



UBC Herbarium Newsletter

SEPTEMBER 2007

Since the last newsletter was published in 2004, there have been many changes, contributions and publications at the UBC Herbarium

Herbarium Updates

Jeannette Whitton, Associate Professor in the Botany Department, was appointed Director of the Herbarium July 1st 2005. The job of Director was added to her duties as Curator of Vascular Plants. She has brought renewed energy and great support to the Herbarium, including working with the Department head to obtain funding for the Graduate Research Assistant positions, and participation in the successful CFI grant (see article below), and keeping a close watch over planning our new space at The Beatty Biodiversity Centre (see article below).

Linda Jennings (Lipsen) was hired Feb 28th, 2006 as the new collections manager for the Vascular Plants and Algae. Linda received her B.Sc. and M.Sc. from UBC in the Botany Department and was previously the accessions technician at the UBC Botanical Garden and Centre for Plant Research. She brings a drive and enthusiasm for our precious dead plants and for collections-based research that only a herbarium manager

can truly understand. Cindy Sayre, our previous collection manager, has stayed within our reach at Van Dusen Botanical Garden, where she is Curator of Collections.

Olivia Lee, Collection Manager for the Bryophyte, Fungal and Lichen Collections, celebrated her 32nd year in the Herbarium and with much help databased her 197,000th Bryophyte accession (beginning with 1)!!!



The Beatty Biodiversity Centre Takes Shape

After years of planning, months of meetings and countless consultation, it is a pleasure to say that construction on the Beatty Biodiversity Centre has begun. The Centre will house both the Biodiversity Research Centre and the Beatty Biodiversity Museum. The Museum will house UBC's extensive biological collections, including the Herbarium, the Cowan Vertebrate Collections, the Fish Collection, the Swpencer Entomological Collections, the Marine Invertebrate Collection, and the Fossil Collection. In this exciting new venture, the collections will be the centrepiece of a new public museum, as well as maintaining their function as research collections. The much anticipated public opening of the museum is scheduled for the summer of 2009.

For the herbarium, the new space will mean all new cabinets for the specimens, as well as modern facilities that will include expanded visitor work space, quarantine facilities, and the opportunity

[CONTINUED ON PAGE 2]

HERBARIUM stats for 2006

Visitors = 1040

Volunteers hours = 229

Web site visitors (Tracked from May to December 2006) = 5143

What you will find in this newsletter

Herbarium Updates	1
The Beatty Biodiversity Centre Takes Shape	1
UBC Herbarium to Participate in the Canadian Biodiversity Consortium	2
Algae Collection	3
Bryophyte Collection	4
Fungi Collection	5
Lichen Collection	5
Vascular Collection	5
E-Flora	8

THE BEATY BIODIVERSITY CENTRE

CONTINUED FROM PAGE 1

to work with staff in other collections. The biggest change will be that the museum will be a public facility aimed at drawing visitors, offering programs for

the general public and school groups. The opportunity to raise awareness of the value of botanical collections will surely benefit the herbarium.

by Jeannette Whitton (Director)



The basement construction of the Beaty Biodiversity Centre, where the UBC biological collections will be housed

UBC Herbarium to participate in the Canadian Biodiversity Consortium

The UBC Herbarium, Spencer Entomological Collection and Botanical Garden collaborated with a group of university museums and collections from across Canada on a successful proposal to fund a Canadian Biodiversity cyber-infrastructure network. The initiative is led by Dr. Anne Bruneau at the University of Montreal and Montreal Botanical Garden and is funded by the Canada Foundation for Innovation with additional funding for UBC from the British Columbia Knowledge and Development Fund. In addition to participating in the national network, UBC will benefit through funding of data entry personnel and new computer equipment. Sean Graham was instrumental in preparing UBC's submissions to CFI and BCKDF on behalf of the three collections. Well done! Look for updates in early 2008 as the project gets started.

by Jeannette Whitton (Director)

Visit our herbarium shop on-line and help support our **fundraising**
(<http://www.botany.ubc.ca/herbarium>, follow herbarium shop link)

Herbarium Prints - High resolution scans of our own herbarium vouchers featuring mainly the native flora of BC, printed with green or cream mat in a frameless glass frame 11x 14 \$25.00 a piece or 3 @ 60.00 (new prices beginning September 1st, 2007)

Wildflower Cards - Our blank greeting cards showcase photographs of native plants of BC taken in Manning Park and Vancouver Island. The cards measure approximately 5x7 inch and are individually wrapped with envelope in a protective packet. \$4.00 each, 3 @ \$10.00, 10 @ \$35.00 (new prices beginning September 1st, 2007)

Plant Press - Our handmade plant presses are lightweight but sturdy, suitable for collecting the field, or your backyard. Each press consists of damp-resistant yellow cedar top and bottom frames, sheets of corrugated cardboard to separate specimens, and heavy-duty nylon straps to bind everything together. The presses are approximately 12x18 inches. \$45.00 each

Eflora Postcards - Help support Eflora fundraising by purchasing their collection of postcards celebrating the native flora of BC featuring such species as our rare *Lupinus rivita*. \$1.00 each or 5 for \$4.00

CONTRIBUTIONS AND PUBLICATIONS FROM EACH COLLECTION

{ *As in all herbaria, we are continually in the process of examining and enhancing our collections through a variety of different projects. What follows are just some highlights of the different projects reflect the value of our collections for research.* }

The Algal Collection

“the most comprehensive collection of northeast Pacific algae”

Total Accessions = 85, 360

Specimens databased = 68, 230 (80% in database)

Total Loans received/ sheets = 1/ 83

Total loans sent/ sheets = 2/ 12

Mike Hawkes – *Curator of Algae*

Sandra Lindstrom – *Assistant Curator of Algae*

CURATOR'S REPORT – PHYCOLOGICAL HERBARIUM

Climate change is very much in the public eye these days and the Phycological Herbarium collections are playing a role in evaluating such change. Dr. Chris Janousek, a marine ecologist in California, has been using our on-line seaweed collections data to investigate the potential utility of historical specimens to test ecological hypotheses. He is particularly interested in kelp and rockweeds and their changes in composition and diversity at sites along the NW coast in the last 50-100 years.

In April of this year, Dr Phil Lebednik (coralline red algal expert and environmental consultant) and Dr Jochen Halfar (Dept. of Geology, Univ. Toronto) will be investigating the Alaskan crus-

tose coralline red alga, *Clathromorphum nereostratum*, as part of a global warming study. Dr Halfar has recently completed a field study of coralline red algae confirming their usefulness as climate archives. *Clathromorphum nereostratum* is a long-lived species (estimated to reach 700 yrs old) that forms calcified crusts up to 20 cm thick. Crusts contain chemical data that give insights into paleoclimate, especially past sea surface temperatures. Dr Lebednik collected specimens of this marine alga in the Aleutian Islands in the late 1960's and subsequently described it as a new species.

Since 1977 the UBC Phycological Herbarium has housed Dr Lebednik's extensive coralline algal collections. Specimens were collected during the period 1968-1976 from 213 stations along the Pacific Coast from Shemya Island (western Aleutians) to San Diego. Collections were made from the intertidal to over 380 ft depth. This collection constitutes the second largest assemblage of coralline specimens in North America (the largest is Dr Walter Adey's collections [mostly from the N. Atlantic] at the Smithsonian Institution in Washington, D.C.).

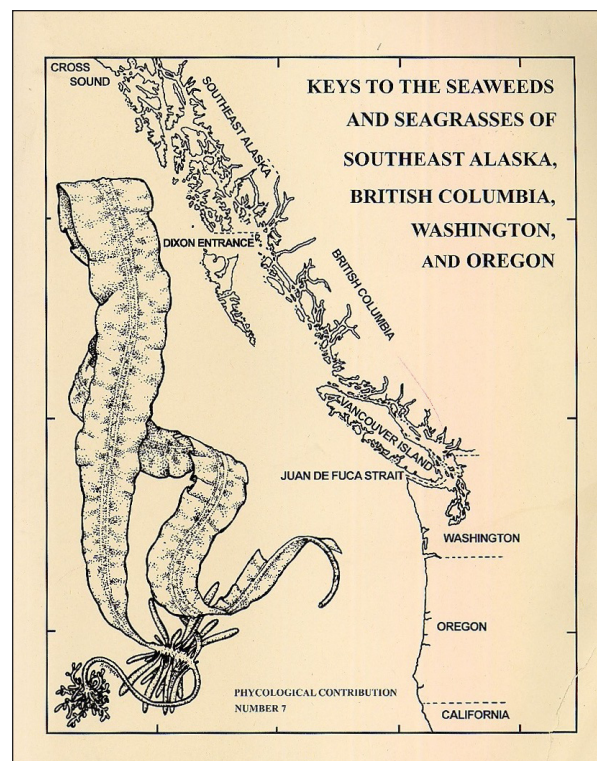
Phycological Contribution #7, an updated version of the marine algal & sea grass keys entitled, Keys to the Seaweeds and Seagrasses of Southeast Alaska, British Columbia, Washington, and Oregon. PhycoID. iv + 209 pp, was published in summer

2006 by Paul Gabrielson, Tom Widdowson, and Sandra Lindstrom. Order forms are available on the UBC herbarium website: <http://www.botany.ubc.ca/herbarium/algae/index.html#Publications>

As part of the E-Flora of British Columbia project, Michael Hawkes has been scanning his extensive collection of 35mm slides of Pacific NW marine algae. A small selection of images is completed and can be viewed at: <http://www.eflora.bc.ca/>. Additional seaweed images by Hawkes were published in Lamb & Hanby's book, Marine Life of the Pacific Northwest, Harbour Publishing: Madiera Park, B.C.

In March 2007, Michael Hawkes, Sandra Lindstrom, and Robert De Wreede, UBC Botany, were invited participants at a Marine Plants Expert Workshop

[CONTINUED TO PAGE 4]



in Vancouver. This workshop is one of several being held by the BC Marine Conservation Analysis Project Team to identify areas of high conservation utility/interest for the offshore marine and coastal areas of BC. This BCMCA Project is a collaboration among the Federal Government, Provincial Government, coastal First Nations, academia and environmental organizations. Workshop participants were asked to advise on the best data and conservation targets to use to conserve marine plants (seaweeds, sea grasses, and marine lichens). The UBC Phycological Herbarium database of collections was used as a major resource in this process. A draft of the BC Marine Conservation Analysis Strategy + Action Plan can be viewed at: <http://www.westcoastaquatic.ca/BC%20MCA%20Draft%20Strategy%2029%20Jan%202007.pdf>

By Mike Hawkes (Algae Curator)

The Bryophyte Collection

“the largest and most comprehensive collection in Canada and one of the largest in the world”

Total Accessions = 245,637

Specimens databased = 161,990 (3,173 added this year - 66% in database)

Total Loans received/ packets = 11/ 687

Total loans sent/ total specimens = 6/ 173

Exchange Program - The Cryptogamic collections (Bryophytes and Lichen) has received through exchange approximately 372 specimens and has sent in exchange 6,739 specimens! The collections of W.B. Schofield have made up the main contributions to the bryophyte exchange program. His collection number now at 135,000, starting in 1942 with number 1!

W.B. Schofield – Curator of Bryophytes

CURATOR'S REPORT – BRYOPHYTE HERBARIUM

Publications

The first volume of *Bryophyte Flora of North America* (Volume 27 of the *Flora of North America*) is to be published in 2007 with treatments of the genera *Buxbaumia*, *Dicramoweisia*, *Diphyscium*, *Discelium* and *Rhabdowisia* annotated by W.B. Schofield and *Ceratodon* and *Schrestidium* annotated by T.T. McIntosh.

A new species described; *Brotherella canadensis* sp. nov., from the Pacific Coast of North America. *Journal of Hattori Botanical Lab*, 100: 355-360 by W.B. Schofield.

This Pacific Northwest Coastal species has been collected over the years from Alaska, Haida Gwaii, (Queen Charlotte Islands), Vancouver Island, and the

Washington Coast line. Be on the look out for it.

Hisatsugo Ando, esteemed bryologist (obituary). *Journal of the Hattori Botanical Lab*, 100; 881-886 by W.B. Schofield

Future Publications

A manual to the *Mosses of the Aleutian Islands* is being prepared by W.B. Schofield in collaboration with S. S. Talbot (U.S. Federal Fish and Wildlife). A rough draft is expected to be accomplished during 2007.

Future Work

Field work in the western Aleutian Islands was carried on in collaboration with S.S. Talbot during the summer of 2006. This was supported by U.S. Federal Fish & Wildlife.

By Wulf Schofield (Bryophyte Curator)

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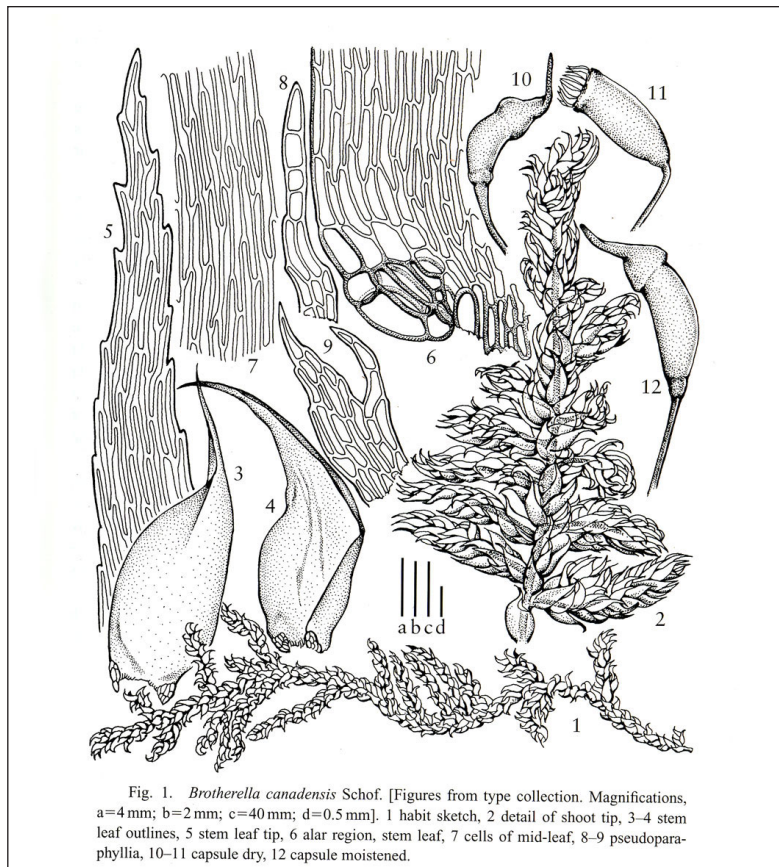


Fig. 1. *Brotherella canadensis* Schof. [Figures from type collection. Magnifications, a=4 mm; b=2 mm; c=40 mm; d=0.5 mm]. 1 habit sketch, 2 detail of shoot tip, 3-4 stem leaf outlines, 5 stem leaf tip, 6 alar region, stem leaf, 7 cells of mid-leaf, 8-9 pseudoparaphyllia, 10-11 capsule dry, 12 capsule moistened.

The Fungal Collection

“the largest research collection of macrofungi of British Columbia”

Total Accessions = 16, 271 (1, 066 added to collection & database)

Specimens databased = 16, 271 (100%)

Total loans received/ packets = 11/ 687

Total loans sent/ packets = 6/ 173

Mary Berbee – *Fungal Curator*

Paul Kroeger – UBC
Herbarium Research Associate

Updates to the macrofungus collection

Paul Kroeger was granted funding by the Daniel E. Stuntz Memorial Foundation to process and accession 1,000 vouchers (900 of his own) into the UBC fungal collection. These collections are an important addition to the collection, as they include studies conducted at Mount Elphinstone Provincial Park in Roberts Creek, British Columbia which has been set aside in part to preserve the outstanding macrofungus diversity. One of the other collections to be processed are from inventory work done in Gwaii Haanas National Park Reserve and Haida Cultural Site in the Queen Charlotte Islands. As part of processing these collections for long term storage, the collection information was included in the UBC Herbarium fungal database (<http://herbarium.botany.ubc.ca/index.html>).

By Linda Jennings (*Collections Manager*)



The Lichen Collection

“one of the largest collections in western North America”

Total Accessions = 39,821 (6 added to the collection & database)

Specimens databased = 39,821 (100%)

Total loans received/ packets = 2/ 53

Total loans sent/ packets = 6/ 865

Trevor Goward - *Curator of Lichen*

CURATOR'S REPORT – PHYCOLOGICAL HERBARIUM

Announcing: The British Columbia Epiphytic Crustose Lichen Flora - Project: Connecting the Dots.

Though spotted owls and many other birds and mammals depend on trees, they don't actually grow on them. Lichens, of course, are different.

In recent years Toby Spribille, Curtis Bjork and I have become fascinated by the epiphytic crustose lichens of our region. To date, we have passed more than 30,000 specimens under our collective microscopes. So far we have documented some 750 species - a number that grows larger by the day.

Included in this count are scores species that still appear to have no names. During the same period, we have undertaken floristic studies in three of British Columbia's forest regions and one national forest in Montana. In each study, the resulting list of epiphytic lichens has exceeded 275 species. Rather astonishingly, we found that epiphytic lichen species (especially crustose lichens) often far outnumber vascular plants and bryophytes combined!

Together with Ernie Brodo (Ber-

gen) and Tor Tonsberg (Bergen), we've decided to formalize our project by announcing its main objective: a flora of the epiphytic crustose lichens of British Columbia. When published, this will constitute Part III of Trevor's 'Lichens of British Columbia' series, and will follow roughly the same format. As with earlier volumes, we hope our work will be useful not just in B.C., but also in adjacent states and provinces. And to hedge our bets, we intend to incorporate several species known from surrounding regions, though not yet specifically recorded from B.C.

Funding for the flora project has yet to be secured. For the time being, we are looking forward to additional field work of the sort we have already undertaken. We hope our fellow lichenologists in both Canada and the U.S. will support this project by: (1) sending along difficult or otherwise interesting specimens; (2) letting us know of opportunities for floristic research on epiphytic crusts; and (3) joining us at workshops (see announcement in this issue of the newsletter).

Here's to fruitful collaboration in the years ahead!

By Trevor Goward (*Lichen Curator*)

The Vascular Collection

“the world's largest collection of British Columbia vascular plants and is worldwide in scope”

Total Accessions = 222, 910 (432 added to the collection)

Specimens databased = 136, 274 (3, 532 added to the database – 61% in database)

Total loans received/ sheets = 14/ 1578

Total loans sent / sheets = 56/ 1258

CURATOR'S REPORT – VASCULAR COLLECTION

In place of a curator's report, some of the many contributors linked to the Vascular Plant Collection have provided brief summaries of their projects.

Jeff Saarela - Herbarium Research Assistant

(Funded by the UBC Department of Botany, Fall 2005)

Summary of Accomplishments

Grasses are an extremely important family of plants economically and ecologically, and they are among the plant families considered to be the most taxonomically. Over the last 20+ years there have been many nomenclatural changes in Poaceae. Many of these changes are reflected in the recently published (2001) Illustrated Flora of British Columbia, but the specimens in the herbarium have not been updated. In 2005, as a research assistant in the UBC herbarium, I annotated a portion of the UBC grass collection, updating the nomenclature and correctly identifying specimens.

This work clearly benefits the herbarium and users of the grass collection, but there was also substantial personal gain for myself as a researcher and student of the grasses. This opportunity allowed me to carefully study the morphology, biogeography, and taxonomy of the grass family in western North America, gaining valuable experience in understanding this difficult group of plants. I was able to study specimens in conjunction with the primary and secondary taxonomic literature, and become famil-

iar with many genera and species. All annotations were based on a thorough understanding of the nomenclature and taxonomy of the group. Every specimen that I annotated was carefully studied under a microscope. Nomenclature was updated and/or identifications were confirmed for the following genera: *Achnatherum*, *Agropyron*, *Aira*, *Anthoxanthum*, *Arctagrostis*, *Arrhenatherum*, *Beckmannia*, *Briza*, *Bromus*, *Catabrosa*, *Cinna*, *Coleanthus*, *Cynosurus*, *Dactylis*, *Deschampsia*, *Distichlis*, *Elymus*, *Eragrostis*, *Hesperostipa*, *Hierochloa*, *Holcus*, *Leymus*, *Oryzopsis*, *Paspopyrum*, *Phalaris*, *Phleum*, *Phragmites*, *Piptatherum*, *Pseudoregneria*, *Schizachne*, *Setaria*, *Sphenopholis*, *Sporobolus*, *Thinopyrum*, *Trisetum*, *Vahlodea*, and *Zizania*. I estimate that I worked through several thousand herbarium sheets.

Through this work, I have identified several taxonomic issues that could benefit from further research, and I anticipate working on several of these problems in the future. While working through specimens of *Trisetum*, it became clear to me that there were problems with the taxonomic treatment of this genus in the BC flora. I therefore prepared an article for Botanical Electronic News to clarify this problem: Saarela, J. M. 2005. *Trisetum* (Poaceae) in British Columbia. Botanical Electronic News No. 251 (<http://www.ou.edu/cas/botany-micro/ben/ben351.html>).

Vascular Type Publication

I also prepared a manuscript (with co-authors Linda Jennings (Lipsen), Cindy Sayre, and Jeannette Whitton) reporting specimen information for all of the vascular plant type specimens in the UBC herbarium. It is critical that this information be made available to the global botanical community to facilitate taxonomic work. This manuscript has recently been published in the Journal

of the Botanical Research Institute of Texas (formerly Sida, Contributions to Botany). The type specimens were digitized and are available to view at our web site <http://www.botany.ubc.ca/herbarium/Vtypes.html>.

Saarela, JM, L Lipsen, CM Sayre, and J Whitton. 2007. Catalogue of the vascular plant type specimens in the University of British Columbia Herbarium (UBC). *Journal of the Botanical Research Institute of Texas* 1(1): 437-448.

Since January, 2007, I have been working as a research scientist at the Canadian Museum of Nature in Ottawa, Ontario, home of the National Herbarium of Canada (CAN). My research continues to be focused on the taxonomy, systematics, and evolution of grasses and their monocot relatives.



Chris Sears - Herbarium Research Assistant

(Funded by the UBC Department of Botany, Fall 2006)

Updating Fern Families in the Electronic Information Age

Taxonomy is a dynamic science that seeks to describe our current understanding of biological diversity and relationships. When circumscription of species and families changes herbaria should update their collections to reflect these changes. If this maintenance is not performed, the value of a herbarium collection is diminished. When taxonomic changes occur, updating the collection to reflect these changes serves to elucidate distribution patterns, especially when the limits of taxa are variously recognized, acts as a benchmark to facilitate

future identification, reflects our understanding of taxon circumscriptions and relationships, and increases our understanding of the global flora. These are fundamental components of biogeography, floristics, ecology, taxonomy, and systematics. The onus is on herbaria, supported by taxonomic experts, to keep a collection's nomenclature current.

With the advent of web based electronic floras and nomenclatural databases high quality and current information is now readily available to the herbarium taxonomist. This has greatly increased the speed at which one can process unfamiliar taxa from far flung corners of the world and helps to ensure a consistency of treatment for taxa that have very large geographical ranges. However, the expectation that a herbarium's collection should be completely up to date is unrealistic, as most institutions lack sufficient staff and funding to do this. As a result, our basic understanding of many re-circumscribed families and newly described species remains incomplete.

As part of a research assistantship granted by the University of British Columbia's Botany department I was able to update the fern and fern ally collection housed at UBC. Family level circumscription and nomenclature followed those outlined in Smith et al 2006. The bulk of the fern collection housed at UBC is from British Columbia and the rest of North America, including Alaska and Hawaii. Species level treatment for this material largely mirrored those of Flora of North America for continental North America and USDA for Alaska. Much of the remainder of the collection is from Western Europe and Russia with some material from Japan, China, the Philippines, Oceania, Zimbabwe, Zambia and South America. Lower level taxonomic treatment for such a wide geographic area was problematic due to a lack of current secondary literature that is congruent with the

Flora of North America treatments. As a result I had to rely largely on older published floras, cross-referenced with on-line floras such as Flora Europaea, Flora of Japan, Flora of Australia, and Flora Zambesiaca in combination with the primary literature. The appropriate primary literature was searched for using w³TROPICOS or IPNI. Spelling of specific epithets and authors were confirmed using these online nomenclatural databases. This approach was very time consuming and took up the bulk of my time. However, this project would not have been possible to complete in the time allotted if it were not for these online resources. The much anticipated Flora of China Volume I should do much to address many outstanding taxonomic issues regarding material from Southeastern Asia.

Literature Cited

Smith, A. R., K. M. Pryer, E. Schuettpelz, P. Korall, H. Schneider & P. G. Wolf. 2006. A classification for extant ferns. *Taxon* 55(3):705–731.

On-line resources Cited 2007

IPNI, international plant name index, Available from <http://www.ipni.org/index.html>

Flora of Australia Online, Australian Government Department of the Environment and Water Resources, available from <http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html>

Flora Europaea, Royal Botanic Garden Edinburgh. Available from <http://rbg-web2.rbge.org.uk/FE/fe.html>

Flora of Japan, Japanese Society for Plant Systematist, available from <http://foj.c.u-tokyo.ac.jp/gbif/>

Flora Zambesiaca, Royal Botanic Gardens, Key, Available from <http://www.kew.org/efloras/search.do>

w³TROPICOS, Missouri Botanical Gar-

den, Available from <http://mobot.mobot.org/W3T/Search/vast.html>



Frank Lomer – UBC Herbarium Research Associate

Updates for Illustrated Flora of BC

Illustrated Flora of British Columbia, Volume 8 (George Douglas, Del Meindinger and Jim Pojar, et al., 1998 - 2002) is currently being updated by Frank Lomer with contributions from numerous botanists from across North America and beyond. The update includes several new additions to the BC flora as well as deletions and name changes. Corrections to keys, descriptions, ranges and illustrations are also planned. The ultimate goal is to produce a second edition of the BC Flora in a single volume well-bound field guide with a good drawing and accurate map along-side each species description. The effort, expertise and persistence of the late George Douglas will never be replaced, but it is hoped a collaborative effort among several BC botanists and plant enthusiasts, and certainly anyone else who has something worthwhile to contribute, will produce a good result.

Currently the first part of the update has been prepared (partially available online; <http://www.for.gov.bc.ca/hre/becweb/resources/codes-standards/standards-species.html>) and the second part is nearing completion. So far about 174 taxa have been added and 31 taxa have been deleted from the flora.

Among the new species recently discovered in the province are: *Phippisia algida* (Ice grass), *Oxyopolis occidentalis* (Western cowbane), *Hieracium glomeratum* (Yellowdevil hawkweed), *Carex granularis* (Limestone-meadow sedge), *Parapholis*

incurva (Curved hard-grass), *Lasthenia glaberrima* (Smooth goldfields), *Bulbostylis capillaris* (Densetuft hairsedge), *Polygonum patulum* (Red knotweed), and *Elatine brachysperma* (Short-seed waterwort).

Among those species recently excluded because of reidentification or lack of vouchers are: *Galium multiflorum*, *Astragalus spaldingii*, *Oxytropis arctica*, *Douglasia alaskana*, *Primula stricta*, *Ribes montigenum*, *Linanthus harknessii*, and *Che-nopodium urticum*.

As always there are far too many name changes to mention.

Funding for this project has been provided by the Ministry of Forests and Range under the direction of Del Meidinger.



Mike Cheney – Plant checklist for Haida Gwaii

I am an amateur botanist living up on the Queen Charlotte Islands/Haida Gwaii. Let me begin by admitting that my interest in plants is multi-dimensional, scattered and somewhat disorganized; nearly everything about them interests me. That is one of the luxuries of the amateur and it is one I am determined to enjoy. Nevertheless, there is good reason to think in an organized way about our botanical treasures alongside of the pure enjoyment they bring.

Reading Calder and Taylor's groundbreaking study of our local flora provoked and inspired my interest in the locally rare flora of the Islands and how it fits into the floristic history of the Northwest. Over the last 10 years or so, I have come to the conclusion that many of our locally rare plants appear to be herbaceous parallels to the "Hypsithermal treeline" in the central and western Canadian Arctic, they represent popula-

tions that have persisted since they established themselves during times when the climate was either significantly cooler or warmer than it is at present. Calder and Taylor collected many of these plants, but more are being discovered as time passes.

One of the problems that always arises when you pursue this sort of interest is getting good information about plant populations in remote areas like the Queen Charlottes. During the past two years, I have been working with members of the staff of Gwaii Haanas National Park Reserve and Haida Heritage Site on compiling a plant checklist for Haida Gwaii. We are attempting to sort through all of the available information about the presence of particular vascular plant taxa and come up with a unified list of all of the plant taxa collected on the Islands. The Vascular Plant Herbarium at the University of British Columbia has been an extremely valuable resource in this work. Along with several other herbaria, it allows us access to crucial information about the presence and distribution of numerous taxa on the Queen Charlotte Islands. Without this sort of resource, the type of work that we are trying to do would not be possible. As a result of visits to UBC, a number of new taxa were added to our checklist and some were removed due to re-identifications by botanists who had annotated UBC collections. Several of these have me again pondering the place played by Haida Gwaii as one of the storehouses of botanical diversity through the ups and downs of ancient changes in the climate.

The list will be completed in the summer of 2007, but I hope that before the ink is too dry on the pages, we will already have new, interesting collections to report from the Queen Charlottes.



E-Flora

E-Flora BC could not exist today without several additional key resources that were made available to us. Several institutions provide the data that drives the E-Flora maps. Thanks go to our supporting partners--the Royal BC Museum, the Canadian Museum of Nature, the BC Ministry of Forests, the Devonian Museum of Alberta and the UBC Herbarium for providing key databases.

E-Flora BC Developments 2006 and 2007

Brian and Rose Klinkenberg, E-Flora Founders and [UBC Herbarium Research Associates](#).

Development on E-Flora has continued in 2006 and 2007, and new features have been added that considerably increase the power of the atlas. More work is yet to be done as we have more components still to add. As always, E-Flora development is dependent upon having a programmer available to make additions and changes, and finding funds to hire one.

New improved photo gallery:

In the photo gallery, new search features have been added that allow users to search the gallery by typing in a species scientific name or English common name, or by selecting a genus name or photographer name from a drop down

list. The most significant feature, however, has been the addition of the ability to create your own photo gallery. This allows users to select species from anywhere in the gallery and display them side by side. This is a valuable feature that improves the use of the gallery for identification purposes. It allows users to compare similar looking flowers or plants side by side or in a group.

Non-Vascular plants added:

This round of programming for E-Flora also saw the addition of non-vascular plants to E-Flora. We now have atlas pages for bryophytes, lichens and algae (seaweeds), and fungi will be added soon. Note that only half of the lichens are entered at the moment. Trevor Goward is reworking the Lichens of BC, and when available that will eventually replace our current information. At the moment, for all other non-vascular plants, the species information is based on existing books. So the species that have atlas pages represent only a portion of the total number of species found in BC.

Additional atlas pages will be added for remaining species once species information becomes available. Because there are many missing atlas pages, we have added a sort feature in the right hand column of the "search results" page (see the Atlas page column). Clicking "Atlas

Page" link allows users to view only those species with atlas pages. Leaving it as the default allows users to view the entire list for BC.

Links between E-Flora and E-Fauna

During the same period, E-Fauna BC (efauna.bc.ca) has been developed and the two atlases are now being linked. For example, for animals such as butter-

flies, we are now developing deep links from each species food plant to the atlas page for that plant in E-Flora.

New Mapping being developed

Using new, powerful, GIS mapping software we are redeveloping our interactive maps with a consistent style and presentation, and overlapping information layers, for both E-Flora and E-Fauna. The new maps will be clear and easy to use, and, importantly will be very easy to update or change. This mapping should appear in E-Flora in April. The new map software allows easy development of complex legends, and the addition of many data layers.

The future and our wish list

We still plan to add a public level interactive key for vascular plant identification to E-Flora. The key has been developed and now needs the associated computer programming to allow it to be incorporated. This key, when done, will allow users to work with flower colour and plant size and location as an aid to identifying their plant. The end result will be a display of photos for species that meet the criteria used.

In the interim, however, users can already partially search by colour.

If a colour appears in a plant name (such as 'yellow'), users can type in yellow in the common search boxes in the main search page or in the quick search boxes, as well as in the photo gallery search feature, and they will get a list of all species with yellow in the common name.



UBC HERBARIUM WELCOMES VOLUNTEERS!

Learn valuable skills and contribute to the Herbarium's important collections including Vascular Plants, Algae, Lichens, Bryophytes and Fungi!

If you have an artistic sense, try mounting herbarium specimens, or improve your knowledge of plant identification and geography by helping us enter data for E-Flora, the Electronic Atlas of British Columbia.

Come check out UBC herbarium located in the Biosciences Bldg., 5th Floor, 400 wing, Room 5470 and talk to a staff member if you are interested in volunteering.

Or email us

ubc.herbarium@ubc.ca

**And, check out our web site
www.botany.ubc.ca/herbarium**



UBC Herbarium
3529-6270 University Blvd.
Vancouver, BC, V6T 1Z4
Canada

POSTAGE

UBC Herbarium and Botanical Garden presents:

**PRESSED PLANTS: CREATING BOTANICAL ART FROM
YOUR GARDEN**

**March 15, 2008, 10am-2pm at UBC Botanical Garden Reception Centre
Instructor: Linda Jennings, Herbarium Collection Manager**

Pressed flowers and foliage can become beautifully framed botanical art. It is also a wonderful way to display and enjoy the beauty of your Garden beyond the spring and summer, preserve a botanical keep-sake as a memory from a vacation destination, or create a unique gift. In this course participants will learn the history & purpose of botanical collections, observe the tools & techniques for successfully preserving plant specimens, participate in an out-door collecting demonstration, and create unique pieces of botanical art.

Cost: \$33 UBC Botanical Garden Member, \$40 General Public

Advance registration is required by email at botg@interchange.ubc.ca, phone at (604) 822-3928, or visit our offices at 6804 SW Marine Drive between 8:30 AM and 4:00 PM on weekdays. Please have your credit card information and your Garden Membership number (if applicable) available.

* Cancellations and no-shows will be refunded but a \$5 service charge will be applied

