



# ***BENTON COUNTY PRAIRIE SPECIES HABITAT CONSERVATION PLAN***

***DECEMBER 2010***

**For more information, please contact:**  
Benton County Natural Areas & Parks Department  
360 SW Avery Ave.  
Corvallis, Oregon 97333-1192  
Phone: 541.766.6871 - Fax: 541.766.6891  
<http://www.co.benton.or.us/parks/hcp>

This document was prepared for Benton County by staff at  
the Institute for Applied Ecology:

Tom Kaye  
Carolyn Menke  
Michelle Michaud  
Rachel Schwindt  
Lori Wisehart

The Institute for Applied Ecology is a non-profit 501(c)(3) organization whose mission is to conserve native ecosystems through restoration, research, and education.



P.O. Box 2855  
Corvallis, OR 97339-2855  
(541) 753-3099  
[www.appliedeco.org](http://www.appliedeco.org)

***Suggested Citation:***

Benton County. 2010. Prairie Species Habitat Conservation Plan. 160 pp plus appendices. [www.co.benton.or.us/parks/hcp](http://www.co.benton.or.us/parks/hcp)

***Front cover photos, top to bottom:***

*Kincaid's lupine, photo by Tom Kaye*  
*Nelson's checkermallow, photo by Tom Kaye*  
*Fender's blue butterfly, photo by Cheryl Schultz*  
*Peacock larkspur, photo by Lori Wisehart*  
*Bradshaw's lomatium, photo by Tom Kaye*  
*Taylor's checkerspot, photo by Dana Ross*  
*Willamette daisy, photo by Tom Kaye*

## Preamble

The Benton County Prairie Species Habitat Conservation Plan (HCP) was initiated to bring Benton County's activities on its own lands into compliance with the Federal and State Endangered Species Acts. Federal law requires a non-federal landowner who wishes to conduct activities that may harm ("take") threatened or endangered wildlife on their land to obtain an incidental take permit from the U.S. Fish and Wildlife Service. State law requires a non-federal public landowner who wishes to conduct activities that may harm threatened or endangered plants to obtain a permit from the Oregon Department of Agriculture. To receive an incidental take permit, a landowner must develop a HCP or Plan. Without this Plan, the County would not be able to continue its routine responsibilities, including road maintenance, without delays and added costs from habitat surveys and regulatory agency consultations prior to each action. With the HCP, the County will avoid and minimize impacts to threatened and endangered species of prairie habitats, but where impacts are unavoidable, the County will mitigate (complete habitat restoration to offset habitat damage) as required.

During HCP development the County also fully recognized its own liability in issuing construction permits to rural private landowners in endangered butterfly habitat. The County also realized the liability and added burden that those landowners face when completing construction of a home, outbuilding, farm or forest structure on their property. Without an HCP, the County would be unable to issue building permits in endangered butterfly habitat until the landowner had received authorization from the U.S. Fish and Wildlife Service. This authorization would involve having a butterfly habitat survey completed in May or June, and if habitat were present the landowner would either have to avoid the habitat, or complete their own HCP and any mitigation required. Waiting for the survey season and completing a survey, developing a HCP, and completing mitigation would frequently delay and add significant cost to a project.

To reduce the burden to private landowners, the Benton County Board of Commissioners decided to offer HCP coverage, through this HCP, as an option to rural private landowners in endangered butterfly habitat. If landowners elect to use this coverage, it eliminates the requirement that they complete a survey, develop their own HCP, or complete or fund their own mitigation. Because the County already manages more than 1,100 acres of natural areas, including over 150 acres of prairie habitat, it can efficiently incorporate the required mitigation into its management of large and protected sites with existing habitat.

This HCP helps the County and its citizens comply with endangered species regulations while protecting at-risk species through long-term planning, avoiding and minimizing impacts, and mitigating for losses.

# Acknowledgments

This Habitat Conservation Plan is the result of collaboration among numerous individuals and organizations working to conserve prairie habitats in the Benton County. We appreciate the considerable time and effort expended by each individual in providing technical expertise, foresight, and/or community stewardship in the preparation of this HCP.

The project relied on individuals sharing their knowledge about prairie habitats and the Covered Species dependent on these habitats for their survival. We would like to thank the Technical Advisory committee members and we hope these individuals will continue to provide Benton County with support as the County moves forward with implementation of the Habitat Conservation Plan.

We wish to acknowledge the time, commitment, and resources of a major group that assisted in the development of the Habitat Conservation Plan – the Stakeholder Advisory Committee. This committee provided the HCP Planning Team with insight and direction in the development of the HCP. We are grateful for their dedication and participation in this important process.

Without the assistance of Benton County staff members we would not have been able to complete the Plan. We would especially like to thank Laurie Starha, Al Kitzman, Mary Simpson, Jon Stratton, Doug Sackinger, Andrew Monaco and Lisa Grisham.

We also wish to thank all those community members who participated at public meetings so far and who provided invaluable comments on the process to date.

We wish to thank the ESRI Conservation Program for a generous GIS software grant that allowed us to create the maps for this project.

Finally, we wish to thank the U.S. Fish and Wildlife Service for providing a majority of the necessary funding needed for this project through the issuance of two USFWS Section 6 Habitat Conservation Planning Assistance Grants.

# Contents

1	Introduction .....	1
1.1	Introduction .....	1
1.2	Purpose and Need .....	5
1.3	Goals .....	6
1.4	Proposed Action .....	7
1.4.0	Scope .....	7
1.4.0.0	Covered Entities and Lands .....	7
1.4.0.1	Covered Species .....	7
1.4.0.2	Covered Activities .....	8
1.4.0.3	Biological Goals and Conservation Measures .....	8
1.4.0.4	Prairie Conservation Strategy .....	9
1.4.0.5	Reducing Disincentives for Conservation on Private Lands .....	9
1.4.0.6	Term of Incidental Take Permit .....	12
1.5	Overview of Conservation Planning Process .....	12
1.5.0	Introduction .....	12
1.5.1	Evaluation Process .....	12
1.5.2	County Board of Commissioners .....	12
1.5.3	Habitat Conservation Planning Team .....	15
1.5.4	Technical Advisory Committee .....	15
1.5.5	Stakeholder Advisory Committee .....	15
1.5.6	Public Outreach .....	16
1.5.7	Public Meetings .....	16
1.5.8	Data Collection .....	16
1.5.8.0	Botanical Surveys .....	16
1.5.8.1	Streaked Horned Lark Surveys .....	17
1.5.8.2	Butterfly Surveys .....	17
1.6	Regulatory Framework .....	18
1.6.0	Federal Endangered Species Act .....	18
1.6.0.0	The Section 10(a)(1)(B) Process - Habitat Conservation Plan Requirements and Guidelines .....	19
1.6.1	National Environmental Policy Act .....	20
1.6.2	National Historic Preservation Act .....	20
1.6.3	Oregon Endangered Species Act .....	20
1.6.4	Other Introductory or Background Topics as Appropriate .....	21
2	Covered Species .....	22
2.1	Fender’s blue butterfly .....	22
2.1.0	Species Description and Ecology .....	22
2.1.1	Species Distribution .....	24
2.2	Taylor’s checkerspot butterfly .....	24
2.2.0	Species Description and Ecology .....	24
2.2.1	Species Distribution .....	25

2.3	Kincaid's lupine.....	25
2.3.0	Species Description and Ecology.....	25
2.3.1	Species Distribution.....	26
2.4	Peacock larkspur .....	26
2.4.0	Species Description and Ecology.....	26
2.4.1	Species Distribution.....	27
2.5	Willamette daisy .....	27
2.5.0	Species Description and Ecology.....	27
2.5.1	Species Distribution.....	28
2.6	Bradshaw's lomatium .....	28
2.6.0	Species Description and Ecology.....	28
2.6.1	Species Distribution.....	28
2.7	Nelson's checkermallow.....	29
2.7.0	Species Description and Ecology.....	29
2.7.1	Species Distribution.....	29
2.8	Listed Species Not Covered .....	30
3	Plan Area .....	31
3.1	Planning Unit One.....	31
3.1.0	Entities in Planning Unit One .....	31
3.1.0.0	Benton County .....	31
3.1.0.1	City of Corvallis .....	31
3.1.0.2	Oregon Department of Transportation.....	35
3.1.0.3	Oregon State University .....	35
3.1.0.4	Greenbelt Land Trust .....	35
3.1.1	Prairie Conservation Areas .....	35
3.1.1.0	Lupine Meadows.....	36
3.1.1.1	Owens Farm .....	36
3.1.1.2	Butterfly Meadows .....	38
3.1.1.3	Benton County Fender's Blue Butterfly Conservation Areas (FBBCAs) 38	
3.1.1.4	Bezell Memorial Forest .....	38
3.1.1.5	Fort Hoskins Historic Park.....	39
3.1.1.6	Fitton Green Natural Area.....	39
3.1.1.7	Jackson-Frazier Wetland .....	39
3.1.1.8	Herbert Farm and Natural Area .....	40
3.1.1.9	Bald Hill Park.....	40
3.1.1.10	Lancaster Property .....	40
3.1.1.11	Corvallis Watershed .....	41
3.1.1.12	Lone Star Ranch .....	41
3.1.1.13	ODOT Wren Mitigation Site.....	41
3.1.1.14	ODOT Henkle Quarry .....	42
3.2	Planning Unit Two .....	42
3.2.0	Potential Fender's Blue Butterfly Habitat under Private Ownership Located outside City Limits.....	42

4	Covered Activities .....	43
4.1	Introduction .....	43
4.2	Covered Activities Summary .....	43
4.2.0	Home, Farm and Forest Construction .....	43
4.2.1	Benton County Permits and Authorizations .....	44
4.2.1.0	Community Development Department Permits .....	44
4.2.1.1	Benton County Health Department Permits .....	47
4.2.1.2	Public Works Department Permits .....	48
4.2.2	Utilities Construction and Maintenance on Private Lands .....	49
4.2.2.0	Telephone Utilities .....	49
4.2.2.1	Natural Gas Utilities .....	50
4.2.3	Public Service Facility Construction .....	51
4.2.4	Transportation and Authorized Work in Rights-of-Way .....	51
4.2.4.0	Transportation Maintenance .....	51
4.2.4.1	Transportation Construction Activities .....	53
4.2.4.2	Authorized Work in Rights-of-Way .....	53
4.2.5	Water and Wastewater Management .....	54
4.2.6	Parks/Natural Areas/Open Space Management Activities .....	54
4.2.6.0	Voluntary Habitat Restoration, Enhancement and Management .....	54
4.2.7	Agriculture .....	55
4.2.8	HCP Implementation Activities .....	55
4.2.8.0	Habitat Enhancement, Restoration and Management for Mitigation .....	55
4.2.8.1	Monitoring .....	55
4.2.8.2	Plant Materials Collection .....	55
4.2.8.3	Plant Population Augmentation and Introduction .....	56
4.2.9	Emergency Response Activities .....	56
4.3	Non-Covered Activities .....	56
5	Impacts .....	58
5.1	Quantifying Impacts .....	58
5.1.0	Fender’s Blue Butterfly .....	58
5.1.0.0	Delineating Suitable Habitat: Fender’s Blue Zone Mapping .....	58
5.1.1	Taylor’s Checkerspot Butterfly .....	62
5.1.1.0	Delineating Suitable Habitat for Taylor’s Checkerspot .....	62
5.1.2	Plants .....	64
5.2	Estimating Impacts to Covered Species from Covered Activities .....	64
5.2.0	Home, Farm and Forest Construction .....	64
5.2.0.0	Take Requested for Impacts to Fender’s Blue Butterfly Habitat from Home, Farm and Forest Construction .....	64
5.2.0.1	Modeling Lupine and Nectar Occupancy in the Fender’s Blue Zone .....	65
5.2.0.2	Estimating Impact Area from Home, Farm, and Forest Construction Projects in the Fender’s Blue Zone .....	65
5.2.0.3	Predicted Dwelling Construction and Related Permits .....	65
5.2.0.4	Predicted Accessory Structure Construction and Related Permits .....	68
5.2.0.5	Predicted Agricultural Building Authorizations .....	68

5.2.0.6	Predicted Medical Hardship Dwelling Requests .....	68
5.2.0.7	Predicted Addition to Structure Permit Requests.....	68
5.2.1	Utilities Construction and Maintenance on Private Lands.....	68
5.2.1.0	Telephone Utilities .....	68
5.2.1.1	Natural Gas Utilities .....	69
5.2.2	Public Service Facility Construction .....	69
5.2.2.0	Total Estimated Impacts from Public Service Facility Construction...	69
5.2.2.1	Rural School Construction .....	70
5.2.2.2	Rural Fire District Station Construction .....	72
5.2.3	Transportation Activities and Authorized Work in Rights-of-Way.....	72
5.2.3.0	Type 1 and Type 2 Roadside Population Classification Criteria .....	72
5.2.3.1	Assessing Impacts from Benton County Transportation Activities and Authorized Work in Rights-of-Way.....	73
5.2.3.2	Estimating Impacts to Fender’s Blue Butterfly Native Nectar Species in ODOT and Benton County Rights-of-Way .....	75
5.2.3.3	Estimating Impacts to Covered Plants Outside Known Populations from Transportation Maintenance, Road Approach and Utility or Work in Rights-of-Way	75
5.2.4	Water and Wastewater Management .....	76
5.2.5	Parks/Natural Areas/Open Space Management Activities .....	76
5.2.5.0	Park Development, Construction, and Maintenance .....	76
5.2.5.1	Recreation and Public Use .....	76
5.2.5.2	Voluntary Habitat Restoration, Enhancement, and Management .....	76
5.2.6	Agricultural Activities .....	77
5.2.6.0	Crop Production .....	77
5.2.7	HCP Implementation Activities.....	77
5.2.7.0	Habitat Restoration, Enhancement, and Management for Mitigation	77
5.2.7.1	Monitoring Activities.....	78
5.2.7.2	Plant Materials Collection Activities.....	79
5.2.8	Emergency Response Activities.....	80
5.3	Indirect Impacts .....	80
5.3.0	Habitat Degradation .....	80
5.3.1	Habitat Fragmentation.....	80
5.3.2	Isolation.....	80
5.3.3	Loss of Biological Diversity .....	80
6	Conservation Measures.....	81
6.1	Biological Goal.....	81
6.2	Biological Objectives, Conservation Measures and Tasks .....	81
6.2.0	Objective 1: Conserve Covered Species populations and habitat.....	82
6.2.1	Objective 2: Enhance Covered Species populations and habitat.....	86
6.2.2	Objective 3: Increase the distribution and connectivity of Covered Species populations.....	89
6.3	Mitigation Requirements.....	91
6.3.0	Factors Determining Mitigation Ratios .....	92



6.3.0.0	Impact and Mitigation Site Quality .....	94
6.3.0.1	Timing of Mitigation .....	95
6.3.0.2	Mitigation Site Protection .....	95
6.3.1	Mitigation Ratios .....	96
6.3.2	Mitigation Implementation .....	97
6.3.2.0	For Impacts on Non-Federal Public Lands .....	97
6.3.2.1	For Impacts on Private lands .....	97
6.3.2.2	Strategy for Fender’s Blue Butterfly Conservation Areas .....	97
6.4	Restrictions and Best Management Practices for Covered Activities in Areas with Covered Species .....	99
6.4.0	Transportation and Public Service Facility Construction Projects in Areas with Covered Species .....	100
6.4.1	Transportation Maintenance Activities in areas with Covered Species....	103
6.4.2	Parks/Natural Areas/Open Space Management Activities .....	104
6.4.3	Water and Wastewater Management .....	105
6.4.3.0	Surveys .....	105
7	Monitoring and Adaptive Management .....	106
7.1	Introduction .....	106
7.2	Monitoring .....	106
7.2.0	Compliance Monitoring .....	106
7.2.1	Effectiveness Monitoring .....	107
7.2.1.0	Monitoring Plans at Sites where Effectiveness Monitoring may be Required	108
7.2.1.1	Effectiveness Monitoring Timing and Frequency .....	108
7.2.1.2	Species Status Monitoring for Effectiveness Monitoring .....	109
7.2.1.3	Prairie Habitat Condition Monitoring for Effectiveness Monitoring...	110
7.2.1.4	Effectiveness Monitoring Data Management .....	111
7.3	Adaptive Management .....	112
7.3.0	Adaptive Management to Update and Improve Habitat Restoration and Enhancement Techniques .....	112
7.3.1	Other Adaptive Management Methods .....	112
7.3.1.0	Redefining Conservation Measures .....	113
7.3.1.1	Recovery Plans in the HCP Area .....	113
7.3.2	Monitoring Interface with Adaptive Management .....	113
7.3.2.0	Species Status Monitoring .....	113
7.3.2.1	Habitat Condition Monitoring .....	114
8	Implementation .....	115
8.1	Roles, Responsibilities, and Tasks .....	115
8.1.0	Introduction .....	115
8.1.1	Responsibilities of Benton County .....	115
8.1.1.0	Benton County Board of Commissioners .....	115
8.1.1.1	Natural Areas and Parks Department.....	116
8.1.1.2	Public Affairs .....	119
8.1.1.3	Community Development Department.....	119

8.1.1.4	Public Works Department .....	120
8.1.1.5	County Attorney .....	120
8.1.2	Advisory Committees .....	122
8.2	Certificates of Inclusion and Cooperative Agreements .....	122
8.2.0	County Permits and Agricultural Building Authorizations to Private Parties 122	
8.2.0.0	Permits for Home, Farm and Forest Construction .....	122
8.2.0.1	Road Approach or Utility Work in Rights-of-Way Permit Applicants.	124
8.2.1	Cooperative Agreements and Certificates of Inclusion for Cooperators..	125
8.2.2	Data Management.....	126
8.3	Schedule.....	127
8.3.0	First Year .....	127
8.3.1	First Three Years.....	127
8.3.2	1–50 years .....	128
8.4	Land and/or Conservation Easement Acquisition Policies .....	128
8.4.0	Willing Sellers .....	128
8.4.1	Gifts of Land.....	128
8.4.2	Conservation Easement Compliance Monitoring .....	129
8.4.3	Public Access to Conservation Easements.....	129
8.5	Mitigation Policies .....	129
8.5.0	Non-Benton County Owned Lands Used for Mitigation .....	129
8.5.1	Pre-mitigation.....	129
8.6	Implementation Costs and Funding .....	129
8.6.0	Introduction .....	129
8.6.1	Implementation Costs.....	130
8.6.1.0	HCP Funding Sources.....	130
8.7	Changed Circumstances .....	132
8.7.0	Introduction .....	132
8.7.1	Additional Federally Listed or State Listed Species.....	132
8.7.2	Delisting.....	132
8.7.3	Previously Undiscovered Wild Fender’s Blue Butterfly outside the Fender’s Blue Zone.....	133
8.7.4	New Invasive Species .....	133
8.7.5	Natural Catastrophes.....	133
8.7.5.0	Flooding .....	133
8.7.5.1	Drought.....	133
8.7.5.2	Wildfires .....	134
8.7.5.3	Windstorms.....	134
8.7.5.4	Other Unanticipated Catastrophes.....	134
8.8	Amendments.....	134
8.8.0	Amendments to the HCP, Incidental Take Permit, or Implementing Agreement .....	135
8.8.0.0	Minor Amendments.....	135
8.8.0.1	Major Amendments .....	136

8.8.0.2	Amendments for Future Species Listings.....	136
8.9	HCP and Incidental Take Permit Renewal .....	137
8.10	Enforcement .....	137
8.11	Notice.....	138
8.12	Suspension/Revocation .....	138
9	Alternatives .....	139
9.1	Introduction .....	139
9.2	Alternatives Considered.....	139
9.2.0	Alternatives Regarding Covered Species.....	139
9.2.0.0	Alternative A: Listed Animal Species.....	140
9.2.0.1	Alternative B: Listed and Candidate Butterfly Species.....	140
9.2.0.2	Alternative C: Listed and Candidate Animal Species Only .....	140
9.2.0.3	Alternative D: Listed Prairie Animal and Plant Species Only .....	141
9.2.0.4	Alternative E: Listed and Candidate Butterfly Species and Plant Species	141
9.2.0.5	Alternative F: Listed, Candidate, and Species of Concern Prairie Animal and Plant Species.....	142
9.2.0.6	Proposed Alternative.....	142
9.2.1	Alternatives Regarding Covered Lands and Entities .....	142
9.2.1.0	Alternative A: Benton County Owned and/or Managed Lands Only.	142
9.2.1.1	Alternative B: Non-federal Public Lands Only.....	143
9.2.1.2	Alternative C: Non-federal Public Lands, Private Lands Located Outside City Limits .....	143
9.2.1.3	Alternative D: Benton County Lands and Private Lands .....	143
9.2.1.4	Alternative E: All Benton County Lands.....	143
9.2.1.5	Proposed Alternative for Covered Lands .....	143
9.2.2	Alternatives Regarding Coverage of Private Development Activities on Lots Generated through Partitions in Fender’s Blue Zone .....	144
9.2.2.0	Alternative A .....	144
9.2.2.1	Alternative B .....	144
9.2.2.2	Proposed Alternative.....	144
9.2.3	Alternatives Regarding Funding to Mitigate Impacts on Private lands....	144
9.2.3.0	Alternative A .....	145
9.2.3.1	Alternative B .....	145
9.2.3.2	Proposed Alternative.....	146
9.3	No HCP Alternative .....	146
9.4	Reduced Take Alternative.....	147
10	References .....	148
11	Acronyms .....	155
12	Glossary .....	156

# List of Figures

Figure 1.1 Benton County and the Willamette Valley Ecoregion of Oregon. .... 2

Figure 1.2 Historic prairie habitat in the Willamette Valley. .... 3

Figure 1.3 Remaining prairie habitat in the Willamette Valley. .... 4

Figure 1.4 HCP planning process. .... 13

Figure 1.5 Advisory Committee, Planning Team and public involvement. .... 14

Figure 2.1 Covered Species for the Benton County Prairie Species HCP. .... 23

Figure 3.1 Lands covered under the Benton County Prairie Species HCP Planning Units 1 and 2. .... 33

Figure 5.1 Map of Fender’s Blue Zone, showing the 0.5 km nectar zone and the 2 km dispersal zone. .... 61

Figure 5.2 Potential habitat for Taylor’s checkerspot butterfly in Benton County based on a 1.5 km likely dispersal distance and currently known locations. .... 63

Figure 6.1 Properties surveyed between 2006 and 2009 within the Fender’s blue butterfly nectar zone that contained native nectar species for Fender’s blue butterfly. .... 92

Figure 6.2 Ground cover (%) of native nectar species for Fender’s blue butterfly within vegetation plots with native nectar species present sampled throughout Benton County in 2006-2009. .... 98

Figure 6.3 Projected increase in Kincaid’s lupine and native nectar species for Fender’s blue butterfly needed for mitigation over the 50 year term of the HCP. .... 99

Figure 8.1 Benton County Departments with responsibility for implementation of the Benton County Prairie Species HCP. .... 116

Figure 8.2 Taxlots in Fender’s blue butterfly habitat. .... 121

Figure 8.3 Certificate of Inclusion process for County permit or agricultural building Authorization applicants inside and outside the Fender’s Blue Zone. .... 123

Figure 8.4 Cooperator options for obtaining take authorization following implementation of the Benton County Prairie Species HCP. .... 126

# List of Tables

Table 1.1 Benton County Prairie Species HCP Covered Species and their status under the State and Federal Endangered Species Acts. .... 1

Table 2.1 Flowering plants identified as nectar sources for Fender’s blue butterfly in Benton County. .... 24

Table 3.1 Land ownership in Benton County. .... 32

Table 3.2 Known and projected abundance of Covered Species across all land ownerships in Benton County as of July, 2009 (% refers to percent of total known or projected abundance in County). .... 34

Table 3.3 Introductions and augmentations of the Covered Species since 2002. .... 37

Table 4.1 Benton County Prairie Species HCP Covered Activities. .... 44

Table 5.1 Total take requested for permanent and short term impacts to Covered Species resulting from Covered Activities by Benton County/Cooperators throughout the County, and home, farm and forest construction on private lands within the Fender’s Blue Zone. .... 59

Table 5.2 Average impact area and structure size within the Fender’s blue butterfly Zone. .... 66

Table 5.3 Estimated take of Fender’s blue butterfly habitat (in m<sup>2</sup> and ft<sup>2</sup> [shaded] to result from home, farm and forest construction on private lands within the Fender’s Blue Zone during the 50 year incidental take permit term. .... 67

Table 5.4 Estimated impacts for telephone utility construction and maintenance by Pioneer Telephone Cooperative on private lands in the Fender’s Blue Zone. .... 69

Table 5.5 Estimated impacts for natural gas utility construction and maintenance by NW Natural on private lands in the Fender’s Blue Zone. .... 70

Table 5.6 Estimated take of Fender’s blue butterfly habitat (in m<sup>2</sup> and ft<sup>2</sup> [shaded] from anticipated Public Service Facility Construction within the Fender’s Blue Zone during the 50 year incidental take permit term. .... 71

Table 5.7 Type 1 and Type 2 roadside populations on Benton County rights-of-way. Sites with A, B, C or D following the same road name are sites at different locations along the same road. .... 74

Table 5.8 Short term impacts to butterflies resulting from voluntary habitat restoration, enhancement and management activities over the 50 year HCP. .... 78

Table 5.9 Short term impacts to butterfly species resulting from mitigation related habitat restoration, enhancement, and management activities over the 50 year HCP. .... 79

Table 6.1 Summary of mitigation to be completed by Benton County and Cooperators. Amounts reported are the minimum required, and assume pre-mitigation will be completed. If mitigation is concurrent, a higher mitigation ratio will be applied, and a larger amount of mitigation will be required (see Table 6.2). No mitigation required for impacts to non-native nectar species for Fender’s blue butterfly (See Section 6.3 for more information). .... 90

Table 6.2 Mitigation ratios that define the amount of plants (for covered plants) or habitat (for butterflies) to be added to a site relative to the amount of plants or habitat impacted. .... 93

Table 6.3 Species present and site quality at sites where some level of mitigation is planned, or may be planned in the future (including PCAs and Type 1 roadside populations (SMAs)). .... 96

Table 6.4 Covered Activities with permanent impacts that require a pre-project botanical survey. .... 100

Table 7.1 Examples of Oregon Department of Agriculture “A” and “B” classified weeds. .... 111

Table 7.2 Habitat condition monitoring thresholds. .... 114

Table 8.1. Summary of estimated costs to implement the Benton County Prairie Species Habitat Conservation Plan. .... 131

# Appendices

Appendix A: Certificate of Inclusion Template – Private Landowner

Appendix B: Certificate of Inclusion Template – Cooperator

Appendix C: Cooperative Agreement Template

Appendix D: Maps of Prairie Conservation Areas

Appendix E: Prairie Conservation Strategy

Appendix F: USFWS March 1, 2010 Letter to Benton County

Appendix G: HCP Advisory Committees and Planning Team

Appendix H: Public Presentations about the HCP

Appendix I: Avian, Botanical and Butterfly Survey Methodology

Appendix J: Prairie Habitat Vegetation Management Guidelines

Appendix K: Project Site Survey and Reporting Protocols for Plants and Butterfly Habitat

Appendix L: Plant Material Collection and Plant Introduction Protocols

Appendix M: Roadside and Streambank Management Guidelines for Covered Plants

Appendix N: Taylor's Checkerspot Management Plan

Appendix O: Covered Plant Soils Lists

Appendix P: Sample Annual Compliance Report

Appendix Q: Sample Cooperator Reporting Forms

# Executive Summary

This Habitat Conservation Plan (HCP or Plan) was submitted to the U.S. Fish and Wildlife Service and Oregon Department of Agriculture by Benton County, Oregon (“County”) to allow the County to receive an incidental take permit under the Endangered Species Act Section 10(a)(1)(B) for Fender’s blue butterfly, Taylor’s checkerspot butterfly, Willamette daisy, peacock larkspur, Kincaid’s lupine, Nelson’s checkermallow and Bradshaw’s lomatium (“Covered Species”). The incidental take permit allows the County to continue to perform its otherwise lawful duties, which have the potential to impact these Covered Species. In return for impacting the Covered Species, the County will minimize and mitigate its impacts. The incidental take permit will be in effect for 50 years.

The vision of the Plan is to achieve long term viability of rare species populations that is compatible with essential public services, public and conservation land management and home, farm and forest construction on private lands.

## Goals:

- Maintain viable populations of the Covered Species in Benton County.
- Increase community appreciation of prairie habitats, enhance positive community engagement, and demonstrate the success of voluntary actions and programs to promote prairie conservation.
- Achieve compliance with State and Federal Endangered Species Act protections and regulations.

Lands with prairie habitat owned and/or managed by Benton County are covered by the HCP. Private landowners who need a County permit or agricultural building authorization for home, farm, and forest construction have the option of obtaining incidental take permit coverage from the County. The entities (“Cooperators”) identified below may also obtain incidental take coverage for certain lands (lands in the “Plan Area”) and certain activities (“Covered Activities”) under the HCP by requesting a Certificate of Inclusion from Benton County.

- City of Corvallis
- Oregon Department of Transportation
- Oregon State University
- Greenbelt Land Trust
- Pioneer Telephone Cooperative
- NW Natural

Activities within the Plan Area that are covered by the incidental take permit and for which the Plan provides avoidance, minimization and mitigation for impacts to Covered Species include:

- Home, Farm and Forest Construction on private lands
- Benton County construction Permits and Agricultural Building Authorizations

- Public Service Facility Construction
- Transportation Activities and Authorized Work in Rights-of-Way
- Utility (including natural gas and telephone) Construction and Maintenance
- Water and Wastewater Management
- Parks/Natural Areas/Open Space Management
- Agriculture on City of Corvallis Land
- HCP Implementation Activities
- Emergency Response Activities

Total permanent impacts, or “take”, requested for the 50 year permit term for each of the Covered Species is summarized in the following table:

Bradshaw's lomatium (#)	Willamette daisy (#)	Peacock larkspur (#)	Nelson's checkermallow (#)	Kincaid's lupine outside the Fender's Blue Zone (m <sup>2</sup> )	Kincaid's lupine inside the Fender's Blue Zone (m <sup>2</sup> )	Nectar for Fender's blue butterfly (m <sup>2</sup> )	Taylor's checkerspot butterfly habitat (m <sup>2</sup> )
2	1	56	222	8	402	8570	57

“Conservation Measures” are the actions proposed to avoid, minimize, and mitigate for impacts to the Covered Species resulting from Covered Activities, in accordance with the HCP’s biological goal. The biological goal of this Plan is to maintain viable populations of the Covered Species in Benton County. Objectives to reach that goal are to:

- 1) Conserve Covered Species populations and habitat.
- 2) Enhance Covered Species populations and habitat.
- 3) Increase the distribution and connectivity of Covered Species populations.

Each objective will be accomplished through a set of Conservation Measures, including:

- Acquire from willing sellers and enhance properties (Benton County Fender’s Blue Butterfly Conservation Areas) with existing populations of Fender’s blue butterfly and prairie habitat.
- Designate Prairie Conservation Areas (PCAs) on over 200 ha (500 ac) public lands or lands under conservation easement, including the Benton County Fender’s Blue Butterfly Conservation Areas described above. These lands within the County will be managed specifically for conservation of the Covered Species. Some areas of some PCAs may be designated for use as mitigation sites.
- Implement best management practices for Covered Species populations in Prairie Conservation Areas and other Covered Lands owned by Benton County and the Cooperators.
- Augment and/or enhance populations of Covered Species to mitigate for impacts.
- Develop a Prairie Conservation Strategy to facilitate effective and voluntary conservation actions by public and willing private landowners, which contribute to the recovery of the Covered Species and other imperiled prairie species in Benton County.



In the event that impacts to Covered Species cannot be avoided, mitigation will be completed at sites with appropriate habitat in Benton County at the closest appropriate location to the impacted site. Mitigation may be achieved by habitat enhancement or species augmentations at sites already supporting the impacted species, or by introducing the species to currently unoccupied sites containing suitable habitat. For a site to be suitable it must:

- Have the correct vegetation structure;
- Possess suitable soils;
- Be located within current or historic prairie habitat;
- Be located on lands protected by permanent conservation easement or under non-federal public ownership; and
- The site cannot be dominated by List A or B noxious weeds.

Mitigation requirements have been fulfilled when the following conditions are met:

- Required amount of covered plants or habitat persists six years after initiation of the mitigation.
- Covered Species population or habitat trend is stable over the final three years of the six year period (no significant population declines during that period).
- For covered plants, at least 40% of the individuals initially planted or seeded are reproductive and produce seeds. This requirement does not apply to portions of the population that recruit (self-seed) naturally after planting.

Monitoring and adaptive management are crucial to successful HCP implementation. Benton County and Cooperators will adopt a monitoring and adaptive management program to allow changes in the Conservation Measures to reach the long-term biological goal of the Plan, and contribute to the survival and recovery of the species.

The County Board of Commissioners has overall responsibility for implementation of the HCP. Many of the tasks to be performed by the County will be delegated to staff in the Natural Areas and Parks Department, the Community Development Department, and the Public Works Department.

Benton County considered a number of alternatives throughout the development of the habitat conservation plan (HCP), including whether to complete the Plan and pursue an incidental take permit. The analysis included what species to cover, what lands and entities to cover, what activities to cover, how to fund County-led mitigation for impacts on private lands, and how to address future partitions and subdivisions of properties.

# 1 Introduction

## 1.1 Introduction

Benton County is located within the southern portion of the Willamette Valley ecoregion (Figure 1.1). Prior to Euro-American settlement in the mid-1800's, native grassland prairie and savanna habitats occupied an estimated 700,000 hectares (ha) (1.7 million acres [ac]) of western Oregon's Willamette Valley (Figure 1.2) (Alverson 2005). Almost all native upland and wet prairies and oak savanna habitats have vanished in the Willamette Valley ecoregion, with less than 0.5% remaining (Figure 1.3) (Ingersoll et al. 1991). Benton County comprises 7% of the Willamette Valley ecoregion, and is home to an estimated 12% of the remaining native prairie and oak savanna habitat.

Much of the habitat loss in the Willamette Valley has occurred due to conversion of native habitats to agricultural crops and urbanization, introduction of invasive species, and elimination fire regimes that historically kept woody vegetation (trees and shrubs) from dominating the habitat (ODFW 2006). The majority of remaining prairie habitat is located on privately owned lands (Alverson 2005), where protection of the native species supported by these native prairie habitats is limited or absent.

Benton County has taken the lead to preserve some of the remaining prairie habitat, as well as rare prairie species endemic to the region, through implementation of a Benton County Prairie Species Habitat Conservation Plan (HCP or Plan). To achieve a lasting legacy of this once abundant native prairie habitat, Benton County will work in cooperation with other public agencies, two utility companies, and a conservation organization to balance conservation of seven rare native species "Covered Species" (Table 1.1) and their habitats with home, farm, and forest construction; vegetation management in parks, natural areas, and open spaces; and essential public services for the citizens of Benton County, including transportation, utility construction and maintenance, rural school and fire station construction, and water and wastewater management ("Covered Activities").

Table 1.1 Benton County Prairie Species HCP Covered Species and their status under the State and Federal Endangered Species Acts.

Scientific Name	Common Name	Federal Status	State Status
<i>Erigeron decumbens</i>	Willamette daisy	Endangered	Endangered
<i>Icaricia icarioides fenderi</i>	Fender's blue Butterfly	Endangered	None
<i>Lomatium bradshawii</i>	Bradshaw's lomatium	Endangered	Endangered
<i>Lupinus sulphureus</i> ssp. <i>kincaidii</i>	Kincaid's lupine	Threatened	Threatened
<i>Sidalcea nelsoniana</i>	Nelson's checkermallow	Threatened	Threatened
<i>Euphydryas editha taylori</i>	Taylor's checkerspot butterfly	Candidate	None
<i>Delphinium pavonaceum</i>	peacock larkspur	Species of Concern	Endangered

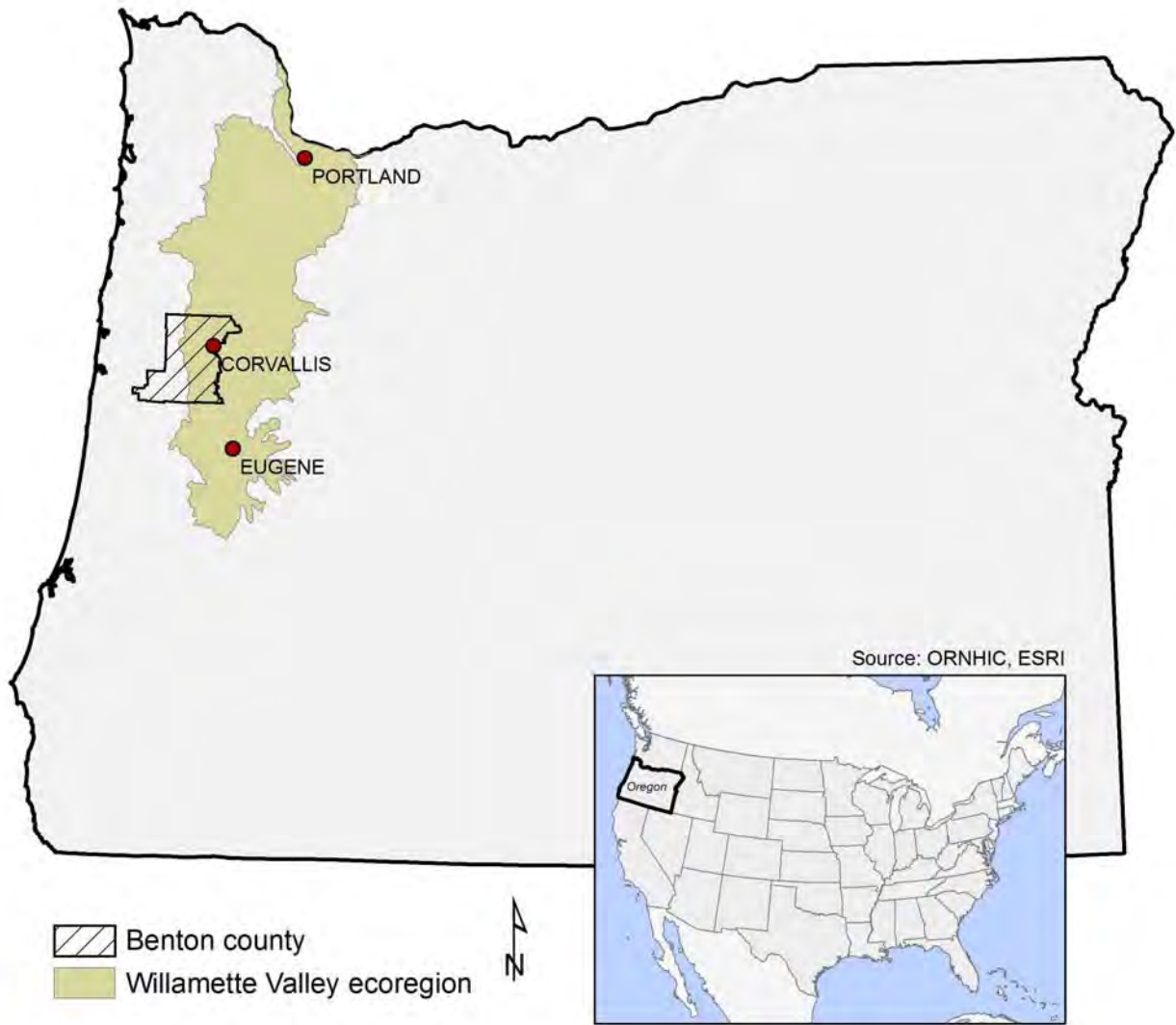


Figure 1.1 Benton County and the Willamette Valley Ecoregion of Oregon.

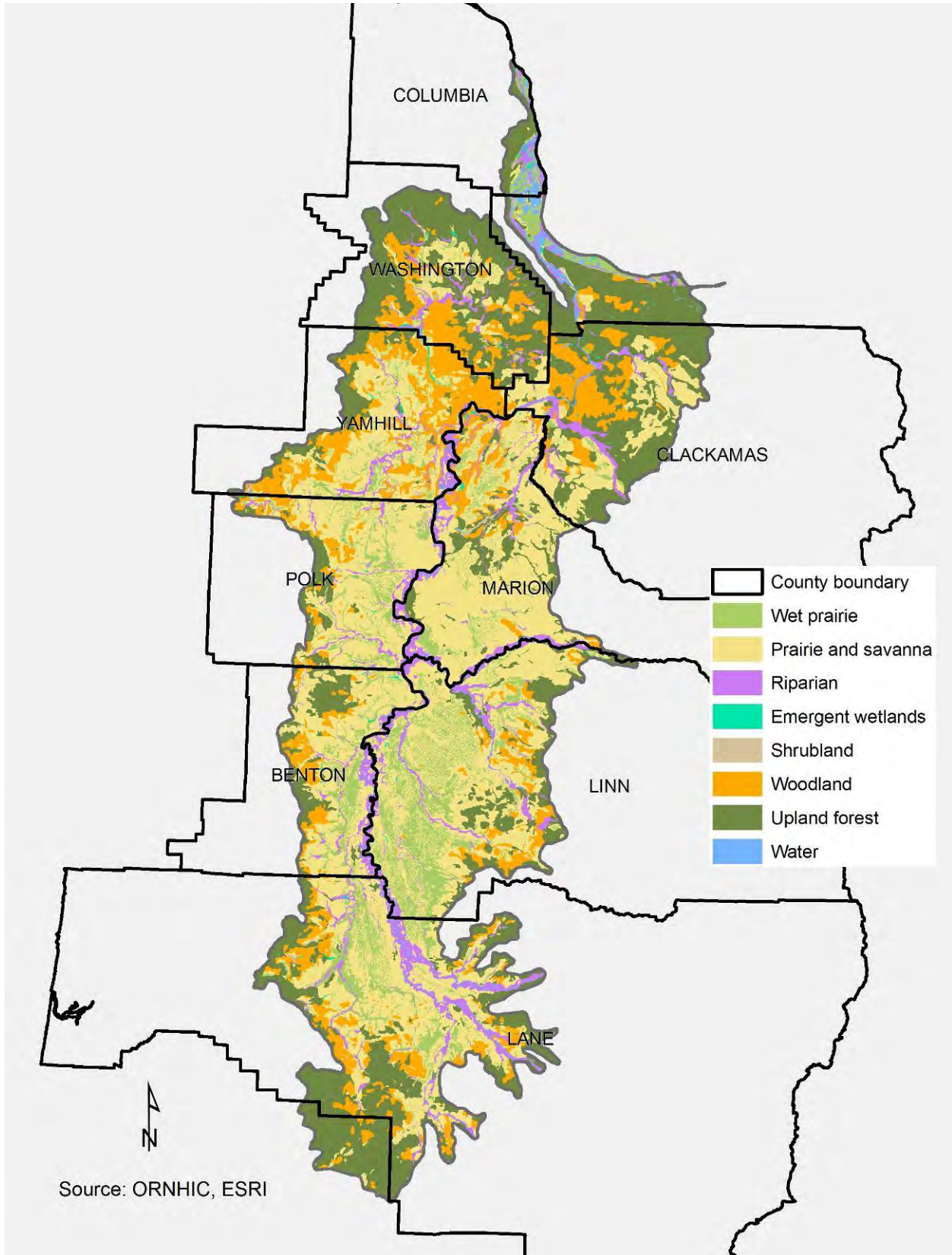


Figure 1.2 Historic prairie habitat in the Willamette Valley.

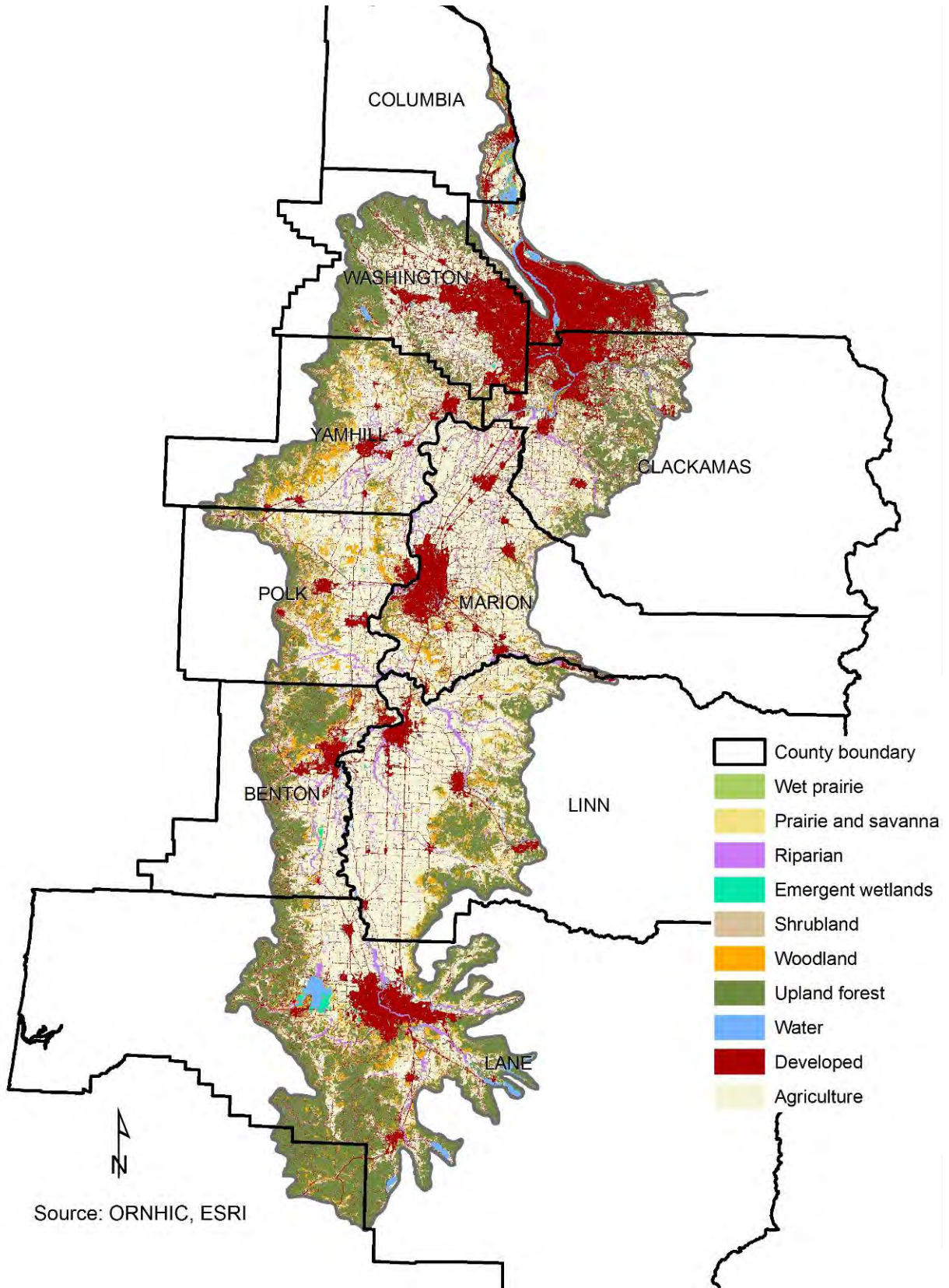


Figure 1.3 Remaining prairie habitat in the Willamette Valley.

Benton County has developed this Plan to address how the County and the participating non-federal public landowners and conservation organization intend to manage for rare native species and their habitats within Benton County while allowing otherwise lawful activities performed on those properties.

## 1.2 Purpose and Need

The purpose of this HCP is to set forth Conservation Measures the County agrees to take for the protection and enhancement of native prairie systems and to offset any impacts resulting from the Covered Activities. These Conservation Measures outline how the County and its citizens can avoid, minimize, and mitigate for their impacts to prairies and the native species dependent upon them. Implementation of the HCP will encourage creative partnerships between the County, its local citizens, local entities and the two primary regulatory agencies, the Oregon Department of Agriculture (ODA), and the U.S. Fish and Wildlife Service (USFWS).

The Federal Endangered Species Act (ESA) makes it illegal to negatively impact listed animal species (known as “take”) without an incidental take permit. Negative impacts result from activities that cause death, harm, or harassment to such an extent the impacted species are unable to breed, feed, or seek shelter. Significant impacts to the species’ habitat can also result in violation of the ESA. An incidental take permit can be issued to the County that allows a limited amount of take, if the following criteria are satisfied: (1) take is incidental, (2) the impacts of such taking are minimized and mitigated to the maximum extent practicable, (3) the County ensures funding for the HCP and procedures to deal with unforeseen circumstances, and (4) take does not appreciably reduce the likelihood of the survival and recovery of the species in the wild (USFWS 1996).

Despite best efforts, preventing impacts to listed species or their habitat during the County’s performance of otherwise lawful activities<sup>1</sup> (such as road construction and maintenance, permit issuance, park and natural area vegetation management) is difficult or costly. The County is voluntarily seeking an incidental take permit from the USFWS and authorization from ODA to perform these otherwise lawful activities which have the potential to impact listed species. The County is not required by law to obtain an incidental take permit from the USFWS; it is only required by law to comply with the state and federal ESA. Therefore, if the appropriate authorization is not obtained, all impacts must be avoided. As a condition of the incidental take permit, Benton County agrees to perform Conservation Measures spelled out in this Plan. The HCP identifies how the County intends to avoid, minimize, and mitigate to the maximum extent practicable impacts to Covered Species from Covered Activities identified in the incidental take permit.

---

<sup>1</sup> Otherwise lawful activities are those activities consistent with other federal, state, and local laws.

Benton County is including a listed animal (Fender's blue butterfly) under this HCP. In addition, a candidate species and five plant species are included that currently have no take prohibition under the federal ESA. By including these species, Benton County is voluntarily assuming responsibility to avoid, minimize, and mitigate for impacts to these species resulting from activities it conducts or authorizes on lands it owns or manages<sup>2</sup>, even though the federal ESA does not require such actions. However, by avoiding, minimizing and mitigating impacts to plant species, Benton County is fulfilling the requirements of the State of Oregon ESA. Additionally, including the candidate and plant species ensures the terms and conditions of the incidental take permit and the HCP do not change over time with the subsequent listing of the candidate species or a change in the law regarding the take of listed plant species.

The County also includes in this HCP coverage for (1) persons<sup>3</sup> in Benton County requiring a Benton County permit for home, farm or forest construction, and (2) certain non-federal public agencies, two utility companies, and a conservation organization (Cooperators) whose activities are likely to affect one or more of the Covered Species on lands they own or work on within the County. Obtaining take coverage under the County's incidental take permit will provide additional predictability in planning and conducting Covered Activities. These private landowners and Cooperators will save time and expense by obtaining take coverage directly from Benton County, rather than having to apply for take coverage (including preparing their own HCP) from the U.S. Fish and Wildlife Service and/or the Oregon Department of Agriculture.

### 1.3 Goals

Vision: Achieve long term viability of rare species populations that is compatible with essential public services, public land management and home, farm and forest construction.

Goals:

- Maintain viable<sup>4</sup> populations of the Covered Species (Table 1.1) in Benton County.
- Increase community appreciation of prairie habitats, enhance positive community engagement, and demonstrate the success of voluntary actions and programs to promote prairie conservation.
- Achieve compliance with State and Federal Endangered Species Act protections and regulations.

---

<sup>2</sup> County "managed" lands are those lands owned by others but managed by the County, such as City or State road rights-of-way.

<sup>3</sup> Persons is defined, to include, but not be limited to individuals, public agencies, corporations, partnerships, limited liability partnerships, limited liability corporations.

<sup>4</sup> A viable population has a sufficient number of individuals, reproduction by those individuals, and habitat conditions to persist over time.

## 1.4 Proposed Action

### 1.4.0 Scope

Benton County seeks incidental take coverage for seven imperiled prairie species. Benton County seeks authorization to issue Certificates of Inclusion to (1) persons requiring a County permit or agricultural building authorization (Appendix A: Certificate of Inclusion Template – Private Landowner) and (2) Cooperators, including select non-federal public agencies, two utility companies, and a conservation organization (Appendix B: Certificate of Inclusion Template – Cooperator). Cooperators will also be required to enter into a Cooperative Agreement with the County; this agreement sets forth the responsibilities of the parties with respect to minimization and mitigation (conservation) measures (Appendix C: Cooperative Agreement Template).

#### 1.4.0.0 Covered Entities and Lands

Lands covered by the HCP are included in the “Plan Area” and described in Chapter 3. The Plan area includes lands owned and/or managed by Benton County. Those listed below may obtain coverage for their activities, under the HCP, by requesting a Certificate of Inclusion from Benton County.

- Private landowners seeking a County permit or agricultural building authorization for work in the Fender’s Blue Zone
- HCP Cooperators
  - City of Corvallis
  - Oregon Department of Transportation (ODOT)
  - Oregon State University (OSU)
  - Greenbelt Land Trust
  - Pioneer Telephone Cooperative
  - NW Natural

#### 1.4.0.1 Covered Species

The scope of this HCP is limited to wet or upland prairie habitat in Benton County. The seven species covered under this HCP exclusively occupy these habitats and include Fender’s blue butterfly (*Icaricia icarioides fenderi*), Taylor’s checkerspot butterfly (*Euphydryas editha taylori*), Bradshaw’s lomatium (*Lomatium bradshawii*), Kincaid’s lupine (*Lupinus sulphureus* ssp. *kincaidii*), peacock larkspur (*Delphinium pavonaceum*), Nelson’s checkermallow (*Sidalcea nelsoniana*), and Willamette daisy (*Erigeron decumbens*) (Chapter 2).

All seven species are covered on lands in the Plan Area (Chapter 3) owned and/or managed by Benton County. Fender’s blue butterfly and the five plant species are covered on land owned or managed by the City of Corvallis, OSU and ODOT. Fender’s blue butterfly is also covered on privately owned lands, including those owned by



Greenbelt Land Trust, within mapped potential habitat for the species (the Fender's Blue Zone- see Chapter 5, Section 5.1.0.0).

Taylor's checkerspot butterfly, currently a candidate species, occurs only on lands under County or private ownership. In this HCP, Taylor's checkerspot is only covered on land owned by Benton County. In the event that Taylor's checkerspot becomes listed as threatened or endangered, Benton County will continue to implement conservation actions for the species on County lands, and collaborate with other public landowners to benefit the species. See Chapter 5 Impacts for more information.

#### **1.4.0.2 Covered Activities**

Covered Activities include: (1) ground-disturbing activities necessary to allow home, farm and forest construction; (2) management of public and conservation organization lands; and (3) activities providing essential public services in the County (e.g., transportation and water system management, and utilities construction and maintenance). An activity is included in this Plan only if: (1) it is the type of impact evaluated in Chapter 5; (2) there is sufficient take coverage available under the incidental take permit issued to Benton County for that activity; (3) it does not preclude achieving the biological goals and objectives of this Plan; and (4) it is an action under the jurisdiction of Benton County, one of the Cooperators, or certain private landowners. Covered activities are identified in Chapter 4.

#### **1.4.0.3 Biological Goals and Conservation Measures**

The overall biological goal of this HCP is to achieve sustainable populations of Covered Species, while maintaining local populations and enhancing connectivity. Through the proposed Conservation Measures, the County and Cooperators will accomplish this by enhancement of selected existing Covered Species populations and habitat, and increasing the distribution and connectivity of Covered Species populations in the County.

This HCP also proposes managing select habitat for the Covered Species, including reducing or managing for current threats to the species on over 200 ha (500 ac) of lands owned or managed by the County or Cooperators. These areas will be designated as Prairie Conservation Areas (PCAs; Appendix D: Maps of Prairie Conservation Areas). Lands designated as PCAs will be areas where the Covered Species are present or where there is suitable habitat for introductions of the Covered Species. PCAs are lands under public ownership or conservation easement and set aside for active conservation, and where habitat restoration and enhancement will take place. Some areas of some PCAs may be used as mitigation sites for impacts to the Covered Species resulting from Covered Activities at the discretion of Benton County or the Cooperators.

#### **1.4.0.4 Prairie Conservation Strategy**

Benton County has developed a Prairie Conservation Strategy, a Conservation Measure of this Plan and an appendix to this document (Appendix E: Prairie Conservation Strategy). The strategy outlines an approach for interested parties, both public and private, to work together to help conserve and restore rare habitat and recover at-risk prairie-dependent species in Benton County in a non-binding, non-regulatory framework. The continued existence of rare habitats and species depends on the willingness of land managers and private landowners to voluntarily undertake conservation actions. The Prairie Conservation Strategy document provides an overview of voluntary actions that can be enacted in Benton County to increase rare habitat and recover at-risk species. Developed as part of the Habitat Conservation Plan, the strategy serves as a stand-alone document but is one component of the Conservation Measures identified in the HCP.

#### **1.4.0.5 Reducing Disincentives for Conservation on Private Lands**

In a letter dated March 1, 2010 (Appendix F), USFWS has agreed to provide discretion under the ESA because of and to encourage the voluntary efforts to contribute to recovery of the HCP species through the HCP Prairie Conservation Strategy (Appendix E).

Habitat loss is the primary threat to at-risk prairie species in Benton County and, with the majority of remaining prairie habitat in Benton County occurring on private lands, encouraging habitat conservation by private landowners is vital to protecting at-risk prairie species. Due to federal Endangered Species Act restrictions on certain activities occurring in areas with listed animal species, some private landowners may decline to manage their properties to promote prairie habitat and Covered Species, or may oppose restoration out of fear for future land use restrictions on their property. Such concerns could limit the potential for persistence and recovery of Covered Species in the region. One of the goals of this HCP, and the accompanying Prairie Conservation Strategy, is to alleviate fears of regulation by clearly explaining the regulations that may impact landowners, increasing community appreciation of prairie habitats, enhancing positive community engagement, and demonstrating the success of voluntary actions and programs to promote prairie conservation. More than 30 landowners and over 790 ha (>1,900 ac) of upland or wet prairie habitat in Benton County are already enrolled in various voluntary conservation programs (J. Jebosek, Pers. comm. 2009). The County hopes to involve even more landowners in prairie conservation through efforts to reduce regulatory disincentives from managing for prairie habitats on private lands.

This HCP identifies the permanent impacts resulting from activities under Benton County's regulatory oversight (e.g., home, farm and forest construction) that will occur on private lands in Fender's blue butterfly habitat (the Fender's Blue Zone) and sets forth the mitigation requirements to be fulfilled for these impacts. However, many activities that may impact Fender's blue butterfly habitat are outside the County's

regulatory oversight. Some of these activities may have short term impacts to the butterfly, yet may result in long term positive effects for the species and its habitat. This HCP strives to reduce the regulatory disincentives for landowners to conduct activities which will help maintain disturbance-dependent prairie habitats. Mechanisms to achieve this reduction, both inside and outside the Fender's Blue Zone, are described below.

### **Inside the Fender's Blue Zone**

The USFWS has identified a suite of habitat and property management activities that are outside Benton County's regulatory oversight, and have the potential for short term or negligible impacts but long term benefit to Fender's blue butterfly habitat. Neither Benton County nor USFWS intends to regulate these activities with regard to Fender's blue butterfly habitat. Such activities, as described in Appendix F, include:

- mowing a field, pasture, or vineyard row middle or margin that has been regularly mowed up to the time of HCP enactment;
- haying a field after July 15th;
- grazing the same type of livestock at a similar timing and intensity as has occurred in the same area in the past;
- spot-spraying or manual removal of noxious weeds;
- planting native prairie species; and
- installing, maintaining or replacing a fence that existed prior to HCP enactment.

Many of these activities would aid in maintaining prairie habitats and thereby benefit the Covered Species. If a landowner wishes, they may receive assistance and guidance in completing these activities by enrolling in an existing program that assists private landowners interested in conservation on their lands. These programs, including the USFWS Partners for Fish and Wildlife program and the Safe Harbor Agreement with Assurances, are described in the Prairie Conservation Strategy (Appendix E) Chapter 6: Voluntary Conservation Tools. While enrollment in such programs is strictly voluntary, the monitoring and assessment that occurs through these programs would contribute information about prairie management, benefit prairie conservation, and demonstrate the success of voluntary actions.

The following activities not covered under this Plan do not require incidental take coverage because they will not result in new impacts to the Covered Species, beyond those that have occurred prior to this plan:

- Maintaining an existing garden, lawn, landscaped area or driveway; and
- Vegetation clearing to maintain the County recommended 30 ft fire break around existing structures or any other ground disturbing activity within 30 ft of an existing permanent structure within the Fender's Blue Zone. The 30 ft fire break around existing structures is assumed to have been disturbed during construction or landscaping, and therefore is unlikely to support Fender's blue butterfly habitat.

### **Outside the Fender's Blue Zone**

Habitat restorations (including species introductions) in areas where Covered Species are currently absent are Conservation Measures that this HCP promotes and facilitates. Successful restoration will result in the establishment of a population of a Covered Species at a new site. If this new population is successful, individuals could disperse from the restoration site onto adjacent properties (within Benton County and outside the Fender's Blue Zone). Where these adjacent properties are currently unoccupied by Covered Species, such dispersal could put the landowners at risk of regulation under the Endangered Species Act. This may create a disincentive for public and private land owners and managers to conduct habitat restoration out of concern for their neighbors. In addition, neighbors may decline to manage their properties to promote Covered Species or may oppose restoration out of fear for their property rights. Taken together, these concerns could severely limit the potential for recovery of Covered Species in the region.

Benton County has worked closely with the USFWS to address these concerns expressed by the public through a Good Neighbor Principle. Under this principle, private landowners whose properties outside the Fender's Blue Zone are colonized by Fender's blue butterfly as a result of habitat restoration or species introductions are held harmless for take resulting from their actions on their property during the 50 year permit term. Neighboring land owners of public properties will be notified of restoration/introduction activities by the public landowner. If neighboring landowners intend to subsequently change their property management in a manner that results in decline of habitat for the Covered Species, they will be encouraged, but not required, to notify and work with USFWS to transplant or capture and move individuals or habitat elements from the property to a secure location.

This principle applies only to Fender's blue butterfly outside of its mapped habitat zone: the area in which the species has the potential to occur given its current distribution in the wild (see Section 8.7.3 for a description of what would occur in the unlikely event that a new wild population of Fender's blue is found outside the mapped habitat). The principle does not apply to other species or areas for the following reasons:

- Inside the mapped Fender's blue habitat zone take will already be mitigated for Covered Activities; take for non-covered activities outside Benton County's regulatory oversight (e.g., land management activities such as road maintenance, grazing) are addressed above (see Inside the Fender's Blue Zone) or in Section 4.3 Non-Covered Activities.
- The Good Neighbor Principle is unnecessary for covered plant species on private lands without a federal nexus in the County because plants are not protected under these conditions by the U.S. or Oregon Endangered Species Acts.
- In the event that Taylor's checkerspot is listed under the ESA in the future, landowners wishing take coverage inside the mapped habitat zone for Taylor's checkerspot will need to work directly with USFWS to secure necessary permits.

Mitigation for take of Taylor's checkerspot is not provided by Benton County to private landowners under this HCP (unless the HCP is amended, see Section 8.7.1).

#### **1.4.0.6 Term of Incidental Take Permit**

Benton County is seeking a 50-year incidental take permit.

## **1.5 Overview of Conservation Planning Process**

### **1.5.0 Introduction**

The overall conservation planning process is outlined in Figure 1.4 and Figure 1.5. At the request of the Board of County Commissioners, the Natural Areas and Parks Department Director formed three primary groups to assist in developing the HCP: The HCP Planning Team, the Stakeholder Advisory Committee, and the Technical Advisory Committee (Appendix G: HCP Advisory Committees and Planning Team). Membership in the advisory committees was subject to approval and invitation by the Commissioners. Input from these groups and comments from private citizens was essential to identifying Covered Lands and Covered Activities, as well as developing Conservation Measures and refining funding mechanisms for HCP implementation. The advisory committees met several times during the course of HCP development. The general public was involved throughout the process through a series of public meetings and all advisory committee meetings were open to the public.

#### **1.5.1 Evaluation Process**

Throughout the HCP development process Benton County considered whether it was in the County's and its citizens' best interests to seek an incidental take permit from the USFWS. During the HCP planning process the County evaluated the following six topics: Covered Species; entities; lands; activities; incidental take permit term; and Conservation Measures to be taken to avoid, minimize, and mitigate for impacts to the Covered Species. The proposed action is the result of the County's analysis of these topics. For more detail on this process see Chapter 9: Alternatives.

#### **1.5.2 County Board of Commissioners**

Benton County is one of nine home-rule charter counties in Oregon. A home-rule charter provides greater control to its citizens. By County charter, Benton County must have three full-time elected commissioners to manage the legislative, executive, and quasi-judicial responsibilities of the County. Each commissioner is elected at-large to a four-year term. No individual commissioner has any more, or less, power than the others to act. Board action requires at least two of the commissioners to be in agreement. The Benton County Commissioners during the development of this plan were Jay Dixon, Annabelle Jaramillo, and Linda Modrell. The Benton County Board of Commissioners is ultimately responsible for preparation, adoption, and implementation of this Plan.

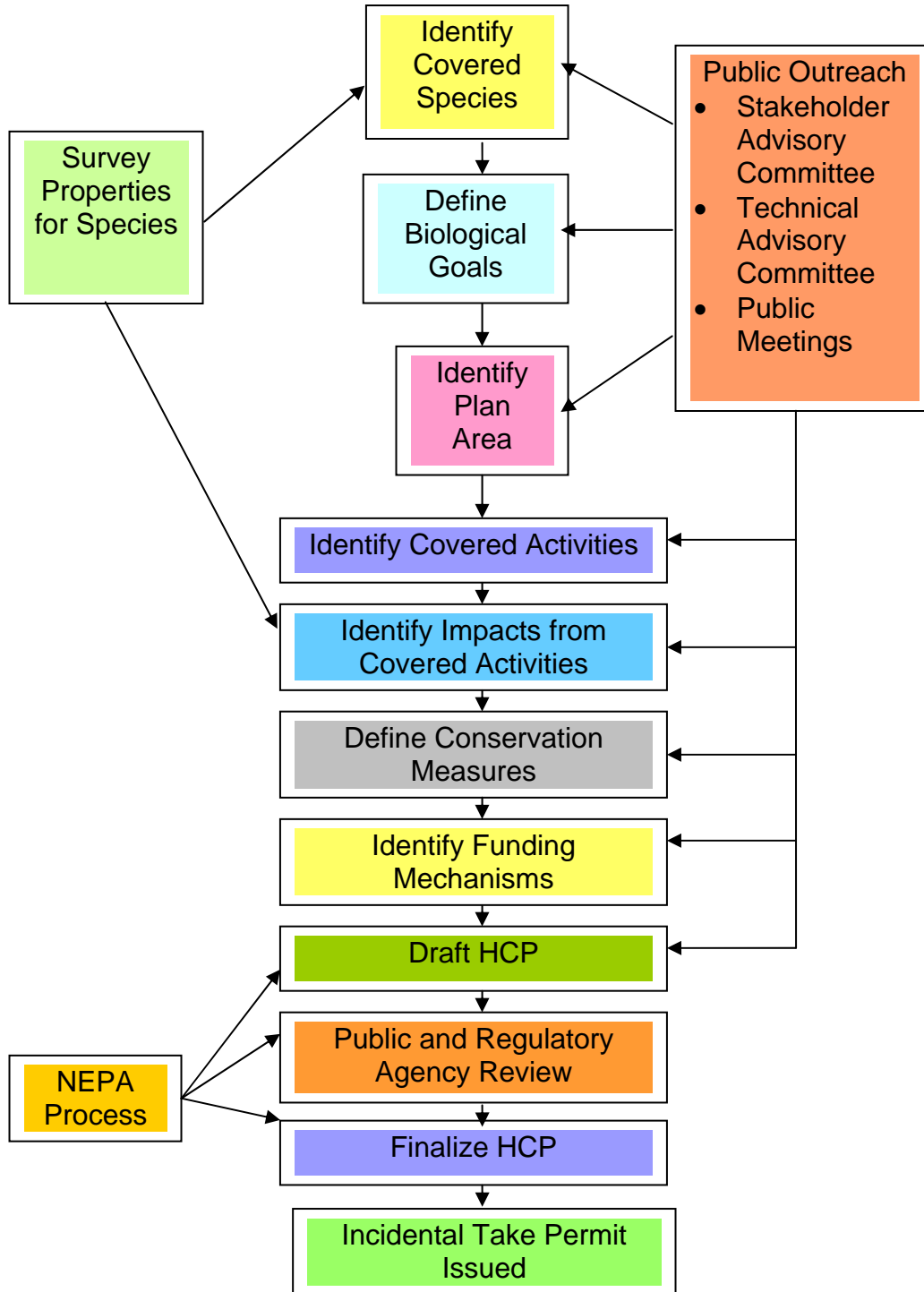


Figure 1.4 HCP planning process.

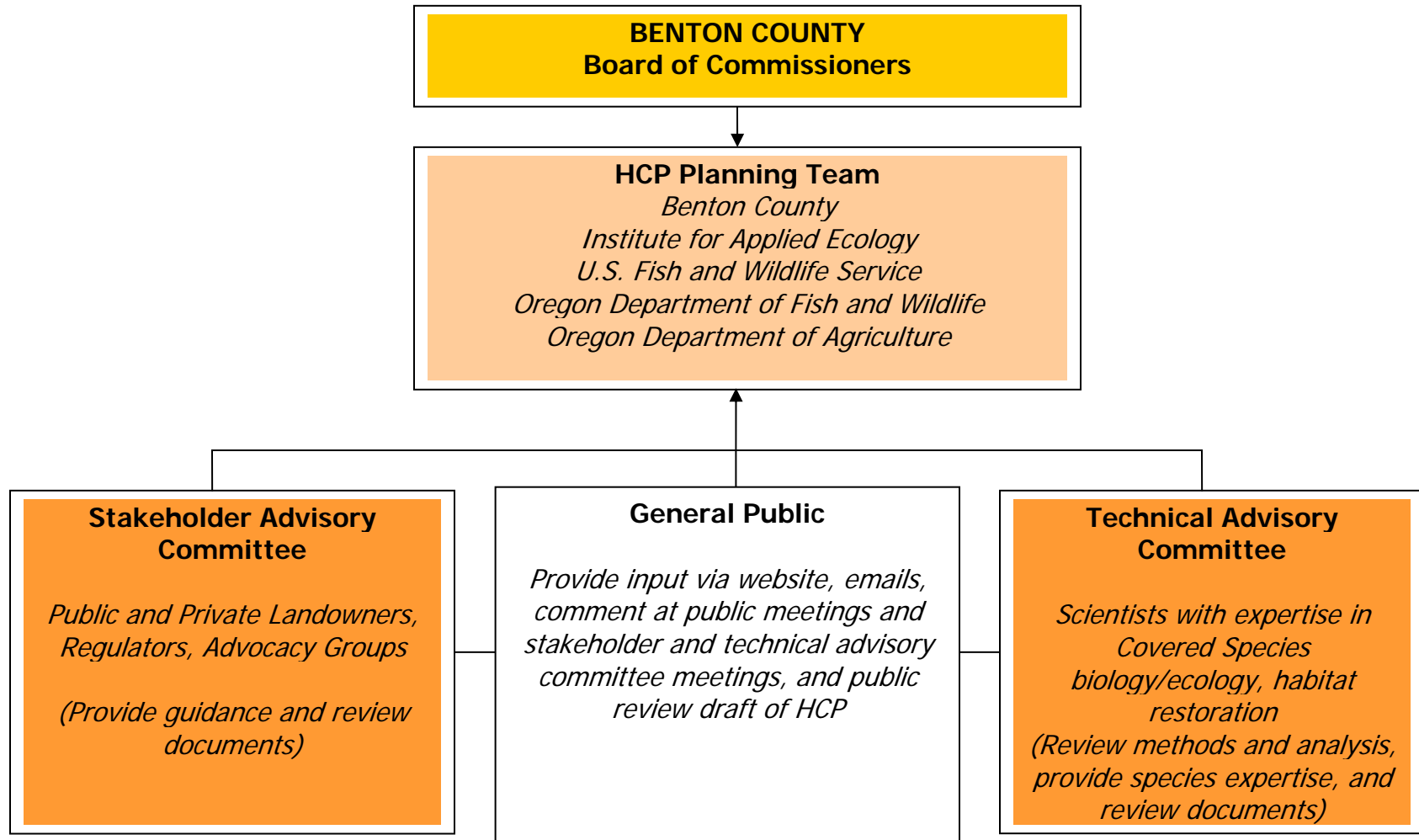


Figure 1.5 Advisory Committee, Planning Team and public involvement.

### **1.5.3 Habitat Conservation Planning Team**

The HCP Planning Team included personnel from Oregon Department of Fish and Wildlife, Oregon Department of Agriculture, U.S. Fish and Wildlife Service, and Benton County. Benton County contracted with the Institute for Applied Ecology (IAE) to assist with development of the HCP and Jerry Davis, former Benton County Natural Areas and Parks Director, to serve as Project Manager. The planning team met on a regular basis to address issues arising during the planning process. Members of the Planning Team (Appendix G: HCP Advisory Committees and Planning Team) also regularly updated the Board on the status of the Plan's development and outstanding issues. Meetings with the Commissioners occurred during regular Board work sessions, as requested.

### **1.5.4 Technical Advisory Committee**

The Technical Advisory Committee (TAC) was composed of scientists from Pacific Northwest universities and experts from local research or conservation organizations. The role of the Technical Advisory Committee (Appendix G: HCP Advisory Committees and Planning Team) was to bring the best available science to the planning process and assist the County in the following:

- Define and refine the biological goals and objectives of the HCP.
- Review habitat assessment/field inventory analysis prepared by County staff and contractors.
- Review potential impacts considered in the take analysis.
- Define and refine monitoring and adaptive management needs for long term population viability and connectivity.
- Identify conservation and restoration measures.
- Conduct formal and informal peer review of the HCP and related documentation.

The TAC formed subcommittees to focus on butterfly species, plant species, and the Streaked Horned Lark.<sup>5</sup>

### **1.5.5 Stakeholder Advisory Committee**

The role of the Stakeholder Advisory Committee (SAC) was to advise the County on the biological goals and objectives of the HCP, Covered Activities, Covered Species, monitoring and management activities, Conservation Measures and alternatives from the perspective of local landowners, land managers, regulators, and groups with expertise in conservation planning.

Members of the SAC included representatives from local, state, and federal agencies; conservation organizations (e.g., The Nature Conservancy, Greenbelt Land Trust, Corvallis Audubon Society, Defenders of Wildlife, and Xerces Society); Watershed

---

<sup>5</sup> The Streaked Horned Lark was considered as a Covered Species, but was not included. See Chapter 9 Alternatives.



Councils (Marys River and Luckiamute); and private landowners (Appendix G: HCP Advisory Committees and Planning Team).

### **1.5.6 Public Outreach**

Benton County provided public outreach opportunities through workshops and presentations during development of the HCP (Appendix H: Public Presentations about the HCP).

### **1.5.7 Public Meetings**

Public meetings were held to encourage and benefit from public comment on the HCP during its development.

- On January 22, 2007, Benton County held an evening public meeting in Corvallis to explain the HCP process and goals, describe the native prairie species to be covered and give an estimated time frame for completing the HCP. HCP Planning Team members answered extensive questions from the public.
- On October 15, 2007, Benton County held an evening public meeting in Corvallis. The focus of the meeting was an update of activities undertaken by the County, including results of the 2007 field season, butterfly habitat mapping, potential Conservation Measures, and development of a Prairie Conservation Strategy.
- On January 27, 28 and 31, 2009, Benton County held a series of three public meetings, in Corvallis, Wren, and Kings Valley. The County introduced the public to the draft HCP, and took public comment on the draft.
- On September 16, 2009, Benton County held a public meeting in Corvallis to discuss the revised draft HCP and take comments and questions.
- On October 12, 2010, in coordination with the USFWS comment period on the draft HCP and EA, Benton County held a public meeting in Corvallis to discuss the draft HCP and answer questions.

### **1.5.8 Data Collection**

To obtain a better understanding of the abundance of the Covered Species, surveys were conducted within Benton County for populations and habitat of the butterfly species, Streaked Horned Lark<sup>6</sup>, and the five plant species. See Appendix I: Avian, Botanical and Butterfly Survey Methodology for survey methodologies.

#### **1.5.8.0 Botanical Surveys**

Botanical surveys were completed by Institute for Applied Ecology. On-the-ground field assessments took place over approximately 4,010 ha (9,910 acres) during the appropriate growing seasons of 2006, 2007, 2008 and 2009. The goals of the field assessments were to:

- Locate and map populations of Covered Species and describe their size (abundance/extent), evaluate the threats or risks to the populations, and

---

<sup>6</sup> The Streaked Horned Lark was considered as a Covered Species, but was not included. See Chapter 9 Alternatives.

describe the associated plant species and abiotic environment of occupied habitat.

- Assess quality and threats for as much of the upland/wet prairie and oak woodland habitat remaining in Benton County as possible to prioritize areas for protection or restoration in the HCP.
- Describe habitat reference conditions from high quality native plant communities to inform restoration activities.
- Develop a database for Benton County that includes species locations, areas surveyed for Covered Species, and habitat descriptions.
- Refine the habitat mapping for Fender's blue butterfly by evaluating sites within the Fender's Blue Zone for Kincaid's lupine and nectar species presence/abundance.

#### **1.5.8.1 Streaked Horned Lark Surveys**

Streaked Horned Lark surveys were completed by Dr. Randy Moore, Oregon State University. On-the-ground field assessments took place during the breeding seasons of 2007 (Moore 2007) and 2008. The goals of the field assessments were to:

- Locate and map areas of Streaked Horned Lark use in Benton County rights-of-way, County Natural Areas and Parks, and other conservation lands. If use occurs, describe habitat needs (e.g., nesting, foraging), evaluate the threats or risks to the populations, and describe the associated plant species and abiotic environment of occupied habitat (2007 field season).
- Determine abundance (nesting pairs) of Streaked Horned Larks at the City of Corvallis Airport and evaluate the threats to the population (2008 field season).

#### **1.5.8.2 Butterfly Surveys**

Butterfly surveys were completed by Dana Ross in 2007 and 2008. Presence/absence surveys for Taylor's checkerspot and Fender's blue butterflies were conducted during April, May and early June at specific sites. When target butterflies were not observed at a site, the site was assessed from the standpoint of potential habitat for these butterflies (Ross 2007). Survey reports included a general assessment of the potential for each site to host the butterflies, and a population estimate where Taylor's checkerspot or Fender's blue was observed (Ross 2007).

Additional Fender's blue butterfly surveys were performed by Dr. Paul Hammond in 2006-2009. Benton County sites surveyed by Hammond included the West Hills Road area, McDonald Forest (Butterfly Meadows), Wren area, and Henkle Way area (Hammond 2008).

Further survey work to define and describe nectar species for Fender's blue butterfly were conducted by Dr. Elizabeth Crone (University of Montana, Missoula) in collaboration with Dr. Cheryl Schultz (University of Washington, Vancouver) (Crone and Kallioniemi *in prep*).

## 1.6 Regulatory Framework

### 1.6.0 Federal Endangered Species Act

Section 9 of the Endangered Species Act (ESA) and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the U.S. Fish and Wildlife Service (Service) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Pursuant to section 11(a) and (b) of the ESA any person who knowingly violates this section 9 of the Act or any permit, certificate, or regulation related to section 9, may be subject to civil penalties of up to \$25,000 for each violation or criminal penalties up to \$50,000 and/or imprisonment of up to one year.

Individuals and State and local agencies proposing an action that is expected to result in the take of federally listed species are encouraged to apply for an incidental take permit under section 10(a)(1)(B) of the ESA to be in compliance with the law. Such permits are issued by the Service when take is not the intention of and is incidental to otherwise legal activities. An application for an incidental take permit must be accompanied by a habitat conservation plan, commonly referred to as an HCP. The regulatory standard under section 10(a)(1)(B) of the ESA is that the effects of authorized incidental take must be minimized and mitigated to the maximum extent practicable. Under section 10(a)(1)(B) of the ESA, a proposed project also must not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and adequate funding for a plan to minimize and mitigate impacts must be ensured.

Section 7 of the ESA requires Federal agencies to ensure that their actions, including issuing permits, do not jeopardize the continued existence of listed species or destroy or adversely modify listed species' critical habitat. "Jeopardize the continued existence of..." pursuant to 50 CFR 402.2, means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. Issuance of an incidental take permit under section 10(a)(1)(B) of the ESA by the Service is a Federal action subject to section 7 of the ESA. As a Federal agency issuing a discretionary permit, the Service is required to consult with itself (i.e., conduct an internal consultation). Delivery of the HCP and a

section 10(a)(1)(B) permit application initiates the section 7 consultation process within the Service.

The requirements of section 7 and section 10 of the ESA substantially overlap. Elements unique to section 7 include analyses of impacts on designated critical habitat, analyses of impacts on listed plant species, if any, and analyses of indirect and cumulative impacts on listed species. Cumulative effects are effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area, pursuant to section 7(a)(2) of the Act. The action area is defined by the influence of direct and indirect impacts of covered activities. The action area may or may not be solely contained within the HCP boundary. These additional analyses are included in this HCP to meet the requirements of section 7 and to assist the Service with its internal consultation.

#### **1.6.0.0 The Section 10(a)(1)(B) Process - Habitat Conservation Plan Requirements and Guidelines**

The Section 10(a)(1)B process for obtaining an incidental take permit has three primary phases: (1) the HCP development phase; (2) the formal permit processing phase; and (3) the post-issuance phase.

During the HCP development phase, the project applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. An HCP submitted in support of an incidental take permit application must include the following information:

- Impacts likely to result from the proposed taking of the species for which permit coverage is requested;
- Measures that will be implemented to monitor, minimize, and mitigate impacts; funding that will be made available to undertake such measures; and procedures to deal with unforeseen circumstances;
- Alternative actions considered that would not result in take; and
- Additional measures the Service may require as necessary or appropriate for purposes of the plan.

The HCP development phase concludes and the permit processing phase begins when a complete application package is submitted to the appropriate permit-issuing office. A complete application package consists of 1) an HCP, 2) an Implementing Agreement (IA) if applicable, 3) a permit application, and 4) a \$100 fee from the applicant, Benton County.

The Service must then publish a Notice of Availability of the HCP package in the Federal Register to allow for public comment. The Service also prepares an Intra-Service Section 7 Biological Opinion; and prepares a Set of Findings, which evaluates the Section 10(a)(1)(B) permit application as in the context of permit issuance criteria (see

below). An Environmental Action Statement, Environmental Assessment, or Environmental Impact Statement serves as the Service's record of compliance with the National Environmental Policy Act (NEPA), which has gone out for a 30-day, 60-day, or 90-day public comment period. An Implementing Agreement is required for HCPs unless the HCP qualifies as a low-effect HCP. A Section 10(a)(1)(B) incidental take permit is granted upon a determination by the Service that all requirements for permit issuance have been met. Statutory criteria for issuance of the permit specify that:

- the taking will be incidental;
- the impacts of incidental take will be minimized and mitigated to the maximum extent practicable;
- adequate funding for the HCP and procedures to handle unforeseen circumstances will be provided by the Permittee, Benton County;
- the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild;
- the applicant will provide additional measures that the Service requires as being necessary or appropriate; and
- the Service has received assurances, as may be required, that the HCP will be implemented.

During the post-issuance phase, the Permittee and other responsible entities implement the HCP, and the Service monitors the Permittee's compliance with the HCP as well as the long-term progress and success of the HCP. The public is notified of permit issuance by means of the Federal Register.

### **1.6.1 National Environmental Policy Act**

The purpose of the National Environmental Policy Act (NEPA) is two-fold: to ensure that Federal agencies examine environmental impacts of their actions (in this case deciding whether to issue an incidental take permit) and to utilize public participation. NEPA serves as an analytical tool on direct, indirect, and cumulative impacts of the proposed project alternatives to help the Service decide whether to issue an incidental take permit. NEPA analysis must be done by the Service for each HCP as part of the incidental take permit application process.

### **1.6.2 National Historic Preservation Act**

All Federal agencies are required to examine the cultural impacts of their actions (e.g. issuance of a permit). This may require consultation with the State Historic Preservation Office (SHPO) and appropriate American Indian tribes. All incidental take permit applicants are requested to submit a Request for Cultural Resources Compliance form to the Service. To complete compliance, the applicants may be required to contract for cultural resource surveys and possibly conduct mitigation.

### **1.6.3 Oregon Endangered Species Act**

Oregon's Endangered Species Act (ESA) was enacted in 1987, and amended in 1995. Oregon may list a species as threatened or endangered under the State Endangered

Species Act even though the species is not listed by the Federal government as threatened or endangered. The two agencies in Oregon responsible for administering the State ESA and the State Sensitive Species List are the Oregon Department of Agriculture (ODA) and ODFW. ODA is responsible for plants while ODFW lists animals, (except freshwater invertebrates and insects). There is no state governmental agency responsible for listing invertebrate species (e.g., Fender's blue butterfly) under the state's ESA, nor do any state agencies designate critical habitat.

The Oregon ESA is much more limited in scope than the federal ESA. Oregon's ESA applies only to state-owned or leased lands and waters. State lands are defined under regulation as any non-federal public lands in Oregon and this includes state, county, and city property. Therefore, Oregon's Endangered Species Act applies to Benton County-owned property, Oregon State University property, Oregon Department of Transportation property and rights-of-way, as well as property owned by local communities such as the Cities of Corvallis, Monroe, Adair Village, North Albany, and Philomath.

Once a species is listed as threatened or endangered under the state's ESA, state law prohibits the take (resulting from collecting, damaging, killing, removing, transplanting, transporting, or otherwise disturbing) of the listed species. Any land action that results in or may result in the taking of a listed species requires consultation with ODA staff or an ODA permit.

#### **1.6.4 Other Introductory or Background Topics as Appropriate**

Other relevant laws to the incidental take permit process include the Migratory Bird Treaty Act, Clean Water Act, and other state and local legislation.

## 2 Covered Species

Covered Species are those animals and plants that Benton County requests authorization from USFWS and ODA for incidental take due to activities on lands covered by this Plan. Photos of each species are included in Figure 2.1.

### 2.1 Fender's blue butterfly

#### 2.1.0 Species Description and Ecology

Fender's blue butterfly (*Icaricia icarioides fenderi* Macy = *Plebejus icaroides fenderi* Macy) was listed as an endangered species under the federal Endangered Species Act in 2000 (USFWS 2000) primarily because of its extreme rarity due to prairie habitat loss and fragmentation. Fender's blue was thought to be extinct from about 1940 until the late 1980's, when biologists discovered a few remaining populations on prairie remnants in the Willamette Valley (USFWS 2000). Fender's blue butterfly is currently found in five counties in Oregon: Lane, Linn, Benton, Yamhill and Polk. On October 31, 2006, the USFWS designated critical habitat for the species (USFWS 2006). USFWS has released a recovery plan for Fender's blue butterfly and several other native prairie species (USFWS 2010).

Two critical elements of Fender's blue butterfly habitat are larval host plants and nectar plant species. Kincaid's lupine is the primary larval host plant for Fender's blue butterfly, and is listed as threatened. Alternate host plants include sickle-keeled lupine (*Lupinus albicaulis*) and spur lupine (*Lupinus arbustus*) (Wilson et al. 1997).

Adult butterflies lay their eggs on lupine leaves in May and June, and larvae hatch a few weeks later. The larvae feed for a few weeks, and then go into diapause on the soil near the base of the plant until the following February or March. Emerging larvae then feed on young lupine leaves and inflorescences (Wilson et al. 1997). The larvae grow and develop, pupate, and emerge as butterflies in early May.

Adult butterflies feed on nectar produced by native species (Table 2.1), including but not limited to narrowleaf onion (*Allium amplexans*), Tolmie's startulip (*Calochortus tolmie*), common camas (*Camassia quamash*), dwarf checkermallow (*Sidalcea virgata*), and Oregon sunshine (*Eriophyllum lanatum*). Adult butterflies may also use non-native nectar species, including species of vetch (*Vicia* spp.). Native nectar species provide greater nectar than non-native nectar species, and appear to be the preferred food source of Fender's blue butterfly (Schultz and Dlugosch 1999, Wilson et al. 1997). Non-native nectar species may be of greater importance if no native nectar species are available.



Fender's blue butterfly:  
*Photo by Cheryl Schultz*



Taylor's checkerspot  
*Photo by Tom Kaye*



Bradshaw's lomatium  
*Photo by Tom Kaye*



Willamette daisy  
*Photo by Tom Kaye*



Nelson's checkermallow  
*Photo by Tom Kaye*



Kincaid's lupine  
*Photo by Tom Kaye*



Peacock larkspur  
*Photo by Lori Wisehart*

Figure 2.1 Covered Species for the Benton County Prairie Species HCP.



## 2.1.1 Species Distribution

Fender's blue butterfly is endemic to the Willamette Valley. In 2001, 16 populations were known range wide (Schultz et al. 2003). There are currently four known population areas in Benton County: Wren; McDonald Forest/Oak Creek; Greasy Creek and West Hills/Philomath; each is composed of several subpopulations.

Table 2.1 Flowering plants identified as nectar sources for Fender's blue butterfly in Benton County.

Species	Common Name	US Nativity
<i>Allium acuminatum</i>	Narrow leaf onion	Native
<i>Allium amplexans</i>	Tapertip onion	Native
<i>Calochortus tolmiei</i>	Tolmie's mariposa lily	Native
<i>Camassia quamash</i>	small camas	Native
<i>Camassia leichtlinii</i>	tall camas	Native
<i>Cryptantha intermedia</i>	clearwater cryptantha	Native
<i>Eriophyllum lanatum</i>	Oregon sunshine	Native
<i>Geranium oregonum</i>	Oregon geranium	Native
<i>Iris tenax</i>	toughleaf iris	Native
<i>Lomatium triternatum</i>	nine-leaf lomatium	Native
<i>Plectritis congesta</i>	seablush	Native
<i>Sidalcea campestris</i>	meadow checkermallow	Native
<i>Sidalcea virgata</i>	dwarf checkermallow	Native
<i>Vicia americana</i>	American vetch	Native
<i>Linum bienne</i>	pale flax	Introduced
<i>Linum perenne</i>	blue flax	Introduced
<i>Vicia cracca</i>	bird vetch	Introduced
<i>Vicia hirsuta</i>	tiny vetch	Introduced
<i>Vicia sativa</i>	garden vetch	Introduced

## 2.2 Taylor's checkerspot butterfly

### 2.2.0 Species Description and Ecology

Taylor's checkerspot (*Euphydryas editha* ssp. *taylori* Edwards) was classified as a candidate for Endangered Species Act protection in 2001 (USFWS 2001) and is currently known to survive in only 13 populations. The name "checkerspot" comes from the checkered pattern of orange, white, and black on the upper and lower surface of the wings. The life cycle of Taylor's checkerspot lasts approximately one year. Adult butterflies appear in April and May to mate and lay eggs (Pyle 1989). They are one of the first butterflies to appear in the spring, but individuals only live for a week or two. Larvae emerge and feed on host plants until mid-June to early July, then enter diapause

through the winter. During diapause no feeding, growth or development occurs. Larvae emerge the following spring to mature, pupate and finally emerge as butterflies.

This species occurred historically in grasslands or oak savanna in the Willamette Valley of Oregon, the Puget Sound area of Washington, and southeast Vancouver Island in British Columbia. Currently, it is known from a total of two sites in Oregon, 10 sites in Washington, and one newly discovered site in British Columbia. Both populations of Taylor's checkerspot in Oregon occur within Benton County.

Suitable upland prairie habitat for Taylor's checkerspot must have host plants for the butterfly's larvae and nectar plants for the adults to feed on. In Oregon, their preferred host plant is a non-native weed, English plantain (*Plantago lanceolata*), although historically they may have used native paintbrushes (*Castilleja* spp.) (Stinson 2005). Adult butterflies in Oregon nectar most frequently on strawberry (*Fragaria virginiana*), Tolmie's startulip (*Calochortus tolmiei*) and seablush (*Plectritis congesta*). Female butterflies may be able to recognize their host plant species by the size, color, and shape of the leaves or by detecting certain chemicals in the plants (Stinson 2005) (Baron & Backhouse 1999).

### 2.2.1 Species Distribution

Taylor's checkerspot was thought to be extinct in Oregon until a population was discovered in 1999 (ORNHIC 2007). By 2002, there were four confirmed populations (Xerces et al. 2002), three in Washington and one in Oregon (in the Bonneville Power Administration powerline corridor in Benton County), with an estimated population size of 1,000 butterflies in Oregon (Ross 2005). In 2004, a population of Taylor's checkerspot butterfly was discovered at Bezell Memorial Forest (owned and managed by Benton County). This site was found to support a population of approximately 500 butterflies (Ross 2005).

## 2.3 Kincaid's lupine

### 2.3.0 Species Description and Ecology

Kincaid's lupine (*Lupinus sulphureus* Dougl. ex Hook. ssp. *kincaidii* [C.P. Sm] L. Phillips = *Lupinus oregonus* A. Heller) was listed as threatened under the federal Endangered Species Act in 2000 (USFWS 2000) and it is also listed as threatened by the state of Oregon. A recovery plan for Kincaid's lupine and several other native prairie species was released in 2010 (USFWS 2010). Critical habitat was designated by USFWS for this species on October 31, 2006 (USFWS 2006).

Kincaid's lupine is a long-lived perennial plant in the pea family (Fabaceae). It has palmately compound leaves clustered at the base of single, unbranched stems, and produces unbranched inflorescences of whitish-purplish to tan flowers. Kincaid's lupine can be distinguished from other Willamette Valley lupines by its characteristic ruffled banner petal on the flower. The species reproduces by seed and by vegetative spread.

The flowers are visible in May and June and require insects for pollination and seed production. Seed production is variable, but on average is estimated to be approximately 47.1 seeds per square meter of foliar (leaf) cover (estimated from data reported by Kaye and Kuykendall 1993, Kaye 1999, Wilson et al. 2003). Lupine foliar cover correlates with lupine abundance, and has been adopted as the standard metric for lupine abundance in the USFWS Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington (USFWS 2010).

Kincaid's lupine is found in southwestern Washington, the Willamette Valley, and Douglas County, Oregon. Within the Willamette Valley, Kincaid's lupine typically occurs in upland prairies on the valley bottom or surrounding foothills. Kincaid's lupine is a host plant for the endangered Fender's blue butterfly (See Section 2.1).

### **2.3.1 Species Distribution**

At the time of listing, there were 54 known populations of Kincaid's lupine, covering 158 ha (370 ac): two in Lewis County, Washington; 48 within the Willamette Valley, Oregon; and four populations in the Umpqua Valley, Oregon (USFWS 2000). Of these 54 sites, 45 occurred on less than 3.4 ha (8.3 ac).

In Benton County, 17 population areas are known with approximately 59 subpopulations. These occur primarily in the Philomath, Greasy Creek, Soap Creek, Wren and Kings Valley area. Twenty-eight subpopulations occur on private lands with no conservation easement. A large population of Kincaid's lupine occurs in the Soap Creek area of the County on lands managed by Oregon State University for cattle grazing. Small scattered populations are also found on roadside rights-of-way, on City of Corvallis property, and at Oregon Department of Fish and Wildlife's E.E. Wilson Wildlife Area.

## **2.4 Peacock larkspur**

### **2.4.0 Species Description and Ecology**

Peacock larkspur (*Delphinium pavonaceum* Ewan) is listed as endangered under the Oregon Endangered Species Act (ODA 2008), and is a federal Species of Concern.

Peacock larkspur is a perennial plant in the buttercup family (Ranunculaceae). The plants are generally 15-30 inches tall, with flowers that are white with dark blue centers. Peacock larkspur blooms from April through early July and reproduces only by seed. Seedlings germinate in winter but may take up to five years to flower. Peacock larkspur can be easily distinguished from the more common field larkspur (*Delphinium menziesii*) which has entirely blue flowers, although the two species occasionally form hybrids.

Peacock larkspur occurs only in the Willamette Valley (McKernan 2004). It is currently found primarily in Benton, Marion and Polk Counties. Only 18 occurrences have been

seen since 1980. Historically, 35 occurrences were known in Benton, Polk, Marion, Multnomah, and Clackamas counties. Population sizes range from as little as 1 to as many as 2,000 plants, although most existing populations have between 10 and 100 plants. Peacock larkspur lives in native wet prairie habitats and on the edges of Oregon ash (*Fraxinus latifolia*) and Oregon white oak (*Quercus garryana*) woodlands. Several remaining populations are found along roadsides and fencerows that have escaped development.

Peacock larkspur does not self-pollinate and instead requires the aid of bumblebees to transfer pollen between plants. The lifespan of individual plants is not known although it is believed to be relatively long. While some extraordinary plants have been observed to have over 100 flowers, not all plants flower every year. Even large, mature, plants may remain dormant through a growing season. Based on data collected by McKernan and reported by Gisler (2004), we estimate each larkspur plant produces an average of 215.4 seeds.

### **2.4.1 Species Distribution**

In Benton County, there are approximately 10 population areas and 17 subpopulations of peacock larkspur. Three entire populations and one large subpopulation reside on private land with no conservation easement. While the largest population resides at Finley NWR, important populations are also found on land owned by the City of Corvallis (Herbert Farm and Natural Area and the Corvallis Watershed). Significant populations are also found in Benton County rights-of-way in Special Management Areas. Populations are also present in Oregon Department of Transportation rights-of-way.

## **2.5 Willamette daisy**

### **2.5.0 Species Description and Ecology**

Willamette daisy (*Erigeron decumbens* Nutt.) was listed as endangered under the federal Endangered Species Act in 2000. The species is also listed by the state of Oregon as endangered. Critical habitat for the species was designated in 2006 (USFWS). A recovery plan for Willamette daisy and several other native prairie species was released in 2010 (USFWS 2010).

Willamette daisy is a small perennial plant in the sunflower family (Asteraceae). It has pale blue-lavender, daisy-like flower heads the size of a quarter that may fade to white late in the season. The grass-like, gray-green leaves are clustered at the plant base. Flowers appear from June to July then produce seeds in July and August. Based on data from Clark et al. (1993 and 1995) reported in Gisler (2004), we estimate each daisy plant produces an average of 2,699.6 seeds, though potentially as few as 20% of the seeds may be viable.

This species is currently found only in the Willamette River Basin, and is primarily known to occur in Lane County, Oregon. Willamette daisy was thought to be extinct

between 1934 and 1980, but is now known from approximately 33 sites in Benton, Lane, Linn, Marion and Polk Counties. Willamette daisy occurs in both wetland prairie and upland prairie or oak savanna, preferring sites with very little shrub cover. It often occurs with tufted hairgrass (*Deschampsia caespitosa*), Roemer's fescue (*Festuca roemerii*), California oatgrass (*Danthonia californica*) and several species of rushes (*Juncus*).

Small populations of Willamette daisy are at increased risk of extinction because of reproductive failure. When the number of plants in a patch falls below about 20 individuals, seed production ceases, possibly due to inbreeding depression (Kaye et al. 2006).

### 2.5.1 Species Distribution

Two of the three naturally occurring Willamette daisy populations in Benton County occur on private lands, with only a small population (57 individuals) on public land (Bald Hill Park). Suitable potential habitat for Willamette daisy occurs at several protected sites (such as Fitton Green Natural Area) at which the species could be reintroduced. A planted population occurs at Finley National Wildlife Refuge, and a total of 750 Willamette daisies were planted at Bald Hill in 2007 and 2008.

## 2.6 Bradshaw's lomatium

### 2.6.0 Species Description and Ecology

Bradshaw's lomatium (*Lomatium bradshawii* [Rose ex Mathias] Mathias and Constance) was listed under the federal Endangered Species Act as endangered in 1988 (USFWS 1988). The species is also listed as endangered by the state of Oregon. Most known occurrences of this species are in southern Washington and the Willamette Valley of Oregon. The USFWS prepared a recovery plan in 1993, but a new recovery plan has been released for this and other listed prairie species (USFWS 1993a, USFWS 2010). The USFWS has not designated critical habitat for Bradshaw's lomatium.

Bradshaw's lomatium is a perennial plant in the carrot family (Apiaceae). Plants are low growing and have highly dissected leaves and yellow flowers in umbrella-shaped clusters. Bradshaw's lomatium flowers in April and May and sheds its seeds in late May and June. Based on data reported by Kaye and Kirkland (1994) we estimate each Bradshaw's lomatium plant produces an average of 21.6 seeds.

Habitat for this species includes wetland prairies dominated by tufted hairgrass and sedges. Prescribed fires are an effective tool to manage habitat for this species and increase its populations (Pendergrass et al. 1999, Kaye et al. 2001).

### 2.6.1 Species Distribution

Seven naturally occurring sites with Bradshaw's lomatium are known in Benton County, totaling over 1,500 plants. One population is split between City of Corvallis and County

ownerships at Jackson-Frazier Wetland, two occur at Finley National Wildlife Refuge, and the remaining four occur on private lands. About 20 Bradshaw's lomatium have been planted on County land at Jackson-Frazier Wetland, and sufficient habitat exists there to support further augmentation of the population.

## 2.7 Nelson's checkermallow

### 2.7.0 Species Description and Ecology

Nelson's checkermallow (*Sidalcea nelsoniana* Piper) was listed as threatened under the federal Endangered Species Act in 1993 (USFWS 1993b). The species is also listed as threatened by the state of Oregon. A recovery plan was completed September 30, 1998 (USFWS 1998). An updated recovery plan for this and other listed prairie species was released in 2010 (USFWS 2010). Critical habitat has not been designated for this species.

Nelson's checkermallow is a perennial plant in the mallow family (Malvaceae). Its pinkish-purplish flowers are clustered at the end of tall stems that appear from mid-June to mid-July. Nelson's checkermallow reproduces both by seeds that typically mature in August, and also by vegetative rhizomes. Plants may produce from 1,500 to 15,000 seeds, for a midpoint of 8,250 seeds per plant.

This species typically occurs in wet prairies of the Willamette Valley and Coast Range. Nelson's checkermallow is primarily found in native prairies remnants, wetlands, ash swales, along the edges of woodlands and riparian areas, in small clearings and edges with fairly open canopies, and along roadsides and fencerows (Gisler 2004; Glad et al. 1994; Wilson 2004; Bartels & Wilson 2003).

A native weevil frequently feeds on the developing seeds of this and other related checkermallow species, consuming up to 90% of the seeds at any given population (Gisler 2004). This weevil in turn serves as host to a parasitic wasp, both of which may be at least as rare as Nelson's checkermallow. The showy flowers of Nelson's checkermallow also attract a diverse array of insect visitors although the most common pollinators of these plants are bumblebees. At least one native bee is a specialist on Willamette Valley checkermallows.

### 2.7.1 Species Distribution

Nelson's checkermallow can be found from southern Benton County northward through the central and western Willamette Valley and into Cowlitz and Lewis Counties, Washington (USFWS 1998). In Benton County there are 23 population and approximately 39 subpopulations. Eight subpopulations are located on private lands, of which only four are under temporary or permanent conservation easement. Over 30% of the known Nelson's checkermallow plants in Benton County are found on roadside rights-of-way. Large populations are found at ODFW's E.E. Wilson Wildlife Area and

---

Finley National Wildlife Refuge. Smaller populations are distributed across Jackson-Frazier Wetland and Oregon State University properties.

## 2.8 Listed Species Not Covered

Fifteen species were initially evaluated for inclusion in this Plan. Listed species not included for coverage in this HCP:

- Marbled Murrelet (*Brachyramphus marmoratus*) – Threatened
- Northern Spotted Owl (*Strix occidentalis caurina*) – Threatened
- Bald Eagle (*Haliaeetus leucocephalus*) - De-listed
- Oregon Chub (*Oregonichthys crameri*) – Endangered
- Spring Run – Upper Willamette River Chinook salmon (*Oncorhynchus tshawytscha*) – Threatened
- Winter Run - Upper Willamette River Steelhead (*Oncorhynchus mykiss*) – Threatened
- Water howellia (*Howellia aquatilis*) – Threatened

These species are not covered in this HCP because they generally do not occupy prairie habitat or are no longer on the federal endangered species list.

## 3 Plan Area

The Plan Area is the area for which Benton County requests authorization from USFWS and ODA for activities and projects that may result in incidental take of the Covered Species. Not all lands within Benton County (Table 3.1) are included within the Plan Area of the HCP. The Plan Area does not cover federal lands, even if the federal lands are managed by state agencies. The Plan Area includes two separate planning units. Planning Unit One is prairie habitat owned and/or managed by certain non-federal public agencies and conservation organizations. Planning Unit Two is potential Fender's blue butterfly habitat under private ownership located outside city limits.

Lands to be included within the Plan Area (Covered Lands) are identified below. Descriptions of lands with known occurrences of the Covered Species are provided in this chapter.

### 3.1 Planning Unit One

Planning Unit One (Figure 3.1) includes roughly 4,734 ha (11,700 ac) of lands and rights-of-way within Benton County with prairie habitat that are owned and/or managed during the term of this incidental take permit by:

- Benton County
- City of Corvallis
- Oregon Department of Transportation
- Oregon State University
- Greenbelt Land Trust

#### 3.1.0 Entities in Planning Unit One

##### 3.1.0.0 Benton County

As of 2009, Benton County owns approximately 478 ha (1182 ac) of land in the HCP Planning Unit One, in addition to County Road rights-of-way and public road districts. Benton County lands with known locations of the Covered Species include Beazell Memorial Forest, Fitton Green Natural Area, Fort Hoskins Historic Park, Jackson-Frazier Wetland, and Special Management Areas within Benton County road rights-of-way (Table 3.2).

##### 3.1.0.1 City of Corvallis

As of 2009, the City of Corvallis owns or manages approximately 341 ha (842 ac) of land within the HCP Planning Unit One. City of Corvallis lands with known locations of



Table 3.1 Land ownership in Benton County.

<b>Land Ownership</b>	<b>Hectares</b>	<b>Acres</b>	<b>Percent</b>
<b>Federal Lands</b>	<b>33016</b>	<b>81522</b>	<b>18.78%</b>
BLM	22915	56581	13.04%
Forest Service	7735	19099	4.40%
US National Guard	214	528	0.12%
USFWS (Finley)	2153	5315	1.22%
<b>State Lands</b>	<b>10823</b>	<b>26723</b>	<b>6.16%</b>
Linn Benton Community College	1	2	0.00%
OR State Human Resources	0	1	0.00%
Oregon Department of Fish and Wildlife	705	1740	0.40%
Oregon Department of Forestry	4487	11079	2.55%
Oregon Department of State Lands	4	10	< 0.01%
Oregon Parks and Recreation Department	197	486	0.11%
Oregon State University	5231	12917	2.98%
Oregon Transportation Department	59	146	0.03%
State of Oregon (other)	121	298	0.07%
<b>County Lands</b>	<b>646</b>	<b>1596</b>	<b>0.37%</b>
Benton County	629	1553	0.36%
Linn County	17	43	0.01%
<b>City Lands</b>	<b>2697</b>	<b>6659</b>	<b>1.53%</b>
Adair Village	83	205	0.05%
Albany	53	132	0.03%
Alsea	0	0	0.00%
City lands (other)	0	1	0.00%
Corvallis	2217	5473	1.26%
Monroe	20	49	0.01%
Philomath	126	312	0.07%
School districts	197	487	0.11%
<b>Private Lands</b>	<b>128614</b>	<b>317566</b>	<b>73.16%</b>
<i>Total acreage in county</i>	<i>175797</i>	<i>434066</i>	

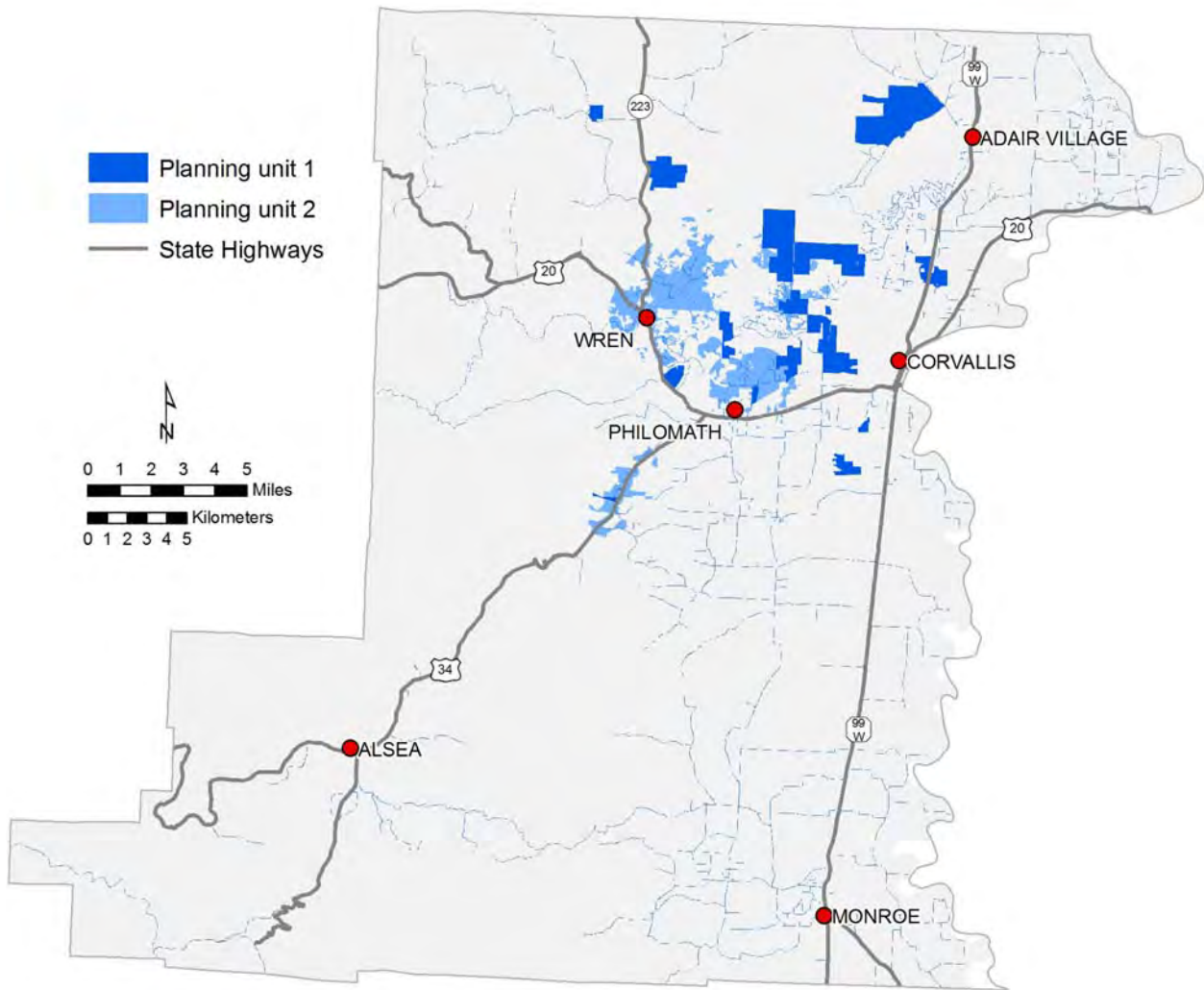


Figure 3.1 Lands covered under the Benton County Prairie Species HCP Planning Units 1 and 2.

Table 3.2 Known and projected abundance of Covered Species across all land ownerships in Benton County as of July, 2009 (% refers to percent of total known or projected abundance in County).

	Bradshaw's lomatium		Willamette daisy		Peacock larkspur		Nelson's checkermallow		Kincaid's lupine outside the Fender's blue zone		Kincaid's lupine inside the Fender's Blue Zone <sup>b</sup>		Native Nectar species for Fender's blue <sup>c</sup>		Non-Native Nectar species for Fender's blue <sup>d</sup>		Taylor's checkerspot Occupied Habitat		
	(#)	%	(#)	%	(#)	%	(#)	%	(m <sup>2</sup> )	%	(m <sup>2</sup> )	%	(m <sup>2</sup> )	%	(m <sup>2</sup> )	%	(m <sup>2</sup> )	(%)	
<b>Benton County</b>																			
Bezell Memorial Forest																			
Jackson-Frazier Wetland	103	6.6%					53	1.6%	5	1.2%									
Benton County & Public Road Dist. ROW					634	14.3%	892	26.6%	4.30	1.0%	44.0	1.6%	2031	1%	1987	1%		5743	65%
<b>City of Corvallis</b>																			
Lancaster Property	128	8.1%					2	0.1%											
Bald Hill			57	13.4%			8	0.2%											
Herbert Open Space					115	2.6%	5	0.1%	4	1.0%									
Corvallis watershed					1935	43.7%							882	10%	1453	1%			
Noyes Property							25	0.7%											
Dunawi Creek/Starker Arts							43	1.3%											
Martin Luther King Jr. Park							6	0.2%											
Owens Farm							5	0.1%											
<b>City of Philomath (not covered)</b>																			
Philomath Blvd. near couplet							38	1.1%											
Other Philomath Lands													55	0%	90	0%			
<b>Oregon Department of Fish and Wildlife (not covered)</b>																			
E.E. Wilson Wildlife Area							377	11.3%	33	7.9%									
<b>Oregon State University</b>																			
Butterfly Meadows											16.5	0.6%	1201	1%	1978	1%			
Soap Creek Ranch							36	1.1%	319	76.4%									
Horse Facility							90	2.7%					3826	2%	6302	3%			
Poultry Facility							73	2.2%											
Other Ag lands											5.5	0.20%							
<b>Oregon Department of Transportation</b>																			
ODOT Rights-of-Way					373	8.4%	70	2.1%	9	2.2%	3	0.11%	701	0%	686	0%			
ODOT Lands													291	0%	480	0%			
<b>Subtotal: Non-federal Public Lands</b>	<b>231</b>	<b>15%</b>	<b>57</b>	<b>13%</b>	<b>3057</b>	<b>69%</b>	<b>1723</b>	<b>51%</b>	<b>374</b>	<b>90%</b>	<b>69</b>	<b>3%</b>	<b>8987</b>	<b>6%</b>	<b>12976</b>	<b>5%</b>	<b>5743</b>	<b>65%</b>	
<b>Greenbelt Land Trust (not covered for plants)</b>																			
Lupine Meadows							20	0.6%			90.5	3.3%	2902	2%	4780	2%			
Owens Farm							145	4.3%											
<b>The Nature Conservancy (not covered)</b>																			
Wren Preserve									4	1%	10	0.4%	130	0%	215	0%			
Philomath prairie																			
<b>Other Private Lands (not covered for plants or candidate species)</b>																			
Private lands - Under easement	21	1.3%			1375	31%	23	0.7%	7	1.7%									
Private lands - Not protected	1320	84%	369	86.6%			340	10.1%	32	7.7%	2583	93.8%	141815	92%	233577	93%	3034	35%	
<b>Federal (not covered)</b>							1100	32.8%											
<b>Grand Total</b>	<b>1572</b>		<b>426</b>		<b>4432</b>		<b>3351</b>		<b>418</b>		<b>2753</b>		<b>153834</b>		<b>251548</b>		<b>8777</b>		

<sup>a</sup> Data not available, not included in totals.

<sup>b</sup> Data reported result from on-the-ground survey. Not all private lands have been surveyed. Projected abundance on unprotected private lands, based on average Kincaid's lupine cover of 0.028%, is 8,165 m<sup>2</sup>.

<sup>c</sup> Estimated based on acreage of prairie within the nectar zone and average native nectar species occupancy of 1.39% (roadsides) and 1.7% all other areas.

<sup>d</sup> Estimated based on acreage of prairie within the nectar zone and average non-native nectar species occupancy of 1.36% (roadsides) and 2.8% all other areas.

the Covered Species include Herbert Farm and Natural Area, Owens Farm, the Lancaster property adjacent to Jackson-Frazier Wetland, Bald Hill Park, Martin Luther King Jr. Park, the Noyes property, Dunawi Creek and Corvallis Forest/Watershed (Table 3.2).

### **3.1.0.2 Oregon Department of Transportation**

The HCP Plan Area includes all ODOT highway right-of-way and any off-highway lands within the nectar zone of the Fender's Blue Zone or an ODOT Special Management Area for the Covered Species, or approximately 14 ha (35 ac). ODOT rights-of-way in Benton County with known locations of the Covered Species (including Fender's blue nectar habitat) include Highway 34, Highway 20, Highway 99, and Kings Valley Highway 223 (Table 3.2).

### **3.1.0.3 Oregon State University**

Planning Unit One includes lands with prairie habitat owned and/or managed by Oregon State University totaling 2,216 ha (5,475 ac). Oregon State University covered lands with known locations of the Covered Species include Butterfly Meadows, Soap Creek Ranch, the horse facility off Walnut Boulevard, and agriculture lands adjacent to the poultry facility on Harrison Boulevard (Table 3.2).

### **3.1.0.4 Greenbelt Land Trust**

Covered lands for Greenbelt Land Trust (GLT) include Lupine Meadows, Owens Farm and Lone Star Ranch, for a total of 135 ha (333 ac). Prairie habitat is found at each of these sites and populations of the Covered Species occur at Lupine Meadows and Owens Farm (Table 3.2).

## **3.1.1 Prairie Conservation Areas**

A Conservation Measure under this Plan is the designation of over 200 ha (500 ac) of Prairie Conservation Areas (Chapter 6), lands within the County to be managed specifically for prairie and Covered Species conservation, and where habitat restoration and enhancement activities may occur. Prairie Conservation Areas (PCAs) will be identified where the Covered Species are naturally present or where there is suitable habitat for introductions of the Covered Species. Some areas of some PCAs may be used as mitigation areas for impacts to the Covered Species resulting from Covered Activities at the discretion of the Cooperators (See Section 3.1.10). Management of PCAs should follow habitat enhancement and management recommendations outlined in Appendix J: Prairie Habitat Vegetation Management Guidelines.

Lands proposed for designation as Prairie Conservation Areas under this Plan are described below, and mapped in Appendix D: Maps of Prairie Conservation Areas. Any future acquisitions that have appropriate habitat for the Covered Species may be designated as Prairie Conservation Areas under the discretion of the Cooperator managing that parcel, the USFWS and ODA. Strategies for cooperative management and species introductions are discussed in Appendix E: Prairie Conservation Strategy.

### **3.1.1.0 Lupine Meadows**

#### **Site Description**

Lupine Meadows is a 23.5 ha (58 ac) site owned by Greenbelt Land Trust (GLT). The dominant habitats include wetland and upland prairie, ash swale and savanna and riparian forest habitat (Kaye 2008). A large portion of the property is jurisdictional wetland (approximately 15.4 ha [38 ac]) (Rorick and Wilson 2003), although a prominent feature of the site is a basalt hill with upland prairie at the north end. Lupine Meadows has a high diversity of native vegetation. This site will be managed for high species diversity and Willamette Valley prairie, with conservation goals linked to the USFWS Recovery Plan for Prairie Species of Western Oregon and Southwestern Washington (USFWS 2010).

#### **Species Occurrences**

The upland prairie supports natural populations of Kincaid's lupine and Fender's blue butterfly. The wetland prairie, ash swales, and riparian areas support an existing small and scattered population of Nelson's checkermallow (Kaye 2008).

Nelson's checkermallow was planted on the western side of the property by IAE (Institute for Applied Ecology; Table 3.3). In addition, Nelson's checkermallow were planted in the southeastern portion of the southern prairie by Oregon Department of Transportation.

### **3.1.1.1 Owens Farm**

#### **Site Description**

Greenbelt Land Trust acquired 38.5 ha (95 ac) of the original 126 ha (312 ac) Owens Farm property in 2002. An additional 53.4 ha (132 ac) were acquired by City of Corvallis and 34.4 ha (85 ac) were acquired by Good Samaritan Health Services (Salix Associates 2006). In 2002, GLT granted to OWEB in perpetuity a conservation easement on its parcel for the protection and enhancement of natural habitats and educational opportunities associated with the site. Much of the GLT portion of Owens farm is composed of oak and ash forest, wooded riparian corridors, and valley bottom wetlands (Salix Associates 2006). The site lies just upstream of Jackson-Frazier Wetland.

#### **Species Occurrences**

There is a naturally occurring population of Nelson's checkermallow at the site, and plants occur on both the City of Corvallis and Greenbelt Land Trust ownerships (Table 3.2). IAE has planted additional Nelson's checkermallow at the site (Table 3.3).

Table 3.3 Introductions and augmentations of the Covered Species since 2002.

	Site	Species	Date	# Seeds	# Transplants	# Established*	
Benton County	Beazell Memorial Forest	Kincaid's lupine	11/1/2006	1000		271	
			4/19/2007		213	20	
			4/29/2009		81		
	Fitton Green Natural Area	Kincaid's lupine	11/1/2006	500		130	
			4/1/2007		139	43	
			11/2/2007	5400		918	
			1/15/2009	3400			
	Jackson-Frazier Wetland	Nelson's checkermallow	4/20/2006		7	6	
			5/4/2006		19	6	
			5/11/2007		92	88	
			5/15/2007		167	65	
			6/1/2007		34	26	
5/29/2008				134			
6/3/2008				71			
Bradshaw's lomatium	4/3/2007		20	9			
	2/12/2008	500		17			
City of Corvallis	Lancaster property	Nelson's checkermallow	4/20/2006		30	4	
			4/10/2007		143	103	
			5/29/2008		47	38	
			6/4/2009		244		
	Bald Hill	Kincaid's lupine	11/1/2005	500		38	
			4/13/2006		72	16	
			11/1/2006	500		140	
			4/11/2007		170	73	
			11/9/2007	2900		1198	
			1/15/2009	2400			
	Willamette daisy	4/21/2009		94			
4/23/2007			600	377			
Marys R. Natural A.	Nelson's checkermallow	4/1/2008		534	516		
		5/1/2009		150			
Greenbelt Land Trust	Owens Farm	Nelson's checkermallow	4/25/2008		188		
			4/14/2009		99		
			Bradshaw's lomatium	11/4/2008	800		
	Lupine Meadows	Kincaid's lupine	5/12/2009		28		
			5/1/2006		69	8	
			Willamette daisy	10/1/2006		8	
			Nelson's checkermallow	2/25/2005		101	24
			6/27/2005		63	1	
			4/10/2006		13	10	
			3/22/2007		250		
4/1/2007		135	83				
TNC	Philomath Prairie	Kincaid's lupine	1/29/2009	1000			
Federal	USFWS Finley	Kincaid's lupine	4/22/2009		102		
			4/16/2002	1500		31	
	BLM Maxfield	Nelson's checkermallow	4/3/2009		98		
			5/15/2009		100		
			Willamette daisy	4/1/2007		551	403
4/1/2008		504	462				
ODFW	EE Wilson Wildlife Area	Kincaid's lupine	12/10/2008	1000		16	
			11/13/2008	1000			
			4/15/2009		66		

\*Approximate, as of data available 8/2009.

### **3.1.1.2 Butterfly Meadows**

#### **Site Description**

Butterfly Meadows is a 4.95 ha (12.8 ac) meadow owned by Oregon State University (0.45 ha [1.1 ac]) and Starker Forest, Inc. (4.5 ha [11.7 ac]). The meadow is surrounded by forest lands.

#### **Species Occurrences**

Kincaid's lupine and Fender's blue butterfly are present at the site (Table 3.2).

### **3.1.1.3 Benton County Fender's Blue Butterfly Conservation Areas (FBBCAs)**

As a conservation and mitigation measure for Fender's blue butterfly, Benton County plans to acquire (fee simple or conservation easement) 20-24 ha (50-60 ac) of lands containing high quality occupied Fender's blue butterfly habitat. The FBBCAs will occur within the Fender's blue butterfly Critical Habitat Unit FBB-8, as designated in the final rule on October 31, 2006 (Federal Register 71:63862-63977). Additional acquisition will take place as needed over the permit term.

These lands will be managed as PCAs with the specific objective of conserving and enhancing some of the highest quality Fender's blue butterfly habitat in the County. Enhancement of areas of these PCAs and resulting increases in the Fender's blue butterfly habitat and population above pre-existing levels will be used for mitigation for impacts to butterfly habitat incurred on private lands where Benton County issues permits for home, farm or forest construction or impacts Fender's blue butterfly habitat within County right-of-way, and for construction of two rural schools and fire stations.

### **3.1.1.4 Bezell Memorial Forest**

#### **Site Description**

This 237 ha (586 ac) property is located in Kings Valley and was gifted to Benton County in 2000 for perpetual park purposes (ITS Management, Inc. 2001). Land and Water Conservation funds were spent on the property, restricting the sale or conversion of use of the property unless similar resources are provided (J. Davis personal communication 2007). The property has a demonstration forest and open space area, with progressive ecosystem management practices used to protect, conserve, and restore the natural, scenic, outdoor recreation, and wildlife values. Revenue generated from logging is used to manage the property (ITS Management, Inc. 2001). Bezell is open to the public, and has restrooms, drinking water, hiking trails, and picnicking facilities.

Only the meadows within the park, approximately 40 ha (100 ac) will be included in the Prairie Conservation Area, and some of these meadows may be designated for mitigation sites.

**Species Occurrences**

Taylor's checkerspot butterfly is present (Ross 2007), and Kincaid's lupine was planted at the site by IAE (Table 3.3).

**3.1.1.5 Fort Hoskins Historic Park**

This 52.6 ha (130 ac) park was acquired by Benton County in 1992. Fort Hoskins is open to the public for day use and features accessible restrooms and a covered picnicking area. There are two self-guided trails: a 0.97 km (0.6 mile) interpretive trail and a 1.9 km (1.2 mile) recreation trail. The area adjacent to the public use area is mowed. The park is used for natural resource research work, including mowing and burning, and an OSU research project involving plant community response to light variations and prescribed burning.

**Species Occurrences**

A single Taylor's checkerspot butterfly was discovered in 2005. Roughly 2.6 ha (6.3 ac) of Fort Hoskins will be managed as a PCA if and when >20 individuals of any Covered Species, including Taylor's checkerspot, occur there or are introduced there.

**3.1.1.6 Fitton Green Natural Area****Site Description**

Fitton Green Natural Area is a 124.6 ha (308 ac) property acquired by Benton County for the purposes of demonstrating progressive stewardship practices (David Reed & Associates 2000). Approximately 56.6 ha (140 ac) of the natural area (northern meadow) is covered by a conservation easement held by the Greenbelt Land Trust. High quality upland prairie occurs in the southern portion of the natural area, and approximately 18 ha (45 ac) of this area will be managed as a PCA. A portion of the Fitton Green PCA will be designated for use as a mitigation site.

**Species Occurrences**

A single Taylor's checkerspot butterfly was observed in 2007 in the southern meadow (Ross 2007). IAE introduced Kincaid's lupine to the site (Table 3.3).

**3.1.1.7 Jackson-Frazier Wetland****Site description**

This 58 ha (144 ac) site is located northeast of Corvallis. The park was established in 1992 to protect the natural features of the area and provide educational and research opportunities (Frenkel & Reed 2005). The site is open to public use, although foot traffic is limited to a wooden boardwalk winding through the wetland. Most of this property has a wetland overlay, restricting the type of land use at this site (G. Verret, personal communication 2007). Four acres outside the wetland overlay, and lacking



Covered Species occurrences, have a conservation easement held by the Greenbelt Land Trust. Approximately 16 ha (40 ac) of Jackson-Frazier will be managed as a PCA. A portion of the Jackson-Frazier PCA area will be used as a mitigation site.

### **Species Occurrences**

There are naturally occurring populations of Kincaid's lupine, Nelson's checkermallow, and Bradshaw's lomatium within the wetland (Table 3.3). IAE has also planted additional Nelson's checkermallow and Bradshaw's lomatium at the site (Table 3.3).

#### **3.1.1.8 Herbert Farm and Natural Area**

##### **Site Description**

This 89.4 ha (221 ac) historic farmland site includes wetlands, oak woodlands, wet prairie, and riparian habitat supporting diverse plant communities and wildlife. Marys River and Muddy Creek converge on the property. There are no existing trails, but future passive public use is under consideration at this time. The City of Corvallis owns Herbert Farm and Natural Area, but The Trust for Public Lands holds the conservation easement. The property serves as mitigation for the Bonneville Power Administration's Willamette Basin federal hydro-electric dams and reservoirs. Approximately 10 ha (25 ac) of Herbert, including the high quality prairie area, will be managed as a PCA.

##### **Species Occurrences**

Naturally occurring populations of Kincaid's lupine, Nelson's checkermallow and peacock larkspur are present at this site (Table 3.2).

#### **3.1.1.9 Bald Hill Park**

##### **Site Description**

This 115 ha (284 ac) site includes oak savanna, upland prairie, wetlands, riparian, and oak woodlands. The park also includes a historic barn, an interpretive trail, and trails that connect with the Benton County Fairgrounds. This site has a 2.4 km (1.5 mile) multi-modal path along the base of the park and several dirt and gravel foot paths that lead to the summit of Bald Hill. Approximately 30 ha (75 ac) of Bald Hill will be managed as a PCA. A portion of the Bald Hill PCA will be designated as a mitigation area.

##### **Species Occurrences**

The site has a natural population of Willamette daisy (Table 3.2). IAE has introduced Kincaid's lupine and planted additional Willamette daisy at this site (Table 3.3).

#### **3.1.1.10 Lancaster Property**

##### **Site Description**

The City of Corvallis owns approximately 3.3 ha (8.1 ac) of property with wet prairie habitat adjacent to the County-owned Jackson-Frazier Wetland. These lands, referred

to here as the Lancaster Property, are managed by the City of Corvallis Housing Division of Community Development. As a result of its location between a residential area and the County-owned Jackson-Frazier Wetland, the area receives light pedestrian traffic. A portion of the Lancaster Property will be designated as a mitigation area.

### **Species Occurrences**

There are natural populations of Bradshaw's lomatium and Nelson's checkermallow (Table 3.2). IAE has augmented the Nelson's checkermallow population (Table 3.3).

#### **3.1.1.11 Corvallis Watershed**

##### **Site Description**

The City of Corvallis owns 951.8 ha (2,352 ac) encompassing the lower elevations of the 4,407 ha (10,000 ac) Rock Creek Watershed on the northeast flanks of Marys Peak. The land is managed primarily by the City of Corvallis Public Works Department although a section near south east end of the property is managed by the Parks Department as "Rock Creek Park". There are native prairie remnants along Rock Creek Road and on the rocky knoll adjacent to Highway 34 significant for their concentration of native prairie species. The 2 ha (5 ac) wedge-shaped parcel of land (Rock Creek Corner) containing the rocky knoll and bordered by Highway 34 and Rock Creek Road will be managed as a PCA and mitigation area.

##### **Species Occurrences**

Peacock larkspur is present at the site, both along the Rock Creek Road and in Rock Creek Corner (Table 3.2). No Covered Species introductions have occurred to date.

#### **3.1.1.12 Lone Star Ranch**

##### **Site Description**

This 80.5 ha (199 ac) property west of Philomath is under conservation easement to the Greenbelt Land Trust. Lone Star includes wet and upland prairie and oak savanna. Roughly 36 ha (89 ac) of the property will be managed as a PCA. Portions of the PCA may be managed as a mitigation area for purposes of the HCP, provided they are not used as mitigation for any other project.

##### **Species Occurrences**

No Covered Species are known to occur at this site.

#### **3.1.1.13 ODOT Wren Mitigation Site**

##### **Site Description**

This 2.5 ha (6.1 ac) property is owned by Oregon Department of Transportation, and is located between Wren and Highway 20. The site includes wet and upland prairie vegetation. Portions of the site will be managed as a mitigation area for purposes of the HCP, provided they are not used as mitigation for any other project.

**Species Occurrences**

This site is located within the nectar zone of the Fender's Blue Zone.

**3.1.1.14 ODOT Henkle Quarry**

This 1.2 ha (2.9 ac) property is owned by Oregon Department of Transportation and is located in the Henkle Way area. The site includes oak woodland and prairie vegetation. Portions of the site will be managed as a mitigation area for purposes of the HCP, provided they are not used as mitigation for any other project.

**Species Occurrences**

This site is located within the nectar zone of the Fender's Blue Zone.

**3.2 Planning Unit Two****3.2.0 Potential Fender's Blue Butterfly Habitat under Private Ownership Located outside City Limits**

As of 2007, approximately 128,514 ha (317,566 ac) of land within Benton County were under private ownership. Of this amount, 127,978 ha (316,242 ac) are located outside the city limits of Corvallis, Philomath, Monroe, Adair Village, and North Albany. Based on the current best available information (including approximately 4,010 ha [9,910 ac] of habitat surveys) describing current Fender's blue butterfly locations, an estimated 2,917 ha (7,208 ac) of this land (excluding Greenbelt Land Trust property included in Planning Unit 1) is potential habitat for Fender's blue butterfly and is included in Planning Unit 2 (Figure 3.1).

# 4 Covered Activities

## 4.1 Introduction

This chapter describes the activities and projects within the Plan Area that are covered by the incidental take permit and for which the Habitat Conservation Plan provides avoidance, minimization and mitigation for impacts to Covered Species (Table 4.1). Incidental take authorization is sought only for activities described in this chapter. An activity is covered under this Plan only if it is the type of impact evaluated in Chapter 5: Impacts, and:

- 1) There is sufficient take coverage available under the incidental take permit issued to Benton County for that activity;
- 2) The activity does not preclude achieving the biological goals and objectives of this Plan;
- 3) The activity must be an action under the jurisdiction of Benton County, one of the Cooperators, or certain private landowners (See Chapter 3: Plan Area);
- 4) The activity must occur within the Plan Area; and
- 5) The activity must occur within the term of the incidental take permit.

## 4.2 Covered Activities Summary

### 4.2.0 Home, Farm and Forest Construction

On private lands zoned Exclusive Farm Use (EFU), Forest Conservation (FC), Rural Residential (RR) or Urban Residential (UR) within the Fender's Blue Zone (areas identified as potential Fender's blue butterfly habitat), each lot or parcel existing as of July 31, 2009 is covered for home, farm and forest construction activities for which the property owner obtains a permit or land use authorization from Benton County and that are allowable under zoning regulations in effect on July 31, 2009. If an already-developed property is partitioned or subdivided after July 31, 2009, the HCP coverage carries to the resulting parcel or lot containing the existing structures. If a property partitioned or subdivided after July 31, 2009 is vacant or if existing structures will be located on more than one of the resulting parcels or lots, the HCP coverage carries to one of the resulting parcels or lots which will be designated by the property owner at the time of land use approval of the partition or subdivision. The other parcels or lots are not covered by this Plan.

Home, farm and forest construction covered by this Plan include, but are not limited to the following:

- Site-built dwellings (single family residences with or without attached garages);
- Manufactured homes (including medical hardship dwellings);

Table 4.1 Benton County Prairie Species HCP Covered Activities.

	Benton County	City of Corvallis	ODOT	OSU	GLT	Pioneer Telephone	NW Natrual	Private landowners
<b>Home, Farm and Forest Construction</b>								✓
<b>Benton County Permits and Authorizations</b>	✓							
<b>Utility Construction and Maintenance</b>						✓	✓	
<b>Public Service Facility Construction</b>	✓							
<b>Transportation Activities and Authorized Work in Rights-of-Way</b>								
Transportation construction and maintenance	✓		✓					
Work in right-of-way, road approach and utility work	✓					✓	✓	
<b>Waterand Wastewater Management</b>		✓						
<b>Parks/Natural Areas/Open Space Management</b>								
Voluntary habitat restoration, enhancement and management	✓	✓		✓	✓			
<b>Agricultural Activities</b>		✓						
<b>HCP Implementation Activities</b>								
Habitat restoration, enhancement and management for mitigation	✓	✓		✓	✓	✓	✓	
Monitoring	✓	✓		✓	✓	✓	✓	
Plant materials collection	✓	✓		✓	✓	✓	✓	
<b>Emergency Response Activities</b>	✓	✓	✓	✓	✓	✓	✓	

- Residential accessory structures (un-attached garage, shop, shed, pool, etc.);
- Agricultural buildings and structures (including those exempt from building permit requirements but requiring County authorization);
- Septic system feasibility studies;
- Septic system installation, alterations, and repairs;
- Driveways, if associated with a County-issued permit;
- Installation of underground or above ground plumbing, mechanical, or electrical facilities; and
- Additions to structures (e.g., attached garage, added room, etc.).

### 4.2.1 Benton County Permits and Authorizations

Benton County issues permits for activities on both private and public lands, including its own lands.

#### 4.2.1.0 Community Development Department Permits

The jurisdiction of the Benton County Community Development Department includes all of Benton County outside of city limits. The department is divided into the Building and Planning Divisions with the primary objective being to ensure the Building and Land Use

laws of the State of Oregon and Benton County are followed in a fair and equitable manner.

### **Permit Exempt Agricultural Building Authorization**

Agricultural buildings are exempt from Oregon's Structural Specialty Code (unless the building will be located within a floodplain) and the landowner is not required to obtain a building permit for construction. However, the landowner is required to complete an "exemption" application, and plumbing, mechanical, and electrical permits are still required. If the use of an agricultural building later changes, a building permit may be required.

Oregon Revised Statute 455.315 defines an agricultural building as "... a structure located on a farm and used in operation of such farm for storage, maintenance or repair of farm machinery and equipment or the raising, harvesting and selling of crops or in the feeding, breeding, management and sale of dairy products or any other agricultural or horticultural use or animal husbandry, or any combination thereof, including the preparation and storage of the produce raised on such farm for human use and animal use and disposal by marketing or otherwise".

A farm is land primarily used for obtaining a profit from crops, livestock, poultry, fur-bearing animals, honeybees, or dairy. Also exempt from building permits are equine facilities, defined as a structure located on a farm and used for stabling or training equines, or for riding lessons and training clinics.

An exempt structure may not:

- be a dwelling;
- have 10 or more persons present at any one time (unless the structure is used for growing plants);
- be a structure regulated by the State Fire Marshal pursuant to ORS Chapter 476;
- be used by the public (except for an equine facility); or
- be in the regulatory floodplain.

Examples of agricultural buildings exempt from building permits include:

- Poultry barns
- Hay barns
- Livestock barns
- Tractor and farm equipment storage buildings
- Farm licensed vehicle storage units
- Shop buildings for servicing and repairing farm equipment used in conjunction with farming activities on the property
- Grain or seed storage structures storing only produce from the farm on which they are constructed
- Dairy barns or milking parlors with fewer than ten persons present

Examples of structures on farms requiring a building permit include the following:

- Residences
- Structures used for a purpose other than growing plants with ten or more persons present
- Structures regulated by the State Fire Marshall (pursuant to ORS Chapter 476)
- Buildings open to the public (ex: nurseries, auction barns, produce stands)
- Horse facilities where ten or more people are present at any one time
- Structures used to store RVs, trailers, motor homes, boats, motorcycles, cars, pickup trucks, or any other licensed vehicle
- Shops used for private or commercial non-farm use
- Hobby shops (metal, wood, ceramics)
- Structures used for private or commercial storage, although on farm property
- Agricultural exempt structures within designated floodplains
- Greenhouses open to the public
- Structures determined to be agriculturally non-exempt by the Building Official in conjunction with the Director of Community Development based on intent of the statute

There are no limitations on the number of agriculturally exempt structures that can be built on lands zoned Exclusive Farm Use (EFU).

### **Building Permits**

A building permit is required to construct, enlarge, alter, move, or demolish one or more family dwellings or other structures. Examples include, but are not limited to: constructing a new home or accessory structure; adding a room; finishing an attic, garage, or basement; moving, removing, or adding walls; applying a roof where the old roof is removed and new sheathing is installed; building a stairway; building a retaining wall greater than four-feet high; building a deck more than 76 cm (30 in) above grade; building a fence greater than 1.8 m (6 ft) high. Not all of these activities involve land disturbance.

- New single-family site-built dwelling permit: This permit is required for anyone constructing a new single family site-built dwelling. Construction of a dwelling involves land disturbance activities.
- New manufactured dwelling permit: This permit is required for anyone wanting to place a manufactured dwelling on their property. Placement of a new manufactured dwelling involves land disturbance activities.
- Replacement Permit (single family or manufactured dwelling): A permit is required if a landowner intends to replace a single family residential or manufactured dwelling. Construction of a replacement residence involves land disturbance activities, where replacement occurs outside the original footprint.
- Addition Permit: An addition permit is required when any new square footage is added to an existing structure. Examples would include; attached garage, attached carport, additional living area, decks and/or porches. Construction of an addition involves land disturbance activities.

- **Accessory Permit:** This permit is required for construction of an accessory building, which is a building that is accessory to an established primary use on the property (such as a personal shop building that is accessory to the residential use of the property). A Permit is not required if a structure is 18.5 m<sup>2</sup> (200 ft<sup>2</sup>) or smaller for residential structures and 11 m<sup>2</sup> (120 ft<sup>2</sup>) for commercial structures, less than 3 m (10 ft) in height, and at least 1.8 m (6 ft) from all other structures. Examples include, but are not limited to: detached garages, detached carports, barns, pole barns, shops, and utility buildings. Construction of an accessory building involves land disturbance activities.
- **Demolition Permit:** Structural demolitions and decommissions are regulated by Benton County and the Oregon Department of Environmental Quality. Structural demolitions require removal of the structure and foundation, including the basement walls and floors and utility systems.
- **Electrical Permits** are required for electrical work on building structures. The electrical work may include installation of electrical lines below ground, requiring the construction of trenches, a land disturbance activity.
- **Mechanical Permits** are required for new or replacement installation on heating, cooling, or ventilation systems including gas/propane appliances and their connections, woodstoves, fireplaces, furnaces, heat pumps, and air handlers. Installation of mechanical systems may require construction of trenches, a land disturbance activity.
- **Plumbing Permits** are required for installation of new baths or kitchens, the addition of baths or kitchens, remodel of existing fixtures replacement of water heaters repair, alteration, or replacement of an existing system if piping exceeds 1 m (3 ft), and for new piping installation for water, sewer, or rain drains. Plumbing systems may include installation of, or connection to, existing piping located below ground, requiring the construction of trenches, a land disturbance activity.

#### **4.2.1.1 Benton County Health Department Permits**

The County's Environmental Health Division, located within the Health Department, provides technical assistance and permitting for the installation of septic sewage systems on public and private property.

A septic system consists of a septic tank, a distribution box, a drainfield with a replacement area, and the surrounding soil. The system may also include a sand filter system or alternative treatment technology (ATT). Septic systems are installed below ground surface and require land clearing/ground disturbance during installation. The size of septic tanks depends on the number of bedrooms in a residential building and the number of employees or seating in a commercial building. The drainfield lines and line lengths are based on the design of the system specific to the property. In addition, there is piping between the tank and the sand filter/ATT and/or drainfield.



The permitting process involves two steps. Step one is site feasibility. The suitability of a proposed site is based on soil type and depth and water table depth. Other factors include the size of the property; size of home; topography/landforms; location of the system relative to streams, wells, cuts, and fills (set backs); and whether sewer service is available. An area for a replacement system is also required. At least two test pits approximately 23 m (75 ft) apart and 10.7 m (35 ft) up and down the slope must be dug in the area of the proposed drainfield. Each test pit is approximately 1.7 m to 2 m (5 ft to 6 ft) deep by 3.7 m (12 ft) wide – essentially one scoop with a backhoe. The number of test pits to be dug will depend upon the soil. The best place to locate a septic system is in an upland area. There are some circumstances where the homeowner is unable to locate a septic system on his property due to the setbacks, topography (too steep), and soils (lacking the correct soil type). Step two involves applying for the permit, which must be obtained before installation of the septic system. Permits must also be obtained for any repair work on septic systems, even minor repair work.

### **Septic System Permits**

- Feasibility Permit: These permits are required for residential and commercial facilities. This permit allows the landowner to dig test holes to identify areas where installation of a septic system is feasible and also the type of system most appropriate based on the site's conditions.
- Septic Installation Permit: This permit is required whenever a landowner intends to install a new septic system on his property.
- Authorization Permit: This permit is required when one dwelling is replaced by another dwelling, or there is an increase in the number of bedrooms.
- Alteration Permit: This permit allows for alteration of an existing system, which may involve a land disturbance activity.
- Minor Repair Permit: This permit is required when the septic tank has filled and needs replacing. Replacement of the septic tank is a land disturbance activity.
- Major Repair Permit: This permit is required when drain fields are failing and need replacing. Replacement or repair of the drain field is a land disturbance activity.
- System Evaluation for Domestic Water Supply: In 2006, 186 permits were issued to install, conduct minor or major repairs, or authorize alterations to a septic system.

#### **4.2.1.2 Public Works Department Permits**

The Public Works Department issues a number of permits for activities occurring on the County's road system, including the road right-of-way. Benton County will be covered for issuing these permits except when a permit applicant requests work in or adjacent to a Type 1 roadside population (see Section 5.2.3.0).

**Work in County Right-of-Way**

This permit is required for any activity impacting public infrastructure - under ground, at surface, or overhead. Work could include trenching, mowing, tree removal, utility work, excavation, or any other activity affecting public infrastructure.

**Utility Permit**

This permit is required whenever a utility company (e.g., Pioneer Telephone Cooperative, Quest, CPI, Comcast, and NW Natural) wishes to install and maintain utilities within the County road right-of-way. Utilities are generally placed in the backslope of the right-of-way.

Construction to place these utilities involves land disturbance, including trenching, movement of heavy equipment, and potential disruption of surface hydrology. Land disturbance activities are most intense during the installation of underground utilities. Maintenance and operational activities have the potential to indirectly or temporarily affect the Covered Species. Maintenance activities include: routine or emergency repairs, minor grading or soil disturbance, and vegetation management.

**Road Approach Permit**

These permits are required whenever a new entrance onto a County or a non-ODOT public road is created or a landowner's driveway does not meet County standards and requires modification.

**4.2.2 Utilities Construction and Maintenance on Private Lands****4.2.2.0 Telephone Utilities**

Pioneer Telephone Cooperative is responsible for all of their buried facilities in right-of-ways as well as on private property to the demarcation box (typically found on the side of the business or residence building).

Pioneer Telephone Cooperative common practices on burying cables are a combination of the following:

- Plow method: Use of a typical vibratory plow, which involves a plow blade that disturbs approximately 15.24 cm (6 in) of soil, with communications cable and/or conduit placed into plow chute and placed into ground as plowing is accomplished. Area of machinery disturbance (including temporary flattening of vegetation) is typically 3 m (10 ft) wide.
- Bore method: Use of a bore machine, which involves a placing the boring machinery (approximately 1.2 m x 3.7 m (4 ft x 12 ft) dimensions) and initiating a bore pit (approximately 0.2 m<sup>2</sup> [2 ft<sup>2</sup>]) where a bore head is inserted into the ground and a receive pit (approximately 0.84 m<sup>2</sup> [9 ft<sup>2</sup>]) where the bore head ends. Communications cable and/or conduit is attached and pulled back through the hole created by the bore head. Average bore length is 91.4 m (300 ft).

Typical replacement of copper or fiber facilities occurs every 30-40 years, dependent upon many conditions, such as landowner or contractor dig up damages, possible rodent damage (rare), exhaustion of facilities due to population growth and many unforeseen situations that can lead to replacement. Many older cables (35+ years) were of an inferior quality to today's cables which led to earlier replacement due to water infiltration. These facilities have been almost entirely replaced and today's cables have a greater lifespan (G. Vick, Pers. comm. 2009).

#### **4.2.2.1 Natural Gas Utilities**

NW Natural's existing pipeline infrastructure within the HCP Plan Area is almost exclusively under existing pavement. Typical modifications, maintenance and repair will be limited to the infrastructure already in existence in these areas, and there will be no anticipated impacts to habitat or species of concern in these instances.

Expansion of the pipeline system within the HCP Plan Area is anticipated to be minimal. In the event that expansion occurs, it will typically track housing development or industrial development and will therefore likely be developed in associated roadways. In the event of a required repair of a damaged pipeline or the addition of a gas service pipeline outside of the roadway, or in a sensitive habitat zone, below is a description of NW Natural construction procedures.

- Excavation/trenching: Excavation is typically uses a backhoe or trackhoe. Equipment is usually staged on the pavement and excavation spoils are directly loaded into trucks for disposal. Excavations are minimized to the extent practical, both to control cost and minimize restoration requirements. Typical linear trench dimensions for service main installation is the overall length required x 28 in width x 36 in depth. The width may vary, according the dimensions of the excavation attachment used. Service installations and repairs are limited to minimal requirements necessary for work completion (e.g., 6 ft x 8 ft x depth required) and vary according to discrete conditions.
- Directional drill/bore: Directional drill/bore technology effectively eliminates all surface impacts to natural resources. Pipelines are directionally drilled underground. The impact is limited to the footprint for the bore rig to set up and the receiving pit where the pipeline ties in or the terminal point of the pipeline. Set up and receiving areas can be moved and amended to avoid critical resources and habitat and depend on the size of the machine (which is a function of the length of the bore and the diameter of the pipe being installed). Directional drill technology is a viable option in many instances though can be cost prohibitive under certain circumstances.

Construction procedures are selected on a job by job basis, depending on multiple criteria including natural resource assessment cost, efficiency, and efficacy (J. Payson, Pers. comm. 2009).

### **4.2.3 Public Service Facility Construction**

Activities included under this category include, but are not limited to construction of rural schools or rural fire stations within the Fender's Blue Zone. Construction of such facilities is covered for Benton County provided avoidance measures and other applicable Conservation Measures are implemented as described in Chapter 6.

### **4.2.4 Transportation and Authorized Work in Rights-of-Way**

This section includes maintenance activities that occur within existing Benton County or ODOT rights-of-way, easements or Public Road Districts under County jurisdiction. All activities will follow the best management practices (BMPs) and avoidance and minimization measures described in Chapter 6.

#### **4.2.4.0 Transportation Maintenance**

The County has jurisdiction over 740 km (460 mi) of roads: 435 km (270 mi) paved, 306 km (190 mi) gravel, in addition to 124 km (77 mi) of Public Road Districts (Public Roads). The life of a paved road is typically 20 years with preventative maintenance, after which time an asphalt overlay is needed. The County's current schedule includes 22 km (13.5 mi) of overlay each year, however far fewer miles are actually overlaid due to financial constraints.

The County conducts road maintenance activities for other local communities (e.g., the City of Corvallis), state and federal governments, and fire departments. The number of roads and mileage maintained varies with funding availability.

In addition to road maintenance work, the County also maintains the land from the edge of the road surface to the outer edge of County's right-of-way. The County's right-of-way starts at the road centerline and can vary from 6.1 m to 30 m (20 ft to 100 ft) outward, but generally average around 12 m (40 ft) to 18 m (60 ft) either side of the centerline.

Transportation maintenance activities carried out by the County with potential to impact the Covered Species include:

- **Bridge Construction and Maintenance:** Benton County maintains 98 bridges within the county. There are 51 wooden bridges, 44 concrete bridges and 3 steel bridges. The average life of a wooden bridge is 40 years, and the average life of a concrete bridge is 60 years. An estimated 15 bridges will need to be replaced within the life of the Permit. Annual routine bridge maintenance includes washing and cleaning, deck sealing, deck resurfacing, guardrail repairs, approach and deck pavement repairs, scour repair, and bank stabilization. Bridge cleaning involves using high-pressured sprayers to spray off accumulated debris. Bridge restoration projects may involve strengthening the substructure with larger caps, deck, and stringer, replacement of timber deck with pre-

stressed slab deck, replacement of pilings, installation of a waterproof deck or guardrails, and new bridge road approaches and paving.

- Culvert Installation, Maintenance, and Repair: The County owns or maintains 7,000 culverts. New culverts are installed as needed, generally to replace existing failing structures. The County generally inspects cross culverts on a seven-year cycle timed with chip seal maintenance projects. The 100-125 County owned culverts over 1.2 m (4 ft) are inspected at least once every two years. Culvert cleaning generally occurs from October to December and involves using a high pressure hydraulic hose to pull debris to the front of the culvert where it can be collected and removed with an excavator. If the culvert is plugged, a grader may be required to dislodge the jammed debris. Approximately 700 – 1,000 culverts are cleaned annually.
- Cut banks for sight distance
- Dead deer removal
- Deicing
- Ditch Cleaning: Ditches are inspected annually to determine whether cleaning is needed and work is completed in late spring (May). Ditches are cleaned with an excavator, grader, or ditch head (auger style/3 blade machine) depending on the size of the ditch. Vegetation and sediment at bottom of the ditch are removed and placed on the back slope or hauled away. The maintenance cycle for ditch cleaning is every seven years.
- Ditch realignment: This activity is rare and only occurs if the ditch is overfilling, erosion is occurring, or a road or shoulder is being widened.
- Emergency Management: Unscheduled work on the road system involving a natural or manmade event causing damage or that could cause damage to the road system and/or pose a significant threat to public safety or the environment. Includes cleanup from vehicle accidents, hazardous material spill, landslides or wind storms, and snow plowing.
- Fence installation, repair and removal: Benton County installs or repairs field fencing (metal T-post and wire) whenever it removes or damages private landowner fencing as part of a road project. The County does not maintain the fencing.
- Grading of Gravel Roads
- Gravel Road Stabilization – Surface Rock Replacement: The placement of rock on roads worn out over time. The County is testing lignin sulfonate, an environmentally benign product, as a tool for binding the surface of gravel roads, stabilizing them so they require less gravel and less grading.
- Legend installation and repair
- Litter pick-up
- Mailbox Installation: Benton County will install a new mailbox whenever it undertakes a project requiring the removal of an existing mailbox.
- Pavement repairs, repainting and resurfacing: Including, but not limited to chip seal, crack seal, hot mix asphalt concrete surfacing, line stripping and traffic marking, oil mat surfacing and pothole patching, slurry seal

- Sanding
- Shoulder Widening and Grading
- Sign Installation and Maintenance: The County maintains over 6,500 signs along the roadways. Roadside signs are installed, cleaned, straightened, and maintained on an as-needed basis. The County rotates out a sign generally every 12-15 years; sign removal and/or installation occurs year-round.
- Vegetation Management: Vegetation management activities carried out in County managed rights-of-way include mechanical, chemical, and manual control of vegetation to maintain sight distances, control noxious weeds and remove hazard trees.
  - One Pass Mowing: Between April and September, the County mows all County maintained rights-of-way (756 km/470 miles), cutting vegetation 15 to 20 cm (6 to 8 inches) in height. A 2 m (3 -6 ft) wide swath is mowed, with equipment remaining on the highway. Mowing focuses on reducing grass height.
  - Full pass mowing: The entire right-of-way is mowed between October and April. The County attempts to do a full pass mowing on all County rights-of-way, but timing and budgetary considerations may prevent this task from being accomplished on all County maintained roads. Full pass mowing targets shrubs and trees.
  - Spraying: Approximately 483 km (300 miles) of road shoulders are sprayed with herbicide each year. Adjacent property owners have the ability to participate in the County's no-spray program. Between April and June broad-spectrum pre- and post-emergent herbicides are applied along road shoulders to control grasses and weeds. Site and weed specific spot application of broadleaf herbicide is used for control of invasive and/or problematic species periodically during May and June. Most of the broadleaf herbicide for Himalayan blackberry and Poison oak control is applied between October/November.
  - Shrub and tree removal: Occurs year-round, as needed. Hazard trees are taken down by chainsaw and generally left on site, although trees will be removed away from drainage areas. Shrubs are removed using mowers.

#### **4.2.4.1 Transportation Construction Activities**

Transportation construction projects, including but not limited to extension and widening of roadways, bike paths, and bridges will be covered under this Plan. Specific projects to be covered are discussed in Chapter 5, however currently unknown projects that arise during the 50 year permit term will also be covered.

#### **4.2.4.2 Authorized Work in Rights-of-Way**

Authorized work in rights-of-way includes activities authorized by Benton County through:

- Utility Permits;
- Road Approach Permits; and

- Work in Right-of-Way Permits.

These activities are described with in Section 4.2.1.2 Public Works Department Permits.

#### **4.2.5 Water and Wastewater Management**

The City of Corvallis owns and operates a water supply and delivery system with water received from the Willamette River and the Rock Creek Watershed. Projects and activities conducted by City of Corvallis that are related to water and wastewater management covered under this Plan include:

- Construction, installation, extension, and maintenance of surface water intake facilities, pumping plants, water treatment facilities, and water supply pipelines. Specific maintenance activities within existing rights-of-way or easements include inspection, cleaning, rehabilitation, repair, and/or replacement of pipelines, pumping stations, etc.
- Construction, installation, replacement, and maintenance of wastewater facilities.

Annual vegetation management of streams within Corvallis city limits is conducted by the City of Corvallis Public Works Department. Weed-eating, mowing, or other vegetation removal methods will take place in Nelson's checkermallow habitat, however this activity is not covered and no take for Nelson's checkermallow is requested from this activity as impacts will be avoided by completing botanical surveys prior to conducting activities in waterways and following timing guidelines for vegetation management in Appendix M: Roadside and Streambank Management Guidelines for Covered Plants.

#### **4.2.6 Parks/Natural Areas/Open Space Management Activities**

Covered activities involved with managing parks, natural areas, and open space for public enjoyment as well as preservation of biological resources are described below. Some of these areas are managed as Prairie Conservation Areas.

##### **4.2.6.0 Voluntary Habitat Restoration, Enhancement and Management**

Benton County, Oregon State University, City of Corvallis, and Greenbelt Land Trust are seeking coverage for the following activities that are conducted for the purposes of voluntary habitat restoration, enhancement and management:

- Mowing
- Herbicide application
- Prescribed burning
- Removal of encroaching trees and shrubs
- Planting native species
- Road and trail decommissioning and restoration
- Livestock grazing managed such that it does not reduce the ability of any of the Covered Species to survive or reproduce

### **4.2.7 Agriculture**

City of Corvallis allows agricultural activities including hay and vegetable crop production on their Herbert Farm and Natural Area, Rock Creek Watershed, and Owens Farm properties, and is seeking coverage for these activities at Owens Farm, subject to implementation of minimization and avoidance measures described in Chapter 6.

### **4.2.8 HCP Implementation Activities**

Benton County and all Cooperators except ODOT (ODOT will obtain any needed coverage independently) are seeking coverage of HCP implementation activities, including but not limited to mitigation related habitat restoration, enhancement, and management, and Covered Species monitoring. These activities may result in temporary impacts to the Covered Species and may occur in Prairie Conservation Areas and/or other public lands within the Plan Area as well as roadside rights-of-way where Covered Species are present.

#### **4.2.8.0 Habitat Enhancement, Restoration and Management for Mitigation**

Habitat restoration, enhancement and management activities, described in Section 4.2.6 will be covered for Benton County and all Cooperators except ODOT (who will obtain coverage independently) for the purpose of HCP Implementation, provided the actions follow recommendations in Chapter 6 and Appendix J: Prairie Habitat Vegetation Management Guidelines.

#### **4.2.8.1 Monitoring**

Monitoring actions include but are not limited to:

- Species presence/absence surveys;
- Species abundance surveys; and
- Monitoring activities associated with habitat restoration, enhancement, and management.

Monitoring activities for covered plants or for butterfly habitat that are required for HCP implementation are covered provided they follow protocol described in Appendix K: Project Site Survey and Reporting Protocols for Plants and Butterfly Habitat. Monitoring activities for Fender's blue butterfly that require any netting or other handling of the butterfly are not covered. The biologists conducting such work must possess the appropriate permits from USFWS.

#### **4.2.8.2 Plant Materials Collection**

Restoration and enhancement activities may call for the collection of seeds and plant materials for introduction, relocation, and augmentation projects. Plant material collection activities include:

- Seed collection;
- Plant material (tubers, rhizomes, etc.) removal; and
- Removal of the entire plant or population and its relocation to another site.



Activities related to collection of plant materials required for HCP implementation will be covered for the County and Cooperators (excluding ODOT) provided they follow protocol described in Appendix L: Plant Material Collection and Plant Introduction Protocols.

#### **4.2.8.3 Plant Population Augmentation and Introduction**

Covered plant populations may be augmented or introduced to increase the number and viability of listed plant populations. Augmentation may be accomplished by sowing seeds or planting propagules to increase the population size. Introduction (via seeds or propagules) of covered plants at an unoccupied site may be used to create new populations or to recreate a lost population at suitable sites. Population augmentation and introductions may include the covered plant species as well as nectar and host species for Fender's blue butterfly and Taylor's checkerspot butterfly.

Activities related to plant population augmentation and introduction required for HCP implementation will be covered provided they follow protocols described in Appendix L: Plant Material Collection and Plant Introduction Protocols.

#### **4.2.9 Emergency Response Activities**

Benton County and all Cooperators are seeking coverage for emergency response activities where public health, safety, and welfare are involved that may have occasional impacts on populations of Covered Species. Emergency activities foreseeable during the term of the incidental take permit include but are not limited to firefighting, utility repairs, hazardous materials clean up, traffic accident clean up, disaster relief and medical assistance. Emergency activities that result in substantial adverse impacts to the Covered Species are considered changed circumstances and are described in Section 8.7.

### **4.3 Non-Covered Activities**

Activities not covered under this Plan, because impacts will be avoided, include, but are not limited to:

- Public use of natural areas, or open spaces (e.g., hiking, picnicking, mountain biking, horseback riding). Impacts to Covered Species from these activities will be prevented with avoidance measures described in Chapter 6; and
- Benton County's issuance of Special Events Permits, as all impacts resulting from such permits will be avoided (see Chapter 6).

Activities not covered under this Plan, but that still require consultation and/or incidental take coverage from the USFWS or ODA, now or in the future, include, but are not limited to:

- Road approach construction or utility construction and maintenance activities in Benton County rights-of-way that will impact Type 1 roadside populations of Covered Species;
- Road construction or maintenance by the Cities of Corvallis, Philomath, Albany, Adair Village, and Monroe;
- Management activities undertaken by Benton County for Taylor's checkerspot butterfly conservation on private property. Taylor's checkerspot is only covered on County lands (see Appendix N: Taylor's Checkerspot Management Plan), and as the species is not listed, coverage is currently unnecessary on private lands. If and when the butterfly is listed, and if Benton County is managing private property for the species, the County will seek a 10(a)(1)(A) Permit from the USFWS for this work;
- Industrial development projects and any commercial (e.g., gas stations, grocery stores, taverns, RV parks) developments in the Fender's Blue Zone;
- Residential development within the Fender's Blue Zone on lots with land use zoning changes that increase the level of development allowed (only the level of development allowed under zoning as of July 31, 2009<sup>7</sup> is covered);
- Residential, farm, or forest construction within the Fender's Blue Zone on lots created after July 31, 2009 by partition or subdivision;
- Ground disturbing activities on private lands within the Fender's Blue Zone (e.g., constructing a new road within a property, plowing to create a new agricultural field or grading for vineyards) impacting Fender's blue butterfly habitat for which a County permit or authorization is not required;
- Research beyond monitoring or adaptive management measures identified in the HCP; and
- Grazing occurring on public lands with the Covered Species that does not comply with best management practices as described in Appendix J: Prairie Habitat Vegetation Management Guidelines.

Activities not covered under this Plan because they will not result in new impacts to the Covered Species, beyond those that have occurred prior to this Plan, and therefore do not require incidental take coverage, include:

- Maintaining an existing garden, lawn, landscaped area or driveway; and
- Vegetation clearing to maintain the County recommended 30' fire break around existing structures or any other ground disturbing activity within 30' of an existing permanent structure within the Fender's Blue Zone. The 30' fire break around existing structures is assumed to have been disturbed during construction or landscaping, and therefore is unlikely to support Fender's blue butterfly habitat.

Activities not requiring incidental take coverage because they are likely to result in a net long-term benefit to the species are discussed in Section 1.4.0.5.

---

<sup>7</sup> July 31, 2009 was the date of the impacts analysis for the Fender's Blue Zone.

# 5 Impacts

Incidental take of the Covered Species is determined by tracking loss of habitat for butterflies (host and native nectar plants) or loss of individual covered plants. This chapter describes and quantifies the unavoidable impacts to the Covered Species that are predicted to result from Covered Activities over the 50 year term of the HCP. The amount of take identified here (Table 5.1) is what Benton County requests from the USFWS and ODA (plants only) through an incidental take permit. Chapter 6: Conservation Measures describes the measures to avoid, minimize, and mitigate for this take. Any additional take beyond this estimate will require separate negotiations with USFWS and/or ODA, or an amendment to the incidental take permit and HCP that involves adding Conservation Measures to offset the additional impacts.

## 5.1 Quantifying Impacts

### 5.1.0 Fender's Blue Butterfly

For Fender's blue butterfly, incidental take is quantified based on impacts to two components of butterfly habitat: Kincaid's lupine and nectar plants (Table 2.1). The following steps were taken to quantify potential take of Fenders blue butterfly habitat:

- **Survey and Map Habitat:** Gather information about population locations and habitat conditions for Fender's blue butterfly, Kincaid's lupine, and nectar species during four years of field work throughout Benton County, in which approximately 4,010 ha (9,910 ac) were surveyed.
- **Establish Fender's Blue Zone Map:** Develop a map to delineate a region of potential habitat based on known Fender's blue butterfly population locations, and typical butterfly dispersal (travel) distances.
- **Forecast Construction Impacts:** Estimate the amount of area within the mapped butterfly habitat likely to be impacted over the next 50 years.
- **Measure Habitat Occupancy:** Estimate the proportion of this area likely to contain Kincaid's lupine and nectar plants.
- **Determine Take:** Calculate the total area of habitat loss to estimate take of Fender's blue butterfly habitat.

This process is described below along with any assumptions used to complete the analysis.

#### 5.1.0.0 Delineating Suitable Habitat: Fender's Blue Zone Mapping

Using data gathered during four years of field surveys of approximately 4,010 ha (9,910 ac) throughout Benton County for the HCP, a map of known or likely suitable

Table 5.1 Total take requested for permanent and short term impacts to Covered Species resulting from Covered Activities by Benton County/Cooperators throughout the County, and home, farm and forest construction on private lands within the Fender's Blue Zone.

	Bradshaw's lomatium (#)	Willamette daisy (#)	Peacock larkspur (#)	Nelson's checkermallow (#)	Kincaid's lupine outside the Fender's Blue Zone	Kincaid's lupine inside the Fender's Blue Zone	Native Nectar for Fender's blue (m <sup>2</sup> )	Non-Native Nectar for Fender's blue (m <sup>2</sup> )	Taylor's checkerspot habitat (m <sup>2</sup> )
<b>Permanent Impacts from Covered Activities</b>									
<b>Private lands:</b>									
<b>Home, Farm and Forest Construction</b>	-	-	-	-	-	346	5364	8835	-
<b>Telephone Utility Construction and Maintenance</b>	-	-	-	-	-	6.4	101.1	137.4	-
<b>Natural Gas Utility Construction and Maintenance</b>	-	-	-	-	-	0.2	1.4	1.4	-
<b>Private lands subtotal</b>	-	-	-	-	-	352.6	5466.5	8973.8	-
<b>Benton County &amp; Cooperator Lands:</b>									
<b>Public Service Facilities Construction</b>	-	-	-	-	-	12.3	222	366	-
<b>Transportation Activities and Authorized Work in Rights-of-Way</b>									
Construction, maintenance, utility work and road approach	-	-	7	169	4.3	35	2732	2673	-
Maintenance, utility and road approach outside known populations <sup>a</sup>	-	-	19	27	0.1	1.3	61	60	-
<b>Water and Wastewater Management</b>	-	-	-	10	-	-	-	-	-
<b>Agriculture</b>	-	-	-	5	-	-	-	-	-
<b>Emergency Response Activities</b>	2	1	30	11	3.4	1.1	88	146	57
<b>County &amp; Cooperator lands subtotal</b>	2	1	56	222	7.8	49.2	3103	3244	57
<b>Permanent Impacts Total</b>	<b>2</b>	<b>1</b>	<b>56</b>	<b>222</b>	<b>7.8</b>	<b>401.8</b>	<b>8570</b>	<b>12218</b>	<b>57</b>
<b>Short Term Impacts from Covered Activities<sup>b</sup></b>									
<b>Benton County &amp; Cooperator Lands:</b>									
<b>Parks/Natural Areas/Open Space Management<sup>b</sup></b>									
Voluntary habitat restoration, enhancement, and management	249 <sup>c</sup>	1,426,739 <sup>c</sup>	274,635 <sup>c</sup>	5,552,250 <sup>c</sup>	418 <sup>c</sup>	2,649 <sup>c</sup>	4,406 <sup>d</sup>	n/a	2,872 <sup>d</sup>
<b>HCP Implementation Activities<sup>b</sup></b>									
Habitat restoration, enhancement, and management for mitigation	86 <sup>c</sup>	10,798 <sup>c</sup>	7,280 <sup>c</sup>	1,097,575 <sup>c</sup>	220 <sup>c</sup>	17,819 <sup>c</sup>	6,756 <sup>d</sup>	n/a	17 <sup>d</sup>
Monitoring	4	11	34	29	207	9	244	n/a	59
Seed Collection (annual maximum number of seeds to be collected)	748 <sup>c</sup>	23,082 <sup>c</sup>	119,838 <sup>c</sup>	2,235,060 <sup>c</sup>	2,468 <sup>c</sup>	3,242 <sup>c</sup>		n/a	
<b>Short Term Impacts Total</b>	<b>1,087</b>	<b>1,460,630</b>	<b>401,787</b>	<b>8,884,914</b>	<b>3,313</b>	<b>23,720</b>	<b>11,405</b>	<b>n/a</b>	<b>2,948</b>

<sup>a</sup> Impacts to currently unknown populations in unsurveyed areas estimated at 3% of existing Covered Plant populations in ROW.

<sup>b</sup> Short term impacts from habitat restoration, enhancement and management do not require mitigation.

<sup>c</sup> Estimated number of seeds affected, based on average seed production described in Chapter 2.

<sup>d</sup> Refers to seeds produced by host/nectar plants within the identified area. Direct impacts to butterfly eggs/larvae from restoration work included in Tables 5.7-5.8.

Fender's blue butterfly habitat (the "Fender's Blue Zone") was developed to identify where in Benton County take of the butterfly's habitat might occur (Figure 5.1).

To develop this map:

- 1) All areas within 2 km (1.2 mi) of a known butterfly population were mapped by placing a 2 km (1.2 mi) buffer around known butterfly locations using GIS. Two kilometers (1.2 mi) is the typical maximum dispersal distance of Fender's blue butterfly between lupine patches (USFWS 2006).
- 2) Prairie, grassland, and oak savanna habitats were overlaid on the buffered region to identify areas within butterfly dispersal distance capable of providing habitat for the butterfly. Existing maps of historic vegetation in the Willamette Valley (Christy 2005) as well as 2005 aerial photos showing current vegetation were used to map habitat within the buffered area. Historic maps were used to include some areas which were prairie habitat at the time the Willamette Valley was surveyed and settled and may still support limited butterfly habitat, but have started to become forest over time. In areas where on-the-ground surveys have not been completed, potential butterfly habitat contiguous with habitat within the buffer areas, and/or forming a natural, connecting corridor between these areas was also included. These areas provide critical connectivity (stepping stones) between dispersal zones, and have a far greater likelihood to support Kincaid's lupine used by Fender's blue butterflies than other areas of the County.

The Fender's Blue Zone includes nectar and dispersal zones.

- The nectar zone includes butterfly habitat within 0.5 km (0.3 mi) of a known Fender's blue butterfly population. Fender's blue butterflies are estimated to nectar most heavily within 0.5 km (0.3 mi) of their natal Kincaid's lupine patch (Cheryl Schultz, Personal Communication 2007).
  - Nectar species (Table 2.1) and Kincaid's lupine within this zone are critical for the butterfly, and any impact to these species in this zone is considered take and requires avoidance, minimization or mitigation. Total impacts to both native and non-native nectar species are enumerated in Table 5.1; however, mitigation will only be required for native nectar species. See Section 6.3 Mitigation Requirements for more information.
- The dispersal zone includes butterfly habitat within 2 km (1.2 mi) of the known Fender's blue butterfly population or in the corridor areas between populations.
  - Kincaid's lupine in the dispersal zone is critical to host any dispersing Fender's blue and support establishment of new butterfly populations. Therefore any impacts to Kincaid's lupine in this zone are considered take and require avoidance, minimization or mitigation.

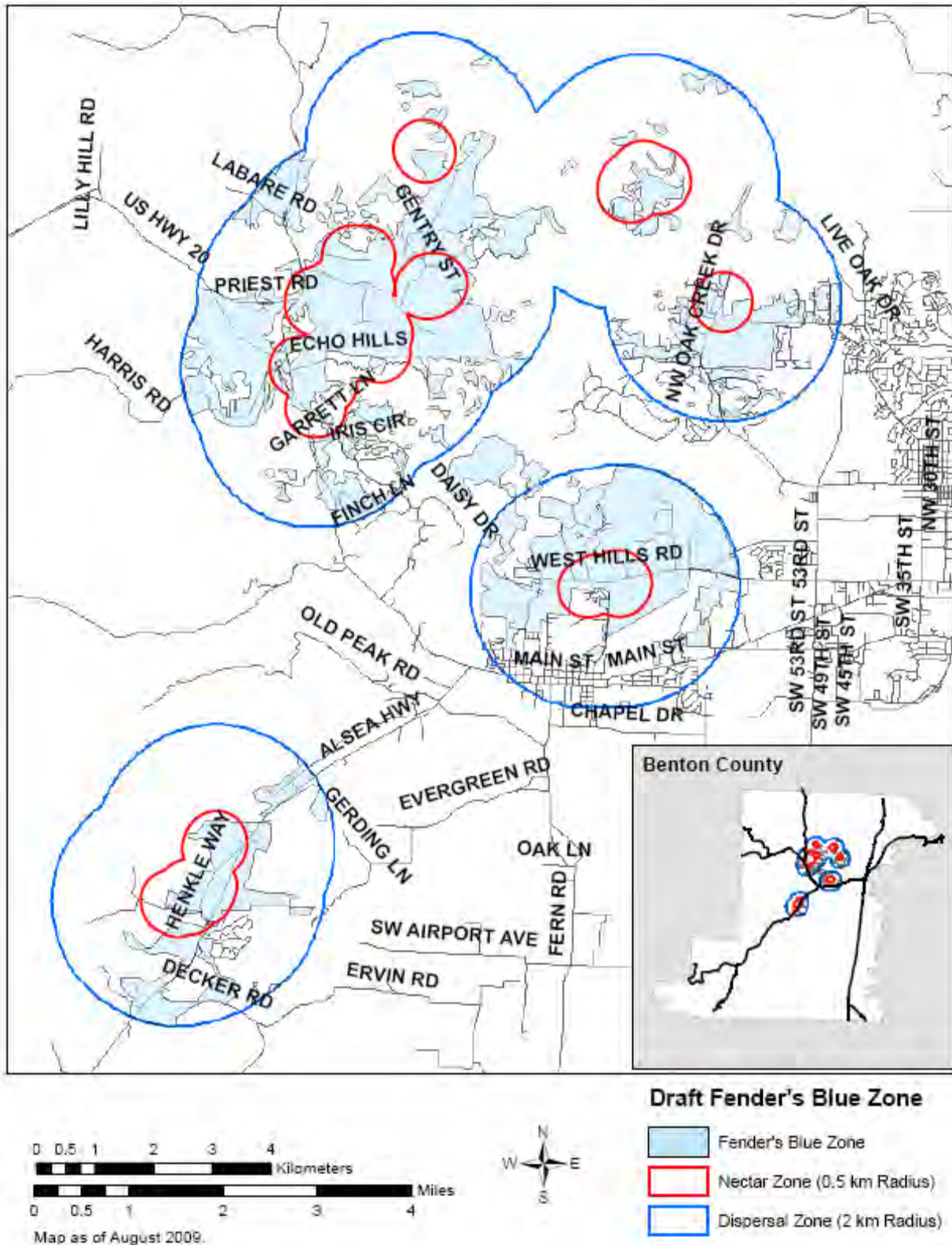


Figure 5.1 Map of Fender's Blue Zone, showing the 0.5 km nectar zone and the 2 km dispersal zone.

**Assumptions for Fender's blue butterfly:**

1. Butterflies disperse up to 2 km (1.2 mi) to travel between Kincaid's lupine patches.
2. Butterflies travel up to 0.5 km (0.3 mi) from their natal Kincaid's lupine patch to forage for nectar.
3. Where survey information is lacking, butterflies may occur in the corridors of habitat between and contiguous with known dispersal zones.
4. No other butterfly populations are present in the County, based on survey information through 2009. Lands adjacent to butterfly populations created through habitat restoration or physical reintroductions are covered under the Principle described in Section 1.4.0.5.

If new scientific data determines an increased or decreased dispersal distance or nectaring distance for Fender's blue butterfly, this HCP shall be modified to address such information as appropriate and practicable.

**5.1.1 Taylor's Checkerspot Butterfly**

Incidental take for Taylor's checkerspot butterfly is quantified on the basis of area of known occupied habitat (nectar plants and host plants) impacted. Known occupied habitat for this butterfly is quite limited and dispersal and nectaring distances are poorly understood (Stinson 2005). The best available information estimates this species is likely to disperse approximately 1.5 km (0.93 mi) between habitat patches (USFWS 2008b). We estimate that host and nectar species for the butterfly cover 10% of the ground area within habitat occupied by Taylor's checkerspot butterfly. For example, there are 174,015 m<sup>2</sup> (1,873,082 ft<sup>2</sup>) of meadow habitat at Beazell Memorial Forest. Taylor's are known to use approximately 1/3 of that habitat (Al Kitzman, personal Communication), or 57,425 m<sup>2</sup> (618,116 ft<sup>2</sup>). Of that habitat, we estimate 10% of it is covered with host and/or nectar plants for the butterfly, or 5,743 m<sup>2</sup> (64,811.6 ft<sup>2</sup>).

**5.1.1.0 Delineating Suitable Habitat for Taylor's Checkerspot**

Taylor's checkerspot is currently only found on Benton County owned lands and privately owned lands. Based on current population locations and the likely dispersal distance of 1.5 km (0.93 mi), the butterfly is likely only to disperse to lands under Benton County or private ownership. Figure 5.2 shows potential Taylor's checkerspot habitat; it delineates open grassland habitat within the likely dispersal distance (1.5 km [0.9 mi]) of a site where documented Taylor's populations occur.

As the species is currently a candidate species, and not listed as threatened or endangered, this Plan only addresses Taylor's checkerspot on County lands. In the event that the species becomes listed as threatened or endangered, Benton County may need to consult with USFWS to determine whether revision of its private lands building permit issuance processes or modification of the HCP is necessary.

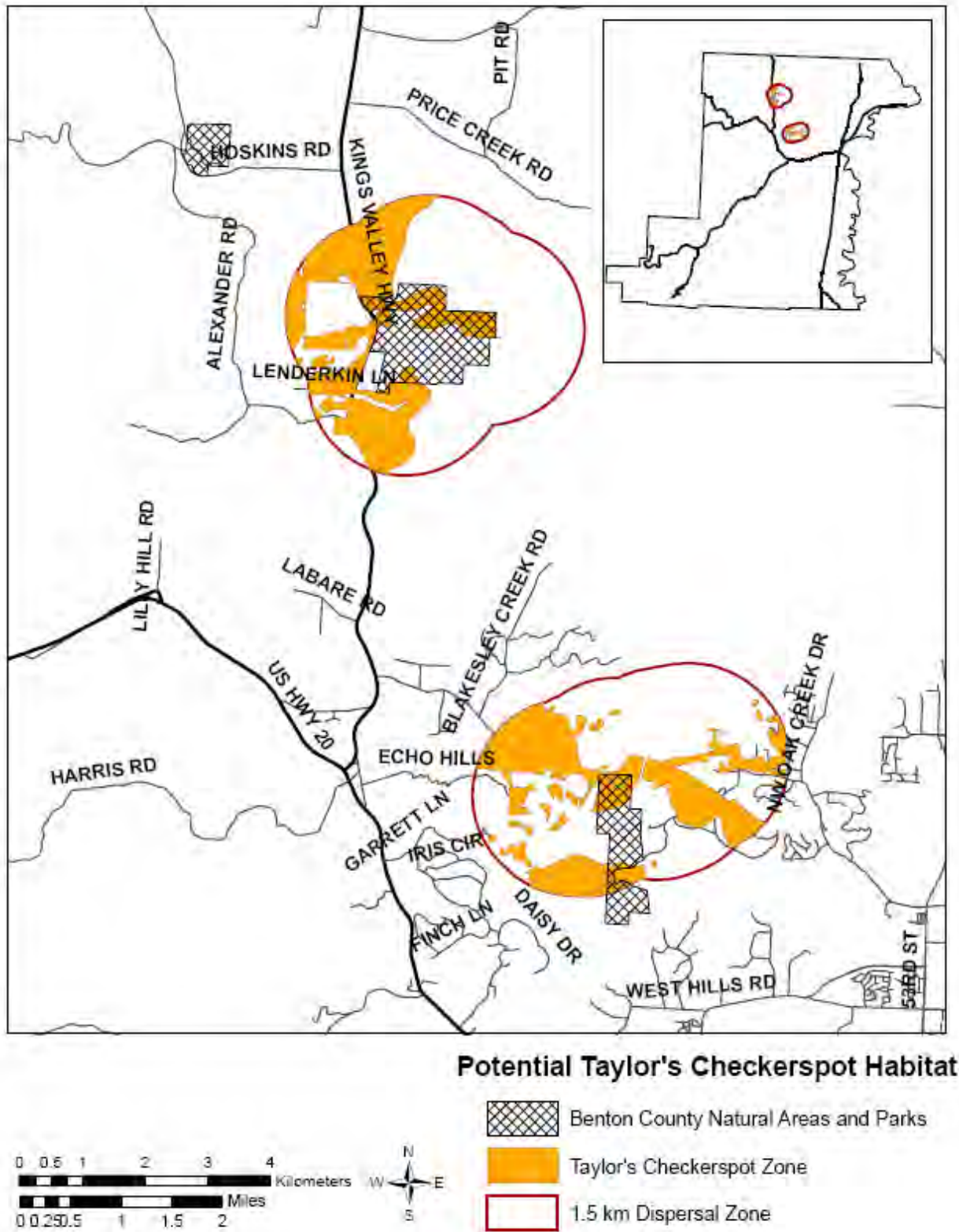


Figure 5.2 Potential habitat for Taylor's checkerspot butterfly in Benton County based on a 1.5 km likely dispersal distance and currently known locations.



### 5.1.2 Plants

Impacts to Kincaid's lupine are quantified on the basis of square meters of foliar cover impacted. Impacts to all other covered plant species are quantified on the basis of individual plants impacted (see Section 7.2.1.2 for more information).

## 5.2 Estimating Impacts to Covered Species from Covered Activities

This section compares the Covered Activities data with Covered Species occurrences documented in recent field surveys conducted for this Plan and data from the Oregon Natural Heritage Information Center (ORNHIC) to describe the amount of incidental take and related impacts expected to result from Covered Activities. Take requested is listed by activity in Table 5.1.

This section includes the potential direct and indirect impacts resulting from Covered Activities. Direct impacts to the Covered Species result from activities causing ground disturbance or removing land cover, habitat, or populations (or portions of populations) of Covered Species. Indirect impacts are caused by the Covered Activities but occur, or are reasonably certain to occur, later in time. The Conservation Measures identified in this Plan (Chapter 6) are designed to avoid, minimize and mitigate for direct and indirect impacts resulting from Covered Activities.

### 5.2.0 Home, Farm and Forest Construction

#### 5.2.0.0 Take Requested for Impacts to Fender's Blue Butterfly Habitat from Home, Farm and Forest Construction

The following total impacts to Fender's blue butterfly habitat are anticipated over the course of the incidental take permit (50 years) as a result of County permitted or authorized home, farm and forest construction (as covered under the HCP) (Table 5.1).

- Ground disturbance will occur on up to 122.5 ha (305.8 ac), which represents 3.8% of the overall Fender's Blue Zone habitat. Within the disturbed area there will be impacts of up to:
  - 346 m<sup>2</sup> (3,730 ft<sup>2</sup>) of Kincaid's lupine in the nectar and dispersal zone
  - 5,364 m<sup>2</sup> (57,740 ft<sup>2</sup>) of native nectar species in the nectar zone
  - 8,835 m<sup>2</sup> (95,102 ft<sup>2</sup>) of non-native nectar species in the nectar zone

The analysis of impacts was accomplished by estimating the following:

- Kincaid's lupine and nectar species occupancy (% cover) within the Fender's Blue Zone.
- Impact area for home, farm and forest construction.
- Number of Benton County home, farm and forest construction permit or authorization (Agricultural building) requests anticipated during the incidental take permit term (50 yrs).

**5.2.0.1 Modeling Lupine and Nectar Occupancy in the Fender's Blue Zone**

The proportion of the nectar zone and dispersal zone habitat within the Fender's Blue Zone that includes Kincaid's lupine (lupine occupancy) was estimated using data from field surveys conducted between 2006 and 2009. Specifically in the identified Fender's Blue Zone, a total of 872 ha (2,155 ac) of prairie, grassland, and oak savanna habitats were surveyed and 0.24 ha (0.60 ac) of Kincaid's lupine foliar cover was recorded, resulting in an estimated average lupine cover of 0.028%.

The proportion of the nectar zone habitat that includes nectar species (nectar occupancy) was estimated using community composition data collected in 2009. The data were collected from 64 5 m x 5 m (16.4 x 16.4 ft) vegetation plots placed at randomly selected sites surveyed within the greater area of the Fender's Blue Zone. The average percent cover of nectar plants (both native and non-native species) was 4.5% (1.7% native and 2.8% non-native).

**5.2.0.2 Estimating Impact Area from Home, Farm, and Forest Construction Projects in the Fender's Blue Zone**

Average impact area for home, farm, and forest construction projects was estimated by GIS analysis of Benton County taxlot data in combination with analysis of permits on file, and is listed in Table 5.2. Dwelling and accessory structure size and driveway width were averaged across 30 randomly selected taxlots in the Fender's Blue Zone. Average driveway length, already compiled in the Benton County GIS database, was calculated from all driveways in the Fender's Blue Zone. Average agricultural building and medical hardship dwelling size and the area of impact from utilities (e.g., electrical) and additions to structures were calculated by the Benton County Community Development Department. Average impact area for a septic system was calculated by the Benton County Environmental Health Department. A 9.14 m (30 ft) wide firebreak buffer was added to the footprint of all new structures to account for the fire safety buffer the County recommends, and to account for disturbance from construction and landscaping. This increased the average structure footprint area used for analysis (Table 5.2).

**5.2.0.3 Predicted Dwelling Construction and Related Permits**

Anticipated future dwelling construction-related permit requests (including dwelling, utilities, driveway and septic) in the Fender's Blue Zone were estimated by identifying all buildable taxlots in the nectar and dispersal zones existing as of July 31, 2009, and evaluating permit request trends. Across all buildable zones, taxlots of less than 0.25 acres were not considered developable in the analysis, as they are likely too small for construction of a dwelling with septic and required setbacks. Home, farm, and forest construction activities on these lots are still covered, but are expected to occur infrequently (due to setback limitations) and will therefore have little impact.

Rural/Urban Residential zones and Exclusive Farm Use/Forest Conservation Zones were assessed separately. See Table 5.3 for the number of lots identified and resulting impacts for each type of construction.

### Rural and Urban Residential Zones

Permit trends indicate private landowners of each vacant lot in these residential zones (UR/RR) in the Fender's Blue Zone will construct a dwelling (either site built or manufactured) with utilities, one driveway, and a septic system. This will result in 156 new dwellings during the 50 year HCP.

Table 5.2 Average impact area and structure size within the Fender's blue butterfly Zone.

<b>Average Impacts</b>	<b>Area (m<sup>2</sup>)</b>	<b>Area (ft<sup>2</sup>)</b>	<b>Area (acres)</b>
Dwelling footprint	246.4	2651.8	0.061
Dwelling footprint + firebreak <sup>#</sup>	1154.9	12431.3	0.285
<b>Dwelling (with firebreak, utilities, driveway, septic)</b>	<b>2760.2</b>	<b>29715.8</b>	<b>0.7</b>
Accessory Structure	101.4	1091.2	0.025
Accessory Structure + firebreak <sup>#</sup>	804.1	8655.2	0.199
<b>Accessory Structure (with firebreak, utilities)</b>	<b>831.9</b>	<b>8955.2</b>	<b>0.2</b>
Agricultural Building	501.7	5400.0	0.124
Agricultural Building + firebreak <sup>#</sup>	1655	17818	0.409
<b>Agricultural Building (with firebreak, utilities)</b>	<b>1683.2</b>	<b>18118.2</b>	<b>0.4</b>
Medical Hardship Dwelling	139.4	1500.0	0.034
<b>Medical Hardship Dwelling + firebreak<sup>#</sup></b>	<b>955.9</b>	<b>10290.0</b>	<b>0.236</b>
<b>Added Utilities, Septic and Driveway (for 10% of Medical Hardship Dwellings)</b>	<b>1605.4</b>	<b>17284.5</b>	<b>0.4</b>
<b>Additions to Structures</b>	<b>77.2</b>	<b>831.0</b>	<b>0.019</b>
Driveway*	184.0	1984.5	0.046
Septic	1393.5	15000.0	0.344
Utilities	27.9	300.0	0.007

<sup>#</sup>County recommended 30' firebreak around buildings.

\*Driveway length calculated from all driveways in Fender's blue zone n=708.

### Exclusive Farm Use and Forest Conservation Zones

Analysis of land use approvals for dwellings in the Farm (EFU) and Forest (FC) zones indicates an average of 11.625 new dwellings per year countywide. The current density of dwellings on resource-zoned land in the Fender's Blue Zone is virtually the same as the density of dwellings on resource-zoned land county-wide (79.1 ac/dwelling vs. 78.6 ac/dwelling), implying that resource land in the Fender's Blue Zone experiences approximately the same demand for dwellings as resource land in the rest of the county. The Fender's Blue Zone contains 6.1% of the county's resource land. Therefore, 6.1% of 11.625 new dwellings per year equal 0.71 dwellings per year in the Fender's Blue Zone, for a total of 39 new dwellings over the 50 year HCP.

Table 5.3 Estimated take of Fender's blue butterfly habitat (in m<sup>2</sup> and ft<sup>2</sup> [shaded] to result from home, farm and forest construction on private lands within the Fender's Blue Zone during the 50 year incidental take permit term.

	Estimated # Permits / Authorizations	Estimated Footprint per Project		Estimated Occupancy (%)		Estimated Total Impacts (m <sup>2</sup> )		Estimated Total Impacts (ft <sup>2</sup> )		
		m <sup>2</sup>	ft <sup>2</sup>	Kincaid's lupine	Native Nectar	Kincaid's lupine	Native Nectar	Kincaid's lupine	Native Nectar	
Nectar Zone	Vacant Lot Dwelling Construction in Residential Zones	23	2760	29712	0.028%	1.70%	17.8	1079.3	191	11617
	Dwelling Construction in Farm and Forest Zones	16	2760	29712			12.2	738.7	131	7952
	Accessory Structure Construction (all zones)	153	832	8955			35.6	2160.0	383	23251
	Agricultural Building Construction	35.4	1683	18118			16.7	1012.6	180	10900
	Additions to Structures	123	77	831			2.7	161.3	29	1737
	Medical Hardship Dwellings	11.2	956	10290			3.0	181.6	32	1955
	Added Driveway, Septic and Utilities for 10% of Medical Hardship Dwellings	1.1	1605	17281			0.5	30.5	5	328
	<b>Sub-Total Impacts</b>						<b>88</b>	<b>5364</b>	<b>951</b>	<b>57740</b>
Dispersal Zone (outside nectar)	Vacant Lot Dwelling Construction in Residential Zones	133	2760	29712	0.028%	n/a	102.8	-	1106	-
	Dwelling Construction in Farm or Forest Zones	23	2760	29712			17.8	-	191	-
	Accessory Structure Construction (all zones)	360	832	8955			83.8	-	902	-
	Agricultural Building Construction	83.4	1683	18118			39.3	-	423	-
	Additions to Structures	290	77	831			6.3	-	67	-
	Medical Hardship Dwellings	26.3	956	10290			7.0	-	76	-
	Added Driveway, Septic and Utilities for 10% of Medical Hardship Dwellings	2.6	1605	17281			1.2	-	13	-
	<b>Sub-Total Impacts</b>						<b>258</b>	<b>0</b>	<b>2779</b>	<b>0</b>
<b>Grand Total</b>							<b>346</b>	<b>5364</b>	<b>3730</b>	<b>57740</b>

#### **5.2.0.4 Predicted Accessory Structure Construction and Related Permits**

Building permit trends within the Fender's Blue Zone indicate an average of 10.25 new accessory structures (with utilities) are constructed per year across all zoning types, for a total of 513 new accessory structures in the Fender's Blue Zone over the 50 year HCP. The estimated impact is shown in Table 5.3.

#### **5.2.0.5 Predicted Agricultural Building Authorizations**

Agricultural buildings can be constructed on any land put to commercial agricultural use. This is most likely to be in Exclusive Farm Use (EFU) zoning, although it can be on Forest Conservation (FC), or other zoning as well. Permit trends indicate that on average, 2.375 agricultural buildings (with utilities) will be constructed per year in the Fender's Blue Zone, for a total of 119 new agricultural buildings over 50 years. The estimated impact is shown in Table 5.3.

#### **5.2.0.6 Predicted Medical Hardship Dwelling Requests**

Medical hardship dwellings may be placed in any zone. While these are technically temporary dwellings, generally site modifications (e.g., gravel, utilities installation, or concrete pad) are permanent. Permit trends within the Fender's Blue Zone indicate an average of 0.75 requests per year (all zones included), for a total of 37.5 new medical hardship dwelling placements for the term of the incidental take permit. Permit trends also suggest that roughly 10% of all medical hardship dwellings require their own driveway and septic (in addition to the required utilities). The total estimated impact added for these special cases is shown in Table 5.3.

#### **5.2.0.7 Predicted Addition to Structure Permit Requests**

Permit trends indicate 8.25 requests for structure additions (e.g., new attached garage) per year (all zones), for a total of 413 additions in the Fender's Blue Zone during this Plan. The estimated impact is shown in Table 5.3.

### **5.2.1 Utilities Construction and Maintenance on Private Lands**

#### **5.2.1.0 Telephone Utilities**

Telephone utility construction and maintenance activities, primarily copper and fiber cable replacement, completed by Pioneer Telephone Cooperative on private lands within the Fender's Blue Zone will disturb 2.3 ha (5.7 ac), or 0.07% of the Fender's Blue Zone, and are estimated to result in take of 6.4 m<sup>2</sup> (69 ft<sup>2</sup>) of Kincaid's lupine, 101.1 m<sup>2</sup> (1,088 ft<sup>2</sup>) of native nectar species, and 137 m<sup>2</sup> (1,479 ft<sup>2</sup>) of non-native nectar species. This estimate assumes roughly 50% of all fiber replacements will be bored (directional drilled), 25% will be plowed within an existing road/driveway, 12.5% to be plowed immediately adjacent to an existing road/driveway, and 12.5% will be plowed cross-country (G. Vick, Pers. comm. 2009).

Table 5.4 Estimated impacts for telephone utility construction and maintenance by Pioneer Telephone Cooperative on private lands in the Fender's Blue Zone.

Copper Cable for Replacement	Length of Cable		# Bores	Impact Area <sup>a,b,c</sup>		Impacts to Lupine & Native Nectar Species <sup>d</sup>			
	m	ft		m <sup>2</sup>	ft <sup>2</sup>	Lupine (m <sup>2</sup> )	Lupine (ft <sup>2</sup> )	Nectar (m <sup>2</sup> )	Nectar (ft <sup>2</sup> )
50% Bored (average bore length = 300 ft)	13391	43933	147	805.7	8673.0	0.23	2.43	3.88	41.77
25% Plowed in Roadway	6695	21966		0	0	0	0	0	0
12.5% Plowed in Vegetation along Roadway	3348	10983		10203.3	109831.3	2.86	30.75	40.17	432.45
12.5% Plowed in Vegetation Cross Country	3348	10983		10203.3	109831.3	2.86	30.75	49.13	528.90
Fiber Cable for Replacement	Length of Cable		# Bores	Impact Area <sup>a,b,c</sup>		Impacts to Lupine & Native Nectar Species <sup>d</sup>			
	m	ft		m <sup>2</sup>	ft <sup>2</sup>	Lupine (m <sup>2</sup> )	Lupine (ft <sup>2</sup> )	Nectar (m <sup>2</sup> )	Nectar (ft <sup>2</sup> )
50% bored (average bore length = 300 ft)	1135	3724	13	71.3	767.0	0.02	0.21	0.34	3.69
25% Plowed in Roadway	568	1862		0	0	0	0	0	0
12.5% Plowed in Vegetation along Roadway	284	931		864.9	9310.0	0.24	2.61	3.41	36.66
12.5% Plowed in Vegetation Cross Country	284	931		864.9	9310.0	0.24	2.61	4.16	44.83
<b>Total Impacts:</b>						<b>6.4</b>	<b>69.4</b>	<b>101.1</b>	<b>1088.3</b>

<sup>a</sup> Assumes impact per bore of 59 ft<sup>2</sup> (48 ft<sup>2</sup> from machine, 2 ft<sup>2</sup> entry pit, 9 ft<sup>2</sup> exit pit).

<sup>b</sup> Assumes no impact when cable plowed in existing road.

<sup>c</sup> Assumes 10 ft wide plow disturbance footprint.

<sup>d</sup> Assumes lupine occupancy of 0.028%, native nectar occupancy along roadsides of 1.39%, and native nectar occupancy of 1.7% for non-roadside habitat.

### 5.2.1.1 Natural Gas Utilities

Natural gas utility construction and maintenance activities completed by NW Natural on private lands within the Fender's Blue Zone will disturb 0.7 ha (1.7 ac), or 0.02% of the area of the Fender's Blue Zone, and are estimated to result in take of 0.2 m<sup>2</sup> (2.2 ft<sup>2</sup>) of Kincaid's lupine, 1.4 m<sup>2</sup> (15.4 ft<sup>2</sup>) of native nectar species (Table 5.5), and 1.4 m<sup>2</sup> (15.4 ft<sup>2</sup>) of non-native nectar species. This estimate assumes roughly 90% of all new line construction and line replacements will be excavated in existing roads, and 10% will be excavated immediately adjacent to an existing road/driveway (J. Payson, Pers. comm. 2009).

### 5.2.2 Public Service Facility Construction

#### 5.2.2.0 Total Estimated Impacts from Public Service Facility Construction

Rural schools and fire stations can be constructed on EFU or FC lands in Benton County. The County estimates two rural schools and two fire stations may be constructed within the Fender's Blue Zone (potentially in the Wren and Greasy Creek areas). As the potential impact to Fender's blue butterfly habitat from these facilities is much larger than a regular home, farm or forest construction project, and involves more time-

intensive planning, Benton County will require the properties to be surveyed for Fender's blue butterfly habitat prior to construction. However, in the event that impacts to Fender's blue butterfly habitat cannot be avoided or minimized through planning, Benton County requests take for 12.3 m<sup>2</sup> (117.5 ft<sup>2</sup>) of Kincaid's lupine, 222 m<sup>2</sup> (2,393 ft<sup>2</sup>) of native nectar and 366 m<sup>2</sup> (3,940 ft<sup>2</sup>) of non-native nectar species for Public Service Facility Construction (Table 5.6). Benton County does not anticipate impacts to the other Covered Species from this activity.

Table 5.5 Estimated impacts for natural gas utility construction and maintenance by NW Natural on private lands in the Fender's Blue Zone.

Private Lands- New Lines	Length of Line		Disturbance Area <sup>b</sup>				Impacts <sup>a,c</sup>			
			Nectar Zone		Dispersal Zone (entire)		Lupine		Nectar	
	m	ft	m <sup>2</sup>	ft <sup>2</sup>	m <sup>2</sup>	ft <sup>2</sup>	m <sup>2</sup>	ft <sup>2</sup>	m <sup>2</sup>	ft <sup>2</sup>
90% Trenched in Roadway	2913	9558	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% Trenched in Vegetation along Roadway	324	1062	27.50	443.4	295.98	3186.0	0.08	0.89	0.57	6.16
Private Lands- Replacement Lines	Length of Line		Disturbance Area <sup>b</sup>				Impacts <sup>a,c</sup>			
			Nectar Zone		Dispersal Zone (entire)		Lupine		Nectar	
	m	ft	m <sup>2</sup>	ft <sup>2</sup>	m <sup>2</sup>	ft <sup>2</sup>	m <sup>2</sup>	ft <sup>2</sup>	m <sup>2</sup>	ft <sup>2</sup>
90% Trenched in Roadway	4141	13585	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% Trenched in Vegetation along Roadway	460	1509	39.08	665.1	420.67	4528.2	0.12	1.27	0.86	9.24
<b>Total Impacts:</b>							0.20	2.16	1.43	15.41

<sup>a</sup> Assumes no impact when line excavated into existing road.

<sup>b</sup> Assumes 3 ft wide trenching disturbance footprint.

<sup>c</sup> Assumes lupine occupancy of 0.028%, native nectar occupancy along roadsides of 1.39%

### 5.2.2.1 Rural School Construction

Benton County estimates two rural schools may be constructed on property acquired in the Fender's Blue Zone during the 50 year term of the incidental take permit. For purposes of determining potential impacts, these two schools are estimated as being similar in size to the Muddy Creek Charter School – 1.72 ha (4.27 ac) and the Kings Valley Charter School – 1.93 ha (4.78 ac). Benton County estimates a total of 36,437 m<sup>2</sup> (392,220 ft<sup>2</sup>) (two schools of identical size) of ground disturbance will result from construction of the schools and associated parking lot, driveway, playgrounds/ball fields, and buffers, representing 0.11% of the total area in the Fender's Blue Zone.

Table 5.6 Estimated take of Fender’s blue butterfly habitat (in m<sup>2</sup> and ft<sup>2</sup> [shaded] from anticipated Public Service Facility Construction within the Fender’s Blue Zone during the 50 year incidental take permit term.

		# Constructed	Estimated Footprint per Project		Estimated Occupancy (%)		Estimated Total Impacts (m <sup>2</sup> )		Estimated Total Impacts (ft <sup>2</sup> )	
			m <sup>2</sup>	ft <sup>2</sup>	Kincaid's Lupine	Native Nectar	Kincaid's Lupine	Native Nectar	Kincaid's Lupine	Native Nectar
Nectar Zone	Rural Schools	0.60	18219	196110	0.028%	1.70%	3	185	32.7	1987
	Rural Fire District Stations	0.60	3725	40094			0.6	38	6.7	406
	<b>Total</b>	<b>1.2</b>	<b>21943</b>	<b>236204</b>			<b>3.7</b>	<b>222</b>	<b>39.4</b>	<b>2393</b>
Dispersal Zone (Outside Nectar)	Rural Schools	1.4	18219	196110	0.028%	N/A	7.2	N/A	77.1	N/A
	Rural Fire District Stations	1.4	3725	40094			1.5		0.0	
	<b>Total</b>	<b>2.8</b>	<b>21943</b>	<b>236204</b>			<b>8.6</b>		<b>-</b>	
<b>GRAND TOTAL</b>		<b>4.0</b>	<b>43887</b>	<b>472407</b>			<b>12.3</b>	<b>222</b>	<b>116.5</b>	<b>2393</b>



### **5.2.2.2 Rural Fire District Station Construction**

Benton County estimates two rural fire district stations may be constructed on property acquired in the Fender's Blue Zone during the 50 year term of the incidental take permit. These rural fire stations would be similar in size to a dwelling with two accessory structures. Benton County estimates a total of 7,449 m<sup>2</sup> (80,187 ft<sup>2</sup>) (two stations at 3,725 m<sup>2</sup> [40,094 ft<sup>2</sup>] each) of ground disturbance resulting from construction of the fire stations, driveway, parking, and buffer. This represents 0.02% of the total area of the Fender's Blue Zone.

### **5.2.3 Transportation Activities and Authorized Work in Rights-of-Way**

Total take requested for transportation and work in rights-of-way activities is included in Table 5.1.

#### **5.2.3.0 Type 1 and Type 2 Roadside Population Classification Criteria**

Known Benton County roadside populations of Covered Species were classified into two groups, Type 1 and Type 2 (see below), based on their size, connectivity potential, and quality of associated vegetation. These criteria have been applied to all currently known populations in Benton County rights-of-way (Table 5.7), and can be applied to any additional populations found during the incidental take permit term, though any impacts to these additional populations must not exceed those requested in Table 5.1. For definitions of "individuals" for each species, see Section 7.2.1.2.

Category A Criteria (1 of 2 criteria must be met):

1. Population size
  - Site must support  $\geq 60$  m<sup>2</sup> (646 ft<sup>2</sup>) of Kincaid's lupine, or  $\geq 200$  individuals of Nelson's checkermallow or peacock larkspur, or  $\geq 100$  m<sup>2</sup> (1,076 ft<sup>2</sup>) of Fender's blue butterfly habitat (Kincaid's lupine and native nectar species), of which at least 60% must be Kincaid's lupine cover. These size thresholds were selected for the covered plant species because this is the minimum size for a population to contribute to the recovery of the species (USFWS 2008b).
2. Rarity
  - Site supports naturally occurring Bradshaw's lomatium or Willamette daisy, neither of which is currently known to persist in a roadside right-of-way.

Category B Criteria (2 of 4 criteria must be met):

1. Population Size
  - Site must support  $>10$ m<sup>2</sup> (108 ft<sup>2</sup>) of Kincaid's lupine, or  $>50$  individuals of the other covered plants, or 15m<sup>2</sup> (162 ft<sup>2</sup>) of Fender's blue butterfly habitat (Kincaid's lupine and native nectar species), of which at least 60% must be Kincaid's lupine cover.
2. Connectivity

- Site contributes to connectivity by providing a stepping stone between naturally occurring or introduced populations of the Covered Species on protected lands that would otherwise be greater than 3 km (1.8 mi) apart (covered plants) or 2 km (1.2 mi) apart (Fender's blue butterfly habitat).
  - These distances are the maximum suggested separation between populations contributing to recovery (USFWS 2008b).
3. 3. Community composition
    - Site supports native vegetation by having >25% cover of native forb or grass species and less than 5% cover of A or B list noxious weed species.
  4. Uniqueness
    - Site must represent a unique facet of the species' ecology, e.g., the most northerly or southerly population in the species' range.

### **Type 1 Roadside Populations**

Roadside populations to be designated as Type 1 must meet one of the Category A criteria or two of the four Category B criteria.

### **Type 2 Roadside Populations**

Roadside populations not meeting the criteria established for Type 1 will be classified as a Type 2 roadside population.

#### **5.2.3.1 Assessing Impacts from Benton County Transportation Activities and Authorized Work in Rights-of-Way**

### **Type 1 Roadside Populations**

All impacts to Type 1 roadside populations will be avoided. Benton County will survey rights-of-way prior to road construction projects, and will avoid any populations found to meet the Type 1 Criteria. These sites have been prioritized for avoidance because of their biological importance due to large size, high quality of associated species, uniqueness and/or greater potential to provide connectivity. Any entity seeking a road approach permit, utility permit, or work in right-of-way permit in Type 1 right-of-way will not be covered under this Plan, and will be referred to USFWS and ODA.

### **Type 2 Roadside Populations**

Benton County requests take of all Type 2 roadside populations. The majority of impacts are likely to result from transportation construction projects (i.e., those described in the Benton County Transportation System Plan (2001)) including those identified in Table 5.7. Additional but currently unplanned construction projects may also result in impacts. Impacts may also occur from routine road maintenance, road approach, utility or other authorized work in rights-of-way. Impact avoidance or minimization may be possible in many cases, by following the guidelines identified in Appendix M: Roadside and Streambank Management Guidelines for Covered Plants. However, the County recognizes the inherent vulnerability of roadside populations and

Table 5.7 Type 1 and Type 2 roadside populations on Benton County rights-of-way. Sites with A, B, C or D following the same road name are sites at different locations along the same road.

	Kincaid's lupine inside the Fender's Blue Zone	Kincaid's lupine outside the Fender's Bue Zone	Peacock larkspur (#)	Nelson's checkermallow (#)
<b>Type 1 Roadside Populations</b>				
Decker Road A			248	
Decker Road B				600
Fern Road A			280	
McFarland Road			99	78
Tampico Road				44
West Hills Road	9.5			
<b>Sub-Total Type 1 Populations</b>	<b>9.5</b>	<b>0</b>	<b>627</b>	<b>722</b>
<b>Type 2 Roadside Populations</b>				
Bellfountain Road <sup>1</sup>				1
Bellfountain Road at Bruce Road <sup>2</sup>				14
Blakesley Creek Road A <sup>3</sup>	3			
Blakesley Creek Road B <sup>3</sup>	2			
Bruce Road		0.30		
Cardwell Hill Drive A <sup>4</sup>	2.50			
Cardwell Hill Drive B <sup>4</sup>	0.25			
Cardwell Hill Drive C <sup>4</sup>	2			
Chapel Drive <sup>5</sup>				18
Cherry Creek Road		0.25		
Fern Road B				6
Fern Road C				1
Fern Road D				52
Gellatly Way A	3.75			
Gellatly Way B	0.5			
Gellatly Way C		0.5		
Gellatly Way D		0.75		
Henkle Way	12.50		7	
Llewellyn Road				2
NW Harrison Boulevard <sup>6</sup>				69
NW Walnut Boulevard				6
Price Creek Road		1.5		
Tanager Road	7			
Ward Road		1		
Wren Road	1			
<b>Sub-Total Type 2 Populations</b>	<b>34.50</b>	<b>4.30</b>	<b>7.00</b>	<b>169.00</b>
<b>Grand Total</b>	<b>44.00</b>	<b>4.30</b>	<b>634</b>	<b>891</b>

<sup>1</sup> May be impacted by bridge improvement/replacement, realignment of Greenberry intersection, or road widening.

<sup>2</sup> All or part may be impacted by spot improvement at intersection or road widening.

<sup>3</sup> May be impacted by possible road widening and surface treatment.

<sup>4</sup> May be impacted if shoulders are added to road.

<sup>5</sup> May be impacted by bikeway between 19th Street and Bellfountain.

<sup>6</sup> All or part may be impacted widening and intersection improvement at Walnut Blvd, or by possible bikeway.

proposes pre- mitigating for additional unforeseen potential impacts to these populations in more secure areas (see Chapter 6).

### **5.2.3.2 Estimating Impacts to Fender's Blue Butterfly Native Nectar Species in ODOT and Benton County Rights-of-Way**

Impacts to nectar plants in roadside rights-of-way were estimated by quantifying the area of right-of-way in Fender's blue butterfly nectar zones and multiplying it by the average native nectar occupancy for roadsides (1.39%, obtained from roadside vegetation plot data collected during HCP development) in the Fender's Blue Zone. Non-native nectar species cover along roadsides was estimated at 1.36% cover.

ODOT requests take for all of its rights-of-way within the Fender's blue nectar zone. ODOT road maintenance activities will affect 3.9 km (2.4 mi) of right-of-way, or 5 ha (12.5 ac) within the Fender's blue nectar zone. This represents 0.15% of the overall Fender's Blue Zone area, and is predicted to result in take of 701 m<sup>2</sup> (7,550 ft<sup>2</sup>) of native nectar species, and 686 m<sup>2</sup> (7,387 ft<sup>2</sup>) of non-native nectar species.

Benton County requests take for nectar in all of its rights-of-way within the nectar zone of the Fender's Blue Zone. Impacts may result from routine road maintenance, road approach, utility work or other authorized work in rights-of-way. Benton County road maintenance activities will affect 15 km (9.3 mi) of County road and Public Road District right-of-way within the Fender's blue nectar zone, or 14.6 ha (36 ac). This represents 0.4% of the overall Fender's Blue Zone area, and is predicted to result in impacts to 2,031 m<sup>2</sup> (21,859 ft<sup>2</sup>) of native nectar species and 1,987 m<sup>2</sup> (21,387 ft<sup>2</sup>) of non-native nectar species. Work by Pioneer Telephone Cooperative will overlap with Benton County road maintenance activities. Of the County impacts, 59 m<sup>2</sup> (638 ft<sup>2</sup>) of impact to native nectar species and 57 m<sup>2</sup> (617 ft<sup>2</sup>) of impact to non-native nectar species is likely to result from work by Pioneer Telephone Cooperative.

### **5.2.3.3 Estimating Impacts to Covered Plants Outside Known Populations from Transportation Maintenance, Road Approach and Utility or Work in Rights-of-Way**

Benton County will complete surveys prior to implementing road construction projects and classify any populations found as Type 1 or Type 2 roadside populations. Recognizing the impracticality of surveying all roadsides before all activities related to routine maintenance, road approach, utility work or work in the right-of-way, the County requests take for impacts to populations of covered plants that may occur in the right-of-way outside established Special Management Areas (known populations) and/or impacts to plants that may be in the operational roadway (i.e., edge of pavement spraying that may impact seedlings recruiting in the gravel road edge). Potential take of the covered plant species resulting from these activities is estimated at 3% of the current known population sizes occurring on County road rights-of-way Special Management Areas.

## **5.2.4 Water and Wastewater Management**

Existing City of Corvallis water and sewer pipelines in the Plan Area will likely require maintenance and possibly replacement during the incidental take permit term. Future development may also require construction of new lines and structures. Most of these lines will be underground and may require excavation for access. Impacts to Covered Species identified during pre-project surveys will be avoided and minimized with use of appropriate vegetation management guidelines (Chapter 6). To account for the possibility that future development by City of Corvallis may require construction of water and wastewater infrastructure in areas with Nelson's checkermallow, take of 10 Nelson's checkermallow plants is requested (Table 5.1).

## **5.2.5 Parks/Natural Areas/Open Space Management Activities**

Take for short term impacts resulting from habitat restoration, enhancement, and management is requested for these activities (Table 5.1). These impacts do not require mitigation as they are expected to result in a net benefit to the Covered Species..

### **5.2.5.0 Park Development, Construction, and Maintenance**

Benton County and the Cooperators who own and/or manage parks, natural areas, and open spaces are responsible for conducting maintenance of infrastructure such as trails, roads, parking areas. Benton County and the Cooperators will implement avoidance measures (e.g., locating any new trails in forest edge rather than through a prairie) to ensure there are no impacts to the Covered Species.

#### **5.2.5.1 Recreation and Public Use**

Impacts to Covered Species from public use will be avoided (avoidance mechanisms are described in Chapter 6), thus, no take for public use is requested.

#### **5.2.5.2 Voluntary Habitat Restoration, Enhancement, and Management**

On-going (over the term of the incidental take permit), short term impacts from activities such as mowing, prescribed burning, and herbicide application activities intended to remove competition with non-native plants and enhance native prairie habitats will occur. These short-term adverse effects will be avoided or greatly minimized by following the recommended restoration, enhancement and management guidelines (Appendix J: Prairie Habitat Vegetation Management Guidelines), and are anticipated to have long-term benefit to the Covered Species (USFWS 2008a).

### **Fender's Blue Butterfly and Taylor's Checkerspot Butterfly**

Prescribed burning may result in 100% mortality of butterfly larvae in burned parcels. Burning is also predicted to result in mortality to 5% of the seeds in the soil seedbank and produced by existing Kincaid's lupine and nectar plants. Chemical treatments can largely avoid negatively impacting the butterflies, but incidental exposure may result in the death or injury of some butterfly larvae (<5% estimated) (USFWS 2008a). Take is

requested for these short term impacts to the butterfly populations (Table 5.1); detailed estimates of take by management treatment are presented in Table 5.8.

### **Covered Plants**

Take is requested for damage to seeds of the covered plants resulting from prescribed burning at covered parks/natural areas/open spaces in the amount of 5% of the existing populations (existing populations shown in Table 3.2) each time the sites are burned. Take resulting from prescribed fire is also requested for impacts to seeds of covered plants anticipated to be established through voluntary species introductions during the 50 year HCP. Anticipated species introductions include:

- 1,000 Nelson's checkermallow;
- 1,000 Willamette daisy;
- 500 peacock larkspur;
- 100 Bradshaw's lomatium; and
- 180 m<sup>2</sup> (1,938 ft<sup>2</sup>) of Kincaid's lupine.

Estimated total mortality to seeds of each species, if prescribed fire occurs 10 times over the course of the HCP, is identified in Table 5.1

## **5.2.6 Agricultural Activities**

### **5.2.6.0 Crop Production**

A Farm Services Contract at Owens Farm allows City of Corvallis property with Nelson's checkermallow to be used for grass crop production and harvest. Impacts have been avoided to these species to date, but the take of the five Nelson's checkermallow plants on the property is requested in the event the plants are inadvertently harmed as a result of farming activities (Table 5.1).

No take of Covered Species is anticipated or requested from agriculture activities on the City of Corvallis' Herbert Farm and Natural Area or Rock Creek properties.

## **5.2.7 HCP Implementation Activities**

### **5.2.7.0 Habitat Restoration, Enhancement, and Management for Mitigation**

This section addresses on-going, short term impacts to Covered Species that may result from habitat restoration, enhancement, and management activities (e.g., mowing, prescribed burn, and herbicide application) conducted for mitigation purposes over the term of the incidental take permit. The short-term adverse effects from this work will be avoided or greatly minimized by following the recommended restoration, enhancement and management actions (Appendix J: Prairie Habitat Vegetation Management Guidelines), and are expected to have long-term benefit to the Covered Species (USFWS 2008a). Impacts to the covered plants, and host and nectar species for the butterflies are included in Table 5.1.

**Fender’s blue butterfly and Taylor’s checkerspot butterfly**

Habitat restoration, enhancement, and management impacts to butterfly habitat for mitigation purposes are described in detail in Table 5.9. Activities will be conducted within the parameters identified in Appendix J: Prairie Habitat Vegetation Management Guidelines.

Table 5.8 Short term impacts to butterflies resulting from voluntary habitat restoration, enhancement and management activities over the 50 year HCP.

	Management Treatment	Treatment Frequency	Affected Habitat Component	Affected Habitat Component Area	Anticipated Impacts per Treatment	Cumulative Impacts over 50 yr HCP
Fender's Blue Butterfly	Burning of Conservation Areas	10 times over 50 years	Eggs/Larvae	112.5 m <sup>2</sup>	Mortality to 100% Eggs/Larvae	All Eggs/Larvae residing in 1,125 m <sup>2</sup>
	Herbicide application at conservation areas and roadsides	10% of area annually, or entire area 5 times	Eggs/Larvae	156.5 m <sup>2</sup>	Mortality to 5% Eggs/Larvae	All Eggs/Larvae residing in 39.1 m <sup>2</sup>
Taylor's Checkerspot Butterfly	Burning of Conservation Areas	10 times over 50 years	Eggs/Larvae	5,743 m <sup>2</sup>	Mortality to 100% Eggs/Larvae	All Eggs/Larvae residing in 57,430 m <sup>2</sup>
	Herbicide application at conservation areas	10% of area annually, or entire area 5 times	Eggs/Larvae	5,743 m <sup>2</sup>	Mortality to 5% Eggs/Larvae	All Eggs/Larvae residing in 1,436 m <sup>2</sup>

**Covered Plants**

At Prairie Conservation Areas (PCAs) where mitigation occurs, take is requested for 5% of the seeds produced by covered plants that are added for mitigation (identified in Chapter 6), to cover seed mortality incurred during prescribed fire. Assuming prescribed fire will occur four times over the course of the mitigation work, and using estimates of each species’ typical seed production (Chapter 2), the resulting seed mortality for each species is identified in Table 5.1. No take of covered plants is anticipated from other habitat restoration, enhancement and management techniques, including mowing or herbicide use, as the activities will be conducted within the parameters identified in Appendix J: Prairie Habitat Vegetation Management Guidelines.

**5.2.7.1 Monitoring Activities**

**Fender’s blue butterfly, Taylor’s checkerspot butterfly and Covered Plants**

Monitoring activities, including pre- and post-activity monitoring and monitoring associated with habitat restoration, enhancement, and management activities will be

conducted to determine how well the activities are working. Monitoring activities have the potential to result in minor trampling of covered plants, host plants, nectar sources, and butterfly eggs and larvae. We estimate that monitoring activities will result in take of 1% of the Covered Species, host, and nectar plant populations, including those added through mitigation and conservation actions. Take requested is included in Table 5.1.

Table 5.9 Short term impacts to butterfly species resulting from mitigation related habitat restoration, enhancement, and management activities over the 50 year HCP.

	Management Treatment	Treatment Frequency	Affected Habitat Component	Affected Habitat Component Area	Anticipated Impacts per Treatment	Cumulative Impacts over 50 yr HCP
<b>Fender's Blue Butterfly</b>	Burning of Mitigation Areas	Burning 10 times over 50 years.	Eggs/Larvae	404 m <sup>2</sup>	Mortality to 100% Eggs/Larvae	All Eggs/Larvae residing in 4,041 m <sup>2</sup>
	Herbicide application at Mitigation Areas	10% of area annually, or entire area 5 times	Eggs/Larvae	404 m <sup>2</sup>	Mortality to 5% Eggs/Larvae	All Eggs/Larvae residing in 101 m <sup>2</sup>
<b>Taylor's Checkerspot Butterfly</b>	Burning of Mitigation Areas	Burning 2 times	Eggs/Larvae	172 m <sup>2</sup>	Mortality to 100% Eggs/Larvae	All Eggs/Larvae residing in 345 m <sup>2</sup>
	Herbicide application at Mitigation Areas	60% of entire area.	Eggs/Larvae	172 m <sup>2</sup>	Mortality to 5% Eggs/Larvae	All Eggs/Larvae residing in 5 m <sup>2</sup>

**5.2.7.2 Plant Materials Collection Activities**

Increasing the size and number of Covered Species populations is essential to ensure the conservation of Covered Species. Activities related to plant material collection and plant enhancement (Appendix L: Plant Material Collection and Plant Introduction Protocols) are expected to benefit the Covered Species by resulting in larger populations and wider distributions (USFWS 2008), but for tracking purposes, is estimated as “take” in Table 5.1. Estimates are based on current plant abundance within populations on lands owned or managed by Benton County or the Cooperators, the allowable annual seed collection for each population size (Appendix L: Plant Material Collection and Plant Introduction Protocols), and the best available information regarding the average seed output of each covered plant species (see Chapter 2 Covered Species).



### **5.2.8 Emergency Response Activities**

To account for the possibility that emergencies (e.g., fire-fighting, vehicle accident clean-up, hazardous material spill cleanup, and ambulance response) may result in some incidental take of Covered Species, impacts from these activities are estimated at the amount of 1% of the populations that remain on Benton County and Cooperator Lands, including rights-of-way, after the already described amounts of incidental take (e.g., projects covered by the HCP) have occurred (Table 5.1).

## **5.3 Indirect Impacts**

Development of private lands in urban and rural areas and road improvements will indirectly impact biological resources as the human population grows. Population growth will increase the general use of Prairie Conservation Areas and prairie habitat in general.

### **5.3.0 Habitat Degradation**

Increased human use may have adverse effects on biological resources in the form of collection, harassment, introduction or spread of diseases or non-native species, trash dumping, spills of hazardous materials, and water quality degradation from road runoff. Trampling would not necessarily result in loss of covered plant species, but could indirectly harm them by compacting soils and negatively impacting plant growth.

Vehicles, clothing, and equipment may transport plant seeds, vegetative material, and pathogens. Covered plant species' habitats may be harmed by introduction and spread of noxious weeds and non-native plants.

### **5.3.1 Habitat Fragmentation**

Habitat fragmentation will reduce the spatial and ecological continuity within the County as habitat is reduced in size and becomes more isolated from adjacent areas of similar habitat types. Fragmentation by roads, home construction, etc., can separate a continuous population into subpopulations, making each subpopulation more vulnerable to local extinction.

### **5.3.2 Isolation**

Isolation can affect ecological functions and the long-term viability of species through genetic bottlenecks and genetic drift.

### **5.3.3 Loss of Biological Diversity**

Any conversion of open space, including construction of homes on prairie habitats, will result in loss of biological diversity as habitat loss occurs and species may be removed from the area.

# 6 Conservation Measures

## 6.1 Biological Goal

For Habitat Conservation Plans (HCPs), biological goals are the broad, guiding principles of the required Conservation Measures set forth in the HCP. Conservation Measures are the actions proposed to avoid, minimize, and mitigate for impacts to the Covered Species resulting from Covered Activities. While the biological goal in this Habitat Conservation Plan (HCP or Plan) can contribute to range-wide recovery goals for the Covered Species, HCP goals and recovery goals are not required to be equivalent. Benton County will plan and design the habitat protection, restoration and enhancement required as mitigation in the HCP to contribute, to the maximum extent practicable, to the recovery of the Covered Species.

The biological goal of this Plan is to maintain viable populations of the Covered Species in Benton County.

## 6.2 Biological Objectives, Conservation Measures and Tasks

To achieve the biological goal, the following objectives shall be accomplished through the Conservation Measures of the HCP:

- 1) Conserve Covered Species populations and habitat.
- 2) Enhance Covered Species populations and habitat.
- 3) Increase the distribution and connectivity of Covered Species populations.

The Conservation Measures required of the County or any holder of a certificate of inclusion shall be commensurate with the type of impacts likely to occur to the Covered Species. Each conservation measure has one or more distinct tasks to be accomplished.

The USFWS and ODA may issue the County an incidental take permit provided the impacts to the Covered Species and the Conservation Measures to be performed to mitigate for those impacts do not appreciably reduce the likelihood of survival and recovery of the Covered Species. The USFWS and/or ODA will also consider the extent to which the HCP is likely to enhance the habitat for Fender's blue butterfly and the other Covered Species or increase these Covered Species' long term survivability or that of their ecosystem.

**6.2.0 Objective 1: Conserve Covered Species populations and habitat.**

Conservation Measures	Tasks
<p>1.1 Acquire from willing sellers and manage properties (as Benton County Fender’s Blue Butterfly Conservation Areas) with existing populations of Fender’s blue butterfly and prairie habitat.</p>	<p>1.1.1 Identify public or private properties for acquisition (fee simple or conservation easement).                      1.1.2 Pursue funding for property acquisition.                      1.1.3 Acquire (fee simple or conservation easement) approximately 20-25 ha (50-60 acres) of Fender’s blue butterfly habitat.                      1.1.4 Develop management plans for properties.                      1.1.5 Implement management plans, including habitat restoration and enhancement activities.</p>
<p>1.2 Establish roadside Special Management Areas (SMAs) for roadside populations of Covered Plants.</p>	<p>1.2.1 Identify new Covered Species locations.                      1.2.2 Classify roadside populations in SMA areas as Type 1 or Type 2, to prioritize roadside populations for management.                      1.2.3 Sign SMA areas.                      1.2.4 Conduct outreach to landowners adjacent to SMA zones, with the goal of avoiding accidental impacts to the Covered Species.                      1.2.5 Conduct outreach to public road districts with roadside Covered Species.                      1.2.6 Conduct outreach to utility companies with potential to impact roadside Covered Species.</p>
<p>1.3 Implement best management practices for roadside populations.</p>	<p>1.3.1 Follow guidelines in Appendix M: Roadside and Streambank Management Guidelines for Covered Plants during any ground disturbing activity.                      1.3.2 In Type 2 roadside populations with anticipated impacts, avoid impacts to the maximum degree possible, salvage seeds and plant materials as possible prior to unavoidable impacts and replant at a PCA with appropriate habitat, and complete any mitigation according to the requirements outlined in Section 6.3.</p>

Conservation Measures	Tasks
<p>1.4 Designate Prairie Conservation Areas (PCAs), lands within the County managed for prairie habitat and conservation the Covered Species. Some areas of some PCAs may be designated for use as mitigation sites.</p>	<p>1.4.1 Designate prairie areas within the following properties as PCAs</p> <ul style="list-style-type: none"> <li>• Benton County: Beazell Memorial Forest, Fitton Green Natural Area, Jackson Frazier Wetland, Fort Hoskins Historic Park</li> <li>• City of Corvallis: Bald Hill Park, Herbert Farm and Natural Area, Lancaster Property, Corvallis Watershed</li> <li>• ODOT Henkle Quarry &amp; Wren Mitigation Site</li> <li>• Greenbelt Land Trust Lone Star Ranch, Lupine Meadows, Owens Farm</li> <li>• Any newly acquired and appropriate lands within the Plan Area.</li> </ul> <p>See Appendix D: Maps of Prairie Conservation Areas.</p>
<p>1.5 Implement best management practices for Covered Species populations in Prairie Conservation Areas and other Covered Lands owned by Benton County or the Cooperators.</p>	<p>1.5.1 Follow Prairie Vegetation Management Guidelines (Appendix J) during any habitat restoration, enhancement or management activities.</p> <p>1.5.2 Avoid impacts to Covered Species to the maximum extent possible during any monitoring work.</p> <p>1.5.3 Follow protocols for seed and plant materials collection that are set forth in the Prairie Vegetation Management Guidelines (Appendix I).</p> <p>1.5.4 Follow protocols for population augmentations and introductions (Appendix L: Plant Material Collection and Plant Introduction Protocols).</p> <p>1.5.5 At PCAs with public use, install signs to encourage the public to avoid impacting Covered Species and prairie habitat.</p> <p>1.5.6 Avoid all impacts to Covered Species from construction of trails or interpretive structures.</p> <p>1.5.7 Avoid all impacts to Covered Species from construction of recreation related facilities including but not limited to restrooms, picnic areas, and parking lots.</p> <p>1.5.8 Establish and maintain a surveyed areas database for the Covered Species.</p> <p>1.5.9 Avoid impacts to Covered Species to the maximum extent practicable</p>

Conservation Measures	Tasks
	during any of the Covered Activities (Table 4.1) within the Plan Area (Figure 3.1).
1.6 Implement Taylor’s checkerspot management plan.	1.6.1 See Appendix N: Taylor’s Checkerspot Management Plan.
1.7 Conduct outreach to the public.	<p>1.7.1 Distribute informational brochures regarding prairie species, habitats and conservation programs.</p> <p>1.7.2 Hold workshops about prairie habitat management.</p> <p>1.7.3 Participate in local community organization activities involving prairie habitat or species.</p> <p>1.7.4 Encourage landowners with prairie habitat to engage in existing conservation programs, including those providing technical assistance, assistance for habitat improvements, funding for conservation easements, or conservation tax deferral programs such as the Wildlife Habitat Conservation and Management Program (WHCMP) (see Appendix E: Prairie Conservation Strategy for more information).</p> <p>1.7.5 Encourage landowners with prairie habitat to enter into Safe Harbor Agreements (SHA) with the USFWS if they have Covered Species on their property, or are interested introducing these species as part of a habitat restoration, enhancement and management project (see Appendix E: Prairie Conservation Strategy for more information).</p> <p>1.7.6 Encourage landowners with Taylor’s checkerspot butterfly to enter into Candidate Conservation Agreements with Assurances (or Safe Harbor Agreements if the butterfly is listed) with the USFWS to conserve the butterfly (see Appendix E: Prairie Conservation Strategy for more information).</p>

Conservation Measures	Tasks
	1.7.7 Recruit and train volunteers to assist with monitoring and restoration work.
1.8 Work with County permit and agricultural building authorization applicants (see Chapter 4 for list of covered permits) in the Fender's Blue Zone to avoid impacts to Fender's blue butterfly habitat from private development.	1.8.1 Offer home or farm building permit applicants in the Fender's Blue Zone information about the butterfly and its habitat, and encourage them to have their property surveyed for butterfly habitat (Appendix K: Project Site Survey and Reporting Protocols for Plants and Butterfly Habitat).  1.8.2 On sites with known use by Fender's blue butterfly, work with landowners to site their construction activities to avoid or minimize impacts to the butterfly and its habitat.
1.9 When Special Event Permits are issued by Benton County in areas where Covered Species occur, County will mandate avoidance of impacts to Covered Species.	1.9.1 Modify language of Special Event Permits to include species protection language.
1.10 Permits issued for utility work, other work, and road approach permits in County Rights-of-Way will mandate avoidance of all impacts to Covered Species on Type 1 roadsides, and mandate avoidance and minimization of impacts where possible in Type 2 roadsides.	1.10.1 Utilize permit issuance process and permit language to reflect the difference between Type 1 and Type 2 roadside populations and include species protection language.  1.10.2 In the event that an applicant is not able to avoid impacts to Type 1 roadside populations, they shall be referred to USFWS and/or ODA to obtain incidental take authorization. County permit issuance will be contingent upon receipt of such authorization and any required mitigation by the USFWS/ODA.

**6.2.1 Objective 2: Enhance Covered Species populations and habitat.**

Conservation Measures	Tasks
<p>2.1 Implement best management practices during any habitat restoration, enhancement and management at the Prairie Conservation Areas (PCAs).</p>	<p>2.1.1 Follow guidelines in Appendix J: Prairie Habitat Vegetation Management Guidelines at PCAs.</p>
<p>2.2 Augment populations of covered plant species using appropriate genetic sources, to mitigate for impacts (See Section 6.3 Mitigation Requirements and Table 6.1).</p>	<p>2.2.1 Augment Bradshaw’s lomatium at the Lancaster Property and Jackson-Frazier Wetland (combined) by a minimum of 20 plants to offset estimated impacts to 2 plants at these sites from emergency activities.</p> <p>2.2.2 Augment peacock larkspur populations at the Corvallis Watershed PCA by a minimum of 21 plants to offset impacts to 7 plants on Henkle Way from possible County road improvements.</p> <p>2.2.3 Augment peacock larkspur populations at the Corvallis Watershed PCA by a minimum of 91 plants to offset impacts to 30 plants for estimated emergency activities on City, County, and ODOT lands.</p> <p>2.2.4 Augment Nelson’s checkermallow populations at Lancaster Property by a minimum of 45 plants to offset impacts to 5 plants on the agricultural portion of Owens Farm and 10 plants from water and wastewater management projects.</p> <p>2.2.5 Augment Nelson’s checkermallow populations at Jackson-Frazier Wetland by a minimum of 507 plants to offset impacts to 169 plants in Benton County rights-of-way.</p> <p>2.2.6 Augment Nelson’s checkermallow populations at Jackson-Frazier Wetland by a minimum of 33 plants to offset impacts to 11 plants from estimated emergency response activities.</p>

Conservation Measures	Tasks
	<p>2.2.7 Introduce Kincaid's lupine populations (outside the Fender's Blue Zone) of a minimum of 23 m<sup>2</sup> (248 ft<sup>2</sup>) total at Fitton Green, Lone Star Ranch or Beazell Memorial Forest to offset impacts to 4.3 m<sup>2</sup> (46 ft<sup>2</sup>) of Kincaid's lupine in Benton County right-of-way from transportation projects, road maintenance, utility work and road approaches, and impacts to 3.4 m<sup>2</sup> (36.6 ft<sup>2</sup>) from estimated emergency response activities.</p> <p>2.2.8 Augment Willamette daisy populations at Bald Hill by at least 20 plants to offset impacts to 1 plant from estimated emergency response activities.</p>
<p>2.3 Enhance habitat for populations of Fender's blue butterfly and associated Kincaid's lupine at Fender's Blue Butterfly Conservation Areas (See Section 6.3 Mitigation Requirements and Table 6.1).</p>	<p>2.3.1 Follow Prairie Vegetation Management Guidelines (Appendix J) to avoid any permanent impacts to Fender's blue habitat other than short term impacts resulting from habitat restoration, enhancement and management activities for mitigation.</p> <p>2.3.2 Through enhancement at the Benton County Fender's blue butterfly Conservation Areas, increase native nectar species cover by a minimum of 2,031 m<sup>2</sup> (21,862 ft<sup>2</sup>) and Kincaid's lupine cover by a minimum of 35 m<sup>2</sup> (377 ft<sup>2</sup>) to offset impacts in Benton County right-of-way within the Fender's Blue Zone.</p> <p>2.3.3 Through enhancement at Benton County Fender's Blue Butterfly Conservation Area PCAs, increase native nectar species cover by a minimum of 222 m<sup>2</sup> (2,390 ft<sup>2</sup>) and Kincaid's lupine cover by a minimum of 12.3 m<sup>2</sup> (129 ft<sup>2</sup>) to offset impacts from Public Services Facility construction in the Fender's Blue Zone.</p> <p>2.3.4 Through enhancement at Benton County Fender's Blue Butterfly Conservation Areas, increase native nectar species cover by a minimum of 5,466.5 m<sup>2</sup> (58,843 ft<sup>2</sup>) and Kincaid's lupine cover by a minimum of 352.6 m<sup>2</sup> (3,789 ft<sup>2</sup>) to offset impacts to Fender's blue butterfly habitat from home, farm and forest construction and utility construction and</p>



Conservation Measures	Tasks
	<p>maintenance on private lands in the Fender’s Blue Zone.</p> <p>2.3.5 Through enhancement at the ODOT Wren Mitigation Site and Henkle Quarry, increase native nectar species cover by a minimum of 2,103 m<sup>2</sup> (22,637 ft<sup>2</sup>) to offset impacts to Fender’s blue butterfly habitat from maintenance of ODOT rights-of-way in the nectar zone of the Fender’s Blue Zone.</p> <p>2.3.6 Through enhancement at one or more of the PCAs with Fender’s blue butterfly, increase Kincaid’s lupine cover by a minimum of 3.3 m<sup>2</sup> (36 ft<sup>2</sup>) and increase native nectar species cover by a minimum of 265 m<sup>2</sup> (2,852 ft<sup>2</sup>) to offset impacts from estimated emergency response activities on all Cooperator lands in the Fender’s Blue Zone.</p>
<p>2.4 Enhance habitat for populations of Taylor’s checkerspot butterfly (see Table 6.1).</p>	<p>2.4.1 Through habitat restoration, enhancement and management at Bezell Memorial Forest, increase habitat available to Taylor’s checkerspot by 172 m<sup>2</sup> (1,854 ft<sup>2</sup>) to offset impacts to 57 m<sup>2</sup> (618 ft<sup>2</sup>) from estimated emergency response activities. Work may include augmentation of native nectar species, limited augmentation of plantain where it is limiting, control of aggressive introduced species, and habitat management to maintain the low vegetation structure preferred by Taylor’s checkerspot.</p>
<p>2.5 Manage and maintain Type 1 roadside populations of peacock larkspur, Kincaid’s lupine and Nelson’s checkermallow (Table 5.7).</p>	<p>2.5.1 Manage and maintain the 722 Nelson’s checkermallow plants in Type 1 roadside populations (SMAs) to offset estimated impacts to 27 plants that may result from transportation maintenance activities, utility work and road approach permits in unsurveyed County rights-of-way outside established SMAs.</p> <p>2.5.2 Manage and maintain the 627 peacock larkspur plants in Type 1 roadside populations to offset estimated impacts to 19 plants that may result from transportation maintenance activities, utility work and road approach</p>

Conservation Measures	Tasks
	<p>permits in unsurveyed County rights-of-way outside established SMAs.</p> <p>2.5.3 Manage and maintain the 9.5 m<sup>2</sup> (110 ft<sup>2</sup>) of Kincaid's lupine and associated nectar species that are located in Type 1 roadside populations to offset estimated impacts to 1.4 m<sup>2</sup> (15 ft<sup>2</sup>) of Kincaid's lupine and 61 m<sup>2</sup> (657 ft<sup>2</sup>) of nectar species that may result from transportation maintenance activities, utility work and road approach permits in unsurveyed County rights-of-way outside established SMAs.</p>
<p>2.6 Conduct restoration activities including burning, seeding with native plant species and planting plugs of native plant species at Prairie Conservation Areas.</p>	<p>2.6.1 Follow guidelines in Appendix J: Prairie Habitat Vegetation Management Guidelines to avoid any permanent impacts to Covered Species other than short term impacts resulting from habitat restoration and enhancement.</p>

**6.2.2 Objective 3: Increase the distribution and connectivity of Covered Species populations.**

Conservation Measure	Tasks
<p>3.1 Develop, update and maintain a Prairie Conservation Strategy (Appendix E) to facilitate effective conservation actions that contribute to the recovery of the Covered Species and other imperiled prairie species in Benton County.</p>	<p>3.1.1 Identify prairie and oak habitats and habitat attributes important to Benton County's at-risk species.</p> <p>3.1.2 Encourage voluntary cooperative partnerships among public and private landowners and the general community to enhance conservation.</p> <p>3.1.3 Facilitate access to diverse sources of funding to maximize the likelihood of stable support.</p> <p>3.1.4 Identify and engage public lands partners in this strategy, including Oregon State University, Oregon Department of Fish and Wildlife, City of Corvallis, Oregon Department of Agriculture, U.S. Fish and Wildlife</p>

Conservation Measure	Tasks
	Service, The Nature Conservancy and Greenbelt Land Trust.
	3.1.5 Use the Recovery Plan for Prairie Species of Western Oregon and Southwest Washington (USFWS 2010) and the Oregon Conservation Strategy (ODFW 2006) to identify conservation targets for listed, candidate, and at risk species.

Table 6.1 Summary of mitigation to be completed by Benton County and Cooperators. Amounts reported are the minimum required, and assume pre-mitigation will be completed. If mitigation is concurrent, a higher mitigation ratio will be applied, and a larger amount of mitigation will be required (see Table 6.2). No mitigation required for impacts to non-native nectar species for Fender’s blue butterfly (See Section 6.3 for more information).

	Bradshaw's lomatium (#)	Willamette daisy (#)	peacock larkspur (#)	Nelson's checkermallow (#)	Kincaid's lupine (m <sup>2</sup> ) (outside Fender's Blue Zone)	Kincaid's lupine (m <sup>2</sup> ) inside the Fender's blue zone	Native nectar for Fender's blue butterfly (m <sup>2</sup> )	Non-Native Nectar for Fender's blue butterfly (m <sup>2</sup> )	Taylor's checkerspot butterfly habitat (m <sup>2</sup> )
<b>Mitigation for Private Lands Impacts Under HCP:</b>									
Home, Farm and Forest Construction	-	-	-	-	-	346	5364	n/a	-
Telephone Utility Construction and Maintenance	-	-	-	-	-	6.4	101.1	n/a	-
Natural Gas Utility Construction and Maintenance	-	-	-	-	-	0.2	1.4	n/a	-
<b>Private lands subtotal</b>						<b>352.6</b>	<b>5466.5</b>		
<b>Mitigation for Benton County and Cooperator Impacts:</b>									
Public Service Facility Construction	-	-	-	-	-	12.3	222	n/a	-
<b>Transportation Activities and Authorized Work in Rights-of-Way</b>									
Construction, maintenance, utility work and road approach	-	-	21	507	12.9	35	4134	n/a	-
Maintenance, utility and road approach outside known populations	-	-	57	80	0.4	1.3	61	n/a	-
Water and Wastewater Management	-	-	-	30	-	-	-	-	-
Agriculture	-	-	-	15	-	-	-	-	-
Emergency Response Activities	7	2	91	33	10.1	3.3	265	n/a	172
<b>County &amp; Cooperator lands subtotal</b>	<b>7</b>	<b>2</b>	<b>169</b>	<b>665</b>	<b>23</b>	<b>51</b>	<b>4682</b>	<b>n/a</b>	<b>172</b>
<b>Mitigation Total</b>	<b>20*</b>	<b>20*</b>	<b>169</b>	<b>665</b>	<b>23.4</b>	<b>756.7</b>	<b>15615</b>	<b>n/a</b>	<b>172</b>

\* A minimum of 20 plants will be established for any covered plant mitigation project.

### 6.3 Mitigation Requirements

Mitigation will occur when impacts are unavoidable and will be completed at sites with appropriate habitat at the closest appropriate location in Benton County (e.g., for Fender's blue butterfly, within the Fender's Blue Zone). Mitigation may be achieved by butterfly habitat enhancement or species augmentations for covered plants. Mitigation will take place at sites already supporting the impacted species, or currently unoccupied sites containing suitable habitat. Mitigation will not take place at sites where there is not suitable habitat for the species. Habitat enhancement or species augmentations must establish the amount of plants/butterfly habitat required for mitigation regardless of the pre-existing population or habitat amounts at the site. For definitions of "individuals" for each species see Section 7.2.1.2.

The estimated quantity of mitigation required for impacts requested in this Plan is identified in Table 6.1 (exact amounts will vary with actual project impacts, mitigation site, and timing of mitigation).

Mitigation requirements have been fulfilled when the following conditions are met:

- The required amount of plants or habitat persists six years after initiation of the mitigation;
- The trend in population size or habitat abundance is stable over the last three years of the six years (no significant population declines during that period); and
- For plants, at least 40% of the individuals initially planted or seeded are reproductive and produce seeds. This requirement does not apply to portions of the population that recruit (self-seed) naturally after planting.

If permanent impacts are to take place at a site (e.g., plants will be eliminated from the area as a result of construction activities), covered plants may be relocated from the impact site and transplanted to a mitigation site. At a minimum, any seeds produced in the population to be permanently impacted will be collected for use at the mitigation site or elsewhere. Successfully transplanted individuals that survive may count towards mitigation requirements. Section 8.5.1 describes the eligibility of funding sources and mitigation projects completed prior to HCP completion.

Mitigation shall not be required for impacts to non-native nectar species for Fender's blue butterfly, as these species, many of which are considered weeds, are common across the landscape. Fender's blue have demonstrated a preference for utilizing native nectar species over non-native ones (Schultz and Dlugosch 1999, Wilson et al. 1997). All of the nectar zones of the Fender's Blue Zone contain private properties with native nectar species present and confirmed by survey (Figure 6.1). A mix of native and non-native nectar species are found along roadside rights-of way. Non-native nectar species tend to be self-mitigating (ground disturbance from projects tends to increase their cover, often at the expense of native species). Mitigation involving augmentation of

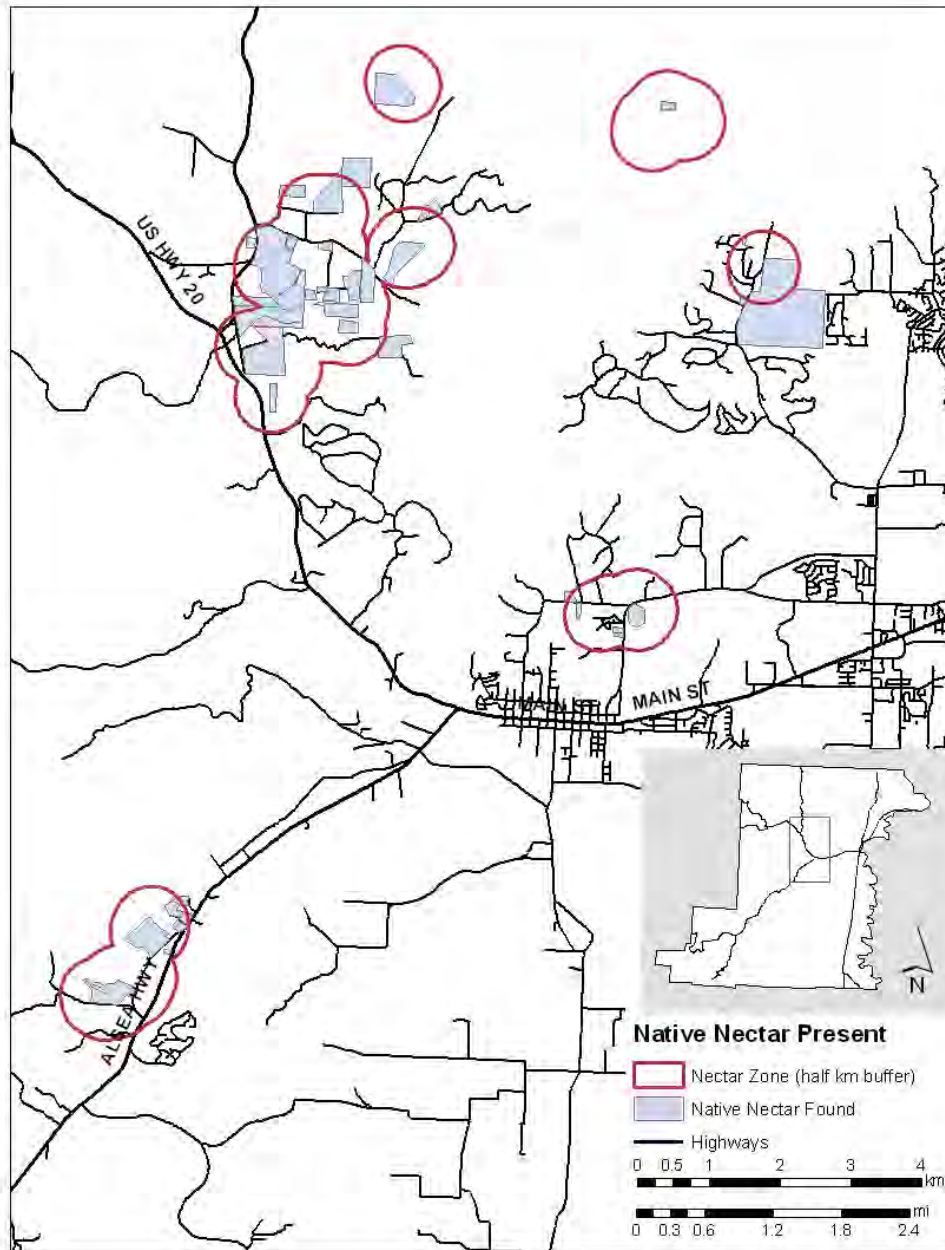


Figure 6.1 Properties surveyed between 2006 and 2009 within the Fender's blue butterfly nectar zone that contained native nectar species for Fender's blue butterfly.

non-native nectar species at mitigation sites, would be counterproductive to long term goals of enhancing native habitat components. At sites with conservation easements, augmentation of non-native species may be prohibited in easement terms.

### 6.3.0 Factors Determining Mitigation Ratios

The quantity of mitigation to be completed is set forth in mitigation ratios. Mitigation ratios (Table 6.2) reflect the amount of plants (for covered plants) or habitat (for

butterflies) to be added to a site relative to the amount of plants or habitat impacted (Table 6.1). The type and quantity of mitigation required for specific impacts is determined by a combination of the:

- quality of the impacted site;
- quality of the mitigation site;
- timing of mitigation (before impacts or concurrent with impacts); and
- mitigation site status (site under permanent conservation easement/deed restriction or on non-federal public lands absent an easement or deed restriction).

For the purposes of determining population size, even if a naturally occurring population spans multiple ownerships, such as Bradshaw's lomatium at Jackson-Frazier Wetland and the Lancaster Property, it will be treated as one population. The size of that overall population will be used in site quality assessments at either site, even though only a portion occurs on each.

Table 6.2 Mitigation ratios that define the amount of plants (for covered plants) or habitat (for butterflies) to be added to a site relative to the amount of plants or habitat impacted.

Site Quality		Site Protection	Mitigation Ratios Based on Timing of Mitigation	
Impacted Site	Mitigation Site	Under permanent conservation easement or deed restriction?	Pre-Mitigation	Concurrent Mitigation
High	Exceptional	Yes	1:1	3:1
	Exceptional	No	3:1	5:1
	Adequate	Yes	4:1	5:1
	Adequate	No	5:1	5:1
Low	Exceptional	Yes	1:1	3:1
	Exceptional	No	3:1	5:1
	Adequate	Yes	3:1	5:1
	Adequate	No	3:1	5:1

In the event that a new mitigation site becomes available in the future, or if Benton County or a Cooperator makes a property acquisition (from willing sellers, fee simple or conservation easement) and wishes to use the acquisition, perpetual maintenance, and/or enhancement of a site to fulfill a mitigation requirement, the site will be evaluated for baseline conditions and potential for enhancement. Negotiations with the County/Cooperator and USFWS and/or ODA will take place to determine mitigation ratios.

### **6.3.0.0 Impact and Mitigation Site Quality**

The quality of an impacted site or a site where mitigation may take place will be determined by a combination of 1) Covered Species population size or area of habitat, for Fender's blue butterfly or Taylor's checkerspot butterfly, 2) associated vegetation and 3) connectivity.

#### **Impacted site quality**

For an impacted site to be classified as high quality it must satisfy one of the site quality criteria (1-3) below. Any impacted site not meeting at least one of these criteria will be classified as low quality.

#### **Mitigation site quality**

All mitigation sites must contain suitable habitat for the species for which mitigation is being completed. For a site to be considered as a mitigation site, and be categorized as having adequate quality, it must:

- have the correct vegetation structure;
- possess suitable soils (see Appendix O: Covered Plant Soils Lists);
- be located within current or historic prairie habitat;
- be located on lands protected by permanent conservation easement or under non-federal public ownership; and
- the site cannot have significant cover (e.g., >30% cover) by List A or B noxious weeds in the prairie area to be planted or enhanced.

For a mitigation site to be classified as exceptional quality it must satisfy at least one of the site quality criteria (1-3) below, in addition to the above general requirements. Any mitigation site that meets the general requirements (above), but not meeting any of the site quality criteria will be classified as adequate. The site quality criteria (below) have been used to classify all currently proposed mitigation sites (Table 6.3). Any newly acquired mitigation sites can also be classified using these criteria.

#### **Site quality criteria**

Criterion 1:

- Population supports  $\geq 60$  m<sup>2</sup> (646 ft<sup>2</sup>) of Kincaid's lupine outside the Fender's Blue Zone, or  $\geq 200$  individuals of the other covered plants, or  $\geq 100$  m<sup>2</sup> (1,076 ft<sup>2</sup>) of Fender's blue habitat (Kincaid's lupine and native nectar species), of which at least 60% must be Kincaid's lupine cover, or 100 m<sup>2</sup> (1,076 ft<sup>2</sup>) of occupied Taylor's checkerspot habitat (host plants and nectar species). The size threshold of 200 individuals was selected for the covered plants because this is the minimum size for a population to contribute to the recovery of the species (USFWS 2008).

Criterion 2:

- Population supports more than 30 m<sup>2</sup> (323 ft<sup>2</sup>) of Kincaid's lupine outside the Fender's Blue Zone, or 100 individuals of the other covered plants, or 50 m<sup>2</sup> (538

ft<sup>2</sup>) of Fender's blue habitat (Kincaid's lupine and native nectar species), of which at least 60% must be Kincaid's lupine cover, or 50 m<sup>2</sup> (538 ft<sup>2</sup>) of occupied Taylor's checkerspot habitat (host plants and nectar species); and

- Site supports  $\geq$  25% native forb and/or grass cover.

Criterion 3:

- Population supports more than 30 m<sup>2</sup> (323 ft<sup>2</sup>) of Kincaid's lupine outside the Fender's Blue Zone, or 100 individuals of the other covered plants, or 50 m<sup>2</sup> (538 ft<sup>2</sup>) of Fender's blue habitat (Kincaid's lupine and native nectar species), of which at least 60% must be Kincaid's lupine cover, or 50 m<sup>2</sup> (538 ft<sup>2</sup>) of occupied Taylor's checkerspot habitat (host plants and nectar species); and
- Population provides connectivity between two other wild or introduced populations on protected lands that would not otherwise be connected. Covered plant populations must be within 3 km (1.8 mi) of each other, Fender's blue butterfly populations must be within 2 km (1.2 mi) of each other, and Taylor's checkerspot populations must be within 1.5 km (0.9 mi) of each other to be considered connected.

#### **6.3.0.1 Timing of Mitigation**

Pre-mitigation is mitigation completed and established for six or more years prior to when impacts take place, thus reducing or eliminating any temporal loss to the species. If mitigation efforts are not successful after six years, the entity responsible for ensuring completion of the mitigation will continue efforts until mitigation requirements are met, using an alternate site, if necessary.

Concurrent mitigation is implemented within one year of when impacts occur and can result in temporal loss of habitat. In most cases, pre-mitigation will require lower mitigation ratios than concurrent mitigation. If concurrent mitigation efforts are not successful after six years, the entity responsible for ensuring completion of the mitigation will continue efforts until mitigation requirements are met, using an alternate site, if necessary. If mitigation continues to be unsuccessful 12 years after initiation, no additional take will be allocated to that entity pending completion of the initial mitigation, and the entity will be referred to the USFWS and/or ODA.

See Section 8.5 Mitigation Policies, for more information.

#### **6.3.0.2 Mitigation Site Protection**

Mitigation must occur on publicly owned sites or lands with some degree of protection (e.g., it cannot occur on privately owned sites without a permanent deed restriction or permanent conservation easement). A lower mitigation ratio will be required at mitigation sites under permanent deed restriction or conservation easement. A higher mitigation ratio will be required on non-federal public land not under permanent deed restriction or conservation easement.



### 6.3.1 Mitigation Ratios

Mitigation ratios are set forth in Table 6.2.

If a project will only require mitigation of a few plants or a small area of habitat, there will be a mandatory minimum of 20 covered plants or 6 m<sup>2</sup> (65 ft<sup>2</sup>) of Kincaid's lupine or native nectar species established as mitigation.

If Benton County acquires and protects sufficient Fender's blue butterfly habitat to establish the Benton County Fender's Blue Butterfly Conservation Areas, and restoration, enhancement and management activities (including Kincaid's lupine and native nectar species population augmentations) commence immediately, the County may use a pre-mitigation ratio during the first ten years of the HCP even though mitigation is concurrent.

Table 6.3 Species present and site quality at sites where some level of mitigation is planned, or may be planned in the future (including PCAs and Type 1 roadside populations (SMAs)).

Site Name	Species Present at Site							Site Quality
	WD	PL	BL	NC	KL	FBB	TCB	
Bald Hill Park (PCA)	X <sup>c</sup>				b,d			Adequate
Bezell Memorial Forest (PCA)					b,d		X	Adequate (KL), Exceptional (TCB)
Benton County Fender's Blue Conservation Areas (PCA)					X	X		Exceptional
Corvallis Watershed (PCA)		X			a,d	X		Exceptional
Decker Road SMA I				X				Exceptional
Decker Road SMA II		X						Exceptional
Fern Road SMA		X						Exceptional
Fitton Green Natural Area (PCA)					b,d		e	Adequate
Fort Hoskins Historic Park					d		e	Adequate
Jackson-Frazier Wetland (PCA)			X <sup>c</sup>	X <sup>c</sup>	X			Exceptional
Lancaster Property (PCA)			X <sup>c</sup>	X <sup>c</sup>				Exceptional
Lone Star Ranch (PCA)					d	d		Adequate
McFarland Road SMA		X		X				Adequate
ODOT Henkle Quarry (PCA)						X		Adequate
ODOT Wren Mitigation Site (PCA)					X	X		Adequate
Tampico Road SMA				X				Exceptional
West Hills Road SMA					X	X		Adequate

<sup>a</sup> Adjacent to naturally occurring Kincaid's lupine

<sup>b</sup> Supports introduced plants

<sup>c</sup> Supports natural and augmented plants

<sup>d</sup> Supports suitable habitat for this species

<sup>e</sup> One TCB individual seen between 2005-2009.

## 6.3.2 Mitigation Implementation

### 6.3.2.0 For Impacts on Non-Federal Public Lands

Any mitigation required of Benton County will be completed at a Prairie Conservation Area or a Type 1 Special Management Area (for road right-of-way impacts only). Benton County will conduct the required monitoring (See Chapter 7).

Any mitigation required of Cooperators will be completed by that entity on-site or at a PCA. See Section 8.5 Mitigation Policies, for more information regarding how Cooperators will submit notices of mitigation initiation and completion. Any required monitoring will be completed by the Cooperator and reported to Benton County.

### 6.3.2.1 For Impacts on Private lands

Any mitigation required for impacts to Fender's blue butterfly in the Fender's Blue Zone due to home, farm, and forest construction on private lands will be completed through habitat enhancement by Benton County at the Benton County Fender's Blue Butterfly Conservation Areas. All enhancement work, monitoring, and required reporting will be completed by Benton County. Funding for this mitigation is discussed in Chapter 8 and Chapter 9. If a private landowner proposes a project that will result in impacts to Fender's blue butterfly habitat and wishes to complete mitigation, along with the associated monitoring and reporting on their own property they may elect to work with USFWS to do so.

### 6.3.2.2 Strategy for Fender's Blue Butterfly Conservation Areas

Benton County will maintain and enhance the entirety of upland prairie and oak habitat at the Fender's Blue Butterfly Conservation Areas (FBBCAs) for Fender's blue butterfly - see Section 3.1.1.3 for more information about these sites. Based on Benton County's mitigation requirements to be fulfilled at these sites (area of Kincaid's lupine and native nectar species to be established- see Table 6.1), the County has projected the acreage of prairie habitat that will need to be enhanced. These projections (described below), are based on mitigation required and the potential for habitat enhancement (increase in cover of lupine and native nectar species) at the FBBCAs. The actual acreage needed will vary with site conditions, and Benton County will acquire or use additional acreage if necessary to fulfill mitigation requirements.

To identify the potential increase in native nectar species cover, Benton County examined data from 5 m x 5 m vegetation plots sampled throughout Benton County (both inside and outside the Fender's Blue Zone) during HCP development, including Finley National Wildlife Refuge, other public lands, and private properties. These data were analyzed to estimate a range of achievable density of native nectar species (Table 2.1) for Fender's blue butterfly. Within the 240 plot dataset, few if any sites were actively managed or restored. Cover of native nectar species ranged from 0% to 50% cover. Of the sites with native nectar species present, their average cover was 4.55%,

with a standard deviation of 7.1%. Benton County estimates that with regular management, restoration, and enhancement, they will be able to achieve an average of 5-10% cover of native nectar species at their mitigation sites (Figure 6.2).



Figure 6.2 Ground cover (%) of native nectar species for Fender's blue butterfly within vegetation plots with native nectar species present sampled throughout Benton County in 2006-2009.

To identify the potential increase in Kincaid's lupine cover at mitigation sites, Benton County examined data from sites occupied by the species in Benton and Lane Counties. A large site on private land in Benton County, which has received minimal maintenance (sporadic mowing only), has average Kincaid's lupine cover of 1.1% (Benton County, unpublished data). Two Eugene District Bureau of Land Management sites in Lane County, Fir Butte and Oxbow West, both of which have been intensively managed and have expanded three-fold or greater in lupine cover over 10 years, have average Kincaid's lupine cover of approximately 3.5% and 18%, respectively (Thorpe et al. 2008). Benton County estimates that with regular management, restoration and enhancement, they will be able to achieve 1-3% cover of Kincaid's lupine at their mitigation sites.

Based on the County's estimate of achievable Kincaid's lupine and native nectar species cover, and the estimated mitigation required, the County anticipates that between 7.7 ha and 15.4 ha (19.1 ac and 38.2 ac) of mitigation area will be needed. Kincaid's lupine and native nectar species will co-occur in this area. To achieve the 7,720 m<sup>2</sup> (83,098 ft<sup>2</sup>) of native nectar species cover needed for Benton County's mitigation, an average increase of about 155 m<sup>2</sup> (1,668 ft<sup>2</sup>) of nectar species cover per year will need to be achieved (Figure 6.3). To achieve the 399 m<sup>2</sup> (4,295 ft<sup>2</sup>) Kincaid's lupine cover needed for Benton County's mitigation, an average increase of about 8 m<sup>2</sup> (87 ft<sup>2</sup>) of lupine cover per year will need to be achieved (Figure 6.3). Actual area needed and increase per year will undoubtedly vary with site, herbivore, management, and climatic conditions.

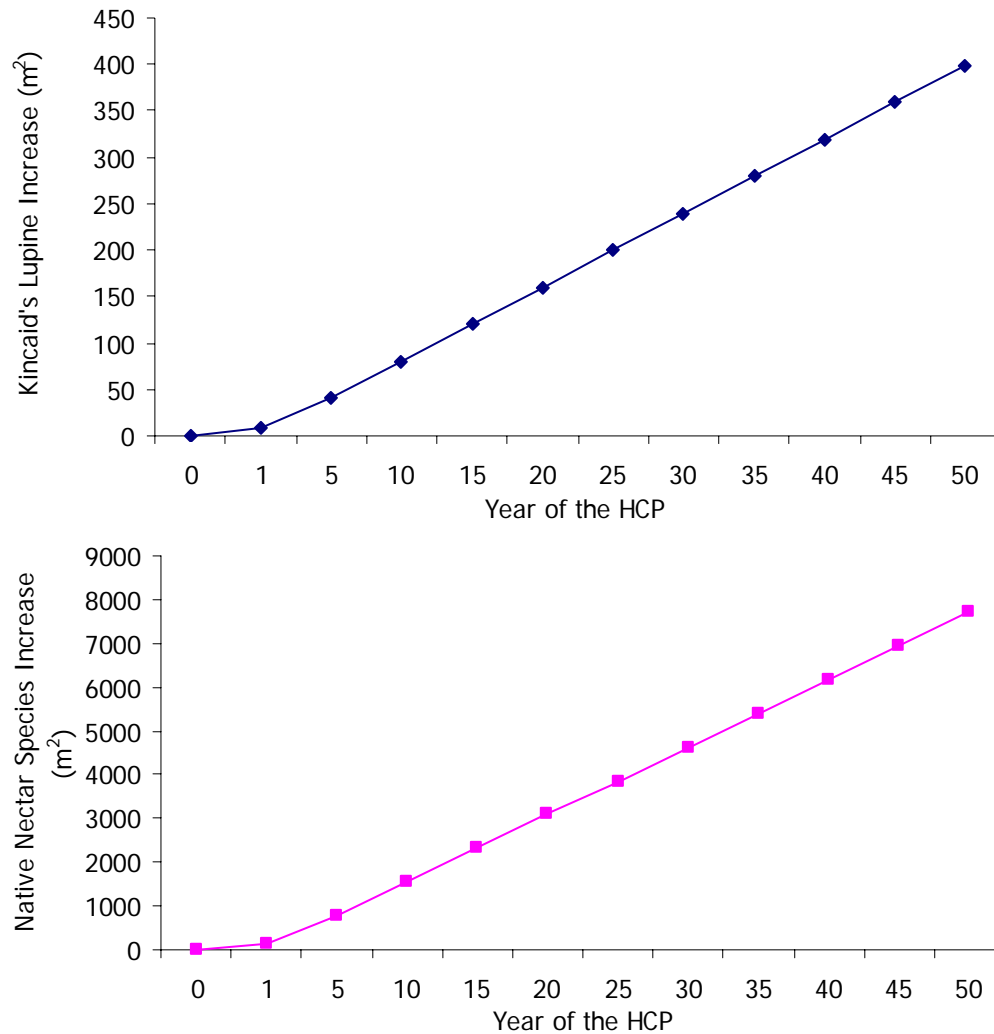


Figure 6.3 Projected increase in Kincaid's lupine and native nectar species for Fender's blue butterfly needed for mitigation over the 50 year term of the HCP.

## 6.4 Restrictions and Best Management Practices for Covered Activities in Areas with Covered Species

Selected activities conducted under this Plan should meet the specified conditions described below.

- **Avoidance:** Impacts to the Covered Species will be avoided by: (1) pre-project planning and design; (2) reconfiguring an existing project design; or (3) adopting the no-project alternative.
- **Reducing impacts:** The magnitude of impacts will be minimized by reducing the size of the project (partial avoidance) and by locating the project in the least environmentally sensitive area.

Many projects with permanent impacts to all or part of a population, such as road construction, will have pre-project surveys (Appendix K: Project Site Survey and Reporting Protocols for Plants and Butterfly Habitat) and take assessments completed, with monitoring conducted post-project to document the actual take that occurred (Table 6.4). Covered Activities that require a pre-project survey are those that occur on public land and for which there is an expectation to avoid and minimize impacts as feasible when projects occur, and to document the actual amount of impact. Covered Activities on private lands do not require a pre-project survey because extensive surveys and estimates of occupied habitat were completed during HCP development. Other Covered Activities, such as routine transportation maintenance in areas outside Special Management Areas do not require pre-project surveys because extensive roadside surveys have already been completed to identify existing Covered Species locations and take is requested to cover unknown sites. Emergency response activities do not require pre-project surveys because they are unpredictable and necessary events, and their impacts have been estimated and requested in advance.

Table 6.4 Covered Activities with permanent impacts that require a pre-project botanical survey.

	Pre-project survey required?
Home, farm and forest construction	
Utility construction and maintenance on private lands	
Public service facility construction	✓
Transportation construction activities	✓
Transportation maintenance activities	
Work in right-of-way, road approach and utility work	Only within Type 2 Special Management Areas <sup>1</sup>
Water and wastewater management	✓
Agricultural activities on public lands	✓
Emergency response activities	

<sup>1</sup> These activities are not covered under the HCP in Type 1 Special Management Areas.

#### 6.4.0 Transportation and Public Service Facility Construction Projects in Areas with Covered Species

1. Project Planning
  - a. USFWS and/or ODA will be consulted during project planning to assess the possibility of avoiding and minimizing any impacts, while weighing other factors including public safety.
2. Surveys

- 
- a. A survey will be conducted by a competent biologist or qualified natural resource specialist prior to construction to determine the presence and abundance of Covered Species or habitat.
3. Pre-Construction Take Assessment
    - a. For Benton County construction projects, Public Works staff will meet annually with the HCP Coordinator to plan pre-construction assessments for upcoming projects in order to avoid delays to construction and to quantify project level take estimates, if any. Construction projects will be evaluated as they occur by the HCP Coordinator (or designee) to ensure (1) all effects are within the range of the incidental take permit and HCP and (2) all appropriate best management practices are properly followed.
    - b. For Cooperators' construction projects, the Cooperator will designate an individual to (1) ensure all impacts are within the range included in the Certificate of Inclusion, (2) quantify extent of take, and (3) ensure all appropriate environmental performance standards are being properly followed.
  4. No-Work Zones
    - a. Benton County and Cooperators shall establish "no-work zones" for all sensitive habitats within the construction project area that will not be affected by the proposed construction project. Contractors will be shown the specific location of the no-work zones prior to the start of construction activities and provided with a map of no-work zones.
    - b. To demarcate the vegetative buffer (generally  $\geq 10$  m [33 ft]) zone around sensitive plants or butterfly habitat and ensure protection of the Covered Species during project construction, a temporary fencing barrier will be installed to physically separate the construction project area from no-work zones. A fencing plan will be included in the project's design plans.
  5. Staging and Equipment Storage
    - a. Specific short- and long-term staging and equipment storage will be situated at least  $\geq 10$  m (33 ft) away from areas designated as no-work zones.
  6. Construction Monitoring
    - a. A qualified biologist/natural resource specialist will monitor active construction projects during environmentally sensitive work at a frequency adequate to detect compliance with the appropriate environmental performance standards. Visits to the project area will occur regularly so general contractors and construction inspectors are kept aware of the species' locations and restrictions associated with these areas. The biologist/natural resource specialist will attend the pre-construction meetings to review with the contractor all incidental take permit restrictions associated with the project.
    - b. A biologist/natural resource specialist will conduct on-site monitoring visits during construction to ensure designated no-work zones are avoided.

- c. Post construction monitoring will be conducted the growing season after the project has been completed to determine actual levels of take to the Covered Species.
  - d. Staging areas will be monitored by a biologist/natural resource specialist and the construction inspector to verify that staging areas remain stationary and do not inadvertently migrate from designated areas.
7. Erosion Control and Spill Prevention Plan
  - a. An Erosion Control and Spill Prevention Plan will be developed by the Construction Contractor addressing risk reduction from sediments and/or oil-based compounds entering no-work zone areas. Site specific measures will be developed for each project and may include, but are not limited to, silt fences or sediment barriers at the base of exposed slopes.
  - b. Erosion control devices will not take the place of fencing designed for purposes of species and habitat protection. Maps or written instructions provided by the County to the on-site construction inspector will show areas to receive this treatment.
8. Re-vegetation Using Native Plant Species
  - a. In areas disturbed during construction, native plant species will be planted before the end of the first planting season following construction. These species will include native grasses and/or forbs. Use of native vegetation will reduce the likelihood of noxious weed introduction and spread. Native plant species and seed mixes will be appropriate for the habitat. No fertilizer or seed mixes containing non-native species will be spread in any open areas created during construction. All seeding to control erosion will use native grasses and forbs as outlined in contract plans or as directed by a biologist/natural resource specialist. Grubbing and brushing activities prior to, during, and following construction will be prohibited in no-work zones.
9. Landscaping
  - a. Any landscaping associated with the construction project will be consistent with a prairie environment. Trees and shrubs will not be planted within upland/or wet prairie habitat with known populations of the Covered Species.
10. Timing of Construction Projects
  - a. In areas where Fender's blue or Taylor's checkerspot butterfly are present, construction work will take place before or after the flight period of the butterfly, and while Kincaid's lupine plants are dormant. Work will be located  $\geq 10$  m (33 ft) from known occupied habitat.
11. Covered Plant Species Relocation
  - a. If a proposed project will result in the destruction of covered plant species, relocation of the affected Covered Species may occur pursuant to the protocols established in Appendix L: Plant Material Collection and Plant Introduction Protocols.
12. Seed Collection

- a. Before excavation or any ground disturbance in the project area, seeds from any Covered Species to be impacted may be collected and stored, subject to established protocols (Appendix L: Plant Material Collection and Plant Introduction Protocols), for future planting at Prairie Conservation Areas or other protected conservation sites.

#### **6.4.1 Transportation Maintenance Activities in areas with Covered Species**

1. Special Management Areas
  - a. Benton County has designated those areas within County rights-of-way where Covered Species or other rare and sensitive species are located as Special Management Areas (SMA). As of 2008, Benton County has established 31 SMAs for the HCP Covered Species. Whenever a new Covered Species population is located in a Benton County right-of-way, a new SMA will be established, and classified as a Type 1 or Type 2 roadside population (Chapter 5). The County's SMA program provides Benton County road maintenance staff with the information needed to avoid impacts to roadside populations of Covered Species. Upon notification and confirmation of a new population within a road right-of-way, Benton County will immediately notify its Public Works maintenance staff of the population's location and any proposed work halted. Within 60 working days, Benton County will establish a new SMA.
  - b. All vegetation management within SMAs with Covered Species will follow guidelines in Appendix M: Roadside and Streambank Management Guidelines for Covered Plants.
  - c. The Oregon Department of Transportation has also introduced a SMA program designed to protect threatened and endangered plant species occurring on its lands. ODOT SMAs are generally signed and certain activities are restricted. SMA signs installed at the edge of buffer areas (at least 15 m [49 ft] from the edge of a population) for sensitive species are coded so that maintenance staff can determine which activities are allowed for that area of roadway.
2. Routine Road/Bridge Maintenance Activities
  - a. Road or bridge maintenance activities have the potential to affect Covered Species by introducing sediment and other pollutants into downstream waterways, spreading invasive weeds, and directly disturbing roadside populations of Covered Species. To minimize and mitigate for these impacts, Benton County and the Cooperators will implement the Best Management Practices identified below, where appropriate and feasible, for all covered road maintenance activities where there is the potential to impact Covered Species:
    - i. Silt fencing or other sediment control devices will be installed downslope from soil disturbing maintenance activities to minimize the transport of sediment off site.



- ii. No erodible materials will be deposited into watercourses. No brush, loose soils, or other debris will be stockpiled within stream channels or on adjacent banks.
- iii. Herbicides and pesticides will only be used when necessary and applied in strict compliance with label requirements and state and federal regulations.
- iv. Heavy equipment (e.g., mowers) will be thoroughly cleaned to remove mud, debris, and vegetation before use in areas so they are free of noxious weeds (e.g., false brome) and do not introduce such weeds to new areas.

### **6.4.2 Parks/Natural Areas/Open Space Management Activities**

To avoid impacts to Covered Species from the development of parks, natural areas, and open spaces, Benton County and Cooperators will adhere to the following best management practices:

1. Surveys
  - a. Prior to design and construction of any recreational facility (including trails and kiosks), if suitable habitat exists, the proposed project area will be surveyed for the presence of Covered Species, unless the lands have been surveyed within 10 years.
2. Facility Location
  - b. Trails and facilities will be located at least 50 m (164 ft) away from existing Covered Species populations or butterfly habitat to minimize impacts to the species.
  - c. Whenever possible, trail alignments will use existing dirt roads.
  - d. Trails will be kept along the edges of large sensitive prairie habitat areas.
  - e. The type, width, and intensity of trail uses will be consistent with protection of the resources being traversed.
  - f. Existing trails adjacent to Covered Species will be realigned if impacts to the Covered Species from public use are detected.
3. Soil disturbance and erosion prevention
  - a. Trails and recreation facilities will not be constructed in areas subject to high levels of erosion.
  - b. Water breaks will be installed, where necessary, on trails to prevent accelerated runoff and erosion.
  - c. Boardwalks will be utilized for trails through wetlands to minimize soil disturbance and erosion.
4. Trampling and trail cutting
  - a. Trails and facilities will be designed to discourage and prevent intrusion into adjacent environmentally sensitive areas.
5. Road access
  - a. Where possible, new trails and facilities will be accessible from existing public roads.

- b. Environmentally sensitive grading techniques, drainage management, and vegetation buffers will be used for trail/facility runoff absorption/filtration.
- 6. Native landscaping
  - a. When landscaping is required, only native species that are appropriate for the habitat type will be used. The use of invasive plant (native or non-native) species will be prohibited.
- 7. Natural resource interpretation & signage
  - a. Interpretive displays will be constructed within PCAs with public access. Displays will describe the species present and their importance to prairies.
  - b. Interpretive materials describing the importance of the prairie habitat and the sensitive species found there will be designed and distributed to visitors. Visitors and pets will be encouraged to stay on established trails and to appreciate the biological diversity of the area.
  - c. Signs will be installed notifying public users that areas with Covered Species or butterfly habitat are off-limits.
- 8. Recreation
  - a. Only low-impact, non-motorized recreational activities that do not impact the Covered Species (e.g., hiking, wildlife viewing) will be allowed in PCAs.
- 9. Vegetation Management Practices
  - a. Vegetation management will follow guidelines in Appendix J: Prairie Habitat Vegetation Management Guidelines.

### **6.4.3 Water and Wastewater Management**

#### **6.4.3.0 Surveys**

Prior to design and construction of any publicly owned or managed water supply and delivery system, the proposed project area will be surveyed for the presence of Covered Species and their habitat. Any construction of such a system will, at a minimum, follow the best management practices for road construction projects (Section 6.4.0).

# 7 Monitoring and Adaptive Management

## 7.1 Introduction

Monitoring and adaptive management are crucial to a successful habitat conservation plan. Benton County and Cooperators will adopt a monitoring and adaptive management program to allow changes in the Conservation Measures to reach the long-term biological goal (Chapter 4) of the Habitat Conservation Plan, and thus to contribute to the survival and recovery of the species.

## 7.2 Monitoring

Compliance Monitoring and Effectiveness Monitoring will be completed by Benton County and the Cooperators. Compliance Monitoring will be conducted annually to assess the implementation of the HCP terms and conditions, and track levels of incidental take of the Covered Species authorized by Benton County under the incidental take permit. Effectiveness Monitoring will be completed at a minimum of three-year intervals at all sites where voluntary or mitigation related habitat restoration, enhancement and management occur.

### 7.2.0 Compliance Monitoring

Benton County Natural Areas and Parks Department shall annually review the terms and conditions of the County's incidental take permit and HCP to determine whether the County is implementing such terms and conditions and the effectiveness of that implementation.

Benton County will submit Annual Compliance Reports to the USFWS and ODA by March 31st of the following year for each year the incidental take permit is in effect (Appendix P: Sample Annual Compliance Report). This report shall include, at a minimum, the following:

1. Summary of assessment of implementation of HCP terms and conditions.
2. Amount of take authorized during the year, including:
  - a. The number of Certificates of Inclusion issued to private landowners and the amount of Fender's blue butterfly habitat impacted;
  - b. The number of Certificates of Inclusion issued to each Cooperator for each species, and the amount of take authorized for each species; and
  - c. The number of Cooperative Agreements entered into with each Cooperator. Copies of the Cooperative Agreement will be provided.

3. Conservation Measures undertaken by Benton County and the Cooperators, including:
  - a. Mitigation Information
    - i. Mitigation projects initiated
    - ii. Mitigation requirements fulfilled
    - iii. Funding spent on mitigation
    - iv. When Covered Species are present, acres mowed, grazed, or treated with herbicide for mitigation purposes
  - b. Voluntary Conservation Activity Information
    - i. Acres mowed, grazed or treated with herbicide for parks/natural areas/open space management
4. Effectiveness Monitoring data (see Section 7.2.1).
5. Monitoring results requiring changes to management techniques (adaptive management outcomes).

Cooperators will submit their compliance information, if any, to Benton County by December 31 of each year, to allow Benton County to incorporate the information into the Annual Compliance Report.

### **7.2.1 Effectiveness Monitoring**

Effectiveness Monitoring will be undertaken as a component of the HCP. The purpose of this monitoring is to determine the success of habitat restoration, enhancement, and management, as measured by tracking species status and habitat condition. Effectiveness monitoring will be conducted on Covered Lands where voluntary or mitigation related habitat restoration, enhancement, and management activities are implemented by Benton County or Cooperators. Each Cooperator is responsible for collecting and reporting their own Effectiveness Monitoring data to Benton County.

Effectiveness Monitoring objectives include:

- Tracking population trends of Covered Species on Covered Lands
- Detecting changes in habitat quality (plant community composition and species cover) over time
- Determining whether and what management actions are necessary
- Measuring success of restoration activities (i.e., evaluate effects of mowing, limited livestock grazing, burning, herbicide application, etc.)
- Measuring fulfillment of mitigation requirements
- Early detection of invasive plants and animals
- Detecting woody plant encroachment and litter/thatch build up
- Providing feedback for adaptive management

Monitoring shall be conducted by qualified biologists or natural resource specialists in possession of any permits required by regulatory agencies (state or federal) for the monitoring activities they are conducting.

### **7.2.1.0 Monitoring Plans at Sites where Effectiveness Monitoring may be Required**

Monitoring plans will be developed for all sites where Effectiveness Monitoring is required, including mitigation sites. At Prairie Conservation Areas, the monitoring plan may be added to any existing management plans or guidelines, such that the required levels of monitoring for the HCP are included. Monitoring plans will be developed by qualified biologists/natural resource specialists, and in some cases, sites may already have a monitoring plan established.

At a minimum, each monitoring plan will include:

1. Name of site.
2. Management goals and objectives (e.g., control of invasive species) for the site.
3. Subject of the monitoring program (e.g., species and/or habitat status).
4. Description of what is being monitored (e.g., species and/or habitats), including a site description (which may be generated using the first year's monitoring data and any prior surveys) with information about the abundance of Fender's Blue or Taylor's Checkerspot butterfly host plants and nectar plants or Covered plants.
5. Variables to be measured and how data will be collected.
6. Frequency (minimum of three year cycle), timing (dependent on species being monitored), duration (minimum of six years), and intensity (number of sample plots) of the sampling.
7. Field procedures.
8. Sampling locations.
9. How data will be analyzed, who will conduct analysis (e.g., qualified biologist, statistician), and how results will determine whether the HCP goals and objectives are being met through the Conservation Measures.
10. Adaptive management process (such as use of the results to update management methods).
11. Monitoring equipment needs.
12. Personnel responsible for implementing monitoring program.
13. Process for reviewing/modifying monitoring plan.

#### **7.2.1.1 Effectiveness Monitoring Timing and Frequency**

Monitoring shall be conducted during the growing season of the Covered Species or habitat. This may vary by 1-3 weeks per year due to weather conditions, and differences in site conditions (elevation, aspect, etc.).

The first year of monitoring data, along with data from any prior surveys, will serve as the site's baseline inventory. Once baseline conditions have been established, periodic re-sampling (monitoring) will occur at a minimum of every three years. If significant management activities (e.g., prescribed fire) are implemented, monitoring should be conducted at a greater frequency (e.g., to collect pre-and post-treatment data) if needed to supply data for adaptive management, then return to regular three year monitoring cycles.

If implementation of habitat restoration, enhancement, or management activities at a given site ceases, monitoring will be conducted for a minimum of two monitoring cycles (six years) after cessation of the activities, as long as no adaptive management thresholds (e.g., decrease in population abundance- see Table 7.2) have been triggered. If an adaptive management threshold is triggered, monitoring will be required until the problem has been addressed.

### **7.2.1.2 Species Status Monitoring for Effectiveness Monitoring**

Species status monitoring will be completed for Covered Species at sites where:

- Covered Activities occur that are likely to result in temporary impacts.
- Habitat restoration and enhancement activities are conducted for conservation purposes.
- Any mitigation work is completed by Benton County or a Cooperator.

Species abundance (or habitat, in the case of Fender's blue and Taylor's checkerspot butterflies) will be monitored. Direct counts of butterflies will not be required as these numbers are extremely variable from year-to-year, and fluctuations may be due to multiple conditions outside the control of the County or Cooperators, including weather.

Abundance of each species will be measured using the following metrics:

- Fender's blue butterflies are quantified on the basis of square meters of Kincaid's lupine and native nectar species cover (see Table 2.1 for a list of nectar species).
- Taylor's checkerspot butterflies are quantified on the basis of square meters of host plants (primarily English plantain) and native nectar plants present.
- Kincaid's lupine are quantified on the basis of square meters of foliar cover.
- Nelson's checkermallow are quantified on the basis of individual plants. Plants that are  $\geq 30$  cm (11.8 in) apart are considered separate individuals.
- Willamette daisy are quantified on the basis of individual plants. Plants that are  $\geq 10$  cm (3.9 in) apart are considered separate individuals.
- Bradshaw's lomatium are quantified on the basis of individual plants. Plants that are  $\geq 10$  cm (3.9 in) apart are considered separate individuals.
- Peacock larkspur are quantified on the basis of individual plants.

Species abundance will be censused by:

- Counting individuals of the covered plants, using the descriptions above to differentiate individuals. Where necessary, sites will be divided with a grid. The grid will be marked with permanent or GPS markers as needed. This will allow tracking of population trends within specific areas of the population and site.
- Measuring the quantity of butterfly habitat, including cover of host and nectar plants within sections of a grid. The grid will be marked with permanent or GPS markers as needed. This will allow tracking of population trends within specific areas of the population and site.

### **7.2.1.3 Prairie Habitat Condition Monitoring for Effectiveness Monitoring**

Prairie Habitat Condition Monitoring will be completed at sites where habitat restoration and enhancement activities are implemented. Monitoring will include measurements of:

- Shrub and tree encroachment into prairie habitats
- Invasive species
- Disturbance (anthropogenic and natural)
- Thatch and plant litter accumulation
- Plant community composition

#### **Shrub and Tree Encroachment into Prairie Habitat**

The first round of monitoring at a site (baseline monitoring) will include mapping of prairie areas by delineating prairie boundaries. When appropriate, individual trees and shrubs (identified to species) or patches of trees and shrubs will be mapped using a combination of sketch maps, aerial photos, photo points, and GPS.

#### **Invasive Species**

During baseline monitoring, established and satellite populations (isolated patches of one to a few individuals) of invasive plant species will be identified and mapped. Methods will include using a combination of sketch maps, aerial photos, photo points, and GPS. Occurrences of invasive animals will be noted and areas of damage caused by these species will be mapped.

Any "A" or "B" Noxious Weeds, following Oregon Department of Agriculture's classification (e.g., ODA 2009) will be identified and mapped. "A" classified weeds are weeds of known economic importance not known to occur in Oregon, or occur in small enough infestations to make eradication/containment possible. "B" classified weeds are weeds of economic importance which are regionally abundant, but which may have limited distribution in some counties (Table 7.1). New problem species may be added to the groups as they are identified in Oregon and the project sites. Problem species may also be re-classified as their status changes. Group A and B classified weeds will be addressed specifically through adaptive management (Table 7.2).

#### **Disturbance**

Signs of man-made disturbance will be evaluated during habitat assessments at all sites, especially those with known use by the public. Any signs of new or existing trails or parts of trails with use by horses, mountain bikes, or hikers, will be mapped and tracked using a combination of sketch maps, aerial photos, photo points, and GPS during each monitoring cycle. Trampling off any established trail will be noted. Changes in surrounding land use will also be noted and described.

Table 7.1 Examples of Oregon Department of Agriculture "A" and "B" classified weeds.

<b>Common Name</b>	<b>Latin Name</b>	<b>Group A</b>	<b>Group B</b>
oblong spurge	<i>Euphorbia oblongata</i>	x	
squarrose knapweed	<i>Centaurea virgata</i>	x	
Himalayan blackberry	<i>Rubus armeniacus</i>		x
Canada thistle	<i>Cirsium arvense</i>		x
oneseed hawthorn	<i>Crataegus monogyna</i>		x
false brome	<i>Brachypodium sylvaticum</i>		x
Italian thistle	<i>Carduus pycnocephalus</i>		x
meadow knapweed	<i>Centaurea pratensis</i>		x
milk thistle	<i>Silybum marianum</i>		x
Scotch broom	<i>Cytisus scoparius</i>		x
spotted knapweed	<i>Centaurea maculosa</i>		x
spurge laurel	<i>Daphne laureola</i>		x
Future species identified as EDRR priorities		x	
Any Oregon State A-listed noxious weeds		x	
Any Oregon State B-listed noxious weeds			x

Signs of natural disturbance will be evaluated during habitat assessments at all sites, including:

- Soil disturbance by animals such as rodents
- Game trails
- Intensive herbivory by animals
- Windfall of trees
- Erosion
- Changes in hydrology

### **Plant Community Composition and Thatch/Litter Accumulation**

Measurement of plant community composition and thatch and litter accumulation will involve fine scale habitat sampling using an appropriate number of randomly placed 5 m x 5 m (16.4 ft by 16.4 ft) plots to sample plant community attributes. The number of plots will vary with the size of the site, the proportion of the site occupied by the Covered Species, and the heterogeneity of the site. Within each plot, the following variables will be estimated:

- Percentage cover of each vascular plant species present
- Percentage cover of plant litter, moss, gravel/rock, and bare soil

#### **7.2.1.4 Effectiveness Monitoring Data Management**

Proper data management, analysis, and reporting are critical to the success of the monitoring and adaptive management program. Data on monitoring methods, results, and analysis must be managed, stored, and made available to interested parties including, but not limited to, Benton County staff, Cooperators, any technical advisors, USFWS, ODA and the Oregon Natural Heritage Information Center (ORNHC). A database and clear reporting procedure are also required for incidental take permit compliance. Information about data management is available in Section 8.2.2 **Error! Reference source not found.** The data will be managed to ensure accurate and up-to-date information is available for making management decisions.



## 7.3 Adaptive Management

Adaptive management is a process allowing resource managers to adjust their actions to reflect new information or changing conditions in order to reach a goal. Adaptive management will allow Benton County and Cooperators to minimize the uncertainty associated with gaps in scientific information or knowledge of the biological requirements of the species. While substantial research has been completed with some Covered Species (e.g., Fender's blue butterfly), more information is needed. For some Covered Species there has been very little research (e.g., peacock larkspur).

Additionally, adaptive management will allow the County and Cooperators to make changes in how they manage habitat for the Covered Species where there is uncertainty about the effects of habitat restoration and enhancement techniques, such as mowing or prescribed burning, or the optimum methods for applying such treatments.

Information used in the adaptive management process will come from implementation of the Conservation Measures pertaining to habitat restoration, enhancement, and management activities (Chapter 6). Effectiveness Monitoring data collected by the County or Cooperators will be analyzed to determine if the goals and objectives of the HCP are being met. If the Conservation Measures are not producing the desired results, adjustments will be made to the Conservation Measures in the HCP and, in particular, to management actions at the PCAs, and to the Prairie Habitat Vegetation Management Guidelines (Appendix J), the Roadside and Streambank Management Guidelines for Covered Plants (Appendix M) and the Plant Material Collection and Plant Introduction Protocols (Appendix L).

### 7.3.0 Adaptive Management to Update and Improve Habitat Restoration and Enhancement Techniques

In management plans and guidelines prepared for the Prairie Conservation Areas, Benton County or the Cooperator will:

1. Identify the uncertainty and the questions to be addressed to resolve the uncertainty.
2. Develop alternative strategies and determine which experimental strategies to implement.
3. Integrate a monitoring program able to detect the necessary information for strategy evaluation.
4. Incorporate feedback loops linking implementation and monitoring to appropriate changes in management.

### 7.3.1 Other Adaptive Management Methods

Adaptive management also may be used to update management strategies to 1) redefine Conservation Measures or 2) incorporate Conservation Measures recommended in future recovery plans for the Covered Species.

### **7.3.1.0 Redefining Conservation Measures**

If new techniques become available for more effective implementation of the Conservation Measures, then revisions to the Conservation Measures in the HCP will be made as soon as practicable (See Section 8.8 Amendments or Implementing Agreement).

### **7.3.1.1 Recovery Plans in the HCP Area**

Recovery plans for the Covered Species may be developed or revised by USFWS over the life of the incidental take permit. The HCP may be amended to incorporate recommendations contained in recovery plans when such recommendations:

1. Identify relevant new information, approaches, techniques, or Covered Species protection needs.
2. Fit within the overall biological goals and objectives, framework, and funding levels of this HCP.
3. Do not exceed require more of mitigation than identified in this HCP.

## **7.3.2 Monitoring Interface with Adaptive Management**

The objective of the Effectiveness Monitoring for purposes of adaptive management is to determine whether the Covered Species populations and/or habitats are declining. Declines may be due to Covered Activities or changes in habitat conditions. Through adaptive management, managers may detect changes in habitat conditions (e.g., increasing invasive species populations) prior to a resulting decline in Covered Species populations. Thresholds of Covered Species population trends and habitat quality are set forth in Table 7.2. If and when thresholds are crossed, adaptive management actions will be triggered (Table 7.2).

### **7.3.2.0 Species Status Monitoring**

#### **Fender's blue butterfly and Taylor's checkerspot butterfly**

If host or nectar plant abundance (as measured by cover) decreases by  $\geq 30\%$  at any single monitoring event it will trigger Benton County or the Cooperator owning or managing the sites to meet with USFWS within 90 days to discuss any necessary changes in habitat management at the site. If host plant or nectar plant abundance (as measured by cover) decreases by  $\geq 30\%$  over two consecutive three year monitoring cycles, it will trigger Benton County or the Cooperator owning or managing the sites to cease the activity and meet with USFWS to discuss changes in habitat management at the site.

#### **Plant Species**

If covered plant abundance decreases by  $\geq 30\%$  at any single monitoring event it will trigger Benton County or the Cooperator owning or managing the sites to meet with USFWS and/or ODA within 90 days to discuss any necessary changes in habitat management at the site. If covered plant abundance decreases by  $\geq 30\%$  over two consecutive three year monitoring cycles, it will trigger Benton County or the

Cooperator owning or managing the sites to cease the activity and meet with USFWS and/or ODA within 60 days to discuss changes in habitat management at the site.

### 7.3.2.1 Habitat Condition Monitoring

If any of the habitat condition thresholds (Table 7.2) are triggered, Benton County or the Cooperator owning or managing the sites will take the necessary actions to adjust management and/or make an immediate response (e.g., in the case of new populations of new invasive species), in coordination with USFWS and ODA.

Table 7.2 Habitat condition monitoring thresholds.

Condition	Threshold	Adaptive Management Response
Tree and Shrub Encroachment	Meadow decreases in size by $\geq$ 30%	If decreases are due to tree or shrub encroachment, evaluate and elevate control of such encroachment.
Invasive species: Group A	New population discovered.	Immediate eradication efforts will be undertaken. Work will be coordinated with USFWS/ODA when invasive species population is adjacent to or overlapping with Covered Species. Additional monitoring will take place the first growing season following treatment.
	>30% increase in abundance of any Group A species at the site.	Current containment efforts will be evaluated and elevated upon review by and recommendations of USFWS/ODA.
Invasive species: Group B	New population discovered.	Immediate eradication efforts will be undertaken. Work will be coordinated with USFWS/ODA when invasive species population is adjacent to or overlapping with Covered Species. Additional monitoring will take place the first growing season following treatment.
	>30% increase in abundance of any Group B species at the site.	Current containment efforts will be evaluated and elevated upon review by and recommendations of USFWS/ODA.
Natural Disturbance	Rodent ground disturbance over $\geq$ 30% of the site.	Confer with USFWS and ODA for recommended actions.
	$\geq$ 30% of covered plants at a site grazed by mammals.	
	Significant windfall, erosion or change in hydrology detected.	
Anthropogenic Disturbance	Any signs of new or existing trails or parts of trails with use by horses, mountain bikes, or hikers	Evaluate management of public use, and revise outreach (including interpretive signs) as needed.
Plant Community Composition	Native species cover decreases by $\geq$ 30%, exotic species cover increases by $\geq$ 30%, or woody species cover increases by $\geq$ 15%.	Evaluate site management, including mowing and prescribed fire frequency/timing with USFWS/ODA.
Plant litter/thatch accumulation	Plant litter/thatch cover increases by $\geq$ 30%.	Evaluate site management, including mowing and prescribed fire frequency and timing with USFWS/ODA.

# 8 Implementation

## 8.1 Roles, Responsibilities, and Tasks

### 8.1.0 Introduction

This Habitat Conservation Plan (HCP or Plan) is executed through an Implementing Agreement (IA) between Benton County, ODA, and the USFWS. This section describes the roles and responsibilities of Benton County in implementing the HCP.

### 8.1.1 Responsibilities of Benton County

For the duration of the incidental take permit, Benton County will provide the staff and resources necessary for implementation of the HCP.

#### 8.1.1.0 Benton County Board of Commissioners

The County Board of Commissioners has overall responsibility for implementation of the HCP. Many of the tasks to be performed by the County will be delegated to staff in the Natural Areas and Parks Department, Public Affairs Office, Community Development Department, Public Works Department, and County Attorney's office (Figure 8.1). The following tasks will be performed by the Benton County Board of Commissioners:

- Program Administration
  - Review and approve Implementing Ordinance
  - Review and approve Amendments to the HCP, incidental take permit and Implementing Agreement
  - Approve submittal of Annual Compliance Reports to USFWS and ODA
  - Approve submittal of Grant Applications
- Land Acquisition
  - Provide guidance and approval for acquisition of lands and/or conservation easements
- Work Plan/Budget
  - Biennially, Benton County will prepare a budget and work plan for implementation of the HCP. Each department with responsibility for implementation of the HCP will submit their budgets to the County's budget office. The County Commissioners have the overall responsibility for adopting the County's budget.
- Updating County Ordinances to meet requirements of the HCP.
- Approval of major amendments to the HCP and Implementing Agreement.

The Benton County Board of Commissioners shall by ordinance amend the County's Comprehensive Plan and Development Code, to include procedures and requirements for implementation of the HCP, incidental take permit, and Implementing Agreement

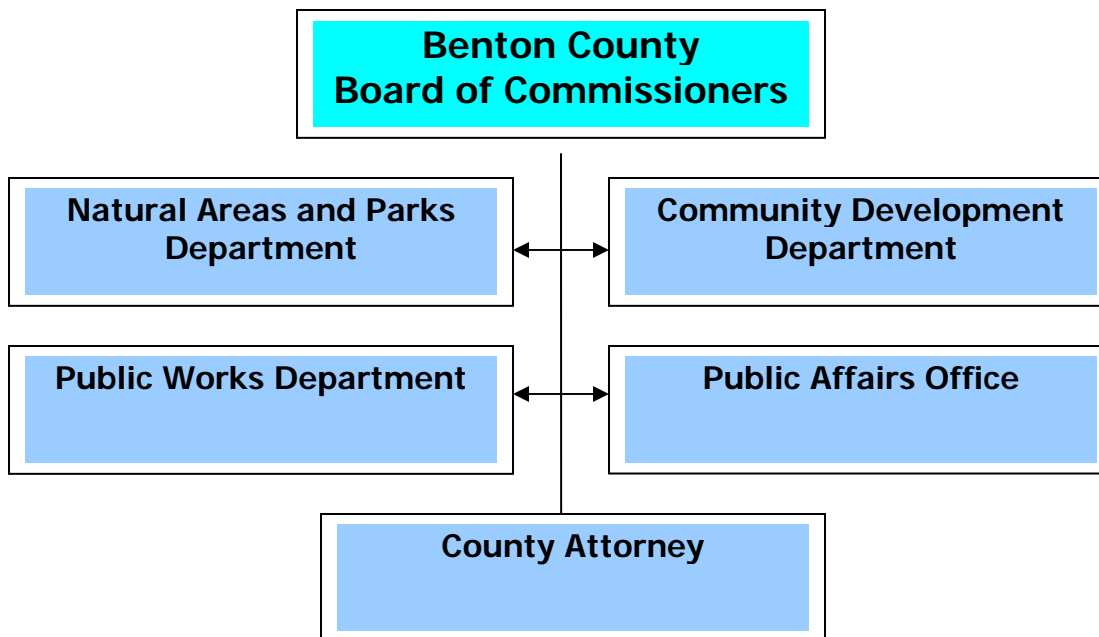


Figure 8.1 Benton County Departments with responsibility for implementation of the Benton County Prairie Species HCP.

terms and conditions. The ordinance will be finalized and adopted no later than one year after issuance of the incidental take permit by USFWS. The ordinance may be amended over time based on HCP amendments.

#### **8.1.1.1 Natural Areas and Parks Department**

The Natural Areas and Parks Department Director will be designated as the County's HCP Coordinator with the task of providing overall program implementation oversight. Implementation tasks and responsibilities of this department are described below.

- Preparation of department work plans and budgets for HCP related tasks
- Grants
  - The Natural Areas and Parks Department, when appropriate, will seek grant opportunities for the habitat restoration, enhancement and management activities at the PCAs. This department will be responsible for administering any grant funding Benton County receives for HCP implementation.
- HCP Amendments
  - Amendments to the HCP are expected during the incidental take permit term (50 years). Amendments will be made through the Natural Areas and Parks Department, in consultation with affected departments. Benton County staff will be notified of any amendments to the HCP affecting their duties. For details on the process to amend the HCP see the Implementing Agreement.
- Land Acquisition

- Benton County will acquire (from willing sellers) lands or conservation easements supporting occupied Fender's blue butterfly habitat to mitigate for impacts to Fender's blue butterfly from home, farm, and forest construction on private lands within the Fender's Blue Zone. The County may also acquire lands outside of the Fender's Blue Zone to support other species covered by the HCP.
- Training
  - Benton County staff responsible for HCP implementation will be trained by the HCP Coordinator on the requirements of the HCP. This training will be offered to all staff members within six months of issuance of the incidental take permit. For staff beginning work with the County after the initial training, the training will become part of new employee orientation.
- Management Guidelines for Parks and Natural Areas
  - The Natural Areas and Parks Department will prepare site management guidelines for Bezell Memorial Forest, Fitton Green Natural Area, and Jackson-Frazier Wetland Prairie Conservation Areas, as well as any PCAs acquired by Benton County during the incidental take permit term. These guidelines will describe the types of restoration, enhancement, and management activities, including monitoring, to occur at the site; the entity responsible for management of the site; and a schedule of management activities. Guidelines will be consistent with the Conservation Measures and protocols set forth in the HCP. Until site management guidelines are prepared, Benton County will manage the Covered Species at each park according to the Conservation Measures in this Plan (Chapter 6).
  - A management plan for Taylor's checkerspot butterfly has been prepared (Appendix N: Taylor's Checkerspot Management Plan). Benton County will follow guidelines described in the plan when conducting activities and managing County lands where Taylor's checkerspot butterfly is present. The plan will be amended, as needed, pursuant to adaptive management principles.
- Management Guidelines and Protocols
  - Management guidelines (Appendix J: Prairie Habitat Vegetation Management Guidelines, Appendix M: Roadside and Streambank Management Guidelines for Covered Plants, and Appendix L: Plant Material Collection and Plant Introduction Protocols) will be updated as new information becomes available through research or the adaptive management process and following discussions with the USFWS and ODA.
- Prairie Conservation Area Management
  - Habitat restoration, enhancement, and management activities on County owned or managed PCAs will be the responsibility of the Natural Areas and Parks Department. The County will implement these activities in accordance with the Conservation Measures (Chapter 6) and the site management plans or guidelines. Benton County may enter into partnerships and use volunteers to achieve management goals. This department will also maintain a database

- to track habitat restoration, enhancement, and management activities occurring on County PCAs, including monitoring results showing pre- and post- management activity data.
- Compliance Monitoring
    - The Natural Areas and Parks Department will be responsible for compiling and submitting the information necessary for the annual Compliance Report (Appendix P: Sample Annual Compliance Report). For each year the incidental take permit is in effect, Benton County shall submit an annual Compliance Report by March 31st of the following year for Benton County and Cooperator activities occurring during the previous year. The Benton County Commissioners will review and approve submittal of the Compliance Report to the USFWS and ODA. The contents of the annual Compliance Report are described in Section 7.2.0 and Appendix P: Sample Annual Compliance Report.
    - Cooperators shall submit all necessary Compliance Report information to Benton County by December 31 of each year.
  - Effectiveness Monitoring
    - Benton County will conduct Effectiveness Monitoring for any habitat restoration and/or enhancement activities occurring on Benton County PCAs. Documentation of monitoring shall be prepared by the Natural Areas and Parks Department and submitted as part of the annual Compliance Report.
  - Data Management
    - The Natural Area and Parks Department will maintain databases tracking HCP information as specified in Section 8.2.2.
  - Public Outreach
    - Public outreach is critical to the success of prairie habitat conservation. Benton County will utilize a variety of outreach methods to work with and build community support for prairie conservation. The Natural Areas and Parks Department will:
      - Maintain web pages on the County's web site providing information about the HCP, including a final copy of the HCP. The web pages will be updated as needed to address conservation actions being undertaken by the County. The website will provide information on opportunities to conserve and manage prairie habitat on private property.
      - Seek opportunities to involve local watershed councils, conservation organizations, and public agencies in partnering with private landowners for conserving Covered Species on their property.
      - Coordinate with other County departments, public agencies, and conservation organizations in presenting workshops and field trips for the general public on such topics as endangered species (plants and butterflies) identification, ecology of Willamette Valley prairies, and invasive weed identification and control.
      - Prepare interpretive materials for County owned and managed PCAs.

- Contractor Management
  - Contractors may be needed to assist Benton County in implementation of the HCP (primarily conducting species surveys, preparing site management plans, conducting Effectiveness Monitoring, and performing management activities). The Natural Areas and Parks Department will be responsible for soliciting and managing contractors.

### **8.1.1.2 Public Affairs**

The office of Public Affairs will be responsible for working with other Benton County departments in the dissemination of information about the HCP and about prairie conservation in general. Tasks may include (1) assisting the Natural Areas and Parks Department with maintaining the HCP webpage, and (2) reviewing and submitting press releases to media outlets, and (3) provide assistance with interpretive materials, as needed.

### **8.1.1.3 Community Development Department**

The HCP is programmatic, allowing Benton County to issue Certificates of Inclusion to select entities. The Benton County Community Development Director will be responsible for issuing (1) Certificates of Inclusion to County permit and agricultural building authorization applicants seeking authorization to impact Fender's blue butterfly habitat in the Fender's Blue Zone and (2) Certificates of Inclusion and Cooperative Agreements to Cooperators seeking take authorization from the County. The Community Development Department will conduct the following activities in the implementation of the HCP:

- Program Administration
  - Prepare department work plans/budgets for HCP related tasks.
  - Maintain records of impacts to Covered Species (Take).
  - Track the number of Certificates of Inclusion and Cooperative Agreements issued by the County.
  - Annually prepare, in cooperation with Natural Areas and Parks Director, information for the Compliance Report.
  - Prepare Implementing Ordinance(s).
  - Revise the Comprehensive Plan and Development Code to incorporate the incidental take permit, HCP, and Implementing Agreement requirements.
  - Modify the Comprehensive Plan and Development Code to reflect any modifications to the HCP that may arise.
- Permitting
  - Work with private landowners to avoid take of Fender's blue butterfly habitat when possible.
  - Review County permit and agricultural building authorization applications for properties located in Fender's Blue Zone (Figure 8.2).
  - Communicate requirements to applicants for activities that are either covered (no action required) or not covered (USFWS approval required).
  - Coordinate with USFWS prior to permitting activities not covered by this HCP.



- Calculate extent of potential impacts.
- Issue Certificates of Inclusion.
- Negotiate, review, and issue Cooperative Agreements to Cooperators.
- Training
  - Benton County Community Development Department will train its staff regarding the HCP initially, and when new staff is hired. Department staff training will cover:
    - Identifying properties within the Fender's Blue Zone
    - Issuing Cooperative Agreements
    - Issuing Certificates of Inclusion
    - Maintaining records of impacts to Covered Species
    - Tracking Cooperative Agreements and Certificates of Inclusion

#### **8.1.1.4 Public Works Department**

Responsibilities of the Public Works Department regarding implementation of the HCP include:

- Program Administration
  - Prepare work plans/budgets for HCP related tasks.
  - Manage consultants as necessary (contractors may be needed for surveys, specific vegetation management activities, etc.).
  - Annually provide Natural Areas and Park Director with information needed for Compliance Report.
- Road Construction
  - Implement Best Management Practices on road construction projects.
- Vegetation Management
  - Manage Type 1 roadside populations as set forth in the HCP.
  - Manage Type 2 roadside populations as set forth in the HCP, where possible.
- Training
  - Conduct annual training of appropriate staff on the roadside vegetation guidelines for Special Management Areas (Appendix M: Roadside and Streambank Management Guidelines for Covered Plants).

#### **8.1.1.5 County Attorney**

The County Attorney is responsible for the legal review of documents to ensure the County is adequately covered for legal liability purposes. Implementation of the HCP will rely on the County Attorney to:

- Review and revise the draft Implementing Ordinance.
- Review and negotiate Cooperative Agreements, where appropriate.
- Enforcing Cooperative Agreements, where necessary.
- Work with Natural Areas and Parks Director to negotiate land acquisitions.

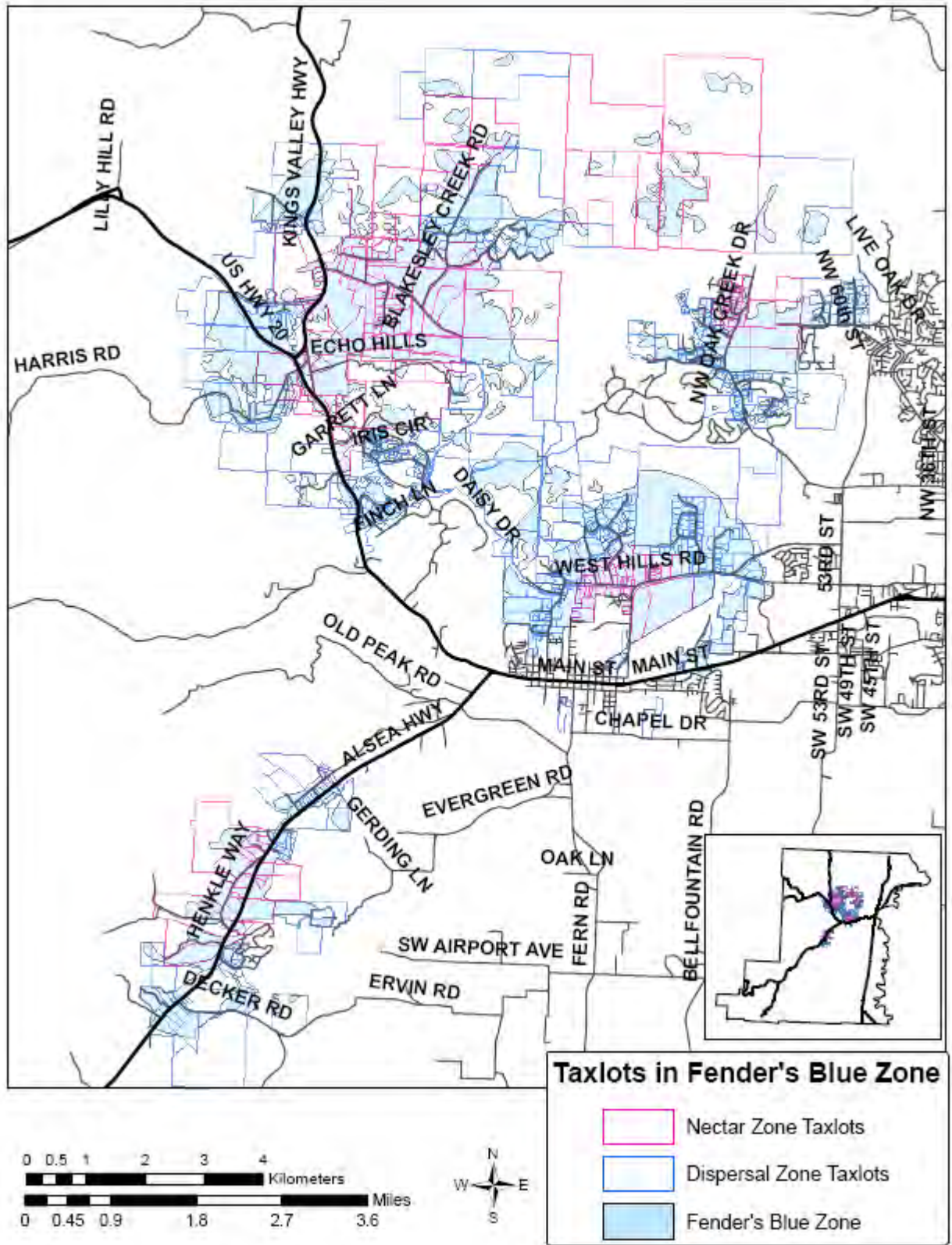


Figure 8.2 Taxlots in Fender's blue butterfly habitat.

### **8.1.2 Advisory Committees**

General oversight will be provided as needed by an existing Advisory Committee to Benton County, such as the Benton County Parks Advisory Board. An ad-hoc Technical Advisory Committee may be formed to seek scientific expertise from scientists or Agency personnel when needed.

## **8.2 Certificates of Inclusion and Cooperative Agreements**

### **8.2.0 County Permits and Agricultural Building Authorizations to Private Parties**

As part of Benton County's incidental take permit, the County seeks authorization to issue Certificates of Inclusion (take authorization) to persons needing a County permit or agricultural building authorization for impacts to Fender's blue butterfly habitat resulting from home, farm or forest construction in the Fender's Blue Zone.

At any time during the HCP, if there is no remaining take available for the County to allocate, no Certificates of Inclusion will be issued and the permit applicant or Cooperator will need to work with the USFWS or ODA to obtain incidental take authorization. The County also reserves the right to refuse issuance of a Certificate of Inclusion and incidental take permit coverage to any party.

#### **8.2.0.0 Permits for Home, Farm and Forest Construction**

County planning staff will review the building and agricultural building authorization applications (Figure 8.3) it receives for ground-disturbing activities to determine whether the applicant's proposed project is located within the Fender's Blue Zone (Figure 8.2). If the proposed project or activity does not occur within the Fender's Blue Zone, then the application process can proceed. If the proposed project is located within the Fender's Blue Zone, County staff will assess whether the proposed project or action is a Covered Activity.

- If the activity is covered by the HCP, the applicant may:
  1. Seek a Certificate of Inclusion from Benton County (Appendix A: Certificate of Inclusion Template – Private Landowner) authorizing impacts to Fender's blue butterfly habitat.
  2. Seek authorization to impact Fender's blue butterfly habitat from USFWS.
- If the proposed project or activity is not covered by the HCP and the activity will impact butterfly habitat, the landowner must seek authorization from USFWS. This typically involves conducting a survey at the appropriate time of year and if habitat is found, applying for a take permit and mitigating for any impacts. Once USFWS authorization has been obtained, the County will continue processing the permit application

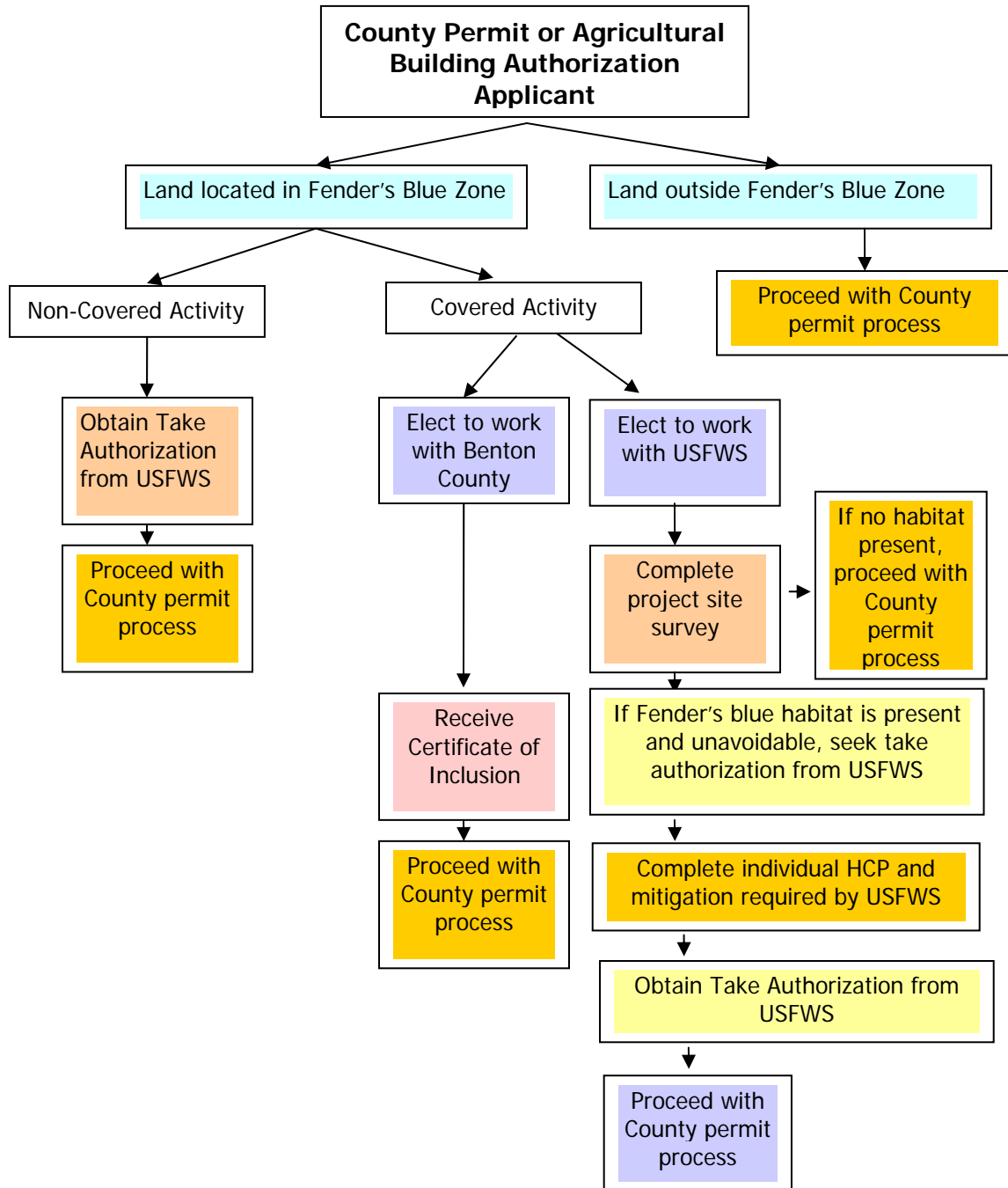


Figure 8.3 Certificate of Inclusion process for County permit or agricultural building Authorization applicants inside and outside the Fender's Blue Zone.

- Applicants obtaining authorization directly from USFWS may be required to conduct any mitigation USFWS may require before a County permit or agricultural building authorization will be issued.

In some cases, an applicant from the Fender's Blue Zone may have already had their property surveyed by a qualified biologist, or may elect to survey prior to requesting a permit from the County.

- If a survey has been conducted within 10 years of an application for a permit or agricultural building authorization, with **no Kincaid's lupine and no native nectar species** (nectar species only applicable if the site is within the Nectar Zone) found, and adequate documentation (e.g., existing documentation from HCP surveys, or a survey report from a qualified biologist with sufficient detail) of the survey is provided to Benton County planning staff by the applicant, or is already included in the Benton County GIS database (for surveys completed during HCP development), then the application process may proceed and no HCP Permit will be required. Surveys greater than 10 years old will not be accepted as evidence of Kincaid's lupine and native nectar species absence.
- If a survey has been conducted within 5 years<sup>8</sup> of an application for a permit or agricultural building authorization, and **Kincaid's lupine or native nectar species were found** (nectar species only applicable if the site is within the Nectar Zone), and adequate documentation of the survey is provided to Benton County planning staff, County planning staff will work with the applicant to site construction projects to avoid impacts to the Fender's blue habitat.
  - If avoidance is achieved, the County will not need to count any impact as "take" or conduct mitigation.
  - If avoidance is not possible, the amount of impact will be determined using the survey data. The applicant may elect to seek take authorization from USFWS, or proceed with the County process, in which case a Certificate of Inclusion will be issued to the applicant, and the application process will proceed.
- Surveys older than 10 years will not be considered in the County's permitting or agricultural building authorization process.

#### **8.2.0.1 Road Approach or Utility Work in Rights-of-Way Permit Applicants**

Public Works staff will review road approach and utility work permit applications it receives to determine whether the proposed activity would occur within the County's Type 1 or Type 2 roadside populations (SMAs: Section 5.2.3.0, Table 5.7). If so, County staff will determine if the proposed activity will affect the Covered Species located within the SMA and will work with the applicant to avoid impacts. If the impacts are unavoidable, Benton County shall:

---

<sup>8</sup> Surveys with habitat found are good for 5 years only as the likelihood of habitat expanding or shifting across the landscape is greater when habitat is present, necessitating more frequent survey information.

- For Type 2 roadside populations, determine the amount of impact (take) to the species. A Certificate of Inclusion will be issued to the applicant, if necessary. Mitigation will be completed by the County for road approach applicants, and by utility companies for utility work applicants.
- For Type 1 roadside populations, refer the permit applicant to ODA or USFWS, and only issue a permit if the applicant has satisfied any needed negotiation, take authorization, and mitigation with ODA or USFWS.

### **8.2.1 Cooperative Agreements and Certificates of Inclusion for Cooperators**

As part of Benton County's incidental take permit, the County is seeking authorization to issue Certificates of Inclusion to the Cooperators for impacts to the Covered Species resulting from their Covered Activities within the Plan Area (Figure 3.1). In order to receive a Certificate of Inclusion, Cooperators must (Figure 8.4):

- Describe the proposed project or activity and ensure the project or activity is covered by the HCP (Appendix Q: Sample Cooperator Reporting Forms).
- Survey the specific project area for the Covered Species if required (Table 6.4, Appendix K: Project Site Survey and Reporting Protocols for Plants and Butterfly Habitat).
- Identify any anticipated impacts to the Covered Species.
- Enter into a Cooperative Agreement (Appendix C: Cooperative Agreement Template) that sets forth the requirements of the parties, including monitoring and reporting commitments.
  - If the Cooperator elects to complete concurrent mitigation, they must demonstrate that they are prepared to initiate the mitigation by submitting a Notice of Mitigation Initiation, including a monitoring plan and mitigation site baseline assessment, to Benton County when they sign the Cooperative Agreement. The Cooperator shall also submit a notice to the County when mitigation requirements have been fulfilled (for forms, see Appendix Q: Sample Cooperator Reporting Forms). Mitigation must be initiated within 1 year of the Cooperative Agreement effective date.
  - If the Cooperator elects to pre-mitigate for impacts, they must submit the needed mitigation notices to Benton County to document when pre-mitigation was initiated and completed.

Once the Cooperative Agreement has been signed by the parties, Benton County will issue a Certificate of Inclusion. A Certificate of Inclusion will be issued only for discrete projects occurring within a yearly timeframe, or for those actions that are repeated in the same location(s) at pre-determined intervals, and not for blanket coverage.

At any time during the HCP, if there is no remaining take available for the County to allocate, no Certificates of Inclusion will be issued, and Cooperators wishing to impact the Covered Species must work with USFWS or ODA to obtain incidental take authorization.

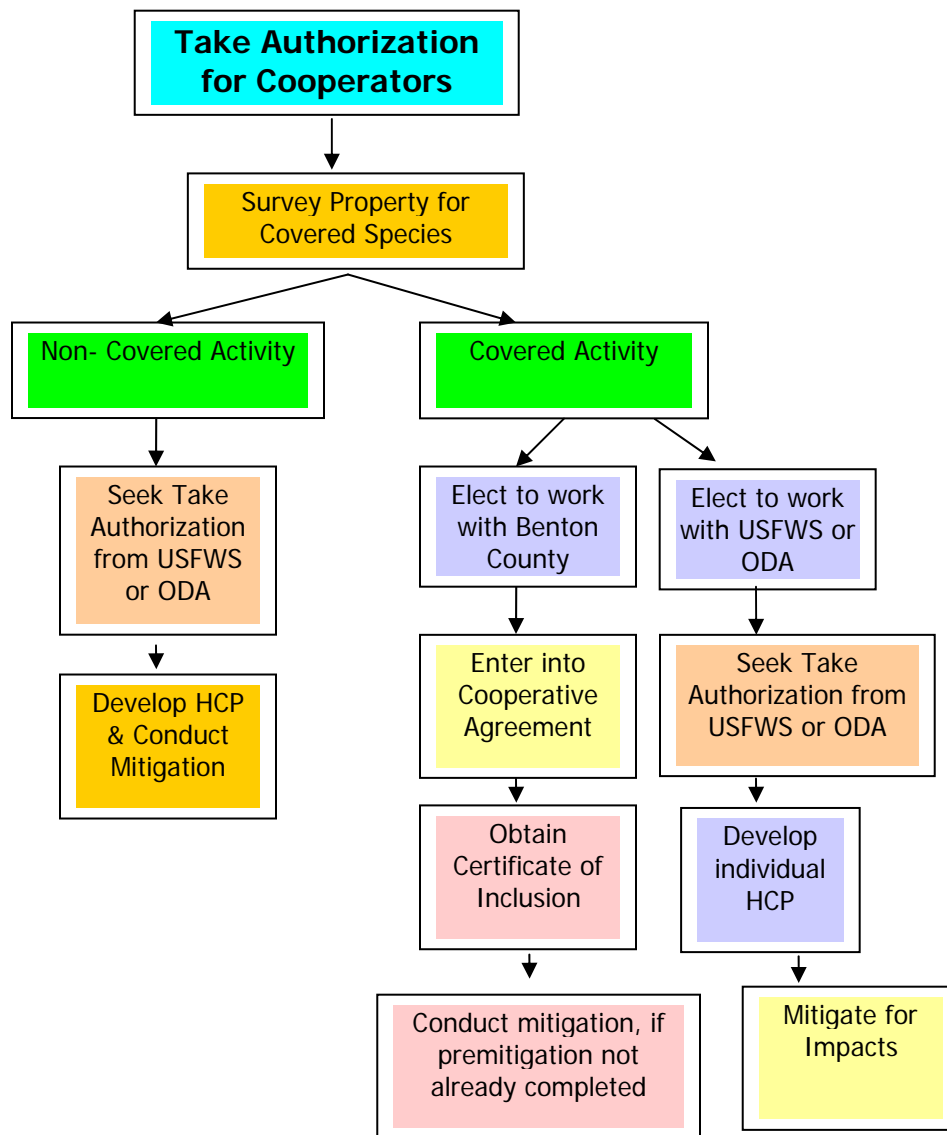


Figure 8.4 Cooperator options for obtaining take authorization following implementation of the Benton County Prairie Species HCP.

### 8.2.2 Data Management

Benton County will maintain a comprehensive data repository to track incidental take permit compliance, monitoring data, and all appropriate aspects of the HCP. The data repository will updated as needed. The County will ensure quality assurance/quality control of the data and provide adequate documentation for all data (i.e., why, how, and where data were collected). The primary types of information to be included in the County’s data management system for the HCP include, but are not limited to:

- Status of Covered Activities.
  - Activities undertaken and where.
- Take of Covered Species from each of the Covered Activities.
  - Including location.
- Status of Conservation Measures.
  - Voluntary or mitigation related habitat restoration, enhancement, and management activities undertaken and where.
- HCP funding and expenditures.
- Records and locations of sites (including County rights-of-way) where habitat surveys have been completed.
- Monitoring data and adaptive management decisions.
- Reports and documents related to the HCP.
- Number of Certificates of Inclusion and Cooperative Agreements issued, with details of:
  - Who they were issued to;
  - When they were issued;
  - Which species they were issued for;
  - Which lands and activities for which take was authorized;
  - How much take was authorized; and
  - Mitigation initiated/completed, including mitigation ratios applied.

### **8.3 Schedule**

Milestones for Plan implementation are outlined below. This schedule does not prevent Benton County from accomplishing these milestones earlier than anticipated.

#### **8.3.0 First Year**

- Pass local ordinance to implement HCP.
- Train staff on HCP requirements.
- Begin receiving and reviewing permit applications from private parties and issuing Certificates of Inclusion for coverage under the HCP where impacts are unavoidable.
- Begin receiving and reviewing requests from Cooperators for Certificates of Inclusion and Cooperative Agreements.
- Establish GIS and other databases to track the elements set forth in Section 8.2.2.

#### **8.3.1 First Three Years**

- Create management plans and/or guidelines for any conservation properties newly acquired by the County with Covered Species or habitat.
- Create effectiveness monitoring plans for County PCAs.
- Implement habitat restoration and enhancement projects at PCAs.



### 8.3.2 1–50 years

- Follow management guidelines at PCAs and update them as needed through Adaptive Management.
- Prepare and revise Natural Area and Parks management guidelines, as needed.
- Monitor biological resources and management actions.
- Prepare annual Compliance Report.
- Update Fender’s Blue Zone Map as new information becomes available.
- Update Taylor’s checkerspot butterfly management plan.
- Update Roadside and Streambank Management Guidelines for Covered Plants (Appendix M) as necessary.
- Update Prairie Habitat Vegetation Management Guidelines (Appendix J), as necessary.
- Update Plant Material Collection and Plant Introduction Protocols (Appendix L), as necessary.
- Update Prairie Conservation Strategy.
- Conduct public outreach activities.

## 8.4 Land and/or Conservation Easement Acquisition Policies

Protection of high quality habitat that supports thriving populations of Fender’s blue butterfly, with ensuing enhancement, restoration and management of that habitat is paramount to conservation of Fender’s blue butterfly. Such protection, whether through conservation easements or fee simple acquisition is a major contribution to the recovery of Fender’s blue butterfly. Benton County plans to acquire from willing sellers, and work to restore, enhance, and manage up to 20-24 ha (50-60 ac) of such habitat. Any increases in quantity and quality of Fender’s blue butterfly habitat at these sites above and beyond the pre-existing levels (baseline) may be used as mitigation to offset impacts from home, farm and forest construction on private lands, utility construction and maintenance, public service facility construction, and transportation maintenance activities.

### 8.4.0 Willing Sellers

Properties or conservation easements acquired as part of the HCP will only be acquired from willing sellers. Benton County will not condemn land to satisfy the Conservation Measures in the HCP, nor will the County partner with any organization to condemn land for the HCP, including contributing funding towards condemnation.

### 8.4.1 Gifts of Land

Benton County may accept land or easements as a gift or charitable donation. The County will evaluate the conservation benefit of the lands donated relative to the goals, objectives, and requirements of the HCP. Donated land not meeting these goals, objectives, and requirements may be sold or exchanged, subject to any restrictions

imposed by the donating entity, to enable acquisition of land or conservation easements that do meet these goals, objectives, and requirements.

### **8.4.2 Conservation Easement Compliance Monitoring**

If Benton County contracts with a conservation easement landowner or another party to manage property for conservation of Covered Species, Benton County will monitor the party's compliance with the terms of the conservation easement.

### **8.4.3 Public Access to Conservation Easements**

Public access to County-owned conservation easements on private lands will only be allowed with the County and landowner's consent and where access does not result in harm to the Covered Species.

## **8.5 Mitigation Policies**

### **8.5.0 Non-Benton County Owned Lands Used for Mitigation**

Mitigation for Cooperator activities may be conducted on lands owned by Cooperators as long as the lands, or designated portions of those lands, are managed for conservation of the Covered Species. All costs associated with mitigation for Cooperator activities will be borne by the Cooperator completing the activity.

#### **8.5.1 Pre-mitigation**

Enhancement activities on lands owned and/or managed by the County and Cooperators occurring after 2005 but prior to the HCP may be considered pre-mitigation for future impacts to the Covered Species, as long as the enhancement activities comply with the mitigation requirements, are not counted towards mitigation for another project, and are not funded with federal dollars or other funds not permitted or intended for use in mitigation. Cooperators must submit a notice of mitigation initiation and completion (Appendix Q: Sample Cooperator Reporting Forms) to Benton County when mitigation projects are initiated and completed. Notices for mitigation initiated and/or completed prior to HCP enactment shall be submitted to Benton County as soon as the HCP is adopted.

## **8.6 Implementation Costs and Funding**

### **8.6.0 Introduction**

One of the key requirements for an incidental take permit is identification and pursuit of reliable funding sources to implement the Conservation Measures set forth in the HCP. Benton County understands that failure to ensure adequate funding of the Conservation Measures outlined in the HCP is grounds for full or partial suspension of the incidental take permit. This section addresses the costs of implementing the HCP and potential sources of funds for implementation.

### 8.6.1 Implementation Costs

Benton County will include in its operating budget funding to support the activities necessary to implement the HCP, including but not limited to:

- Project administration (including HCP amendments).
- Acquisition (fee simple or conservation easements) on Fender's blue butterfly habitat from willing sellers.
- Management of Fender's blue butterfly habitat for mitigation.
- Training (staff and volunteers).
- Issuing certificates of inclusion, developing Cooperative Agreements,
- Monitoring (compliance and effectiveness).
- Reporting.
- Habitat restoration, enhancement, and management activities for the County's Prairie Conservation Areas where mitigation is planned or conducted.
- Vegetation management of Type 1 roadside population SMAs.
- Database management.
- Preparation and update of management plans, effectiveness monitoring plans, and management guidelines and protocols.
- Public outreach, including website management.

Implementation costs are summarized in Table 8.1. In the event that funding for implementation of the Conservation Measures identified in Chapter 6 of the HCP is not available to meet the commitments outlined in the HCP, Benton County will consult with the USFWS to determine whether the HCP or incidental take permit need amending. USFWS may suspend the County's incidental take permit until these issues are resolved.

#### 8.6.1.0 HCP Funding Sources

Because of the uncertainty associated with the allocation of local, state, and federal funds, a variety of funding sources will be sought. Administrative costs to implement the management actions identified in the HCP as well as the mitigation costs associated with Fender's blue butterfly habitat restoration, enhancement, monitoring and outreach will be borne through one or more of the following funding mechanisms:

##### **Local County Funding; Departmental Level**

Benton County Natural Areas and Parks, Community Development, and Public Works Departments will each submit to the Board of Commissioners, on a biennial basis, an agency operating and capital budget to fulfill the County's obligations under the HCP, incidental take permit, and Implementing Agreement. A Cost Center for monitoring HCP revenues and expenses already exists within the Natural Areas and Parks Department (NAPD) Budget, and the County intends to keep this budget instrument in place throughout the term of the incidental take permit. Several aspects of HCP implementation will be absorbed into established Departmental practices and operations.

Table 8.1. Summary of estimated costs to implement the Benton County Prairie Species Habitat Conservation Plan.

<b>Summarized Estimates of HCP Implementation Costs<sup>1,2</sup></b>				
<b>Benton County Costs</b>	<b>Labor (Hrs)</b>	<b>FTE<sup>3</sup></b>	<b>Labor (\$)</b>	<b>Services/ Supplies</b>
Annual New HCP Costs	562	0.27	\$ 25,738	\$ 28,541
Start-up New HCP Costs	81	0.04	\$ 15,250	
<i>Subtotal: New HCP Costs</i>	<i>643</i>	<i>0.31</i>	<i>\$ 40,988</i>	<i>\$ 28,541</i>
Annual Absorbed HCP Labor Costs	329	0.16	\$ 20,418	
Start-up Absorbed HCP Labor Costs	100	0.05	\$ 8,120	
<i>Subtotal: Absorbed HCP Costs</i>	<i>429</i>	<i>0.21</i>	<i>\$ 28,538</i>	<i>\$ -</i>
<b>HCP Total Costs</b>	<b>1071</b>	<b>0.52</b>	<b>\$ 69,525</b>	<b>\$ 28,541</b>

<sup>1</sup> Based on 2008 dollars.

<sup>2</sup> Excludes estimated \$4300/yr Cooperators (collectively) will spend on mitigation, monitoring and reporting.

<sup>3</sup> Full time employee.

NAPD has a history of and capacity for managing the costs and duties for preservation and restoration activities. For example, several years prior to initiating the Prairie Species HCP, the NAPD set aside several hundred acres of important prairie habitat as public parks and open space. Benton County, through the NAPD, will seek a range of additional revenue sources to balance costs incurred as the result of HCP implementation and associated mitigation. The following potential revenue sources will be analyzed as a means to balance HCP costs: the sale of Carbon Credits, voluntary contributions, and System Development Charges.

### **Undesignated County Funds**

The County's budget is comprised of 24 active funds and constitutes a complex mix of undesignated and dedicated resources. The County will underwrite, with undesignated funds, any portion of HCP implementation and mitigation costs not balanced by additional revenues generated at the Departmental level. Revenues from the other active funds which are dedicated for specific projects or programs cannot be used to implement the HCP.

### **General Obligation Bond**

Benton County may seek voter approval of a general obligation bond for the acquisition, restoration, and enhancement of Fender's blue butterfly habitat for the purposes of establishing the Benton County Fender's Blue Butterfly Prairie Conservation Areas. For more information about these areas, see Section 3.1.1.3 and 6.3.2.2.

### **Local Property Tax Option Levy**

Benton County has the option of seeking voter approval for a local property tax option levy. Property taxes may be levied for up to 5 years for any purpose or for 10 years for capital projects. The funds could be used to purchase and restore, enhance, and manage the Benton County Fender's Blue Butterfly Prairie Conservation Areas (see Section 3.1.1.3 and 6.3.2.2).

### **Potential Federal Grant Sources**

Benton County will pursue any Federal grant sources available for projects related to or complementing implementation of the HCP.

## **8.7 Changed Circumstances**

### **8.7.0 Introduction**

If circumstances change during the term of the incidental take permit, Benton County may modify its activities and amend the HCP to address such changes. Possible changed circumstances, and the County's response to them, are discussed in this section.

### **8.7.1 Additional Federally Listed or State Listed Species**

Should additional prairie species not covered by the HCP be listed, proposed, or petitioned for listing, Benton County may request that USFWS or ODA add such species to the incidental take permit and the HCP. To determine whether to make this request, Benton County may consider whether the species is present in the Plan Area and if it is likely to be affected by the Covered Activities. If incidental take coverage is desired, Benton County will seek to amend the incidental take permit and HCP. Alternatively, Benton County may apply for a new and separate incidental take permit. Procedures for amending the HCP are outlined in Section 8.8 and in the Implementing Agreement. Alternatively, the County may elect to refer affected Cooperators or landowners seeking a County permit to the USFWS or ODA.

### **8.7.2 Delisting**

In the event that a Covered Species is delisted by the federal and/or state government, Benton County will continue to manage and mitigate for impacts to the affected Covered Species for an additional five-years beyond delisting.

### **8.7.3 Previously Undiscovered Wild Fender's Blue Butterfly outside the Fender's Blue Zone**

The Fender's Blue Zone reflects the best assessment of where Fender's populations occur (based on >4,010 ha [9,910 ac] of field survey). Therefore, the likelihood of discovering a new wild population is low. However, if a new wild population is found outside the Fender's Blue Zone during the 50 year HCP term, all non-HCP covered activities (e.g., land conversion or sub-division) will be regulated at that location at the discretion of the USFWS. For activities covered by the HCP in the Fender's Blue Zone, Benton County may consider the following actions:

- Amend the HCP to expand the Fender's Blue Zone, adding the needed anticipated impacts and mitigation to be fulfilled; or
- Refer affected Cooperators or landowners seeking a County permit to the USFWS.

### **8.7.4 New Invasive Species**

Invasive species are a continuing threat to native prairie habitat. Additional invasive species could further stress areas already threatened by invasive species. The County will work with ODA an early detection and control program for any new invasive species likely to threaten prairie habitat in any Benton County Prairie Conservation Areas.

### **8.7.5 Natural Catastrophes**

A number of natural catastrophes could occur during the term of the Permit, including flooding, drought, wildfires, and windstorms.

#### **8.7.5.0 Flooding**

Wet prairies may become flooded during the incidental take permit term. If any Benton County Prairie Conservation Areas are flooded, Benton County will evaluate the site during the field season following the flood to determine any negative effects the flooding may have had on the site, and the County will take appropriate action, in consultation with USFWS, to determine effectiveness of restoring or enhancing the site.

#### **8.7.5.1 Drought**

Extreme and prolonged drought may threaten drinking water, water supplies for fire suppression, water-dependent agriculture, industry, and fish, wildlife, and plants. The most recent drought occurrence was in 1992; Benton County and 32 other Oregon counties were declared a disaster area due to continuing drought conditions. Drought is a serious problem for all the Covered Species, but particularly for the butterfly species. If their host and/or nectar species do not produce sufficient food at the right time, the butterfly adults and larvae may starve to death. During drought conditions some plants do not produce seed, which could further affect the continued existence of the population of that species. If drought conditions threaten Covered Species in Prairie Conservation Areas, Benton County, in collaboration with the Cooperators, will

determine if water is available elsewhere and, if it is reasonably feasible, transport it to the affected sites for drought abatement.

#### **8.7.5.2 Wildfires**

When managed, prescribed fires are a useful tool for managing native prairie species. However, uncontrolled wildfires may negatively affect Covered Species populations either directly by burning the organisms or indirectly through fire fighting actions (trampling of plants, eggs, or larvae). If a fire occurs and fire fighters attempt to control it, human health and safety will take precedence over protection of Covered Species. Within one year of a wildfire in a Benton County Prairie Conservation Area the County will determine the status of the site and the need for restoration and/or enhancement efforts. Any restoration/enhancement work needed will be performed pursuant to the contingency measures in the Prairie Conservation Area's site management plan.

#### **8.7.5.3 Windstorms**

The Pacific Northwest may experience strong windstorms in the fall and winter months. These windstorms can damage trees, buildings, and structures. Following a windstorm, Benton County staff will assess the damage to the County's Prairie Conservation Areas within six months. Any fallen trees negatively affecting the Covered Species or its habitat will be removed with care to avoid further impacts to the species. Benton County Prairie Conservation Areas will be restored or enhanced, as needed.

#### **8.7.5.4 Other Unanticipated Catastrophes**

Benton County may respond to additional natural catastrophes to protect or conserve one or more of the Covered Species.

### **8.8 Amendments**

The incidental take permit will be issued for a 50-year period based upon actions to be implemented in the HCP. During that period the County may seek to amend or modify the HCP, the incidental take permit, or the Implementing Agreement.

If a member of the public wishes to propose an amendment to the HCP, they may seek an audience with the Benton County Parks Advisory Board. The Advisory Board will determine if the proposed amendment is within the vision, goals, and objectives of the HCP, and will evaluate the implications of making such an amendment. The Advisory Board will inform the Natural Areas and Parks Department of the request. Staff will review the request and inform the County Board of Commissioners of the amendment request, and the Board will determine how to proceed.

## **8.8.0 Amendments to the HCP, Incidental Take Permit, or Implementing Agreement**

Benton County, ODA, or the USFWS may propose minor or major amendments to the HCP, the incidental take permit, and/or the Implementing Agreement. The party proposing the amendments shall provide the other parties with a written statement of the reasons for the amendments and analysis of the effects of the amendments on (1) the environment (NEPA documents), if required, (2) the Covered Species, and (3) implementation of the HCP. The incidental take permit may be amended in accordance with all applicable laws and regulations.

### **8.8.0.0 Minor Amendments**

Benton County may make minor amendments to the incidental take permit, Implementing Agreement, or HCP. Minor amendments may include, but are not limited to, the following:

- Correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the incidental take permit, Implementing Agreement, or HCP.
- Changes in land ownership.
- Changes to non-USFWS survey, monitoring, or reporting protocols.
- Changes to the biological goals or objectives in response to adaptive management.
- Modifications to or adoption of additional Conservation Measures likely to improve the conservation of Covered Species.
- Discontinuing any Conservation Measures determined through monitoring and adaptive management to be ineffective.
- Any other types of modifications clarifying components of the incidental take permit, Implementing Agreement, or HCP.

The party proposing the amendment must provide the other parties with written notice as specified in the Implementing Agreement, except when another process is specifically identified under the terms of the HCP or the Implementing Agreement with respect to a particular amendment. The parties agree to use their best efforts to respond to proposed amendments within sixty (60) days of receipt of such written notice. The amendment shall be approved upon written agreement of both parties. Minor amendments do not require an amendment of the incidental take permit or the Implementing Agreement, but require approval from USFWS and ODA before being implemented. If the USFWS and ODA concur with the minor amendments proposed by Benton County, they will submit such approval in writing within 120 days or less. If the USFWS and ODA do not send notice or approval or disapproval, the amendment is approved automatically. The modifications will be considered effective on the date of USFWS' and ODA's written authorization or after 120-days if USFWS and ODA fail to send notice of approval or disapproval. A record of any minor amendments to the HCP, incidental take permit, or Implementing Agreement shall be documented in writing.



Minor modifications to the HCP, incidental take permit, and/or Implementing Agreement do not require amendment of the County's Implementing Ordinance.

Minor amendments do not include actions:

- Resulting in obligations under the HCP significantly different from those analyzed in connection with the original HCP.
- Resulting in adverse effects on the environment significantly different from those analyzed in connection with the original HCP.
- Allowing additional take not analyzed in connection with the original HCP.
- Reducing the number of mitigation areas.

### **8.8.0.1 Major Amendments**

A major amendment to the HCP is a change affecting the impact analysis, need for additional incidental take coverage, or the required Conservation Measures. Major amendments require amending the HCP, the incidental take permit, and/or the Implementing Agreement following a formal review process similar to that used for the original HCP and incidental take permit, including USFWS and ODA review, NEPA review and internal USFWS Section 7 consultation.

Major amendments may include, but are not limited to, the following:

- Revisions (additions or deletions) to the Plan Area, not qualifying as a minor modification.
- Adding or removing one or more species to the list of Covered Species.
- Increasing the amount of take allowed under the incidental take permit.
- Adding one or more activities to the list of Covered Activities if that activity will result in greater adverse effects to the Covered Species than those analyzed through the NEPA documentation.
- Modifying a Conservation Measure so substantially as to affect the level of authorized take, the Covered Activities, funding, or the nature and scope of the Conservation Measures.
- Extending the Permit term beyond 50 years.

Benton County will submit requests for major amendments to the USFWS and ODA. The request shall include a description of the proposed amendment, the need for the amendment, and an assessment of its impacts.

Major amendments to the HCP, incidental take permit, and/or Implementing Agreement will require amendment of the County's Implementing Ordinance pertaining to the HCP, Implementing Agreement, or incidental take permit.

### **8.8.0.2 Amendments for Future Species Listings**

If a currently unlisted species is federally listed as threatened or endangered pursuant to the federal or state Endangered Species Act during the Term of the HCP, and Benton

County desires incidental take coverage for activities in Benton County that may impact these newly listed species, Benton County will coordinate with ODA and the USFWS on an HCP and incidental take permit amendment to include the newly listed species.

The process to amend the HCP and incidental take permit shall include a review of the HCP to determine if the Conservation Measures identified in the HCP are adequate for conservation of the newly listed species. If the USFWS, ODA and Benton County determine the Conservation Measures are adequate, then Benton County shall request an amendment to the HCP and incidental take permit to include the newly listed species.

If the Conservation Measures in the HCP do not adequately cover the newly listed species, Benton County shall submit a revised or supplementary HCP and supporting documentation with the request to amend the incidental take permit. The USFWS is responsible for completing environmental compliance documents under NEPA and for all internal compliance under Section 7 of the ESA.

Amending the HCP to add one or more additional species is considered a “major” amendment to the HCP, incidental take permit, and Implementing Agreement.

## **8.9 HCP and Incidental Take Permit Renewal**

Once the incidental take permit expires (50 years), take is no longer available under Benton County’s permit to Benton County for the Covered Activities it conducts or authorizes on land it owns or manages or for issuing County permits or agricultural building authorizations in Fender’s blue butterfly habitat; persons needing a County permit or agricultural building authorization in Fender’s blue butterfly habitat; or Cooperators.

Benton County may apply to USFWS for a renewal of its incidental take permit and to ODA for a renewal of the HCP. If a written request for renewal is on file with USFWS and ODA at least 30 days prior to the HCP/incidental take permit expiration, the incidental take permit and will continue to be valid while the renewal request is processed. The renewal request must certify the statements and information in the original HCP are correct or include a list of changes. The renewal request must also specify what take has occurred under the incidental take permit/HCP and the Covered Activities still likely to occur during the renewal time period.

## **8.10 Enforcement**

The provisions in this HCP are enforceable by the USFWS and ODA through the terms and conditions of the incidental take permit (USFWS) and the Implementing Agreement (USFWS and ODA). For further details, see the incidental take permit and the Implementing Agreement.

## **8.11 Notice**

Any notice required to be given by USFWS or ODA pursuant to the terms and conditions of the HCP, incidental take permit (USFWS), and/or Implementing Agreement (USFWS and ODA) must be given to the Benton County Board of Commissioners by personal delivery or by certified mail/return receipt requested as described in the incidental take permit or Implementing Agreement.

## **8.12 Suspension/Revocation**

The USFWS may suspend or revoke the incidental take permit if Benton County fails to implement the HCP in accordance with the terms and conditions of the incidental take permit or federal law requires suspension or revocation. Suspension or revocation of the incidental take permit, in whole or in part, by the USFWS shall be in accordance with 50 C.F.R. 13.27-29, 17.22 (b)(8), and 17.32 (b)(8) and the Implementing Agreement.

Benton County may suspend or revoke a Certificate of Inclusion or Cooperative Agreement with a Cooperator and refer the Cooperator to ODA or USFWS if the Cooperator does not abide by the terms of the Certificate of Inclusion or the Cooperative Agreement, does not satisfy mitigation and monitoring requirements in a timely manner, or if the Cooperator is delinquent in reporting Compliance and Effectiveness Monitoring information to the County by December 31 of the year it is due.

# 9 Alternatives

## 9.1 Introduction

Benton County considered a number of alternatives during development of the HCP. The analysis included what species, lands, entities, and activities to cover, how to fund County-led mitigation for impacts on private lands, and how to address partitions and subdivisions of properties. In addition to these questions, Section 10(a)(1)(a)(iii) of the Federal Endangered Species Act (ESA) requires the incidental take permit applicant to set forth in the HCP: (1) any specific alternative, whether considered before or after the HCP process was begun, that would reduce such take below levels anticipated for the project proposal; and (2) a "no action" alternative, which means no HCP would be enacted, no incidental take permit would be issued and take would be avoided or activities would not be constructed or implemented.

## 9.2 Alternatives Considered

### 9.2.0 Alternatives Regarding Covered Species

Part of the evaluation process involved deciding which species to cover in the HCP. The HCP can include listed (threatened and endangered) and unlisted species (e.g., candidate species, species of concern). The following 12 plants or animals occurring in Benton County are listed as endangered or threatened under the Federal ESA.

#### Listed Species (T= Threatened, E= Endangered)

• <i>Erigeron decumbens</i>	Willamette daisy	E
• <i>Icaricia icarioides fenderi</i>	Fender's blue butterfly	E
• <i>Lomatium bradshawii</i>	Bradshaw's lomatium	E
• <i>Oregonichthys crameri</i>	Oregon chub	E
• <i>Brachyramphus marmoratus</i>	Marbled Murrelet	T
• <i>Howellia aquatilis</i>	Water howellia	T
• <i>Lupinus sulphureus ssp. kincaidii</i>	Kincaid's lupine	T
• <i>Oncorhynchus mykiss</i>	Upper Willamette River Steelhead	T
• <i>Oncorhynchus tshawytscha</i>	Upper Willamette River Chinook	T
• <i>Sidalcea nelsoniana</i>	Nelson's checkermallow	T
• <i>Strix occidentalis caurina</i>	Northern Spotted Owl	T
• <i>Castilleja levisecta</i>	Golden paintbrush	T <sup>9</sup>

<sup>9</sup> This species is currently extirpated from Oregon.

**Candidate Species**

- *Eremophila alpestris strigata* Streaked Horned Lark
- *Euphydryas editha taylori* Taylor's checkerspot butterfly
- *Coccyzus americanus* Yellow-billed Cuckoo
- *Rana luteiventris* Columbia spotted frog

**Species of Concern**

There are currently 41 species of concern occurring in Benton County. Of these, the Commissioners decided to limit potential coverage to one plant species, peacock larkspur (*Delphinium pavonaceum*).

The Benton County Commissioners chose to focus the HCP on prairie species, thereby limiting the possible number of species to be considered for inclusion into the HCP to five listed (Fender's blue butterfly, Willamette daisy, Bradshaw's lomatium, Kincaid's lupine, and Nelson's checkermallow), two candidate (Taylor's checkerspot butterfly, Streaked Horned Lark), and one species of concern (peacock larkspur). The County next considered which of these eight prairie species to cover in the HCP. The following options were considered:

**9.2.0.0 Alternative A: Listed Animal Species**

Under this option only Fender's blue butterfly would be covered by the County's incidental take permit as it is the only listed prairie animal species in Benton County for which take by non-federal landowners is prohibited.

**9.2.0.1 Alternative B: Listed and Candidate Butterfly Species**

Under this option only the butterfly species (Fender's blue butterfly and Taylor's checkerspot butterfly) would be covered under the County's incidental take permit. Although there is no "take" of Taylor's checkerspot butterfly under the federal ESA, by including the butterfly in the HCP, take liability is presumed. If Taylor's checkerspot butterfly is ever listed as threatened or endangered under the federal ESA in the future, this species would already be covered and no amendment to the County's incidental take permit and HCP would be required.

**9.2.0.2 Alternative C: Listed and Candidate Animal Species Only**

This option would include Fender's blue butterfly, Taylor's checkerspot butterfly, and the Streaked Horned Lark. Although there is no "take" of Taylor's checkerspot butterfly or Streaked Horned Lark under the Federal Endangered Species Act, by including these species in the HCP, take liability is presumed. If the candidate species (Taylor's checkerspot butterfly and Streaked Horned Lark) are ever listed as threatened or endangered under the Federal Endangered Species Act in the future, these species would already be covered and no amendment to the County's incidental take permit and HCP would be required.

Plants would not be included in the HCP. The County and Cooperators would be required to consult with ODA prior to any action on non-federal public lands that may affect State-listed plant species. If Congress decided to provide take coverage for the listed plant species during the term of the County's incidental take permit or if the species of concern (peacock larkspur) later becomes listed, the County would need to amend its incidental take permit and HCP to cover these plant species or seek a new incidental take permit and HCP.

### **9.2.0.3 Alternative D: Listed Prairie Animal and Plant Species Only**

This option includes Fender's blue butterfly and four of the five plant species: Willamette daisy, Nelson's checkermallow, Bradshaw's lomatium, and Kincaid's lupine. Although there is no "take" of federally listed plant species, they are protected under the Oregon Endangered Species Act, and by including these species in the County's incidental take permit and HCP, take liability will be presumed. However, if the listed plant species are ever given take protection under the federal ESA in the future, these species would already be covered and no amendment to the County's incidental take permit and HCP would be required.

The candidate species and species of concern would be excluded from coverage under this option. If the candidate species and species of concern are later listed under the federal ESA the County would not have take coverage for these species under its incidental take permit. The County's incidental take permit and HCP would require amendment to include these species. The County and Cooperators would be required to consult with ODA prior to any action on non-federal public lands that may affect State-listed plant species.

### **9.2.0.4 Alternative E: Listed and Candidate Butterfly Species and Plant Species**

This option includes the two butterfly species and all five plant species. Although there is no "take" of federally listed plant, candidate, or species of concern, by including these species in the County's incidental take permit and HCP, take liability will be presumed. However, if these species are ever listed and/or given take protection under the federal ESA in the future, these species would already be covered in the County's incidental take permit and HCP, and no amendment would be required.

The Streaked Horned Lark would be excluded under this option. If the Streaked Horned Lark is later listed, the County would not have take coverage for the lark under its incidental take permit. The County would need to amend its incidental take permit and HCP to include the species if take coverage was desired.

This alternative does not include peacock larkspur, a federal species of concern. If Congress decides to list this species during the term of the County's incidental take permit and provide take coverage for the species, the County would need to amend its incidental take permit and HCP to cover peacock larkspur or seek a new incidental take

permit and HCP. The County and Cooperators would be required to consult with ODA prior to any action on non-federal public lands that may affect State-listed plant species.

#### **9.2.0.5 Alternative F: Listed, Candidate, and Species of Concern Prairie Animal and Plant Species**

Under this option all eight federally listed, candidate, and species of concern prairie animal and plant species would be included in the County's incidental take permit and HCP. Although there is no take of federally listed plant, candidate, or species of concern, by including these species in the County's incidental take permit and HCP take liability will be presumed. If these species are ever listed and/or given take protection under the federal ESA in the future, these species would already be covered in the County's incidental take permit and HCP and no amendment would be required.

#### **9.2.0.6 Proposed Alternative**

Benton County proposes to seek incidental take coverage for the following seven species:

- Fender's blue butterfly
- Taylor's checkerspot butterfly
- Kincaid's lupine
- Willamette daisy
- Nelson's checkermallow
- Bradshaw's lomatium
- Peacock larkspur

The County decided not to include the Streaked Horned Lark, a candidate species, in the proposed alternative. The County conducted Streaked Horned Lark surveys in 2007, and the results indicated there are no larks nesting on Benton County owned and/or managed lands (Moore 2007). The two primary concentrations of Streaked Horned Lark occurrences in Benton County are located on William L. Finely National Wildlife Refuge and at the City of Corvallis Airport. However, the Streaked Horned Lark is clearly imperiled, and the Corvallis Airport population is the largest known population in Benton County. Benton County and the City of Corvallis believe the Streaked Horned Lark can best be addressed through a Candidate Conservation Agreement with Assurances (CCAA) between the City of Corvallis and the USFWS.

### **9.2.1 Alternatives Regarding Covered Lands and Entities**

Part of the evaluation process is the decision of whose lands should be covered by the County's incidental take permit and HCP, which revolved, in part, around who was interested in obtaining take coverage under the County's incidental take permit and HCP. The options considered include the following:

#### **9.2.1.0 Alternative A: Benton County Owned and/or Managed Lands Only**

This option would only include lands owned and/or managed by the County. The County's incidental take permit would only apply to County owned and/or managed

lands. Any other landowner in Benton County would need to obtain take coverage from the USFWS and/or ODA (public lands only) for impacts to listed species on their lands.

#### **9.2.1.1 Alternative B: Non-federal Public Lands Only**

This option would include Benton County lands as well as other non-federally public owned and/or managed lands, including city and state lands. Private lands would not be included. Under this option, take coverage would be available for any non-federal public landowner seeking coverage under the County's incidental take permit for their activities on their lands. Such landowners would need to undertake Conservation Measures set forth in the HCP to minimize and mitigate for take of the Covered Species.

#### **9.2.1.2 Alternative C: Non-federal Public Lands, Private Lands Located Outside City Limits**

This option would include all non-federal public lands mentioned above, as well as any private lands located outside city limits. Under this option, in addition to Benton County, incidental take coverage would be available for any non-federal public and private landowners seeking coverage under the County's incidental take permit, if the Conservation Measures set forth in the HCP to minimize and mitigate for take of the Covered Species are completed. Private landowners inside the city limits of Philomath, Monroe, Corvallis, Adair Village, and Albany would not be covered by the County's incidental take permit.

#### **9.2.1.3 Alternative D: Benton County Lands and Private Lands**

This option would include all Benton County owned and/or managed lands and all private lands, including those private lands located within incorporated cities. Under this option, in addition to Benton County, any private landowners wishing to obtain take coverage under the County's incidental take permit and promising to undertake the Conservation Measures set forth in the HCP to minimize and mitigate for take of the Covered Species would be covered by the County's incidental take permit. Other non-federal public landowners would need to obtain incidental take coverage directly from the USFWS as their lands would not be covered by the County's incidental take permit and HCP.

#### **9.2.1.4 Alternative E: All Benton County Lands**

This alternative would include all wet and upland prairie habitat (non-federal public and private) in Benton County, including, but not limited to urban lands. Take coverage under the County's incidental take permit would be available to any non-federal public or private landowner, so long as the landowner promised to undertake the Conservation Measures set forth in the HCP to minimize and mitigate for take of the Covered Species.

#### **9.2.1.5 Proposed Alternative for Covered Lands**

Benton County considered all the various options listed above. The County will seek coverage of lands it owns and/or manages. The County will also include the lands of



Cooperators interested in obtaining take coverage under the County's HCP and incidental take permit. Finally, the County will also include the lands of private landowners in Rural or Urban Residential (outside City Limits), Exclusive Farm Use, or Forest Conservation Zones within Fender's Blue Zone (Figure 5.1).

## **9.2.2 Alternatives Regarding Coverage of Private Development Activities on Lots Generated through Partitions in Fender's Blue Zone**

### **9.2.2.0 Alternative A**

Under this option, if a private landowner decides to partition the property and create more lots, then the newly created lots (with the exception of the one "original" lot) will not be covered under the County's incidental take permit and HCP. The owners of these newly created lots would need to obtain incidental take coverage from the USFWS.

### **9.2.2.1 Alternative B**

Under this option, the owner(s) of the newly created lots would be allowed to seek take coverage under the County's incidental take permit for the Covered Activities on each lot located within the Fender's Blue Zone. This option would add approximately 300 vacant residential lots to the home, farm, and forest construction impacts analysis. Predicted development on the added lots would increase the impact to Kincaid's lupine by about 40%, and increase the impacts to native nectar species by about 15%. Mitigation required would increase proportionally. The County is currently proposing to acquire (fee simple or conservation easement) and manage 20-24 ha (50-60 ac) of high quality prairie habitat. The County would need to acquire and manage additional acreage of Fender's blue butterfly habitat to satisfy the additional mitigation required.

### **9.2.2.2 Proposed Alternative**

In the HCP, the County proposes covering those lots established as of July 31, 2009, the date of the most recent impacts analysis for the HCP. If a private landowner after that date petitions to have the property divided, only one of the newly created lots, the "original" lot, will be covered under the County's incidental take permit and HCP. The landowners will need to obtain take coverage directly from the USFWS before the County will issue them a County permit or agricultural building authorization for home, farm or forest construction activities on the other lots.

## **9.2.3 Alternatives Regarding Funding to Mitigate Impacts on Private lands**

The question was raised as to who would pay to mitigate for impacts to Fender's blue butterfly habitat occurring on private land. Options considered included (1) private landowners would pay the entire cost of mitigating for impacts to Fender's blue

butterfly habitat on their land; (2) Benton County would pay the entire cost to mitigate for these impacts; and (3) a combination of the two first options.

The County proposes acquiring (fee simple or conservation easement) approximately 20-24 ha (50-60 ac) of high quality Fender's blue butterfly habitat in Benton County. Securing these sites will benefit populations of the butterfly and contribute to the recovery of the species. Benton County will manage and enhance the habitat at these sites. Any increases in habitat for the butterfly (above baseline) can be used to offset and mitigate for impacts to Fender's blue butterfly from home farm, and forest construction on private lands within the Fender's Blue Zone.

The estimated cost for annual enhancement and management work at the Benton County Fender's Blue Butterfly Conservation Areas (including monitoring and outreach) is approximately \$20,000 per year (in 2008 dollars). Annual administrative costs for implementing the private land permitting program are estimated to be approximately \$4,500 (2008 dollars), which will cover:

- Working with the permit applicant to:
  - help them understand the program
  - obtain the necessary information
  - avoid and/or minimize habitat impacts
- Record-keeping and compliance reporting
- Ensuring the Permittee does not exceed the permitted impact.

### **9.2.3.0 Alternative A**

Under this alternative, applicants within the Fender's Blue Zones seeking to obtain a County permit or agricultural building authorization would pay the full mitigation and administration costs. Costs would be paid from a fee added to the regular permit fees of individuals obtaining a County building or septic system permit for one or more of the covered activities. The fee would be scaled to the area impacted. For development of a typical homesite the HCP Permit and Mitigation Fee would be approximately \$3,500 (2008 dollars). This would be added to the County fees for homesite construction (building permits, septic system installation permit, electrical permit, etc.), which currently total \$3,500 to \$4,500 for an average homesite.

If Benton County does not obtain an incidental take permit and offer take coverage to private landowners or if private landowners seek to obtain their own incidental take coverage from the USFWS, they would pay approximately \$6,000 to 9,000 to complete their own HCP, obtain their own incidental take permit, and mitigate for impacts to Fender's blue butterfly habitat.

### **9.2.3.1 Alternative B**

Under this alternative, Benton County would incur 50% of the annual cost to mitigate for impacts on private lands resulting from home, farm, and forest construction development in the Fender's Blue Zones allowed under a County permit or agricultural

building authorization. These funds would come from the County's general fund. The other 50% of the mitigation costs would be paid for by the applicant within the Fender's Blue Zones seeking a County permit or agricultural building authorization. The private landowner would also pay an administrative cost. It is estimated the HCP Permit and Mitigation Fee under this alternative would average \$1,500-\$2,000. Because permit activity will vary unpredictably over time, the Board of Commissioners would review the HCP Permit and Mitigation fee every 5 years and adjust as necessary to maintain as close to a 50% portion of the mitigation costs as possible.

### **9.2.3.2 Proposed Alternative**

Under this alternative Benton County will develop the funding needed to mitigate for impacts resulting from home, farm, and forest construction allowed under a County permit or agricultural building authorization on private lands in the Fender's Blue Zone. The County will still issue those private landowners a Certificate of Inclusion for take of Fender's blue butterfly habitat, but the landowner will not be required to pay for the mitigation or associated administrative costs incurred by the County. This alternative distributes the burden of endangered species conservation across all citizens in the County, rather than individuals who own property within the Fender's Blue Zone.

## **9.3 No HCP Alternative**

Under this alternative, Benton County would avoid take of all the Covered Species and not seek incidental take coverage from the USFWS or ODA. If Benton County were to avoid take altogether, they could not issue County permits or agricultural building authorizations to persons whose activities would impact Fender's blue butterfly habitat without those persons first obtaining authorization from USFWS to impact the butterfly's habitat. The process would merely delay impacts to some Fender's blue butterfly habitat as the USFWS would, in all likelihood, allow some level of take; but the federal process would delay the landowner's ability to develop their property. The no take alternative could potentially affect owners of approximately 1,100 private taxlots in Benton County.

Other than emergency response actions, the County's potential permanent long term impacts to the Covered Species are limited to roadside habitat. Without an HCP, the County could not issue permits for utility, road approaches or authorized work in rights-of-way that may impact Covered Species without first obtaining approval from ODA. The County could not perform certain vegetation management activities along roadsides or complete road improvement projects that may result in take of the Covered Species. Growth of vegetation in roadside areas could eventually pose sight distance problems, and excess vegetation could pose a fire hazard. For public safety reasons, the County needs to maintain the vegetation along County roadsides. Even with implementation of roadside vegetation management timing restrictions it would be difficult for the County to avoid take altogether in these situations.

The County proposes to protect and maintain a significant amount of the known occupied Fender's blue butterfly habitat in Benton County (via fee simple or conservation easement acquisition) through the Conservation Measures set forth in the HCP. If there is no HCP, this habitat could be lost to land conversion activities. Even if the land is not converted, this Fender's blue butterfly habitat could be lost to the spread of invasive species or through ecological succession (conversion of prairie habitat into forest habitat).

With respect to Taylor's checkerspot butterfly and the five covered plant species, absent inclusion of these species in the HCP, there is no federal take for these species. Inclusion of these species in the HCP affords the species greater protection than they currently receive under federal law, and heightens awareness of and compliance with state law.

## 9.4 Reduced Take Alternative

Under this alternative Benton County would seek to purchase from willing sellers fee simple title and/or conservation easements on up to 100% of all remaining Fender's blue butterfly habitat in private ownership. Benton County estimates approximately 2,917 ha (7,208 ac) of Fender's blue butterfly habitat is in private ownership with no protection status. This alternative, in all likelihood, would minimize, but not eliminate take altogether.

This alternative was rejected for the following reasons:

- Not all landowners would be willing to sell their property or an interest in their property to the County for protection of the Fender's blue butterfly habitat and Benton County would not exercise its condemnation authority to acquire the property;
- Benton County does not have the funds available to acquire and/or manage this amount of habitat;
- Acquisition of all this property would take considerable time and effort and during that time some of the Fender's blue butterfly habitat could be lost to land conversion activities, ecological succession processes, or the spread of invasive species; and
- Benton County is proposing to acquire up to 20-24 ha (50-60 acres) of Fender's blue butterfly habitat, containing some of highest quality butterfly habitat.

# 10 References

Alverson, E.R. 1990. A Survey for Native Grassland Remnants in Mid-Willamette Valley, Oregon. Oregon Department of Agriculture, Salem, Oregon, USA.

Alverson, E.R. 2005. Preserving Prairies and Savannas in A Sea of Forest: A Conservation Challenge in the Pacific Northwest. Plant Talk No. 40. Accessed at: <http://www.plant-talk.org/stories/40forest.html> on December 7, 2006.

Baron, N. and F. Backhouse. 1999. Rare Butterflies of Southeastern Vancouver Island and the Gulf Islands. The Disappearance of Critical Food Plants Threatens This Region's Butterfly Diversity. Brochure developed by British Columbia Ministry of Environment, Lands, and Parks.

Bartels, M. R., and M. V. Wilson. 2003. Flood tolerance of the threatened plant *Sidalcea nelsoniana* (Malvaceae): Ecological and management implications. Madrono 50:265-270.

Christy, J.A. 2005. Historic vegetation of the Willamette Valley, Oregon. GIS shapefile. Oregon Natural Heritage Information Center, Oregon State University, Portland, OR.

Clark, D.L., K.K. Finley, and C.A. Ingersoll. 1993. Status report for *Erigeron decumbens* var. *decumbens*. Unpublished update of previous status report by Kagan and Yamamoto (1987), on file at Oregon Department of Agriculture.

Clark, D.L., K.K. Finley, and C.A. Ingersoll. 1995. Regeneration biology of *Erigeron decumbens* var. *decumbens*, an endangered plant of the Willamette Valley. Unpublished report on file at Oregon Department of Agriculture.

Clark, D.L. 2000. Demographic Analysis of *Erigeron decumbens* var. *decumbens*, An Endangered Plant Species of the Willamette Valley, Oregon 1999 Field Studies. Unpublished report prepared for the U.S. Fish and Wildlife Service, Western Oregon NWR Refuge Complex. 16 pp.

Clark, D., M. Blakeley-Smith, P. Hammond, D. Johnson, T.N. Kaye, B. Kelpsas, F. Pfund, M. Vomocil, and M. Wilson. 2004. Control of *Brachypodium sylvaticum* and Restoration of Rare Native Upland Prairie Habitat at Butterfly Meadows, Benton County. ODA 1514 GR. Prepared for Oregon State Weed Board, Oregon Department of Agriculture, Salem, OR.

Crone, E. and E. Kallioniemi. In Prep. Analysis of nectar plants used by the Fender's blue butterfly in the Cardwell Hills area. Prepared for Benton County and Institute for Applied Ecology by the Wildlife Biology Program, College of Forestry and Conservation, University of Montana, Missoula MT USA 59812.

David Reed & Associates. 2000. Fitton Green Open Space Natural Area Management Plan. Plan prepared for the Benton County Parks Department.

Frenkel, B. and D. Reed. 2005. Jackson-Frazier Wetland Management Plan. Prepared for the Benton County Natural Areas & Parks Department. 52 pp + appendices.

Glad, J.B, R.R. Halse, and R. Mishaga. 1994. Observations on distribution, abundance, and habitats of *Sidalcea nelsoniana* Piper (Malvaceae) in Oregon. *Phytologia* 76:307-323.

Gisler, S.D. 2004. Developing biogeographically based population introduction protocols for at-risk Willamette Valley plant species. Report to US Fish and Wildlife Service, Portland, Oregon. Native Plant Conservation Program, Oregon Department of Agriculture, Salem, Oregon.

Goodrich, G.O. 1983. Rare and common species of *Delphinium* in western Oregon and Washington: a systematic and ecological study. M.S. thesis, University of Oregon, Eugene, OR.

Hammond, P.C. 2005. The 2005 Study of Fender's Blue Butterfly (*Icaricia icarioides fenderi*) in Benton, Polk, and Yamhill Counties. Report submitted to the Oregon Division of State Lands and the U.S. Fish and Wildlife Service. 43pp.

Hammond, P.C. 2007. The 2007 Study of Fender's Blue Butterfly (*Icaricia icarioides fenderi*) in Benton, Polk, and Yamhill Counties. Report submitted to The Nature Conservancy and the U.S. Fish and Wildlife Service. 52pp.

Ingersoll, C. A., M. V. Wilson, and E. R. Alverson. 1991. Restoration of a western Oregon remnant prairie. *Restoration and Management Notes* 9:110-111.

Institute for Applied Ecology. 2003. Population Estimate and Management Recommendations for Kincaid's Lupine (*Lupinus sulphureus* ssp. *kincaidii*) at the Philomath/West Hills Rd. Property (Cuniff). Prepared for the Greenbelt Land Trust. 11 pp.

ITS Management, Inc. 2001. Bezell Memorial Forest Stewardship Management Plan. Prepared for Benton County Natural Areas and Parks. 70 pp + appendices.  
[http://www.co.benton.or.us/parks/documents/bezell\\_plan\\_no\\_appendices.pdf](http://www.co.benton.or.us/parks/documents/bezell_plan_no_appendices.pdf)

- Jackson-Frazier Wetland Management Plan Task Force. September 1992. Jackson-Frazier Wetland Management Plan. Plan prepared for Benton County Development Department.
- Kagan, J. 1980. The Biology of *Lomatium Bradshawii* (Apiaceae), A Rare Plant of Oregon. M.S. Thesis, University of Oregon, Eugene, Oregon.
- Kagan, J.S. and S. Yamamoto. 1987. Status Report for *Erigeron decumbens* var. *decumbens*. Unpublished Report Prepared by the Oregon Natural Heritage Program.
- Kaye, T.N. 1999. Obligate insect pollination of a rare plant: *Lupinus sulphureus* ssp. *kincaidii*. Northwest Science. 73:50-52.
- Kaye, T.N. 2000. Population Monitoring for Proposed Experimental Habitat Manipulation of Willamette Daisy, Oxbow West Site, West Eugene. 2000 Progress Report. Prepared by Institute for Applied Ecology for the Eugene Bureau of Land Management.
- Kaye, T.N. 2008. Management Plan for Lupine Meadows. Prepared by Institute for Applied Ecology for Greenbelt Land Trust.
- Kaye, T.N., and K. Kuykendall. 1993. Status report for *Lupinus sulphureus* ssp. *kincaidii*. Oregon Department of Agriculture, Salem, and U.S. Fish and Wildlife Service, Portland.
- Kaye, T.N. and A. Brandt. 2004. Seeding and transplanting rare Willamette Valley plants for prairie restoration. Final Report. Prepared by Institute for Applied Ecology for the Bureau of Land Management Eugene District. 83pp.
- Kaye, T.N. and M. Kirkland. 1994. Population biology of *Lomatium bradshawii* II. Insect interactions, phenology and breeding system. Unpublished report for the Bureau of Land Management (Eugene District). Oregon Department of Agriculture, Salem, Oregon.
- Kaye, T.N., K.L. Pendergrass, K. Finley, and J.B. Kauffman. 2001. Effects of Fire on Population Viability of an Endangered Prairie Plant. *Ecological Applications* 11:1366-1380.
- Kaye, T.N., C. Wise, A.S. Thorpe and T.D. Gaitaud. 2006. Minimum Population Size for Reproduction in Willamette Daisy. Unpublished report to the Bureau of Land Management, Eugene District Prepared by the Institute for Applied Ecology. 13 pp.

- McKernan, B. 2004. The Influence of Prescribed Fire on the Rare Endemic Plant *Delphinium pavonaceum* (Peacock Larkspur). Master's Thesis, Oregon State University, Corvallis, Oregon.
- Moore, R. 2007. Summary of Streaked Horned Lark (*Eremophila alpestris strigata*) Reproductive Ecology on Benton County Roadsides; breeding season 2007. 2pp.
- Oregon Department of Agriculture. 2008. Oregon Administrative Rule 603, Division 73. Plants: Wildflowers and Endangered, Threatened, and Candidate Species. Accessed at: [http://arcweb.sos.state.or.us/rules/OARS\\_600/OAR\\_603/603\\_073.html](http://arcweb.sos.state.or.us/rules/OARS_600/OAR_603/603_073.html) on December 15, 2008.
- Oregon Department of Agriculture. 2009. Noxious weed policy and classification system 2009. Oregon Department of Agriculture Noxious Weed Control Program, Salem, OR. 11pp.
- Oregon Department of Fish and Wildlife. 2006. Oregon Conservation Strategy. Oregon Department of Fish and Wildlife, Salem, OR. 375 pp plus appendices.
- Oregon Natural Heritage Information Center. 2007. Rare, Threatened and Endangered Species of Oregon. Oregon Natural Heritage Information Center, Oregon State University, Portland, Oregon. 100 pp.
- Pendergrass, K.L., P.M. Miller, J.B. Kauffman, and T.N. Kaye. 1999. Role of Fire in Maintenance of an Endangered Plant Species, *Lomatium bradshawii*. *Ecological Applications* 4:1420-1429.
- Pyle, R. M. 1989. Washington Butterfly Conservation Status Report and Plan. Report Submitted to the Nongame Program, Washington Department of Wildlife, Olympia, Washington. 217 pp.
- Rorick, N. and L.M. Wilson. 2003. Wetland delineation and determination of the Newton Creek Site. Rorick Environmental Services. Submitted to Greenbelt Land Trust, Corvallis, Oregon.
- Ross, D. 2005. 2005 Surveys for Taylor's Checkerspot (*Euphydryas editha taylori*) in Benton County, Oregon. Report submitted to the U.S. Fish and Wildlife Service, Portland Office. 6 pp.
- Ross, D.N. 2007. Summary Report to the Institute for Applied Ecology: Unpublished results from 2007 Surveys for Taylor's Checkerspot and Fender's Blue Butterflies for the Benton County Habitat Conservation Plan. Unpublished report for the Institute for Applied Ecology. 9 pp.



- Salix Associates. 2006. Botanical Assessment Report for the Corvallis Watershed Stewardship Plan. Prepared for Trout Mountain Forestry. 15 pp.
- Schultz, C.B. 1998. Dispersal Behavior & Its Implications for Reserve Design in a Rare Oregon Butterfly. *Conservation Biology* 12:284-292.
- Schultz, C.B. 2001. Restoring resources for an endangered butterfly. *Journal of Applied Ecology* 38:1007-1019.
- Schultz, C.B. and E.E. Crone. 1998. Burning Prairie to Restore Butterfly Habitat: A Modeling Approach to Management Tradeoffs for Fender's Blue. *Restoration Ecology* 6(3):244-252.
- Schultz, C.B. and K.M. Dlugosch. 1999. Nectar and Host Plant Scarcity Limit Populations of an Endangered Oregon Butterfly. *Oecologia* 119:231-238.
- Schultz, C.B., P.C. Hammond and M.V. Wilson. 2003. Biology of Fender's Blue Butterfly (*Icaricia icarioides fenderi*, Macy), an Endangered Species of Western Oregon Native Prairies. *Natural Areas Journal* 23(1):61-71.
- Smith, S.P. 1993. E.E. Wilson Wildlife Area: Long Range Management Plan. Prepared by the Oregon Department of Fish and Wildlife. 29pp.
- Stinson, D.W. 2005. Washington State Status Report for the Mazama Pocket Gopher, Streaked Horned Lark, and Taylor's Checkerspot Butterfly. Washington Department of Fish and Wildlife, Olympia, WA. pp 129+xii.
- Thorpe, A.S., R.T. Massatti, and T.N. Kaye. 2008. *Lupinus sulphureus* ssp. *kincaidii* (Kincaid's lupine) and *Icaricia icarioides fenderi* (Fender's blue butterfly) in the West Eugene Wetlands: Population monitoring, reintroduction success, and an evaluation of experimental treatments. 2008 Progress Report. Prepared by Institute for Applied Ecology for Eugene District BLM. 44 pp.
- U.S. Fish and Wildlife Service. September 30 1988. Endangered and Threatened Wildlife and Plants; Final Endangered Status for *Lomatium bradshawii* (Bradshaw's lomatium). *Federal Register* 53:38448-38451.
- U.S. Fish and Wildlife Service. 1993a. *Lomatium bradshawii* (Bradshaw's lomatium) Recovery Plan. Portland, Oregon. pp 47.
- U.S. Fish and Wildlife Service. February 12 1993b. Endangered and Threatened Wildlife and Plants: Threatened Status for the Plant *Sidalcea nelsoniana* (Nelson's checkermallow) – Final Rule. *Federal Register* 58:8235-8243.

U.S. Fish and Wildlife Service. 1996. Habitat Conservation Planning and Take Permit Processing Handbook. US Department of Interior Fish and Wildlife Service, US Department of Commerce National Oceanic and Atmospheric Administration and National Marine Fisheries Service.

U.S. Fish and Wildlife Service. 1998. Recovery Plan for the Threatened Nelson's Checker-mallow (*Sidalcea nelsoniana*). Portland, Oregon. 61 pp.

U.S. Fish and Wildlife Service. January 25, 2000. Final Rule: Endangered and Threatened Wildlife and Plants: Endangered Status for *Erigeron decumbens* var. *decumbens* (Willamette Daisy), and Fender's Blue Butterfly (*Icaricia icarioides fenderi*) and Threatened Status for *Lupinus sulphureus* ssp. *kincaidii* (Kincaid's lupine). Federal Register 65:3876-3890.

U.S. Fish and Wildlife Service. 2001. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Species That Are Candidates or Proposed for Listing as Endangered or Threatened, Annual Notice of Findings on Recycled Petitions, and Annual Description of Progress on Listing Actions; Proposed Rule. Federal Register 66: 54807-54832.

U.S. Fish and Wildlife Service. 2006. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Fender's blue butterfly (*Icaricia icarioides fenderi*), *Lupinus sulphureus* ssp. *kincaidii* (Kincaid's lupine), and *Erigeron decumbens* var. *decumbens* (Willamette daisy); Final Rule. Federal Register 71:63861-63977.

U.S. Fish and Wildlife Service. 2008a. Programmatic Formal Consultation on Western Oregon Prairie Restoration: Biological Opinion. U.S. Fish and Wildlife Service, Portland, OR. 54 pp.

U.S. Fish and Wildlife Service. 2008b. Parameterizing Patch Dynamics Models in Support of Optimal Reserve Design in South Puget Sound: Summary Report from an Expert Workshop December 9-11, 2008. USFWS Western Washington Fish and Wildlife Office, Lacey, WA, USA. 19pp.

U.S. Fish and Wildlife Service. 2010. Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington. U.S. Fish and Wildlife Service, Portland, Oregon. 212 pp.

Wilson, M.V. 2004. The Analysis of Management Strategies to Restore and Enhance Nelson's Checkermallow (*Sidalcea nelsoniana*) Habitat at William L. Finley National Wildlife Refuge: Response to two years of restoration techniques in an existing *Sidalcea nelsoniana* habitat. Report to the U.S. Fish and Wildlife Service. 30 pp.

---

Wilson, M. V., P. C. Hammond and C. B. Schultz. 1997. Interdependence of the Fender's blue butterfly and Oregon's native prairies. in T. Kaye, A. Liston, R. M. Love, D. L. Luoma, R. J. Meinke, & M. V. Wilson (editors) Conservation and Management of Native Plants and Fungi. Native Plant Society of Oregon, Corvallis, OR. 82-87.

Wilson, M. V., T. Erhart, P. C. Hammond, T. N. Kaye, K. Kuykendall, A. Liston, A. F. Robinson, C. B. Schultz, and P. M. Severns. 2003. The biology of Kincaid's lupine (*Lupinus sulphureus* spp. *kincaidii*), a threatened species of western Oregon native prairies. *Natural Areas Journal* 23: 72-83.

Xerces Society, Friends of the San Juans, Oregon Natural Resources Council, Northwest Ecosystem Alliance, and Center for Biological Diversity. 2002. Petition to Emergency List Taylor's (Whulge) Checkerspot Butterfly (*Euphydryas editha taylori*) as an Endangered Species under the U.S. Endangered Species Act. Accessed at: [http://www.xerces.org/documents/Taylors\\_Checkerspot\\_Petition.pdf](http://www.xerces.org/documents/Taylors_Checkerspot_Petition.pdf) on July 11, 2006.

#### Personal Communications

Al Kitzman, Benton County Natural Area and Parks Department, 2007

Jeff Payson, NW Natural, 2009

Dr. Cheryl Schultz, Washington State University, 2007

Greg Verret, Benton County Community Development Director, 2007

# 11 Acronyms

The following is a list of acronyms used in the Benton County Prairie Species Habitat Conservation Plan.

CCAA – Candidate Conservation Agreement with Assurances  
COI – Certificate of Inclusion  
EFU – Exclusive Farm Use  
ESA – Endangered Species Act  
FC - Forest Conservation  
GLT – Greenbelt Land Trust  
HCP – Habitat Conservation Plan  
IA – Implementing Agreement  
IAE – Institute for Applied Ecology  
ITP – incidental take permit  
NEPA – National Environmental Policy Act  
OAR – Oregon Administrative Rule  
ODA – Oregon Department of Agriculture  
ODFW – Oregon Department of Fish and Wildlife  
ODOT – Oregon Department of Transportation  
OPRD – Oregon Parks and Recreation Department  
OSU – Oregon State University  
PCA – Prairie Conservation Area  
ROW – Right-of-Way  
RR - Rural Residential  
SHA – Safe Harbor Agreement  
SMA – Special Management Areas  
TIP – Transportation Improvement Plan  
TNC – The Nature Conservancy  
UR – Urban Residential  
USFWS – United States Fish and Wildlife Service or U.S. Fish and Wildlife Service

# 12 Glossary

**Action:** An activity or program of any kind authorized, funded, or carried out, in whole or in part, by a federal agency in the United States.

**Action area:** All areas to be affected directly or indirectly by the federal action and not merely the immediate area involved.

**Adaptive management:** A cyclical process whereby managers treat actions as experiments from which they improve management actions.

**Adverse modifications:** A direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species.

**Biological Opinion:** A document stating the opinion of the U.S. Fish and Wildlife Service on whether or not a federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

**Biological diversity:** The variety of life and its processes that have developed on earth.

**Candidate Conservation Agreement with Assurances (CCAA):** A voluntary agreement between the U.S. Fish and Wildlife Service and a non-federal property owner who agrees to manage lands or waters to remove threats to candidate or proposed species, with assurances that the property owner's conservation efforts will not result in future regulatory obligations that exceed those agreed to at the time the agreement is signed. The CCAA authorizes take through a section 10 Permit if the species is later listed.

**Candidate species:** Candidate species are plants and animals for which the U.S. Fish and Wildlife Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

**Certificate of Inclusion:** This is a document issued by Benton County that enrolls a landowner into the HCP for purposes of obtaining coverage under the county's incidental take permit.

**Community:** A group of interacting plants and animals inhabiting a particular area.

**Compliance monitoring:** An evaluation of whether the organization did what it said it would accomplish.

**Conservation:** As defined by Section 3 of the ESA, to use and the use of all methods and procedures necessary to bring any endangered or threatened species to the point at which the measures provided are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resource management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, regulated taking.

**Conservation action/measure:** A specific conservation tool employed in a specific location. May include, but is not limited to, habitat acquisition and habitat restoration.

**Consultation:** The process required of a federal agency under Section 7 of the ESA when any activity authorized, carried out, or conducted by that agency may affect a listed species or designated critical habitat. Consultation is with the U.S. Fish and Wildlife Service (or National Marine Fisheries Service) and may be formal or informal.

**Cooperative Agreement:** An agreement between Benton County and anyone wishing to obtain incidental take coverage under the County's Permit. The agreement will specify the obligations of the parties.

**Cooperator:** Non-federal public agencies, utility companies and a conservation organization whose activities are likely to affect one or more of the Covered Species, and who have elected to obtain coverage under the County's incidental take permit.

**Covered Activity:** These are activities that are included in the HCP and covered for incidental take by the incidental take permit.

**Covered Species:** These are species that are included in the HCP and covered for incidental take by the incidental take permit.

**Critical habitat:** Specific areas within the geographic area occupied by the species on which are found those physical and biological features essential to the conservation of the species and which may require special management considerations or protection.

**Cumulative effects (ESA):** For purposes of consultation under the ESA, the effects of future State or private activities not involving Federal activities that are reasonably certain to occur within the action area of an action subject to consultation. Cumulative effects are defined differently for purposes of the National Environmental Policy Act (NEPA).

**Cumulative effects (NEPA):** Impacts on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes the action.

**Delist:** To remove a plant or animal species from the list of endangered or threatened species.

**Diapause:** A state of dormancy.

**Ecology:** The study of the inter-relationship among organisms and between organisms and between all aspects, living and nonliving, of their environment.

**Ecoregion:** A relatively large land and water area containing geographically distinct assemblages of natural communities, with approximate boundaries. These communities share a large majority of their species, dynamics, and environmental conditions, and function together effectively as a conservation unit at the continental and global scales.

**Ecosystem:** A discrete unit that consists of living and nonliving parts, interacting to form a stable system.

**Ecosystem management:** a management process that rather than considering natural resources only as commodities (such as timber or fuel) for human use, focuses instead on the ecosystem processes of population (plants, animals) community (a grouping of different organisms living together), and biogeochemical interactions to maintain the condition and function of a site as a whole.

**Effectiveness Monitoring:** Monitoring to determine whether the restoration or enhancement techniques are meeting the management objective.

**Endangered species:** Those species threatened with extinction throughout all, or a significant portion, of their range. Species can be listed as endangered or threatened for a number of reasons, including disease or predation. Natural or human factors affecting chances for survival: over utilization for commercial, scientific, or recreational purposes, or current or threatened destruction of habitat or range.

**Endemic species:** A species native and confined to a certain region. Generally used for species with comparatively restricted distribution.

**Extinct species:** A species that no longer exists. For ESA purposes, a species currently believed to be extinct.

**Federal Register:** The official daily publication for actions taken by the Federal government, such as rules, proposed rules, and Notices of Federal agencies and/organizations, as well as Executive Orders and other Presidential documents.

**Fender's Blue Zone:** Area of potential habitat for Fender's blue butterfly, determined by mapping grassland and oak habitat within the 2km (1.2 mi) flight distance (dispersal distance) of known populations of the butterfly.

**Functioning networks:** A well-connected set of functional landscapes within an ecoregion or across multiple ecoregions.

**Globose:** Spherical.

**Graminoids:** Grasses, sedges, and rushes.

**Habitat:** The living place of a species or community characterized by its physical or biotic properties.

**Habitat Conservation Plan (HCP):** A plan that outlines ways of maintaining, enhancing, and protecting a given habitat type needed to protect species. The plan usually includes measures to minimize impacts, and may include provisions for permanently protecting land, restoring habitat, and relocating plants or animals to other areas. The HCP is required before an incidental take permit will be issued.

**Harass:** To intentionally or negligently, through act or omission, create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, and sheltering.

**Harm:** To perform an act that kills or injures wildlife; may include significant modification of habitat or degradation when it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

**Historic range:** The geographic area where a species was known to or believed to occur within historic time.

**Host plant:** A particular plant species required of butterflies during egg laying and for food during the larvae and pupae life stage.

**Impacts:** Impacts may be negative or positive. Negative impacts are ecological stresses to a species and the source of that stress. Positive impacts are impacts whose net effect is beneficial to the species, and may include such activities as mowing or burning.

**Implementing Agreement:** Agreement between Benton County, Oregon Department of Agriculture and the U.S. Fish and Wildlife Service that describes the terms of the

HCP, describes remedies and recourse should any of the parties to the agreement fail to perform their obligations, and provides assurances to Benton County that as long as the terms of the HCP, the Permit (USFWS only), and this Agreement are performed, no additional mitigation will be required of Benton County by USFWS or ODA, except as provided for in the Agreement or required by law.

**Inbreeding depression:** Reduced fitness (reproductive success) in a given population as a result of inbreeding.

**Incidental take:** Take that results from, but is not the purpose of, carrying out an otherwise lawful activity.

**Incidental take permit:** A Permit issued under section 10(a)(1)(B) of the ESA to a non-federal party undertaking an otherwise lawful project that might result in the take of a threatened or endangered species. An application for an incidental take Permit is subject to certain requirements, including preparation of habitat conservation plan.

**Indirect effect:** An effect caused by a proposed action taking place later in time than the action, but is still reasonably certain to occur (Section 7 of ESA).

**Inflorescence:** A group or cluster of flowers on a stem.

**Instar:** In arthropods, larvae stages between molts until sexual maturity is reached.

**Listed species:** A species, subspecies, or distinct population segment that has been added to the federal list of endangered and threatened wildlife and plants.

**Monitoring:** Repeated measurements carried out in a consistent manner so that observations are comparable over time.

**Native species:** Those species present in part or all of a specified range without direct or indirect human intervention, growing within their native range and natural dispersal potential.

**Nectar Plant:** A particular plant species required of adult butterflies for food/energy.

**Non-native species:** Those species present in a specified region only as a direct or indirect result of human activity.

**Persons:** Includes individuals, corporations, partnerships, limited liability corporations, limited liability partnerships.

**Petition:** A formal request from an interested individual or organization to list, reclassify, or delist a species, or to revise critical habitat for a listed species.

**Population:** A group of individuals of a species living in certain areas maintaining some degree of reproductive isolation.

**Range:** The geographic area a species is known to or believed to occupy.

**Reclassify:** To change a species' status from threatened to endangered or endangered to threatened. An example of a reclassification was the downlisting of the Bald Eagle from endangered to threatened.

**Recovery:** A reduction of the risk of extinction to the point that, based upon best available science, it is reasonably sure that the species will remain secure into the foreseeable future.

**Recovery plan:** A document drafted by U.S. Fish and Wildlife Service serving as a guide for activities to be undertaken by federal, state, or private entities in helping to recover and conserve endangered and threatened species.



**Secured:** Habitat of local populations are (1) owned or managed by a government agency or private conservation organization identifying maintenance of the species and its habitat as the primary management objective for the site, or (2) private land is protected by a long term or permanent conservation easement committing the landowner to conservation of the species.

**Senescencing:** Dying off at the end of a season (annuals) or approaching dormancy (perennials).

**Sink population:** A population with a higher mortality rate than birth rate.

**Source population:** A population with a higher birth rate than mortality rate; a self sustaining population capable of dispersing to other populations.

**Species:** A group of organisms resembling one another, and includes subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate, fish, or wildlife that interbreeds when mature.

**Species of Concern:** An informal term referring to a species that may need conservation action due to declining population sizes. Similar terms include "species at risk" and "imperiled species". Such species receive no legal protection, nor is there any guarantee that the species will be listed in the future.

**Subspecies:** A taxonomic rank below species, usually recognizing individuals with certain heritable characteristics distinct from other subspecies of a species.

**Take:** To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct; may include significant habitat modification or degradation if it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, and sheltering.

**Terms and conditions:** Required actions described in an incidental take permit under section 10 or Incidental Take Statement intended to implement the Reasonable and Prudent Measures under section 7.

**Threatened species:** A species that is likely to become endangered in the foreseeable future.

**Viable:** A viable population has a sufficient number of individuals, reproduction by those individuals, and habitat conditions to persist over time.

**Watershed:** An area of land draining to a common point.

# **Appendix A. Certificate of Inclusion Template<sup>1</sup> – Private Landowners**

---

<sup>1</sup> Subject to revision over time with input from the USFWS and ODA.



## BENTON COUNTY PRAIRIE SPECIES HCP

### CERTIFICATE OF INCLUSION

for Private Landowners

BENTON COUNTY COMMUNITY DEVELOPMENT DEPARTMENT,  
360 SW Avery Avenue, Corvallis, OR

The United States Fish and Wildlife Service ("Service") issued to Benton County ("County") an Incidental Take Permit ("Permit") No. \_\_\_\_\_, on **[[[Date]]]**, for a period of 50 years, pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended, 16 U.S.C. 1539(a)(1)(B). Such Permit authorizes the "Take" of Fender's blue butterfly and its habitat in accordance with the terms and conditions of the Permit, the Benton County Prairie Species Habitat Conservation Plan ("HCP"), and the associated Implementing Agreement. Under the Permit, **[[[insert name of party seeking the certificate of inclusion]]]** ("Participating Landowner") is authorized to perform certain activities covered in the Permit resulting in the "Take" of **Fender's blue butterfly** and its habitat, provided all applicable terms and conditions of the Permit, the HCP, and the associated Implementing Agreement are met.

As the owner of the property depicted on Exhibit "A", attached hereto and incorporated herein by this reference, you are entitled to the protection of the Permit for the activities authorized by the County in the **[[[name of County permit]]]**, with respect to any Take of **Fender's blue butterfly** and its habitat as identified in the HCP. In the event the property depicted on Exhibit "A" is used for other purposes without the express consent of Benton County, Take Authorization under the Permit will automatically cease and the U.S. Fish and Wildlife Service shall be notified of the revocation of the Certificate of Inclusion within 5 business days of such action. Such authorization is provided as described in the Permit, the HCP, and the Implementing Agreement.

By signing this Certificate of Inclusion, you signify your election to receive Take Authorization under the County's Permit in accordance with the terms and conditions thereof and in accordance with the terms and conditions of the Benton County **[[[name of County permit]]]**. This Certificate of Inclusion does not impose additional regulatory control over the signatory nor require the signatory to provide additional information not called for in the Certificate of Inclusion, but instead ensures compliance with 50 Code of Federal Regulations, section 13.25(d).

Coverage under the Permit will become effective upon receipt of the executed Certificate of Inclusion by Benton County and Participating Landowner. In the event the subject property is sold or leased, the buyer or lessee must be informed of these

provisions and execute a new Certificate of Inclusion and **[[[name of County permit]]]**.

---

**[[[Name of Private Landowner]]]** Date

---

Address Phone

**[[[Name of Community Development Director]]]**

---

Community Development Director, Date  
Benton County Representative

# **Appendix B. Certificate of Inclusion Template<sup>2</sup> – Cooperators**

---

<sup>2</sup> Subject to revision over time with input from the USFWS and ODA.



## BENTON COUNTY PRAIRIE SPECIES HCP

### CERTIFICATE OF INCLUSION

for Cooperators

BENTON COUNTY COMMUNITY DEVELOPMENT  
DEPARTMENT, 360 SW Avery Avenue, Corvallis, OR

The United States Fish and Wildlife Service (USFWS) issued to Benton County ("County") an Incidental Take Permit ("Permit") No. \_\_\_\_\_, on **[[[Date]]]**, for a period of 50 years, pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended, 16 U.S.C. 1539(a)(1)(B). The Oregon Department of Agriculture ("ODA") entered into an Implementing Agreement with the County and the USFWS on **[[[Date]]]**, for a period of 50 years. The Permit and Implementing Agreement authorizes the "Take" of **[[[covered species]]]** and its habitat in accordance with the terms and conditions of the Permit, the Benton County Prairie Species Habitat Conservation Plan ("HCP"), and the associated Implementing Agreement. Under the Permit (USFWS) and Implementing Agreement (ODA & USFWS), **[[[insert name of Cooperator seeking the certificate of inclusion]]]** ("Participating Landowner") is authorized to perform certain activities covered in the HCP resulting in the "Take" of **[[[covered species]]]** and its habitat, provided all applicable terms and conditions of the Permit, the HCP, and the associated Implementing Agreement are met.

As the owner of the property depicted on Exhibit "A", attached hereto and incorporated herein by this reference, you are entitled to the protection of the Permit for the activities authorized by the County in the **[[[(1) name of permit, (2) name of land use approval, or (3) cooperative agreement]]]** with respect to any Take of **[[[covered species]]]** and its habitat as identified in the HCP. In the event the property depicted on Exhibit "A" is used for other purposes without the express consent of Benton County, Take Authorization under the Permit and Implementing Agreement will automatically cease and the USFWS and ODA shall be notified of the revocation of the Certificate of Inclusion within 5 business days of such action. Such authorization is provided as described in the Permit, the HCP, and the Implementing Agreement.

By signing this Certificate of Inclusion, you signify your election to receive Take Authorization under the County's Permit and Implementing Agreement in accordance with the terms and conditions thereof and in accordance with the terms and conditions of the Benton County **[[[(1) name of permit, (2) name of land use approval, or (3) cooperative agreement]]]**. This Certificate of Inclusion does not impose additional regulatory control over the signatory nor require the signatory to provide additional information not called for in the Certificate of Inclusion, but instead ensures compliance with 50 Code of Federal Regulations, section 13.25(d).

Coverage under the Permit will become effective upon receipt of the executed Certificate of Inclusion by Benton County and Participating Landowner. In the event the subject property is sold or leased, the buyer or lessee must be informed of these provisions and execute a new

Certificate of Inclusion and **[[[(1) name of permit, (2) name of land use approval, or (3) cooperative agreement]]]**.

**[[[Name of Cooperator]]]**

---

[[[Cooperator Representative]]]

Date

---

Address

Phone

**[[[Name of Benton County Development Director]]]**

---

Community Development Director ,  
Benton County Representative

Date

# Appendix C. Cooperative Agreement Template<sup>3</sup>

---

<sup>3</sup> Subject to revision over time with input from the USFWS and ODA.





## BENTON COUNTY PRAIRIE SPECIES HCP

### COOPERATIVE AGREEMENT

(Between Benton County and HCP Cooperator)

BENTON COUNTY COMMUNITY DEVELOPMENT DEPARTMENT,  
360 SW Avery Avenue, Corvallis, OR

**1. PARTIES AND PURPOSE.** This Cooperative Agreement (“Agreement”) is between **Benton County** (“County”), and **[Property owner]** (“Cooperator”). This Agreement is intended to set forth the obligations of the Cooperator for **[short term restoration or permanent]** impacts to **[list the covered species here (“Covered Species”)]** on land owned by the Cooperator resulting from covered activities performed by the Cooperator. Participation in this Agreement is a prerequisite for obtaining a Certificate of Inclusion from Benton County issued as part of the County’s Prairie Species Habitat Conservation Plan, Incidental Take Permit (Permit # \_\_\_\_\_) from the U.S. Fish and Wildlife Service (USFWS), and Implementing Agreement from the USFWS and Oregon Department of Agriculture (ODA).

The County’s Incidental Take Permit, Implementing Agreement, Certificate of Inclusion, and this Agreement do not release the Cooperator from the responsibility to avoid “take” of any covered species already occupying the property.

This Agreement includes, at a minimum:

- (1) Map(s) of Cooperator’s property or properties (Exhibit A) showing the following information:
  - a) Property boundaries,
  - b) Area to be impacted by the covered activity (“Impact Area”),
  - c) Location of Covered Species to be impacted by the covered activity, based on a pre-project survey or calculation of nectar species abundance (Documentation attached as Exhibit B),
  - d) For projects requiring mitigation, Prairie Conservation Area where mitigation will be undertaken, including area where Covered Species will be restored, enhanced or augmented;
- (2) For projects requiring mitigation, Notice of Mitigation Initiation (Reporting Form D);
- (3) Current Species Survey/Baseline Assessment (Reporting Form C) of site where habitat restoration, enhancement and management activities or mitigation will occur;
- (4) Effectiveness Monitoring Plan (Attached as Exhibit C);
- (5) Cooperator and County responsibilities under the Agreement; and
- (6) Benton County Habitat Conservation Plan (incorporated herein by reference).

**2. AFFECTED PROPERTY.** The Cooperator owns property identified as **[list tax lot information]** or milepost **[insert milepost information]** in Benton County, Oregon (Exhibit A).

**3. BASELINE CONDITIONS OF MITIGATION SITE.** Cooperators have performed a baseline assessment of the Prairie Conservation Area where mitigation will be performed. This assessment (Reporting Form C), includes a species survey (See HCP Appendix K: Project Site Survey and Reporting Protocols for Plants and Butterfly Habitat) of the Covered Species present on the property and an assessment of the habitat. This baseline assessment will be used to track the effectiveness of the conservation measures required under this Agreement.

4. **IMPACTED HABITAT.** The parties agree Cooperator is allowed to impact **[List the covered species and number of individuals or amount of foliar cover to be affected]** within that area shown on Exhibit A as the Impact Area, as a result of performing the following activities (“Covered Activities”) which are covered under the County’s Incidental Take Permit, Habitat Conservation Plan, and Implementing Agreement.

- **[List covered activities here]**

5. **CONSERVATION MEASURES.** The purpose of the County’s Incidental Take Permit, Habitat Conservation Plan, Implementing Agreement, and this Agreement is to mitigate for impacts to Covered Species or their habitat on Covered Lands resulting from Cooperator’s Covered Activities. The biological goal of the Permit is to maintain viable populations of the Covered Species in Benton County. To accomplish this goal, it is essential that the Cooperator and the County work together to provide good habitat and positive stewardship for the Covered Species on Cooperator’s lands. Therefore, Cooperator agrees to conduct the following activities to minimize and mitigate for impacts to the Covered Species as provided for in the Certificate of Inclusion and this Agreement:

- **[Specify conservation measures/mitigation to be undertaken]**

6. **EFFECTIVENESS MONITORING**

Cooperator shall undertake effectiveness monitoring for any habitat restoration, enhancement, and management activities required in Section 5 above, and according the Effectiveness Monitoring Plan (Exhibit C) prepared by the Cooperator. Cooperator shall complete and submit a Reporting Form C: Monitoring Summary, to the County by December 31<sup>st</sup> of each year monitoring is conducted.

7. **RESPONSIBILITIES OF THE PARTIES**

**Cooperator’s Responsibilities.** The Cooperator agrees to limits its impacts on Covered Species to those allowed through the Agreement and Certificate of Inclusion. The Cooperator understands that in order for the County to fulfill the responsibilities of its Incidental Take Permit and Implementing Agreement, the County must report to the U.S. Fish and Wildlife Service and Oregon Department of Agriculture all activities impacting Cooperator’s Covered Species in accordance with its Incidental Take Permit and Implementing Agreement. In addition, Cooperator agrees to:

- Implement the Conservation Measures specified herein in compliance with all federal, state and local laws, including, but not limited to, physical delineation of the habitat area on the ground as deemed necessary by the County.
- Perform its Covered Activities in compliance with the Best Management Practices and Management Guidelines identified in the HCP, in addition to all federal, state, and local laws,
- Upon reasonable notice (48 hours), allow access to the Cooperator’s Property by the County or its approved contractors, for purposes related to this Agreement, including, but not limited to, compliance monitoring and technical assistance.
- Notify the County, in writing, of any transfer of ownership at least 30 calendar days prior to the intended transfer, so the County can attempt to contact the new owner and explain the responsibilities applicable to the impacted property.
- If pre-mitigation has not been completed, initiate mitigation and within 1 year of the effective date of this agreement. Submit Reporting Form D: Mitigation Notice, Part A: Notification of Mitigation Initiation, with this Agreement and prior to beginning any mitigation required by this Agreement and submit Part B of the form, Notice of Mitigation Completion, at the completion of any mitigation required by this Agreement.
- Conduct effectiveness monitoring as set forth in the Cooperator’s Effectiveness Monitoring Plan (Exhibit C), and submit the monitoring forms to the County as required in Section 6 above.
- Submit required Part A and Part B of Reporting Form A: Project Impacts, and Form B: Work Completed, detailing covered activities implemented, including habitat restoration, enhancement and management activities by December 31 of the year in which they were completed.

**County’s Responsibilities.** The County’s responsibilities include the following:

- Provide 48 hours advance notification to the Cooperator before any visit by County staff or its contractors to Cooperator's Property.

**7. AGREEMENT DURATION.** Obligations under this Agreement will be in effect from the date executed until the conservation measures required under this Agreement have been satisfied and Reporting Form D: Part B: Notice of Mitigation Completion has been submitted to and signed off by the County. Upon signing the Agreement and submitting Notice of Mitigation Initiation (Reporting Form D) (and Notice of Mitigation Completion, if premitigation has already been completed), a Certificate of Inclusion will be issued to the Cooperator under the County's Incidental Take Permit and Implementing Agreement. The Certificate of Inclusion will authorize incidental take of the Covered Species at the time the Certificate of Inclusion is issued. Copies of the Agreement and Certificate of Inclusion will be held by the County, and copies will be submitted to the USFWS and ODA as part of the County's Annual Compliance Report.

**8. INCIDENTAL TAKE.** Take is defined as actions or attempted actions to harass, harm, pursue hunt, shoot, wound, kill, trap, capture, or collect such species. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. "Harass" is further defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns including, but not limited to, breeding, feeding or sheltering. Incidental take is any take of federally-listed wildlife or State-listed wildlife and plants that is incidental to, but not the purpose of, otherwise lawful activities.

**9. MODIFICATION OF AGREEMENT.** The County or the Cooperator may propose modifications or amendments to this Agreement by providing written notice to the other party and obtaining their written concurrence. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. The parties will make their best efforts to respond to proposed modifications within 60 calendar days of receiving the notice. Proposed modifications will become effective upon the parties' written concurrence.

**10. CERTIFICATE OF INCLUSION SUSPENSION OR REVOCATION.** The County may suspend or revoke a Cooperator's Certificate of Inclusion if the Cooperator, without the express written consent of the County, (1) performs activities other than the covered activities allowed for under this Agreement resulting in the take of the Covered Species, (2) does not perform the conservation measures set forth in the Agreement, (3) does not conduct the required effectiveness monitoring required in the Agreement, or (4) does not comply with the provisions of this Agreement. The County will notify the USFWS and ODA within ten (10) business days of the suspension or revocation of the Certificate of Inclusion.

**11. SUCCESSION AND TRANSFER.** This Agreement shall be binding on and shall inure to the benefit of the parties (including officers, directors, employees, lessees and agents thereof) and their respective successors and transferees. The rights and obligations under this Agreement are transferable to subsequent non-Federal property owners, upon consent of the successor or transferee of the land, execution of a new Agreement, and issuance of a Certificate of Inclusion. A new owner(s) will have the same rights and obligations as the original owner.

**12. RELEASE.** The Cooperator releases and shall hold the County harmless from any liability arising from or related to this Agreement or activities undertaken on the Cooperator's Property pursuant to this Agreement.

**13. NOTIFICATION.** Communication/correspondence required by this Agreement should be directed to the addresses below. Names and addresses may be changed upon written notice to all parties.

Benton County Community Development Director  
360 SW Avery Avenue  
Corvallis, OR 97333-1192  
(541) 541-6871

Cooperator's Name  
Address  
City, State, Zip  
Telephone Number

Dated effective as of the last date of signature below.

BENTON COUNTY

Signature \_\_\_\_\_ Date \_\_\_\_\_

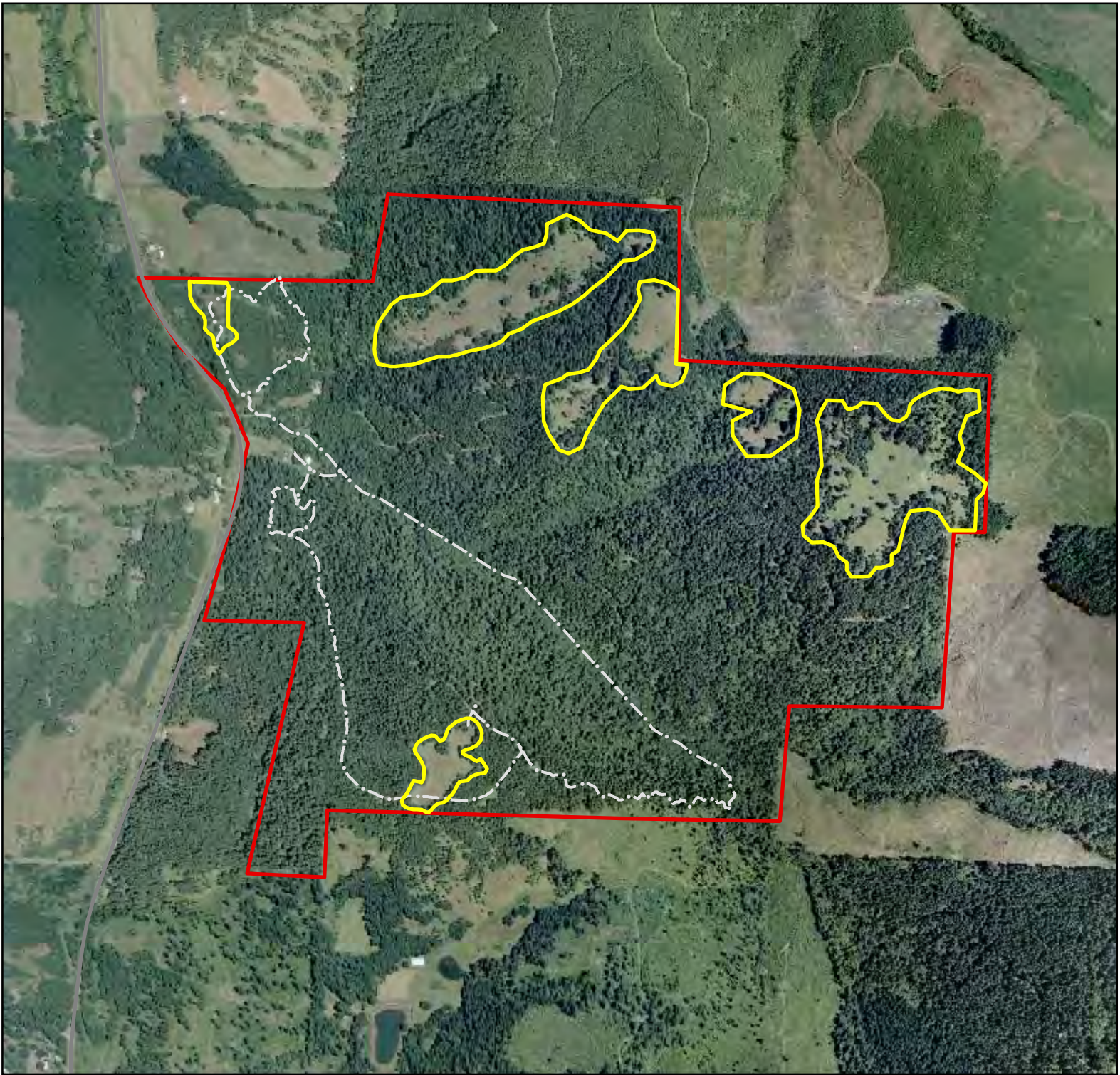
Printed Name \_\_\_\_\_ Title \_\_\_\_\_

COOPERATOR

Signature \_\_\_\_\_ Date \_\_\_\_\_

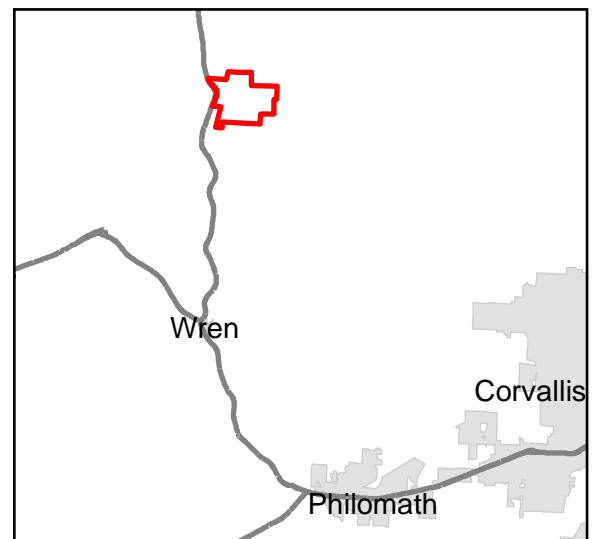
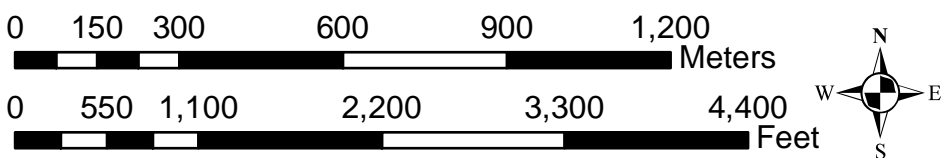
Printed Name \_\_\_\_\_ Title \_\_\_\_\_

# **Appendix D. Maps of Prairie Conservation Areas**



### Legend

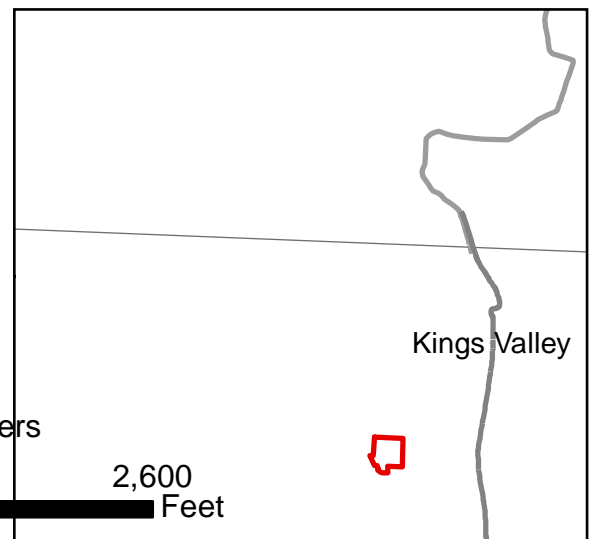
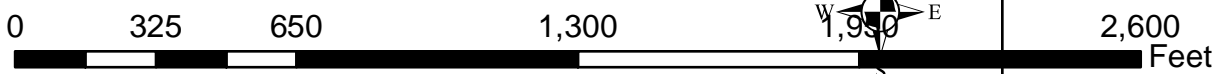
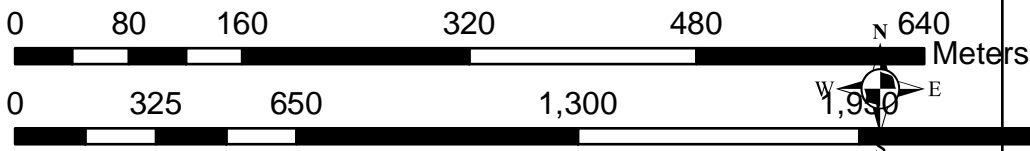
-  Beazell Memorial Forest
-  Prairie Conservation Area
-  Trails
-  State Highways





### Legend

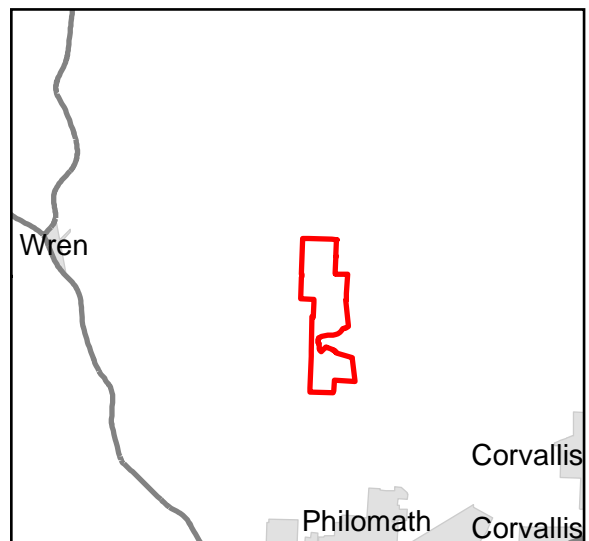
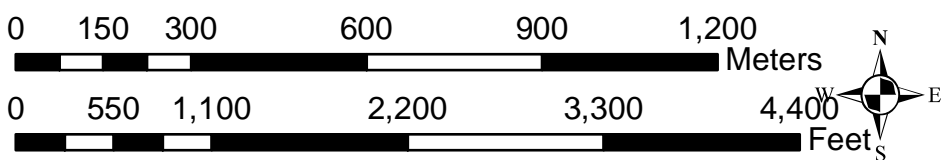
-  Prairie Conservation Areas
-  Fort Hoskins Historic Park
-  Trails
-  State Highways





### Legend

- Fitton Green Natural Area
- Prairie Conservation Area
- Trails
- State Highways





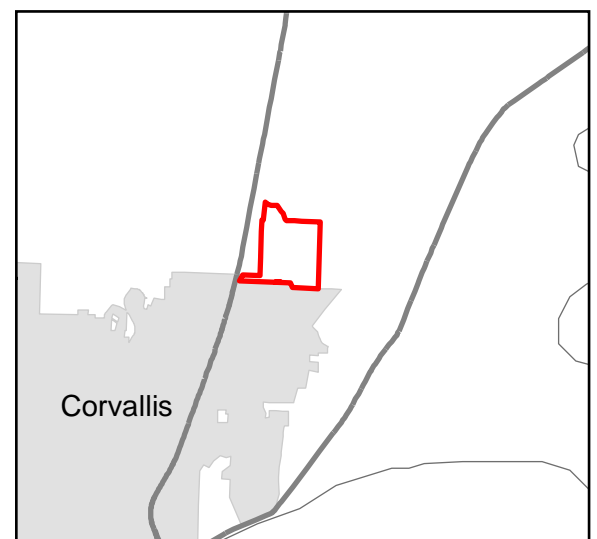


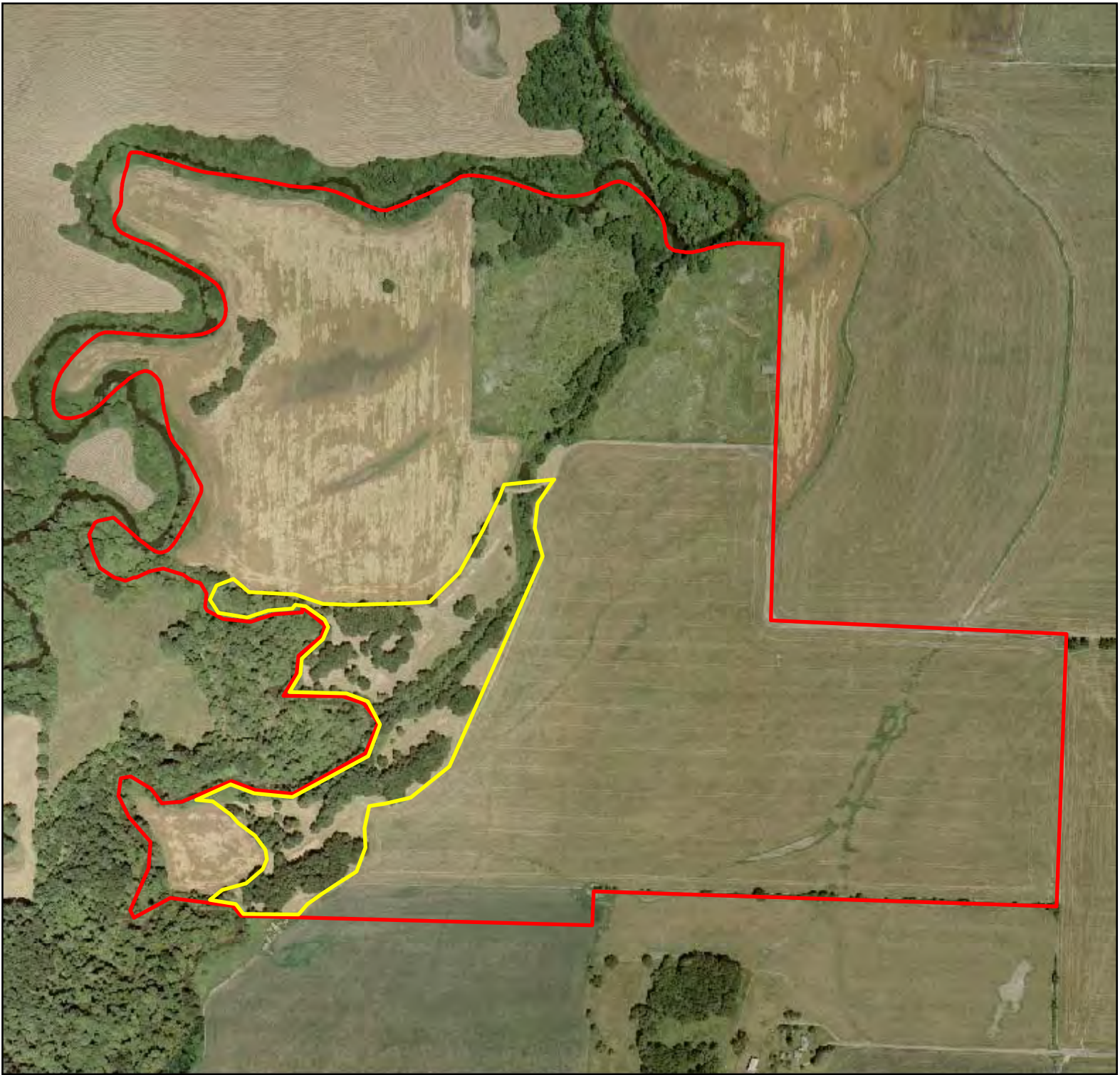
### Legend

- Prairie Conservation Area
- Jackson-Frazier Wetland
- Trails
- State Highways

0 80 160 320 480 640 Meters

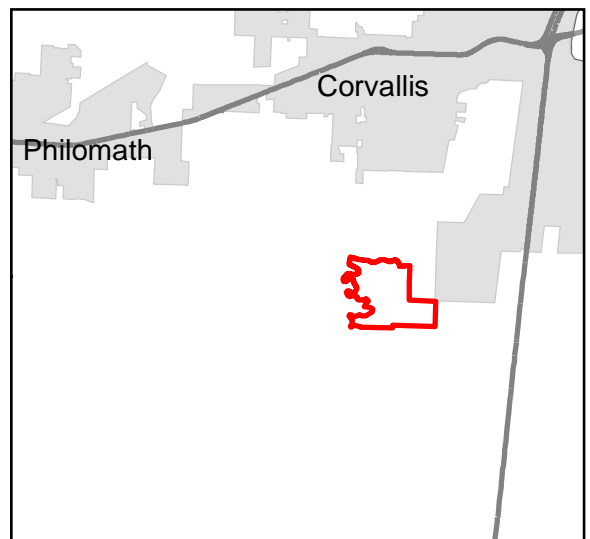
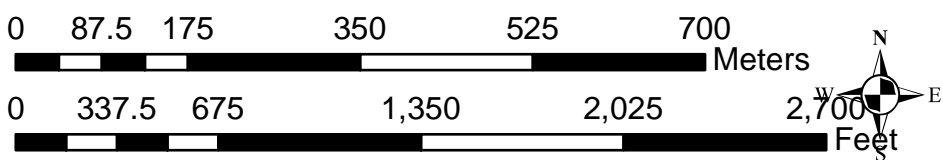
0 305 610 1,220 1,830 2,440 Feet

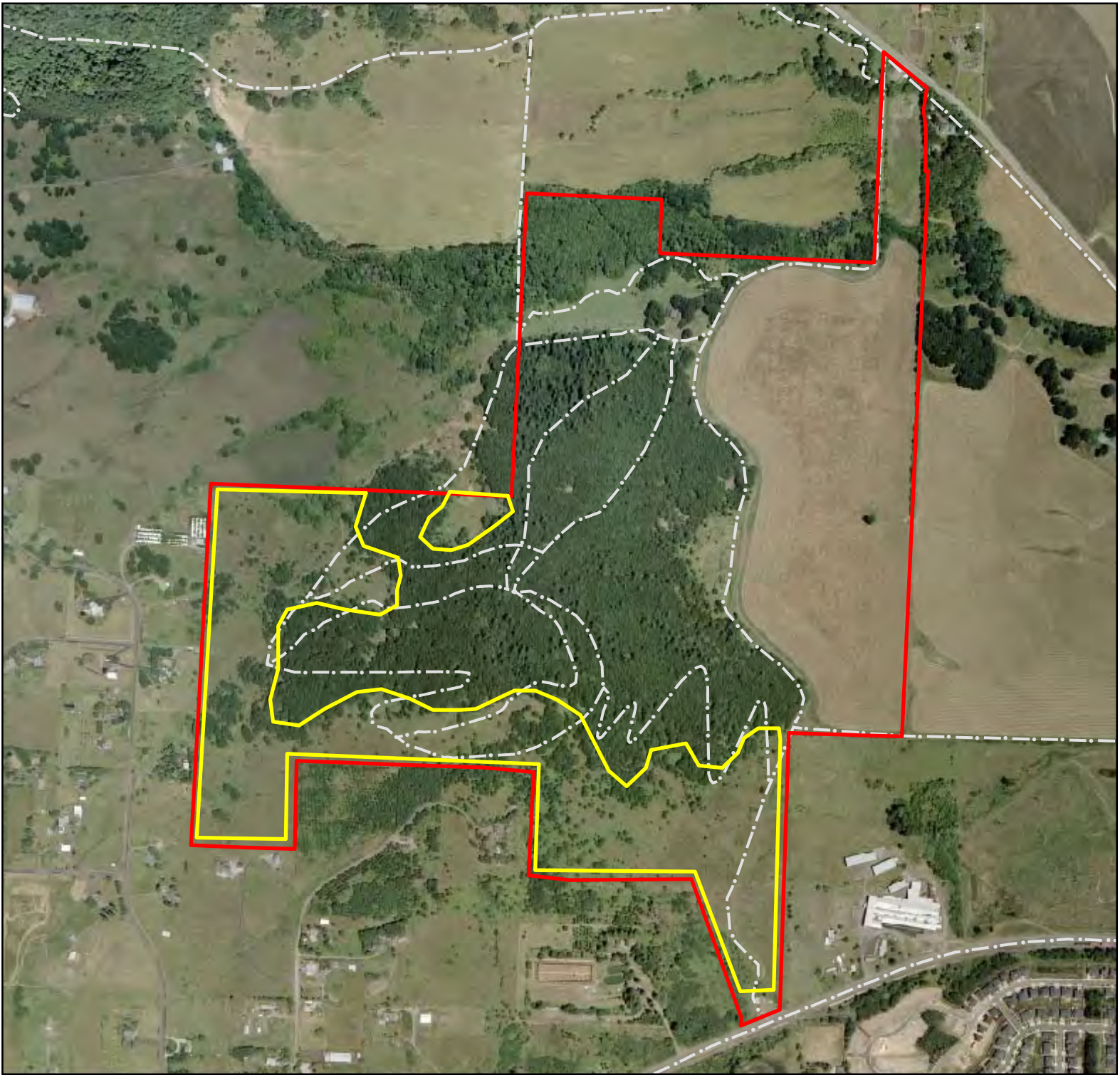




### Legend

-  Prairie Conservation Area
-  Herbert Open Space
-  Trails
-  State Highways



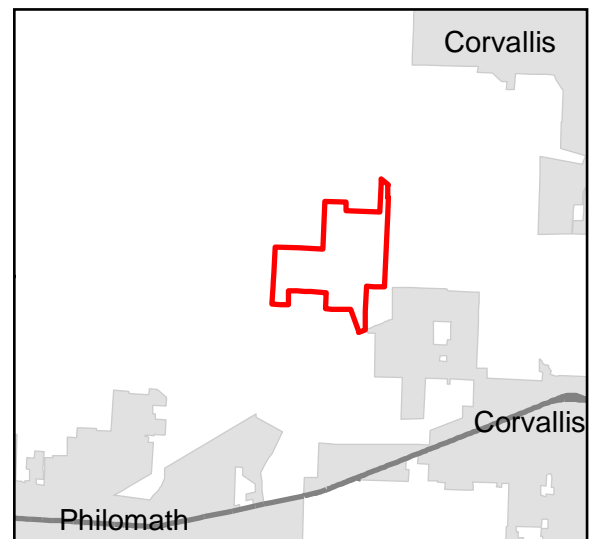


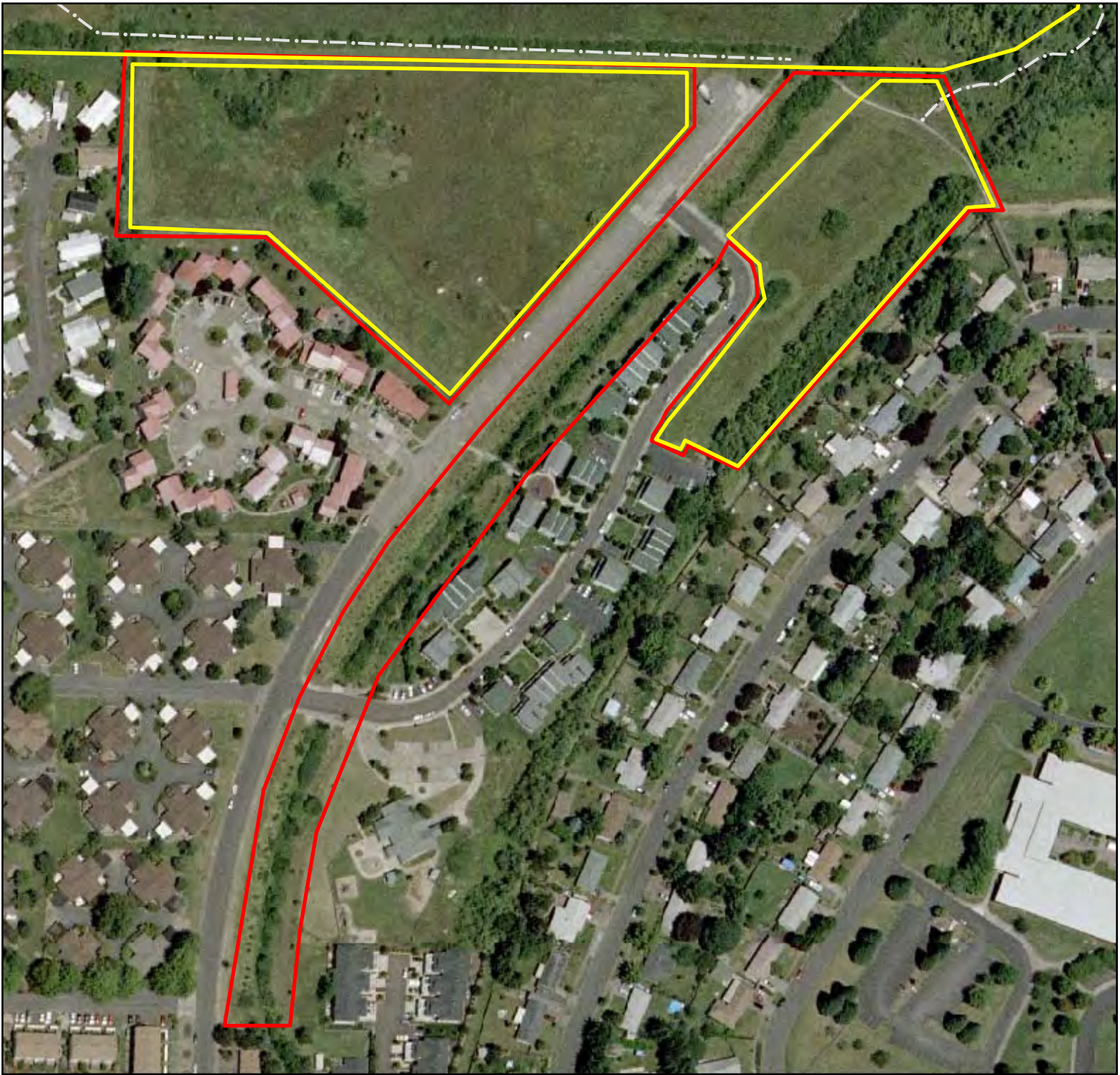
## Legend

- Prairie Conservation Area
- Bald Hill Park
- Trails
- State Highways

0 112.5 225 450 675 900 Meters

0 370 740 1,480 2,220 2,960 Feet



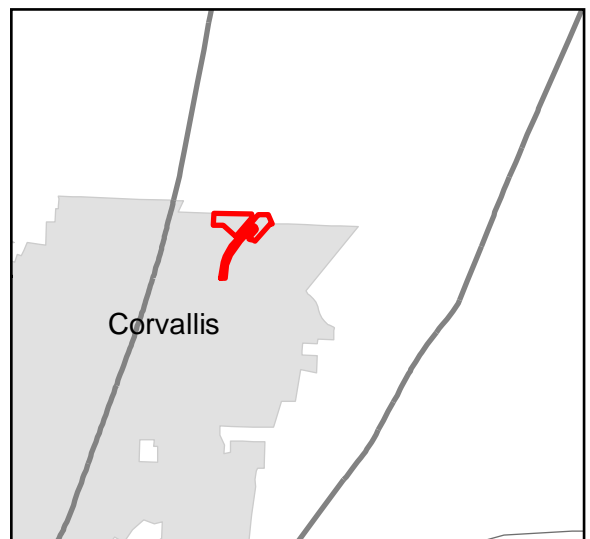


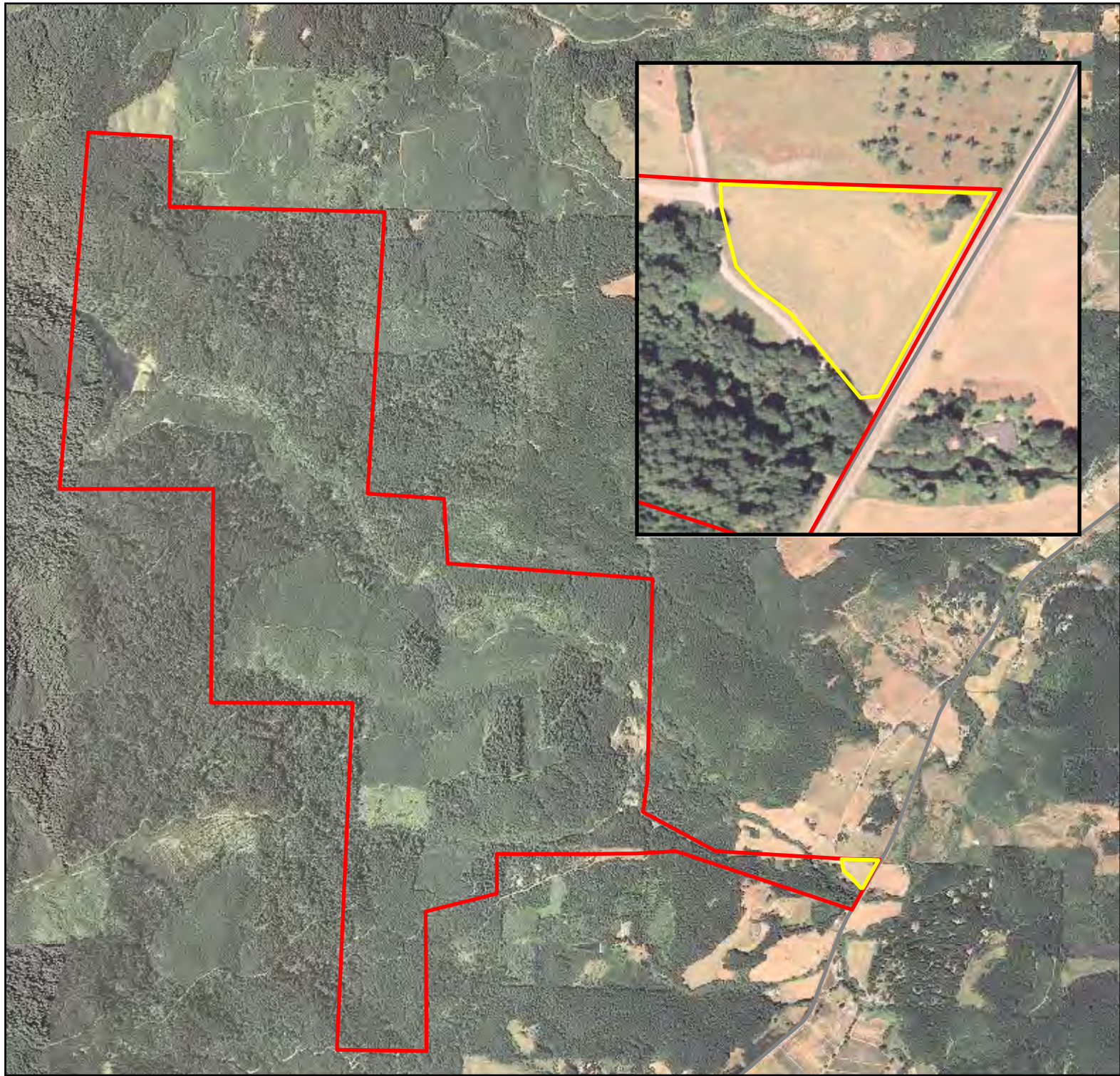
### Legend

-  Prairie Conservation Area
-  Lancaster Property
-  Trails
-  State Highways

0 25 50 100 150 200 Meters

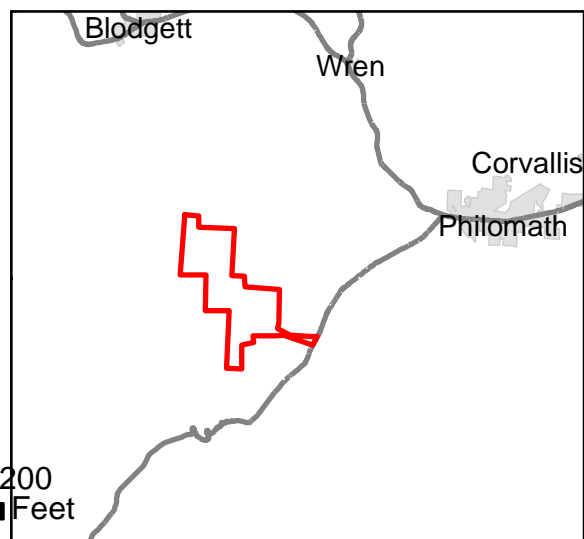
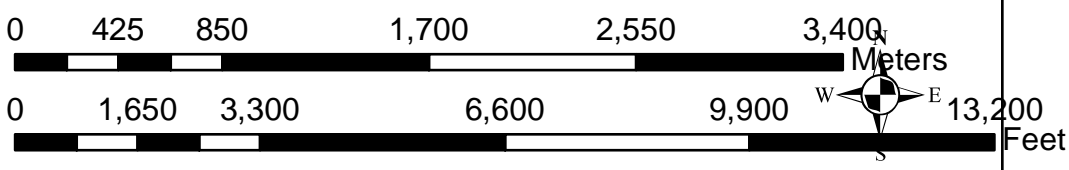
0 95 190 380 570 760 Feet








## Legend

-  Prairie Conservation Area
-  Corvallis Watershed
-  Trails
-  State Highways



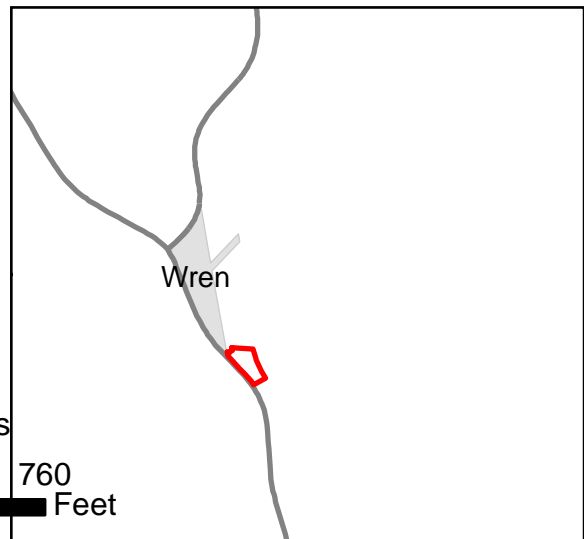


### Legend

-  ODOT Wren Mitigation Site and PCA
-  Trails
-  State Highways




0 25 50 100 150 200 Meters

0 95 190 380 570 760 Feet



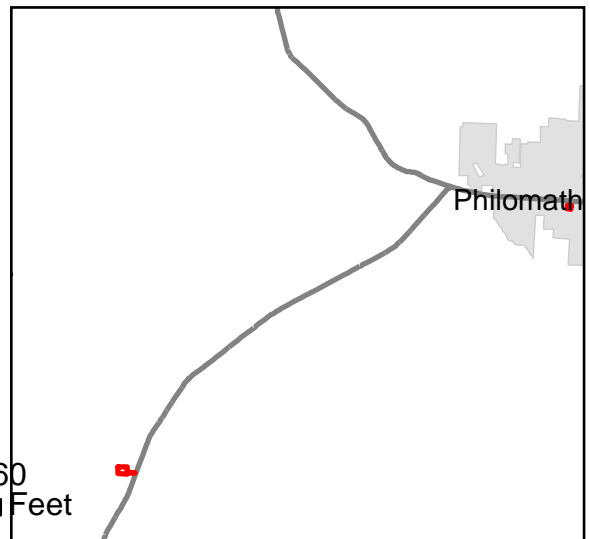


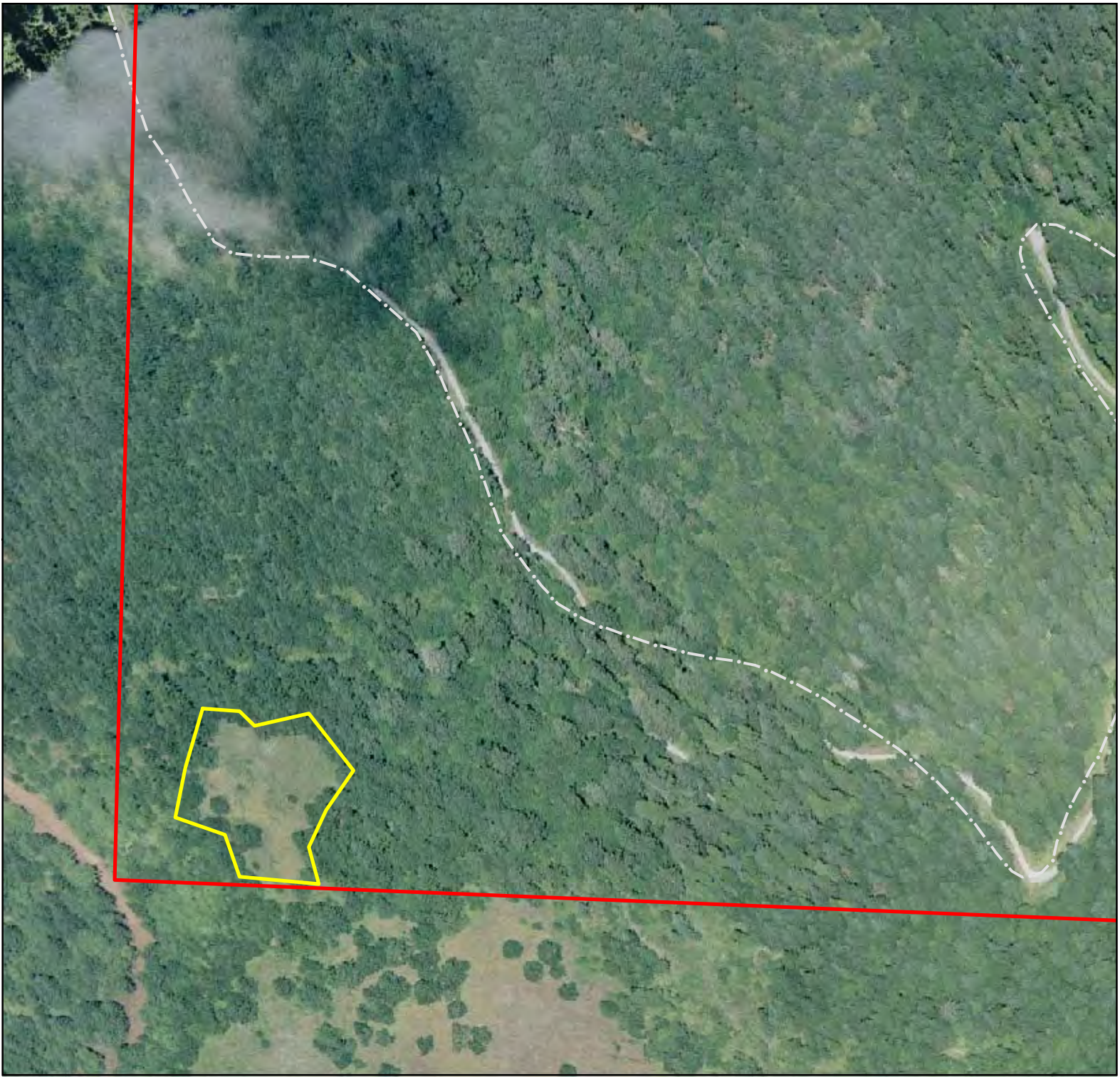
### Legend

-  ODOT Henkle Quarry and PCA
-  Trails
-  State Highways

0 25 50 100 150 200 Meters

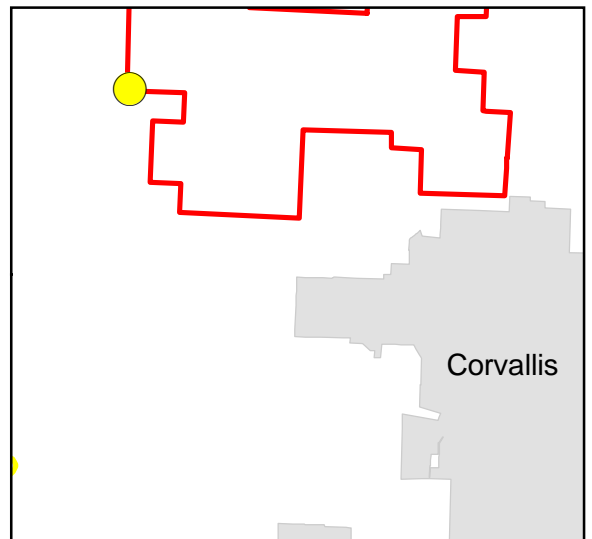
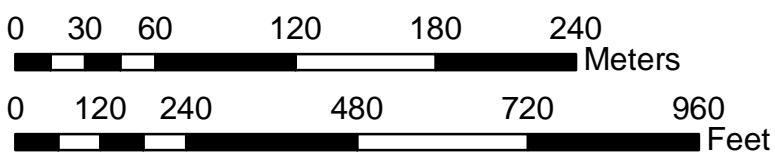
0 95 190 380 570 760 Feet





### Legend

- Butterfly Meadows Prairie Conservation Area
- OSU Forest Boundary
- Trails
- State Highways





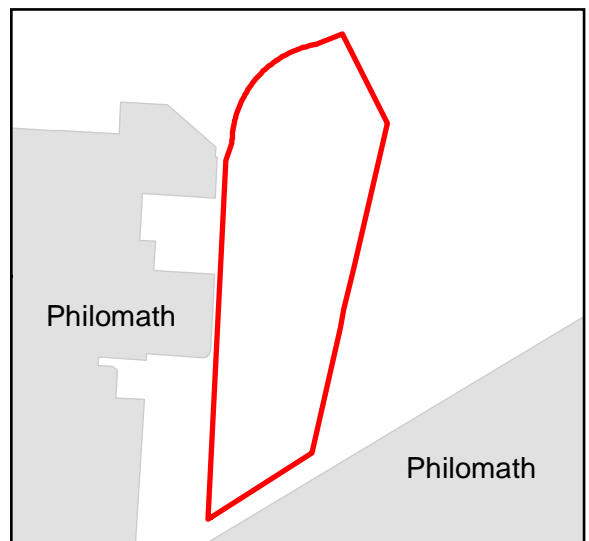


## Legend

-  Prairie Conservation Area
-  Lupine Meadows
-  Trails
-  State Highways

0 60 120 240 360 480 Meters

0 220 440 880 1,320 1,760 Feet



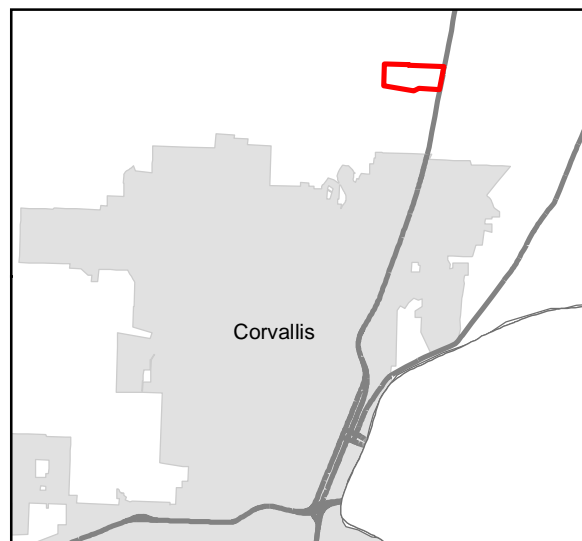


### Legend

-  Prairie Conservation Area
-  Owens Farm
-  Trails
-  State Highways

0 55 110 220 330 440 Meters

0 200 400 800 1,200 1,600 Feet






### Legend

 Prairie Conservation Area

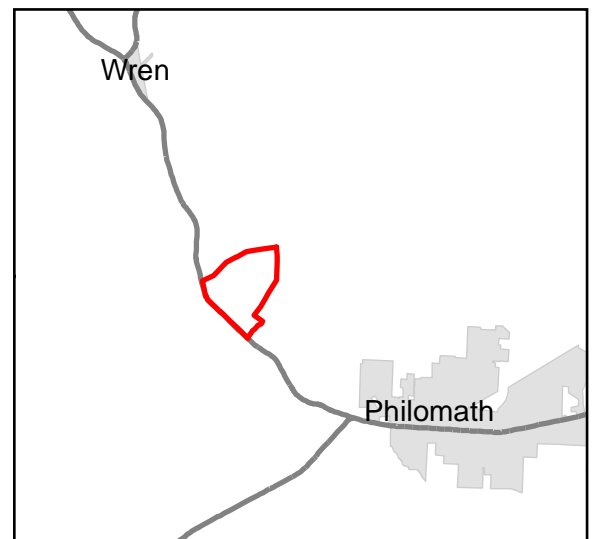
 Lonestar Ranch

 Trails

 State Highways

0 80 160 320 480 640 Meters

0 265 530 1,060 1,590 2,120 Feet



# **Appendix E. Prairie Conservation Strategy**



# **BENTON COUNTY, OREGON**

## **PRAIRIE CONSERVATION STRATEGY**

### **DECEMBER 2010**



This document was prepared for Benton County by staff at  
the Institute for Applied Ecology



The Institute for Applied Ecology is a non-profit 501(c)(3) organization whose mission is to conserve native ecosystems through restoration, research, and education.

P.O. Box 2855  
Corvallis, OR 97339-2855  
(541) 753-3099  
[www.appliedeco.org](http://www.appliedeco.org)

We wish to thank the ESRI Conservation Program for a generous GIS software grant that allowed us to create the maps for this project



**Cover photos:**

**Photos top left to right:**

*Fender's blue butterfly: Tom Kaye*

*Kincaid's lupine: Lori Wisehart*

*American Kestrel: Rod Gilbert*

*Wren upland prairie tour: Rachel Schwindt*

*Western gray squirrel: Rod Gilbert*

*Willamette daisy: Lori Wisehart*

**Photo bottom:**

*Jackson-Frazier and Owens Farm: Rachel Schwindt*

# Preamble

The Benton County Prairie Conservation Strategy has been developed to educate citizens and land managers about at-risk habitat and species in Benton County, and to provide voluntary long-term strategies for conservation on both public and private lands. The Strategy is the result of input from local citizens and land managers who participated in meetings, workshops, and a web based survey. The Benton County Habitat Conservation Plan Stakeholder Advisory and Technical Advisory Committees guided the goals and objectives of the Strategy, as well as provided technical information on species and habitats (Benton County 2010). The information in this Strategy provides a reference for landowners and land managers to recognize at-risk habitat and species, and understand where these species occur in Benton County. This information is useful for planning efforts to protect listed species and reintroduce species no longer locally present.

Habitat loss due to land use change and invasive species has led to the decline of many species locally and worldwide. Conservation actions on privately owned land are essential for protection of unique habitats and rare species that occur across multiple ownerships. Several chapters in this Strategy provide additional information specifically for voluntary private landowner conservation actions. This information is appropriate both for those who wish to collaborate on projects with public agencies or who are interested in working independently. For those working independently, relevant chapters in this guide include Chapter 3: Species habitat needs, Chapter 5: Habitat conservation guide for private lands, and Chapter 6: Landowner incentives and opportunities. It is hoped that local citizens will utilize the information in this Strategy to learn about local conservation efforts and to participate where possible.

# Contents

<b>1 Background and purpose</b> .....	<b>1</b>
Prairie conservation strategy vision.....	1
Benton County conservation issues.....	2
Benton County conservation opportunities.....	2
How this strategy was prepared.....	3
Strategy goals.....	3
How to use this strategy.....	5
<b>2 Key habitats</b> .....	<b>6</b>
Habitat selection criteria.....	6
Habitat descriptions.....	8
Upland prairie and savanna.....	8
Wet prairie.....	9
Oak woodland.....	10
<b>3 Key species</b> .....	<b>11</b>
Priority species for conservation.....	11
Species habitat needs.....	18
Prairie Species Recovery Plan.....	20
Recovery implementation.....	22
Listed species recovery actions.....	22
<b>4 Protected habitat sites</b> .....	<b>26</b>
Habitat locations and quality.....	26
Sites managed for permanent habitat conservation.....	26
Sites managed for limited timeframe habitat conservation.....	31
Priority habitat zones.....	33
<b>5 Key Conservation Actions</b> .....	<b>35</b>
Habitat conservation actions.....	35
Habitat conservation guide for private lands.....	37
Opportunity areas for species conservation.....	38
Key species conservation actions.....	45
Priority short term actions.....	45
Priority long term actions.....	46
Research needed.....	53
<b>6 Voluntary conservation tools</b> .....	<b>55</b>
Landowner incentives and opportunities.....	55
Technical assistance programs.....	55
Habitat improvement programs.....	56
Easement programs.....	56
Tax incentives.....	57
Endangered species regulatory assurance.....	57
Conservation Banking.....	58
Habitat acquisition.....	59
Funding sources and assistance for voluntary acquisition.....	59



Conservation opportunity actions .....	60
<b>7 Additional species resources .....</b>	<b>66</b>
Amphibians .....	66
Insects.....	67
Birds .....	66
Mammals .....	67
Plants .....	68
Reptiles.....	69
<b>8 References .....</b>	<b>70</b>

## List of figures

Figure 2.1 Historic and current vegetation/land use in Benton County .....	7
Figure 3.1 Habitat guide for key bird species in Benton County .....	18
Figure 3.2 Habitat guide for key plant species in Benton County .....	19
Figure 3.3 Minimum area required for small population of key species in Benton County .....	20
Figure 3.4 USFWS recovery zones for prairie species in Oregon and SW Washington... 21	21
Figure 4.1 Key protected prairie and oak habitat in Benton County.....	34
Figure 5.1 Opportunity areas for key species in Benton County based on historic vegetation and elevation.....	39
Figure 5.2 Opportunity areas for key butterfly species in Benton County.....	40
Figure 5.3 Opportunity areas for key turtle species in Benton County .....	41
Figure 5.4 Opportunity areas for Peacock larkspur, Bradshaw’s lomatium, and Nelson’s checkermallow in Benton County.....	42
Figure 5.5 Opportunity areas for Kincaid’s lupine and shaggy horkelia in Benton County .....	43
Figure 5.6 Opportunity areas for Willamette daisy and thin-leaved peavine in Benton County.....	44
Figure 5.7 Areas of high priority for conservation actions to benefit key species in Benton County .....	48
Figure 5.8 Areas of high priority for conservation actions near Wren, Philomath, and West Corvallis .....	49
Figure 5.9 Areas of high priority for conservation actions in north Benton County .....	50
Figure 5.10 Areas of high priority for conservation actions in south Benton County .....	51
Figure 5.11 Areas of high priority for conservation actions near Kings Valley.....	52

## List of tables

Table 3.1 Prairie Conservation Strategy key species habitat requirements.....	12
Table 3.2 Summary of recovery objectives from the Western Oregon and Southwestern Washington Prairie Species Recovery Plan (USFWS 2010) .....	24

Table 4.1 Benton County sites managed for permanent habitat conservation by local, state, and federal government agencies .....27

Table 4.2 Benton County sites managed for permanent habitat conservation by non governmental organizations (owned or under conservation easement) .....30

Table 4.3 Benton County sites managed for habitat conservation under limited timeframe protection .....31

## Acronyms

The following is a list of acronyms used in the Benton County Prairie Conservation Strategy:

- ESA – Endangered Species Act
- FSA – Farm Service Agency
- NGO – Non-governmental organization
- NRCS – Natural Resources Conservation Service
- ODA – Oregon Department of Agriculture
- ODFW – Oregon Department of Fish and Wildlife
- SWCD – Soil Water Conservation District
- TNC – The Nature Conservancy
- USFWS – United States Fish and Wildlife Service

# 1 Background and purpose

Benton County encompasses some of the highest quality prairie and oak habitat in the Willamette Valley of Oregon. These habitats support unique plant and animal species and contribute to the scenic landscape enjoyed by Benton County's residents and visitors. Though significant remnants of prairie habitats remain in Benton County, much of the historic prairie, oak savanna, and oak woodlands have been lost to land use conversion, habitat fragmentation, fire and flood suppression, and invasive species introductions (ODFW 2006). Populations of several plant and animal species dependent on prairie and oak habitat have declined and several are listed as threatened or endangered by Federal and State agencies. Strategic conservation planning can help focus conservation actions around the best remaining habitat for the benefit of both listed species and species that may be at risk for future extinction.

This strategy was developed as one of the Conservation Measures of a multi-species Habitat Conservation Plan funded by a U.S. Fish and Wildlife Service grant to Benton County and also serves as a stand-alone reference document. The continued existence of prairie habitats and species depends on the willingness of land managers and private landowners to voluntarily undertake conservation actions. This document provides an overview of voluntary actions that can be enacted in Benton County to increase prairie habitats and recover high priority species.



## ***Prairie conservation strategy vision***

The vision for the Prairie Conservation Strategy is that:  
*Benton County will contain abundant and high value prairie and oak habitat for secure populations of native species. Prairie and oak habitat are valued community assets for native species protection, scenic landscapes, and recreation opportunities.*

## ***Benton County conservation issues***

In the Willamette Valley, prairie and oak habitats have declined from their historic extent and, unless protected and restored, will likely continue to decline due to a variety of factors, including land use change to accommodate future population growth and invasive species spread. In Benton County, much of the historic open prairie and oak habitat has been developed into farmland and urban areas or has become Douglas-fir forest through natural succession. The few remaining habitat patches have been maintained by low intensity management. Habitat patches that were once interconnected are now isolated from one another by roads, forests, agricultural fields, and other habitat types. This habitat fragmentation makes it difficult for some plant and animal species to disperse between patches, reducing their ability to survive over the long term.



Fire suppression and altered floodplain connections over the last two centuries have allowed native shrubs and trees to displace prairie species and slowly prairies have been replaced by ash and coniferous forests in a process called succession. In addition, non-native species introduced to our region pose a new threat to prairie ecosystems by changing the habitat ecology and composition.

### **The primary threats to prairie and oak habitat are:**

- Habitat loss and fragmentation through development
- Invasion by non-native plant species
- Vegetative succession to shrub and tree species

## ***Benton County conservation opportunities***

There are many opportunities for habitat conservation in Benton County due to the remaining intact prairie sites and the conservation interest of Benton County's citizens. Many dedicated individuals and groups are working to restore and protect prairie and oak habitat on private and public lands. State and federal agencies, as well as several non-governmental organizations (NGOs), manage more than 16,000 acres of land for conservation in Benton County. Many private landowners also manage much of the best remaining native habitat on their own or in partnership with public agencies and NGOs and their work is crucial for maintaining habitat for rare native species. Engaging private landowners in prairie conservation is key to this strategy for native prairie and oak habitat retention in Benton County and throughout the Willamette Valley.

## ***How this strategy was prepared***

This strategy is the result of input from land managers, scientists, and local citizens who participated in meetings, workshops, and a survey between 2006 and 2009. Groups associated with Benton County's Prairie Species Habitat Conservation Plan were convened to share ideas and information on the species and habitats discussed here. The Stakeholder Advisory Committee to the HCP held a series of meetings to define the vision, goals and objectives of this strategy, as well as obstacles to conservation and solutions to these challenges. In addition, this group set the scope of the strategy, including the habitats and species to be included. Riparian habitats are an integral component of ecosystem processes but were excluded to focus the strategy on prairie and oak habitats.

Technical information on the habitats and species was provided by the Technical Advisory Committee to the HCP and its taxonomic subgroups. An online survey conducted in 2009 provided background information on community willingness to participate in habitat conservation on public and private lands, and identified obstacles, priorities and techniques for community engagement. With technical and community information in hand, the Stakeholders reconvened in a summer workshop to discuss on-the-ground priorities for prairie habitats in Benton County, focusing on site-specific needs of the local landscape and opportunities for establishing connectivity between habitat patches and populations. Benton County Natural Areas and Parks Department staff and consultants assembled the outcomes of this process into a single document. The result is summarized in this strategy.



## ***Strategy goals***

Prairie Conservation Strategy goals were developed to guide long-term conservation of prairie and oak habitat for native species in Benton County. Actions recommended by this strategy are voluntary and emphasize opportunities for public and private landowners to work together towards habitat conservation. Funding for conservation is often limited, so efficient methods for species conservation using diverse sources of funding are crucial.

***Goal 1: Identify prairie and oak habitats and habitat attributes important to Benton County's at-risk species***

Goal 1 Actions

- Identify areas within Benton County that have prairie or oak habitat with a predominantly native plant component.
- Identify actions for strategic habitat conservation.
- Identify at-risk species that would benefit from prairie or oak habitat management and the habitat requirements for these species.
- Identify current habitats in Benton County that support at-risk native species.
- Identify connectivity needs and obstacles for these species and their habitat on unprotected lands.
- Identify actions for strategic species conservation.

***Goal 2: Encourage voluntary cooperative partnerships among public and private landowners and the general community to enhance conservation***

Goal 2 Actions

- Identify voluntary tools for conservation.
- Identify opportunities to engage private landowners in habitat conservation.

***Goal 3: Facilitate access to diverse sources of funding to maximize the likelihood of stable support***

Goal 3 Actions

- Identify existing funding sources for conservation.
- Identify gaps in funding for conservation.



*Hitchcock's blue-eyed-grass*

## ***How to use this strategy***

This strategy outlines an approach for interested parties, both public and private, to conserve and restore habitats and recover prairie-dependent species in Benton County in a non-binding, non-regulatory framework. Chapters in this document are structured around the key steps needed for habitat conservation at any location:

- Identify key habitats (Chapter 2)
- Identify key species (Chapter 3)
- Understand habitat geography and locate partners (Chapter 4)
- Identify actions (Chapter 5)
- Get help (Chapter 6)

Identification of the key habitats already, or potentially, present at a site, including wetland prairie, upland prairie and savanna, and oak woodland, is covered in Chapter 2. Chapter 3 discusses key species, from the uncommon to the endangered, that could be supported and describes their habitat, population, and connectivity needs. With this information a landowner or manager can decide which habitats and species their property has the potential to support. Chapter 4 describes the existing network of public and conservation lands in Benton County, putting into geographic context restoration projects on public or private lands. Actions needed to support these habitats and species locally are identified in Chapter 5, with high and low priorities assigned to such activities as enhancing existing sites and populations, creating new populations or restoring habitats to provide connectivity across the landscape, and conducting outreach to the local community. Landowners and managers can find their sites on the maps in this section and learn how their actions can contribute directly to conservation. Finally, chapter 6 describes several conservation tools available to private individuals and public agencies, from technical to financial assistance and existing support programs to new ideas. This strategy puts necessary information into the hands of our local community, enabling conservation through informed action.



## 2 Key habitats

### ***Habitat selection criteria***

This Prairie Conservation Strategy focuses on three key habitats with opportunities for conservation in Benton County. Upland prairie/oak savanna, wet prairie, and oak woodland habitat types have been identified in the Oregon Conservation Strategy as being particularly reduced by development in the Willamette Valley (ODFW 2006). Additionally, the loss of prairie habitat in Benton County has contributed to the listing of several prairie-dependent species which makes protection of prairie habitat particularly important. The U.S. Fish and Wildlife Service (USFWS) has finalized a Recovery Plan for listed prairie-dependent species and for additional prairie species that may be candidates for listing in western Oregon (USFWS 2010). This Prairie Conservation Strategy applies the USFWS's recovery criteria from that plan to identify networks of habitat that could assist in the recovery of listed species.



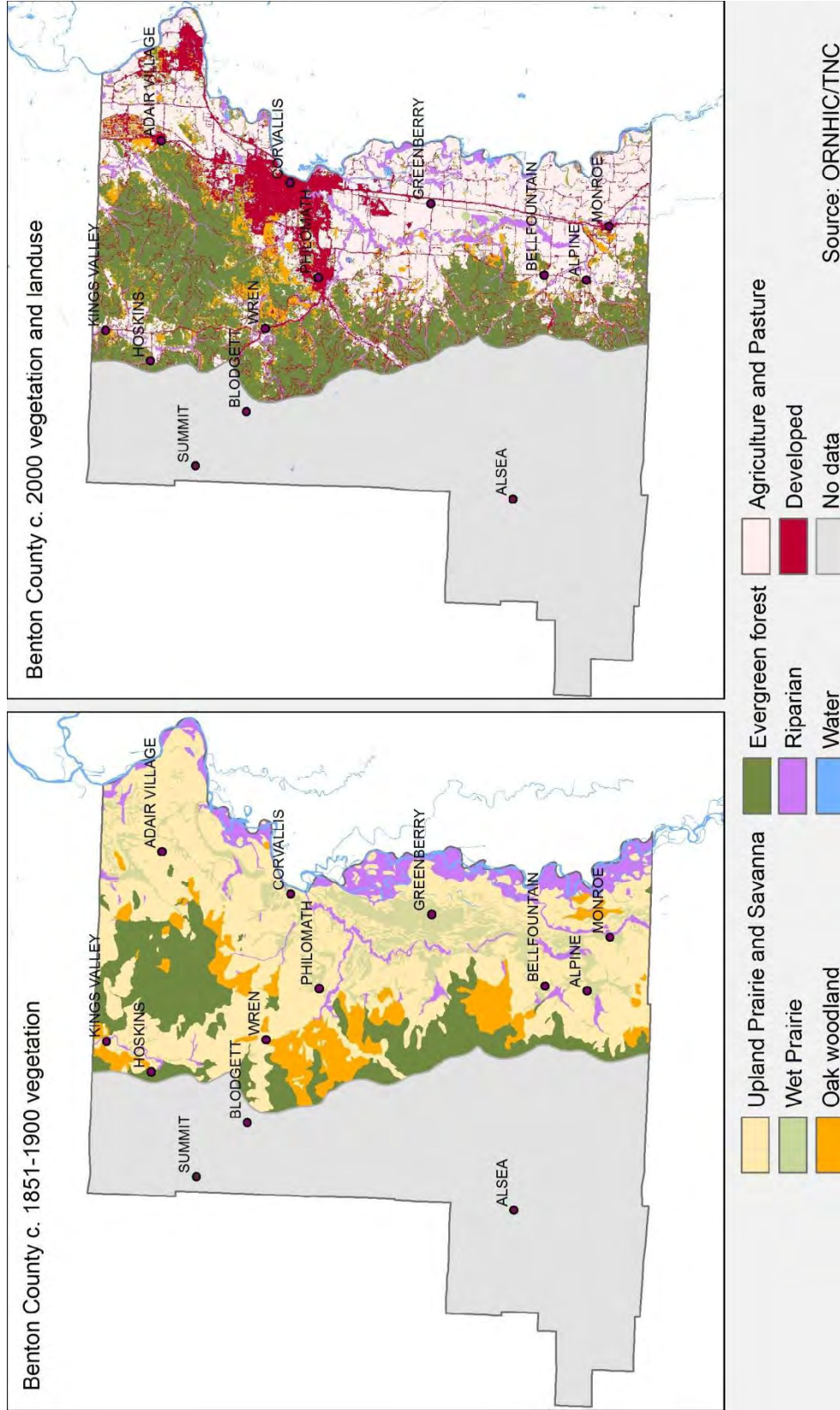
All of the selected habitat types have been mapped in the Willamette Valley by several groups and are defined in the International Terrestrial Ecological Systems Classification system (NatureServe 2009).

### **The key habitat types addressed in this strategy are:**

- **Willamette Valley Upland Prairie and Oak Savanna**
- **Willamette Valley Wet Prairie**
- **North Pacific Oak Woodland**

Conservation of these broadly defined habitat types across our landscape will serve to improve conditions for rare species as well as the diverse suite of species that reside in those habitats. Landscape level conservation actions will also allow for increased connectivity between fragmented sites.





**Figure 2.1 Historic and current vegetation/land use in Benton County**

## ***Habitat descriptions***

### **Upland prairie and savanna**

Upland prairies are among the most threatened ecosystems in Oregon. These open grasslands historically occurred across the Willamette Valley and supported diverse animal and herbaceous plant species. Upland prairies are typically dominated by perennial grasses and annual or perennial forbs. Savanna areas may also contain widely spaced (a few trees per acre) open grown Oregon white oaks (*Quercus garryana*), Douglas-fir (*Pseudotsuga menziesii*), or ponderosa pines (*Pinus ponderosa*) with wide canopies. In the Willamette Valley, upland prairies and savanna typically occur on low elevation,



well draining slopes along the valley bottom and surrounding foothills. This habitat was historically maintained by seasonal fire.

Common native grasses in upland prairie include Roemer's fescue (*Festuca roemeri*), California oatgrass (*Danthonia californica*), prairie junegrass (*Koeleria*

*macrantha*), blue wildrye (*Elymus glaucus*), and Lemmon's needlegrass (*Achnatherum lemmonii*). Native forbs that are commonly intermixed with the grasses include Oregon sunshine (*Eriophyllum lanatum*), slender cinquefoil (*Potentilla gracilis*), dwarf checkermallow (*Sidalcea virgata*), lance selfheal (*Prunella vulgaris* ssp. *lanceolata*) and Tolmie startulip (*Calochortus tolmiei*).

Plant species that invade the prairie when there is a lack of management include native woody species such as Douglas-fir and non-natives such as oneseed hawthorn (*Crataegus monogyna*), Scot's broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus armeniacus*), false brome (*Brachypodium sylvaticum*) and a wide diversity of other invasive plants.

Key at-risk species associated with upland prairie and savanna include: Fender's blue butterfly (*Icaricia icarioides fenderi*), Taylor's checkerspot butterfly (*Euphydryas editha taylori*), field crescent butterfly (*Phyciodes pulchella*), tailed copper (*Lycaena arota*), Western Meadowlark (*Sturnella neglecta*), Streaked Horned Lark (*Eremophila alpestris strigata*), camas pocket gopher (*Thomomys bulbivorus*), golden paintbrush (*Castilleja levisecta*), Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), shaggy horkelia (*Horkelia congesta* ssp. *congesta*), and Willamette daisy (*Erigeron decumbens* var. *decumbens*).



## Wet prairie

Wet prairies were once a common habitat in the floodplain of the Willamette River. These prairies are a mosaic of ash swales, vernal pools, emergent marsh, and seasonally flooded grasslands that occur on poorly drained clay soils or shallow soils above bedrock. Wet prairies are maintained by seasonal flooding, which creates anaerobic wetland soil characteristics, and many were also historically maintained by late summer fires.

Wet prairies are dominated by herbaceous plants, often including facultative or obligate wetland plant species. Common native



grass species found in wet prairies include tufted hairgrass (*Deschampsia cespitosa*) and meadow barley (*Hordeum brachyantherum*). One-sided sedge (*Carex unilateralis*) and dense sedge (*C. densa*) are also common. Native forbs found in wet prairie include camas (*Camassia quamash* and *C. leichtlinii*), Oregon sunshine, elegant downingia (*Downingia elegans*), and coyote-thistle (*Eryngium petiolatum*).

Without management or natural disturbance, native tree and shrub species such as Oregon ash (*Fraxinus latifolia*) and Nootka rose (*Rosa nutkana*) invade into the prairie. Non-native invading plants include sweetbriar rose (*Rosa eglantheria*), reed canarygrass (*Phalaris arundinacea*), common St. Johnswort (*Hypericum perforatum*) and many others.

Key at-risk species associated with wet prairies include: American grass bug (*Acetropis Americana*), Wilson's Snipe (*Gallinago delicata*), Northern Harrier (*Circus cyaneus*), Short-eared Owl (*Asio flammeus*), Bradshaw's lomatium (*Lomatium bradshawii*), shaggy horkelia, Nelson's checkermallow (*Sidalcea nelsoniana*), racemed goldenweed (*Pyrocoma racemosa* var. *racemosa*), white-topped aster (*Sericocarpus rigidus*), and Willamette daisy.



Northern Harrier © Rod Gilbert

## Oak woodland

In Benton County, oak woodlands are characterized by Oregon white oak and have an open to moderately shrubby understory historically maintained by low severity fire.



These woodlands have >30% of the canopy shading the ground. Oak woodlands contain multiple trees as compared to the single open grown oaks in an oak savanna but these woodlands still filter light to the ground to allow oak seedling germination. Oaks do not tolerate shading by other trees and will eventually die if overtopped. These woodlands are found on low elevation slopes and on drier flat terrain. Oaks

provide multiple benefits to wildlife such as acorns for food or cavities for nesting. Most of these habitats have been lost to Douglas-fir encroachment, fire wood cutting, or conversion to agriculture and development.

Common native plant species in oak woodlands include blue wildrye, small camas, Pacific blacksnakeroot (*Sanicula crassicaulis*), poison-oak (*Toxicodendron diversilobum*), common snowberry (*Symphoricarpos albus*), and sword fern (*Polystichum munitum*). Douglas-fir is a common invader that can overtop and shade the oaks resulting in conversion of oak woodlands to conifer forest. Non-native species that colonize this habitat include false brome, Himalayan blackberry, oneseed hawthorn, spurgelaurel (*Daphne laureola*), and Scot's broom.

Key at-risk species associated with oak woodlands include Acorn Woodpecker (*Melanerpes formicivorus*), Chipping Sparrow (*Spizella passerina*), White-breasted Nuthatch (*Sitta carolinensis aculeate*), Western gray squirrel (*Sciurus griseus*), and thin-leaved peavine (*Lathyrus holochlorus*). Red-legged frogs (*Rana aurora*) use this habitat during their summer migration from wetlands to upland habitat.



*Thin-leaved peavine* © Tom Kaye

## 3 Key species

### ***Priority species for conservation***

In Benton County, several populations of prairie or oak dependent species have declined and are listed as threatened or endangered by the U.S. Fish and Wildlife Service and/or the State of Oregon or are candidates for listing with their status in review. In addition, some species, while not considered threatened, have declining populations which could be increased through targeted restoration within a habitat type.

The prairie species considered in this strategy include those covered by the Oregon Conservation Strategy (ODFW 2006) and USFWS Recovery Plan for Prairie Species of Western Oregon and Southwest Washington (USFWS 2008) that occur in Benton County. Several species that may have secure populations region-wide, but which are currently locally rare, were also included. These at-risk species are highly associated with the strategy habitats or utilize close approximations of their historic habitat, such as pasture lands or mowed roadsides.



Several of the species, such as pond turtles and red-legged frogs, are dependent on prairies or oaks during a part of their lifecycle, while others remain in a single habitat type over their lifespan. Some species, such as Dusky Canada Goose, were not selected for inclusion because habitat conditions outside of Benton County are responsible for the species viability. All of the selected species have specific habitat requirements that should be addressed by restoring diverse vegetation structure within a key habitat.

The species summarized in this strategy have habitat requirements that may overlap with the needs of other species (Table 3.1). Conserving diverse and connected habitats can benefit many species by opening up new territory and providing opportunities for migration and genetic exchange. Ideal habitat patch or population size is the recommended minimum for sustaining a breeding population and is based on territory requirements or genetic viability (Altman 2000, Altman personal communication June 10, 2009, USFWS 2010). Some species can be found in smaller habitat patches than recommended and in smaller population sizes, but generally a larger habitat patch is preferable. Large or very open territory requirements can be achieved through single ownership or multiple adjacent properties of suitable habitat.

**Table 3.1 Prairie Conservation Strategy key species habitat requirements.**

See Chapter 7 for web links to additional species information.

Ideal habitat patch or population size is the recommended minimum for sustaining a breeding population and is based on territory requirements or genetic viability (Altman 2000, Altman pers. Comm. June 10, 2009, USFWS 2010).

Common name	Scientific name	Status		ODFW Strategy species	Ideal habitat conditions	Habitat patch size for small population (animals) or population size (plants)
		Fed <sup>1</sup>	State <sup>2</sup>			
<b>Amphibians:</b>						
Northern red-legged frog	<i>Rana aurora</i>	SOC	SV	✓	Oak Woodland-Wet prairie: Floodplain, lowland, and foothill ponds and wetlands with shallow areas and access to adjacent upland habitat Connectivity: <1 km (0.6 mi) between habitat patches in wetland/upland mosaic (Hammerson 2005)	Information needed
<b>Birds:</b>						
Grasshopper Sparrow	<i>Ammodramus savannarum</i>		SV	✓	Upland prairie: Lowland prairie with low to moderate grass height (Johnson et al 1998)	>80 ha (200 acre)
Short-eared Owl	<i>Asio flammeus</i>			✓	Wet prairie-Upland prairie: Lowland and floodplain prairie with large open expanses (Canning 2001)	>80 ha (200 acre)
Common Nighthawk	<i>Chordeiles minor</i>		SC	✓	Upland prairie: Gravel bars and sparse low growing vegetation and some bare ground in floodplain, lowland, or foothills	>80 ha (200 acre)
Northern Harrier	<i>Circus cyaneus</i>				Wet prairie-Upland prairie: Lowland and floodplain prairie with large open expanses	>80 ha (200 acre)
Streaked Horned Lark	<i>Eremophila alpestris strigata</i>	C	SC	✓	Upland prairie: Lowland and floodplain prairie with significant bare ground patches and sparse low growing vegetation	>80 ha (200 acre)
American Kestrel	<i>Falco sparverius</i>				Savanna: Small groves of scattered oak or ponderosa pine with nesting cavities and herbaceous understory in floodplain, lowland, or foothills	20-40 ha (50-100 acre)
Wilson's Snipe	<i>Gallinago delicata</i>				Wet prairie: Floodplain prairie with low growing vegetation	8-20 ha (20-50 acre)

Acorn Woodpecker	<i>Melanerpes formicivorus</i>	SOC	SV	✓	Oak woodland-Savanna: Lowland valley areas with mature oaks and open understory with dead limbs or snags for storing acorns Connectivity: <9.7 km (6 mi) habitat patch from existing occupied patch (Vesely and Rosenberg 2010)	8-20 ha (20-50 acre)
Lazuli Bunting	<i>Passerina amoena</i>				Savanna-Upland prairie: Foothill prairie with scattered shrubs and trees with grassy openings	4-8 ha (10-20 acre)
Oregon Vesper Sparrow	<i>Pooecetes gramineus affinis</i>	SOC	SC	✓	Upland prairie-Savanna: Lowland and foothill prairie with scattered shrubs and trees and some bare ground with grassy openings	4-8 ha (10-20 acre)
Western Bluebird	<i>Sialia mexicana</i>		SV	✓	Savanna-Upland prairie: Lowland areas with scattered shrubs or small trees for perches or foraging with grassy (herbaceous) understory and oak cavities or nesting boxes for nesting	4-8 ha (10-20 acre)
White-breasted Nuthatch (Slender-billed)	<i>Sitta carolinensis aculeata</i>		SV	✓	Oak woodland-Savanna: Mature oaks with nesting cavities in savanna groves or open woodland (Grubb and Pravosudov 2008)	8-20 ha (20-50 acre)
Chipping Sparrow	<i>Spizella passerina</i>			✓	Oak woodland-Savanna: Herbaceous cover in understory of oak woodlands or savanna in foothills or rural areas	0.8-4 ha (2-10 acre)
Western Meadowlark	<i>Sturnella neglecta</i>		SC	✓	Upland prairie-Savanna: Lowland or floodplain areas with large patches of scattered shrubs or trees for perches. Locate restoration sites in areas with few grass seed fields (Vesely and Rosenberg 2010)	>80 ha (200 acre)
Western Kingbird	<i>Tyrannus verticalis</i>				Upland prairie-Savanna: Scattered oaks with a grassy (herbaceous) understory in floodplain, lowland, or foothills	8-20 ha (20-50 acre)

**Invertebrates:**

American grass bug	<i>Acetropis americana</i>	SOC		✓	Wet prairie: Wet prairie with tufted hairgrass	Information needed
Taylor's checkerspot	<i>Euphydryas editha taylori</i>	C		✓	Upland prairie-Savanna: Upland prairie and savannas with host plant species such as <i>Castilleja</i> and plantain and nectar plants like strawberry ( <i>Fragaria virginiana</i> ) and rosy plectritis ( <i>Plectritis congesta</i> ). Connectivity: 1.5 km (0.9 mi) dispersal distance between habitat patches (Converse 2009)	> ~2 ha (5 acre) for annual survival probability >5% (Converse 2009)

Fender's blue	<i>Icaricia icarioides fenderi</i>	E		✓	Upland prairie-Savanna: Lowland and foothill open upland prairie Connectivity: 2 km (1.2 mi) dispersal distance to host lupine plants and open upland or wet prairie within 1 km (0.6 mi) for nectaring (USFWS 2010)	>6 ha (15 acre) (USFWS 2010)
Tailed copper	<i>Lycaena arota</i>				Upland prairie-Savanna-Oak Woodland: Open areas with yellow and mauve composites for nectar, near shrubby or riparian areas with <i>Ribes divaricatum</i> Connectivity: habitat patches 0.5 km/0.3 mi (possibly 4-10 km/2.5-6 mi) dispersal distance between habitat patches (Schweitzer, 2001b)	Information needed
Field crescent	<i>Phyciodes pulchella</i>				Upland prairie-Savanna: Meadows with diverse composite species, larvae feed on asters such as <i>Symphotrichum hallii</i> or <i>Erigeron decumbens</i> Connectivity: 2 km/1.2 mi (possibly up to 10 km/6 mi) dispersal distance between habitat patches (Schweitzer 2001c)	Information needed
Sonora skipper	<i>Polites sonora</i>				Upland prairie-Savanna: Meadows with diverse floral species, larvae feed on <i>Danthonia californica</i> , possibly <i>Festuca roemerii</i> and <i>Panicum occidentale</i> Connectivity: 1 km/0.6 mi (possibly 4-10 km/2.5-6 mi) dispersal distance between habitat patches (Schweitzer, 2001a)	Information needed

**Mammals:**

Western gray squirrel	<i>Sciurus griseus</i>		SV	✓	Oak woodland: Continuous canopy within 200 feet of nest site in lowlands and foothills oak/conifer forest Connectivity: 0.1 km (2-5 km and greater) dispersal distance between habitat patches (Hammerson 2005)	>2 ha (5 acre) with goal of >4 ha (10 acre) (Ryan and Carey 1995)
Camas pocket gopher	<i>Thomomys bulbivorus</i>	SOC			Upland prairie: Floodplain to lowland open meadows in areas with heavy clay, but not wetland, soils Connectivity: 1-3 km (0.6-1.9 mi) dispersal distance between habitat patches, roads >30 m (100 ft) are rarely crossed (Cannings and Hammerson 2004)	Information needed



**Plants:**

Golden paintbrush (not currently found growing wild in Oregon)	<i>Castilleja levisecta</i>	T	E	✓	Upland prairie-Wet prairie: Dry to moist meadows and flat prairies on hill tops and at low elevations in lowlands and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 1,000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
Peacock larkspur	<i>Delphinium pavonaceum</i>	SOC	E	✓	Wet prairie-Upland prairie-Savanna: Well-drained native prairie or dry sites within wet prairie, or dry roadsides in floodplain, lowlands and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 5,000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
Willamette daisy	<i>Erigeron decumbens</i> var. <i>decumbens</i>	E	E	✓	Wet prairie-Upland prairie: Open, flat prairie with heavier soils, as well as wetlands and balds in floodplains, lowlands, and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 10,000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
Shaggy horkelia	<i>Horkelia congesta</i> ssp. <i>congesta</i>	SOC	C		Wet prairie-Upland prairie: Drier microhabitats within wet prairie and in open native upland prairie in floodplains, lowlands, and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 5,000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
Howellia (Not currently found growing wild in Benton County)	<i>Howellia aquatilis</i>	T	T	✓	Wet prairie-Riparian: Vernal pools and sloughs that dry up by the end of the year in floodplains; dry fall is best for vegetative growth and a wet spring is best for flowering	200 individuals per patch; 5000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
Thin-leaved peavine	<i>Lathyrus holochlorus</i>	SOC			Upland prairie-oak woodland ecotone in lowlands and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 5000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)

Bradshaw's lomatium	<i>Lomatium bradshawii</i>	E	E	✓	Wet prairie: Flat, moist native prairies with heavy clay soils in floodplains Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 10,000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
Kincaid's lupine	<i>Lupinus sulphureus</i> ssp. <i>kincaidii</i>	T	T	✓	Upland prairie-Savanna: Native open prairie or woodland edge in lowlands and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	60 m <sup>2</sup> foliar cover per patch; 7,500 m <sup>2</sup> foliar cover in several populations in Corvallis West Recovery Zone (USFWS 2010)
Racemed goldenweed (Not currently found growing wild in Benton County)	<i>Pyrrocoma racemosa</i> var. <i>racemosa</i>				Wet prairie-Upland prairie: Flat, native prairies with heavy clay soils in lowlands and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 5,000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
White-topped aster (Not currently found growing wild in Benton County)	<i>Sericocarpus rigidus</i>	SOC	T	✓	Wet prairie: Low elevation native prairie in floodplains Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 5,000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)
Nelson's checkermallow	<i>Sidalcea nelsoniana</i>	T	T	✓	Wet prairie: Relatively open areas on damp soil, in meadows, wet prairie remnants, fencerows, roadsides, deciduous forest edges, and occasionally Oregon ash wetlands in floodplains and foothills Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch or 60 m <sup>2</sup> foliar cover; 20,000 individuals or 10,000 m <sup>2</sup> foliar cover in several populations in Corvallis West Recovery Zone (USFWS 2010)
Hitchcock's blue-eyed-grass (Not currently found growing wild in Benton County)	<i>Sisyrinchium hitchcockii</i>	SOC			Upland prairie-Wet prairie: Open prairie habitat in floodplain and lowlands Connectivity: Populations within 3 km (2 mi) pollinator travel distance	200 individuals per patch; 5000 individuals in several populations in Corvallis West Recovery Zone (USFWS 2010)

**Reptiles:**

Pacific pond turtle	<i>Actinemys marmorata</i>	SOC	SC	✓	Wetland prairie-Upland prairie-Oak woodland: Ponds and adjacent open ground up to 250 m (nesting <200 m) from water in floodplain, lowlands, and foothills (Rosenberg et al 2009). Clay soils with <25% vegetative cover and <40% litter cover for appropriate nesting habitat (Thorpe 2007) Connectivity: 1 km (0.6 mi) between habitat patches, usually along stream corridors (Hammerson 2001a)	Information needed
Northern painted turtle	<i>Chrysemys picta</i>		SC	✓	Upland prairie: Ponds and adjacent open nesting ground up to several hundred meters from water in floodplain and lowlands Connectivity: 1 km/0.6 mi (3-10 km/1.9-6 mi) between habitat patches, usually along stream corridors (Hammerson 2001b)	Information needed

**<sup>1</sup>Federal Status October 2009:**

E – Listed Endangered  
 T – Listed Threatened  
 C – Candidate for listing  
 SOC – Species of Concern

**<sup>2</sup>State Status October 2009:**

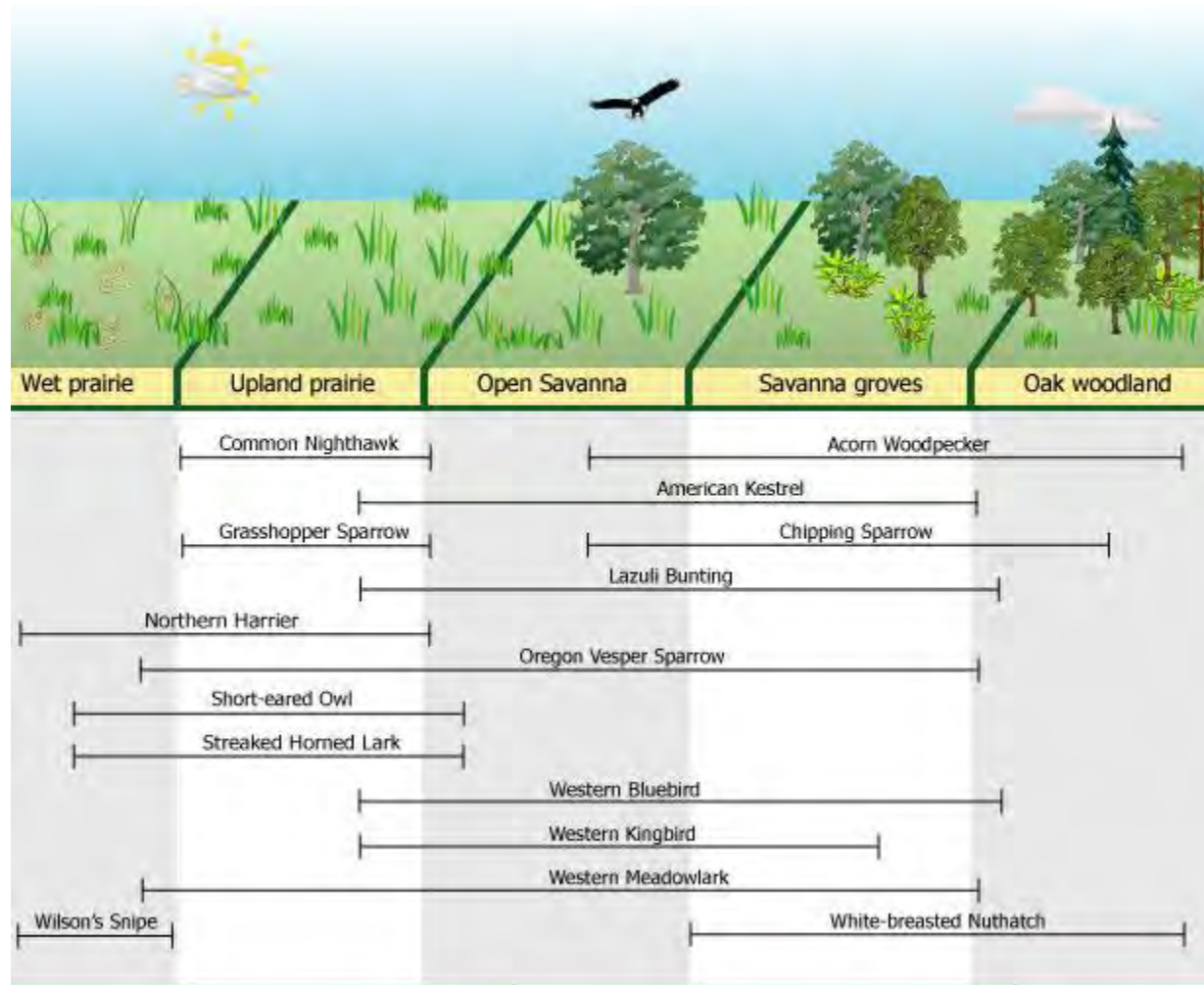
E – Listed Endangered  
 T – Listed Threatened  
 C – Candidate (plants only)  
 SC – Sensitive Species, Critical category  
 SV – Sensitive Species, Vulnerable Category (note: Sensitive Species applies to vertebrates only)

Note: An endangered species is in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered in the foreseeable future.

## Species habitat needs

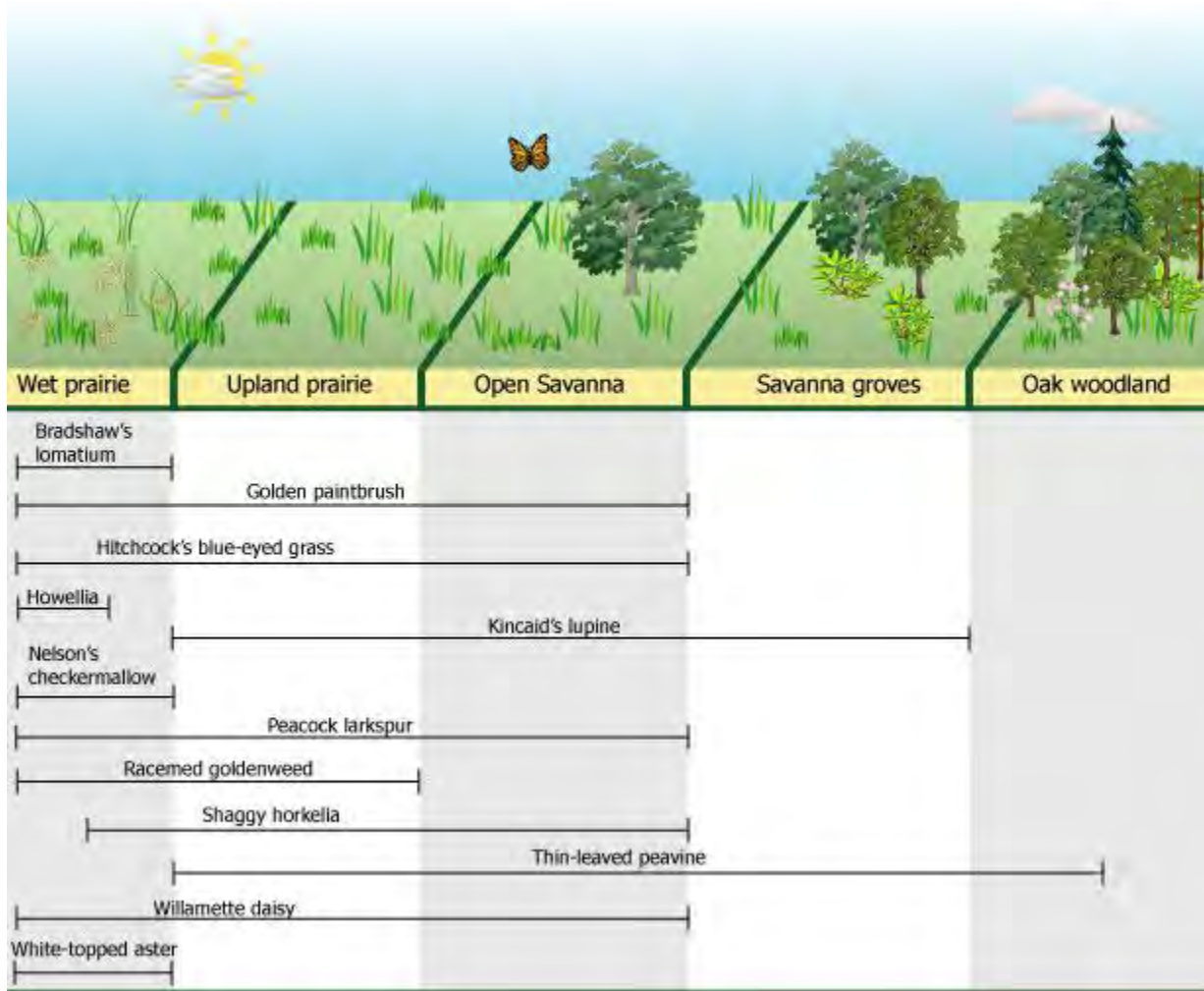
Many bird species are able to quickly colonize restored habitat, but plants, insects, and turtles are not always able to cross barriers such as forests or highways. Riparian areas and roadsides can provide pathways for animal movement and are important areas to enhance with native vegetation. Even small parcels of property can provide habitat for certain key species. When several neighbors with smaller properties enhance suitable habitat on adjoining property areas, this action can benefit species that require larger territories. Figures 3.1-3.3 graphically outline some of the key species habitat requirements.

**Figure 3.1 Habitat guide for key bird species in Benton County**



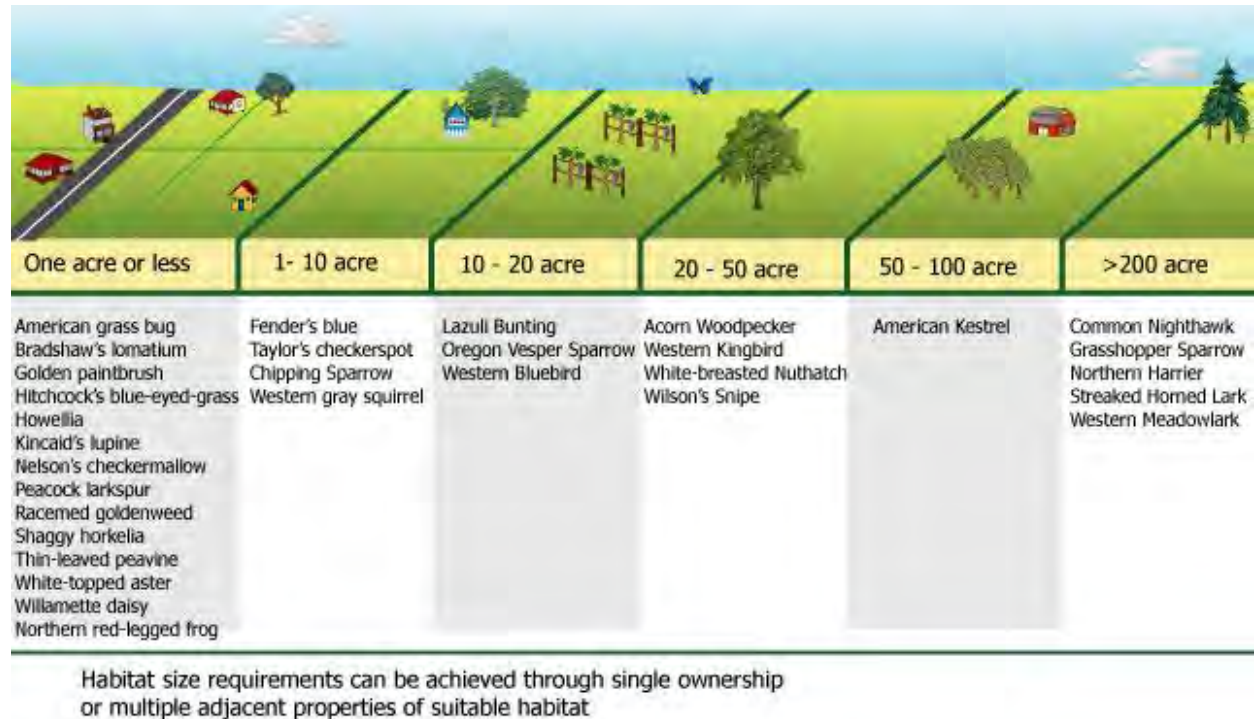
Symbols courtesy of the Integration and Application Network ([ian.umces.edu/symbols/](http://ian.umces.edu/symbols/)), University of Maryland Center for Environmental Science.

**Figure 3.2 Habitat guide for key plant species in Benton County**



Symbols courtesy of the Integration and Application Network ([ian.umces.edu/symbols/](http://ian.umces.edu/symbols/)), University of Maryland Center for Environmental Science.

**Figure 3.3 Minimum area required for small population of key species in Benton County**



Symbols courtesy of the Integration and Application Network ([ian.umces.edu/symbols/](http://ian.umces.edu/symbols/)), University of Maryland Center for Environmental Science.

### ***Prairie Species Recovery Plan***

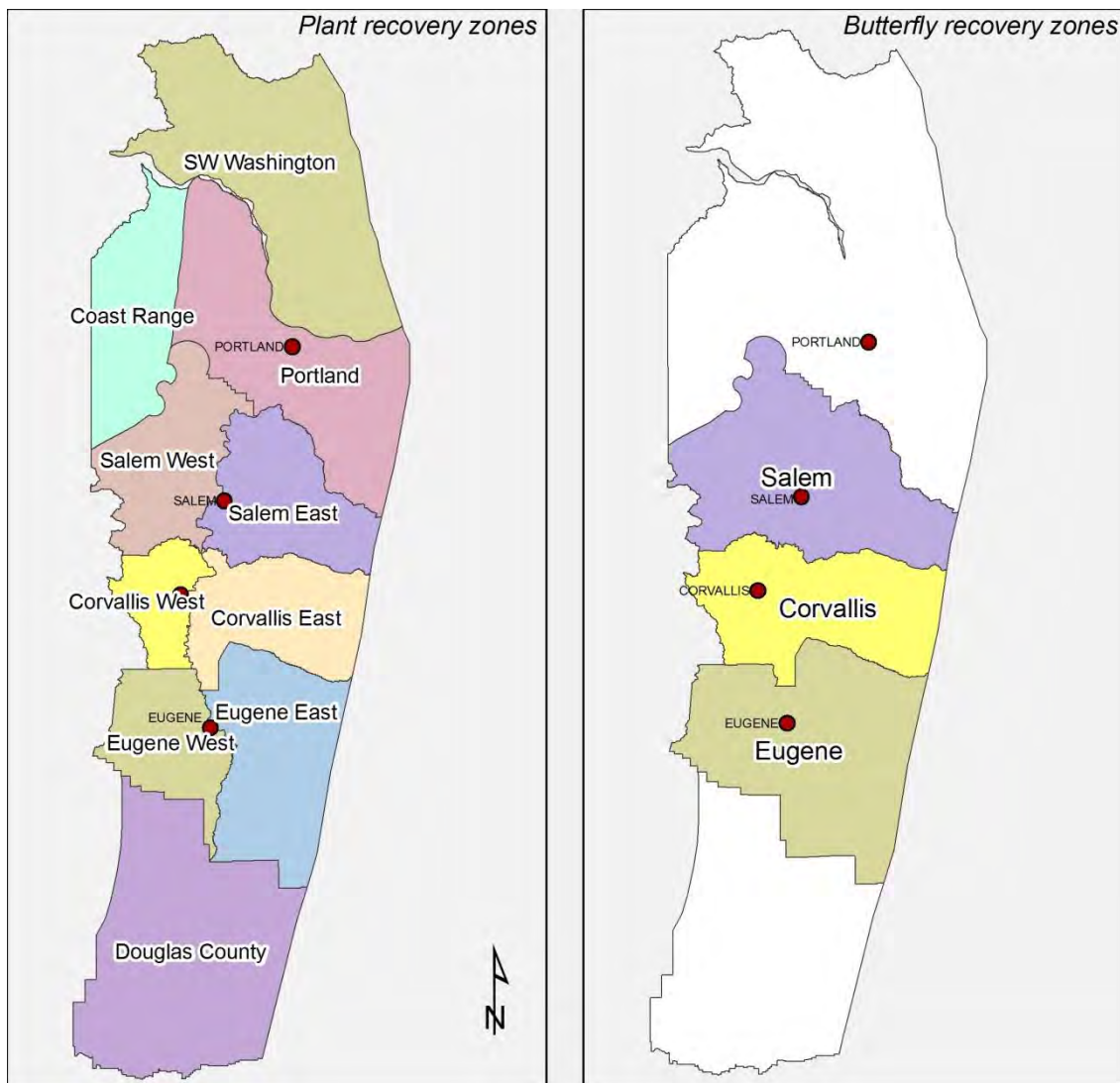
The U.S. Fish and Wildlife Service has prepared a Recovery Plan for listed prairie species of Western Oregon and Southwestern Washington, including Fender's blue butterfly, Bradshaw's lomatium, Willamette daisy, Kincaid's lupine, Nelson's checkermallow, and golden paintbrush (USFWS 2010). The plan also provides conservation measures for Taylor's checkerspot butterfly, a candidate for listing, and addresses six species of concern: pale larkspur, peacock larkspur, Willamette Valley larkspur, white-topped aster, shaggy horkelia, and Hitchcock's blue-eyed grass. The goal of the recovery plan is to achieve viable populations of listed species to ultimately remove them from the Endangered Species list and to enhance native prairie habitat to preclude the need to list additional species.

The recovery strategy calls for the preservation and appropriate management of native prairies, and the establishment of networks of diverse prairie reserves across the historical geographic range of the species. **To count towards recovery, sites must be under long term protection by either a public agency or conservation agreement on private land.**

High quality prairie habitat requires active management to limit woody species encroachment and invasion by non-natives. Reserve sites require a diversity of native vegetation with a relative cover of more than 50% of the site and <15% woody vegetation cover. Additionally, high quality prairie habitat for Fender’s blue butterflies should include at least five nectar flower species available throughout the flight season as well as robust Kincaid’s lupine populations (USFWS 2010).

USFWS has designated nine recovery zones in Oregon for prairie dependent plant species and three zones for Fender’s blue butterfly (Figure 3.4). One of the recovery zones for plants is Corvallis West, which encompasses much of the historic prairie area within Benton County. For Fender’s blue, the Corvallis recovery zone encompasses Benton County as well as adjacent Linn County.

**Figure 3.4 USFWS recovery zones for prairie species in Oregon and SW Washington**



## ***Recovery implementation***

Implementation of the prairie species recovery plan in Benton County can contribute to removing these threatened and endangered plants and butterflies from the U.S. endangered species list. Through this recovery plan, USFWS has established criteria for the number, size, and connectivity of populations in each recovery zone necessary for downlisting and delisting species (USFWS 2010).

For each zone, downlisting Fender's blue butterfly will require at least:

1. **A minimum number of butterflies and habitat patches:** >200 butterflies each year for 10 years in a network of habitat that contains at least three butterfly subpopulation patches of >6 ha (15 acre), and in addition there must be a second network or two large independent populations also >6 ha (15 acre). The patches must be separated by <2 km (1.2 mi) or linked by smaller lupine stepping stone patches < 1 km (0.6 mi) apart, and
2. **Protected habitat and active management:** All sites must be under long-term protection, have a management plan approved by USFWS, and be managed for habitat quality. Larval host plants, such as Kincaid's lupine, and nectar plant species must be present.

Delisting Fender's blue butterfly requires greater minimum population sizes such that the probability of persistence is 95% over the next 100 years (USFWS 2010). The Wren area has a large population of Fender's blue butterfly which can function as a population network. Populations in OSU McDonald Forest could be linked to Lupine Meadows, and potentially Fitton Green along the Oak Creek corridor. Enhancing habitat and working with landowners on creating stepping stone patches less than 1 km apart will require coordination between USFWS, Benton County Natural Areas and Parks Department, Greenbelt Land Trust, Marys River Watershed Council, Oregon State University, The Nature Conservancy, additional NGOs, and private landowners.

USFWS has identified Finley National Wildlife Refuge as a potential Fender's blue butterfly network. Additionally, E.E. Wilson has the potential to support Fender's blue butterfly and could form a network with Kincaid's lupine patches currently existing along the Soap Creek drainage and along the Benton/Polk county border. Creating stepping stone patches less than 1 km apart in north Benton County will require coordination and cooperation between USFWS, ODFW, Oregon National Guard, Oregon State University, Luckiamute Watershed Council, additional NGOs, and private landowners.

## ***Listed species recovery actions***

The following actions are suggested to strategically promote habitat conservation and species reintroductions for listed and at-risk species throughout Benton County.



### **Actively manage for open habitat**

- Actively manage protected sites to reduce woody species encroachment and to reduce non-native plant invasions using appropriate management techniques developed for the conditions at each site.
- Provide open habitat for pollinator dispersal between known habitat patches. Prairie species require relatively open habitat. Barriers, such as coniferous forest, limit dispersal or pollinator movement between habitat patches.

### **Identify habitat network opportunity areas**

- Identify privately owned sites where landowners are willing to enhance stepping stone habitat to connect known habitat patches that are currently too far for pollinator dispersal.
- Work with USFWS to identify programs that encourage conservation in areas that currently do not have listed species but that are close to possible reintroduction sites.

### **Use adaptive management**

- Utilize adaptive management principles to improve conservation methods over the long-term. Adaptive management allows the latest, most effective information learned from restoration actions and monitoring to be incorporated into future management actions for an individual site.
- Monitor projects to evaluate their effectiveness and to help land managers utilize effective strategies to conserve species. Evaluation and monitoring of reintroduction efforts is especially important for recovery of listed species.
- Share conservation strategies and monitoring results via site tours, conferences, and written project evaluations. The Oregon Conservation Registry, a website to upload or search for project information, is one way to share information about the effectiveness of conservation actions (<http://or.conservationregistry.org/>).



### **Use genetically appropriate materials**

- Work with USFWS, ODA, and other appropriate entities to determine the appropriate genetic source of plant materials for reintroduction. Benton County is considered a single genetic zone for most species, with the exception of locally extirpated species such as golden paintbrush (USFWS 2010).
- Provide education on plant material collection laws to private landowners. A permit is required to collect seeds or plant material on Federal lands. ODA requires a permit to collect seeds or plant materials from non-federal public lands, transport seeds or plant materials on non-federal public lands (i.e. roads), and

propagate or cultivate state-listed plant species. Plant material collection can harm wild populations and should be done to minimize risk.

**Create production partnerships**

- Reintroduction efforts require new plant materials, preferably from seeds or cuttings of nearby populations. Plant material production partnerships between ODA and local farmers can enhance the amount of material available locally for recovery.

**Identify funding sources**

- The USFWS provides grants for projects benefiting listed species through its Cooperative Endangered Species Conservation Fund (section 6 of the ESA). These grants require a 25% match of the estimated project cost. See additional landowner assistance programs under Voluntary Conservation Tools (Chapter 6) or visit the USFWS website at <http://www.fws.gov/endangered/grants/section6/index.html>.
- Identify incentive programs, such as reduced property tax assessment, for private landowners who wish to enhance and protect habitat for listed animal species.

**Table 3.2 Summary of recovery objectives from the Western Oregon and Southwestern Washington Prairie Species Recovery Plan (USFWS 2010)**

<b>Criteria</b>	<b>Willamette daisy, Bradshaw’s lomatium, Kincaid’s lupine, Nelson’s checkermallow</b>	<b>Fender’s blue butterfly</b>
<b>Population trend and evidence of reproduction</b>	<ul style="list-style-type: none"> <li>• Stable or increasing for at least 10 years (15 years for delisting).</li> <li>• Evidence of reproduction (seed set, seedlings).</li> </ul>	
<b>Habitat quality and diversity</b>	<ul style="list-style-type: none"> <li>• ≥50% relative cover of non-woody natives at 70% of local populations.</li> <li>• ≤15% cover of woody species.</li> <li>• No single non-native species &gt;50% cover.</li> </ul>	<ul style="list-style-type: none"> <li>• ≥50% cover of non-woody natives at 70% of populations.</li> <li>• 10% (20% for delisting) nectar species.</li> <li>• ≥5 ha of quality habitat in network; ≥2 ha in subpopulations.</li> </ul>
<b>Size of each population network (group of local populations with connectivity)</b>	<ul style="list-style-type: none"> <li>• Varies per species</li> </ul>	<ul style="list-style-type: none"> <li>• Downlisting: 90% probability of persistence for 25 years.</li> <li>• Delisting: 95% probability of persistence for 100 years.</li> </ul>

<b>Criteria</b>	<b>Willamette daisy, Bradshaw’s lomatium, Kincaid’s lupine, Nelson’s checkermallow</b>	<b>Fender’s blue butterfly</b>
<b>Distribution and size of local populations</b>	<ul style="list-style-type: none"> <li>• At least two local populations per population network.</li> <li>• 10,000 plants/zone for Willamette daisy and Bradshaw’s lomatium.</li> <li>• 7,500 m2 foliar cover for Kincaid’s lupine delisting.</li> <li>• 20,000 plants (10,000 m2 foliar cover for Nelson’s checkermallow.</li> <li>• 3 km maximum distance between local populations.</li> <li>• Sufficient area for expansion.</li> </ul>	<ul style="list-style-type: none"> <li>• Distance between local populations <math>\leq 1</math> km, none <math>\geq 2</math> km.</li> </ul>
<b>Security of habitat</b>	<ul style="list-style-type: none"> <li>• Habitat of local populations must be owned or managed by a government agency or conservation organization that manages the site specifically for the species in question. Or the site must be under permanent or long-term conservation easement that commits present and future landowners to the conservation of the species.</li> </ul>	
<b>Management, monitoring, and threat abatement</b>	<ul style="list-style-type: none"> <li>• Sites must be managed to ensure quality habitat.</li> <li>• Management plans must be developed for each site.</li> </ul>	

## 4 Protected habitat sites

Private landowners who wish to enhance their land for at-risk species are encouraged to do so. Creating or maintaining native prairie for plants and insects requires a commitment to long term management, but some key species, especially birds, do well in grassy areas that are kept open by fall mowing or light grazing. See the private lands habitat conservation guide in Chapter 5 for actions to enhance key habitats.

The key to conserving native species is conservation of native habitat across the county. Private landowners can help native species on their land by retaining native habitats such as prairie and oak woodlands, planting native species, and removing invasive plants such as Scot's broom, Himalayan blackberry, and Douglas-fir. See Chapter 6 for existing assistance programs.

### ***Habitat locations and quality***

High quality habitat can be found throughout Benton County but often these areas are beyond the dispersal ability of populations of plants and animals. Creating a network of protected habitat (through partnerships, conservation easements and property acquisition), along dispersal corridors facilitates native species movement and reduces genetic isolation. Understanding the current distribution of protected sites helps identify areas within Benton County that are beyond the dispersal ability of at-risk species.

Several questions that still need to be answered include:

- Is there suitable habitat on private lands for species dispersal from known population sites?
- Where can restoration work take place to enhance current species habitat?
- What are the habitat improvement and population introduction/augmentation needs in the county?
- Where are the connectivity problems for species/habitat on unprotected lands?

### ***Sites managed for permanent habitat conservation***

There are many sites in Benton County that have key habitat or the potential for key habitat after restoration. Those that are permanently protected by public ownership or conservation easement specifically for habitat conservation meet USFWS's guidelines for species recovery. Several sites have protected habitat but are specifically managed for recreation. These sites provide important habitat while connecting people with wildlife. (Bird species checklists were determined from Birdnotes.net)

**Table 4.1 Benton County sites managed for permanent habitat conservation by local, state, and federal government agencies**

See Table 3.1 for species habitat requirements

<b>Site #</b>	<b>Site name</b>	<b>Area ha (acre)</b>	<b>Key Habitat</b>	<b>Key species present (*Planted)</b>
<b>Benton County Natural Areas and Parks</b>				
1	Bezell Memorial Forest	237 (586)	Upland Prairie	Taylor's checkerspot butterfly Chipping Sparrow Kincaid's lupine*
2	Fitton Green Natural Area	125 (308)	Upland Prairie Oak woodland	Taylor's checkerspot butterfly Lazuli Bunting Oregon Vesper Sparrow Kincaid's lupine*
3	Fort Hoskins Historical Park	51 (126)	Upland prairie and savanna Oak woodland	Taylor's checkerspot butterfly Chipping Sparrow Northern Harrier Western Bluebird
4	Jackson-Frazier Wetland	58 (144)	Wet prairie	American Kestrel Wilson's Snipe Northern Harrier American grass bug Bradshaw's lomatium Kincaid's lupine Nelson's checkermallow
<b>City of Corvallis Parks and Recreation</b>				
5	Bald Hill Park	115 (284)	Upland prairie Oak woodland	American Kestrel Chipping Sparrow Lazuli Bunting Western Bluebird White-breasted Nuthatch Kincaid's lupine* Willamette daisy Nelson's checkermallow
6	Chip Ross Park	51 (126)	Upland prairie	Bird checklist needed
7	Rock Creek Park	12 (30)	Upland prairie	Peacock larkspur Bird checklist needed
8	Caldwell Open Space	15 (36)	Wet prairie	Bird checklist needed
9	Herbert Farm and Natural Area	90 (221)	Upland prairie Wet prairie	Pacific pond turtle Red-legged frog Chipping Sparrow White-breasted Nuthatch Streaked Horned Lark Kincaid's lupine Nelson's checkermallow Peacock larkspur Thin-leaved peavine

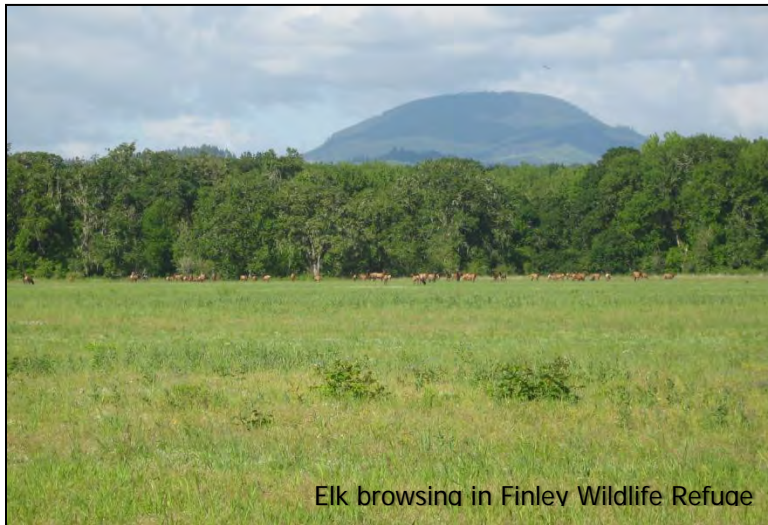
<b>Site #</b>	<b>Site name</b>	<b>Area ha (acre)</b>	<b>Key Habitat</b>	<b>Key species present (*Planted)</b>
10	Marys River Natural Area	30 (74)	Wet prairie	Kincaid's lupine* Nelson's checkermallow* Northern Harrier Bird checklist needed
11	Noyes Natural Area	2 (5)	Wet prairie	Nelson's checkermallow Bird checklist needed
12	Owens Open Space	53 (131)	Wet prairie Oak woodland	Nelson's checkermallow Bird checklist needed
13	Timberhill Open Space	19 (47)	Upland prairie Oak woodland	Lazuli Bunting Thin-leaved peavine
14	Witham Hill Natural Area	14 (35)	Oak woodland	Bird checklist needed
<b>Bureau of Land Management (BLM)</b>				
15	Maxfield Creek meadows	130 (321)	Upland Prairie Oak woodland	Kincaid's lupine* Bird checklist needed
<b>Oregon Department of Fish and Wildlife (ODFW)</b>				
16	E. E. Wilson Wildlife Area	681 (1,683)	Upland prairie Wet prairie Oak woodland	Red-legged frog Acorn Woodpecker American Kestrel Common Nighthawk Wilson's Snipe Lazuli Bunting Northern Harrier Oregon Vesper Sparrow Short-eared Owl Western Bluebird Western Kingbird Western Meadowlark White-breasted Nuthatch Camas pocket gopher Western gray squirrel Kincaid's lupine Nelson's checkermallow Pacific pond turtle
<b>Oregon Parks and Recreation Department (OPRD)</b>				
17	Luckiamute State Park Natural Area – South tract	126 (311)	Upland prairie Wet prairie Oak woodland	American Kestrel Wilson's Snipe Northern Harrier Western Bluebird Western Meadowlark White-breasted Nuthatch Camas pocket gopher Pacific pond turtle

<b>Site #</b>	<b>Site name</b>	<b>Area ha (acre)</b>	<b>Key Habitat</b>	<b>Key species present (*Planted)</b>
<b>Oregon State University (OSU)</b>				
18	Butterfly Meadows	2 (5)	Upland Prairie	Fender's blue butterfly Kincaid's lupine Bird checklist needed
<b>United States Fish and Wildlife Service (USFWS)</b>				
19	Finley Wildlife Refuge	2,155 (5,325)	Upland prairie Wet prairie Oak woodland	Red-legged frog Acorn Woodpecker American Kestrel Chipping Sparrow Wilson's Snipe Lazuli Bunting Northern Harrier Oregon Vesper Sparrow Short-eared Owl Western Kingbird Western Meadowlark White-breasted Nuthatch American grass bug Camas pocket gopher Western gray squirrel Bradshaw's lomatium Golden paintbrush* Kincaid's lupine* Nelson's checkermallow Peacock larkspur Thin-leaved peavine Willamette daisy* Pacific pond turtle Northern painted turtle
<b>US Army Corps of Engineers</b>				
20	Oregon National Guard Rifle Range	206 (509)	Upland prairie Wet prairie Oak woodland	Streaked Horned Lark Kincaid's lupine Nelson's checkermallow Bird checklist needed

**Table 4.2 Benton County sites managed for permanent habitat conservation by non-governmental organizations (owned or under conservation easement)**

See Table 3.1 for species habitat requirements

Site #	Site name	Area ha (acre)	Key habitat	Key species present (*Planted)
<b>Greenbelt Land Trust</b>				
21	Lupine Meadows	24 (58)	Upland Prairie Wet prairie	Oregon Vesper Sparrow Fender's blue butterfly Kincaid's lupine Nelson's checkermallow Racemed goldenweed*
22	Owens Farm	38 (95)	Wet prairie Oak woodland	Bradshaw's lomatium* Nelson's checkermallow Bird checklist needed
23	Evergreen Creek	89 (221)	Upland prairie Wet prairie Oak woodland	Bird checklist needed
24	Private land easements	>120 (>300)	Upland prairie Wet prairie Oak woodland	
<b>The Nature Conservancy (TNC)</b>				
25	Wren Preserve	4 (9)	Upland Prairie	Fender's blue butterfly Bird checklist needed
26	Philomath Prairie (Easement)	48 (119)	Upland prairie	Kincaid's lupine Bird checklist needed



Elk browsing in Finley Wildlife Refuge



## ***Sites managed for limited timeframe habitat conservation***

There are many sites in Benton County protected under short term habitat conservation agreements or that provide mitigation for habitat impacts elsewhere in Benton County (**Figure 4.1**). These agreements benefit land owners who receive financial or technical help with conservation. See Chapter 6 for descriptions of conservation assistance tools.

**Table 4.3 Benton County sites managed for habitat conservation under limited timeframe protection**

See Table 3.1 for species habitat requirements

	<b>Site name</b>	<b>Area ha (acre)</b>	<b>Key habitat</b>	<b>Key species present (*planted)</b>
<b>Natural Resource Conservation Service (NRCS) WRP land easements</b>				
	Private – Finley NWR vicinity	9 (23)	Wet prairie	Pacific pond turtle
	Private – Finley NWR vicinity	49 (120)	Wet prairie Upland prairie	Pacific pond turtle
	Private – E.E. Wilson vicinity	10 (24)	Wet prairie	
	Private – Corvallis airport vicinity	116 (286)	Wet prairie Upland prairie Oak woodland	Bradshaw’s lomatium Kincaid’s lupine Nelson’s checkermallow
	Private – Finley NWR vicinity	44 (108)	Wet prairie Upland prairie Oak woodland	Pacific pond turtle
	Private – Finley NWR vicinity	24 (60)	Upland prairie Wet prairie Oak woodland	Kincaid’s lupine*
<b>Oregon Department of Transportation (ODOT)</b>				
	Mitigation site	1 (3)	Upland prairie	
	Mitigation site	2.5 (6)	Upland prairie	
<b>Oregon State University – FSA CREP agreement</b>				
	Oak Creek dairy	22 (55)	Wet prairie	
	Horse Center	2 (5)	Wet prairie	Nelson’s checkermallow
	Sheep Farm	19 (48)	Wet prairie	
	Soap Creek Ranch	46 (103)	Wet prairie	
	Walnut St.	19 (47)	Wet prairie	Nelson’s checkermallow
<b>USFWS Partners for Fish and Wildlife Program</b>				
	Newton Creek Wetlands - Philomath	8 (21)	Wet prairie Oak woodland	Red-legged frog Acorn Woodpecker Thin-leaved peavine Pacific pond turtle
	Private – Wren area	20 (50)	Upland prairie Oak woodland	Fender’s blue butterfly Kincaid’s lupine
	Private – Wren area	3 (7)	Upland prairie Oak woodland	

	<b>Site name</b>	<b>Area ha (acre)</b>	<b>Key habitat</b>	<b>Key species present (*planted)</b>
	Private – Wren area	43 (106)	Upland prairie	Fender’s blue butterfly Kincaid’s lupine Pacific pond turtle
	Private – Wren area	8 (21)	Upland prairie	Pacific pond turtle
	Private – Wren area	2 (5)	Upland prairie	Fender’s blue butterfly Kincaid’s lupine
	Private – Wren area	13 (32)	Upland prairie Oak woodland	Fender’s blue butterfly Kincaid’s lupine
	Private – Wren area	39 (95)	Upland prairie	Fender’s blue butterfly Kincaid’s lupine
	Private – Wren area	3 (6.5)	Upland prairie	Fender’s blue butterfly
	Private – Wren area	26 (64)	Upland prairie	Fender’s blue butterfly Kincaid’s lupine
	Private – Wren area	2 (5)	Upland prairie	Fender’s blue butterfly Kincaid’s lupine
	Private – Wren area	4 (10)	Upland prairie Oak woodland	Fender’s blue butterfly Kincaid’s lupine
	Private – Wren area	1 (3)	Upland prairie	
	Private – Wren area	0.6 (1.5)	Upland prairie	
	Private – Wren area	35 (87)	Upland prairie Oak woodland	Kincaid’s lupine
	Private – Wren area	82 (202)	Upland prairie Oak woodland	Kincaid’s lupine
	Private – Corvallis airport vicinity	16 (40)	Wet prairie	Pacific pond turtle
	Private – Finley NWR vicinity	32 (80)	Wet prairie	Pacific pond turtle
	Private – Finley NWR vicinity	1.5 (3.5)	Upland prairie	
	Private – Finley NWR vicinity	13 (33)	Wet prairie	
	Private – Finley NWR vicinity	46 (113)	Upland prairie	
	Private – Finley NWR vicinity	84 (208)	Upland prairie Wet prairie	Kincaid’s lupine*
<b>Wetland mitigation banks</b>				
	Evergreen	71 (175)	Wet prairie	Streaked Horned Lark
	Frazier	11 (26)	Wet prairie	
	Mid-Valley	17 (43)	Wet prairie	
	Muddy Creek	44 (108)	Wet prairie	

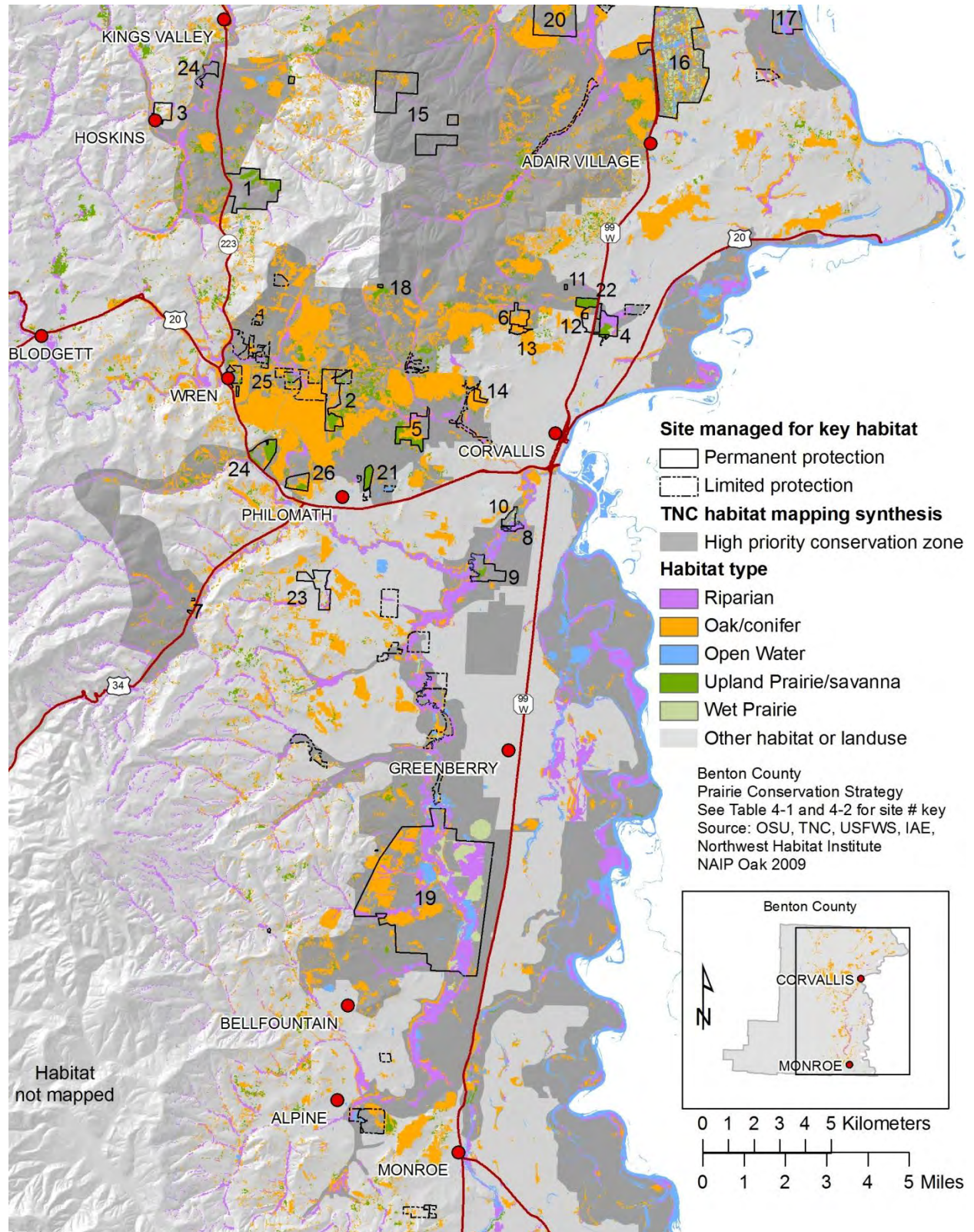
## ***Priority habitat zones***

Several planning efforts have defined areas of high priority for conservation in the Willamette Valley, including the Oregon Conservation Strategy (ODFW 2006). A planning group, led by The Nature Conservancy, came together in 2007 to combine the identified high priority areas into a single map for the Willamette Valley (The Nature Conservancy 2009). This mapping effort includes high priority forest land and riparian areas, as well as prairie and oak woodland (Figure 4.1). These areas can currently be considered the highest priority for habitat and species conservation actions in Benton County. Areas outside of this zone contain important habitat and can provide opportunities for meaningful habitat acquisition and restoration, but focusing in priority areas makes strategic use of limited funding.



*Menzies' larkspur in upland prairie near Wren*  
*Photo: Lori Wisehart*

**Figure 4.1 Key protected prairie and oak habitat in Benton County**



# 5 Key Conservation Actions

## ***Habitat conservation actions***

Landowners in all parts of Benton County, urban to rural, can provide habitat for native species and can participate in conservation of prairie and oak habitat by actively managing to maintain open vegetation. The following actions are suggested to strategically promote habitat conservation throughout Benton County.

### **Conserve and protect the best remaining key habitats**

- Inventory and map the best remaining prairie and oak sites in Benton County to determine habitat quality and opportunities for enhancement. Public agencies and conservation groups should share mapped habitat information and integrate it into their planning and management programs.
- Conserve and enhance high quality sites. Focus on preserving large habitat blocks and areas that provide connectivity for wildlife.
- Engage private landowners who are interested in habitat assessment and conservation on their land. The USFWS Partners for Fish and Wildlife Program offers assistance with rare habitat enhancement.

### **Enhance and restore degraded key habitats**

- Maintain prairies with site specific management strategies to improve the habitat structure and increase native species. Tools such as carefully timed mowing, prescribed burning, and well managed grazing can promote some native species and inhibit shrub, conifer, and Scot's broom encroachment.
- Engage landowners in invasive species removal and long-term management. Education on false brome and meadow knapweed (*Centaurea pratensis*) management will be crucial to control these very invasive species. See Benton SWCD brochures available on their webpage [www.bentonswcd.org](http://www.bentonswcd.org) or download the Field Guide to Weeds of the Willamette Valley ([www.appliedeco.org/invasive-species-resources/](http://www.appliedeco.org/invasive-species-resources/)) for more information.
- Minimize soil disturbance to reduce new weed infestations.
- Maintain large oaks and reintroduce oaks to appropriate sites. In agricultural areas, single oaks planted along hedgerows can replace those lost to attrition.
- Remove trees that will overtop and kill oak trees through shading.
- Leave several large dead trees for wildlife habitat.
- Maintain oak woodlands by removing Douglas-fir trees



Invasive meadow knapweed



Invasive false brome

growing through the canopy and utilize appropriate management to encourage native species.

- Create wet prairies and vernal pools as part of mitigation programs.
- Provide landowners with technical assistance and education regarding the importance of vernal pools to wildlife.
- Provide information about oak habitat and technical assistance to landowners in both rural and urban areas since oaks can attract native wildlife in most locations.

### **Identify conservation tools for private landowners**

- Many of the best remaining prairie and oak sites are on privately owned lands. Voluntary tools such as technical assistance, financial incentives, and conservation easements can assist landowners with conservation on their own land (see Chapter 6: Voluntary Conservation Tools for a list of programs) (ODFW 2006)
- Provide links to educational materials. For example, OSU Extension Service ecology field cards for students describe Willamette Valley habitat attributes and species. See <http://extension.oregonstate.edu/benton/natural/eco>.
- Provide management guidelines and resources to interested landowners. Habitat conservation and restoration actions should be implemented to protect remaining high quality habitats and key sites for connectivity, and to reduce the impact of invasive plant species on these habitats and on at-risk plant populations.

Several documents provide management guidelines for enhancement of prairies and oak habitats:

1. *Restoring Rare Native Habitats in the Willamette Valley* ([Campbell 2004](#))
2. *A Landowner's Guide for Restoring and Managing Oregon White Oak Habitats* ([Vesely 2004](#))
3. *Native Willamette Valley prairie and oak habitat restoration site preparation and seeding information* ([Boyer 2009](#))
4. *Techniques for restoring native plant communities in upland and wetland prairies in the Midwest and west coast regions of North America* ([Fitzpatrick 2004](#))
5. *Use of prescribed fire in Willamette Valley native prairies* ([Alverson 2006](#))
6. *Benton County Prairie Species Habitat Conservation Plan* (Benton County 2010)



## ***Habitat conservation guide for private lands***

Private landowners can contribute to conservation of prairie and oak habitat by taking actions to enhance the habitat on their property. USFWS or NRCS also have programs to assist private landowners with habitat conservation actions (Chapter 6). The following actions are suggested to strategically promote habitat conservation on private lands throughout Benton County.

### **Enhance upland prairie and savanna habitat:**

- Remove invasive shrubs such as Scot's broom and blackberry by mowing and/or pulling small plants or cutting down large plants.
- Remove Douglas-fir trees by pulling small trees or girdling/removing large trees. Where there is a need to block views or winds, limb the lower Douglas-fir branches to enable light to reach the ground.
- Identify large oaks to retain.
- Mow after native flowers have set seed.
- Work with knowledgeable person or group such as a watershed council or SWCD to identify invasive plants and determine the appropriate management timing.
- Allow grazing after July 15 to control woody vegetation. See (Benton County 2010)
- Minimize soil disturbance to reduce invasion of non-native plants. Many non-native seeds last many years in the soil and will germinate when brought to the surface.
- Plant local native flowering species to encourage pollinators. Many local nurseries sell native plants and the Benton SWCD and OSU master gardeners each hold a yearly native plant sale.
- Identify bird and turtle nesting sites and avoid impacting those areas during the nesting season.

### **Enhance wet prairie habitat:**

- Remove rose and hawthorn shrubs, and ash trees that shade prairie plants. Mow and/or pull small plants or cut large plants.
- Work with knowledgeable person or group to determine if the site's hydrology has been altered by dikes or tile drains, and restore hydrology if needed.
- Minimize disturbance to the soil, especially when the ground is wet. Heavy vehicles can permanently change a site's hydrology by creating ruts where water pools.
- Plant local native flowering species to encourage pollinators.

### **Enhance oak woodland habitat:**

- Identify live, large oaks that have been shaded by Douglas-fir or other conifers.
- Remove shrubs such as Scot's broom, spurge laurel, and Himalayan blackberry by mowing and/or pulling small plants or cutting large plants.
- Remove Douglas-fir trees by pulling small trees or removing/girdling large trees.
- Leave large snags for wildlife.
- Avoid management during wildlife nesting season.

## ***Opportunity areas for species conservation***

Habitat and species conservation opportunity areas occur across Benton County. These areas have potential habitat that can be enhanced or restored to benefit key species. While specific habitat condition maps are not available for Benton County, general habitat maps can help land owners and land managers assess the types of species they may be able to retain, attract, or plant. Figure 5.1 divides Benton County into elevation and gradient areas that roughly correspond to the species requirements listed in Table 3.1. These areas were based on historic vegetation. Wet prairie, upland prairie and oaks, and foothill prairie and oaks may be found in any geographic area depending on local soil and moisture conditions, but broad expanses of prairie habitats were more likely historically in lowland and floodplain areas.

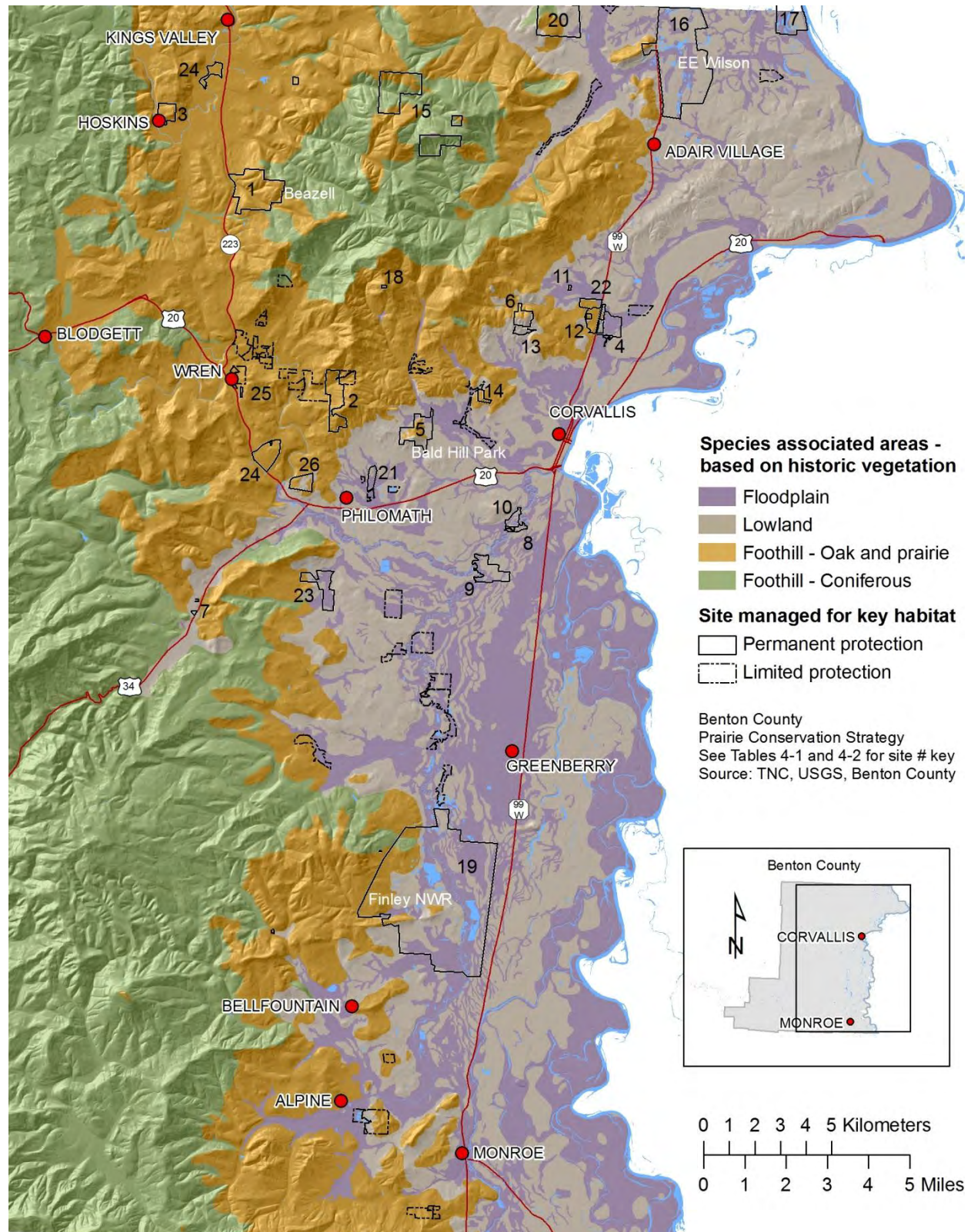
Where information was available, species locations or potential habitats were mapped in Benton County to give readers a sense of the distribution of at-risk species in the county. Maps showing general species locations, as well as habitat types, indicate possible areas for conservation and habitat enhancement (Figure 5.2, Figure 5.3, Figure 5.4, Figure 5.5, Figure 5.6). Several of the key plant species are not currently found in Benton County (Table 3.1) and current information is not available for other species.

The habitat types represented on several of the maps in this section indicate potential habitat that may be an opportunity for enhancement to suitable habitat but may not show currently suitable habitat for a particular species. Future work to identify suitable habitat for at-risk species on public and private lands should include:

1. Mapping of prairie and oak habitat quality.
2. Outreach to private landowners.

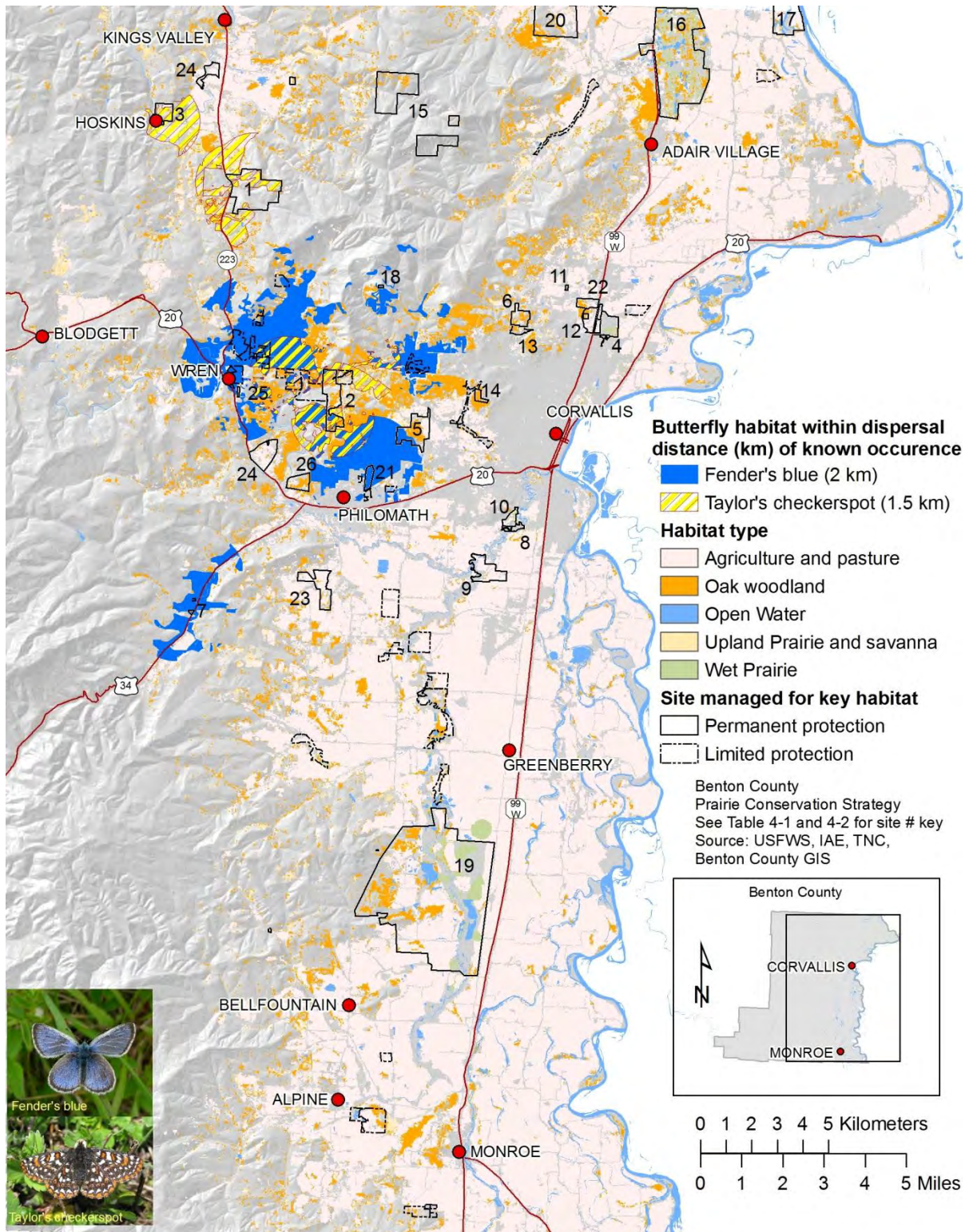


**Figure 5.1 Opportunity areas for key species in Benton County based on historic vegetation and elevation**



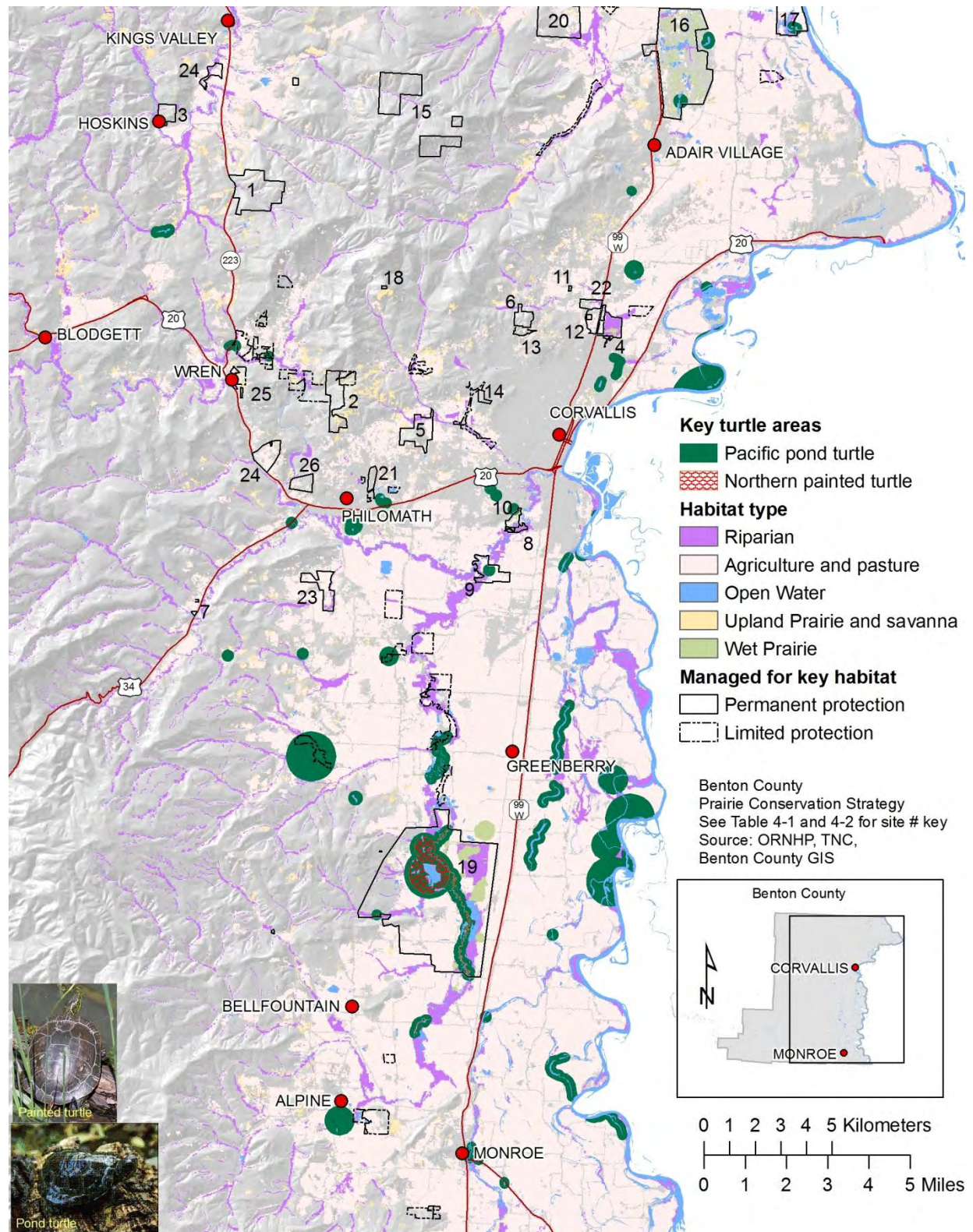
### Figure 5.2 Opportunity areas for key butterfly species in Benton County

Shaded or hatched areas are within the dispersal distance of Fender’s blue and Taylor’s checkerspot and represent potential habitat.



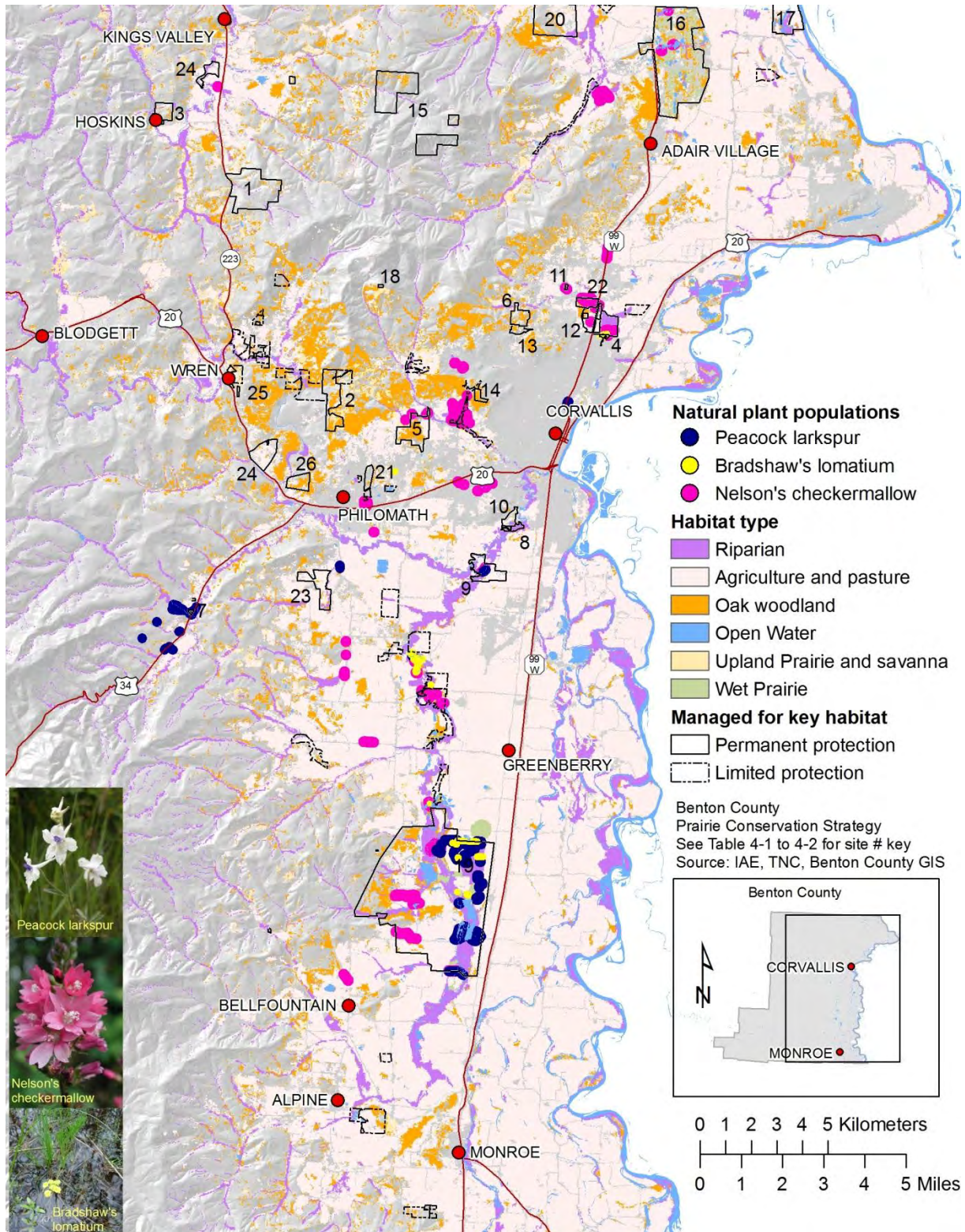
### Figure 5.3 Opportunity areas for key turtle species in Benton County

Turtle locations indicate areas where turtles have been found in the recent past.



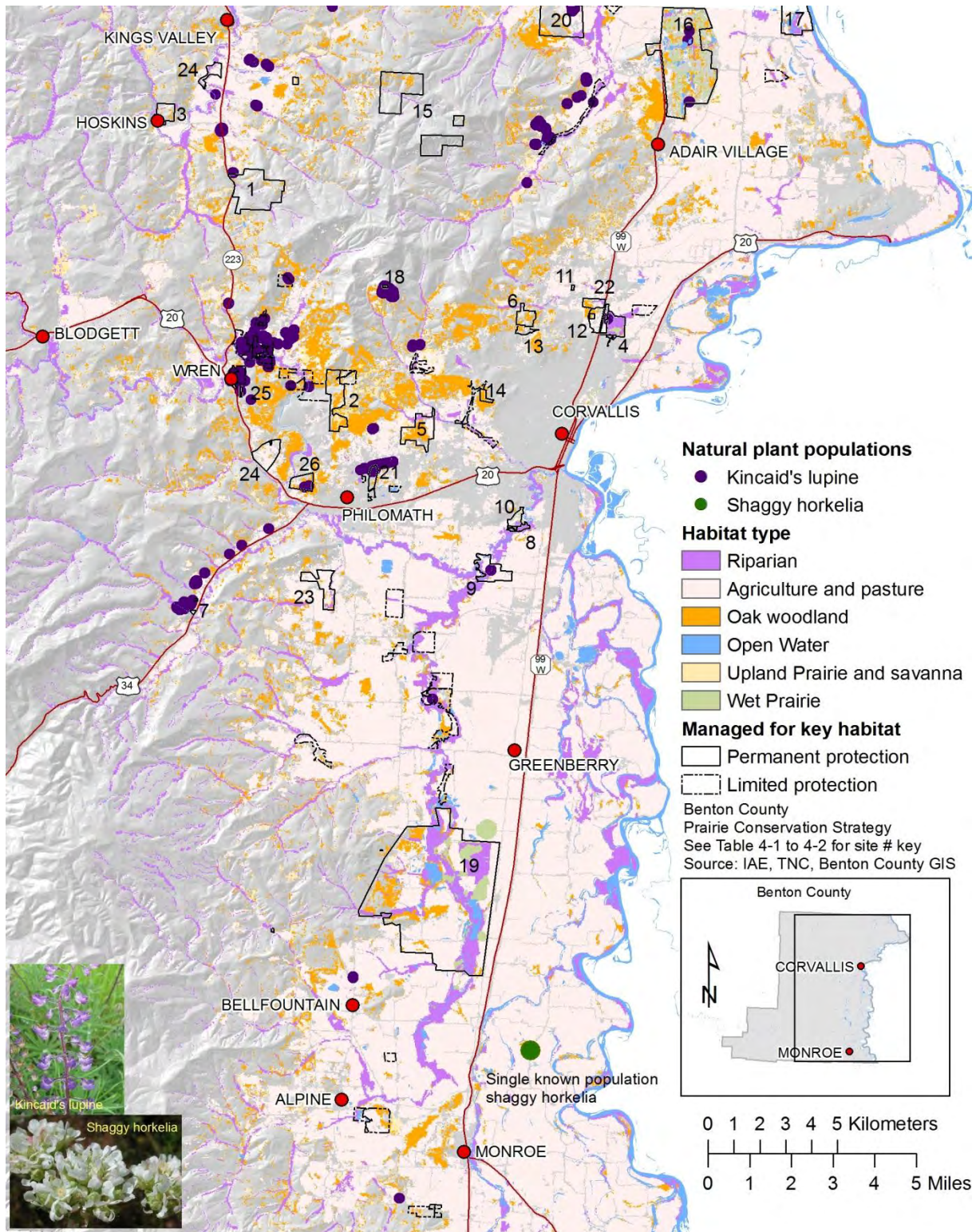
### Figure 5.4 Opportunity areas for Peacock larkspur, Bradshaw's lomatium, and Nelson's checkermallow in Benton County

Plant locations indicate areas where plants have been found in the recent past.



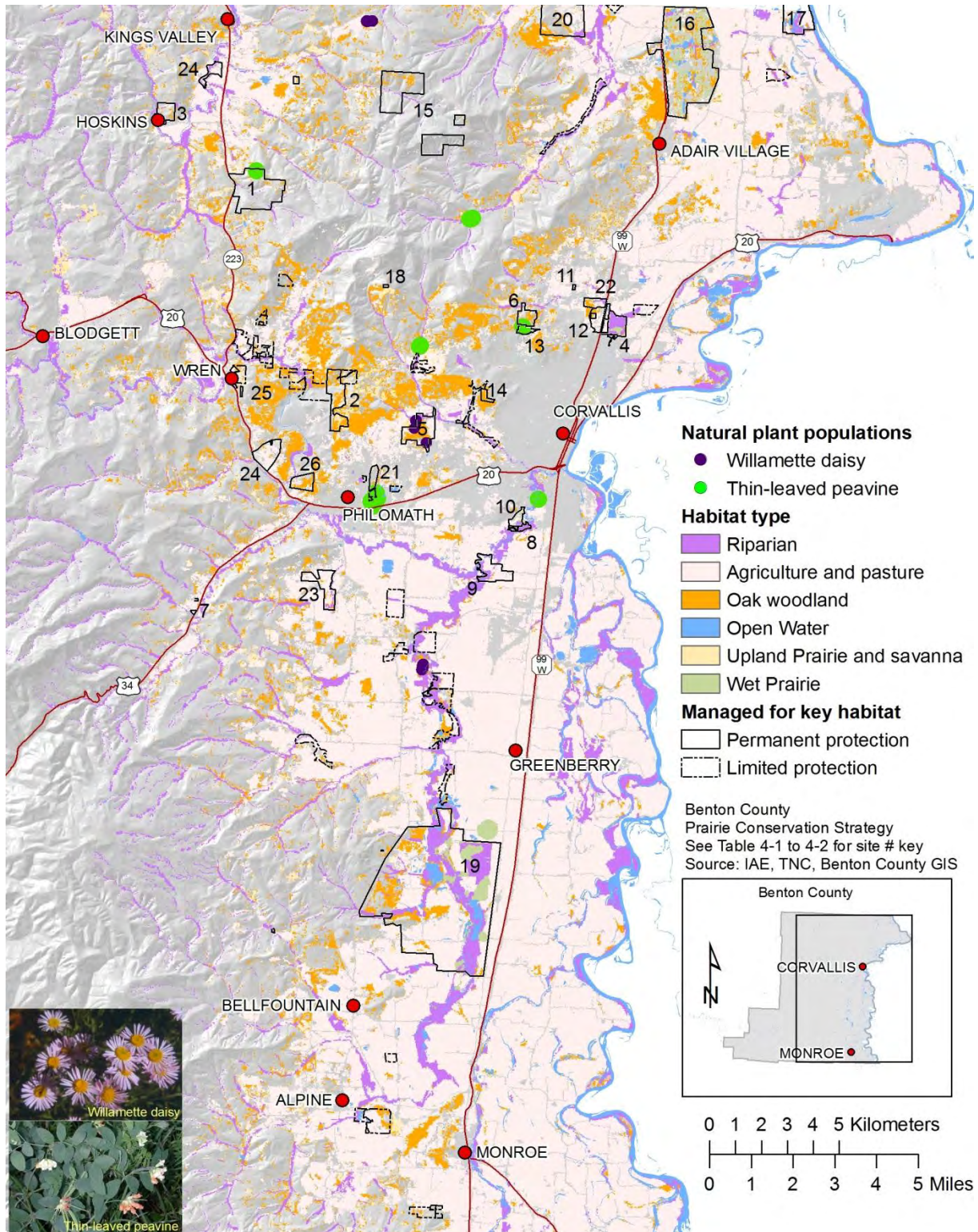
### Figure 5.5 Opportunity areas for Kincaid's lupine and shaggy horkelia in Benton County

Plant locations indicate areas where plants have been found in the recent past.



### Figure 5.6 Opportunity areas for Willamette daisy and thin-leaved peavine in Benton County

Plant locations indicate areas where plants have been found in the recent past.



## ***Key species conservation actions***

Areas within Benton County identified as particularly important for conservation were prioritized for short or long term action.

1. Short term actions are those that can reasonably begin in the near future and are critical for listed species recovery or to prevent listing of additional species.
2. Long term actions are those that will require landowner engagement, significant habitat enhancement, or voluntary conservation easements/acquisition.

Priority actions are shown on several maps in this chapter and can be identified by the letters O for outreach, C for connectivity, and E for enhancement.

These actions identify geographic conservation areas within Benton County for strategic habitat conservation. Only public lands are specifically identified but private landowners who wish to work towards prairie conservation can consult the maps included here to identify the key actions needed to support habit for species on their property.

### **Priority short term actions (Figures 5.7 through 5.11)**

#### **Outreach – Benton County-wide**

O:

Work with landowners to enhance and protect key habitats throughout Benton County by providing learning opportunities such as field trips to local habitat sites and workshops on species identification and habitat restoration techniques.

Provide private landowners with printed or web-based information on habitat management, conservation incentive programs, and easement programs.

Locate extant populations of golden paintbrush, Hitchcock's blue-eyed-grass, howellia, and racemed goldenweed. Identify potential reintroduction sites for extirpated species.

Work with private landowners to plant nectar species in potential butterfly habitat.

Work with private landowners, including those in eastern Benton County, to identify and protect large oaks that are important to wildlife such as Western gray squirrel and Acorn Woodpecker.

#### **Connect habitat**

C1: Connect Fender's blue butterfly habitat in OSU McDonald Forest to Fitton Green by creating or enhancing nectar and Kincaid's lupine habitat patches at Audubon's Hesthavn property, at the OSU sheep ranch along Oak Creek, through Bald Hill, and at Lupine Meadows. Stepping stone habitat patches should be less than 1 km apart.

## **Enhance habitat**

E1: Enhance habitat for Taylor's checkerspot butterfly and Fender's blue butterfly between Lupine Meadows and Fitton Green by reducing flight path barriers through thick conifer stands, planting nectar species in open habitat patches, and planting Kincaid's lupine in open areas. Introduce harsh paintbrush (*Castilleja hispida* var. *hispida*), golden paintbrush (*Castilleja levisecta*), and small-flower blue-eyed Mary (*Collinsia parviflora*) for Taylor's checkerspot butterfly host plant use to provide possible alternatives to non-native English plantain (*Plantago lanceolata*).

E2: Enhance current Fender's blue butterfly habitat in the Wren area by actively managing for open habitat, and increasing habitat connectivity between current habitat patches and along transmission line corridors by reducing flight path barriers through thick conifer stands.

E3: Enhance habitat with nectar species at Finley Wildlife Refuge for future Fender's blue butterfly reintroduction efforts so that a new population network can be created. Enhance habitat for Streaked Horned Lark.

## **Priority long term actions (Figures 5.7 through 5.11)**

### **Connect habitat**

C2: Connect Fender's blue butterfly populations at Lupine Meadows to populations on Highway 34 by enhancing habitat patches with nectar species and Kincaid's lupine and by decreasing barriers, such as conifer stands and invasive shrubs, to butterfly dispersal. Connect these populations to populations in Wren with stepping stone patches less than 1 km apart.

C3: Connect Fender's blue butterfly habitat in McDonald Forest to habitat in the Wren area by planting sickle-keeled lupine (*Lupinus albicaulis*) in the clear cut mosaic that divides these areas. Sickle-keeled lupine populations could wink in and out as clearcuts are established and replanted.

C4: Connect and enhance Taylor's checkerspot butterfly populations between Bezell and Fort Hoskins by working with private landowners to create protected stepping stone habitat patches closer than 1.5 km.

C5: Connect Fender's blue butterfly habitat in the Soap Creek watershed from Oregon State University's property to E.E. Wilson by protecting stepping stone habitat patches less than 1 km apart. Work with interested private landowners who are willing to plant nectar species and provide information on conservation easements and incentive programs.

C6: Connect and enhance habitat for and introduce Willamette daisy and Bradshaw's lomatium to Herbert Natural Area, Caldwell Natural Area, and Marys River Natural Area. Introduce Kincaid's lupine, Nelson's checkermallow, and peacock larkspur to Caldwell Natural Area and Marys River Natural Area to join populations currently greater than 3 km apart.



C7: Connect and enhance habitat for and introduce peacock larkspur north of Finley Wildlife Refuge to join populations currently greater than 3 km apart.

### Enhance habitat

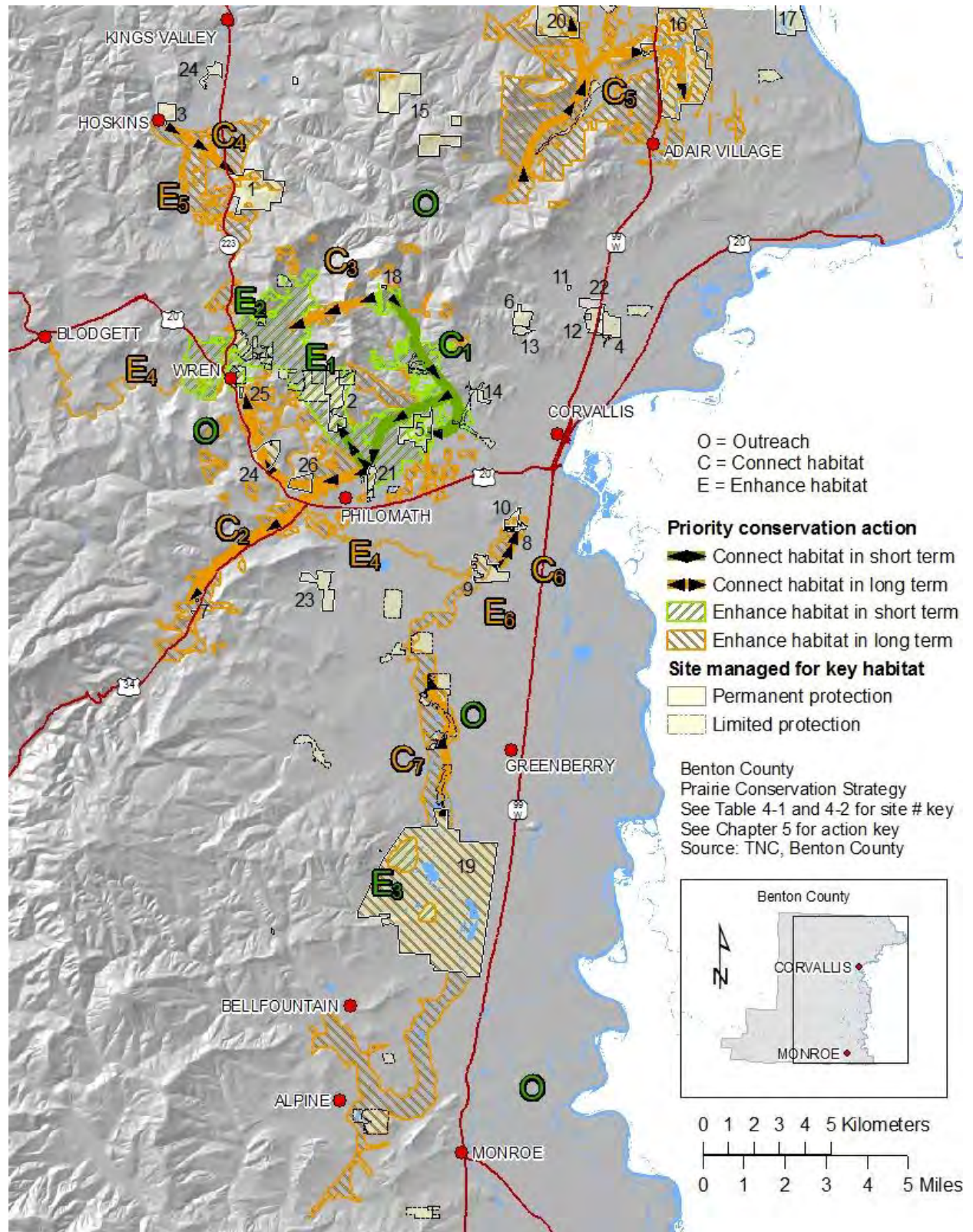
E4: Enhance and protect turtle habitat along the Marys River from Marys River Natural Area upstream to Blodgett, along the Muddy Creek corridor, and along the Willamette River by protecting and restoring riparian zones and increasing floodplain connectivity. Minimize barriers to turtle migration between riparian and upland nesting habitat by locating trails and roads away from riparian areas. Identify occupied nests and avoid driving farm equipment over the nest. Protect nests from predators, such as raccoons, by using temporary fencing until the eggs hatch.

E5: Enhance Taylor's checkerspot butterfly habitat between Beazell and Fort Hoskins by establishing nectar species in habitat patches and minimize flight path barriers, such as dense stands of conifers, to butterfly dispersal. Introduce harsh paintbrush (*Castilleja hispida* var. *hispida*), golden paintbrush (*Castilleja levisecta*), and small-flower blue-eyed Mary (*Collinsia parviflora*) at Beazell for butterfly host plant use to provide possible alternatives to non-native English plantain (*Plantago lanceolata*).

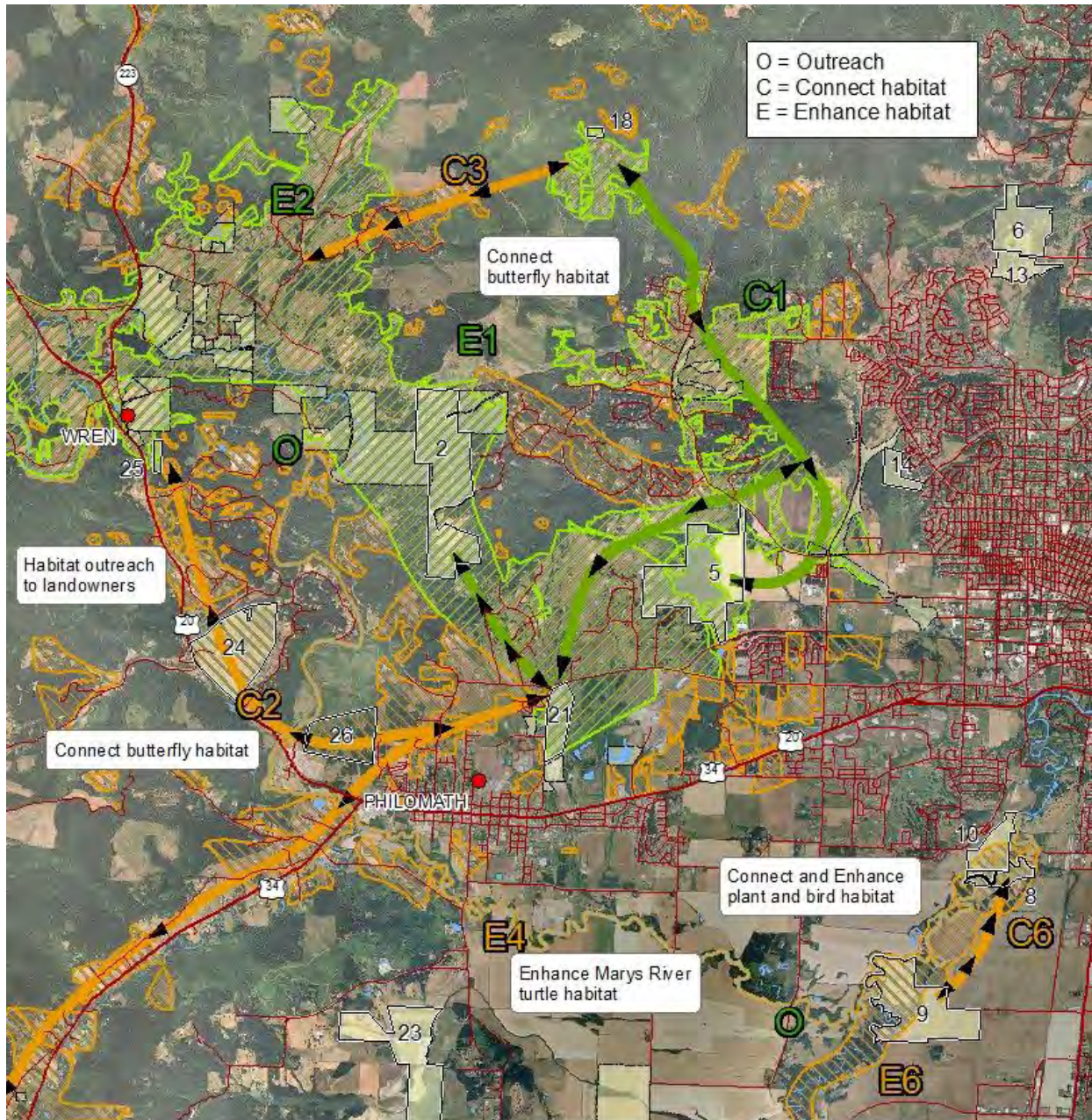
E6: Enhance habitat for Streaked Horned Lark, Western Meadowlark, Western Kingbird, and Short-eared Owl in areas around Herbert Natural Area, Caldwell Natural Area, and Marys River Natural Area.



**Figure 5.7 Areas of high priority for conservation actions to benefit key species in Benton County**



**Figure 5.8 Areas of high priority for conservation actions near Wren, Philomath, and West Corvallis**

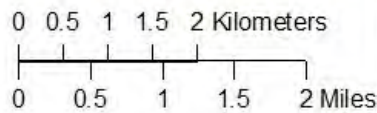


**Priority conservation action**

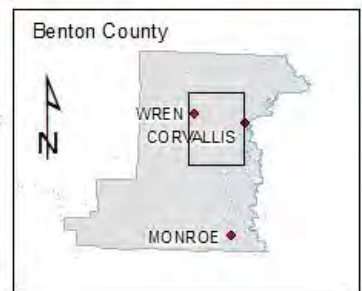
- Connect habitat in short term
- Connect habitat in long term
- Enhance habitat in short term
- Enhance habitat in long term

**Site managed for key habitat**

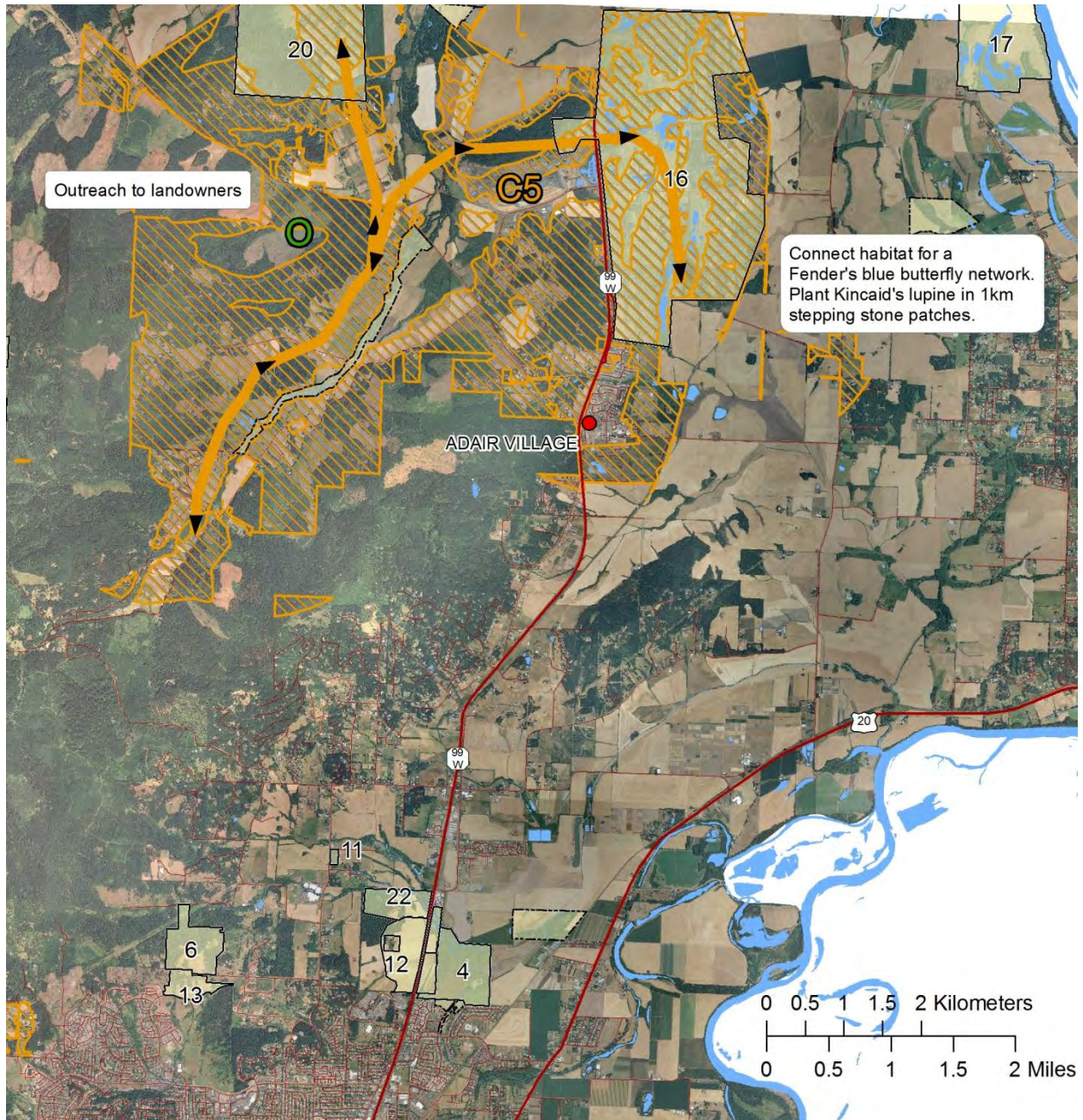
- Permanent protection
- Limited protection



Benton County  
Prairie Conservation Strategy  
See Table 4-1 and 4-2 for site # key  
See Chapter 5 for conservation action key  
Source: TNC, Benton County  
2005 NAIAP Aerial photo



**Figure 5.9 Areas of high priority for conservation actions in north Benton County**

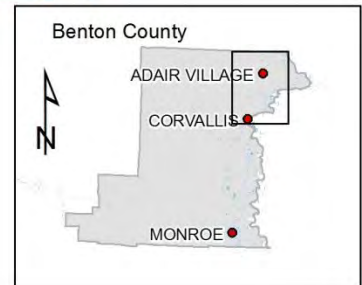


**Priority conservation action**

- Connect habitat in short term
- Connect habitat in long term
- Enhance habitat in short term
- Enhance habitat in long term

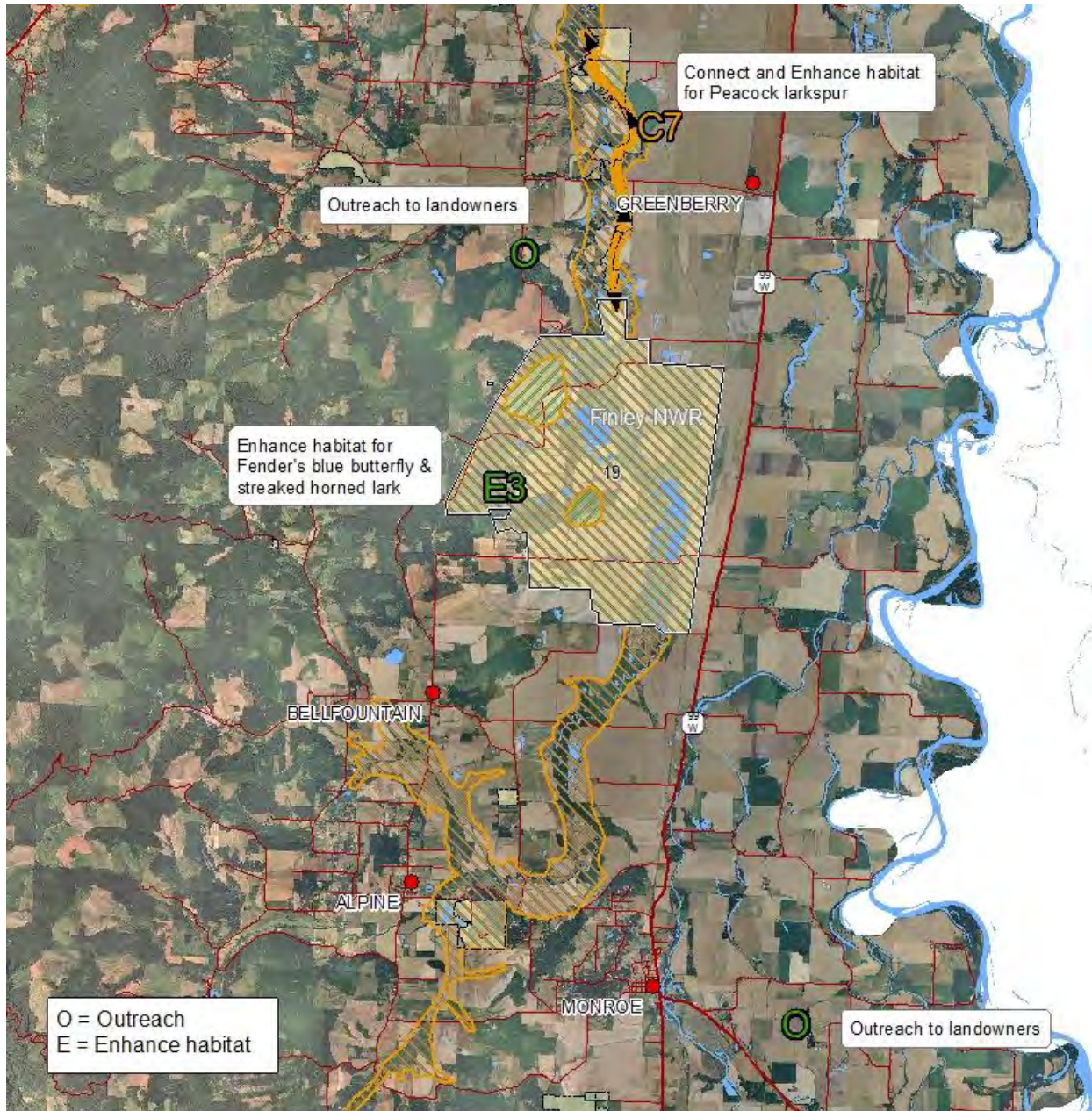
**Site managed for key habitat**

- Permanent protection
- Limited protection
- O = Outreach
- C = Connect habitat



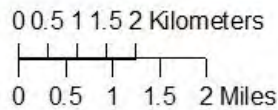
Benton County Prairie Conservation Strategy  
 See Table 4-1 and 4-2 for site # key, See Chapter 5 for conservation action key  
 Source: Benton County GIS, 2005 NAIP Aerial photo

**Figure 5.10 Areas of high priority for conservation actions in south Benton County**



**Priority conservation action**

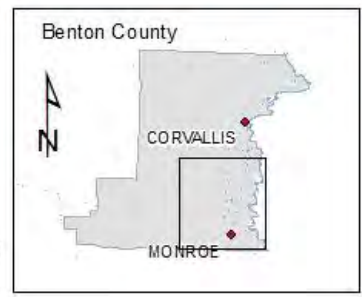
- Connect habitat in short term
- Connect habitat in long term
- Enhance habitat in short term
- Enhance habitat in long term



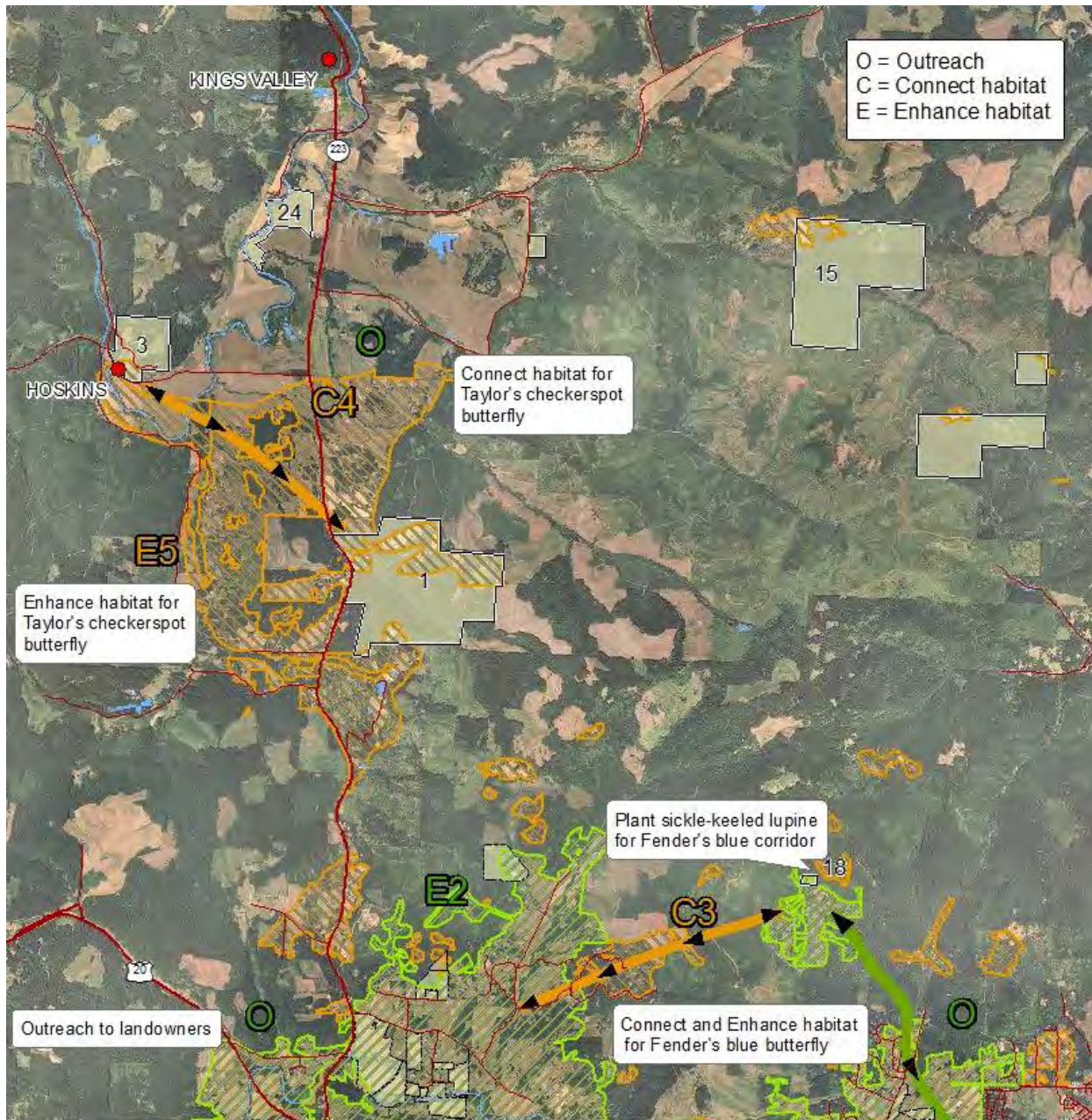
**Site managed for key habitat**

- Permanent protection
- Limited protection

Benton County  
 Prairie Conservation Strategy  
 See Tables 4-1 and 4-2 for site # key  
 See Chapter 5 for conservation action key  
 Source: Benton County GIS,  
 2005 NAIP Aerial photo



**Figure 5.11 Areas of high priority for conservation actions near Kings Valley**

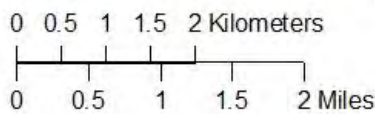


**Priority conservation action**

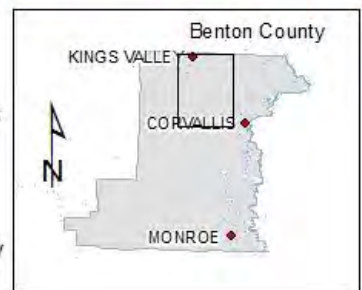
- Connect habitat in short term
- Connect habitat in long term
- Enhance habitat in short term
- Enhance habitat in long term

**Site managed for key habitat**

- Permanent protection
- Limited protection



Benton County  
 Prairie Conservation Strategy  
 See Tables 4-1 and 4-2 for site # key  
 See Chapter 5 for conservation action key  
 Source: Benton County GIS,  
 2005 NAIP Aerial photo



## ***Research needed***

Research has been conducted on many of the key species covered by this strategy but further studies will be essential to reduce gaps in our current understanding. The Oregon Conservation Strategy (ODFW 2006) and USFWS Recovery Plan (USFWS 2010) list data gaps for specific prairie species covered in those documents.

### **Habitat management and restoration**

- Evaluate habitat patch size and configuration for maintaining viable populations.
- Evaluate the effectiveness of prairie management techniques such as the timing and intensity of mowing, burning, and removal of woody vegetation.
- Assess the use of livestock grazing to manage prairie habitat.
- Assess the use of mowing to control vole populations in prairies.
- Evaluate the effectiveness of providing passage around barriers to migrating wildlife.
- Investigate innovative weeding methods.
- Investigate the impacts of global climate change on habitats.

### **Species conservation**

#### All species

- Determine population size and trends for all Strategy species.
- Evaluate the interactions between Strategy species and introduced species, for example predation of juvenile pond turtles by bull frogs or competition for food between Western gray squirrels and Eastern gray squirrels.
- Evaluate genetic diversity within and among populations.
- Examine the effects of climate change on local populations to develop strategies for improving their resiliency.

#### Amphibians and reptiles

- Evaluate the impacts of disease introduced and spread by non-natives.
- Clarify impacts of pollutants and UV radiation in amphibians.

#### Plants

- Develop effective management techniques through demographic studies to understand effects of treatments on birth and death rates. Compare management treatments experimentally (including mowing, burning, grazing with livestock, de-thatching, reduction of grass competition) to improve best management practices for these species.
- Examine the effects of herbivory by voles and gophers on the population dynamics of target species and develop techniques to exclude or inhibit these animals, if necessary.
- Evaluate the incidence of hybridization with related species for Nelson's checkermallow, peacock larkspur, and Kincaid's lupine.

- Conduct population genetic analysis using either molecular or common garden studies on listed plant species to develop seed transfer guidelines and evaluate the need for genetic rescue of inbred populations.
- Evaluate the importance of mycorrhizae and other below-ground micro-organisms on plant performance.
- Identify the most frequent pollinator species and their habitat needs.
- Evaluate the importance of seed-eating weevils on Nelson’s checkermallow and Kincaid’s lupine and develop techniques to reduce their impact.



*Nelson's checkermallow*



*Willamette daisy*



## 6 Voluntary conservation tools

There are many opportunities for landowners to voluntarily conduct conservation on their own land or for interested citizens to participate in conservation on public lands. Habitat conservation actions such as removal of Douglas-fir in prairies and oak woodlands can help numerous species beyond those protected by federal and state law. Private landowners can contribute to recovery of listed species and can also provide habitat for non-listed native species. Several programs are available to help landowners with habitat conservation and management.

### ***Landowner incentives and opportunities***

Private lands conservation is essential for preserving native habitat and rare species. Several programs are available to Benton County landowners that provide technical and financial assistance for restoration and enhancement of wetlands, riparian areas and wildlife habitat. These programs are offered through a variety of state and federal agencies such as Oregon Department of Fish and Wildlife ([ODFW](#)), USDA Natural Resource Conservation Service ([NRCS](#)), USDA Farm Service Agency ([FSA](#)), and U.S. Fish and Wildlife Service ([USFWS](#)). Conservation programs often lack secure funding, therefore availability of programs can vary over time. **See links under each subject for more information.**

### **Several organizations offer help accessing programs and funding:**

- Benton Soil and Water Conservation District ([Benton SWCD](#)) – County wide
- Greenbelt Land Trust ([GBLT](#)) – County wide habitat easements
- Long Tom Watershed Council ([LTWC](#)) – South Benton County
- Luckiamute Watershed Council ([LWC](#)) – North Benton County
- Marys River Watershed Council ([MRWC](#)) - Mid Benton County

### **Technical assistance programs**

- **Conservation of Private Grazing Land ([CPGL](#))** – NRCS technical assistance program for private landowners with grazing lands. Unfunded as of 6/2009.
- **Conservation Technical Assistance ([CTA](#))** – NRCS technical assistance to landowners for conservation, maintenance, and improvement of natural resources.

## Habitat improvement programs

- **Access and Habitat Program (A&H)** – ODFW grants for improving wildlife habitat, increasing public hunting access to private land or for solving a wildlife damage issue.
- **Conservation Incentive Program (CIP)** – BSWCD local property tax funded program to maintain and improve water and soil quality.
- **Conservation Innovation Grants (CIG)** – This nationally competitive grant program awards funds to projects that “stimulate the development and adoption of innovative conservation approaches and technologies while leveraging Federal investment in environmental enhancement and protection, in conjunction with agricultural production”.
- **Conservation Security Program (CSP)** – This NRCS program provides technical and financial assistance to agricultural producers who undertake or increase conservation actions on their lands. These actions can include increasing native pollinator plants in hedgerows or creating windbreaks for native habitat.
- **Cooperative Endangered Species Conservation Fund (Section 6)** – USFWS grants to States that may, in turn, be provided to individual landowners and groups to benefit endangered species conservation.
- **Environmental Quality Incentives Program (EQIP)** – NRCS cost share program to help landowners install or implement structural and management practices on eligible agricultural land.
- **North American Wetland Conservation Act (NAWCA)** – USFWS matching grants to organizations and individuals who have developed partnerships to carry out wetlands conservation projects.
- **USFWS Partners for Fish and Wildlife (PFW)** – USFWS provides technical and financial assistance to private landowners who are willing to work with USFWS and other partners on a voluntary basis to help meet the habitat needs of Federal Trust Species.
- **Wildlife Habitat Incentive Program (WHIP)** – A voluntary program, administered by NRCS, designed to help private landowners who want to develop and improve wildlife habitat on their lands. NRCS provides technical assistance and up to 75% match (funding) to assist with establishing and improving fish and wildlife habitat.

## Easement programs

- **Conservation Reserve Program (CRP)** – This FSA program provides annual payments for 10-15 years for those landowners who retire highly erodible croplands or cropped wetlands. The intent of the program is to reduce soil erosion, reduce sedimentation into lakes and streams, improve water quality, establish wildlife habitat, and restore and enhance wetland and forest resources. Landowners are required to plant the enrolled lands with native species.

- **Conservation Reserve Enhancement Program (CREP)** – This offshoot of the CRP program retires erodible agricultural lands to enhance riparian and wetland wildlife habitat. Funds are also contributed by state and federal agencies.
- **Emergency Watershed Protection (EWP) Program** – NRCS floodplain easement program on land that has been impaired by flooding at least once in the past year or at least twice in the past 10 years. NRCS maintains a permanent conservation easement on the land and undertakes habitat restoration.
- **Forest Legacy Program (FLP)** – US Forest Service program, administered locally by ODF, provides a conservation easement payment to help protect private forest lands from development or fragmentation.
- **Grassland Reserve Program (GRP)** – Conservation easement or cost share program administered by NRCS and FSA that helps landowners and operators restore and protect grassland, including rangeland, pastureland, shrubland, and certain other lands, while maintaining the areas as grazing lands.
- **Wetlands Reserve Program (WRP)** – This program, administered by NRCS, provides a financial incentive to private landowners to restore and protect wetlands in exchange for retiring marginal agricultural lands.

## Tax incentives

- **Riparian Lands Tax Incentive ([web link](#))** – An ODFW property tax incentive program for improving or maintaining qualifying riparian lands up to 100 feet from a stream. Landowners receive property tax exemption for riparian lands.
- **Wildlife Habitat Conservation and Management Program (WHCMP)** - Private landowners currently in Exclusive Farm Unit (EFU) zoning, Forestland zoning, or in designated wildlife areas can receive a reduced property tax assessment to voluntarily conserve native wildlife habitat. See the Benton County Assessor's office for more information on your property's zoning. There is no additional tax for switching to a wildlife special assessment.
- **Conservation Easement Special Assessment** – Land that has a recorded conservation easement can qualify for a reduced property tax assessment. The easement must be held in perpetuity. The property is assessed at the forestland or farm use special assessment rate.

## Endangered species regulatory assurance

- **Safe Harbor Agreement (SHA)** - A Safe Harbor Agreement (SHA) is a voluntary agreement between USFWS and a non-federal landowner to promote habitat management for listed species on non-federal lands. During the term of the agreement, the landowner sets aside all or a portion of a property for listed species habitat management. By entering into the agreement, the USFWS provides the landowner with assurances that if habitat management attracts or increases the population of a listed animal species, when the agreement ends

the landowner may use the property in any legal manner that does not place the species below the baseline condition assessed at the beginning of the agreement. An agreement is only entered into when the USFWS finds the covered species will receive a net conservation benefit from the management actions to be taken by the landowner.

The USFWS has developed a programmatic Fender's blue butterfly SHA to streamline the enrollment process for private landowners (USFWS 2008a). The coverage area includes Benton County and neighboring counties.

- **Candidate Conservation Agreement with Assurances (CCAA)** - Candidate Conservation Agreements are voluntary agreements between the USFWS and non-federal landowners that encourage species conservation stewardship. A Candidate Conservation Agreement applies only to species that are candidates for listing species, e.g., the Streaked Horned Lark and Taylor's checkerspot butterfly. Some landowners may manage their property to prevent or discourage colonization of their property by candidate species because future listings can result in land use restrictions. A CCAA provides additional assurances beyond a Candidate Conservation Agreement that the property owner is assured that their conservation efforts will not result in future regulatory obligations in excess of those they agree to at the time they enter into the agreement. Non-candidate species may be included. The conservation benefits sought through the CCAA are the same as those under Safe Harbor Agreements.

## Conservation Banking

A conservation bank is a parcel or parcels of land containing natural resource values that are conserved and managed in perpetuity for listed or at-risk species and their habitat. In exchange for permanently protecting an area, the landowner receives credits from USFWS that they may use to offset impacts to habitat or species in other areas or can sell the credits to others. This concept is similar to wetland mitigation banks that sell credits for impacts to wetlands from development. Generally it costs less per acre to manage a conservation bank than the equivalent acreage on many smaller isolated parcels of land. Additionally, larger acreage reserves are more likely to ensure ecosystem functions, biodiversity, and conservation of the species. Advantages of a conservation bank include:

- Streamlined permitting process
- Reduced cost of compliance with regulations
- Increased economic value of the conservation bank land
- Reduced administrative burden of permitting on regulatory agencies
- Supports endangered species recovery
- Effective management and monitoring in a preserve system
- Opportunity for large, un-fragmented, high quality habitat preservation
- Market incentive for habitat preservation, restoration, and enhancement

## ***Habitat acquisition***

Habitat acquisition from voluntary sellers is an important conservation measure that ensures long-term protection of a site. Property can be acquired outright (fee simple) by purchasing property from a willing seller or through a conservation easement whereby the current landowner retains ownership of the property but the use of that property is restricted. Non-profit groups such as The Greenbelt Land Trust, Marys River Watershed Council, Luckiamute Watershed Council, Long Tom Watershed Council, The Nature Conservancy, and Trust for Public Lands can provide assistance.

- **Acquisition, Donation, Land Exchange:** Public agencies and non-profit groups can acquire property at fair market value from a willing landowner and may accept donations of land. A land exchange usually involves trading public land for private land, but it can involve trading land between public land agencies.
- **Conservation Easement:** A conservation easement is a legal contract between the landowner who wishes to retain the land and the easement holder. Easements can be held by state or federal agencies, tribes, and non-profit groups. The landowner gives up certain development rights and agrees to certain restrictions on the property in exchange for compensation (money and/or tax benefits). The landowner can donate the conservation easement to a qualified not-for-profit organization, such as a land trust, or to a public agency. The easement can be in perpetuity or for a term of years. Landowners with a conservation easement can apply to the Benton County assessor for a special tax assessment of the property. See Tax Incentives section above.

## **Funding sources and assistance for voluntary acquisition**

Several programs offer financial assistance with easement and acquisition projects.

- **The Oregon Watershed Enhancement Board ([OWEB](#)):** The Oregon Watershed Enhancement Board (OWEB) is a state agency that promotes and funds voluntary conservation activities around Oregon using dedicated lottery funds. Eligible applicants include any individual, organization, local government, or institute of higher education. State or federal agencies must be a co-applicant with another eligible applicant. These competitive grants require a 25% match from another funding source (OWEB, 2009). OWEB has adopted ecological priorities for acquisition funding which include upland prairies and savanna, oak woodlands, and wet prairies in the Willamette Basin. Several of the priority species identified by OWEB are key species identified in this strategy, including: Acorn Woodpecker, American Kestrel (natural nest sites only), Chipping Sparrow, Oregon Vesper Sparrow, Short-eared Owl (nest and roost habitat only), Streaked Horned Lark, Western Meadowlark, White-breasted Nuthatch, western gray squirrel, red-legged frog, northern painted turtle, pacific pond turtle, Fender's blue butterfly,

Taylor's checkerspot butterfly, white-topped aster, golden paintbrush, peacock larkspur, Willamette daisy, Howellia, Bradshaw's lomatium, Kincaid's lupine, and Nelson's checkermallow.

- **U.S. Fish and Wildlife Service Recovery Land Acquisition Fund ([web link](#)):** The USFWS provides land acquisition funding for species covered under the Endangered Species Act that have draft or final recovery plans in place. State agencies that have a cooperative agreement with the Secretary of the Interior may apply for these acquisition funds. In addition, individuals or groups (land conservancies or conservation organizations, cities, counties, or community organizations) may be a subgrantee with a State agency that has a cooperative agreement. Funding can not be used for acquisition of lands associated with a permitted Habitat Conservation Plan. 25% non-Federal matching funds are required for individual state applications.
- **U.S. Fish and Wildlife Service Habitat Conservation Plan ([HCP](#)) Land Acquisition Program:** This program provides funds to States or subgrantees to State agencies for land acquisition in areas covered by an HCP. The funds can be used for land that is not part of mitigation required by the HCP and covers habitat for listed or candidate species. Only one proposal per HCP may be submitted, though multiple parcels may be identified.
- **National Fish and Wildlife Foundation ([NFWF](#)) – Acres for America:** In 2005, the National Fish and Wildlife Foundation partnered with Wal-Mart Stores Inc. to offset the footprint of Wal-Mart's development in the United States. These grants require a 1:1 match of cash or in-kind contribution. Conservation of important species and public access to the property is preferred.

### ***Conservation opportunity actions***

The following actions are suggested to strategically promote habitat conservation throughout Benton County.

#### **Coordinate a Strategy outreach and implementation action plan**

**Action:** *Conduct outreach to landowners to jumpstart priority conservation actions in Benton County.*

- Let landowners know about this Strategy through newsletters, list serves, outreach groups, OSU Extension Service, and the BSWCD.
- Utilize a citizen mentors program to provide information to local areas within the County.
- Conduct neighborhood meetings with presentations in priority areas to provide information about this Strategy to landowners.
- Post signs at project sites to provide project information to inform neighbors.

### **Lobby state to fund for private land conservation programs**

**Action:** Lobby state government to fund and staff state conservation programs, such as the Wildlife Habitat Conservation and Management Program (WHCMP), which provide private lands conservation incentives.

- Property taxes in Oregon are valued and based upon the real market value of the property. Urban and suburban areas are encroaching on farm and forest lands which make these properties more valuable and therefore potentially subject to higher taxes. The Oregon legislature offers a reduced property tax assessment program to property owners in farm and forest designated areas to encourage retention of farm land and native forests. A comparable program was developed in 1997 to provide a reduced property tax incentive for landowners to conserve habitat for native wildlife. The Wildlife Habitat Conservation and Management Program (WHCMP), administered by ODFW, allows properties in areas zoned Exclusive Farm Use (EFU) or Forest Conservation (FC), and in County designated wildlife zones, to receive reduced property tax assessment for providing wildlife habitat.

Though the WHCMP incentive program provides reduced taxes, property owners give up the ability to generate income from farming or timber and must come up with funding to develop management plans or restoration actions. This reduces the long term incentive to private landowners who need technical advice on habitat management. This program could provide a greater incentive for landowner participation if state funds were dedicated to the WHCMP for staff to work with landowners.

### **Work to reduce regulatory disincentives to conservation**

**Action:** Identify regulations that hinder conservation in Benton County and work with state and federal regulators to address these issues.

- An ESA listing may be a disincentive for some landowners to conserve or enhance habitat for listed species due to the possibility of future land use restrictions on their property. Safe Harbor Agreements (SHA) and Candidate Conservation Agreements with Assurances (CCAAs) were developed to reduce this disincentive by removing future land use regulation if conservation actions are implemented. These programs may not provide sufficient assurances for some landowners due to uncertainty regarding timelines, conservation actions, government involvement, or complex paperwork. Identifying and modifying regulations that hinder conservation on private lands, as well as expanding technical and financial assistance programs, can promote habitat conservation actions on private lands.

### **Provide clear information on regulations**

**Action:** *Provide clear species regulatory information to local citizens in newsletters, websites, and other accessible means.*

- ESA listings are often a surprise to impacted landowners even though the listing process can take years. Information on how the listing of animal species can impact private property owners should be provided in a clear manner. The Endangered Species Act is a federal program that is regulated at the federal level, but education can happen locally.
- Examples of information:
  1. Plant species listed by state or federal endangered species laws are not protected on private lands unless they provide habitat to a listed animal species or if federal funds are involved in projects on that particular private property.
  2. The USFWS is the federal agency responsible for regulating native species that are federally listed as threatened or endangered. Impacting a protected plant species on federal land or a protected animal species or its habitat on any land requires one of three types of permit:
    - a. An incidental take permit is required when non-Federal activities will result in “take” of a threatened or endangered species. The permit application must be accompanied by a habitat conservation plan (HCP) which “ensures that the effects of the authorized incidental take are adequately minimized and mitigated” (USFWS 2008b).
    - b. An enhancement of survival permit is “required for non-Federal landowners participating in Safe Harbor Agreements or Candidate Conservation Agreements with Assurances. These agreements encourage landowners to take actions to benefit species while also providing assurances that they will not be subject to additional regulatory restrictions as a result of their conservation actions” (USFWS 2008b).
    - c. A recovery and interstate commerce permit is “issued to allow for take as part of activities intended to foster the recovery of listed species. A typical use of a recovery permit is to allow for scientific research on a listed species in order to understand better the species’ long-term survival needs. Interstate commerce permits also allow transport and sale of listed species across State lines (e.g., for purposes such as a breeding program)” (USFWS 2008b).
  3. The Oregon Department of Fish and Wildlife (ODFW) is the state agency responsible for the management of animals that are listed as threatened or endangered by the state of Oregon. Oregon regulates listed animal species only on non-federal public lands. Animals listed by the state but not by the federal government are not regulated on private lands.
  4. The Oregon Department of Agriculture (ODA) is the state agency responsible for the management of native plants that are listed as threatened or



- endangered by the state of Oregon on non-federal public lands. Plants listed by the state of Oregon are only regulated on non-federal public lands.
- a. A permit is required if a listed plant is moved across public lands, such as roads.
  - b. A permit is required for activities that involve “take” which includes transporting listed plants on public roads or transporting seeds of listed species to plant on private property.
  - c. A permit is required for any propagation/cultivation of state-listed plants.
5. The Oregon Natural Heritage Program is the state agency responsible for state listed invertebrates and in addition USFWS has granted ONHIP limited authority to manage a program for federally listed invertebrates.

### **Identify interest in specific conservation tools**

**Action:** *Survey local citizens on tools that would be most valuable for conservation and provide clear information.*

- In a June 2009 survey for the Prairie Conservation Strategy (Benton County 2010), respondents wrote of their frustrations with a lack of clear information from regulators and with punitive regulations. Participants in Prairie Conservation Strategy workshops consistently requested information on endangered species conservation on their land, technical assistance and incentives for habitat conservation, and changes to portions of the US Endangered Species Act.

### **Provide endangered plant seeds to private landowners**

*"Remember that in our enlightened community there are many who would like to grow these beautiful though threatened species. We provide free land for experiments."*  
*2009 Prairie Conservation Strategy Survey response*

**Action:** *Work with state agencies to create a plant material registry program.*

- A plant material registry program would provide a way for private landowners to participate in recovery of listed species by planting threatened and endangered species on their land. For a program to occur, several steps would be required:
  1. ODA would administer the program.
  2. USFWS would distribute seeds to landowners with appropriate habitat and would report seed amounts and planting locations to ODA. Landowners would receive educational materials to correctly report their habitat type.
  3. Anyone receiving plant materials would be required to sign an affidavit declaring the destination of the plant material. This way, genetically appropriate plant materials would be distributed to appropriate sites and ODA would have a tracking system.
  4. Plant materials would be provided or sold by ODA permitted nurseries or vendors with materials collected in Benton County or within genetically

- appropriate areas as approved by ODA. Funding for initial seed collection would need to be determined.
5. A sufficient amount of seeds would need to be in production to augment limited seed resources.
  6. Minimum seed numbers would be required for planting. This would ensure sufficient establishment due to high mortality of seedlings.
  7. Educational materials provided to program participants.
  8. Program participants could provide voluntary feedback on planting success.

### **Create new conservation programs**

**Action:** *Work to create "adopt a roadside" program.*

- Many populations of listed plants reside along roadsides due to management practices that favor open habitat. These populations are important for genetic diversity and connectivity between larger populations. Individuals or volunteer groups could "adopt" roadside populations and maintain the habitat through a registry program and be recognized for the effort. A program would require:
  1. A registry system coordinated by a local or state agency.
  2. Funds to administer a program and provide recognition to volunteers.

**Action:** *Work with local groups to create a habitat evaluation program.*

- Volunteers currently provide invasive plant assessments for private land owners through the Soil and Water Conservation District's Weed Spotter Program. A voluntary program to assess habitat conditions, similar to Energy Star, could be implemented by a state or local agency to determine if private landowners have native habitat. These volunteers could provide educational materials and point out sources of additional information to private landowners.

**Action:** *Create community equipment and knowledge share.*

- Some private landowners do not wish to work with federal or state agencies to enhance their habitat, but want technical advice and to borrow equipment. Local government, non-profit groups, or volunteers could provide information, such as printed technical information, to citizens who wish to work on their own habitat. A tool and equipment sharing program could help private landowners gain access to expensive equipment and could be run by a local conservation group who could provide educational material or on-site advice. For a program to occur there would need to be:
  1. Coordination by a local group.
  2. Equipment available for public use.
  3. Liability issues would need to be addressed.

**Action:** *Recognition program for exceptional habitat conservation.*

- Some private landowners have protected exceptional habitat in Benton County. A recognition program is a "pat on the back" to these landowners and their experience can provide a valuable outreach to neighboring landowners.

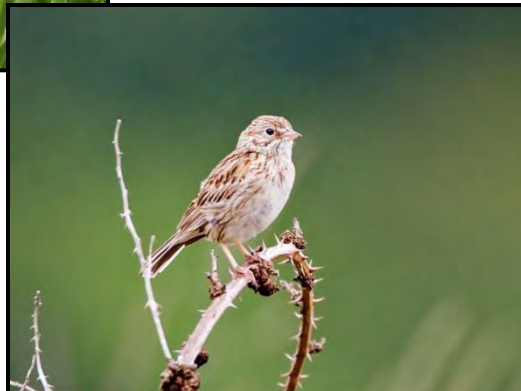
**Action:** *Conservation/recovery implementation working group.*

- Conservation working groups aim to understand and communicate ecological issues to diverse audiences. These informal groups are concerned for a

particular habitat type or species and work to promote and improve conservation. The Oregon Oak Communities Working Group and the South Puget Sound Prairie Landscape Working Group are two examples of groups working on oak and prairie conservation. A group consisting of scientists, agency personnel, land managers, and concerned citizens could provide recommendations to state and federal agencies and provide information to the general public on strategies for prairie conservation in Oregon. A Prairie Conservation Strategy implementation group made up of local partners would provide guidance and recommendations to local land managers working on habitat enhancement or species recovery.



White-topped aster © Tom Kaye



Oregon vesper sparrow © Rod Gilbert

## 7 Additional species resources

### ***Amphibians***

Northern red-legged frog (*Rana aurora*)

NatureServe explorer database (Accessed March 2010):

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rana+aurora>

### ***Birds***

Acorn Woodpecker (*Melanerpes formicivorus*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Acorn\\_Woodpecker/id](http://www.allaboutbirds.org/guide/Acorn_Woodpecker/id)

American Kestrel (*Falco sparverius*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/American\\_Kestrel/id](http://www.allaboutbirds.org/guide/American_Kestrel/id)

Chipping Sparrow (*Spizella passerina*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Chipping\\_Sparrow/id](http://www.allaboutbirds.org/guide/Chipping_Sparrow/id)

Common Nighthawk (*Chordeiles minor*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Common\\_Nighthawk/id](http://www.allaboutbirds.org/guide/Common_Nighthawk/id)

Grasshopper Sparrow (*Ammodramus savannarum*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Grasshopper\\_Sparrow/id](http://www.allaboutbirds.org/guide/Grasshopper_Sparrow/id)

Horned Lark (*Eremophila alpestris*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Horned\\_Lark/id](http://www.allaboutbirds.org/guide/Horned_Lark/id)

Lazuli Bunting (*Passerina amoena*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Lazuli\\_Bunting/id](http://www.allaboutbirds.org/guide/Lazuli_Bunting/id)

Northern Harrier (*Circus cyaneus*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Northern\\_Harrier/id](http://www.allaboutbirds.org/guide/Northern_Harrier/id)

Short-eared Owl (*Asio flammeus*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Short-eared\\_Owl/id](http://www.allaboutbirds.org/guide/Short-eared_Owl/id)

Vesper Sparrow (*Pooecetes gramineus*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Vesper\\_Sparrow/id](http://www.allaboutbirds.org/guide/Vesper_Sparrow/id)

Western Bluebird (*Sialia mexicana*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Western\\_Bluebird/id](http://www.allaboutbirds.org/guide/Western_Bluebird/id)

Western Kingbird (*Tyrannus verticalis*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Western\\_Kingbird/id](http://www.allaboutbirds.org/guide/Western_Kingbird/id)

Western Meadowlark (*Sturnella neglecta*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Western\\_Meadowlark/id](http://www.allaboutbirds.org/guide/Western_Meadowlark/id)

White-breasted Nuthatch (*Sitta carolinensis*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/White-breasted\\_Nuthatch/id](http://www.allaboutbirds.org/guide/White-breasted_Nuthatch/id)

Wilson's Snipe (*Gallinago delicata*)

Cornell Lab of Ornithology (Accessed March 2010):

[http://www.allaboutbirds.org/guide/Wilsons\\_Snipe/id](http://www.allaboutbirds.org/guide/Wilsons_Snipe/id)

## ***Insects***

American grass bug (*Acetropis Americana*)

US Department of Agriculture, US Forest Service 2005 fact sheet (Accessed March 2010): <http://www.fs.fed.us/r6/sfpnw/issssp/documents/planning-docs/20050906-fact-sheet-acetropis-americana.doc>

Fender's blue butterfly (*Icaricia icarioides fenderi*)

USFWS fact sheet (Accessed March 2010):

<http://www.fws.gov/oregonfwo/Species/Data/FendersBlueButterfly/>

Butterfly Conservation Initiative (Accessed March 2010):

[http://www.butterflyrecovery.org/species\\_profiles/fenders\\_blue/](http://www.butterflyrecovery.org/species_profiles/fenders_blue/)

Taylor's checkerspot butterfly (*Euphydryas editha taylori*)

Butterfly Conservation Initiative (Accessed March 2010):

[http://www.butterflyrecovery.org/species\\_profiles/taylors\\_checkerspot/](http://www.butterflyrecovery.org/species_profiles/taylors_checkerspot/)

Tailed copper (*Lycaena arota*)

NatureServe explorer database (Accessed March 2010):

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Lycaena+arota>

Field crescent (*Phyciodes pulchella*)

NatureServe explorer database (Accessed March 2010):

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Phyciodes+pulchella>

## **Mammals**

Camas pocket gopher (*Thomomys bulbivorus*)

NatureServe explorer database (Accessed March 2010):

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Thomomys%20bulbivorus>

Western gray squirrel (*Sciurus griseus*)

Washington Department of Fish and Wildlife (Accessed March 2010):

<http://wdfw.wa.gov/wlm/diversty/soc/wgraysquirrels/index.htm>

## **Plants**

Bradshaw's lomatium (*Lomatium bradshawii*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/lombra.pdf>

Golden paintbrush (*Castilleja levisecta*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/caslev.pdf>

Hitchcock's blue-eyed-grass (*Sisyrinchium hitchcockii*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/sishit.pdf>

Howellia (*Howellia aquatilis*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/howaqu.pdf>

Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/lupsulkin2.pdf>

Nelson's checkermallow (*Sidalcea nelsoniana*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/sidnel.pdf>

Peacock larkspur (*Delphinium pavonaceum*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/delpav.pdf>

Racemed goldenweed (*Pyrrocoma racemosa* var. *racemosa*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010):  
<http://www.oregonflora.org/rarepdfs/pyrracrac.pdf>

Shaggy horkelia (*Horkelia congesta* ssp. *congesta*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010):  
<http://www.oregonflora.org/rarepdfs/horconcon.pdf>

Thin-leaved peavine (*Lathyrus holochlorus*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010):  
<http://www.oregonflora.org/rarepdfs/lathol.pdf>

White-topped aster (*Sericocarpus rigidus*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/astcur.pdf>

Willamette daisy (*Erigeron decumbens* var. *decumbens*)

Oregon State University, 2002 Oregon Flora Project Rare Plant Guide (Accessed March 2010): <http://www.oregonflora.org/rarepdfs/eridecdec.pdf>



Peacock larkspur

## ***Reptiles***

Pacific pond turtle (*Actinemys marmorata*)

Oregon Conservation Strategy (Accessed March 2010):  
<http://www.dfw.state.or.us/conservationstrategy/turtles.asp>

Northern painted turtle (*Chrysemys picta*)

Oregon Conservation Strategy (Accessed March 2010):  
<http://www.dfw.state.or.us/conservationstrategy/turtles.asp>

## 8 References

Altman, B. 2000. Conservation strategy for landbirds in lowlands and valleys of western Oregon and Washington. Version 1.0. Report prepared for Oregon-Washington Partners in Flight. American Bird Conservancy, Corvallis, OR.

Alverson, E.R. 2006. Use of prescribed fire in Willamette Valley native prairies. The Nature Conservancy. Portland, OR. [http://www.eugene-or.gov/portal/server.pt/gateway/PTARGS\\_0\\_2\\_214887\\_0\\_0\\_18/Prescribed-Fire-Paper-Alverson-2006.pdf](http://www.eugene-or.gov/portal/server.pt/gateway/PTARGS_0_2_214887_0_0_18/Prescribed-Fire-Paper-Alverson-2006.pdf)

Benton County. 2010. Benton County prairie species Habitat Conservation Plan. Benton County Natural Areas and Parks Department. Corvallis, OR. [www.co.benton.or.us/parks/hcp/documents/index](http://www.co.benton.or.us/parks/hcp/documents/index)

Birdnotes Database. 2009. Bird checklists and reports for Oregon. Available [www.Birdnotes.net](http://www.Birdnotes.net). (Accessed July 10, 2009).

Boyer, L. 2009. Native Willamette Valley prairie and oak habitat restoration site preparation and seeding information. Heritage Seedlings Inc., Salem, OR. <http://www.heritageseedlings.com/PDF/prairieandoakrestorationmethods.pdf>

Campbell, B. 2004. Restoring rare native habitats in the Willamette Valley: A Landowner's guide for restoring oak woodlands, wetlands, prairies, and bottomland hardwood and riparian forests. Defenders of Wildlife. West Linn, OR. [http://www.ser.org/sernw/pdf/DefOWild\\_willamette\\_hab\\_restore\\_manual.pdf](http://www.ser.org/sernw/pdf/DefOWild_willamette_hab_restore_manual.pdf)

Cannings, S. 2001. Population/Occurrence delineation for Short-eared Owl. In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: October, 2009). <http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Asio+flammeus>

Cannings, S. and G. Hammerson, G. 2004. Population/Occurrence delineation for pocket gophers. In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: October, 2009). <http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Thomomys+bulbivorus>

Christy, J.A., E.R. Alverson, M.P. Dougherty, S.C. Kolar, C.W. Alton, S.M. Hawes, L. Ashkenas & P. Minear. 2008. Historical vegetation of the Willamette Valley, Oregon,



1851-1910. ArcMap shapefile, Version 2008\_02. Oregon Natural Heritage Information Center, Oregon State University, OR.

Converse, S. 2009. Parameterizing patch dynamics models in support of optimal reserve design in south Puget Sound. Summary Report from an Expert Workshop, December 9-11, 2008. USFWS Western WA Fish and Wildlife Office, Lacey, WA.

Fitzpatrick, G. 2004. Techniques for restoring native plant communities in upland and wetland prairies in the Midwest and west coast regions of North America. Report prepared for City of Eugene, Parks and Open Spaces Division. Eugene, OR.

[http://www.eugene-or.gov/portal/server.pt/gateway/PTARGS\\_0\\_2\\_232243\\_0\\_0\\_18/EPA-WhitePaperFinal.pdf](http://www.eugene-or.gov/portal/server.pt/gateway/PTARGS_0_2_232243_0_0_18/EPA-WhitePaperFinal.pdf)

Grubb, Jr., T. C. and V. V. Pravosudov. 2008. White-breasted Nuthatch (*Sitta carolinensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online (Accessed 10/20/09): <http://bna.birds.cornell.edu/bna/species/054>

Hammerson, G. 2001a. Population/Occurrence delineation for Pacific Pond Turtle. In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: June 27, 2009).

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Actinemys+marmorata>

Hammerson, G. 2001b. Population/Occurrence delineation for Northern Painted Turtle. In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: June 27, 2009).

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Chrysemys+picta>

Hammerson, G. 2005. Population/Occurrence delineation for Ranid Frogs. NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: October 20, 2009).

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rana+aurora>

Hammerson, G., and S. Cannings. 2005. Population/Occurrence delineation for tree squirrels. In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: June 27, 2009).

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Sciurus+griseus>

Johnson, D.H., L.D. Igl, J.A. Dechant, M.L. Sondreal, C.M. Goldade, M.P. Nenneman, and B.R. Euliss. 1998. Effects of management practices on grassland birds: Grasshopper Sparrow. Northern Prairie Wildlife Research Center, Jamestown, ND.

Revisions by G. Hammerson, J. Michaud. Management Summary of Grasshopper Sparrow. In NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: October 20, 2009).  
<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ammodramus+savannarum>

Oregon Parks and Recreation Department. 2009. Luckiamute State Natural Area Master Plan. Oregon Parks and Recreation Department, Salem, OR.  
[http://www.oregon.gov/OPRD/PLANS/docs/Luckiamute\\_Final\\_Master\\_Plan\\_Web.pdf](http://www.oregon.gov/OPRD/PLANS/docs/Luckiamute_Final_Master_Plan_Web.pdf)

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: June 1, 2009).

Oregon Department of Fish and Wildlife. 2006. Oregon Conservation Strategy. Oregon Department of Fish and Wildlife, Salem, OR.  
<http://www.dfw.state.or.us/conservationstrategy/>

Oregon Watershed Enhancement Board (OWEB). 2009. Land Acquisition Grants. Available <http://www.oregon.gov/OWEB> (Accessed: June 1, 2009)  
[http://www.oregon.gov/OWEB/GRANTS/acquisition\\_grants.shtml](http://www.oregon.gov/OWEB/GRANTS/acquisition_grants.shtml)

O'Neil, T.A., C. Langhoff, A. Hackethorn, R. George, C. Russo, C. Killsgaard, and C. Barrett. 2009. Willamette Valley Oak Map – NAIP based. Partners: Willamette Valley Oak Conservation Project, National Fish and Wildlife Foundation, BLM, USDA Forest Service and the Northwest Habitat Institute.

Rosenberg, D. K., et al. 2009. Conservation assessment for western pond turtles in Oregon. Unpubl. Report, Oregon Wildlife Institute, Corvallis, OR. (Accessed March 8, 2010). <http://www.fs.fed.us/r6/sfpnw/issssp/documents/planning-docs/ca-hr-actinemys-marmorata-2009-11.pdf>

Ryan, L, and A. Carey. 1995. Biology and management of the Western gray squirrel and Oregon white oak woodlands: With emphasis on the Puget Trough. Gen. Tech. Rep. PNW-GTR-348. Portland, OR: U.S. Department of Agriculture. Forest Service, Pacific Northwest Research Station. (Accessed: June 27, 2009)  
[http://www.fs.fed.us/pnw/pubs/pnw\\_gtr348.pdf](http://www.fs.fed.us/pnw/pubs/pnw_gtr348.pdf)

Schweitzer, D.F. 2001a. Population/Occurrence delineation for Hesperiiinae. In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: June 27, 2009)  
<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Polites+sonora>

Schweitzer, D.F. 2001b. Population/Occurrence delineation for *Lycaena* (Coppers). In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: June 27, 2009)

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Lycaena+arota>

Schweitzer, D.F. 2001c. Population/Occurrence delineation for small or localized Nymphalids. In NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available <http://www.natureserve.org/explorer>. (Accessed: June 27, 2009)

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Phyciodes+pulchella>

The Nature Conservancy. 2009. Synthesis of Willamette Valley Habitat Plans. Unpublished report for The Willamette Partnership. Portland, OR.

Thorpe, A. 2007. Restoring upland habitat for the Western pond turtle at East Regional Park, Cottage Grove, OR. Unpublished report for USDA Forest Service and Institute for Applied Ecology.

U.S. Fish and Wildlife Service. 2008. Willamette Valley native prairie habitat programmatic Safe Harbor Agreement for the Fender's blue butterfly. U.S. Fish and Wildlife Service, Portland, OR.

[http://www.fws.gov/oregonfwo/ToolsForLandowners/HabitatConservationPlans/Documents/WV\\_SHA\\_signed.pdf](http://www.fws.gov/oregonfwo/ToolsForLandowners/HabitatConservationPlans/Documents/WV_SHA_signed.pdf)

U.S. Fish and Wildlife Service. 2008b. Permits for native species under the Endangered Species Act. U.S. Fish and Wildlife Service, Arlington, VA.

<http://www.fws.gov/Endangered/factsheets/permits.pdf>

U.S. Fish and Wildlife Service. 2009. Federally listed, proposed, candidate species and species of concern under the jurisdiction of the fish and wildlife service which may occur within Benton County, OR. April 25, 2009. (Accessed: April 29, 2009)

<http://www.fws.gov/oregonfwo/Species/Lists/Documents/County/BENTON%20COUNTY.pdf>

U.S. Fish and Wildlife Service. 2010. Recovery plan for the prairie species of western Oregon and southwestern Washington. U.S. Fish and Wildlife Service, Portland, OR.

<http://www.fws.gov/endangered/recovery/index.html>

Vesely, D. and D. Rosenberg. 2010. Wildlife Conservation in the Willamette Valley's Remnant Prairies and Oak Habitats: A Research Synthesis. Oregon Wildlife Institute, Corvallis, OR. [http://www.oregonwildlife.org/Publish/synthesis\\_intro.htm](http://www.oregonwildlife.org/Publish/synthesis_intro.htm)

Vesely, D. and G. Tucker. 2004. A landowner's guide for restoring and managing Oregon white oak habitats. U.S. Dept. of Interior, Bureau of Land Management. Salem District, Salem, OR. <http://www.oregonoaks.org/documents/landguide.pdf>

# **Appendix F. USFWS March 1, 2010 Letter to Benton County**



# COPY

## United States Department of the Interior



### FISH AND WILDLIFE SERVICE

Oregon Fish and Wildlife Office  
2600 SE 98<sup>th</sup> Avenue, Suite 100  
Portland, Oregon 97266

Phone: (503)231-6179 FAX: (503)231-6195

Reply To: 8539.4001 (08)  
File Name: Benton\_goodneighbor\_response.doc  
TS Number TS: 10-648

RECEIVED

MAR 02 2010

BENTON COUNTY AVERY FACILITY

MAR 01 2010

Benton County Board of Commissioners  
408 SW Monroe Ave, Suite 111  
P.O Box 3020  
Corvallis, OR 97339

Re: Benton County Habitat Conservation Plan (HCP).

Dear Benton County Commissioners,

Thank you for meeting with me and my staff to discuss the Benton County HCP. As we discussed, this planning effort has increased public awareness about Endangered Species Act (ESA) regulation and consequently, concern from private landowners about current and future land use. I appreciate your interest and patience in addressing these concerns.

I understand that landowners are concerned about the voluntary conservation efforts promoted in the Prairie Conservation Strategy (Appendix E, Draft HCP). Since these efforts are intended to increase the distribution and abundance of listed species in Benton County (including County-owned lands), landowners are concerned about further liability under the ESA. I also understand that landowners are concerned about a few on-going activities (enclosure) that may impact Fender's blue butterfly but are not identified as "Covered Activities" in the draft HCP.

I appreciate the proactive approach to conservation already implemented by Benton County and identified in the draft HCP. Specifically, Benton County's progress towards permanently protecting and maintaining a core Fender's blue butterfly (*Icaricia icarioides fenderi*) population (acquisition grants already awarded), in combination with the commitment to enhance this population, as identified in the draft HCP. In and of itself, these commitments will significantly reduce the imminence of threats to the species and contribute towards its recovery. Additionally, we anticipate a significant recovery contribution from the voluntary conservation efforts identified in the Prairie Conservation Strategy (Appendix E, Draft HCP). Given the number of Benton County landowners already participating in these voluntary programs, my staff and I believe that by alleviating the above mentioned concerns, we will ensure the success of the Prairie Conservation Strategy (Appendix E, Draft HCP) and achieve Fender's blue butterfly recovery goals in Benton County.

It is the U.S. Fish and Wildlife Service's (Service) responsibility to investigate and take appropriate enforcement action with respect to potential harm or harassment of Fender's blue butterfly under the ESA. However, this letter is to inform you that, while finalizing the HCP and

Printed on 100 percent chlorine free/60 percent post-consumer content paper.

TAKE PRIDE<sup>®</sup>  
IN AMERICA 

during its successful implementation, I will not recommend that the Service initiate prosecution for 1) those on-going activities specifically identified (enclosure) or 2) any activities outside of the "Blue Zone" as identified in the draft HCP, that may impact introduced populations of Fender's blue butterfly. Although these activities pose a small risk of incidental take, we believe the risk of harm is low and that any potential harm will be discountable from the standpoint of species recovery. However, if a naturally occurring Fender's blue butterfly population is found outside of the "Blue Zone", this prosecutorial discretion may not be utilized because the impacts to the species would no longer be considered small or discountable.

I appreciate your willingness to undertake a County-wide planning effort, and your commitment to ensuring the final HCP provides a meaningful contribution to prairie recovery. I look forward to working with you on finalizing the HCP and achieving prairie recovery goals in Benton County. If you wish to contact us to discuss this letter, please contact Mikki Collins or Rich Szlemp of my staff at (503) 231-6179.

Sincerely,



Paul Henson, PhD  
State Supervisor

Enclosure - List of On-going Activities

cc: Cindi Bockstadter, Fish and Wildlife Service Law Enforcement, Wilsonville, Oregon  
Jeff Powers, Director Benton County Parks and Open Space  
Tom Kaye, Institute for Applied Ecology

## **Enclosure- List of On-going Activities**

This list of habitat and property management activities are outside Benton County's regulatory oversight, and have the potential for short term or negligible impacts but long term benefit to Fender's blue butterfly habitat. Such activities include:

- mowing a field, pasture, or vineyard row middle or margin that has been regularly mowed prior to HCP enactment;
- haying a field after July 15th;
- grazing the same type of livestock at a similar timing and intensity as has occurred in the same area in the past;
- spot-spraying or manual removal of noxious weeds;
- planting native prairie species; and
- installing, maintaining or replacing a fence that existed prior to HCP enactment.

Many of these activities may aid in maintaining prairie habitats and thereby benefit the Covered Species. If a landowner wishes, they may receive assistance and guidance in completing these activities by enrolling in an existing program that assists private landowners interested in conservation on their lands. These programs, including the USFWS Partners for Fish and Wildlife program and the Safe Harbor Agreement with Assurances, are described in the Prairie Conservation Strategy in the draft HCP (Appendix E) Chapter 6: Voluntary Conservation Tools. While enrollment in such programs is strictly voluntary, the monitoring and assessment that occurs through these programs would contribute information about prairie management, benefit prairie conservation, and demonstrate the success of voluntary actions.

# Appendix G. HCP Advisory Committees and Planning Team

## 1.1 Technical Advisory Committee

### 1.1.0 Members

First Name	Last Name	Organization	Sub-Committee
Bob	Altman	American Bird Conservancy	Streaked Horned Lark
Ed	Alverson	The Nature Conservancy	Plants
Richard	Brainerd	Salix Associates	Plants
Deborah	Clark	Oregon State University, Biology Program	Plants
Rebecca	Currin	Oregon Department of Agriculture	Plants
Andrew	Gray	Oregon State University, Department of Forest Science	Plants
Paul	Hammond	Private Consultant	Butterfly
Ann	Kreager	Oregon Department of Fish and Wildlife	Streaked Horned Lark, Plants, Butterfly
Randy	Moore	Oregon State University, Department of Fisheries and Wildlife	Streaked Horned Lark
Doug	Robinson	Oregon State University, Department of Fisheries and Wildlife	Streaked Horned Lark
Dana	Ross	Private Consultant	Butterfly
Cheryl	Schultz	Washington State University, Vancouver Washington Campus	Butterfly
Nick	Testa	Oregon Department of Transportation	Plants, Streaked Horned Lark
Mark	Wilson	Oregon State University, Botany & Plant Pathology Department	Butterfly
Scott	Hoffman Black	Xerces Society	Butterfly

### 1.1.1 Technical Advisory Subcommittee Meetings

Entire Technical Advisory Committee	Meeting Dates
Full Committee	November 16, 2006
Full Committee	April 23, 2009
Technical Advisory Sub-Committees	
Streaked Horned Lark Technical Advisory Subcommittee	January 17, 2007 March 1, 2007 August 13, 2007



Plant Subcommittee Technical Advisory Subcommittee	January 24, 2007
	August 21, 2007
	April 24, 2008
	October 17, 2008

Butterfly Subcommittee Technical Advisory Subcommittee	January 26, 2007
	August 22, 2007
	April 25, 2008
	September 4, 2008

## 1.2 Stakeholder Advisory Committee

### 1.2.0 Members, Past and Present

Name	Organization
Ed Alverson	The Nature Conservancy
Noel Bacheller	Oregon Parks and Recreation Department
Matt Blakeley-Smith	Native Plant Society of Oregon
Michael Cairns	Luckiamute Watershed Council
Julee Conway	City of Corvallis Parks and Recreation Department (former Director)
Sandra Coveny	Marys River Watershed Council
Dai Crisp	Private Landowner, Lumos Wine Company
Rebecca Currin	Oregon Dept. Agriculture Plant Division
Peter Dalke	Oregon Solutions
Stephen DeGhetto	City of Corvallis Parks and Recreation
Nicole Duplaix	Luckiamute Watershed Council
Ken Faulk	Oregon Small Woodlands Association
Greg Fitzpatrick	The Nature Conservancy
Karen Fleck Harding	Private Landowner, Wren Citizens Advisory Committee, Marys River Watershed Council
Rick Fletcher	Oregon State University Extension
John Gaylord	Audubon Society of Corvallis
Amy Gillette	Oregon Parks and Recreation Department
Scott Hoffman Black	Xerces Society
Ann Kreager	Oregon Department of Fish and Wildlife
Randy Kugler	City of Philomath
Dave Lysne	OSU College of Forestry
Steven Marx	Oregon Department of Fish and Wildlife
Karlene McCabe	Greenbelt Land Trust
Randy Moore	OSU Dept. of Fisheries and Wildlife, Audubon Society
Susan Morre	Benton Co. Environmental Issues Advisory Committee
Jean Nath	Benton County Natural Areas and Parks Advisory Board
Sara O'Brien	Defenders of Wildlife
William Percy	Private Landowner
David Phillips	City of Corvallis Parks and Recreation

Irene Pilgrim	OSU Dept. of Animal Science
Michael Pope	Oregon Department of Fish and Wildlife
Janine Salwasser	Marys River Watershed Council, OSU Natural Resources Digital Library
Donna Schmitz	Benton Soil and Water Conservation District
Amy Schoener	Private Landowner

---

## 1.2.1 Stakeholder Advisory Committee Meetings Held

---

### Stakeholder Advisory Committee Meeting Dates

---

November 20, 2006  
 March 15, 2007  
 October 9, 2007  
 March 4, 2008  
 April 17, 2008  
 May 15, 2008  
 January 22, 2009  
 April 2, 2009  
 May 7, 2009  
 July 1, 2009  
 August 20, 2009  
 November 3, 2009

---

## 1.3 HCP Planning Team

### 1.3.0 Current Members

<b>Name</b>	<b>Organization</b>
Greg Verret	Benton County Community Development
Jeff Powers	Benton County Natural Areas and Parks
George McAdams	Benton County Natural Areas and Parks
Tom Kaye	Institute for Applied Ecology
Carolyn Menke	Institute for Applied Ecology
Rachel Schwindt	Institute for Applied Ecology
Rebecca Currin	Oregon Department of Agriculture
Ann Kreager	Oregon Department of Fish and Wildlife
Mikki Collins	US Fish and Wildlife Service
Rich Szlemp	US Fish and Wildlife Service

---

# Appendix H. Public Presentations about the HCP

## 1.1 Introduction

For a successful plan, Benton County has sought to inform the public about the HCP through workshops and presentations:

## 1.2 Workshops

**Prairie Plant Workshop, Cardwell Hill, June 12, 2006:** A Prairie Plant Identification workshop was held cooperatively by Mary's River Watershed Council and Institute for Applied Ecology (IAE) on June 12, 2006. Carolyn Menke from IAE led this workshop. Approximately 20 landowners from the Cardwell Hills area attended. Al Kitzman, Parks Superintendent from Benton County Natural Areas and Parks, represented the County. Many of the landowners attending already had their property surveyed by IAE staff. The workshop took place on a private landowner's property in Cardwell Hill. This landowner has a high quality population of Kincaid's lupine and Fender's Blue Butterfly. Attendees were provided with a list of species found by IAE in the Cardwell Hill area. The workshop began with Carolyn providing an overview of the HCP process. The group then walked the property and Carolyn identified native and exotic plants for the group, and discussed the importance of native plant species in prairie plant communities. Several very problematic weedy exotic plant species common in the area were identified and the group discussed what conditions may have facilitated the spread of these species into certain areas of the property. The group concluded the workshop with a discussion of rare species and prairie management options.

**Prairie Restoration Workshop, Cardwell Hill, September 23, 2006:** This workshop was held collaboratively by Mary's River Watershed Council (MRWC) and Institute for Applied Ecology (IAE) on Saturday, September 23, 2006 at the MRWC's outreach coordinator's property in Cardwell Hill. Workshop presenters included Steve Smith (USFWS), private lands biologist from the USFWS Finley National Wildlife Refuge, Lynda Boyer, Botanist and Restoration Ecologist from Heritage Seedlings in Salem, and Carolyn Menke from IAE. The workshop was attended by approximately 25 people from Cardwell Hill, Corvallis, King's Valley and other local areas in the Willamette Valley. Al Kitzman, Parks Superintendent from Benton County Natural Areas and Parks, represented the County. Topics discussed included prairie restoration and management, exotic species control, and rare species management options. Specific attention was directed to control options for false-brome, an extremely problematic

invasive exotic grass in the area. Rich Owen from RJ Consulting, Inc., gave a demonstration of exotic shrub (hawthorn and Armenian blackberry) removal with skid-steer machinery. Participants received packets of information about prairie restoration, weed management, native seed sources, and local contractors engaging in restoration work in their area.

**Public Worksession for the Benton County Prairie Conservation Strategy, May 28, 2009:** HCP staff presented information about the developing prairie conservation strategy, including an overview of aerial photos from the strategy area. Attendees broke into small solution groups to brainstorm on two topics: (1) How to enable citizens to do conservation on private lands, and (2) how to improve conservation on private lands. Each solution group then presented their discussion outline to the entire group.

### **1.3 Presentations to Interest Groups/ Workshops/ Conferences**

April 13, 2006: HCP Planning Team Members gave a presentation at the Oregon Solutions Regional Conservation Strategy Project meeting about the HCP process and goals.

June 6, 2006: HCP Planning Team members gave a presentation to the Luckiamute Watershed Council about the HCP process, goals and rationale, species to be covered, and estimated time frame for completion of the HCP.

December 13, 2006: HCP Planning Team members gave a presentation to the Benton County Natural Areas and Parks Advisory Board about the HCP process, goals and rationale, species to be covered, and estimated time frame for completion of the HCP.

December 19, 2006: HCP Planning Team members gave a presentation to the Greenbelt Land Trust Board of Directors regarding the HCP process, goals and rationale, species to be covered, and estimated time frame for completing the HCP.

January 30, 2007: HCP Planning Team members gave a presentation to the Long Tom Watershed Council regarding the HCP process, goals and rationale, species to be covered, and upcoming field work for the HCP and associated projects.

March 7, 2007: HCP Planning Team members gave a presentation to the Mary's River Watershed Council regarding the HCP process, goals and rationale, species to be covered, and upcoming field work for the HCP and associated projects.

April 4, 2007: HCP Planning Team members attended the Mary's River Watershed Council Meeting. This meeting focused on conservation projects taking place in the Muddy Creek portion of the Mary's River Watershed. Projects highlighted included the Benton County HCP and projects by Mary's River Watershed Council, Greenberry

Irrigation District, Cascade Pacific RC&D, Benton Soil and Water Conservation District. Carolyn Menke (IAE) gave a brief summary of the HCP project, describing the covered species, the progress to date, and plans for the upcoming field season.

August 15, 2007: HCP Planning Team member, Carolyn Menke, was an invited guest lecturer at the University of Oregon for a seminar on Conservation Planning. The purpose of the class was to explore real-world planning initiatives for conserving native plants and wildlife habitats in Oregon. Carolyn discussed the components of the HCP process, targets and goals, and challenges of conservation tools. A follow-up field trip was held on August 19, 2007 at Jackson Frazier Wetland and Lupine Meadows, where Carolyn Menke discussed habitat management, Benton County conservation goals, prairie ecology, and conservation strategies.

September 29, 2007: HCP Planning Team member, Carolyn Menke, participated in a Streaked Horned Lark Workshop sponsored by The Nature Conservancy. Carolyn discussed the goals of the Benton County HCP, the status of the project, and how the Streaked Horned Lark fits into conservation in Benton County.

January 7-8, 2008: HCP Planning Team member, Lori Wisheart, participated in a Taylor's checkerspot Workshop sponsored by The Nature Conservancy. Lori discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit Taylor's checkerspot in Benton County.

April 18, 2008: HCP Planning Team member, Lori Wisheart, participated in a Oregon Oak Working Group meeting in Eugene. Lori discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie species in Benton County.

April 23, 2008: HCP Planning Team member, Lori Wisheart, was invited to participate in the US Forest Service Restoration for a Reason Workshop. Lori discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie habitats in Benton County.

May 6, 2008: HCP Planning Team member, Carolyn Menke, was invited to discuss the HCP at the Wren Citizens Advisory Committee Meeting in Wren. Carolyn discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie habitats in Benton County.

May 8, 2008: HCP Planning Team member, Carolyn Menke, was invited to discuss the HCP at the Luckiamute Watershed Council Meeting in Monmouth. Carolyn discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie habitats in Benton County.

May 13, 2008: HCP Planning Team members, Carolyn Menke and Tom Kaye, were invited to discuss the HCP at the Marys River Watershed Council Meeting in Philomath. They discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie habitats in Benton County.

May 15, 2008: HCP Planning Team member, Carolyn Menke, was invited to discuss the HCP at the Benton County Environmental Issues Advisory Committee in Corvallis. Carolyn discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie habitats in Benton County.

June 11, 2008: HCP Planning Team member, Carolyn Menke, was invited to give an update to the Benton County Parks Advisory Board in Corvallis. Carolyn discussed the goals of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie habitats in Benton County.

September 22-23, 2008: HCP Planning Team members, Jeff Powers, Jerry Davis and Tom Kaye, attended the Oregon Parks and Recreation Association Conference in Bent, OR. They discussed the goals and rationale of the Benton County HCP, the status of the project, and how the HCP hopes to benefit prairie habitats in Benton County.

December 11, 2008: HCP Planning Team member, Carolyn Menke, was invited to give an update to the Benton County Parks Advisory Board in Corvallis. Carolyn discussed the goals of the Benton County HCP, the status of the project, including upcoming public review of the draft, and how the HCP hopes to benefit prairie habitats in Benton County.

February 9, 2009. HCP Planning Team member, Tom Kaye, was invited to give a presentation to the Oregon Native Plant Society of Corvallis describing how the HCP would affect plant conservation in Benton County.

February 17, 2009. HCP Planning Team member, Carolyn Menke, was invited to give a presentation to the City of Corvallis Watershed Advisory Board describing the HCP and how it would interface with the Corvallis Watershed.

March 10, 2009. HCP Planning Team members participated in the Marys River Watershed Council-facilitated "Community Conversation" about the Benton County HCP. Planning team members answered questions from the public and described the HCP process.

April 20, 2009. HCP Planning Team Members Tom Kaye, Jeff Powers, and Greg Verret invited local realty professionals working in Benton County to an informational meeting about the Habitat Conservation Plan, which detailed how the proposed HCP would affect private lands within the Fender's Blue Zone.

January 27, 2010. HCP Planning Team member, Tom Kaye, gave an invited guest lecture about the Benton County Prairie Species HCP and HCP development process to an OSU Environmental Science class.

February 23, 2010, HCP Planning Team member, Tom Kaye, gave an invited guest lecture about the Benton County Prairie Species HCP and HCP development process to an OSU Geography of Resource Use class.

## **1.4 Public Meetings**

Benton County sought public participation through several public meetings.

January 22, 2007: Benton County held an evening public meeting in Corvallis to explain the HCP process and goals, describe the species to be covered and give an estimated time frame for completing the HCP. HCP Planning Team members answered extensive questions from the public.

October 15, 2007: Benton County held an evening public meeting in Corvallis. The focus of the meeting was an update of activities undertaken by the County, including results of the 2007 field season, hotspot mapping, potential conservation measures, and development of a Prairie Conservation Strategy.

January 27, 28, & 31, 2009: Benton County held three evening public meetings in Corvallis, Wren and Kings Valley, respectively. The County introduced the draft HCP, explained the public process around the draft, answered questions, and took public comment.

September 16, 2009: Benton County held an evening public meeting in Corvallis. The County introduced the revised draft HCP, described the Prairie Conservation Strategy, explained the timeline and public process around the draft, answered questions, and took public comment.

October 12, 2010. In coordination with the USFWS public comment period on the draft HCP, Benton County held a public meeting in Corvallis to present the draft HCP and answer questions.

# Appendix I. Avian, Botanical and Butterfly Survey Methodology

## 1.1 Streaked Horned Lark Surveys

Roadside Streaked Horned Lark surveys were conducted between 4 am and 6am by walking stretches of roadside-right-of-way and listening for lark vocalizations. If vocalizations were heard, as soon as light conditions permitted, surveyors visually located the lark, and observed or searched to determine whether nesting was occurring.

## 1.2 Botanical Surveys

### 1.2.0 Overall Site Description

Each site was assessed in terms of land use (grazed pasture, ungrazed pasture, relatively undisturbed meadow, tree plantation, etc.), structural layout (completely open, scattered openings, woodland), and site history (when possible: grazed in past, changes in ownership, etc.). Vascular plant species present in target habitats (prairie/savanna/oak woodland) were recorded. Descriptions of the site including the abundance of nectar species, presence of non-native invasive species, and the status of oaks relative to surrounding conifers (overtopped by conifers, losing branches, etc.) were also recorded. Data were recorded on field survey forms.

### 1.2.1 Covered Species Population or Habitat Description

At sites where covered species were observed, patch perimeters were mapped using a GPS (Global Positioning System) unit and population sizes were estimated. In each patch or population cluster, we estimated plant abundance by counting individuals, or for Kincaid's lupine, by estimating cover occupied by lupine leaves in m<sup>2</sup> (foliar cover). Lupine foliar cover correlates with lupine abundance, and has been adopted as the standard metric for lupine abundance in the USFWS Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington (USFWS 2010). Kincaid's lupine can have substantial underground clonal growth, making identification of individual plants frequently impossible. Newly discovered Kincaid's lupine populations were assessed for evidence of Fender's blue butterfly presence (i.e. evidence of larvae feeding on young leaves near the plant meristem or eggs on the underside of leaves).



## 1.2.2 Vegetation Plot Sampling

Vegetation plots (5m x 5m) were sampled in two situations: (1) sites with high quality (high native cover and diversity) target habitats and (2) sites with covered species populations. In both cases we placed multiple plots at a site if there were multiple, distinct, high quality community types, and or multiple covered species population clusters or associated plant community types. In each plot percent cover of vascular plants, bare ground, moss, and rock was recorded. Slope (degrees), aspect (degrees), and elevation (from GIS) were also measured at each plot. Plots were also positioned with a GPS and incorporated into a GIS (Geographic Information System).

## 1.3 Butterfly Surveys

### 1.3.0 Fender's blue butterfly

#### 1.3.0.0 Ross Survey Methodology:

Population estimates for Fender's blue butterfly at Fitton Green Natural Area, Beazell Memorial Forest, and on private properties in the Cardwell Hill/Wren area were conducted by counting actual numbers of females and males observed while walking a slow zig-zag meander walk through all Fender's blue butterfly habitat.

Counts were conducted between 10am and 4pm when weather conditions (sunny, warm) stimulated adult activity. Target intervals for population estimates were 5-7 days once adults were present, with subjective adjustments made by the observer as deemed reasonable due to local conditions. Each site is visited a minimum of three times to capture early, peak and late-flying individuals. In a typical year, an adult's lifespan is assumed to be less than 10 days.

#### 1.3.0.1 Hammond Survey Methodology (From Hammond 2007)

Population estimates were made for individual habitat sites by taking the highest count of male butterflies at the peak of the flight season, and doubling that number to account for females (assuming an equal sex ratio). An additional 20% of the combined male-female number was added to this sum to account for butterflies in the tail ends of the flight season that would not have been present on the peak day count. The result is likely a conservative estimate for most populations, particularly for large populations dispersed over large geographic areas where many butterflies are probably missed during the surveys.

### 1.3.1 Taylor's checkerspot butterfly

#### 1.3.1.0 Population Estimates

Population estimates for Taylor's checkerspot butterfly in the area near Fitton Green Natural Area and Beazell Memorial Forest are made from modified Pollard counts – a

walking tally of all butterflies within a 5-meter radius of the observer along permanent transects. The same transects are used for consistency in the data for year-to-year comparisons. Counts are conducted between 10am and 4pm when weather conditions (sunny, warm) stimulate adult activity. Target intervals for population estimates are 5-7 days once adults are present, with subjective adjustments made by the observer as deemed reasonable due to local conditions. Each site is visited a minimum of three times to capture early, peak and late-flying individuals. In a typical year, an adult's lifespan is assumed to be less than 14 days.

The Taylor's checkerspot population near Fitton Green serves as an indicator for adult checkerspot activity within Benton County as a whole. Visits there to determine the onset of adult activity begin in early April and continue at weekly intervals until checkerspots are observed and formal fieldwork started.

When possible, each population estimate in the Fitton Green area includes a maximum of 3 counts along each of three transects which are then averaged for that site and date. This number is then multiplied by a variable (number) to account for the entire population at that location. Counts at Bezell require visits to five separate areas and needs more time to complete, so only single transect count is made there. This methodology provided a conservative estimate of adults for each site.

#### **1.3.1.1 General Surveys**

General surveys for Taylor's checkerspot are conducted throughout the flight period. The surveys include sites visited in past years as well as new sites with potential habitat. Most new sites are on private lands where landowners provide access.

General surveys are conducted, as fair weather permits, around higher priority visits to Fitton Green Natural Area and Bezell Memorial Forest. For each survey, all visible and likely checkerspot habitats are inspected on foot. A visual check for adult checkerspots is always the primary objective. Additional attention is given to the presence and relative abundance of the larval host plant English plantain (*Plantago lanceolata*), and to strawberry (*Fragaria*), cat's-ear lily (*Calochortus*), and sea blush (*Plectritis*) in particular as potential nectar sources for adults.

# Appendix J. Prairie Habitat Vegetation Management Guidelines

## 1.1 Introduction

Habitat loss and fragmentation is the biggest threat to the Covered Species through land conversion, invasive species spread, and successional processes (tree and shrub encroachment). Two key components of any restoration, enhancement, or maintenance effort is removal of woody vegetation and invasive species. These guidelines largely follow those in the U.S. Fish and Wildlife Service Biological Opinion for prairie restoration in western Oregon (USFWS 2008a).

A number of restoration, enhancement, and maintenance techniques are available (see below) and whether a particular technique will be implemented will depend, in part, on the needs of the particular site and on the presence or absence of the Covered Species, in particular Fender's blue butterfly and Taylor's checkerspot butterfly. These techniques include, but are not limited to, manual or machine cutting, mowing, prescribed burning, herbicide application, solarization, and use of shade cloth. Once a site has been manipulated to remove unwanted vegetation, the site will need to be replanted with appropriate native prairie species, which may include the covered plant species. For specific habitat restoration and enhancement protocols for Taylor's checkerspot butterfly see the Taylor's Checkerspot Butterfly Management Plan (Appendix N).

## 1.2 Habitat Restoration and Enhancement Techniques

The following habitat restoration and enhancement protocols will be followed by the County and Cooperators when implementing a voluntary or mitigation related habitat restoration, enhancement or management project.. These protocols may be updated as new information becomes available on effective restoration and enhancement techniques for the Covered Species.

### 1.2.0 Cutting

Cutting is used to remove woody species such as hawthorn (*Crataegus* spp.), blackberry (*Rubus* spp.), rose (*Rosa* spp.), Scot's broom (*Cytisus scoparius*), Douglas-fir (*Pseudotsuga menziesii*), Oregon ash (*Fraxinus latifolia*) and other species from native prairie communities, and to control and remove resprouting stems.

Machine cutting includes trimming, girdling trees, and chain saw removal of woody species. Manual cutting involves the use of loppers, shovels, hoes, weed wrenches/pullers, and trowels to remove woody vegetation through cutting, hoeing, grubbing, pulling, chipping, or digging techniques.

- Directional falling shall be used to avoid impacts to listed and/or covered plant species as much as possible.
- All cut material will be removed from the site.
- To reduce potential impacts to Covered Species, cutting will occur only while the listed and/or covered plant species on site are dormant (late August through February).
- Cutting of woody species may also be combined with application of herbicide to the cut stems to reduce resprouting.
- If no listed and/or Covered Species are present, manual cutting may occur at any time of year.
- The necessity of treatment requirements will be determined by a qualified specialist (see Appendix K: Project Site Survey and Reporting Protocols for Plants and Butterfly Habitat) who will direct the on-site implementation of this technique to reduce potential impacts to any Covered Species.

#### **1.2.0.0 Girdling Trees**

Girdling trees involves the removal of a ring of bark near the base of the tree with either an ax or chainsaw. Girdling eventually kills the tree. This practice is used to control and remove invasive woody plants.

- Girdling may occur at any time of year.
- Workers shall enter the site on foot and take care to avoid trampling listed and/or covered plant species.
- Girdled trees may remain on site or be removed during the dry season, depending on management objectives for the site.

#### **1.2.0.1 Cutting, Thinning, and Removing Tree Stumps**

- Handheld power tools may be used to cut down, control, or remove woody vegetation.
- Such activities will occur when listed and/or covered plant species are dormant or during the flowering season so long as workers take precautions to avoid trampling of any listed and/or Covered Species, including working no closer than 2 m (6 ft) from a Covered Species.
- No trees shall be removed from Fender's blue butterfly habitat during the flight season (May 1 – June 15).
- Vehicle-supported stump removal will occur only during dry periods.
- All cut material will be piled or chipped and spread away from any listed and/or covered plant populations or hauled off-site for disposal.

- If activities occur during the wet season, the tree debris may be left on site away from the listed and/or covered plant species until the dry season when workers can access the work area with equipment to remove tree debris.

### **1.2.1 Mowing**

Mowing annually or as needed can reduce invasive and woody vegetation and maintain or enhance existing native species populations. This activity is anticipated to enhance growing conditions for Covered Species. At sites with Covered Species present, the following conditions apply:

#### **1.2.1.0 Covered Plant Species**

- Mowing shall occur August 15-February 28 while listed and/or covered plant species are dormant.
- Tractor mowing should occur when soils are dry enough not to be disturbed by tires/tracks, and the mowing deck must be set a minimum of 15 cm (6 in) above the ground for all covered plants.
- Mowing will be avoided when soil is saturated to avoid compaction and rutting.
- Spring mowing is only allowed where it is necessary to control a weed infestation involving a weed species reproducing mainly by seed (e.g., meadow knapweed), in which case up to ½ of the listed and/or covered plant population may be mowed in an effort to control invasive species seed set.
- Flail mowers will not be used.

#### **1.2.1.1 Fender's Blue Butterfly**

In areas with Fender's blue butterfly, mowing will occur under the following limitations.

- Mowing will be limited to June 15-February 15 at sites with Fender's blue butterflies.
- After the flight season and before Kincaid's lupine senescence (June 15 – July 15), tractor mowing may occur no closer than 2 m (6 ft) from the nearest Kincaid's lupine plant.
- Mowing with hand-held mowers may be implemented during the flight season (May 1 – June 15) so long as a buffer of  $\geq 8$  m ( $\geq 25$  ft) is maintained between the mower and any Kincaid's lupine plants.
- Mowing may be conducted throughout the site after Kincaid's lupine has senescence and before lupine re-emerge the following spring (generally July 15 – March 1).
- Tractor decks will be set at a minimum of 15 cm (6 in) above ground to reduce impacts to Fender's blue butterfly larvae.
- Flail mowers will not be used.

## 1.2.2 Prescribed Burning

The purpose of this treatment is removal and control of invasive woody plants, thatch removal, preparation for seeding and planting, and invigoration of native plant populations. The area burned in any given year at each site, also called the annual burn unit, will be determined yearly based on individual site conditions and population sizes.

- All burns will comply with state regulations and protocols.
- Woody debris will be removed from the burn unit prior to burning as needed to reduce fire intensity.
- Appropriate barriers will be used to contain burns such as perimeter mowing, wet lines with hose lays, disk lines, foam or other retardants, etc.
- Fire retardant chemicals will be used sparingly near listed and/or covered plant species and will follow labeled restrictions and state regulations or guidelines for use near water.
- Fire management vehicles will be restricted to areas of dry soil.

### 1.2.2.0 Fender's Blue Butterfly (FBB) Habitat

- At sites supporting 100 or more FBB, the burn unit will encompass no more than 1/3 of the occupied FBB habitat.
- At sites supporting less than 100 FBB, the burn unit will encompass no more than ¼ of the occupied FBB habitat.
- The center of the burn unit must be within 100 m (100 yds) of unburned occupied habitat.
- Butterfly larvae habitat (Kincaid's lupine patches) adjacent to the burn unit may be additionally protected with a fire barrier, where appropriate.
- USFWS has set a limit to the total area of occupied Fender's blue habitat throughout the species geographic range that may be burned in any single year (USFWS 2008a). This limit is 400 ha (1,000 ac). Prior to prescribed burns, USFWS will be consulted to determine if the area proposed for burning is compatible with regional habitat management activities.
- If post-burn butterfly numbers show a stable or increasing population, burning may continue on a rotational cycle with continued monitoring. If the butterfly population declines, USFWS will be consulted prior to additional burns (See HCP Chapter 7: Monitoring and Adaptive Management).

### 1.2.2.1 Covered Plant Species Habitat

- Prescribed burning will occur as needed to restore habitat for Nelson's checkermallow, Bradshaw's lomatium, Kincaid's lupine, peacock larkspur, and Willamette daisy. Where prior research has demonstrated that fire effects are positive or neutral for these Covered Species (such as Bradshaw's lomatium, Kincaid's lupine, peacock larkspur, and Willamette daisy), 100% of the populations may be burned in any given year. For those species with uncertain

responses to fire (such as Nelson's checkermallow), burning will be limited to 50% of the population until research indicates fire effects are positive or neutral.

- Frequency of burning will depend on habitat conditions, Covered Species population trends, funding, staffing, weather, and fire conditions.
- Prescribed burning will occur in late summer or early fall after the Covered Species have gone dormant.

### **1.2.3 Chemical Treatment**

Chemical treatments are used to control woody vegetation and invasive species. However, chemical treatments will be used sparingly as they may have a lethal effect on non-target native species and butterfly larvae.

- Any herbicide used will be part of an Integrated Pest Management Plan.
- All listed and/or Covered Species will be closely monitored following herbicide application to identify any immediate adverse effects.
- Percentage cover measurements (or abundance measurements) will be taken in the spring to determine if the herbicide treatment has adversely affected any listed and/or covered plant species.
- Herbicides will be applied by a licensed applicator, using appropriate equipment and best management practices.
- Exposure of non-targeted species to herbicides, especially Covered Species, associated with drift, leaching to groundwater, and surface runoff will be avoided or minimized.
- Chemical treatments will follow labeled restrictions, including limitations for use near water.

#### **1.2.3.0 Acceptable Chemicals**

Only the chemicals in Table J.1 below are acceptable herbicides for management of habitats under this Plan. If new, more effective or less toxic herbicides become available, Benton County will coordinate with USFWS and ODA to update this Appendix for their inclusion.

#### **1.2.3.1 Controlling Herbicide Drift**

The following procedures will be used to control herbicide drift:

- The lowest effective nozzle pressure and minimum effective nozzle height recommended by the nozzle manufacturer will be used.
- Droplet size shall be at least 500 microns.
- Spraying will not occur where winds exceed the wind limits specified by the manufacturer and in no event shall winds exceed 11 km (7 mi) per hour.
- Spraying shall occur when temperatures are below 30° C (85° F).
- Drift retardant adjuvants may only be used for boom spray applications and must be non-toxic and applied under the above strict application requirements.
- Dyes may be used for applications to ensure complete and uniform application and to observe the amount of drift.

### **1.2.3.2 Restrictions for use near Fender's blue butterfly**

Research to date indicates that Fender's blue larvae are not damaged by some herbicides such as glyphosate, pendimethalin, imazapic, and fluazifop under field application conditions when herbicides are applied in September-November (Clark et al. 2004). This may be because the larvae are buried in leaf litter and shielded from direct contact with these herbicides.

- For non-tested herbicides, broad scale application will be limited to a portion of the occupied habitat (areas with Kincaid's lupine that may host larvae) during the season when larvae are buried under leaf litter.
- The area allowed for herbicide application will be less in small compared to large butterfly populations. These restrictions are noted in Table J.1.

### **1.2.3.3 Restrictions for use near Nelson's checkermallow**

In some cases Nelson's checkermallow does not go completely dormant in the fall and winter. Therefore, use of herbicides when this species is present requires additional precautions:

- Plants must be shielded from herbicide drift or overspray with buckets, tree protection tubes, or other suitable material or method of application. Application should be by hand (e.g., backpack sprayer wand) when spraying within 2 m (6 ft) of Nelson's checkermallow plants.
- Exceptions include herbicides that do not harm Nelson's checkermallow (such as grass-specific herbicides) and wipe-on applications that target other species and do not result in drift. These exceptions are noted in Table J.1.

### **1.2.3.4 Shade Cloth**

Shade cloth is used to control dense weed infestations. A dark cloth is placed over the infestation and fastened to the ground with stakes. The cloth is generally removed after two years.

- Shade cloths shall be installed during the growing season, but will not be used directly over any Covered Species or within 5 m (15 ft) of Kincaid's lupine plants in order to prevent impacts to Fender's blue butterfly eggs or larvae.
- A qualified specialist will direct the on-site implementation of this technique to reduce potential impacts to any covered plant species.

### **1.2.4 Solarization**

This technique is also used to control dense weed infestations and may be combined with tilling prior to treatment. The weed infestation is covered with plastic sheeting and remains in place for at least three months during the subsequent growing season. Once the plastic is removed, follow-up weeding may be necessary.

- This technique will be used not used over any Covered Species and no closer than 5 m (15 ft) to Kincaid's lupine plants in order to prevent impacts to Fender's blue butterfly eggs or larvae.



- Solarization can be used for site preparation prior to reintroductions or augmentations.
- A qualified specialist will direct the on-site implementation of this technique to reduce potential impacts to any covered plant species.

### **1.2.5 Tilling/Disking**

Tilling and disking is used to remove invasive species.

- Tilling/disking will, to the extent practicable, be implemented along existing ground contours.
- Tilling/disking shall not occur during the wet season to minimize alterations to site hydrology and destruction of the soil structure.
- Absent the need for additional weed control (such as solarization), tilling/disking will be immediately followed by planting native plant species groundcover via seeding or outplanting.
- This technique will be used no closer than 5 m (15 ft) to Covered Species.

### **1.2.6 Raking**

Raking is used to reduce thatch build up.

- Rakes may be tractor mounted or hand held.
- Raking will occur after listed and/or covered plants have gone dormant for the season.
- Efforts will be made to avoid disturbing the underlying soil.
- At sites with 100 or more Fender's blue butterfly, no more than 1/3 of the site may be raked annually.
- At sites with less than 100 Fender's blue butterfly, no more than 1/4 of the site may be raked annually.
- Efforts will be made to identify and avoid Nelson's checkermallow.
- Tractors shall be equipped with rubber tracks to minimize soil compaction when needed.
- Thatch and leaf litter will be removed off site.

### **1.2.7 Sod Rolling**

Sod rolling is used for invasive species removal, especially those with rhizomes.

- This technique will be used no closer than 5 m (15 ft) to covered plants and butterflies.
- This method may be used for site preparation prior to introductions or augmentations.

### **1.2.8 Grazing**

Grazing may be used to control woody vegetation encroachment and invasive species. Grazing shall be permitted to occur if it is managed so as not to impede the ability of

the Covered Species to survive and reproduce. The following guidelines are suggested to avoid negative impacts from grazing. Monitoring and adaptive management that is completed in grazed areas will provide additional management guidelines.

In areas with the Covered Species:

- Grazing will not occur during the wet season when soils are soft.
- Grazing will not occur at intensities that result in trampling or creation of bare soil.
- Grazing at low to moderate levels during the dry season (after July 15) is generally allowed in most upland prairies.
- Grazing in areas with Kincaid's lupine may be possible once soils are sufficiently dry, and before the lupine is dormant, as this species is generally not palatable to most livestock.
- No grazing shall occur in areas with Nelson's checkermallow present, as this species frequently does not go completely dormant.
- No grazing shall occur in areas with Fender's blue butterfly larvae present, as the impacts of trampling on larvae are unknown.
- The type of animals used will depend upon the type of invasive species control needed, availability of the animals, and the time of year control is needed.
- Animals brought in from another site will be cleaned of weed seeds prior to use.

### **1.2.9 Biological Control**

- Currently there are no biological controls for invasive species of concern. If in the future such controls become available, Benton County and/or any holder of a Certificate of Inclusion will work with the USFWS, ODA, and the appropriate state agency, to develop a plan for use of these control methods. Any biological control method used will be part of an Integrated Pest Management Plan.

Table J.1. Approved Herbicides

Herbicide	Brand Names(s)	Surfactant or Adjuvant	Target Species	Application Period	Application Method	Restrictions
Triclophyr	Garlon		Woody species and broadleaves	February 1–August 15: wipe on applications only. August 15–October 31: spray and wipe applications. August 15–April 1: Applications in areas with Nelson's checkermallow, provided restrictions are followed	Woody Species: Hand painted or directly wicked onto fresh cut stumps within 24 hours of cutting. Broadleaf Species: Apply using a hand-held wand or mounted on an all-terrain vehicle.	<b>Fender's blue butterfly:</b> Do not spray over Kincaid's lupine where Fender's blue is present
Glyphosate	Rodeo, Round-up, Aqua-Master, Accord	Vegetable oil based surfactant	Grasses and broadleaves, some woody species including blackberry	February 1–August 15: wipe on applications only. August 15–October 31: spray and wipe applications. August 15–April 1: Nelson's checkermallow, provided precautions are followed	Apply with a hand-held wand or boom mounted on an all-terrain vehicle.	<b>Nelson's checkermallow:</b> No covering of Nelson's checkermallow is required where glyphosate is applied with a weed wipe (target upper grass stems, avoiding Nelson's checkermallow plants.) <b>Fender's blue butterfly:</b> Apply in fall with an all-terrain vehicle boom mounted sprayer or via spot treatment of target plants.
Imazapic	Plateau	Vegetable oil based surfactant	Grasses and broadleaf sp. (pre- and post-emergent)	September 1–November 30: Spray or wipe on.	Apply with a hand-held wand or boom mounted on an all-terrain vehicle.	<b>Fender's blue butterfly:</b> Apply in fall with an all-terrain vehicle boom mounted sprayer or via spot treatment of target plants.

Herbicide	Brand Names(s)	Surfactant or Adjuvant	Target Species	Application Period	Application Method	Restrictions
Pendimethalin	Pendulum		Grasses and broadleaf sp. (pre-emergent)	September 1- November 30: Spray on	Apply with a hand-held wand or boom mounted on an all-terrain vehicle.	Control germination of seeds; will not harm established plants. <b>Fender's blue butterfly:</b> Apply in fall with an all-terrain vehicle boom mounted sprayer or via spot treatment.
2,4-D amine	Weedar 64	Vegetable oil based surfactant	Broadleaf sp.	February 1 – August 15: wipe on applications only. August 15 – October 31: spray and wipe applications. August 15- April 1: Nelson's checkermallow, provided precautions are followed.	Apply with a hand-held wand or boom mounted on an all-terrain vehicle..	<b>Fender's blue butterfly:</b> With areas supporting 100 adult FBB, the area to be treated will be no more than 1/3 of the occupied habitat. For sites supporting fewer than 100 adult FBB, the area to be treated will be no more than ¼ of the occupied habitat.
Clethodim	Envoy	Vegetable oil based surfactant	Non-native grasses	June 1 – October 25: upland prairie. August 1 – October 25: Wet Prairie.	Apply with a hand-held wand or boom mounted on an all-terrain vehicle. Weed wiping during the growing season near covered plants should target taller grasses, avoiding low-stature plants.	<b>Nelson's checkermallow:</b> No covering of Nelson's checkermallow is required. <b>Fender's blue butterfly:</b> With areas supporting 100 adult FBB, the area to be treated will be no more than 1/3 of the occupied habitat. For sites supporting fewer than 100 adult FBB, the area to be treated will be no more than ¼ of the occupied habitat.
Sethoxydim	Poast	Vegetable oil based surfactant	Grasses	Upland Prairie: June 1 – October 25 Wet Prairie: August 1 – October 25 General: February 15 – May 15 (early application)	Apply with a hand-held wand or boom mounted on an all-terrain vehicle.	<b>Nelson's checkermallow:</b> No covering of Nelson's checkermallow is required. <b>Fender's blue butterfly:</b> With areas supporting 100 adult FBB, the area to be treated will be no more than 1/3 of the occupied habitat. For sites supporting fewer than 100 adult FBB, the area to be treated will be no more than ¼ of the occupied habitat.

Herbicide	Brand Names(s)	Surfactant or Adjuvant	Target Species	Application Period	Application Method	Restrictions
Fluazifop-P-butyl	Fusilade	Vegetable oil based surfactant	Grasses	Upland Prairie: June 1 – October 25 Wet Prairie: August 1 – October 25 General: February 15 – May 15	Spot foliar application using a hand-held wand or mounted on an all-terrain vehicle. If weed wiper is used to apply Fluazifop-P-butyl near listed or covered plants during the growing season, the herbicide shall be applied at a height to target the upper grass stems and avoid lower stature listed and/or covered plant species.	<b>Nelson's checkermallow:</b> No covering of Nelson's checkermallow is required. <b>Fender's blue butterfly:</b> Apply in the fall or winter with an all-terrain vehicle boom mounted sprayer or via spot treatment.
Oryzalin	Surflan	Activator 90	Grasses	Upland Prairie: August 1 – October 31	Broadcast spray application using a backpack sprayer with a hand-held wand.	<b>Nelson's checkermallow:</b> Protect plants from herbicide drift or overspray (species does not go dormant), cover using buckets, tree protection tubes, or other suitable material that covers or shields the plants. <b>Fender's blue butterfly:</b> Apply in the fall with an all-terrain vehicle with boom sprayer or via spot treatment. With areas supporting 100 adult FBB, the area to be treated will be no more than 1/3 of the occupied habitat. For sites supporting fewer than 100 adult FBB, the area to be treated will be no more than ¼ of the occupied habitat.

# Appendix K: Project Site Survey and Reporting Protocols for Plant and Butterfly Habitat

## 1.1 Introduction

This appendix provides protocols for completing a survey of a proposed project site for Covered Species.

## 1.2 Survey Windows

Surveys to document the presence or absence of Covered Species must occur during the season when the species are identifiable. In some cases this may need to be several months prior to habitat restoration or maintenance actions.

Nelson's checkermallow and Kincaid's lupine can be confused with similar, more common species, so surveys for them can be of two types. "Presence surveys" are conducted when the species can be positively identified (while the plants are in flower). "Absence surveys" are conducted during seasons when leaves of the species are reliably present so that if leaves are not encountered, neither the Covered Species nor its look-alike are present. Absence surveys can be conducted over a wider window of time than presence surveys. The two types of surveys can be used in series. If an absence survey finds the species may be present, a follow-up presence survey will be required for a positive identification. If the absence survey shows that the species is absent, no further survey is required.

### 1.2.0 Nelson's checkermallow (*Sidalcea nelsoniana*)

- Absence surveys can be conducted prior to and during the blooming period (April through July) to rule out the presence of any checkermallow species by looking for plants in a vegetative state.
- Presence surveys for *Sidalcea nelsoniana* must be conducted during the blooming period, mid June through mid July, to distinguish this species from other *Sidalcea* species, including field and rose checkermallow.

### 1.2.1 Peacock larkspur (*Delphinium pavonaceum*)

- Surveys should be conducted during the blooming period from May 1 through June 15.

### **1.2.2 Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*)**

- Absence surveys may be conducted from March 1 through July 31.
- Presence surveys must occur from May 1 through June 30.

### **1.2.3 Bradshaw's lomatium (*Lomatium bradshawii*)**

- Surveys should be conducted during the blooming period from April 1 through May 31.

### **1.2.4 Willamette daisy (*Erigeron decumbens*)**

- Surveys should be conducted during the blooming period from June 1 through July 15.

### **1.2.5 Fender's blue butterfly (*Icaricia icarioides fenderi*) habitat**

- Surveys for butterfly host plants (Kincaid's lupine) should be completed as described in Section 1.2.2. Surveys for nectar species can generally be completed during the flight period of the butterfly, May 1- June 15.

### **1.2.6 Taylor's checkerspot butterfly (*Euphydryas editha taylori*) habitat**

- Surveys for butterfly host plants (English plantain) can be completed during the growing season. Surveys for nectar species can generally be completed during the flight period of the butterfly, which usually occurs between April 1 and May 31.

## **1.3 Qualifications for Botanical Surveys**

The biologist or natural resource specialist conducting botanical surveys and providing direction and guidance regarding protection of Covered Species during vegetation management activities must possess the following qualifications:

- Experience conducting floristic field surveys and/or butterfly surveys depending on the species being targeted for survey.
- Familiarity identifying Willamette Valley prairie species and high priority weed species.
- Experience identifying each of the five covered plant species.

## **1.4 Field Survey Protocol**

To ensure no rare species are missed during surveys, all species in the project area (area to be impacted by the proposed project) will be identified to species, subspecies, or variety, as applicable. Some sites may require more than one visit during the

growing season to ensure an accurate inventory of Covered Species at the site (i.e., if the site contains habitat for both Bradshaw's lomatium and Nelson's checkermallow the surveyor may need to visit the site in April to look for Bradshaw's lomatium and in June or July to look for Nelson's checkermallow).

All habitats within the project area will be surveyed thoroughly in order to properly inventory and document the plant species present. Population boundaries of any Covered Species populations will be mapped using GPS and sketch maps on aerial photos, to identify the location as accurately as possible. The number of individuals in each population will be counted or estimated, as appropriate (i.e., individual peacock larkspur plants will be counted while lupine abundance would be recorded as area of foliar coverage in m<sup>2</sup>).

#### **1.4.0 Required Reporting and Documentation**

Written survey reports will include the following sections, some of which will be completed by the biologist/natural resource specialist, and some of which may be completed by the permit applicant or Cooperator.

##### **1.4.1 Project location and description**

- A detailed map of the location and footprint of the proposed project.
- A detailed description of the proposed project, including one-time or ongoing activities that may affect botanical resources.
- A description of the general biological setting of the project area.
- Dates of surveys and rationale for timing and intervals; names of personnel conducting the surveys; and total hours spent in the field for each surveyor on each date.

##### **1.4.2 Results**

- A description and map of the vegetation communities on the project site.
- A description of the phenology of each of the plant communities at the time of each survey date.
- A list of all plants observed on the project area using accepted scientific nomenclature, along with any special status designation. The reference(s) used for scientific nomenclature shall be cited.
- Written description and detailed GIS map(s) showing the location of each Covered Species, butterfly nectar-plant species (if within the Fender's Blue Butterfly nectar zone), or locally significant plant found, the size of each population, and method used to estimate or census the population.
- Copies of survey forms (if applicable) and accompanying maps.



### 1.4.3 Discussion

- Any factors affecting the results of the surveys
- An assessment of potential impacts of the proposed project to the Covered Species. This shall include a map showing the distribution of Covered Species and locally significant plants and communities on the site in relation to the proposed activities. Impacts to the Covered Species shall be discussed.
- Recommended measures to avoid and/or minimize impacts.
- References cited and persons contacted.
- Qualifications of surveyor(s) - a Curriculum Vitae or similar.

# Appendix L: Plant Material Collection and Plant Introduction Protocols

## 1.1 Introduction

To mitigate for impacts to Covered Species of plants resulting from one or more Covered Activities (including habitat restoration and enhancement activities), Benton County and Cooperators will, in addition to habitat enhancement, increase covered plant abundance through population introduction, augmentation, and relocation.

- Introduction is the establishment of a new population in suitable habitat.
- Augmentation is addition of more individuals to an existing wild population.
- Relocation involves movement of individuals from an existing wild population to a new site or different existing population.

Augmentation of existing populations by adding individuals will be given highest priority, where possible and appropriate, because it increases the viability of existing populations and targets plantings to areas where the habitat is known to be appropriate. Introductions into areas currently unoccupied by the Covered Species will be used to recreate a lost population at a suitable site. Relocations of existing populations will occur in circumstances where the covered plant species will be permanently impacted, and may be used as a method of population introduction or augmentation.

The following protocols<sup>4</sup> outline how plant introduction, relocation and augmentation (hereinafter "Plant Introductions") activities will occur at Prairie Conservation Areas (PCAs). The entity conducting work (collection, transportation, storage, cultivation, etc.), must comply with existing state and federal regulations, and possess any required permits.

## 1.2 General Protocols

Plant introductions will be accomplished by collecting seeds from covered plant species and then planting them directly or cultivating plugs from the seeds, or both, depending upon the species.

---

<sup>4</sup> Protocols based in part on USFWS Programmatic Formal Consultation on Western Oregon Prairie Restoration Activities, August 14, 2008.

To ensure plant introductions serve to ultimately benefit and not harm the species, such mitigation activities will follow these guidelines. In addition, this work will be performed under the supervision of a qualified specialist. If during the course of the Permit, other treatment options other than those listed in this HCP become available or are identified through the adaptive management process, Benton County will present these options to the USFWS and ODA, and the parties will decide whether the options should be incorporated into these protocols.

## 1.2.0 Target Site Selection

Inappropriate site selection is the most common cause of rare plant introduction failure. To improve the success of plant introductions, target sites shall include habitat appropriate for the Covered Species. Factors to consider include geographic distance from the site of origin, soil type, aspect, elevation, hydrology, and plant community. All target sites shall be in areas within the species' current range and habitat type. The risk of hybridization with closely related species shall be reduced by prioritizing sites with no closely related species (species in the same genus) present. Seeds and other plant materials used in introductions should originate from genetically diverse sources (largest sample sizes possible) and should be from populations as near to the target site as possible, with priority to sites within the same Recovery Zone as defined in the Recovery Plan (USFWS 2010). All sites will be surveyed for presence of listed and/or covered plant and butterfly species using the HCP site survey protocols prior to initiation of plant introduction projects.

### 1.2.1 Plant Material Collection

Seeds and rhizomes of existing covered plant species populations may be collected and used for habitat restoration and enhancement projects. A qualified specialist will determine the number of propagules (seeds and rhizomes) needed for plant introduction objectives based on the number of individuals needed for mitigation or other restoration objectives.

The collection limits for each covered plant species in any single year shall be as follows (From USFWS 2008i):

Species	Populations under 50 individuals	Populations between 50-500 individuals	Populations of >500 individuals	Any population to be permanently impacted by a Covered Activity
Bradshaw's lomatium	50% of seeds	15% of seeds	25% seeds	100% of seeds and plants
Kincaid's lupine	50 % of seeds	15% of seeds	25% of seeds	100% of seeds and plants
Nelson's checkermallow	50% of seeds, 2% of rhizome biomass	15% seeds, 2% of rhizome biomass	25% of seeds, 2% of rhizome biomass	100% of seeds, plants and rhizome biomass
Peacock larkspur	50% of seeds	15% of seeds	25% of seeds	100% of seeds and plants
Willamette daisy	50% of seeds, 2% of rhizome biomass	15% of seeds, 2% of rhizome biomass	25% of seeds, 2% of rhizome biomass	100% of seeds, plants and rhizome biomass

## **Seeds**

Persons collecting seeds may gather loose seeds or seed pods, capsules, or heads. Seeds pods, capsules, or heads may be removed by hand or by using cutting devices. Mesh bags may be tied over stems with developing fruits to capture seeds, a technique especially useful for species whose seeds disperse when seed pods snap open, such as Kincaid's lupine. Collectors should avoid damage to the plants by minimizing trampling, removing as little tissue as possible from the plants during seed collection (unless the plants are already senescent), and removing seeds in a manner that does not result in plants being pulled from the ground. Loose seed from the plant or the ground may be gathered by hand or with hand-held harvesting devices, such as flails or hoppers, a method most appropriate when collecting seeds from large populations. In general and as possible, collections should be made from twenty or more individuals and avoid obtaining a large proportion of seeds from any single individual to minimize genetic drift from uneven sampling.

### **1.2.1.0 Rhizomes**

Rhizomes from mature plants shall be exposed by careful hand digging to avoid harm to the plants or exposing plant roots. Any exposed rhizomes shall be reburied. Rhizomes shall be taken from throughout the population to maximize genetic diversity.

### **1.2.1.1 Relocated Plants**

Where the entire plant will be relocated, care shall be taken to avoid damage to any parts of the plants, including the roots.

## **1.2.2 Transport**

Seeds shall be cleaned by hand, sieve, or blower as appropriate to the species prior to transfer to storage containers. Rhizomes shall be stored in cool moist conditions until transferred to potting medium or to the new site. Transport will be completed as quickly as possible. During transport, propagules shall be protected from temperature and moisture extremes.

Containers will be labeled with name of plant, place of collection, and date of collection. Propagules from individual plants may be placed in separate containers, if appropriate.

## **1.2.3 Storage**

Propagules will be cleaned and properly stored prior to cultivation or outplanting. Diseased propagules will be removed and discarded. Seeds shall be thoroughly dried before long-term storage.

Seeds shall be stored in airtight and moisture proof containers to maintain their viability. A drying agent, such as silica gel, dry wood ash, diatomaceous earth, dry charcoal, lime, or paper may be used to help absorb moisture in the container. Seed

material may only be stored for up to two years before cultivating or outplanting, unless placed in a cold-storage facility.

Rhizomes shall be stored under cool, moist conditions with a suitable medium to keep them alive and viable until cultivation.

Plants to be relocated shall be stored under cool, moist conditions with sufficient soil and water to keep them alive and viable until transplantation.

#### **1.2.4 Cultivation**

Propagules will be grown in a greenhouse or nursery facility where genetic contamination of any produced seeds through cross pollination will be prevented, unless intentional to increase genetic diversity. Mixing of source populations through captive breeding may be conducted when the source population(s) are small or genetic evidence suggests inbreeding depression, genetic drift or other issues may cause progeny to have low fitness. Suitable growing medium, soils, fertilizer, or other chemical additives will be used, as necessary, to prevent algal, fungal, or insect infestations.

Seed and rhizome material and their F1 progeny may be cultivated for plant enhancement activities. Under greenhouse conditions, propagules and their progeny from F1 and F2 generations may be used for introduction and augmentation into prairie habitat. Only F1 generation will be used for subsequent propagation. F2 generation propagules and plant plugs may be outplanted, but further greenhouse or agricultural generation is discouraged unless necessary to produce sufficient propagules for successful establishment of individuals.

#### **1.2.5 Outplanting**

Field personnel shall take measures to avoid trampling any Covered Species. Dead and living vegetation, except for listed or Covered Species present, may be cleared away from the immediate planting site to expose the soil. Existing rhizomes of Covered Species will not be disturbed. Any site preparation activities will minimize negative environmental impacts and follow the habitat management guidelines in Appendix J: Prairie Habitat Vegetation Management Guidelines.

Seeds may be sown by either hand-broadcasting or no-till drill. Drilling may be used if soil is dry enough to support vehicle weight without substantial soil compaction and no covered or other listed species are present. Harrowing may be used if no other method is feasible and harrow equipment is operated at least 2 m (6 ft) from existing listed or covered plant species.

Rhizomes or plugs, and if possible, relocated plants, will be planted when soils are saturated by rain – generally November through April (see below for specific timeframes

for the various covered plant species) or when irrigation can be ensured and plants will not be exposed to intense heat. Also, the growing cycles of introduced covered plants should match those growing in the field. Soil will be excavated to the depth and width of the plug or rhizome. Plugs will be inserted directly into the soil or amended soils containing mulch or fertilizer so the rim of the plug is level with the surrounding soil. To reduce desiccation, a small amount of native soil may be added over the plug.

Equipment used during plantings should be cleaned prior to use and disturbance at the target site shall be minimized to avoid spreading non-native plant species.

### **1.2.6 Timing of Planting or Seeding**

Plant introduction projects shall be planned so collection and planting occur at the appropriate time of year. For example, rhizome collection should be targeted for the period when plants are dormant, or when donor-plants will not be killed by the collection procedure. Outplanting of seeds and/or cultivated plugs shall occur within the correct time frame (described for each species below). Relocations shall take place either soon after plants begin growing for the year or after the peak growing season, preferably during cool and moist conditions.

### **1.2.7 Monitoring**

Plant introduction projects will be monitored to determine plant establishment and difference in planting methods (to inform adaptive management). Propagules will be planted in a manner that facilitates subsequent monitoring. To assist with post-planting monitoring, mapped grids, metal tags, or flags will be used to indicate planted areas.

## **1.3 Species Specific Protocols for Cultivation and Introduction Using Seeds or Cultivated Plant Materials**

Research into factors that affect introduction of these species was conducted by Kaye and Brandt (2004) for Bradshaw's Lomatium, Willamette daisy, and Kincaid's lupine. General review of propagation and reintroduction protocols for Covered Plant Species is available in Gisler (2004). Recommendations provided here are largely derived from these sources.

### **1.3.0 Bradshaw's Lomatium**

#### **1.3.0.0 Target sites**

Plant introduction projects at PCAs will occur in wet prairies. Optimal microhabitats include small depressions or seasonal channels with open, exposed soils (USFWS 1993a) and broad, flat areas of soils with wetland hydrology.

### **1.3.0.1 Collection**

Seeds may be collected for off-site cultivation. Bradshaw's lomatium seeds may be collected by hand off the exposed terminal ends of the flower structure (umbels), and usually are mature in June.

### **1.3.0.2 Cultivation**

Direct seeding and transplanting plugs have both resulted in successful introductions, and both methods may be used in introduction efforts. To break seed dormancy for cultivation in a greenhouse, Bradshaw's lomatium seeds need cold stratification- moist conditions at ~5° C (40°F) for at least eight weeks, followed by warm conditions such as alternating 10°/20°C (50°F/68°F). Once seeds have germinated, they may be potted with a standard soil mix, watered daily, and fertilized bi-weekly.

### **1.3.0.3 Outplanting**

Direct seeding into field sites may be accomplished in the late fall, when seeds can be sown on the ground, either directly on the soil surface, or into areas prepared by raking or light tilling, or other activity that creates bare soil. Seed burial is not necessary for this species. Any soil preparation will avoid impacts to existing Covered Species.

Field planting of cultivated plugs may be conducted in spring or fall when the soil is moist. Fertilizer is not recommended for this species except during fall plantings in areas with little competing vegetation.

## **1.3.1 Kincaid's lupine**

### **1.3.1.0 Target sites**

Plantings will prioritize sites with grassland vegetation with a diversity of forb species, and near Fender's blue butterfly populations and associated butterfly nectar plants. Soils for the lupine are typically well drained but the species does not appear to prefer any single or small group of soil series. Instead, Kincaid's lupine tends to occur on a variety of upland soils and grows poorly in wetland soils. Sites with minimal encroachment of trees and shrubs may be preferred.

### **1.3.1.1 Collection**

Seeds will be collected for off-site cultivation or direct seeding at target sites. Seed is best collected by tying mesh bags over developing fruit clusters and harvesting the bags after the seed pods have snapped open. Bagging is best done in early June and seeds are generally mature in July. Precise dates vary from year to year and site to site.

### **1.3.1.2 Cultivation**

Kincaid's lupine can be successfully cultivated from seed. Seed dormancy may be broken by scarifying seed (abrading the seed coat) followed by cold stratification at

~5°C (40°F) for 4 to 8 weeks. After these procedures, seed will germinate under warm conditions, such as alternating temperatures of 10°/20°C (50°/68° F), either on germination paper or in pots with a suitable soil mix, watered when the soil surface has dried (~twice weekly), and fertilized monthly with 20-20-20 liquid fertilizer. Survival rates of Kincaid's lupine seedlings grown from several seed sources vary from 58% - 100%. Plant health and subsequent growth after planting may be improved by adding nodulating bacteria (e.g., *Bradyrhizobium lupinii*) to the germinating seed or during potting.

### **1.3.1.3 Outplanting**

Direct seeding may use either scarified or non-scarified seeds in the fall and winter, although seedings in winter may be most successful if seeds are scarified. Non-scarified seeds should be direct-seeded at project sites from October to January; while scarified seeds may be planted October through March. Seeds should be sown without fertilizer onto soil, raked ground, or lightly tilled soils, either on the soil surface or buried to a depth of 0.25-1.0 cm [1/8 to 1/2 in]). Invasive species will be cleared to the extent practicable prior to seeding.

Field planting of cultivated plugs may occur in late fall, late winter, or early spring. Plugs can be planted by hand into pre-excavated soil pits suitable to accommodate the plug along with soil amendments, if necessary (including mix of planting or native soils). Nitrogen fertilizer should not be used, but phosphorus and micronutrient fertilizers may provide the species with advantages over non-leguminous competing vegetation.

## **1.3.2 Nelson's checkermallow**

### **1.3.2.0 Target site**

Planting sites should contain at least one of the following: remnant native wet prairies, wetlands, ash swales, riparian areas, or small clearings with hydric soils and edges with fairly open canopy. None of the areas should have persistent flooding into later spring, although saturated soils during the raining season (inundation for several weeks or longer) or flooded soils mid-November through mid-April is acceptable (Gisler 2004, Bartels & Wilson 2003).

### **1.3.2.1 Collection**

Seeds and rhizome cuttings will be collected for off-site cultivation of plugs needed for seed increase, plant increase, and introductions. Seed capsules or loose seeds may be collected. Seeds generally mature in July-August. A maximum of two 8 cm (3 in) long rhizomes segments per plant may be collected, or up to 2% of a single plant.

### **1.3.2.2 Cultivation**

Nelson's checkermallow can be cultivated using both seeds and rhizome cuttings. Some seed may need to be cold stratified for 8-12 weeks at ~5° C (~40° F) to break



dormancy, followed by exposure to warm conditions such as room temperature. Seeds can be germinated in flats; transferred to pots containing appropriate soil such as bark, compost, peat, vermiculite, and Phillips Pre-mix (Gisler 2004); then transferred to larger outdoor beds before introduction to a target site.

Large plants can be divided to generate more individuals for planting, although plantings should ensure that genetic diversity is maximized by, for example, including individuals derived from sexual reproduction. Large, reproductively mature individuals are possible within two-three months of planting using divisions, and within three-five months using seeds, when they are supplied with ample light, warm temperatures, irrigation, and fertilization.

Rhizomes can be cultivated under greenhouse conditions or in field beds. No special soil mixtures, symbionts, or special growing conditions are necessary to achieve growth so long as pest infestations are prevented (Gisler 2004).

To minimize the risk of hybridization, different *Sidalcea* species should not be cultivated closely together.

### **1.3.2.3 Outplanting**

Planting greenhouse-grown container stock has proven most effective to date, but direct seeding may be a useful technique at some sites and if ample seeds are available, such as through a seed increase program. Plugs can be transplanted by hand into pre-excavated soil pits suitable to accommodate the plug and soil amendments (including mix of planting or native soils) after the arrival of the fall rains and before June.

Plantings will not occur at sites south of the natural southern range limit of the species, which is approximately McFarland Road in southern Benton County.

## **1.3.3 Peacock larkspur**

### **1.3.3.0 Target Site**

Sites for peacock larkspur introduction shall contain appropriate habitat. Peacock larkspur habitat includes native wet and upland prairie communities (often the slightly higher, drier, more well-drained microsites within and adjacent to wetlands), shady Oregon ash and Oregon white oak woodland edges (forest clearings), native prairie grasslands, and in floodplains on well-drained mounds (Finley and Ingersoll 1994). Previous research has found peacock larkspur to occur at elevations ranging from 46 to 122 m (150 to 400 ft) (Gisler 2004), in shallow, slightly acidic soils (5.38 pH), with low organic matter (11.28%), and mostly sand and silt soil particles (Goodrich 1983). Additional evaluations could broaden these observations. Peacock larkspur tolerates seasonal inundation.

### **1.3.3.1 Collection**

Seeds for cultivation and restoration projects will be collected initially from wild populations. Fruits on the lower portions of fruiting stems tend to produce the greatest numbers of seed per fruit. Seeds generally mature in June.

### **1.3.3.2 Cultivation**

Peacock larkspur can be successfully cultivated in a greenhouse or in outdoor beds, and does not require specialized soil amendments or soil symbionts. The larkspur can be cultivated using seeds. Seeds may need to be cold stratified in a refrigerator at ~5°C [~40°F] for 12-16 weeks to break dormancy, after which they may be placed in pots with standard sterilized potting mixture, and watered and fertilized as needed.

### **1.3.3.3 Outplanting**

Peacock larkspur seeds, plugs or tubers may be planted upon arrival of fall rains. To date there have been no published studies evaluating methods or success of direct seeding, transplanting or introducing this species, although tubers have been successfully transplanted. Once planted, seedlings require up to five years or more to become reproductively mature, although some individuals appear to grow and flower rapidly.

Hybridization with other *Delphinium* species is a concern. To minimize the risk of hybridization, different *Delphinium* species will not be cultivated closely together, and outplanting sites should be checked for the presence of other *Delphinium* species and plantings should occur no closer than 100 m from any resident populations of different species.

## **1.3.4 Willamette daisy**

### **1.3.4.0 Target Site**

Willamette daisy is found in both wetland and upland habitats in the Willamette Valley, including bottomland grasslands consisting of flat, open, seasonally flooded prairie especially those with some bare soil and little litter layer between the large bunches of grasses (Kagan & Yamamoto 1987), and upland prairie sites having moderate to well-drained soils and a mix of native bunchgrasses such as *Festuca roemerii* (Roemer's fescue), *Bromus carinatus* (California brome), and *Elymus glaucus* (blue wild rye) (Clark 2000).

### **1.3.4.1 Collection**

Both seeds and rhizome cuttings may be collected for off-site cultivation of plugs for use in plant introduction projects. Seed heads or loose seed may be gathered. Seeds generally mature in mid to late July. Rhizomes of approximately 2.5 cm (1 in) length may be harvested from individual plants, but this should be performed only on larger individuals and no more than two rhizome segments should be collected per plant.

#### **1.3.4.2 Cultivation**

To maximize germination rates, seeds need to be cold stratified at ~5°C (~41°F) for 10-16 weeks followed by alternating 10°/20°C (50°/68° F) temperatures. Seeds may also be scarified at the pappus end or removed from the achene to break dormancy, but this procedure is very labor intensive. Germination rates of 40-78% can be expected within 2-11 days of placement in warm conditions, although germination rates of seeds collected from smaller populations may be low, possibly due to inbreeding depression. After germination, seeds may be planted in pots containing a standard commercial potting mix.

Cultivation of rhizomes may occur under greenhouse conditions or in outside beds. Rhizomes may be dipped in a rooting hormone to stimulate root development and planted 1-2 cm (0.5 - 1.0 in) deep in soil-filled pots. Plants should be rooted within 8-11 weeks, and may be transferred to larger pots or beds.

#### **1.3.4.3 Outplanting**

Outplanting of container plants and direct seeding maybe used as techniques to establish plants at field sites. Previous experiments have shown that direct seeding results in relatively low rates (~1%) of plant establishment, so large numbers of seeds may be needed to support this technique, which may require a seed increase program to produce the necessary quantity of seeds. Seeding should be conducted in the fall to provide seeds with a sufficient cold period to stimulate germination.

Plugs may be planted when soils are moist, generally between October and May. Fertilizer should not be used during outplanting. Plugs should be planted primarily in high quality, native prairies with minimal non-native plant cover. To prevent inbreeding depression, individuals should be planted in large patches to maximize opportunities for outcrossing. A 33% survival rate may be expected using rhizome cuttings, although this will vary from year to year, site to site, and among source populations of Willamette daisy.

# Appendix M. Roadside and Streambank Management Guidelines for Covered Plants

## 1.1 Introduction

Management of vegetation on roadsides and some waterways frequently requires actions that disturb the existing vegetation. These activities have the potential to harm or benefit populations of Covered Species. The recommendations in this section ensure that management actions avoid or minimize negative effects on Covered Species in such areas, including Special Management Areas on roadsides and banks along urban streams. Habitat management recommendations for areas specifically designated as Prairie Conservation Areas are presented in Appendix J: Prairie Habitat Vegetation Management Guidelines.

## 1.2 General recommendations for Management of Roadside and Streambank Vegetation for Covered Plants

- To prevent the spread of noxious weeds and non-native plants by seeds or live plant parts, all equipment (hand tools, vehicles and heavy machinery) should be cleaned to remove mud, debris, and vegetation prior to entering the site.
- Human activities, including walking, in areas occupied by Covered Species will be limited to minimize potential negative effects to Covered Species.
- Vehicle use will be minimized to reduce damage or mortality to covered plants and butterflies.
- Soil disturbance should be avoided to the maximum extent possible during road maintenance activities.
- Projects should minimize alterations to hydrology.
- Weed-free products such as soil, gravel, mulch, and seeds should be used whenever possible.
- Re-vegetation of disturbed areas should be done with native grass/forb seed mixes or transplants.
- Vegetation control will be maintained in “sight distance zones” (areas required to be kept clear of obstructing vegetation for safety reasons), despite the presence of Covered Species.
- Woody plant and noxious weed encroachment should be minimized.

## 1.3 Specific Guidelines

### 1.3.0 Mowing

- Mowing will generally occur during the fall and winter, after covered plants have senesced for the season (August 15-February 28).
- Mowing deck must be set a minimum of 15 cm (6 in) above the ground for all covered plants.
- Where possible, mowing with a tractor driving on non-paved surfaces should be avoided when soil is saturated to minimize compaction and rutting. If such mowing must occur, use of rubber tracked equipment is preferred
- Spring mowing is only allowed where necessary to control a weed infestation involving a weed species reproduced mainly by seed (e.g., meadow knapweed), in which case up to ½ of the covered plant population may be mowed in an effort to control seed set.
- No flail mowers will be used.

### 1.3.1 Cutting/Thinning/Removing Tree Stumps

- Handheld power tools may be used to remove woody vegetation.
- Such activities will occur when Covered Species are dormant or during the flowering season so long as workers take precautions (e.g., marking plant patches with posts and flagging) to avoid trampling of any Covered Species.
- No trees will be removed from Fender's blue butterfly habitat during the flight season, unless a tree is deemed a hazard, and immediate removal is required.
- Stump removal will occur only during dry periods.
- All cut material will be piled or chipped and spread away from any covered plant populations or hauled off-site for disposal.
- If activities occur during the wet season, tree debris may be left on site away from the covered plant species, until the dry season when equipment can access the work area to remove the debris.

## 1.4 Chemical Treatment

- Chemical treatments may be used to control invasive, non-native species.
- Herbicides will be applied by a licensed applicator, using appropriate equipment and best management practices.
- Exposure of non-targeted species to herbicides, especially covered species, associated with drift, leaching to groundwater, and surface runoff will be avoided or minimized.
- Chemical treatments will follow labeled restrictions, including limitations for use near water.
- Acceptable chemicals are listed in Table J.1

- If new, more effective or less toxic herbicides become available, Benton County will coordinate with USFWS to update this Appendix for their inclusion.
- Precautions to protect Covered Species and control herbicide drift are listed in Appendix J: Prairie Habitat Vegetation Management Guidelines, and Table J.1.

# **Appendix N. Taylor's Checkerspot Management Plan**

# Benton County Taylor's Checkerspot Butterfly Management Plan



Photo by Dana Ross

Prepared By Dana Ross and Institute for Applied Ecology  
For the Benton County Natural Areas and Parks Department  
2009



## Table of Contents

1	Introduction .....	5
2	Species Description, Reproduction, and Ecology .....	5
2.1	Conservation Status .....	5
2.2	Taxonomy .....	6
2.3	Species Description .....	6
2.3.0	Reproduction/Life Cycle .....	6
2.3.1	Population Status .....	8
2.3.2	Range .....	9
2.3.3	Habitat .....	9
2.3.4	Host Species .....	9
2.3.5	Nectar Species .....	10
2.4	Threats .....	14
2.4.0	Habitat Loss, Fragmentation, and Degradation .....	14
2.4.1	Fire Suppression .....	14
2.4.2	Invasive Non-Native Species .....	14
2.4.3	Vegetation Management .....	15
2.4.4	Weather .....	15
2.4.5	Diseases .....	15
2.4.6	Parasitism .....	15
2.4.7	Predation .....	15
2.4.8	Pesticides .....	15
2.4.9	Small Population Size .....	16
2.4.10	Overutilization for Scientific or Education Purposes .....	16
2.4.11	Public Use Activities .....	16
3	Habitat Management Guidelines .....	16
3.1	Guidelines for Sites with Taylor’s Checkerspot Butterfly .....	17
3.2	Guidelines for Sites without Taylor’s Checkerspot Butterfly .....	19
4	Site Specific Management Recommendations .....	19
4.1	Beazell Memorial Forest .....	19
4.1.0	North Meadow .....	20
4.1.1	Middle Meadow .....	21
4.1.2	Small Steep Double Meadows (south of the Middle Meadow) .....	22
4.1.3	Summit Meadow .....	22
4.1.4	South Meadow .....	23
4.1.5	Caretaker’s House Meadow .....	24
4.2	Fitton Green Natural Area .....	26
4.2.0	South Meadow .....	26
5	Future Research .....	28

## List of Tables

Table 1. Life cycle of Taylor's Checkerspot Butterfly in Oregon. ....	6
Table 2. Taylor's checkerspot butterfly populations in Oregon 2002-2008. ....	8
Table 3. Taylor's checkerspot butterfly larval host species in Washington and Oregon. .....	10
Table 4. Detailed information about host plants for Taylor's checkerspot butterfly. ....	11
Table 5. Taylor's checkerspot butterfly nectar plant species range-wide. ....	12
Table 6. Detailed information about Taylor's checkerspot nectar plants known in Oregon.....	13
Table 7. General habitat restoration/enhancement schedule.....	19
Table 8. Site information for meadows at Beazell Memorial Forest. ....	20

## List of Figures

Figure 1. Meadow locations at Beazell Memorial Forest. ....	25
Figure 2. Fitton Green Natural Area adjacent to the BPA Powerline Easement. ....	27

# 1 Introduction

Taylor's checkerspot butterfly (*Euphydryas editha taylori*) is endemic to the Pacific Northwest, and is currently known from only two locations in Oregon, both of which are in Benton County: Bezell Memorial Forest (owned and managed by Benton County Natural Areas and Parks Department) and the Fitton Green Natural Area/Bonneville Power Administration powerline area (private and public property). Benton County is preparing a Prairie Species Habitat Conservation Plan (HCP) to address the protection and conservation of this butterfly along with the Fender's blue butterfly (*Icaricia icarioides fenderi*) and five plant species: Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), Willamette daisy (*Erigeron decumbens* var. *decumbens*), peacock larkspur (*Delphinium pavonaceum*), Bradshaw's lomatium (*Lomatium bradshawii*), and Nelson's checkermallow (*Sidalcea nelsoniana*).

Benton County seeks to ensure the protection and conservation of known populations of Taylor's checkerspot butterfly on County owned or managed lands, focusing management actions on the protection, enhancement, and maintenance of suitable habitat at key locations. The guidelines set forth in this management plan will assist Benton County in managing their lands in a way that is consistent with protection and conservation of Taylor's checkerspot butterfly. This plan will be updated at least once every ten years, to take into account changes in management techniques and status of the species.

## 2 Species Description, Reproduction, and Ecology

### 2.1 Conservation Status

Taylor's checkerspot butterfly has been identified as a candidate for federal listing (USFWS 2006). Although invertebrates are ineligible for state listing in Oregon, the Oregon Natural Heritage Information Center considers it to be threatened or endangered throughout its range (ORNHIC 2007). The Natural Heritage Network ranks the butterfly as G5/T1/S1: species is widespread, abundant, and secure throughout its range, but the subspecies is threatened or endangered, and is critically imperiled in Oregon (ORNHIC 2007).

A petition to list the butterfly was filed by several environmental organizations in 2002 (Xerces et al. 2002); however, the USFWS has not published a decision on the petition

to list (USFWS 2008). If the USFWS lists the species as threatened or endangered under the ESA, a recovery plan and/or critical habitat may be established for the species.

## 2.2 Taxonomy

Taylor's checkerspot butterfly is a member of the family Nymphalidae – the brush-footed butterflies (Xerces et al. 2002; Stinson 2005), and a subspecies of Edith's checkerspot (*Euphydryas editha*) (Stinson 2005). Checkerspots get their name from the checkerboard pattern on the upper side of their wings (Stinson 2005).

## 2.3 Species Description

Taylor's checkerspot is a medium sized butterfly with orange, black, and white coloring. The short stubby wings of this subspecies span less than 5.7 cm (2.25 inches) (Xerces et al. 2002). The upper wings are generally black with checkered bands of red-orange, cream and black; the underside forewing is orange with black bars and cream spots; the hindwing has alternating bands of orange and cream spots; and the head and abdomen are black (Stinson 2005).

In Oregon, this subspecies is the darkest of the *E. editha* subspecies (USFWS 2006), with rows of red and creams spots separated by heavy black bands, and with wings proportionately broader and rounder than other subspecies (Stinson 2005, citing Dornfeld 1980). Caterpillars are black with white speckles and bear black branching bristles with an orange base (Stinson 2005, citing Dornfeld 1980 and Guppy & Shepard 2001). Eggs are pale yellow and transparent when first laid, later turning orange and brown (Stinson 2005, citing Scott 1986).

Taylor's checkerspot does not migrate and is one of the first butterflies to appear in spring (Stinson 2005).

### 2.3.0 Reproduction/Life Cycle

Taylor's checkerspot butterfly goes through four distinct life stages: egg, larva (caterpillar), pupa, adult (Table 1).

**Table 1.** Life cycle of Taylor's Checkerspot Butterfly in Oregon.

LIFE STAGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ADULTS	-	-	x	X	X	x	-	-	-	-	-	-
EGGS	-	-	-	X	X	X	x	-	-	-	-	-
LARVAE (PRE-DIAPAUSE)	-	-	-	X	X	X	x	-	-	-	-	-
LARVAE (IN DIAPAUSE)	x	x	-	-	x	x	X	X	X	X	X	X
LARVAE (POST-DIAPAUSE)	x	X	X	X	x	-	-	-	-	-	-	-

LIFE STAGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PUPAE	-	x	X	X	x	x	-	-	-	-	-	-

PRESENT: X-typical, x-some years.

### **2.3.0.0 Mating/Egg Laying**

Taylor's checkerspot butterfly typically flies from early April through May (Table 1) when mating occurs. Males perch and patrol to find females (Stinson 2005, citing Scott 1986). Taylor's checkerspot butterflies are polygynous with males mating multiple times and females mating once (occasionally twice) with one brood per year (Stinson 2005). Only one to two of the eggs from each female generally survive to adulthood (Stinson 2005, citing Scott 1986). Female butterflies recognize host plant species by the size, color, and shape of the leaf (Stinson 2005); the female then confirms the plant is the correct type by tasting it using forelegs and antennae (Baron & Backhouse 1999). Eggs are laid only on specific host plants.

#### **2.3.0.1 Larvae/Pupation**

Eggs hatch simultaneously after about 2 weeks (Stinson 2005) with the resulting gregarious larvae then moving in search of larval food sources (Weiss et al. 1987). Newly hatched larvae starve if food is not available within 10 cm (3.9 inches) (Singer & Ehrlich 1979). Larvae will grow until the fourth or fifth instar (approximately half-grown caterpillars) at which time they will enter diapause as their host plants senesce (Weiss et al. 1987). During diapause no feeding, growth, or development occurs (Scott 1986). The caterpillars resume eating when temperatures rise in the late winter (late January to March), and continue feeding for several weeks. When the caterpillar is fully grown it finds a sheltered spot and enters pupation (Dornfeld 1980). Larval growth rate is affected by microclimate (slope, aspect, degree of sun exposure) (Stinson 2005), with larvae preferring warmer locations (Weiss et al 1987).

#### **2.3.0.2 Pupa**

Pupation generally lasts two weeks after which the adult emerges (Pyle 1981).

#### **2.3.0.3 Adults**

Adults emerge over a one to several week period of time, with males emerging a few days before females (Stinson 2005). Adult butterflies are active for several days to two weeks. During the flight period male and female adults mate and then females lay their eggs. Adult females emerging earlier in the season improve offspring survival (Stinson 2005). The flight period for adults is typically from early April through May.

Dispersal capabilities of Taylor's checkerspot butterflies have not been studied. In Oregon in 2004, several Taylor's checkerspot butterflies were observed dispersing when weather was good and the butterfly population numbers were high (Stinson 2005 citing M. Vaughn pers. comm.). According to Stinson (2005), male checkerspot butterflies generally do not emigrate with increasing population densities; and checkerspot larvae will move in search of food (host plants) or pupation sites. The timing of available host

and nectar species with the adult flight period is vital to species survival (Baron & Backhouse 1999).

### 2.3.1 Population Status

Population size can fluctuate greatly from year to year (Table 2), and individual populations are susceptible to local extinction. Taylor's checkerspot butterfly was thought to be extinct in Oregon until a population was discovered in 1999 (A. Warren pers. comm.) on private land owned by Weyerhaeuser Corporation, under a utility easement maintained by the Bonneville Power Administration<sup>5</sup> near Fitton Green Natural Area (ORNHIC 2006). In 2002, there were only four confirmed populations of Taylor's checkerspot butterfly (Xerces et al. 2002) – three in Washington and one in Oregon. In 2004, a population of Taylor's checkerspot butterfly was discovered at Beazell Memorial Forest (owned and managed by Benton County). This site was found to support a population of approximately 500 butterflies (Ross 2005). As of 2004, Oregon's two populations of Taylor's checkerspot butterfly comprised greater than 75% of the known populations in Oregon and Washington (ORNHIC 2006).

**Table 2.** Taylor's checkerspot butterfly populations in Oregon 2002-2008.

Site	Population Abundance						
	2002	2003	2004	2005	2006	2007	2008
Fitton Green Natural Area/BPA Powerline Corridor	1,000	750	1,104	1,221	300	650	**765
Fitton Green Natural Area (South Meadow)	NS	NS	NS	NS	1	1	NS
Beazell Memorial Forest	NS	NS	*500	484	150	422	615
Fort Hoskins Historic Park	NS	NS	NS	1	0	0	NS
<b>TOTAL</b>	---	---	<b>1,104</b>	<b>1,706</b>	<b>450</b>	<b>1073</b>	<b>1380</b>

NS – Not surveyed \*Rough estimate \*\*Includes additional habitat

In 2006, Taylor's checkerspot butterfly abundance in Oregon dropped significantly (Table 2; Ross, 2006). The flight period was delayed and compressed and resulted in a significant drop in butterfly abundance. The first documented butterfly was observed on April 20<sup>th</sup>, more than one week later than normal. Subsequent warm weather accelerated adult activity with the peak flight period occurring in late April; few

<sup>5</sup> The Bonneville Power Administration has entered into an agreement with the Xerces Society to manage the site, in part, for the conservation of Taylor's checkerspot butterfly.

butterflies were observed in early to mid May. Butterfly abundance appeared to fully recover at Bezell in 2007 and 2008 (Ross 2008).

In 2006 and 2007, additional potential habitat was surveyed, however, no new Taylor's checkerspot populations were found (Ross 2006; Ross 2007).

### 2.3.2 Range

Historically Taylor's checkerspot butterfly was found in the Willamette Valley, Puget Sound, and south Vancouver Island (Xerces et al. 2002); although its precise historic range is not known (Butterfly Conservation Initiative 2006). Historically there were at least 23 recorded populations in British Columbia; 34 recorded populations in Washington, and 13 recorded populations in Oregon (USFWS 2006). In British Columbia, where Taylor's checkerspot butterfly was recently thought to be extinct a previously unknown population was discovered at Denman Island (USFWS 2006) In Washington, the butterfly is currently known from just 10 sites, and may occur at another 3 sites (Stinson 2005).

In Oregon, the subspecies historically occurred in Benton, Polk, and Lane Counties at 14 sites (USFWS 2006). Today the butterfly is known only from Benton County: Bezell Memorial Forest and near Fitton Green Natural Area/BPA Powerline corridor (Ross 2006), although one butterfly was found at Ft. Hoskins Historic Park in 2005 (Ross 2006).

### 2.3.3 Habitat

Habitat quality is more important than habitat size (Ehrlich 1992), and habitat heterogeneity is the most important factor in determining habitat quality (Weiss et al. 1987).

Taylor's checkerspot butterfly requires upland prairie habitat, dominated by short-stature grasses such as native fescues (e.g., *Festuca roemerii*) (Stinson 2005). The best prairie habitats include a high abundance of the larval host plant and a diversity of adult nectar sources (USFWS 2006). Each species of butterfly has specific larval host plant and adult nectar plant requirements, where the larval host and nectar plant species may be the same or different (Baron & Backhouse 1999). Taylor's checkerspot requires different plant species to provide adult versus larval nutrition.

### 2.3.4 Host Species

Pristine native habitats are not always required to sustain some populations of Taylor's checkerspot as powerline rights-of-way are used (in part) by some populations; nor are native plant species always necessary. Larvae primarily feed on paintbrush and plantain species, but utilize other species as well (Stinson 2005) (Table 3). In Washington, Taylor's checkerspot caterpillars feed primarily on English (=narrowleaf) plantain (*Plantago lanceolata*), harsh paintbrush (*Castilleja hispida*), seablush (*Plectritis*

*congesta*), and blue eyed Mary (*Collinsia parviflora*) (Stinson 2005). In Oregon the primary larval host species is English plantain, a non-native species; and the delay in growth of this host plant in 2006 may have reduced the number of adult Taylor's checkerspot butterflies that year (Ross 2006). For more information about host species, see Table 4.

### 2.3.5 Nectar Species

Adult butterflies utilize a variety of nectar species (Table 5). Nectar availability affects how many eggs a female butterfly can lay – the more nectar available, the more eggs can be laid (Baron & Backhouse 1999). Adults require food in the form of nectar during their search for breeding partners (Baron & Backhouse 1999), as well as for producing and laying eggs, and producing sperm (Stinson 2005).

The primary nectar species utilized by Taylor's checkerspot in Oregon is strawberry (*Fragaria virginiana*), followed by Tolmie's mariposa lily (*Calochortus tolmiei*), sea blush (*Plectritis congesta*), bi-colored flaxflower (*Linanthus bicolor*) and dandelion (*Taraxacum officinale*) (Ross 2006). Common lomatium (*Lomatium utriculatum*) is also used at one site (D. Thomas pers. comm.). Depending on the timing of the butterflies' flight period, not all of the potential nectar sources may be available for use. For more information on the nectar plant species utilized by Taylor's checkerspot butterfly in Oregon see Table 6.

**Table 3.** Taylor's checkerspot butterfly larval host species in Washington and Oregon.

Scientific Name	Common Name	Native/ Introduced
<i>Castilleja hispida</i>	Harsh paintbrush	Native
<i>Castilleja attenuata</i> / <i>Orthocarpus attenuatus</i>	Attenuate Indian paintbrush	Native
<i>Orthocarpus pusillus</i> / <i>Triphysaria pusillus</i>	dwarf's owl clover	Native
<i>Collinsia grandiflora</i>	giant blue eyed Mary	Native
<i>Collinsia parviflora</i>	Maiden blue eyed Mary	Native
<i>Plectritis congesta</i>	shortspur seablush	Native
<i>Plantago lanceolata</i>	English/narrowleaf plantain	Introduced
<i>Plantago elongata</i>	prairie plantain	Native

Stinson (2005)



**Table 4.** Detailed information about host plants for Taylor's checkerspot butterfly.

<b>Latin Name</b>	<i>Plantago lanceolata</i>	<i>Castilleja</i> spp.
<b>Common Name</b>	English plantain	paintbrush
<b>Native or Introduced</b>	Introduced	Native
<b>Annual or Perennial</b>	annual, biennial, perennial	perennial
<b>Form</b>	herb	herb
<b>Bloom Time</b>	April through May	Variable, depending on species
<b>Senescence</b>	After August 15	After August 15
<b>Range</b>	Widespread throughout U.S.	Variable
<b>Benton County Distribution</b>	Common	uncommon
<b>Habitat</b>	Roadsides, open meadows	
<b>Nectar Production</b>		
<b>Collection and Planting</b>	Recommended where localized augmentation of larval host plant is needed. Otherwise, not recommended (non-native weed).	Allow seed pods to dry on the plant before collecting. Usually require a host plant because of their parasitic lifestyle.
<b>Species Descriptions</b>	1.5-9 dm tall, brown-woolly at the base, leaves 5-40 cm long,, pubescent, long-lanceolate, 3-several-ribbed, gradually tapered to the short petiole, usually irregularly denticulate; spike 1-8 cm. long, dense; stamens 4 (Gilkey & Dennis 2001)	

**Table 5.** Taylor's checkerspot butterfly nectar plant species range-wide.

<b>Scientific Name</b>	<b>Common Name</b>	<b>Native/ Introduced</b>
<i>Armeria maritima</i>	Thrift	Native
<i>Balsamorhiza deltoidea</i>	deltoid balsamroot	Native
<i>Berberis</i> spp.	Oregon grape	Native
<i>Calochortus tolmiei</i>	Tolmie's mariposa lily	Native
<i>Camassia quamash</i>	common camas	Native
<i>Cerastium arvense</i>	field chickweed	Native
<i>Eriophyllum lanatum</i>	woolly sunflower	Native
<i>Fragaria</i> spp.	Strawberry	Native
<i>Linanthus bicolor</i>	bicolored flaxflower	Native
<i>Lomatium triternatum</i>	nineleaf biscuitroot	Native
<i>Lomatium utriculatum</i>	common lomatium	Native
<i>Malus</i> sp.	apple	Cultivated
<i>Mimulus</i> spp.	monkey-flower	
<i>Plectritis congesta</i>	shortspur seablush	Native
<i>Potentilla anserina</i>	Silverweed	Native
<i>Ranunculus occidentalis</i> *	Western buttercup	Native
<i>Sedum</i> sp.	Stonecrop	
<i>Taraxacum officinale</i>	common dandelion	Introduced
<i>Zigadenus venenosus</i>	meadow death-camas	Native

\*This species is only used when other nectar species are not available.

Source: Stinson 2005

**Table 6.** Detailed information about Taylor's checkerspot nectar plants known in Oregon.

Latin Name	<i>Calochortus tolmiei</i>	<i>Fragaria virginiana</i>	<i>Linanthus bicolor</i>	<i>Lomatium utriculatum</i>	<i>Plectritis congesta</i>	<i>Taraxacum officinale</i>	<i>Malus</i> sp.
<b>Common Name</b>	Mariposa lily	Wild strawberry	Bi-colored flax flower, baby stars	Common lomatium	seablush	<i>Dandelion</i>	Apple
<b>Native or Introduced</b>	Native	Native	Native	Native	Native	Introduced	Introduced
<b>Annual or Perennial</b>	Perennial	Perennial	Annual	Perennial	Annual	Annual/Biennial	Perennial
<b>Growth Form</b>	Forb	Forb	Forb	Forb	Forb	Forb	Tree
<b>Bloom Time</b>	Mid May-early June	Mid April- Mid May	May-June	Mid April-May	May-June	April-September	Late April-May
<b>Senescence</b>							
<b>Relative preference of Taylor's checkerspot</b>	+++	+++				+	
<b>Benton County Distribution</b>	Common	Extremely common	Somewhat common	Uncommon	Uncommon	Extremely common	Somewhat common
<b>Habitat</b>	Open meadows	Open meadows, roadsides	Open meadows	Moist meadows	Open meadows	All unshaded habitats	Varies
<b>Nectar Production</b>	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
<b>Collection and Planting</b>	Bulbs best propagule. Slow to propagate from seed.	Fruits must be collected for seeds.	Seed.	Seed.	Seed.	Not recommended or needed-weedy species.	Cultivated species.
<b>Species Description</b>	Small lily, 15-30 cm tall, one basal leaf, pale pink/white flower, 2.5-4 cm diameter, pubescent petals.	Stoloniferous with blue-green toothed leaves, pale flowers, red fruit with seed like achenes.	Small annual, 2.5-15 cm tall, divided leaves clustered at stem nodes, flower tube 15-25 mm long, short pink lobes.	Stems 3-60 cm tall, leaves finely divided, flat topped umbel of yellow flowers.	Plants 5-60 cm tall, opposite upper leaves, dense inflorescences of small (~3mm across) pink tubular flowers.	Taprooted, basal leaves, flowering stem $\geq$ 40 cm. Leaves pinnately lobed, flower heads yellow.	Small deciduous tree, whitish to pale pink flowers, Typically an escaped cultivated species.

## 2.4 Threats

### 2.4.0 Habitat Loss, Fragmentation, and Degradation

Fragmentation, degradation, and loss of habitat are primary factors affecting Taylor's checkerspot butterfly populations (Stinson 2005). Suitable prairie habitat has been lost to agricultural and residential development, succession (encroachment of trees), loss of natural disturbance regimes, and invasive species.

In Oregon, the butterfly's current habitat is shrinking and its quality is diminishing, due primarily to the spread of invasive species, particularly false brome (*Brachypodium sylvaticum*) (Ross 2005). Successional processes which increase the shrub and tree layers are also a continuing threat. Scotch broom (*Cytisus scoparius*), rose (*Rosa* sp.), hawthorn (*Crataegus* sp.), and Douglas-fir (*Pseudotsuga menziesii*) continue to be problematic (Stinson 2005; Ross 2005).

When habitats become fragmented and suitable habitat becomes more widely separated, the butterflies are less able to disperse to these far away sites (Baron & Backhouse 1999). At existing sites, butterfly population size may diminish for any number of reasons (e.g., weather, invasive species competition with nectar and host plants species) which may lead to a decrease in the rate of dispersal and natural recolonization of peripheral sites with suitable habitat.

### 2.4.1 Fire Suppression

Due to the influx of European settlers onto prairie habitats, the elimination of human-caused disturbances, such as fire, have resulted in the rapid conversion of prairie habitat to Douglas-fir forests (ODFW 2006) reducing habitat availability for Taylor's checkerspot and other prairie-dependent species (Baron & Backhouse 1999). However, fire itself can have a detrimental affect on Taylor's checkerspot butterfly, killing larvae, eggs, and pupae, depending on when prescribed burning activities occur and over how much of the occupied habitat (Xerces et al. 2002).

### 2.4.2 Invasive Non-Native Species

Invasive non-native species directly compete with host and nectar plant species for water, nutrients, and light and often prevent or reduce butterfly access to host and/or nectar species (Potter et al. 1999; Hays et al. 2000).

Non-native species that threaten native prairie habitats in Benton County include scotch broom, colonial bentgrass (*Agrostis tenuis*), tall oatgrass (*Arrhenatherum elatius*), common velvetgrass (*Holcus lanatus*), Kentucky bluegrass (*Poa pratensis*), sweet vernalgrass (*Anthoxanthum odoratum*), false brome (*Brachypodium sylvaticum*), rose (*Rosa* sp.), oxeye daisy (*Leucanthemum vulgare*), and meadow knapweed (*Centaurea xpratensis*) (Baron & Backhouse 1999; Stinson 2005; Ross 2005).

### 2.4.3 Vegetation Management

Mowing may kill larvae, eggs, and pupae, depending on the time of year. Hand pulling of vegetation may result in the trampling of eggs, larvae, and pupae (Xerces et al. 2002).

### 2.4.4 Weather

Weather plays a significant role in the mortality rate of Taylor's checkerspot butterflies (Ross 2006; Stinson 2005); and poses the greatest natural threat. Wind, rain, and hail may knock small caterpillars and egg clusters from host plants. Unseasonably cold weather may kill larvae and adult butterflies (Stinson 2005, citing Guppy & Shepard 2001). Droughts can affect host or nectar species resulting in starvation of the butterfly adults and larvae. The greatest mortality rate occurs during the pre-diapause stage when food plants senesce and the caterpillar is unable to enter the diapause stage (Ehrlich 1987).

### 2.4.5 Diseases

While Taylor's checkerspot is susceptible to bacterial, fungal, and viral diseases, it is not known at this time what specific diseases may affect the insect at each life stage.

### 2.4.6 Parasitism

Parasitic flies and wasps lay eggs on the eggs, larvae, and pupae of butterflies (Stinson 2005). The tachinid fly, *Siphosturmia confusa*, is a known parasite of Taylor's checkerspot with the level of parasitism varying from year to year (Stinson 2005, citing Tothill 1913). In Oregon, late instar Taylor's checkerspot caterpillars bearing parasitic wasp larvae and pupae have been observed (Ross 2005).

### 2.4.7 Predation

Other arthropod groups (i.e. spiders, wasps, dragonflies etc.) are primary predators of butterflies, while lizards, toads, small mammals and small birds also prey on them (Stinson 2005 citing Guppy & Shephard 2001). In Oregon, predation on adult Taylor's checkerspot butterflies by web-spinning spiders and crab spiders has been observed several times (Ross 2005). The degree of impact to associated butterfly populations has not been measured but may be significant (Ross 2005).

### 2.4.8 Pesticides

Butterflies are very sensitive to pesticides (Ehrlich 1992). Use of pesticides to eradicate gypsy moths may have a lethal effect on associated populations of Taylor's checkerspot and could lead to local population extinctions (Xerces et al. 2002). The chosen pesticide to eradicate the Asian gypsy moth (*Lymantria dispar*) is Btk (*Bacillus thuringiensis* var. *kurstaki*), a pesticide containing a suspension of bacteria used to kill forest and garden insect pests. Btk kills butterfly larvae that ingest foliage sprayed with the pesticide (Barry et al. 1993; Whaley et al. 1998). Btk is generally applied during early spring, a time when Taylor's checkerspot larvae are actively feeding. While

buffers around spray projects may be established, spray drift can negatively impact butterfly populations more than 3 km (2 mi) from the target spray area.

#### **2.4.9 Small Population Size**

The small size of remaining Taylor's checkerspot populations makes them especially vulnerable to extinction. Genetic exchange between isolated populations and recolonization of vacant habitat patches is necessary for long-term persistence. Most remaining sites with potentially suitable habitats are beyond a reasonable dispersal distance thereby rendering natural recolonization unlikely (USFWS 2006).

#### **2.4.10 Overutilization for Scientific or Education Purposes**

Scientific studies involving the mark-recapture of butterflies have been shown to be detrimental to other *E. editha* subspecies in California (Xerces et al. 2002, citing McGarrah 1997). Collection of this species, due to its rarity, is also a potential threat (Xerces et al. 2002).

#### **2.4.11 Public Use Activities**

Recreational activities, including walking, horseback riding, off-road vehicle use, and picnicking can trample Taylor's checkerspot adults, pupae, larvae, and eggs (Xerces et al. 2002).

## **3 Habitat Management Guidelines**

The following management guidelines are recommended for all County properties having the potential to be occupied by Taylor's checkerspot butterfly (areas known to be occupied or areas of suitable habitat within a reasonable dispersal distance of a known population).

High quality habitat for Taylor's checkerspot in Benton County is generally found within meadows protected by trees and with a south to west exposure and modest slope. The best habitats are dominated by short stature grasses and have an abundance of English plantain and strawberry with a diversity of additional nectar species. These sites will nearly always be of native upland prairie origin. Disturbed or degraded habitats can continue to support Taylor's checkerspot if patches of high quality habitat persist.

Taylor's checkerspot is capable of re-colonizing formerly occupied sites once habitat is again made suitable, but appears to be most successful at doing this if restored sites are close to existing populations of some size. The removal of trees, shrubs and dense, tall grasses combined with the restoration of desired plant species – either naturally or by purposeful augmentation – has been shown to be effective.

### 3.1 Guidelines for Sites with Taylor's Checkerspot Butterfly

The following guidelines are recommended to avoid negative impacts to Taylor's checkerspot individuals and their habitat:

- Annually define and mark breeding habitat:
  - Establish a 5 to 10 meter buffer around known Taylor's checkerspot butterfly breeding areas within which management activity should be avoided. The perimeter of this area should be clearly marked (flagged) and should also be recorded with a handheld GPS unit (to better assess changes in breeding habitat availability over time).
- Time management activities to avoid flight period:
  - Disturbance to the breeding habitat should be reduced to the extent possible during the flight period (generally April to May).
  - Habitat management activities should be scheduled and conducted according to the timing guidelines presented in Table 7.
- Mow within the following guidelines:
  - Where mowing is used to maintain quality habitat within a single Taylor's checkerspot butterfly site, one-half of the entire (non-breeding core) area may be mowed per year unless additional mowing is deemed necessary to maintain the appropriate low vegetation profile.
  - A mower with a large rotary deck should be used, and blade height set to a minimum 15 cm (6 in) so blades rarely gouge the ground (no more than five percent of the area mowed) and to minimize impacts to low stature native prairie species and Taylor's checkerspot butterfly larvae, if present.
  - Flail mowers will generally not be used.
  - Line trimmers may be used in occupied habitat in early spring, when necessary.
  - Mowed vegetation, to include cut branches from trees and shrubs and excessive cut grass, should be removed from butterfly habitat whenever possible. May be left in place if it is shown to naturally degrade or be dispersed over the winter by natural events within the first post-treatment year.
  - Mowers with rubber tracks or high floatation tires that exert less than 4 psi should be utilized when possible.
- Burn within the following guidelines:
  - Must be conducted with extreme caution when any Taylor's checkerspot butterfly life stage is active and/or vulnerable to its application anywhere on site (Table 7).
  - It is recommended that no more than 1/3 of a site be burned during a given year.
- Use herbicide as necessary within the following guidelines:

- Must be conducted with extreme caution when any Taylor's checkerspot butterfly life stage is active and/or vulnerable to its application anywhere on site (Table 7).
- No broadcast spraying of herbicides when butterfly or larvae are active – (January 15<sup>th</sup> – August 31<sup>st</sup>). Careful spot-spraying of herbicides targeted at noxious weeds that does not impact larvae, nectar or host species, and does not disrupt normal butterfly behavior can occur at any time.
- Targeted application of herbicides is preferred over broadcast applications.
- Utilize lowest residual, least toxic herbicide that gives desired control.
- Remove encroaching trees and shrubs:
  - Identify encroaching trees and shrubs and remove (entirely) every few years by cutting, pulling or mechanical grinding, and removal (trees may be girdled initially but all related woody material must be removed from the meadow environment).
- Re-seed any bare soil created:
  - When management practices expose bare ground (i.e. herbicides, tree removal), native nectar species, short stature native bunch grasses or host plants should be planted as deemed appropriated to enhance habitat.
- Follow the monitoring and adaptive management guidelines in the HCP:
  - Follow habitat restoration monitoring guidelines in Chapter 7: Monitoring and Adaptive Management, of the Benton County Prairie Species HCP.
  - Conduct annual population estimates as possible, to determine management effects on Taylor's checkerspot butterfly populations.
- Maintain and augment host plants:
  - English plantain is the primary larval host species being utilized by Benton County Taylor's checkerspot populations. Habitat management activities should maintain and/or enhance populations of this plant wherever Taylor's checkerspot occurs and at sites where potential recolonization or the purposeful introduction of the butterfly may occur.
  - The potentially useful introduction of native and likely historical larval host plant species may occur at occupied sites on an experimental basis but not at the expense of English plantain or other documented plant resources. Documented use of any alternate host plant by Taylor's checkerspot, while of potential value to the butterfly's long term conservation, in no way diminishes the importance of English plantain as *the* essential larval host plant.
- Maintain and enhance nectar plants:
  - Strawberry is the primary nectar species for Benton County Taylor's checkerspot populations for the foreseeable future. Habitat management activities should maintain and/or enhance populations of this plant.
  - Additional nectar plants may be introduced to occupied sites but not at the expense of strawberry.



**Table 7. General habitat restoration/enhancement schedule.**

MANAGEMENT ACTIVITY	Taylor's checkerspot butterfly	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	MOW	<b>PRESENT</b>	o	o	o	o	o	o	o	X	X	X	X
	<b>ABSENT</b>	MAY OCCUR AT ANY TIME											
BURN	<b>PRESENT</b>	o	o	o	o	o	o	o	X	X	X	X	X
	<b>ABSENT</b>	MAY OCCUR AT ANY TIME											
HERBICIDE	<b>PRESENT</b>	o	o	o	o	o	o	o	o	X	X	X	X
	<b>ABSENT</b>	MAY OCCUR AT ANY TIME											
HAND PULLING	<b>PRESENT</b>	X	o	o	o	o	o	o	X	X	X	X	X
	<b>ABSENT</b>	MAY OCCUR AT ANY TIME											
CUTTING TREES/SHRUBS	<b>PRESENT</b>	X	o	o	o	o	o	o	X	X	X	X	X
	<b>ABSENT</b>	MAY OCCUR AT ANY TIME											

X= Optimal time for activity; o = activity should not occur during this timeframe.

### 3.2 Guidelines for Sites without Taylor’s Checkerspot Butterfly

- Site improvement activities should be timed to maximize their effectiveness.
- More than one restoration regime should be considered (when practical) as individual site responses may vary.
- All trees and shrubs cut/pulled from within or bordering Taylor’s checkerspot butterfly habitat should be removed from the area if deemed problematic.
- Mowed vegetation from grasses and forbs may be left in place unless deemed problematic.
- Populations of larval host and nectar species should be enhanced. Seeding or planting of English plantain and strawberry (and other desired plant species) may be required post-treatment to encourage their immediate establishment.
- Sites should be surveyed annually during the flight period to determine whether efforts have been successful at promoting Taylor’s checkerspot colonization.

## 4 Site Specific Management Recommendations

### 4.1 Bezell Memorial Forest

- Meadows at Bezell Memorial Forest are labeled in Figure 1 and described briefly in terms of size, aspect, elevation and soils in Table 8.

- Follow all recommended guidelines set forth in Section 3.1 and 3.2

**Table 8.** Site information for meadows at Beazell Memorial Forest.

<b>Beazell Meadow</b>	<b>Acres</b>	<b>Aspect</b>	<b>Elevations (Feet)</b>	<b>Soils</b>
North	15.5	SSW	860'-1300'	Witzel-Ritner Complex, 12-30% Slopes, Price-McDunn-Ritner Complex, 30-60% Slopes
Middle	5.5	SW	1280'-1380'	Witzel-Ritner Complex, 12-30% Slopes and 30-60%
Double Small Steep	2.75	WSW	1400'-1220'	Witzel-Ritner Complex, 12-30% Slopes and 30-60%
Summit	15.5	WSW	1400'-1630'	Witzel-Ritner Complex, 12-30% Slopes and 30-60%
South	3.75	SW	1090'-1260'	Dixonville-Gellatly Complex 12-30% Slopes
Caretaker's House	0.75	W	660'-710'	Dixonville-Gellatly Complex 12-30% Slopes

#### 4.1.0 North Meadow

##### 4.1.0.0 Site Description

**Taylor's checkerspot present?** Yes, but declining.

**Habitat:** Butterflies primarily use an acre or two of the flatter, summit portion of this relatively steep meadow. The area used by Taylor's checkerspot contains a small amount of remnant prairie plant species within an otherwise highly degraded area dominated by tall grasses and non-native plants (Scotch broom, rose, blackberry, thistle, false-brome). Bracken fern and snowberry are also present. The larval host plant, English plantain, is scarce and has been decreasing in abundance over the past several years. Nectar species, including strawberry, are in relatively low abundance and may also be disappearing from the site.

**Threats:** Habitat is threatened by spread of invasive non-native plants (tall fescue or orchard grass, rose, Scotch broom, thistle) as well as bracken fern and encroachment by shrubs (i.e., snowberry) and trees (i.e., Douglas-fir) into the meadow

#### **4.1.0.1      Management Recommendations**

Management priorities at this site should include enhancing existing meadow habitat. In addition to the general guidelines in Section 3, the following actions are recommended:

1. Remove Scotch broom (hand pulling or cutting, mowing, herbicide spray). Remove all hand pulled plant material from the meadow environment. Hand pulling of broom from the core Taylor's checkerspot area is recommended, but trampling must be minimized.
2. Reduce cover of invasive/tall grass and bracken fern component (burn & herbicide or mow, as appropriate and following parameters in Section 3). Do not impact core breeding areas.
3. Augment larval host and nectar plant populations within the meadow. Seeding or planting of young plants may be required.
4. The degraded meadow just upslope towards the road should be reclaimed as a Taylor's checkerspot is present there annually as nectaring adults.

#### **4.1.1      Middle Meadow**

##### **4.1.1.0      Site Description**

**Taylor's checkerspot present?** Yes, observed in 2008, and 2004-5.

**Habitat:** Butterflies observed to have preference for the least degraded portions of the site – the southern 1/3 and westward sloping (in the lee of prevailing winds) areas of this meadow. Those portions of the meadow appeared to contain the most remnant prairie habitat and included some plantain, with vegetation of relatively low stature overall. In 2007, tall grasses dominated the entire meadow and very little plantain was noted. Invasive shrubs (hawthorn, rose and scotch broom) and encroaching Douglas-fir present. Nectar species, including strawberry, appeared to be in low abundance.

**Threats:** A lack of larval host plants and adult nectar sources. Tall grasses (tall fescue and orchard grass) and invasive plants (hawthorn, rose, Scotch broom), tree encroachment (Douglas-fir) at the southern end of the meadow.

##### **4.1.1.1      Specific Management Recommendations**

To enable the natural re-colonization by Taylor's checkerspot butterfly from adjacent source populations, the following actions are recommended in addition to the general guidelines in Section 3.1:

1. Augment host (e.g., plantain) and nectar species (e.g., strawberry) within the meadow in areas of recent Taylor's checkerspot use. Seeding or planting of young plants may be required.
2. Work to reduce cover by tall stature grasses.
3. Monitor for the presence and establishment of Taylor's checkerspot and note areas of adult use.

## 4.1.2 Small Steep Double Meadows (south of the Middle Meadow)

### 4.1.2.0 Site Description

**Taylor's checkerspot present?** A few individuals have been recorded, but on-site breeding is doubtful.

**Habitat:** Openings as small, steep, shallow-soiled hillsides that serve as "stepping stones" for butterflies moving between adjacent areas of higher quality habitat. Larval and nectar resources have not been well assessed.

**Threats:** Encroachment by trees and shrubs and potential occupation by invasive plants that reduce the size of the opening or create habitat that consists of high-profile vegetation.

### 4.1.2.1 Specific Management Recommendations

In addition to the general recommendations in Section 3.1:

1. Better assess host and nectar resources.
2. Prioritize maintaining or expanding the meadow perimeters.

## 4.1.3 Summit Meadow

### 4.1.3.0 Site Description

**Taylor's checkerspot present?** Yes, as a moderate sized and reasonably stable colony.

**Habitat:** The meadow is relatively large, and the contiguous ridge area at the southern periphery has been opened up recently in an effort to reclaim oak savanna and adds an additional acre or two of potential Taylor's checkerspot habitat, some of which is occupied by Taylor's checkerspot. Also, about two acres of previously overlooked habitat on the southeast portion of the site was found to support moderate numbers of Taylor's checkerspot (2008). Originally, Taylor's checkerspot was thought to primarily utilize the upper 1/2-2/3 of the existing meadow, although reproduction appeared to be extremely localized within low stature vegetation hosting some plantain. One relatively small hand-mowed area along the summit ridge is heavily used by Taylor's checkerspot adults for nectaring. A large portion of the meadow contains tall grasses and there are sizeable patches of snowberry. Prairie plant species are present, but have not been well assessed. Typical nectar species such as strawberry are not abundant, and adults have been observed feeding at flowers of both Western buttercup and a dandelion species – two rarely used resources.

**Threats:** A lack of abundant larval host plants and adult nectar sources. Tall grasses (tall fescue and orchard grass) as well as shrub (snowberry) and tree encroachment (Douglas-fir) are potential threats.

#### **4.1.3.1 Specific Management Recommendations**

To support a larger population of Taylor's checkerspot at this site the following actions are recommended in addition to the general recommendations in Section 3.1:

1. Augment plantain, strawberry, and other nectar species within the meadow, especially within small areas where they currently exist. Seeding or planting of young plants may be required.
2. Better assess the presence and relative abundances of native and non-native species.

#### **4.1.4 South Meadow**

##### **4.1.4.0 Site Description**

**Taylor's checkerspot present?** Yes. The site currently (2007-2008) hosts the majority of the Bezell Taylor's checkerspot population.

**Habitat:** Reclaimed prairie/meadow within conifer forest. Taylor's checkerspot use is heaviest within the sloping portion of the site where plantain and strawberry densities are greatest and where tall grasses are least prevalent. The flatter portions of the upper and lower meadow support Taylor's checkerspot, but in much smaller numbers. Plantain and strawberry are generally abundant throughout the site. Bare patches of earth are also present, especially on the sloped portion. Small rose shrubs are present throughout and are heavily utilized as perch sites for adults.

**Threats:** While the sloped portion of the meadow hosts a few hundred butterflies at present, trailing blackberry, tall grasses and numerous small rose bushes, as well as encroaching Douglas-fir trees, are all potential threats to the site as a whole. A primary access trail (old road) runs across the lower portion of the site. An unofficial (deer) trail bisects the meadow from top to bottom. Pedestrian use of this trail could cause Taylor's checkerspot mortality.

##### **4.1.4.1 Specific Management Recommendations**

In addition to the general recommendations in Section 3.1, the following management actions are recommended to increase the availability of high quality habitat for Taylor's checkerspot that occur at the site. An increase in habitat quality at the site may encourage Taylor's checkerspot population growth.

1. The middle section of this meadow contains high quality habitat that should be maintained over time. Enhancement efforts should be focused on the upper and lower ends where habitat is of lower quality.
2. Remove trailing blackberry from the midslope area with minimal trampling or use of herbicides. For all other areas, use the most effective method available.
3. Maintain existing rose plants in the 2-4 foot tall range as long as they continue to be used by the butterflies for the perching and do not negatively affect other components of habitat quality.

4. Identify meadow edges where site enlargement could be conducted with greatest potential benefit. Increasing the size of the meadow gradually over time may benefit the Taylor's checkerspot population.
5. Discourage pedestrian use of the unsanctioned trail that bisects middle of meadow.

#### **4.1.5 Caretaker's House Meadow**

##### **4.1.5.0 Site Description**

**Taylor's checkerspot present?** Yes.

**Habitat:** A few Taylor's checkerspot show up at the site annually to nectar on the abundant strawberry flowers. Plantain is also plentiful, although the extent, if any, to which the site is used by females for egg laying is unknown. Frequent mowing has helped to keep the site suitable for Taylor's checkerspot use.

**Threats:** Various tall grasses and weedy plant species are present. Loss of plantain and strawberry may occur if annual mowing ceases. Encroachment into meadow by trees and shrubs from edges poses a continual threat. The small size of the site and the relative lack of connectivity to other area meadows with Taylor's checkerspot may limit Taylor's checkerspot use there. On-site breeding has not been witnessed.

##### **4.1.5.1 Specific Management Recommendations**

In addition to the general recommendations in Section 3.1, the following actions are suggested:

1. Annual mowing(s) to retain short stature vegetation and to encourage strawberry and plantain.
2. Monitor encroaching trees and shrubs, with removal every few years.
3. Maintain English plantain and strawberry, or other host plant and nectar plant abundance.
4. Refrain from using site as a parking area.

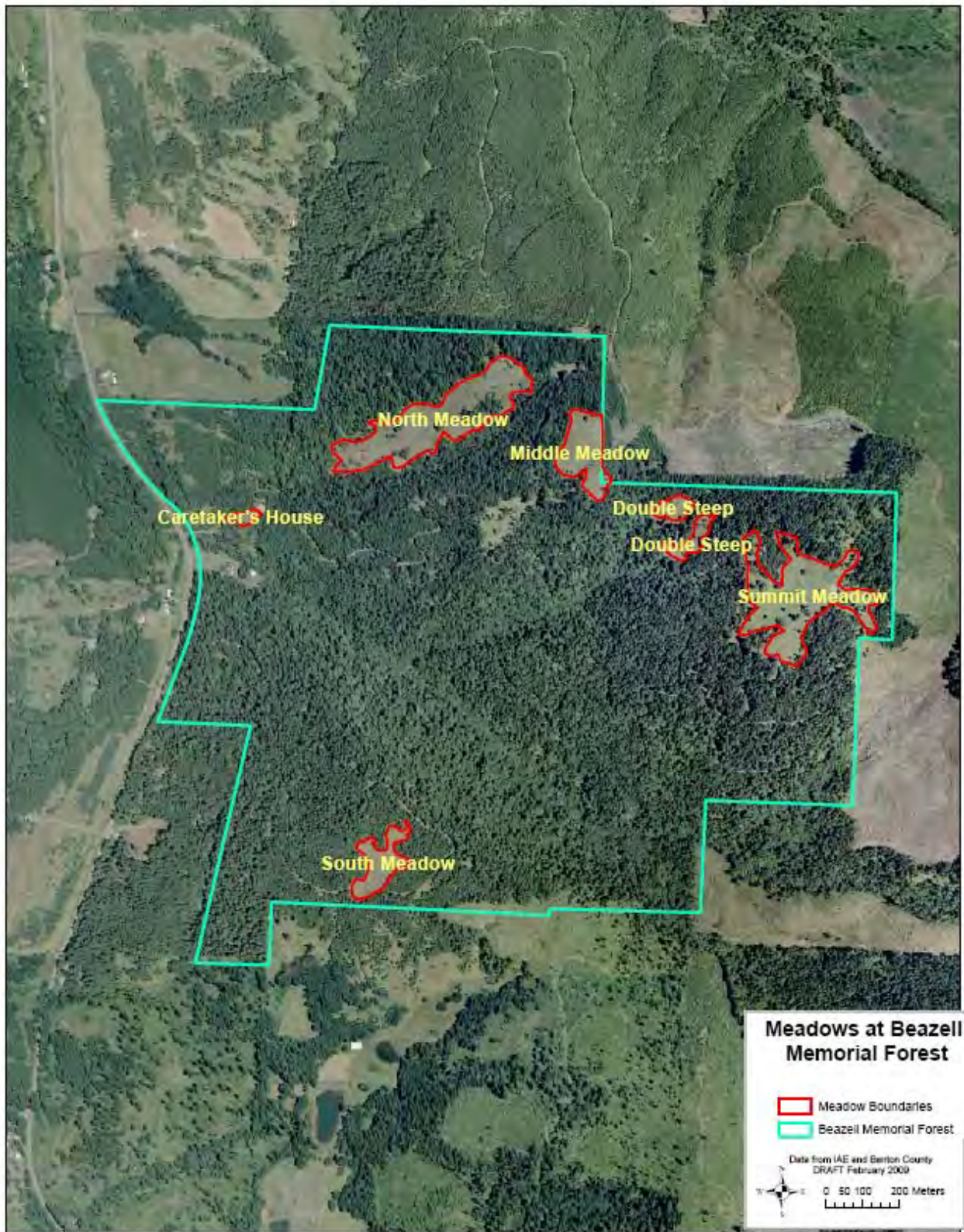


Figure 1. Meadow locations at Bezell Memorial Forest.

## 4.2 Fitton Green Natural Area

### 4.2.0 South Meadow

#### 4.2.0.0 Site Description

**Taylor's checkerspot present:** Yes, as a few dispersing individuals. On-site breeding has not been recorded.

**Habitat:** A relatively large area of upland oak savanna/prairie habitat undergoing restoration (29 acres, west to southwest aspect, 700'-1060' elevation; Figure 2). Some high quality, short stature vegetation, dominated by native perennial grasses, and including English plantain and strawberry is present on the main hillside. Lower portions of the site contain meadows that have good physical characteristics for Taylor's checkerspot, but lack the desired plant community (short stature grasses and presence of larval host and nectar species) at present. The site is largely isolated from the core population, but Taylor's checkerspot is able to reach it via the connecting ridgeline and/or forest roads and openings. The site includes soil of the Dixonville-Gellatly Complex, 12-30 and 30-60% slopes.

**Threats:** The site largely lacks high quality, low stature habitat with sufficient larval and adult plant resources within areas that may be best suited to Taylor's checkerspot—namely, in a few smaller stepping stone meadow areas on the lower west-southwest portion of the site in the lee of prevailing winds. Tree and shrub encroachment and tall grasses are also threats. While the area is a popular destination for hikers, trampling should not be an issue if existing trails are used. Limited connectivity to the core population to the north may limit dispersal to this site.

#### 4.2.0.1 Specific Management Recommendations

In addition to the general management guidelines in Section 3.1:

1. Restore select portions of lower meadows to high quality habitat in a stepping stone manner to attract dispersing Taylor's checkerspot and to encourage on-site breeding.
2. Identify, enlarge and restore openings along north/south road, and between Cardwell Hill Road and BPA power line easement to establish stepping stone dispersal opportunities.
3. Continue ongoing restoration of the site as a whole.
4. Monitor site annually for Taylor's checkerspot presence and document areas of primary use.



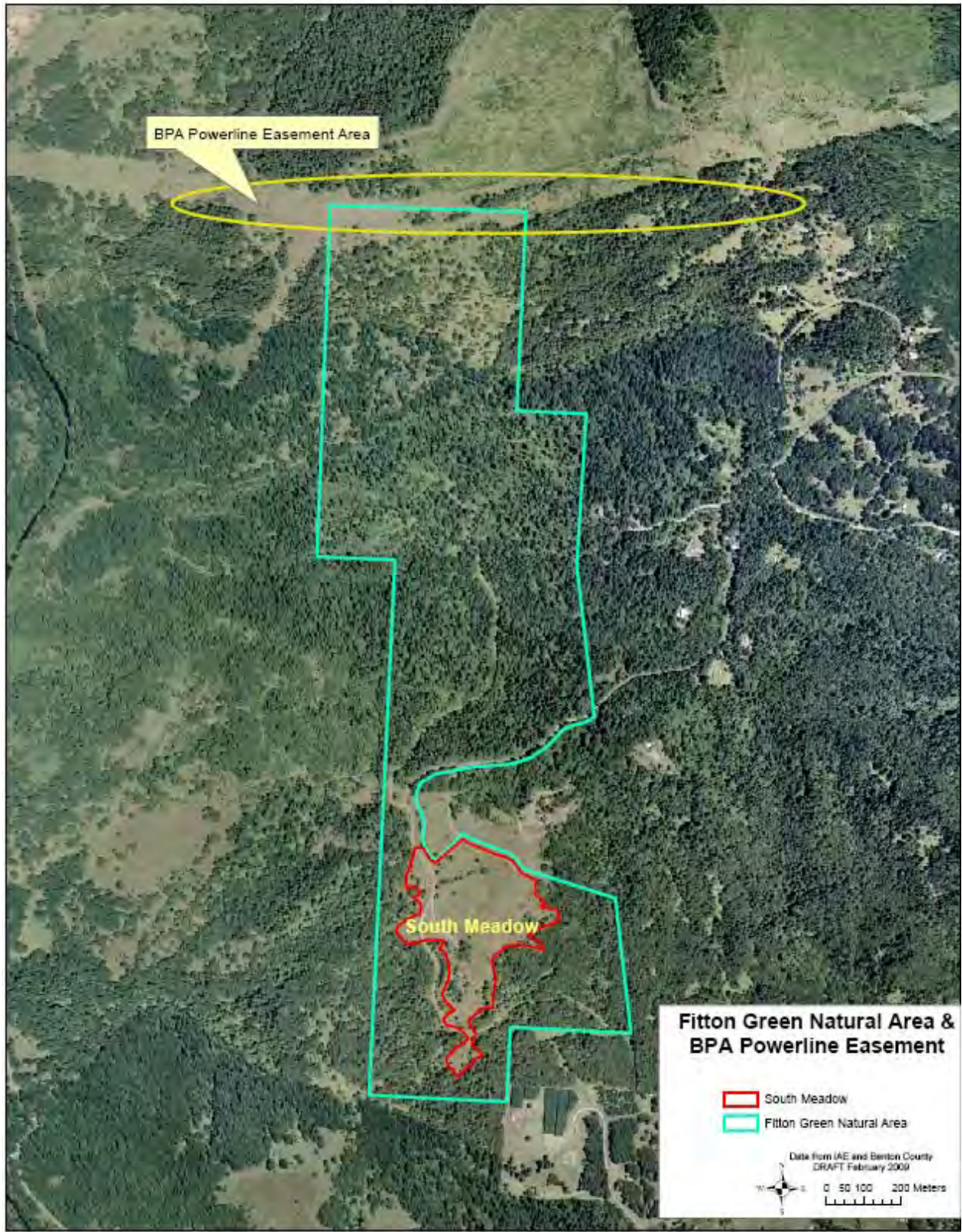


Figure 2. Fitton Green Natural Area adjacent to the BPA Powerline Easement.

## 5 Future Research

Research opportunities for this species abound. Effects of weather, aspect, plant communities, disease, site structure, dispersal patterns, herbicide interactions, predators, ideal habitat conditions, and successful restoration strategies on Taylor's checkerspot have yet to be fully understood.

As more research and study of Taylor's checkerspot takes place, new knowledge of nectar and host plant species may emerge. Such information will be incorporated into the management guidelines for this species on County owned and managed properties, under the advisement of species and resource specialists.

Future Taylor's checkerspot research should include studies of dispersal and recolonization by adults as well as more detailed studies of occupied sites and butterfly behavior there. The purposeful introduction of Taylor's checkerspot to an unoccupied site with the desired physical characteristics and high quality habitat should also be considered.

## 6 Literature Cited

Baron, N. and F. Backhouse. 1999. Rare Butterflies of Southeastern Vancouver Island and the Gulf Islands. The Disappearance of Critical Food Plants Threatens This Region's Butterfly Diversity. Brochure developed by British Columbia Ministry of Environment, Lands, and Parks.

Barry J.W., P.J. Skyler, M.E. Teske, J.A. Rafferty, and B.S. Grim. 1993. Predicting and measuring drift of *Bacillus thuringiensis* sprays. *Environmental Toxicology and Chemistry*. 12:1977-1989.

Butterfly Conservation Initiative. 2006. Taylor's (Whulge) Checkerspot Butterfly Overview. Accessed at: [www.butterflyrecovery.org/species\\_profiles/Taylors\\_Checkerspot](http://www.butterflyrecovery.org/species_profiles/Taylors_Checkerspot) on July 11, 2006.

Dornfeld, E. J. 1980. *Butterflies of Oregon*. Timber Press, Forest Grove, Oregon. 276 pp.

Ehrlich, P.R. 1992. Population Biology of Checkerspot Butterflies and the Preservation of Global Diversity. *Oikos* 63:6-12.

Gilkey, H. and L. Dennis. 2001. Handbook of Northwestern Plants. OSU Press, Corvallis, OR. 484 pp.

Hays, D. W., A.E. Potter, C.W. Thompson, and P.V. Dunn. 2000. Critical Habitat Components of Four Rare South Puget Sound Butterflies. Final Report.

Oregon Department of Fish and Wildlife. 2006. Oregon Conservation Strategy. Oregon Department of Fish and Wildlife, Salem, Oregon.

Oregon Natural Heritage Information Center. 2007. Rare, Threatened and Endangered Species of Oregon. Oregon Natural Heritage Information Center, Oregon State University, Portland, Oregon. 100 pp.

Potter A., J. Fleckenstein, S. Richardson, and D. Hays. 1999. Washington State Status Report for the Mardon Skipper. Washington Department of Fish and Wildlife. Olympia, WA. 39 pp.

Oregon Natural Resource Council. Link to Oregonian Article Dated May 19, 2004. Ecologists Trying to Boost the Numbers of the Fragile Beauties Campaign for Federal Protection, and the Oregon Zoo Begins Captive-Rearing Program.

Pyle, R.M. 1981. National Audubon Society Field Guide to North American Butterflies. Alfred . Knopf, New York, New York. 924 pp.

Ross, D. 2005. 2005 Surveys for Taylor's Checkerspot (*Euphydryas editha taylorii*) in Benton County, Oregon. Report submitted to the U.S. Fish and Wildlife Service, Portland Office. 6 pp.

Ross, D. 2006. 2006 Surveys For Taylor's Checkerspot (*Euphydryas editha taylori*) in Benton County, Oregon. A Report to The Xerces Society and U.S. Fish & Wildlife Service. 9 pp.

Ross, D. 2007. 2007 Summary Report to the Institute for Applied Ecology: Results from 2007 Surveys for Taylor's Checkerspot and Fender's Blue Butterflies for the Benton County Habitat Conservation Plan. Report to the Institute for Applied Ecology. 9 pp.

Ross, D. 2008. Population Estimates for Taylor's Checkerspot at Fitton Green Natural Area & Beazell Memorial Forest A Report to Benton County Natural Areas & Parks Department & U.S. Fish and Wildlife Service (Portland, OR). 8 pp.

Singer, M. C. and P. R. Ehrlich 1979. Population dynamics of the checkerspot butterfly *Euphydryas editha*. *Fortschritte der Zoologie* 25:53-60.

Stinson, D. W. 2005. Washington State Status Report for the Mazama Pocket Gopher, Streaked Horned Lark, and Taylor's Checkerspot. Washington Department of Fish and Wildlife, Olympia. 129+ xii pp.

U.S. Fish and Wildlife Service. Taylor's checkerspot (*Euphydryas editha taylorii*) Endangered Species Fact Sheet. Accessed at: <http://www.fws.gov/Oregonfwo/EndSpp/FactsInverts/Checkerspot.htm> on July 11, 2006.

U.S. Fish and Wildlife Service. 2008. Taylor's Checkerspot Butterfly Species Profile. Accessed at: <http://ecos.fws.gov/speciesProfile/SpeciesReport.do?scode=IOT6> on April 16, 2008

Weiss, S.B., R.R. White, D.D. Murphy, and P.R. Ehrlich. 1987. Growth and Dispersal of Larvae of the Checkerspot Butterfly *Euphydryas editha*. *Oikos* 50(2):161-166.

Whaley, W.H., J. Arnold, and B.G. Schaaleje. 1998. Canyon drift and dispersion of *Bacillus thuringiensis* and its effects on selection nontarget lepidopterans in Utah. *Environmental Entomology*. 27(3):539-548.

Xerces Society, Friends of the San Juans, Oregon Natural Resources Council, Northwest Ecosystem Alliance, and Center for Biological Diversity. 2002. Petition to Emergency List Taylor's (Whulge) Checkerspot Butterfly (*Euphydryas editha taylorii*) as an Endangered Species under the U.S. Endangered Species Act.

# **Appendix O. Covered Plant Soils Lists**

Table O.1 The Covered Plant Species occur on a wide variety of soil types. The table below shows the percent of known populations that occur on each soil type, and sums the total number of soil types for each species.

Soil Type	Slopes (%)	Frequency of Occurrence				
		DEPA	ERDE	LOBR	LUSUKI	SINE
Abiqua silty clay loam	0 - 3 %	4.08%				
	3 - 5 %				1.23%	
Amity silt loam	0 - 3 %	4.08%				3.07%
Awbrig silty clay loam	0 - 2 %	4.08%				3.07%
Bashaw clay (flooded)	0 - 3 %			46.15%		22.70%
Bashaw clay (non-flooded)	0 - 3 %				1.84%	26.99%
Bashaw silty clay loam (non-flooded)	0 - 3 %			7.69%	0.61%	3.68%
Bellpine-Jory complex	12 - 20 %				2.45%	
	30 - 60 %				1.23%	
Briedwell gravelly loam	0 - 7 %				0.61%	
	7 - 20 %				1.23%	
Cehalem silty clay loam	3 - 12 %					0.61%
Cehalis silt loam	0 - 3 %					0.61%
Coburg complex (rare/occasionally flooded)	0 - 3 %	6.12%		15.38%	1.23%	2.45%
Coburg silty clay loam	0 - 3 %	4.08%				0.61%
Coburg silty clay loam (rarely flooded)	0 - 3 %	4.08%				1.84%
Concord silt loam	0 - 2 %					0.61%
Conser silty clay loam	0 - 3 %	2.04%	13.33%			0.61%
Dayton silt loam	0 - 2 %	20.41%			0.61%	0.61%
Dayton silt loam (clay substratum)	0 - 2 %					1.84%
Dixonville-Gellatly complex	12 - 30 %	4.08%			22.09%	
	30 - 60 %				0.61%	
Dixonville-Gellatly-Witham complex	2 - 12 %		13.33%		26.38%	0.61%
Holcomb silt loam	0 - 3 %					1.84%
Jory silty clay loam	12 - 20 %				2.45%	
	2 - 12 %	6.12%			8.59%	
Jory silty clay loam (sediments)	2 - 12 %				0.61%	
Jory-Gelderman complex	12 - 30 %	4.08%			6.75%	
MacDunn-Price-Ritner complex	60 - 90 %				0.61%	
McAlpin silty clay loam	0 - 3 %		60.00%		3.68%	1.23%
	3 - 6 %	4.08%			2.45%	
McAlpin silty clay loam (rarely flooded)	0 - 3 %	6.12%			3.07%	
Price-MacDunn-Ritner complex	30 - 60 %				3.07%	
Santiam silt loam	2 - 8 %				0.61%	0.61%
Verboort silty clay loam	0 - 3 %					1.23%
Waldo silty clay loam	0 - 3 %	16.33%	6.67%	30.77%		23.31%
Willamette silt loam	0 - 3 %					0.61%
Witham silty clay loam	2 - 12 %		6.67%		6.13%	
Witzel-Ritner complex	12 - 30 %				1.23%	
	3 - 12 %				0.61%	
Woodburn silt loam	0 - 3 %	10.20%			2.45%	
<b># Soil Types Per Species</b>		<b>15</b>	<b>5</b>	<b>4</b>	<b>26</b>	<b>21</b>

# Appendix P. Sample Annual Compliance Report<sup>6</sup>

---

<sup>6</sup> Subject to revision over time with input from the USFWS and ODA.

20XX Annual Compliance Report  
for Endangered Species Permit # \_\_\_\_\_  
Submitted to the  
U.S. Fish and Wildlife Service  
and  
Oregon Department of Agriculture  
  
by  
  
Benton County  
\_\_\_\_\_, 20XX



# Contents

Executive Summary .....	4
1 Introduction .....	5
1.1 Summary of Work towards Biological Goals and Objectives .....	5
1.1.0 Conservation Measures and Tasks Completed.....	5
2 Covered Activities Completed.....	6
2.1 Home, Farm and Forest Construction .....	6
2.2 Telephone Utility Construction and Maintenance.....	6
2.2.0 Pioneer Telephone Cooperative .....	6
2.3 Natural Gas Utility Construction and Maintenance.....	6
2.3.0 NW Natural.....	6
2.4 Public Service Facility Construction.....	6
2.4.0 Benton County.....	6
2.5 Transportation Activities.....	6
2.5.0 Benton County.....	6
2.5.1 Oregon Department of Transportation .....	7
2.6 Water and Wastewater Management.....	7
2.6.0 City of Corvallis.....	7
2.7 Agriculture .....	7
2.7.0 City of Corvallis.....	7
2.8 Emergency Response Activities .....	7
2.8.0 Benton County.....	7
2.8.1 City of Corvallis.....	7
2.8.2 Greenbelt Land Trust.....	7
2.8.3 NW Natural.....	7
2.8.4 Oregon Department of Transportation .....	7
2.8.5 Oregon State University.....	7
2.8.6 Pioneer Telephone Cooperative .....	7
2.9 Voluntary Parks/Natural Areas/Open Space Management.....	8
2.9.0 Summary of All Sites .....	8
2.9.1 Benton County.....	8
2.9.2 City of Corvallis.....	9
2.9.3 Oregon State University.....	11
2.9.4 Greenbelt Land Trust.....	11
2.10 Mitigation Related Habitat Restoration, Enhancement and Management.....	12
2.10.0 New Mitigation Initiated (See attached Cooperator Reporting Form D: Mitigation Notices) .....	12
2.10.1 New Mitigation Completed (See attached Cooperator Reporting Form D: Mitigation Notices) .....	12
2.10.2 Work Completed for On-Going Mitigation Projects.....	13
2.11 Seed Collection.....	13
2.11.0 Total Seeds/Plant Material Collected .....	13

2.11.1	Detailed Seed Collection Information by Site .....	13
2.12	Effectiveness Monitoring.....	14
3	Changed Circumstances .....	15
3.1	Additional Federal or State Listed Species in Plan Area.....	15
3.2	Delisted Species .....	15
3.3	New Wild Population of Fender’s Blue Butterfly Discovered outside Fender’s Blue Zone .....	15
3.4	New Invasive Species.....	15
3.5	Natural Catastrophes .....	15
4	Administration .....	16
4.1	Take Allocated.....	16
4.1.0	Total Take Issued .....	16
4.2	Certificates of Inclusion Issued .....	16
4.2.0	List by Private Ownership .....	17
4.2.1	List by Cooperator.....	17
4.3	Cooperative Agreements Executed .....	17
4.3.0	List by Cooperator.....	17
5	References .....	17

## Executive Summary

Benton County committed under the Prairie Species Habitat Conservation Plan (HCP) to submit an annual report to the US Fish and Wildlife Service (USFWS) and the Oregon Department of Agriculture (ODA) describing the implementation of the HCP. This HCP annual report covers the period from [insert date] to [insert date] and describes the efforts within the County HCP program and with HCP Cooperators to implement the HCP.

[Insert summary of each section below].

# 1 Introduction

In [ ], Benton County completed the Prairie Species Habitat Conservation Plan (HCP) to achieve long term viability of rare species populations that is compatible with essential public services, public land management and home, farm and forest construction. This effort was completed by the County and several Cooperators in response to the federal and state threatened and endangered status of certain butterfly and plant species. The US Fish and Wildlife Service (USFWS) and Oregon Department of Agriculture (ODA) accepted the HCP and under the authority of the Endangered Species Act (ESA), on [insert date], the USFWS issued an Incidental Take Permit (ITP) to Benton County. As a part of the HCP agreement, the County is to submit an annual report to USFWS and ODA describing implementation activities. This, the [insert number] annual report, covers the period from [ ] to [ ]. The report describes the County and Cooperators' (City of Corvallis, Greenbelt Land Trust, Oregon Department of Transportation, Oregon State University, NW Natural and Pioneer Telephone Cooperative) efforts to avoid, minimize and mitigate impacts to the HCP Covered Species (Fender's blue butterfly, Taylor's checkerspot butterfly, Kincaid's lupine, Willamette Daisy, Nelson's checkermallow, Bradshaw's lomatium and peacock larkspur).

## 1.1 Summary of Work towards Biological Goals and Objectives

### 1.1.0 Conservation Measures and Tasks Completed

The HCP sets forth Conservation Measures to avoid, minimize and mitigate impacts to the HCP Covered Species. The HCP identifies three major objectives of the conservation program, each with Conservation Measures and specific tasks:

- 1) Conserve Covered Species populations and habitat
- 2) Enhance Covered Species populations and habitat
- 3) Increase the distribution and connectivity of Covered Species populations

Progress towards these objectives, measures and tasks completed between [insert dates] is described in this section

[Refer to specific conservation measures and tasks described in Section 6.2.0 of the HCP.]

## 2 Covered Activities Completed

[Information for this section included in Cooperator Reporting Form A: Project Impacts, and Cooperator Reporting Form B: Work Completed- Habitat Restoration, Enhancement and Management.]

### 2.1 Home, Farm and Forest Construction

Insert # projects, total impact area, average project impact area, total FBB habitat (total lupine, native nectar and non-native nectar) impacted.

### 2.2 Telephone Utility Construction and Maintenance

#### 2.2.0 Pioneer Telephone Cooperative

Insert total line replaced, total impact area, total FBB habitat (total lupine, native nectar and non-native nectar) impacted.

### 2.3 Natural Gas Utility Construction and Maintenance

#### 2.3.0 NW Natural

Insert total line installed and replaced, total impact area, total FBB habitat (total lupine, native nectar and non-native nectar) impacted.

### 2.4 Public Service Facility Construction

#### 2.4.0 Benton County

Insert total acreage impacted for rural school or fire station construction, and total FBB habitat (total lupine, native nectar and non-native nectar) impacted.

### 2.5 Transportation Activities

#### 2.5.0 Benton County

##### 2.5.0.0 Transportation Maintenance

Insert total acreage impacted with transportation maintenance (mowing in the nectar zone), and total FBB nectar habitat (native nectar and non-native nectar) impacted.

##### 2.5.0.1 Transportation Projects- Type 2 ROW

#### Kincaid's lupine outside the Fender's Blue Zone

List Type 2 SMA's impacted for this species, describe project, and insert number of individuals impacted.

**Nelson's checkermallow**

List Type 2 SMA's impacted for this species, describe project, and insert number of individuals impacted.

**Peacock larkspur**

List Type 2 SMA's impacted for this species, describe project, and insert number of individuals impacted.

**2.5.1 Oregon Department of Transportation**

Insert total acreage impacted with transportation maintenance (mowing in the nectar zone), and total FBB nectar habitat impacted (calculated using average native nectar cover of 1.39% and average non-native nectar cover of 1.36%).

**2.6 Water and Wastewater Management****2.6.0 City of Corvallis**

Insert description of water and wastewater activities completed. Insert total area of habitat and Nelson's checkermallow plants impacted

**2.7 Agriculture****2.7.0 City of Corvallis**

[Insert description of Agricultural activities completed at Owens Farm. Insert total area of habitat and Nelson's checkermallow plants impacted at Owens Farm.]

**2.8 Emergency Response Activities**

[For each ownership, describe any emergency response activities that occurred, total area impacted, and any species affected.]

**2.8.0 Benton County****2.8.1 City of Corvallis****2.8.2 Greenbelt Land Trust****2.8.3 NW Natural****2.8.4 Oregon Department of Transportation****2.8.5 Oregon State University****2.8.6 Pioneer Telephone Cooperative**

## 2.9 Voluntary Parks/Natural Areas/Open Space Management

The Benton County HCP covers permanent impacts to the Covered Species from activities such as home, farm and forest construction, but also covers a significant amount of short-term impacts that may result from habitat restoration, enhancement and management activities (e.g., mortality to rare plant seeds from a prescribed fire) on County and Cooperator lands. These activities are undertaken proactively for conservation purposes, are not completed to fulfill a specific mitigation requirement. On the contrary, as these habitat restoration, enhancement and management activities are designed to produce long-term benefit the Covered Species and their associated habitats, mitigation is not required for any short term impacts that occur.

The County and the Cooperators are responsible for independently tracking the habitat restoration, enhancement and management activities they complete, and monitoring (Effectiveness Monitoring) the effects of these activities on the Covered Species and their habitat. Monitoring data is compiled and analyzed so that adaptive management, a process allowing resource managers to adjust their actions to reflect new information or changing conditions, can take place to achieve the best outcomes for the Covered Species.

### 2.9.0 Summary of All Sites

[Insert total:

Acres mowed

Acres grazed

Acres burned

Acres treated with herbicide

Species/# introduced/augmented]

### 2.9.1 Benton County

#### 2.9.1.0 Bezell Memorial Forest

This 237 ha (586 ac) property is located in Kings Valley and was gifted to Benton County in 2000 for perpetual park purposes. The property has a demonstration forest and open space area, with progressive ecosystem management practices used to protect, conserve, and restore the natural, scenic, outdoor recreation, and wildlife values. Revenue generated from logging is used to manage the property. Bezell is open to the public, and has restrooms, drinking water, hiking trails, and picnicking facilities. Taylor's checkerspot butterfly is present (Ross 2007), and Kincaid's lupine was planted at the Bezell prior to the HCP.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated

## 5. Species and # introduced/augmented

### 2.9.1.1 Fitton Green Natural Area

Fitton Green Natural Area is a 124.6 ha (308 ac) property acquired by Benton County for the purposes of demonstrating progressive stewardship practices (David Reed & Associates 2000). Approximately 56.6 ha (140 ac) of the natural area (northern meadow) is covered by a conservation easement held by the Greenbelt Land Trust. A portion of Fitton Green will be designated for use as a mitigation site. A single Taylor's checkerspot butterfly was observed in 2007 in the southern meadow (Ross 2007). Kincaid's lupine was introduced to the site prior to the HCP.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

### 2.9.1.2 Jackson-Frazier Wetland

This 58 ha (144 ac) site is located northeast of Corvallis. The park was established in 1992 to protect the natural features of the area and provide educational and research opportunities. The site is open to public use, although foot traffic is limited to a wooden boardwalk winding through the wetland. Four acres outside the wetland overlay, and lacking Covered Species occurrences, have a conservation easement held by the Greenbelt Land Trust. There are naturally occurring populations of Kincaid's lupine, Nelson's checkermallow, and Bradshaw's lomatium within the wetland. Additional Nelson's checkermallow and Bradshaw's lomatium were planted at the site prior to the completion of the HCP.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

## 2.9.2 City of Corvallis

### 2.9.2.0 Bald Hill Park

This 115 ha (284 ac) site includes oak savanna, upland prairie, wetlands, riparian, and oak woodlands. The park also includes a historic barn, an interpretive trail, and trails that connect with the Benton County Fairgrounds. The site has a natural population of Willamette daisy. IAE has introduced Kincaid's lupine and planted additional Willamette daisy at this site.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

### **2.9.2.1 Corvallis Watershed**

The City of Corvallis owns 951.8 ha (2,352 ac) encompassing the lower elevations of the 4,406.9 ha (10,000 ac) Rock Creek Watershed on the northeast flanks of Marys Peak. The land is managed primarily by the City of Corvallis Public Works Department although a section near south east end of the property is managed by the Parks Department as "Rock Creek Park". There are native prairie remnants along Rock Creek Road and on the rocky knoll adjacent to Highway 34 significant for their concentration of native prairie species. The wedge-shaped parcel of land (Rock Creek Corner) containing the rocky knoll and bordered by Highway 34 and Rock Creek Road will be managed as a mitigation area. Peacock larkspur is present at the site, both along the Rock Creek Road and in Rock Creek Corner.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

### **2.9.2.2 Herbert Farm and Natural Area**

This 89.4 ha (221 ac) historic farmland site includes wetlands, oak woodlands, wet prairie, and riparian habitat supporting diverse plant communities and wildlife. Marys River and Muddy Creek converge on the property. There are no existing trails, but future passive public use is under consideration at this time. The City of Corvallis owns Herbert Farm and Natural Area, but The Trust for Public Lands holds the conservation easement. The property serves as mitigation for the Bonneville Power Administration's Willamette Basin federal hydro-electric dams and reservoirs. Naturally occurring populations of Kincaid's lupine, Nelson's checkermallow and peacock larkspur are present at this site.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

### **2.9.2.3 Lancaster Property**

The City of Corvallis owns approximately 1.8 ha (4.5 ac) of property with wet prairie habitat adjacent to the County-owned Jackson-Frazier Wetland. These lands, known as the Lancaster Property are managed by the City of Corvallis Housing Division of Community Development. As a result of its location between a residential area and the County-owned Jackson-Frazier Wetland, the area receives light pedestrian traffic. There are natural populations of Bradshaw's lomatium and Nelson's checkermallow and augmented populations of Nelson's checkermallow.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated



## 5. Species and # introduced/augmented

### 2.9.3 Oregon State University

#### 2.9.3.0 Butterfly Meadows

Butterfly Meadows is a (0.45 ha [1.1 ac]) meadow owned by Oregon State University. The meadow is surrounded by forest lands. Kincaid's lupine and Fender's blue butterfly are present at the site.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

#### 2.9.3.1 Soap Creek Ranch

The OSU Department of Animal Sciences operates the Soap Creek Ranch (1,880 acres), which is located 11 miles north of the OSU campus. Approximately 65% of the ranch is open grasslands utilized primarily for forage production, and the remainder is forested. The site supports a large population of Kincaid's lupine, and a scattered population of Nelson's checkermallow.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

### 2.9.4 Greenbelt Land Trust

#### 2.9.4.0 Lone Star Ranch

This 80.5 ha (199 ac) property west of Philomath is under conservation easement to the Greenbelt Land Trust. Lone Star includes wet and upland prairie and oak savanna. Portions of the easement may be managed as a mitigation area for purposes of the HCP, provided they are not used as mitigation for any other project. No Covered Species are known to occur at this site.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

#### 2.9.4.1 Lupine Meadows

Lupine Meadows is a 23.5 ha (58 ac) site with dominant habitats including wetland and upland prairie, ash swale and savanna and riparian forest habitat. Lupine Meadows has a high diversity of native vegetation. The upland prairie supports natural populations of Kincaid's lupine and Fender's blue butterfly. The wetland prairie, ash swales, and

riparian areas support an existing small and scattered population of Nelson's checkermallow (Kaye 2008). Nelson's checkermallow was planted on the western and southeastern sides of the property prior to the HCP.

1. Acres mowed, date mowed
2. Acres grazed with (X livestock during X and Y months)
3. Acres burned, date burned
4. Acres treated with herbicide, date treated
5. Species and # introduced/augmented

## **2.10 Mitigation Related Habitat Restoration, Enhancement and Management**

### **2.10.0 New Mitigation Initiated (See attached Cooperator Reporting Form D: Mitigation Notices)**

- 2.10.0.0 **Benton County**
- 2.10.0.1 **City of Corvallis**
- 2.10.0.2 **Greenbelt Land Trust**
- 2.10.0.3 **NW Natural**
- 2.10.0.4 **Oregon Department of Transportation**
- 2.10.0.5 **Oregon State University**
- 2.10.0.6 **Pioneer Telephone Cooperative**

### **2.10.1 New Mitigation Completed (See attached Cooperator Reporting Form D: Mitigation Notices)**

- 2.10.1.0 **Benton County**
- 2.10.1.1 **City of Corvallis**
- 2.10.1.2 **Greenbelt Land Trust**
- 2.10.1.3 **NW Natural**
- 2.10.1.4 **Oregon Department of Transportation**
- 2.10.1.5 **Oregon State University**
- 2.10.1.6 **Pioneer Telephone Cooperative**

### 2.10.2 Work Completed for On-Going Mitigation Projects

[List each mitigation site for each ownership, species being mitigated, then insert acres burned, mowed, grazed or treated with herbicide this year, as reported on Reporting Form B].

- 2.10.2.0 Benton County
- 2.10.2.1 City of Corvallis
- 2.10.2.2 Greenbelt Land Trust
- 2.10.2.3 NW Natural
- 2.10.2.4 Oregon Department of Transportation
- 2.10.2.5 Oregon State University
- 2.10.2.6 Pioneer Telephone Cooperative

## 2.11 Seed Collection

[Information for this section included in Cooperator Reporting Form B: Work Completed-Habitat Restoration, Enhancement and Management].

### 2.11.0 Total Seeds/Plant Material Collected

	Year 1	Year 2	Year 3
Bradshaw's lomatium			
Nelson's checkermallow			
Peacock larkspur			
Willamette daisy			
Kincaid's lupine (Outside Fender's Blue Zone)			
Kincaid's lupine (Inside Fender's Blue Zone)			
Fender's blue Nectar Species (Inside nectar zone)			
Taylor's checkerspot Host Species			
Taylor's checkerspot Nectar Species			

### 2.11.1 Detailed Seed Collection Information by Site

See attached Reporting Form(s).

## **2.12 Effectiveness Monitoring**

Effectiveness Monitoring is conducted to determine the success of habitat restoration, enhancement, and management, as measured by tracking species status and habitat condition. Only sites with new effectiveness monitoring data will be included in this report in any given year.

The first year of monitoring data, along with data from any prior surveys, will serve as the site's baseline inventory. Once baseline conditions have been established, they will be followed up with periodic re-sampling (monitoring) occurring at a minimum of every three years. If significant management activities (e.g. prescribed fire) are implemented, monitoring should be conducted at a greater frequency (e.g., to collect pre-and post-treatment data) if needed to supply data for adaptive management, then return to regular three year monitoring cycles.

[Information for this section included in Cooperator Reporting Form C: Effectiveness Monitoring Summary. For each site, insert:

**Monitoring Summary**-[Was monitoring completed this year? If so, insert "See attached Monitoring Summary Form.", if not, insert 'No effectiveness monitoring required at this site this year'.]

**Actions in response to any triggered Adaptive Management**-[Were any such actions taken? If so, describe. If not, insert "No such actions taken".]

### **2.12.0.0 Benton County**

**Bezell Memorial Forest**

**Fitton Green Natural Area**

**Jackson Frazier Wetland**

### **2.12.0.1 City of Corvallis**

**Bald Hill**

**Corvallis Watershed**

**Herbert Farm and Natural Area**

**Lancaster property**

### **2.12.0.2 Oregon State University**

**Butterfly Meadows**

**Soap Creek Ranch**

### **2.12.0.3 Greenbelt Land Trust**

**Lone Star Ranch**

**Lupine Meadows**

**Owens Farm**

## **3 Changed Circumstances**

### **3.1 Additional Federal or State Listed Species in Plan Area**

Note additional species listed. Discuss whether Benton County plans to address these species through a major amendment to the HCP and additional formal review process.

### **3.2 Delisted Species**

Note any Covered Species that have been delisted.

### **3.3 New Wild Population of Fender's Blue Butterfly Discovered outside Fender's Blue Zone**

Note any such populations, and whether the County plans to seek additional HCP coverage or refer landowner to USFWS.

### **3.4 New Invasive Species**

Note any new invasive species detected at Prairie Conservation Areas.

### **3.5 Natural Catastrophes**

Describe the location, scope and scale of any natural disasters occurring within the Plan Area.

# 4 Administration

## 4.1 Take Allocated

### 4.1.0 Total Take Issued

	Bradshaw's lomatium (#)	Willamette daisy (#)	peacock larkspur (#)	Nelson's checker-mallow (#)	Kincaid's lupine outside the Fender's Blue Zone	Kincaid's lupine inside the Fender's Blue Zone	Nectar for Fender's blue butterfly (m <sup>2</sup> )	Taylor's checkerspot butterfly habitat (m <sup>2</sup> )
<b>Home, Farm and Forest Construction</b>								
<b>Telephone Utility Construction and Maintenance</b>								
<b>Natural Gas Utility Construction and Maintenance</b>								
<b>Public Service Facility Construction</b>								
<b>Transportation Activities</b>								
Construction, maintenance, utility work and road approach								
Maintenance, utility and road approach outside known populations								
<b>Water and Wastewater Management</b>								
<b>Agriculture</b>								
<b>Emergency Response Activities</b>								
<b>Total</b>								

## 4.2 Certificates of Inclusion Issued

As part of Benton County's incidental take permit, the County has authorization to issue Certificates of Inclusion (take authorization) to persons needing a County permit or agricultural building authorization for impacts to Fender's blue butterfly habitat resulting from home, farm or forest construction in the Fender's Blue Zone. The County

may also issue Certificates of Inclusion to HCP Cooperators for activities identified and covered in the HCP.

#### **4.2.0 List by Private Ownership**

Benton Count issued a total of [insert number] Certificates of Inclusion to private landowners between [insert dates].

[insert list of Certificates of Inclusion for private landowners]

#### **4.2.1 List by Cooperator**

Benton Count issued a total of [insert number] Certificates of Inclusion to Cooperators between [insert dates].

[insert list of Certificates of Inclusion for Cooperators]

### **4.3 Cooperative Agreements Executed**

To obtain a Certificate of Inclusion, a Cooperator must enter into a Cooperative Agreement with Benton County. This agreement sets forth the requirements of the County and the Cooperator entering the agreement, including monitoring and reporting commitments of the Cooperator.

#### **4.3.0 List by Cooperator**

Benton Count entered into a total of [insert number] Cooperative Agreements with Cooperators between [insert dates].

[insert list of Cooperative Agreements]

## **5 References**

[insert any references cited.]

# Appendix Q. Sample Cooperator Reporting Forms<sup>7</sup>

---

<sup>7</sup> Subject to revision over time with input from the USFWS and ODA.



## Summary of Cooperator Reporting Forms and Purposes

Cooperator Reporting Form	When Required?	Purpose	Due
<b>Form A:</b> Project Impacts	Required as precursor to Cooperative Agreement when Cooperator needs authorization for permanent impacts identified in HCP.	Part A requests impacts.	Minimum of 3 months prior to project.
		Part B reports impacts.	December 31 of year with impacts.
<b>Form B:</b> Work Completed-Habitat Restoration, Enhancement and Management	Every year habitat restoration, enhancement or management work is completed.	Reports voluntary or mitigation related habitat restoration, enhancement and management work.	December 31 of year with work completed.
<b>Form C:</b> Effectiveness Monitoring Summary	Year 0 (baseline) of habitat restoration, enhancement and management work (for mitigation or conservation) and every 3 yr following.	Reports HCP species status and habitat condition, and tracks adaptive management thresholds.	By December 31 of year with monitoring completed.
<b>Form D:</b> Mitigation Notices	Required as part of Cooperative Agreement, any time Cooperator needs to complete mitigation for permanent impacts identified in HCP.	Part A notifies County of mitigation initiated.	Minimum of 3 months prior to project.
		Part B documents fulfillment of mitigation requirements.	By December 31 of the year mitigation is completed.



**BENTON COUNTY PRAIRIE SPECIES HCP**

**Reporting Form A: Project Impacts**

SUBMIT TO: BENTON COUNTY COMMUNITY DEVELOPMENT DEPARTMENT, 360 SW Avery Avenue, Corvallis, OR

**PART A: REQUEST FOR IMPACTS** (to be completed PRIOR to impacts).

*Benton County will use this information to determine whether a HCP Cooperator's proposed impacts can be covered by the Benton County Prairie Species HCP. If impacts can be covered under Benton County's incidental take permit and HCP, additional information will be required to develop a Cooperative Agreement between the Cooperator and Benton County, and for a Certificate of Inclusion to be issued.*

**Cooperator Name:** \_\_\_\_\_

**Date of Proposed Impacts:** \_\_\_\_\_

**Location of Proposed Impacts:** \_\_\_\_\_

**Required Documentation: Project Map(s). Attach following maps:**

- Location of project, including property boundaries.
- Extent of proposed project impact area.
- Location of Covered Species within impact area.

**Required Documentation: Project Description.** Attach a brief description of the activities that will result in the proposed impacts. In the case of utilities, this should include length of line installed or replaced within the Fender's Blue Zone and Nectar Zone, etc.

**Required Documentation: Quantity of Covered Species to be Impacted by Proposed Project.** Attach current Survey Report documenting species abundance within project area, or calculate native nectar species quantity (based on impact area and cover of 1.39% on roadsides or 1.7% elsewhere).

_____ Nelson's checkermallow (#)	_____ Kincaid's lupine (m <sup>2</sup> ) outside Fender's Blue Zone
_____ Bradshaw's lomatium (#)	_____ Kincaid's lupine (m <sup>2</sup> ) inside Fender's Blue Zone
_____ Willamette daisy (#)	_____ Native Nectar for Fender's blue butterfly (m <sup>2</sup> )
_____ Peacock larkspur (#)	

**Has mitigation already been completed for this project?**

- No.
- Yes, copy of previously submitted Form D Attached.

\_\_\_\_\_  
[[[Signature of Cooperator Representative]]] Date

\_\_\_\_\_  
Name of Cooperator

\_\_\_\_\_  
Address Phone

\_\_\_\_\_  
Community Development Director, Benton County Representative Date

**PART B: REPORTING OF IMPACTS** (to be completed AFTER impacts occur).  
*Benton County will use this information in its annual compliance reporting to the USFWS and ODA.*

Cooperator Name: \_\_\_\_\_

Date(s) of Impacts: \_\_\_\_\_

Location(s) of Impacts: \_\_\_\_\_

- Required Documentation: Attach Project Maps (may refer to PART A if no change).**
  - Location of project, including property boundaries.
  - Extent of proposed project impact area.
  - Location of Covered Species within impact area.

- Required Documentation: Attach Project Description (may refer to PART A if no change)**  
(Attach a brief description of the activities that resulted in impacts. In the case of utility work within the Fender's Blue Zone, this should include length of line installed, replaced, area of ground disturbed, etc.).

**Confirmed Quantity of Covered Species Impacted by Project:**

_____ Nelson's checkermallow (#)	_____ Kincaid's lupine (m <sup>2</sup> ) outside Fender's Blue Zone
_____ Bradshaw's lomatium (#)	_____ Kincaid's lupine (m <sup>2</sup> ) inside Fender's Blue Zone
_____ Willamette daisy (#)	_____ Native Nectar for Fender's blue butterfly (m <sup>2</sup> )
_____ Peacock larkspur (#)	

\_\_\_\_\_

\_\_\_\_\_ **[[[Signature of Cooperator Representative]]]** Date

\_\_\_\_\_ Name of Cooperator

\_\_\_\_\_ Address Phone

\_\_\_\_\_ Community Development Director, Benton County Representative Date







## BENTON COUNTY PRAIRIE SPECIES HCP Reporting Form C: Effectiveness Monitoring Summary

SUBMIT TO: BENTON COUNTY COMMUNITY DEVELOPMENT  
DEPARTMENT, 360 SW Avery Avenue, Corvallis, OR

*Complete this form using effectiveness monitoring data from a single site, and **SUBMIT BY DECEMBER 31 OF THE YEAR IN WHICH MONITORING WAS COMPLETED.** For Baseline Monitoring, complete the shaded fields only. For continuing monitoring, if an adaptive management threshold has been triggered (e.g., if YES is checked in any box below), it is the responsibility of the landowner/manager to take and document the designated corrective action (see HCP Section 7.3.2).*

CHECK ONE:  WORK FOR MITIGATION  VOLUNTARY WORK FOR CONSERVATION

Cooperator Name: \_\_\_\_\_

Site: \_\_\_\_\_ Date of Effectiveness Monitoring: \_\_\_\_\_

**HCP SPECIES STATUS/ABUNDANCE**

Species	Abundance (note units)			% Change		THRESHOLD CHECK: > 30 % Decrease from Prior?
	Baseline Date: ( / / )	Prior Monitoring Date: ( / / )	Current Monitoring	From Baseline = 100x (Current # - Baseline #) / Baseline #	From Prior = 100x (Current # - Prior #) / Prior #	
						YES NO
						YES NO
						YES NO
						YES NO
						YES NO
						YES NO

**TREE AND SHRUB ENCROACHMENT**

\_\_\_\_\_ Estimated baseline meadow size.  
\_\_\_\_\_ % Estimated decrease in meadow size from baseline

**THRESHOLD CHECK**

Decrease >30%?  YES  NO

**INVASIVE SPECIES: GROUP A**

New population(s) discovered of \_\_\_\_\_  
New population(s) discovered of \_\_\_\_\_

New occurrence?  YES  NO  
New occurrence?  YES  NO

Existing population of \_\_\_\_\_ increased by \_\_\_\_\_% Increase >30%?  YES  NO  
 Existing population of \_\_\_\_\_ increased by \_\_\_\_\_% Increase >30%?  YES  NO  
 Existing population of \_\_\_\_\_ increased by \_\_\_\_\_% Increase >30%?  YES  NO

**INVASIVE SPECIES: GROUP B**

New population(s) discovered of \_\_\_\_\_ New population?  YES  NO  
 New population(s) discovered of \_\_\_\_\_ New population?  YES  NO

Existing population of \_\_\_\_\_ increased by \_\_\_\_\_% Increase >30%?  YES  NO  
 Existing population of \_\_\_\_\_ increased by \_\_\_\_\_% Increase >30%?  YES  NO  
 Existing population of \_\_\_\_\_ increased by \_\_\_\_\_% Increase >30%?  YES  NO  
 Existing population of \_\_\_\_\_ increased by \_\_\_\_\_% Increase >30%?  YES  NO

**DISTURBANCE**

Rodent ground disturbance: Baseline \_\_\_\_\_% of site, Current \_\_\_\_\_% Increase >30%? **YES NO**  
 Mammal grazing of Covered plants: Baseline: \_\_\_\_\_% Current \_\_\_\_\_% Increase >30%? **YES NO**  
 Significant windfall, erosion or hydrology issues? **YES NO**  
 Briefly describe or attach additional sheets.

Describe baseline trail use/trampling: \_\_\_\_\_  
 Significant increase in trail use or trampling? **YES NO**

Describe baseline surrounding land use \_\_\_\_\_  
 Significant change in surrounding land use? **YES NO**

**PLANT COMMUNITY COMPOSITION & PLANT LITTER/THATCH ACCUMULATION (5x5m plots)**

	Total % Cover and Date			% Change		<b>THRESHOLD CHECK: Change from Baseline?</b>
	Baseline	Prior Monitoring	Current Monitoring	From Baseline = 100 x (Current # - Baseline #) / Baseline #	From Prior = 100 x (Current # - Prior #) / Prior #	
Native Species						> 30 % Decrease? YES NO
Exotic Species						> 30 % Increase? YES NO
Woody Vegetation						> 15 % Increase? YES NO
Plant Litter/ Thatch						> 30 % Increase? YES NO

**OTHER NOTES (attach additional pages)**

---

COI Number: \_\_\_\_\_ COI Date: \_\_\_\_\_

---

**[[[Signature of Cooperator Representative]]]** Date

---

Name of Cooperator

---

Address Phone

---

Community Development Director, Benton County Representative Date





**BENTON COUNTY PRAIRIE SPECIES HCP**

**Reporting Form D: Mitigation Notices**

SUBMIT TO: BENTON COUNTY COMMUNITY DEVELOPMENT DEPARTMENT, 360 SW Avery Avenue, Corvallis, OR

**PART A: NOTICE OF MITIGATION INITIATION**

*Submit this form before work to fulfill a mitigation requirement has been initiated.*

**Cooperator Name:** \_\_\_\_\_

**Prairie Conservation Area (PCA) Mitigation Site:** \_\_\_\_\_

**Date Mitigation Project Initiated:** \_\_\_\_\_

**Required Documentation:**

- Project Description.** Attach a brief description of the mitigation project. If all or part of the required mitigation is to be completed through habitat enhancement and restoration, describe planned management actions, e.g., mowing and burning regime.
- Map of the PCA.** Show where mitigation will occur.
- Baseline Habitat Assessment** of mitigation site (Reporting Form C).
- Effectiveness Monitoring Plan** for mitigation project.

**Quantity of Covered Species to be established:**

SPECIES	#/m <sup>2</sup> REQUIRED FOR MITIGATION	# PLUGS PLANNED FOR PLANTING	# SEEDS PLANNED FOR PLANTING	NOTES

COI Number: \_\_\_\_\_ COI Date: \_\_\_\_\_

\_\_\_\_\_ Date

\_\_\_\_\_ Name of Cooperator

\_\_\_\_\_ Address Phone

\_\_\_\_\_ Community Development Director, Benton County Representative Date





# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
911 NE 11<sup>th</sup> Avenue  
Portland, Oregon 97232-4181



In Reply Refer To:  
FWS/R1/AES/TE27275A-0

Annabelle Jaramillo  
Benton County Board of Commissioners  
408 SW Monroe Avenue, Suite 111  
Corvallis, Oregon 97333

JAN 14 2011

**RECEIVED**

JAN 20 2011

**Benton County  
Board of Commissioners**

Dear Ms. Jaramillo:

Enclosed is a copy of your Endangered Species Act section 10(a)(1)(B) Incidental Take Permit and the Implementing Agreement for the Benton County Prairie Species Habitat Conservation Plan. The permit authorizes take of Fender's blue butterfly (*Icaricia icarioides fenderi*), Willamette daisy (*Erigeron decumbens* var. *decumbens*), Bradshaw's lomatium (*Lomatium bradshawii*), Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), Nelson's checkermallow (*Sidalcea nelsoniana*), Taylor's checkerspot butterfly (*Euphydryas editha taylori*), and the peacock larkspur (*Delphinium pavonaceum*) (all 'Covered Species') caused by covered activities that are implemented in accordance with your Plan.

Thank you for helping to conserve listed species. If you have any questions regarding this permit, please contact the Field Supervisor of our Oregon Fish and Wildlife Office at (503) 231-6179.

Sincerely,

Deputy Regional Director

Enclosures (2)

**TAKE PRIDE<sup>®</sup>  
IN AMERICA** 

**IMPLEMENTING AGREEMENT**  
**for the**  
**Benton County**  
**Prairie Species Habitat Conservation Plan**

**January 11, 2011**

## TABLE OF CONTENTS

<b>1.0</b>	<b>PARTIES</b> .....	1
<b>2.0</b>	<b>RECITALS AND PURPOSES</b> .....	1
<b>2.1</b>	Recitals.....	1
<b>2.2</b>	Purposes .....	1
<b>3.0</b>	<b>DEFINITIONS</b> .....	2
<b>3.1</b>	Terms defined in Endangered Species Act .....	2
<b>3.2</b>	“Changed circumstances” .....	2
<b>3.3</b>	“Covered Activities” .....	2
<b>3.4</b>	“Covered Lands” .....	3
<b>3.5</b>	“Covered Species” .....	3
<b>3.6</b>	“HCP” .....	3
<b>3.7</b>	“Listed species” .....	3
<b>3.8</b>	“Permit” .....	3
<b>3.9</b>	“Permittee” .....	3
<b>3.10</b>	“Take” .....	3
<b>3.11</b>	“Unforeseen circumstances” .....	3
<b>3.12</b>	“Unlisted species” .....	4
<b>4.0</b>	<b>OBLIGATIONS OF THE PARTIES</b> .....	4
<b>4.1</b>	Obligations of Permittee. ....	4
<b>4.2</b>	Obligations of the USFWS. ....	4
4.2.1	Permit coverage. ....	4
4.2.2	“No surprises” assurances.....	4
<b>4.3</b>	Obligations of the ODA. ....	4
<b>4.4</b>	Unforeseen circumstances .....	4
4.4.1	Limitation of additional mitigation for unforeseen circumstances. ....	4
4.4.2	Basis for determination of unforeseen circumstances. ....	5
4.4.3	Burden of demonstrating unforeseen circumstances requiring additional mitigation.....	5
4.4.4	Notification of unforeseen circumstances.....	5
<b>5.0</b>	<b>INCORPORATION OF HCP</b> .....	6
<b>6.0</b>	<b>TERM</b> .....	6
<b>6.1</b>	Initial Term. ....	6
<b>6.2</b>	Permit suspension or revocation. ....	6
<b>6.3</b>	Extension of the Permit.....	6
<b>7.0</b>	<b>FUNDING</b> .....	6
<b>8.0</b>	<b>MONITORING AND REPORTING</b> .....	7
<b>8.1</b>	Planned periodic reports. ....	7
<b>8.2</b>	Other reports. ....	7
<b>8.3</b>	Certification of reports.....	7
<b>8.4</b>	Monitoring by USFWS.....	7
<b>9.0</b>	<b>CHANGED CIRCUMSTANCES</b> .....	7
<b>9.1</b>	Permittee-initiated response to changed circumstances.....	7
<b>9.2</b>	9.2 USFWS or ODA-initiated response to changed circumstances.....	8
<b>10.0</b>	<b>ADAPTIVE MANAGEMENT</b> .....	8
<b>10.1</b>	Permittee-initiated adaptive management.....	8

10.2	USFWS or ODA-initiated adaptive management.....	8
10.3	Reductions in mitigation.....	8
10.4	No increase in take.....	8
11.0	LAND TRANSACTIONS.....	9
11.1	Acquisition of land by Permittee.....	9
11.2	Disposal of Prairie Conservation Areas by Permittee.....	9
12.0	EMERGENCY MANAGEMENT.....	9
13.0	MODIFICATIONS AND AMENDMENTS.....	10
13.1	Minor modifications.....	10
13.2	Major Amendments of the Permit.....	11
14.0	REMEDIES, ENFORCEMENT, AND DISPUTE RESOLUTION.....	11
14.1	In general.....	11
14.2	No monetary damages.....	11
14.3	Injunctive and temporary relief.....	12
14.4	Enforcement authority of the United States.....	12
14.5	ODA Enforcement Permit.....	12
14.6	Dispute resolution.....	12
14.6.1	Informal dispute resolution process.....	12
15.0	MISCELLANEOUS PROVISIONS.....	13
15.1	No partnership.....	13
15.2	Notices.....	13
15.3	Entire agreement.....	14
15.4	Elected officials not to benefit.....	14
15.5	Availability of funds.....	14
15.6	Duplicate originals.....	14
15.7	No third-party beneficiaries.....	14
15.8	Relationship to the ESA and other authorities.....	15
15.9	References to regulations.....	15
15.10	Applicable laws.....	15
15.11	Successors and assigns.....	15

## **Implementing Agreement**

### **1.0**      *PARTIES*

The parties to this Implementing Agreement (Agreement) are Benton County (Benton County or Permittee), the United States Fish and Wildlife Service (USFWS) and Oregon Department of Agriculture (ODA). Benton County, the USFWS and ODA are referred to collectively as “the Parties”.

### **2.0**      *RECITALS AND PURPOSES*

#### **2.1**            *Recitals*

The Parties have entered into this Agreement in consideration of the following facts:

- (a) Lands within Benton County contain upland and wet prairies habitat for the following listed and unlisted prairie species: Fender’s blue butterfly, Taylor’s checkerspot butterfly, Kincaid’s lupine, Willamette daisy, Nelson’s checkermallow, Bradshaw’s lomatium, and peacock larkspur.
- (b) Benton County; several non-federal state and local land managers, a utility company, and two conservation organizations (Cooperators); and private landowners needing a County permit or Agricultural Building Authorization (private landowners) wish to conduct activities in Benton County resulting in impacts to Fender’s blue butterfly, Taylor’s checkerspot butterfly, Kincaid’s lupine, Willamette daisy, Nelson’s checkermallow, Bradshaw’s lomatium, and peacock larkspur (Covered Species).
- (c) Benton County is seeking a Permit from the USFWS to allow the County, Cooperators, and private landowners to conduct activities likely to impact the species. In return, Benton County, Cooperators, and private landowners agree to minimize and mitigate to the maximum extent practicable their impacts to the Covered Species.
- (d) Benton County has prepared a Habitat Conservation Plan identifying the activities, lands, and species to be covered by the Permit and setting forth the conservation measures to be implemented to mitigate for impacts to the covered species as a result of the covered activities. Also included in the HCP are adaptive management and monitoring requirements, and the costs, funding sources, and tasks necessary to implement the HCP.
- (e) The ODA is not a party to the Permit issued to Benton County by the USFWS, and it does not issue a separate incidental take permit. The HCP includes conservation measures needed to meet its and Cooperators’ obligations under the State of Oregon’s ESA.

#### **2.2**            *Purposes*

The purposes of this Agreement are:

- (a) To ensure implementation of each of the terms of the HCP;

(b) To describe remedies and recourse should any of the Parties fail to perform their obligations as set forth in this Agreement; and,

(c) To provide assurances to Benton County that as long as the terms of the HCP, the Permit (USFWS only), and this Agreement are performed, no additional mitigation will be required of Permittee by USFWS or ODA, with respect to Covered Species, except as provided for in this Agreement or required by law.

### 3.0 *DEFINITIONS*

The following terms as used in this Agreement will have the meanings set forth below:

#### 3.1 *Terms defined in Endangered Species Act*

Terms used in this Agreement and specifically defined in the Endangered Species Act (ESA) or in regulations adopted by the USFWS or the State of Oregon have the same meaning as in the federal or Oregon ESA and those implementing regulations, unless this Agreement expressly provides otherwise.

#### 3.2 *“Changed circumstances”*

Changed Circumstances means changes in circumstances affecting a Covered Species or the geographic area covered by the HCP that can reasonably be anticipated by the Parties to the HCP and that can reasonably be planned for in the HCP (e.g. the listing of a new species, or a fire or other natural catastrophic event in areas prone to such event.) Changed circumstances and the planned responses to those circumstances are described in Chapter 8 of the HCP. Changed circumstances are not Unforeseen Circumstances.

#### 3.3 *“Covered Activities”*

Covered Activities means certain activities carried out by Benton County, Cooperators, and private landowners on covered lands that may result in incidental take of the Covered Species. Covered Activities are described in Chapter 4 of the HCP and include:

- Home, Farm, and Forest Development
- Benton County Permits and Authorizations
- Public Service Facilities Construction
- Transportation and Work in Rights-of-Way
- Water and Wastewater Management
- Utility Construction and Maintenance
- Parks, Natural Areas, and Open Space Management
- Agricultural Activities
- HCP Implementation
- Emergency Response Activities



**3.4**            “Covered Lands”

Covered Lands means the lands upon which the Permit authorizes incidental take of the Covered Species and the lands to which the HCP's conservation and mitigation measures apply. These lands are described in Chapter 3 of the HCP.

**3.5**            “Covered Species”

Covered Species means the Fender’s blue butterfly, Taylor’s checkerspot butterfly, Kincaid’s lupine, Willamette daisy, Nelson’s checkermallow, Bradshaw’s lomatium, and peacock larkspur, which the HCP addresses in a manner sufficient to meet all of the criteria for issuing a Permit under ESA Section 10(a)(1)(B) and as required under the State of Oregon ESA.

**3.6**            “HCP”

HCP means the habitat conservation plan prepared by Benton County.

**3.7**            “Listed species”

Listed Species means a species (including a subspecies, or a distinct population segment of a vertebrate species) that is listed as endangered or threatened under the state or federal ESA.

**3.8**            “Permit”

Permit means the incidental take permit issued by the USFWS to Benton County pursuant to Section 10(a)(1)(B) of the ESA for take incidental to the Covered activities in Benton County, as it may be amended from time to time.

**3.9**            “Permittee”

Permittee means Benton County.

**3.10**          “Take”

Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any listed or unlisted Covered Species. Harm means an act that actually kills or injures a member of a Covered Species, including an act that causes significant habitat modification or degradation where it actually kills or injures a member of a Covered Species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

**3.11**          “Unforeseen circumstances”

Unforeseen circumstances means changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers, USFWS, and ODA at the time of the HCP’s negotiation and development, and that result in a substantial and adverse change in the status of the Covered Species.

**3.12**            *“Unlisted species”*

Unlisted Species means a species (including a subspecies, or a distinct population segment of a vertebrate species) that is not listed as endangered or threatened under the ESA.

**4.0**            *OBLIGATIONS OF THE PARTIES*

**4.1**            *Obligations of Permittee.*

The Permittee will fully and faithfully perform all obligations assigned to it under this Agreement, the Permit, and the HCP.

**4.2**            *Obligations of the USFWS.*

Upon execution of this Agreement by the Parties, and satisfaction of all other applicable legal requirements, the USFWS will issue the Permittee a Permit under Section 10(a)(1)(B) of the ESA, authorizing incidental take of the Covered Species resulting from Covered Activities on Covered Lands.

**4.2.1**            **Permit coverage.**

The Permit issued by the USFWS will identify all Covered Species and will take effect for Covered Species at the time the Permit is issued.

**4.2.2**            **“No surprises” assurances.**

Provided that Permittee has complied with its obligations under the HCP, this Agreement, and the Permit, the USFWS can require Permittee to provide mitigation beyond that provided for in the HCP only under unforeseen circumstances, and only in accordance with the “no surprises” regulations at 50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5).

**4.3**            *Obligations of the ODA.*

Upon execution of this Agreement by the Parties, ODA agrees to provide Benton County with incidental take coverage for the covered plant species as allowed under the State of Oregon ESA.

**4.4**            *Unforeseen circumstances*

**4.4.1**            **Limitation of additional mitigation for unforeseen circumstances.**

If unforeseen circumstances arise during the Permit term warranting additional mitigation from Benton County, so long as the County is in compliance with the HCP obligations, any additional

mitigation shall maintain the original terms of the HCP to the maximum extent possible. Any such changes in mitigation requirements will be limited to modifications to the habitat restoration, enhancement, and management activities; monitoring; and plant material collection activities undertaken as mitigation in the Prairie Conservation Areas or Benton County Type I Special Management Areas (SMAs), so long as such changes do not require additional funding, land, or water resources without the consent of the County.

#### **4.4.2 Basis for determination of unforeseen circumstances.**

If, during the implementation of this HCP, an unforeseen circumstance occurs that could have a significant negative impact on one or more of the Covered Species or could affect the ability of Benton County to effectively manage covered activities under this HCP, the USFWS or ODA shall notify Benton County, in writing, of the unforeseen circumstance. The USFWS or ODA's determination of unforeseen circumstances shall be based on the following factors:

- size of current range of affected species,
- percentage of range adversely affected by the HCP,
- percentage of range conserved by the HCP,
- ecological significance of the portion of the range affected by the HCP,
- level of knowledge about the affected species,
- degree of specificity of the species' conservation program under the HCP,
- whether conservation measures in the HCP provides an overall net benefit to the species and contains measurable criteria for assessing biological success of the HCP conservation measures, and
- whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

#### **4.4.3 Burden of demonstrating unforeseen circumstances requiring additional mitigation.**

The USFWS or ODA have the burden of demonstrating when such unforeseen circumstances exist requiring additional mitigation.

#### **4.4.4 Notification of unforeseen circumstances.**

USFWS or ODA will provide Benton County with 120 days written notice of the proposed findings of unforeseen circumstances. During that 120-day period, USFWS or ODA shall meet with Benton County to discuss the proposed finding and provide the County with an opportunity to submit information to rebut the proposed finding and to consider any proposed changes to the HCP or Permit. During that period, Permittee will avoid actions contributing to appreciably reducing the likelihood of the survival and recovery of the affected species.

If the parties mutually agree to modify or amend the HCP or Permit, the procedures set forth in Section 13.2 will be followed.

## **5.0**      *INCORPORATION OF HCP*

The HCP and each of its provisions are intended to be, and by this reference are, incorporated herein. In the event of any direct contradiction between the terms of this Agreement and the HCP, the terms of this Agreement will control. In all other cases, the terms of this Agreement and the terms of the HCP will be interpreted to be supplementary to each other.

## **6.0**      *TERM*

### **6.1**            *Initial Term.*

This Agreement and the HCP will become effective on the date the USFWS issues the Permit. This Agreement, the HCP, and the Permit will remain in effect for a period of Fifty (50) years from issuance of the Permit, except as provided below.

### **6.2**            *Permit suspension or revocation.*

The USFWS may suspend or revoke the Permit for cause in accordance with the laws and regulations in force at the time of such suspension or revocation (See 5 U.S.C. § 558; 50 C.F.R. §§ 13.27 - 13.29; 15 C.F.R. Part 904) except the USFWS may revoke the Permit based on a determination that the continuation of the Covered Activities would likely jeopardize the continued existence of the Covered Species, but only if the USFWS has been unsuccessful in remedying the situation in a timely fashion through other means as provided in the "No Surprises" rule (50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5)). Such suspension or revocation may apply to the entire Permit, or only to specified Covered Species, Covered Lands, or Covered Activities. In the event of suspension or revocation, Permittee's obligations under this Agreement and the HCP will continue until the USFWS and ODA determine that all take of Covered Species that occurred under the Permit has been fully mitigated in accordance with the HCP.

### **6.3**            *Extension of the Permit.*

Upon agreement of the parties and compliance with all applicable laws, the Permit may be extended beyond its initial term under regulations of the USFWS in force on the date of such extension. If Permittee desires to extend the Permit, it will so notify the USFWS at least 180 days before the then-current term is scheduled to expire. Extension of the Permit constitutes extension of the HCP and this Agreement for the same amount of time, subject to any modifications the USFWS may require at the time of extension.

## **7.0**      *FUNDING*

Permittee warrants that it has, and will expend, such funds as may be necessary to fulfill its obligations under the HCP. Permittee will promptly notify the USFWS and ODA of any material change in Permittee's financial ability to fulfill its obligations. In addition to providing any such notice, Permittee will provide the USFWS and ODA with a copy of its Annual HCP Compliance Report each year of the Permit, or with such other reasonably available financial

information the parties agree will provide adequate evidence of Permittee's ability to fulfill its obligations.

## **8.0**      *MONITORING AND REPORTING*

### **8.1**            *Planned periodic reports.*

As described in the HCP, the Permittee will submit Annual HCP Compliance Reports.

### **8.2**            *Other reports.*

Permittee will provide, within 30 days of being requested by the USFWS and/or ODA any additional information in its possession or control related to implementation of the HCP requested by the USFWS and/or ODA for the purpose of assessing whether the terms and conditions of the Permit (USFWS only) and the HCP, including the HCP's adaptive management plan, are being fully implemented.

### **8.3**            *Certification of reports.*

All reports will include the following certification executed by a responsible Benton County official who supervised or directed preparation of the report:

I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

### **8.4**            *Monitoring by USFWS.*

The USFWS may conduct inspections and monitoring in connection with the Permit in accordance with its regulations. (See 50 C.F.R. § 13.47)

## **9.0**      *CHANGED CIRCUMSTANCES*

### **9.1**            *Permittee-initiated response to changed circumstances.*

Permittee will give notice to the USFWS and ODA within seven days after learning that any of the changed circumstances listed in the HCP has occurred. As soon as practicable thereafter, but no later than 30 days after learning of the changed circumstances, Permittee will modify its activities to the extent necessary to mitigate the effects of the changed circumstances on Covered Species, and will report to the USFWS and ODA on its actions. Permittee will make such modifications without awaiting notice from the USFWS or ODA.

**9.2**            *9.2 USFWS or ODA-initiated response to changed circumstances.*

If the USFWS or ODA determines changed circumstances have occurred and Permittee has not responded in accordance with the HCP, the USFWS or ODA will so notify Permittee and will direct Permittee to make the required changes. Within 30 days after receiving such notice, Permittee will begin making the required changes and report to the USFWS and ODA on its actions. Such changes are provided for in the HCP, and hence do not constitute unforeseen circumstances or require amendment of the permit or HCP.

**10.0**        *ADAPTIVE MANAGEMENT*

**10.1**            *Permittee-initiated adaptive management.*

Permittee will implement the adaptive management provisions in the HCP when changes in management practices are necessary to achieve the HCP's biological goal and objectives, or to respond to monitoring results or new scientific information. Permittee will coordinate with the USFWS and ODA on what kind of actions will be undertaken, and will report to the USFWS and ODA on any actions taken pursuant to this section.

**10.2**            *USFWS or ODA-initiated adaptive management.*

If the USFWS or ODA determines one or more of the adaptive management provisions in the HCP have been triggered and Permittee has not changed its management practices in accordance with the HCP, the USFWS or ODA will notify Permittee and will direct Permittee to make the required changes. Within 30 days after receiving such notice, Permittee will begin making the required changes and report to the USFWS and ODA on its actions. Such changes are provided for in the HCP, and hence do not constitute unforeseen circumstances or require amendment of the Permit or HCP, except as provided in this section.

**10.3**            *Reductions in mitigation.*

Permittee will not implement adaptive management changes resulting in less mitigation than provided for the Covered Species under the original terms of the HCP, unless the USFWS and ODA first provide written approval. Permittee may propose any such adaptive management changes by written notice to the USFWS and ODA, specifying the adaptive management modifications proposed, the basis for them, including supporting data, and the anticipated effects on Covered Species, and other environmental impacts. Within 120 days of receiving such a notice, the USFWS and ODA will either approve the proposed adaptive management changes, approve them as modified, or notify Permittee the proposed changes constitute Permit amendments that must be reviewed under Section 13.3 of this Agreement.

**10.4**            *No increase in take.*

This section does not authorize any modifications resulting in an increase in the amount and nature of take, or increase the impacts of take of Covered Species beyond that analyzed under the

original HCP and any amendments thereto. Any such modification must be reviewed as a Permit amendment under Section 13.3 of this Agreement.

## 11.0 *LAND TRANSACTIONS*

### 11.1 *Acquisition of land by Permittee.*

Nothing in this Agreement, the HCP, or the Permit limits the Permittee's or HCP Cooperator's right to acquire additional lands. Any lands that may be acquired that are outside those areas defined as Covered Lands will not be covered by the Permit and the HCP except upon amendment of the Permit and the HCP as provided in section 13.2 of this Agreement.

### 11.2 *Disposal of Prairie Conservation Areas by Permittee.*

Permittee's or HCP Cooperator's transfer of ownership or control of Prairie Conservation Areas will require prior approval by the USFWS and ODA and an amendment of the Permit and HCP in accordance with section 13.2 of this Agreement, except transfers of Covered Lands may be processed as minor modifications in accordance with section 13.1 of this Agreement if:

- (a) The land will be transferred to an agency of the federal government and, prior to transfer, the USFWS and ODA have determined the transfer will not compromise the effectiveness of the HCP based on adequate commitments by that agency regarding management of such land;
- (b) The land will be transferred to a non-federal entity that has entered into an agreement acceptable to the USFWS and ODA (e.g., an easement held by the state fish and wildlife agency or a conservation organization with the USFWS and ODA as third-party beneficiaries) to ensure the lands will be managed in such a manner and for such duration so as not to compromise the effectiveness of the HCP;
- (c) The USFWS and ODA determines the amount of land to be transferred will not have a material impact on the ability of the Permittee to comply with the requirements of the HCP and the terms and conditions of the Permit.

## 12.0 *EMERGENCY MANAGEMENT*

Permittee, USFWS, and ODA agree that in the event a PCA is threatened by fire, flood, or similar emergency, emergency response personnel shall be permitted full access to the area, as necessary, to protect human life, property, and/or biological resources. In the event disturbance of a PCA is necessary to protect life or to prevent the catastrophic loss of property, emergency personnel shall, where time permits, attempt to contact the USFWS and ODA for input on how best to respond to the emergency to maximize preservation of the Covered Species and habitat values, while preserving life and preventing the catastrophic loss of property. If time does not permit such consultation, Benton County is authorized to allow emergency personnel to disturb the habitat area as necessary to preserve life and prevent the catastrophic loss of property. After

the emergency relief process begins, Benton County shall meet and consult with USFWS or ODA to determine the need and schedule for rehabilitating any Prairie Conservation Area.

### **13.0**    *MODIFICATIONS AND AMENDMENTS*

#### **13.1**        *Minor modifications.*

(a) Any party may propose minor modifications to the HCP or this Agreement by providing written notice to all other parties. Such notice shall include a statement of the reason for the proposed modification and an analysis of its environmental effects, including its effects on operations under the HCP and on Covered Species. The parties will use best efforts to respond to proposed modifications within 60 days of receipt of such notice. Proposed modifications will become effective upon all other parties' written approval. If the USFWS and ODA concur with the minor amendments proposed by Benton County, they will submit such approval in writing within 120 days or less. If the USFWS and ODA do not send notice or approval or disapproval, the amendment is approved automatically. The modifications will be considered effective on the date of USFWS' and ODA's written authorization or after 120-days if USFWS and ODA fail to send notice of approval or disapproval. A record of any minor amendments to the HCP, incidental take permit, or Implementing Agreement shall be documented in writing.

If, for any reason, a receiving party objects to a proposed modification, it must be processed as a major amendment to the Permit in accordance with subsection 13.3 of this section. The USFWS or ODA will not approve minor modifications to the HCP or this Agreement if USFWS or ODA determines such modifications would result in (1) operations under the HCP significantly different from those analyzed in connection with the original HCP, (2) adverse effects on the environment new or significantly different from those analyzed in connection with the original HCP, or (3) additional take not analyzed in connection with the original HCP.

(b) Minor amendments to the HCP and this Agreement processed pursuant to this subsection may include but are not limited to the following:

- Correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the incidental take permit, Implementing Agreement, or HCP.
- Changes in land ownership.
- Changes to non-USFWS survey, monitoring, or reporting protocols.
- Changes to the biological goal or objectives in response to adaptive management.
- Modifications to or adoption of additional conservation measures likely to improve the conservation of Covered Species.
- Discontinuing any conservation measures determined through monitoring and adaptive management to be ineffective.
- Any other types of modifications clarifying components of the incidental take permit, Implementing Agreement, or HCP.



(c) Minor amendments to the HCP, Permit, and/or this Agreement do not require amendment of the County's implementing ordinance adopting the HCP, Permit, and this Agreement.

(d) Any other amendments to the HCP or this Agreement will be processed as major amendments to the Permit in accordance with subsection 13.3 of this section.

### **13.2**        *Major Amendments of the Permit.*

(a) The Permit may be amended in accordance with all applicable legal requirements, including but not limited to the ESA, the National Environmental Policy Act, and the USFWS's permit regulations. The party proposing the amendment shall provide a statement of the reasons for the amendment and an analysis of its environmental effects, including its effects on operations under the HCP and on Covered Species.

Major amendments to the HCP, Permit, and/or this Agreement may include, but are not limited to, the following:

- Revisions (additions or deletions) to the Plan Area, not qualifying as a minor modification.
- Adding or removing one or more species to the list of Covered Species.
- Increasing the amount of take allowed under the incidental take permit.
- Adding one or more activities to the list of Covered Activities if that activity will result in greater adverse effects to the Covered Species than that analyzed through the NEPA documentation.
- Modifying a conservation measure so substantially as to affect the level of authorized take, the Covered Activities, funding, or the nature and scope of the conservation measures.
- Extending the Permit term beyond 50 years.

The parties agree a major modification of the HCP will occur only if Benton County has sufficient funding to assist in make the necessary revisions to the HCP.

## **14.0**        *REMEDIES, ENFORCEMENT, AND DISPUTE RESOLUTION*

### **14.1**        *In general.*

Except as set forth below, each party shall have all remedies otherwise available to enforce the terms of this Agreement, the Permit, and the HCP.

### **14.2**        *No monetary damages.*

No party shall be liable in damages to any other party or other person for any breach of this Agreement, any performance or failure to perform a mandatory or discretionary obligation imposed by this Agreement, or any other cause of action arising from this Agreement.

**14.3** *Injunctive and temporary relief.*

The parties acknowledge the Covered Species are unique and their loss as species would result in irreparable damage to the environment, and therefore injunctive and temporary relief may be appropriate to ensure compliance with the terms of this Agreement.

**14.4** *Enforcement authority of the United States.*

Nothing contained in this Agreement is intended to limit the authority of the United States government or State of Oregon to seek civil or criminal penalties or otherwise fulfill its enforcement responsibilities under the state or federal ESA or other applicable laws.

**14.5** *ODA Enforcement Permit.*

The ODA shall have no authority to enforce the terms of the Permit issued to Benton County by the USFWS.

**14.6** *Dispute resolution.*

The parties recognize that disputes concerning implementation of, compliance with, or termination of this Agreement, the HCP, and/or the Permit may arise from time to time. The parties agree to work together in good faith to resolve such disputes, using the informal dispute resolution procedures set forth in this section, or such other procedures upon which the parties may later agree. However, if at any time any party determines circumstances so warrant, it may seek any available remedy without waiting to complete informal dispute resolution.'

**14.6.1** **Informal dispute resolution process.**

Unless the parties agree upon another dispute resolution process, or unless an aggrieved party has initiated administrative proceedings or filed suit in state or federal court as provided in this section, the parties may use the following process to attempt to resolve disputes:

- (a) The aggrieved party will notify the other parties of the provision that may have been violated, the basis for contending a violation has occurred, and the remedies it proposes to correct the alleged violation.
- (b) The party alleged to be in violation will have 30 days, or such other time as may be agreed upon, to respond. During this time it may seek clarification of the information provided in the initial notice. The aggrieved party will use its best efforts to provide any information then available that may be responsive to such inquiries.
- (c) Within 30 days after such response was provided or was due, representatives of the parties having authority to resolve the dispute will meet and negotiate in good faith toward a solution satisfactory to all parties, or will establish a specific process and timetable to seek such a solution.

(d) If any issues cannot be resolved through such negotiations, the parties will consider non-binding mediation and other alternative dispute resolution processes and, if a dispute resolution process is agreed upon, will make good faith efforts to resolve all remaining issues through that process.

## **15.0 MISCELLANEOUS PROVISIONS**

### **15.1** *No partnership.*

This Agreement, the Permit, or the HCP shall not make or be deemed to make any party to this Agreement the agent for or the partner of any other party.

### **15.2** *Notices.*

Any notice allowed or required by this Agreement shall be in writing, delivered personally to the persons listed below, or shall be deemed given five (5) days after deposit in the United States mail, certified, and postage prepaid, return receipt requested and addressed as follows, or at such other address as any party may from time to time specify to the other parties in writing. Notices may be delivered by facsimile or other electronic means, provided they are also delivered personally or by certified mail. Notices shall be transmitted so they are received within the specified deadlines.

State Supervisor  
Oregon Fish and Wildlife Office  
United States Fish and Wildlife Service  
2600 S.E. 98<sup>th</sup> Ave.  
Portland, Oregon 97266  
Telephone: 503-231-6179  
Fax: 503-231-6195

Director  
Oregon Department of Agriculture  
635 Capitol St. NE  
Salem, OR 97301-2532  
Telephone: 503-986-4550  
Fax: 503-986-4747

Commissioners  
Benton County Government  
P.O. Box 3020  
Corvallis, Oregon 97330-3020  
Telephone: 541-766-6800  
Fax: 541-766-6893

**15.3** *Entire agreement.*

This Agreement, together with the HCP and the Permit (USFWS only), constitutes the entire agreement among the parties. It supersedes any and all other agreements, either oral or in writing, among the parties with respect to the subject matter hereof and contains all of the covenants and agreements among them with respect to said matters, and each party acknowledges no representation, inducement, promise or agreement, oral or otherwise, has been made by any other party or anyone acting on behalf of any other party not embodied herein.

**15.4** *Elected officials not to benefit.*

No member of or delegate to Congress shall be entitled to any share or part of this Agreement, or to any benefit arising from it. No Oregon State Legislator nor the Governor of Oregon shall be entitled to any share or part of this Agreement, or to any benefit arising from it.

**15.5** *Availability of funds.*

Implementation of this Agreement by the USFWS is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the parties to require the obligation, appropriation, or expenditure of any money from the U.S. Treasury. The parties acknowledge the USFWS will not be required under this Agreement to expend any federal agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing. Nothing in this Agreement will be construed by the parties to require an obligation, appropriate, or expenditure of any money from the treasury of the State of Oregon. The parties acknowledge ODA will not be required under this Agreement to expand any state agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit such expenditures as evidence in writing.

**15.6** *Duplicate originals.*

This Agreement may be executed in any number of duplicate originals. A complete, signed original of this Agreement shall be maintained in the official records of each of the parties hereto.

**15.7** *No third-party beneficiaries.*

Without limiting the applicability of rights granted to the public pursuant to the state or federal ESA or other state or federal law, this Agreement shall not create any right or interest in the public, or any member thereof, as a third-party beneficiary hereof, nor shall it authorize anyone not a party to this Agreement to maintain a suit for personal injuries or damages pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the parties to this Agreement with respect to third parties shall remain as imposed under existing law.

**15.8**        *Relationship to the ESA and other authorities.*

The terms of this Agreement shall be governed by and construed in accordance with the state and federal ESA and applicable state and federal law. In particular, nothing in this Agreement is intended to limit the authority of the USFWS or ODA to seek penalties or otherwise fulfill their responsibilities under state or federal ESA. Moreover, nothing in this Agreement is intended to limit or diminish the legal obligations and responsibilities of the USFWS as an agency of the federal government or the ODA, as an agency of Oregon state government. Nothing in this Agreement will limit the right or obligation of any federal agency to engage in consultation required under Section 7 of the ESA or other federal law; however, it is intended the rights and obligations of Permittee under the HCP and this Agreement will be considered in any consultation affecting Permittee's use of the Covered Lands.

**15.9**        *References to regulations.*

Any reference in this Agreement, the HCP, or the Permit to any regulation or rule of the USFWS or ODA shall be deemed to be a reference to such regulation or rule in existence at the time an action is taken.

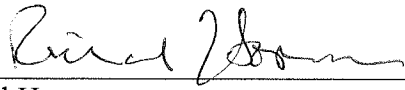
**15.10**       *Applicable laws.*

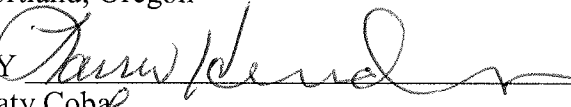
All activities undertaken pursuant to this Agreement, the HCP, or the Permit must be in compliance with all applicable state and federal laws and regulations.


**15.11**       *Successors and assigns.*

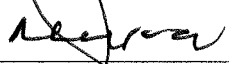
This Agreement and each of its covenants and conditions shall be binding on and shall inure to the benefit of the parties and their respective successors and assigns. Assignment or other transfer of the Permit shall be governed by the USFWS' regulations in force at the time.

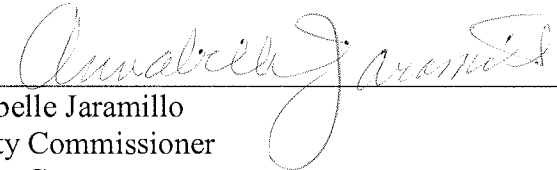
**IN WITNESS WHEREOF, THE PARTIES HERETO** have executed this Implementing Agreement to be in effect as of the date the USFWS issues the Permit.

BY  Date 1/14/11  
Richard Hannan  
Deputy Regional Director  
United States Fish and Wildlife Service  
Portland, Oregon

BY  Date 1/13/11  
Katy Cobak  
Director  
Oregon Department of Agriculture  
Salem, Oregon

BY  Date 01-11-11  
Linda Modrell  
County Commissioner  
Benton County  
Corvallis, Oregon

BY  Date 1-11-11  
Jay Dixon  
County Commissioner  
Benton County  
Corvallis, Oregon

BY  Date 1/11/2011  
Annabelle Jaramillo  
County Commissioner  
Benton County  
Corvallis, Oregon



# FEDERAL FISH AND WILDLIFE PERMIT

1. PERMITTEE

BENTON COUNTY  
408 SW MONROE AVE., SUITE 111  
CORVALLIS, OR 97333  
U.S.A.

2. AUTHORITY-STATUTES  
16 USC 1539(a)  
16 USC 1533(d)

REGULATIONS  
50 CFR 17.22  
50 CFR 17.32

50 CFR 13

3. NUMBER  
**TE27275A-0**

4. RENEWABLE  
 YES  
 NO

5. MAY COPY  
 YES  
 NO

6. EFFECTIVE  
01/14/2011

7. EXPIRES  
01/13/2061

8. NAME AND TITLE OF PRINCIPAL OFFICER (If #1 is a business)  
BENTON COUNTY  
BOARD OF COMMISSIONERS

9. TYPE OF PERMIT  
NATIVE ENDANGERED & THREATENED SP. HABITAT  
CONSERVATION PLAN - E & T WILDLIFE

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED  
Lands owned or under the jurisdiction of Benton County, Oregon; area covered is approximately 19,000 acres and includes County-managed parks, open space, and natural areas. However, the area where the species occur that could be impacted is approximately a few hundred acres in total.

11. CONDITIONS AND AUTHORIZATIONS:

- A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.
- B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.
- C. VALID FOR USE BY PERMITTEE NAMED ABOVE.
- D. Further conditions of authorization are contained in the attached Special Terms and Conditions.

ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS  
SEE SPECIAL TERM AND CONDITIONS

ISSUED BY  
*Ronald Johnson*

TITLE  
DEPUTY REGIONAL DIRECTOR

DATE  
01/14/2011

U.S. Fish and Wildlife Service, Portland Oregon  
Special Terms and Conditions for Permit TE27275A-0

- E. All Sections of Title 50 Code of Federal Regulations, parts 13, 17.22, and 17.32 are conditions of this permit.
- F. The authorization granted by this permit is subject to compliance with, and implementation of the Prairie Species Habitat Conservation Plan (HCP), executed by the Permittee and the U.S. Fish and Wildlife Service (Service). This permit and the HCP are binding upon the Permittee, and any authorized officer, employee, contractor, or agent conducting permitted activities.
- G. The Permittee, and its authorizing officers, employees, contractors, and agents are authorized under the Endangered Species Act of 1973, as amended (Act), to incidentally take the Fender's blue butterfly (*Icaricia icarioides fenderi*), Willamette daisy (*Erigeron decumbens* var. *decumbens*), Bradshaw's lomatium (*Lomatium bradshawii*), Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), Nelson's checkermallow (*Sidalcea nelsoniana*), Taylor's checkerspot butterfly (*Euphydryas editha taylori*), and the peacock larkspur (*Delphinium pavonaceum*) (all 'Covered Species') to the extent that take of these species would otherwise be prohibited under section 9 of the Act, and its implementing regulations, or pursuant to a rule promulgated under section 4(d) of the Act. Take must occur incidental to otherwise lawful activities associated with the Covered Activities as described in the HCP, and as conditioned herein.
- H. The Permittee shall refer to permit number TE27275A-0 in all correspondence and reports concerning permit activities. Any questions you may have about this permit should be directed to the Oregon Fish and Wildlife Office, US Fish and Wildlife Service, 2600 SE 98<sup>th</sup> Avenue, Suite 100, Portland, Oregon 97266, telephone (503) 231-6179.
- I. A copy of this permit must be in possession of the Permittee and designated agents while conducting covered activities.
- J. Construction activities that could result in incidental take of the Fender's blue butterfly on private lands will not occur until the effective date of the Benton County ordinance implementing the HCP provisions for construction activities on private lands.
- K. Construction activities that could result in incidental take of the Fender's blue butterfly on private lands will not occur until Benton County has finalized acquisition (fee simple or conservation easement) of lands containing high quality occupied Fender's blue butterfly habitat within the Fender's blue butterfly Critical Habitat Unit FBB-8, as designated in the final rule on October 31, 2006 (Federal Register 71:63862-63977).
- L. Benton County will submit Annual Compliance Reports to the USFWS and ODA by March 31st of the following year for each year the incidental take permit is in effect



(Appendix P: Sample Annual Compliance Report). This report shall include, at a minimum, the following:

1. Summary of assessment of implementation of the HCP terms and conditions.
2. Amount of take authorized during the year, including:
  - a. The number of Certificates of Inclusion issued to private landowners and the amount of Fender's blue butterfly habitat impacted;
  - b. The number of Certificates of Inclusion issued to each Cooperator for each species, and the amount of take authorized for each species; and
  - c. The number of Cooperative Agreements entered into with each Cooperator. Copies of the Cooperative Agreement will be provided.
3. Conservation Measures undertaken by Benton County and the Cooperators, including:
  - a. Mitigation Information
    - i. Mitigation projects initiated
    - ii. Mitigation requirements fulfilled
    - iii. Funding spent on mitigation
    - iv. When Covered Species are present, acres mowed, grazed, or treated with herbicide for mitigation purposes
  - b. Voluntary Conservation Activity Information
    - i. Acres mowed, grazed or treated with herbicide for parks/natural areas/open space management
4. Effectiveness Monitoring data (see HCP Section 7.2.1)
5. Monitoring results requiring changes to management techniques (adaptive management outcomes).

Cooperators will submit their compliance information, if any, to Benton County by December 31 of each year, to allow Benton County to incorporate the information into the Annual Compliance Report.