GRANTS PASS RESOURCE AREA
MEDFORD DISTRICT BLM

GRAYBACK GLADES RESEARCH NATURAL AREA FUNGI INVENTORY

2013-2015 ISSSSP PROJECT

(Clockwise from upper left: *Hydnum umbilicatum, Ramaria formosa, Ramaria sp., Ramaria marrii, Ramaria rubricarnata, Gyromitra melaleucoides, Laccaria amethysteo-occidentalis, Rhizopogon sp.*, and middle; *Pithya vulgaris*. Photos courtesy of Siskiyou BioSurvey.)

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GRAYBACK GLADES RNA

ISSSSP FUNGI INVENTORY PROJECT ~ 2013-2015

PROJECT SUMMARY AND FINDINGS

Beginning in the Fall of 2013, an inventory was conducted for macrofungi within the Grayback Glades Research Natural Area (RNA), Grants Pass Resource Area, Medford BLM (Figure 1). Grayback Glades is on the north slopes of Grayback Mountain and Sugarloaf Mountain at mid to high elevation. The goals of the survey were to develop a comprehensive species list of the RNA and to document Special Status Species occurrences. Field surveys were conducted in the Fall of 2013 and Spring 2014, with a follow-up in the Fall of 2014. The field surveyors were John Villella, Jason Clark, Ron Hamill, Richard Brock, Richard Callagan, Gretchen Vos and Jay Scelza. Ron Hamill also conducted most of the lab work, and made most of the species determinations. A large collection of specimens and photos was compiled during this study, and there were a few interesting finds.

Methods

For each Special Status Species found, the observation location was flagged, photos taken, and the following data recorded; UTM location, slope, aspect, sporocarp number, area occupied, and the three dominant associated vascular species. Collections were made for each species at least once. For each Special Status species at least one Medford BLM "site report" form was completed. All observations are listed on Table 2 and locations are displayed on accompanying maps and GIS shapefile. A field protocol was constructed to guide surveyors (see protocol attached). Eight different surveyors were involved with the field inventory, including Ron Hamill who was the principle determiner of identifications for difficult species. Survey polygons, visits, and observations of Special Status Species fungi were entered into GeoBOB.

Fall 2013 Survey

The Fall 2013 surveys occurred between October 17th and December 4th; survey dates are listed below. The survey began on October 17th approximately 3 weeks after the first 2 inches of rain of the season had occurred. The survey area was visited on 12 different dates (including Oct. 17th), with between two and 6 surveyors conducting surveys on each date. Surveys occurred in two sessions, separated by a 3-4 week interval. In total, the entire RNA was surveyed twice during the Fall 2013 season.

Each session began at the highest elevations, and worked down the slope to finish at the lowest elevations. Survey intensity was significantly greater at the lower elevations where higher fungal diversity and biomass was found to occur.

The month of October was dry with moderately warm temperatures. November was moist and moderately warm. In December the fungi season came to a close on December 6th with a heavy snowfall followed by very cold temperatures.

Survey Dates: October 17,19,21,24; November 2,4,6,9,20,22,24; December 4.

Spring 2014 Survey

Surveys were conducted on 8 dates between early April and early July. Two to four surveyors participated on each date. An effort was made to cover all of the different ecotypes each visit.

Timing of surveys was scattered through the whole season, with hopes of hitting at least one date that would produce a good flush of sporocarps. Surprisingly, there were very few fungi species encountered on all of the visits, with a very low number of sporocarps. Winter of 2014 was quite dry so that may have been a factor that limited sporocarp production.
Survey Dates: April 8, 29; May 12,13,26; June 1,8; July 3.

Fall 2014 Survey
A visit was made by three surveyors on October 30 to the lower portion of the RNA to areas dominated by Port Orford Cedar.
Survey Date: October 30.

Results
A total of 366 fungi species were observed and identified during the course of the survey. A comprehensive voucher collection was made to augment field note observations. This collection includes 207 different species. Some species have redundant collections.

Special Status Species Found
A total of 21 different Special Status Species were found during the course of the survey (see table 1) at 117 different locations. This includes five species that were on the 2001 Survey and Manage List, but are no longer on the list. Unless otherwise noted, all observations occurred during the fall survey season.

Table 1: Special Status Fungi Observations; Fall 2013-Fall 2014

Species	Code	Obs Count	Sites Count
Albatrellus ellisii	ALEL4	2	1
Baeosprora myriadifolia	BAMY3	1	1
Chromosera cyanophylla	CHCY4	3	3
Clavariadelphus occidentalis	CLOC4	1	1
Clavaridelphus sachalinensis	CLSA9	3	3
Clavariadelphus truncatus	CLTR4	5	4
Cortinarius olympianus	COOL4	2	2
Craterellus tubaeformis	CRTU3	19	5
Cudonia monticola	CUMO2	1	1
Cyphellostereum laeve	CYLA13	2	1
Galerina vittaeformis	GAVI8	2	2
Gomphus clavatus	GOCL	18	7
Gomphus kauffmanii	GOKA	2	2
Gyromitra infula	GYIN4	2	2
Gymnopilus punctifolius	GYPU2	7	7
Hydnum umbilicatum	HYUM4	12	3
Pithya vulgaris	PIVU2	4	4
Ramaria stuntzii	RAST5	3	3
Rhizopogon truncatus	RHTR4	4	4
Spathularia flavida	SPFL8	4	3
Tremiscus helvelloides	TRHE7	21	11

Albatrellus ellisii (S&M B): Two observations were made approximately 70 feet apart in the upper elevations/west half of the RNA.

Baeospora myriadifolia (S&M B): One site was found in the lower part of the west alder glade.

Chromosera cyanophylla (2001 S&M B): Three observations were made on logs in the SW part of the RNA.

Baeospora myriadifolia, Photo by R. Brock

Clavariadelphus occidentalis (S&M B): One observation was made at low elevation in the Port Orford Cedar zone, near Right Hand Fork Rock Creek.

Clavariadelphus sachalinensis (S&M B): Three observations were made, all at middle elevations of the RNA.

Clavariadelphus truncatus (S&M D): Five observations were made at lower to middle elevations

Cortinarius olympianus (S&M B): Two observations were made, both in the lower part of the RNA, associated with Port Orford Cedar.

Craterellus tubaeformis (2001 S&M D): This species is quite common in the lower 1/3 of the RNA, often forming **large** populations.

Cudonia monticola (S&M B): This species was found in only one location, on a log in an area adjacent to an alder glade, during spring surveys.

Cyphellostereum laeve (S&M B): Two observations were made, close enough together to be one "site", in the lowest part of the area associated with Port Orford cedar in the riparian zone of Right Fork Rock Creek.

Cudonia monticola, Photo by R. Brock

Galerina vittaeformis (2001 S&M B): Found at two locations, one low on the slope and one at high elevations. It occurs on moss upon rock.

Gomphus clavatus (S&M F): This species is quite common in the lower 1/3 of the RNA, particularly near the creeks.

Gomphus kauffmanii: (S&M E, STR): Only two observations were made of this species, both adjacent to alder glades at relatively high elevation.

Gymnopilus punctifolius (S&M B): Technically only S&M in California, but rare here. Seven observations were made during the fall of 2013.

Gomphus clavatus, Photo by R. Brock

Gyromitra infula (2001 S&M B): Two observations were made, one at low elevation in the Port Orford cedar zone and one quite high up the slope.

Hydnum umbilicatum (2001 S&M B): This species is quite common in the lower 1/3 of the RNA, often forming large populations.

Pithya vulgaris (S&M D): Found at four locations during spring surveys.

Ramaria stuntzii (S&M B): Found at three locations, two along the upper reaches of Left Fork Rock Creek and one in the Shasta red fir-white fir forest at higher elevation.

Rhizopogon truncatus (S&M D): Found at four locations in the lower 1/3 of the survey area. Two of the four observations were made during spring surveys.

Spathularia flavida (S&M B): Two observations were made, both with limited number of sporocarps, both in the lower elevations of the area, one in the white-fir-madrone forest and one in the Port Orford cedar forest type.

Tremiscus helvelloides (S&M D): This species is quite common in the RNA. It was noted at 21 locations, comprising 11 "sites." It occurs mainly in the lower half of the area.

Tremiscus helvelloides, Photo by R. Brock

Habitat Description

The Grayback Glades RNA is on a northerly aspect at elevations between 3500 feet and 6600 feet. The topography is mostly steep mountain slope (mostly greater than 55% with many areas >65%) with some bench areas in the upper half and several steeply incised streams in the lower (north) half. Soils are rocky, sandy loam derived from granitic substrate. The vegetation is mostly late successional or old growth conifer-dominated forest with several large mountain-alder *(Alnus incana* ssp. *tenuifolia)* glades, which give the area its name. On the lowest slopes is found a large stand of Port-Orford cedar with white fir co-dominant. This is mainly associated with the two forks of Rock Creek but also extends a considerable distance upslope. Also at these lower elevations is a limited occurrence of a mixed conifer-hardwood forest dominated by White fir, madrone, Douglas fir and golden chinquapin. The middle elevations support a white fir-Douglas fir forest with a rather lush herb layer. Further upslope is a "true fir" mix of white fir and Shasta red fir and then above that, in the highest elevations, is a mountain hemlock-Shasta red fir dominated forest. We mapped the habitat as seven Areas or Zones (see attached map) as described below. When surveyors recorded fungal species in the field, the zone that it occurs in was noted, in most cases.

Area 1: White Fir-Douglas Fir Forest

This white fir- Douglas fir forest type has the greatest coverage of all the forest types in the RNA. It occupies an intermediate elevation band between 4000 feet and 5000 feet and extends higher in relatively dry areas such as along the western ridge. The overstory is a mix of White fir (*Abies concolor,* or ABCO*)* and Douglas fir (*Pseudotsuga menziesii,* or PSME*)*, generally dense canopy (80% closure) with the largest trees 30"-60" diameter-at-breast height (DBH) and with a dense mid-layer of 80-100 year old trees. The understory is sparse *Abies concolor.* The high-shrub layer is sparse while the low-shrub layer is moderately dense with *Berberis nervosa* dominant. The herb layer is sparse in most of the area with dominants including *Achlys triphylla* and *Chimaphila umbellata.* Large logs are frequent.

Surface rock varies from 10% in the lower elevations to 30% in the higher elevations. In dry areas, incense cedar is occasionally found.

Area 2: Mid-Elevation Riparian Influenced Forest

This includes the riparian zones along the two major streams, Rock Creek and Right Hand Fork Rock Creek, above the Port Orford cedar and below the alder glades. The riparian influence extends up to 300 feet from the streams, which are both perennial. These streams are on a steep gradient, becoming cascades in a few sections. The inner gorges are also quite steep. Coarse wood material is abundant in all sizes and decay classes. The vegetation is mostly old growth conifer forest dominated by *Abies concolor* and *Pseudtsuga menziesii* with infrequent *Abies magnifica* var. *shastensis* and *Tsuga mertensiana*. The shrub layer is moderately dense with *Acer circinatum, Holodiscus discolor, Corylus cornuta* ssp. *californica* and *Acer glabra* dominant in the high-shrub layer and *Berberis nervosa (BENE)* and *Symphorocarpus mollis* in the low-shrub layer. The herb layer is dense with dominants including *Achlys triphylla (ACTR), Linnea borealis, Chimaphila umbellata, Adenocaulon bicolor, Clintonia uniflora* and *Pyrola secuda*. Overstory trees are 30"-50" DBH; the canopy tends to be dense (70% closure) with a few small openings; the understory is sparse. The plant association here is most often ABCO/BENE/ACTR.

Area 3: Alder Glades

This includes a series of shrub dominated wetlands occurring between 5000 and 6000 feet elevation, at the head of the streams and below the very rocky upper slopes. The dominant species is *Alnus viridis* ssp. *sinuata* which forms moderately dense thickets (> 60% cover) with occasional *Abies concolor* forming small clumps and with infrequent meadow openings and small seeps and fens. Other common species here are *Ribes lacustre*, *Bromus vulgaris* and *Asarum caudatum*. Some wet areas are under dense alder while the open areas support *Calamagrostis sp.*, *Bromus carinatus* and *Carex* spp..

Area 3B: Alder Glade Riparian Influenced Forest

Surrounding the alder glades is a moist riparian-zone area that is white fir forest with scattered alder patches that is significantly different than either the alder glades themselves or the other forest types. The slopes are relatively gentle, the soils are deep and loamy, large logs are abundant, and the trees are very large, probably reflecting a lower-intensity fire effect in these areas. Though this is a small landscape unit, it is likely to have a high diversity of fungus at some point. The herb layer is relatively dense with dominants including *Asarum caudatum*, Achlys triphylla, *Adenocaulon bicolor, Clintonia uniflora* and *Pyrola secuda.*

Area 4: White Fir-Shasta Red Fir Forest

This "true-fir forest" is the second largest vegetation type in the RNA, after the Area 1 white fir – Douglas fir forest. It is above the Douglas fir zone, generally starting at elevations of 5000-5200 feet and continuing up to about 6000 feet. The soils are very rocky, often with 30-50% exposed rock, sometimes more, which tends to create a more open canopy than is found in the lower elevation forest types. There are some large open boulder-fields in the east half. The tree overstory in this type ranges from pure *Abies magnifica* var. *shastensis (ABMAS)* to a mix with *Abies concolor* co-dominant. The understory is sparse in most of the area, as are the shrub the herb layers. The shrub dominants are *Berberis nervosa, Symphorocarpus mollis* and *Rosa gymnocarpus*. The herb-layer dominants include *Achlys triphylla*, *Adenocaulon bicolor, Clintonia uniflora* and *Campanula scouleri*. Coarse woody material is variable, mostly moderately abundant but sometimes sparse. The forest is mostly old growth but a large area in the western half is younger, fire-regenerated, and 50-60 years old. The plant association in this forest type is mostly ABCO-ABMAS/ACTR.

Area 5: Mountain Hemlock-Shasta Red Fir Forest

This is the highest elevation type, generally above 5900 feet elevation, with *Tsuga mertensiana* dominant in the tree layer. *Abies magnifica* var. *shastensis* is also common while *Abies concolor* is infrequent. The forest is mostly old growth; many of the trees are quite large; the canopy is relatively open (50% closure) due to the high rock shallow soil. The understory is sparse with both *Tsuga mertensiana (TSME)* and *Abies magnifica* var. *shastensis* (ABMAS) common. The shrub layer is very sparse with occasional *Ribes lassiococcus*. *Ribes marshallii* is occasional in open spots. The herb layer is sparse with dominants including *Achlys triphyla, Pyrola secunda* (PYSE), *Rubus lasiococcus* (RULA2)and *Campanula scouleri*. Coarse wood is abundant, mostly decay class 3 and 4. Surface rock is less than in Area 4, except in the east ¼, where a large boulder-field occurs. The plant association in this type is TSME-ABMAS/RULA2/PYSE

Area 6: White Fir-Douglas Fir-Madrone Forest

In the lower elevations there are three small areas with a mixed conifer-hardwood forest that includes *Pseudtsuga menziesii*, *Abies concolor, Arbutus menziesii, Chrysolepis chrysophylla*, frequent *Pinus lambertiana* and occasional *Quercus chrysophylla*. These areas are drier than the other areas in the RNA. The overstory is dominated by *Pseudtsuga menziesii* while *Abies concolor* is dominant in the understory. *Arbutus menziesii* cover ranges from 10-30%. The shrub layer is sparse with *Symphorocarpus mollis* dominant. The herb layer is sparse with *Achlys triphylla, Chimaphila umbellata* and *Bromus vulgaris* often dominant.

Area 7: Port Orford Cedar-White Fir Lower Elevation Riparian Forest

This area is the core of the RNA, occurring on the lower elevation riparian zones and lower slopes up to an elevation of 4200 feet in some places. The overstory is dominated by *Chamaecyperus lawsonii* (20-60% cover)*, Pseudotsuga menziesii* (10-30% cover), and *Abies concolor* (10-30% cover), with occasional *Acer macrophyllum and Chrysolepis chrysophylla.* The understory is patchy, and includes *Chamaecyperus lawsonii, Taxus brevifolia* and *Abies concolor*. The shrub layer is patchy with dominants including *Acer circinatum, Berberis nervosa, Vaccinium parviflorum, Symphorocarpus mollis*, and with occasional *Gaultheria shallon* and *Rubus nivalis*. The herb layer is moderately dense with a diversity of species including *Polystichum munitum, Linnea borealis, Tiarella trifoliata* var. *unifoliata, Achlys triphylla, Whipplea modesta*, and *Chimaphila umbellata.* The trees are large in this moist forest type, ground moss cover is high and coarse wood is abundant. The extent of this type is limited to the riparian influenced area which can be as little as 200 feet upslope on east or west aspects to 500 feet upslope on north aspects.

PROJECT FUNDING

Funding

This ISSSSP project proposal originally asked for, and was granted, $25,000. However, actual cost was $46,500. Grants Pass Resource Area funded the difference ($21,500). We would like to thank both the ISSSSP program and the Grants Pass Resource Area, Medford District BLM for recognizing the validity of this project and for providing the necessary funding.

SURVEY PROTOCOLS USED

Grayback Glades RNA Fungi Inventory Field Protocol - Please refer to Appendix A.

HOW THIS REPORT DIFFERS FROM ORIGINAL ISSSSP PROPOSAL

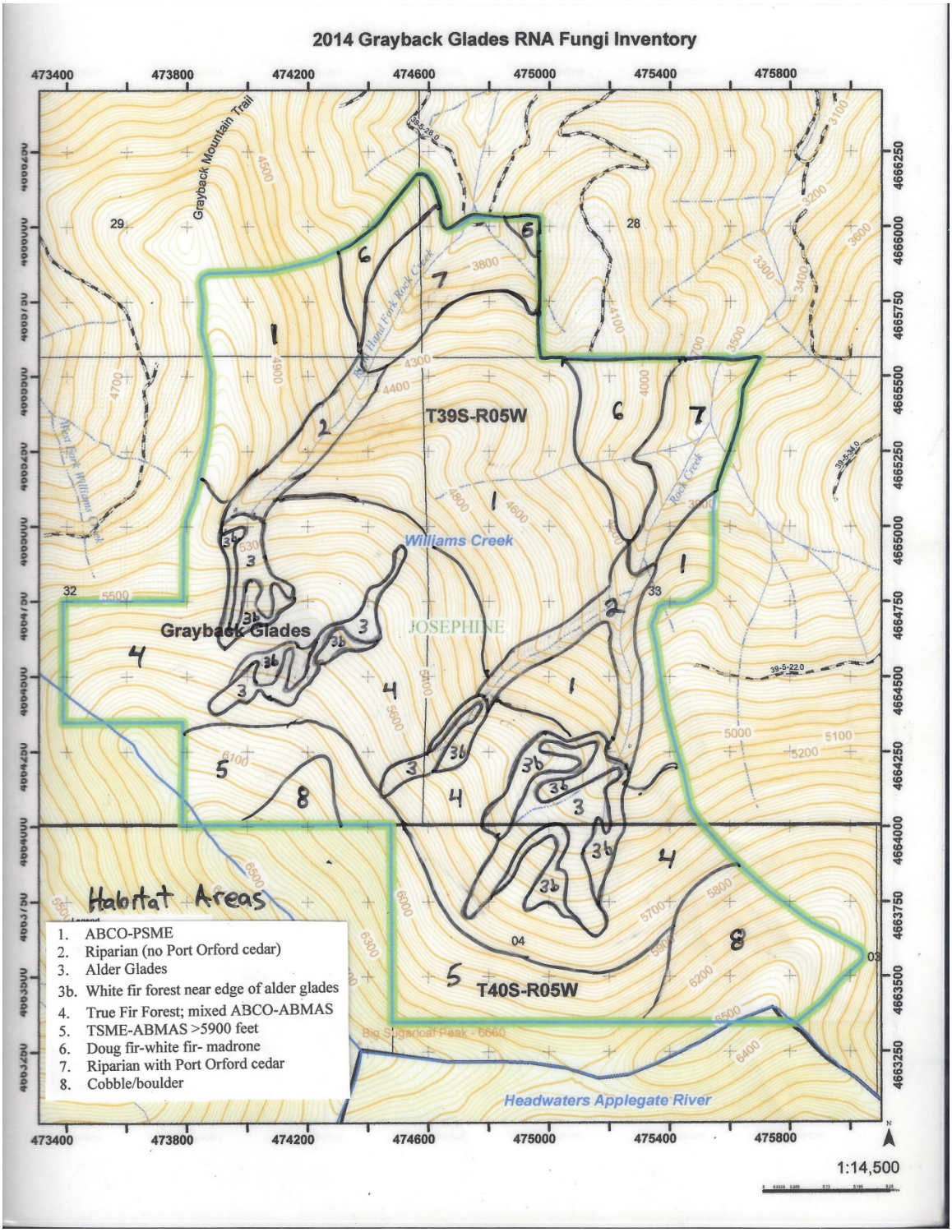
There are two notable differences between the original project proposal and what actually happened in the course of completing this project:

1 Nonvascular inventories did not occur as originally proposed due to lack of funding.
2. The *Cypripedium fasciculatum* site was not revisited as part of this effort, but will be targeted for monitoring in the spring of 2016.

HOW RESULTS OF THIS ISSSSP PROJECT HAVE BEEN UTILIZED

In addition to providing relevant baseline data for macrofungal species within Grayback Glades RNA, the results of this project were recently used to complete the species list for the upcoming Grayback Glades RNA Guidebook, a project led by Reid Schuller, Western Stewardship Science Institute.

Figure 1. Map of Grayback Glades RNA Fungi Inventory Habitat Areas.



Appendix A – **Grayback Glades RNA Fungi Inventory Field Protocol**

Grayback Glades RNA Fungi Inventory Field Protocol

The following was the information provided to the contracted surveyors.

Goal: a hybrid survey/inventory: The usual rare species inventory AND a general species inventory that will be of long term scientific value.

- Protocol SSP survey (2001 species) with the usual documentation of Target species.
- Conduct a general inventory, with accurate ID's
- Collect and voucher a large number (10-20 per day per person) of specimens WITH TAGS and photos

Zones: The Survey area is mapped according to habitat zones. All collections should refer to the zone they were collected in. This will replace point by point habitat descriptions for the General vouchers. The zones will have short descriptions of the general habitat characteristics, dominant species, rock percent etc. We are mapping them as we go. The Zones are:

1. *ABCO-PSME*
2. *Riparian*
3. *Alder Glades*

3b. *ABCO Forest near edge of alder glades (*sort of the alder riparian zone*)*

4. *True Fir Forest; mixed ABCO-ABMAS or either one alone*
5. *TSME-ABMAS >5900 feet*
6. *Doug fir-white fir- madrone*
7. *Riparian with Port Orford cedar*

We will be getting into each zone each visit, and seek out hot spots. Some areas will have more than others; some will have the unique species. For each species you find, write down the zone that you find it in and add this info to the species list.

SSP and S&M Sites:
We will do **one site report** per species and include all of the rest of the obs for that species in a table format with basic site info. For most things we need only one collection per species, but more is OK, especially if ID is at all uncertain or they are far apart in different habitat. Exceptions: *Ramaria*, collect all obs (probably others). For"super rares" (subjective) we will do separate site reports, especially if they are far apart. All SSP Voucher specimens need the usual description forms as well as the field tags.

Each Obs location needs:

- Two long black-yellow flags with the usual writing on it (SPP, obs ID, date, Initials), no placards and no perimeter flagging.
- Photos at each obs location; (1 specimen and 1 habitat)
- Basic table data: either use the printed table, or notebook it; either way it gets input into a spreadsheet each visit cycle.

									Associated Species			
Species	Obs ID	UTM E	UTM N	Date	Area (m)	Count	Aspect	Slope	Sp 1	Sp 2	Sp 3	Notes

Inventory Specimen Collection: We will be making collections of all the interesting species that we can find. The collections will be preserved to herbarium standards. We don't need to collect all the truly common things;

- if you can ID it to species with certainty in the field don't collect it

- anything that requires lab work to get to species, do collect it.

When collecting, be sure to get a UTM on the tag, and good complete fresh specimen descriptions. The tags will replace the Description forms for General Collection specimens. Get good photos of each collection. If you don't want to do the specimen ID immediately, get the specimen to Ron, or do a good description and dry it. Immediately after drying put into wax bag and quart size or gallon size plastic bag. No more moldy vouchers!

Photos: Label general collection photos with your collection # and the date "RB14-134_4-12-14" so they can be easily found in a long list Label SSP photos with correct Code.collection # and date; "SACO34_RB 14-135_4-12-14" so they can be sorted by species. TRS doesn't matter. You can use "Grayback" on the end if you want.

Deliverables From Each Person Each Survey Day:

- Species List (with substrate and zone of occurrence). From 1) field notes and also 2) from lab work.
- After each trip out each surveyor must post the new findings from the trip on the latest species list on dropbox; add your initials to the list after updating.
- SSP and S&M species site reports and collection for first time encounters, with tabular data for additional encounters.
- For each SSP collection specimen include a field tag, description form and 2 photos (post photos on dropbox.
- For each General Collection specimen (packed in a waxed bag inside a quart plastic bag) include field tag and post photos on drop box.