

RARE BRYOPHYTES AND LICHENS IN IDAHO:
STATUS OF OUR KNOWLEDGE

by

Robert K. Moseley and Andrew Pitner
Conservation Data Center

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Idaho Department of Fish and Game
600 South Walnut, P.O. Box 25
Boise, Idaho 83707
Jerry M. Conley, Director

Idaho Bureau of Land Management
Idaho Department of Fish and Game

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INTRODUCTION

The compilation and dissemination of information regarding rare cryptogams in Idaho has lagged far behind that for vascular plants. The Conservation Data Center (CDC) has been actively researching sources of information on rare mosses, liverworts, and lichens for several years, including an extensive, computerized literature search for rare species done in 1992 (methods described in Moseley *et al.* 1992. Idaho Rare Vascular Flora: Bibliography, 1896-1991. GTR-INT-292. USDA, Forest Service, Ogden, UT). Because of the large workload associated with vascular plants we were never able to computerize the rare bryophyte and lichen populations into our rare species occurrence data base, or the numerous references into the bibliographic data base. To rectify this, the Idaho BLM provided funding in 1995 to put rare bryophytes and lichens on par with vascular species.

This report represents a summary of the information we compiled. It is organized into four main sections. The first presents the status of our knowledge of rare Idaho bryophytes (mosses and liverworts). It includes a current list of rare species in the state, with conservation ranks and county distributions, and a printout from the CDC data base for all reported Idaho occurrences of some of the rare species. The second section, covering rare lichens, is similar to the bryophyte section. A short Conclusions and Recommendations section follows these two. Finally, we present output from our bibliographic data base of all references pertaining to bryophytes and lichens that we have on file. These citations represent a broad range of material, including sources specific to Idaho's rare species, general articles on nonvascular plant conservation, air quality monitoring, ecological studies, and others.

BRYOPHYTES

In 1989, Joe Elliot of Helena, Montana, helped put a preliminary list of rare Idaho bryophytes together. These ten moss species have been on the Idaho rare plant list ever since (Table 1). Because few field inventories have been conducted for mosses, their conservation status has changed little since they were added to the list. Only in the last couple of years have any occurrences been submitted to the CDC by field biologists.

Table 1. Status and distribution of rare mosses currently on the Idaho Native Plant Society rare plant list. Conservation Ranks and County Distribution abbreviations are defined in the "blue book" (Conservation Data Center. 1994. Rare, threatened, and endangered plants and animals in Idaho. Idaho Department of Fish and Game, Boise). Under Comments, EO refers to the number of occurrences in the CDC data base, which appear at the end of the Bryophyte section.

Species	Rank	Distribution	Comments
<i>Bryum calobryoides</i>	G3/S1	El	1 EO
<i>Buxbaumia aphylla</i>	G4/S?	Northern Idaho	
<i>Buxbaumia piperi</i>	G4/S3	Id, La	10 EOs, 3 not in db
<i>Hellodium blandowii</i>	G5/S2	Bn, Cu, Id, Lm	4 EOs, 1 not in db
<i>Hookeria lucens</i>	G4/S1	Cw, Id	5 EOs
<i>Meesia longiseta</i>	G5/S?	Northern Idaho	
<i>Sphagnum mendocinum</i>	G4/S1	Bn, Id	2 EOs
<i>Tayloria serrata</i>	G5/S3?	Northern Idaho	
<i>Ulota megalospora</i>	G4/S2?	Northern Idaho	

SUGGESTED TO BE DROPPED:

Ulota curvifolia - no documented occurrences in Idaho!?

David Wagner from Eugene, Oregon, recently brought to our attention the presence of a globally rare liverwort in Idaho, *Sphaerocarpos hians*. Two historical collections from the Palouse Prairie near Pullman, Washington, and Moscow, Idaho, were all that were thought to exist until a collection was made recently in the Willamette Valley of western Oregon (John Christy, Oregon Natural Heritage Program, personal communication, 1996). More inventory needs to be conducted, but for the time being we've ranked it G1/SH, with one historical collection in Idaho from Latah County.

As part of the Interior Columbia River Basin assessment, John Christy and Judith Harpel (1995).

Bryophytes of the Columbia River Basin, south of the Canadian border) were contracted by federal agencies to compile a list of bryophytes occurring in the study area and make recommendations on the conservation of rare species. Although there was some overlap with the current Idaho list, their recently completed study suggested 31 additional moss species that should be of conservation concern in Idaho (Table 2). Most species are known from only one or two collections. Of special note is the narrow endemic, *Orthotrichum holzingeri*, known only from Nez Perce County, Idaho, and adjacent Washington.

Table 2. Additional rare Idaho mosses from Christy and Harpel's Columbia River Basin analysis.

Species	Distribution	Number of Collections
<i>Anacolia menziesii</i> var. <i>baueri</i>	Ko	1
<i>Dichodontium olypicum</i>	Sh	1
<i>Didymodon tophaceus</i>	Id	1
<i>Drepanocladus fluitans</i>	Ko, La	2
<i>Encalypta intermedia</i>	Cu	2
<i>Fissidens ventricosus</i>	Bn	1
<i>Hamatocaulis vernicosus</i>	Bn, Cu, Ko	3
<i>Homalothecium arenarium</i>	El	1
<i>Hygrohypnum alpinum</i>	Bn	1
<i>Hygrohypnum duriusculum</i>	Id	?
<i>Hygrohypnum styriacum</i>	Cu	?
<i>Oligotrichum aligerum</i>	Sh	1
<i>Orthotrichum flowersii</i>	Ow	?
<i>Orthotrichum hallii</i>	Cu	1
<i>Orthotrichum holzingeri</i>	Ne	1
<i>Orthotrichum pulchellum</i>	Ne	1
<i>Orthotrichum striatum</i>	Id, Ko	2

Table 2. Continued

Species	Distribution	Number of Collections
<i>Plagiothecium cavifolium</i>	Sh	1
<i>Plagiothecium undulatum</i>	La	1
<i>Pogonatum contortum</i>	Sh	1
<i>Polytrichum formosum</i>	Bd	1
<i>Pottia lanceolata</i>	Cu	1
<i>Pottia nevadensis</i>	Go	1
<i>Pseudoleskea radicata</i> var. <i>denudata</i>	Bd	1
<i>Pseudoleskea saviana</i>	Va	1
<i>Racomitrium aquaticum</i>	Id	1
<i>Racomitrium varium</i>	Ko	1
<i>Schistidium cinclidodonteum</i>	Ko	1
<i>Splachnum sphaericum</i>	La	1
<i>Tayloria acuminata</i>	El	1
<i>Triptercladum leucocladulum</i>	Ne	1

Following are abbreviated occurrence records for the five mosses listed in Table 1 that have been entered into the CDC data base and the single *Sphaerocarpos hians* occurrence. Several collections have been difficult to locate and are not yet in the data base. We are beginning to compile information on the species listed in Table 2 and will be processing occurrence records for these species during 1996.

SPHAEROCARPOS HIANS

Occurrence Number: 001
 Survey Site Name: PARADISE CREEK
 County: Latah
 USGS quadrangle: MOSCOW WEST
 First Observed: CA 1928 Last Observed: CA 1928
 Population Data: Ca 1928: Collected in Latah County by Clark.
 Habitat Description: On soil.
 Specimens: Clark s.n. (WS).

BRYUM CALOBRYOIDES

BEAUTIFUL BRYUM

Occurrence Number: 001
Survey Site Name: CHATTANOOGA HOT SPRINGS
County: Elmore
USGS quadrangle: ATLANTA EAST
Last Observed: 1941-07-05 First Observed: 1941-07-05
Population Data: 1941: No data. Collected by F. A. MacFadden.
Habitat Description: Above hot springs.
Specimens: F. A. MacFadden 18542 (UBC) - determined by A. L. Andrews.

BUXBAUMIA PIPERI

PIPER'S BUG-ON-A-STICK

Occurrence Number: 001
Survey Site Name: EAST OF SOB POINT
County: Idaho
USGS quadrangle: STILLMAN POINT
First Observed: 1994-07-21 Last Observed: 1994-07-21
Population Data: 1994: 3 mature genets in fruit. Population vigor assessed as average. Area thoroughly surveyed by Leonard Lake, Nez Perce NF.
Habitat Description: Old growth Thuja plicata stand. Thuja plicata/Athyrium filix-femina habitat type. Found on downed logs in advanced stages of decay.
Specimens:

Occurrence Number: 002
Survey Site Name: FALLS CREEK
County: Idaho
USGS quadrangle: STILLMAN POINT
First Observed: 1994-08-02 Last Observed: 1994-08-02
Population Data: 1994: 2 mature genets in fruit. Population vigor assessed as average. 1 log thoroughly surveyed by Leonard Lake, Nez Perce NF.
Habitat Description: Old growth Thuja plicata stand. Thuja plicata/Adiantum pedatum habitat type. On downed log in advanced stages of decay.
Specimens:

Occurrence Number: 003
Survey Site Name: BIG SMITH CREEK - LITTLE SMITH CREEK
County: Idaho
USGS quadrangle: SYRINGA
First Observed: 1994-08-16 Last Observed: 1994-08-19
Population Data: 1994: 2 populations: 14 or more individuals in fruit near Little Smith Creek; 49 or more in fruit near Big Smith Creek. Observations by Karen Gray, Clearwater NF, Lochsa RD.
Habitat Description: Southerly aspects. Slopes 25-35%. Partial to shaded light. Moist slumpy substrate. Growing on rotten Thuja plicata logs. Thuja plicata/Asarum caudatum/Asarum caudatum habitat type. Associated species include Equisetum telmateia, Athyrium filix-femina, Adiantum pedatum, Rubus ursinus, Polystichum munitum, Asarum caudatum, Smilacina stellata, Clintonia uniflora, Montia cordifolia, Festuca subuliflora, Carex hendersonii, Cornus canadensis, Dryopteris expansa, Kindbergia oregana, and Rhytidiopsis robusta.
Specimens: Karen L. Gray 319 (ID). Karen L. Gray 320 (ID, MRC).

Occurrence Number: 004
Survey Site Name: NORTH OF BURGDORF HOT SPRINGS
County: Idaho
USGS quadrangle: BURGDORF
First Observed: 1991-06-05 Last Observed: 1991-06-05
Population Data: 1991: No data. Collected by Roger Rosentreter, Idaho State BLM.
Habitat Description: On a Pinus contorta log. Potential forest climax is Abies lasiocarpa/Vaccinium scoparium habitat type.
Specimens: Roger Rosentreter 6865 (SRP).

Occurrence Number: 005
Survey Site Name: FOUR-BIT CREEK
County: Idaho
USGS quadrangle: MUSSELSHELL
First Observed: 1995-08-06 Last Observed: 1995-08-06
Population Data: 1995: 20 individuals or more in fruit. Observation by Karen Gray.
Habitat Description: Aspect: west. Substrate: rotten log. Shady, moist Thuja plicata forest.
Specimens: Karen L. Gray 868 (MRC).

Occurrence Number: 006
Survey Site Name: CAMP CREEK
County: Idaho
USGS quadrangle: GOODWIN MEADOWS
First Observed: 1959-07-16 Last Observed: 1959-07-16
Population Data: 1959: Collected by Higinbotham.
Habitat Description: Abies grandis/Pachistima association; on decaying wood.
Specimens: Higinbotham 771 (WSU).

Occurrence Number: 007
Survey Site Name: DEVOTO GROVE
County: Idaho
USGS quadrangle: ROCKY POINT
First Observed: 1975-10-18 Last Observed: 1975-10-18
Population Data: 1975: Collected by Hunter and Wagner.
Habitat Description: On downed Thuja plicata log.
Specimens: Hunter s.n. (WSU). Wagner s.n. (WSU).

Occurrence Number: 008
Survey Site Name: ELDORADO/DOLLAR CREEK
County: Idaho
USGS quadrangle: MUSSELSHELL
First Observed: 1994-08-22 Last Observed: 1994-08-22
Population Data: 1994: Collected by Karen Gray, Clearwater NF.
Habitat Description: E aspect in Thuja plicata-Abies grandis forest on a rotten log.
Specimens: Karen L. Gray 333a (ID).

Occurrence Number: 009
Survey Site Name: ELDORADO/MAY CREEK
County: Idaho
USGS quadrangle: MUSSELSHELL
First Observed: 1994-09-14 Last Observed: 1994-09-14
Population Data: 1994: Collected by Karen Gray, Clearwater NF.
Habitat Description: NE aspect in Thuja plicata-Abies grandis forest on a rotten log.
Specimens: Karen L. Gray 384 (ID).

Occurrence Number: 010
Survey Site Name: YAKUS CREEK/STRAY CREEK
County: Idaho
USGS quadrangle: SYRINGA
First Observed: 1994-09-06 Last Observed: 1994-09-06
Population Data: 1994: Collected by Karen Gray, Clearwater NF.
Habitat Description: E aspect in Thuja plicata-Abies grandis forest on a rotten log.
Specimens: Karen L. Gray 371 (ID).

HELODIUM BLANDOWII

BLANDOW'S HELODIUM

Occurrence Number: 001

Survey Site Name: JACK CREEK

County: Idaho

USGS quadrangle: TRAPPER CREEK

First Observed: 1994-05-26 Last Observed: 1994-05-26

Population Data: 1994: Ca 500 mature vegetative genets. Population vigor assessed as good. Observation on a cursory visit by Leonard Lake, Nez Perce NF.

Habitat Description: Minerotrophic seep with sphagnum under *Pinus contorta*. Rolling *Pinus contorta* landform adjacent to Jack Creek riparian area.

Specimens:

Occurrence Number: 002

Survey Site Name: BEAR VALLEY CREEK

County: Lemhi

USGS quadrangle: LEM PEAK

First Observed: 1973 Last Observed: 1973

Population Data: 1973: No data. Occurred in macroplot but not any microplots so no cover estimate. Observation by Alma Hanson.

Habitat Description: Aspect: 100 degrees. 1% slope. Aulacomnium palustre-Brachythecium velutinum moss association which occurs on cool moist terraces supporting *Abies lasiocarpa*/Calamagrostis canadensis habitat type. Associated with Aulacomnium palustre, Brachythecium velutinum, *B. hylotapetum*, *Pohlia nutans*, and *Hypnum revolutum*.

Specimens:

Occurrence Number: 003

Survey Site Name: MAYS CREEK FEN

County: Custer

USGS quadrangle: OBSIDIAN

First Observed: 1993-08 Last Observed: 1993-08

Population Data: 1993: Plants rare, comprising <1% of cover in microplot RM002. Area thoroughly surveyed by Bob Moseley and Rob Bursik, Idaho CDC.

Habitat Description: 3% slope. Peat depth 55 cm. *Pinus contorta*/*Vaccinium occidentale* community type. Near top of high Sphagnum hummocks around the base of *Vaccinium occidentale*, *Betula glandulosa*, and *Ledum glandulosum*. Additional associates include *Lonicera caerulea*, *Potentilla fruticosa*, *Salix planifolia*, *S. wolfii*, *Calamagrostis canadensis*, *Carex aquatilis*, *C. deweyana*, *C. livida*, *C. muricata*, *C. rostrata*, *Deschampsia cespitosa*, *Eleocharis pauciflora*, *Muhlenbergia filiformis*, *Aster foliaceus*, *Senecio cymbalarioides*, and *Swertia perennis*. Other bryophytes include *Aulacomnium palustre*, *Calliergon stramineum*, and *Homalothecium nitens*.

Specimens: Rob Bursik collection number unknown (ID).

Occurrence Number: 004

Survey Site Name: REDFISH LAKE

County: Custer

USGS quadrangle: MT. CRAMER

First Observed: 1972-06-27 Last Observed: 1972-06-27

Population Data: 1972: Collected by Anderegg.

Habitat Description: No information available.

Specimens: Anderegg M-71 (ID).

HOOKERIA LUCENS

LIGHT HOOKERIA

Occurrence Number: 001

Survey Site Name: ELDORADO CREEK/SNOW CREEK

County: Idaho

USGS quadrangle: MUSSELSHELL

First Observed: 1994-09-26 Last Observed: 1994-09-26
Population Data: 1994: 6 square inch vegetative mat. Population vigor assessed as fair to poor. Area thoroughly surveyed by Karen Gray, Clearwater NF, Lochsa RD.

Habitat Description: Occurs on the edge of a seep in Thuja plicata/Abies grandis forest with Glyceria striata, Senecio triangularis, Dryopteris expansa, Boykinia major, Conocephalum conicum, other liverworts, Plagiomnium sp., Rhizomnium sp., Carex amplifolia, Veratrum viride, Polystichum munitum, and Hylocomium splendens. Overall site quality is fair.

Specimens:

Occurrence Number: 002

Survey Site Name: YAKUS CREEK/STRAY CREEK

County: Idaho

USGS quadrangle: SYRINGA

First Observed: 1994-09-06 Last Observed: 1994-09-06

Population Data: 1994: 1 square foot vegetative patch observed by Karen Gray, Clearwater NF, Lochsa RD.

Habitat Description: In a seepy area in Thuja plicata/Abies grandis forest with Boykinia major, Senecio triangularis, and other mosses and liverworts. East aspect. Overall site quality is good.

Specimens: Karen L. Gray 374 (ID, MRC).

Occurrence Number: 003

Survey Site Name: WEITAS CREEK - NW OF JOHNNY BUTTE

County: Clearwater

USGS quadrangle: LEAN-TO POINT

First Observed: 1994-08-26 Last Observed: 1994-08-26

Population Data: 1994: 3 vegetative patches observed by Karen Gray, Clearwater NF, Lochsa RD.

Habitat Description: Found growing near seeps or small creeks on soil or rotten logs. Scattered large-diameter Thuja plicata with Abies grandis (60 year old?). Associates include Alnus rubra, Streptopus amplexifolius, Adiantum pedatum, Gymnocarpium dryopteris, Athyrium filix-femina, and liverworts. Overall site quality is good.

Specimens: Karen L. Gray 355, 360, 363 (ID, MRC).

Occurrence Number: 004

Survey Site Name: PETE KING CREEK N

County: Idaho

USGS quadrangle: SYRINGA

First Observed: 1994-08-19 Last Observed: 1994-08-19

Population Data: 1994: Collected by Karen Gray, Clearwater NF, Lochsa RD.

Habitat Description: In Thuja plicata-Abies grandis forest. On wet, rotten log at waters edge. SE aspect.

Specimens: Karen L. Gray 328 (ID).

Occurrence Number: 005

Survey Site Name: FOUR-BIT CREEK RNA

County: Idaho

USGS quadrangle: MUSSELSHELL

First Observed: 1995-12-01 Last Observed: 1995-12-01

Population Data: 1995: Population is vegetative and assessed as vigorous. Observation on a cursory visit by Karen Gray.

Habitat Description: N aspect. Growing on the edge of a small tributary in a seepy, nearly flat area adjacent to water. Thuja plicata, Abies grandis, Abies lasiocarpa, and Picea engelmannii forest.

Specimens: Karen L. Gray 1076 (MRC, GFC).

SPHAGNUM MENDOCINUM

PEATMOSS

Occurrence Number: 001

Survey Site Name: MOSQUITO BAY FEN

County: Bonner

USGS quadrangle: PRIEST LAKE NE

First Observed: 1901-08 Last Observed: 1901-08

Population Data: 1901: No data. Collected by C. V. Piper.
Habitat Description: Peatland habitat.
Specimens: C. V. Piper 349 (WTU, NY).

Occurrence Number: 002

Survey Site Name: SAWYER RIDGE

County: Idaho

USGS quadrangle: SAWYER RIDGE

First Observed: 1974 Last Observed: 1974

Population Data: 1974: No data. Collected by E. F. Layser.

Habitat Description: Montane bog community. Perennially wet seepage area. Complex of *Abies lasiocarpa* (Abla) series habitat types (Abla-*Caltha biflora*, Abla-*Menziesia ferruginea*, Abla-*Xerophyllum tenax*, and Abla-*Luzula hitchcockii*).

Representative species include *Picea engelmannii*, *Sphagnum* spp., *Caltha biflora*, *Dodecatheon jefferyii*, *Gentiana* affins, *Kalmia polifolia*, *Ledum glandulosum*, and *Tofieldia palustris*.

Specimens: E. F. Layser 2216, 2219, 2222, 2224 (WTU).

LICHENS

At the same time that the bryophyte list was being compiled, the preliminary list of rare Idaho lichens was compiled by Roger Rosentreter and Bruce McCune. In contrast to the bryophytes, the list of rare lichens has been more dynamic due to the greater inventory and collecting activity of lichenologists and other biologists in the state. Table 3 presents the current rare lichen list and reflects several changes made as a result of new data received in 1995, including some additions, suggested deletions, and up-to-date conservation ranks.

Table 3. Status and distribution of rare lichens in Idaho. Species not on the current Idaho Native Plant Society list are marked with an asterisk. As in Table 1, Conservation Ranks and County Distribution abbreviations are defined in the "blue book." Under Comments, EO refers to the number of occurrences in the CDC data base, which appear at the end of the Lichens section.

Species	Rank	Distribution	Comments
<i>Aspicilia fruticulosa</i>	G?/S3?	Bk, Cu, Lm, Ow	numerous collections from Idaho at SRP
* <i>Catapyrenium congestum</i>	G2/S1	Aa, Bi, Jf, Ow	3 EOs; 1 not in db
* <i>Cetraria subalpina</i>	G3/S1	Bn, Bd	?
* <i>Cladina rangiferina</i>	G5?/S1	Bn	1 not in db
* <i>Cladonia andreggii</i>	G1/S1	La	1 EO
* <i>Cladonia imbricaria</i>	G?/S1?	Bn, Bw, Id	3 EOs
<i>Cladonia luteoalba</i>	G2/S1	Cu	1 EO
<i>Cladonia transcendens</i>	G5/S2	Cw, Id, La, Lw, Ko, Sh	1 EO; 3 not in db
<i>Cladonia uncialis</i>	G5/S1	Bn, Id, Sh	1 EO; 2 not in db
<i>Collema curtisporum</i>	G1/S1	Id, Ko, Sh	2 not in db
<i>Collema furfuraceum</i>	G5/S1	Sh?	
* <i>Dermatocarpon lorenzianum</i>	G1/S1	Wa	1 EO
<i>Lobaria hallii</i>	G4/S3	Bn, Bw, Ko, Sh	10 EOs; 5 not in db
<i>Lobaria linita</i>	G4/S1	Id	1 EO
<i>Lobaria scrobiculata</i>	G4/S1	Id	3 EOs
<i>Phycia semipinnata</i>	G5/S?	Id?	

Table 3. Continued

Species	Rank	Distribution	Comments
<i>Pilophorus acicularia</i>	G4/S1	Cw, Sh	2 EOs; 1 not in db
<i>Pseudocyphellaria anthraspis</i>	G4/S3	Cw, Id	9 EOs; 9 not in db
<i>Sphaerophorus tuckermannii</i>	G4/S1	Cw, Id?, La?	1 not in db
<i>Texosporium sancti-jacobi</i>	G2/S2	Aa, El	13 EOs
<i>Thamnolia vermicularis</i>	G4/S1	Cu	1 EO
<i>Xanthoparmelia idahoensis</i>	G1/S1	Lm	5 EOs

SUGGESTED TO BE DROPPED:

Cladonia verruculosa - more common than previously thought

Ramalina thrausta - more common than previously thought

Thelomma ocellatum - more common than previously thought

Hypogymnia apinnata - more common than previously thought

Hypogymnia enteromorpha - more common than previously thought

Following are abbreviated occurrence records for the 18 lichens listed in Table 3 that have been entered into the CDC data base (EOs). The status of several common species are being evaluated and some of the numerous known occurrences have not been entered yet. Also, several hard-to-locate specimens are not entered.

CATAPYRENIUM CONGESTUM

Occurrence Number: 001

Survey Site Name: DRY CREEK

County: Ada

USGS quadrangle: BOISE NORTH

First Observed: 1993-04-17 Last Observed: 1993-04-17

Population Data: 1993: Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: Found on sandstone rock in Artemisia grasslands. Associated species is *Gleocapsa phycobiont*.

Specimens: Roger Rosentreter 7892 (SRP).

Occurrence Number: 002

Survey Site Name: CIRCULAR BUTTE

County: Jefferson

USGS quadrangle: CIRCULAR BUTTE

First Observed: 1987-06-26 Last Observed: 1987-06-26

Population Data: 1987: Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: Found on deep loamy soils in *Eurotia lanata* habitat.

Specimens: Roger Rosentreter 3950 (SRP) - determined by McCune, 1994.

Occurrence Number: 003
Survey Site Name: OREANA SW
County: Owyhee
USGS quadrangle: OREANA
First Observed: 1981-10-01 Last Observed: 1981-10-01
Population Data: 1981: Collected by Roger Rosentreter, Idaho State BLM.
Habitat Description: Found on soil in *Artemisia tridentata* habitat.
Specimens: Roger Rosentreter 2470 (SRP).

CLADONIA ANDEREGGII

Occurrence Number: 001
Survey Site Name: MOOSE CREEK DIVIDE
County: Latah
USGS quadrangle: SAND MOUNTAIN
First Observed: 1989-06 Last Observed: 1989-06
Population Data: 1989: No data. Collected by Samuel Hammer.
Habitat Description: Growing with aquatic bryophytes in deep shade, damp area near stream and seep.
Specimens: Samuel Hammer 3798 (FH, paratype). Samuel Hammer 3800 (FH, holotype).

CLADONIA IMBRICARICA

Occurrence Number: 001
Survey Site Name: EMIDA
County: Benewah
USGS quadrangle: EMIDA
First Observed: CA 1989 Last Observed: CA 1989
Population Data: 1989: No data. Collected by Samuel Hammer.
Habitat Description: On acidic soil over volcanically-derived rocks. Basalt outcrop.
Specimens: Samuel Hammer 3842 (FH) - collection number noted as 2842 in Hammer's 1995 "A synopsis of the genus *Cladonia*."

Occurrence Number: 002
Survey Site Name: HANNA FLATS CEDAR GROVE BOTANICAL AREA
County: Bonner
First Observed: CA 1989 Last Observed: CA 1989
Population Data: 1989: No data. Collected by Samuel Hammer.
Habitat Description: On acidic soil over volcanically-derived rocks.
Specimens: Samuel Hammer 3965 (FH) - collection number noted as 2965 in Hammer's 1995 "A synopsis of the genus *Cladonia*."

Occurrence Number: 003
Survey Site Name: HARPSTER
County: Idaho
USGS quadrangle: HARPSTER
First Observed: CA 1989 Last Observed: CA 1989
Population Data: 1989: No data. Collected by Samuel Hammer.
Habitat Description: On acidic soil over volcanically-derived rocks.
Specimens: Samuel Hammer 5311 (FH).

CLADONIA LUTEOALBA

REINDEER LICHEN
Occurrence Number: 001
Survey Site Name: ACROSS FROM HOSPITAL BAR
County: Lemhi
USGS quadrangle: RAMEY HILL

First Observed: 1987-07-22 Last Observed: 1987-07-22
Population Data: 1987: No data. Collected by Roger Rosentreter, Idaho State BLM.
Habitat Description: Moss-covered, N-facing small cliff band.
Specimens: Roger Rosentreter 4526 (H, OSU).

CLADONIA TRANSCENDENS

TRANSCENDING REINDEER LICHEN
Occurrence Number: 001
Survey Site Name: MOOSE CREEK DIVIDE
County: Latah
USGS quadrangle: SAND MOUNTAIN
First Observed: 1989-06 Last Observed: 1989-06
Population Data: 1989: No data. Collected by Samuel Hammer.
Habitat Description: On rotting, ecorticate wood, rarely terricolous.
Specimens: Samuel Hammer collection number and herbarium unknown.

CLADONIA UNCIALIS

Occurrence Number: 001
Survey Site Name: NEAR CLARK FORK
County: Bonner
USGS quadrangle: CLARK FORK
First Observed: 1981-07-17 Last Observed: 1981-07-17
Population Data: 1981: No data. Collected by Roger Rosentreter, Idaho State BLM.
Habitat Description: On talus on a N-facing slope.
Specimens: Roger Rosentreter 2357 (SRP) - confirmed by Hammer.

DERMATOCARPON LORENZIANUM

Occurrence Number: 001
Survey Site Name: BUCKWHEAT FLATS
County: Washington
USGS quadrangle: MIDVALE HILL
First Observed: 1984-08-27 Last Observed: 1991-06-22
Population Data: 1984 and 1991: Collected by Roger Rosentreter, Idaho State BLM.
Habitat Description: Found on rock in heavy clay soils, shallow stony basalt is adjacent; Eriogonum thymoides habitat.
Specimens: Roger Rosentreter 6896 (SRP). Roger Rosentreter 3538 (SRP).

HYPOGYMNA APINNATA

TUBE LICHEN
Occurrence Number: 001
Survey Site Name: GLOVER CAMPGROUND
County: Idaho
USGS quadrangle: SELWAY FALLS
First Observed: 1974-08-22 Last Observed: 1974-08-22
Population Data: 1974: Collected by Anderegg and Schroeder.
Habitat Description: Growing on Cornus sp. in coniferous forest of Thuja plicata, Taxus brevifolia, and Alnus rubra.
Specimens: Anderegg and Schroeder 3100 (ID).

Occurrence Number: 002
Survey Site Name: CLEARWATER RIVER/LODGE CREEK
County: Idaho
USGS quadrangle: SYRINGA
First Observed: 1971-07-06 Last Observed: 1971-07-06
Population Data: 1971: Collected by Schroeder.

Habitat Description: No information available.
Specimens: Schroeder L1697 (ID).

Occurrence Number: 003
Survey Site Name: MERRY CREEK
County: Shoshone
USGS quadrangle: MERRY CREEK
First Observed: 1972-07-15 Last Observed: 1972-07-15
Population Data: 1972: Collected by Doyle Anderegg.
Habitat Description: Coniferous forest; Thuja plicata, Pseudotsuga menziesii, and Larix sp.
Specimens: Doyle E. Anderegg 722 (ID).

Occurrence Number: 004
Survey Site Name: HEMLOCK BUTTE EAST
County: Clearwater
USGS quadrangle: ANTHONY PEAK
First Observed: 1968-06-09 Last Observed: 1968-06-09
Population Data: 1968: Collected by Anderegg.
Habitat Description: No information available.
Specimens: Anderegg 101 (ID).

Occurrence Number: 005
Survey Site Name: BANKS GULCH
County: Latah
USGS quadrangle: SAND MOUNTAIN
First Observed: 1969-12 Last Observed: 1969-12
Population Data: 1969: Collected by Anderegg.
Habitat Description: No information available.
Specimens: Anderegg 112 (ID).

Occurrence Number: 006
Survey Site Name: MANNERING CREEK W
County: Latah
USGS quadrangle: WEST DENNIS
First Observed: 1972-05-11 Last Observed: 1972-05-11
Population Data: 1972: Collected by Anderegg.
Habitat Description: Mature conifer forest: Pseudotsuga menziesii, Pinus monticola, and Thuja plicata.
Specimens: Anderegg 391 (ID).

Occurrence Number: 007
Survey Site Name: MANNERING CREEK E
County: Latah
USGS quadrangle: WEST DENNIS
First Observed: 1974-05-18 Last Observed: 1974-05-18
Population Data: 1974: Collected by Anderegg.
Habitat Description: Mature forest of Thuja plicata and Pseudotsuga menziesii.
Specimens: Anderegg 2389 (ID).

Occurrence Number: 008
Survey Site Name: GISBORNE MOUNTAIN
County: Bonner
USGS quadrangle: PRATER MTN.
First Observed: 1969-07-15 Last Observed: 1969-07-15
Population Data: 1969: Collected by Esslinger.
Habitat Description: On bark of Pinus monticola, north aspect; Tsuga heterophylla-Pachistima myrsinites habitat type.

Specimens: Esslinger 1393 (ID).

Occurrence Number: 009

Survey Site Name: BOTTLE LAKE RESEARCH NATURAL AREA

County: Bonner

USGS quadrangle: PRIEST LAKE NE, PRIEST LAKE NW

First Observed: 1995-08-15 Last Observed: 1995-08-15

Population Data: 1995: Observation by B. McCune, R. Rosentreter, BLM SO, and A. Debolt, Lower Snake River District BLM.

LOBARIA HALLII

HALL'S LUNGWORT

Occurrence Number: 001

Survey Site Name: WEST OF MURRAY

County: Shoshone

USGS quadrangle: MURRAY

First Observed: 1987-08-19 Last Observed: 1987-08-19

Population Data: 1987: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: Found on Populus trichocarpa bark.

Specimens: Roger Rosentreter 5015 (SRP).

Occurrence Number: 002

Survey Site Name: BEAVER CREEK/TRAIL CREEK

County: Shoshone

USGS quadrangle: OSBURN

First Observed: 1987-08-19 Last Observed: 1987-08-19

Population Data: 1987: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: On Populus trichocarpa bark.

Specimens: Roger Rosentreter 5023 (SRP).

Occurrence Number: 003

Survey Site Name: MURRAY

County: Shoshone

USGS quadrangle: MURRAY, BURKE

First Observed: 1985-06-07 Last Observed: 1985-06-07

Population Data: 1985: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: On rock in Thuja forest.

Specimens: Roger Rosentreter 3600 (SRP) - determined by C. Wetmare 4/87.

Occurrence Number: 004

Survey Site Name: GROUSE MOUNTAIN

County: Bonner

First Observed: 1971-06-13 Last Observed: 1971-06-13

Population Data: 1971: Collected by Schroeder.

Habitat Description: In shade on a Betula tree in a conifer forest.

Specimens: Schroeder L1666 (ID).

Occurrence Number: 005

Survey Site Name: ST. JOE RIVER MILE 45

County: Shoshone

USGS quadrangle: CALDER

First Observed: 1971-05-09 Last Observed: 1971-05-09

Population Data: 1971: Collected by Schroeder.

Habitat Description: On trunk of Populus trichocarpa.

Specimens: Schroeder L1548 (ID).

Occurrence Number: 006
Survey Site Name: SANTA CREEK
County: Benewah
USGS quadrangle: SANTA
First Observed: 1969-09-13 Last Observed: 1969-09-13
Population Data: 1969: Collected by Schroeder.
Habitat Description: On Populus tree in wooded pasture.
Specimens: Schroeder L465 (ID).

Occurrence Number: 007
Survey Site Name: ST. MARIES S
County: Benewah
USGS quadrangle: ST. MARIES
First Observed: 1971-04-28 Last Observed: 1971-04-28
Population Data: 1971: Collected by Schroeder.
Habitat Description: On trunk of Populus trichocarpa.
Specimens: Schroeder L1519 (ID).

Occurrence Number: 008
Survey Site Name: CHATCOLET LAKE
County: Benewah
USGS quadrangle: BENEWAH LAKE
First Observed: 1970-04-18 Last Observed: 1971-03-30
Population Data: 1970 and 1971: Collected by Schroeder and Anderegg.
Habitat Description: On Populus tree in open picnic area.
Specimens: Schroeder L954 (ID). Schroeder L749 (ID). Anderegg 177 (ID).

Occurrence Number: 009
Survey Site Name: DISTILLERY BAY
County: Bonner
USGS quadrangle: PRIEST LAKE NW
First Observed: 1971-08-02 Last Observed: 1971-08-02
Population Data: 1971: Collected by Schroeder.
Habitat Description: On alder tree, in shade.
Specimens: Schroeder L1702 (ID).

Occurrence Number: 010
Survey Site Name: ESE OF OROFINO
County: Clearwater
USGS quadrangle: OROFINO EAST
First Observed: 1995-12-03 Last Observed: 1995-12-03
Population Data: 1995: Ca 50 vegetative plants. Population vigor assessed as fair. Observation by Karen Gray.
Habitat Description: In wetland on N aspect of ridge. Substrates: Amelanchier alnifolia and Physocarpus malvaceus. Wetland surrounded by Pseudotsuga menziesii and Abies grandis forest. Wetland vegetation: Carex spp., Cornus stolonifera, Salix sp., Acer glabrum, Physocarpus malvaceus, and Amelanchier alnifolia. Associated lichens: Lobaria pulmonaria and Pseudocyphellaria anomola.
Specimens: Karen L. Gray 1073, 1109 (MRC, ID).

LOBARIA LINITA

SMEARED LUNGWORT
Occurrence Number: 001
Survey Site Name: GRAVE PEAK
County: Idaho
USGS quadrangle: GRAVE PEAK
First Observed: 1981-07-24 Last Observed: 1981-07-24

Population Data: 1981: No data. Collected by Bruce McCune.
Habitat Description: On alpine sod, ledges on NW side of summit.
Specimens: Bruce McCune 11491 (WIS, US, SRP). Bruce McCune 11503 (herbarium unknown).

LOBARIA SCROBICULATA

PORED LUNGWORT

Occurrence Number: 001

Survey Site Name: BARTH HOT SPRINGS

County: Idaho

USGS quadrangle: SHEEP HILL

First Observed: 1987-07-29 Last Observed: 1989-08

Population Data: 1987-1989: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: On granitic rock and Betula bark above the river banks.

Specimens: Roger Rosentreter 4527 (SRP) - collected 7/29/87. Roger Rosentreter 4915 (SRP) - collected 6/18/88. Roger Rosentreter 4956 (SRP) - collected 7/28/88. Roger Rosentreter 1906 (SRP) - collected 8/89.

Occurrence Number: 002

Survey Site Name: FIVEMILE BAR

County: Idaho

USGS quadrangle: FIVEMILE BAR

First Observed: 1993-08-16 Last Observed: 1993-08-16

Population Data: 1993: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: N-facing cliffs. *Pseudotsuga menziesii* habitat.

Specimens: Roger Rosentreter 7987 (SRP).

Occurrence Number: 003

Survey Site Name: SALMON RIVER MILE 110

County: Idaho

USGS quadrangle: CAREY DOME

First Observed: 1975-06-28 Last Observed: 1975-06-28

Population Data: 1975: Collected by Anderegg and Schroeder.

Habitat Description: On a shaded, N aspect, talus and rubble slope.

Specimens: Anderegg and Schroeder 3219 (ID).

PILOPHORUS ACICULARIS

NAIL LICHEN

Occurrence Number: 001

Survey Site Name: MURRAY

County: Shoshone

USGS quadrangle: MURRAY, BURKE

First Observed: 1985-06-07 Last Observed: 1985-06-07

Population Data: 1985: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: On rock in Thuja forest.

Specimens: Roger Rosentreter 3599 (SRP) - determined by JWT 3/87.

Occurrence Number: 002

Survey Site Name: BEAVER CREEK/NORTH FORK CLEARWATER RIVER CONFLUENCE

County: Clearwater

USGS quadrangle: SHEEP MTN.

First Observed: 1995-07-15 Last Observed: 1995-07-15

Population Data: 1995: Collected by Karen Gray.

Habitat Description: On rock near stream. Moist, shady area. Growing with liverworts.

Specimens: Karen L. Gray 752 (ID, MRC).

PSEUDOCYPHELLARIA ANTHRASPIS

WHITE-DOT LICHEN

Occurrence Number: 001

Survey Site Name: MOUTH OF APGAR CREEK

County: Idaho

USGS quadrangle: LOWELL

First Observed: 1994-01-12 Last Observed: 1994-03-11

Population Data: 1994: Appeared to have fallen to the ground. Collected by Karen Gray, Clearwater NF, Lochsa RD.

Habitat Description: Shady Thuja plicata forest. East aspect. Moist.

Specimens: Karen L. Gray 123B (MRC). Karen L. Gray 157 (MRC).

Occurrence Number: 002

Survey Site Name: MOUTH OF RYE PATCH CREEK

County: Idaho

USGS quadrangle: LOWELL

First Observed: 1994-04-24 Last Observed: 1994-04-24

Population Data: 1994: Collected by Karen Gray, Clearwater NF, Lochsa RD.

Habitat Description: East aspect. On branch of hardwood, probably either Alnus, Betula, or Acer. Thuja plicata/Abies grandis forest. With Lobaria pulmonaria.

Specimens: Karen L. Gray 182 (ID, MRC).

Occurrence Number: 003

Survey Site Name: WEITAS CREEK - WNW OF JOHNNY BUTTE

County: Clearwater

USGS quadrangle: LEAN-TO POINT

First Observed: 1994-08-26 Last Observed: 1994-08-26

Population Data: 1994: Population vigor assessed as fair. Observation on a cursory visit by Karen Gray, Clearwater NF, Lochsa RD.

Habitat Description: NW aspect. On a Thuja plicata branch. Overall site quality is fair.

Specimens: Karen L. Gray 364 (herbarium unknown).

Occurrence Number: 004

Survey Site Name: WASHINGTON CREEK

County: Clearwater

USGS quadrangle: CLARKE MTN.

First Observed: 1966-08-09 Last Observed: 1966-08-09

Population Data: 1966: No data. Collected by Peter F. Stickney.

Habitat Description: Young Abies grandis forest. Substrate: dead limb of Thuja plicata.

Specimens: Peter F. Stickney 1590 (MRC) - determined to be *Stricta anthraspis* by John W. Thompson in 1968.

Occurrence Number: 005

Survey Site Name: AQUARIUS

County: Clearwater

USGS quadrangle: THOMPSON POINT

First Observed: 1989-07-17 Last Observed: 1995-06-15

Population Data: 1989: No data. Collection by Ann DeBolt. 1995: In fruit. Observation by Sarah Walker, Clearwater NF, and Juanita Lichthardt, Idaho CDC.

Habitat Description: E aspect. On fallen Thuja branch in old growth Thuja plicata stand. With Alnus rubra, Boykinia major, Polystichum munitum, and Cornus canadensis. Other lichens present include Sphaerophorus globosus and Lobaria pulmonaria.

Specimens: Ann DeBolt 1257 (SRP) - collection label gives elevation as 2000 ft.

Occurrence Number: 006

Survey Site Name: TWO SHADOWS CREEK

County: Idaho

USGS quadrangle: SYRINGA

First Observed: 1979-03-14 Last Observed: 1995-06-06
Population Data: 1979: No data. Collected by Roger Rosentreter, Idaho State BLM. 1995: 4 or 5 thalli were found on the ground. More probably exist in the trees. Observation on a cursory visit by Karen Gray, Clearwater NF, Lochsa RD.
Habitat Description: Thuja plicata/Abies grandis forest. River terrace, gentle slope and aspect. Substrate: Thuja branch.
Associated with Lobaria pulmonaria. Associated understory species include Cardamine constancei, Carex hendersonii, Kindbergia oregana, Festuca subuliflora, and Eburophyton austiniiae.
Specimens: Roger Rosentreter 1174 (SRP). Karen L. Gray 705 (MRC). Karen L. Gray 708 (ID).

Occurrence Number: 007
Survey Site Name: ISABELLA LANDING
County: Clearwater
USGS quadrangle: THOMPSON POINT, SHEEP MTN.
First Observed: 1995-06-22 Last Observed: 1995-06-22
Population Data: 1995: Found frequently, 20% vegetative and 80% in fruit. Area surveyed by Sarah Walker, Clearwater NF, and Juanita Lichthardt, Idaho CDC.
Habitat Description: Moist Thuja plicata and Abies grandis forest. Found frequently through elevation range. Predominantly on shrub branches like Philadelphus lewisii, one occurrence on a mossy rock. Usually with Peltigera collina and Nephroma resupinatum.
Specimens:

Occurrence Number: 008
Survey Site Name: ISABELLA CREEK
County: Clearwater
USGS quadrangle: SHEEP MTN.
First Observed: 1995-06-21 Last Observed: 1995-06-21
Population Data: 1995: No data. Observation by Sarah Walker, Clearwater NF, and Juanita Lichthardt, Idaho CDC.
Habitat Description: On branches in Thuja plicata/Athyrium filix-femina forest. Other lichens present include Lobaria pulmonaria.
Specimens:

Occurrence Number: 009
Survey Site Name: AQUARIUS
County: Clearwater
USGS quadrangle: THOMPSON POINT
First Observed: 1995-06-01 Last Observed: 1995-06-01
Population Data: 1995: No data. Collected by Sarah Walker, Clearwater NF.
Habitat Description: NE aspect. Young Abies grandis stand with small Thuja plicata and Clintonia uniflora. On Thuja plicata branch with Lobaria pulmonaria. Other lichens present include Nephroma resupinatum, Hypogymnia physodes, Peltigera spp., and Alectora spp.
Specimens: Sarah Walker 29 (herbarium unknown).

TEXOSPORIUM SANCTI-JACOBI

WOVEN SPORE LICHEN

Occurrence Number: 001
Survey Site Name: SOUTH COLE ROAD/TENMILE CREEK SOUTH
County: Ada
USGS quadrangle: MORA
First Observed: 1993-05-18 Last Observed: 1993-05-18
Population Data: 1993: A scattered population of at least 50 clumps over 120 acres was assessed as having good population vigor by Anne DeBolt, Boise District BLM, on a cursory survey of the area on 5-18.
Habitat Description: These scattered populations were found on a gently sloping terrain with loamy-silt loam type soils. Associated species include Artemisia tridentata wyomingensis, Poa secunda, Sitanion hystrix, and Stipa thurberiana. The overall site quality was rated as good.
Specimens: A. DeBolt 1679 (Boise BLM).

Occurrence Number: 002
Survey Site Name: CINDER CONE BUTTE
County: Ada
USGS quadrangle: CINDER CONE BUTTE
First Observed: 1993-05-11 Last Observed: 1995-01-17
Population Data: 1993: At least 20 clumps of lichen were observed. Unknown age class structure. Apothecia were present. Population vigor assessed as good. Observation on a cursory visit on 5-11 by Ann DeBolt, Boise District BLM. 1995: Ca 70-100 additional clumps with apothecia present were located to the SE, further up the NW slope of Cinder Cone Butte. Observation by Dana Quinney and J. Weaver, Idaho Army National Guard.
Habitat Description: Occurs in a nice stand of *Artemisia tridentata wyomingensis*/*Poa sandbergii*/*Stipa thurberiana* habitat on large volcanic cinders on the surface in some open areas. On clumps of dead *Poa* and mosses. Few exotic annuals present.
Specimens: Ann DeBolt 1673 (Boise BLM).

Occurrence Number: 003
Survey Site Name: EIGHTMILE CREEK/TENMILE CREEK
County: Ada
USGS quadrangle: CLOVERDALE
First Observed: 1991 Last Observed: 1993-05-18
Population Data: 1991: Hundreds of clumps. Population vigor assessed as high. Observation on a cursory visit by Ann DeBolt, Boise District BLM. 1993(Sec 18): At least 30 separate mature clumps were observed on a cursory visit by DeBolt. Population vigor assessed as good.
Habitat Description: Occurs in remnant *Artemisia tridentata wyomingensis*/native bunchgrass community on clumps of dead *Poa*. Associated with *Sitanion hystrix*, *Stipa thurberiana*, *Agropyron spicatum*, *Poa sandbergii*, and *Lepidium papilliferum*. On gently sloping terrain with northerly aspect.
Specimens:

Occurrence Number: 004
Survey Site Name: EIGHTMILE CREEK
County: Ada
USGS quadrangle: BOISE SOUTH
First Observed: 1993-07-27 Last Observed: 1993-07-27
Population Data: 1993: At least 15 clumps scattered over 40 acres. Population vigor assessed as moderate. Observation on a cursory visit by Ann DeBolt, Boise District BLM.
Habitat Description: Occurs on dead clumps of *Poa secunda*. Associates include *Sitanion hystrix*, *Poa secunda*, *Agropyron spicatum*, *Stipa thurberiana*, and *Bromus tectorum*. Site burned within the last 15 years so there are virtually no shrubs left. North aspect slope. Overall site quality rated as fair.
Specimens: Ann DeBolt 1755 (Boise BLM).

Occurrence Number: 005
Survey Site Name: KUNA BUTTE EAST
County: Ada
USGS quadrangle: KUNA
First Observed: 1994-04-28 Last Observed: 1994-04-28
Population Data: 1994: 5 clumps. Population vigor assessed as fair. Observation by Ann DeBolt, Boise District BLM, on a cursory visit on 4-28.
Habitat Description: *Artemisia tridentata wyomingensis*, *Sitanion hystrix*, *Poa secunda* site with good cryptogamic cover. Overall site quality rated as good.
Specimens:

Occurrence Number: 006
Survey Site Name: ORCHARD SOUTHWEST
County: Ada
USGS quadrangle: ORCHARD
First Observed: 1994-01-07 Last Observed: 1994-01-07
Population Data: 1994: Ca 1000 clumps with apothecia present. Observation by Dana Quinney and J. Weaver, Idaho Army National Guard.

Habitat Description: Flat to gently rolling with fine silt soil. Weedy site with scattered sage. Associated species include *Artemisia tridentata wyomingensis*, *Poa sandbergii*, *Ranunculus testiculatus*, exotic *Brassica* spp., and *Lepidium papilliferum*. Also present in burned area next to the sage.

Specimens:

Occurrence Number: 007

Survey Site Name: HIGBY CAVE EAST - RED TIE AREA

County: Ada

USGS quadrangle: ORCHARD

First Observed: 1993-12-03 Last Observed: 1993-12-03

Population Data: 1993: Several thousand clumps with apothecia present. Observation by Dana Quinney and J. Weaver, Idaho Army National Guard.

Habitat Description: Slightly rolling terrain with fine silt soil. Growing on dead *Poa* clumps. Associated species include *Artemisia tridentata wyomingensis*, *Poa sandbergii*, *Stipa thurberiana*, and *Lepidium papilliferum*. Few exotic annuals are present.

Specimens:

Occurrence Number: 008

Survey Site Name: COLUMBIA VILLAGE - SOUTHEAST BOISE

County: Ada

USGS quadrangle: BOISE SOUTH

First Observed: 1994-06-24 Last Observed: 1994-06-24

Population Data: 1994: Ca 30 clumps. Population vigor assessed as high. Area thoroughly surveyed by Ann DeBolt, Boise District BLM.

Habitat Description: On clumps of humus in a patch of native bunchgrasses. Associates include *Stipa thurberiana*, *Agropyron spicatum*, *Sitanion hystrix*, and *Poa secunda*.

Specimens:

Occurrence Number: 009

Survey Site Name: PLEASANT VALLEY NORTH

County: Ada

USGS quadrangle: OWYHEE, IDAHO

First Observed: 1987 Last Observed: 1987

Population Data: 1987: Ca 100+ clumps observed on a thorough survey by Ann DeBolt, Boise District BLM.

Habitat Description: On humus clumps and soil. *Artemisia tridentata wyomingensis*-*Stipa thurberiana*-*Agropyron spicatum* community. *Lepidium papilliferum* is also present.

Specimens: Roger Rosentreter 6815 (personal herbarium).

Occurrence Number: 010

Survey Site Name: OWYHEE SOUTHWEST

County: Ada

USGS quadrangle: OWYHEE, IDAHO

First Observed: 1983-04-28 Last Observed: 1988

Population Data: 1983: Hundreds of clumps along the E side of Pleasant Valley Road. Population vigor assessed as good to high. Observation by Roger Rosentreter, Idaho BLM. 1988: Hundreds of clumps (<1000) W of Pleasant Valley Road.

Population vigor assessed as high. Observation on a cursory visit by Ann DeBolt, Boise District BLM.

Habitat Description: Flat area. *Artemisia tridentata*-*Sitanion hystrix*-*Poa sandbergii* and *Chrysothamnus nauseosus*-*Poa secunda* communities. Area intermixed with exotics *Bromus tectorum* and *Sisymbrium altissimum*.

Specimens: Roger Rosentreter 3081 (Boise BLM, personal herbarium).

Occurrence Number: 011

Survey Site Name: SIMCO ROAD/I-84

County: Elmore

USGS quadrangle: MAYFIELD SW

First Observed: 1988 Last Observed: 1988

Population Data: 1988: Ca 50-100 scattered clumps. Population vigor assessed as high. Area thoroughly surveyed by Ann

DeBolt, Boise District BLM, and Roger Rosentreter, Idaho BLM.

Habitat Description: Flat topography. On soil and humus. *Artemisia tridentata*-*Stipa thurberiana*-*Agropyron spicatum* community in excellent condition. *Lepidium papilliferum* also present.

Specimens: Roger Rosentreter 6819b (Boise BLM, personal herbarium). Bruce McCune 18894 (personal herbarium).

Occurrence Number: 012

Survey Site Name: MOUTH OF ISAACS CANYON

County: Ada

USGS quadrangle: BOISE SOUTH

First Observed: 1995-10-11 Last Observed: 1995-10-11

Population Data: 1995: Ca 20-40 clumps observed on a cursory visit by Ann DeBolt, Lower Snake River District BLM.

Population vigor assessed as high.

Habitat Description: Portions of this general area are represented by a good to excellent bunchgrass (*Agropyron spicatum*, *Stipa thurberiana*, *Sitanion hystrix*)-*Artemisia tridentata* community. Some portions have no *Artemisia tridentata* left due to fire, but still have good bunchgrass representation. Weedier areas are intermittent (ie. dominated by *Sisymbrium altissimum* and *Bromus tectorum*).

Specimens:

Occurrence Number: 013

Survey Site Name: N OF INITIAL POINT

County: Ada

USGS quadrangle: KUNA, INITIAL POINT

First Observed: 1995-03 Last Observed: 1995-03

Population Data: 1995: 2 sites with a total of ca 30-50 clumps. Population vigor assessed as good. Observation on a cursory visit by Ann DeBolt, Boise District BLM.

Habitat Description: *Artemisia tridentata wyomingensis*-*Poa sandbergii*-*Sitanion hystrix* community on the edge of a burn.

Specimens:

THAMNOLIA VERMICULARIS

WORM LICHEN

Occurrence Number: 001

Survey Site Name: ACROSS FROM HOSPITAL BAR

County: Lemhi

USGS quadrangle: RAMEY HILL

First Observed: 1987-07-22 Last Observed: 1987-07-22

Population Data: 1987: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: Moss-covered, N-facing small cliff band.

Specimens: Roger Rosentreter 4525 (SRP).

XANTHOPARMELIA IDAHOENSIS

IDAHO RANGE LICHEN

Occurrence Number: 001

Survey Site Name: LEMHI RIVER - SE OF MULKEY CREEK

County: Lemhi

USGS quadrangle: SAL MOUNTAIN

First Observed: 1993-11-19 Last Observed: 1993-11-19

Population Data: 1993: Thousands of genets of unknown age class structure were found at two sites. Population vigor assessed as very good in the larger of the two populations. Observation by Helen Ulmschneider, Salmon District BLM, who notes that more bare hills with potential habitat exist in the immediate area.

Habitat Description: Found on bare bentonite hills and flats bordering 2 small dry washes. Surrounding vegetation includes *Artemisia tridentata* and *Sarcobatus vermiculatus*. Other lichen include *X. norchlorochroa* on bare clay. Up to 80% of lichens were on south-facing hills above a small creek, but only 5-20% were on flats or north slopes. Overall lichen cover on all bare hills was roughly 10-20%, in patches. The overall site quality was rated as excellent.

Specimens: H. Ulmschneider 93-13 (Salmon BLM). H. Ulmschneider 93-12 (Salmon BLM).

Occurrence Number: 002

Survey Site Name: E OF SALMON AIRPORT - SE OF SALMON

County: Lemhi

USGS quadrangle: EAST OF SALMON

First Observed: 1993-10-13 Last Observed: 1993-10-20

Population Data: 1993: 3 small populations of lichen were found. The easternmost population, visited on 10-14, had an estimated 2000 thalli clumps all of which were vegetative; population vigor assessed as good as about 5% of the X. Thalli present were X. idahoensis. The westernmost population, visited on 10-20, contained several hundred clumps; population vigor assessed as good, having ca 1-3% of lichens being X. idahoensis. The middle population, also visited on 10-20, contained ca 100 clumps; population vigor assessed as fair as <1% of the lichens present were X. idahoensis. Observations on cursory visits on 10-14 by Roger Rosentreter, Idaho State BLM, and Helen Ulmschneider, Salmon District BLM, and again on 10-20 by just Ulmschneider.

Habitat Description: Eastern population occurs on bentonite hills completely bare of vegetation in lacustrine ash deposits >40% clay. Slope <50% with generally southern aspects, but some also with northerly aspect. X. idahoensis occurs mixed in a large population of X. norchlorochroa, but it is easily distinguished from about 6 feet away. Surrounding vascular vegetation includes Atriplex spinosa, Tetradymia canescens. The western population also occurs on a south-facing, bare Bentonite slope with X. norchlorochroa and with Atriplex spinosa, Tetradymia spinescens, and Poa secunda. The middle population occurs on a rocky slope of small (1-3") stones with bentonite matrix. Also associated with X. norchlorochroa. Specimens: Roger Rosentreter 8238 (SRP, US, Salmon BLM). Helen Ulmschneider 93-12 (Salmon BLM).

Helen Ulmschneider 93-13 (Salmon BLM).

Occurrence Number: 003

Survey Site Name: HOT SPRING CREEK

County: Lemhi

USGS quadrangle: SAL MOUNTAIN

First Observed: 1986-01-04 Last Observed: 1986-01-04

Population Data: 1986: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: On calcareous lacustrine ash soil. Sites nearly barren of vascular vegetation and surrounded by Atriplex confertifolia.

Specimens: Roger Rosentreter 3828 (Personal herbarium, isotype; US, holotype).

Occurrence Number: 004

Survey Site Name: KADLETZ CREEK

County: Lemhi

USGS quadrangle: BAKER

First Observed: 1987-07-07 Last Observed: 1987-07-07

Population Data: 1987: No data. Collected by Roger Rosentreter, Idaho State BLM.

Habitat Description: Barren bentene clay soil, Artemisia tridentata wyomingensis and Atriplex habitat.

Specimens: Roger Rosentreter 4520 (SRP) - determined by M. Hale 1987.

Occurrence Number: 005

Survey Site Name: N OF PRICE CREEK

County: Lemhi

USGS quadrangle: BAKER

First Observed: 1995-05-19 Last Observed: 1995-05-19

Population Data: 1995: 3 populations. The top of hill 4773T is almost a solid carpet of X. idahoensis. Population vigor assessed as excellent. Observation on a cursory visit by Helen Ulmschneider, Salmon District BLM, noting that there are extensive clay hills in the area that were not visited.

Habitat Description: Growing on clay. Bare clay hills with Monolepsis nuttalliana, Tetradymia sp., and Artemisia sp. Other range lichens present include Xanthoparmelia norchlorochroa and X. wyomingensis in the shrub area.

Specimens: Helen Ulmschneider 95-01, 95-02, 95-03 (Salmon BLM).

CONCLUSIONS AND RECOMMENDATIONS

1. **Globally Rare Species** - While most of our state's rare lichens and bryophytes are globally common, there are several species that are globally rare (*i.e.*, have a global conservation rank of G1, G2, or G3 in Tables 1 and 3). These species should be of particular conservation concern to land managers and biologists in the state. The globally rare species occurring in Idaho are:

Bryophytes

Bryum calobryoides G3
Orthotrichum holzingeri G1 or G2?
Sphaerocarpos hians G1

Lichens

Catapyrenium congestum G2
Cetraria subalpina G3
Cladonia andreggii G1
Cladonia luteoalba G2
Collema curtisporum G1
Dermatocarpon lorenzianum G1
Texosporium sancti-jacobi G2
Xanthoparmelia idahoensis G1

2. **Increase Awareness for Rare Cryptogams** - Rare bryophytes and lichens should be incorporated into the overall rare species and ecosystem conservation activities of land management agencies and organizations, similar to vascular plants and vertebrate animals. The first step is to increase the ability of biologists to identify and inventory for rare species through special training and workshops. While a few training sessions have taken place in the last couple of years, more are needed.

The results of rare cryptogam inventories should be submitted to the CDC so that populations can be entered into our rare species occurrence data base, which is the centralized data base for Idaho. Reporting forms and instructions can be downloaded from the CDC's home page on the World Wide Web (address: www.state.id.us/fishgame/cdchome.htm)

3. **Rare Fungi** - The diversity of fungi in Idaho is particularly notable, from the rich diversity in the central Idaho mountains to the endemism on the Owyhee Plateau. Although technically not plants, but usually lumped in with the field of botany, this group of organisms are important members of our native ecosystems. Only recently has the conservation of fungi species begun to be addressed in the Pacific Northwest, in general, and Idaho in particular. Information on rare fungi compiled as part of the Interior Columbia River Basin assessment needs to be incorporated into the CDC's data base and into species and ecosystem conservation activities of land management agencies.

4. **NONVASCULAR WORKING GROUP** - We recommend that a “working group” be established to evaluate the conservation of nonvascular plants in the state. This is usually done at the annual Idaho Rare Plant Conference, but for several reasons (listed below) we believe that a separate group could more effectively evaluate the status of these species: 1) considerable time needs to be spent on the suggested additions to the bryophyte list and the nearly *de novo* evaluation of rare fungi in the state; 2) the hectic schedule of the conference rarely (never?) allows for such an in depth evaluation; and 3) relatively few people have adequate knowledge of nonvascular groups. This group clearly needs to address several short-term issues and may not need to be permanent.

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MONTANE FOREST
OLD GROWTH FOREST
THELYPTERIS PHEGOPTERIS
PHEGOPTERIS CONNECTILIS
HOOKERIA LUCENS
BLECHNUM SPICANT
HYPOGYMNIA ENTEROMORPHA

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LICHEN
CHECKLIST
COLLEMA FURFURACEUM
CLADONIA UNCIALIS
LOBARIA SCROBICULATA
PHYSICIA SEMIPINNATA

Anderegg, D. E., G. J. Schroeder, and N. E. Schroeder. 1973. Further additions to the lichen flora of Idaho. *The Bryologist* 76(1): 207-208.

LICHEN
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NONVASCULAR CONSERVATION

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HOOKERIA LUCENS
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LICHEN

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BRYOPHYTE
CHECKLIST
SPHAGNUM MENDOCINUM

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SPHAGNUM MENDOCINUM
TAYLORIA SERRATA
ULOTA MEGALOSPORA
HOOKERIA LUCENS
HELODIUM BLANDOWII
BUXBAUMIA APHYLLA
BUXBAUMIA PIPERI
CHECKLIST

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BRYOPHYTE
NONVASCULAR CONSERVATION
BIOGEOGRAPHY
FUNCTION
BRYUM CALOBRYOIDES
BUXBAUMIA APHYLLA
BUXBAUMIA PIPERI
HELODIUM BLANDOWII
HOOKERIA LUCENS
MEESIA LONGISETA
SPHAGNUM MENDOCINUM
TAYLORIA SERRATA
SPHAEROCARPOS HIANIS

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FUNGI
LICHEN
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TEXOSPORIUM SANCTI-JACOBI

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MULTI-SPECIES
NONVASCULAR CONSERVATION
BRYUM CALOBRYOIDES
BUXBAUMIA PIPERI
BUXBAUMIA APHYLLA
HELODIUM BLANDOWII
HOOKERIA LUCENS
MEESIA LONGISETA
SPHAGNUM MENDOCINUM
TAYLORIA SERRATA
ULOTA CURVIFOLIA
ULOTA MEGALOSPORA

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SPHAGNUM MENDOCINUM
DISTRIBUTION

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MULTI-SPECIES
NONVASCULAR CONSERVATION
BRYUM CALOBRYOIDES
BUXBAUMIA PIPERI
BUXBAUMIA APHYLLA
HELODIUM BLANDOWII
HOOKERIA LUCENS
MEESIA LONGISETA
SPHAGNUM MENDOCINUM
TAYLORIA SERRATA
ULOTA CURVIFOLIA
ULOTA MEGALOSPORA

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YELLOWSTONE
FNPNP
LICHEN
CHECKLIST

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FNPNP
GYE
LICHEN
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HYPOGYMNIA ENTEROMORPHA

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FUNCTION
PEATLAND
VEGETATION HISTORY
BRYOPHYTE
HYDROLOGY
VACCINIUM OXYCOCCOS
SCIRPUS CAESPITOSUS

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AIR QUALITY
THAMOLIA VERMICULARIS
PILOPHORUS ACICULARIS
CLADONIA TRANSCENDENS
CLADONIA UNCIALIS
COLLEMA FURFURACEUM
PSEUDOCYPHELLARIA ANTHRASPIS
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
LOBARIA LINITA
LOBARIA SCROBICULATA

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AIR QUALITY
LICHEN

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AIR QUALITY
THAMOLIA VERMICULARIS
PILOPHORUS ACICULARIS
CLADONIA TRANSCENDENS
CLADONIA UNCIALIS
COLLEMA FURFURACEUM
PSEUDOCYPHELLARIA ANTHRASPIS
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
LOBARIA LINITA
LOBARIA SCROBICULATA

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PEATLAND
BRYOPHYTE

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OLD GROWTH FOREST
MONTANE FOREST
NONVASCULAR CONSERVATION
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
LOBARIA LINITA
PSEUDOCYPHELLARIA ANTHRASPIS

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TAXONOMY
BIOGEOGRAPHY
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CLADONIA UNCIALIS
CLADONIA LUTEOALBA
CLADONIA TRANSCENDENS
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CLADONIA UNCIALIS
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CLADONIA LUTEOALBA
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IDAHO PANHANDLE NATIONAL FORESTS
BOREAL OWL
NORTHERN SAW-WHET OWL
RAPTORS
REPRODUCTION
CAVITY NESTERS
AEGOLIUS ACADICUS
AMERICAN KESTREL
FALCO SPARVERIUS
NORTHERN FLYING SQUIRREL
GLAUCOMYS SABRINUS
AEGOLIUS FUNEREUS
LICHEN

Hayward, G. D., and P. H. Hayward. 1988. Nest box use: Payette National Forest, 1988. University of Idaho, Department Fish and Wildlife Resources, College of Forestry, Wildlife, and Range Sciences, Moscow. 4 pp.

PAYETTE NATIONAL FOREST
RAPTORS
BOREAL OWL
NORTHERN SAW-WHET OWL
AEGOLIUS ACADICUS
CAVITY NESTERS
NORTHERN FLYING SQUIRREL
GLAUCOMYS SABRINUS
MARTEN
MARTES AMERICANA
AEGOLIUS FUNEREUS
LICHEN
REPRODUCTION
BIOLOGY

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SPECIES BIOLOGY
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NORTHERN FLYING SQUIRREL
SMALL MAMMALS
LICHEN

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AIR QUALITY
LICHEN

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MONTANE FOREST
BUXBAUMIA PIPERI
HOOKERIA LUCENS
RAMALINA THRAUSTA
PSEUDOCYPHELLARIA ANTHRASPIS
LOBARIA HALLII
LOBARIA SCROBICULATA
LOBARIA LINITA

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COMMUNITY ECOLOGY
SPECIES BIOLOGY

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LOBARIA HALLII
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LOBARIA SCROBICULATA
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LICHEN
COMMUNITY ECOLOGY
SALIX CANDIDA
ANDROMEDA POLIFOLIA

CAREX CHORDORRHIZA

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DISTRIBUTION

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BRYOPHYTE
VEGETATION HISTORY
VACCINIUM OXYCOCCOS

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OLD GROWTH FOREST
MONTANE FOREST
COMMUNITY ECOLOGY

MANAGEMENT TECHNIQUES
BRYOPHYTE
LICHEN
HYPOGYMNIA ENTEROMORPHA

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MULTI-SPECIES
BUXBAUMIA PIPERI
HELODIUM BLANDOWII
HOOKERIA LUCENS
SPHAGNUM MENDOCINUM
CETRARIA SUBALPINA
HYPOGYMNIA APINNATA
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
LOBARIA SCROBICULATA
PSEUDOCYPHELLARIA ANTHRASPIS

Lin, C. K., J. Y. Hsiao, and M. J. Lai. 1989. Studies on the lichen genus *Lobaria* in Taiwan. Proceedings of the National Science Council, Republic of China, Part B Life Sciences 13(1): 47-55.

LOBARIA SCROBICULATA
TAXONOMY
DISTRIBUTION

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SPHAGNUM MENDOCINUM
TAXONOMY
DISTRIBUTION

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COLLEMA FURFURACEUM
SPECIES BIOLOGY

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CHECKLIST
DISTRIBUTION
TAYLORIA SERRATA
MEESIA LONGISETA
HOKERIA LUCENS
BUXBAUMIA APHYLLA
BUXBAUMIA PIPERI

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LICHEN

McCoy, P. R. 1994. Botanist shows Polish scientists some tricks. Capital Press, August 19, 1994, edition. Boise, ID.

LICHEN

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LICHEN
BRYOPHYTE
CLASSIFICATION
SUCCESSION
MONTANE FOREST
COMPOSITION
STRUCTURE

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COLLEMA FURFURACEUM
LOBARIA HALLII
PHYSICIA SEMIPINNATA
CHECKLIST
LICHEN

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LICHEN
AQUARIUS
FFSRN
CLADONIA TRANSCENDENS
HYPOGYMNIA ENTEROMORPHA
PSEUDOCYPHELLARIA ANTHRASPIS
SPHAEROPHORUS TUCKERMANNII
LOBARIA LINITA
BIOGEOGRAPHY
DISTRIBUTION

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COLLEMA FURFURACEUM
PHYSICIA SEMIPINNATA
LOBARIA HALLII
COLLEMA CURTISPORUM
NONVASCULAR CONSERVATION
DISTRIBUTION

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SAMPLING
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MONTANE FOREST

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LICHEN
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COLLEMA FURFURACEUM
RAMALINA THRAUSTA

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FFSRN
CLEARWATER NATIONAL FOREST
SPHAEROPHORUS TUCKERMANNII
RAMALINA THRAUSTA
PSEUDOCYPHELLARIA ANTHRASPIS
HYPOGYMNIA ENTEROMORPHA
CLADONIA TRANSCENDENS

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MUD FLAT OOLITE
FBLAC
CHECKLIST
TEXOSPORIUM SANCTI-JACOBI
LICHEN

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STATUS SURVEY

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LICHEN
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PHYSCIA SEMIPINNATA
PILOPHORUS ACICULARIS
TEXOSPORIUM SANCTI-JACOBI

HYPOGYMNIAS ENTEROMORPHA
LOBARIA HALLII
LOBARIA SCROBICULATA
LICHEN
CHECKLIST
ASPICILIA FRUTICULOSA
CLADINA RANGIFERINA
CLADONIA LUTEOALBA
CLADONIA TRANSCENDENS
CLADONIA UNCIALIS
COLLEMA CURTISPORUM
COLLEMA FURFURACEUM
HYPOGYMNIAS APINNATA

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LICHEN
FUNCTION
CHECKLIST
ASPICILIA FRUTICULOSA
CLADINA RANGIFERINA
CLADONIA LUTEOALBA
CLADONIA TRANSCENDENS
CLADONIA UNCIALIS
COLLEMA CURTISPORUM
COLLEMA FURFURACEUM
HYPOGYMNIAS ENTEROMORPHA
LOBARIA SCROBICULATA
LOBARIA HALLII
LOBARIA LINITA
PHYSCIA SEMIPINNATA
PILOPHORUS ACICULARIS
TEXOSPORIUM SANCTI-JACOBI
CATAPYRENIUM CONGESTUM

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LICHEN

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CLADONIA LUTEOALBA
CLADONIA TRANSCENDENS
CLADINA RANGIFERINA
ASPICILIA FRUTICULOSA
LICHEN
FLORA
CETARIA SUBALPINA
COLLEMA CURTISPORUM
COLLEMA FURFURACEUM

HYPOGYMNIA APINNATA
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
LOBARIA LINITA
LOBARIA SCROBICULATA
PHYSICIA SEMIPINNATA
PILOPHORUS ACICULARIS
PSEUDOCYPHELLARIA ANTHRASPIS
THAMNOLIA VERMICULARIS

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LICHEN
BOTTLE LAKE
FFSRN

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FIELD GUIDE
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TEXOSPORIUM SANCTI-JACOBI

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LOBARIA LINITA
LOBARIA HALLII
HYPOGYMNIA ENTEROMORPHA
CLADONIA TRANSCENDENS
CLADONIA FURFURACEUM
PHYSICIA SEMIPINNATA
PSEUDOCYPHELLARIA ANTHRASPIS
RAMALINA THRAUSTA

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TAYLORIA SERRATA
DISTRIBUTION

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EPILOBIUM PALUSTRE
PRIMULA INCANA
WETLAND
NONVASCULAR CONSERVATION
YELLOWSTONE
FNPNP
HOT SPRINGS
AQUATIC
THERMAL SPRINGS AQUATIC COMMUNITY
MANAGEMENT TECHNIQUES

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BRYOPHYTE
VEGETATION HISTORY
CLASSIFICATION

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HYPOGYMNIA ENTEROMORPHA
AIR QUALITY
SPECIES BIOLOGY

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NONVASCULAR CONSERVATION

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SPHAGNUM MENDOCINUM

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FIELD GUIDE
MULTI-SPECIES
ALLIUM TOLMIEI PERSIMILE
BRYUM CALOBRYOIDES
DOUGLASIA IDAHOENSIS
HAPLOPAPPUS INSECTICRURIS
PHACELIA MINUTISSIMA
ALLIUM VALIDUM
CAREX BUXBAUMII
EPIPACTIS GIGANTEA
LEWISIA KELLOGGII
RHYNCHOSPORA ALBA
SCHEUCHZERIA PALUSTRIS

Pickett, F. L., and G. N. Jones. 1928. Check-list of the mosses known to occur in southeastern Washington and adjacent Idaho. *The Bryologist* 31: 54-56.

BRYOPHYTE
CHECKLIST

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HYPOGYMNIA ENTEROMORPHA
TAXONOMY

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NONVASCULAR CONSERVATION

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PILOPHORUS ACICULARIS
RAMALINA THRAUSTA
TEXOSPORIUM SANCTI-JACOBI
XANTHOPARMELIA IDAHOENSIS
COLLEMA CURTISPORUM
CLADONIA TRANSCENDENS
CLADONIA VERRUCULOSA
COLLEMA FURFURACEUM
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
LOBARIA LINITA
LOBARIA SCROBICULATA
PHYSICIA SEMIPINNATA

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AIR QUALITY
LICHEN
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WOODLAND CARIBOU
OLD GROWTH FOREST
HABITAT
LICHEN
WINTERING

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WOODLAND CARIBOU
RANGIFER TARANDUS CARIBOU
WINTERING
FOOD HABITS
LICHEN

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IDAHO
BRYOPHYTE

LICHEN
RIPARIAN
CLASSIFICATION
AQUATIC

Rosentreter, R. 1985. Letter to S. Caicco listing rare plant, lichen, and fungus locations for southern Idaho.

ASCLEPIAS CRYOPTERIS
ASTRAGALUS JEJUNUS
DIMERESIA HOWELLII
ERIOGONUM BREVICAULE
STIPA WEBBERI
LICHEN
FUNGI

Rosentreter, R. 1986. Composition patterns within a rabbit brush (*Chrysothamnus*) community of the Idaho Snake River Plain. Pages 273-277 in E. D. McArthur and B. L. Welch, compilers, Proceedings- Symposium on the Biology of Artemisia and Chrysothamnus. USDA Forest Service General Technical Report INT-200. Intermountain Research Station, Ogden, UT.

FIRE
IDAHO
SPECIES BIOLOGY
SUCCESSION
SHRUBLAND
LICHEN

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SPECIAL PLANTS
LICHEN

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LICHEN
IDAHO
SHRUBLAND
STRUCTURE

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AIR QUALITY
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TAXONOMY
SHRUBLAND
LICHEN

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ASPICILIA FRUTICULOSA
XANTHOPARMELIA IDAHOENSIS

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LICHEN

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LICHEN

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ASPICILIA FRUTICULOSA
LICHEN
DISTRIBUTION
XANTHOPARMELIA IDAHOENSIS

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LICHEN
MONITORING
MONTANE FOREST
SUBALPINE FOREST

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LICHEN
SHRUBLAND

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LICHEN
MONTANE FOREST
MANAGEMENT TECHNIQUES
NONVASCULAR CONSERVATION
STRUCTURE

Rosentreter, R. [n.d.]. New lichen species for Idaho. Unpublished report on file at Idaho Department of Fish and Game, Conservation Data Center, Boise. 7 pp.

LICHEN
TEXOSPORIUM SANCTI-JACOBI
LOBARIA LINITA
LOBARIA SCROBICULATA

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LICHEN
BIOGEOGRAPHY
FUNCTION
COMPOSITION
STRUCTURE
SUCCESSION
MONTANE FOREST
SUBALPINE FOREST
ALPINE
GRASSLAND
SHRUBLAND
COTTONWOOD
RIPARIAN
ASPICILIA FRUTICULOSA
CLADINA RANGIFERINA
CLADONIA TRANSCENDENS
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
LOBARIA LINITA
PILOPHORUS ACICULARIS
PSEUDOCYPHELLARIA ANTHRASPIS
TEXOSPORIUM SANCTI-JACOBI

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WOODLAND CARIBOU
RANGIFER TARANDUS CARIBOU
HABITAT
FOOD HABITS
LICHEN
FIRE

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LOBARIA HALLII
PSEUDOCYPHELLARIA ANTHRASPIS
DISTRIBUTION
IDAHO

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DISTRIBUTION
LICHEN

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CHECKLIST
IDAHO
LICHEN
HYPOGYMNIA ENTEROMORPHA
LOBARIA HALLII
PILOPHORUS ACICULARIS

PSEUDOCYPHELLARIA ANTHRASPIS

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RANGIFER TARANDUS CARIBOU
WOODLAND CARIBOU
BIOLOGY
DISTRIBUTION
REPRODUCTION
WINTERING
HABITAT
LICHEN
FOOD HABITS
TAXONOMY
IMPACTS-HUMAN
MANAGEMENT TECHNIQUE
CONSERVATION BIOLOGY

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AIR QUALITY
LICHEN
HYPOGYMNIA ENTEROMORPHA
MONTANE FOREST

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MANAGEMENT TECHNIQUES
COMMUNITY ECOLOGY
NONVASCULAR CONSERVATION

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PEATLAND
SCIRPUS CAESPITOSUS
CAREX CHORDORRHIZA
CAREX LIVIDA
DROSERA INTERMEDIA
SALIX PEDICELLARIS
BRYOPHYTE
COMPOSITION
STRUCTURE
FUNCTION
SCIRPUS HUDSONIANUS
SCHEUCHZERIA PALUSTRIS
VACCINIUM OXYCOCCOS

RHYNCHOSPORA ALBA
MUHLENBERGIA RACEMOSA

Spence, J. R. 1985. Checklist of the mosses of Grand Teton National Park and Teton County, Wyoming. Great Basin Naturalist 45(1): 124-126.

CHECKLIST
BRYOPHYTE

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TAXONOMY
BRYUM CALOBRYOIDES

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BRYUM CALOBRYOIDES
TAYLORIA SERRATA
DISTRIBUTION
FLORA

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BRYUM CALOBRYOIDES
TAXONOMY

Steele, A. 1974. Moss communities of central Idaho forests. Unpublished thesis, University of Idaho, Moscow. 52 pp.

CLASSIFICATION
IDAHO
BRYOPHYTE
SUBALPINE FOREST
MONTANE FOREST
HELODIUM BLANDOWII

Steele, A. 1978. Bryophyte communities of central Idaho forests. Northwest Science 52(4): 310-322.

CLASSIFICATION
STRUCTURE
COMPOSITION
MONTANE FOREST
SUBALPINE FOREST
BRYOPHYTE
HELODIUM BLANDOWII

Stenroos, S. 1990. Cladonia luteoalba - an enigmatic Cladonia. Karstenia 30: 27-32.

TAXONOMY
DISTRIBUTION
CLADONIA LUTEOALBA

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STATUS SURVEY
DISTRIBUTION

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AIR QUALITY
LICHEN

Taylor, J. 1972. The habitat and orientation of capsules of *Buxbaumia aphylla* in the Douglas Lake region of Michigan. *The Michigan Botanist* 11: 70-73.

BUXBAUMIA APHYLLA
SPECIES BIOLOGY

Thomas, A. E., and R. Rosentreter. 1992. Utilization of lichens by pronghorn antelope in three valleys in east-central Idaho. Bureau of Land Management Technical Bulletin No. 92-3, Idaho State Office, Boise.

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PRONGHORN
FOOD HABITS
INEL
IDAHO
LICHEN
SHRUBLAND
AUTECOLOGY

Thor, G. 1993. Letter outlining the IAL Committee for Conservation of Lichens (ICCL) and questionnaire for information concerning lichens and lichen rich habitats. On file at Idaho Department of Fish and Game, Conservation Data Center, Boise. Not paged.

NONVASCULAR CONSERVATION

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NONVASCULAR CONSERVATION
LICHEN

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DISTRIBUTION

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NONVASCULAR CONSERVATION
LOBARIA SCROBICULATA

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NONVASCULAR CONSERVATION

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MIRABILIS MACFARLANEI
LICHEN
PRIMULA ALCALINA

USDA Forest Service and USDI Bureau of Land Management. 1994. Final supplemental environmental impact statement on management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Washington, DC.

NONVASCULAR CONSERVATION
RAMALINA THRAUSTA
PSEUDOCYPHELLARIA ANTHRASPIS
LOBARIA SCROBICULATA
LOBARIA HALLII
LOBARIA LINITA

Virginia Game Department. 1990. Distribution and status of the northern flying squirrel in Virginia. Annual Report, Virginia Nongame and Endangered Wildlife Investigations. Virginia Department of Game and Inland Fisheries.

NORTHERN FLYING SQUIRREL
GLAUCOMYS SABRINUS
SOUTHERN FLYING SQUIRREL
GLAUCOMYS VOLANS
SURVEY METHOD
REPRODUCTION
LICHEN
HABITAT
DISTRIBUTION

Vives, J. C. 1974. Additions to the moss flora of Catalonia. *Collectanea Botanica "A Barcinonesi Botanico Instituto Edita"* 9: 195.

HOOKERIA LUCENS
DISTRIBUTION

Welch, W. H. The Hookeriaceae of the United States and Canada. *Bryologist* 65(1): 1-25.

HOOKERIA LUCENS
BRYOPHYTE
TAXONOMY
DISTRIBUTION

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BUXBAUMIA APHYLLA
DISTRIBUTION

Wheeler, G. A. 1985. *Buxbaumia aphylla* Hedw. new to Minnesota and notes on some other mosses little known in the state. *The Michigan Botanist* 24: 77-79.

DISTRIBUTION
BUXBAUMIA APHYLLA

Won, S. H. 1976. Annotated checklist of the Hepatics of Idaho. *The Bryologist* 79: 422-436.

SPHAEROCARPUS HIANUS
DISTRIBUTION
BRYOPHYTE
CHECKLIST

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