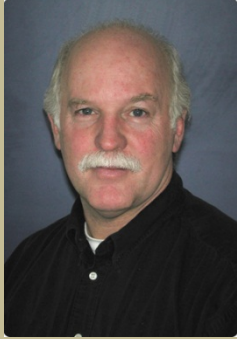


Course Focus

BIOO 465 - Insect Identification - Mike Ivie



Students working with insects have to be able to identify them from among the bewildering array of possibilities. When you realize that there are more beetle species alone than all the vascular plants together and insect genera with important pest species may have nearly 3,000 species, the scale of this problem becomes apparent. Unlike small groups of animals like mammals, birds and fish, there are no species level guides to insects. The point of this class is therefore to allow family-level identification, not based on memorization, but on skill with the tools used by insect systematists everyday to solve the puzzle of “What in the world is that?” At the end of the semester, students are responsible for being able to place any of the 95,000 species of North American insects into the correct one of 698 families. Therefore, the faint of heart do not take Insect Identification. The majority who do are Entomology graduate students, with a significant number of undergraduate Entomology minors. A few brave souls from other fields are always welcome.

BIOO 465 is designed to provide students an entrée into the world of insect evolution and taxonomy. The lecture emphasizes the phylogenetic relationships of the insect Orders, and prepares the student to use evolutionary patterns as a basis for recognizing unknown species when they encounter them. These lectures are based on the text Evolution of the Insects by Grimaldi and Engel, as well as current journal literature. The lab utilizes a teaching collection of over 10,000 specimens of some 400 families of insects and related terrestrial arthropods from all over the world, and provides an introduction to using keys to identify them. For this task, the text is the 7th edition of Borror and DeLong's Introduction to the Study of the Insects by Triplehorn and Johnson. Specialist guest instructors provide in-depth expertise in both lecture and lab work, most notably by Dr. Justin Runyon of the USFS, who teaches the notoriously difficult Diptera (flies) module.

Given that every student in BIOO 465 will spend a very, very large number of hours at a dissecting scope during the semester, it is important that quality optics are available. In Insect Id, each student is assigned a Wild M3C dissecting scope with 16X oculars, and a fiber optic illuminator, giving them the tools needed for professional level taxonomic determinations. A Wild double-headed teaching scope allows one-on-one instruction of difficult character interpretation.

Students meet for three lectures and three lab periods each week. In addition, the lab is open for extended hours for those who wish to utilize it. It is rare for a student to not take advantage of those extra hours.

Maintaining the quality of the teaching collection in an on-going task. We are quite proud of this resource, which has many rare groups never handled or even seen in classes in far larger entomology programs. It is impossible to have students use

these delicate specimens without damage. Since every student has already been through Kevin O'Neill's BIOC 262 Introduction to Entomology, they have already learned to handle specimens safely, but accidents are inevitable. Material in the collection is derived from research trips made throughout Montana, North America and to some extent, the world. It is far easier to see characters on a 1 cm long thrips from New Zealand than a 1.5 mm long one of the same family from Montana, so the broad base of this collection is critical to the quality of the class. New specimens are added constantly, but there is always a need for better and additional representatives.

It is my goal that every student who comes through Insect Identification is confident of their ability to handle the challenge of dealing with insect biodiversity. Our students have an established reputation for excellence that allows them to succeed in both immediate careers and further academic training in top programs.