Government of India
Ministry of Environment, Forest& Climate Change
ZOOLOGICAL SURVEY OF INDIA
Andaman and Nicobar Regional Centre
Port Blair-744 102, A & N Islands

SYLLABUS - TAXONOMY

Chapter 1:

Historical Perspective of Taxonomy - Biological classification - Branches and applications - Binomial Classification - Definition and relation with taxonomy - Taxonomic characters, Taxonomic history, biogeography and systematics - Nomenclature, checklists, and faunal surveys - Phylogenetics and Molecular Systematics - Conservation and Taxonomy.

Chapter 2:

Concepts of Evolution, Theories of organic evolution, Lamarckism, Darwanism, Neo Darwinism and Modern synthetic theory; *Types of speciation*: Allopatric, Sympatric, Parapatric and peripatric, Reproductive Isolation - Origin, patterns and mechanism. Species concepts: species category, different species concepts, subspecies and other infra-specific categories. Theories of biological classification, hierarchy of categories; *Population Genetics*: Hardy-Weinberg law of genetic equilibrium, Natural selection, Mutation, Genetic Drift, Migration, Meiotic Drive, Molecular Evolution, Gene evolution(molecular clock), Evolution of gene families.

Chapter 3:

Origin of Higher Categories: Phylogenetic, gradualism and punctuated equilibrium, Major trends in the origin of higher categories, Micro and macro evolution, Molecular population genetics, Pattern of changes in nucleotide and amino acid sequence, Ecological significance of molecular variations (genetic polymorphism), Evolutionary Genetics & Speciation, Biological mechanism of genetic incompatibility. *Structure and Function of Invertebrates and Vertebrates*: Origin of Metazoa, Organisation of Coelom, Locomotion, Nutrition and Digestion, Respiration, Excretion, Osmoregulation, Nervous system; *Scope and Importance of Taxonomy*: Biodiversity and Conservation, Medicine, Research, Agriculture. Taxonomic impediments and problems to overcome, Ethics in Taxonomy.

Chapter 4:

Introduction to Biodiversity and Conservation Biology - Adaptation and Biodiversity - Diversity of Living Organisms - Animal Diversity: Invertebrates & Vertebrates -Research issues in Ecology and Evolutionary process - Habitat: Ecological Niche, Niche construction - Community assemblage - Island biogeography - Meta-population Biology - Macro-ecology

Chapter - 5

Lepidoptera; Classification of moths; Evolution and systematics; Differences between butterflies and moths; Distribution and diversity; Moths of economic significance; Ecological importance; Significance to humans; Census Techniques; Field survey methods; Forest ecosystem; host plants; Life cycle; Insect Pests; Moths & Pollination; Effects of artificial light on moths

SUGGESTED READINGS

Arora, G. S. 2000. Studies on some Indian Pyralid species of Economic importance, Part-1. Zoological Survey of India, Occ. Paper 181: 1-154.

Arora, G.S. and I.J. Gupta 1979. Taxonomic studies of some of the Indian non-mulberry silk moth (Lepidopters : Saterniidae). *Memoirs of Zoological Survey of India* 16: 1-63.

Barlow H.S. 1982. *An Introduction to the Moths of South East Asia.* Malaysian Nature Society, Kuala Lumpur.

Barlow, H.S. and I.P. Woiwod 1989. Moth diversity of a tropical forest in Peninsular Malaysia. *J. Trop. Ec*ol. 5: 37-50.

Barnes, R.D. Invertebrates Zoology, III edition. W.B. Saunders Co. Philadelphia

Bhumannavar B.S., P. Mohanraj, H.R. Rangnath, T.K. Jacob and K. Bandyopadhyay 1991. Insects of agricultural importance in Andaman and Nicobar Islands. *CARI Research Bulletin* 6: 1- 49.

Chapin, F. S, Matson, P.A. and Mooney, H.A. 2002. Principles of Terrestrial Ecosystem Ecology. New York: Springer. ISBN 0-387-95443-0.

Davies, N B., Krebs, J R., and West, S.A., 2012. An Introduction to Behavioral Ecology, 4th ed. Oxford: Wiley-Blackwell.

Hampson, G. 1894. *The Fauna of British India including Ceylon and Burma: Moths*, Vol. 2: Moths 2. Arctiidae, Agrostidae, Noctuidae 609 pp. Taylor and Francis Ltd., London.

Hampson, G. 1895. *The Fauna of British India including Ceylon and Burma: Moths*, Vol. 3: Moths 3. Noctuidae (cont.) to Geometridae 546 p. Taylor and Francis Ltd., London.

Hampson, G. 1896. *The Fauna of British India including Ceylon and Burma: Moths*, Vol. 1: Moths 4. Pyralidae 594 pp. Taylor and Francis Ltd., London.

Hampson, G.F. 1892. *The Fauna of British India including Ceylon and Burma: Moths*, Vol. 1: 527 pp., Taylor and Francis Ltd., London.

Holloway, J.D. 1983. The Moths of Borneo, Family Notodontidae. *Malayan Nature Journal*, 37:1-107.

Holloway, J.D. 1985. The moths of Borneo: family Noctuidae, subfamilies Euteliinae, Stictopterinae, Plusiinae, Pantherinae. *Malayan Nature Journal* 38: 157-317.

Holloway, J.D. 1987. Macrolepidoptera diversity in the Indo-Australian tropics: geographic, biotopic and taxonomic variations. *Biological Journal of the Linnaean Society* 30: 325-341.

Holloway, J.D. 1988. *The Moths of Borneo: Family Arctiidae, Subfamilies Syntominae, Euchromiinae, Arctiinae; Noctuidae misplaced in Arctiidae* (Camptoloma, *Aganainae*). 101pp. Kuala Lumpur, Southdene.

Hyman, L.H., The invertebrates, Nol. I.protozoa through Ctenophora, McGraw Hill Co., New York.

Jagerstein, G., Evolution of Metazoan life cycle, Academic Press, New York & London.

Mayr, Ernst 1991. Principles of Systematic Zoology. New York: McGraw-Hill, p. 159.

Michener, Charles D., John O. Corliss, Richard S. Cowan, Peter H. Raven, Curtis W. Sabrosky, Donald S. Squires, and G. W. Wharton (1970). *Systematics In Support of Biological Research*. Division of Biology and Agriculture, National Research Council. Washington, D.C. 25 pp.

Parker, T.J., Haswell W.A., Text book of Zoology, Macmillan Co., London.

Simpson, G.G., Principle of animal taxonomy, Oxford IBH Publication Company.

Wilkins, J. S. *What is systematics and what is taxonomy?*. Available on http://evolvingthoughts.net