ENTOMOLOGY BSPM 423/523

Evolution and Classification of Insects

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Objectives

Course objectives include principles of systematic entomology, speciation, phylogeny, and evolution; modern techniques in insect taxonomy; description, illustration of insects and preparation of identification keys; phylogeny, classification and biology of the orders of North American insects; non-insect arthropods; use of identification keys for adults; major sources of literature. A collection of adult insects is required.

Texts and Special Teaching Aids

Required Text:

Triplehorn, C. A. and N.E Johnson. 2005. Borror and Delong's An introduction to the Study of Insects. 7th Edition. Thomson Brooks/Cole. Belmont, CA.

Reference Texts:

- Arnett, R.H., Jr. American Insects. 2nd Edition. CRC Press, Boca Raton, Florida. 2000.
- Grimaldi, D. and M. S. Engel. Evolution of Insects. Cambridge University Press. 2005.
- Marshall, S. A. Insects. Their Natural History and Diversity. Firefly Books. 2006.
- Mayr, E. and P.D. Ashlock. Principles of Systematic Zoology. 2nd Ed. New York, NY. McGraw-Hill. 1991. 475pp.
- Merritt, R.W. et al. 2008. An Introduction to the Aquatic Insects of North America. 4th Ed. Dubuque, IA. Kendal Hunt Publishing Co., Dubuque, Iowa
- Resh, V. H. and R. T. Carde. Encyclopedia of Insects. 2nd Edition. Academic Press. Elsevier Science, Amsterdam. 2009.

SYLLABUS - LECTURE

1. Introduction; history of systematic entomology.
2. Taxonomic categories; criteria of species; old and new species concepts.
3. Infraspecific categories; classification of higher taxonomic categories.
4. Types of insect collections; identification procedures.
5. Taxonomic characters and procedures.
6. Morphological description of an insect.
7. Preparation of keys and illustrations.
8. International Code of Zoological Nomenclature (ICZN) Part I.
9. ICZN Part II. Code of Ethics.
10. Role of natural selection in evolution. Factors influencing the effectiveness of selection.
11. Geological time table and arthropods. Geological history of insects. Fossil records.
12. Different concepts on the phylogeny of arthropods and insects.
13. Others. Major faunal regions of the world.
14. Phylum Arthropoda
15. Review of the orders

Field trips: A Saturday of choice.

A review of the Higher Classification (Phylogeny) of a Group of Insects
(10 page maximum)

Select a group of insects, could be at the order, family, subfamily, tribe or generic level.

Brief summary of procedures
1) Literature review
2) Provide summary of the classification/phylogeny of the group

Insect Collection

10% of this course is an insect collection. Each person will turn in a collection. The collection must include the following taxa:

Collembola	1 family
Thysanura	order
Ephemeroptera	1 family
Odonata	2 families
Orthoptera	5 families
Dermaptera	1 family
Isoptera	1 family
Plecoptera	1 family
*Phthiraptera	order
Thysanoptera	1 family
Hemiptera	10 families
Neuroptera	2 families
Coleoptera	10 families

Hymenoptera	10 families
Trichoptera	1 family
Lepidoptera	5 families
Diptera	10 families
*Siphonaptera	order

Organization, diversity, effort, and proper techniques will be important.
* Special Credit