

**FUNGI FROM THE OWYHEE REGION
OF
SOUTHERN IDAHO AND EASTERN OREGON**

by

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THE OWYHEE REGION

The Owyhee Region is south of the Snake River and covers Owyhee County, Idaho, Malheur County, Oregon, and a part of northern Nevada. It extends approximately from 115° to 118° West longitude and is bounded by parallels 41° to 44°. Owyhee County includes 7,662 square miles, Malheur County has 9,861 square miles, and the part of northern Nevada which is in the Owyhee River watershed is about 2,900 square miles.

The elevations in the region range from about 660 m in the Snake River Plains and adjoining Owyhee Uplands to 2522 m at Hayden Peak in the Owyhee Mountains. Where the Snake River Plain area is mostly sediment-covered basalt, the area south of the Snake River known as the Owyhee Uplands, includes rolling hills, sharply dissected by basaltic plateaus. The Owyhee Mountains have a complex geology, with steep slopes of both basalt and granite. In the northern areas of the Owyhee Mountains, the steep hills, mountains, and escarpments consist of basalt. In other areas of the mountains the steep slopes are of granitic or rhyolitic origin. The mountains are surrounded by broad expanses of sagebrush covered plateaus.

The soils of the Snake River Plains are generally non-calcareous and alkaline. Most are well-drained, with common soil textures of silt loam, loam and fine sand loam. In the Uplands and Mountains, the soils are often coarse textured on the surface, while the subsoils are loamy and non-calcareous. All are well-drained.

Precipitation varies from 15 cm to 22.5 cm per year on the plains, and as high as 75 cm. in the mountains. Temperature ranges are extreme throughout a year, with highs over 37.6° C in the summer months and lows around -7.5° C in the winter. The annual mean temperature at 1179 m is around 17.6° C.

This wide variety of geology and soils has created many interesting and specialized habitats within the Owyhee Region for plants and fungi. Tree and shrub species numbers are limited in number and differ in their distribution. The most common species are:

Douglas Fir	<i>Pseudotsuga menziesii</i> (Mirbel) Franco
Alpine Fir	<i>Abies lasiocarpa</i> (Hook.) Nutt.
Western Juniper	<i>Juniperus occidentalis</i> (Torr.) Little
Ponderosa Pine	<i>Pinus ponderosa</i> Dougl.
Mountain mahogany	<i>Cercocarpus ledifolius</i> Nutt.
Aspen	<i>Populus tremuloides</i> Mx.
	<i>Populus trichocarpa</i> T. & G.
Cottonwood	<i>Populus acuminata</i> Rydb.
	<i>Populus angustifolia</i> James
	<i>Populus deltoides</i> Marsh.
Willow	<i>Salix amygdaloides</i> Anderss.
	<i>Salix exigua</i> Nutt.
	<i>Salix lemmonii</i> Bebb.
	<i>Salix lutea</i> Nutt.

Other trees and shrubs include:

Alder	<i>Alnus tenuifolia</i> Nutt.
Mountain Maple	<i>Acer glabrum</i> Torrey
Water Birch	<i>Betula occidentalis</i> Hooker
Mountain Ash	<i>Sorbus scopulina</i> Greene
Bitter Cherry	<i>Prunus emarginata</i> (Dougl.) Walp.
Choke Cherry	<i>Prunus virginiana</i> L.
Service Berry	<i>Amelanchier alnifolia</i> Nutt.
Red Ozier Dogwood	<i>Cornus stolonifera</i> Michx.
Ocean Spray	<i>Holodiscus dumosus</i> (Hook.) Heller
Syringa	<i>Philadelphus lewisii</i> Pursh.
Skunkbush	<i>Rhus trilobata</i> Nutt.
Elderberry	<i>Sambucus coerulea</i> Raf., <i>S. racemosa</i> L.
Snowberry	<i>Symphoricarpos oreophilus</i> Gray
Sagebrush	<i>Artemisia arbuscula</i> Nutt.
Big Sagebrush	<i>Artemisia tridentata</i> Nutt.
Rabbit Brush	<i>Chrysothamnus nauseosus</i> (Pall.) Britt.
Bitter Brush	<i>Purshia tridentata</i> (Pursh) DC.
Gray Tetradymia	<i>Tetradymia canescens</i> DC.
Smooth Tetradymia	<i>Tetradymia glabrata</i> Gray
Cotton-thorn	<i>Tetradymia spinosa</i> H. & A.

Greasewood	<i>Sarcobatus vermiculatus</i> (Hook.) Torr.
Fourwing Saltbush	<i>Atriplex canescens</i> (Pursh) Nutt.
Shadscale	<i>Atriplex confertifolia</i> (Wats.) Torr.
Golden Current	<i>Ribes aureum</i> Pursh
Alpine Prickly Current	<i>Ribes montigenum</i> McClatchie
Squaw Current	<i>Ribes cereum</i> Dougl.
Sticky Current	<i>Ribes viscosissimum</i> Pursh

The Owyhee Region is mostly public domain under the direction of the Bureau of Land Management (BLM).

FUNGI OF THE OWYHEE REGION

Methods Used to Develop Data Base

Fungal collections at local, regional, and selected national herbaria were surveyed for species from the Owyhee region. The herbaria studied include: Boise State University, Boise, ID. (SRP); Albertsons College, Caldwell, ID. (CIC); University of Idaho, Moscow, ID. (ID); University of Michigan, Ann Arbor, MI (MICH). During the searches of local and regional herbaria, specimens were recurated to protect and preserve them for future reference. These searches revealed that the Owyhee region is well represented only in the University of Michigan Herbarium and is rather poorly represented in other herbaria. Further, a search of the scientific literature for references to fungi occurring within the Owyhee Region found that species from this region are rarely cited in the literature.

The primary collector in the Owyhee region was Mrs. Ellen Trueblood formerly of Nampa, Idaho. The majority of her collections and field notebooks are deposited at the herbarium of the University of Michigan (MICH). Most of these collections are in storage and have not been formally accessioned into the herbarium. Hence, information regarding these collections was not available for this list. Many of these fungal species remain unpublished. Although collections of Lycoperdales are fairly well documented at MICH, collections of Agaricales and Aphyllorphales are not. When these collections are accessioned, many additional species could be included on the list of fungi from the Owyhee region.

Dr. Robert Fogel, Director, University of Michigan Herbarium, is currently conducting a three year study titled "Survey of Hypogeous Fungi in the Great Basin Desert" as part of the Survey of Systematics funded by the National Science Foundation. Many of his recent collections from the Owyhee region have been incorporated into our species lists. His ongoing work will continue to increase our knowledge of the hypogeous flora of the area.

A data base was developed and includes the following information, where possible: Family, species names, authority, date collected, collection number, substrate, habitat, location, state, county, herbarium, collector, notes and comments from the label.

Status of Knowledge

Appendix 1 includes a list of 145 species of macroscopic fungi from the Owyhee region. Included in this list are several species where the type collection was made in the Owyhee region.

Species of Special Concern.

Amanita armillariiformis Trueblood and Jenkins

Known only from sites within Owyhee Co., Idaho and Malheur Co. Oregon.

Grows among sagebrush, mustards, cheat grass, aspen, Douglas fir, and scattered willow. Usually found in xeric areas, on hard ground, in late March and April through mid-June. Habitat for this species is quite unusual, with restricted rainfall and limited potential mycorrhizal hosts. The only potentially ectomycorrhizal host is willow.

Amanita aurantisquamosa Trueblood, Miller and Jenkins

Known only from sites within Owyhee Co., Idaho. Grows scattered in deep duff under Douglas fir, aspen, and juniper. Collections from semi-arid habitats where possible ectomycorrhizal hosts are limited. The only plants capable of forming ectomycorrhizae in the collecting sites are aspen and Douglas fir. Trueblood records finding specimens of *A. aurantisquamosa* near Coyote Creek, Scout

Mountain, Owyhee Co., where it was in a plant association with aspen, sage, and juniper. This collecting site was denuded of aspen by 1977, and *A.*

aurantisquamosa has not been found since.

Amanita mulheurensis Trueblood, Miller & Jenkins

Known only from Malheur Co., Oregon. Grows in desert areas with sand dunes and in desert rangeland near or under *Sarcobatus vermiculatus* and

Chrysothamnus nauseosus from late April through June. Collections only in areas devoid of any identifiable ectomycorrhizal host.

Calvatia owyheensis Smith

Known only from Owyhee Co., Idaho. Growing at high elevation in Douglas fir, juniper, sagebrush, cheatgrass habitats.

Cyathus olla f. *lanatus* Brodie

Known only from Owyhee Co., Idaho. Collected from the Reynold's Creek area, on dead sagebrush. Type collection at MICH.

Leccinum truebloodii A.H. Smith & Thiers & Watling

A rare species associated with the aspen and Douglas fir areas of the Owyhee region. Type collection at MICH.

Psathyrellu deserticola A. H. Smith

A rare species growing under sagebrush in June after heavy rains. Type locality Owyhee Co., Idaho.

Psathyrellu owyheensis A. H. Smith

Known only from type locality, Sand's Basin, Owyhee Co., Idaho. Growing among native grasses near cow dung. Type collection at MICH.

Psathyrella populorum Trueblood & A. H. Smith

Associated with aspen. Type collection from Ace Black's Aspen Grove, Juniper Mountain, Owyhee Co., Idaho. Type collection at MICH.

Psathyrellu subrudicatu A. H. Smith

Known only from type locality, South Fork of Boulder Creek, Owyhee Co., Idaho. Grows under *Abies*.

Appendix 2 is an alphabetical listing of taxa with priority for consideration as a "species of special concern".

Habitat associations

Appendix 3 is a list of species organized according to habitat association. The ten habitats represented by fungal collections are: Conifer, Deciduous Tree, Shrub, Graminoid, Meadow, Riparian, Thermal Springs, Bare Soil, Disturbed, Unknown.

Locations

Appendix 4 is an alphabetical listing of taxa with all reported locations of collections given. Township and range is also given for each location.

Appendix 5 is a listing of sites within the Owyhee region which have the greatest diversity of fungi. Sites which have yielded 4 or more taxa are listed with the collected taxa.

FUNCTIONAL GROUPS AND ASSOCIATIONS OF FUNGI

The fungi included in Appendix 1 and 2 are nearly all members of the Division Dikaryomycota. Most are Basidiomycetes, though a number are Ascomycetes. The basidiomata (i.e. mushroom, puffball, etc.) and ascomata (i.e. cup, morel, false morel, etc.) are the visible part of the growing fungus. It is supported by and develops from an extensive network of thread-like filaments called hyphae. Hyphae are collectively termed the mycelium. The mycelium is the food-absorbing part of the fungus, and the individual hyphae that compose the mycelium absorb nutrients and water from the substratum in which they are growing.

Some basidiomycetes and ascomycetes are saprophytic, obtaining nutrients from dead organic matter like wood, bark, leaf litter, dung, etc. Many fungi, especially gill mushrooms and boletes (Agaricales), have an extensive mycelium that lives in association with the roots of green plants. This association, which is beneficial to both the fungus and host plant, is termed a mycorrhiza.

Ectotrophic Mycorrhizae

The term mycorrhizae defines a structural as well as functional association: a mycorrhizae is a mutualistic symbiosis between plant and fungus localized in a root in which energy (carbon compounds) moves primarily from plant to fungus and inorganic resources (principally phosphate) move from fungus to plant. Mycorrhizal associations are geographically wide-spread and are found in a broad range of habitats. The type of mycorrhizal association formed by the majority of basidiomycetes and ascomycetes is termed an ectotrophic mycorrhiza.

Most ectotrophic mycorrhizal fungi are holobasidiomycete members of at least 73 genera in 9 orders. There are also ectomycorrhizal fungi in 16 unitunicate ascomycete genera from 2 orders. It is estimated that over 5000 different fungal species are involved in this type of association. Identification of the ectotrophic mycorrhizal fungus is usually done through macroscopic observations of their basidiomata and ascomata. Some families are almost entirely ectomycorrhizal, for example, Boletaceae, Gomphidiaceae, Russulaceae, and Cantharellaceae. Most species of the following genera form ectotropic mycorrhizae: *Amunita*, *Armillaria*, *Cortinarius*, *Hebelomu*, *Laccaria*, *Pisolithus*, *Sclerodermu*, *Tricholomu*, and all known hypogeous basidiomycetes (e.g. *Rhizopogon*, *Truncocolumellu*, *Hymenoguster*).

This type of mycorrhiza is found in only about 2,000 species of plants, almost all of which are woody and perennial. Included as ectomycorrhizal host plants are some of the important forest trees - e.g. Pinaceae (pine, spruce, fir, etc.) and Fagaceae (beech, oak). One tree

host may have several, or even many, different ectomycorrhizal partners on its roots at the same time, and these may be replaced by others as the tree ages. Hence, a single tree species can have a large number of potential fungal associates. Douglas fir has been reported to form ectomycorrhizae with as many as 2,000 different species of fungi.

The Gymnosperm hosts of the ectomycorrhizal fungi includes all species of Pinaceae and Cupressaceae. For Angiosperms, all members of the Fagaceae, Betulaceae, Salicaceae, and Dipterocarpoideae are ectomycorrhizal hosts. Many legumes and some Aceraceae, Euphorbiaceae, Rosaceae, Tiliaceae, and Ulmaceae are host species.

Ectomycorrhizal Fungi and Hosts in the Owyhee Region.

The success of ectotrophic mycorrhizal fungal species in the Owyhee region is dependent on the maintenance of appropriate host plant species. Special habitats important to the success of fungal species can be found in both high and low elevation sites. In the higher elevations, aspen, Douglas fir, and juniper species form important habitats for fungi. Riparian habitats at both high and low elevation characteristically include plant species important for ectomycorrhizal fungal populations. The vegetation that lines streams and creeks, includes species of willow and cottonwood, and can form interconnecting corridors through the mountains, canyons, and plateaus of this region. The unique ectomycorrhizal fungi in the Owyhee region are obligately dependent on these few plant species, many of which grow in small pockets surrounded by largely non-ectomycorrhizal plant species (e.g. sagebrush steppe shrubs and grass species). In

turn, the ecological requirements of ectomycorrhizal fungi are of particular importance, since the mycorrhizal dependent plants cannot succeed without their fungal associate.

With the combination of soil-climate-host-geography found in the Owyhee region, many unique fungi (both ectomycorrhizal and saprophytic) have evolved, as noted by the number of fungal species endemic in the region. The species lists reported here probably reflects only a small number of the unique species to be found in the Owyhee region. Lack of availability to information on past collections and the remoteness of the area which has limited collecting time, has left us with a less than complete picture of the fungal flora of the Owyhee region.

MANAGEMENT RECOMMENDATIONS

The biological diversity of fungi in the Owyhee region is great, considering the relatively small area. Since many of these fungi have an obligate dependence on host plant species, it is recommended that a significant effort be made to protect these plant species and unique sites from land use practices which would damage and/or destroy them. Some of the fungi for special consideration, such as *Amanitu armillariiformis* and *A. malheurensis* are found in areas devoid of any identifiable ectomycorrhizal host. However, our knowledge of this genus is that all members are mycorrhizal. More information needs to be gathered on these habitats in order to understand more fully the ecology and distribution of these species.

Special attention should be given to preserving vegetation along streams and creeks, since they provide numerous ectomycorrhizal hosts throughout the shrub-steppe habitat. Because of the interdependence of the fungi and the plant species, both associates should be considered as valuable components of the ecosystem.

Although the fungal flora in sagebrush habitats is well documented in Mrs. Truebloods collections, this habitat deserves more attention. The rôle that these desert fungi have in the ecosystem is not now fully understood, yet the habitat in which they are found is gradually being destroyed or fragmented by a combination of agents, including wildfire, overgrazing, the invasion of cheatgrass and other weedy annuals, and conversion to agriculture. There are many

sites with unusual soils and geology, and it is likely that systematic studies of these sites will add greatly to our understanding of biodiversity of fungi in the Owyhee Region.

FURTHER WORK

Because of the past work of Mrs. Ellen Trueblood and the recent work of Dr. Robert Fogel there is a body of information existing about the fungi of the Owyhee Resource Area. However, there is a great deal of basic information that remains to be gathered in order to more fully understand the diversity of the fungal component in the intermountain area. Some of the work that needs to be completed is listed below:

1. Survey of stored collections of Agaricales at the University of Michigan Herbarium.

Work with Mrs. Trueblood's collections and notes will allow for the development of a more complete data base and add to our knowledge of the Owyhee region.

2. Field studies in the Owyhee Region.

An effort should be made to fully investigate selected habitats in the Owyhee Region, in order to develop a greater understanding of the association between its unique soils, vegetation, and fungi. A systematic study of habitats will add greatly to our understanding of the biodiversity of fungi in the Owyhee Region.

RELATED LITERATURE

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APPENDIX 1

OWYHEE FUNGI

SPECIES LIST

AGARICACEAE

Agaricus urvensis Schaeff. ex Fr.
Agaricus campestris Fr.
Agaricus minores in herb.
Agaricus piloporus Peck
Agaricus silvicolu (Vitt.) Sacc.

AMANITACEAE

Amanitu urmillariformis Trueblood & Jenkins
Amanita uuruntisquumosa Trueblood, Miller & Jenkins
Amanitu fulvolaeta in herb.
Amanitu junquillea Ouel
Amanita malheurensis Trueblood, Miller & Jenkins
Amanitu muscaria var. *muscaria* (L. ex Fr.) Hooker
Amanita pantherinu (D.C. ex Fr.) Schumm
Amanita prairiicolu Peck
Amanita tenacipes in herb.

ASCOBOLACEAE

Cheilymenia coprinaria (Cke.) Boud.

ASTROGASTRACEAE

Martellia sp.

BOLETACEAE

Leccinum truebloodii Smith, Thiers, & Watling
Suillus fakeii (Murr.) Smith & Thiers

COPRINACEAE

Coprinus atramentarius (Bull. ex Fr.) Fr.
Coprinus disseminatus (Pers. ex Fr.) Gray
Panaeolus campanulatus (Bull. ex Fr.) Quel
Psathyrella alnicola Smith
Psathyrella deserticola Smith
Psathyrella fulvourbrina Smith
Psathyrella grasmerensis Trueblood & A. H. Smith
Psathyrella griseopullida Trueblood ex Smith
Psathyrella populorum Trueblood & Smith
Psathyrella owyheensis Smith
Psathyrella subrudicuta Smith

CORTINARIACEAE

Cortinarius collinitus (Fr.) Gray*Inocybe* sp.

DACRYMYCETACEAE

Guepinopsis alpinus (Tracy & Earl) Brasfield

ENTOLOMATACEAE

Claudopus sp.*Entoloma lividum* Fr.

GEASTRACEAE

Geaster hygrometrurus (Berk) Morg.*Geastrum floriformis* Vitt.*Geastrum quadrifidum* Pers.*Geastrum recolligens* (Woodw. ex Sow.) Desv.*Geastrum xerophilum* Long

GOMPHIDIACEAE

Gomphidius gfutinosus (Schaeff. ex Fr.) Fr.

HELVELLACEAE

Discina sp.*Helvella queletii* Bresadola

LEPIOTACEAE

Lepiota sp.

LYCOPERDACEAE

Abstoma townei (Lloyd) Zeller*Bovistu dakotensis* (Brenckle) Kreisel*Bovista leucoderma* Kreisel*Bovista minor* Morg.*Bovistu pila* Berk. & Curt.*Bovista plumbea* Pers.*Calbovista subsculpta* Morse*Calvatia abjecta* in herb.*Calvatia booniana* Smith*Calvatia bovistu* (Pers. Kambly & Lee*Calvatia bovistu* var. *hungarica* (Pers.) Kambly & Lee*Calvatia candida* (Rosth.) Hollis*Calvatia cyathiformis* (Bosc.) Morg.*Calvatia cyathiformis* f. *fragilis* (Bosc.) Morg.*Calvatia dextrinospora* in herb.*Calvatia excipuliformis* (Pers.) Perdeck*Calvatia fragilis* (Vitt.) Morg.*Calvatia frustrata* in herb.*Calvatia fumosa* Zeller

Calvatia impolita in herb.
Calvatia infefix in herb.
Calvatia ffoydii Zeller & Coker
Calvatia lycoperdoides Smith
Calvatia owyheensis Smith
Calvatia packardae Sp.nov.
Calvatia pallida Smith
Calvatia parva in herb.
Calvatia rubro-flava (Cragin) Morg.
Calvatia scufpta (Harkn.) Lloyd
Calvatia subareofata Smith
Calvatia subargiflaceae Weber & Smith
Calvatia subcretacea Zeller
Calvatia tatrensis Hollis
Calvatia utriiformis (Bull. ex Pers.) Jaap
Calvatia utriiformis var. *utriiformis* Smith & Weber
Disciseda candida (Schw.) Lloyd
Disciseda subterranea (Pk.) Coker & Couch
Lycoperdon dakotensis Brenckle
Lycoperdon echinatum Pers.
Lycoperdon spadiceum in herb.

MYCENASTRACEAE

Mycenastrum corium (Guens.) Desvaux

NIDULARIACEAE

Crucibufum laeve (D. C.) Kambly & Lee
Crucibufum parvum Brodie
Crucibufum vulgare Tulasne
Cyathus olla (Batsch) Pers. f. *fanatus* Brodie
Cyathus olla (Batsch) Pers.
Cyathus pygmaeus Brodie

PAXILLACEAE

Paxillus invofutus (Batsch ex Fr.) Fr.

PEZIZACEAE

Cafoscypha fulgens (Pers.: Fr.) Boud.
Discina apiculata McKnight
Discina olympiana Kanouse
Discina olympiana var. *difuta* McKnight
Discina olympiana var. *olympiana* Kanouse
Discina perfata (Fr.) Fr.
Hydnотrya tufasnei Berk. & Broome
Peziza repanda Fr.
Pfectania nannfefdii Korf
Sarcobatus vermicufatus (Hook.) Torr.
Sarcosphaeria eximia (Dur. & Lev.) R. Maire

PISOLITHACEAE

Pisolithus arhizus Persoon.

PLUTEACEAE

Pfuteus feoninus (Schff. ex Fr.) Kummer

POLYPORACEAE

Fomes juniperinus (von Schrenk) Sacc. & Syd.
Fomes pinicofa (Fr.) Cooke
Polyporus elegans Fr.
Polyporus feucospongia (Cooke & Harkness) Murr.
Polyporus schweinitzii Fr.
Polyporus squamosus Fr.
Polyporus tomentosus Fr.
Trametes hispida Bagl.

PYRONEMATACEAE

Geopora cooperi f. *cooperi* Harkn.
Scuteffinia scuteffata (Fr.) Lambotte

RHIZOPOGONACEAE

Truncocolumefla citrina Zeller

RUSSULACEAE

Lactarius controversus (Pers. ex Fr.) Fr.
Russufa sp.

SCLERODERMATACEAE

Scferoderma areofatum Ehmb.

SECOTIACEAE

Endoptychum agaricoides Czemiaiev
Montagnea arenaria (D. C.) Morse
Podaxis pistiffaris (L. ex Pers.) Fr.
Secotium agaricoides (Czemiaiev) Hollis

SPHAEROBOLACEAE

Sphaerobolus steffatus Tode ex Pers.

STROPHARIACEAE

Phofiota destruens (Brond.) Gill.
Phofiota squarrosa (Muller ex Fr.) Kummer
Psifocybe coprophifa (Bull. ex Fr.) Kummer
Strophuria semigfobata (Batsch ex Fr.) Quel

TRICHOLOMATACEAE

Cfitycybe irina (Fr.) Bigelow & Smith
Cfitycybe lepista
Cfitycybe nuda (Fr.) Bigelow & Smith
Ffammufina velutipes (Fr.) Karst.
Laccaria faccata (Scop. ex Fr.) Cke.
Lyophyffum sp.
Mycena nodufosa Smith
Pfeurotus ostreatus (Fr.) Kummer
Pleurotus sapidus (Schulz. in Kalchbr.) Sacc.
Tricholoma imbucatum (Fr. ex Fr.) Kummer

TUBERACEAE

Geopora cooperi f. *cooperi* Harkness

TULOSTOMACEAE

Battarraea stevenii (Lib.) Fr.
Chfamydopus myenianus (Klotzch) Lloyd
Phellorinia strobifina (Kalchbr.) Kalchbr.
Tulostoma brumafe Pers.
Tulostoma obesum in herb.
Tulostoma simufans Lloyd
Tufostoma striatum Cunningham

APPENDIX 2

**ALPHABETICAL LISTING OF TAXA WITH PRIORITY FOR CONSIDERATION
AS A "SPECIES OF SPECIAL CONCERN"**

	<u>PRIORITY FOR MONITORING</u>
AGARICACEAE	
<i>Agaricus arvensis</i> Schaeff. ex Fr.	Low
<i>Agaricus campestris</i> Fr.	Low
<i>Agaricus minores</i> in herb.	Med
<i>Agaricus piloporus</i> Peck	Med
<i>Agaricus siluicola</i> (Vitt.) Sacc.	Low
AMANITACEAE	
<i>Amanita armillariformis</i> Trueblood & Jenkins	High
<i>Amanita aurantisquamosa</i> Trueblood, Miller & Jenkins	High
<i>Amanita fulvolaeta</i> in herb.	Med
<i>Amanita junquillea</i> Ouel	Low
<i>Amanita malheurensis</i> Trueblood, Miller & Jenkins	High
<i>Amanita muscaria</i> var. <i>muscaria</i> (L. ex Fr.) Hooker	Low
<i>Amanita pantherina</i> (D.C. ex Fr.) Schumm	Low
<i>Amanita prairiicola</i> Peck	Low
<i>Amanita tenacipes</i> in herb.	Med
ASCOBOLACEAE	
<i>Cheilymenia coprinaria</i> (Cke.) Boud.	Med
ASTROGASTRACEAE	
<i>Martellia</i> sp.	Low
BOLETACEAE	
<i>Leccinum truebloodii</i> Smith, Thiers, & Watling	High
<i>Suillus lakeii</i> (Murr.) Smith & Thiers	Low
COPRINACEAE	
<i>Coprinus atramentarius</i> (Bull. ex Fr.) Fr.	Low
<i>Coprinus disseminatus</i> (Pers. ex Fr.) Gray	Low
<i>Panaeolus campanulatus</i> (Bull. ex Fr.) Quel	Low
<i>Psathyrella alnicola</i> Smith	Med
<i>Psathyrella deserticola</i> Smith	High
<i>Psathyrella fulvoumbrina</i> Smith	Low
<i>Psathyrella grasmerensis</i> Trueblood & A. H. Smith	Med

<i>Psathyrella griseopallida</i> Trueblood ex Smith	Low
<i>Psathyrella populorum</i> Trueblood & Smith	High
<i>Psathyrella owyheensis</i> Smith	High
<i>Psathyrella subradicata</i> Smith	High
CORTINARIACEAE	
<i>Cortinarius collinitus</i> (Fr.) Gray	Med
<i>Inocybe</i> sp.	Low
DACRYMYCETACEAE	
<i>Guepiniopsis alpinus</i> (Tracy & Earl) Brasfield	Low
ENTOLOMATACEAE	
<i>Claudopus</i> sp.	
<i>Entoloma lividum</i> Fr.	Low
GEASTRACEAE	
<i>Geaster hygrometrirus</i> (Bere) Morg.	Med
<i>Geastrum floriformis</i> Vitt.	Low
<i>Geastrum quadrifidum</i> Pers.	Med
<i>Geastrum recolligens</i> (Woodw. ex Sow.) Desv.	Low
<i>Geastrum xerophilum</i> Long	Med
GOMPHIDIACEAE	
<i>Gomphidius glutinosus</i> (Schaeff. ex Fr.) Fr.	Low
HELVELLACEAE	
<i>Discina</i> sp.	Low
<i>Helvella queletii</i> Bresadola	Med
LEPIOTACEAE	
<i>Lepiota</i> sp.	Low
LYCOPERDACEAE	
<i>Abstoma townei</i> (Lloyd) Zeller	Low
<i>Bovista dakotensis</i> (Brenckle) Kreisel	Low
<i>Bovista leucoderma</i> Kreisel	Low
<i>Bovista minor</i> Morg.	Low
<i>Bovista pila</i> Berk. & Curt.	Low
<i>Bovista plumbea</i> Pers.	Low
<i>Calbovista subsculpta</i> Morse	Low
<i>Calvatia abjecta</i> in herb.	
<i>Calvatia booniana</i> Smith	Low
<i>Calvatia bovista</i> (Pers.) Kambly & Lee	Low

<i>Calvatia bovista</i> var. <i>hungarica</i> (Pers.) Kambly & Lee	Med
<i>Calvatia candida</i> (Rosth.) Hollis	Low
<i>Calvatia cyathiformis</i> (Bosc.) Morg.	Low
<i>Calvatia cyathiformis</i> f. <i>fragilis</i> (Bosc.) Morg.	Low
<i>Calvatia dextrinospora</i> in herb.	
<i>Calvatia excipuliformis</i> (Pers.) Perdeck	Low
<i>Calvatia fragilis</i> (Vitt.) Morg.	Low
<i>Calvatia frustrata</i> in herb.	
<i>Calvatia fumosa</i> Zeller	Low
<i>Calvatia impolita</i> in herb.	
<i>Calvatia infelix</i> in herb.	
<i>Calvatia lloydii</i> Zeller & Coker	Low
<i>Calvatia lycoperdoides</i> Smith	Med
<i>Calvatia owyheensis</i> Smith	High
<i>Calvatia packardae</i> Sp.nov.	
<i>Calvatia pallida</i> Smith	Med
<i>Calvatia parva</i> in herb.	-
<i>Calvatia rubro-flava</i> (Cragin) Morg.	Med
<i>Calvatia sculpta</i> (Harkn.) Lloyd	Low
<i>Calvatia subareolata</i> Smith	Med
<i>Calvatia subargillaceae</i> Weber & Smith	Med
<i>Calvatia subcretacea</i> Zeller	Low
<i>Calvatia tatrensis</i> Hollis	Low
<i>Calvatia utriformis</i> (Bull. ex Pers.) Jaap	Low
<i>Calvatia utriformis</i> var. <i>utriformis</i> Smith & Weber	Med
<i>Disciseda candida</i> (Schw.) Lloyd	Low
<i>Disciseda subterranea</i> (Pk.) Coker & Couch	Low
<i>Lycoperdon dakotensis</i> Brenckle	Low
<i>Lycoperdon echinatum</i> Pers.	Low
<i>Lycoperdon spadiceum</i> in herb.	-

MYCENASTRACEAE

<i>Mycenastrum corium</i> (Guens.) Desvaux	Med
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NIDULARIACEAE

<i>Crucibulum laeve</i> (D. C.) Kambly & Lee	Low
<i>Crucibulum parvulum</i> Brodie	
LOW	
<i>Crucibulum vulgare</i> Tulasne	Low
<i>Cyathus olla</i> (Batsch) Pers. f. <i>lanatus</i> Brodie.	High
<i>Cyathus olla</i> (Batsch) Pers.	Low
<i>Cyathus pygmaeus</i> Brodie	Low

PAXILLACEAE

Paxillus involutus (Batsch ex Fr.) Fr. Low

PEZIZACEAE

Caloscypha fulgens (Pers.: Fr.) Boud. Low
Discina apiculata McKnight Low
Discina olympiana Kanouse Med
Discina olympiana var. *diluta* McKnight Med
Discina olympiana var. *olympiana* Kanouse Med
Discina perlata (Fr.) Fr. Low
Hydnotrya tulasnei Berk. & Broome Low
Peziza repanda Fr. Low
Plectania nannfeldtii Korf Low
Sarcobatus vermiculatus (Hook.) Torr. Low
Sarcosphaeria eximia (Dur. & Lev.) R. Maire Low

PISOLITHACEAE

Pisolithus arhizus Persoon. Med

PLUTEACEAE

Pluteus leoninus (Schff. ex Fr.) Kummer Low

POLYPORACEAE

Fomesjuniperinus (von Schrenk) Sacc. & Syd. Low
Fomes pinicola (Fr.) Cooke Low
Polyporus elegans Fr. Low
Polyporus leucospongia (Cooke & Harkness) Murr. Low
Polyporus schweinitzii Fr. Low
Polyporus squamosus Fr. Low
Polyporus tomentosus Fr. Low
Trametes hispida Bagl. Low

PYRONEMATACEAE

Geopora cooperi f. *cooperi* Harkn. Low
Scutellinia scutellata (Fr.) Lambotte Low

RHIZOPOGONACEAE

Truncocolumella citrina Zeller Med

RUSSULACEAE

Luctarius controversus (Pers. ex Fr.) Fr. Low
Russula sp. Low

SCLERODERMATACEAE

Scleroderma areolatum Ehmb. Low

SECOTIACEAE

Endoptychum agaricoides Czerniaiev Low

Montagnea arenaria (D. C.) Morse Med

Podaxis pistillaris (L. ex Pers.) Fr. Low

Secotium agaricoides (Czerniaiev) Hollis Med

SPHAEROBOLACEAE

Sphaerobolus stellatus Tode ex Pers. Low

STROPHARIACEAE

Pholiota destruens (Brond.) Gill. Low

Pholiota squarrosa (Muller ex Fr.) Kummer Low

Psilocybe coprophila (Bull. ex Fr.) Kummer low

Stropharia semiglobata (Batsch ex Fr.) Quel Low

TRICHOLOMATACEAE

Clitocybe irina (Fr.) Bigelow & Smith Low

Clitocybe lepista in herb

Clitocybe nuda (Fr.) Bigelow & Smith Low

Flammulina velutipes (Fr.) Karst. Low

Laccaria laccata (Scop. ex Fr.) Cke. Low

Lyophyllum sp. Low

Mycena nodulosa Smith Med

Pleurotus ostreatus (Fr.) Kummer Low

Pleurotus sapidus (Schulz. in Kalchbr.) Sacc. Low

Tricholoma imbucatum (Fr. ex Fr.) Kummer Low

TUBERACEAE

Geopora cooperi f. *cooperi* Harkness Med

TULOSTOMACEAE

Battarraea stevenii (Lib.) Fr. Med

Chlamydopus myenianus (Klotzch) Lloyd Med

Phellorinia strobilina (Kalchbr.) Kalchbr. Low

Tulostoma brumale Pers. Med

Tulostoma obesum in herb.

Tulostoma simulans Lloyd Med

Tulostoma striatum Cunningham Med

APPENDIX 3

CONIFER HABITATS

FIR (*ABIES* SPP.)

AGARICUS

Agaricus sp.
Agaricus minores
Agaricus sylvicola

COPRINACEAE

Psathyrella subradicata

LYCOPERDACEAE

Calvatia booniana
Calvatia bovista var. *hungarica*
Calvatia lloydii
Calvatia sculpta

PAXILLACEAE

Paxillus involutus

PEZIZACEAE

Caloscypha fulgens
Discina apiculata
Discina perlata
Plectania nannfeldtii

POLYPORACEAE

Polyporus scheevermetzii

PYRONEMATACEAE

Geopora cooperi f. *cooperi*

RUSSULACEAE

Russula sp.

TRICHOLOMATACEAE

Flammulina velutipes

DOUGLAS-FIR (*PSEUDOTSUGA MENZIESII*)

AMANITACEAE

Amanita junquillea

BOLETACEAE

Leccinum truebloodii

GEASTRACEAE

Geastrum recolligens
Geastrum xerophilum

GOMPHIDIACEAE

Gomphidius glutinosus

HELVELLACEAE

Helvella queletii

LEPIOTACEAE

Lepiota sp.

LYCOPERDACEAE

Bovista pila
Bovista plumbea
Calvatia sp.
Calvatia cyathiformis f. *fragilis*
Calvatia infelix
Calvatia lloydii
Calvatia lycoperdoides
Calvatia orvyheensis
Calvatia sculpta
Calvatia subcretacea
Lycoperdon sp.

NIDULARIACEAE

Crucibulum laeve

PEZIZACEAE

Caloscypha fulgens
Discina olympiana

POLYPORACEAE

Fomes pinicola
Polyporus tomentosus

PYRONEMATACEAE

Geopora cooperi f. *cooperi*

RHIZOPOGONACEAE

Truncocolumella citrina

RUSSULACEAE

Lactarius sp.
Russula sp.

SECOTIACEAE

*Endoptychum agaricoides***JUNIPER (*JUNIPERUS* SPP.)**

AGARICACEAE

Agaricus sp.

AMANITACEAE

Amanita muscaria var. *muscaria*

ASTRPGASTRACEAE

Martellia sp.

COPRINACEAE

Coprinus atramentarius

DACRYMYCETACEAE

Guepiniopsis alpinus

GEASTRACEAE

Geastrum recolligens

LEPIOTACEAE

Lepiota sp.

LYCOPERDACEAE

*Abstoma townei**Bovista leucoderma**Calvatia* sp.*Calvatia booniana**Calvatia cyathiformis* f. *fragilis**Calvatia dentrinospora**Calvatia frustrata**Calvatia lloydii**Calvatia owyheensis**Calvatia packardae**Calvatia pallida**Calvatia parva**Calvatia sculpta**Calvatia tatrensis**Calvatia utriformis* var. *utriformis*

PAXILLACEAE ,

Paxillus involutus ,

RUSSULACEAE

Lactarius sp.

SECOTIACEAE

Endoptychum agaricoides

TRICHOLOMATACEAE

Clitocybe sp.

Clitocybe irina

Clitocybe nuda

TULOSTOMACEAE

Tulostoma sp.

UNSPECIFIED CONIFER SPECIES

RUSSULACEAE

Russula sp.

TRICHOLOMATACEAE

Tricholoma imbucatum

DECIDUOUS TREE HABITATS

ASPEN (*POPULUS TREMULOZDES*)

AMANITACEAE

Amanita fulvolaeta

Amanita junquillea

Amanita muscaria var. *muscaria*

Amanita pantherina

Amanita tenacipes

BOLETACEAE

Leccinum truebloodii

COPRINACEAE

Coprinus disseminatus

Psathyrella griseopallida

Psathyrella popularum

CORTINARIACEAE

Cortinarius collinitus

ENTOLOMATACEAE

Entoloma lividum

HELVELLACEAE

Helvella queletii

LEPIOTACEAE

Lepiota sp.

LYCOPERDACEAE

*Calvatia booniana**Calvatia lloydii**Calvatia sculpta**Lycoperdon* sp.*Lycoperdon echinatum*

PAXILLACEAE

Paxillus involutus

PEZIZACEAE

*Calyscypha fulgens**Discina apiculata**Discina olympiana**Discina olympiana* var. *olympiana**Peziza repanda*

PLUTEACEAE

Pluteus leoninus

POLYPORACEAE

Polyporus elegans

PYRONEMATACEAE

Geopora cooperi f. *cooperi*

RUSSULACEAE

*Lactarius controversus**Lactarius* sp.

STROPHARIACEAE

Pholiota sp.*Pholiota destruens**Pholiota squarrosa*

TRICHOLOMATACEAE

*Clitocybe nuda**Pleurotus ostreatus**Pleurotus* sp.

COTTONWOOD (POPULUS TRICHOCARPA)

TRICHOLOMATACEAE

*Pleurotus sapidus***UNSPECIFIED POPULUS SPP.**

LYCOPERDACEAE

Bovista plumbea

SECOTIACEAE

*Endoptychum agaricoides***SHRUB HABITATS****ALDER (ALNUS SPP.)**

LYCOPERDACEAE

Bovista plumbea

SECOTIACEAE

*Endoptychum agaricoides***MOUNTAIN-MAHOGANY (CERCOCARPUS LEDIFOLIUS)**

GEASTRACEAE

*Geastrum sp.**Geastrum recolligens*

LEPIOTACEAE

Lepiota sp.

LYCOPERDACEAE

*Calvatia sp.**Calvatia booniana**Calvatia dextrinospora**Calvatia subargillaceae**Lycoperdon dakotensis*

TRICHOLOMATACEAE

Clitocybe lepista

CEANOTHUS SPP.**ASCOBOLACEAE***Cheilymenia coprinaria***PEZIZACEAE***Discina olympiana***SAGEBRUSH (ARTEMISIA SPP.)****AGARICACEAE***Agaricus* sp.*Agaricus campestris***AMANTACEAE***Amanita armillariformis**Amanita muscaria* var. *muscaria***COPRINACEAE***Psathyrella grasmerensis***GEASTRACEAE***Geaster hygrometrurus**Geastrum* sp.*Geastrum floriformis**Geastrum recolligens***LYCOPERDACEAE***Abstoma townei**Bovista dakotensis**Bovista leucoderma**Bovista minor**Bovista pila**Bovista plumbea**Calbovista subsculpta**Calvatia* sp.*Calvatia abjecta**Calvatia booniana**Calvatia cyathiformis**Calvatia cyathiformis* f. *fragilis**Calvatia dextrinospora**Calvatia excipuliformis**Calvatia fragilis**Calvatia fumosa**Calvatia owyheensis**Calvatia packardae**Calvatia pallida*

Calvatia subargillaceae
Calvatia tatrensis
Calvatia utriformis
Disciseda candida
Disciseda subterranea
Lycoperdon spadiceum

NIDULARIACEAE

Crucibulum laeve
Crucibulum parvulum
Cyathus sp.
Cyathus olla
Cyathus olla f. *lanatus*
Cyathus pygmaeus

SECOTIACEAE

Endoptychum agaricoides
Montagnea arenaria
Podaxis pistillaris
Secotium agaricoides

TRICHOLOMATACEAE

Clitocybe sp.

TULOSTOMACEAE

Battarraea stevenii
Tulostoma sp.
Tulostoma obesum
Tulostoma simulans

RABBITBRUSH (*CHRYSOTHAMNUS* SPP.)

AMANITACEAE

Amanita armillariformis

LYCOPERDACEAE

Bovista plumbea

NIDULARIACEAE

Crucibulum laeve
Crucibulum parvulum
Cyathus olla

DESERT SHRUB**AMANITACEAE***Amanita malheurensis***ENTOLOMATACEAE***Claudopus* sp.**LYCOPERDACEAE***Calvatia cyathiformis**Calvatia owyheensis***NIDULARIACEAE***Crucibulum laeve***SECOTIACEAE***Montagnea* sp.*Montagnea arenaria***TULOSTOMACEAE***Chlamydopus myenianus**Tulostoma* sp.**BITTERBRUSH (*PURSHIA TRIDENTATA*)****LYCOPERDACEAE***Abstoma townii***SECOTIACEAE***Endoptychum agaricoides***GRAMINOID HABITATS****CHEATGRASS (*BROMUS TECTORUM*) UNDERSTORY OR GRASSLAND****GEASTRACEAE***Gastrum recolligens***LYCOPERDACEAE***Abstoma townii**Bovista leucoderma**Bovista minor**Bovista pila*

Bovista plumbea
Calvatia booniana
Calvatia cyathiformis
Calvatia cyathiformis f. *fragilis*
Calvatia excipuliformis
Calvatia fragilis
Calvatia fumosa
Calvatia owyheensis
Disciseda subterranea
Lycoperdon spadiceum

SECOTIACEAE

Endoptychum agaricoides
Montagnea arenaria
Secotium agaricoides

TULOSTOMACEAE

Battarraea stevenii
Tulostoma brumale

UNSPECIFIED GRAMINOID COMMUNITY

AGARICACEAE

Agaricus sp.

COPRINACEAE

Psathyrella owyheensis

LYCOPERDACEAE

Bovista plumbea
Calvatia tatrensis

MEADOW HABITATS

AGARICACEAE

Agaricus campestris

LYCOPERDACEAE

Bovista plumbea
Calvatia cyathiformis
Calvatia utriformis

RIPARIAN, STREAMBANK, OR SPRING HABITATS

LYCOPERDACEAE

Abstoma townei
Bovista dakotensis
Bovista plumbea
Calvatia candida
Calvatia cyathiformis f. *cyathiformis*
Calvatia impolita
Calvatia utriformis
Lycoperdon echinatum

POLYPORACEAE

Polyporus elegans
Polyporus squamosus

RUSSULACEAE

Russula sp.

SECOTIACEAE

Endoptychum agaricoides
Montagnea arenaria

TULOSTOMACEAE

Chlamydopus myenianus

THERMAL SPRINGS

TULOSTOMACEAE

Tulostoma sp.

ON BARE SOIL IN UNDEFINED HABITAT

LYCOPERDACEAE

Calvatia booniana
Calvatia cyathiformis f. *fragilis*
Calvatia utriformis

SECOTIACEAE

Endoptychum agaricoides
Montagnea sp.
Montagnea arenaria

TULOSTOMACEAE

*Battarraea stevenii**Tulostoma* sp.**DISTURBED HABITATS (EG. ROADS, CORRALS)**

AGARICACEAE

Agaricus campestris

AMANITACEAE

Amanita prairiicola

LYCOPERDACEAE

*Bovista plumbea**Bovista leucoderma**Calbovista subsculpta**Calvatia* sp.*Calvatia booniana**Calvatia subareolata**Calvatia utriformis* var. *utriformis**Calvatia subargillaceae**Calvatia cyathiformis**Calvatia cyathiformis* f. *cyathiformis**Calvatia dextrinospora**Calvatia owyheensis**Calvatia rubro-flava*

SECOTIACEAE

Endoptychum agaricoides

TULOSTOMACEAE

*Battarraea stevenii**Tulostoma* sp.**HABITAT UNKNOWN**

AGARICACEAE

Agaricus sp.*Agaricus campestris*

ASCOBOLACEAE

Cheilymenia coprinaria

BOLETACEAE

Leccinum truebloodii

COPRINACEAE

Panaeolus campanulatus

CORTINARIACEAE

Inocybe sp.

GEASTRACEAE

Geastrum sp.*Geastrum quadrijidum*

HELVELLACEAE

Discina sp.

LEPIOTACEAE

Lepiota sp.

LYCOPERDACEAE

*Abstoma townei**Bovista* sp.*Bovista leucoderma**Bovista pila**Bovista plumbea**Calvatia* sp.*Calvatia booniana**Calvatia bovista* var. *bovista**Calvatia candida**Calvatia cyathiformis**Calvatia cyathiformis* f. *fragilis**Calvatia owyheensis**Calvatia pallida**Calvatia sculpta**Calvatia subcretacea**Calvatia tatrensis**Disciseda subterranea*

NIDULARIACEAE

*Crucibulum parvulum**Crucibulum vulgare*

PEZIZACEAE

*Caloscypha fulgens**Discina olympiana* var. *diluta*

POLYPORACEAE

Polyporus elegans

PYRONEMATACEAE

Scutellinia scutellata

RUSSULACEAE

Lactarius sp.

SECOTIACEAE

Endoptychum *agaricoides**Montagnea* *arenaria**Secotium* *agaricoides*

SPHAEROBOLACEAE

Sphaerobolus *stellatus*

STROPHARIACEAE

Psilocybe *coprophila**Stropharia* *semiglobata*

TRICHOLOMATACEAE

Clitocybe sp.*Laccaria* *laccata**Lyophyllum* sp.*Mycena* sp.*Mycena* *nodulosa*

TUBERACEAE

Geopora cooperi f. *cooperi*

TULOSTOMACEAE

Battarraea *stevenii**Tulostoma* sp.*Tulostoma* *striatum*

APPENDIX 4

ALPHABETICAL LISTING OF TAXA WITH COLLECTION SITES

Abstoma townei

Upper Jump Creek, in Sands Basin.
T1N R5W

Bobcat Canyon (possibly Wildcat Canyon -- there is no Bobcat Canyon in Idaho).
T1N R4.5W

Browns Creek.
T6-7S RO-7E

McBrides Creek.
T1S R5W

Deep Creek Road; Old windmill along.
T10S R3W

Grasmere; south of Hwy. 55.
T12S R4E

South Mountain near South Fork of Boulder Creek.
T6S R4.5W

BLM Reservoir; west of Finger Gulch.
T12S, R2W, Sec. 23.24

Rabbit Creek.
T2S, R2W

Reynold's Creek; 1 mile above turn-off to Nancy Gulch.
T4S, R4W

Drydens Gulch.
T1S, R4W

Peters Gulch.
T3S, R3.5W

Agaricus sp.

Near summit between Currant Creek and Pleasant Valley.
T8-9S, R4-5W

Slack Mountain.
T10S, R3W

Picket Creek.
T4-5S, R1-2W

Peters Gulch.
T3S, R3.5W

Thistle Springs.
T9S, R2W

Agaricus campestris

Dickshooter Creek.

T11-12S, R2W

McKenzie Ranch, South Mountain.

T8S, R5W

Peters Gulch.

T3S, R3.5W

Agaricus minores

Slack Mountain.

T10S, R3W

Agaricus sylvicola

Slack Mountain.

T10S, R3W

Amanita armillariformis

Between Negro Rock and Mitchell Butte.

Drydens Gulch.

T1S, R4W

Browns Creek.

T6-7S, RO-7E

Amanita aurantisquamosa

Coyote Creek, South Mt.

Boulder Creek, South Fork

Macivor Cabin, South Mt. Road

Amanita fulvolaeta

Reynolds Creek above Peters Gulch.

Peters Gulch.

T3S, R3.5W

Amanita junquillea

South Fork Boulder Creek.

Amanita malheurensis

Between Loan Willow Spring and Negro Rock; Malheur Co., OR.

Amanita muscaria var. *muscaria*

Coyote Creek.

Silver City.

Amanita pantherina

Juniper Mountain.

Amanita prairiicola

Sheep Creek, Power Line Road, Reynolds Creek drainage.

Amanita tenacipes

Coyote Creek.

Ascomycetea

Bruneau Sand Dunes State Park.
T6S, R6E

Battarraea stevenii

Near Murphy.
T2S, R1 W, Sec. 9 and 29

Near the Bruneau Armory.

Rovista dakotensis

Browns Creek.
T6-7S, R0-7E

Sagehen hunting camp, N of Squaw Meadows.
T4-6S, R3-4W

Bovista leucoderma

Sage Creek.
T3N, R5W

Wildcat Canyon.
T1S, R4.5W

Shares Basin.
T1N, R4W

Poison Creek.
T1N, R5.5W

Near Payne Ranch and Juniper Mountain.
T11S, R5W

Bovista minor

Wildcat Canyon.
T1S, R4.5W

Bovista pila

Sands Basin.
T1N, R5W

Boulder Creek.
T6S, R4.5W

Peters Gulch.
T3S, R3.5W

Bovista plumbea

Squaw Creek, above Johnstone place.
T1N, R4W

Sands Basin or Upper Jump Creek.
T1N, R5W

Jump Creek, draw west of main creek.
T3N, R4.5W

Upper Jump Creek, in Sands Basin.
T3N, R4.5W

Wildcat Canyon.
T1S, R4.5W

Bobcat Canyon (possibly Wildcat Canyon; there is no Bobcat Canyon in Idaho).
T1N, R4.5W

McBrides Creek.
T1S, R5W

Browns Creek.
T6-7S, RO-7E

Squaw Creek.
T1N, R4W

Squaw Meadows (high on plateau).
T11S, R2W

Sagehen camp between Deep Creek and east fork of river.
T4-6S, R3-4W

Indian Meadows.
T8S, R4W

Sagehen hunting camp, North of Squaw Meadows,
T4-6S, R3-4W

Basin Spring.
T10-11S, R2W

Dickshooter Creek.
T11-12S, R2W

Battle Creek; lower crossing.
T9-13S, R1W

Near Nickle Creek.
T10-11S, R4W

Little reservoir west of Dickshooter Creek camp, below BLM reservoir.
T11-12S, R2W

Pole Creek.

SW of Squaw Meadows.
T11S, R2W

Rose Creek.
T8S, R3W

BLM reservoir west of Finger Draw.
T12S, R2W, Sec. 23, 24

Upper Reynolds Creek.
T2S, R3W

Poison Creek.
T1N, R5.5W

Jordan Creek above Silver City.
T5-6S, R3.5W

Browns Creek
T6-7S, RO-7E

East Fork Owyhee River; south of Dickshooter Creek.
T11-12S, R2W

Mud Flat.
T5S, R2.5E

Willow Spring, Frying Pan Basin.
T12S, R2W

Bovista pila

Drydens Gulch.
T1S, R4W

Calbovista subsculpta

Reynolds Creek.
T4S, R4W

Peters Gulch.
T3S, R3.5W

Slack Mountain; Between the mountain and Rabbit Creek.
T2S, R2W

Calvatia spp.

North Fork Owhyee River.
T9S, R6W

Near summit between Currant Creek and Pleasant Valley.
T8-9S, R4-5W

Rabbit Creek; along fence north of Black Mountain summit.
T3S, R2-3W

Slack Mountain.
T10S, R3W

Black Mountain.
T3S, R3W

Camp east of Big Springs Road.
T10S, R1W

Calvatia abjecta

Diskshooter Creek.
T12S, R2W, Sec. 13

Calvatia booniana

New York Ridge, 0.5 mile from Owyhee Mountains.
T4S, R3W

Road to Indian Meadows.

Squaw Creek area.

T11S, R5W, Sec. 21 NE4

Combination Creek.
T7S, R3.5W

Basin Spring.
T10-11S, R2W

Road to South Mountain.
T6S, R4.5W

South Fork Boulder Creek.
T6S, R4.5W

Upper Jordan Creek.
T5-6S, R3.5W

Deep Creek Road.
T10S, R3W

Juniper breaks area.
T10S, R4W

South Mountain near the South Fork Boulder Creek.
T6S, R4.5W

Anne Valley; along road.
T9S, R3W

Rose Creek.
T8S, R3W

South Mountain.
T8S, R7E

Near Coyote Creek, on road grade above and toward Jordan Valley.
T8S, R4.5W

Juniper Mountain.
T10S, R4W

Between Trout and Scott Springs.
T5S, R5.5W

MacIvor place, South Fork Boulder Creek.
T6S, R4.5W

Near MacIvor's place, South Fork Boulder Creek.
T7S, R6E

One mile south of Noon Creek along Hwy. 55.
T9S, R5W

Calvatia bovista var. *bovista*

Upper Jump Creek, in Sands Basin.
T3N, R4.5W

Calvatia bovista var. *hungarica*

Boulder Creek.
T6S, R4.5W

Calvatia candida

Shares Basin.
T1N, R4W

Calvatia cyathiformis

Bobcat Canyon (possibly Wildcat Canyon -- there is no Bobcat canyon in Idaho).
T1N, R4.5W

Browns Creek.
T6-7S, R0-7E

Wildcat Canyon.
T1S, R4.5W

McBrides Creek.
T1S, R5W

Pole Creek.

Poison Creek; road between creek summit and Mud Flats springs.
T3S, R5W

South Mountain.
T8S, R7E

Calvatia cyathiformis f. *fragilis*

Frying Pan Basin.
T12S, R1W

Bobcat Canyon (possibly Wildcat Canyon -- there is no Bobcat Canyon in Idaho).
T1N, R4.5W

Indian Meadows.
T8S, R4W

South Mountain, east of Vulcan Gulch.
T6S, R4.5W

South Mountain.
T8S, R7E

Reynolds Creek.
T4S, R4W

Mud Flat; between road and river.
T8-10S, R1W-R1E

Mud Flat, Corral Creek.
T9S, R5W

Juniper Mountain; road between mountain and north fork of river.
T5S, R2E

Juniper Mountain Road to North Fork from Mud Flat.
T10S, R4W

Calvatia cyathiformis f. *cyathiformis*

Shares Basin.
T1N, R4W; T1 N, R5W

Ranch north of Squaw Meadows.
T4-6S, R3-4W

Mud Flat.
T5S, R2.5E

Sands Basin.
T1N, R5W

Calvatia dextrinospora

Avery Ranch.
T10S, R3W, Sec. 2

Pleasant Valley, Juniper Mountain.
T11S, R5W

Slack Mountain,
T10S, R3W

Calvatia excipuliformis

Dickshooter Creek.
T11-12S, R2W

Calvatia fragilis

Upper Jump Creek, in Sands Basin.
T1N, R5W

Browns Creek.
T6-7S, R0-7E

Calvatia frustrata

Thistle Spring.
T9S, R2W, Sec. 26

Calvatia impolita

Pole Creek - Road crossing at old Totorica Ranch.
T10S, R2W, Sec. 10

Calvatia infelix

Slaughterhouse Gulch near Silver City.
T4S, R3W, Sec. 32

Calvatia owyheensis

South Fork Boulder Creek, near MacIvos's place.
T6S, R4.5W

Near summit between Currant Creek and Pleasant Valley.

T8-9S, R4-5W

Peters Gulch; second aspen grove above.
T3S, R3.5W

Deep Creek.
T10S, R3W

Calvatia packardae

Dickshooter Creek.
T12S, R2W, Sec. 13

Twin Spring.
T11S, R5W, Sec. 2

Calvatia pallida

Juniper Mountain **Exclosure**
T11S, R5W, Sec. 21

Calvatia parva

Rose Creek
T8S, R3W, Sec. 28

Calvatia sculpta

South Fork Boulder Creek.
T6S, R4.5W

Rileys Gulch.
T8S, R4W

Calvatia subareolata

Deep Creek Road.
T10S, R5W, Sec. 16

Calvatia subargillaceae

Deep Creek Road
T11S, R5W, Sec. 16

Thistle Spring
T9S, R2W, Sec. 26

Calvatia tatrensia

Near summit between Currant Creek and Pleasant Valley.
T8-9S, R4-5W

Asa Black's ranch, Pole Creek.
T4S, R4W

Deep Creek Road 2 miles east of Mud Flat.
T10S, R3W

Camp east of turn-off to Big Springs Ranch.
T10S, R1W

East of Deep Creek and above Catfish Pond.
T10S, R3W

Calvatia utriformis var. *utriformis*

Juniper Mountain **Exclosure**
T11S, R5W, Sec. 21

Chlamydopus myenianus

Sinker Creek area.
T3S, R1E, Sec. 16

Unidentified Clitocybe spp.

Bobcat Canyon (possibly Wildcat Canyon -- there is no Bobcat Canyon in Idaho).
T1N, R4.5W

Wildcat Canyon
T1S, R4.5W

Clitocybe irina

Mud Flat
T5S, R2.5E

Near summit between Currant Creek and Pleasant Valley. between.
T8-9S, R4-5W

South Fork Boulder Creek, near old camp.
T6S, R4.5W

Clitocybe lepista

Payne Ranch; near gate to Payne and Hanley Ranch.
T10.5S, R5W

Clitocybe nuda

Payne Ranch; near gate to Payne and Hanley Ranch.
T11S, R5W

Peters Gulch; 3rd aspen grove above.
T3S, R3.5W

Coprinus atramentarius

North Fork Owhyee River.
T9S, R6W, Sec. 36

Coprinus disseminatus

Drydens Gulch.
T1S, R4W

Coprinus disseminatus

Peters Gulch.
T3S, R3.5W

Cortinarius collinitus

Peters Gulch; 2nd aspen grove above.
T3S, R3.5W

Crucibulum laeve

Squaw Creek
T1N, R4W

Reynolds Creek below Dick Bass place.
T4S, R4W

West Fork Rabbit Creek.
T1S R2W

Hurry Back Creek.
T10S, R3W

Crucibulum parvulum

Wilson Creek, near BLM spring.
T1S, R3W

Reynolds Creek, near mouth.
T4S, R4W

Lower Wilson Creek, below BLM reservoir
T1S, R3W

Near summit between Currant Creek and Pleasant Valley.
T8-9S, R4-5W

Picket Creek.
T4-5S, R1-2W

Lower Succor Creek.
T2.5S, R4-5W

Reynolds Creek; along road to cemetery above creek.
T2S, R3W

Crucibulum vulgare

Rocky Point.
T13-14S, R2W

Cyathus sp.

Peters Gulch
T3S, R3.5W

Cyathus olla

Reynolds Creek, below canyon, Brandau ranch.
T4S, R4W

Wilson Creek, near BLM spring.
T1S, R3W

Cyathus olla f. lanatus

Reynolds Creek

Cyathus pygmaeus

Reynolds Creek
T4S, R4W

Discina

Upper Flint Creek, near Silver City.
T6S, R4W

Bruneau Sand Dunes State Park, near Bruneau.
T6S, R6E

Disciseda candida

South Fork Pole Creek (several areas).

Disciseda subterranea

North Fork Owhyee River.
T9S, R6W

Sunshine Valley
T10S, R3W

West Fork Rabbit Creek.
T1S, R2W

Wildcat Canyon
T1S, R4.5W

Endoptychum agaricoides

Sands Basin
T1N, R5W

Poison Creek
T1N, R5.5W

Upper Jump Creek, in Sands Basin.
T3N, R4.5W

Main fork of Browns Creek.
T6-7S, RO-7E

Poison Creek near Homedale.
T2N, R5W

Upper Reynolds Creek.
T2S, R3W

Bobcat Canyon (possibly Wildcat Canyon; there is no Bobcat Canyon in Idaho).
T1N, R4.5W

Reynolds Creek
T4S, R4W

Browns Creek
T6-7S, RO-7E

Hard-trigger Draw
T0.5, R3W

Indian Meadows
T8S, R4W

Poison Creek Hill
T1N, R5.5W

Ranch near **Sagehen** hunting camp; North of Squaw Meadows.
T4-6S, R3-4W

Coyote Wells
T8S, R5W

Rabbit Creek
T2S, R2W

Lower Reynolds Creek
T4S, R4W

Crane Falls
T5S, R5E

Entoloma lividum

Peters Gulch; 3rd aspen grove above.
T3S, R3.5W

Flammulina velutipes

Cottonwood Creek
T6S, R0.5E or T2S, R3W

Fomes pinicola

South Fork Boulder Creek, near old camp.
T6S, R4.5W

Geaster kygrometrurus

Near Marsing
T2.5N, R4W

Geastrum sp.

Ox Lake, 30 miles S of Grandview.
T9S, R2E, Sec. 16

Bruneau Sand Dunes annex area
T6S, R6E, Sec. 22

Slack Mountain
T10S, R3W

Upper Battle Creek; 40 miles S of Grandview.
T9S, R1E, Sec. 4

Geastrum floriformis

Wildcat Canyon
T1S, R4.5W

Rabbitt Creek
T2S, R2W

Geastrum quadrifidum

North Fork Owhyee River.
T9S, R6W

Geastrum recolligens

Rose Creek
T8S, R3W

Slack Mountain
T10S, R3W

Drydens Gluch
T1S, R4W

Geastrum xerophilum

Slack Mountain
T10S, R3W

Geopora cooperi f. *cooperi*

South Fork Boulder Creek.
T6S, R4.5W

Gomphidius glutinosus

Silver City Mountains.
T5S, R3W

Guepiniopsis alpinus

Near summit between Currant Creek and Pleasant Valley.
T8-9S, R4-5W

Inocybe

North Fork Owhyee River.
T9S, R6W

Luccaria laccata

Peters Gulch; 3rd aspen grove above.
T3S, R3.5W

Luctarius

Fairview Mine; Below site. Silver City Mts.
T5S, R3W

Peters Gulch; 2nd aspen grove above.
T3S, R3.5W

Vulcan Gulch, ID
T8S, R7E

Lactarius controversus

Peters Gulch; 3rd aspen grove above.
T3S, R3.5W

Leccinum truebloodii

South Fork Boulder Creek.
T6S, R4.5W

Peters Gulch
T3S, R3.5W

Peters Gulch; 3rd aspen grove above.
T3S, R3.5W

Lepiota

Near Payne Ranch
T11S, R5W

Slack Mountain
T10S, R3W

Peters Gulch
T3S, R3.5W

Lepiota nov.

Payne Ranch; Near gate to Payne and Hanley Ranch.
T11 S. R5W

Lycoperdon

Jordan Creek above Silver City
T5-6S, R3.5W

Peters Gulch
T3S, R3.5W

Lycoperdon dakotensis

New York Summit, north side.
T4S, R3W

Lycoperdon echinatum
 Peters Gulch; 2nd aspen grove above.
T3S, R3.5W

Lycoperdon spadiceum
 Wildcat Canyon
T1S, R4.5W

Lyophyllum
 Poison Creek Spring
T2N, R5W

Martellia
 MacIvor Place, S Fork Boulder Creek, ID
T6S, R4.5W

Montagnea
 Jackass Butte
T4S, R2E, Sec. 15- 16
 Deadman Canyon
T6S, R9E, Sec. 23

Montagnea arenaria
 Sage Creek, Strodes Basin
T3N, R5W
 Wilson Creek
T1S, R3W
 Sands Basin; Between basin and Poison Creek.
T1N, R5.5W
 Bobcat Canyon (possibly Wildcat Canyon: there is no Bobcat canyon in Idaho).
T1N, R4.5W
 MudFlat Road, S of Grandview
T5S, R2.5E

Browns Creek
T6-7S, R0-7E

Bruneau Sand Dunes State Park, near Bruneau
T6S, R6E

Sugar Vally Badlands
T7S, R6E, Sec. 17

Poison Creek, S of Grandview
T5S, R5E

Rabbit Creek
T2S, R2W

West Fork Rabbit Creek.
T1S, R2W

Jump Creek; entry to Snake River
T3N, R4.5W

Mycena

Picket Creek, ID
T4-5S, R1-2W

Mycena nodulosa

Poison Creek
T1N, R5.5W

Panaeolus campanulatus

Peters Gulch
T3S, R3.5W

Paxillus involutus

Peters Gulch; 2nd aspen grove above.
T3S, R3.5W

Peziza repanda

Boulder Creek; a Fork of.
T6S, R4W

Pholiota

South Moutain; McIvors place.
T6S, R4.5W

Pholiota destruens

Deep Creek
T10S, R3W

Pholiota squarrosa

Sunshine Valley
T10S, R3W

Pleurotus

Boulder Creek; West Fork, near MacIvors cabin.
T8S, R7E

Pleurotus ostreatus

Boulder Creek; South Fork.
T6S, R4.5W

Pleurotus sapidus

Browns Creek, ID
T6-7S, R0-7E

Pluteus (like *leoninus*)

Peters Gulch; 2nd aspen grove above,
T3S, R3.5W

Podaxis pistillaris

Rabbit Creek; West Fork.
T1S, R2W

Polyporus elegans

Peters Gulch
T3S, R3.5W

Polyporus schevermetzii

Slack Mountain
T10S, R3W

Polyporus squamosus

Peters Gulch
T3S, R3.5W

Polyporus tomentosus

Fairview area, Silver City Mts., ID
T5S, R3W

*Psathyrella deserticola**Psathyrella grasperensis*

Highway 51 Rest Stop
T13S, R5E, Sec. 6

Psathyrella griseopallida

Sunshine Valley
T10S, R3W, Sec. 14

Psathyrella owyheensis

Sands Basin

Psathyrella popularum

Sunshine Valley
T10S, R3W, Sec. 14

Psathyrella subradicata

South Fork of Boulder Creek

Psilocybe coprophila

Sunshine Valley
T10S, R3W

Russula

Fairview Mine; Below site. Silver City Mts.
T5S, R3W

Scutellinia scutellata

Peters Gulch; aspen grove above.
T3S, R3.5W

Secotium agaricoides

Sands Basin
T1N, R5W

Sand Basin upper Jump Creek
T1N, R5W

Sphaerobolus stellatus

Black Mt., ID
T3S, R3W

Stropharia semiglobata

Current Creek; Near summit.
T8S, R4W

Picket Creek, ID
T4-5S, R1-2W

Tricholoma imbucatum

Fairview Mine; Below site. Silver City Mts.
T5S, R3W

Tulostoma

Grandview, 17 miles south of.
T8S, R2E, Sec 3

Coyote Hole on S Fork of Owyhee River
T8S, R4.5W

Bruneau River and the Confluence of Jarbridge River; at a hot hole.
T15S, R7E

Indian Bathtub; North of, near Bruneau
T7S, R6E, Sec. 34

Murphy; near
T5S, R3E, Sec. 9

Snake River 1 mile W of Sinker Creek
T3S, R2E, Sec. 3 1

Snake River Birds of Prey area near Murphy, ID
T3S, R2E, Sec. 31

Red Tail Hawks Nest
T2S, R1 W, Sec. 4

Browns Creek on the Bruneau River
T6-7S, R0-7E

Oreana; near
T4S, R2W, Sec. 30

Swan Dam; # poles PF
T2S, R1E

Murphy; near
T2S, R1 W, Sec. 29

Jackass Butte
T4S, R2E, Sec. 15-16

Bruneau Sand Dunes annex area
T6S, R6E, Sec. 22

Bruneau confluence; East Fork.
T15S, R7E

Rabbit Creek; West Fork.
T1S, R2W

Tulostoma brumale

Wildcat Canyon
T1S, R4.5W

Tulostoma obesum

Wildcat Canyon
T1S, R4.5W

Tulostoma simulans

Reynolds Creek; Sheep Creek area.
T4S, R4W

APPENDIX 5

SITES IN THE OWYHEE REGION WITH FOUR OR GREATER TAXA RECORDED

Browns Creek

Abstoma townei
Amanita armillariformis"
Bovista dakotensis
Bovista plumbea
Calvatia cyathiformis
Calvatia fragilis
Endoptychum agaricoides
Montagnea arenaria
Pleurotus sapidus
Tulostoma

Bruneau Sand Dunes

Discina
Geastrum
Montagnea arenaria
Tulostoma

Dickshooter Creek

Agaricus campestris
Bovista plumbea
Calvatia abjecta
Calvatia excipuliformis
Calvatia packardae

Drvdens Gulch

Abstoma townei
*Amanita armillariformis***
Bovista pila
Coprinus disseminatus
Geastrum recolligens

Fairview Mine area near Silver City

Luctarius
Polyporus tomentosus
Russula
Tricholoma imbucatum

Near summit between Current Creek and Pleasant Valley

Agaricus
Calvatia owyheensis
Calvatia tatrensis
Clitocybe irina
Crucibulum parvulum
Guepiniopsis alpinus
Stropharia semiglobata
Tulostoma

North Fork Owyhee River

Calvatia
Coprinus atramentarius
Disciseda subterranea
Geastrum quadrifidum
Inocybe

Peters Gulch

A bstoma townei
Agaricus campestris
Amanita fulvolaeta
Bovista pila
Calbovista subsculpta
Calvatia owyheensis^{**}
Clitocybe nuda
Coprinus disseminatus
Cortinarius collinitus
Cyathus
Entoloma lividum
Luccaria laccata
Lactarius controversus
Leccinum trueblodii^{**}
Lepiota
Lycoperdon echinatum
Panaeolus campanulatus

Paxillus involutus
Pluteus
Polyporus elegans
Polyporus squamosus
Scutellinia scutellata

Picket Creek

Agaricus
Crucibulum parvulum
Mycena
Stropharia semiglobata

Poison Creek

Bovista leucoderma
Bovista plumbea
Calvatia cyathiformis
Endoptychum agaricoides
Lyophyllum
Montagnea arenaria
Mycena nodulosa

Pole Creek

Bovista plumbea
Calvatia cyathiformis
Calvatia impolita
Disciseda candida

Rabbit Creek (including West Fork Rabbit Creek)

Abstoma townei
Calvatia
Crucibulum laeve
Disciseda subterranea
Endoptychum agaricoides
Geastrum floriformis
Montagnea arenaria
Podaxis pistillaris
Tulostoma

Reynolds Creek

Abstoma townei
Amunita fulvolaeta
Amanita prairiicola
Bovista plumbea
Calbovista subsculpta
Calvatia cyathiformis f. *fragilis*
Crucibulum laeve
Crucibulum parvulum
Cyathus olla f. *lanatus*"
Cyathus pygmaeus
Endoptychum agaricoides
Tulostoma simulans

Slack Mountain

Agaricus minores
Agaricus sylvicola
Calbovista subsculpta
Calvatia dextrinospora
Geastrum recolligens
Geastrum xerophilum
Lepiota
Polyporus schevermetzii

South Fork Boulder Creek

*Amanita aurantisquamoas***
Calvatia booniana
Calvatia owyheensis"
Calvatia sculpta
Clitocybe irina
Fomes pinicola
Geopora cooperi f. *cooperi*
L-eccinum truebloodii
Martellis
Pleurotus ostreatus
Psathyrella subradicata"

Sunshine Valley

Disciseda subterranea
Pholiota squurrosa
Psathyrella griseopallida

Psathyrella popularum”
Psilocybe coprophila

Upper Jump Creek/Sands Basin

Abstoma townei
Bovista pila
Bovista plumbea
Calvatia bovista var. *bovista*
Calvatia cyathiformis f. *cyathiformis*
Endoptychum agaricoides
Montagnea arenaria
Psathyrella owyheensis”
Secotium agaricoides

Wildcat Canvon

Abstoma townei
Bovista leucoderma
Bovista minor
Bovista plumbea
Calvatia cyathiformis f. *fragilis*
Clitocybe
Disciseda subterranea
Endoptychum agaricoides
Gastrum floriforme
Lycoperdon spadiceum
Montagnea arenaria
Tulostoma brumale
Tulostoma obesum