Lost Prairie
Area of Critical Environmental Concern Guidebook
April 2009

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BLM
Salem District

NATIONAL SYSTEM OF PUBLIC LANDS

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As the Nation's principal conservation agency, the Department of Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering economic use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

Front Cover: Lost Prairie from the northeast looking southwest.
All photos by Ron Exeter.

BLM/OR/WA/PL -09/018+1792

Abstract

Schuller, Reid; Exeter, Ronald L. 2009. Lost Prairie Area of Critical Environmental Concern (ACEC) Guidebook.18 p.26

This guidebook describes the prominent biological and environmental features of Lost Prairie, a 24.28-ha (60-ac) tract located within the Oregon Coast Range, Lincoln County, Oregon. Special features include a 8.5-ha (21-ac) montane fen, and populations of six rare species including: three vascular plant species, two lichens, and one moss. The site has been designated as an Area of Critical Environmental Concern (ACEC) in the 1995 Salem District Resource Management Plan, Salem District, Bureau of Land Management. .

Keywords: Lost Prairie ACEC, Montane fen, Bureau of Land Management, rare plant species, sphagnum.

Preface

Area of Critical and Environmental Concern (ACEC) designations highlight areas where special management attention is needed to protect, and prevent irreparable damage to, important historic, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards. The ACEC designation indicates to the public that the BLM recognizes that an area has significant values and has established special management measures to protect those values. In addition, designation also serves as a reminder that significant values or resources exist which must be accommodated near or within an ACEC. Designation may also support a funding priority (BLM manual 1613.02).

The Federal Land Policy and Management Act (FLPMA) provides for ACEC designation and established national policy for the protection of public land areas of critical environmental concern. Section 202(c) (3) of the FLPMA mandates the agency to give priority to the designation and protection of ACECs in the development and revision of land use plans. The BLM's planning regulations (43 CFR 1610.7-2) establish the process and procedural requirements for the designation of ACECs in resource management plans and in plan amendments (BLM manual 1613.02).

To be considered as a potential ACEC and analyzed in resource management alternatives, an area must meet the criteria of both relevance and importance, as established and defined in 43 CFR 1610.7-2.

A. Relevance.

An area meets the "relevance" criterion if it contains one or more of the following:

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources, and religious or cultural resources important to Native Americans).

2. A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity).

3. A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).

4. Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

B. Importance.

The value, resource, system, process, or hazard described above must have substantial significance and values in order to satisfy the importance criteria. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:

1. Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.

2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.

3. Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLMPA.

4. Has qualities which warrant highlighting in order to satisfy public or management concerns about safety and public welfare.

5. Poses a significant threat to human life and safety or to property.

Criteria Evaluation.

An interdisciplinary team screens the ACEC nominations to see if the area meets the relevance and importance criteria. The field manager, with district manager concurrence, approves the relevance and importance criteria. Areas which meet the criteria are called Potential ACECs. Areas which do not meet the criteria are dropped from the process, but are acknowledged in the planning process.

Special Management Attention.

To be designated as an ACEC, an area must require special management attention to protect the important and relevant values. "Special management attention" refers to management prescriptions developed during preparation of a Resource Management Plan (RMP) or amendment expressly to protect the important and relevant values of an area from the potential effects of actions permitted by the RMP. A management prescription is considered to be special if it is unique to the area involved and includes terms and conditions specifically to protect the important and relevant values occurring on that area. Special management often provides for consultation and coordination with identified groups and/or experts having interest or expertise in the affected values (BLM manual 1613.12).

Develop Management Prescriptions for Potential ACECs.

Management prescriptions must be developed for all potential ACECs. At least one prescription for each potential ACEC must be developed which provides special management attention (BLM manual 1613.22).

Identifying Factors Which Influence Management Prescriptions.

The factors will vary based on the planning issues and resources in the planning area. They are primarily identified and evaluated during the analysis of the management situation (BLM manual 1616.4). These factors are important in the development of management prescriptions for potential ACECs. Factors to consider include, but are not limited to, the following:

1. Conditions or trends of the potential ACEC. What is the current condition of the resource(s) or hazard involved? What is the trend in its condition? Can degradation be stopped? Is it reversible? What is the capability of the resource or hazard in terms of the level and type of use it can sustain without risk or threat?

2. Relationship to other resources or activities. What measures can be implemented to reduce the adverse effects of other resource uses on the potential ACEC? Are resources uses contributing to the degradation of or threatening the existence of the important and relevant values? What land and resources uses would be compatible and under what conditions should they be conducted or permitted in order to protect the important and relevant values? What uses or actions would not be compatible with protection of the identified values even when conditioned? Considering the objectives of the RMP alternative, do the values of other resources outweigh the need for protection of the important and relevant values?

3. Opportunities for protection and/or restoration of potential ACEC values. What measures can be taken to protect the potential ACEC values without restricting other resource uses? Is it feasible to protect the resource value(s) or reduce or minimize the threats from hazards?

Monitoring and Management of ACECs.

General guidance on monitoring is set forth in BLM manual 1616.9.

The Lost Prairie ACEC described in this document is administered by the Bureau of Land Management (BLM), U.S. Department of the Interior. The BLM Salem District office has ACEC program administrative responsibility, and the Marys Peak Resource Area has on-the-ground management responsibility for the ACEC. Individuals or organizations wishing to visit or use the site should contact the resource area field manager in advance and provide information about the purpose of their visit, specific areas within the ACEC that will be visited, group size, timing of the visit, and planned activities. Research projects, educational visits, and collection of specimens from the site require prior approval. There may be limitations on public use.

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Introduction

Lost Prairie Area of Critical Environmental Concern (ACEC) is a 32.38-ha (60-ac) tract of land occupying a portion of the upper reaches of the Salmon River drainage, including a mid-elevation basin within the Oregon Coast Range. Lost Prairie was designated as an ACEC in 1984 (Federal Register 49) to protect a rare example of mid- to high-elevation sedge fen, Sphagnum (see app. 1 for a list of species names and authorities) bog and beaver marsh in the Oregon Coast Range ecological province (Dyrness et al. 1975, O.N.H.P. 2003). Populations of rare plants including: *Erythronium elegans* (Coast Range fawn-lily), *Anemone oregana* var. *felix* (Felix anemone), and *Fritillaria camschatcensis* (Indian rice) also occur at Lost Prairie. The presence of two rare lichens (*Hypogymnia duplicata*, *Platismatia lacunosa*), and a rare moss (*Tetraplodon mnioides*) (O.N.H.I.C. 2007) provide further justification for designation of the site. In addition, Lost Prairie supports a diverse array of vascular plants and bryophyte species that would be considered as uncommon in the coastal coniferous forests of northwestern Oregon.

Lost Prairie was originally designated as an ACEC in 1984 (Federal Register 1984) in the Salem District Management Framework Plan (MFP) (USDI BLM 1984). The site was subsequently re-designated in May, 1995 in the Salem District Resource Management Plan (RMP) (USDI BLM 1995). The ACEC is administered by the Salem District Bureau of Land Management (BLM) and managed as part of the Marys Peak Resource Area.

Access and Accommodations

Vehicle access is through gated, private lumber company roads. Permission is required to cross these lands. Contact the Salem BLM, Marys Peak Resource Area for current access information.

From the town site of Grande Ronde, Oregon, travel west on Highway 18 to the Murphy Grade Road located west of milepost 17, and turn south (locked gate). Murphy Grade Road (also known as the "100 road") is located just west of the green Murphy Summit Road sign where two westbound lanes merge into one. Proceed on the 100 road (portions are also known as "road 6") past the junction of the 300 road at 7.5 mi (12 km). At 7.9 mi (12.7 km), turn right on the 200 road, then right onto road 210 (fig. 1) and travel approximately 1.3 km (0.8 mi) and park.

There are no developed trails within Lost Prairie ACEC although foot access into the central portions of the site may be gained off of adjacent logging roads (fig. 1). Lodging accommodation is available in Grande Ronde, Lincoln City, and Salem, Oregon.

Environment

Lost Prairie occupies a mid- to upper-elevation bench along the upper reaches of the Salmon River in Lincoln County, Oregon. Elevations range from 701 to 884 m (2300 to 2900 ft) within the ACEC (fig. 2). Parent material underlying the montane fen is partially decomposed organic material over alluvium and colluvium derived from igneous and sedimentary rock.

Slightly more than half of the ACEC (12.55-ha (31-ac) supports soils that have been mapped as Histic Cryaquepts, 0 to 3 percent slopes. These organic soils occur along drainageways and on benches in the upper reaches of the Salmon River. They are very poorly drained and experience frequent ponding. Depth to water table varies with yearly and seasonal variation in precipitation between 0 and 30 cm (0 and 12 in) USDA-NRCS 2007). A typical profile includes:

0 to 20 cm (0 to 8 in) peat
20 to 30 cm (8 to 12 in) muck
30 to 41 cm (12 to 16 in) silty clay loam
41 to 91 cm (16 to 36 in) gravelly sandy loam
91 to 152 cm (36 to 60 in) cobbly loam

Depth to a restrictive feature exceeds 203 cm (80 in) in this soil mapping unit (USDA-NRCS 2007).

The remainder of the ACEC (as mapped by soil maps) is terrestrial upland that has been mapped as the Valsetz-Yellowstone complex

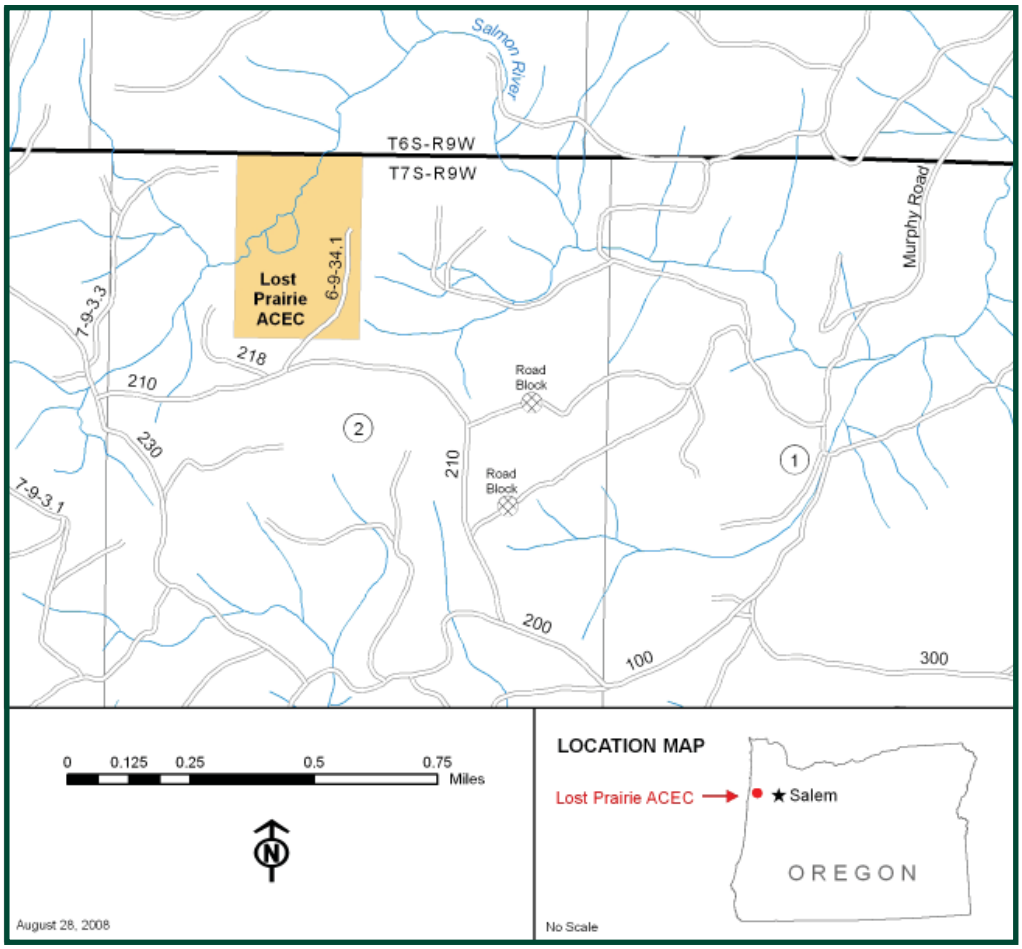


Figure 1 - Location Map: Lost Prairie ACEC location and access.

with slopes steepness ranging between 3 to 30 percent. Valsetz soil is moderately deep and well drained and formed in colluvium derived from volcanic material. The surface layer is brown cobbly loam about 13 cm thick. The upper part of the subsurface is reddish-brown very cobbly loam about 23 cm thick, and the lower part is brown and strongly brown extremely cobbly loam about 56 cm thick Fractured basic igneous rock is at a depth of about 91 cm. The Valsetz component of this complex is classified as medial-skeletal, frigid Typic Haplocryands (Shipman 1997, USDA-NRCS 2007).

Yellowstone soil is shallow and somewhat excessively well drained. The surface layer is dark reddish-brown stony cobbly loam about 25 cm thick. The subsurface is dark reddish-brown extremely cobbly loam about 20 cm thick. Fractured basic igneous rock occurs at a depth of about 45 cm. The Yellowstone component of this complex is classified as medial-skeletal, frigid Lithic Haplocryands (Shipman 1997, USDA-NRCS 2007).

Climate

The climate of Lost Prairie is strongly maritime, owing to its proximity to the Pacific Ocean. By mid-June, a high pressure system develops off the Oregon Coast, and north to northwesterly winds deflect storms to the north resulting in periods of clear skies. Summers are usually moderately dry and warm with the June-August period receiving about 5 percent of the total annual precipitation (Christy 2004, Western Regional Climate Center 2007).

Between October and April, low-pressure weather systems generated in the Gulf of Alaska bring extended and occasionally strong

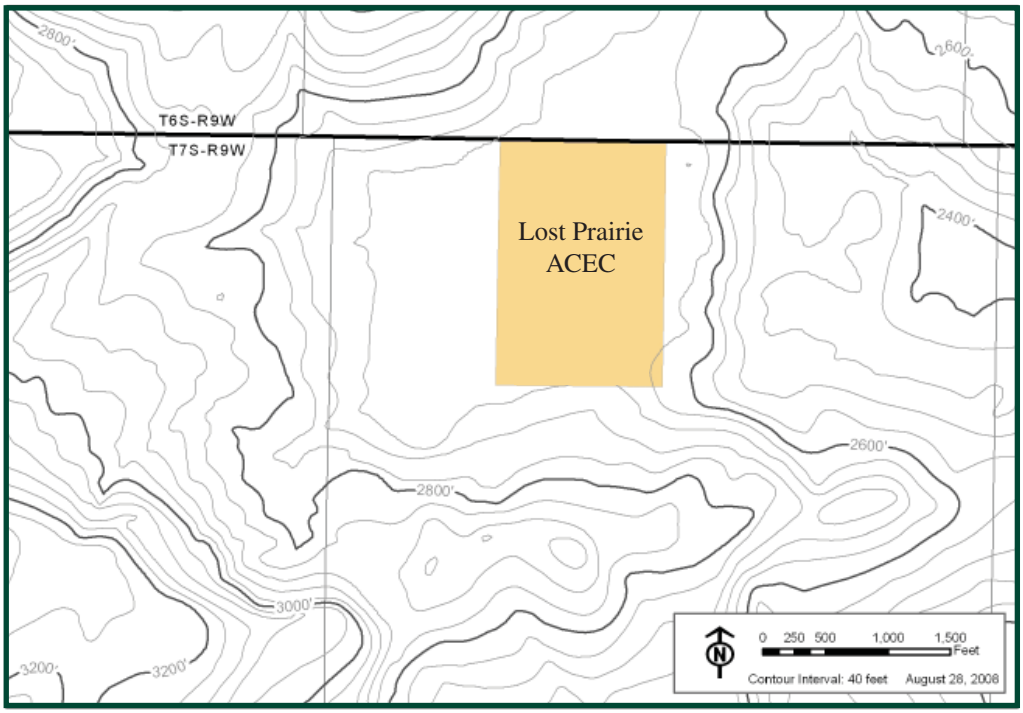


Figure 2 - Lost Prairie ACEC boundary and topography.

cyclonic storms to the Oregon Coast Range. These winter storms are accompanied by south to southwesterly winds, and by heavy precipitation in the form of both rain and snow. Eighty-five percent of the annual total precipitation occurs between October and April. Fall, winter, and spring are typically cool and wet. (Western Regional Climate Center 2007.)

Meteorological data is taken from Laurel Mountain (station 354776) and summarized in Table 1, the nearest climate station of comparable elevation in the Oregon Coast Range, (Western Regional Climate Center 2007). The Laurel Mountain Station is on the mountain summit at 1094 m (3,589 ft) elevation. Lost Prairie occurs at 853 m (2,800 ft) elevation, and is probably somewhat drier, warmer, and has less snow accumulation than the Laurel Mountain Climate Station would indicate. Lost Prairie ACEC is located approximately 32 km (20 mi) northwest of the Laurel Mountain Climate Station.

Snowfall may occur from October through May. The highest monthly snowfall averages are between December and March. During the 1978-2007 time period, the highest average monthly snowfall of 61 cm (23.9 in) occurred in February, with February also averaging the highest monthly maximum snow depths of 25.4 cm (10 in) (Western Regional Climate Center 2007).

Table 1. Summary of Meterological data

Period of Record: 3/1/1978 to 6/30/2007 – LAUREL MOUNTAIN, OREGON (354776)	
Average minimum January temperature	-0.8 °C (30.5 °F)
Average maximum January temperature	4.4 °C (40.0 °F)
Average minimum July temperature	9.3 °C (48.7 °F)
Average maximum July temperature	18.7 °C (65.6 °F)
Average annual precipitation	3106 mm (122.30 in)
Average June-August precipitation	156 mm (6.14 in)
Average annual snowfall	3048 mm (120 in)

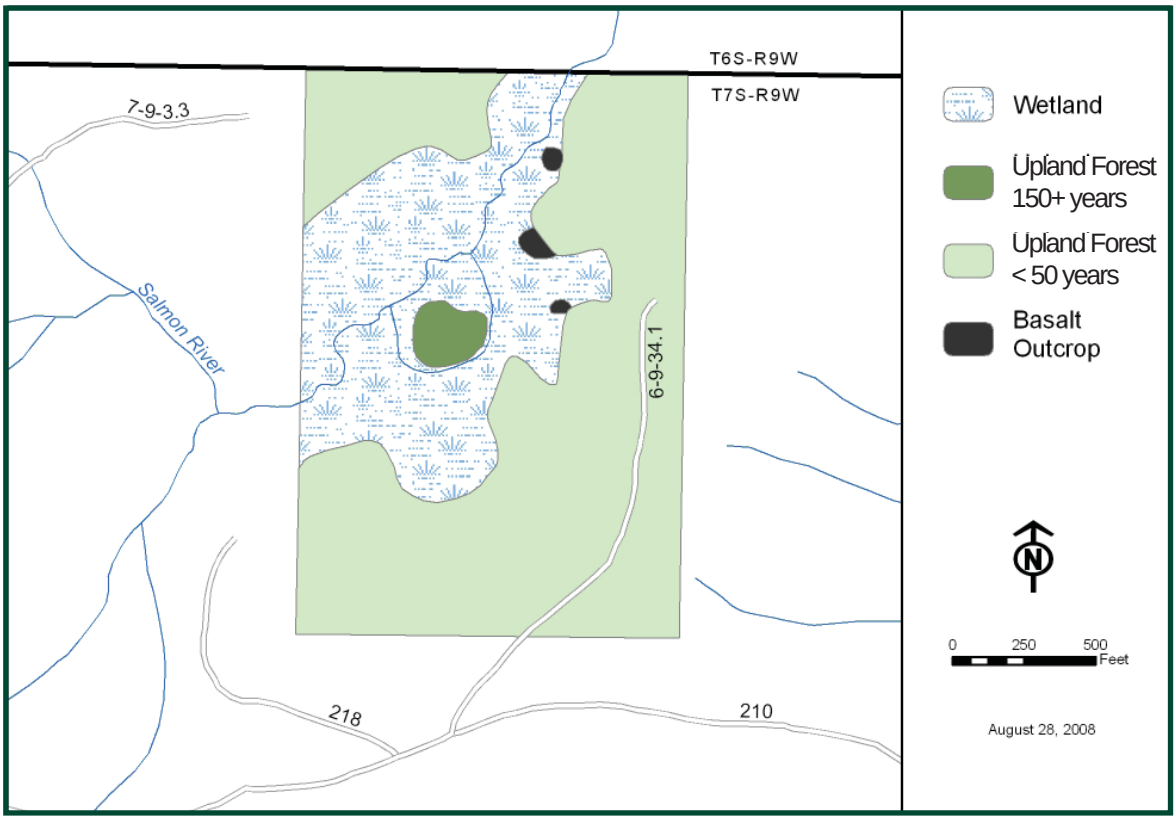


Figure 3 - Stand Age-class distribution in Lost Prairie ACEC.

Center basalt outcrop

Riparian channel located on west boundary

View of Lost Prairie, 'meadow' from NE corner to SW

Vegetation

The primary reason for designation of Lost Prairie as an ACEC is the occurrence of the montane fen[1] (ONHP 2003). The majority of the fen is non-forested. Within this area, the fen consists of low hummocks of *Vaccinium caespitosum* (Dwarf huckleberry) interspersed around seasonally-flooded openings with a variable cover of *Carex obnupta* (Slough sedge), *C. aquatilis* var. *dives* (Water sedge), *C. exsiccata* (Western inflated sedge), *C. urticulata* (Northwest Territory sedge) and other graminoids. *Vaccinium caespitosum* is widespread and common throughout the fen, except is locally sparse in some areas. *Salix scouleriana* (Scouler willow) and *Spiraea douglasii* (Rose spirea) both have patchy distributions and occasionally dominate as tall- or medium-sized shrubs. *Sanguisorba officinalis* (Official burnet) is a major herbaceous species in many areas of the fen. Stunted growth forms of *Spiraea douglasii*, *Carex obnupta* and *Camassia quamash* (Camas) suggest that the soil has low nutrient status. *Sphagnum mendocinum* and *Aulacomnium palustre* are the dominant mosses to occur among the *Vaccinium* hummocks (Christy 1984). Grasses such as *Deschampsia cespitosa* (Tufted hairgrass), *Calamagrostis stricta* var. *inexpansa* (Northern reedgrass), and *Agrostis exarata* (Spike bentgrass) occasionally occupy the herb layer. Felix anemone and Indian Rice are rare plants that occur within the fen (ONHP 2003, ONHIC 2007). See table 2 for a summary of rare vascular plants, lichens and mosses of Lost Prairie.

In the center of the fen a habitat "island" of less than 0.4-ha (1-ac) supports a conifer stand of approximately 150 years (see figure 3 and 4). This area is dominated by Pseudotsuga menziesii (Douglas-fir), Tsuga heterophylla (Western hemlock), Thuja plicata (Western red cedar), Pinus monticola (Western white pine), Rhododendron macrophyllum, and Gaultheria shallon (Salal). Similar habitats occur as a thin band around the margins of the fen and are not represented on figure 3, but are identifyable on figure 4. Similar shrub habitats occur on logs and elevated areas within and surrounding the fen.

Three small basalt outcrops occur along the fen margin (see figure 3 & 4). These sparsely vegetated areas support Saxifraga (Saxifrage) sp., Allium crenulatum (Olympic onion), mosses such as Andreaea sp. and Codriophorus sp., and lichens (Cladina rangiferina).

The forested portion of the ACEC consists of a 15.8-ha (39-ac) ~ 35 year-old Douglas-fir and western hemlock stand. The surrounding forested portion of Lost Prairie ACEC was harvested for timber in the mid-1970s. The resulting, second growth stands form a mosaic of dense conifers with sparse to absent shrub and herb cover (see figure 4). This alternates and intergrades with dense, impenetratable thickets of Rhododendron macrophyllum (Pacific rhododendron), Vaccinium spp. (huckleberry) and Gaultheria shallon (Salal) or a mixture of both. In addition, numerous rare plant species occur at Lost Prairie. An updated list of vascular plants which are known to occur at Lost Prairie is included in appendix 1. * See Figure 3 and Figure 4 for Age Class Distribution.

[1] A fen is a type of freshwater wetland fed by surface and/or groundwater. The flora of fens is characterized by their water chemistry. Fens are often confused with bogs, which are fed primarily by rainwater and often inhabited by certain sphagnum moss, making them acidic.

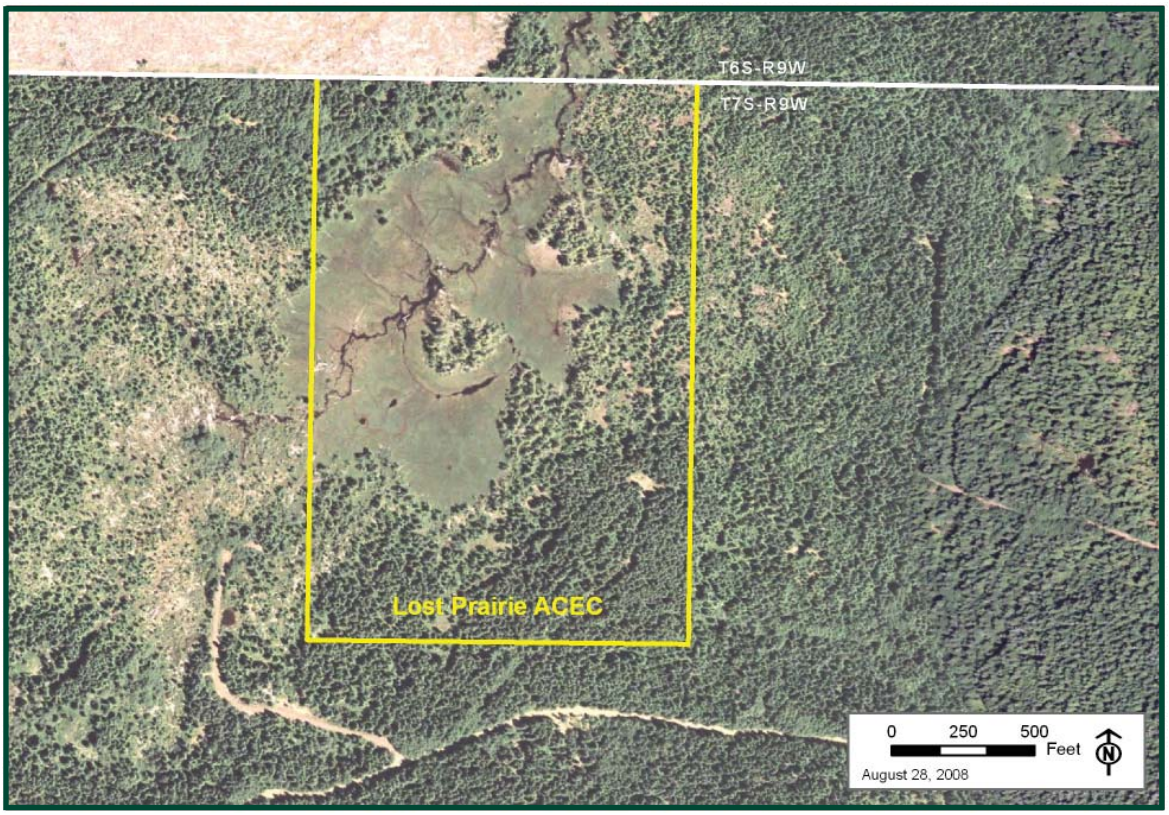


Figure 4 - 2005 aerial photograph of Lost Prairie ACEC.


Deep pond located south of basalt outcrop facing the "center island" of conifers.


Young upland forest with small meadow amongst stumps. This habitat is common around the margins of the fen.

Table 2. Rare vascular plants, lichens and mosses of Lost Prairie - their global, federal, and state status' (ONHP 2003, ONHIC 2007).

Species Name	ONHP rank	Federal status	ODA list	ORNHIC list	BLM list
Anemone oregana var. *felix*	G4 T2 S1	listed as species of concern	-	list 2	X
Erythronium elegans	G1 S1	listed as species of concern	LT listed as threatened	list 1	X
Fritillaria camschatcensis	G5 S1	-	-	list 2	X
Hypogymnia duplicata (lichen)	G4 S2	-	-	list 3	X
Platismatia lacunosa (lichen)	G3G4 S3	-	-	list 4	Tracking
Tetraplodon mnioides (moss)	G4 S2	-	-	list 2	X = sensitive

Fauna

Elk frequent Lost Prairie and roam throughout the Slick Rock – Warnick Creek Watershed. The herd uses the ACEC for foraging and escape cover. In 1986, the herd of 150 was determined to be increasing in size (Elliott et al. 1986).

Reptiles, amphibians, birds, and mammals known or expected to occur within the ACEC are listed in appendix 4. These lists have been compiled from a combination of field observations and published literature and together represent a provisional list of species expected to occur within or use the ACEC for portions of their life cycles (Csuti et al. 1997, USDI BLM 2007).

Disturbance History

The Oregon Coast Range is characterized by a pattern of large-scale (some greater than 20,000 ac), infrequent (150- to 300-year mean fire-return interval) stand-replacement fires typical of cool moist climates where lightning is uncommon (Agee 1990). Large fires such as the 1933 Tillamook Fire are part of recent Oregon Coast Range fire history. Almost all coniferous forests within the *Tsuga heterophylla* Zone are first- or multi-generation stands originating from fire. Proximity to historic wildfire areas suggests that at least periodically, wetlands such as Lost Prairie may burn. However, no detailed fire history data has been collected within the ACEC. About 3.2 km (2 mi) northwest of Lost Prairie Juday (1976) examined Douglas-fir growth rings on stumps in a clearcut adjacent to the old-growth stand within Saddle Bag Mountain Research Natural Area (RNA) and concluded that there had been no major disturbance (in the immediate vicinity) since approximately 1300. Hines (1971) surmised that the absence of Douglas-fir fire scars and charcoal in soil profiles on Saddle Bag Mountain may be attributed to the high rainfall on Saddle Bag Mountain. However, other locations on Saddle Bag Mountain have experienced wildfire in recent history (USDI BLM 2006).

Maps and Aerial Photography

Maps applicable to Lost Prairie ACEC: Topographic—Stott Mountain 7.5 minute 1:24,000 scale,

1984; BLM Salem District Westside Recreation Map 1:10,560, 1996.
Aerial Photography: 2003 color 1:12,000.

Acknowledgments

We thank Michelle Davis for creating and providing maps for this publication, Gary Licata and Scott Hopkins for reviewing the wildlife portion, Tim Jacobsson for formatting and final layout and the Salem District, Bureau of Land Management for providing funding for this project.

English Equivalents

1 hectare (ha) = 2.47 acres (ac)
1 kilometer (km) = 0.62 miles (mi)
1 meter (m) = 3.28 feet (ft)
1 centimeter (cm) = 0.394 inch (in)
1 millimeter (mm) = 0.0394 inch

View of Lost Prairie in late spring.

View of Lost Prairie in mid-summer.

APPENDIX 1 – Vascular Plants, Ferns and Fern Allies[a, b]

Scientific name	Common name
Coniferous trees	
Abies amabilis (Douglas ex Louden) Douglas ex Forbes	Pacific silver fir
Abies procera Rehder	Noble fir
Picea sitchensis (Bong.) Carr.	Sitka spruce
Pinus monticola Dougl. ex D. Don	Western white pine
Pseudotsuga menziesii (Mirbel) Franco.	Douglas-fir
Thuja plicata Donn ex D. Don	Western red cedar
Tsuga heterophylla (Raf.) Sarg.	Western hemlock
Deciduous trees >8m (26.3 ft) tall	
Alnus rubra Bong.	Red alder
Pyrus fusca (Raf.) Schneid.	Oregon crabapple
Tall shrubs 2m-8m (6.6-26.3 ft) tall	
Acer circinatum Pursh	Vine maple
Amelanchier alnifolia (Nutt.) Nutt. ex M. Roem. var. *semiintegrifolia* (Hook.) C.L. Hitchc.	Saskatoon serviceberry
Cytisus scoparius (L.) Link.	Scotch broom
Physocarpus capitatus (Pursh) Kuntze	Pacific ninebark
Rhododendron macrophyllum D. Don ex G. Don	Pacific rhododendron
Salix scouleriana Barratt ex Hook.	Scouler's willow
Sorbus sitchensis M. Roemer	Western mountain ash
Viburnum edule (Michx.)	Raf.Squashberry
Medium shrubs 0.5m-2m (1.6-6.6 ft) tall	
Arctostaphylos uva-ursi (L.) Spreng.	Kinnikinnick
Gaultheria shallon Pursh	Salal
Ledum ×*columbianum* Piper (pro sp.) [*glandulosum* × *groenlandicum*]	Labrador tea
Lonicera involucrata (Richardson) Banks ex Spreng.	Twinberry honeysuckle
Menziesia ferruginea Sm.	Fool's huckleberry
Ribes lacustre (Pers.) Poir.	Prickly currant
Rosa gymnocarpa Nutt.	Baldhip rose
Rubus spectabilis Pursh	Salmonberry
Spiraea douglasii Hook.	Rose spirea
Symphoricarpos mollis Nutt.	Creeping snowberry
Vaccinium caespitosum Michx.	Dwarf huckleberry
Vaccinium deliciosum Piper	Cascade huckleberry
Vaccinium ovalifolium Sm.	Oval-leaf blueberry
Vaccinium parvifolium Sm.	Red huckleberry

[a] Compiled from numerous sources
[b] Nomenclature from vascular plants, ferns, and fern-allies follws the Flora of North America Web site (2006) and the Oregon Flora Project Web site (2006).

Scientific name	Common name
Low shrubs <0.5m (1.6 ft) tall	
Cornus canadensis L.	Bunchberry dogwood
Chimaphila menziesii (R. Br.) Spreng.	Little Prince's-pine
Linnaea borealis L. var. *longiflora* Torr.	Western twinflower
Rubus lasiococcus Gray	Roughfruit berry
Rubus pedatus J.E. Smith	Strawberry dwarf bramble
Rubus ursinus Cham. & Schlecht.	California blackberry
Ferns and allies	
Athyrium filix-femina (L.) Roth.	Lady fern
Blechnum spicant (L.) Sm.	Deer fern
Botrychium multifidum (Gmel.) Trev	Leathery grapefern
Cystopteris fragilis (L.) Bernh.	Brittle bladderfern
Equisetum palustre L.	Marsh horsetail
Lycopodium clavatum L.	Running clubmoss
Polypodium glycyrrhiza D.C. Eat.	Licorice fern
Polystichum munitum (Kaulf.) Presl	Western swordfern
Pteridium aquilinum (L.) Kuhn.	Bracken fern
Herbs	
Allium crenulatum Wieg.	Olympic onion
Anaphalis margaritacea (L.) B. & H.	Pearly-everlasting
Anemone oregana Gray var. *felix* (M.E. Peck) C.L. Hitchc.	Felix anemone
Angelica arguta Nutt.	Lyell's angelica
Bistorta bistortoides Pursh	American bistort
Boykinia elata Torr. & Gray	Coastal brookfoam
Caltha leptosepala DC.	White marsh marigold
Camassia quamash (Pursh) Greene	Camas
Castilleja miniata Dougl. ex Hook.	Giant red Indian paintbrush
Cerastium nutans Raf.	Nodding chickweed
Chamerion angustifolium (L.) Holub	Fireweed
Cicuta douglasii (DC.) Coult. & Rose	Western water hemlock
Claytonia parvifolia (Moc. ex DC.) Greene ssp. *parvifolia*	Littleleaf minerslettuce
Digitalis purpurea L.	Purple foxglove
Drosera rotundifolia L.	Roundleaf sundew
Epilobium sp.	Willowherb
Equisetum sp.	Horsetail
Erythronium elegans Hammonds & Chambers	Coast Range fawn-lily
Fritillaria camschatcensis (L.) Ker-Gawl.	Black lily, Indian rice
Galium trifidum L. var. *pacificum* Wieg.	Treepetal bedstraw
Gentiana sceptrum Griseb.	King's gentian
Hieracium albiflorum Hook.	White-flowered hawkweed
Hypericum anagalloides Cham. & Schlecht.	Bog St. John's-wort
Hypericum formosum Kunth var. *nortoniae* (M.E. Jones) C.L. Hitchc.	Western St. John's-wort
Hypericum perforatum L.	Common St. John's-wort
Hypochaeris radicata L.	Hairy cat's-ear
Leucanthemum vulgare Lam.	Oxeye daisy

Scientific name	Common name
Lilium columbianum Leichtl. in Duchartre	Columbia lily
Lomatium martindalei Coult. & Rose (Coult. & Rose	Cascade desert parsley
Lotus crassifolius (Benth.) Greene	Big deervetch
Lupinus latifolius Lindl. ex J.G. Agardh	Broadleaf lupine
Lysichitum americanus Hultén & St. John	American Skunk cabbage
Lycopodium clavatum L.	Running clubmoss
Maianthemum dilatatum(Wood) A. Nels. & J.F. Macbr.	False lily of the valley
Maianthemum stellatum (L.) Link.	Starry false lily of the valley
Osmorhiza berteroi DC.	Sweetcicely
Petasites frigidus L.) Fries var. *palmatus* (Ait.) Cronq.	Colt's foot
Platanthera dilatata (Pursh) Lindl. ex Beck var. *dilatata*	White bogorchid
Platanthera stricta Lindl.	Slender bog orchid
Potamogeton sp.	Pondweed
Pyrola asarifolia Michx. var. *asarifolia*	Liverleaf wintergreen
Ranunculus flammula L.	Greater creeping spearwort
Ranunculus populago Greene	Popular buttercup
Rumex acetosella L.	Sheep sorrel, Sour weed
Sanguisorba menziesii Rydb.	Menzies' burnet
Saxifraga ferruginea Graham	Russethair saxifrage
Scoliopus hallii S. Wats.	Oregon fetid adderstongue
Senecio jacobaea L.	Tansy ragwort
Senecio triangularis Hook. var. *angustifolius* G. N. Jones	Bog grounsel
Sisyrinchium sp.	Blue eyed grass
Solidago canadensis L.	Canada goldenrod
Spiranthes romanzoffiana Cham.	Hooded lady's tresses
Trientalis artica Fisch. ex Hook.	Northern starflower
Trifolium repens L.	White clover
Trifolium sp.	Clover
Veratrum viride Ait.	Green false hellebore
Veronica officinalis L.	Common gypsyweed
Viburnum ellipticum Hook.	Common viburnum
Viola palustrus L.	Marsh violet
Viola sempervirens Greene	Redwoods violet
Xerophyllum tenax (Pursh) Nutt.	Common beargrass

Grasses, sedges and rushes

Agrostis exarata Trin.	Spike bentgrass
Aira caryophyllea L.	Silver hairgrass
Aira praecox L.	Little hairgrass
Calamagrostis canadensis (Michx.) P. Beauv.	Bluejoint
Calamagrostis stricta (Timm) Koel. ssp. *inexpansa* (Gray) C.W. Greene	Northern reedgrass
Carex aquatilis Wahlenb. var. *dives* Kuken.	Water sedge
Carex californica L. H. Bailey	California sedge
Carex echinata Murr. var. *echinata*	Star sedge
Carex exsiccata L. H. Bailey	Western inflated sedge
Carex leptopoda Mack.	Taperfruit shortscale sedge

Scientific name	Common name
Carex luzulina Olney	Woodrush sedge
Carex mertensii J. D. Prescott ex Bong.	Mertens' sedge
Carex obnupta Bailey	Slough sedge
Carex pachystachya Cham.	Chamisso sedge
Carex rossii Boott	Ross' sedge
Carex utriculata Boott	Northwest Territory sedge
Dactylis glomerata L.	Orchardgrass
Danthonia californica Bol.	California oatgrass
Deschampsia cespitosa (L.) Beauv.	Tufted hairgrass
Elymus glaucus Buckl.	Blue wildrye
Festuca rubra L.	Red fescue
Holcus lanatus L.	Common velvetgrass
Juncus effusus L.	Common rush
Juncus sp.	Rush
Luzula multiflora (Ehrh.) Lej. ssp. *multiflora*	Field woodrush
Luzula parviflora (Ehrh.) Desv.	Small-flowered woodrush
Poa sp.	Bluegrass
Schoenoplectus americanus (Pers.) Volk.	Chairmaker's bulrush
Scirpus macrocarpus J. Presl & C. Presl	Panicled bulrush
Sparganium emersum Rehm.	European bur-reed

APPENDIX 2 – Liverworts[c, d]

Scientific name	Authority
Blepharostoma trichophyllum	(L.) Dum.
Calypoegeja sp.	
Cephalozia sp.	
Cephaloziella divaricata(Sm.)	Schiffn.
Chiloscyphus pallescens	(Ehrh. ex Hoffm.) Dum.
Chiloscyphus polyanthus(L.)	Corda
Diplophyllum obtusifolium	(Hook.) Dum.
Douinia ovata	(Dicks.) Brid.
Frullania nisquallensis	Sull.
Gymnocolea inflata	(Huds.) Dum.
Marsupella sphacelata	(Gieseke) Dum.
Porella navicularis	(Lehm. & Lindenb.) Pfieff.
Ptilidium californicum	(Aust.) Underw.
Scapania bolanderi	Aust.
Scapania paludosa	(K. Muell.) K. Muell.
Scapania undulata	(L.) Dum.

APPENDIX 3 – Mosses[e, f]

Amblystegium serpens(Hedw.)	Schimp. in B.S.G.
Andreaea rothii var. *rothii*	Web. & Mohr
Andreaea rupestris	Hedw.
Antitrichia curtipendula	(Hedw.) Brid.
Aulacomnium androgynum	(Hedw.) Schwaegr.
Aulacomnium palustre	(Hedw.) Schwaegr.

[c] Compiled from numerous sources
[d] Nomenclature follows Missouri Botanic Garden website W3MOST (2007)
[e] Compiled from numerous sources
[f] Nomenclature follows Missouri Botanic Garden website W3MOST (2007)

Scientific name	Authority
Brachythecium frigidum	(C. Muell.) Besch.
Bryum capillare	Hedw.
Calliergon stramineum	(Brid.) Kindb.
Calliergonella cuspidata	(Hedw.) Loeske
Ceratodum purpureus	(Hedw.) Brid.
Dicranella heteromalla	(Hedw.) Schimp.
Dicranum fuscescens	Turn.
Dicranum scoparium	Hedw.
Ditrichum heteromallum	(Hedw.) Britt.
Eurhynchium oreganum	(Sull.) Jaeg.
Eurhynchium praelongum	(Hedw.) Schimp. in B.S.G.
Fontinalis howellii	Ren. & Card.
Fontinalis neomexicana	Sull. & Lesq.
Hylocomium splendens	(Hedw.) Schimp. in B.S.G.
Hypnum circinale	Hook.
Hypnum dieckii	Ren. & Card. in Roell
Isothecium myosuroides	Brid.
Mnium thomsonii	Schimp.
Philonotis fontana var. *fontana*	(Hedw.) Brid.
Plagiothecium laetum	Schimp. in B.S.G.
Pleuridium subulatum	(Hedw.) Rabenh.
Pleurozium schreberi	(Brid.) Mitt.
Pogonatum contortum	(Brid.) Lesq.
Pohlia annotina	(Hedw.) Lindb.
Pohlia nutans	(Hedw.) Lindb.
Polytrichastrum alpinum	(Hedw.) G.L. Sm.
Polytrichum commune	Hedw.
Polytrichum juniperinum	Hedw.
Racomitrium elongatu	Ehrh. ex Frisv.
Racomitrium heterostichum	(Hedw.) Brid.
Racomitrium lanuginosum	(Hedw.) Brid.
Rhizomnium glabrescens	(Kindb.) T. Kop.
Rhizomnium magnifolium	(Horik.) T. Kop.
Rhytidiadelphus loreus	(Hedw.) Warnst.
Rhytidiadelphus squarrosus	(Hedw.) Warnst.
Rhytidiadelphus triquetrus	(Hedw.) Warnst.
Sphagnum fuscum	(Schimp.) Klinggr.
Sphagnum henryense	Warnst.
Sphagnum mendocinum	Sull. & Lesq. in Sull.
Sphagnum palustre	L.
Sphagnum squarrosum	Crome
Sphagnum subnitens	Russ. & Warnst. in Warnst.
Sphagnum subsecundum	Nees in Sturm
Tetraplodon mnioides	(Hedw.) Bruch & Schimp. in B.S.G.
Trachybryum megaptilum	(Sull.) Schof.
Ulota megalospora	Vent. in Roell
Warnstorfia exannulata	(Schimp. in B.S.G.) Loeske

Appendix 4 – Amphibians, reptiles, birds, and mammals[g]

Amphibians

Order	Scientific name	Common name
Caudata	*Ambystoma gracile*	Northwestern salamander
	Ambystoma macrodactylum	Long-toed salamander
	Aneides ferreus	Clouded salamander
	Dicamptodon tenebrosus	Pacific giant salamander
	Ensatina eschscholtzi	Ensatina
	Plethodon dunni	Dunn's salamander
	Plethodon vehiculum	Western redback salamander
	Rhyacotriton variegatus	Southern torrent salamander
	Taricha granulosa	Rough-skinned newt
Anura	*Bufo boreas*	Western toad
	Pseudacris regilla	Pacific chorus frog
	Rana aurora	Red-legged frog

Reptiles

Squamata	*Elgaria coerulea*	Northern alligator lizard
	Charina bottae	Rubber boa
	Coluber constrictor	Racer
	Contia tenuis	Sharptail snake
	Eumeces skiltonianus	Western skink
	Sceloporus occidentalis	Western fence lizard
	Thamnophis elegans	Western terrestrial garter snake
	Thamnophis ordinoides	Northwestern garter snake
	Thamnophis sirtalis	Common garter snake

Birds

Anseriformes		
	Aix sponsa	Wood Duck
	Anas platyrhynchos	Mallard
	Anas cyanoptera	Cinnamon Teal
	Lophodytes cucullatus	Hooded Merganser
Podicipediformes		
	Podilymbus podiceps	Pied-billed Grebe
Ciconiiformes		
	Ardea herodias	Great Blue Heron
	Butorides virescens	Green Heron
Falconiformes		
	Accipiter cooperii	Cooper's hawk
	Accipiter striatus	Sharp-shinned hawk
	Buteo jamaicensis	Red-tailed hawk
	Cathartes aura	Turkey vulture

[g] Nomenclature, distribution and habitat characteristics taken from Csuti et al. 1997.

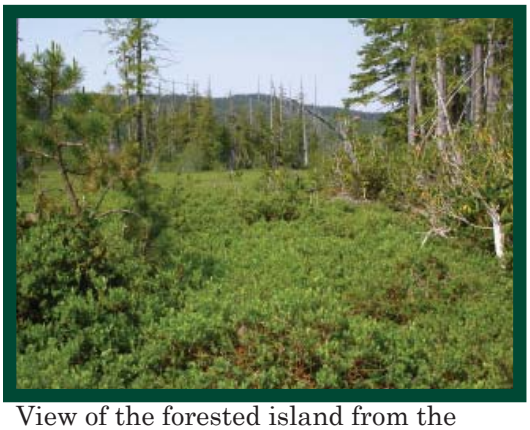
Order	Scientific name	Common name
Falconiformes (continued)		
	Circus cyaneus	Northern harrier
	Falco sparverius	American kestrel
	Haliaeetus leucocephalus	Bald eagle
Galliformes	*Bonasa umbellus*	Ruffed grouse
	Dendragapus fuliginosus	Sooty Grouse
	Oreortyx pictus	Mountain quail
Charadriiformes		
	Actitis macularia	Spotted sandpiper
	Gallinago delicata	Wilson's Snipe
	Brachyramphus marmoratus	Marbled murrelet
Columbiformes		
	Columba fasciata	Band-tailed pigeon
	Zenaida macroura	Mourning dove
Strigiformes		
	Aegolius acadicus	Northern saw-whet owl
	Bubo virginianus	Great-horned owl
	Glaucidium gnoma	Northern pygmy owl
	Otus kennicottii	Western screech-owl
	Strix occidentalis	Spotted owl
	Strix varia	Barred owl
Caprimulgiformes		
	Chordeiles minor	Common nighthawk
Apodiformes		
	Chaetura vauxi	Vaux's swift
	Selasphorus rufus	Rufous hummingbird
Coraciiformes		
	Ceryle alcyon	Belted kingfisher
Piciformes		
	Colaptes auratus	Northern flicker
	Dryocopus pileatus	Pileated woodpecker
	Picoides pubescens	Downy woodpecker
	Picoides villosus	Hairy woodpecker
	Sphyrapicus ruber	Red-breasted sapsucker
Passeriformes		
	Agelaius phoeniceus	Red-winged blackbird
	Bombycilla cedrorum	Cedar waxwing
	Carduelis pinus	Pine siskin
	Carduelis tristis	American goldfinch
	Carpodacus purpureus	Purple finch
	Catharus ustulatus	Swainson's thrush
	Certhia americana	Brown creeper
	Chamaea fasciata	Wrentit
	Cinclus mexicanus	American dipper

Order	Scientific name	Common name
Passeriformes (continued)		
	Coccothraustes vespertinus	Evening grosbeak
	Contopus borealis	Olive-sided flycatcher
	Contopus sordidulus	Western wood peewee
	Corvus brachyrhynchos	American crow
	Corvus corax	Common raven
	Cyanocitta stelleri	Steller's jay
	Dendroica coronata	Yellow-rumped warbler
	Dendroica nigrescens	Black-throated gray warbler
	Dendroica occidentalis	Hermit warbler
	Dendroica petechia	Yellow warbler
	Empidonax difficilis	Pacific-slope flycatcher
	Empidonax hammondii	Hammond's flycatcher
	Empidonax traillii	Willow flycatcher
	Geothlypis trichas	Common yellowthroat
	Ixoreus naevius	Varied thrush
	Junco hyemalis	Dark-eyed junco
	Loxia curvirostra	Red crossbill
	Melospiza melodia	Song sparrow
	Molothrus ater	Brown-headed cowbird
	Myadestes townsendi	Townsend's solitaire
	Oporornis tolmiei	MacGillivray's warbler
	Parus atricapillus	Black-capped chickadee
	Parus rufescens	Chestnut-backed chickadee
	Perisoreus canadensis	Gray jay
	Pheucticus meelanocephalus	Black-headed grosbeak
	Pipilo maculattus	Spotted towhee
	Piranga rubra	Western tanager
	Progne subis	Purple martin
	Psaltriparus minimus	Bushtit
	Regulus satrapa	Golden-crowned kinglet
	Sialia mexicana	Western bluebird
	Sitta canadensis	Red-breasted nuthatch
	Spizella passerina	Chipping sparrow
	Stelgidopterix serripennis	Northern rough-winged swallow
	Tachycineta bicolor	Tree swallow
	Tachycineta thalassina	Violet-green swallow
	Troglodytes aedon	House wren
	Troglodytes troglodytes	Winter wren
	Turdus migratorius	American robin
	Vermivora celata	Orange-crowned warbler
	Vermivora ruficapilla	Nashville warbler
	Vireo gilvus	Warbling vireo
	Vireo cassinii	Cassin's Vireo
	Vireo huttoni	Hutton's vireo
	Wilsonia pusilla	Wilson's warbler
	Zonotrichia leucophrys	White-crowned sparrow

Mammals

Order	Scientific name	Common name
Didelphimorphia		
	Didelphis virginiana	Virginia opossum
Insectivora		
	Neurotrichus gibbsii	Shrew-mole
	Scapanus townsendii	Townsend's mole
	Scapanus orarius	Coast mole
	Sorex bairdi	Baird's shrew
	Sorex bendirii	Pacific marsh shrew
	Sorex pacificus	Pacific shrew
Insectivora		
	Sorex sonomae	Fog shrew
	Sorex trowbridgii	Trowbridge's shrew
	Sorex vagrans	Vagrant shrew
Chiroptera		
	Corynorhinus townsendii	Townsend's big-eared bat
	Eptesicus fuscus	Big brown bat
	Lasionycteris noctivagans	Silver-haired bat
	Lasiurus cinereus	Hoary bat
	Myotis californicus	California myotis
	Myotis evotis	Long-eared myotis
	Myotis lucifugus	Little brown myotis
	Myotis thysanodes	Fringed myotis
	Myotis volans	Long-legged myotis
	Myotis yumanensis	Yuma myotis
Lagomorpha		
	Lepus americanus	Snowshoe hare
	Sylvilagus bachmani	Brush rabbit
Rodentia		
	Aplodontia rufa	Mountain beaver
	Castor canadensis	American beaver
	Clethrionomys californicus	Western red-backed vole
	Erethizon dorsatum	Common porcupine
	Glaucomys sabrinus	Northern flying squirrel
	Microtus longicaudus	Long-tailed vole
	Microtus oregoni	Creeping vole
	Microtus townsemdii	Townsend' vole
	Neotoma cinerea	Bushy-tailed woodrat
	Peromyscus maniculatus	Deer mouse
	Phenacomys albipes	White-footed vole
	Phenacomys longicaudus	Red tree vole
	Spermophilus beecheyi	California ground squirrel

Order	Scientific name	Common name
Rodentia (continued)		
	Tamias townsendii	Townsend's chipmunk
	Tamiasciurus douglasii	Douglas' squirrel
	Thomomys mazama	Western pocket gopher
	Zapus trinotatus	Pacific jumping mouse
Carnivora		
	Canis latrans	Coyote
	Felis concolor	Mountain lion
	Lutra canadensis	Northern river otter
	Lynx rufus	Bobcat
	Mephitis mephitis	Striped skunk
	Mustela erminea	Ermine
	Mustela frenata	Long-tailed weasel
	Mustela vison	Mink
	Procyon lotor	Common raccoon
	Spilogale gracilis	Western spotted skunk
	Urocyon cinereoargenteus	Common gray fox
	Ursus americanus	Black bear
	Vulpes vulpes	Red fox
Artiodactyla		
	Cervus elaphus	Elk
	Odocoileus hemionus ssp. *columbianus*	Black-tailed deer



View of the forested island from the northwest.

Beaver dam in riparian channel on west portion of Lost Prairie.

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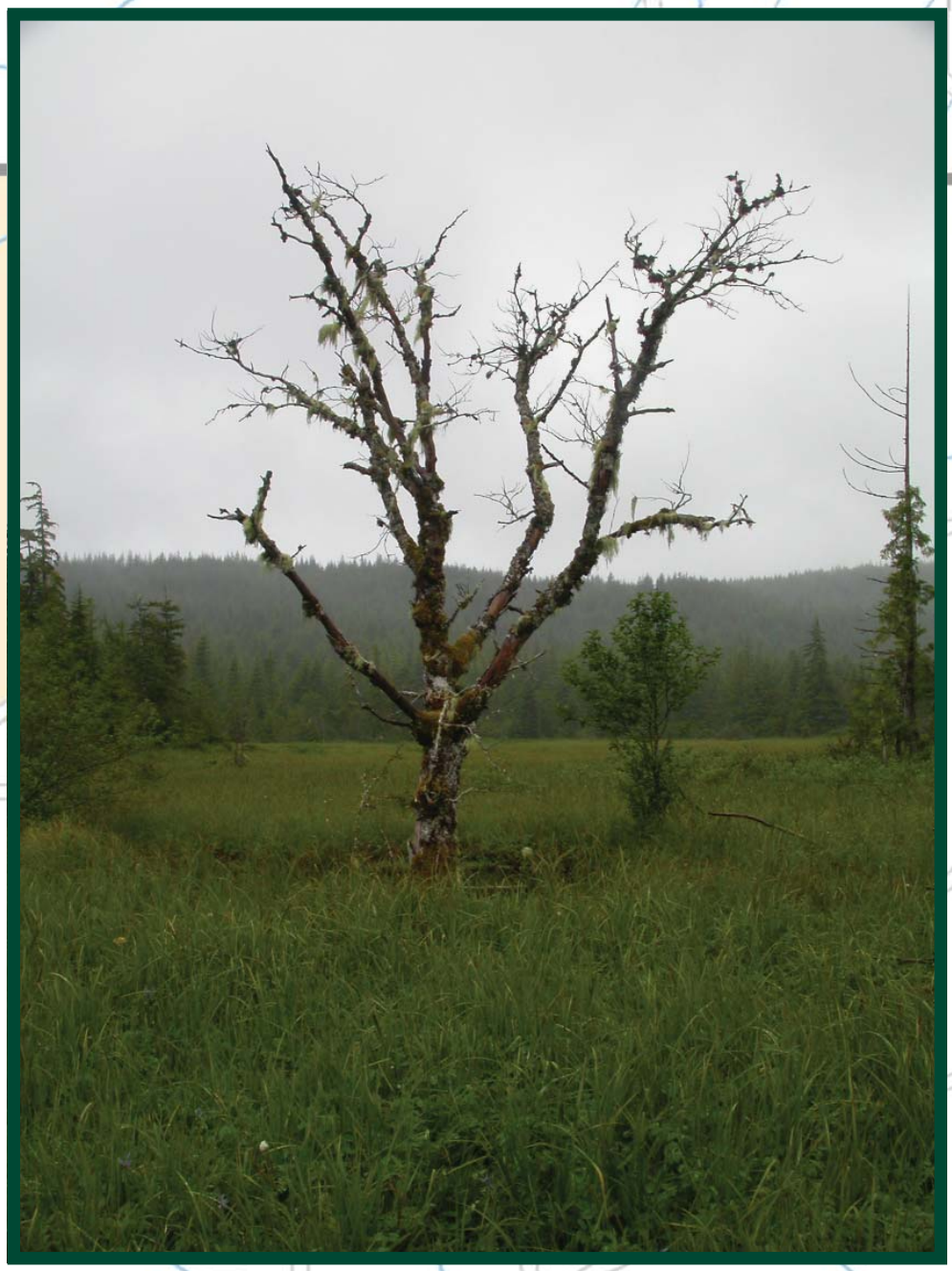
Back Cover: Red alder snag covered in lichens and bryophytes near edge of pond at Lost Prairie.



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