

NORTHWEST LICHENOLOGIST NEWSLETTER Spring 2009

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Invitation to join ad hoc group on pollution (see Linda Geiser)  
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Lichen list of Grey Butte (central Oregon)

Here are the activities for the upcoming NW Lichenologists meeting, in conjunction with the NW Scientific Association (Seattle, March 25-28, 2009)  
Half-day session for lichen papers. **(Get your abstract in soon!)**

Workshop: Lichens on Rocks and Other Problematic Collections. Bring your favorite lichen rock to the workshop. Share with others your knowledge of the lichens found on your rock. Amaze your friends! We will set up a projector for touring the rocks. Please have a general idea of the genera on your rock so that others may learn. Microscopes will be available. Some chemicals will be provided. Leaders: Richard Droker, Katherine Glew

Saturday field trip to Valley of the Stillaguamish River, South Fork. Probably the most pristine area within one hour's driving time from the University of Washington. The hike will explore the lower elevations of the valley. Abundant *Usnea longissima* is expected and indicative of a healthy habitat. Several lichen stops will be made along the river and on side roads. The lower elevation forest is dominated by old growth forest, consisting of western hemlock, western red cedar, and occasional Douglas fir. Red alder, big leaf maple and black cottonwood are abundant along the river. Access to higher elevations will be limited by persistent winter snow pack. If the group is so inclined we should be able to walk for some distance on trails. Leader: Richard Droker. Transportation will be arranged by car pool. Be prepared to reimburse the driver for gas money. Size limited to 30 people. Photography encouraged.

Forum/Discussion: Contracting for Lichen Survey work. This is an opportunity for those who have done contract work to share their experiences with others about how to do it, who to contact, and what to expect. This will be an informal conversation to generate interest and knowledge for making contacts and developing proposals. Leader: John Villella. Hope you can make it.

-Bruce McCune  
Sec-Treas, NWL

More info: NW Scientific Association:

[http://www.vetmed.wsu.edu/org\\_NWS/NWSci\\_Home.htm](http://www.vetmed.wsu.edu/org_NWS/NWSci_Home.htm)

NW Lichenogists, upcoming events:

<http://home.comcast.net/~nwlichens/events.htm>

Univ. of Washington: <http://www.washington.edu/>

How to get there, where to stay, etc.:

[http://www.vetmed.wsu.edu/org\\_NWS/Files/2009%20meeting/NWSA2009\\_Directions\\_Housing\\_Food.pdf](http://www.vetmed.wsu.edu/org_NWS/Files/2009%20meeting/NWSA2009_Directions_Housing_Food.pdf)

Bring your favorite lichen rock to the workshop.

[http://www.vetmed.wsu.edu/org\\_NWS/Files/2009%20meeting/2009%20meeting%20announcement.htm](http://www.vetmed.wsu.edu/org_NWS/Files/2009%20meeting/2009%20meeting%20announcement.htm) Takes you directly to registration page.

Click on registration form.

**MAIL BY FEB 16<sup>TH</sup>** for the better rate.

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**Katherine Glew** began a new project with Fisheries professor Dr. Ted Pietsch. Ted was the investigator for the Russian Far East projects - International Kuril Islands Project (IKIP) and International Sakhalin Island Project (ISIP). The latest biodiversity project, funded with start up support from NSF, looks at the biodiversity of 'small things' along the Elwha River. This included, lichens, bryophytes, fungi, spiders, aquatic insects, and small insects found in the forest. Lichens were collected in the spring of 2008. Crustose lichens were a focus, since they were under-represented in current lists.

Katherine continues to assist with lichen curation in the University of Washington Herbarium, working with volunteers from the Seattle Lichen Guild and the local community. Lichens are organized and taxonomy is updated.

As Program Chair for the Northwest Scientific Association, Katherine is heading up the March meeting at the University of Washington in Seattle. There will be a lichen/bryophyte session for papers, a field trip led by Richard Droker and two workshops addressing lichens on rocks and contract work for lichen surveys.

It is anticipated to be an exciting meeting!

**Karen Dillman** ( Tongass National Forest, Alaska) conducted a lichen survey in a small portion of the Afognak Island unit of the Kodiak National Wildlife Refuge in southwestern Alaska ( roughly 56 N and 155 W). This area of the KNWR contains the western-most *Picea sitchensis* forests in North America. Habitats visited were spruce forests, alpine ridges, and small islands with grassy capes and rock outcrops exposed to the Pacific

Ocean. Preliminary results indicate that lichens collected from these habitats provide many new lichen records for the refuge and the archipelago, and several range extensions for coastal Alaska lichens.

Lichens were subjects of interest on St. Lazaria Maritime Wildlife Refuge (approx 57 N and 135.5 W near Sitka), where Karen Dillman worked with botanist Elena Glazkova from St. Petersburg, Russia. They have embarked on an international cooperative study to compare and contrast the vegetation on small islands containing large, colonial seabird nesting sites in Russia and Alaska. Plants, including lichens and mosses, were collected to provide a botanical inventory for the refuge, and to develop a list of guano-loving plants (ornithocoprophilous) for coastal Alaska to monitor changes in vegetation due to the influence of nesting seabirds. Habitats surveyed included basalt cliffs and outcrops around gull nesting sites, wind-thrashed *Picea sitchensis*, and cliffs exposed to the open Pacific Ocean.

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### **Linda Geiser**

#### 2008/2009 News from the USFS PNW Regional Air Program

Our most newsworthy event has been the publication of the multidisciplinary, multi-million dollar, NPS-sponsored Western Airborne Contaminants Assessment Project. The report covers the transport, deposition patterns and ecological effects of ~100 semi-volatile organic compounds (pesticides, pcbs, PAHs, and PBDEs) and 50 metals surveyed in 20 national parks and 1 USFS Wilderness in the western US. New analytical chemistry techniques made possible the quantitative analysis of very low contaminant levels (ppb) in biota, air, water, snow & sediments. Lichens were surveyed at all parks proved useful in demonstrating the cold condensation effect (higher concentrations at higher elevations & colder temps). Lichens accumulated contaminants concentrations similar to fish and conifer needles. PNW parks studied were Olympic, North Cascades, Mt Rainier and Crater Lake. Download the report at: <http://www.epa.gov/nheerl/wacap/>. A synthesis paper will be published in Environmental Science and Technology in early 2009 by science lead,

Dixon Landers (EPA-Corvallis). Lichen analyses were conducted at Oregon State University by Jill Schrlau and Staci Simonich. Vegetation samples were collected by USFS Doug Glavich, Adrienne Marler, Karen Dillman, Shanti Berryman, Heath Powers, Larissa Lasselle and Jill Grenon, and by Chiska Derr.

Our second focus has been the development of lichen based critical loads for nitrogen deposition (see the Winter 2008 Bryologist for an introduction to the subject by Doug Glavich and myself). Our program is also participating in a national State-of-the-Science review of critical loads for multiple ecosystem components (including lichens) within each major ecoregion of the US. The multi-author report, led by Linda Pardo (USFS NE Research Station), is scheduled to be published as a USFS General Technical Report in May 2008, with a synthesis paper to follow. Sarah Jovan and I also contributed to an article by Mark Fenn (USFS PSW Research Station, proposing critical loads for the Sierra Nevada based on lichen community and freshwater ecosystem responses (Environmental Pollution 155:492-511). I also attended an NPS-sponsored workshop on critical loads in alpine ecosystems of North America, coordinated by Ellen Porter & Tamara Blett (NPS Air Resources Division, Denver), Tim Sullivan (E&S Environmental Chemistry), Harald Sverdrup & Bengt Nihlgård (Lund University, Sweden) to apply North American plant (including lichen) data to the European ForSAFE-VEG model to predict alpine critical loads. Karen Dillman and Regina Rochefort (NPS OLYM) are helping to prepare lichen and vascular plant data for the model's west coast marine forests ecoregion, n CA to the Aleutian Peninsula. We welcome suggestions for alpine lichens to include.

A third focus has been updating the air quality section for the upcoming spring release by Oregon State University Press of the newly revised 'Macrolichens of the Pacific Northwest' by Bruce McCune and Linda Geiser. The ratings for nitrogen and sulfur containing pollutants for over 200 regional lichens and introduces the terms 'oligotrophic, mesotrophic, and eutrophic' to describe the nitrogen requirements of lichens. (DANA this paragraph could be integrated with anything Bruce McCune reports, the revision was his sabbatical project and includes many more species, more photos, microphotos, complete taxonomic updating, key revisions, etc)

A joint NPS-USFS air quality study of cruise ship emissions is in progress in SE Alaska encompassing popular destinations at Klondike Goldrush NHP, the Tongass NF Tracy Fjord Wilderness, Glacier Bay NP, Sitka NHP, and the city of Juneau. Lichen concentrations of S, N, & metals, and lichen community effects are being measured in tandem with gaseous and

precipitation concentrations of pollutants, and plume modeling to document any adverse environmental effects of the emissions. The project lead is David Schirokauer (NPS-KLGO), other participants are Karen Dillman, Sarah Jovan, Rick Graw (USFS PNW regional AQ specialist), Mark Fenn & Andrzej Bytnerowicz (USFS PSW Research Station) and Albert Faure (AK DEC).

As a result of the IAL meeting in Asilomar CA this summer, an ad hoc discussion group on air pollution effects (esp. nitrogen) on lichens has formed. Members include Sarah Jovan, Jen Riddell, Pamela Padgett, Shanti Berryman, Peter Neitlich, Martin Hutten, Suzy Will-Wolf and myself. Anyone interested in joining our monthly phone calls or emails can contact Sarah Jovan (sjovan@fs.fed.us) or sign up at our website:  
<http://groups.google.com/group/lichen-air?hl=en>

**Peter Nelson** sent this:

"Members of the Northwest Lichenologist guild (Dave Kofranek, Peter Nelson, Daphne Stone and Rob Weiss ) assisted Cheshire Mayhrson of the Cascade Mycological Society (and NW lichenologists) at the 2008 Mt. Pisgah Mushroom Show in Eugene, OR. Cheshire once again provided the lion's share of the lichen specimens on display as well as an amazing exposé on lichen dying. Everyone took turns spending a few hours answering questions about lichens to the impressive crowd that attend the Mushroom show every year. They also sold a good number of NWL shirts and hats. Don't miss it next year!"

**Roger Rosentreter**

Roger is distributing some lichen collections made by Leeds Baily, from Ontario, Oregon (far east Oregon). Leeds was an avid collector famous for his desert fungi but also he collected a little bit of everything. Leeds is 94 years old and still kicking but is down sizing.

Ann DeBolt and Roger Rosentreter did a transplant of the ground dwelling federally listed, endangered lichen, *Cladonia perforata*, in Jan. of 2009. *Cladonia perforata* occurs in barren sandy sites in Florida.

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**John Villella**

During 2008 I continued to do contracted surveys for non-vascular plants on public lands in Oregon, Washington and Northern California. This work took me to many interesting habitats and exposed me to many new lichens communities. I participated in the NWL/IAL field trip from Portland to Monterrey and this event was a great chance to get to know some interenational lichenologists and get exposed to some great lichen spots. I volunteered to help with a lichen bioblitz in Crater Lake National Park along with several other lichenologists. During this short foray we found many species not yet recorded for the park and we will publish our results this year.

**Andrea Ruchty**

As a follow up to the Northwest Lichenologists annual board meeting held this last Saturday, I'm sending a link to a website where anyone who is interested can access both the Forest Service and BLM special status species lists: <http://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/>

For the criteria used to place species on the Sensitive or Strategic lists, look at: OR/WA BLM, Previous Lists, IM-OR-2007-073, Attachment 1-Final List Criteria; the criteria are the same for both the BLM and the FS. Feel free to call or send a note if you have any questions about this.

Andrea Ruchty  
Botanist

I'll also add that the Region 6 Forest Service and OR/WA BLM Sensitive and Strategic species lists are updated each year. The next update will happen within the next month and will then be posted on the ISSSSP web site.

Kelli Van Norman, Inventory Coordinator  
Interagency Special Status/Sensitive Species Program  
OR/WA BLM & R6 Forest Service  
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<http://www.fs.fed.us/r6/sfpnw/issssp/>

**Martin Hutten and James Walton**

PNW lichenologists astray in the Sierra Nevada. Two NWL affiliates ended up far south of their normal range in 2008. Both Martin Hutten ([Martin\\_Hutten@nps.gov](mailto:Martin_Hutten@nps.gov)), now with Yosemite National Park, and

James Walton (James\_Walton@nps.gov), still with the Central Alaska Network, spent an exciting Fall 2008 collecting and photographing lichens for Yosemite's ongoing lichen inventory project. Tremendous thanks go out to the American Alpine Club volunteers whose courage helped procure lichen collections that would have otherwise been far out of reach to most lichenologists. Special thanks also to Heather Root and Bruce McCune for ongoing assistance with saxicolous crust specimens for which the identification is equally out of reach to most lichenologists. Highlights included glamorous macrolichens such as *Dermatocarpon meiophyllizum*, *Solorina spongiosa* and *Waynea californica*, but also overlooked subtleties such as **Thelenella muscorum**. In Yosemite, it really isn't lichenology as usual in the PNW; even *Alectoria sarmentosa*, *Ahtiana pallidula*, and *Nephroma helveticum* are challenging to find! In 2008, more than 100 new taxa were added to the Park's survey list. Even more additions are expected in 2009. A 'Lichen Blitz' is currently being organized for Fall 2009 to bring in the taxonomical expertise needed to bring more crustose lichens to our attention and to make a contribution to the lichen list of the southern Sierras. To learn more about the project and to see a photo of some extreme lichenizing on the wall at Vernal Falls, visit the following link: <http://www.nps.gov/yose/naturescience/lichen.htm>. Stop on in if you're passing through EI Portal this summer!

### **Tony Spribille**

Greetings from Graz!

I have accepted a Ph.D. position at the University of Graz in Austria, working on phylogeography of *Mycoblastus sanguinarius* across its global range. This rounded off a long summer of field work across the Pacific Northwest and in Alaska and also a nice visit to California, during which I got to see many of you! It always feels good to be back at home in the United States and this year in particular, to feel the winds of change!

I would like to thank all of the people who, early in the year, provided material of *Kaernefeltia merrillii* for a molecular population study to me and/or Sergio Pérez Ortega in Madrid. This material is being worked on in the lab now and will hopefully yield some reportable results soon. We would still be grateful to anyone who could provide us with a couple populations of typical *Kaernefeltia californica* – if there is anyone with ready access to a population and willing to go out and get some, please write me and I will send you the relatively simple protocol. I am also grateful for the individuals and populations of *Mycoblastus sanguinarius* sent to me over the course of the summer – they will all be ground up in tubes and put to good use!

The Pacific Northwest crust lichen flora has continued to make progress thanks largely to the clockworkesque collaboration in the core team of myself, Curtis Björk, Ernie Brodo, Trevor Goward and Tor Tønsberg, as well as the overwhelming support we have been receiving from numerous lichenologists at home and abroad. A further eight new species will be described in the upcoming issue of *The Bryologist*, and another (*Myochroidea minutula*, still known only from a single old-growth forest in the B.C. Kootenays) appeared in *The Lichenologist* earlier in the summer in a paper with Christian Printzen and Tor Tønsberg. Work is already underway on the next in the series. Again, I am grateful for all the people who have sent interesting specimens along for identification or thin layer chromatographic analysis, this helps enormously and we are learning so much! I would also like to draw people's attention to a few other new publications that may or may not have relevance to their areas of interest, geographical and otherwise: 1) an overview of wood-dwelling lichens of the Pacific Northwest and Fennoscandia, which just appeared in the journal *Ecography* (the take home message: near one-tenth of our epiphytic lichens are obligate lignicoles); and 2) a paper on new records and range extensions of lichens on wood, including numerous records from our region (in *Mycotaxon*). People can get more from my website ([www.geobotanik.org/spribille](http://www.geobotanik.org/spribille) - click on English, then on publications).

I hope to see many of you again this summer and/or fall when I am back for more and to compare the effects of the recession between Austria and Trego, Montana. I am hoping that between now and then I will hear news of a stimulus plan for lichenology. And for any lichen types travelling through Central Europe, do work in a visit to Graz !

Toby Spribille, [toby.spribille@uni-graz.at](mailto:toby.spribille@uni-graz.at)

### **Erin Martin**

Following graduate school, I worked as a full time instructor at Shasta College in Redding, CA for three years. There, I taught courses in general biology, heredity, field biology and botany. I am currently the president of the California Lichens Society and chair of the CALS education committee. Recently, I accepted a position as an Assistant Professor of Biology at Pacific University in Forest Grove, OR. My research now focuses on science education in addition to lichenology. I am very happy to be back in Oregon, and look forward to working with NW Lichenologists and CALS in the future. I also welcome any dialog regarding lichens in science education and conservation!



### Book and occasional paper

The second edition of the "Macrolichens of the Pacific Northwest", by **Bruce McCune** and **Linda Geiser**, is scheduled to appear in print this spring (Oregon State University Press). The second edition is thoroughly revised, with over 120 species added, many more photographs, and 100 more pages (up to about 500 pages now).

### **Fred Rhoades**

"Lichens of South Lopez Island, San Juan County, Washington State" by Fred Rhoades will be available around the beginning of March, 2009. It is a revision of a lichen inventory done in 1998 for BLM on two of their managed properties, Point Colville and Iceberg Point, and is published as a Washington Native Plant Society Occasional Paper. The text reviews the various lichen habitats present, about 190 species of macrolichens and crusts, including comments on each species' habitat and any special status or rarity, and comparisons to other studies in the region. It is fully illustrated with color photographs of delineated habitats, and many of the common and some of the less common species. Much of the crustose identification was done by the late Bruce Ryan and the text includes some of his comments about the more unusual species. Order copies through WNPS at their website, [www.wnps.org](http://www.wnps.org) A link to this publication will be located under What's New. The cost will be \$15, including shipping and handling.

### Workshops

**John Villella** will once again be leading a lichens and bryophyte workshop focusing on old-growth dependant species at Opal Creek Ancient Forest Center. <http://www.opalcreek.org/programs.html>

Mosses and Lichens of the Ancient Forest

April 25-26, 2009

Cost: \$130/adult

### **David Wagner**

#### 2009 BRYOPHYTE IDENTIFICATION WORKSHOPS IN OREGON

I have scheduled two intensive bryophyte workshops this year, the beginners' in late April to take place on the University of Oregon campus and an advanced one starting September 30 at the H.J. Andrews Experimental Forest. These workshops combine hands-on experience with detailed lectures. Study specimens and copious handouts are provided, including the current draft of my "Liverworts of Oregon" on CD and a digital, illustrated key to the racomitriums.

**BRYOPHYTES I: ALL THE BASICS.** April 23-24-25-26. This workshop starts with a classroom day of introductory material followed the next day by a field trip. The idea is to get direct experience early on with the common species in their natural habitat and make observations about bryophyte ecology. Then two subsequent classroom days will involve study of about 70 important species. Emphasis in this workshop is on hand lens recognition of the species covered, their habitat characteristics, learning the basic terminology to describe them, and characteristics of the major families. Although microscopes are not necessary for this workshop, I will have two pairs of dissecting and compound microscopes on hand for demonstration of the features necessary for using technical keys. Students with microscopes are urged to bring them. Methods of handling specimens and making preparations will be provided with ample practice material. This is a very intensive workshop intended to give beginners sufficient training that, with conscientious application of energy, they can move to more advanced levels on their own.

Travel and lodging for Bryophytes I are the responsibility of the participants; I'll offer suggestions. Sandwich lunches are provided during the classroom days. Participants are responsible for lunches and transportation on field trip day; carpools encouraged. Participants should bring a dissecting microscope if possible. Fee: \$400.

Class size is limited. To reserve a space, send \$25 deposit (non-refundable processing fee). The balance is due twenty days before the workshop. Cancellations after the balance due deadline will be refunded only if waiting list alternates can be substituted.

**BRYOPHYTES II: ADVANCED FIELD BRYOLOGY.** September 30–October 3. This year's advanced workshop is completely new: I have reserved space in the fall at the H.J. Andrews Experimental Forest near the McKenzie River: <http://andrewsforest.oregonstate.edu/>

We will study together, go in the field together, live together, and cook together for four days. It is designed for people who have had previous training in Bryology. The location and time of year will allow us to visit montane wetlands of the High Cascades. In addition to field competence, this workshop emphasizes developing microscope skills and mastering the specialized terminology necessary to use technical keys to identify bryophytes. The field trip will provide fresh material to supplement dried herbarium specimens. Participants are encouraged to bring up to a dozen of their own unknowns for supervised independent study. Bring more if

ready to work evenings. Keying liverworts will focus on Doyle and Stotler's 2006 keys to California liverworts, supplemented by my CD, Liverworts of Oregon. Norris and Shevock's 2004 keys will be emphasized for mosses. The Flora North America vol. 27 highly recommended. Participants should bring both dissecting and compound microscopes for Bryophytes II, at least one set per pair.

Tuition for this workshop is \$400; an additional fee for lodging will be \$80 for double occupancy or, if space available, \$160 for single occupancy. Meals will be prepared communally; budget \$20 per day for this. Class size is limited. To reserve a space, send \$25 deposit (non-refundable processing fee). The balance is due twenty days before the workshop. Cancellations after the balance due deadline will be refunded only if waiting list alternates can be substituted.

Please send check or money order (payable to Northwest Botanical Institute) to NW Botanical Institute, P.O. Box 30064, Eugene OR 97403-1064. Note that credit cards cannot be processed. An invoice can be provided upon request ahead of time, if needed. I will supply my tax ID Number and DUNS Number for electronic payment on agency purchase orders. Agency botanists can document a firm commitment of funds from their fiscal officer in lieu of the deposit.

David H. Wagner, Ph.D.  
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A list of lichens of the Gray Butte/Smith Rock area of Central Oregon

**Rick Demmer** 208-373-3824

The Gray Butte is about 5100' (1554m) surrounded by shorter peaks and ridgelines. The topography is relatively steep with basaltic rimrock and spire-like rhyplitic outcrops and cliffs. There are lots of interesting places to find lichens and bryophytes including shallow caves and overhangs tallus slopes and a variety of soils derived mainly from rhyolite on which soil crusts are often abundant. The area receives between 10 and 16 inches of precipitation each year.



Plant communities are various versions of juniper woodland ranging from old growth areas that are in excellent condition to large dense stands that are fairly young. The Crooked River flows along the south border of the area and there are several small creeks that flow seasonally as well as occasional springs. Ridgelines are often grassland with a few scattered junipers. Although the plant communities are similar to those in the juniper woodland that occurs in pumice soils to the south they seem to be somewhat more diverse.





The majority of the Gray Butte area is within the Forest Service administered Crooked River National Grasslands and smaller areas are within Smith Rock State Park and Bureau of Land Management administered land.

JoAnne Armson (the Prineville Botanist) and I made eleven lichen and bryophyte collections in the course of evaluating three grazing allotments that comprise about 2300 acres of BLM land between January and June of 2007. These collections were from the south part of the area and largely found on southern aspects although there are several side canyons. About 150 species are listed here but there are a number of species not seen that are fairly common in nearby similar habitats on Barnes Butte to the east and Powell Butte to the south. There are a number of mainly crustose species in the collections that have not yet identified. Bryophytes are not included since most of those collected have not yet been identified.





JoAnne at the mouth of a Cave



*Dimelaena oreino* and *Umbilicaria krascheninnikovii*



In the list below rock means rhyolite and wood means Juniper unless otherwise stated.

## LICHENS

### CRUSTOSE

*Acoraspora fuscata*  
*Acoraspora heppii*  
*Acoraspora schleicheri*  
*Acoraspora* sp  
*Aspicilia caesiocinerea*  
*Aspicilia cinerea*  
*Aspicilia contorta*  
*Aspicilia mastrucata*  
*Aspicilia* sp.  
*Buellia aethalea*  
*Buellia triseptata*  
*Buellia badia*  
*Buellia punctata*  
*Buellia punctata*

### SUBTRATE

Rock and old wood  
 Rock  
 Soil and parasitic on *Diploschistes muscorum*  
 Soil  
 Rock  
 Rock and old wood  
 Rock  
 Rock and soil  
 Rock  
 Rock  
 Bark and wood  
 Lichenicolous on *Rhizocarpon bolanderi*  
 Bark and organic matter  
 In my notes I refer to this as the juniper variety;  
 it grows on the bark of junipers. It has a thick olive  
 colored thallus and larger than usual apothecia. It is  
 distinctive enough to be recognizable in the field.



<i>Buellia terricola</i>	Organic matter
<i>Caloplaca citrina</i>	Rock
<i>Caloplaca epithellina</i>	Parasitic on lichens on rock
<i>Caloplaca sp</i>	Rock (very common with thin scattered yellowish areoles)
<i>Caloplaca jungermanniae</i>	Soil
<i>Caloplaca stillicidiorum</i>	Moss
<i>Caloplaca tirolensis</i>	Moss over rock
<i>Caloplaca tominii</i>	Soil and organic matter. It is difficult to separate this species from <i>C. Xanthostigmoides</i> when it grows on organic matter. <i>C tominii</i> seems a lighter yellow and less granular.
<i>Caloplaca xanthostigmoides</i>	Moss, soil, organic matter (rabbit droppings), and wood
<i>Candelariella aurella</i>	Rock
<i>Candelariella aggregata</i>	Moss and soil
<i>Candelariella biatorina</i>	Old growth Juniper wood exclusively
<i>Candelariella vitellina</i>	Rock and sometimes wood or bark
<i>Carbonea vitellinaria</i>	Lichenicolous on <i>Candelariella vitellina</i> on rock
<i>Cyphelium inquinans</i>	Wood
<i>Cyphelium pinicola</i>	Wood
<i>Cyphelium tigillare</i>	Wood
<i>Dimelaena oreino</i>	Rock
<i>Diploschistes muscorum</i>	Soil
<i>Diploschistes scruposus</i>	Rock
<i>Lecanora expallens</i>	Wood
<i>Lecanora hagenii</i>	Bark/wood
<i>Lecanora gangaliodes</i>	Rock
<i>Lecanora piniperda</i>	Deciduous shrubs mostly
<i>Lecanora reagens</i>	Growing on sheltered, seasonally wet rock
<i>Lecanora rupicola</i>	Rock
<i>Lecanora sp</i>	Sagebrush bark
<i>Lecanora sp</i>	Sagebrush twig
<i>Lecanora zosteriae</i>	Bark and twigs and organic matter
<i>Lecidea atrobrunnea</i>	Rock
<i>Lecidea tessellata</i>	Rock
<i>Lecidella euphoria</i>	Sagebrush and juniper wood or bark
<i>Lecidella wolfenii</i>	Soil
<i>Lepraria sp</i>	Rock and moss over rock
<i>Lepraria sp</i>	Juniper bark
<i>Leprocaulon subalbicans</i>	Soil, moss and wood
<i>Megaspora verrucosa</i>	Moss over soil
<i>Ochrolechia upsaliensis</i>	Moss over rock
<i>Placynthiella uliginosa</i>	Soil
<i>Placynthiella icmalea</i>	Rock
<i>Pleopsidium flavum</i>	Rock



<i>Protoparmelia badia</i>	Rock
<i>Rhizocarpon bolanderi</i>	Rock
<i>Rhizocarpon disporum</i>	Rock
<i>Rhizocarpon geminatum</i>	Rock
<i>Rhizocarpon geographicum</i>	Rock
<i>Rhizocarpon grande</i>	Rock
<i>Rhizocarpon superficial</i>	Rock
<i>Rinodina conradii</i>	Organic matter
<i>Rinodina mniaraea</i>	Moss over rock
<i>Rinodina</i> sp.	Sagebrush wood
<i>Rimularia insularis</i>	Parasitic on <i>Lecanora rupicola</i>
<i>Trapeliopsis bisorediata</i>	Sandy soil
<i>Trapeliopsis flexuosa</i>	Charred wood
<i>Trapeliopsis granulosa</i>	Old wood of any kind

#### SQUAMULOSE

<i>Arthonia glebosa</i>	Soil
<i>Fuscopannaria cyanolepra</i>	Soil and moss
<i>Hypocenomyce scalaris</i>	Juniper bark and charred wood
<i>Massalongia carnosa</i>	Moss
<i>Phaeorhiza sareptana</i>	Soil
<i>Placidium pilosellum</i>	Soil
<i>Placidium squamulosum</i>	Soil
<i>Psora cerebriformis</i>	Soil
<i>Psora globifera</i>	Soil and rock
<i>Psora montana</i>	Soil
<i>Psora tuckermanii</i>	Soil and rock
<i>Toninia ruginosa</i>	Soil and organic matter
<i>Toninia sedifolia</i>	Soil

#### GELATINOUS

<i>Collema coccophorum</i>	Organic matter and moss
<i>Collema tenax</i>	Organic matter and soil
<i>Leptochidium albociliatum</i>	Moss and soil
<i>Leptogium lichenoides</i>	Moss and soil often over rock
<i>Polychidium muscicola</i>	Moss and soil



*Caloplaca decipiens* and *Lobothallia alphoplaca*

FOLIOSE

<i>Caloplaca decipiens</i>	Rock
<i>Candelaria concolor</i>	Shrub and tree bark and wood
<i>Dermatocarpon miniatum</i>	Rock
<i>Dermatocarpon reticulatum</i>	Soil
<i>Lecanora garovaglii</i>	Rock
<i>Lecanora muralis</i>	Rock, wood, organic matter
<i>Lobothallia alphoplaca</i>	Rock
<i>Melanelia exasperatula</i>	Bark and wood
<i>Melanelia sorediata</i>	Juniper wood
<i>Melanelia subelegantula</i>	Wood
<i>Melanelia subolivacea</i>	Bark of deciduous shrubs and trees
<i>Neofuscelia loxodes</i>	Rock
<i>Neofuscelia subhosseana</i>	Rock, and sometimes bark or wood
<i>Neofuscelia verruculifera</i>	Rock
<i>Parmelia saxatilis</i>	Rock and moss over rock
<i>Parmelia sulcata</i>	Rock and bark
<i>Peltigera ponojensis</i>	Soil in rock crevice
<i>Peltigera rufescens</i>	Moss and soil
<i>Phaeophyscia kairomoi</i>	Rock
<i>Phaeophyscia orbicularis</i>	Rock
<i>Phaeophyscia sciastra</i>	Rock and wood
<i>Physcia adscendens</i>	Bark of shrubs and deciduous shrubs and trees
<i>Physcia aipolia</i>	Bark of deciduous shrubs and trees
<i>Physcia caesia</i>	Moss over rock
<i>Physcia callosa</i>	Rock
<i>Physcia dimidiata</i>	Juniper bark
<i>Physcia dubia</i>	Juniper bark
<i>Physcia magnussonii</i>	Rock
<i>Physcia tenella</i>	Bark of shrubs and deciduous shrubs and trees
<i>Physcia sp</i>	Moss over rock
<i>Physconia enteroxantha</i>	Soil, bark, and rock
<i>Physconia isidiigera</i>	Moss over rock
<i>Platismatia glauca</i>	Rock
<i>Rhizoplaca chrysoleuca</i>	Rock
<i>Rhizoplaca melanophthalma</i>	Rock
<i>Umbilicaria hyperborea</i>	Rock
<i>Umbilicaria krascheninnikovii</i>	Rock
<i>Umbilicaria phaea</i>	Rock
<i>Umbilicaria torrefacta</i>	Rock
<i>Xanthoparmelia coloradoensis</i>	Rock
<i>Xanthoparmelia plittii</i>	Rock
<i>Xanthoria elegans</i>	Rock
<i>Xanthomendosa fallax</i>	Bark

*Xanthomendosa fulva* Bark and sometimes rock  
*Xanthomendosa galericulata* Bark and rock

#### FRUITICOSE

*Aectoria sarmentosa* Shrubs and tree bark  
*Aspicilia filiformis* Soil and organic matter  
*Aspicilia reptans* Soil and organic matter  
*Bryoria fremontii* Bark  
*Bryoria fuscescens* Soil over rock  
*Bryoria pseudofuscescens* Rock and moss over rock  
*Cladonia chlorophaea* Moss and organic matter  
*Cladonia fimbriata* Moss and organic matter  
*Cladonia ochrochlora* Moss and organic matter  
*Cladonia pocillum* Soil, litter, rock and wood  
*Cladonia pyxidata* Soil and moss over soil  
*Cladonia verruculosa* Moss over rock and soil  
*Evernia prunastri* Shrub bark  
*Hypogymnia tubulosa* Moss over rock  
*Letharia columbiana* Bark and wood  
*Letharia vulpina* Bark, wood and sometimes rock  
*Pseudephebe minuscula* Rock  
*Pseudephebe pubescens* Rock  
*Xanthoria candelaria* Rock and bark



**Ann Henson**, the illustrator of this Bryoria.

I started taking scientific illustration classes decades ago at CSU as a young biology student. I picked up botanical illustration about 10 years ago by taking the wonderful courses at the Denver Botanic Gardens. I love those little lichens, so occasionally draw one. I am a beginning "student" of lichens with a mentor of Bob Egan.

Many thanks to Bruce McCune and Katherine Glew for their assistance with this newsletter. Dana Ericson