

**FHM LICHEN COMMUNITY DATA FROM WASHINGTON, OREGON AND  
CALIFORNIA, 1998  
Pre-Gradient Model Interim Summary**

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## **INTRODUCTION**

The Forest Health Monitoring (FHM) program seeks to assess the condition and trend of the forests of the United States (Riitters et al. 1992; NAPAP 1993). FHM is linked with the national sampling grid established by the Environmental Monitoring and Assessment Program (EMAP) of the Environmental Protection Agency. Epiphytic lichen communities were included in FHM because they help to answer several key assessment questions. These questions concern the contamination of natural resources, biodiversity, forest health, and sustainability of timber production.

Hundreds of papers worldwide (chronicled in the series "Literature on air pollution and lichens" in the *Lichenologist*) and dozens of review papers and books (e.g., Nash & Wirth 1988; Richardson 1992; Seaward 1993; Smith et al. 1993; van Dobben 1993) published during the last century have documented the close relationship between lichen communities and air pollution, especially SO<sub>2</sub> and acidifying or fertilizing nitrogen and sulfur-based pollutants. In a comparison of biological responses to air pollution between nearby and remote areas surrounding a coal-fired power plant, lichens gave a much clearer response (in terms of diversity, total abundance, and community composition) than either foliar symptoms or tree growth (Muir & McCune 1988). Lichens were one of the few components of terrestrial ecosystems to show a clear relationship to gradients of acidic deposition in the eastern United States (Showman 1992; NAPAP 1991). Much of the sensitivity of epiphytic lichens to air quality apparently results from their lack of a cuticle and their reliance on atmospheric sources of nutrition. Although trees may respond to moderate, chronic levels of air pollution deposition, all of the other influences on tree growth, such as variation in soils, make the responses of trees to pollutants difficult to measure in the field. Lichen communities provide, therefore, not only a measure of air pollution impacts upon lichens, but also suggest air pollution impacts on aspects of forest health that are difficult to measure directly.

In addition to their utility as indicators of air quality, epiphytic lichens are an important component of many forests. Lichens often comprise a large portion of the diversity of macrophytic species in a forest. Lichens have numerous functional roles in temperate forests, including nutrient cycling (especially nitrogen fixation in moist forests; Pike 1978) and as components of food webs (Dawson et al. 1987; Maser et al. 1986; Maser et al. 1985; Rominger & Oldemeyer 1989; Servheen & Lyon 1989). Small scale studies have shown that forest management (e.g., rotational silviculture) has led to reduced lichen abundance and altered community composition (Neitlich 1993, Neitlich and McCune 1997) in some areas, although the extent of the issue has never been studied on a landscape level.

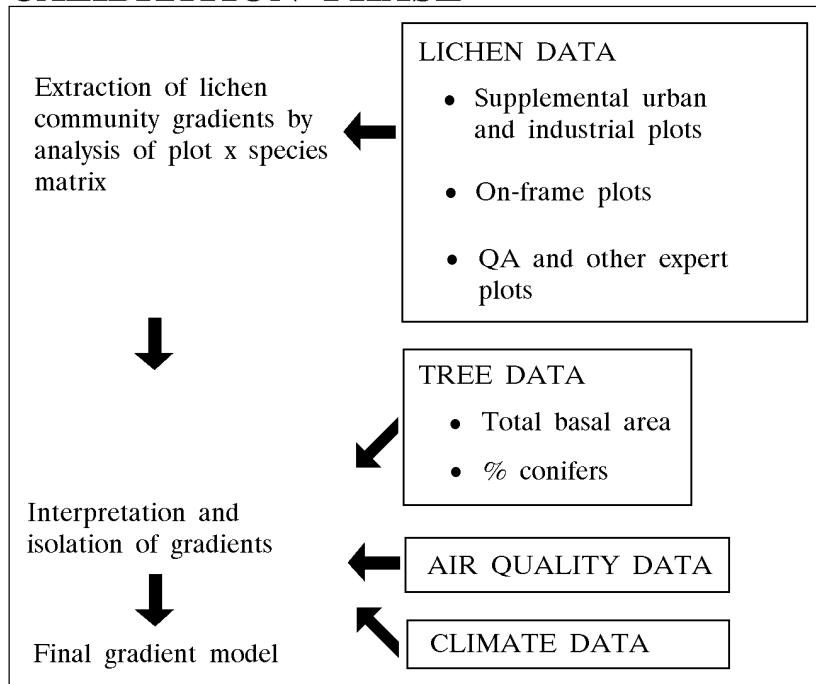
The current report documents lichens on FHM plots in Oregon and Washington prior to the establishment of a gradient model, and is thus necessarily limited in the scope of potential findings. The significance of the data presented below for regional climate and air quality gradients will be understood only once a regional gradient model is in place.

For more information about the lichen indicator in general please visit the websites:  
[http://willow.ncfes.umn.edu/fhm\\_fact/lichen.htm](http://willow.ncfes.umn.edu/fhm_fact/lichen.htm) and [http://willow.ncfes.umn.edu/fhm/fhm\\_hp.htm](http://willow.ncfes.umn.edu/fhm/fhm_hp.htm)

## **SUMMARY OF FHM LICHEN COMMUNITY METHODS**

The lichen community indicator is implemented in two phases (Figure 1): (1) construct a gradient model of lichen communities to isolate and describe climatic and air quality gradients and (2) apply the model to calculate gradient scores for additional plots. Scores for these plots are then used to describe the regional condition and geographic variation in lichen communities. Repeated sampling of these permanent plots will allow us to document changes in the condition of lichen communities over time. All lichen data are archived with the Information Management group for the Forest Health Monitoring Program in Las Vegas, Nevada.

## CALIBRATION PHASE



## APPLICATION PHASE

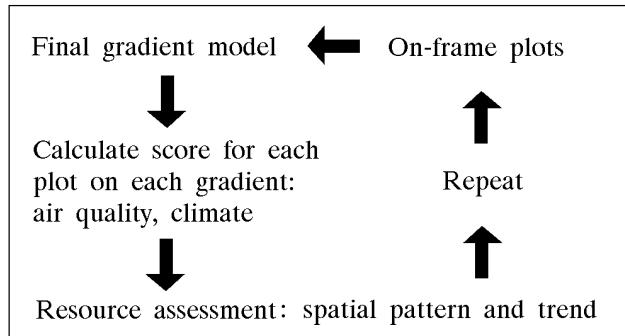


Figure 1. Implementation of the lichen communities as an indicator in the Forest Health Monitoring Program

Field procedures were designed to be conducted by non-lichenologists for practical reasons of staffing field crews. Field crews typically receive 3-4 days of intensive training in lichen community methods. Only crews who attain the required measurement quality objective (MQO) at the end of training are allowed to sample plots. The method has two parts that are performed simultaneously. (1) The sample area on the plot consists of all standing woody plants in the 120 ft radius plot, excluding those in the subplots (For diagram, consult USDA 1998). The population being sampled consists of all macrolichens occurring on these woody plants, excluding the 0.5 m basal portions of trees and shrubs and all permanent features of the forest floor. Lichens on recently fallen branches and other lichen litter are included. In each plot the field crew collects a sample of each macrolichen believed to be a different species. This collection represents the species diversity of macrolichens in the plot as fully as possible. Given the large plot area, fallen branches typically provide an excellent sample of the canopy lichens. Specimens are then sent to specialists for identification. (2) The field crew estimates the abundance of each species using a four-step scale: 1 = rare (< 3 individuals in plot); 2 = uncommon (4-10 individuals in plot); 3 = common (> 10 individuals in plot but less than half of the boles and branches have that species present); and 4 = abundant (more than half of boles and branches in the plot have the subject species present). Note that the field crew need not accurately assign species names to the lichens (that is done later by a specialist), but must be able to distinguish among species, and be able to estimate abundances accurately.

The field methods are described in detail in the FHM methods manual (USDA 1998). Quality assurance (QA) procedures and results are described in Cline (1995) and McCune et al. (1997). Vouchers are stored by the Lichen Communities Indicator Lead. The lichen indicator's methods have been closely studied and documented for repeatability (McCune et al. 1997), and are in use by many programs including USDA/Forest Service/PNW Air Program, BLM Density Management Program, and other studies not based on existing sampling grids.

Identifications were performed by Peter Neitlich, Linda Hasselbach, Jim Riley, and Chiska Derr. Identifier(s) of each plot are included in the permanent data archive with the Information Management Group in Las Vegas. Identifications were overseen and verified by Peter Neitlich. Determination and/or verification of problem material was performed by Bruce McCune and Ted Esslinger (*Melanelia*).

## DATA FROM WASHINGTON AND OREGON

### DATA SOURCES

This report summarizes results from 170 plots as described below.

On-frame 1998 data. Lichen community data were collected by summer field crews on 131 on-frame permanent plots in 1998. "On-frame" plots were selected on a formal sampling framework, according to standard sampling protocols for the EMAP hexagonal grid (Messer et al. 1991). The strict sampling criteria applied to the on-frame data allow regional estimates of lichen community parameters. On-frame data can be used for assessment of regional status and trends because it consists of an unbiased sample (Messer et al. 1991). In contrast, off-frame data (i.e., supplemental plots not on the grid network), while useful in building a gradient model, cannot by themselves be used to answer such questions as, "Is lichen diversity in the Pacific Northwest decreasing through time?"

Hot checks. Each crew was audited once to assure that s/he was capturing at least 65% of the species found by a certified specialist. Some of the hot checks were conducted on "on-frame" hex plots. A few others were conducted on supplemental off-frame plots. In the hot checks, the auditor and the crew conducted the plots simultaneously. The dual purposes of these hot checks are training and verification of data quality, and typically the auditor spends a few hours helping crews with their species concepts in order to boost species capture rates.

Reference plots. In 1998 two reference plots were sampled twice by each crew member and another was sampled once. In addition, each of the plots were sampled by a lichen specialist. The purpose of the reference plots was to establish the level of between-crew variability, and to determine the extent of within-season change. The reference plots were located in Deschutes and Marion counties in Douglas-fir (*Pseudotsuga menziesii*), Ponderosa pine (*Pinus ponderosa*) and Juniper (*Juniperus occidentalis*) woodland vegetation communities. The Juniper plot became depleted of lichen species during sampling by multiple crews and was deleted from the quality assurance (QA) analysis.

Training Certification Plots. All crew members and auditors were certified in MacDonald Dunn Forest near Corvallis, OR in an off-frame plot.

### QUALITY ASSURANCE

Data quality was generally satisfactory with crews capturing a mean of 77% of the species that experts found on 28 QA plots (Table 1). FHM's measurement quality objective (MQO) for crew species capture is 65% of the species that an expert collects on the same plot. Crews met this objective in 100% of all training certification and hot check plots, but only in 69% of the reference plots. Although the mean capture rate across all crews was 74%, the high number of plots under 65% constitutes cause for concern. Factors influencing this discrepancy may include 1) high crew fatigue on reference plots 2) extra effort by crews during hot checks and training, and 3) additional assistance with near-plot coaching on the species before hot checks. This year, we are replacing reference plots with cold checks to verify crew performance of the species capture MQO. These should be considerably less biased than reference plots, as they are randomly chosen, and should be conducted under more typical field conditions and fatigue levels.

Between-crew variability represented by the mean coefficient of variation ( $CV = [\text{standard deviation}/\text{mean}] * 100$ ) for the two multi-sampled plots was approximately 17%. This statistic appears within reason, although the only official MQO for between-crew variation requires comparison along a community gradient model, which has yet to be performed.

**Table 1.** Crew data quality from a variety of Quality Assurance sources, Oregon and Washington, 1998.

Plot Type	N	% of Expert <sup>2</sup>	Bias <sup>3</sup>	% Improvement on Resampling	% of Plots Attaining 65% MQO <sup>4</sup>
Hot Checks	5	90	-3	-	100
Reference Plots <sup>1</sup>	16	74	-6	1.15*	69
Training Certification Plots	5	80	-8	-	100
<b>Total</b>	<b>26</b>	<b>77</b>	<b>-6</b>	<b>-</b>	<b>81</b>

1. Reference Plot #2 was omitted from this assessment, as it had low species diversity and suffered depletion of lichens with repeated sampling.

\* N=6

2. = (no. of species found by crew/ no. of species found by expert) \*100

3. = mean signed deviation from the specialist's species richness

4. The MQO (Measurement Quality Objective) is that a crew collects 65% of those collected by an expert on the same plot.

## SUMMARIES BY ASSESSMENT TOPIC

### Biodiversity and Potential Impacts

A total of 148 species (including groups determinate only to genus) were found in the 170 on-frame, off-frame and QA plots conducted in 1998 (Table 2, Table 3). When multiple readings of plots on QA sampling were omitted, the mean species richness (alpha) was 16 species/plot. In the full dataset, alpha was 17 species/plot, approximately 75% higher than the alpha in California (9.8, see Data from California, below) and 85% higher than the alpha in Idaho (9.2). As expected, the region west of the Cascades hosted approximately 60% higher total number of species than the east side, but as seen in the higher beta diversity, also hosted a larger number of community types or factors depressing species richness. The mean lichen species richness in Washington's west side was approximately 13, while the mean in Oregon's west side was approximately 20 (Table 4). Plots in the Washington Cascades had generally lower species richness scores than those in the Oregon Cascades (Fig. 2).

Air quality is likely to be involved in the low species richness scores found in many west-side sites in Oregon and Washington (Fig. 2), though final determination of the presence and extent of the problem will await the upcoming regional gradient model. Willamette Valley sites and those near or downwind of Seattle and Portland had fairly low to intermediate species richness for this zone (usually <15 species), and are probably hosting lower diversity than they would be in a clean air regime. Given the high proportion of hardwoods in the Willamette Valley and the high lichen diversity generally found on hardwoods (ca. 40 species at the 1999 Corvallis training, and a mean of 40 species in 18 plots south of Eugene in Neitlich and McCune 1997), we might expect a higher diversity in this area given clean air conditions and good habitat management.

Forest management is likely to be playing a role in the low diversity in some sites as well. The Oregon Cascades have generally medium to high diversity, although there are many Cascadian sites whose diversity is low (<10 species). It is likely (though yet untested) that species richness, where poor in this zone, was negatively influenced by the current forest age and/or structure. Of particular relevance, several other studies have demonstrated that young managed stands host relatively few species compared to mature forest, and likewise, densely stocked, dark stands host far fewer species than stands with open structure (Neitlich 1993, Neitlich and McCune 1997, Peck et al. 1997). There also appears to be species impoverishment on the immediate coast (especially in WA), where we would otherwise expect intermediate to high lichen diversity (i.e., if stands were mature and within natural structure limits).

These trends are highlighted by the large number of west-side plots over the two states with species richness scores in Class 2 (6-15 species in Fig. 3, Table 4). Approximately 30% of the on-frame plots on the west side fell in Class 2 and 60% in Class 3 (>15 species). Approximately 48% of the on-frame plots on the east side fell in Class 2 and 46% in Class 3. While a large proportion of plots in Class 2 is to be expected in eastern Oregon and Washington because of

the dry climate, such a high proportion of plots in this class is suggestive of bioeffects on the west side. Again, these may potentially include pollution, forest management, and other issues. One recent study in western Oregon (Neitlich and McCune 1997) reported that even 50 year-old young managed stands with poor forest structure vis -à-vis lichen diversity hosted a mean lichen diversity of 25 species per plot (off-frame). If the Class 2 scores in this study are adjusted upward to account for reduced crew capture (on average, 75% of expert), these plots would still host only 8-20 species, a figure lower than even in the young, pollution-affected stands surveyed. The apparent relationship of species richness scores to management and bioeffects zones on the landscape suggest that the upcoming gradient model is likely to detect pronounced community gradients related to anthropogenic sources.

### **Floristics**

The 1998 findings greatly contributed to our base of knowledge of the region's flora. Many new point locations were found for the new *Xanthoria* species recently clarified by Louise Lindblom (1997) in her monograph of the *Xanthoria* of North America. These species include *X. fulva*, *X. hasseana*, *X. fallax* (*sensu stricto*), *X. oregana*, and *X. polycarpa* (*sensu stricto*). Frequency data from this survey has allowed preliminary quantitative assessment of these new species. The bulk of species on the Pacific Northwest sampling grid which would have been formerly classified as *X. fallax* were in actuality *X. fulva*.

Several species uncommon in our area were found including *Hypogymnia duplicata*, *Hypogymnia oceanica* (endemics of southeast Alaska and BC), and *Bryoria nadvornikiana* (typically in the boreal forest). Eight new datapoints were identified for the Forest Service's Survey and Manage category 1&3 species, some of the most sensitive lichen species in the Pacific Northwest (Table 3). Additionally, the range of the recently described *Physcia dimidiata*, a foliose lichen of the Juniper woodland zone, was also expanded with point data through this survey. In 1999, crews were given information about rare coastal species in an effort to combine this survey effort with broader floristic data needs.

**Table 2.** Alpha ( $\pm$  standard deviation, "s"), beta and gamma diversity of epiphytic lichens in 170 reference and on-frame plots in Oregon and Washington, 1998. Numbers presented in bold are the category sum totals of the subcategories listed immediately below. QA results include plots conducted by experts. The species numbers listed in this table consider groups determinable only to genus as single species (e.g., *Usnea* sp.).

<b>Plot Type</b>	<b>Number</b>	<b>Alpha (s)<sup>1</sup></b>	<b>Beta<sup>2</sup></b>	<b>Gamma<sup>3</sup></b>
<b>QA</b>	<b>40</b>	<b>21 (6.1)</b>	<b>5</b>	<b>107</b>
On-frame audits	2	25 (4.9)	1	31
Off-frame audits	6	26 (2.4)	2	46
Reference plots	24	17 (4.5)	4	76
Training certification	8	27 (4.0)	2	54
<b>On-Frame</b>	<b>131</b>	<b>16 (6.8)</b>	<b>9</b>	<b>144</b>
PNW west side	69	18 (6.6)	7	132
PNW east side	62	15 (6.7)	6	84
<b>Total<sup>4</sup></b>	<b>170</b>	<b>17 (6.9)</b>	<b>9</b>	<b>148</b>

1. Alpha diversity is mean species richness, with standard deviation from the mean for that group.
2. Beta diversity is Gamma/alpha and is a rough estimate of "community turnover".
3. Gamma diversity is the total number of species found.
4. The total is one plot less than the sum of the QA and on-frame plots because one of the QA plots is also an on-frame plot.

**Table 3.** Summary of 144 lichen species found in 131 on-frame plots in Oregon and Washington, 1998.

Species	Number of Occurrences	% Frequency	Mean Abundance <sup>1</sup>
<i>Ahtiana sphaerosporella</i>	3	1.76	0.03
<i>Alectoria imshaugii</i>	45	26.47	0.61
<i>Alectoria sarmentosa</i>	79	46.47	1.25
<i>Alectoria vancouverensis</i>	7	4.12	0.09
<i>Bryoria</i> sp.	16	9.41	0.18
<i>Bryoria capillaris</i>	46	27.06	0.65
<i>Bryoria fremontii</i>	55	32.35	0.95
<i>Bryoria friabilis</i>	18	10.59	0.28
<i>Bryoria fuscescens</i>	62	36.47	0.92
<i>Bryoria glabra</i>	10	5.88	0.15
<i>Bryoria lanestris</i>	3	1.76	0.05
<i>Bryoria nadvornikiana</i>	1	0.59	0.02
<i>Bryoria pseudofuscescens</i>	49	28.82	0.72
<i>Bryoria simplicior</i>	18	10.59	0.24
<i>Bryoria tortuosa</i> <sup>s</sup>	5	2.94	0.09
<i>Candelaria concolor</i>	12	7.06	0.19
<i>Cavernularia hultenii</i>	7	4.12	0.09
<i>Cetraria</i> sp.	1	0.59	0.01
<i>Cetraria canadensis</i>	40	23.53	0.50
<i>Cetraria chlorophylla</i>	83	48.82	1.02
<i>Cetraria merrillii</i>	61	35.88	0.90
<i>Cetraria orbata</i>	75	44.12	1.02
<i>Cetraria pallidula</i>	15	8.82	0.14
<i>Cetraria platyphylла</i>	63	37.06	0.95
<i>Cetraria subalpina</i>	3	1.76	0.05
<i>Cetrelia cetrarioides</i>	4	2.35	0.04
<i>Cladonia</i> sp.	3	1.76	0.03
<i>Cladonia bellidiflora</i>	1	0.59	0.01
<i>Cladonia chlorophaea</i>	4	2.35	0.04
<i>Cladonia coniocraea</i>	14	8.24	0.22
<i>Cladonia fimbriata</i>	13	7.65	0.12
<i>Cladonia ochrochlora</i>	13	7.65	0.14
<i>Cladonia squamosa</i>	8	4.71	0.12
<i>Cladonia squamosa</i> var. <i>subsquamosa</i>	12	7.06	0.17
<i>Cladonia sulphurina</i>	1	0.59	0.01
<i>Cladonia transcendens</i>	35	20.59	0.52
<i>Cladonia umbricola</i>	2	1.18	0.04
<i>Cladonia verruculosa</i>	2	1.18	0.02
<i>Collema</i> sp.	1	0.59	0.01
<i>Collema furfuraceum</i>	1	0.59	0.02
<i>Esslingeriana idahoensis</i>	25	14.71	0.30
<i>Evernia prunastri</i>	62	36.47	0.78
<i>Hypocenomyce castaneocinerea</i>	1	0.59	0.01
<i>Hypocenomyce scalaris</i>	1	0.59	0.01

Species	Number of Occurrences	% Frequency	Mean Abundance <sup>1</sup>
<i>Hypogymnia</i> sp.	1	0.59	0.01
<i>Hypogymnia apinnata</i>	28	16.47	0.42
<i>Hypogymnia duplicata</i> <sup>s</sup>	2	1.18	0.01
<i>Hypogymnia enteromorpha</i>	69	40.59	1.07
<i>Hypogymnia imshaugii</i>	106	62.35	1.67
<i>Hypogymnia inactiva</i>	59	34.71	0.94
<i>Hypogymnia metaphysodes</i>	44	25.88	0.56
<i>Hypogymnia occidentalis</i>	32	18.82	0.45
<i>Hypogymnia oceanica</i> <sup>s</sup>	2	1.18	0.01
<i>Hypogymnia physodes</i>	70	41.18	1.04
<i>Hypogymnia rugosa</i>	4	2.35	0.05
<i>Hypogymnia tubulosa</i>	43	25.29	0.54
<i>Hypotrachyna sinuosa</i>	20	11.76	0.29
<i>Leptogium polycarpum</i>	2	1.18	0.04
<i>Letharia columbiana</i>	53	31.18	0.85
<i>Letharia vulpina</i>	92	54.12	1.54
<i>Lobaria oregana</i>	5	2.94	0.07
<i>Lobaria pulmonaria</i>	31	18.24	0.45
<i>Lobaria scrobiculata</i>	4	2.35	0.04
<i>Melanelia</i> sp.	12	7.06	0.17
<i>Melanelia elegantula</i>	21	12.35	0.28
<i>Melanelia exasperatula</i>	43	25.29	0.61
<i>Melanelia fuliginosa</i>	7	4.12	0.10
<i>Melanelia multispora</i>	4	2.35	0.08
<i>Melanelia subaurifera</i>	16	9.41	0.18
<i>Melanelia subelegantula</i>	21	12.35	0.28
<i>Melanelia subolivacea</i> <sup>2</sup>	37	21.76	0.55
<i>Menegazzia terebrata</i>	13	7.65	0.15
<i>Nephroma bellum</i>	1	0.59	0.01
<i>Nephroma helveticum</i>	5	2.94	0.06
<i>Nephroma laevigatum</i>	9	5.29	0.12
<i>Nephroma parile</i>	2	1.18	0.03
<i>Nephroma resupinatum</i>	8	4.71	0.11
<i>Nodobryoria</i> sp.	3	1.76	0.04
<i>Nodobryoria abbreviata</i>	73	42.94	1.17
<i>Nodobryoria oregana</i>	44	25.88	0.67
<i>Parmelia</i> sp.	2	1.18	0.02
<i>Parmelia hygrophila</i>	49	28.82	0.68
<i>Parmelia pseudosulcata</i>	5	2.94	0.07
<i>Parmelia saxatilis</i>	3	1.76	0.05
<i>Parmelia squarrosa</i>	2	1.18	0.02
<i>Parmelia sulcata</i>	99	58.24	1.52
<i>Parmeliopsis ambigua</i>	45	26.47	0.65
<i>Parmeliopsis hyperopta</i>	61	35.88	0.93
<i>Parmotrema</i> sp.	1	0.59	0.02
<i>Parmotrema arnoldii</i>	2	1.18	0.01
<i>Parmotrema chinense</i>	3	1.76	0.04
<i>Peltigera collina</i>	18	10.59	0.26

<b>Species</b>	<b>Number of Occurrences</b>	<b>% Frequency</b>	<b>Mean Abundance<sup>1</sup></b>
<i>Peltigera membranacea</i>	1	0.59	0.01
<i>Peltigera neopolydactyla</i>	1	0.59	0.01
<i>Peltigera pacifica</i>	3	1.76	0.04
<i>Phaeophyscia orbicularis</i>	1	0.59	0.02
<i>Physcia</i> sp.	1	0.59	0.01
<i>Physcia adscendens</i>	12	7.06	0.16
<i>Physcia aipolia</i>	13	7.65	0.15
<i>Physcia caesia</i>	2	1.18	0.04
<i>Physcia dimidiata</i>	8	4.71	0.11
<i>Physcia dubia</i>	1	0.59	0.02
<i>Physcia tenella</i>	14	8.24	0.17
<i>Physconia</i> sp.	2	1.18	0.02
<i>Physconia americana</i>	5	2.94	0.08
<i>Physconia enteroxantha</i>	6	3.53	0.09
<i>Physconia isidiigera</i>	4	2.35	0.07
<i>Physconia perisidiosa</i>	8	4.71	0.13
<i>Platismatia</i> sp.	1	0.59	0.02
<i>Platismatia glauca</i>	109	64.12	1.73
<i>Platismatia herrei</i>	53	31.18	0.78
<i>Platismatia norvegica</i>	1	0.59	0.01
<i>Platismatia stenophylla</i>	39	22.94	0.55
<i>Polychidium contortum</i>	1	0.59	0.01
<i>Pseudocyphellaria anomala</i>	8	4.71	0.11
<i>Pseudocyphellaria anthraspis</i>	9	5.29	0.15
<i>Pseudocyphellaria crocata</i>	4	2.35	0.04
<i>Ramalina dilacerata</i>	9	5.29	0.10
<i>Ramalina farinacea</i>	44	25.88	0.57
<i>Ramalina pollinaria</i>	1	0.59	0.01
<i>Ramalina roesleri</i>	1	0.59	0.01
<i>Ramalina subleptocarpha</i>	3	1.76	0.03
<i>Ramalina thrausta</i>	1	0.59	0.02
<i>Sphaerophorus globosus</i>	44	25.88	0.61
<i>Sticta</i> sp.	1	0.59	0.02
<i>Sticta fuliginosa</i>	7	4.12	0.08
<i>Sticta limbata</i>	7	4.12	0.08
<i>Sticta weigelii</i>	1	0.59	0.01
<i>Usnea</i> sp.	24	14.12	0.33
<i>Usnea cavernosa</i>	2	1.18	0.03
<i>Usnea cornuta</i>	7	4.12	0.11
<i>Usnea diplotypus</i>	7	4.12	0.12
<i>Usnea filipendula</i>	86	50.59	1.33
<i>Usnea glabrata</i>	8	4.71	0.14
<i>Usnea hesperina</i> <sup>s</sup>	1	0.59	0.01
<i>Usnea hirta</i>	1	0.59	0.01
<i>Usnea lapponica</i>	9	5.29	0.11
<i>Usnea longissima</i>	1	0.59	0.01
<i>Usnea scabrata</i>	10	5.88	0.17
<i>Usnea substerilis</i>	2	1.18	0.02

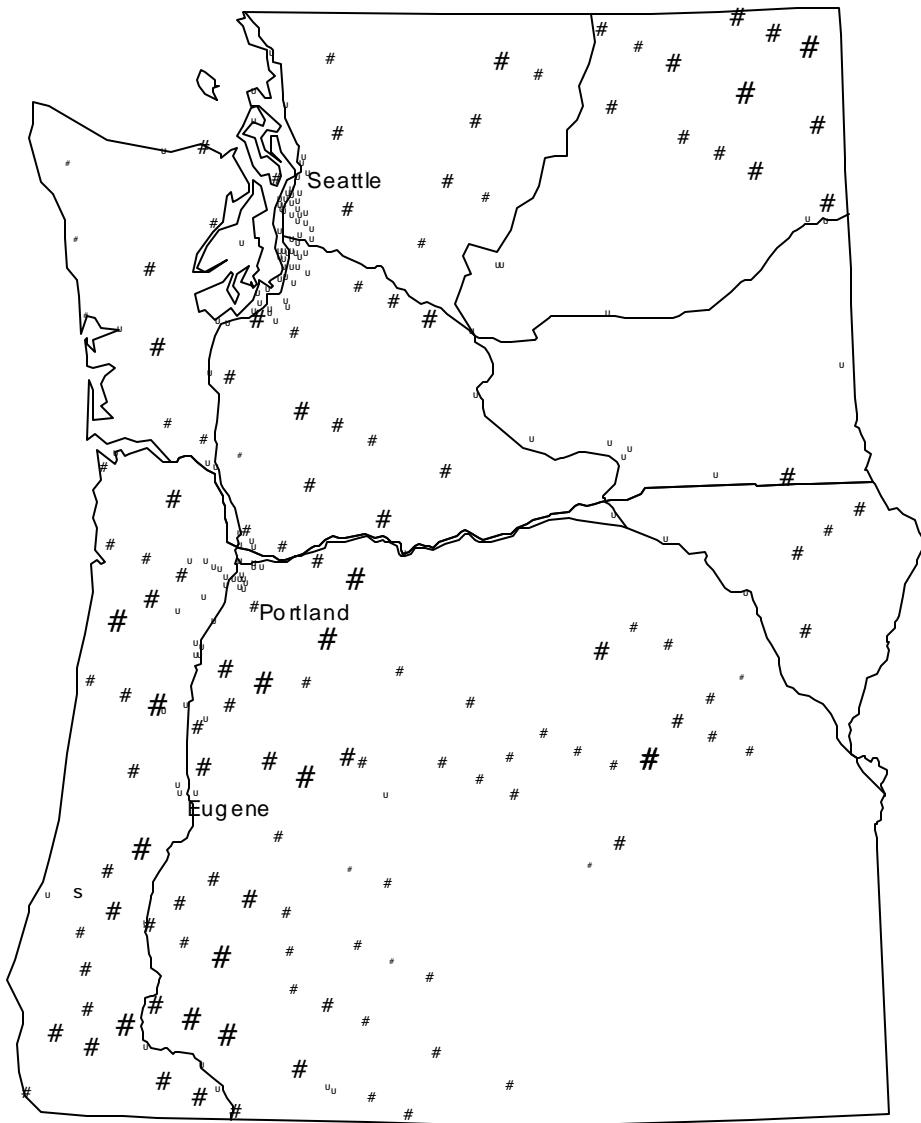
<b>Species</b>	<b>Number of Occurrences</b>	<b>% Frequency</b>	<b>Mean Abundance<sup>1</sup></b>
<i>Usnea wirthii</i>	30	17.65	0.49
<i>Xanthoria</i> sp.	4	2.35	0.05
<i>Xanthoria candelaria</i>	14	8.24	0.18
<i>Xanthoria fallax</i>	4	2.35	0.05
<i>Xanthoria fulva</i>	23	13.53	0.38
<i>Xanthoria hasseana</i> <sup>3</sup>	6	3.53	0.08
<i>Xanthoria oregana</i>	7	4.12	0.12
<i>Xanthoria polycarpa</i>	19	11.18	0.26

1. Mean represents the sum of all abundance scores (1-4) of a species in all plots divided by total number of on-frame plots (131).

2. Includes *Melanelia subolivacea* and probably some *M. multispora*.

3. Includes *Xanthoria hasseana* and *X. montana*, but probably represents mostly the former species.

s = Category 1 & 3 Survey and Manage species.



#### Lichen Species Richness

s 0

\*

# 1 - 5

# 6 - 10

# 11 - 15

# 16 - 20

# 21 - 25

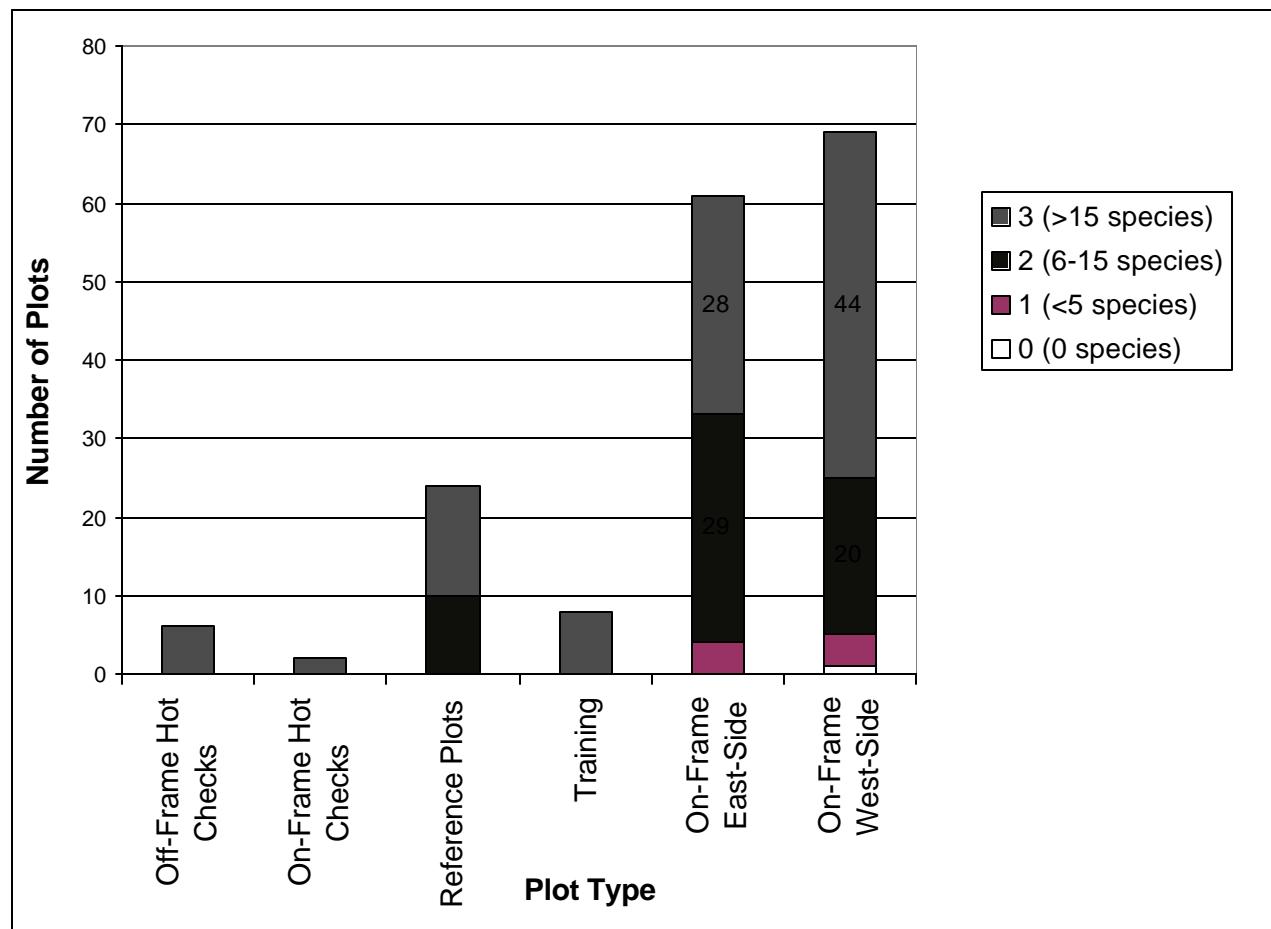
# 26 - 29

Highways

State

Cities

Figure 2. Lichen species richness in 1998 on- and off-frame plots. Circular dot size is graded to indicate increasing species richness. Cities are shown as squares.



**Fig. 3.** Number of FHM lichen plots in four lichen species richness classes, 1998. Number of plots in class are shown in on-frame bars.

**Table 4.** Summary of QA plots and On-Frame plots surveyed in Oregon and Washington in 1998.

PLOT	No. of Species	Species Richness Class <sup>1</sup>	Crew Member <sup>2</sup>	Lichen Indicator Plot Code
<b>QA</b>				
<i>Off-Frame Hot Checks</i>				
OR98A1_Z	24	3	Neitlich	OR98A1_Z
OR98A1_c	24	3	Rash	OR98A1_c
OR98A1_f	25	3	Shory	OR98A1_f
OR98A2_Y	30	3	Hasselbach	OR98A2_Y
OR98A2_d	27	3	Kelley	OR98A2_d
OR98A2_g	24	3	Hooper	OR98A2_g
<i>On-Frame Hot Checks</i>				
4712018W	28	3	Ulrich	4712018W
4712018	21	3	Chesnut	4712018e
<i>Reference Plots<sup>3</sup></i>				
OR_R1_Y	25	3	Hasselbach	OR_R1_Y
00034111	16	3	Rash	OR_R1_c1
00034131	19	3	Rash	OR_R1_c2
00044111	20	3	Kelley	OR_R1_d1
00044131	22	3	Kelley	OR_R1_d2
00054111	20	3	Chesnut	OR_R1_e1
00054131	20	3	Chesnut	OR_R1_e2
00064111	30	3	Shory	OR_R1_f1
00934111	19	3	Hooper	OR_R1_g1
OR_R2_Z	13	2	Neitlich	OR_R2_Z
00034112	16	3	Rash	OR_R2_c1
00044112	13	2	Kelley	OR_R2_d1
00054112	21	3	Chesnut	OR_R2_e1
00064112	13	2	Shory	OR_R2_f1
00934112	14	2	Hooper	OR_R2_g1
OR_R3_Z	22	3	Neitlich	OR_R3_Z
00034113	13	2	Rash	OR_R3_c1
00034133	13	2	Rash	OR_R3_c2
00044113	11	2	Kelley	OR_R3_d1
00044133	17	3	Kelley	OR_R3_d2
00054113	15	2	Chesnut	OR_R3_e1
00054133	16	3	Chesnut	OR_R3_e2
00064133	14	2	Shory	OR_R3_f1
00934113	15	2	Hooper	OR_R3_g1
<i>Training</i>				
ortr98_a	23	3	Johnson	ortr98_a
ortr98_b	24	3	Foss	ortr98_b
ortr98_c	29	3	Rash	ortr98_c
ortr98_d	26	3	Kelley	ortr98_d
ortr98_e	25	3	Chesnut	ortr98_e
ortr98_f	31	3	Shory	ortr98_f
ortr98_g	26	3	Hooper	ortr98_g
ortr98_Z	35	3	Neitlich	ortr98_Z

PLOT	No. of Species	Species Richness Class <sup>1</sup>	Crew Member <sup>2</sup>	Lichen Indicator Plot Code
<b>ON-FRAME</b>				
<i>East Side</i>				
4212022	8	2	Kelley	4212022
4212047	12	2	Kelley	4212047
4212088	8	2	Rash	4212088
4212111	11	2	Shory	4212111
4212124	7	2	Rash	4212124
4212164	7	2	Rash	4212164
4212167	18	3	Shory	4212167
4212231	21	3	Rash	4212231
4212271	10	2	Kelley	4212271
4311955	5	1	Kelley	4311955
4311972	17	3	Rash	4311972
4312112	5	1	Kelley	4312112
4312115	9	2	Rash	4312115
4312153	9	2	Shory	4312153
4312155	5	1	Rash	4312155
4411831	8	2	Rash	4411831
4411844	15	2	Shory	4411844
4411856	19	3	Rash	4411856
4411864	12	2	Hooper	4411864
4411872	4	1	Rash	4411872
4411923	9	2	Rash	4411923
4411935	10	2	Shory	4411935
4411948	10	2	Rash	4411948
4411984	22	3	Kelley	4411984
4412012	12	2	Kelley	4412012
4412024	7	2	Rash	4412024
4412032	9	2	Kelley	4412032
4412037	11	2	Shory	4412037
4412065	12	2	Shory	4412065
4512145	26	3	Kelley	4512145
4412172	10	2	Hooper	4412172
4512173	24	3	Chesnut	4512173
4511715	16	3	Rash	4511715
4511755	16	3	Rash	4511755
4511763	12	2	Kelley	4511763
4511771	19	3	Rash	4511771
4511817	11	2	Kelley	4511817
4511911	10	2	Shory	4511911
4611716	22	3	Chesnut	4611716
4612017	20	3	Chesnut	4612017
4612134	12	2	Chesnut	4612134
4711772	22	3	Chesnut	4711772
4711788	25	3	Chesnut	4711788
4712018	21	3	Chesnut	4712018e
4712074	6	2	Chesnut	4712074
4712087	18	3	Shory	4712087
4712123	17	3	Shory	4712123

PLOT	No. of Species	Species Richness Class <sup>1</sup>	Crew Member <sup>2</sup>	Lichen Indicator Plot Code
4712151	7	2	Chesnut	4712151
4811733	25	3	Hooper	4811733
4811748	27	3	Chesnut	4811748
4811773	28	3	Chesnut	4811773
4811776	24	3	Chesnut	4811776
4811812	20	3	Shory	4811812
4811825	20	3	Chesnut	4811825
4811866	25	3	Chesnut	4811866
4811878	13	2	Shory	4811878
4811881	24	3	Chesnut	4811881
4811942	18	3	Chesnut	4811942
4811958	11	2	Chesnut	4811958
4811983	20	3	Chesnut	4811983
4812035	18	3	Chesnut	4812035
4812063	21	3	Shory	4812063
<i>West Side</i>				
4212215	18	3	Rash	4212215
4212227	21	3	Kelley	4212227
4212256	28	3	Rash	4212256
4212268	28	3	Shory	4212268
4212322	23	3	Kelley	4212322
4212355	27	3	Kelley	4212355
4212363	24	3	Kelley	4212363
4212347	24	3	Rash	4212347
4212367	18	3	Kelley	4212367
4212388	19	3	Hooper	4212388
4212423	11	2	Rash	4212423
4212451	24	3	Shory	4212451
4312211	10	2	Kelley	4312211
4312216	29	3	Rash	4312216
4312232	13	2	Rash	4312232
4312244	25	3	Kelley	4312244
4312247	17	3	Rash	4312247
4312272	15	2	Rash	4312272
4312311	13	2	Kelley	4312311
4312323	20	3	Rash	4312323
4312328	14	2	Hooper	4312328
4312331	16	3	Kelley	4312331
4312336	23	3	Kelley	4312336
4312348	0	0	Rash	4312348
4312356	17	3	Kelley	4312356
4312364	27	3	Kelley	4312364
4412221	28	3	Shory	4412221
4412228	25	3	Kelley	4412228
4412233	24	3	Rash	4412233
4412248	19	3	Rash	4412248
4412256	20	3	Kelley	4412256
4412274	27	3	Rash	4412274
4412276	21	3	Shory	4412276

PLOT	No. of Species	Species Richness Class <sup>1</sup>	Crew Member <sup>2</sup>	Lichen Indicator Plot Code
4412325	16	3	Kelley	4412325
4412365	19	3	Rash	4412365
4412368	14	2	Shory	4412368
4512117	26	3	Hooper	4512117
4512158	18	3	Hooper	4512158
4512224	13	2	Rash	4512224
4512263	11	2	Hooper	4512263
4512265	13	2	Shory	4512265
4512326	27	3	Shory	4512326
4512334	25	3	Rash	4512334
4512342	16	3	Rash	4512342
4512354	15	2	Kelley	4512354
4512357	15	2	Rash	4512357
4512382	22	3	Rash	4512382
4612147	17	3	Hooper	4612147
4612211	20	3	Shory	4612211
4612226	1	1	Shory	4612226
4612241	22	3	Shory	4612241
4612267	16	3	Shory	4612267
4612282	14	2	Shory	4612282
4612318	7	2	Rash	4612318
4612331	8	2	Shory	4612331
4612343	10	2	Shory	4612343
4612374	22	3	Chesnut	4612374
4712135	15	2	Chesnut	4712135
4712176	20	3	Shory	4712176
4712215	22	3	Shory	4712215
4712268	6	2	Chesnut	4712268
4712284	15	2	Chesnut	4712284
4712335	17	3	Chesnut	4712335
4712412	4	1	Shory	4712412
4712452	5	1	Chesnut	4712452
4812127	16	3	Chesnut	4812127
4812168	12	2	Chesnut	4812168
4812321	20	3	Chesnut	4812321
4812413	4	1	Chesnut	4812413

1. Species Richness Classes:

- 0. 0 species
- 1. 1-5 species
- 2. 6-15 species
- 3. >15 species

2. Crew Members: Linda Chesnut, Walter Foss, Carolina Hooper, Karina Johnson, John Kelley, Scott Rash, Rick Shory.

Specialist/Auditors: Linda Hasselbach, Peter Neitlich, Riban Ulrich.

3. OR\_R1\_\*\* = Reference Plot 1 (Cold Springs). OR\_R2\_\*\* = Reference Plot 2 (Juniper). OR\_R3\_\*\* = Reference Plot 3 (Marion Forks).

## Air Quality

As the gradient model will focus on lichen community trends associated with urban industrial areas and deposition monitoring, this report presents first-level summary data with a minimum of analysis. As mentioned above, some trends in pollution impacts are likely based on species richness data (Fig. 2, Table 4). The gradient study will follow leads identified in this report in planning the locations of “gradient-calibration” off-frame plots—primarily in urban-industrial and clean-air areas. The lower mean species richness (13) in Washington’s west side compared to Oregon’s west side (20) is certainly suggestive of impacts, and helps focus our off-frame study plans toward likely impact areas near Seattle and in the Washington Cascades. In Oregon, 1998 results suggest possible impacts to lichens both in the Portland area and in the remnant hardwood forests of the Willamette Valley. Communities of the latter forests are particularly vulnerable as they host a distinctly different flora than that of the coniferous forests.

As we plan our gradient sampling, many of the genera found in 1998 will be useful in studying air quality as they have distinctive indicator values. Some of these genera and their values are cited below (Table 5).

**Table 5.** Characteristics of some common epiphytic macrolichen genera in Oregon and Washington.

Genus	Appearance	Indicator value and functional roles
<i>Bryoria</i>	Brown, hairlike	Pollution-sensitive; forage lichen; many uses by animals
<i>Candelaria</i>	Yellow, very small foliose	Pollution and dust tolerant, mainly on hardwoods
<i>Cetraria</i>	Brown or yellow, foliose	Mostly pollution intermediate
<i>Hypogymnia</i>	Grey or brown, foliose, hollow lobes	Mainly on conifers, some species pollution tolerant
<i>Letharia</i>	Yellow to chartreuse, shrubby	Widespread in east-side conifer forests; somewhat pollution sensitive.
<i>Melanelia</i>	Brown to olive, foliose, medium size	Common but inconspicuous; some species pollution tolerant; on both hardwoods and conifers
<i>Parmelia</i>	Grey, foliose, medium size, black below	Widespread, pollution tolerant, on both hardwoods and conifers
<i>Parmeliopsis</i>	Grey or green-grey narrow lobed foliose	Mid to upper elevation conifers; intermediate in pollution sensitivity.
<i>Phaeophyscia</i>	Small, cryptic, grey or brownish, foliose	Usually on hardwoods; most species pollution tolerant
<i>Physcia</i>	Small, white, foliose	Some species nitrogen-loving; some species almost restricted to hardwoods
<i>Physconia</i>	Small, frosty-coated, foliose, often forming rosettes; brown, grey or white	Usually on hardwoods; pollution tolerant, nitrogen-loving
<i>Usnea</i>	Greenish fruticose, tufted or hanging, branches have a central cord	Abundant in wet areas, somewhat pollution sensitive but persisting in polluted areas as dwarf, compact forms
<i>Xanthoria</i>	Orange or yellow, foliose	Widespread but more abundant in areas of elevated nitrogen, somewhat pollution tolerant

## DATA FROM CALIFORNIA

### DATA SOURCES

This report summarizes results from 76 plots, as described below.

On-frame 1998 data. Lichen community data were collected by summer field crews on 61 on-frame permanent plots in 1998. "On-frame" plots were selected on a formal sampling framework, according to standard sampling protocols for the EMAP hexagonal grid (Messer et al. 1991). The strict sampling criteria applied to the on-frame data allow regional estimates of lichen community parameters. On-frame data can be used for assessment of regional status and trends because it consists of an unbiased sample (Messer et al. 1991). In contrast, off-frame data (i.e., supplemental plots not on the grid network) while useful in building a gradient model, cannot by themselves be used to answer such questions as, "Is lichen diversity in California decreasing through time?"

Hot checks. Each crew was audited once to assure that s/he was capturing at least 65% of the species found by a certified specialist. Hot checks were conducted on "on-frame" hex plots. In the hot checks, the auditor and the crew conducted the plots simultaneously. The dual purposes of these hot checks are training and verification of data quality, and typically the auditor spends a few hours helping crews with their species concepts in order to boost species capture rates

Reference plots. In 1998 each of two reference plots was sampled twice by one crew member and once by another. In addition, each of the plots were sampled by a lichen specialist. The purpose of the reference plots was to establish the level of between crew variability, and to determine the extent of within-season change. One of the reference plots was located near Placerville in a Blue Oak woodland. The other plot was located about 1 hour north of Placerville in a mixed conifer habitat at the Blodgett State Forest.

Training Certification Plots. All crew members and auditors were certified with Oregon and Washington crews in MacDonald Dunn Forest near Corvallis, OR in an off-frame plot.

### QUALITY ASSURANCE

Crew data quality as demonstrated by species capture was satisfactory, but not high (Table 6), with a mean of 69% of an expert's species capture over all 10 QA plots. The Pacific Northwest's capture rate across all QA plots, by contrast, was 77%. FHM's measurement quality objective (MQO) for species capture maintains that crews need to collect 65% of the species that an expert collects on the same plot. Crews met this objective in 100% of all training certification and hot check plots, but only in 67% of the reference plots. Factors influencing this discrepancy may include 1) high crew fatigue on reference plots 2) extra effort by crews during hot checks and training, and 3) additional assistance with near-plot coaching on the species before hot checks. This year, we are replacing reference plots with cold checks to verify crew performance of the species capture MQO. These should be considerably less biased than reference plots, as they are randomly chosen.

Between crew variability represented by the mean coefficient of variation ([standard deviation/mean] \*100) was approximately 11% over the two reference plots. This statistic appears to be relatively low, although the only official MQO for between-crew variation requires comparison along a community gradient model, which has yet to be performed.

**Table 6.** Crew data quality from a variety of Quality Assurance sources, 1998.

Plot Type	N	% of Expert <sup>1</sup>	Bias <sup>2</sup>	% Improvement on Resampling	% of Plots Attaining 65% MQO <sup>3</sup>
Hot Checks	2	70	-6.5	-	100
Reference Plots	6	69	-6	5*	67
Training Certification Plots	2	68	-11.5	-	100
<b>Total</b>	<b>10</b>	<b>69</b>	<b>-7.2</b>	-	<b>80</b>

\* N=2 plots conducted twice by single crew

1. = no. of species found by crew/ no. of species found by expert

2. In this case, bias represents the mean signed deviation from the specialist's species richness

3. The MQO (Measurement Quality Objective) is that a crew collects 65% of those collected by an expert on the same plot.

## SUMMARIES BY ASSESSMENT TOPIC

### Biodiversity and Floristics

A total of 105 species (including groups determinate only to genus) were found in the 76 California on-frame, off-frame and QA plots in 1998 (Table 7, Table 8). Species richness was predictably low given the relatively dry climate, with a 1998 mean of 9.6 species per plot. The high beta diversity in the on-frame data indicates that several distinct lichen communities are likely to be present. This appears intuitively correct given the diversity of California's geography and vegetation. The steep natural gradients in lichen community composition combined with the small sample size over a large area make inferences about anthropogenic impacts difficult prior to a gradient model. For instance, the fact that species richness is considerably higher in montane areas (Fig. 4) does not imply that impacts to lichens there are slight or that impacts are great at low elevations where species are fewer. We should certainly expect pollution-related declines around large urban areas, but our plot base is not currently sufficient to address this question. The data in Table 11 is therefore useful herein only for baseline and descriptive purposes.

The 1998 findings enhanced our base of knowledge of the region's flora. Many new point locations were found for the new *Xanthoria* species recently clarified by Louise Lindblom (1997) in her monograph of the *Xanthoria* of North America. These species include *X. fulva*, *X. hasseana*, *X. fallax* (*sensu stricto*), *X. oregana*, and *X. polycarpa* (*sensu stricto*). Frequency data from this survey has allowed preliminary quantitative assessment of these new species. For instance, in Oregon, the bulk of the lichens which would have been previously lumped into the species *X. fallax* were in actuality *X. fulva*; in California, 40% of the lichens formerly lumped as *X. fallax* were indeed this species. Frequency data presented in Table 3 is one of the first attempts to quantify the epiphytic lichen community frequencies on a regional scale.

Several species uncommon in our area were found including *Parmotrema austrosinense*, and *Bryoria tortuosa*. The former species is rare in California, and known primarily from the South Coast Ranges (Hale and Cole 1988). In this study, the species was found surprisingly far north of there, just north of the Bay Area. *B. tortuosa* is uncommon generally, and was found close to the Oregon border. This lichen has become increasingly rare due to the destruction of its habitat in the interior, transitional areas at the edge of the mountains.

One of the more fascinating problems in this study is the absence of epiphytic lichens in the Eastern Sierra floristic province, even amidst a very robust population of rock-dwelling species. Plots ranged from 0–4 epiphytic species in this zone, in which air quality is surmised to be intermediate. Diversities are similarly low throughout most of the High Sierra and White Mountains even though a large volume of old to ancient trees (e.g., Bristlecone Pine and Foxtail Pine >1500 years old) abound. By contrast, lichen communities in the east-side areas near Susanville are robust and diverse, resembling much more the east side lichen communities of the Pacific Northwest (Table 4). Moisture regime is likely to be responsible, but in a manner that is currently unknown given the abundance of rock-dwelling species (e.g., *Rhizoplaca chrysoleuca*, *R. melanophthalma*, *Xanthoria elegans*, *Caloplaca saxicola*, *Acarospora chlorophhana*, etc.) Host tree species may additionally play a role. For instance, Lodgepole Pine (*Pinus contorta*) is a relatively poor

host for lichens even in the favorable climate of the western Cascades, and is one of the most common trees at mid to upper elevations in California's east side.

This study will additionally help researchers examine a curious landscape level phenomenon of east side Pacific Northwest lichen communities. Communities dominated by *Letharia* spp., *Melanelia* spp., *Physcia* spp. and *Xanthoria* spp. typify the regions west of the Cascades. In California, this community appears to cross through the southern Cascades and continue down the west side of the Sierra at mid elevations until their terminus. On the east side, the community appears to cease at low elevations in the far north of the state, but to continue southward at mid to upper elevations (4,000 – 8,000 ft) until somewhere between Susanville and the Tahoe area. Understanding of this community's distribution on a landscape level and coming to some inference on driving processes will be essential to developing California's gradient model.

**Table 7.** Alpha ( $\pm$  standard deviation, "s"), beta and gamma diversity of epiphytic lichens in 170 reference and on-frame plots in Oregon and Washington, 1998. Numbers presented in bold are the category sum totals of the subcategories listed immediately below. QA plots presented include those conducted by experts. The species numbers listed in this table consider groups determinable only to genus as single species (e.g., *Usnea* sp.).

Plot Type	Number	Alpha (s) <sup>1</sup>	Beta <sup>2</sup>	Gamma <sup>3</sup>
<b>QA</b>	<b>13</b>	<b>16.6 (3.6)</b>	<b>3.6</b>	<b>59</b>
On-frame audits <sup>4</sup>	5	18.8 (3.3)	2.2	43
Reference plots <sup>5</sup>	8	15.3 (3.2)	2.4	37
<b>On-Frame</b>	<b>61</b>	<b>8.9 (5.2)</b>	<b>11.2</b>	<b>100</b>
<b>Off-Frame</b>	<b>4</b>	<b>0.8 (1.0)</b>	<b>3.7</b>	<b>3</b>
<b>Total<sup>6</sup></b>	<b>76</b>	<b>9.6 (6.0)</b>	<b>10.9</b>	<b>105</b>

1. Alpha diversity is mean species richness, with standard deviation from the mean for that group.
2. Beta diversity is Gamma/alpha and is a rough estimate of "community turnover".
3. Gamma diversity is the total number of species found.
4. N=5 independent samples on 2 different Hex plots, 3 by experts and 2 by crews
5. N=8 independent samples on 2 different reference plots, 2 by experts, 4 by one crew, and 2 by one crew.
6. The total number of plots is 2 lower than the sum of all categories as the 2 crew on-frame audits were summarized under both QA and on-frame data.

**Table 8.** Summary of 100 lichen species found in 105 QA, On-Frame and Off-Frame plots in California, 1998.

Species	Number of Occurrences	% Frequency	Mean Abundance <sup>1</sup>
<i>Ahtiana sphaerosporella</i>	6	5.7	0.171
<i>Alectoria sarmentosa</i>	11	10.5	0.408
<i>Bryoria</i> sp.	1	1.0	0.039
<i>Bryoria capillaris</i>	4	3.8	0.158
<i>Bryoria fremontii</i>	6	5.7	0.237
<i>Bryoria fuscescens</i>	2	1.9	0.066
<i>Bryoria tortuosa</i>	1	1.0	0.039
<i>Candelaria concolor</i>	28	26.7	1.039
<i>Catapyrenium tuckermanii</i>	1	1.0	0.039
<i>Cetraria canadensis</i>	6	5.7	0.145
<i>Cetraria chlorophylla</i>	4	3.8	0.158

Species	Number of Occurrences	% Frequency	Mean Abundance <sup>1</sup>
<i>Cetraria merrickii</i>	13	12.4	0.5
<i>Cetraria orbata</i>	17	16.2	0.605
<i>Cetraria pallidula</i>	3	2.9	0.105
<i>Cetraria platyphylla</i>	15	14.3	0.566
<i>Cladonia</i> sp.	3	2.9	0.118
<i>Cladonia coniocraea</i>	2	1.9	0.066
<i>Cladonia fimbriata</i>	1	1.0	0.039
<i>Cladonia furcata</i>	2	1.9	0.079
<i>Cladonia ochrochlora</i>	2	1.9	0.079
<i>Cladonia squamosa</i> v. <i>subsquamosa</i>	1	1.0	0.039
<i>Cladonia transcendens</i>	5	4.8	0.197
<i>Cladonia verruculosa</i>	1	1.0	0.039
<i>Collema furfuraceum</i>	2	1.9	0.066
<i>Esslingeriana idahoensis</i>	18	17.1	0.632
<i>Evernia prunastri</i>	21	20.0	0.711
<i>Flavoparmelia caperata</i>	1	1.0	0.053
<i>Flavopunctelia flaventior</i>	8	7.6	0.316
<i>Hypogymnia</i> sp.	1	1.0	0.026
<i>Hypogymnia apinnata</i>	1	1.0	0.039
<i>Hypogymnia enteromorpha</i>	4	3.8	0.158
<i>Hypogymnia imshaugii</i>	37	35.2	1.474
<i>Hypogymnia inactiva</i>	3	2.9	0.118
<i>Hypogymnia metaphysodes</i>	3	2.9	0.092
<i>Hypogymnia occidentalis</i>	4	3.8	0.092
<i>Hypogymnia physodes</i>	1	1.0	0.039
<i>Leptochidium albociliatum</i>	2	1.9	0.079
<i>Leptogium</i> sp.	1	1.0	0.039
<i>Leptogium lichenoides</i>	2	1.9	0.079
<i>Letharia</i> sp.	2	1.9	0.039
<i>Letharia columbiana</i>	23	21.9	0.921
<i>Letharia vulpina</i>	40	38.1	1.618
<i>Lobaria hallii</i>	2	1.9	0.026
<i>Lobaria pulmonaria</i>	4	3.8	0.158
<i>Melanelia</i> sp.	1	1.0	0.039
<i>Melanelia elegantula</i>	9	8.6	0.303
<i>Melanelia exasperatula</i>	3	2.9	0.118
<i>Melanelia glabra</i>	20	19.0	0.737
<i>Melanelia subargentifera</i>	3	2.9	0.105
<i>Melanelia subelegantula</i>	3	2.9	0.066
<i>Melanelia subolivacea</i>	22	21.0	0.816
<i>Nephroma helveticum</i>	4	3.8	0.132
<i>Nodobryoria abbreviata</i>	19	18.1	0.684
<i>Nodobryoria oregana</i>	4	3.8	0.158
<i>Parmelia</i> sp.	1	1.0	0.013
<i>Parmelia hygrophila</i>	8	7.6	0.276
<i>Parmelia saxatilis</i>	4	3.8	0.145
<i>Parmelia sulcata</i>	15	14.3	0.592

Species	Number of Occurrences	% Frequency	Mean Abundance <sup>1</sup>
<i>Parmelina quercina</i>	15	14.3	0.579
<i>Parmeliopsis ambigua</i>	1	1.0	0.039
<i>Parmeliopsis hyperopta</i>	3	2.9	0.105
<i>Parmotrema arnoldii</i>	1	1.0	0.039
<i>Parmotrema austrosinense</i>	1	1.0	0.039
<i>Parmotrema chinense</i>	1	1.0	0.039
<i>Peltigera britannica</i>	1	1.0	0.039
<i>Peltigera collina</i>	5	4.8	0.145
<i>Phaeophyscia ciliata</i>	1	1.0	0.013
<i>Phaeophyscia orbicularis</i>	1	1.0	0.039
<i>Physcia</i> sp.	1	1.0	0.039
<i>Physcia adscendens</i>	15	14.3	0.539
<i>Physcia aipolia</i>	11	10.5	0.421
<i>Physcia biziana</i>	4	3.8	0.171
<i>Physcia dimidiata</i>	3	2.9	0.092
<i>Physcia stellaris</i>	12	11.4	0.447
<i>Physcia tenella</i>	9	8.6	0.355
<i>Physciella chloantha</i>	1	1.0	0.039
<i>Physconia</i> sp.	3	2.9	0.066
<i>Physconia americana</i>	13	12.4	0.487
<i>Physconia enteroxantha</i>	19	18.1	0.697
<i>Physconia isidiigera</i>	9	8.6	0.355
<i>Physconia perisidiosa</i>	7	6.7	0.263
<i>Platismatia glauca</i>	15	14.3	0.487
<i>Platismatia herrei</i>	3	2.9	0.118
<i>Platismatia stenophylla</i>	3	2.9	0.092
<i>Pseudocyphellaria anomala</i>	8	7.6	0.25
<i>Pseudocyphellaria anthraspis</i>	6	5.7	0.197
<i>Punctelia subrudecta</i>	3	2.9	0.105
<i>Ramalina farinacea</i>	10	9.5	0.342
<i>Ramalina leptocarpha</i>	1	1.0	0.039
<i>Ramalina subleptocarpha</i>	6	5.7	0.197
<i>Sphaerophorus globosus</i>	2	1.9	0.066
<i>Usnea</i> sp.	11	10.5	0.395
<i>Usnea arizonica</i>	1	1.0	0.039
<i>Usnea diplotypus</i>	8	7.6	0.316
<i>Usnea filipendula</i>	17	16.2	0.605
<i>Usnea hirta</i>	1	1.0	0.039
<i>Usnea lapponica</i>	1	1.0	0.039
<i>Usnea scabrata</i>	3	2.9	0.105
<i>Usnea wirthii</i>	1	1.0	0.039
<i>Xanthoria candelaria</i>	6	5.7	0.211
<i>Xanthoria fallax</i>	12	11.4	0.474
<i>Xanthoria fulva</i>	12	11.4	0.447
<i>Xanthoria hasseana</i>	18	17.1	0.618
<i>Xanthoria oregana</i>	6	5.7	0.224
<i>Xanthoria polycarpa</i>	9	8.6	0.303

1. Mean represents the sum of all abundance scores (1-4) of a species in all plots divided by 76 plots.

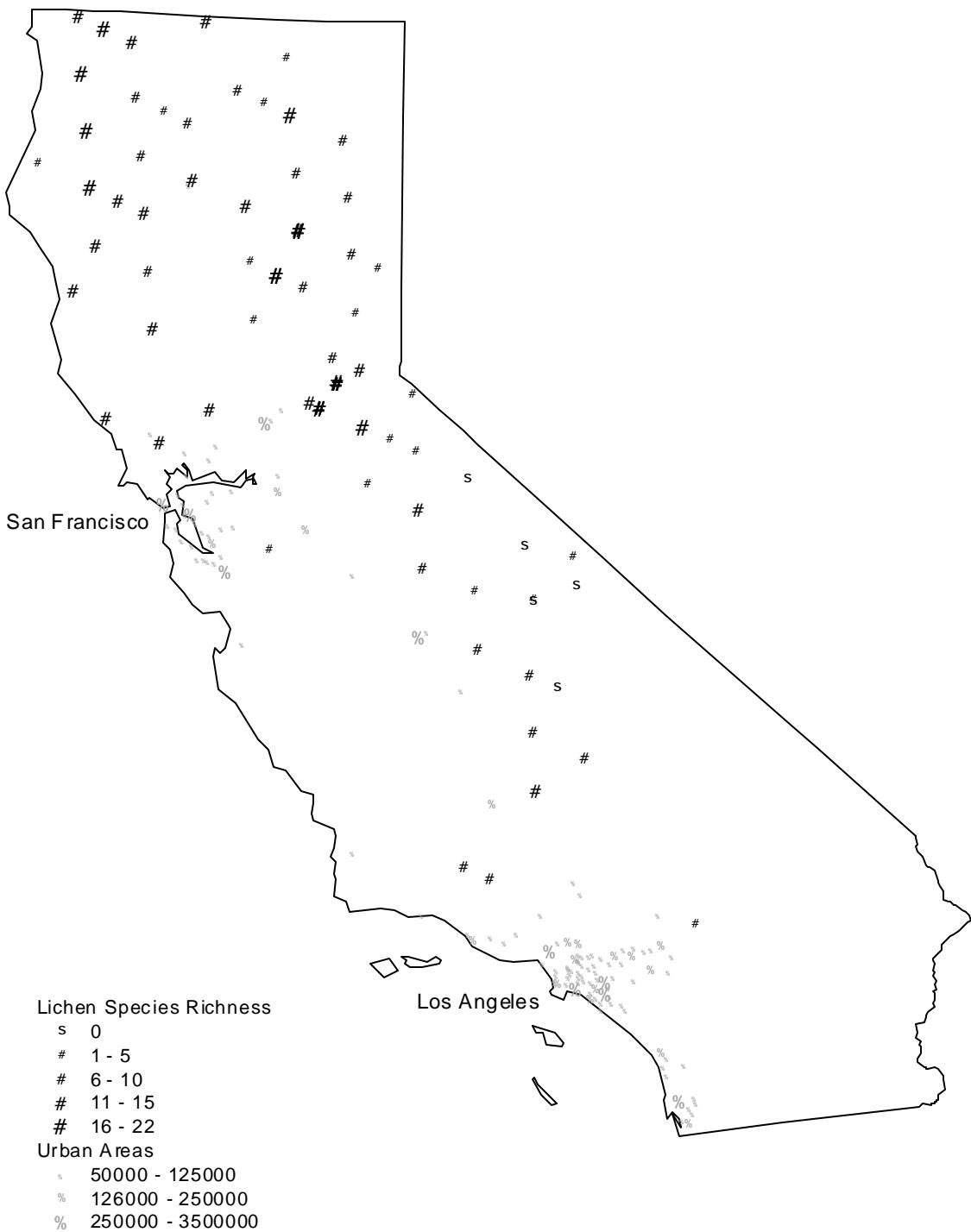


Fig. 2. Lichen species richness in 76 on-frame and off-frame FHM plots in California, 1998.

**Table 9.** Summary of QA plots and On-Frame plots surveyed in California, 1998.

PLOT	No. of Species	Species Richness Class <sup>1</sup>	Crew Member <sup>2</sup>	Lichen Indicator Plot Code
<b><i>Reference Plots<sup>3</sup></i></b>				
CA_R1_Y	19	3	Hasselbach	CA_R1_Y
00010611	15	2	Johnson	CA_R1_a1
00010621	15	2	Johnson	CA_R1_a2
00020611	13	2	Foss	CA_R1_b1
CA_R2_Z	21	3	Neitlich	CA_R2_Z
00010612	13	2	Johnson	CA_R2_a1
00010622	15	2	Johnson	CA_R2_a2
00020621	11	2	Foss	CA_R2_b1
<b><i>On-Frame Hot Checks</i></b>				
4012122Z	22	3	Neitlich	4012122Z
4012122Y	19	3	Hasselbach	4012122Y
3912174Z	22	3	Neitlich	3912174Z
<b><i>Off-Frame</i></b>				
ESideBR1	2	1	Neitlich	ESideBR1
ESideSS1	0	0	Neitlich	ESideSS1
ESideBC1	1	1	Neitlich	ESideBC1
ESideBC2	0	0	Neitlich	ESideBC2
<b><i>On-Frame</i></b>				
3411638	5	1	Johnson	3411638
3411961	7	2	Foss	3411961
3411973	7	2	Foss	3411973
3511845	11	2	Johnson	3511845
3511861	9	2	Johnson	3511861
3511885	8	2	Foss	3511885
3611833	0	0	Foss	3611833
3611845	7	2	Johnson	3611845
3711821	0	0	Foss	3711821
3711922	5	1	Johnson	3711922
3711937	10	2	Johnson	3711937
3611962	8	2	Johnson	3611962
3711977	13	2	Johnson	3711977
3712144	2	1	Foss	3712144
3811923	0	0	Foss	3811923
3811937	5	1	Foss	3811937
3811978	1	1	Foss	3811978
3812013	4	1	Foss	3812013
3812041	3	1	Foss	3812041
3812054	16	3	Johnson	3812054
3812078	13	2	Johnson	3812078
3812245	12	2	Johnson	3812245
3812261	13	2	Johnson	3812261

PLOT	No. of Species	Species Richness Class <sup>1</sup>	Crew Member <sup>2</sup>	Lichen Indicator Plot Code
3812352	14	2	Foss	3812352
3912014	15	2	Johnson	3912014
3912026	6	2	Foss	3912026
3912055	2	1	Johnson	3912055
3912083	1	1	Johnson	3912083
3912145	4	1	Johnson	3912145
3912161	9	2	Foss	3912161
3912174	17	3	Foss	3912174b
3912186	2	1	Foss	3912186
3912236	11	2	Foss	3912236
3912277	8	2	Foss	3912277
3912365	11	2	Foss	3912365
4012015	10	2	Johnson	4012015
4012045	6	2	Johnson	4012045
4012086	8	2	Johnson	4012086
4012122	15	2	Johnson	4012122a
4012146	14	2	Johnson	4012146
4012162	7	2	Johnson	4012162
4012237	11	2	Johnson	4012237
4012253	12	2	Johnson	4012253
4012278	8	2	Foss	4012278
4012314	15	2	Johnson	4012314
4012342	11	2	Foss	4012342
4012344	16	3	Johnson	4012344
4012385	22	3	Johnson	4012385
4012461	4	1	Johnson	4012461
4112123	17	3	Johnson	4112123
4112135	4	1	Foss	4112135
4112147	9	2	Foss	4112147
4112163	2	1	Foss	4112163
4112214	6	2	Foss	4112214
4112226	4	1	Foss	4112226
4112282	14	2	Foss	4112282
4112331	10	2	Foss	4112331
4112345	18	3	Johnson	4112345
4112371	13	2	Foss	4112371
4112374	16	3	Foss	4112374
4112386	12	2	Johnson	4112386

1. Species Richness Classes:

- 0. 0 species
- 4. 1-5 species
- 5. 6-15 species
- 6. >15 species

2. Crew Members: Walter Foss, Karina Johnson. Specialist/Auditors: Linda Hasselbach, Peter Neitlich.

3. CA\_R1\_\*\* = Reference Plot 1 (Oak Plot, Placerville). CA\_R2\_\*\* = Reference Plot 2 (Mixed Conifer, Blodgett State Forest).

**Table 10.** Number of plots in 4 lichen species richness classes over several plot types, California, 1998.

Plot Type	Species Richness Class			
	0 <i>0 species</i>	1 <i>1-5 species</i>	2 <i>6-15 species</i>	3 <i>&gt;15 species</i>
Reference	0	0	6	2
Hot Check	0	0	1	4
On-Frame	3	15	35	6
Off-Frame	2	2	0	0
Total	5	17	42	12
Percent of Total in Class	7	22	55	16

### Potential Air Quality and Management Issues

Although the California does not currently have a gradient model or a large plot base from which to draw conclusions, anecdotal evidence in lichen community composition is suggestive of air quality concerns. First, observation and studies from other areas in the US (e.g., McCune et al. 1997) suggest that the areas surrounding large and medium-sized urban centers are likely to be most heavily impacted. Second, nitrification from agriculture in the Central Valley is likely to have fostered a bloom of nitrophilous species in the genera *Xanthoria* and *Physcia* in areas adjacent. Third, the air pollution plume from both Orange County (Los Angeles) and the Bay Area is likely to have an effect on downwind oak woodland (*Quercus* spp.) communities. In clean air conditions, these should normally host a high diversity of lichens including the charismatic *Ramalina menziesii*. This species has been one of the most showy and abundant members of the oak woodlands, especially in fog zones (McCune and Geiser 1997), but is pollution sensitive and has declined due to poor air quality and habitat loss. Floristically, this community is of great importance, and is likely to hold equal or higher diversity than the coniferous forests of the mid-elevations on the west side in clean air situations.

Conducting a gradient model will be essential to determining the nature and extent of these problems. A model for this state is the next priority for FHM in the western US following completion of the Pacific Northwest gradient model. In constructing the gradient model, the genera listed in Table 11 are likely to be of great utility as indicator species in indicator species analysis techniques (Dufrene and Legendre 1997).

**Table 11.** Characteristics of some common epiphytic macrolichen genera in California.

Genus	Appearance	Indicator value and functional roles
<i>Bryoria</i>	Brown, hairlike	Pollution-sensitive; forage lichen; many uses by animals
<i>Candelaria</i>	Yellow, very small foliose	Pollution and dust tolerant, mainly on hardwoods
<i>Cetraria</i>	Brown or yellow, foliose	Mostly pollution intermediate
<i>Evernia</i>	Yellow green subfruticose	Mostly on hardwoods. Pollution tolerant.
<i>Hypogymnia</i>	Grey or brown, foliose, hollow lobes	Mainly on conifers, some species pollution tolerant

<i>Letharia</i>	Yellow to chartreuse, shrubby	Widespread in conifer forests; somewhat pollution sensitive.
<i>Melanelia</i>	Brown to olive, foliose, medium size	Common but inconspicuous; some species pollution tolerant; on both hardwoods and conifers
<i>Parmelia</i>	Grey, foliose, medium size, black below	Widespread, pollution tolerant, on both hardwoods and conifers
<i>Phaeophyscia</i>	Small, cryptic, grey or brownish, foliose	Usually on hardwoods; most species pollution tolerant
<i>Physcia</i>	Small, white, foliose	Some species nitrogen-loving; some species strongly preferential to hardwoods
<i>Physconia</i>	Small, frosty-coated, foliose, often forming neat rosettes; brown, grey or white	Usually on hardwoods; pollution tolerant, nitrogen-loving
<i>Ramalina</i>	Yellow green, fruticose, sometime forming large nets	Many species sensitive. Most common in disappearing oak forests.
<i>Usnea</i>	Greenish fruticose, tufted or hanging, branches have a central cord	Common in moist forests, somewhat pollution sensitive but persisting in polluted areas as dwarf, compact forms
<i>Xanthoria</i>	Orange or yellow, foliose	Widespread but more abundant in areas of elevated nitrogen, somewhat pollution tolerant

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**APPENDIX 1.** List of lichen species by plot collected by crew members and auditors in the Pacific Northwest, 1998.

Compact format data file:

D:\FHM\PNW\PNWMASTER.TXT

Species file:

D:\FHM\PNW\EPIPHYTE.SPP

Matrix size: 171 plots (rows)  
150 species (columns)

Group: OFF-FRAME AUDITS  
Sample unit: OR98A1\_Z

Value	Code	Species	Code Name
3.00	4004	Melanelia exasperatula	Melexl
3.00	4017	Melanelia subolivacea	Melsol
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4016	Melanelia subelegantula	Melsel
3.00	8207	Xanthoria polycarpa	Xanpol
3.00	1004	Cetraria canadensis	Cetcan
3.00	1016	Cetraria platyphylla	Cetpla
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	1011	Cetraria merrillii	Cetmer
1.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	3112	Hypogymnia metaphysodes	Hypmet
1.00	6101	Platismatia glauca	Plagla
3.00	3702	Letharia vulpina	Letvul
3.00	4806	Parmelia sulcata	Parsul
3.00	205	Alectoria sarmentosa	Alesar
1.00	1005	Cetraria chlorophylla	Cetchl
1.00	2404	Evernia prunastri	Evepru
2.00	8077	Usnea substerilis	Usnsst
3.00	202	Alectoria imshaugii	Aleims
3.00	8029	Usnea filipendula	Usnfil
3.00	607	Bryoria fremontii	Bryfre
3.00	620	Bryoria simplicior	Brysim
3.00	610	Bryoria fuscescens	Bryfus

Group: OFF-FRAME AUDITS  
Sample unit: OR98A1\_c

Value	Code	Species	Code Name
3.00	3702	Letharia vulpina	Letvul
2.00	6102	Platismatia herrei	Plaher
3.00	6101	Platismatia glauca	Plagla
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	202	Alectoria imshaugii	Aleims
3.00	4004	Melanelia exasperatula	Melexl
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3116	Hypogymnia physodes	Hypphy
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3105	Hypogymnia enteromorpha	Hypent
3.00	1016	Cetraria platyphylla	Cetpla
3.00	205	Alectoria sarmentosa	Alesar
3.00	1004	Cetraria canadensis	Cetcan

2.00	2404	<i>Evernia prunastri</i>	Evepru
3.00	4000	<i>Melanelia</i>	Mel
1.00	6912	<i>Ramalina farinacea</i>	Ramfar
3.00	8207	<i>Xanthoria polycarpa</i>	Xanpol
2.00	8203	<i>Xanthoria fallax</i>	Xanfal
3.00	5202	<i>Parmeliopsis hyperopta</i>	Pophyp
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	610	<i>Bryoria fuscescens</i>	Bryfus
3.00	620	<i>Bryoria simplicior</i>	Brysim

Group: OFF-FRAME AUDITS  
 Sample unit: OR98A1\_f

Value	Code	Species	Code Name
3.00	4004	<i>Melanelia exasperatula</i>	Melexl
2.00	4806	<i>Parmelia sulcata</i>	Parsul
1.00	6912	<i>Ramalina farinacea</i>	Ramfar
2.00	1011	<i>Cetraria merrillii</i>	Cetmer
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	3702	<i>Letharia vulpina</i>	Letvul
1.00	3701	<i>Letharia columbiana</i>	Letcol
2.00	6101	<i>Platismatia glauca</i>	Plagla
1.00	6934	<i>Ramalina subleptocarpha</i>	Ramsle
3.00	1016	<i>Cetraria platyphylla</i>	Cetpla
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	4016	<i>Melanelia subelegantula</i>	Melsel
3.00	610	<i>Bryoria fuscescens</i>	Bryfus
2.00	8065	<i>Usnea scabrata</i>	Usnsca
3.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
2.00	8029	<i>Usnea filipendula</i>	Usnfil
1.00	620	<i>Bryoria simplicior</i>	Brysim
2.00	1004	<i>Cetraria canadensis</i>	Cetcan
1.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
1.00	5201	<i>Parmeliopsis ambigua</i>	Popamb
2.00	4002	<i>Melanelia elegantula</i>	Melele
2.00	8207	<i>Xanthoria polycarpa</i>	Xanpol
1.00	2404	<i>Evernia prunastri</i>	Evepru
2.00	4017	<i>Melanelia subolivacea</i>	Melsol

Group: OFF-FRAME AUDITS  
 Sample unit: OR98A2\_Y

Value	Code	Species	Code Name
1.00	5702	<i>Physcia aipolia</i>	Phyaip
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	1016	<i>Cetraria platyphylla</i>	Cetpla
1.00	2301	<i>Esslingeriana idahoensis</i>	Essida
1.00	1011	<i>Cetraria merrillii</i>	Cetmer
1.00	3701	<i>Letharia columbiana</i>	Letcol
1.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
3.00	4004	<i>Melanelia exasperatula</i>	Melexl
2.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
3.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	608	<i>Bryoria friabilis</i>	Bryfri
2.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	3702	<i>Letharia vulpina</i>	Letvul

3.00	610	Bryoria fuscescens	Bryfus
3.00	607	Bryoria fremontii	Bryfre
2.00	603	Bryoria capillaris	Brycap
3.00	4552	Nodobryoria oregana	Nodore
3.00	618	Bryoria pseudofuscescens	Brypse
1.00	3121	Hypogymnia tubulosa	Hyptub
2.00	5201	Parmeliopsis ambigua	Popamb
2.00	8200	Xanthoria	Xan
3.00	4016	Melanelia subelegantula	Melsel
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	2404	Evernia prunastri	Evepru
3.00	6101	Platismatia glauca	Plagla
3.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	202	Alectoria imshaugii	Aleims
2.00	8029	Usnea filipendula	Usnfil

Group: OFF-FRAME AUDITS  
 Sample unit: OR98A2\_d

Value	Code	Species	Code Name
1.00	8203	Xanthoria fallax	Xanfal
1.00	4015	Melanelia subaurifera	Melsub
3.00	4016	Melanelia subelegantula	Melsel
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3116	Hypogymnia physodes	Hypphy
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	4017	Melanelia subolivacea	Melsol
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	6101	Platismatia glauca	Plagla
2.00	202	Alectoria imshaugii	Aleims
3.00	8029	Usnea filipendula	Usnfil
3.00	205	Alectoria sarmentosa	Alesar
3.00	610	Bryoria fuscescens	Bryfus
4.00	607	Bryoria fremontii	Bryfre
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	620	Bryoria simplicior	Brysim
2.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
1.00	6912	Ramalina farinacea	Ramfar

Group: OFF-FRAME AUDITS  
 Sample unit: OR98A2\_g

Value	Code	Species	Code Name
3.00	3116	Hypogymnia physodes	Hypphy
3.00	6101	Platismatia glauca	Plagla
3.00	4004	Melanelia exasperatula	Melexl
4.00	3702	Letharia vulpina	Letvul
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1016	Cetraria platyphylla	Cetpla

3.00	610	Bryoria fuscescens	Bryfus
3.00	4806	Parmelia sulcata	Parsul
3.00	4802	Parmelia hygrophila	Parhyg
2.00	8029	Usnea filipendula	Usnfil
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	5201	Parmeliopsis ambigua	Popamb
2.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	8201	Xanthoria candelaria	Xancan
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	1013	Cetraria orbata	Cetorb
3.00	4016	Melanelia subelegantula	Melsel
2.00	202	Alectoria imshaugii	Aleims
1.00	2404	Evernia prunastri	Evepru
3.00	205	Alectoria sarmentosa	Alesar
3.00	4017	Melanelia subolivacea	Melsol
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	607	Bryoria fremontii	Bryfre

Group: ON-FRAME AUDITS  
 Sample unit: 4712018W

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
2.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	1011	Cetraria merrillii	Cetmer
3.00	1004	Cetraria canadensis	Cetcan
2.00	1016	Cetraria platyphylla	Cetpla
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	1014	Cetraria pallidula	Cetpal
2.00	3119	Hypogymnia rugosa	Hyprug
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3109	Hypogymnia inactiva	Hypina
3.00	3105	Hypogymnia enteromorpha	Hypent
2.00	3116	Hypogymnia physodes	Hypphy
2.00	3121	Hypogymnia tubulosa	Hyptub
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3702	Letharia vulpina	Letvul
2.00	4016	Melanelia subelegantula	Melsel
1.00	4000	Melanelia	Mel
3.00	4806	Parmelia sulcata	Parsul
3.00	4552	Nodobryoria oregana	Nodore
3.00	624	Bryoria tortuosa	Brytor
2.00	603	Bryoria capillaris	Brycap
3.00	610	Bryoria fuscescens	Bryfus
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla

Group: ON-FRAME AUDITS  
 Sample unit: 4712018e

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	202	Alectoria imshaugii	Aleims

2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	624	Bryoria tortuosa	Brytor
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	610	Bryoria fuscescens	Bryfus
1.00	1014	Cetraria pallidula	Cetpal
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3105	Hypogymnia enteromorpha	Hypent
2.00	3108	Hypogymnia imshaugii	Hypims
3.00	603	Bryoria capillaris	Brycap
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3702	Letharia vulpina	Letvul
2.00	3701	Letharia columbiana	Letcol
1.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
1.00	6102	Platismatia herrei	Plaher
2.00	1004	Cetraria canadensis	Cetcan

Group: REFERENCE PLOTS  
 Sample unit: OR\_R1\_Y

Value	Code	Species	Code Name
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	202	Alectoria imshaugii	Aleims
3.00	3702	Letharia vulpina	Letvul
3.00	607	Bryoria fremontii	Bryfre
3.00	1011	Cetraria merrillii	Cetmer
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	1016	Cetraria platyphylla	Cetpla
3.00	6101	Platismatia glauca	Plagla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	8210	Xanthoria fulva	Xanful
1.00	4802	Parmelia hygrophila	Parhyg
1.00	4004	Melanelia exasperatula	Melexl
3.00	205	Alectoria sarmentosa	Alesar
3.00	3701	Letharia columbiana	Letcol
1.00	8029	Usnea filipendula	Usnfil
3.00	1004	Cetraria canadensis	Cetcan
1.00	3006	Hypocenomyce scalaris	Hcesca
1.00	6934	Ramalina subleptocarpha	Ramsle
2.00	5900	Physconia	Pho
1.00	5701	Physcia adscendens	Phyads
1.00	3114	Hypogymnia occidentalis	Hypocc
2.00	1013	Cetraria orbata	Cetorb
1.00	1400	Collema	Col

Group: REFERENCE PLOTS  
 Sample unit: OR\_R1\_c1

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
1.00	607	Bryoria fremontii	Bryfre
2.00	618	Bryoria pseudofuscescens	Brypse
3.00	1004	Cetraria canadensis	Cetcan
3.00	1005	Cetraria chlorophylla	Cetchl

3.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	8210	Xanthoria fulva	Xanful

Group: REFERENCE PLOTS  
 Sample unit: OR\_R1\_c2

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
2.00	205	Alectoria sarmentosa	Alesar
1.00	603	Bryoria capillaris	Brycap
1.00	618	Bryoria pseudofuscescens	Brypse
1.00	620	Bryoria simplicior	Brysim
3.00	1004	Cetraria canadensis	Cetcan
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
2.00	1016	Cetraria platyphylla	Cetpla
1.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	6101	Platismatia glauca	Plagla
1.00	8029	Usnea filipendula	Usnfil

Group: REFERENCE PLOTS  
 Sample unit: OR\_R1\_d1

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
2.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4017	Melanelia subolivacea	Melsol
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
2.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	5724	Physcia tenella	Phyten
3.00	5906	Physconia perisidiosa	Phoper
3.00	6101	Platismatia glauca	Plagla
3.00	6100	Platismatia	Pla
3.00	8210	Xanthoria fulva	Xanful

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Group: REFERENCE PLOTS  
Sample unit: OR\_R1\_d2

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	618	Bryoria pseudofuscescens	Brypse
1.00	620	Bryoria simplicior	Brysim
2.00	1004	Cetraria canadensis	Cetcan
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
1.00	1016	Cetraria platyphylla	Cetpla
1.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
4.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
2.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	6101	Platismatia glauca	Plagla
3.00	8210	Xanthoria fulva	Xanful

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Group: REFERENCE PLOTS  
Sample unit: OR\_R1\_e1

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
2.00	205	Alectoria sarmentosa	Alesar
2.00	607	Bryoria fremontii	Bryfre
3.00	1004	Cetraria canadensis	Cetcan
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
2.00	1013	Cetraria orbata	Cetorb
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
2.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4550	Nodobryoria	Nod
1.00	4806	Parmelia sulcata	Parsul
1.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	5702	Physcia aipolia	Phyaip
3.00	5907	Physconia isidiigera	Phoisi
2.00	6101	Platismatia glauca	Plagla
3.00	8210	Xanthoria fulva	Xanful

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Group: REFERENCE PLOTS  
Sample unit: OR\_R1\_e2

Value	Code	Species	Code Name
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1.00	101	Ahtiana sphaerosporella	Ahtsph
1.00	202	Alectoria imshaugii	Aleims
2.00	205	Alectoria sarmentosa	Alesar
1.00	603	Bryoria capillaris	Brycap
2.00	620	Bryoria simplicior	Brysim
2.00	1004	Cetraria canadensis	Cetcan
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
2.00	3108	Hypogymnia imshaugii	Hypims
1.00	3116	Hypogymnia physodes	Hypphy
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	5201	Parmeliopsis ambigua	Popamb
1.00	5910	Physconia americana	Phoame
2.00	6101	Platismatia glauca	Plagla
1.00	8029	Usnea filipendula	Usnfil
3.00	8210	Xanthoria fulva	Xanful
3.00	5706	Physcia caesia	Phycae

Group: REFERENCE PLOTS

Sample unit: OR\_R1\_f1

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
1.00	206	Alectoria vancouverensis	Alevan
1.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
1.00	618	Bryoria pseudofuscescens	Brypse
2.00	620	Bryoria simplicior	Brysim
3.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
1.00	600	Bryoria	Bry
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
2.00	4004	Melanelia exasperatula	Melexl
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4552	Nodobryoria oregana	Nodore
1.00	4802	Parmelia hygrophila	Parhyg
2.00	4806	Parmelia sulcata	Parsul
2.00	5702	Physcia aipolia	Phyaip
2.00	5724	Physcia tenella	Phyten
3.00	5906	Physconia perisidiosa	Phoper
2.00	6101	Platismatia glauca	Plagla
1.00	6912	Ramalina farinacea	Ramfar
2.00	8000	Usnea	Usn
2.00	8029	Usnea filipendula	Usnfil
3.00	8210	Xanthoria fulva	Xanful

Group: REFERENCE PLOTS

Sample unit: OR\_R1\_g1

Value	Code	Species	Code Name
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3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
2.00	1217	Cladonia fimbriata	Clafim
2.00	1240	Cladonia transcendens	Clatra
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
1.00	5503	Peltigera collina	Pelcol
3.00	6101	Platismatia glauca	Plagla
3.00	8029	Usnea filipendula	Usnfil
1.00	5507	Peltigera membranacea	Pelmem

Group: REFERENCE PLOTS

Sample unit: OR\_R2\_Z

Value	Code	Species	Code Name
2.00	8203	Xanthoria fallax	Xanfal
3.00	8210	Xanthoria fulva	Xanful
2.00	3702	Letharia vulpina	Letvul
2.00	1011	Cetraria merrillii	Cetmer
1.00	1004	Cetraria canadensis	Cetcan
1.00	8201	Xanthoria candelaria	Xancan
1.00	4806	Parmelia sulcata	Parsul
3.00	8301	Candelaria concolor	Cndcon
2.00	3108	Hypogymnia imshaugii	Hypims
2.00	4002	Melanelia elegantula	Melele
3.00	3701	Letharia columbiana	Letcol
2.00	618	Bryoria pseudofuscescens	Brypse
1.00	5900	Physconia	Pho

Group: REFERENCE PLOTS

Sample unit: OR\_R2\_c1

Value	Code	Species	Code Name
2.00	202	Alectoria imshaugii	Aleims
3.00	610	Bryoria fuscescens	Bryfus
1.00	618	Bryoria pseudofuscescens	Brypse
3.00	8301	Candelaria concolor	Cndcon
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
1.00	1217	Cladonia fimbriata	Clafim
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3701	Letharia columbiana	Letcol
3.00	4004	Melanelia exasperatula	Melexl
3.00	4802	Parmelia hygrophila	Parhyg
2.00	6101	Platismatia glauca	Plagla
2.00	8215	Xanthoria oregana	Xanore
3.00	8210	Xanthoria fulva	Xanful
2.00	4550	Nodobryoria	Nod

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Group: REFERENCE PLOTS  
Sample unit: OR\_R2\_d1

Value	Code	Species	Code Name
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	620	Bryoria simplicior	Brysim
2.00	1004	Cetraria canadensis	Cetcan
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	1011	Cetraria merrillii	Cetmer
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	4004	Melanelia exasperatula	Melexl
2.00	6101	Platismatia glauca	Plagla
3.00	8215	Xanthoria oregana	Xanore
3.00	5711	Physcia dubia	Phydub
1.00	5710	Physcia dimidiata	Phydim

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Group: REFERENCE PLOTS  
Sample unit: OR\_R2\_e1

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
2.00	608	Bryoria friabilis	Bryfri
2.00	610	Bryoria fuscescens	Bryfus
2.00	611	Bryoria glabra	Brygla
2.00	1005	Cetraria chlorophylla	Cetchl
1.00	1016	Cetraria platyphylla	Cetpla
1.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
1.00	3115	Hypogymnia oceanica	Hypoce
1.00	3116	Hypogymnia physodes	Hypphy
3.00	4552	Nodobryoria oregana	Nodore
1.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
1.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
1.00	6105	Platismatia stenophylla	Plaste
1.00	7402	Sphaerophorus globosus	Sphglo

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Group: REFERENCE PLOTS  
Sample unit: OR\_R2\_f1

Value	Code	Species	Code Name
1.00	1004	Cetraria canadensis	Cetcan
1.00	1005	Cetraria chlorophylla	Cetchl
1.00	1011	Cetraria merrillii	Cetmer
1.00	1016	Cetraria platyphylla	Cetpla
2.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	4002	Melanelia elegantula	Melele

1.00	4004	Melanelia exasperatula	Melexl
1.00	4017	Melanelia subolivacea	Melsol
1.00	4802	Parmelia hygrophila	Parhyg
1.00	4806	Parmelia sulcata	Parsul
3.00	8210	Xanthoria fulva	Xanful

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Group: REFERENCE PLOTS  
Sample unit: OR\_R2\_g1

Value	Code	Species	Code Name
2.00	610	Bryoria fuscescens	Bryfus
2.00	618	Bryoria pseudofuscescens	Brypse
2.00	1011	Cetraria merrillii	Cetmer
1.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	4002	Melanelia elegantula	Melele
3.00	4552	Nodobryoria oregana	Nodore
2.00	4806	Parmelia sulcata	Parsul
2.00	5201	Parmeliopsis ambigua	Popamb
1.00	5903	Physconia enteroxantha	Phoent
2.00	6101	Platismatia glauca	Plagla
3.00	8210	Xanthoria fulva	Xanful
2.00	5710	Physcia dimidiata	Phydim

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Group: REFERENCE PLOTS  
Sample unit: OR\_R3\_Z

Value	Code	Species	Code Name
2.00	1016	Cetraria platyphylla	Cetpla
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	205	Alectoria sarmentosa	Alesar
3.00	608	Bryoria friabilis	Bryfri
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	4552	Nodobryoria oregana	Nodore
3.00	603	Bryoria capillaris	Brycap
3.00	4802	Parmelia hygrophila	Parhyg
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	4803	Parmelia pseudosulcata	Parpse
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	1240	Cladonia transcendens	Clatra
3.00	3109	Hypogymnia inactiva	Hypina
3.00	6101	Platismatia glauca	Plagla
3.00	611	Bryoria glabra	Brygla
1.00	6105	Platismatia stenophylla	Plaste
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	6102	Platismatia herrei	Plaher
3.00	610	Bryoria fuscescens	Bryfus
3.00	600	Bryoria	Bry

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Group: REFERENCE PLOTS  
Sample unit: OR\_R3\_c1

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar

2.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	1016	Cetraria platyphylla	Cetpla
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
3.00	6105	Platismatia stenophylla	Plaste
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	4552	Nodobryoria oregana	Nodore

Group: REFERENCE PLOTS  
 Sample unit: OR\_R3\_c2

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	610	Bryoria fuscescens	Bryfus
3.00	611	Bryoria glabra	Brygla
3.00	1005	Cetraria chlorophylla	Cetchl
1.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3109	Hypogymnia inactiva	Hypina
2.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher

Group: REFERENCE PLOTS  
 Sample unit: OR\_R3\_d1

Value	Code	Species	Code Name
4.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	608	Bryoria friabilis	Bryfri
3.00	1240	Cladonia transcendens	Clatra
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	4552	Nodobryoria oregana	Nodore
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher

Group: REFERENCE PLOTS  
 Sample unit: OR\_R3\_d2

Value	Code	Species	Code Name
4.00	205	Alectoria sarmentosa	Alesar
4.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
1.00	901	Cavernularia hultenii	Cavhul
2.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb

1.00	1240	Cladonia transcendens	Clatra
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	4552	Nodobryoria oregana	Nodore
2.00	4804	Parmelia saxatilis	Parsax
2.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6102	Platismatia herrei	Plaher
1.00	6105	Platismatia stenophylla	Plaste
3.00	611	Bryoria glabra	Brygla

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Group: REFERENCE PLOTS  
Sample unit: OR\_R3\_e1

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	610	Bryoria fuscescens	Bryfus
3.00	1005	Cetraria chlorophylla	Cetchl
1.00	1200	Cladonia	Cla
1.00	1228	Cladonia ochrochlora	Claoch
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	4552	Nodobryoria oregana	Nodore
2.00	4802	Parmelia hygrophila	Parhyg
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
2.00	6102	Platismatia herrei	Plaher
3.00	6105	Platismatia stenophylla	Plaste
1.00	7402	Sphaerophorus globosus	Sphglo

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Group: REFERENCE PLOTS  
Sample unit: OR\_R3\_e2

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
2.00	618	Bryoria pseudofuscescens	Brypse
2.00	1004	Cetraria canadensis	Cetcan
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
1.00	1217	Cladonia fimbriata	Clafim
2.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	4004	Melanelia exasperatula	Melexl
1.00	4802	Parmelia hygrophila	Parhyg
1.00	4806	Parmelia sulcata	Parsul
2.00	6101	Platismatia glauca	Plagla
3.00	8210	Xanthoria fulva	Xanful
1.00	3112	Hypogymnia metaphysodes	Hypmet
1.00	5710	Phycia dimidiata	Phydim

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Group: REFERENCE PLOTS  
Sample unit: OR\_R3\_f1

Value	Code	Species	Code Name

4.00	202	Alectoria imshaugii	Aleims
3.00	603	Bryoria capillaris	Brycap
3.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	1240	Cladonia transcendens	Clatra
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	4552	Nodobryoria oregana	Nodore
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
1.00	6105	Platismatia stenophylla	Plaste
3.00	600	Bryoria	Bry

Group: REFERENCE PLOTS  
 Sample unit: OR\_R3\_g1

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	608	Bryoria friabilis	Bryfri
3.00	610	Bryoria fuscescens	Bryfus
3.00	901	Cavernularia hultenii	Cavhul
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1016	Cetraria platyphylla	Cetpla
2.00	1240	Cladonia transcendens	Clatra
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	4805	Parmelia squarrosa	Parsqu
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher

Group: TRAINING  
 Sample unit: ortr98\_a

Value	Code	Species	Code Name
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	6101	Platismatia glauca	Plagla
2.00	6102	Platismatia herrei	Plaher
3.00	6401	Pseudocyphellaria anomala	Pcyano
3.00	1013	Cetraria orbata	Cetorb
3.00	8084	Usnea wirthii	Usnwir
2.00	6105	Platismatia stenophylla	Plaste
3.00	5503	Peltigera collina	Pelcol
3.00	1238	Cladonia squamosa v. subsquamosa	Classq
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	1211	Cladonia coniocraea	Clacon
3.00	4804	Parmelia saxatilis	Parsax
2.00	3116	Hypogymnia physodes	Hypphy
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	4408	Nephroma resupinatum	Nepres

3.00	8023	Usnea diplotypus	Usndip
3.00	8029	Usnea filipendula	Usnfil
3.00	8000	Usnea	Usn

Group: TRAINING  
Sample unit: ortr98\_b

Value	Code	Species	Code Name
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	4405	Nephroma laevigatum	Neplae
1.00	1217	Cladonia fimbriata	Clafim
2.00	1238	Cladonia squamosa v. subsquamo	Classq
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	5724	Physcia tenella	Phyten
3.00	3109	Hypogymnia inactiva	Hypina
3.00	1013	Cetraria orbata	Cetorb
3.00	6101	Platismatia glauca	Plagla
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	6105	Platismatia stenophylla	Plaste
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	2404	Evernia prunastri	Evepru
2.00	6102	Platismatia herrei	Plaher
3.00	3905	Lobaria pulmonaria	Lobpul
2.00	6401	Pseudocyphellaria anomala	Pcyano
2.00	4408	Nephroma resupinatum	Nepres
3.00	5503	Peltigera collina	Pelcol
3.00	5510	Peltigera pacifica	Pelpac
3.00	1211	Cladonia coniocraea	Clacon
3.00	8029	Usnea filipendula	Usnfil
3.00	8000	Usnea	Usn
3.00	8065	Usnea scabrata	Usnsca
3.00	8084	Usnea wirthii	Usnwir

Group: TRAINING  
Sample unit: ortr98\_c

Value	Code	Species	Code Name
1.00	4004	Melanelia exasperatula	Melexl
2.00	8301	Candelaria concolor	Cndcon
3.00	1217	Cladonia fimbriata	Clafim
3.00	5503	Peltigera collina	Pelcol
1.00	4016	Melanelia subelegantula	Melsel
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3116	Hypogymnia physodes	Hypphy
3.00	8084	Usnea wirthii	Usnwir
3.00	1238	Cladonia squamosa v. subsquamo	Classq
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3219	Hypotrachyna sinuosa	Htrsins
3.00	4806	Parmelia sulcata	Parsul
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	1013	Cetraria orbata	Cetorb
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	5724	Physcia tenella	Phyten
2.00	6401	Pseudocyphellaria anomala	Pcyano
3.00	4405	Nephroma laevigatum	Neplae
3.00	7503	Sticta limbata	Stilim
3.00	2404	Evernia prunastri	Evepru
3.00	6101	Platismatia glauca	Plagla

2.00	6404	Pseudocyphellaria crocata	Pcycro
3.00	6105	Platismatia stenophylla	Plaste
3.00	6102	Platismatia herrei	Plaher
3.00	8023	Usnea diplotypus	Usndip
3.00	8000	Usnea	Usn
3.00	8029	Usnea filipendula	Usnfil
3.00	8065	Usnea scabrata	Usnsca

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Group: TRAINING  
Sample unit: ortr98\_d

Value	Code	Species	Code Name
3.00	6101	Platismatia glauca	Plagla
3.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3121	Hypogymnia tubulosa	Hyptub
2.00	6105	Platismatia stenophylla	Plaste
2.00	1228	Cladonia ochrochlora	Claoch
3.00	1236	Cladonia squamosa	Clasqu
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	3116	Hypogymnia physodes	Hypphy
3.00	1013	Cetraria orbata	Cetorb
2.00	7503	Sticta limbata	Stilim
3.00	5503	Peltigera collina	Pelcol
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	4806	Parmelia sulcata	Parsul
3.00	6401	Pseudocyphellaria anomala	Pcyano
2.00	4405	Nephroma laevigatum	Neplae
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	6102	Platismatia herrei	Plaher
3.00	6912	Ramalina farinacea	Ramfar
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	8019	Usnea cornuta	Usncor
3.00	8000	Usnea	Usn
3.00	8084	Usnea wirthii	Usnwir
3.00	8029	Usnea filipendula	Usnfil
3.00	8036	Usnea glabrata	Usngla

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Group: TRAINING  
Sample unit: ortr98\_e

Value	Code	Species	Code Name
3.00	6102	Platismatia herrei	Plaher
3.00	4802	Parmelia hygrophila	Parhyg
2.00	6101	Platismatia glauca	Plagla
2.00	3109	Hypogymnia inactiva	Hypina
2.00	2404	Evernia prunastri	Evepru
3.00	8029	Usnea filipendula	Usnfil
2.00	4806	Parmelia sulcata	Parsul
3.00	8019	Usnea cornuta	Usncor
3.00	4015	Melanelia subaurifera	Melsub
2.00	8084	Usnea wirthii	Usnwir
3.00	8000	Usnea	Usn
2.00	3121	Hypogymnia tubulosa	Hyptub
2.00	7503	Sticta limbata	Stilim
3.00	3105	Hypogymnia enteromorpha	Hypent
2.00	3116	Hypogymnia physodes	Hypphy
2.00	6912	Ramalina farinacea	Ramfar

2.00	5503	Peltigera collina	Pelcol
3.00	4408	Nephroma resupinatum	Nepres
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	1236	Cladonia squamosa	Clasqu
3.00	8301	Candelaria concolor	Cndcon
2.00	5724	Physcia tenella	Phyten
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	8036	Usnea glabrata	Usngla
1.00	1238	Cladonia squamosa v. subsquamo	Classq

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Group: TRAINING  
Sample unit: ortr98\_f

Value	Code	Species	Code Name
2.00	3114	Hypogymnia occidentalis	Hypocc
2.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	6105	Platismatia stenophylla	Plaste
2.00	3109	Hypogymnia inactiva	Hypina
3.00	1236	Cladonia squamosa	Clasqu
3.00	1240	Cladonia transcendens	Clatra
2.00	4806	Parmelia sulcata	Parsul
2.00	1238	Cladonia squamosa v. subsquamo	Classq
3.00	6101	Platismatia glauca	Plagla
3.00	3219	Hypotrachyna sinuosa	Htrsin
2.00	3116	Hypogymnia physodes	Hypphy
3.00	1013	Cetraria orbata	Cetorb
3.00	4000	Melanelia	Mel
3.00	7500	Sticta	Sti
3.00	1211	Cladonia coniocraea	Clacon
3.00	608	Bryoria friabilis	Bryfri
3.00	7402	Sphaerophorus globosus	Sphglo
2.00	5503	Peltigera collina	Pelcol
3.00	6102	Platismatia herrei	Plaher
3.00	3636	Leptogium polycarpum	Leppol
3.00	5702	Physcia aipolia	Phyaip
3.00	5724	Physcia tenella	Phyten
2.00	7502	Sticta fuliginosa	Stiful
1.00	4405	Nephroma laevigatum	Neplae
1.00	1217	Cladonia fimbriata	Clafim
1.00	8207	Xanthoria polycarpa	Xanpol
2.00	8000	Usnea	Usn
3.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir
2.00	8023	Usnea diplotypus	Usndip

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Group: TRAINING  
Sample unit: ortr98\_g

Value	Code	Species	Code Name
3.00	6101	Platismatia glauca	Plagla
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	6102	Platismatia herrei	Plaher
2.00	3116	Hypogymnia physodes	Hypphy
3.00	3109	Hypogymnia inactiva	Hypina
3.00	1228	Cladonia ochrochlora	Claoch
3.00	3105	Hypogymnia enteromorpha	Hypent
2.00	1013	Cetraria orbata	Cetorb

3.00	1240	Cladonia transcendens	Clatra
3.00	5503	Peltigera collina	Pelcol
3.00	8084	Usnea wirthii	Usnwir
3.00	3219	Hypotrachyna sinuosa	Htrsinf
3.00	6105	Platismatia stenophylla	Plaste
3.00	8036	Usnea glabrata	Usngla
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	4806	Parmelia sulcata	Parsul
2.00	5724	Physcia tenella	Phyten
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	1211	Cladonia coniocraea	Clacon
3.00	5510	Peltigera pacifica	Pelpac
2.00	6912	Ramalina farinacea	Ramfar
1.00	7503	Sticta limbata	Stilim
3.00	8000	Usnea	Usn
3.00	8023	Usnea diplotypus	Usndip
3.00	8029	Usnea filipendula	Usnfil

Group: TRAINING  
 Sample unit: ortr98\_Z

Value	Code	Species	Code Name
3.00	3109	Hypogymnia inactiva	Hypina
3.00	1013	Cetraria orbata	Cetorb
3.00	4802	Parmelia hygrophila	Parhyg
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	2404	Evernia prunastri	Evepru
3.00	6912	Ramalina farinacea	Ramfar
3.00	6102	Platismatia herrei	Plaher
3.00	7503	Sticta limbata	Stilim
3.00	6105	Platismatia stenophylla	Plaste
3.00	6101	Platismatia glauca	Plagla
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	6401	Pseudocyphellaria anomala	Pcyano
2.00	3116	Hypogymnia physodes	Hypphy
1.00	4101	Menegazzia terebrata	Menter
1.00	5724	Physcia tenella	Phyten
1.00	6404	Pseudocyphellaria crocata	Pcycro
1.00	4403	Nephroma helveticum	Nephel
3.00	4405	Nephroma laevigatum	Neplae
3.00	4806	Parmelia sulcata	Parsul
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	5503	Peltigera collina	Pelcol
1.00	3108	Hypogymnia imshaugii	Hypims
1.00	5701	Physcia adscendens	Phyads
3.00	3219	Hypotrachyna sinuosa	Htrsinf
1.00	1240	Cladonia transcendens	Clatra
3.00	1238	Cladonia squamosa v. subsquamo	Classq
1.00	1217	Cladonia fimbriata	Clafim
2.00	1211	Cladonia coniocraea	Clacon
3.00	1236	Cladonia squamosa	Clasqu
3.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir
3.00	8000	Usnea	Usn
3.00	8019	Usnea cornuta	Usncor

Group: ON-FRAME - E  
 Sample unit: 4212022

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	8210	Xanthoria fulva	Xanful

Group: ON-FRAME - E  
 Sample unit: 4212047

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
1.00	620	Bryoria simplicior	Brysim
1.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
3.00	3108	Hypogymnia imshaugii	Hypims
4.00	3702	Letharia vulpina	Letvul
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
1.00	4806	Parmelia sulcata	Parsul
1.00	8029	Usnea filipendula	Usnfil
1.00	8200	Xanthoria	Xan
3.00	3701	Letharia columbiana	Letcol

Group: ON-FRAME - E  
 Sample unit: 4212088

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	1011	Cetraria merrillii	Cetmer
1.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3702	Letharia vulpina	Letvul
2.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb

Group: ON-FRAME - E  
 Sample unit: 4212111

Value	Code	Species	Code Name
3.00	8301	Candelaria concolor	Cndcon
1.00	1011	Cetraria merrillii	Cetmer
3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
3.00	4004	Melanelia exasperatula	Melexl
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4000	Melanelia	Mel
2.00	4806	Parmelia sulcata	Parsul
3.00	8201	Xanthoria candelaria	Xancan
3.00	8210	Xanthoria fulva	Xanful

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Group: ON-FRAME - E  
Sample unit: 4212124

Value	Code	Species	Code Name
3.00	8301	<i>Candelaria concolor</i>	Cndcon
3.00	5710	<i>Physcia dimidiata</i>	Phydim
3.00	3701	<i>Letharia columbiana</i>	Letcol
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	4002	<i>Melanelia elegantula</i>	Melele
3.00	8210	<i>Xanthoria fulva</i>	Xanful
3.00	8215	<i>Xanthoria oregana</i>	Xanore

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Group: ON-FRAME - E  
Sample unit: 4212164

Value	Code	Species	Code Name
3.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	610	<i>Bryoria fuscescens</i>	Bryfus
4.00	1011	<i>Cetraria merrillii</i>	Cetmer
2.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb

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Group: ON-FRAME - E  
Sample unit: 4212167

Value	Code	Species	Code Name
2.00	101	<i>Ahtiana sphaerosporaella</i>	Ahtsph
2.00	202	<i>Alectoria imshaugii</i>	Aleims
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	618	<i>Bryoria pseudofuscescens</i>	Brypse
3.00	1004	<i>Cetraria canadensis</i>	Cetcan
4.00	1011	<i>Cetraria merrillii</i>	Cetmer
4.00	1016	<i>Cetraria platiphylla</i>	Cetpla
1.00	2404	<i>Evernia prunastri</i>	Evepru
4.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
2.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
3.00	3701	<i>Letharia columbiana</i>	Letcol
4.00	3702	<i>Letharia vulpina</i>	Letvul
1.00	4016	<i>Melanelia subelegantula</i>	Melsel
3.00	4017	<i>Melanelia subolivacea</i>	Melsol
4.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
3.00	8029	<i>Usnea filipendula</i>	Usnfil
2.00	8207	<i>Xanthoria polycarpa</i>	Xanpol
1.00	1014	<i>Cetraria pallidula</i>	Cetpal

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Group: ON-FRAME - E  
Sample unit: 4212231

Value	Code	Species	Code Name
1.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	618	<i>Bryoria pseudofuscescens</i>	Brypse
4.00	1004	<i>Cetraria canadensis</i>	Cetcan

3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
1.00	1016	Cetraria platyphylla	Cetpla
3.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
3.00	4004	Melanelia exasperatula	Melexl
3.00	4016	Melanelia subelegantula	Melsel
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
2.00	6101	Platismatia glauca	Plagla
2.00	8044	Usnea lapponica	Usnlap
3.00	8029	Usnea filipendula	Usnfil
3.00	8207	Xanthoria polycarpa	Xanpol

Group: ON-FRAME - E  
 Sample unit: 4212271

Value	Code	Species	Code Name
4.00	202	Alectoria imshaugii	Aleims
4.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
4.00	618	Bryoria pseudofuscescens	Brypse
1.00	1013	Cetraria orbata	Cetorb
2.00	1016	Cetraria platyphylla	Cetpla
2.00	3108	Hypogymnia imshaugii	Hypims
4.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore

Group: ON-FRAME - E  
 Sample unit: 4311955

Value	Code	Species	Code Name
3.00	1011	Cetraria merrillii	Cetmer
3.00	3701	Letharia columbiana	Letcol
1.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4552	Nodobryoria oregana	Nodore

Group: ON-FRAME - E  
 Sample unit: 4311972

Value	Code	Species	Code Name
1.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	620	Bryoria simplicior	Brysim
1.00	1004	Cetraria canadensis	Cetcan
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
1.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol

3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
3.00	4000	Melanelia	Mel
4.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
1.00	8029	Usnea filipendula	Usnfil
3.00	8210	Xanthoria fulva	Xanful

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Group: ON-FRAME - E  
Sample unit: 4312112

Value	Code	Species	Code Name
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
2.00	3702	Letharia vulpina	Letvul
2.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb

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Group: ON-FRAME - E  
Sample unit: 4312115

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
1.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
1.00	610	Bryoria fuscescens	Bryfus
3.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb

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Group: ON-FRAME - E  
Sample unit: 4312153

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	620	Bryoria simplicior	Brysim
2.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
1.00	1016	Cetraria platyphylla	Cetpla
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3702	Letharia vulpina	Letvul
1.00	4002	Melanelia elegantula	Melele

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Group: ON-FRAME - E  
Sample unit: 4312155

Value	Code	Species	Code Name
3.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
1.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul

1.00 8000 Usnea Usn

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Group: ON-FRAME - E  
Sample unit: 4411831

Value	Code	Species	Code Name
3.00	4017	Melanelia subolivacea	Melsol
3.00	1011	Cetraria merrillii	Cetmer
2.00	3701	Letharia columbiana	Letcol
4.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	620	Bryoria simplicior	Brysim
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	4002	Melanelia elegantula	Melele

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Group: ON-FRAME - E  
Sample unit: 4411844

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
2.00	205	Alectoria sarmentosa	Alesar
2.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
3.00	4004	Melanelia exasperatula	Melexl
2.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	5201	Parmeliopsis ambigua	Popamb
2.00	5202	Parmeliopsis hyperopta	Pophyp

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Group: ON-FRAME - E  
Sample unit: 4411856

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
1.00	618	Bryoria pseudofuscescens	Brypse
3.00	1016	Cetraria platyphylla	Cetpla
3.00	1013	Cetraria orbata	Cetorb
3.00	3702	Letharia vulpina	Letvul
3.00	3701	Letharia columbiana	Letcol
3.00	4551	Nodobryoria abbreviata	Nodabb
1.00	2404	Evernia prunastri	Evepru
1.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	5201	Parmeliopsis ambigua	Popamb
3.00	205	Alectoria sarmentosa	Alesar
3.00	4010	Melanelia multispora	Melmul
1.00	6912	Ramalina farinacea	Ramfar
1.00	3114	Hypogymnia occidentalis	Hypocc
1.00	4806	Parmelia sulcata	Parsul
3.00	1011	Cetraria merrillii	Cetmer
3.00	610	Bryoria fuscescens	Bryfus
3.00	3108	Hypogymnia imshaugii	Hypims

3.00 8029 *Usnea filipendula* Usnfil

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Group: ON-FRAME - E  
Sample unit: 4411864

Value	Code	Species	Code Name
4.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	1011	<i>Cetraria merrillii</i>	Cetmer
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
3.00	3701	<i>Letharia columbiana</i>	Letcol
3.00	3702	<i>Letharia vulpina</i>	Letvul
2.00	4002	<i>Melanelia elegantula</i>	Melele
3.00	4000	<i>Melanelia</i>	Mel
3.00	4016	<i>Melanelia subelegantula</i>	Melsel
3.00	4017	<i>Melanelia subolivacea</i>	Melsol
3.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
1.00	8201	<i>Xanthoria candelaria</i>	Xancan

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Group: ON-FRAME - E  
Sample unit: 4411872

Value	Code	Species	Code Name
3.00	3701	<i>Letharia columbiana</i>	Letcol
3.00	3702	<i>Letharia vulpina</i>	Letvul
1.00	4017	<i>Melanelia subolivacea</i>	Melsol
2.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb

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Group: ON-FRAME - E  
Sample unit: 4411923

Value	Code	Species	Code Name
3.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	1011	<i>Cetraria merrillii</i>	Cetmer
2.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	3701	<i>Letharia columbiana</i>	Letcol
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	4002	<i>Melanelia elegantula</i>	Melele
3.00	4017	<i>Melanelia subolivacea</i>	Melsol
3.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
3.00	8210	<i>Xanthoria fulva</i>	Xanful

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Group: ON-FRAME - E  
Sample unit: 4411935

Value	Code	Species	Code Name
4.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	620	<i>Bryoria simplicior</i>	Brysim
3.00	1011	<i>Cetraria merrillii</i>	Cetmer
1.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	1016	<i>Cetraria platyphylla</i>	Cetpla
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	3701	<i>Letharia columbiana</i>	Letcol
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	4017	<i>Melanelia subolivacea</i>	Melsol

4.00	4551	Nodobryoria abbreviata	Nodabb
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Group: ON-FRAME - E
Sample unit: 4411948

Value	Code	Species	Code Name
4.00	607	Bryoria fremontii	Bryfre
2.00	8301	Candelaria concolor	Cndcon
2.00	1011	Cetraria merrillii	Cetmer
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
4.00	4551	Nodobryoria abbreviata	Nodabb
1.00	8210	Xanthoria fulva	Xanful

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Group: ON-FRAME - E
Sample unit: 4411984

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
4.00	607	Bryoria fremontii	Bryfre
3.00	620	Bryoria simplicior	Brysim
3.00	624	Bryoria tortuosa	Brytor
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1016	Cetraria platyphylla	Cetpla
1.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3116	Hypogymnia physodes	Hypphy
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
3.00	4004	Melanelia exasperatula	Melexl
1.00	4000	Melanelia	Mel
1.00	4016	Melanelia subelegantula	Melsel
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
1.00	5201	Parmeliopsis ambigua	Popamb
3.00	6101	Platismatia glauca	Plagla
2.00	8029	Usnea filipendula	Usnfil
2.00	8210	Xanthoria fulva	Xanful

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Group: ON-FRAME - E
Sample unit: 4412012

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb

3.00	8210	Xanthoria fulva	Xanful
3.00	8215	Xanthoria oregana	Xanore
2.00	4800	Parmelia	Par

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Group: ON-FRAME - E  
Sample unit: 4412024

Value	Code	Species	Code Name
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	4002	Melanelia elegantula	Melele
3.00	4017	Melanelia subolivacea	Melsol
3.00	8203	Xanthoria fallax	Xanfal
2.00	5710	Physcia dimidiata	Phydim
3.00	8215	Xanthoria oregana	Xanore

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Group: ON-FRAME - E  
Sample unit: 4412032

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	620	Bryoria simplicior	Brysim
3.00	1011	Cetraria merrillii	Cetmer
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore

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Group: ON-FRAME - E  
Sample unit: 4412037

Value	Code	Species	Code Name
1.00	1005	Cetraria chlorophylla	Cetchl
2.00	5724	Physcia tenella	Phyten
2.00	4000	Melanelia	Mel
3.00	5710	Physcia dimidiata	Phydim
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	4002	Melanelia elegantula	Melele
3.00	8201	Xanthoria candelaria	Xancan
1.00	4806	Parmelia sulcata	Parsul
3.00	3701	Letharia columbiana	Letcol
3.00	8210	Xanthoria fulva	Xanful
3.00	5903	Physconia enteroxantha	Phoent

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Group: ON-FRAME - E  
Sample unit: 4412065

Value	Code	Species	Code Name
3.00	8301	Candelaria concolor	Cndcon
1.00	1011	Cetraria merrillii	Cetmer
1.00	1013	Cetraria orbata	Cetorb
1.00	3702	Letharia vulpina	Letvul
1.00	4015	Melanelia subaurifera	Melsub

1.00	4016	Melanelia subelegantula	Melsel
1.00	4551	Nodobryoria abbreviata	Nodabb
1.00	4800	Parmelia	Par
3.00	5701	Physcia adscendens	Phyads
3.00	5903	Physconia enteroxantha	Phoent
3.00	8210	Xanthoria fulva	Xanful
3.00	8215	Xanthoria oregana	Xanore

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Group: ON-FRAME - E  
Sample unit: 4512145

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
4.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	610	Bryoria fuscescens	Bryfus
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	1240	Cladonia transcendens	Clatra
1.00	1000	Cetraria	Cet
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3119	Hypogymnia rugosa	Hyprug
3.00	3702	Letharia vulpina	Letvul
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
4.00	4552	Nodobryoria oregana	Nodore
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
4.00	6101	Platismatia glauca	Plagla
3.00	6105	Platismatia stenophylla	Plaste
1.00	6912	Ramalina farinacea	Ramfar
3.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - E  
Sample unit: 4412172

Value	Code	Species	Code Name
3.00	4002	Melanelia elegantula	Melele
1.00	1011	Cetraria merrillii	Cetmer
3.00	4017	Melanelia subolivacea	Melsol
3.00	5710	Physcia dimidiata	Phydim
3.00	3702	Letharia vulpina	Letvul
3.00	3701	Letharia columbiana	Letcol
2.00	5701	Physcia adscendens	Phyads
3.00	5724	Physcia tenella	Phyten
2.00	8201	Xanthoria candelaria	Xancan
2.00	5907	Physconia isidiigera	Phoisi

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Group: ON-FRAME - E  
Sample unit: 4512173

Value	Code	Species	Code Name

3.00	603	Bryoria capillaris	Brycap
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
3.00	1014	Cetraria pallidula	Cetpal
3.00	1016	Cetraria platyphylla	Cetpla
2.00	2301	Esslingeriana idahoensis	Essida
3.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3109	Hypogymnia inactiva	Hypina
2.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3116	Hypogymnia physodes	Hypphy
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
1.00	5702	Physcia aipolia	Phyaip
3.00	6101	Platismatia glauca	Plagla
2.00	6102	Platismatia herrei	Plaher
2.00	6105	Platismatia stenophylla	Plaste
3.00	6912	Ramalina farinacea	Ramfar
3.00	8029	Usnea filipendula	Usnfil
3.00	8200	Xanthoria	Xan

Group: ON-FRAME - E  
 Sample unit: 4511715

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
1.00	610	Bryoria fuscescens	Bryfus
4.00	618	Bryoria pseudofuscescens	Brypse
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
1.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3702	Letharia vulpina	Letvul
3.00	4000	Melanelia	Mel
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore
2.00	4802	Parmelia hygrophila	Parhyg
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp

Group: ON-FRAME - E  
 Sample unit: 4511755

Value	Code	Species	Code Name
2.00	607	Bryoria fremontii	Bryfre
1.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3121	Hypogymnia tubulosa	Hyptub

3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
3.00	4004	Melanelia exasperatula	Melexl
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
2.00	8029	Usnea filipendula	Usnfil
3.00	8207	Xanthoria polycarpa	Xanpol

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Group: ON-FRAME - E  
Sample unit: 4511763

Value	Code	Species	Code Name
4.00	607	Bryoria fremontii	Bryfre
1.00	618	Bryoria pseudofuscescens	Brypse
2.00	620	Bryoria simplicior	Brysim
1.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
2.00	600	Bryoria	Bry
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
2.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4552	Nodobryoria oregana	Nodore

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Group: ON-FRAME - E  
Sample unit: 4511771

Value	Code	Species	Code Name
1.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
1.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
3.00	4551	Nodobryoria abbreviata	Nodabb
1.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
1.00	6101	Platismatia glauca	Plagla
1.00	8201	Xanthoria candelaria	Xancan
2.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - E  
Sample unit: 4511817

Value	Code	Species	Code Name
4.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
2.00	618	Bryoria pseudofuscescens	Brypse
2.00	1011	Cetraria merrillii	Cetmer

1.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
1.00	2301	Esslingeriana idahoensis	Essida
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3702	Letharia vulpina	Letvul
2.00	4004	Melanelia exasperatula	Melexl
3.00	4551	Nodobryoria abbreviata	Nodabb

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Group: ON-FRAME - E  
Sample unit: 4511911

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	620	Bryoria simplicior	Brysim
3.00	1011	Cetraria merrillii	Cetmer
2.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb

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Group: ON-FRAME - E  
Sample unit: 4611716

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
1.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
1.00	2301	Esslingeriana idahoensis	Essida
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
2.00	4004	Melanelia exasperatula	Melexl
2.00	4016	Melanelia subelegantula	Melsel
3.00	4017	Melanelia subolivacea	Melsol
2.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4802	Parmelia hygrophila	Parhyg
1.00	5201	Parmeliopsis ambigua	Popamb
1.00	8000	Usnea	Usn
2.00	8044	Usnea lapponica	Usnlap
2.00	8065	Usnea scabrata	Usnsca
1.00	8201	Xanthoria candelaria	Xancan
1.00	8204	Xanthoria hasseana	Xanhas

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Group: ON-FRAME - E  
Sample unit: 4612017

Value	Code	Species	Code Name
2.00	202	Alectoria imshaugii	Aleims
1.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap

2.00	1011	Cetraria merrillii	Cetmer
2.00	1013	Cetraria orbata	Cetorb
1.00	1014	Cetraria pallidula	Cetpal
3.00	1016	Cetraria platyphylla	Cetpla
2.00	2301	Esslingeriana idahoensis	Essida
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
3.00	4016	Melanelia subelegantula	Melsel
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4552	Nodobryoria oregana	Nodore
2.00	4802	Parmelia hygrophila	Parhyg
2.00	6105	Platismatia stenophylla	Plaste

Group: ON-FRAME - E  
 Sample unit: 4612134

Value	Code	Species	Code Name
2.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3119	Hypogymnia rugosa	Hyprug
1.00	3701	Letharia columbiana	Letcol
3.00	4551	Nodobryoria abbreviata	Nodabb
1.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
1.00	6101	Platismatia glauca	Plagla
2.00	1019	Cetraria subalpina	Cetsub

Group: ON-FRAME - E  
 Sample unit: 4711772

Value	Code	Species	Code Name
3.00	603	Bryoria capillaris	Brycap
2.00	607	Bryoria fremontii	Bryfre
2.00	8301	Candelaria concolor	Cndcon
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	1016	Cetraria platyphylla	Cetpla
1.00	1217	Cladonia fimbriata	Clafim
1.00	2301	Esslingeriana idahoensis	Essida
3.00	2404	Evernia prunastri	Evepru
2.00	3108	Hypogymnia imshaugii	Hypims
1.00	3112	Hypogymnia metaphysodes	Hypmet
2.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3116	Hypogymnia physodes	Hypphy
1.00	3121	Hypogymnia tubulosa	Hyptub
1.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
1.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4802	Parmelia hygrophila	Parhyg
3.00	6101	Platismatia glauca	Plagla
2.00	8000	Usnea	Usn
1.00	8044	Usnea lapponica	Usnlap

2.00	8029	<i>Usnea filipendula</i>	Usnfil
3.00	8207	<i>Xanthoria polycarpa</i>	Xanpol

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Group: ON-FRAME - E  
Sample unit: 4711788

Value	Code	Species	Code Name
2.00	202	<i>Alectoria imshaugii</i>	Aleims
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
2.00	603	<i>Bryoria capillaris</i>	Brycap
3.00	607	<i>Bryoria fremontii</i>	Bryfre
3.00	608	<i>Bryoria friabilis</i>	Bryfri
3.00	610	<i>Bryoria fuscescens</i>	Bryfus
2.00	618	<i>Bryoria pseudofuscescens</i>	Brypse
3.00	1004	<i>Cetraria canadensis</i>	Cetcan
3.00	1005	<i>Cetraria chlorophylla</i>	Cetchl
3.00	1016	<i>Cetraria platyphylla</i>	Cetpla
3.00	2301	<i>Esslingeriana idahoensis</i>	Essida
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
1.00	3109	<i>Hypogymnia inactiva</i>	Hypina
3.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
2.00	3114	<i>Hypogymnia occidentalis</i>	Hypocc
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
3.00	3121	<i>Hypogymnia tubulosa</i>	Hyptub
3.00	3702	<i>Letharia vulpina</i>	Letvul
2.00	4004	<i>Melanelia exasperatula</i>	Melexl
1.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
3.00	4802	<i>Parmelia hygrophila</i>	Parhyg
1.00	5201	<i>Parmeliopsis ambigua</i>	Popamb
3.00	6101	<i>Platismatia glauca</i>	Plagla
1.00	8000	<i>Usnea</i>	Usn
1.00	8207	<i>Xanthoria polycarpa</i>	Xanpol

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Group: ON-FRAME - E  
Sample unit: 4712018e

Value	Code	Species	Code Name
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	618	<i>Bryoria pseudofuscescens</i>	Brypse
2.00	202	<i>Alectoria imshaugii</i>	Aleims
2.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
3.00	624	<i>Bryoria tortuosa</i>	Brytor
3.00	1005	<i>Cetraria chlorophylla</i>	Cetchl
3.00	610	<i>Bryoria fuscescens</i>	Bryfus
1.00	1014	<i>Cetraria pallidula</i>	Cetpal
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
2.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	603	<i>Bryoria capillaris</i>	Brycap
2.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
3.00	3101	<i>Hypogymnia apinnata</i>	Hypapi
3.00	3702	<i>Letharia vulpina</i>	Letvul
2.00	3701	<i>Letharia columbiana</i>	Letcol
1.00	5201	<i>Parmeliopsis ambigua</i>	Popamb
3.00	5202	<i>Parmeliopsis hyperopta</i>	Pophyp
3.00	6101	<i>Platismatia glauca</i>	Plagla
1.00	6102	<i>Platismatia herrei</i>	Plaher
2.00	1004	<i>Cetraria canadensis</i>	Cetcan

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Group: ON-FRAME - E  
Sample unit: 4712074

Value	Code	Species	Code Name
1.00	1011	Cetraria merrickii	Cetmer
1.00	1016	Cetraria platyphylla	Cetpla
2.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
1.00	4004	Melanelia exasperatula	Melexl
3.00	4551	Nodobryoria abbreviata	Nodabb

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Group: ON-FRAME - E  
Sample unit: 4712087

Value	Code	Species	Code Name
2.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
1.00	1004	Cetraria canadensis	Cetcan
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
2.00	1014	Cetraria pallidula	Cetpal
3.00	1016	Cetraria platyphylla	Cetpla
1.00	2301	Esslingeriana idahoensis	Essida
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3114	Hypogymnia occidentalis	Hypocc
1.00	3116	Hypogymnia physodes	Hypphy
3.00	3702	Letharia vulpina	Letvul
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla

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Group: ON-FRAME - E  
Sample unit: 4712123

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
2.00	608	Bryoria friabilis	Bryfri
2.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1241	Cladonia umbricola	Claumb
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3114	Hypogymnia occidentalis	Hypocc
1.00	3702	Letharia vulpina	Letvul
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	614	Bryoria nadvornikiana	Brynad

Group: ON-FRAME - E  
Sample unit: 4712151

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	624	Bryoria tortuosa	Brytor
3.00	1011	Cetraria merrillii	Cetmer
3.00	3702	Letharia vulpina	Letvul
1.00	5201	Parmeliopsis ambigua	Popamb
2.00	5202	Parmeliopsis hyperopta	Pophyp
1.00	5700	Phycia	Phy

Group: ON-FRAME - E  
Sample unit: 4811733

Value	Code	Species	Code Name
2.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	1004	Cetraria canadensis	Cetcan
3.00	1005	Cetraria chlorophylla	Cetchl
1.00	1014	Cetraria pallidula	Cetpal
2.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
3.00	4806	Parmelia sulcata	Parsul
3.00	4802	Parmelia hygrophila	Parhyg
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
1.00	8044	Usnea lapponica	Usnlap
3.00	8207	Xanthoria polycarpa	Xanpol
3.00	4000	Melanelia	Mel

Group: ON-FRAME - E  
Sample unit: 4811748

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
1.00	1004	Cetraria canadensis	Cetcan
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1016	Cetraria platyphyllea	Cetpla
3.00	2301	Esslingeriana idahoensis	Essida
2.00	2404	Evernia prunastri	Evepru
2.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
2.00	3114	Hypogymnia occidentalis	Hypocc

3.00	3116	Hypogymnia physodes	Hypphy
3.00	3121	Hypogymnia tubulosa	Hyptub
1.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
2.00	4017	Melanelia subolivacea	Melsol
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
2.00	5701	Physcia adscendens	Phyads
3.00	6101	Platismatia glauca	Plagla
1.00	6912	Ramalina farinacea	Ramfar
3.00	8029	Usnea filipendula	Usnfil
3.00	8201	Xanthoria candelaria	Xancan
2.00	8207	Xanthoria polycarpa	Xanpol

Group: ON-FRAME - E  
 Sample unit: 4811773

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	608	Bryoria friabilis	Bryfri
1.00	610	Bryoria fuscescens	Bryfus
3.00	613	Bryoria lanestris	Brylan
2.00	618	Bryoria pseudofuscescens	Brypse
2.00	1005	Cetraria chlorophylla	Cetchl
1.00	1014	Cetraria pallidula	Cetpal
1.00	1200	Cladonia	Cla
1.00	1210	Cladonia chlorophaea	Clachl
2.00	2301	Esslingeriana idahoensis	Essida
1.00	1239	Cladonia sulphurina	Clasul
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3114	Hypogymnia occidentalis	Hypocc
1.00	3115	Hypogymnia oceanica	Hypoce
3.00	3116	Hypogymnia physodes	Hypphy
2.00	3121	Hypogymnia tubulosa	Hyptub
1.00	3702	Letharia vulpina	Letvul
2.00	4017	Melanelia subolivacea	Melsol
2.00	4407	Nephroma parile	Neppar
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
2.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
1.00	6105	Platismatia stenophylla	Plaste
1.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - E  
 Sample unit: 4811776

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
1.00	205	Alectoria sarmentosa	Alesar
2.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	1004	Cetraria canadensis	Cetcan
2.00	1005	Cetraria chlorophylla	Cetchl

3.00	1016	Cetraria platyphylla	Cetpla
2.00	2301	Esslingeriana idahoensis	Essida
1.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3116	Hypogymnia physodes	Hypphy
2.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3702	Letharia vulpina	Letvul
2.00	4004	Melanelia exasperatula	Melexl
2.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	6101	Platismatia glauca	Plagla
2.00	8029	Usnea filipendula	Usnfil
3.00	8201	Xanthoria candelaria	Xancan
3.00	8207	Xanthoria polycarpa	Xanpol

Group: ON-FRAME - E  
 Sample unit: 4811812

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
3.00	613	Bryoria lanestris	Brylan
1.00	1004	Cetraria canadensis	Cetcan
3.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
1.00	2301	Esslingeriana idahoensis	Essida
3.00	2404	Evernia prunastri	Evepru
3.00	4550	Nodobryoria	Nod
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3116	Hypogymnia physodes	Hypphy
4.00	3701	Letharia columbiana	Letcol
4.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
1.00	6101	Platismatia glauca	Plagla
3.00	8204	Xanthoria hasseana	Xanhas

Group: ON-FRAME - E  
 Sample unit: 4811825

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
1.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet

2.00	3114	Hypogymnia occidentalis	Hypocc
2.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3702	Letharia vulpina	Letvul
2.00	4004	Melanelia exasperatula	Melexl
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
2.00	6101	Platismatia glauca	Plagla
2.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - E  
Sample unit: 4811866

Value	Code	Species	Code Name
1.00	205	Alectoria sarmentosa	Alesar
1.00	603	Bryoria capillaris	Brycap
1.00	8029	Usnea filipendula	Usnfil
3.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
2.00	613	Bryoria lanestris	Brylan
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	1005	Cetraria chlorophylla	Cetchl
1.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
1.00	1211	Cladonia coniocraea	Clacon
1.00	2301	Esslingeriana idahoensis	Essida
2.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3116	Hypogymnia physodes	Hypphy
2.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	6101	Platismatia glauca	Plagla
1.00	8044	Usnea lapponica	Usnlap
2.00	8000	Usnea	Usn
3.00	8201	Xanthoria candelaria	Xancan

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Group: ON-FRAME - E  
Sample unit: 4811878

Value	Code	Species	Code Name
1.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
1.00	1011	Cetraria merrillii	Cetmer
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb

Group: ON-FRAME - E  
Sample unit: 4811881

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
3.00	611	Bryoria glabra	Brygla
1.00	1004	Cetraria canadensis	Cetcan
2.00	1005	Cetraria chlorophylla	Cetchl
1.00	1013	Cetraria orbata	Cetorb
1.00	1014	Cetraria pallidula	Cetpal
3.00	1016	Cetraria platyphylla	Cetpla
1.00	2301	Esslingeriana idahoensis	Essida
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
2.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3702	Letharia vulpina	Letvul
1.00	4017	Melanelia subolivacea	Melsol
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
2.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
1.00	8207	Xanthoria polycarpa	Xanpol

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Group: ON-FRAME - E  
Sample unit: 4811942

Value	Code	Species	Code Name
3.00	607	Bryoria fremontii	Bryfre
2.00	610	Bryoria fuscescens	Bryfus
1.00	1004	Cetraria canadensis	Cetcan
1.00	1005	Cetraria chlorophylla	Cetchl
2.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	4002	Melanelia elegantula	Melele
2.00	4004	Melanelia exasperatula	Melexl
1.00	4016	Melanelia subelegantula	Melsel
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4000	Melanelia	Mel
2.00	4806	Parmelia sulcata	Parsul
1.00	6101	Platismatia glauca	Plagla
2.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - E  
Sample unit: 4811958

Value	Code	Species	Code Name
2.00	101	Ahtiana sphaerosporaella	Ahtsph
1.00	205	Alectoria sarmentosa	Alesar

3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
3.00	1011	Cetraria merrillii	Cetmer
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp

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Group: ON-FRAME - E  
Sample unit: 4811983

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
2.00	603	Bryoria capillaris	Brycap
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
1.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3112	Hypogymnia metaphysodes	Hypmet
2.00	3116	Hypogymnia physodes	Hypphy
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
3.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
1.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	8041	Usnea hirta	Usnhir
2.00	8029	Usnea filipendula	Usnfil
1.00	8204	Xanthoria hasseana	Xanhas

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Group: ON-FRAME - E  
Sample unit: 4812035

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
1.00	1011	Cetraria merrillii	Cetmer
2.00	1014	Cetraria pallidula	Cetpal
3.00	1016	Cetraria platyphylla	Cetpla
2.00	3101	Hypogymnia apinnata	Hypapi
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
2.00	3116	Hypogymnia physodes	Hypphy
1.00	3121	Hypogymnia tubulosa	Hyptub
2.00	3702	Letharia vulpina	Letvul
1.00	4016	Melanelia subelegantula	Melsel
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4552	Nodobryoria oregana	Nodore
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	6101	Platismatia glauca	Plagla

Group: ON-FRAME - E  
Sample unit: 4812063

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
2.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
1.00	1004	Cetraria canadensis	Cetcan
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
2.00	1014	Cetraria pallidula	Cetpal
4.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3116	Hypogymnia physodes	Hypphy
2.00	3702	Letharia vulpina	Letvul
1.00	4004	Melanelia exasperatula	Melexl
2.00	4016	Melanelia subelegantula	Melsel
1.00	4017	Melanelia subolivacea	Melsol
3.00	4551	Nodobryoria abbreviata	Nodabb
1.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	5202	Parmeliopsis hyperopta	Pophyp
1.00	6101	Platismatia glauca	Plagla

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Group: ON-FRAME - W  
Sample unit: 4212215

Value	Code	Species	Code Name
3.00	603	Bryoria capillaris	Brycap
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3702	Letharia vulpina	Letvul
3.00	4016	Melanelia subelegantula	Melsel
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	4552	Nodobryoria oregana	Nodore
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	5201	Parmeliopsis ambigua	Popamb
3.00	6101	Platismatia glauca	Plagla
1.00	6912	Ramalina farinacea	Ramfar
3.00	8029	Usnea filipendula	Usnfil
1.00	8207	Xanthoria polycarpa	Xanpol

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Group: ON-FRAME - W  
Sample unit: 4212227

Value	Code	Species	Code Name
3.00	624	Bryoria tortuosa	Brytor
3.00	603	Bryoria capillaris	Brycap
2.00	8301	Candelaria concolor	Cndcon
3.00	2404	Evernia prunastri	Evepru
3.00	3108	Hypogymnia imshaugii	Hypims

3.00	1011	Cetraria merrillii	Cetmer
3.00	3702	Letharia vulpina	Letvul
3.00	4004	Melanelia exasperatula	Melexl
4.00	4010	Melanelia multispora	Melmul
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
3.00	5702	Physcia aipolia	Phyaip
3.00	5903	Physconia enteroxantha	Phoent
3.00	5906	Physconia perisidiosa	Phoper
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	8029	Usnea filipendula	Usnfil
3.00	8000	Usnea	Usn
1.00	1004	Cetraria canadensis	Cetcan
3.00	8207	Xanthoria polycarpa	Xanpol
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	610	Bryoria fuscescens	Bryfus

Group: ON-FRAME - W  
 Sample unit: 4212256

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
2.00	603	Bryoria capillaris	Brycap
1.00	610	Bryoria fuscescens	Bryfus
3.00	1004	Cetraria canadensis	Cetcan
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
3.00	2301	Esslingeriana idahoensis	Essida
3.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
1.00	3109	Hypogymnia inactiva	Hypina
3.00	3112	Hypogymnia metaphysodes	Hypmet
1.00	3702	Letharia vulpina	Letvul
2.00	3905	Lobaria pulmonaria	Lobpul
2.00	4403	Nephroma helveticum	Nephel
2.00	4408	Nephroma resupinatum	Nepres
2.00	4552	Nodobryoria oregana	Nodore
3.00	4806	Parmelia sulcata	Parsul
3.00	5910	Physconia americana	Phoame
3.00	5906	Physconia perisidiosa	Phoper
3.00	6101	Platismatia glauca	Plagla
1.00	6102	Platismatia herrei	Plaher
3.00	6105	Platismatia stenophylla	Plaste
3.00	6402	Pseudocyphellaria anthraspis	Pcyant
2.00	6912	Ramalina farinacea	Ramfar
2.00	8029	Usnea filipendula	Usnfil
3.00	8065	Usnea scabrata	Usnsca

Group: ON-FRAME - W  
 Sample unit: 4212268

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla

3.00	2301	<i>Esslingeriana idahoensis</i>	Essida
3.00	2404	<i>Evernia prunastri</i>	Evepru
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
1.00	3114	<i>Hypogymnia occidentalis</i>	Hypocc
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	3905	<i>Lobaria pulmonaria</i>	Lobpul
3.00	4010	<i>Melanelia multispora</i>	Melmul
1.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
3.00	4552	<i>Nodobryoria oregana</i>	Nodore
3.00	4806	<i>Parmelia sulcata</i>	Parsul
1.00	5202	<i>Parmeliopsis hyperopta</i>	Pophyp
2.00	5503	<i>Peltigera collina</i>	Pelcol
3.00	5702	<i>Phycia aipolia</i>	Phyaip
3.00	5910	<i>Physconia americana</i>	Phoame
3.00	5906	<i>Physconia perisidiosa</i>	Phoper
3.00	6101	<i>Platismatia glauca</i>	Plagla
1.00	6105	<i>Platismatia stenophylla</i>	Plaste
3.00	6402	<i>Pseudocyphellaria anthraspis</i>	Pcyant
1.00	6912	<i>Ramalina farinacea</i>	Ramfar
3.00	8029	<i>Usnea filipendula</i>	Usnfil
3.00	8200	<i>Xanthoria</i>	Xan
3.00	8204	<i>Xanthoria hasseana</i>	Xanhas

Group: ON-FRAME - W  
 Sample unit: 4212322

Value	Code	Species	Code Name
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	603	<i>Bryoria capillaris</i>	Brycap
3.00	608	<i>Bryoria friabilis</i>	Bryfri
3.00	1004	<i>Cetraria canadensis</i>	Cetcan
3.00	1005	<i>Cetraria chlorophylla</i>	Cetchl
3.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	1016	<i>Cetraria platyphylla</i>	Cetpla
3.00	2301	<i>Esslingeriana idahoensis</i>	Essida
3.00	2404	<i>Evernia prunastri</i>	Evepru
4.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
1.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
3.00	3114	<i>Hypogymnia occidentalis</i>	Hypocc
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	3905	<i>Lobaria pulmonaria</i>	Lobpul
3.00	4005	<i>Melanelia fuliginosa</i>	Melful
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	5906	<i>Physconia perisidiosa</i>	Phoper
3.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	6105	<i>Platismatia stenophylla</i>	Plaste
3.00	6912	<i>Ramalina farinacea</i>	Ramfar
3.00	8036	<i>Usnea glabrata</i>	Usngla
4.00	8065	<i>Usnea scabrata</i>	Usnsca

Group: ON-FRAME - W  
 Sample unit: 4212355

Value	Code	Species	Code Name
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	603	<i>Bryoria capillaris</i>	Brycap
1.00	1005	<i>Cetraria chlorophylla</i>	Cetchl

3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	1240	Cladonia transcendens	Clatra
3.00	2301	Esslingeriana idahoensis	Essida
3.00	2404	Evernia prunastri	Evepru
4.00	3108	Hypogymnia imshaugii	Hypims
2.00	3109	Hypogymnia inactiva	Hypina
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3702	Letharia vulpina	Letvul
3.00	3905	Lobaria pulmonaria	Lobpul
1.00	4005	Melanelia fuliginosa	Melful
3.00	4010	Melanelia multispora	Melmul
3.00	4016	Melanelia subelegantula	Melsel
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
2.00	5503	Peltigera collina	Pelcol
1.00	5702	Physcia aipolia	Phyaip
3.00	5910	Physconia americana	Phoame
4.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
3.00	6105	Platismatia stenophylla	Plaste
3.00	6402	Pseudocyphellaria anthraspis	Pcyant
3.00	6912	Ramalina farinacea	Ramfar
3.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
 Sample unit: 4212363

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
4.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	610	Bryoria fuscescens	Bryfus
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
1.00	1228	Cladonia ochrochlora	Claoch
3.00	1240	Cladonia transcendens	Clatra
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore
3.00	4802	Parmelia hygrophila	Parhyg
3.00	5201	Parmeliopsis ambigua	Popamb
4.00	6101	Platismatia glauca	Plagla
3.00	6105	Platismatia stenophylla	Plaste
1.00	7402	Sphaerophorus globosus	Sphglo
3.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
 Sample unit: 4212347

Value	Code	Species	Code Name
1.00	205	Alectoria sarmentosa	Alesar

1.00	206	Alectoria vancouverensis	Alevan
1.00	1005	Cetraria chlorophylla	Cetchl
1.00	1014	Cetraria pallidula	Cetpal
2.00	1211	Cladonia coniocraea	Clacon
3.00	1240	Cladonia transcendens	Clatra
1.00	2301	Esslingeriana idahoensis	Essida
1.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3905	Lobaria pulmonaria	Lobpul
1.00	4403	Nephroma helveticum	Nephel
3.00	4405	Nephroma laevigatum	Neplae
3.00	4408	Nephroma resupinatum	Nepres
2.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
1.00	5510	Peltigera pacifica	Pelpac
3.00	6101	Platismatia glauca	Plagla
2.00	6102	Platismatia herrei	Plaher
1.00	6105	Platismatia stenophylla	Plaste
3.00	6402	Pseudocyphellaria anthraspis	Pcyant
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
 Sample unit: 4212367

Value	Code	Species	Code Name
4.00	206	Alectoria vancouverensis	Alevan
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
3.00	2301	Esslingeriana idahoensis	Essida
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	4407	Nephroma parile	Neppar
3.00	4552	Nodobryoria oregana	Nodore
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
2.00	5202	Parmeliopsis hyperopta	Pophyp
4.00	6101	Platismatia glauca	Plagla
3.00	6105	Platismatia stenophylla	Plaste
3.00	6402	Pseudocyphellaria anthraspis	Pcyant
1.00	6912	Ramalina farinacea	Ramfar
3.00	7402	Sphaerophorus globosus	Sphglo
4.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
 Sample unit: 4212388

Value	Code	Species	Code Name
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
2.00	1228	Cladonia ochrochlora	Claoch
2.00	2404	Evernia prunastri	Evepru
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3116	Hypogymnia physodes	Hypphy

2.00	3219	Hypotrachyna sinuosa	Htrsin
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
2.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
2.00	6102	Platismatia herrei	Plaher
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	8000	Usnea	Usn
3.00	8019	Usnea cornuta	Usncor
3.00	8029	Usnea filipendula	Usnfil
2.00	600	Bryoria	Bry

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Group: ON-FRAME - W  
Sample unit: 4212423

Value	Code	Species	Code Name
1.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
2.00	1211	Cladonia coniocraea	Clacon
3.00	3114	Hypogymnia occidentalis	Hypocc
1.00	4015	Melanelia subaurifera	Melsub
3.00	4806	Parmelia sulcata	Parsul
3.00	5303	Parmotrema chinense	Pmochi
3.00	5503	Peltigera collina	Pelcol
3.00	6912	Ramalina farinacea	Ramfar
3.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir

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Group: ON-FRAME - W  
Sample unit: 4212451

Value	Code	Species	Code Name
1.00	202	Alectoria imshaugii	Aleims
3.00	206	Alectoria vancouverensis	Alevan
3.00	603	Bryoria capillaris	Brycap
2.00	611	Bryoria glabra	Brygla
1.00	600	Bryoria	Bry
3.00	1240	Cladonia transcendens	Clatra
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3702	Letharia vulpina	Letvul
3.00	3905	Lobaria pulmonaria	Lobpul
1.00	3909	Lobaria scrobiculata	Lobscr
2.00	4552	Nodobryoria oregana	Nodore
1.00	4802	Parmelia hygrophila	Parhyg
2.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
3.00	6402	Pseudocyphellaria anthraspis	Pcyant
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	8065	Usnea scabrata	Usnsca
2.00	8029	Usnea filipendula	Usnfil
1.00	8040	Usnea hesperina	Usnhes
1.00	1004	Cetraria canadensis	Cetcan

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Group: ON-FRAME - W

Sample unit: 4312211

Value	Code	Species	Code Name
2.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
2.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3702	Letharia vulpina	Letvul
3.00	4552	Nodobryoria oregana	Nodore
3.00	5202	Parmeliopsis hyperopta	Pophyp

Group: ON-FRAME - W  
Sample unit: 4312216

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
1.00	603	Bryoria capillaris	Brycap
1.00	610	Bryoria fuscescens	Bryfus
2.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
2.00	1014	Cetraria pallidula	Cetpal
1.00	1217	Cladonia fimbriata	Clafim
3.00	1228	Cladonia ochrochlora	Claoch
1.00	1238	Cladonia squamosa v. subsquamo	Classq
1.00	1240	Cladonia transcendens	Clatra
1.00	2301	Esslingeriana idahoensis	Essida
1.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
2.00	3108	Hypogymnia imshaugii	Hypims
1.00	3116	Hypogymnia physodes	Hypphy
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	4403	Nephroma helveticum	Nephel
1.00	4408	Nephroma resupinatum	Nepres
1.00	4552	Nodobryoria oregana	Nodore
2.00	4806	Parmelia sulcata	Parsul
1.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	5503	Peltigera collina	Pelcol
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
1.00	6401	Pseudocyphellaria anomala	Pcyano
3.00	6402	Pseudocyphellaria anthraspis	Pcyant
1.00	7402	Sphaerophorus globosus	Sphglo
1.00	7502	Sticta fuliginosa	Stiful
3.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
Sample unit: 4312232

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	607	Bryoria fremontii	Bryfre
3.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
1.00	1004	Cetraria canadensis	Cetcan

3.00	1011	Cetraria merrillii	Cetmer
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3114	Hypogymnia occidentalis	Hypocc
1.00	3702	Letharia vulpina	Letvul
3.00	4552	Nodobryoria oregana	Nodore
1.00	6101	Platismatia glauca	Plagla

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Group: ON-FRAME - W  
Sample unit: 4312244

Value	Code	Species	Code Name
3.00	202	Alectoria imshaugii	Aleims
3.00	205	Alectoria sarmentosa	Alesar
3.00	206	Alectoria vancouverensis	Alevan
3.00	603	Bryoria capillaris	Brycap
2.00	610	Bryoria fuscescens	Bryfus
2.00	618	Bryoria pseudofuscescens	Brypse
3.00	1005	Cetraria chlorophylla	Cetchl
1.00	1016	Cetraria platyphylla	Cetpla
3.00	1240	Cladonia transcendens	Clatra
3.00	2301	Esslingeriana idahoensis	Essida
2.00	3002	Hypocenomyce castaneocinerea	Hcecas
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3114	Hypogymnia occidentalis	Hypocc
1.00	3116	Hypogymnia physodes	Hypphy
3.00	3702	Letharia vulpina	Letvul
2.00	3905	Lobaria pulmonaria	Lobpul
1.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4552	Nodobryoria oregana	Nodore
3.00	4802	Parmelia hygrophila	Parhyg
4.00	5202	Parmeliopsis hyperopta	Pophyp
4.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
1.00	6105	Platismatia stenophylla	Plaste
2.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - W  
Sample unit: 4312247

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
3.00	608	Bryoria friabilis	Bryfri
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	1011	Cetraria merrillii	Cetmer
3.00	1013	Cetraria orbata	Cetorb
2.00	2404	Evernia prunastri	Evepru
2.00	3105	Hypogymnia enteromorpha	Hypent
2.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3116	Hypogymnia physodes	Hypphy
1.00	3702	Letharia vulpina	Letvul
3.00	4015	Melanelia subaurifera	Melsub
3.00	4016	Melanelia subelegantula	Melsel
2.00	4552	Nodobryoria oregana	Nodore
3.00	6101	Platismatia glauca	Plagla
3.00	6105	Platismatia stenophylla	Plaste
3.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - W  
Sample unit: 4312272

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	608	Bryoria friabilis	Bryfri
3.00	611	Bryoria glabra	Brygla
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
2.00	3105	Hypogymnia enteromorpha	Hypent
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
1.00	3112	Hypogymnia metaphysodes	Hypmet
1.00	4802	Parmelia hygrophila	Parhyg
1.00	6101	Platismatia glauca	Plagla
3.00	6105	Platismatia stenophylla	Plaste
2.00	8029	Usnea filipendula	Usnfil
2.00	4552	Nodobryoria oregana	Nodore

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Group: ON-FRAME - W  
Sample unit: 4312311

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	603	Bryoria capillaris	Brycap
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
4.00	3116	Hypogymnia physodes	Hypphy
3.00	4806	Parmelia sulcata	Parsul
1.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
4.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - W  
Sample unit: 4312323

Value	Code	Species	Code Name
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	2404	Evernia prunastri	Evepru
1.00	3114	Hypogymnia occidentalis	Hypocc
2.00	3909	Lobaria scrobiculata	Lobscr
3.00	4005	Melanelia fuliginosa	Melful
4.00	4806	Parmelia sulcata	Parsul
3.00	5701	Physcia adscendens	Phyads
1.00	5702	Physcia aipolia	Phyaip
3.00	5724	Physcia tenella	Phyten
3.00	5903	Physconia enteroxantha	Phoent
3.00	5907	Physconia isidiigera	Phoisi
4.00	6912	Ramalina farinacea	Ramfar
3.00	8029	Usnea filipendula	Usnfil
1.00	4000	Melanelia	Mel

3.00	5706	Physcia caesia	Phycae
3.00	5710	Physcia dimidiata	Phydim
3.00	8023	Usnea diplotypus	Usndip
3.00	8044	Usnea lapponica	Usnlap
1.00	8077	Usnea substerilis	Usnsst
3.00	8215	Xanthoria oregana	Xanore

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Group: ON-FRAME - W  
Sample unit: 4312328

Value	Code	Species	Code Name
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	6912	Ramalina farinacea	Ramfar
3.00	8084	Usnea wirthii	Usnwir
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	4806	Parmelia sulcata	Parsul
3.00	8029	Usnea filipendula	Usnfil
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	4802	Parmelia hygrophila	Parhyg
3.00	3114	Hypogymnia occidentalis	Hypocc
2.00	4803	Parmelia pseudosulcata	Parpse
2.00	6102	Platismatia herrei	Plaher
2.00	1013	Cetraria orbata	Cetorb
1.00	3905	Lobaria pulmonaria	Lobpul
1.00	3101	Hypogymnia apinnata	Hypapi

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Group: ON-FRAME - W  
Sample unit: 4312331

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
2.00	603	Bryoria capillaris	Brycap
2.00	610	Bryoria fuscescens	Bryfus
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	2404	Evernia prunastri	Evepru
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
1.00	4002	Melanelia elegantula	Melele
2.00	4016	Melanelia subelegantula	Melsel
3.00	4806	Parmelia sulcata	Parsul
3.00	6101	Platismatia glauca	Plagla
3.00	6912	Ramalina farinacea	Ramfar
4.00	8029	Usnea filipendula	Usnfil
2.00	600	Bryoria	Bry

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Group: ON-FRAME - W  
Sample unit: 4312336

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
1.00	206	Alectoria vancouverensis	Alevan
2.00	603	Bryoria capillaris	Brycap
2.00	610	Bryoria fuscescens	Bryfus
2.00	618	Bryoria pseudofuscescens	Brypse
2.00	1004	Cetraria canadensis	Cetcan

3.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
2.00	1014	Cetraria pallidula	Cetpal
3.00	1211	Cladonia coniocraea	Clacon
3.00	1240	Cladonia transcendens	Clatra
4.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4803	Parmelia pseudosulcata	Parpse
1.00	5202	Parmeliopsis hyperopta	Pophyp
4.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
2.00	6912	Ramalina farinacea	Ramfar
3.00	7402	Sphaerophorus globosus	Sphglo
4.00	8029	Usnea filipendula	Usnfil

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Sample unit: 4312348

No species encountered in this sample unit.

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Group: ON-FRAME - W  
Sample unit: 4312356

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	206	Alectoria vancouverensis	Alevan
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
1.00	1228	Cladonia ochrochlora	Claoch
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
1.00	3905	Lobaria pulmonaria	Lobpul
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	8000	Usnea	Usn
4.00	8029	Usnea filipendula	Usnfil
4.00	8065	Usnea scabrata	Usnsca

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Group: ON-FRAME - W  
Sample unit: 4312364

Value	Code	Species	Code Name
4.00	8029	Usnea filipendula	Usnfil
3.00	6912	Ramalina farinacea	Ramfar
3.00	8084	Usnea wirthii	Usnwir
3.00	6102	Platismatia herrei	Plaher
3.00	4802	Parmelia hygrophila	Parhyg
3.00	4004	Melanelia exasperatula	Melex1
3.00	6101	Platismatia glauca	Plagla
3.00	8000	Usnea	Usn
2.00	2404	Evernia prunastri	Evepru

3.00	3121	<i>Hypogymnia tubulosa</i>	Hyptub
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
3.00	3109	<i>Hypogymnia inactiva</i>	Hypina
2.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	3114	<i>Hypogymnia occidentalis</i>	Hypocc
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	7402	<i>Sphaerophorus globosus</i>	Sphglo
3.00	8065	<i>Usnea scabrata</i>	Usnsca
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
2.00	4015	<i>Melanelia subaurifera</i>	Melsub
2.00	608	<i>Bryoria friabilis</i>	Bryfri
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	3219	<i>Hypotrachyna sinuosa</i>	Htrsin
1.00	3905	<i>Lobaria pulmonaria</i>	Lobpul
3.00	3101	<i>Hypogymnia apinnata</i>	Hypapi
2.00	1013	<i>Cetraria orbata</i>	Cetorb
2.00	6910	<i>Ramalina dilacerata</i>	Ramdil
3.00	6937	<i>Ramalina thrausta</i>	Ramthr

Group: ON-FRAME - W  
 Sample unit: 4412221

Value	Code	Species	Code Name
3.00	202	<i>Alectoria imshaugii</i>	Aleims
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
1.00	603	<i>Bryoria capillaris</i>	Brycap
2.00	608	<i>Bryoria friabilis</i>	Bryfri
3.00	610	<i>Bryoria fuscescens</i>	Bryfus
1.00	600	<i>Bryoria</i>	Bry
1.00	1005	<i>Cetraria chlorophylla</i>	Cetchl
1.00	1013	<i>Cetraria orbata</i>	Cetorb
2.00	1014	<i>Cetraria pallidula</i>	Cetpal
2.00	1016	<i>Cetraria platyphyllea</i>	Cetpla
3.00	1238	<i>Cladonia squamosa v. subsquamo</i>	Classq
3.00	1240	<i>Cladonia transcendens</i>	Clatra
3.00	2301	<i>Esslingeriana idahoensis</i>	Essida
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
3.00	3109	<i>Hypogymnia inactiva</i>	Hypina
1.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
3.00	3114	<i>Hypogymnia occidentalis</i>	Hypocc
2.00	3121	<i>Hypogymnia tubulosa</i>	Hyptub
1.00	3905	<i>Lobaria pulmonaria</i>	Lobpul
2.00	4552	<i>Nodobryoria oregana</i>	Nodore
2.00	4802	<i>Parmelia hygrophila</i>	Parhyg
3.00	5202	<i>Parmeliopsis hyperopta</i>	Pophyp
3.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	6102	<i>Platismatia herrei</i>	Plaher
3.00	6105	<i>Platismatia stenophylla</i>	Plaste
3.00	7402	<i>Sphaerophorus globosus</i>	Sphglo
2.00	8029	<i>Usnea filipendula</i>	Usnfil
1.00	8046	<i>Usnea longissima</i>	Usnlon

Group: ON-FRAME - W  
 Sample unit: 4412228

Value	Code	Species	Code Name
1.00	603	<i>Bryoria capillaris</i>	Brycap
2.00	1005	<i>Cetraria chlorophylla</i>	Cetchl
3.00	1013	<i>Cetraria orbata</i>	Cetorb

3.00	1217	Cladonia fimbriata	Clafim
3.00	1240	Cladonia transcendens	Clatra
3.00	2404	Evernia prunastri	Evepru
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3116	Hypogymnia physodes	Hypphy
2.00	3121	Hypogymnia tubulosa	Hyptub
1.00	3905	Lobaria pulmonaria	Lobpul
3.00	3909	Lobaria scrobiculata	Lobscr
3.00	4405	Nephroma laevigatum	Neplae
1.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	5701	Physcia adscendens	Phyads
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
3.00	6105	Platismatia stenophylla	Plaste
3.00	6912	Ramalina farinacea	Ramfar
3.00	7402	Sphaerophorus globosus	Sphglo
4.00	8029	Usnea filipendula	Usnfil
3.00	8044	Usnea lapponica	Usnlap

Group: ON-FRAME - W  
 Sample unit: 4412233

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
3.00	611	Bryoria glabra	Brygla
3.00	1016	Cetraria platyphylla	Cetpla
3.00	4552	Nodobryoria oregana	Nodore
3.00	600	Bryoria	Bry
3.00	603	Bryoria capillaris	Brycap
3.00	610	Bryoria fuscescens	Bryfus
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	202	Alectoria imshaugii	Aleims
1.00	5201	Parmeliopsis ambigua	Popamb
3.00	2301	Esslingeriana idahoensis	Essida
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	3904	Lobaria oregana	Lobore
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	4803	Parmelia pseudosulcata	Parpse
3.00	3116	Hypogymnia physodes	Hypphy
3.00	6102	Platismatia herrei	Plaher
3.00	3109	Hypogymnia inactiva	Hypina
3.00	6101	Platismatia glauca	Plagla
3.00	6105	Platismatia stenophylla	Plaste
1.00	8000	Usnea	Usn
1.00	1240	Cladonia transcendens	Clatra
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
 Sample unit: 4412248

Value	Code	Species	Code Name
3.00	6912	Ramalina farinacea	Ramfar
3.00	5503	Peltigera collina	Pelcol
1.00	1005	Cetraria chlorophylla	Cetchl

1.00	6105	Platismatia stenophylla	Plaste
2.00	6101	Platismatia glauca	Plagla
3.00	3116	Hypogymnia physodes	Hypphy
3.00	5702	Physcia aipolia	Phyaip
3.00	6910	Ramalina dilacerata	Ramdil
1.00	7502	Sticta fuliginosa	Stiful
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	5701	Physcia adscendens	Phyads
4.00	4806	Parmelia sulcata	Parsul
3.00	2404	Evernia prunastri	Evepru
4.00	8029	Usnea filipendula	Usnfil
3.00	1409	Collema furfuraceum	Colfur
3.00	8204	Xanthoria hasseana	Xanhas
3.00	4015	Melanelia subaurifera	Melsub
3.00	5907	Physconia isidiigera	Phoisi
3.00	5906	Physconia perisidiosa	Phoper

Group: ON-FRAME - W  
 Sample unit: 4412256

Value	Code	Species	Code Name
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	1240	Cladonia transcendens	Clatra
3.00	2404	Evernia prunastri	Evepru
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3905	Lobaria pulmonaria	Lobpul
1.00	4101	Menegazzia terebrata	Menter
3.00	4806	Parmelia sulcata	Parsul
3.00	6101	Platismatia glauca	Plagla
3.00	6105	Platismatia stenophylla	Plaste
3.00	6912	Ramalina farinacea	Ramfar
1.00	7402	Sphaerophorus globosus	Sphglo
4.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir
4.00	8023	Usnea diplotypus	Usndip
3.00	8013	Usnea cavernosa	Usncav

Group: ON-FRAME - W  
 Sample unit: 4412274

Value	Code	Species	Code Name
3.00	6105	Platismatia stenophylla	Plaste
3.00	3904	Lobaria oregana	Lobore
3.00	4806	Parmelia sulcata	Parsul
3.00	6102	Platismatia herrei	Plaher
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	6912	Ramalina farinacea	Ramfar
2.00	2404	Evernia prunastri	Evepru
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	8029	Usnea filipendula	Usnfil
3.00	1240	Cladonia transcendens	Clatra
3.00	6101	Platismatia glauca	Plagla
1.00	1228	Cladonia ochrochlora	Claoch
1.00	3909	Lobaria scrobiculata	Lobscr

3.00	4403	Nephroma helveticum	Nephel
1.00	618	Bryoria pseudofuscescens	Brypse
1.00	6404	Pseudocyphellaria crocata	Pcycro
3.00	3116	Hypogymnia physodes	Hypphy
1.00	4802	Parmelia hygrophila	Parhyg
2.00	3109	Hypogymnia inactiva	Hypina
2.00	1013	Cetraria orbata	Cetorb
3.00	3219	Hypotrachyna sinuosa	Htrsinf
2.00	6910	Ramalina dilacerata	Ramdil
3.00	3905	Lobaria pulmonaria	Lobpul
2.00	7502	Sticta fuliginosa	Stiful
1.00	4405	Nephroma laevigatum	Neplae
2.00	5503	Peltigera collina	Pelcol
1.00	7505	Sticta weigelii	Stiwei

Group: ON-FRAME - W  
 Sample unit: 4412276

Value	Code	Species	Code Name
3.00	8301	Candelaria concolor	Cndcon
3.00	1101	Cetrelia cetrariooides	Celcet
3.00	2404	Evernia prunastri	Evepru
3.00	3116	Hypogymnia physodes	Hypphy
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	3219	Hypotrachyna sinuosa	Htrsinf
3.00	3905	Lobaria pulmonaria	Lobpul
1.00	4004	Melanelia exasperatula	Melexl
3.00	4015	Melanelia subaurifera	Melsub
2.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
3.00	5503	Peltigera collina	Pelcol
3.00	5701	Physcia adscendens	Phyads
3.00	5910	Physconia americana	Phoame
3.00	5903	Physconia enteroxantha	Phoent
1.00	6401	Pseudocyphellaria anomala	Pcyano
3.00	6910	Ramalina dilacerata	Ramdil
3.00	6912	Ramalina farinacea	Ramfar
2.00	8000	Usnea	Usn
3.00	8029	Usnea filipendula	Usnfil
3.00	8201	Xanthoria candelaria	Xancan

Group: ON-FRAME - W  
 Sample unit: 4412325

Value	Code	Species	Code Name
3.00	901	Cavernularia hultenii	Cavhul
3.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
2.00	3905	Lobaria pulmonaria	Lobpul
3.00	4804	Parmelia saxatilis	Parsax
1.00	4805	Parmelia squarrosa	Parsqu
3.00	4806	Parmelia sulcata	Parsul
1.00	5701	Physcia adscendens	Phyads
3.00	6101	Platismatia glauca	Plagla
2.00	6102	Platismatia herrei	Plaher
3.00	6912	Ramalina farinacea	Ramfar
1.00	7402	Sphaerophorus globosus	Sphglo

3.00	8029	<i>Usnea filipendula</i>	Usnfil
3.00	8084	<i>Usnea wirthii</i>	Usnwir

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Group: ON-FRAME - W  
Sample unit: 4412365

Value	Code	Species	Code Name
3.00	8084	<i>Usnea wirthii</i>	Usnwir
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	3219	<i>Hypotrachyna sinuosa</i>	Htrsins
3.00	6912	<i>Ramalina farinacea</i>	Ramfar
2.00	2404	<i>Evernia prunastri</i>	Evepru
3.00	4101	<i>Menegazzia terebrata</i>	Menter
2.00	4005	<i>Melanelia fuliginosa</i>	Melful
2.00	7503	<i>Sticta limbata</i>	Stilim
3.00	3121	<i>Hypogymnia tubulosa</i>	Hyptub
3.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
3.00	3109	<i>Hypogymnia inactiva</i>	Hypina
3.00	3101	<i>Hypogymnia apinnata</i>	Hypapi
3.00	6101	<i>Platismatia glauca</i>	Plagla
1.00	6102	<i>Platismatia herrei</i>	Plaher
1.00	3905	<i>Lobaria pulmonaria</i>	Lobpul
1.00	6910	<i>Ramalina dilacerata</i>	Ramdil
1.00	5724	<i>Physcia tenella</i>	Phyten
1.00	4802	<i>Parmelia hygrophila</i>	Parhyg

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Group: ON-FRAME - W  
Sample unit: 4412368

Value	Code	Species	Code Name
2.00	1101	<i>Cetrelia cetrariooides</i>	Celcet
3.00	1228	<i>Cladonia ochrochlora</i>	Claoch
3.00	3219	<i>Hypotrachyna sinuosa</i>	Htrsins
1.00	3905	<i>Lobaria pulmonaria</i>	Lobpul
2.00	4015	<i>Melanelia subaurifera</i>	Melsub
3.00	4101	<i>Menegazzia terebrata</i>	Menter
3.00	4802	<i>Parmelia hygrophila</i>	Parhyg
3.00	4806	<i>Parmelia sulcata</i>	Parsul
2.00	5303	<i>Parmotrema chinense</i>	Pmochi
1.00	6102	<i>Platismatia herrei</i>	Plaher
2.00	6402	<i>Pseudocypsellaria anthraspis</i>	Pcyant
1.00	7402	<i>Sphaerophorus globosus</i>	Sphglo
3.00	8029	<i>Usnea filipendula</i>	Usnfil
3.00	8084	<i>Usnea wirthii</i>	Usnwir

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Group: ON-FRAME - W  
Sample unit: 4512117

Value	Code	Species	Code Name
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	202	<i>Alectoria imshaugii</i>	Aleims
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
3.00	7402	<i>Sphaerophorus globosus</i>	Sphglo
3.00	1240	<i>Cladonia transcendens</i>	Clatra
3.00	6102	<i>Platismatia herrei</i>	Plaher

3.00	3904	Lobaria oregana	Lobore
2.00	6105	Platismatia stenophylla	Plaste
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	8029	Usnea filipendula	Usnfil
3.00	4802	Parmelia hygrophila	Parhyg
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	3109	Hypogymnia inactiva	Hypina
2.00	1013	Cetraria orbata	Cetorb
2.00	4408	Nephroma resupinatum	Nepres
3.00	3116	Hypogymnia physodes	Hypphy
2.00	1228	Cladonia ochrochlora	Claoch
3.00	600	Bryoria	Bry
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	1005	Cetraria chlorophylla	Cetchl
2.00	3108	Hypogymnia imshaugii	Hypims
3.00	608	Bryoria friabilis	Bryfri
3.00	4552	Nodobryoria oregana	Nodore
2.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	1217	Cladonia fimbriata	Clafim

Group: ON-FRAME - W  
 Sample unit: 4512158

Value	Code	Species	Code Name
3.00	6101	Platismatia glauca	Plagla
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	603	Bryoria capillaris	Brycap
3.00	3109	Hypogymnia inactiva	Hypina
3.00	4806	Parmelia sulcata	Parsul
3.00	6105	Platismatia stenophylla	Plaste
3.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir
2.00	618	Bryoria pseudofuscescens	Brypse
3.00	3116	Hypogymnia physodes	Hypphy
3.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	4552	Nodobryoria oregana	Nodore
3.00	205	Alectoria sarmentosa	Alesar
2.00	3105	Hypogymnia enteromorpha	Hypent
2.00	3101	Hypogymnia apinnata	Hypapi
2.00	600	Bryoria	Bry
2.00	7402	Sphaerophorus globosus	Sphglo
2.00	610	Bryoria fuscescens	Bryfus

Group: ON-FRAME - W  
 Sample unit: 4512224

Value	Code	Species	Code Name
3.00	2404	Evernia prunastri	Evepru
1.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3121	Hypogymnia tubulosa	Hyptub
1.00	4015	Melanelia subaurifera	Melsub
3.00	4806	Parmelia sulcata	Parsul
1.00	5724	Physcia tenella	Phyten
3.00	6101	Platismatia glauca	Plagla
3.00	6912	Ramalina farinacea	Ramfar
1.00	7402	Sphaerophorus globosus	Sphglo
2.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir

3.00 1248 Cladonia verruculosa Claver

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Group: ON-FRAME - W  
Sample unit: 4512263

Value	Code	Species	Code Name
3.00	1211	Cladonia coniocraea	Clacon
2.00	3105	Hypogymnia enteromorpha	Hypent
2.00	3100	Hypogymnia	Hyp
2.00	3116	Hypogymnia physodes	Hypphy
2.00	4802	Parmelia hygrophila	Parhyg
2.00	5202	Parmeliopsis hyperopta	Pophyp
2.00	4806	Parmelia sulcata	Parsul
1.00	5509	Peltigera neopolydactyla	Pelneo
2.00	6101	Platismatia glauca	Plagla
1.00	6912	Ramalina farinacea	Ramfar
1.00	6929	Ramalina roesleri	Ramroe

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Group: ON-FRAME - W  
Sample unit: 4512265

Value	Code	Species	Code Name
3.00	4806	Parmelia sulcata	Parsul
3.00	8301	Candelaria concolor	Cndcon
3.00	6934	Ramalina subleptocarpha	Ramsle
3.00	4015	Melanelia subaurifera	Melsub
3.00	4802	Parmelia hygrophila	Parhyg
3.00	2404	Evernia prunastri	Evepru
1.00	8000	Usnea	Usn
3.00	5701	Physcia adscendens	Phyads
3.00	8207	Xanthoria polycarpa	Xanpol
3.00	8215	Xanthoria oregana	Xanore
3.00	8210	Xanthoria fulva	Xanful
1.00	5906	Physconia perisidiosa	Phoper
3.00	5612	Phaeophyscia orbicularis	Phaorb

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Group: ON-FRAME - W  
Sample unit: 4512326

Value	Code	Species	Code Name
1.00	608	Bryoria friabilis	Bryfri
3.00	1013	Cetraria orbata	Cetorb
1.00	1101	Cetrelia cetrariooides	Celcet
3.00	1238	Cladonia squamosa v. subsquamo	Classq
1.00	2404	Evernia prunastri	Evepru
1.00	3101	Hypogymnia apinnata	Hypapi
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3121	Hypogymnia tubulosa	Hyptub
1.00	3219	Hypotrachyna sinuosa	Htrsin
2.00	3904	Lobaria oregana	Lobore
3.00	4101	Menegazzia terebrata	Menter
1.00	4402	Nephroma bellum	Nepbel
2.00	4802	Parmelia hygrophila	Parhyg
3.00	4806	Parmelia sulcata	Parsul
1.00	5301	Parmotrema arnoldii	Pmoarn
1.00	5303	Parmotrema chinense	Pmochi
3.00	6102	Platismatia herrei	Plaher

3.00	6105	Platismatia stenophylla	Plaste
3.00	6401	Pseudocypphellaria anomala	Pcyano
3.00	6402	Pseudocypphellaria anthraspis	Pcyant
2.00	6404	Pseudocypphellaria crocata	Pcycro
3.00	6912	Ramalina farinacea	Ramfar
1.00	7402	Sphaerophorus globosus	Sphglo
3.00	7502	Sticta fuliginosa	Stiful
1.00	7503	Sticta limbata	Stilim
1.00	6203	Polychidium contortum	Polcon
3.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
Sample unit: 4512334

Value	Code	Species	Code Name
2.00	610	Bryoria fuscescens	Bryfus
1.00	600	Bryoria	Bry
2.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
3.00	1236	Cladonia squamosa	Clasqu
3.00	1238	Cladonia squamosa v. subsquamo	Classq
3.00	1240	Cladonia transcendens	Clatra
3.00	2301	Esslingeriana idahoensis	Essida
1.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3116	Hypogymnia physodes	Hypphy
1.00	4552	Nodobryoria oregana	Nodore
2.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher
1.00	6104	Platismatia norvegica	Planor
3.00	6105	Platismatia stenophylla	Plaste
1.00	6912	Ramalina farinacea	Ramfar
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	8000	Usnea	Usn
3.00	8029	Usnea filipendula	Usnfil
1.00	8065	Usnea scabrata	Usnsca

Group: ON-FRAME - W  
Sample unit: 4512342

Value	Code	Species	Code Name
3.00	2404	Evernia prunastri	Evepru
3.00	6912	Ramalina farinacea	Ramfar
3.00	4806	Parmelia sulcata	Parsul
3.00	4802	Parmelia hygrophila	Parhyg
3.00	8029	Usnea filipendula	Usnfil
1.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
2.00	6910	Ramalina dilacerata	Ramdil
1.00	4015	Melanelia subaurifera	Melsub
2.00	6101	Platismatia glauca	Plagla
1.00	8084	Usnea wirthii	Usnwir
3.00	8201	Xanthoria candelaria	Xancan
3.00	8207	Xanthoria polycarpa	Xanpol
1.00	5724	Phycia tenella	Phyten

1.00	3116	<i>Hypogymnia physodes</i>	Hypphy
3.00	4005	<i>Melanelia fuliginosa</i>	Melful

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Group: ON-FRAME - W  
Sample unit: 4512354

Value	Code	Species	Code Name
1.00	901	<i>Cavernularia hultenii</i>	Cavhul
1.00	1005	<i>Cetraria chlorophylla</i>	Cetchl
1.00	2404	<i>Evernia prunastri</i>	Evepru
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
2.00	3109	<i>Hypogymnia inactiva</i>	Hypina
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
2.00	3219	<i>Hypotrachyna sinuosa</i>	Htrsinf
2.00	4101	<i>Menegazzia terebrata</i>	Menter
3.00	4802	<i>Parmelia hygrophila</i>	Parhyg
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	6102	<i>Platismatia herrei</i>	Plaher
3.00	7402	<i>Sphaerophorus globosus</i>	Sphglo
1.00	7502	<i>Sticta fuliginosa</i>	Stiful
3.00	8084	<i>Usnea wirthii</i>	Usnwir

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Group: ON-FRAME - W  
Sample unit: 4512357

Value	Code	Species	Code Name
3.00	8084	<i>Usnea wirthii</i>	Usnwir
3.00	8000	<i>Usnea</i>	Usn
3.00	8019	<i>Usnea cornuta</i>	Usncor
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	8029	<i>Usnea filipendula</i>	Usnfil
2.00	4101	<i>Menegazzia terebrata</i>	Menter
2.00	3219	<i>Hypotrachyna sinuosa</i>	Htrsinf
3.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	6102	<i>Platismatia herrei</i>	Plaher
3.00	1019	<i>Cetraria subalpina</i>	Cetsub
3.00	3109	<i>Hypogymnia inactiva</i>	Hypina
1.00	6912	<i>Ramalina farinacea</i>	Ramfar
3.00	7402	<i>Sphaerophorus globosus</i>	Sphglo
2.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
1.00	5301	<i>Parmotrema arnoldii</i>	Pmoarn

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Group: ON-FRAME - W  
Sample unit: 4512382

Value	Code	Species	Code Name
3.00	8084	<i>Usnea wirthii</i>	Usnwir
3.00	8029	<i>Usnea filipendula</i>	Usnfil
3.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	3219	<i>Hypotrachyna sinuosa</i>	Htrsinf
3.00	7402	<i>Sphaerophorus globosus</i>	Sphglo
2.00	3109	<i>Hypogymnia inactiva</i>	Hypina
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
3.00	3101	<i>Hypogymnia apinnata</i>	Hypapi
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy

3.00	3121	Hypogymnia tubulosa	Hyptub
2.00	5503	Peltigera collina	Pelcol
2.00	4101	Menegazzia terebrata	Menter
2.00	4408	Nephroma resupinatum	Nepres
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	7502	Sticta fuliginosa	Stiful
1.00	4405	Nephroma laevigatum	Neplae
3.00	1240	Cladonia transcendens	Clatra
1.00	1256	Cladonia bellidiflora	Clabel
1.00	603	Bryoria capillaris	Brycap
1.00	600	Bryoria	Bry
1.00	6912	Ramalina farinacea	Ramfar

Group: ON-FRAME - W  
 Sample unit: 4612147

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
3.00	610	Bryoria fuscescens	Bryfus
3.00	618	Bryoria pseudofuscescens	Brypse
3.00	600	Bryoria	Bry
3.00	901	Cavernularia hultenii	Cavhul
2.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
3.00	4552	Nodobryoria oregana	Nodore
2.00	4802	Parmelia hygrophila	Parhyg
2.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	6102	Platismatia herrei	Plaher

Group: ON-FRAME - W  
 Sample unit: 4612211

Value	Code	Species	Code Name
4.00	6101	Platismatia glauca	Plagla
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	6105	Platismatia stenophylla	Plaste
3.00	205	Alectoria sarmentosa	Alesar
3.00	6102	Platismatia herrei	Plaher
3.00	611	Bryoria glabra	Brygla
3.00	3109	Hypogymnia inactiva	Hypina
2.00	1228	Cladonia ochrochlora	Claoch
3.00	7402	Sphaerophorus globosus	Sphglo
3.00	4552	Nodobryoria oregana	Nodore
2.00	608	Bryoria friabilis	Bryfri
2.00	3114	Hypogymnia occidentalis	Hypocc
1.00	1013	Cetraria orbata	Cetorb
3.00	603	Bryoria capillaris	Brycap
1.00	1005	Cetraria chlorophylla	Cetchl
1.00	4806	Parmelia sulcata	Parsul
1.00	600	Bryoria	Bry
1.00	3119	Hypogymnia rugosa	Hyprug
3.00	5202	Parmeliopsis hyperopta	Pophyp

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Group: ON-FRAME - W  
Sample unit: 4612226

Value	Code	Species	Code Name
3.00	1240	<i>Cladonia transcendens</i>	Clatra

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Group: ON-FRAME - W  
Sample unit: 4612241

Value	Code	Species	Code Name
3.00	8084	<i>Usnea wirthii</i>	Usnwir
1.00	618	<i>Bryoria pseudofuscescens</i>	Brypse
1.00	603	<i>Bryoria capillaris</i>	Brycap
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
3.00	4101	<i>Menegazzia terebrata</i>	Menter
2.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
3.00	6102	<i>Platismatia herrei</i>	Plaher
3.00	6912	<i>Ramalina farinacea</i>	Ramfar
2.00	2404	<i>Evernia prunastri</i>	Evepru
2.00	3109	<i>Hypogymnia inactiva</i>	Hypina
2.00	8029	<i>Usnea filipendula</i>	Usnfil
1.00	1217	<i>Cladonia fimbriata</i>	Clafim
1.00	1228	<i>Cladonia ochrochlora</i>	Claoch
1.00	1248	<i>Cladonia verruculosa</i>	Claver
2.00	6101	<i>Platismatia glauca</i>	Plagla
1.00	4015	<i>Melanelia subaurifera</i>	Melsub
1.00	3101	<i>Hypogymnia apinnata</i>	Hypapi
3.00	1005	<i>Cetraria chlorophylla</i>	Cetchl
1.00	4004	<i>Melanelia exasperatula</i>	Melexl
1.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	608	<i>Bryoria friabilis</i>	Bryfri

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Group: ON-FRAME - W  
Sample unit: 4612267

Value	Code	Species	Code Name
2.00	2404	<i>Evernia prunastri</i>	Evepru
1.00	6910	<i>Ramalina dilacerata</i>	Ramdil
3.00	8207	<i>Xanthoria polycarpa</i>	Xanpol
3.00	8023	<i>Usnea diplotypus</i>	Usndip
3.00	3116	<i>Hypogymnia physodes</i>	Hypphy
2.00	3219	<i>Hypotrachyna sinuosa</i>	Htrsins
3.00	4005	<i>Melanelia fuliginosa</i>	Melful
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	1240	<i>Cladonia transcendens</i>	Clatra
1.00	1101	<i>Cetrelia cetrariooides</i>	Celcet
1.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
1.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
1.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	1238	<i>Cladonia squamosa v. subsquamo</i>	Classq
3.00	1200	<i>Cladonia</i>	Cla

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Group: ON-FRAME - W

Sample unit: 4612282

Value	Code	Species	Code Name
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
3.00	1211	Cladonia coniocraea	Clacon
3.00	2404	Evernia prunastri	Evepru
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
1.00	3116	Hypogymnia physodes	Hypphy
3.00	4806	Parmelia sulcata	Parsul
3.00	6101	Platismatia glauca	Plagla
1.00	6102	Platismatia herrei	Plaher
3.00	8044	Usnea lapponica	Usnlap
3.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir
3.00	3636	Leptogium polycarpum	Leppol

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Group: ON-FRAME - W  
Sample unit: 4612318

Value	Code	Species	Code Name
1.00	1013	Cetraria orbata	Cetorb
3.00	4806	Parmelia sulcata	Parsul
3.00	3219	Hypotrachyna sinuosa	Htrsins
3.00	5300	Parmotrema	Pmo
3.00	8084	Usnea wirthii	Usnwir
1.00	4101	Menegazzia terebrata	Menter
1.00	6912	Ramalina farinacea	Ramfar

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Group: ON-FRAME - W  
Sample unit: 4612331

Value	Code	Species	Code Name
3.00	3116	Hypogymnia physodes	Hypphy
3.00	4806	Parmelia sulcata	Parsul
3.00	8036	Usnea glabrata	Usngla
2.00	2404	Evernia prunastri	Evepru
3.00	1240	Cladonia transcendentis	Clatra
1.00	1210	Cladonia chlorophaea	Clachl
1.00	5702	Physcia aipolia	Phyaip
1.00	3114	Hypogymnia occidentalis	Hypocc

---

Group: ON-FRAME - W  
Sample unit: 4612343

Value	Code	Species	Code Name
3.00	6101	Platismatia glauca	Plagla
3.00	4806	Parmelia sulcata	Parsul
3.00	3109	Hypogymnia inactiva	Hypina
3.00	8084	Usnea wirthii	Usnwir
3.00	8029	Usnea filipendula	Usnfil
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3114	Hypogymnia occidentalis	Hypocc
1.00	2404	Evernia prunastri	Evepru

1.00 1013 Cetraria orbata Cetorb

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Group: ON-FRAME - W  
Sample unit: 4612374

Value	Code	Species	Code Name
1.00	3105	Hypogymnia enteromorpha	Hypent
1.00	618	Bryoria pseudofuscescens	Brypse
3.00	901	Cavernularia hultenii	Cavhul
2.00	1238	Cladonia squamosa v. subsquamo	Classq
2.00	1240	Cladonia transcodens	Clatra
2.00	3101	Hypogymnia apinnata	Hypapi
1.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
2.00	3219	Hypotrachyna sinuosa	Htrsin
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	4101	Menegazzia terebrata	Menter
2.00	5202	Parmeliopsis hyperopta	Pophyp
1.00	4803	Parmelia pseudosulcata	Parpsse
3.00	4806	Parmelia sulcata	Parsul
2.00	6101	Platismatia glauca	Plagla
1.00	6102	Platismatia herrei	Plaher
2.00	6912	Ramalina farinacea	Ramfar
1.00	1005	Cetraria chlorophylla	Cetchl
2.00	1013	Cetraria orbata	Cetorb
1.00	8029	Usnea filipendula	Usnfil
2.00	8084	Usnea wirthii	Usnwir
3.00	8019	Usnea cornuta	Usncor

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Group: ON-FRAME - W  
Sample unit: 4712135

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
2.00	1005	Cetraria chlorophylla	Cetchl
1.00	2404	Evernia prunastri	Evepru
2.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3116	Hypogymnia physodes	Hypphy
3.00	3121	Hypogymnia tubulosa	Hyptub
2.00	4552	Nodobryoria oregana	Nodore
3.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
1.00	6102	Platismatia herrei	Plaher
2.00	6105	Platismatia stenophylla	Plaste
1.00	7402	Sphaerophorus globosus	Sphglo
1.00	8029	Usnea filipendula	Usnfil

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Group: ON-FRAME - W  
Sample unit: 4712176

Value	Code	Species	Code Name
2.00	205	Alectoria sarmentosa	Alesar
1.00	603	Bryoria capillaris	Brycap
1.00	600	Bryoria	Bry
2.00	1005	Cetraria chlorophylla	Cetchl

3.00	1210	Cladonia chlorophaea	Clachl
3.00	1240	Cladonia transcendens	Clatra
2.00	2404	Evernia prunastri	Evepru
1.00	3105	Hypogymnia enteromorpha	Hypent
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
1.00	3116	Hypogymnia physodes	Hypphy
2.00	4552	Nodobryoria oregana	Nodore
3.00	4802	Parmelia hygrophila	Parhyg
1.00	4806	Parmelia sulcata	Parsul
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
1.00	6912	Ramalina farinacea	Ramfar
1.00	7402	Sphaerophorus globosus	Sphglo
2.00	8029	Usnea filipendula	Usnfil
3.00	1241	Cladonia umbricola	Claumb

Group: ON-FRAME - W  
 Sample unit: 4712215

Value	Code	Species	Code Name
3.00	6101	Platismatia glauca	Plagla
3.00	3121	Hypogymnia tubulosa	Hyptub
3.00	4806	Parmelia sulcata	Parsul
2.00	8000	Usnea	Usn
3.00	8084	Usnea wirthii	Usnwir
3.00	8036	Usnea glabrata	Usngla
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3219	Hypotrachyna sinuosa	Htrsinv
1.00	4015	Melanelia subaurifera	Melsub
1.00	2404	Evernia prunastri	Evepru
2.00	3108	Hypogymnia imshaugii	Hypims
1.00	8019	Usnea cornuta	Usncor
3.00	8029	Usnea filipendula	Usnfil
3.00	1013	Cetraria orbata	Cetorb
1.00	7402	Sphaerophorus globosus	Sphglo
3.00	3109	Hypogymnia inactiva	Hypina
3.00	6102	Platismatia herrei	Plaher
1.00	1005	Cetraria chlorophylla	Cetchl
2.00	3101	Hypogymnia apinnata	Hypapi
3.00	1211	Cladonia coniocraea	Clacon
1.00	1210	Cladonia chlorophaea	Clachl
1.00	1240	Cladonia transcendens	Clatra

Group: ON-FRAME - W  
 Sample unit: 4712268

Value	Code	Species	Code Name
2.00	1240	Cladonia transcendens	Clatra
3.00	3105	Hypogymnia enteromorpha	Hypent
1.00	3116	Hypogymnia physodes	Hypphy
1.00	4806	Parmelia sulcata	Parsul
1.00	1013	Cetraria orbata	Cetorb
1.00	8084	Usnea wirthii	Usnwir

Group: ON-FRAME - W  
 Sample unit: 4712284

Value	Code	Species	Code Name
2.00	1240	Cladonia transcendens	Clatra
3.00	2404	Evernia prunastri	Evepru
1.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3116	Hypogymnia physodes	Hypphy
1.00	3219	Hypotrachyna sinuosa	Htrsin
2.00	4005	Melanelia fuliginosa	Melful
1.00	4101	Menegazzia terebrata	Menter
2.00	4802	Parmelia hygrophila	Parhyg
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	4806	Parmelia sulcata	Parsul
1.00	5702	Physcia aipolia	Phyaip
1.00	1013	Cetraria orbata	Cetorb
3.00	8036	Usnea glabrata	Usngla
3.00	8084	Usnea wirthii	Usnwir
1.00	8207	Xanthoria polycarpa	Xanpol

Group: ON-FRAME - W  
 Sample unit: 4712335

Value	Code	Species	Code Name
3.00	205	Alectoria sarmentosa	Alesar
1.00	611	Bryoria glabra	Brygla
1.00	901	Cavernularia hultenii	Cavhul
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3109	Hypogymnia inactiva	Hypina
2.00	3116	Hypogymnia physodes	Hypphy
1.00	3219	Hypotrachyna sinuosa	Htrsin
2.00	3121	Hypogymnia tubulosa	Hyptub
1.00	4015	Melanelia subaurifera	Melsub
3.00	4806	Parmelia sulcata	Parsul
3.00	6101	Platismatia glauca	Plagla
2.00	6102	Platismatia herrei	Plaher
1.00	6910	Ramalina dilacerata	Ramdil
2.00	7402	Sphaerophorus globosus	Sphglo
1.00	1005	Cetraria chlorophylla	Cetchl
1.00	1016	Cetraria platyphylla	Cetpla
2.00	8029	Usnea filipendula	Usnfil

Group: ON-FRAME - W  
 Sample unit: 4712412

Value	Code	Species	Code Name
3.00	1211	Cladonia coniocraea	Clacon
3.00	1236	Cladonia squamosa	Clasqu
3.00	1240	Cladonia transcendens	Clatra
1.00	4806	Parmelia sulcata	Parsul

Group: ON-FRAME - W  
 Sample unit: 4712452

Value	Code	Species	Code Name
1.00	3104	Hypogymnia duplicata	Hypdup
2.00	3105	Hypogymnia enteromorpha	Hypent
1.00	4101	Menegazzia terebrata	Menter
2.00	7402	Sphaerophorus globosus	Sphglo

3.00 8029 Usnea filipendula Usnfil

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Group: ON-FRAME - W  
Sample unit: 4812127

Value	Code	Species	Code Name
1.00	1013	Cetraria orbata	Cetorb
3.00	1211	Cladonia coniocraea	Clacon
3.00	2404	Evernia prunastri	Evepru
2.00	3105	Hypogymnia enteromorpha	Hypent
1.00	3108	Hypogymnia imshaugii	Hypims
3.00	3116	Hypogymnia physodes	Hypphy
3.00	4806	Parmelia sulcata	Parsul
1.00	5503	Peltigera collina	Pelcol
3.00	5702	Physcia aipolia	Phyaip
1.00	6101	Platismatia glauca	Plagla
2.00	6910	Ramalina dilacerata	Ramdil
3.00	6912	Ramalina farinacea	Ramfar
2.00	8013	Usnea cavernosa	Usncav
2.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir
3.00	8204	Xanthoria hasseana	Xanhas

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Group: ON-FRAME - W  
Sample unit: 4812168

Value	Code	Species	Code Name
2.00	1228	Cladonia ochrochlora	Claoch
3.00	205	Alectoria sarmentosa	Alesar
2.00	603	Bryoria capillaris	Brycap
3.00	610	Bryoria fuscescens	Bryfus
1.00	1236	Cladonia squamosa	Clasqu
2.00	3101	Hypogymnia apinnata	Hypapi
1.00	3104	Hypogymnia duplicata	Hypdup
1.00	4552	Nodobryoria oregana	Nodore
3.00	5202	Parmeliopsis hyperocea	Pophyp
3.00	6101	Platismatia glauca	Plagla
2.00	7402	Sphaerophorus globosus	Sphglo
4.00	1019	Cetraria subalpina	Cetsub

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Group: ON-FRAME - W  
Sample unit: 4812321

Value	Code	Species	Code Name
1.00	603	Bryoria capillaris	Brycap
2.00	1217	Cladonia fimbriata	Clafim
2.00	1240	Cladonia transcendens	Clatra
3.00	2404	Evernia prunastri	Evepru
2.00	3101	Hypogymnia apinnata	Hypapi
3.00	3116	Hypogymnia physodes	Hypphy
1.00	3121	Hypogymnia tubulosa	Hyptub
3.00	4015	Melanelia subaurifera	Melsub
3.00	4806	Parmelia sulcata	Parsul
3.00	5701	Physcia adscendens	Phyads
3.00	6101	Platismatia glauca	Plagla
1.00	6102	Platismatia herrei	Plaher
3.00	6912	Ramalina farinacea	Ramfar

2.00	6927	Ramalina pollinaria	Rampol
2.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
2.00	8029	Usnea filipendula	Usnfil
3.00	8201	Xanthoria candelaria	Xancan
3.00	8036	Usnea glabrata	Usngla
3.00	8044	Usnea lapponica	Usnlap

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Group: ON-FRAME - W  
Sample unit: 4812413

Value	Code	Species	Code Name
2.00	1236	Cladonia squamosa	Clasqu
2.00	3105	Hypogymnia enteromorpha	Hypent
1.00	3904	Lobaria oregana	Lobore
3.00	7402	Sphaerophorus globosus	Sphglo

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Total number of species occurrences in data = 2970

**APPENDIX 2.** List of lichen species by plot collected by crew members and auditors in California, 1998.

Compact format data file:  
D:\FHM\CA\CARAWDATA\CA-ALLPLOTS-98.TXT  
Species file:  
D:\FHM\CA\CARAWDATA1\EPIPHYTE.SPP

Matrix size: 76 plots (rows)  
105 species (columns)

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Group: REFERENCE  
Sample unit: CA\_R1\_Y

Value	Code	Species	Code Name
3.00	5701	Physcia adscendens	Phyads
3.00	5910	Physconia americana	Phoame
4.00	4006	Melanelia glabra	Melgla
3.00	8301	Candelaria concolor	Cndcon
3.00	2404	Evernia prunastri	Evepru
2.00	6711	Punctelia subrudecta	Punsub
2.00	4014	Melanelia subargentifera	Melsar
3.00	2702	Flavopunctelia flaventior	Fpufla
3.00	5001	Parmelina quercina	Pnaque
3.00	8207	Xanthoria polycarpa	Xanpol
3.00	5906	Physconia perisidiosa	Phoper
3.00	5903	Physconia enteroxantha	Phoent
3.00	8204	Xanthoria hasseana	Xanhas
3.00	8215	Xanthoria oregana	Xanore
3.00	5723	Physcia stellaris	Physte
2.00	5702	Physcia aipolia	Phyaip
3.00	5907	Physconia isidiigera	Phoisi
2.00	6934	Ramalina subleptocarpha	Ramsle
2.00	4017	Melanelia subolivacea	Melsol

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Group: REFERENCE  
Sample unit: CA\_R1\_a1

Value	Code	Species	Code Name
2.00	8207	Xanthoria polycarpa	Xanpol
2.00	8301	Candelaria concolor	Cndcon
2.00	5701	Physcia adscendens	Phyads
3.00	8204	Xanthoria hasseana	Xanhas
2.00	5723	Physcia stellaris	Physte
3.00	6934	Ramalina subleptocarpha	Ramsle
3.00	8203	Xanthoria fallax	Xanfal
3.00	5702	Physcia aipolia	Phyaip
3.00	5903	Physconia enteroxantha	Phoent
3.00	2702	Flavopunctelia flaventior	Fpufla
2.00	5001	Parmelina quercina	Pnaque
2.00	5910	Physconia americana	Phoame
3.00	4006	Melanelia glabra	Melgla
3.00	2404	Evernia prunastri	Evepru
3.00	4014	Melanelia subargentifera	Melsar

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Group: REFERENCE  
Sample unit: CA\_R1\_a2

Value	Code	Species	Code Name
3.00	6912	Ramalina farinacea	Ramfar
3.00	8215	Xanthoria oregana	Xanore
3.00	6934	Ramalina subleptocarpha	Ramsle
3.00	8204	Xanthoria hasseana	Xanhas
3.00	5907	Physconia isidiigera	Phoisi
3.00	5723	Physcia stellaris	Physte
1.00	3700	Letharia	Let
3.00	2702	Flavopunctelia flaventior	Fpufla
3.00	8301	Candelaria concolor	Cndcon
3.00	2404	Evernia prunastri	Evepru
3.00	4006	Melanelia glabra	Melgla
3.00	1011	Cetraria merrickii	Cetmer
3.00	5701	Physcia adscendens	Phyads
3.00	5001	Parmelina quercina	Pnaque
3.00	4806	Parmelia sulcata	Parsul

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Group: REFERENCE  
Sample unit: CA\_R1\_b1

Value	Code	Species	Code Name
3.00	8207	Xanthoria polycarpa	Xanpol
2.00	8301	Candelaria concolor	Cndcon
3.00	8203	Xanthoria fallax	Xanfal
3.00	6934	Ramalina subleptocarpha	Ramsle
3.00	8204	Xanthoria hasseana	Xanhas
3.00	5701	Physcia adscendens	Phyads
3.00	5910	Physconia americana	Phoame
3.00	5903	Physconia enteroxantha	Phoent
3.00	2404	Evernia prunastri	Evepru
3.00	2702	Flavopunctelia flaventior	Fpufla
3.00	4006	Melanelia glabra	Melgla
3.00	4014	Melanelia subargentifera	Melsar
3.00	5723	Physcia stellaris	Physte

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Group: REFERENCE  
Sample unit: CA\_R2\_Z

Value	Code	Species	Code Name
3.00	1013	Cetraria orbata	Cetorb
3.00	5702	Physcia aipolia	Phyaip
3.00	2301	Esslingeriana idahoensis	Essida
3.00	5724	Physcia tenella	Phyten
3.00	5910	Physconia americana	Phoame
3.00	4006	Melanelia glabra	Melgla
1.00	5503	Peltigera collina	Pelcol
3.00	8301	Candelaria concolor	Cndcon
2.00	4017	Melanelia subolivacea	Melsol
3.00	5903	Physconia enteroxantha	Phoent
2.00	5701	Physcia adscendens	Phyads
1.00	6912	Ramalina farinacea	Ramfar
3.00	5001	Parmelina quercina	Pnaque
3.00	3108	Hypogymnia imshaugii	Hypims

2.00	5723	Physcia stellaris	Physte
1.00	4800	Parmelia	Par
2.00	1409	Collema furfuraceum	Colfur
3.00	8204	Xanthoria hasseana	Xanhas
1.00	5603	Phaeophyscia ciliata	Phacil
3.00	3625	Leptogium lichenoides	Leplic
3.00	5907	Physconia isidiigera	Phoisi

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Group: REFERENCE  
Sample unit: CA\_R2\_a1

Value	Code	Species	Code Name
3.00	1013	Cetraria orbata	Cetorb
3.00	2404	Evernia prunastri	Evepru
3.00	6912	Ramalina farinacea	Ramfar
2.00	8204	Xanthoria hasseana	Xanhas
3.00	2301	Esslingeriana idahoensis	Essida
3.00	5910	Physconia americana	Phoame
3.00	5724	Physcia tenella	Phyten
3.00	8301	Candelaria concolor	Cndcon
2.00	3108	Hypogymnia imshaugii	Hypims
3.00	5702	Physcia aipolia	Phyaip
3.00	5001	Parmelina quercina	Pnaque
3.00	4802	Parmelia hygrophila	Parhyg
3.00	3702	Letharia vulpina	Letvul

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Group: REFERENCE  
Sample unit: CA\_R2\_a2

Value	Code	Species	Code Name
3.00	2404	Evernia prunastri	Evepru
3.00	6912	Ramalina farinacea	Ramfar
3.00	5903	Physconia enteroxantha	Phoent
3.00	5724	Physcia tenella	Phyten
1.00	1004	Cetraria canadensis	Cetcan
3.00	8301	Candelaria concolor	Cndcon
3.00	5702	Physcia aipolia	Phyaip
3.00	2301	Esslingeriana idahoensis	Essida
3.00	5001	Parmelina quercina	Pnaque
3.00	4006	Melanelia glabra	Melgla
3.00	4806	Parmelia sulcata	Parsul
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3702	Letharia vulpina	Letvul
3.00	5723	Physcia stellaris	Physte
3.00	1013	Cetraria orbata	Cetorb

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Group: REFERENCE  
Sample unit: CA\_R2\_b1

Value	Code	Species	Code Name
3.00	5910	Physconia americana	Phoame
2.00	4804	Parmelia saxatilis	Parsax
3.00	3702	Letharia vulpina	Letvul
3.00	1013	Cetraria orbata	Cetorb
2.00	8204	Xanthoria hasseana	Xanhas
3.00	2301	Esslingeriana idahoensis	Essida
2.00	3108	Hypogymnia imshaugii	Hypims

3.00	6912	Ramalina farinacea	Ramfar
3.00	5903	Physconia enteroxantha	Phoent
3.00	2404	Evernia prunastri	Evepru
2.00	6934	Ramalina subleptocarpha	Ramsle

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Group: ON-FRAME AUDIT  
Sample unit: 4012122Z

Value	Code	Species	Code Name
1.00	101	Ahtiana sphaerosporella	Ahtsph
3.00	1014	Cetraria pallidula	Cetpal
3.00	607	Bryoria fremontii	Bryfre
2.00	2404	Evernia prunastri	Evepru
4.00	1016	Cetraria platyphylla	Cetpla
3.00	1011	Cetraria merrillii	Cetmer
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
1.00	8201	Xanthoria candelaria	Xancan
1.00	8207	Xanthoria polycarpa	Xanpol
1.00	8210	Xanthoria fulva	Xanful
2.00	3108	Hypogymnia imshaugii	Hypims
1.00	4551	Nodobryoria abbreviata	Nodabb
1.00	1004	Cetraria canadensis	Cetcan
1.00	2301	Esslingeriana idahoensis	Essida
1.00	3114	Hypogymnia occidentalis	Hypocc
3.00	4016	Melanelia subelegantula	Melsel
1.00	1013	Cetraria orbata	Cetorb
3.00	4017	Melanelia subolivacea	Melsol
1.00	8029	Usnea filipendula	Usnfil
3.00	4004	Melanelia exasperatula	Melexl
2.00	4002	Melanelia elegantula	Melele

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Group: ON-FRAME AUDIT  
Sample unit: 4012122Y

Value	Code	Species	Code Name
1.00	2301	Esslingeriana idahoensis	Essida
1.00	8029	Usnea filipendula	Usnfil
3.00	3702	Letharia vulpina	Letvul
3.00	1014	Cetraria pallidula	Cetpal
3.00	1011	Cetraria merrillii	Cetmer
3.00	4551	Nodobryoria abbreviata	Nodabb
1.00	1004	Cetraria canadensis	Cetcan
2.00	2404	Evernia prunastri	Evepru
1.00	8000	Usnea	Usn
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	5701	Physcia adscendens	Phyads
2.00	4017	Melanelia subolivacea	Melsol
1.00	3114	Hypogymnia occidentalis	Hypocc
2.00	1013	Cetraria orbata	Cetorb
1.00	8301	Candelaria concolor	Cndcon
3.00	607	Bryoria fremontii	Bryfre
1.00	4016	Melanelia subelegantula	Melsel
3.00	3701	Letharia columbiana	Letcol

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Group: ON-FRAME AUDIT  
Sample unit: 3912174Z

Value	Code	Species	Code Name
3.00	8401	<i>Leptochidium albociliatum</i>	Lpcalb
3.00	3600	<i>Leptogium</i>	Lep
2.00	5910	<i>Physconia americana</i>	Phoame
1.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	5503	<i>Peltigera collina</i>	Pelcol
3.00	5702	<i>Physcia aipolia</i>	Phyaip
1.00	5900	<i>Physconia</i>	Pho
3.00	5723	<i>Physcia stellaris</i>	Physte
1.00	4016	<i>Melanelia subelegantula</i>	Melsel
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	5903	<i>Physconia enteroxantha</i>	Phoent
3.00	8207	<i>Xanthoria polycarpa</i>	Xanpol
3.00	4804	<i>Parmelia saxatilis</i>	Parsax
2.00	8301	<i>Candelaria concolor</i>	Cndcon
1.00	1016	<i>Cetraria platyphylla</i>	Cetpla
1.00	3901	<i>Lobaria hallii</i>	Lobhal
2.00	4006	<i>Melanelia glabra</i>	Melgla
3.00	4017	<i>Melanelia subolivacea</i>	Melsol
1.00	6401	<i>Pseudocyphellaria anomala</i>	Pcyano
3.00	4403	<i>Nephroma helveticum</i>	Nephel

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Group: OFF-FRAME  
Sample unit: ESideBR1

Value	Code	Species	Code Name
3.00	3701	<i>Letharia columbiana</i>	Letcol
1.00	4002	<i>Melanelia elegantula</i>	Melele

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Group: OFF-FRAME  
Sample unit: ESideSS1

No species encountered in this sample unit.

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Group: OFF-FRAME  
Sample unit: ESideBC1

Value	Code	Species	Code Name
3.00	3702	<i>Letharia vulpina</i>	Letvul

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Group: OFF-FRAME  
Sample unit: ESideBC2

No species encountered in this sample unit.

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Group: ON-FRAME  
Sample unit: 3411638

Value	Code	Species	Code Name
3.00	4017	<i>Melanelia subolivacea</i>	Melsol

3.00	8203	Xanthoria fallax	Xanfal
3.00	8301	Candelaria concolor	Cndcon
3.00	3701	Letharia columbiana	Letcol
3.00	8207	Xanthoria polycarpa	Xanpol

Group: ON-FRAME  
Sample unit: 3411961

Value	Code	Species	Code Name
4.00	3701	Letharia columbiana	Letcol
3.00	5903	Physconia enteroxantha	Phoent
3.00	5701	Physcia adscendens	Phyads
3.00	8215	Xanthoria oregana	Xanore
3.00	5612	Phaeophyscia orbicularis	Phaorb
3.00	8210	Xanthoria fulva	Xanful
3.00	4017	Melanelia subolivacea	Melsol

Group: ON-FRAME  
Sample unit: 3411973

Value	Code	Species	Code Name
3.00	3701	Letharia columbiana	Letcol
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	5705	Physcia biziana	Phybiz
3.00	8215	Xanthoria oregana	Xanore
3.00	4017	Melanelia subolivacea	Melsol
2.00	5710	Physcia dimidiata	Phydim
3.00	8201	Xanthoria candelaria	Xancan

Group: ON-FRAME  
Sample unit: 3511845

Value	Code	Species	Code Name
3.00	5701	Physcia adscendens	Phyads
3.00	5724	Physcia tenella	Phytен
3.00	5900	Physconia	Pho
3.00	8210	Xanthoria fulva	Xanful
3.00	8204	Xanthoria hasseana	Xanhas
3.00	4017	Melanelia subolivacea	Melsol
3.00	5702	Physcia aipolia	Phyaip
3.00	8203	Xanthoria fallax	Xanfal
3.00	8301	Candelaria concolor	Cndcon
3.00	5906	Physconia perisidiosa	Phoper
3.00	4006	Melanelia glabra	Melgla

Group: ON-FRAME  
Sample unit: 3511861

Value	Code	Species	Code Name
3.00	8301	Candelaria concolor	Cndcon
3.00	4017	Melanelia subolivacea	Melsol
3.00	8203	Xanthoria fallax	Xanfal
3.00	5710	Physcia dimidiata	Phydim
3.00	5702	Physcia aipolia	Phyaip
3.00	8215	Xanthoria oregana	Xanore

2.00	3700	Letharia	Let
3.00	8210	Xanthoria fulva	Xanful
3.00	8204	Xanthoria hasseana	Xanhas

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Group: ON-FRAME  
Sample unit: 3511885

Value	Code	Species	Code Name
3.00	8204	Xanthoria hasseana	Xanhas
3.00	4017	Melanelia subolivacea	Melsol
3.00	5724	Physcia tenella	Phyten
3.00	3702	Letharia vulpina	Letvul
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3701	Letharia columbiana	Letcol
3.00	5907	Physconia isidiigera	Phoisi
3.00	4002	Melanelia elegantula	Melele

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Sample unit: 3611833

No species encountered in this sample unit.

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Group: ON-FRAME  
Sample unit: 3611845

Value	Code	Species	Code Name
3.00	1011	Cetraria merrickii	Cetmer
3.00	3112	Hypogymnia metaphysodes	Hypmet
3.00	3701	Letharia columbiana	Letcol
3.00	3702	Letharia vulpina	Letvul
3.00	8301	Candelaria concolor	Cndcon
3.00	4002	Melanelia elegantula	Melele
1.00	4551	Nodobryoria abbreviata	Nodabb

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Sample unit: 3711821

No species encountered in this sample unit.

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Group: ON-FRAME  
Sample unit: 3711922

Value	Code	Species	Code Name
2.00	4002	Melanelia elegantula	Melele
3.00	3702	Letharia vulpina	Letvul
3.00	8301	Candelaria concolor	Cndcon
3.00	101	Ahtiana sphaerospora	Ahtsph
2.00	3100	Hypogymnia	Hyp

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Group: ON-FRAME  
Sample unit: 3711937

Value	Code	Species	Code Name

2.00	6912	Ramalina farinacea	Ramfar
3.00	8207	Xanthoria polycarpa	Xanpol
3.00	5907	Physconia isidiigera	Phoisi
3.00	5801	Physciella chloantha	Pclchl
3.00	4006	Melanelia glabra	Melgla
3.00	4000	Melanelia	Mel
3.00	5001	Parmelina quercina	Pnaque
3.00	5701	Physcia adscendens	Phyads
3.00	8301	Candelaria concolor	Cndcon
3.00	2404	Evernia prunastri	Evepru

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Group: ON-FRAME  
Sample unit: 3611962

Value	Code	Species	Code Name
3.00	8203	Xanthoria fallax	Xanfal
3.00	5705	Physcia biziana	Phybiz
3.00	8301	Candelaria concolor	Cndcon
3.00	4002	Melanelia elegantula	Melele
3.00	5001	Parmelina quercina	Pnaque
3.00	5702	Physcia aipolia	Phyaip
3.00	5907	Physconia isidiigera	Phoisi
3.00	4006	Melanelia glabra	Melgla

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Group: ON-FRAME  
Sample unit: 3711977

Value	Code	Species	Code Name
3.00	3701	Letharia columbiana	Letcol
2.00	1014	Cetraria pallidula	Cetpal
3.00	8210	Xanthoria fulva	Xanful
3.00	3702	Letharia vulpina	Letvul
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	4017	Melanelia subolivacea	Melsol
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	101	Ahtiana sphaerospora	Ahtsph
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	1011	Cetraria merrickii	Cetmer
3.00	5724	Physcia tenella	Phyten
3.00	5906	Physconia perisidiosa	Phoper
3.00	5910	Physconia americana	Phoame

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Group: ON-FRAME  
Sample unit: 3712144

Value	Code	Species	Code Name
4.00	5705	Physcia biziana	Phybiz
3.00	8203	Xanthoria fallax	Xanfal

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Sample unit: 3811923

No species encountered in this sample unit.

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Group: ON-FRAME

Sample unit: 3811937

Value	Code	Species	Code Name
3.00	3701	Letharia columbiana	Letcol
4.00	3702	Letharia vulpina	Letvul
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	101	Ahtiana sphaerosporella	Ahtsph
3.00	4017	Melanelia subolivacea	Melsol

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Group: ON-FRAME  
Sample unit: 3811978

Value	Code	Species	Code Name
3.00	3702	Letharia vulpina	Letvul

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Group: ON-FRAME  
Sample unit: 3812013

Value	Code	Species	Code Name
3.00	4006	Melanelia glabra	Melgla
3.00	5001	Parmelina quercina	Pnaque
3.00	5903	Physconia enteroxantha	Phoent
1.00	8204	Xanthoria hasseana	Xanhas

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Group: ON-FRAME  
Sample unit: 3812041

Value	Code	Species	Code Name
2.00	101	Ahtiana sphaerosporella	Ahtsph
3.00	3702	Letharia vulpina	Letvul
3.00	3701	Letharia columbiana	Letcol

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Group: ON-FRAME  
Sample unit: 3812054

Value	Code	Species	Code Name
3.00	8000	Usnea	Usn
3.00	8023	Usnea diplotypus	Usndip
3.00	5903	Physconia enteroxantha	Phoent
3.00	8210	Xanthoria fulva	Xanful
3.00	4806	Parmelia sulcata	Parsul
3.00	5907	Physconia isidiigera	Phoisi
3.00	3702	Letharia vulpina	Letvul
3.00	4006	Melanelia glabra	Melgla
3.00	1013	Cetraria orbata	Cetorb
3.00	2404	Evernia prunastri	Evepru
3.00	2301	Esslingeriana idahoensis	Essida
3.00	5724	Physcia tenella	Phyten
2.00	4017	Melanelia subolivacea	Melsol
2.00	5701	Physcia adscendens	Phyads
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3108	Hypogymnia imshaugii	Hypims

Group: ON-FRAME  
Sample unit: 3812078

Value	Code	Species	Code Name
3.00	5906	Physconia perisidiosa	Phoper
2.00	5903	Physconia enteroxantha	Phoent
3.00	2702	Flavopunctelia flaventior	Fpufla
3.00	8044	Usnea lapponica	Usnlap
3.00	8210	Xanthoria fulva	Xanful
3.00	6912	Ramalina farinacea	Ramfar
3.00	8301	Candelaria concolor	Cndcon
3.00	6711	Punctelia subrudecta	Punsub
3.00	5724	Physcia tenella	Phyten
3.00	2404	Evernia prunastri	Evepru
2.00	4806	Parmelia sulcata	Parsul
2.00	4006	Melanelia glabra	Melgla
3.00	5001	Parmelina quercina	Pnaque

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Group: ON-FRAME  
Sample unit: 3812245

Value	Code	Species	Code Name
3.00	8000	Usnea	Usn
3.00	5303	Parmotrema chinense	Pmochi
3.00	6912	Ramalina farinacea	Ramfar
3.00	5701	Physcia adscendens	Phyads
3.00	8301	Candelaria concolor	Cndcon
4.00	2601	Flavoparmelia caperata	Flacap
3.00	2404	Evernia prunastri	Evepru
3.00	4806	Parmelia sulcata	Parsul
3.00	6711	Punctelia subrudecta	Punsub
3.00	5302	Parmotrema austrosinense	Pmoaus
3.00	8007	Usnea arizonica	Usnari
3.00	5702	Physcia aipolia	Phyaip

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Group: ON-FRAME  
Sample unit: 3812261

Value	Code	Species	Code Name
3.00	5910	Physconia americana	Phoame
2.00	5906	Physconia perisidiosa	Phoper
3.00	8210	Xanthoria fulva	Xanful
3.00	8203	Xanthoria fallax	Xanfal
3.00	4006	Melanelia glabra	Melgla
3.00	8301	Candelaria concolor	Cndcon
3.00	5705	Physcia biziana	Phybiz
3.00	5001	Parmelina quercina	Pnaque
3.00	851	Catapyrenium tuckermanii	Cattuc
3.00	4017	Melanelia subolivacea	Melsol
3.00	5700	Physcia	Phy
3.00	8207	Xanthoria polycarpa	Xanpol
3.00	2702	Flavopunctelia flaventior	Fpufla

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Group: ON-FRAME  
Sample unit: 3812352

Value	Code	Species	Code Name
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3.00	1200	Cladonia	Cla
3.00	6402	Pseudocypphellaria anthraspis	Pcyant
3.00	4806	Parmelia sulcata	Parsul
3.00	8029	Usnea filipendula	Usnfil
3.00	8084	Usnea wirthii	Usnwir
3.00	1013	Cetraria orbata	Cetorb
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3109	Hypogymnia inactiva	Hypina
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	2301	Esslingeriana idahoensis	Essida
3.00	5301	Parmotrema arnoldii	Pmoarn
3.00	6920	Ramalina leptocarpha	Ramlep
3.00	6912	Ramalina farinacea	Ramfar
3.00	2702	Flavopunctelia flaventior	Fpufla

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Group: ON-FRAME  
Sample unit: 3912014

Value	Code	Species	Code Name
3.00	5723	Physcia stellaris	Physte
3.00	1016	Cetraria platyphylla	Cetpla
3.00	8204	Xanthoria hasseana	Xanhas
3.00	8210	Xanthoria fulva	Xanful
3.00	5724	Physcia tenella	Phyten
1.00	101	Ahtiana sphaerosporella	Ahtsph
3.00	4017	Melanelia subolivacea	Melsol
3.00	5903	Physconia enteroxantha	Phoent
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	4806	Parmelia sulcata	Parsul
3.00	3702	Letharia vulpina	Letvul
3.00	1011	Cetraria merrillii	Cetmer
3.00	8301	Candelaria concolor	Cndcon
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	6101	Platismatia glauca	Plagla

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Group: ON-FRAME  
Sample unit: 3912026

Value	Code	Species	Code Name
2.00	8204	Xanthoria hasseana	Xanhas
3.00	5001	Parmelina quercina	Pnaque
3.00	4006	Melanelia glabra	Melgla
3.00	5910	Physconia americana	Phoame
2.00	6912	Ramalina farinacea	Ramfar
3.00	5702	Physcia aipolia	Phyaip

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Group: ON-FRAME  
Sample unit: 3912055

Value	Code	Species	Code Name
3.00	3702	Letharia vulpina	Letvul
3.00	3701	Letharia columbiana	Letcol

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Group: ON-FRAME  
Sample unit: 3912083

Value	Code	Species	Code Name
3.00	3701	Letharia columbiana	Letcol

Group: ON-FRAME  
Sample unit: 3912145

Value	Code	Species	Code Name
3.00	8204	Xanthoria hasseana	Xanhas
2.00	6934	Ramalina subleptocarpha	Ramsle
3.00	8301	Candelaria concolor	Cndcon
3.00	5701	Physcia adscendens	Phyads

Group: ON-FRAME  
Sample unit: 3912161

Value	Code	Species	Code Name
3.00	8029	Usnea filipendula	Usnfil
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	6101	Platismatia glauca	Plagla
1.00	2404	Evernia prunastri	Evepru
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	1013	Cetraria orbata	Cetorb
2.00	4802	Parmelia hygrophila	Parhyg
3.00	3702	Letharia vulpina	Letvul

Group: ON-FRAME  
Sample unit: 3912174b

Value	Code	Species	Code Name
3.00	5907	Physconia isidiigera	Phoisi
3.00	5503	Peltigera collina	Pelcol
3.00	4802	Parmelia hygrophila	Parhyg
2.00	8207	Xanthoria polycarpa	Xanpol
2.00	6401	Pseudocyphellaria anomala	Pcyano
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3625	Leptogium lichenoides	Leplic
3.00	1409	Collema furfuraceum	Colfur
3.00	4806	Parmelia sulcata	Parsul
2.00	3702	Letharia vulpina	Letvul
3.00	4804	Parmelia saxatilis	Parsax
2.00	4006	Melanelia glabra	Melgla
2.00	1011	Cetraria merrillii	Cetmer
3.00	5903	Physconia enteroxantha	Phoent
1.00	6402	Pseudocyphellaria anthraspis	Pcyant
1.00	3901	Lobaria hallii	Lobhal
3.00	6101	Platismatia glauca	Plagla

Group: ON-FRAME  
Sample unit: 3912186

Value	Code	Species	Code Name
3.00	5903	Physconia enteroxantha	Phoent

3.00 6402 Pseudocypphellaria anthraspis Pcyant

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Group: ON-FRAME  
Sample unit: 3912236

Value	Code	Species	Code Name
3.00	8401	Leptochidium albociliatum	Lpcalb
3.00	8023	Usnea diplotypus	Usndip
3.00	8000	Usnea	Usn
3.00	5906	Physconia perisidiosa	Phoper
3.00	5907	Physconia isidiigera	Phoisi
3.00	2301	Esslingeriana idahoensis	Essida
3.00	3702	Letharia vulpina	Letvul
2.00	5503	Peltigera collina	Pelcol
2.00	6401	Pseudocypphellaria anomala	Pcyano
3.00	4403	Nephroma helveticum	Nephel
3.00	3108	Hypogymnia imshaugii	Hypims

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Group: ON-FRAME  
Sample unit: 3912277

Value	Code	Species	Code Name
3.00	8023	Usnea diplotypus	Usndip
3.00	8029	Usnea filipendula	Usnfil
2.00	8204	Xanthoria hasseana	Xanhas
3.00	1016	Cetraria platyphylla	Cetpla
3.00	4551	Nodobryoria abbreviata	Nodabb
4.00	3108	Hypogymnia imshaugii	Hypims
4.00	3702	Letharia vulpina	Letvul
3.00	607	Bryoria fremontii	Bryfre

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Group: ON-FRAME  
Sample unit: 3912365

Value	Code	Species	Code Name
3.00	1200	Cladonia	Cla
2.00	1211	Cladonia coniocraea	Clacon
3.00	1240	Cladonia transcendens	Clatra
3.00	8029	Usnea filipendula	Usnfil
3.00	6401	Pseudocypphellaria anomala	Pcyano
3.00	8023	Usnea diplotypus	Usndip
2.00	6402	Pseudocypphellaria anthraspis	Pcyant
3.00	7402	Sphaerophorus globosus	Sphglo
2.00	3108	Hypogymnia imshaugii	Hypims
3.00	3109	Hypogymnia inactiva	Hypina
3.00	205	Alectoria sarmentosa	Alesar

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Group: ON-FRAME  
Sample unit: 4012015

Value	Code	Species	Code Name
3.00	4017	Melanelia subolivacea	Melsol
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	8203	Xanthoria fallax	Xanfal
3.00	8201	Xanthoria candelaria	Xancan

3.00	4002	Melanelia elegantula	Melele
3.00	1016	Cetraria platyphylla	Cetpla
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3701	Letharia columbiana	Letcol
3.00	1011	Cetraria merrillii	Cetmer
3.00	3702	Letharia vulpina	Letvul

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Group: ON-FRAME  
Sample unit: 4012045

Value	Code	Species	Code Name
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	1016	Cetraria platyphylla	Cetpla
3.00	3701	Letharia columbiana	Letcol
3.00	8301	Candelaria concolor	Cndcon
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3702	Letharia vulpina	Letvul

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Group: ON-FRAME  
Sample unit: 4012086

Value	Code	Species	Code Name
3.00	8203	Xanthoria fallax	Xanfal
3.00	8210	Xanthoria fulva	Xanful
3.00	8201	Xanthoria candelaria	Xancan
3.00	3702	Letharia vulpina	Letvul
3.00	4002	Melanelia elegantula	Melele
3.00	3701	Letharia columbiana	Letcol
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	8301	Candelaria concolor	Cndcon

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Group: ON-FRAME  
Sample unit: 4012122a

Value	Code	Species	Code Name
1.00	6101	Platismatia glauca	Plagla
3.00	1011	Cetraria merrillii	Cetmer
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3701	Letharia columbiana	Letcol
3.00	1016	Cetraria platyphylla	Cetpla
3.00	3702	Letharia vulpina	Letvul
2.00	3114	Hypogymnia occidentalis	Hypocc
3.00	1004	Cetraria canadensis	Cetcan
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	1013	Cetraria orbata	Cetorb
3.00	4017	Melanelia subolivacea	Melsol
3.00	4004	Melanelia exasperatula	Melexl
1.00	5900	Physconia	Pho
2.00	8029	Usnea filipendula	Usnfil
3.00	607	Bryoria fremontii	Bryfre

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Group: ON-FRAME  
Sample unit: 4012146

Value	Code	Species	Code Name

3.00	6101	Platismatia glauca	Plagla
3.00	4017	Melanelia subolivacea	Melsol
2.00	5903	Physconia enteroxantha	Phoent
3.00	5723	Physcia stellaris	Physte
3.00	5001	Parmelina quercina	Pnaque
3.00	4006	Melanelia glabra	Melgla
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	5701	Physcia adscendens	Phyads
2.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3702	Letharia vulpina	Letvul
3.00	3701	Letharia columbiana	Letcol
3.00	1016	Cetraria platyphylla	Cetpla
3.00	2301	Esslingeriana idahoensis	Essida
3.00	1011	Cetraria merrickii	Cetmer

Group: ON-FRAME  
Sample unit: 4012162

Value	Code	Species	Code Name
2.00	5710	Physcia dimidiata	Phydim
3.00	8201	Xanthoria candelaria	Xancan
3.00	4002	Melanelia elegantula	Melele
3.00	1011	Cetraria merrickii	Cetmer
3.00	3702	Letharia vulpina	Letvul
3.00	3701	Letharia columbiana	Letcol
3.00	8301	Candelaria concolor	Cndcon

Group: ON-FRAME  
Sample unit: 4012237

Value	Code	Species	Code Name
3.00	5906	Physconia perisidiosa	Phoper
2.00	5903	Physconia enteroxantha	Phoent
2.00	2404	Evernia prunastri	Evepru
3.00	5723	Physcia stellaris	Physte
3.00	5701	Physcia adscendens	Phyads
3.00	8301	Candelaria concolor	Cndcon
2.00	4006	Melanelia glabra	Melgla
3.00	8203	Xanthoria fallax	Xanfal
3.00	8204	Xanthoria hasseana	Xanhas
3.00	5910	Physconia americana	Phoame
3.00	5001	Parmelina quercina	Pnaque

Group: ON-FRAME  
Sample unit: 4012253

Value	Code	Species	Code Name
3.00	5001	Parmelina quercina	Pnaque
3.00	2702	Flavopunctelia flaventior	Fpufla
3.00	5723	Physcia stellaris	Physte
3.00	8210	Xanthoria fulva	Xanful
3.00	8301	Candelaria concolor	Cndcon
3.00	8203	Xanthoria fallax	Xanfal
3.00	8000	Usnea	Usn
3.00	5903	Physconia enteroxantha	Phoent
3.00	4006	Melanelia glabra	Melgla
3.00	5701	Physcia adscendens	Phyads

3.00	4806	<i>Parmelia sulcata</i>	Parsul
3.00	2404	<i>Evernia prunastri</i>	Evepru

Group: ON-FRAME  
Sample unit: 4012278

Value	Code	Species	Code Name
3.00	8029	<i>Usnea filipendula</i>	Usnfil
2.00	5903	<i>Physconia enteroxantha</i>	Phoent
3.00	8000	<i>Usnea</i>	Usn
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
2.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	4806	<i>Parmelia sulcata</i>	Parsul
2.00	4403	<i>Nephroma helveticum</i>	Nephel

Group: ON-FRAME  
Sample unit: 4012314

Value	Code	Species	Code Name
3.00	8023	<i>Usnea diplotypus</i>	Usndip
3.00	2404	<i>Evernia prunastri</i>	Evepru
3.00	8041	<i>Usnea hirta</i>	Usnhir
3.00	8029	<i>Usnea filipendula</i>	Usnfil
2.00	6105	<i>Platismatia stenophylla</i>	Plaste
3.00	603	<i>Bryoria capillaris</i>	Brycap
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	1013	<i>Cetraria orbata</i>	Cetorb
3.00	6401	<i>Pseudocyphellaria anomala</i>	Pcyano
3.00	2301	<i>Esslingeriana idahoensis</i>	Essida
2.00	1004	<i>Cetraria canadensis</i>	Cetcan
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	1011	<i>Cetraria merrillii</i>	Cetmer
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	607	<i>Bryoria fremontii</i>	Bryfre

Group: ON-FRAME  
Sample unit: 4012342

Value	Code	Species	Code Name
3.00	4802	<i>Parmelia hygrophila</i>	Parhyg
3.00	8301	<i>Candelaria concolor</i>	Cndcon
2.00	8204	<i>Xanthoria hasseana</i>	Xanhas
3.00	8029	<i>Usnea filipendula</i>	Usnfil
2.00	8065	<i>Usnea scabrata</i>	Usnsca
3.00	4552	<i>Nodobryoria oregana</i>	Nodore
2.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	1016	<i>Cetraria platyphylla</i>	Cetpla
3.00	3702	<i>Letharia vulpina</i>	Letvul
2.00	2301	<i>Esslingeriana idahoensis</i>	Essida
3.00	3108	<i>Hypogymnia imshaugii</i>	Hypims

Group: ON-FRAME  
Sample unit: 4012344

Value	Code	Species	Code Name

3.00	8029	Usnea filipendula	Usnfil
2.00	610	Bryoria fuscescens	Bryfus
3.00	205	Alectoria sarmentosa	Alesar
3.00	4552	Nodobryoria oregana	Nodore
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	4802	Parmelia hygrophila	Parhyg
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	603	Bryoria capillaris	Brycap
2.00	6105	Platismatia stenophylla	Plaste
3.00	6101	Platismatia glauca	Plagla
3.00	4017	Melanelia subolivacea	Melsol
3.00	1016	Cetraria platyphylla	Cetpla
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3702	Letharia vulpina	Letvul
3.00	2301	Essligneriana idahoensis	Essida

Group: ON-FRAME  
 Sample unit: 4012385

Value	Code	Species	Code Name
3.00	1244	Cladonia furcata	Clafur
3.00	1217	Cladonia fimbriata	Clafim
3.00	8029	Usnea filipendula	Usnfil
3.00	8000	Usnea	Usn
3.00	3101	Hypogymnia apinnata	Hypapi
3.00	1240	Cladonia transcendens	Clatra
3.00	8065	Usnea scabrata	Usnsca
3.00	1228	Cladonia ochrochlora	Claoch
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	3108	Hypogymnia imshaugii	Hypims
2.00	7402	Sphaerophorus globosus	Sphglo
3.00	6102	Platismatia herrei	Plaher
2.00	6401	Pseudocyphellaria anomala	Pcyano
3.00	1013	Cetraria orbata	Cetorb
3.00	603	Bryoria capillaris	Brycap
3.00	6101	Platismatia glauca	Plagla
3.00	205	Alectoria sarmentosa	Alesar
3.00	4804	Parmelia saxatilis	Parsax
3.00	1004	Cetraria canadensis	Cetcan
3.00	3702	Letharia vulpina	Letvul
3.00	4552	Nodobryoria oregana	Nodore

Group: ON-FRAME  
 Sample unit: 4012461

Value	Code	Species	Code Name
3.00	1248	Cladonia verruculosa	Claver
3.00	1244	Cladonia furcata	Clafur
3.00	1240	Cladonia transcendens	Clatra
3.00	1200	Cladonia	Cla

Group: ON-FRAME  
 Sample unit: 4112123

Value	Code	Species	Code Name
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3.00	2301	<i>Esslingeriana idahoensis</i>	Essida
3.00	8029	<i>Usnea filipendula</i>	Usnfil
1.00	2404	<i>Evernia prunastri</i>	Evepru
3.00	8000	<i>Usnea</i>	Usn
3.00	8210	<i>Xanthoria fulva</i>	Xanful
3.00	8201	<i>Xanthoria candelaria</i>	Xancan
3.00	8301	<i>Candelaria concolor</i>	Cndcon
3.00	1016	<i>Cetraria platyphylla</i>	Cetpla
3.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	4004	<i>Melanelia exasperatula</i>	Melexl
3.00	4017	<i>Melanelia subolivacea</i>	Melsol
3.00	1011	<i>Cetraria merrillii</i>	Cetmer
3.00	3701	<i>Letharia columbiana</i>	Letcol
3.00	5723	<i>Physcia stellaris</i>	Physte
4.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
3.00	6101	<i>Platismatia glauca</i>	Plagla

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Group: ON-FRAME  
Sample unit: 4112135

Value	Code	Species	Code Name
2.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet
3.00	3701	<i>Letharia columbiana</i>	Letcol
3.00	3702	<i>Letharia vulpina</i>	Letvul
3.00	607	<i>Bryoria fremontii</i>	Bryfre

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Group: ON-FRAME  
Sample unit: 4112147

Value	Code	Species	Code Name
3.00	8023	<i>Usnea diplotypus</i>	Usndip
3.00	8029	<i>Usnea filipendula</i>	Usnfil
1.00	2404	<i>Evernia prunastri</i>	Evepru
4.00	3108	<i>Hypogymnia imshaugii</i>	Hypims
2.00	205	<i>Alectoria sarmentosa</i>	Alesar
3.00	1013	<i>Cetraria orbata</i>	Cetorb
4.00	3702	<i>Letharia vulpina</i>	Letvul
4.00	4551	<i>Nodobryoria abbreviata</i>	Nodabb
1.00	4802	<i>Parmelia hygrophila</i>	Parhyg

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Group: ON-FRAME  
Sample unit: 4112163

Value	Code	Species	Code Name
2.00	8215	<i>Xanthoria oregana</i>	Xanore
2.00	3701	<i>Letharia columbiana</i>	Letcol

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Group: ON-FRAME  
Sample unit: 4112214

Value	Code	Species	Code Name
3.00	4802	<i>Parmelia hygrophila</i>	Parhyg
3.00	2301	<i>Esslingeriana idahoensis</i>	Essida

3.00	4806	Parmelia sulcata	Parsul
3.00	6101	Platismatia glauca	Plagla
3.00	3702	Letharia vulpina	Letvul
3.00	3108	Hypogymnia imshaugii	Hypims

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Group: ON-FRAME  
Sample unit: 4112226

Value	Code	Species	Code Name
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	3108	Hypogymnia imshaugii	Hypims
4.00	3701	Letharia columbiana	Letcol
3.00	1013	Cetraria orbata	Cetorb

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Group: ON-FRAME  
Sample unit: 4112282

Value	Code	Species	Code Name
3.00	5903	Physconia enteroxantha	Phoent
3.00	5910	Physconia americana	Phoame
3.00	8204	Xanthoria hasseana	Xanhas
3.00	8029	Usnea filipendula	Usnfil
4.00	4806	Parmelia sulcata	Parsul
3.00	1013	Cetraria orbata	Cetorb
3.00	4551	Nodobryoria abbreviata	Nodabb
2.00	2301	Esslingeriana idahoensis	Essida
3.00	2404	Evernia prunastri	Evepru
3.00	4017	Melanelia subolivacea	Melsol
4.00	3108	Hypogymnia imshaugii	Hypims
3.00	1016	Cetraria platyphyllea	Cetpla
3.00	1005	Cetraria chlorophylla	Cetchl
4.00	3702	Letharia vulpina	Letvul

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Group: ON-FRAME  
Sample unit: 4112331

Value	Code	Species	Code Name
3.00	8000	Usnea	Usn
3.00	8023	Usnea diplotypus	Usndip
3.00	1005	Cetraria chlorophylla	Cetchl
3.00	1013	Cetraria orbata	Cetorb
3.00	4551	Nodobryoria abbreviata	Nodabb
3.00	5201	Parmeliopsis ambigua	Popamb
4.00	3702	Letharia vulpina	Letvul
2.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	6101	Platismatia glauca	Plagla
3.00	3108	Hypogymnia imshaugii	Hypims

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Group: ON-FRAME  
Sample unit: 4112345

Value	Code	Species	Code Name
2.00	1013	Cetraria orbata	Cetorb
3.00	8000	Usnea	Usn
3.00	2301	Esslingeriana idahoensis	Essida

3.00	3905	Lobaria pulmonaria	Lobpul
3.00	6105	Platismatia stenophylla	Plaste
3.00	600	Bryoria	Bry
3.00	6101	Platismatia glauca	Plagla
2.00	4006	Melanelia glabra	Melgla
3.00	205	Alectoria sarmentosa	Alesar
3.00	1016	Cetraria platyphylla	Cetpla
3.00	603	Bryoria capillaris	Brycap
3.00	3702	Letharia vulpina	Letvul
3.00	3105	Hypogymnia enteromorpha	Hypent
3.00	6402	Pseudocyphellaria anthraspis	Pcyant
3.00	5202	Parmeliopsis hyperopta	Pophyp
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	6102	Platismatia herrei	Plaher
3.00	6401	Pseudocyphellaria anomala	Pcyano

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Group: ON-FRAME  
Sample unit: 4112371

Value	Code	Species	Code Name
3.00	8029	Usnea filipendula	Usnfil
3.00	1211	Cladonia coniocraea	Clacon
3.00	4802	Parmelia hygrophila	Parhyg
3.00	624	Bryoria tortuosa	Brytor
3.00	5910	Physconia americana	Phoame
3.00	2301	Esslingeriana idahoensis	Essida
3.00	3702	Letharia vulpina	Letvul
3.00	4806	Parmelia sulcata	Parsul
3.00	6101	Platismatia glauca	Plagla
2.00	4403	Nephroma helveticum	Nephel
3.00	205	Alectoria sarmentosa	Alesar
4.00	3108	Hypogymnia imshaugii	Hypims
3.00	4552	Nodobryoria oregana	Nodore

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Group: ON-FRAME  
Sample unit: 4112374

Value	Code	Species	Code Name
3.00	3905	Lobaria pulmonaria	Lobpul
3.00	4806	Parmelia sulcata	Parsul
3.00	3116	Hypogymnia physodes	Hypphy
2.00	8000	Usnea	Usn
3.00	3108	Hypogymnia imshaugii	Hypims
3.00	3114	Hypogymnia occidentalis	Hypocc
3.00	8023	Usnea diplotypus	Usndip
3.00	610	Bryoria fuscescens	Bryfus
2.00	6101	Platismatia glauca	Plagla
3.00	205	Alectoria sarmentosa	Alesar
3.00	2404	Evernia prunastri	Evepru
3.00	1240	Cladonia transcendens	Clatra
2.00	5503	Peltigera collina	Pelcol
3.00	1228	Cladonia ochrochlora	Claoch
3.00	5502	Peltigera britannica	Pelbri
3.00	6402	Pseudocyphellaria anthraspis	Pcyant

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Group: ON-FRAME  
Sample unit: 4112386

Value	Code	Species	Code Name
3.00	1238	<i>Cladonia squamosa</i> v. <i>subsquamo</i>	Classq
3.00	1240	<i>Cladonia transcendens</i>	Clatra
3.00	8029	<i>Usnea filipendula</i>	Usnfil
3.00	8065	<i>Usnea scabrata</i>	Usnsca
3.00	3105	<i>Hypogymnia enteromorpha</i>	Hypent
3.00	6102	<i>Platismatia herrei</i>	Plaher
3.00	6401	<i>Pseudocyphellaria anomala</i>	Pcyano
3.00	3905	<i>Lobaria pulmonaria</i>	Lobpul
3.00	3109	<i>Hypogymnia inactiva</i>	Hypina
2.00	6101	<i>Platismatia glauca</i>	Plagla
3.00	205	<i>Alectoria sarmentosa</i>	Alesar
2.00	3112	<i>Hypogymnia metaphysodes</i>	Hypmet

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Total number of species occurrences in data = 731