Course Focus
BIOO 435 - Plant Systematics
Matt Lavin

Students in Range Science, Land Resources, and the various Biology degree options often have to learn how to identify plant species as part of their studies of vegetation and restoration. BIOO 435 is therefore designed to introduce to such students upwards of 200 of the most common plant species that inhabit riparian, shrub-prairie, and disturbance-prone settings in Montana. Because nearly 3,000 plant species occur in Montana in such habitats, the course is also designed to familiarize students with how to use taxonomic keys so that they can leave the course being able to potentially identify the many plants species previously never seen. In order to use taxonomic keys successfully, however, students have to know how to sight identify, at least to some degree, a given plant not just to the species, but also to the genus or family. This is why the 200 or so common Montana plant species are introduced in BIOO 435. The ability to sight-identify these to the family, genus, and species level actually facilitates the use of taxonomic keys on unknown plant specimens. Such ability helps to create mental landmarks in the otherwise difficult and bumpy landscape of the world created by taxonomic keys. Without such mental landmarks, taxonomic keys are practically impossible to use. The taxonomic keys used in BIOO 435 are those in the book, “Vascular Plants of Montana” by Robert Dorn (1984). During the next year or two, this book will be replaced by “The Flora of Montana” by Peter Lesica.

Photograph of the very common and native Vicia americana, American vetch, which grows in open dry sites and, like other member of the genus Vicia, has a predilection for disturbance-prone or frequently disturbed sites. The genus Vicia is one of the few dry-site inhabiting viney herbs in Montana (evinced in part by the leaves that terminate in tendrils).

Students meet once a week on Monday afternoons. Confining the class to this time often enables people with jobs to take the course; for example, those who work for government or environmental consultant agencies. The noon hour “lecture” is spent introducing the plant families and genera that will be studied that afternoon. Relevant plant families and genera are typically collected that morning in the field and are brought in for display during lecture. For lab, students are given about 15 plant specimens that have been pressed and dried during the summer when the plants were in flower. The afternoon is then spent partly indoors preparing a reference set of plant species for that day, as well as outdoors, where students can see the relevant plant species in fall conditions.

Photographs of all of these species are taken so that the 3-dimensionality and close-ups of flowers, fruits, and other diagnostic traits can be readily accessed via a collection on www.flickr.com. These photographic collections include sets for local sites in Bozeman, such as Burke Park (http://www.flickr.com/photos/plant_diversity/sets/72157620805880377/) and the Gallagator Trail (http://www.flickr.com/photos/plant_diversity/sets/72157620806308215/). These photos are augmented by a collection of about 200 plants species given to the students during the semester. Students can opt to make a taxonomically organized reference collection from these specimens which can be taken with them at the end of the semester. Such a collection is, or should be, invaluable to those students working on aspects of Montana vegetation.

Photograph of a close-up of the flower detail of Vicia americana. The wing petals (top and bottom) enclose the keel (center), which in turn houses the reproductive parts. This floral morphology has a bilateral symmetry that is unique to the legume family, Fabaceae (or

It is my hope that students who leave BIOO 435 will be able to make first-hand observations of the plant world and realize for themselves that there is not much of a difference between native and introduced plant species and that introduced species often rarely become problematic weeds. With nearly 3,000 plant species in Montana alone, it is difficult for any one of these species, or even a small subset, to gain an advantage over the others.