Bryophyte Sampling and Inventory Techniques:
How to find the rare and unusual species
January 7 and 8, 2015
By Jim Shevock, California Academy of Sciences

Bryophytes as the first lands plants are a remarkable evolutionary group. They contain about 20,000 species worldwide and occupy all environments except marine. Yet, they are rarely appreciated. One of the reasons for this is their generally small size, lack of showy features (like flowers) and being perceived as some type of ‘lower plant’. Here in California, over 650 mosses and 150 liverworts have been documented. New additions to the California bryoflora are being discovered as more landscapes across the state are being surveyed.

Since the days of Bolander in the 1860s, many California botanists during their careers have collected bryophytes. However, most vascular trained botanists have not added measurably to the herbarium record to catalog the California bryoflora. This is, in part, based on the exceedingly random event when a bryophyte catches the eye of the collector and it is then added among the other seed plants being collected. Few vascular plant collectors have been trained in the proper methods to ‘collect’ and ‘document’ a bryophyte sample and transform it into a high quality herbarium specimen. This factor alone can determine whether a voucher sample is obtained from the field or not. The most critical factor why bryophytes are under-collected is from a lack of awareness of actually ‘seeing’ how bryophytes partition the available habitat. Inventory efforts for bryophytes requires a completely different sampling scale and methodology than used for documenting vascular plants since even a few inches away can actually represent a considerably different bryophyte community. Due to the small size of most bryophytes, they can easily be overlooked if not systematically sampled. Another factor has been the lack of more localized bryophyte identification manuals to aid in identification of specimens. Fortunately, new bryophyte identification guides and picture books like “California Mosses” published in 2009 are becoming available to fill this need. With a bit of field training, vascular plant trained botanists can readily make this transition and therefore can make significant advances toward bryophyte inventories and floristic studies. Also, with experience, many bryophytes can be recognized to the species level in the field. However, some taxa require microscopic examination to be sure of the species identification. Therefore, small bryophyte voucher specimens are nearly always required. It is also critical then that these samples be processed as a permanent record as a herbarium specimen with a high-quality and informative label provided with each specimen.

With increasing appreciation of the role bryophytes perform in ecosystem function coupled with requirements under NEPA and CEQA to address rare species, botanists are in need of developing additional inventory and sampling skills to recognize bryophytes that are either rare or species of special concern.
This session will offer classroom lecture, demonstration, and field exercises. Participants will need a hand-lens. A pocket-sized field notebook (preferably of water repellent paper) is also recommended. We will not be using compound ‘scopes as a general identification process during this course, but rather, utilizing both hand-lens and dissecting ‘scopes to be able to recognize key features and determine if a moss has been previously collected while doing a survey. The goal is to be able at the end of the course to be more effective and efficient in conducting bryophyte inventories, methods in enhanced data capture, and learn to distinguish microhabitats. The “California Mosses” book (Malcolm et al. available for purchase from CNPS) and the California moss catalogue, species keys, and liverworts and hornworts (Madroño 51: 1–269; 53: 89–197, available from the California Botanical Society) will be useful references during this course.

Jim Shevock is a retired botanist with the US Forest Service and US National Park Service who is now affiliated with the California Academy of Sciences. He has been a bryophyte researcher for the last 15 years and has collected bryophytes throughout the world. He co-authored the “Contributions toward a Bryoflora of California” with Dan Norris in 2004.

This workshop will meet Wednesday January 7 and Thursday January 8, 2015 from 9:00 to 4:30 in Holt Hall room 129 at CSU, Chico. For the field portion of the workshop on Wednesday and Thursday to Bidwell Park participants will be responsible for their own transportation. Carpooling is encouraged. Note: The field practicum occurs rain or shine so bring appropriate gear. Please come prepared with lunch and water. The registration is $180.00 personal, $220.00 business ($160.00 for members of the Friends of the Herbarium), $100.00 student (only 2 seats at this price). Please register in advance; class size is limited to 16 participants. For more information about this workshop content please contact Jim Shevock at jshevock@calacademy.org.

For more information about workshop registration please contact the Friends of the Herbarium at epurvis@csuchico.edu or 530-898-5356.
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Workshop registration form

Please make your check payable to “Friends of the Herbarium” and mail to:

Friends of the Herbarium
California State University, Chico
Chico, CA 95929-0515

Name__________________________________________________
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Meesia triquetra photo by Carl Wishner
Resources:


The above three items can be obtained through the California Botanical Society web site at www.calbotsoc.org/bryoflora.html


The above two books of superb photographs can be obtained through the California Native Plant Society on-line store: www.cnps.org


*Helodium blandowii* photo by Martin Lenz