

BIODIVERSITY AND CONSERVATION BIOLOGY (M.Sc., 2008 – 2009)

Core Theory

UNIT - I

Characterization of Biodiversity: Definitions of the following terms: - Biodiversity, Domesticated Biodiversity, Agrobiodiversity, Introduced Biodiversity and Native Biodiversity. Components of Biodiversity: - 1) **Ecosystems** – Forests, Wetlands, Grasslands and Mangrove ecosystems. Classification of Habitats – Ecoregions, Biogeographic biomes (Udvardy), Life zone classification (Holdridge). 2) **Species Diversity** – α , β and γ diversity. Endemic species and patterns of distribution with special reference to India. 3) **Genetic diversity** – Assessing biodiversity, RFLP, RAPD, Allozymes, PCR.

UNIT - II

Magnitude, distribution and measuring of Biodiversity: Current estimates of Biodiversity. Megadiversity countries. Biodiversity indices and sampling techniques. Inventorying and Monitoring biodiversity.

UNIT - III

Threats to Biodiversity: Habitat degradation and fragmentation. Overexploitation. Alien Invasive Species and their Impact. Extinction of species; past episodes of extinctions. Threatened species. Concept of IUCN Red Data List Categories. Climate Change and its impact on Biodiversity.

UNIT - IV

Valuing Biodiversity : Biodiversity values. Biocentrism and Ecocentrism. Assessing the Economic value of the Biodiversity. Biodiversity and Intellectual Property Rights.

UNIT - V

Conservation Genetics: Factors affecting Genetic variations. Population Viability. Effective population size and its estimation.

UNIT - VI

Conservation Approaches: *In situ* and *Ex situ* approaches. Ecoregions (WWF), Biosphere Reserves (UNESCO), Protected Areas (IUCN), Hotspots (CI), WCMC. International and National legislations and conventions on biodiversity – CBD, NBA, CITES and TRAFFIC. Protected Areas of India, Biosphere Reserves of India and community approach to conservation. Restoration Ecology.

Suggested Reading

- BELL, P. R. AND A.R. HEMSLEY. 2000. Green Plants Their Origin and Diversity. (2nd Edition). Cambridge University Press, United Kingdom.
- DAVIS, S.D., V.H. HEYWOOD, AND A.C. HAMILTON, (Eds.). 1995. Centres of Plant Diversity: A Guide and Strategy for their Conservation. Vol. 2. Asia, Australia and The Pacific. Published by The World Wide Fund For Nature(WWF) and IUCN - The World Conservation Union. Information Press, Oxford, U.K.
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- GROOM, M.J., G.K. MEFFE, & R.C. CARROLL (Eds.) 2005. Principles of Conservation Biology. Sinauer Associates, Inc. Publishers, Massachusetts, U.S.A.
- HEYWOOD, V.H. 1992. Global Bio-Diversity Assessment. UNEP. Cambridge University Press.
- KATE, K. T. & S.A. LAIRD. 2002. The Commercial Use of Biodiversity Access to Genetic Resources and Benefit – Sharing. Earthscan Publication Ltd. London.
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- KOTHARI, A., N. SINGH, AND S. SURI, (Eds.). 1997. People and Protected Areas: Towards Participatory Conservation in India. Sage Publications India Pvt. Ltd. New Delhi.
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- LOVEJOY, T.E. & L. HANNAH (Eds.). 2006. Climate Change and Biodiversity. TERI Press, New Delhi
- MACE, M., A. BALMFORD & J.R. GINSBERG (Eds.). 1988. Conservation in a changing world. Cambridge University Press, Cambridge
- MARGULIS, L., AND K.V. SCHWARTZ. 1988. Five Kingdoms: An Illustrated Guide to the Phyla of Life on Earth. Second Edition. W.H. Freeman And Company. New York.
- MINISTRY OF ENVIRONMENT AND FORESTS. 1994. Conservation of Biological Diversity in India: An Approach. Government of India. New Delhi.
- PRIMACK, R. B. 2000. A Primer of Conservation Biology. (2nd Edition). Sinauer Associates, Inc. USA.
- PRIMACK, R. B. 2006. Essentials of Conservation Biology (4th Edition). Sinauer Associates, Inc. USA

PULLIN, A.S. 2002. Conservation Biology. Cambridge University Press, United Kingdom

RODGERS, W.A., H.S. PANWAR & V.B. MATHUR 2000. Wildlife Protected Area Network in India: A Review. Wildlife Institute of India Dehradun.

SABARWAL, V., M. RANGARAJAN AND A. KOTHARI. 2000. People, Parks & Wildlife. Towards Coexistence. Orient Longman, New Delhi.

UNEP. 1992. Convention on Biological Diversity. United Nations Environment Programme, Nairobi.

WILSON, E.O, (Ed.). 1988. Biodiversity. National Academy Press. Washington, D.C.

WORLD CONSERVATION MONITORING CENTRE. 1992. Global Biodiversity: Status of the World's Living Resources. Chapman and Hall. London.

WORLD WIDE FUND FOR NATURE - INDIA. 1992. India's Wetlands, Mangroves, and Coral Reefs. New Delhi.

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