

Northwest Lichenologists Newsletter

March 2006

**Compiled by Katherine Glew, Ph.D.
University of Washington
Herbarium, Burke Museum
Assistant Editor: Dana Ericson**

The following contributions were compiled on February 24, 2006.

Jeanne Ponzetti <jmponzetti@hotmail.com>

Jeanne just relocated to Olympia, Washington. Her new contact information is:
2914 Central St. SE
Olympia WA 98501
(360) 357-4358
jponzetti@world.oberlin.edu

Jeanne is working full-time as a mom and part time as a technical editor for a "Rare Plants of Washington" book, to be published by University of Washington Press. It covers mostly vascular plants, but they are looking for good photos, "habitat photos," and line drawings of the following (mostly) mosses:

Bartramiopsis lescurii
Brotherella roellii
Buxbaumia viridis
Crumia latifolia
Discelium nudum
Encalypta brevicolla var. crumiana
Iwatsukiella leucotricha
Meesia uliginosa
Myurella julacea
Orthotrichum praemorsum
Scouleria marginata
Taylora serrata
Tetraphis geniculata
Tetraplodon mnioides
Texosporium sancti-jacobi

The book is a spin-off on the Washington Natural Heritage Program's (WNHP) rare plant field guide write-ups that are currently on the web, funded by WNHP, Forest Service and Bureau of Land Management (BLM), plus additional grant money for publishing costs. It is a non-profit endeavor.

Anyone interested in the possibility of donating photographs or line drawings should contact Jeanne.

~~~~~

**David Wagner** <davidwagner@mac.com>

David is offering two bryology workshops being held in Eugene in April.

For more information about David, visit his web site:

<http://homepage.mac.com/davidwagner/FernZenMosses/Menu34.html>

The site also includes slide shows of mosses, ferns, and hikes:

### **MOSSSES AND LIVERWORTS OF THE PACIFIC NORTHWEST**

Two Bryophyte Workshops are being offered by David Wagner on the University of Oregon campus in Eugene, Oregon. Two four-day workshops will be held April 12-15 and April 26-29, 2006.

The workshops are directed toward practicing botanists who desire intensive training in identifying bryophytes. The first workshop is intended for people with minimal experience with bryophytes and the second will be at a more advanced level. A serious botanist could take both workshops to good advantage; there will be little overlap of prepared material.

**David Wagner, Ph.D.**, has been teaching bryophytes for over twenty-five years. He is an Associate Professor of Biology (Courtesy) at University of Oregon, Herbarium Research Associate at both Oregon State University and University of California, Berkeley. He was formerly director of the University of Oregon Herbarium. He is co-author of the regional standard, "Guide for the Identification of Rare, Threatened, or Sensitive Bryophytes..."

The first three days of each workshop will be spent in the classroom and will include box lunches, and refreshments. The fourth day of each workshop will be a field trip to local sites. Participants will be responsible for their own lunch and transportation (carpooling will be encouraged).

#### **Bryophyte Workshop I:** Ecological Approach

Classroom sessions: April 12-14 (Wednesday, Thursday & Friday) 8:30 am - 5 pm  
(21 hours instruction)

Field Trip: April 15, Saturday, 9 am - 4 pm

The basics of how to identify the most common, ecologically important bryophytes. The premise of this workshop is that sight recognition of the most common bryophytes is the first step in developing identification skills. We will emphasize the use of hand lens and field characters. Our subjects will be selected for their ecological significance in the major habitats of the region. Over sixty species will be presented for study.

#### **Bryophyte Workshop II:** Taxonomic Approach

Classroom sessions: April 26-28 (Wednesday, Thursday & Friday) 8:30 - 5 pm  
(21 hours instruction)

Field Trip: April 29, Saturday, 9 am - 4 pm

This workshop is aimed at botanists who know at least a dozen of the more prominent mosses and liverworts of the region. Focus of this workshop is on using technical keys for identification.

Microscope preparations are necessary for this exercise.

**PARTICIPANTS SHOULD BRING THEIR OWN MICROSCOPES.**

Ideally, for each pair of students there should be one dissecting microscope and one compound microscope available. Cooperation among participants is strongly encouraged. A large selection of specimens will be available for study. We will use "Keys to California Mosses" by Dan Norris, published in Madroño in March 2004. Wagner's latest keys, including the HTML version on CD, will be used for liverworts.

**Fee** for each workshop: \$300.00 Class size is limited to 12 for each session. To reserve a space, send \$25 deposit (non-refundable processing fee). The \$275 balance is due March 27 or 10 days before the workshop begins.

Please send check or money order (payable to Northwest Botanical Institute) to:  
NW Botanical Institute

P.O. Box 30064

Eugene OR 97403-1064.

Credit cards cannot be processed.

Agency purchase orders should include my tax ID

Number (200714276) and DUNS Number for electronic payment (045324790).

Lists of tools needed, recommended references, directions to the site, and list of nearby accommodations (registrant's responsibility) will be provided to registrants upon receipt of deposit.

Cancellations by registrants less than one week before the workshop will have fees refunded (less processing fee) only if a substitute from a waiting list is available. If any workshop must be canceled by Northwest Botanical Institute, full refunds will be made.

E-mail contact for David Wagner: davidwagner@mac.com

**Mail:** Northwest Botanical Institute, P.O. Box 30064, Eugene OR 97403-1064

---

**The Lichens and Bryophytes of Opal Creek**

Saturday and Sunday, April 29-30, 2006

Opal Creek Ancient Forest Center

Jawbone Flats, Oregon

www.opalcreek.org

*\$110 -- price includes instruction, workshop materials, accommodations, meals, and luggage shuttle to Opal Creek Ancient Forest Center at Jawbone Flats.*

*Meet at the Opal Creek trailhead at 10 am, located one hour east of Salem in the Willamette National Forest.*

For reservations, call (503) 892-2782

Non-vascular plants such as moss and lichen are drawing increasing attention, from air quality indicators and natural water filters to nesting material for bird and mammals, they are invaluable to Pacific Northwest forest ecosystems. Focusing on these unique and often fragile organisms gives us a clearer view of the key ecological roles they play. With the recent reinstatement of Survey and Manage as well as recent media coverage these organisms again are playing a role in forest management. Join lichenologists Daphne

Stone and John Villella and as they lead us on a journey through the little known non-vascular flora of the Opal Creek Wilderness. Opal Creek is home to hundreds of species, including rare lichen species such as *Pilophorus nigricaulis*, *Pseudocyphellaria rainierensis*, and *Nephroma occultum* just to name a few. ***This workshop will be run as training for the NW Lichenologist certification program***, with field and lab components as well as a packet of information about Northwest Survey and Manage species. Come experience the vast biological diversity of "Oregon's uncut gem."

---

**Sharon Eversman** <eversman@montana.edu>  
Montana State University

**Exit Gallery**

Location: Strand Union Building

Director: Annette Trinity-Stevens <annettet@montana.edu>

February 03, 2006

Sharon wanted folks to know about the following exhibit on lichen photography by some of her students. Although now past, it has some spectacular photos of lichens. She said it was great to have attention given to lichens. The web site can still be viewed at:

<http://www.montana.edu/cpa/news/nwview.php?article=3332>

QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

*Quoted from the web site:*

"The beauty of lichen is captured in an art show at the Exit Gallery in the SUB through Friday, Feb. 10."

"Four former and present MSU students have an exhibit entitled "li'ken and mos: a collaborative expose of the obscure" in the Exit Gallery in the Strand Union Building."

"Lichens and mosses are abundant in forest and other habitats, yet inconspicuous to most people as they hike. Jessie Salix and Angie Kociolek, both of whom earned M.S. degrees from MSU, have collaborated on making shadow boxes that contain actual samples of common lichens of various forest areas."

"Sarah Fetzek Tabor, a senior in the ecology department, is exhibiting several photographs of lichens and mosses in their natural habitat, and Eva Masin, a former graduate student in the ecology department, has drawings of the organisms. In addition, viewers can see actual samples of lichens and mosses under dissecting microscopes. Especially entertaining is watching a wrinkled, dried-up moss "grow" and unfurl when a drop of water is placed on it."

Exit Gallery hours are 8 a.m. to 5 p.m., Monday through Friday.

---

**Katherine Glew** <kglew@u.washington.edu>

WTU Herbarium, University of Washington, Seattle - Assistant Curator, Cryptogamic Collections (lichens, bryophytes, hepatics).

Since 2003, acquisitions totaling over 17,000 lichen and bryophyte collections from the US Forest Service (Survey and Manage - Judy Harpel), Bureau of Land Management (BLM), Elroy Burnett, Mildred Arnot, Gayle McHenry-Teller, John Vilella, and Katie Glew came into the herbarium. Most of the collections were from western Washington forests (USFS, BLM), with additions from the Wenatchee (Burnett) and Colville National Forests (McHenry-Teller, Glew). We also received gifts from general state collections (Arnot, Burnett, Glew, McHenry-Teller).

Collections from the International Kuril Island Project (IKIP)

<http://artedi.fish.washington.edu/okhotskia/ikip/index.htm>

and International Sakhalin Island Project (ISIP)

<http://artedi.fish.washington.edu/okhotskia/isip/index.htm>

comprise around 16,500 additional collections from Russian Far East gathered between 1995 - 2003. Lichens - 10,000+, Bryophytes - 6,500+.

This study was conducted to examine the biodiversity of organisms from understudied temperate islands, bordering the Sea of Okhotsk in the Russian Far East.

The Nature Conservancy and University of Washington Herbarium are collaborating on a botanical survey of the San Juan Islands, looking mainly at the smaller islands owned by

US Fish and Wildlife and private owners. K. Glew and J. Harpel are conducting lichen and bryophyte collections for the survey.

For additional fun, Katie attended the "Rocker's Workshop" in the Scottish Highlands with the British Lichenological Society. Brian and Sandy Coppins, Royal Botanic Garden in Edinburgh and Alan Fryday, Michigan State University, organized the workshop. Emphasis of the workshop was collecting and identifying crustose lichens on rocks. Interest was expressed in conducting a similar workshop in Washington and Oregon in 2007.

Katie also attended the annual Tuckerman Workshop in the Ozark Region of Arkansas and Missouri this October, with The Eastern Lichen Network. This workshop was a follow-up to the 1997 workshop held in Missouri.

Northwest Lichenologists met in Boise, Idaho with Northwest Scientific Association and Northwest Section of The Wildlife Society - March 6-8 (9).

**DATABASE WORKSHOP:** At the Northwest Scientific/Lichenologist meeting in Boise, it was suggested that we put on a workshop to investigate various database programs being used for lichen collections at institutions, agencies and private collections. It would be helpful if we had programs that could share information between collections. If there would be interest in this and setting up a place and time, please e-mail me at: [kglew@u.washington.edu](mailto:kglew@u.washington.edu)

If I receive an active response, I will make the arrangements for a workshop. Oregon was suggested as a central location to Washington, California, Idaho, Nevada, British Columbia.

General Interest:

Photos of lichens from the California Lichen Society

<http://californialichens.org/>

Field Trip images are at: <http://californialichens.org/fieldtrips/index.html>

More lichen images can be found at:

**Flechtenauswahl:** <http://www.paulhofmann.at/flechtenauswahl.html>

~~~~~  
Tim Wheeler <twheeler_nz@hotmail.com>

Lichens of the Valdivian Temperate Rainforests of Chile

In February, Tim Wheeler, Peter Nelson, and Tatiana Apablaza just returned from a month long lichen field trip of the Valdivian Region of Southern Chile. They spent a week collecting and photographing lichens in each of the 4 Parks of Region Ten they visited including Parque Nacional de Chiloe, Parque Nacional Alerce Andino, Parque Nacional Hornopiren, and Parque Pumalin. Over 3,000 samples were collected and will be housed in the OSU herbarium, and at the herbarium at the University of Concepcion. This was the first field season of the project, with the intention to produce an electronic field guide to the common lichens of the region in both English and Spanish.

Tim Wheeler
6606 Jocko Canyon Rd.
Arlee, MT 59821

Roger Rosentreter <Roger_Rosentreter@blm.gov>

Roger Rosentreter had two visits this last year to the Brigham Young University Herbarium reviewing species and distributions of biological soil crusts. This April 25-27 Roger and Jayne Belnap will be teaching a class in Boise, ID on the "Ecology and Management of Biological soil crusts". Cost for non- BLM personnel is \$200 contact Mark Phillips at (602) 906-5552.

Roger and Ann DeBolt hosted Dr. David Eldridge for a visit from Sydney, Australia. They are all working together on monitoring methods of Rangeland health utilizing biological soil crusts.

Roger, Ann, and Erin Martin are working on the "Diversity of Lichens by forest types in the Subtropical forests of Florida"

Recent publications include:

Roger Rosentreter. 2004. Sagebrush Identification, Ecology, and Palatability Relative to Sage-Grouse. USDA Forest Service Proceedings RMRS-P-000.

Marcelo D. Serpe1, Jeanne M. Orm, Tara Barkes, & Roger Rosentreter. 2006. Germination and seed water status of four grasses on moss-dominated biological soil crusts from arid lands. Plant Ecology, Springer

Nancy L. Shaw, Ann M. DeBolt, Roger Rosentreter. 2005. Reseeding Big Sagebrush: Techniques and Issues. USDA Forest Service Proceedings RMRS-P-38.

Write Roger if you would like PDF copies of these.

Stephen Talbot <stephen_talbot@fws.gov>

Stephen will be sponsoring a workshop with Dr. Roman Dial at Alaska Pacific University: "Analysis and Classification of Ecological Data Using JUICE Software", May 15-17, taught by Dr. Lubomír Tich_, Masaryk University, Brno, Czech Republic. The presenter has developed a powerful package that I think you would find most useful. As you are well aware, it can be used in conjunction with PC-ORD. We will all benefit from his knowledge. The class will be limited to not more that 10 people. I have attached the announcement that gives an overview and registration information. Hope to see you and members of the Northwest Lichenologists at the workshop. With friendly greetings from Alaska,

Stephen S. Talbot
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99503 USA
Tel: +1 907 786 3381 Fax: +1 907 786 3905
E-mail: stephen_talbot@fws.gov

See attachment at end of Newsletter

Linda Geiser <lgeiser@fs.fed.us>
Doug Glavich <dglavich@yahoo.com>

Doug Glavich and **Adrienne Marler** of Corvallis, OR spent last summer collecting lichens and conifer needles in Big Bend (TX), Bandelier (NM), Great Sand Dunes (CO), Grand Teton (WY), North Cascades (WA), Crater Lake (OR), Lassen (CA) and Glacier Bay (AK) national parks for the National Park Service Western Airborne Contaminants Assessment Program (WACAP). This 5 year program analyzes snow, lake water, fish, lake sediments, vegetation, and moose meat. It aims to quantify and detect ecological effects of current, banned, and persistent semi-volatile organic compounds. Results are updated frequently at (http://www2.nature.nps.gov/air/studies/air_toxics/wacap.cfm). This winter **Doug Glavich** has been writing about a 2002-2004 Forest Service-sponsored aquatic lichen study that he conducted in western OR, western WA and northern CA. This project surveyed for *Dermatocarpon luridum*, *Leptogium rivale*, and *Peltigera hydrothera* (*Hydrotheria venosa*) at randomly selected and known sites. Aquatic lichen field crews found *D. meiohyllizum* at all visited *D. luridum* sites rather than *D. luridum*. The paper reporting results (frequency across the study area and habitat info) will be finished this year. He is also identifying lichens collected this summer by lichenologists mentioned in the subsequent paragraphs.

Karen Dillman (Petersburg, AK) and **Linda Geiser** (Corvallis, OR) spent 5 weeks in 2005 and 3 weeks in 2004 working on a lichen air quality biomonitoring project in Tongass National Forest Wilderness. They collected over 1500 lichens from 19 Wildernesses and other areas. Some of the lichens are still being identified but of those that have been there are 10 species new to Alaska and range extensions for *Pseudocyphellaria perpetua* and *Lobaria amplissima*. Many of the sites were revisits to monitoring sites established 15 years ago before the days of GPS (and actually relocated!) so they will be interested in finding out what changes in lichen element or communities have taken place. They also completed work for the National Park Service WACAP (see paragraph above) in Alaska's Wrangell-St. Elias National Park and Katmai National Park and Stikine-LeConte Wilderness.

Jill Grenon, **Mark Boyll**, **Peter Nelson**, **Larissa LaSelle**, and **Doug Glavich**, completed about 250 lichen community surveys to monitor air quality on the Willamette, Siuslaw, Mt. Hood, Gifford Pinchot, Deschutes, Columbia River Gorge, and Mt. Baker-Snoqualmie national forests of western Oregon and Washington. Most of the sites were 10-year revisits. They also collected samples for elemental analysis at each survey site.

Results of the first ten year study, complete with western OR and WA air quality and climate maps, coauthored by **Linda Geiser** and **Peter Neitlich** have been accepted for publication (finally!) –and may be in print by the end of this year.

Peter Nelson has recently returned from a collecting trip to Chile, where he and his game co-hort, **Tim Wheeler**, collected thousands of lichens from four national parks. They have their work cut out for them in the identification and packeting arena. Fortunately they are really into it, especially finding out how many of the 54 species of Chilean *Pseudocyphellaria* they found.

Daphne Stone <stone_daphne@hotmail.com>

NWL is offering several wonderful opportunities for lichenologists.

29 - 30 April **Lichen Certification Training**. John Villella will lead a workshop designed to help on the field exam portion of the Certification Exam. This is also a good opportunity for anyone with some knowledge of lichens to delve deeper. It will include general lichen study, collection on a standard test plot, study specimens of many of the Survey and Manage species, and much field collection in Cascades habitats. see nwlichens.org

19 - 21 May **Lichen Certification Exam**. Participants will spend a weekend at a remote cabin near the base of Mt Rainier for this exam. The written part of the exam is given Saturday morning and the field collection portion in the afternoon. Participants then have 24 hours to hand in a list and specimens of all they found. see nwlichens.org

Sept 5 - 7 **Opal Creek Lichenologists Foray**. We will set up a lab, bringing our own scopes, at the beautiful Opal Creek facilities, then collect lichens, identify to our heart's content, and eat! Limited to 30 people, so register now! see nwlichens.org

Fred M. Rhoades <fredr@cc.wvu.edu>
Western Washington University, Bellingham

During the course of an undergraduate field project on Sehome Hill (the arboretum above Western's campus), one of our graduate TAs discovered a single specimen of *Usnea rigida* (the Northwest's own apotheciate *Usnea*) on a blow-down bigleaf maple branch (after our windstorm). This is the first report from Western's campus. I have been monitoring reports of this species from NW Washington ever since seeing another thallus for the first time in a local Bellingham park. We now have a half dozen or so locations for this species here, each generally rather restricted in numbers of thalli seen (except for one big-leaf maple tree in Washington Park, Anacortes which is loaded). I had originally seen this species with Wilf Schofield at Bridal Veil Falls Provincial Park back in the 80's (as I remember it was quite abundant) but could not find it on a recent visit to that park. I

would be curious if others have reports of locations south of Deception Pass area (north Whidbey Island), which is our southmost location for the species.

I was asked about the availability of **101 Common Mosses, Liverworts & Lichens of the Olympic Peninsula**, by Martin and Karen Hutten, Andrea Woodward. Here is what Karen told me:

They are still available, but only from the visitor center in Port Angeles, while supplies last. Reprinting is doubtful. Martin would rather make a new improved version anyway.

If anyone has extra copies they would like to sell to someone, let Fred Rhoades know <fredr@cc.wvu.edu>. He has people in his lichen group that would be interested in having copies.

Northwest Lichenologists, Inc.
Board of Directors Meeting
Date: 14 January 2006, 10 a.m.
Place: Corvallis

Certification

John Villella - 2-day lichen workshop this spring at Opal Creek (April 18ish).
\$100 for the weekend.
A practice plot will be part of the activity, in preparation for Certification.

Examiner for 2006 – Daphne Stone

Site for 2006 – Katie Glew's cabin on Ohop Lake, by Eatonville, WA

Date for Examination - May 19 - 20, 2006

Promotional Materials – Erin Martin will resign as sales manager. **Sarah Jovan has volunteered to serve as sales mgr for shirts, books, and journals.** John Davis offered to store things. Emily Holt has volunteered to help.

Suggestions:

Hats with embroidery
T-shirt
Postcards.
Calendars.
Patches – for foray/field trips
Stickers

Replacement board members for 2006

Sarah will continue on the board.
John Villella and Dave Kofranek will serve as new alternates.

Election of officers for 2006

Pres – Daphne Stone
Vice pres – Erin Martin
Sec-Treas – Bruce McCune

NWL Website -- <http://www.nwlichens.org/> (McCune)

In the future, add link to Flickr.com/photos/Johns_picks – John Davis's website
To see it try googling Lepidoderma
Consider adding ongoing statement of items for sale to support NWL.

Newsletter (Glew) –Last edition was March 2005.

She is soliciting contributions for next one.

NW Scientific Association liaisons (Glew, Rosentreter) and Annual General Meeting

+ any other issues having to do with spring meeting (this year in Boise)
Read Katie's report. Six papers presented. Workshop idea: Brown Parmelia-like things.

Workshop at Opal Creek, September 2006 (Villella, Stone)

Workshop/foray in early fall. Facilities for classroom and lab. Focus on crustose lichens. Each attendant would pick a genus or group or a substrate to do a presentation on. They have laptop and digital projector. Bring a CD.
Opportunity to be in an OG forest and to see more rare spp in intact forest, plus see good crusts. <http://www.nwlichens.org/>

Dates: Sept 5-7 (T, W, Th, during the week). 2 nights.

Cost: about \$110/person, including D,B,L,D,B,L, leave midafternoon. Bring your own lunch the first day.

Payment: Send check/cash to Bruce by certain date. Need to figure cost for camping option (free camp + meals) and cost for lodge option (lodge + meals) plus other details.

People should bring scopes if they can.

John and Daphne prepared announcement with all the info, Bruce distributed and put on website.

Workshops/trainings for 2006/7

Suggestion to do another backpack trip in 2007.

Book and journal sales

Fundraiser. Sarah researched EBay, etc. See attachment. 5 options:

2 Auction

2 Online marketplace.

1 do-it-yourself. Post a list. Let check clear, then send it. Ship once a month. Make a list of inventory, along with a price. First come first serve.

Sarah's initial recommendation: Amazon Marketplace.
Craig's list might be an option.

Bruce and Sarah make the list and come up with draft prices, send to John Davis for review.

Monographs in Lichenology

McCune & Rosentreter soil crust book is on the way.
Jeanne Ponzetti has agreed to be the editor.

John Villella is interested in doing an annotated list of the lichens of the Olympic Peninsula, with Martin Hutten.

Information on the Juice Software Workshop

Special Three-day Workshop
15-17 May 2006
ALASKA PACIFIC UNIVERSITY
4101 University Drive, Anchorage, AK 99508

**Analysis and Classification of Ecological Data
Using JUICE Software:**

How to Use the JUICE Package in Combination with Turboveg, Twinspan, PC-ORD, MULVA, SYN-TAX, D-MAP, CANOCO and Others to Extend the Possibilities of these Programs

by

Dr. Lubomír Tichý
Department of Botany
Masaryk University
Brno, Czech Republic

Description: This three-day course will combine lectures with hands-on application to teach the basic concepts and advanced features of the JUICE 6.3 freeware, computing package based on the Microsoft WINDOWS platform. The workshop will include:

- 1. Databases as Important Sources of Ecological Information – Differences between Small and Large Data Sets.**
- 2. The Basics of Working with Vegetation Tables.**
- 3. Available Classifications, Ordinations and other Analyses.**

4. Synoptic Tables, the Fidelity Concept, Similarity Indices, Beta-Diversity etc.

5. Parameterization of Species and Vegetation Units with Using Environmental Variables.

6. Finalization of Results for Publication.

7. Published Sample Data (e. g. non-forest vegetation classification of the Czech Republic – about 20.000 records; a vegetation data set combined with mollusk data – about 150 records; a large data set with measured environmental variables – about 500 records).

The workshop program can be modified according to the interests of the participants. Several data sets will be prepared for use by all participants to test described functions and possibilities simultaneously by hand.

The workshop will be held at Alaska Pacific University and be limited to 10 participants. Cost of workshop: \$200 (a special price is available for fulltime students). Checks, Visa, or purchase order should be made payable to "Alaska Pacific University" and sent to: JUICE Workshop, Environmental Science, Alaska Pacific University, 4101 University Drive, Anchorage, Alaska 99508; telephone contact for payment is L. A. Piper, Environmental Science Office @ (907) 564-8207; FAX (907) 562-4276; email: <LA@alaskapacific.edu>. Classes from 9:00 -12:00 and 1:00 - 4:00 pm. Participants should bring their own laptop computers. Further information concerning the JUICE package may be found on the Web homepage (<http://www.sci.muni.cz/botany/juice.htm>); a JUICE Manual will be available for distribution two weeks prior to the workshop. Questions concerning the workshop should be addressed to: Stephen Talbot, U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, AK 99503; phone (907) 786-3381, fax (907) 786-3905, email: stephen_talbot@fws.gov.

The program JUICE was designed as an application for editing, classification and analysis of vegetation tables or other ecological data. This software, with current maximum capacity of 65,500 relevés in one table, utilizes many functions for easy manipulation of table and header data. Various options include classification using COCKTAIL, PC-ORD, and TWINSpan methods, calculation of interspecific associations, fidelity measures, preparation of synoptic tables, automatic sorting of relevé tables, and export of table data into other applications (text editors, table processors or mapping packages). JUICE is optimized for use in association with TURBOVEG, which is the most widespread database program for storing phytosociological data in Europe. However, three other import formats are available.

Suggested reading: **Tichy, L.** [2002. JUICE, software for vegetation classification.](#) *J. Veg. Sci.* 13: 451-453.

JUICE WORKSHOP

REGISTRATION

To register please send this form to:

JUICE Workshop, Attn: L. A. Piper, Environmental Science, Alaska Pacific University,
4101 University Drive, Anchorage, Alaska 99508. (email: <LA@alaskapacific.edu>).

Checks should be made payable to "Alaska Pacific University" and sent to the address
above. For other forms of payment, contact L. A. Piper, phone (907) 564-8207; fax
(907) 562-4276; email <LA@alaskapacific.edu>.

Name:

Address:

Telephone:

Fax:

Email:

Remember to:

- 1) Bring your own data set, or you may use a dataset provided at the workshop;
and
- 2) Download the JUICE software on your PC
< <http://www.sci.muni.cz/botany/juice.htm> > and check for program updates
one week prior to the workshop