PRELIMINARY SURVEY OF THE PLANT COMMUNITIES AND RARE PLANTS OF BISMARK MEADOWS, IDAHO

by

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LIST OF APPENDICES

Introduction

Bismark Meadows is a 1200-acre wetland complex at the confluence of Reeder and Kalispell Creeks, near Nordman, Idaho. Much of the wetland has been drained for agriculture, but remnants of the natural vegetation are indicative of a peatland containing rich-fen and paludified forest (peatland swamp) communities rare in Idaho (Idaho Conservation Data Center 2002).

Peatlands of northern Idaho, termed valley peatlands by Bursik (1990), are of high biodiversity value because of their rarity in the state, and because of the numerous plant species restricted to such habitat (Bursik and Moseley 1992). Bismark Meadows is rare among Idaho valley peatlands in that it formed along a stream rather than a pond or lake. In 1991, Rob Bursik, a wetland scientist working for the Idaho Conservation Data Center (IDCDC), surveyed two Forest Service parcels that are part of the wetland and found 13 plant species that are tracked by the IDCDC as well as seven community types associated with valley peatlands. In addition to the rare plants recorded by Bursik and others (Appendix A, Map 1) there are historical records of three other rare peatland species occurring in Bismark Meadows. Element occurrence records (EOR) for both recent and historical rare plant reports can be found in Appendix B. Many of these plants also occur at Hager Lake Fen to the south, which is probably hydrologically tied to Bismark Meadows. Following his assessment and limited survey, Bursik completed a site record containing pertinent information on biodiversity values of the area, which was entered into the IDCDC database (IDCDC 2002; Appendix C). Based on the areas he surveyed, Bursik considered Bismark Meadows to be a high-priority conservation site. He recommended that ground disturbance within the site be minimized and the natural hydrology of the site be restored, allowing recolonization by natural vegetation to run its course.

Most of Bismark Meadows is privately owned and has been drained for use as pasture and hayfields. Approximately 85% (1,016 acres) of the contiguous, unforested wetland complex is now a conservation easement managed by the Natural Resources Conservation Service (NRCS) under the Wetland Reserve Program (WRP). The goal of the NRCS and its cooperators is to restore the natural hydrology of the area and thereby the original functions and values of the wetland. This will require filling-in of some of the drainage ditches that traverse the wetland and will result in a general raising of the water table. The NRCS would like to avoid direct impacts to rare species and communities and to obtain baseline vegetation information with which to compare future conditions.

In 2003 a complete vegetation inventory will be conducted for Bismark Meadows. The objectives will be: 1) to identify sensitive plant species and communities worthy of protection from land-disturbing activities, 2) to identify any federally protected species, 3) to make a baseline vegetation map for the purpose of monitoring future changes in the ecosystem, and 4) to develop a vegetation monitoring plan.

During the first week of September, 2002, we conducted a preliminary rare plant and vegetation survey as an initial phase of the project, and to help us plan for a larger, more comprehensive effort in 2003.

Survey methods

Armed with IDCDC records of known rare plant locations, aerial photos, and GPS units, we walked several areas of the Bismark Meadows easement over a two-day period in early September. The timing was late for a rare plant survey–some species may not have been evident, and others are easily overlooked at this time. We tried to sample different parts of the meadow in order to encompass the variability present. Our survey routes are shown on Map 2 (Appendix A). We looked specifically at ditches where possible, because some of these will be filled in as part of a restoration plan. On the first day we started in the northwest corner of the open meadow, near the Hawley farm, which is along Reeder Creek just south of one of the areas surveyed by Bursik in 1991 (Appendix A, Map 3). On the second day we accessed the north-central portion of the meadow from the old Bismark Work Center. High water restricted our ability to survey along ditches in this area to the extent we had intended. We then accessed the southeast portion of the meadow from Highway 57, where we were able to survey along the main ditch running east-west along the section line, as well as those branching off of it. We looked at forested inclusions and at forested margins of the meadow, but did not find areas of high *Sphagnum* cover indicative of paludified forest.

We kept a plant species list by community type and collected many unknown plants which were later identified. Specimens of many of these will be submitted to the University of Idaho herbarium. When a rare species was encountered a report form was filled out with population data and associated species, and a GPS unit was used to determine latitude and longitude (Appendix D).

Results

We found Bismark Meadows to be a mosaic of vegetation types, both natural and anthropogenic. Areas that have not been drained support rich-fen plant communities of varying condition. Wet sedge-meadow, mesic graminoid-meadow, and shrub-fen communities are interspersed. Condition of the native communities is primarily a function of the amount of *Phalaris arundinacea* (reed canarygrass) present. *Phalaris* dominates over large areas, as well as occurring to varying extent within native meadow communities. It is least abundant in the wet sedge-meadow communities dominated by native species such as *Carex lasiocarpa* (slender sedge). Former pastures and hayfields have fairly distinct boundaries, were dry at the time of our survey, and contained mostly pasture grasses, in some cases predominantly *Poa pratensis* (Kentucky bluegrass). Plant species noted during this initial survey are tabled in Appendix E.

We recorded three rare plants during our survey, *Petasites sagittatus* (arrow-leaf coltsfoot), *Dryopteris cristata* (crested shield fern), and *Hypericum majus* (large Canadian St. John's wort; Appendix D). All three are boreal species of valley peatlands, on the southern fringe of their ranges in northern Idaho. *Hypericum majus* and *Petasites*

sagittatus are ranked S3 by the IDCDC,[1] and *Dryopteris cristata* is ranked S2.[2] UTM coordinates for the rare plant locations are given on the observation report forms (Appendix D).

In the western lobe of the meadow we found examples of some of the fen communities described by Bursik such as *Carex lasiocarpa* and shrub-fen (shrub "carr"), and a small amount of *Sphagnum* moss. In this area we mapped several scattered clumps of *Dryopteris cristata* and *Petasites sagittatus* which were associated with the shrub community (Appendix A, Map 1).

At the time of our survey, much of the northern portion of the meadow adjoining a channelized segment of Reeder Creek was inundated with water. The main ditch carrying the flow from Reeder Creek, as well as other depressions in the floodplain, were filled with water. The level of water in the meadow may have been related to a beaver dam downstream on Reeder Creek, east of highway 57. We collected *Hypericum majus* near a bridge over Reeder Creek (Appendix A, Map 1) but were not aware of what it was at the time. Areas of shrub-fen in the central part of the meadow may harbor additional rare species, but were inaccessible from our access point due to high water and deep ditches. This may be the area Bursik was referring to when he wrote "much of it to the east appears to be intact and may indeed support … fen habitats suitable to bog cranberry [*Vaccinium oxycoccos*] and other rare species."

We found an additional population of *Dryopteris cristata* along the east-west running ditch in the southeast portion of the meadow (Appendix A, Map 1). Several plants were found along the ditch bank, for approximately 300 feet, growing with other native species. This was recorded as the third subpopulation of occurrence #006.

Plant communities tentatively identified during our survey are listed below (see Appendix E for common names). These will be refined and more fully characterized during the 2003 field season. Preliminary cover types are shown in Appendix A, Map 3.

1. Pasture grass: A mixture of introduced pasture grasses including *Agropyron* sp. (probably a cultivar), *Agrostis stolonifera*, *Alopecurus pratensis*, *Poa pratensis*, *Phalaris arundinacea*, and *Rumex acetosella*. These areas are former pastures and hayfields that have been drained and were dry at the time of our survey.

2. *Phalaris arundinacea*–pasture grass: dominated by *P. arundinacea*, with introduced pasture grasses such as *Agrostis stolonifera*, *Phleum pratense*, and *Poa pratensis* present in varying amounts; native sedges may also be present. There are inclusions dominated by *Agrostis stolonifera*. These areas are probably wetter than #1–possibly undrained.

[1] Rare or uncommon within the state but not imperiled (typically 21 to 100 occurrences).
[2] Imperiled within the state because of rarity or other factors making it very vulnerable to extinction (typically 6 to 20 occurrences).

3. *Poa pratensis*: *P. pratensis* dominates, with scattered patches of *Spiraea douglasii*. In some places with *Phleum pratense* and/or high cover of *Achillea millefolium*.

4. *Phalaris arundinacea*–native graminoids: Native graminoid meadow with the exception of *P. arundinacea*; other species include *Juncus* sp., *Scirpus microcarpus,* and *Carex lenticularis*; probably with standing water part of the year.

5. Mesic graminoid (native meadow): dominated by *Calamagrostis canadensis* and/or *Carex utriculata,*[3] with a variety of other sedge species and forbs; *Aster* sp. and *Senecio hydrophilus* are locally prominent.

6. *Carex lasiocarpa* wet meadow: with *Carex utriculata* and various amounts of *Phalaris arundinacea*; some areas with standing water at time of survey. *Carex lasiocarpa* is an obligate wetland plant indicative of peat.

7. *Carex* [*utriculata*]/*Spiraea douglasii*: solid stands of a large sedge, probably *C. utriculata* (no seed heads were present on the dominant sedge), with minor amounts of *Spiraea douglasii*, *Carex arcta,* and *Solidago canadensis*. *C. utriculata* is an obligate wetland plant.

8. Shrub fen: *Betula glandulosa*, *Spiraea douglasii*, *Crataegus douglasii*, *Rhamnus alnifolia*, and *Carex utriculata*.

9. *Salix geyeriana/Spiraea douglasii/Carex lasiocarpa*: a shrub community with *C. lasiocarpa* in the understory; with standing water at time of our survey.

10. *Alnus incana* riparian stringer: scattered alders line streams and ditch channels.

11. *Pinus contorta*: forested margins and inclusions of the meadow with an overstory of *P. contorta* and sometimes *Populus tremuloides*, and understory of *Spiraea douglasii* and *Phalaris*.

Recommendations

Occurrences of *Dryopteris cristata*, *Hypericum majus*, *Petasites sagittatus*, and any other rare plants found should be protected during ditch filling and other management activities.

Based on limited survey, remnant portions of peatland vegetation occur in the far western lobe of the meadow (Section 21, SE 1/4); to the south of Reeder Creek in section 23 and adjoining portion of section 22; and probably in other areas where shrubs indicate the absence of artificial drainage. The portion of Reeder Creek upstream from the open meadow (Section 21, W 1/2 of SE 1/4 of NE 1/4) is also likely to be a sensitive area. It has not yet been surveyed but likely supports shrub-fen habitat and rare plants. In these

[3] *Carex utriculata* Boott. = *Carex rostrata* Stokes in Hitchcock and Cronquist (1973).

areas ATV use should be minimized, and spraying for weeds should be done in a highly controlled manner.

References cited

Bursik, R.J. 1990. Floristic and phytogeographic analysis of northwestern Rocky Mountain peatlands, U.S.A. University of Idaho, Moscow, Idaho. 37 p. M.S. thesis.

Bursik, R.J. and R.K. Moseley. 1992. Prospectus–Valley peatlands ecosystem project, Idaho. Idaho Department of Fish and Game, Conservation Data Center. Boise, Idaho. 16 p.

Hitchcock, C.L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle, Washington. 730 p.

Idaho Conservation Data Center. 2002. Site Basic Record #291, Bismark Meadows. Idaho Conservation Data Center, Biological and Conservation Data System. Idaho Department of Fish and Game, Boise, Idaho. Conservation Site Database.

APPENDIX C

SITE BASIC RECORD
BISMARK MEADOWS

APPENDIX E

PLANT SPECIES OBSERVED AT BISMARK MEADOWS (2002)

APPENDIX E

Plant species observed at Bismark Meadows (2002). Nomenclature follows Hitchcock and Cronquist (1973) except where noted.

Latin name	Common name	Life form[1]
Achillea millefolium	Yarrow	PF
Agropyron sp.	Wheatgrass	G
Agrostis stolonifera	Redtop	G
Alnus incana	Thin-leaf alder	S
Alopecurus geniculatus	Water foxtail	G
Alopecurus pratensis	Little foxtail	G
Anaphalis margaritacea	Pearly everlasting	PF
Aster modestus	Few-flowered aster	PF
Athyrium filix-femina	Ladyfern	FE
Betula glandulosa	Bog birch	S
Bidens cernua	Nodding beggar-ticks	AF
Botrychium multifidum	Leathery grape-fern	FE
Calamagrostis canadensis	Bluejoint reedgrass	G
Carex arcta	Northern clustered sedge	G
Carex athrostachya	Slender-beaked sedge	G
Carex canescens	Gray sedge	G
Carex cusickii	Cusick's sedge	G
Carex lasiocarpa	Slender sedge	G
Carex lenticularis	Lentil-fruit sedge	G
Carex leporina	Hare sedge	G
Carex praegracilis	Clustered field sedge	G
Carex retrorsa	Retrorse sedge	G
Carex stipata	Sawbeak sedge	G
Carex utriculata[2]	Beaked sedge	G
Crataegus douglasii	Black hawthorn	S
Dryopteris cristata[2]	Crested shield fern	FE
Echinochloa crusgalli	Barnyard-grass	G
Equisetum arvense	Common horsetail	FE
Fragaria vesca	Strawberry	PF
Fragaria virginiana	Strawberry	PF
Galeopsis tetrahit	Common hemp nettle	PF
Galium trifidum	Small bedstraw	PF
Glyceria borealis	Northern mannagrass	G
Gnaphalium palustre	Lowland cudweed	AF
Gratiola neglecta	Common hedge-hyssop	AF
Hypericum majus[3]	Giant Canadian St. John's wort	PF

Latin name	Common name	Life form[1]
Hypericum perforatum	Common St. John's wort	AF
Impatiens noli-tangere	Touch-me-not	PF
Juncus balticus	Baltic rush	G
Juncus bufonius	Toad rush	G
Juncus tenuis	Wire rush	G
Juncus vaseyi	Vasey's rush	G
Luzula campestris	Woodrush	G
Lysichitum americanum	Skunk cabbage	PF
Lysimachia thyrsiflora	Tufted loosestrife	PF
Madia glomerata	tarweed	AF
Muhlenbergia filiformis	Slender muhly	G
Petasites sagittatus[2]	Arrow-leaf coltsfoot	PF
Phalaris arundinacea	Reed canarygrass	G
Phleum pratense	Timothy	G
Plantago lanceolata	Buckhorn plantain	PF
Poa palustris	Fowl bluegrass	G
Poa pratensis	Kentucky bluegrass	G
Populus tremuloides	Aspen	T
Polygonum amphibium	Water smartweed	PF
Polygonum aviculare	Prostrate knotweed	AF
Potentilla gracilis	cinquefoil	PF
Potentilla palustris	Purple cinqefoil	PF
Rhamnus alnifolia	Alder-leaf buckthorn	S
Rumex acetosella	Sheep sorrel	AF
Salix boothii	Booth willow	S
Salix geyeriana	Geyer's willow	S
Scirpus microcarpus	Small-fruited bulrush	G
Senecio hydrophilus	Alkali-marsh butterweed	PF
Solidago canadensis	Goldenrod	PF
Sparganium angustifolium	Narrow-leaf bur-reed	G
Spiraea douglasii	Douglas' spiraea	S
Tanacetum vulgare	Common tansy	PF
Veronica peregrina var. *xalapensis*	Purslane speedwell	AF

[1] G = graminoid, PF = forb, AF = annual forb, FE = ferns and allies, S = shrub, T = tree.

[2] *Carex utriculata* Boott. = *Carex rostrata* Stokes in Hitchcock and Cronquist (1973).

[3] Tracked by IDCDC with a rank of S1–critically imperiled within the state because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction (5 or fewer occurrences).

[4] Tracked by IDCDC with a rank of S3–rare or uncommon within the state but not imperiled (typically 21 to 100 occurrences).