

INSTITUTE OF WILDLIFE SCIENCE

Syllabus

Post Graduate Diploma In Biodiversity, Wildlife Conservation and Management (PGDBWCM)



UNIVERSITY OF LUCKNOW

SYLLABUS
POST GRADUATE DIPLOMA IN
BIODIVERSITY, WILDLIFE CONSERVATION AND MANAGEMENT

Preamble:

In these days of diversification, super-specialization and competition, graduates from any field of Biological Sciences find it difficult to stay within their pure stream of Biology subject and make relevant use of the education they had taken with so much love and interest. There are a large number of professions in which the knowledge gained during graduation in Biological Sciences, can be applied, such as in the fields of Biodiversity conservation, Conservation action, Wildlife Biology, Eco-tourism and Environment education. But an undergraduate in Biological Science lacks the skills to convert the ideas and concepts, learned in the conventional Biology syllabi, into action and therefore needs further training to become a good manager/trainer.

Many Governmental, Non-Governmental Organizations, Corporates and Institutions run programmes for Biodiversity conservation and Nature Conservation awareness. These programmes need many trained manpower to meet the programme objectives. Post graduates Diploma holders who are trained and attuned to the field requirements would find ready career opportunities both at national and international levels.

With the increasing popularity of Wildlife Biology, Eco-tourism and allied fields like wildlife and adventure (sport) based tourism, the existing travel agencies, resorts and chains of hotels find it difficult to satisfy the needs of information, assistance and guidance expected by their clientele. Additionally, with increasing demands of environmental education, schools, colleges, government and private bodies (Corporates) are augmenting their interest in conservation activities, sometimes even investing crores of rupees in ameliorative programmes under the Corporate Social Responsibility strategies.

Eco-tourism and conservation have a great deficiency of qualified personnel, who can guide, lead or organise tours and other programmes into the realm of Nature. This course intends to develop such qualified professionals with skills, information and know-how, so as to step into high-end jobs or become entrepreneurs, while sticking to the basic field of Biological Sciences.

Objectives:

- To generate qualified students who can directly get jobs in the allied fields of Biodiversity, Conservation and Wildlife Management;
- To generate qualified postgraduates diploma holders who can be part professional organizations working in the field of conservation and environment protection.
- To generate a team of field experts who can take up jobs related to the environment in educational institutions.
- To generate a skilled post graduates diploma holders who can undertake research in the field of Biodiversity, Wildlife biology and Nature conservation.
- To provide an alternate avenue to Biology graduates to specialize as “environmental entrepreneurs” in areas such as Environmental audits, Environmental education, Ecotourism etc.
- To create awareness about Biodiversity and Nature Conservation.

Eligibility: Graduate in any stream, other eligibility according to admission norms of University of Lucknow.

Seats : 24+6 (sponsored candidates from any Institute, NGOs, Govt. department etc.) =30 Candidates

Duration: 1 Year (2 Semester=6+6 month)

Selection: Merit based

No. of Lectures: 40 lecture/ paper

No of Practical Period: 3 practicals of 2 lecture/week

Core Faculty: Post graduate degree in the subject of Wildlife Biology/ Conservation Biology/ Zoology/Life Science/ Animal Science with PhD or NET/SET

Visiting Faculty from Universities, Governmental Organisation & Research Institutes: The visiting faculty will be form a post equivalent to that of assistant professor/ Scientist level with Ph.D. and not less than 5 years of research/ field experience.

**Post Graduate Diploma in Biodiversity, Wildlife Conservation and Management
(PGDBWCM)**

**SYLLABUS IN BRIEF
PGDBWCM; Semester – I**

| Paper | Code | Lectures | Marks |
|---|--------------|------------|------------|
| Biodiversity & Biogeography : Global, Indian and Natural History | PGDBWCM 501 | 40 | 100 |
| Planning and Execution of Field surveys & Technology in Field Biology | PGDBWCM 502 | 40 | 100 |
| Planning and Implementing Conservation programmes | PGDBWCM 503 | 40 | 100 |
| Practical and Project Report | PGDBWCMP 504 | 120 | 50 |
| TOTAL | | 240 | 350 |

PGDBWCM; Semester – II

| Paper | Code | Lectures | Marks |
|---|--------------|------------|------------|
| Protected Areas, Sustainable Development and People's Participation in Their Sustenance | PGDBWCM 505 | 40 | 100 |
| Environment Monitoring and Environment Audits | PGDBWCM 506 | 40 | 100 |
| Applications of Information Technology in Field Biology | PGDBWCM 507 | 40 | 100 |
| Practical and Project Report | PGDBWCMP 508 | 120 | 50 |
| TOTAL | | 240 | 350 |

Note: Field Visits may also be included in Semester I and II and their reports will be assessed.

SYLLABUS IN DETAIL

NOTE:

- While teaching, examples from both plants and animals should be covered, wherever applicable.
- Case studies (Indian & foreign), wherever applicable should be discussed as a part of the syllabus
- Ensure that students are in touch with latest developments especially with respect to civil society's movements, Government policies, International agreements etc.

SEMESTER I THEORY

□PGDBWCM 501: Biodiversity & Biogeography: Global, Indian and Natural History

Unit-I

- What is biodiversity?
Types of Biodiversity
Climatic Zones and Biodiversity
Biodiversity as a natural resource
- Global Biodiversity and Indian Biodiversity
Zones of Faunal distribution
Major protected areas & their importance
Major Biodiversity areas of the world
Biodiversity Hot Spots

Unit- II

- Basic Taxonomy
An overview of types of classification
Classification of bacteria, algae, fungi and plants (major families only)
Classification of Protozoans, Non-chordates (major classes with insects up to orders) and Chordates (major orders)

Unit-III

- Biomes of the World
Threatened species
Natural History of Flora & Fauna of India- Major flora & Fauna
Methods of recording Natural History of a place
Red Data Book and its significance
Resident, Migrant, Vagrant species

Unit-IV

- Urban Biodiversity and Agricultural conservation
Biodiversity in cities & towns
Concept of opportunistic species

Species adapted to Human environs
Anthropological factors in species dispersal
Strays and feral populations
Conserving species of Economic significance
Significance of gene banks and germ plasm conservation
Seed Banks & Artificial seeds in conservation
Conservation of Live Stock species /varieties
Conservation of economically important aquatic species

□PGDBWCM 502: Planning and Implementation of Field surveys

Unit-I

- Field surveys & observation
Sampling methods and identifying study sites
Different methods of transacts & quadrates
Techniques of field observation
Camouflages & Observation stations

Unit-II

- Recording & Evaluation of Data
Field note book and its records
Qualitative & Quantitative data
Field kit and its usage
Cameras, binoculars, field scopes, camera traps etc.
Different methods of recording field observations
Use of rings / tags, Color codes, Colour marking on animals

Unit-III

- Ethics in Field Studies
Dos & Don'ts in field studies
Regulatory permissions for field observations
Field collections & Field preservations

Unit-IV

- Statistical Methods (use examples from wildlife, forestry and field experimentation)
Identifying sampling sites & Determining sample size
Central tendencies & their applications
Working with qualitative data
Depiction of data (tables, charts, graphs, Pictograms, kite diagrams etc.)
Methods to evaluate significance of results
Concept of confidence interval & its application

□ PGDBWCM 503: Planning and Implementing Conservation programmes

Unit-I

Concept of carrying Capacity
Limiting factors in habitats
Improving carrying capacity in wildlife areas
Human – wildlife interactions
Conservation Vs protection
Concept of Buffer zones, Wildlife corridors
Strategies to reduce human-wildlife interactions

Unit-II

- Role of Government and NGOs in controlling human-wildlife interactions Socio-economic issues related to human-wildlife interactions
 - Wildlife parks, wildlife reserves, privately owned wildlife reserves & Biosphere reserves, Single species / single habitat based conservation programmes (e.g. Project tiger, Valley of flowers)
 - International conventions on conservation
 - Important International conventions & treaties on nature & conservation
 - India's role & contribution (including VISION 2040)
 - Ex- situ & in-situ conservation
 - Conservation Breeding (e.g. Vulture, Pygmy hog, Gharial etc.)

Unit-III

- Institutions and their role in conservation;
 - Zoos, Natural history museums & collections
 - Zoological survey of India, Botanical survey of India,
 - Forest research Institute, Survey of India,
 - Central Marine Fisheries Research Institute
- People and conservation
 - Traditional knowledge
 - Traditions & cultures
 - Women in conservation
 - Traditional Societies (e.g. Bishnois)

Unit-IV

- Role of NGOs in conservation
 - International NGOs;
 - UNEP, GEF, WCS, Bird Life International
 - Important NGOs in India & their contributions
 - WWF, ATREE, BNHS, WTI, Kalpavriksha etc.
 - Important NGO movements
 - Chipko movement, Narmada Bachavo Aandholan, Pani Panchayats, Seed Movement etc.

Semester I Practical

Note:

- Field visits will be integral part of the Practical. Visits to nearby Zoo, Museum, Forest, seashore, Nursery, Aquaria or any other relevant site must be arranged.
- The report of these visits will be submitted as part of the Practical work.

PGDBWCMP 504

1. Using photographs / paintings / coloured drawings identify and study the classification, characteristics & ecological role of characteristic species (representative species only) from;
 - Protista – protozoans
 - Non-chordates – major classes (Insecta – upto orders)
 - Chordates – major orders
 2. Using photographs / paintings / coloured drawings identify and study the classification, characteristics & ecological role of characteristic species (representative species only) from;
 - Monera – bacteria, cyanobacteria, spirichets
 - Protista – algae of various types
 - Fungi (upto classes) – funguses, molds, mushrooms, yeasts, mildews, smuts
 3. Study of Morphological features of a fish (e.g. Mackerel, Tilapia)
 4. Study of morphological features of a bird (e.g. Pigeon)
 5. Study of social casts / types (use diagrams / photographs) in ; Honey bee, ants, termites
 6. Identification and study of venomous snakes, action of their venom and first aid for snake bites; Cobra (spectacled & monocled), Common krait, Banded krait, Russell's Viper, Saw scaled Viper, Pit vipers (Bamboo, Green, Malabar)
 - Study of Fish Scales (lateral side of Body) from at least six different Marine and Fresh water fishes. Make low power microscopic observations and draw diagrams to depict the diagnostic and distinctive features of each scale type.
 - Estimate primary production using water samples from different aquatic habitats.
- Using suitable diagram / picture identify zonations in a pond ecosystem and study the species distribution.
 - Using suitable diagram / picture identify zonations in a sea-shore ecosystem and study the species distribution.
 - Study of some pioneer communities in succession; Lichen and their types, mosses and their types, coral and their types.
 - Application of transacts and quadrants in Simulated pictures / photographic sheets for data collection. Record & tabulate the data.
 - Using a suitable hand held camera photograph the following (to record diagnostic features). Record the camera settings and take 5" X 7" prints on three different papers; Butterfly / Moth, House fly, Dragonfly, a caterpillar, Fresh fish (from market) e.g. Mackerel, Hilsa, Rohu, catfish.

SEMESTER II THEORY

□PGDBWCM 505: Protected Areas, Sustainable Development and People's Participation in Their Sustenance

Unit-I

- Management of Protected areas
 - Principles of wildlife management
 - Wildlife management techniques
 - Habitat management
 - Plantations, nesting places
 - Nesting materials, Hides & shelters
 - Census & enumeration of species
 - Prey-predator ratio

Unit-II

- Improving carrying capacity
 - Water holes, salt licks, stall feeding,
 - Controlled grazing, controlled fire
 - Culling & translocation
 - Dealing with Human –Wildlife conflicts
 - Compensating losses
 - Regulating forest usage (e.g. grazing at Keoladeo / Gir,
 - Fishing in Sunderbans, Mahua collection in Kanha)

Unit-III

- People's participation in managing protected areas
 - Integrating Local Community in conservation
 - (e.g. Kaziranga, Eagle's Nest)
 - Training & skill development of local human resource
 - Interpretation Centers & Interpretation to visitors
 - Hospitality & Conducted tours
 - Resource sharing & income sharing
 - Case studies of success stories:
 - (e.g. Ranthambor, Periyar, Lakswadweep, Van samitis)

Unit-IV

- Eco-tourism
 - Scope of Eco tourism in India
 - Hospitality & Logistics in Eco-tourism
 - Planning and executing Eco-tourism
 - Customized Eco-tours (e.g. Bird watching, Adventure Tourism, Agro-tourism)
 - Local community's participation in Eco-tourism
 - Public awareness & Interpretation towards environment

□PGDBWCM 506: Environment Monitoring and Environment Audits

Unit-I

- Monitoring Environment

- Abiotic parameters to be monitored for various types of habitats
- Keystone species & Indicator species
- Continuous & seasonal monitoring

Environmental Journalism

- Investigating environmental issues
- Important Governmental agencies
- RTI and its judicious use
- Interacting with affected people
- Mass media and its role

- e.g books – Silent spring, Small is beautiful
- Home (BBC documentary), Inconvenient truth
- Reporting Environmental issues

films –

- Environmental Audits &reporting

- Planning environmental audits
- Audit parameters: major biotic and abiotic factors
- Environment safety audits

Unit-II

- Environmental education Techniques

- Need & scope of Environmental Education
- Identifying Audience & their needs

- Children, General public, Decision makers

- Techniques in environmental education

- Class-room techniques (examples)

- Talks, Nature games, role playing, models, competitions, songs, drama, mass-media etc.

- Field techniques

- For e.g. Surveys, Street plays, demonstrations, Art

- Cultural practices, exhibitions etc.

Unit-III

- Habitat Ecology

- Types of Habitats & their major ecological factors

- Ecological Succession & climax ecosystems

- Maximizing usage of Habitat resources by populations

Habitat selection in animals

- Territoriality and Habitat utilization in animals

- Concept of niches, its realization & its continuity

Unit-IV

- Human – wildlife interactions
 - Conservation Vs protection
 - Concept of Buffer zones, Wildlife corridors
 - Strategies to reduce human-wildlife interactions
 - Role of Government and NGOs in controlling human-wildlife interactions, Socio-economic issues related to human-wildlife interactions
 - Wildlife Trade and Laws
 - Wildlife protection Act of India
 - CITES
 - TRAFFIC
 - RED Data Book
 - Measures to control poaching & wildlife trade
 - Regulations & Acts related to protected areas
- General concepts of Private forests, Reserve forests, Sanctuaries, National Parks, Wildlife reserves, Coastal Regulation Zone , Protected Areas Network

□PGDBWCM 507: Applications of Information Technology in Field Biology

Unit-I

- Computational needs in the field
 - Field computer & its applications
 - Using computers in field
 - Various field input devices
 - Managing data integrity & safety in field

Unit-II

- Radio-telemetry
 - Various restraining, capture techniques and types of cages for animals.
 - Various telemetry devices (including data loggers)
 - Ethics in telemetry applications
 - Limitations of telemetry observations
 - Applications of telemetry
 - e.g. Habitat usage, migration studies
 - “Digital” tagging & its applications

Unit-III

- Audiorecords
 - Various audio recording techniques
 - Sonogram and its evaluation
 - Applications of audio recordings
 - e.g. (Bird songs, Insect calls, Habitat usage by Bats, Marine mammals)

Unit-IV

- GIS and its interpretation
 - Principles and Practice of Geographic Information System
 - Satellite imageries and false colour imaging
 - GPS and its application in field
 - Preparation of field maps, vegetation maps

Semester II

Practical

Note: Field visits will be integral part of the Practical. Visits to nearby lake, pond, river, reserved forest, Buffer area of a reserve, inhabitations / settlements near wild life areas or any other relevant site must be arranged.

The report of these visits will be submitted as part of the Practical work.

PGDBWCMP 508

1. Using photographs / paintings / coloured drawings identify and study ecological role of characteristic animal species (major representative species only) of various Biomes.
2. Separate, mount and study the appendages of prawn; penaeid and non-penaeid.
3. Study of animal architecture (photographs / diagram / abandoned specimen); Hive of honey bee, nest of paper wasp, nest of potter wasp, Mount of termite, Nests of Weaver Bird and tailor bird.
4. Comparative study of mouth parts (preserved specimen / diagrams only); House fly, female Mosquito, Cockroach, Butterfly / moth, Bug, beetle.
5. Using photographs / paintings / coloured drawings identify and study distribution and ecological role of common bivalves and gastropods that occur along a sea-shore.
6. Identification, biology & ecological role of following introduced species;
Parthenium, Eichornia, Lantera camera.
7. On a phytoogeographic map of India locate & demarcate major sanctuaries / national parks.
8. Using a suitable camera fitted with a macro lens, take close-up photograph of the following (to record diagnostic features). Record the camera settings and take 5" X 7" prints on three different papers; Head of Cockroach, Eye of prawn
9. Compare and interpret given sonograms of bird calls (any two e.g. Courtship calls, Alarm calls).
10. Undertake a survey of Fishermen's village / Tribal village near forest. Use a suitable questionnaire (1) to record the extend of dependence of the community on the natural resource base, (2) to record their pattern of usage of the natural resource, (3) to document the anthropogenic influences on the ecosystem and (4) to suggest ameliorative measures including environment awareness programmes. Apply suitable Statistical tools for tabulating, representing and evaluating both quantitative and qualitative data obtained during the survey. Interpret the results and make a report.
11. Prepare a plan, itinerary & brochure for an eco-tour using simulated data provided (maximum three days & two nights, excluding travel);
 - a) A place of interest from Natural History – e.g. wildlife reserve

- b) A place of interest from Adventure Tourism – e.g. a riverine valley
 c) A place of interest from Agro-tourism – e.g. an organic farm
12. Collect an **abandoned** nest of a bird (made of twigs /grass preferably collected after the breeding season). e.g. Bulbul or Crow or Warbler. Carry out the following analysis;
 Record the weight of the nest. Gently separate the nesting material one by one and segregate them as per their lengths. Weight each length group separately and note their group total weights. Note down any cushioning material /artificial materials used. Make a frequency table of nesting material lengths & weights. Depict your observations using suitable statistical tools and evaluate your data. Make interpretations regarding preferences in nesting material.
 13. Study of Pugmarks: Make plaster cast of pugmark (e.g. of domestic cat or dog). From the plaster cast make measurements and record the same. Trace the pug mark using glass slab and make a record. Take measurements and keep a record. Study the applications of the same.
 If possible, repeat the experiment with Plaster cast of pug mark of Tiger / Leopard (take help from Wildlife authority to obtain plaster casts)
 14. Study of animal Tracks & signs using photographs or drawings. e.g. pugmarks, foot prints, tracks, claw marks, browse lines, dung mounts, regurgitates (e.g. owls), hair, scats, burrows, dens, nests etc.
 15. Prepare an audio-visual presentation to communicate conservation to the youth & general public on some environment issues (e.g. : Destruction of local biodiversity site like mangrove or sea shore or a forest patch, Human-wildlife conflict, Developmental activity that has potential threat to local biodiversity etc.)
 16. Design a self-guided trail for a nature reserve / biodiversity park and submit a report.
 17. Make an audio recording of a song bird. e.g., bulbul, magpie robin, sunbird. Observe and note the activity of the bird while recording the call. Make a sonogram of the recording.
 Analyze the call and correlate with the behavioral observations. Classify the call as advertisement call, territorial call, alarm call, courtship call etc.
 18. Using a hand held GPS instrument locate coordinates of a demarcated field site (example college campus).
 19. Prepare a ready reference data base of resources available in the **Public domain** that is useful in field. e.g. environment education films, charts & pictures, images, audio-visual presentations, reference articles, books, legal petitions, judgments etc. Make a report that will be ready reckoner.

QUESTION PAPER PATTERN

THEORY

Total Marks – 100

Total duration – Three hours

Total question – 05

Marks for each question – 20

Coverage of each question – each question will correspond to each unit taught in that semester

Compulsory questions – All five questions will be compulsory.

PRACTICAL

Total Marks – 50

Total duration – Five hours

Total questions – 05

Distribution of marks – Question No. 1, 2, and 3 –10 marks each (performance & results)

Question No. 4 – Reports of field visits – 15 marks

Question No. 5 – Viva voce –05 marks

SUGGESTED READINGS

| Sr. No. | Title | Author | Publisher | Year |
|---------|---|---|--|------------|
| 1. | Protected Area Update; Newsletter | ----- | Kalpavriksh Environment Action Group, Pune , India | Periodical |
| 2. | Zoos in India; Legislation, Policy, Guidelines and Strategy | ----- | Central Zoo Authority, New Delhi | 2007 |
| 3. | Wildlife ecology | Aaron, N.M. | W.H. Freeman Co. San Francisco, U.S.A. | 1973 |
| 4. | The Book of Indian Birds | Ali, Salim | Oxford University Press, Mumbai | 1997 |
| 5. | Wildlife Ecology, Conservation and Management | Anthony R.E. Sinclair, John M. Fryxell and Graeme Caughly | Blackwell Publishing, U.S.A. | 2006 |
| 6. | The Book of Indian Shells. | Apte, Deepak. | Oxford University Press, Mumbai. | |
| 7. | Colorful Atlas on Indian Wildlife Diseases and Disorders | Arora and BipulChakraborty B.M. | IBDC, Lucknow. | 2008 |
| 8. | Indian Wildlife Yearbook | Arora B. M. , Editor | AIZ & WV, Bareilly and | 2002 |

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|-----|--|-------------|--|------|
| | | | Central Zoo Authority, New Delhi | |
| 9. | Dietary Husbandry of Wild Mammalia | Arora, B.M. | AIZ & WV, Bareilly and CZA, New Delhi. | 2001 |
| 10. | Indian Wildlife Diseases and Disorders. | Arora, B.M. | | |
| 11. | Rehabilitation in free living wild animals | Arora, B.M. | AIZ & WV, Bareilly | 2007 |
| 12. | Reproduction in Wild Mammalia & Conservation | Arora, B.M. | AIZ & WV, Bareilly. | 2002 |

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|----------------|--|--|---|-------------|
| 13. | A Text Book of Developmental Biology | Banerjee, S. | IBD, Dehradun | 2001 |
| 14. | Remote Sensing for Hazard Monitoring and Disaster Assessment | Barett, E.C. and Anton Micallef | Taylor and Francis, London | 1991 |
| 15. | Statistics in Research | Bernard Ostle and R.W.Mensing | | |
| 16. | Wild Animals in Central India | Brander, A.A | Natraj Publisher, Dehradun. | |
| 17. | Method of Statistical Analysis | C.H. Goulden | John Wiley & Sons | |
| 18. | Environmental Impact Assessment | Canter, L. W. | Graw, Mc, , Hill Publication, New York. | |
| 19. | A Text Book of Agricultural Statistics | Chandel S.R.S., | AchalPrakashanMandir, Kanpur | 1999 |
| Sr. No. | Title | Author | Publisher | Year |
| 20. | Introduction to Geographic Information Systems, | Chang – Kang, Tsung | Tata McGraw -Hill Publishing Company Limited, New Delhi | 2002 |
| 21. | A guide to Chemical Restraint of Wild Animals. | Chowdhury, Sushant and Malik, Pradeep | Natraj Publishers, Dehradun. | |
| 22. | EIA – A Biography | Clark, B. D., Bissel, B. D. and Watheam, P. | School of Forestry and Environment, SHIATS Deemed University, Allahabad | |
| 23. | The Temple Tiger. | Corbett, Jim | Oxford University Press, New Delhi | 2007 |
| 24. | Asian Elephant, | Daniel, J.C. | Natraj Publishers, Dehradun | |
| 25. | The Book of Indian Reptiles and Amphibians | Daniel, J.C. | Oxford University Press, Mumbai. | |
| 26. | Resource and Environmental Economics | Fisher, A.C. | New York: John Wiley & Sons | 1979 |
| 27. | The conservation of plant biodiversity. | Frankal, Otto H., Anthony, A., Brown, D. and Burdon, Jeremy J. | Cambridge University Press | 1995 |
| 28. | Statistical Methods | G.W. Snedecor and W.G. Cochran | | |
| 29. | The Serengeti Lion | George B. Schaller | | |
| 30. | Fundamentals of Wildlife Management | Gopal, Rajesh | Justice Home, Allahabad, India. | 1992 |

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|----------------|---|------------------------------------|---|-------------|
| 31. | Encyclopedia of mammals | Grzimek | McGraw Hill Publishing House, New Delhi. | 1988 |
| 32. | Wild Animals, Their Minds and Manners | Hornaday, W.T. | IBD, Dehradun. | 1989 |
| 33. | Concepts in Wildlife Management | Hosetti, B.B. | Daya Publishing House, Delhi. | 1997 |
| 34. | Collection and preservation of animals | Jairajpuri M. S. | Zoological Survey of India | 1990 |
| 35. | Statistical Ecology | John A. Ludwig & James F. Reynolds | John Wiley & Sons | 1988 |
| 36. | Handbook of Environment, Forest and Wildlife Protection Laws in India | Justice Kuldip Singh | Natraj Publishers, Dehradun | 1998 |
| 37. | Biodiversity conservation in managed and protected areas | Katwal/Banerjee | Agrobios, India | 2002 |
| Sr. No. | Title | Author | Publisher | Year |
| 38. | Advances in Fish and Wildlife Ecology and Biology | Kaul, B.L. | | 1999 |
| 39. | A Vet in Wilderness | Khan Ali M. G. | Central Zoo Authority, New Delhi | |
| 40. | Modern Textbook of Zoology, Vertebrates. | Kotpal, R.L. | Rastogi Publications, Merrut. | |
| 41. | Remote Sensing and Image Interpretation | Lilleand, T.M. and Kieffer, R.W | John Wiley and Sons | |
| 42. | Wild Animals of India, Burma, Malaya and Tibet | Lydekker, R., | Natraj Publishers, Dehradun. | |
| 43. | Wildlife Crime | Menon, Vivek and Kumar, Ashok | Natraj Publisher, Dehradun. | 1999 |
| 44. | Wildlife Issues in a Changing World | Moulton, M. P. & J. Sanderson | St. Lucie Press | 1997 |
| 45. | A handbook of forestry. | Negi, S.S. | International Book Distributor, Dehradun. | 2005 |
| 46. | Biodiversity and its conservation in India | Negi, S.S. | Indus Publishing Co., New Delhi. | 1993 |
| 47. | Manual for Wildlife Management in India | Negi, S.S. | | |
| 48. | Fundamentals of Ecology | Odum, Eugene P | Natraj Publishers, Dehradun. | |
| 49. | Applied Anatomy of the Domestic Animals. | Ommer, P.A. and Harshan, K.R. | Jaypee Brothers Medical Publishers (P) Ltd., New Delhi. | |

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| 50. | Natural Resource Information for Economic Development | Orris C. Herfindahl | Baltimore: The Johns Hopkins University Press | 1969 |
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|----------------|---|---|---|-------------|
| 51. | Watching and Conserving | Oxford Anthology of Indian Wildlife | Oxford University Press, New Delhi. | |
| 52. | Aerial Photography and Image Interpretation for Resource Management. | Paine, D.P. | John Wiley and Sons. | |
| 53. | The Ecology of Wildlife Diseases. | Peter J. Hudson, Annapaola Rizzoli, Bryan T. Grenfell, Hans Heestrbeek and Andy P. Dobson | Oxford University Press, Oxford | 2002 |
| 54. | Book of Indian Animals. | Prater, S.H. | Bombay Natural History Society, Mumbai. | |
| 55. | Essentials of Conservation Biology | Primack, R.B. | Sinauer Associates, Inc. Sunderland, MA | 1998 |
| Sr. No. | Title | Author | Publisher | Year |
| 56. | Principles and Procedures of Statistics (with special reference to Biological Sciences) | R.G. Steel and J.H. Torrie | | |
| 57. | A Text Book of Agricultural Statistics | R.Rangaswamy | | |
| 58. | Birds of Wetlands and Grasslands | Rahmani, Asad R. &Ugra, Gayatri | Bombay Natural History Society, Mumbai. | |
| 59. | A Handbook of the Management of Animals in Captivity. | Ram BramhaSanyal | | 1995 |
| 60. | Hunting and Shooting | Rangarajan, Mahesh | The Oxford Anthology of Indian Wildlife. | 1999 |
| 61. | The ecology and evolution of animal behavior | Robert, A.W | Good Year Pub. Co. California, U.S.A. | 1979 |
| 62. | Wildlife management. | Robert, G.H. | W.H. Freeman and Co., San Francisco, U.S.A. | 1978 |
| 63. | The Care and Feeding of Infant Orphaned Wild Birds. | S.M.L. Grose. | IBD, Dehradun | |
| 64. | Remote Sensing: Principles and Applications | Sabbins, F.E., Freeman | | |

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|----------------|--|--|--|-------------|
| 65. | Manual of wildlife techniques for India. | Sale, J.B. and Berkmuller, K. | WII, FAO, Dehra Dun, India | 1988 |
| 66. | A Handbook of the Management of Animals in Captivity. | Sanyal, Ram Bramha | | 1995 |
| 67. | Indian Wildlife Resources Ecology and Development | Sharma, B.D | Daya Publishing House, Delhi | 1999 |
| | | | | |
| 68. | A New Approach to Linear Programming | Sharma, S.D. | Kedarnath, Ramnath and Co. Meerut | 1975 |
| 69. | Wildlife Ecology, Conservation and Management | Sinclair, Anthony R.E., Fryxell, John M. and Caughly, Graeme | Blackwell Publishing, U.S.A. | 2006 |
| 70. | Economics of PA's and its effect on biodiversity. | Singh and Vijaykumar. | APH Publishing Corporation, New Delhi. | 2001 |
| 71. | Text Book of Wildlife Management. | Singh, S.K. | IBDC, Lucknow. | 2005 |
| Sr. No. | Title | Author | Publisher | Year |
| 72. | Conserving India's Natural Heritage | Singh, Samar | Natraj Publication, Dehra Dun. | 1987 |
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