

Final Report
Interagency Special Status/Sensitive Species Program
Inventory and Conservation Planning
Siuslaw Resource Area 2008 Special Status Fungi Inventory Surveys

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Introduction

In the fall of 2008, 686 acres were surveyed by contract for all Special Status fungi documented or suspected on the Eugene District. Surveys were also for Strategic, ONHP list 4 and Eugene District Review list species. Surveys were for 35 Sensitive Species, 77 Strategic Species, 8 ONHP List 4 Species and 5 Eugene District Review species. Eight units were picked at random from the Forest Operations Inventory GIS layer, in the Triangle Lake region of the Siuslaw Resource Area. Only units older than 30 years were selected, due to the density and expected poor habitat of younger units. An additional 68 acre unit was surveyed by the project inspector for fungi as a reference unit, i.e., to compare contractor results and ensure the contractor was finding sites at a reasonable rate. The contract cost was \$10.30 per acre, and \$7,065.80 in total.

The survey contract had the following characteristics:

- Surveys were for both epigeous and hypogeous fungi.
- Each unit was to be surveyed at least once during the height of the fungi fruiting season, generally between October 15th and December 30th. Reconnaissance visits were expected, to ensure optimal timing of the actual survey during the height of the fruiting season.
- The intuitive controlled survey method was used to survey for both hypogeous and epigeous species.
- Hypogeous fungi were surveyed for by raking in the most likely habitats. Survey intensity was to be great enough so that inspection criteria were likely to be fulfilled.
- Vouchers were collected, and fresh specimens were digitally photographed.
- Inspection criteria called for a rework if inspection results revealed any of the following:
 - a. If both more than 10% of the special status fungi sites were missed and more than two (2) sites were missed, in a submission.
 - b. Incorrect flagging or no flagging.
 - c. Incomplete documentation.

The survey units are described below. Stands typed to 1810 or 1820 are considered old growth stands on the Eugene District, and generally contain trees dating much earlier than 1810.

Section	Date	Seral Stage	Acres
15S-7W-31	1810	Old Growth	57
16S-7W-11	1971	Early (30-39)	96
16S-7W-13	1810	Old Growth	21
16S-7W-7	1940	Mid (40-79)	85
16S-8W-33	1820	Old Growth	95
17S-7W-25	1947	Mid (40-79)	86
17S-8W-21	1935	Mid (40-79)	33
17S-8W-27	1955	Mid (40-79)	213
16S-8W-17	1820	Old Growth	68
		TOTAL	754

Results

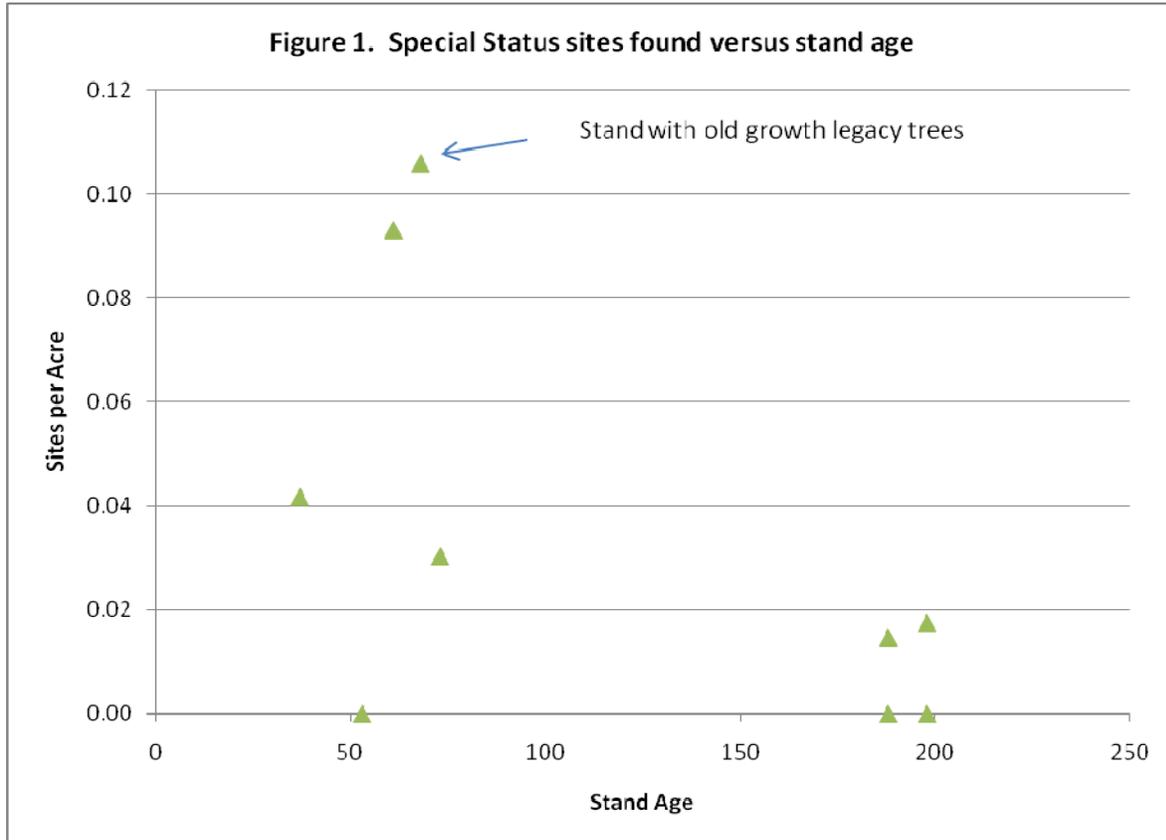
Twenty four sites were found, including one found by the project inspector. Only one species, *Leucogaster citrinus*, is hypogeous. Seven of the fourteen species found were new to the Eugene District, and 5 were new to the Siuslaw RA. This survey provided an increase in the understanding of these species' distribution and range.

Species	Sites	Status	Comments
<i>Helvella elastica</i>	2	Strategic	
<i>Leucogaster citrinus</i>	1	Strategic	New to Eugene District
<i>Phaeocollybia attenuata</i>	4	ONHP List 4	New to Siuslaw RA
<i>Phaeocollybia dissiliens</i>	1	Sensitive	
<i>Phaeocollybia olivacea</i>	2	Sensitive	New to Siuslaw RA
<i>Phaeocollybia piceae</i>	1	ONHP List 4	New to Eugene District
<i>Phaeocollybia radicata</i>	1	Strategic	New to Eugene District
<i>Phaeocollybia sipei</i>	3	Sensitive	New to Siuslaw RA
<i>Phaeocollybia spadicea</i>	2	Sensitive	New to Siuslaw RA
<i>Ramaria conjunctipes</i> var. <i>sparsiramosa</i>	2	Strategic	New to Eugene District
<i>Ramaria stuntzii</i>	1	Eugene Review	New to Siuslaw RA
<i>Ramaria suecica</i>	1	Strategic	New to Eugene District
<i>Sarcodon fuscoindicus</i>	1	Strategic	New to Eugene District
<i>Sowerbyella rhenana</i>	2	Sensitive	New to Eugene District
TOTAL	24		

Correlation with Stand Age

As part of the need for a better understanding of habitat associations, the correlation with stand age was explored. Each stand was considered a sample unit, and the number of sites found per acre was calculated. Unfortunately, because of the low number of samples, no conclusions could be drawn. The Spearman Rank Correlation between sites/acre and age was not statistically significant ($P=0.22$); it would generally take at least 30 stands sampled to ensure valid statistical sampling. Also, the stand with the most sites per acre was difficult to type, having significant numbers of legacy trees left after harvest, often in groups. Eight of nine

Special Status fungi sites were among legacy trees. The stand was dated to 1940, but old growth trees to 84 inches DBH were common. This stand further confounded any correlation between age and fungi sites. It appears that younger stands, especially young stands with legacy components, in addition to old stands, are important habitats and are necessary to consider in conservation. More surveys should help clarify any relationship.



The 1940 stand with legacy trees was surveyed to more fully typify the habitat. At each of 9 fungi sites, two trees were measured. If old growth legacy trees were nearby, the two nearest were measured. In some cases, old trees were more than 50 feet away; in these cases two nearby canopy co-dominant second growth trees were measured. In all cases, legacy trees were within 100 feet of the sites. Old trees had brown bark, often fire scarred and dominated by mosses and fruticose lichens, while second growth trees were easily differentiated by their whitish bark due to crustose lichens. Using relationships between DBH and age developed from Winter et al. (2002), the second growth trees appear about 90 years old, and the old growth trees 650 years old. These ages seem to be overestimates, as the stand was dated to be 68 years old, based on the Forest Operations Inventory GIS layer.

Site	Old Trees, DBH in inches	Second growth, DBH in inches	Species
4974	68, 51		<i>Sowerbyella rhenana</i>
4975	44, 84		<i>Phaeocollybia attenuata</i>
4961 location 2		29, 32	<i>Phaeocollybia sipei</i>
4964	52, 57		<i>Ramaria conjunctipes</i> var. <i>sparsiramosa</i>
4963		15, 21	<i>Phaeocollybia attenuata</i>
4961		20, 24	<i>Phaeocollybia sipei</i>
4962		19, 23	<i>Phaeocollybia spadicea</i>
4965	63, 55		<i>Phaeocollybia spadicea</i>
4969, 4970		26, 24	<i>Phaeocollybia attenuata</i> , <i>P. sipei</i>
Mean DBH	59	23	
Estimated Age	650	90	

Contract Inspection

Because the fungi season abruptly ended due to snow before the paperwork was turned in, the contract inspection provision regarding missed sites was not implementable. Difficulties were encountered in looking for missed sites. Requiring notice the day a unit was completed by the contractor could be a solution to this kind of problem. In this case, a reference unit comprising 10% of the contract acreage was used to test an alternate method to ensure adequate contractor survey effort. The reference unit was surveyed by the inspector during the same contract time period, using the same protocols. One fungi site was located on the 68 acre reference unit. Altogether, the contractors found 23 sites of Special Status fungi, as verified by taxonomic experts, in 686 acres. This works out to be 1 site per 30 acres surveyed by the contractor. Using the inspector's results in comparison indicates that the contractor was probably finding sites at a very good rate.

A contract stipulation that uses reference units could not be too strict, as the reference units may randomly contain more than usual numbers of sites. In this survey, the reference unit was steep, with skeletal soils, so probably contained less than usual numbers of fungi. It would be important to use multiple reference units sited nearby the contracted units, to get a useable comparison.

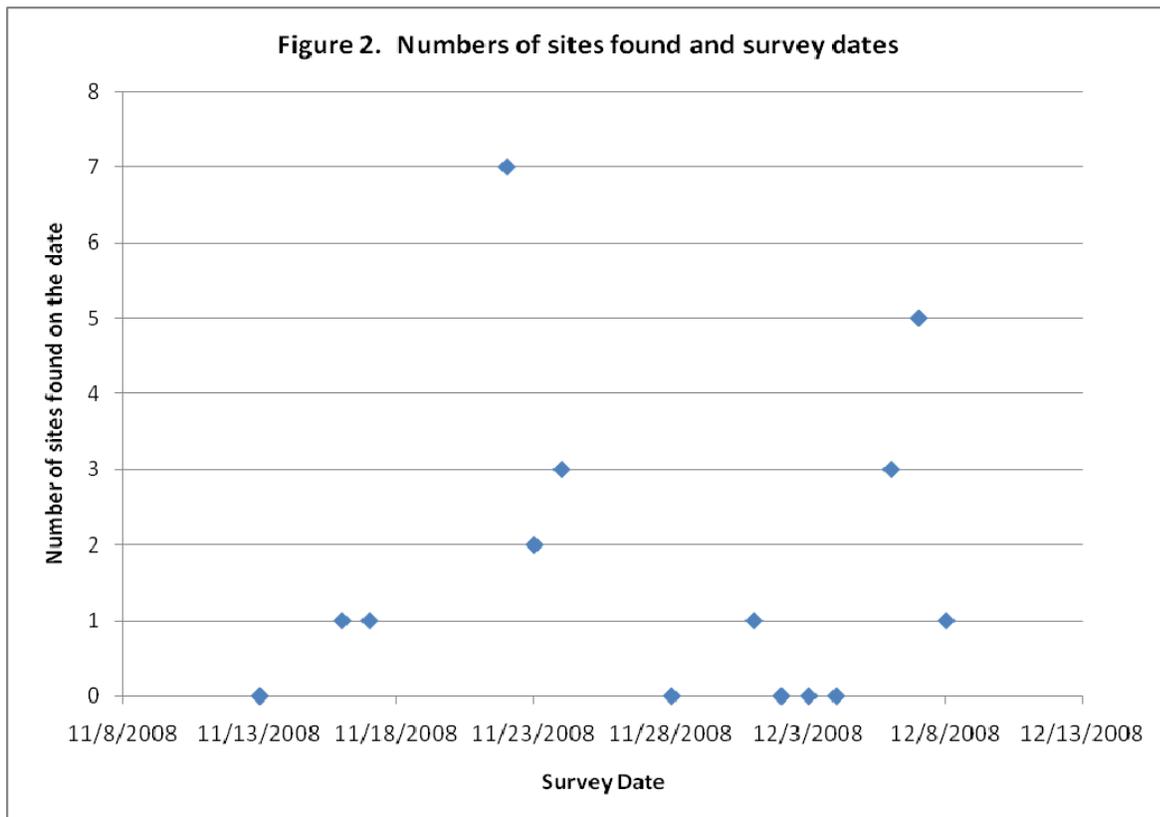
A possible contract stipulation that is not too strict could require that the contractor find sites at least at 50% of the rate that the inspectors find sites. If this rate is not upheld, the contractor may be paid at a reduced rate, or be required to resurvey the sites the following fungi season. An increase in the total acres surveyed is a further advantage of using reference units; in this case, another 10% was added to the acres surveyed in the project. A more exact method, of course, would be to require the contractor to notify the inspector the day a survey visit on a unit is done, so they could inspect the unit for missed sites immediately. This method would increase administrative work, and there may be problems with mushrooms emerging within a day after a survey visit is done.

Identification Issues

Identification of fungi to species continues to be difficult. During this survey, 65 specimens were turned in to taxa experts, yet only 26 specimens were actually target species. For 47 specimens, either different names were given by taxa experts than originally determined, or only the genus was originally determined. Of the sequestrate species, only 1 of 13 was actually listed as rare. Some specimens were turned in simply for the identification, regardless of whether they were thought rare. Continued access to taxa experts is critical.

Fungi Phenology

As mentioned above, surveys included a single visit, timed to coincide with the height of the fungal fruiting season. Fungal fruiting bodies are often found in late October in our area, but the most productive season appears to be in late November and early December. The number of target species sites found was compared to the days at which a survey occurred (Figure 2). The data are not extensive enough to show a complete picture of the season; there is little evidence of the rise and fall in fruiting body production. More survey data should give a better picture of the Eugene District's fungal fruiting season.



References

Winter, L.E., L.B. Brubaker, J.F. Franklin, E.A. Miller and D.Q. DeWitt. 2002. Initiation of an old-growth Douglas-fir stand in the Pacific Northwest: a reconstruction from tree-ring records. *Can. J. For. Res.* 32(6): 1039-1056.

Acknowledgments

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