



Odell Lake Area - Rare Fungi Surveys

Report to the Interagency Special Status/Sensitive Species Program
FY2012 Inventory & Conservation Planning Project



Tremiscus helvelloides Photo by Christina Veverka

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INTRODUCTION

The moist, dense mixed conifer forests surrounding Odell Lake provide a rich habitat for fungi, particularly those species associated with late-successional, old-growth forest stands. Despite this abundance of potential habitat, only cursory botanical surveys had ever been conducted throughout the area, resulting in a few documented occurrences of what are now considered Survey and Manage¹ fungi species (Table 1). Because of this rich habitat potential, a proposal was funded by the ISSSSP for conducting a rare fungi survey focusing on the forested area around Odell Lake.

SURVEY LOCATION

Odell Lake is located in northern Klamath County, near the Cascade crest, and easily accessed by Highway 58 near the summit of Williamette Pass. Odell Lake and the surrounding area lie within the boundary of the Northwest Forest Plan², with the vast majority of the Forest within the protected areas of the Diamond Peak Wilderness and the Maiden Peak Roadless area.

Survey areas were selected based on prior field work that had identified high habitat potential for fungi species (Fig. 1). These areas included the numerous spring-fed creeks on the northern side of the lake, from Douglas Creek to Rosary Creek. Another habitat area was the western side of the lake, within the Diamond Peak Wilderness, and with the Pacific Crest Trail as the upper boundary of the survey area. A third survey area was selected on the southeast side of the lake between Warf and Crystal Creeks. Elevations for these areas range from 4800 to 5600 ft.

Although not included in the original survey proposal, the area around Yoran Lake and the Yoran Lake Trail were added as part of botanical field work for this survey. Elevations in this area ranged from 4841 to 6000 ft.

HABITAT

Odell Lake lies within the Cascade ecological province, with moist, old-growth forest stands dominated by mountain hemlock (*Tsuga mertensiana*) with associates of grand fir (*Abies grandis*), noble fir (*Abies procera*), and Douglas fir (*Pseudotsuga menziesii*). The forest around the lake consists mostly of late-successional, old-growth stands, characterized by dense, multi-layered tree canopies (60-100% canopy cover), an abundance of large, dead woody material, and numerous large-diameter trees.

On the mountain hemlock dominated slopes around the lake, the dense forest canopies result in a rather sparse understory consisting mostly of fir duff, woody debris, and Prince's pine (*Chimaphila umbellata*). The understory vegetation becomes more diverse and dense on the topographically flatter areas around the lake, and within the riparian zones of springs and creeks. In these areas the forest consists of moist, dense mountain hemlock stands that are more typical west of the Cascade crest. Understory vegetation is diverse with dominant species consisting of twin flower (*Linnaea borealis*), huckleberry (*Vaccinium membranaceum*), grouse whortleberry (*Vaccinium scoparium*), dwarf bramble (*Rubus lasiococcus*), and Prince's pine.

¹ Survey and Manage Standards and Guidelines in the 2001 ROD as modified by the 2011 Settlement Agreement, including the need for pre-habitat disturbing surveys, for over 350 rare and/or isolated species.

² Northwest Forest Plan, 1994 – BLM and Forest Service guidelines for the management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl.



Fig. 2. The lush riparian areas around spring-fed creeks provide a rich habitat for fungi species.

The Odell Lake area also has numerous spring-fed streams that originate on the forested slopes and empty into the lake. Several of the streams lie on the north side of Odell Lake, the largest being Princess and Rosary Creeks (Figure 1). The other main streams lie on the south side of Odell Lake and include Warf, Trapper and Crystal Creeks.

These streams and the riparian zones they create provide a moist, lush environment that provides an ideal habitat for those fungi species associated with old-growth forests.

Human disturbance within the area is limited to the lake shoreline where there are Forest Service recreation cabins, three campgrounds, and the Shelter Cove and Odell Lake Resorts.

METHODS

Prior to fieldwork, a list was compiled of documented fungi sites around Odell Lake using the following databases:

- Forest Service NRIS (Natural Resource Inventory System) database
- Oregon Biodiversity Information Center
- Oregon State University Herbarium, Mycological Collection

Field work was conducted using the protocols for Survey and Manage fungi (Van Norman and Huff 2012) throughout the designated survey areas. Intuitive botanical surveys were conducted by Christina Veverka, Crescent District Botanist, and Desiree Johnson, Biological Technician. Two survey passes were conducted throughout the entire area for each fall season. These surveys were started as soon as precipitation had moistened the ground, and was continued until freezing night temperatures occurred in November. Fall surveys were conducted on October 2, 5, 9, and November 6 and 8. The survey of the Yoran Lake trail area was conducted on September 4 and 6.

Spring surveys were conducted on May 30 and June 4, 6, 8, 2012. These surveys were conducted when at least 50% of the ground was free of snow cover, with the intent to find snowmelt associated species.

RESULTS and DISCUSSION

Results of the database searches revealed 14 sites of rare fungi documented around Odell Lake (Table 1). These sites ranged from historic collections from the 1940's to several sites that were found during Forest Service regional botanical surveys during the late 1990's and early 2000's. It should be noted that the Regional CVS plot data and data migrated from GEOBOB and ISMS (i.e. older BLM and Forest Service databases) was only recently added to the NRIS database in November of 2012, and are listed in Table 1.

Table 1. Summary of historic fungi sites in the Odell Lake area.

Species	Date Found	Collector	NRIS Element Occurrence #
<i>Albatrellus caeruleporus</i>	9/9/1997	D. Greene	ORBIC record 30974, not in NRIS
<i>Albatrellus caeruleporus</i>	11/19/2000		06010200120_ALCA20
<i>Alpova alexsmithii</i>	9/17/1971	J.M. Trappe	ORBIC record 29182, not in NRIS
<i>Chalciporus piperatus</i>	9/12/1943	F.Sipe	060102_SIPE512_CHPI11_JEW
<i>Chalciporus piperatus</i>	9/11/2000	Fungi, TLFL	06010200121_CHPI11
<i>Clavariadelphus ligula</i>	9/9/1947	F. Sipe	060102_OSU37050_CLLI7_JEW
<i>Clavariadelphus truncatus</i>	9/8/1941	F. Sipe	060102_OSU37047_CLTR_JEW
<i>Gastroboletus subalpinus</i>	10/6/1999	Fungi, TLFL	060102_ODELL7228_GASU6_JEW
<i>Gastroboletus subalpinus</i>	11/1/2000	Fungi, TLFL	06010200124
<i>Mycena overholtsii</i>	11/1/2000*	Fungi, TLFL	06010200123
<i>Ramaria amyloidea</i>	10/6/1998	A. Humpert	060102_ODELL5445_RAAM4_JEW
<i>Ramaria amyloidea</i>	1/1/1903*	Fungi, TLFL	06010200012_RAAM4
<i>Ramaria maculatipes</i>	9/30/1998	B. Fondrick	060102_ODELL5397_RAMA10
<i>Ramaria rubripermanens</i>	8/2/1999	Fungi, TLFL	060102_ODELL6699_RARU6
<i>Ramaria rubripermanens</i>	7/17/2001	Fungi, TLFL	CVSPLOT2071158_RARU6_01

From the botanical surveys, 14 species of Survey and Manage fungi were found in 20 new sites around the Odell Lake area (Table 2). These include two species, *Chroogomphus loculatus* and *Tremiscus helvelloides* that are new to the Deschutes Forest (i.e. previously not documented on the Forest) and two species, *Gastroboletus ruber* and *Leucogaster citrinus* that are new to the Crescent District.

In reviewing the habitat data associated with these new occurrences, a distinction was seen in timing and habitat type between the late summer and fall fruiting fungi species that were found. Species found within the drier, mixed conifer forest included the sequestrate fungi *Alpova alexsmithii*, *Gastroboletus ruber*, and *Gastroboletus subalpinus*. Both *A. alexsmithii* and *G. ruber* are known to fruit in summer and late fall (Castellano et al 1999), while *G. subalpinus* fruits in September and October. (All of these species were found in early September.) It is interesting to note that both the *A. alexsmithii* and the *G. subalpinus* were found within the disturbed area along a trail edge. Observations from other Crescent botany surveys have found these two species in similar disturbed locations along trails and road cuts.

Also found in early September and in the same vicinity as the sequestrate fungi was a specimen of *Ramaria rubrievanescens*. Both this species and the *Gastroboletus ruber* were found away from any ground disturbance, under thick duff, and beneath a dense canopy cover of mountain hemlock. It should be noted that although the ground was dry during early September, there had been some late summer precipitation one week prior to

surveying. It is suspected this precipitation stimulated some late-summer fruiting of fungi. (There were other *Ramaria* specimens observed in early September, but they had been too old to identify.)

Most of the other fungi species were found during the fall when precipitation had fallen and upper soil horizons were moistened. The occurrences of these species were focused within the moist, mixed conifer stands associated



Fig. 3. A characteristic stand of mountain hemlock around Odell Lake.

with riparian areas. As indicated earlier, these riparian areas provide zones of lush, rich habitat within the drier mixed conifer and mountain hemlock stands.

Some species were found within areas of damp, downed wood and moss covered ground such as *Chalciporus piperatus* and the two *Clavariadelphus* species. *Mycena overholtsii*, a spring-fruiting species, was found growing on large, decayed wood, as is typical for this species (Castellano 1999). In comparison to these sites, the *Ramaria* species (*R. rubrievanescens* and *R. amyloidea*) found during the surveys tended to be located under thick duff and beneath a dense canopy cover of mountain hemlock and noble fir.

New to the Deschutes Forest was the jelly fungus *Tremiscus helvelloides*, which was found growing on a moss mat of *Eurhynchium praelongum* along the moist bank of a spring-fed creek. Of all the fungi locations, this *Tremiscus* species had the wettest habitat location.

In addition to the 14 species of rare fungi that were found during the surveys, new occurrences of Survey and Manage lichens were also found. This included the first occurrence of *Cladonia norvegica* for the Crescent District, as well as 11 new sites of the diminutive pin lichen *Chaenotheca furfuracea*.

The survey work also resulted in an expansive fungi list for the Odell Lake area, with a total of 90 species documented (Appendix A). Considering that the annual precipitation for the area during 2011 and 2012 was below average (NOAA 2012), finding such an abundance of fungi indicates what a rich habitat exists within the forest around Odell Lake.



Lime-green patches of *Chaenotheca furfuracea*

Fig. 4. Numerous new sites of the pin lichen *Chaenotheca furfuracea* were found on old-growth root wads within the survey area.

Table 2. Summary of new, rare fungi found in the Odell Lake area during the 2011-2012 field surveys.

Species	NRIS #	Comments
<i>Alpova alexsmithii</i>	06010200175	
<i>Chroogomphus oculatus</i> (2 sites)	06010200159 06010200160	First documented sites on the Deschutes Forest
<i>Clavariadelphus truncatus</i>	06010200206	
<i>Clavariadelphus ligula</i>	06010200201	
<i>Gastroboletus ruber</i> (2 sites)	06010200173 06010200174	First documented site on the Crescent District
<i>Gastroboletus subalpinus</i>	06010200205	
<i>Leucogaster citrinus</i> (2 sites)	06010200156 06010200157	First documented site on the Crescent District
<i>Mycena overholtsii</i>	06010200210	
<i>Polyozellus multiplex</i>	06010200188	
<i>Ramaria amyloidea</i> (4 sites)	06010200161 06010200162 06010200163 06010200185	
<i>Ramaria rubrievanescentis</i>	06010200180	
<i>Rhizopogon evadens</i> var. <i>subalpinus</i>	06010200155	
<i>Sparassis crispa</i>	06010200158	
<i>Tremiscus helvelloides</i>	06010200179	First documented site on the Deschutes Forest
Other Rare Taxa Found		
<i>Cladonia norvegica</i>	06010200198	First documented site on the Crescent District
<i>Chaenotheca furfuracea</i>		11 new sites found

REFERENCES

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Appendix A. Fungi Species from the Odell Lake Surveys

Spring Species

Fall Species

Calocybe onychina	Albaltrellus avellaneus	Inonotus tomentosus	Tricholoma sp.
Caloscypha fulgens	Albatrellus flettii	Laccaria laccata	Tricholoma zelleri
Calvatia formosa	Albatrellus sp.	Lactarius deliciosus	
Cheilymenia raripila	Alpova alexsmithii	Lactarius scrobiculatus	
Chromosera cyanophylla	Armillaria ostoyae	Leccinum sp.	
Chrysomphalina aurantiaca	Cantharellus subalbidus	Leucogaster citrinus	
Clitocybe albirhiza	Chroogomphus loculatus	Lyophyllum decastes	
Clitocybe epichysium	Chroogomphus sp.	Morganella pyriformis	
Cortinarius biglowii	Chroogomphus vinicolor	Mycena aurantiidisca	
Discinia perlata	Clavariadelphus truncatus	Mycena epipterygia	
Entoloma holoconiotum	Clavaridelphus ligula	Mycena monticola	
Fomitopsis pinicola	Clavulina cristata	Phaeolus schweinitzii	
Ganoderma oregonense	Collybia cirrhata	Pleuteus cervinus	
Heterbasidion annosum	Corintarius variosimilis	Polyzellus multiplex	
Heterotextus alpinus	Cortinarius sp.	Polyporus badius	
Hygrophorus purpurascens	Craterellus tubaeformis	Pseudohydnum gelatinosum	
Hygrophorus sp.	Galerina sp.	Ramarai rubrievanescens	
Hymenogaster subalpinus	Gastroboletus ruber	Ramaria amyloidea	
Lachnellula arida	Gastroboletus subalpinus	Ramaria flavobrunescens var. aromatica	
Lachnellula suecica	Gautieria monticola	Ramaria flavogelatinosa	
Lentinellus montanus	Gomphus floccosus	Ramaria rubripermanens	
Lyophyllum sp.	Gymnopus acervatus	Ramaria sp.	
Melanoleuca cognata	Gyromitra infula	Rhizopogon evadens var. subalpinus	
Morchella esculenta	Helvella lacunosa	Rhizopogon roseolus	
Mycena leptcephala	Hericium abietis	Rhizopogon sp.	
Mycena overholtsii	Hydnellum aurantiacum	Rhizopogon subsalmonius	
Mycena stipata	Hydnellum suaveolens	Rhizopogon vulgare	
Nivatogastrium nubigenum	Hydnum sp.	Russula brevipes	
Oligioporos leucospongia	Hygrocybe conica	Russula sp.	
Phellinus pini	Hygrophorus aurantiaca	Russula xerampelina	
Psathyrella sp.	Hygrophorus agathosmus	Sparassis crispa	
Xeromphalina campanella	Hygrophorus eburneus	Strobilurus trullisatus	
Xeromphalina cornui	Hygrophorus purpurascens	Suillus caerulescens	
	Hypholoma fasciculare	Suillus sp.	
	Inocybe sp.	Thaxterogaster pinguis	
		Tremiscus helvelloides	
		Tricholoma magnivelare	

Appendix B. Picture Gallery of Rare Fungi



Gastroboletus ruber specimen; notice the characteristic reddish-yellow coloration of this species.



Leucogaster citrinus truffle



Rhizopogon evadens var. *subalpinus* truffle



The unique *Polyozellus multiplex* with blue-black coloration.



Cross-sectioned sporocarps of *Alpova alexsmithii*



Specimen of *Chroogomphus loculatus*

Fig. 1. Odell Lake Fungi Survey Areas - Crescent Ranger District, Deschutes National Forest

