

ENT 601- 2005
ADVANCING SYSTEMATICS AND CLASSIFICATION-
STUDENT LECTURE AND DISCUSSION OF CURRENT CONTENTIOUS ISSUES

Each student is required to design and present a lecture on a current systematic topic (see suggestions below). You may chose your own topic given my approval. Lectures should be 15 minutes and present the following sections: an introduction which outlines the history of the issue and current contentions, data that support each side of the issue, assessment of analysis of the data, and assessment the authors' conclusions. Discussion lead by the presenter will follow and occupy the remaining 10 minutes of class. Lectures should utilize visual aids (overheads, slides, chalkboard drawings) to illustrate and emphasize important concepts. Before lecture the presenter should provide the class with a pertinent question and an extended bibliography. You will be graded on presentation content (50%), lecture delivery (30%) and discussion leadership (20%).

Below are references that provide an introduction for each topic. Everyone should read these before lecture so to facilitate the topic discussion. These readings will be available in labeled folders and usual places.

Who was Karl Popper?

Wiley, E.O. 1975. Karl R. Popper, Systematics, and Classification: A Reply to Walter Bock and Other Evolutionary Taxonomists. *Systematic Zoology* 24: 233-243.

Popper, K.R. 1996. Chapter 1. Conjecture and Refutations: The growth of scientific knowledge. London: Routledge.

Linnean nomenclature

Schuh, R.T. (2000) Chapter 2 Biological Systematics, Principles and Applications, Cornell University Press, Ithaca, NY.

Mayr and Ashlock (1991): Chapter 14.

Phylogenetic classification: end of rank?

DeQueiroz, K. and J. Gauthier. 1992. Phylogenetic taxonomy. *Ann. Rev.Ecol.Syst.* 23:449-480.

Nixon, K.C. and Carpenter, J.M. 2000. On the other "phylogenetic systematics". *Cladistics.* 16:238-318.

(Diptera, Strepsiptera): Reality or Fiction?

Whiting et al. 1997. The Strepsiptera problem: Phylogeny of the holometabolous insect orders inferred from 18S and 28S ribosomal DNA sequences and morphology. *Systematic Biology*. 46: 1-68.

Huelsenbeck, J.P. 1997. Is the Felsenstein Zone a Fly trap? *Systematic Biology* 46: 69-74.

Are Cloven beasts monophyletic?

Thewissen, J. 1994. Phylogenetic aspects of cetacen origins: A morphological prespective. *Journal of Mammalian Evolution*. 2:157-184.

Gatesy, J. 1998. Molecular evidence for the phylogenetic affinities of Cetacea. In *Advances in Vertebrate Paleobiology*. J. Thewissen, Ed.), pp. 63-111. Plenum, New York.

Can large phylogenies be resolved?

Hillis, D.M. 1996. Inferring complex phylogenies. *Nature* 383:130-131.

Purvis, A. and D.L.J. Quicke. 1997. Building phylogenies: Are the big easy? *Trends Ecology and Evolution*. 12: 49-50.

Are species figments of the imagination?

Suggested readings TBA.

Fossil evidence and hominoid species boundaries.

Suggested readings TBA.

Do gene trees reflect species trees?

Brower et al. 1996. Gene trees, species trees, and systematics: A cladistic perspective. *Annu. Rev. Ecol. Syst.* 27:423-50.

Maddison, WP. 1997. Gene trees in species trees. *Syst. Biol.* 46: 523-536.

DNA taxonomy: Good bye microscope?

Tautz, D., Arctander, P., Minelli, A., Thomas, R.H. and Vogler, A. 2003. A plea for DNA taxonomy. *TREE*, 18:70-74.

Lipscomb, D. Platnick, N. Wheeler, Q. 2003. The intellectual content of taxonomy: A comment on DNA taxonomy. TREE 18: 65-66.

Value of Systematic collections.

Mayr and Ashlock. 1991. Chapter 12. In *Principles of Systematic Zoology*. McGraw Hill, New York.

Suarez, A.V. and N.D. Tsutsui. 2004. The value of museum collections for research and society. Bioscience 54: 66-74.