

SCHOOL OF LIFE SCIENCES

The School of Life Sciences comprising four departments, namely, Zoology, Botany, Biochemistry and Forestry aims at being an active centre for postgraduate teaching and research in frontiers of constituent subjects. The major specialization and thrust areas of activities are : Environmental Biology (Immunobiology, Endocrinology & Reproductive Physiology, Entomology, Genetics & Limnology) in Zoology; Forest Biology in the Department of Botany; Enzymology, Protein Chemistry, Medical Biochemistry, Immunology, Radiation and Molecular Biology, Betel-nut carcinogenesis, Drug delivery system, High Altitude Adaptation and Nitrogen Fixation in Biochemistry, and multidisciplinary areas of Forestry in the Department of Forestry.

In a small span of period, the academic departments have made a notable impact on the chosen areas of activities. Several faculty members of the School have won national awards and honours in recognition of their pioneering and excellent work in their respective fields. In the light of its accomplishment, the U.G.C. has awarded the second phase of DRS project under Special Assistance Programme to the Department of Zoology and other awards to other Departments as well.

Department of Botany

The Department is actively involved in teaching and research in priority areas of regional and national importance. Keeping the regional relevance in view, Forest Biology has been identified as the thrust area of research. During 23 years of its existence the Department has made valuable contribution in the field of Forest Biology and allied disciplines. The teaching programme of the Department is highly developed and the students passing out from here are occupying important positions in prestigious educational institutions, research organisations and other important sectors.

The Department is covered under Special Assistance Programme (SAP) of the U.G.C. Higher plant Ecology and Microbial Ecology have been identified as the thrust area under SAP. Other major areas of research in which the Department has made notable contributions are Plant Physiology, Experimental Morphology, Cytogenetics and Plant Taxonomy. Researches carried out in the Department have been published in prestigious national and international journals.

In order to improve the teaching standards in colleges and universities of the region, the Department is regularly conducting U.G.C. refresher courses. During 1996-97 alone about 20 lecturers from different states of North-Eastern region successfully completed the refresher course organised by the Department.

Head : Professor R R Mishra

Faculty :

Name and Degrees	Designation
R R Mishra, MSc, PhD (BHU)	Professor
R S Tripathi, MSc, (Agra), PhD (BHU)	Professor
Y S Chauhan, MSc, PhD (Agra)	Professor
P Tandon, MSc (Luknow), PhD (Jodhpur)	Professor
H N Pandey, MSc, PhD (BHU)	Professor
G D Sharma, MSc (Meerut), PhD (NEHU) on lien	Reader
R C Laloo, MSc, PhD (Gau) on lien	Reader
A K Misra, MSc, PhD (Meerut)	Reader
N K Chrungoo, MSc, PhD (Kashmir)	Reader
M S Dkhar, MSc, PhD (NEHU)	Reader
Y Kumar, MSc (Agra), PhD (NEHU)	Lecturer
L Kharlukhi, MSc (NEHU), PhD (IARI)	Lecturer
N Venugopal, MSc, PhD (Madras)	Lecturer
H Kayang, MSc, PhD (NEHU)	Lecturer
S Kumaria, MSc, PhD (NEHU)	Lecturer

Student Intake :

- (a) Enrolment Capacity : (M.Sc. = 20 , Ph.D. = Not fixed)
- (b) Actual Admission :

	SC		ST		Gen		Total
	Male	Female	Male	Female	Male	Female	
M.Sc. =	-	1	5	10	-	4	20
Ph.D. =	-	-	1	4	3	2	10

Degrees Awarded :

Ph.D.

1. Chrysanthemum Massar, "An Ecological Study on seed Mycotoxin in maize (Zea mays L.)". Supervisor, Dr. G.D.Sharma.
2. S.Paulsamy, "Studies on uptake and assimilation of nitrate nitrogen in common buckwheat (Fagopyrum esculentum Moench)". Supervisor, Dr. N.K. Chrungoo.
3. K.A.Joy, "Experimental taxonomy of Paphiopedilum Pfitz. of North-Eastern India". Supervisor, Dr. Yogendra Kumar.
4. Arnab Sen, "Electron Microscopy and Molecular Biology of Frankia". Supervisor, Dr. A.K. Misra.

Funds received from agencies other than NEHU/UGC.:

1. D.S.T. Govt. of India Rs. 1,00,000.00
2. D.B.T. Govt. of India Rs. 27,97,000.00
- Total = Rs. 28,97,000.00

Courses Conducted :

M.Sc:

Algae, Bryophyta & Pteridophyta; Gymnosperms & Plant Anatomy; Mycology & Plant Pathology; Plant Taxonomy & Biostatistics; Plant Biochemistry & Molecular Biology; Microbiology & Biotechnology; Genetics & Plant Breeding; Ecology & Environment; Plant Physiology; Morphology; Embryology & Differentiation; Ecosystem Analysis & Phytogeography.

Special Paper : (Plant Biotechnology/Applied Cell & Molecular Biology/Ecology & Management of Forest Ecosystem).

Seminar/Conference etc. :

Professor R.S.Tripathi (1) delivered the key note address on "Environmental protection with particular reference to Meghalaya" at the seminar on "Environmental Protection" organised by the Meghalaya Pensioners Association on 25th October, 1996 at the State Central Library, Shillong. He also delivered a special lecture on "The role of Botanical study in improving the environment"; (2) chaired the Inaugural Session of the "Experience-Sharing Workshop among NGOs on microplanning and Joint Forest Management" held at State Forest College, Burnihat during 4-5 March, 1997 and delivered a lecture on "Forest Ecosystem : Structure, function and approach of study". He also participated in the Workshop-cum-consultative meeting on "JFM in Meghalaya" held at NEHU, Shillong during 11-12 March, 1997. He chaired the inaugural session and delivered the key note address on "Joint Forest Management : Concept and Strategies for implementation".

Professor Y.S.Chauhan (1) presented a paper entitled "Solasodine yielding solanums in N.E.India : Prospects and Problems" at the International Workshop on "Prospects of Medicinal Plants" held at Y.S. Parmar University of Horticulture and Forestry, Solan during 4-9 November, 1996.

Professor P.Tandon (1) was one of the organisers of the National Symposium on "Role of Plant Biochemistry and Biotechnology in improving crop productivity" held at ICAR, Shillong during 18-20 March, 1997.

Dr. A.K.Misra (1) attended the International Symposium on Genetic and Biotechnology in Crop Improvement and presented a paper on "Molecular techniques in improvement of plant productivity with special reference to actinorrhizal symbiosis" during 14-16 February, 1997 at Meerut; (2) attended the National Symposium on role of plant Biochemistry and Biotechnology in improving crop productivity and presented a paper entitled, "Strategies to develop molecular signatures" held at ICAR, Shillong during 18-20 March, 1997.

Dr. Y.Kumar (1) attended the International workshop on "Plant Species Diversity Index data base for South Asia" held at NBRI,

Luknow during 3-7 March, 1997 and presented a paper entitled, "Date base of Indian orchids".

Visiting Professors/Fellows :

(1) Dr. Maria Angeles Rojo, STA Fellow, National Institute of Agrobiological Resources, Tsukuba, Japan visited the Department during 1-4 November, 1996 and delivered a lecture on "Ribosome inactivating proteins from plants".

(2) Prof. Y.P. Abrol, Plant Physiology Division, Indian Agricultural Research Institute, New Delhi visited the Department and delivered a series of lectures during 6-14 October, 1996 on nitrogen metabolism.

Publications :

Arunachalam, A., Maithani, K., Das, A.K., Pandey, H.N. and Tripathi, R.S. "Decomposition dynamics of *Quercus dealbata* Hook. f & Th. leaf litter in two regrowing sub-tropical humid forest stands in Meghalaya". Ecology, Environment and Conservation 2:87-91 (1996).

Arunachalam, A., Pandey, H.N., Tripathi, R.S. and Maithani, K. "Fine root decomposition and nutrient mineralization patterns in a subtropical humid forest following clear cutting". Forest Ecology and Management 86 (1-3) : 141-150 (1996).

Arunachalam, A., Maithani, K., Pandey, H.N. and Tripathi, R.S. "The impact of disturbance on detrital dynamics and soil microbial biomass of a *Pinus Kesiya* forest in North East India". Forest Ecology and Management 88 : 273-282 (1996).

Arunachalam, A., Pandey, H.N. and Tripathi, R.S. "Allocation and accumulation of starch in fine and coarse root biomass during recovery of three disturbed sub-tropical forest stands in North-East India". Acta Botanica Indica 23 : 49-53 (1995).

Barik, S.K., Tripathi, R.S., Pandey, H.N. and Rao, P. "Tree regeneration in a subtropical humid forest : effect of disturbance on seed production, dispersal and germination". Journal of Applied Ecology 33 : 1551-1560 (1996).

Borthakur, M., Sen, A. and Misra, A.K. "Immobilized *Frankia* spores remained viable on dry storage and on restoration to medium regenerated active colonies". Plant and Soil 181 : 127-231 (1996).

Changkija, S. and Kumar, Y. "Ethnobotanical folk practices and beliefs of the Ao-Nagas in Nagaland, India". Ethnobotany 8 : 26-30 (1996).

Chhetry, G.K.N., Sharma, G.D. and Mishra, R.R. "Effect of fungicides on the phylloplane mycoflora of french bean". Adv. in Plant Sciences 10:121-125 (1995).

Ishikawa, M., Tandon, P., Suzuki, M. and Yamaguishi Cimapi, A. "Cryopreservation of bromegrass (*Bromus inermis* Leyso) suspension cultured cells using slow prefreezing and vitrification procedures". Plant Science 120 : 81-88 (1996).

Kayang, H., Sharma, G.D. and Mishra, R.R. "The influence of isopod grazing on microbial dynamics in decomposing leaf litter of *Alnus nepalensis* D. Don". Eur. J. Soil Biol. 32 (1) : 35-39 (1996).

Maithani, K., Tripathi, R.S. "Species diversity of soil micro-fungi in humid subtropical forests of north-eastern India". J. Swamy Bot. Club 13: 63-66 (1996).

Maithani, K., Tripathi, R.S., Arunachalam, A. and Pandey, H.N. "Seasonal dynamics of microbial biomass C, N, and P during regrowth of subtropical humid forest in north-east India". Applied Soil Ecology 4 (1) : 31-37 (1996).

Rout, M.K. and Chrungoo, N.K. "Partial characterization of the lysine rich 280 KD globulin from common buckwheat (*Fagopyrum esculentum* Moench): its antigenic homology with seed proteins of some other crops". Biochemistry and Molecular Biology 40 : 587-595 (1996).

Sharma, J. and Chauhan, Y.S. "Establishment of In vitro raised seedlings of *Dendrobium* and *Paphiopedilum*". J. Orchid Society of India 9: 37-41 (1995).

Shukla, A.K. and Mishra, R.R. "Evaluation of some biocides against pathogen *Alternaria alternata*". Crop Research 12: 76-81 (1996).

Shukla, A.K., Sharma, G.D., Kumar, R. and Mishra, R.R. "Influence of fungicides on mycorrhizal association, seedling growth and enzyme activities in root region of *Pinus Kesiya* seedlings". J. Soil Biol. Ecol. 15 : 27-34 (1995).

Sinha, A.K., Chrungoo, N.K. and Rao, K.S. "Characterization of somatic embryogenesis in sandalwood (*Santalum album*)" In vitro Cellular & Developmental Biology 32 : 123-129 (1996).

Tawnenga, Uma Shankar and Tripathi, R.S. "Evaluating second year cropping on jhum fallows in Mizoram, North Eastern India : Phytomass dynamics and primary productivity". Journal of Bioscience 21 (4) : 563-575 (1996).

Tiwari, S.C. and Mishra, R.R. "Seasonal variation in dehydrogenase and urease activity in hill soils under grassland and forests". J. Indian Soc. Soil Science 43: 689-690 (1995).

Tiwari, S.C. and Mishra, R.R. "Nodulation status of *Alnus nepalensis* seedlings in pure stand". J. Tree. Sci 14 (2) : 49-54 (1995).

Tripathi, R.S., Pandey, H.N. and Tiwari, B.K. State of Environment of Meghalaya. Technical Report of the study sponsored by the Department of Urban Affairs, Government of Meghalaya. pp. 1-199 (1996).

Study Tour/Field Trip of students :

A Study Tour of the III Semester M.Sc. students was conducted during January-February, 1997 to Lucknow-Dehradun-Delhi under the supervision and guidance of Prof. Y.S. Chauhan and Dr. (Miss) M.S. Dkhar. The students acquainted themselves with the flora of the places of visit and also learned about the researches being undertaken at various research institutes located at Lucknow (National Botanical Research Institute, Indian Toxicology Research Institute, Central Drug Research Institute, Central Institute of Medicinal and Aromatic Plants, Birbal Sahni Institute of Palaeobotany, Lucknow University), Dehradun (Forest Research Institute, Botanical Survey of India), Haridwar (Gurukul Kangri University) and Delhi (Indian Agricultural Research Institute, Delhi University, National Bureau of Plant Genetic Resources).

Thrust Area of Research : Forest Biology.

Research Programmes/Projects :

One D.B.T funded project "Development of an embryogenic system of genetic improvement and mass propagation of Pinus Kesiya" has been undertaken by Professor P. Tandon. Amount of Grant : Rs. 42 lakhs (approx.)

Other Activities:

Professor R.S. Tripathi:

In pursuance of the interim direction of the Hon'ble Supreme Court Order dated 12th December, 1996 he was nominated as the Chairman of the "Committee on Identification of Forests in Arunachal Pradesh" constituted by the Government of Arunachal Pradesh. He was also nominated as a member to the "National Scientific Advisory Group for Research Programme" of the Ministry of Environment and Forests, Govt. of India and "Task Force for Biodiversity Conservation in Meghalaya" constituted by the State Government of Meghalaya.

Professor P. Tandon:

He has been elected Fellow of the National Academy of Sciences, India.

Dr. N.K. Chrungoo:

He was awarded the Biotechnology National Associateship by the Department of Biotechnology, Govt. of India, New Delhi, worked as a Visiting Scientist in the Centre for Plant Molecular Biology, School of Life Sciences, J.N.U., New Delhi for one year from January to December, 1996 and worked on cloning of genes coding for nutritionally rich seed storage proteins from crop plants.

One U.G.C. sponsored Refresher Course in Botany was conducted during November, 1996 (1st November - 21st November, 1996). Twenty college teachers attended this course.

Awards, Honours and Highlights of Achievements :

The publication entitled, "Spatial dispersion statistics and sequential sampling plan for leaf spot disease caused by *Colletotrichum lindemethianum* in french bean" by Chhetry, G.K.N., Mishra, R.R. & Sharma, G.D. has won the best research paper award of 1994 of the Indian Phytopathological Society, New Delhi.

A Regional Centre of National Afforestation and Ecodevelopment Board, Ministry of Environment and Forests, Govt. of India has been established at NEHU, Shillong largely through the efforts of the Department of Botany. Prof. R.S. Tripathi of the Department is the Coordinator of this Regional Centre.

The Department is covered under the DSA programme of the UGC. The Department has also been selected by the UGC for conducting refresher courses for college and university teachers.

Department of Bio-Chemistry

This Department started in 1982 with the objective to produce highly skilled personnels and researchers in multidisciplinary areas of biochemistry who could render their valuable services to the people of this region and improve the quality of life. Since its inception, it has offered courses like M.Sc. (Biochemistry) and M.Phil./Ph.D. programmes keeping in view various challenging and fundamental problems of biology and medicine. The main areas of research in this Department are Enzymology, Protein Chemistry, Medical Biochemistry, Immunology, Radiation and Molecular Biology, Betel-nut Carcinogenesis, Drug delivery System, High Altitude Adaptation and Nitrogen Fixation.

Our M.Sc./Ph.D. students compete successfully at National Entrance Test (NET) and GATE every year. Students of this Department have been placed in many important institutions of higher learning in India and abroad. Beside this, a number of national and international collaborative research programmes have been established by the faculty members. The major funding agencies in India like DST, CSIR and UGC have regularly funded major research projects. It has also contributed exceptionally good research publications in highly reputed international journals and the faculty have also authored/edited books and have contributed several book chapters.

Head : Dr R Sharma : Until 21st December 1996; Dr R N Sharan at present.

Faculty : Name and Degrees	Designation
R Lalthantluanga, MSc, PhD (Poona) on leave	Professor
A N Rai, MSc (BHU), PhD (Dundee)	Professor
R Sharma, MSc, PhD (BHU)	Reader
R N Sharan, MSc, PhD (JNU)	Reader
A Alam, MSc (AMU), PhD (Moscow)	Lecturer
D Syiem, MSc, PhD (NEHU)	Lecturer
A K Singh, MSc (Gorakhpur), PhD (Hyderabad)	Lecturer

Student Intake :

	M.Sc.	M.Phil./Ph.D		
(a) Enrolment Capacity :	10	Open		
(b) Actual Admission :				
	SC/ST/Gen	Male/Female		Total
M.Sc. -	0/ 6/ 3	8 / 1		9
Ph.D. -	0/ 3/ 2	5 / 0		5

Degrees Awarded :

Ph.D. :

1. Santanu Deb Choudhury, "Physicochemical and Kinetic Characterization of cathepsin B from goat spleen". Supervisors, Dr. R. Sharma and Dr. M.Y. Khan.

2. Donkumar Syiem, "Developmental regulation of chicken inorganic Pyrophosphatase". Supervisor, Dr. R. Sharma.

Funds received from agencies other than NEHU/UGC:

Rs. 28.5 lakhs from DST.

Courses Conducted :

M.Sc:

Chemistry, Introductory Biochemistry and Environmental Biochemistry, Enzymology, Biochemistry practicals, Genetics, medical Biochemistry, Biosynthetic Pathways, Biochemistry practicals, Techniques in Biochemistry, Physiological Chemistry, Bioenergetic Pathways, Biochemistry practicals, Molecular Biology, Microbiology and Immunology,

Special paper (Nitrogen Fixation), Biochemistry practicals.

M.Phil:

Biological Research Techniques, Biophysics and Physiological Chemistry, Cellular and Molecular Biology.

Seminar/Conference etc. :

Prof. A.N.Rai attended the International Symposium on Cyanobacterial Biotechnology, Sept. 18-21, 1996, Bharatidasan University, Tiruchirapali, India, and delivered plenary lecture

titled "Cyanobacterial Nitrogen Metabolism: Relevance in Agricultural Biotechnology". He also attended the symposium on Algal Biology and Biotechnology, BHU, Varanasi and delivered plenary lecture titled "Cyanobacterial Symbiosis: Nitrogen Fixation and Transfer of Fixed Nitrogen" and chaired a session.

Dr. R. Sharma attended FAOBMB symposium at Tokushima, Japan, July 29-31, 96 and chaired a session on Apoptosis and aging and also delivered a lecture on "Developmental and hormonal expression of adenosine deaminase in mice".

M.A. Borbhuiya and Dr. R. Sharma presented a paper titled "Physicochemical characterization of liver glucocorticoid receptor from pre- and post-weaned mice" in 65th Meeting of SBC (I) Nov. 20-23, 1996 at IISc, Bangalore.

Dr. R.N. Sharan conducted extension experiments on "Effects of Boron Particle Irradiation on Human and Rat Cell Lines" using heavy ions from Biobeam at Nuclear Science Center, New Delhi (July 1996).

Visiting Professors/Fellows :

Prof. H.N. Singh (September 1995 till date).

Publications :

Bergman, B., Gallon, J.R., Rai, A.N. and Stal, L.J. "Nitrogen fixation by non-heterocystous cyanobacteria". FEMS microbiol. Rev. 19 : 139-185 (1996).

Rai, A.N., Borthakur, M. and Paul, D. "Symbiotic Cyanobacteria: biotechnological applications". J. Sci. Industrial Res. 55 ; 742-752 (1996).

Sharan, R.N. "Association of betel nut with carcinogenesis: A Review" Cancer Journal 9 : 13-19 (1996).

Sharan, R.N., Schaffrath, R., Ialtanpuia and Schneeweiss, F.H.A. "Radiotoxicity of chronic ingestion of tritiated water on liver HMG proteins of Swiss albino mice" Proc. Ind. Natl. Sci. Acad. B62 : 5-10 (1996)

Sharan, R.N., Schneeweiss, F.H.A. and Feinendegen, L.E. "Neutrons affect ADP-ribosylation of proteins in human kidney T1-cells in vitro". Ind. J. Biochem and Biophys. 33 : 281-184 (1996).

Singh, A.K., Chakravarty, D., Singh, T.P.K. and Singh, H.N. "Evidence for a role of L-proline as salinity protectant in the cyanobacterium *Nostoc muscorum*". Plant Cell & Environment 19 : 490-494 (1996).

Singh, A.K., Chakravarty, D. and Singh, H.N. "Osmoregulation in the diazotrophic cyanobacterium *Nostoc muscorum*". Current Research in plant Sciences Vol II pp 63-70 (1996).

Syiem, D. and Sharma, R. "Purification and kinetic characterization of chicken liver inorganic pyrophosphatase". Ind. J. Biochem. Biophys. 33 :363-370 (1996).

Syiem, D. and Sharma, R. "Kinetic differences in liver inorganic pyrophosphatase during development of chick", in: Kumar, V. (ed) Aging: Indian Perspective and Global Scenario pp 455-458, Balaji Press, New Delhi (1996).

Thrust Areas of Research :

Enzymology, Medical Biochemistry, Nitrogen Fixation, Protein Chemistry, Betel-nut carcinogenesis and drug delivery system.

Research Programmes/Projects :

1. DST funded project to Dr. R.N. Sharan on "Involvement of Poly-ADP-ribosylation in cellular transformation", total grant approx. 14.8 lakhs.

2. DST funded project to Dr. A. Alam on "Liposome as vehicle for the presentation of tumour-associated antigen to the immune system", total grant approx. 13.7 lakhs.

Other Activities :

(A) Prof. A.N. Rai was awarded Young Scientist Award in Biotechnology, 1996 and was a Visiting Professor, Assam University, Silchar, Nov.25-Dec.10, 1996.

(B) Dr. R. Sharma was invited as one of the principal speakers at Fed. Asianic Oceanic Biochemistry and Molecular Biology symposium, July 29-31, 1996 at Tokushima University Japan. The title of his talk was "Developmental and hormonal regulation of mice adenosine deaminase".

(C) Dr. R.N. Sharan was Visiting Professor at KFA, Julich & DKFZ, Heidelberg, Germany, Jan-Feb, 1997.

Centre for Eco-Development

The hill regions of North East India are rich in biological and mineral resources. Scientific and planned exploitation of these resources are essential for improving the standard of living of the people and sustainable development of the area. The fragility of the hill ecosystems warrants utmost care while implementing developmental projects and therefore, an in-built mechanism for safeguarding the environment is essential. Eco-development is the right strategy for ensuring development of the region without adversely affecting the environment.

Since its inception, the Centre has been working towards creating data base on environmental issues necessary for planning

and implementation of development projects in the region. The publications brought out by the Centre are used by various governmental and non-governmental agencies involved in formulation, planning and execution of developmental projects.

Head : Dr B K Tiwari

Faculty :

Name and Degrees	Designation
Dr B K Tiwari, MSc (Gorakhpur), PhD (NEHU)	Reader

Funds received from agencies other than NEHU/UGC :

- (i) Society for Promotion of Wastelands Development New Delhi- Rs. 24,000/-
 - (ii) Government of India Ministry of Non-Conventional Energy Sources, New Delhi.- Rs. 4.5 lakhs.
 - (iii) M/S Lum Mawshun Mineral Private Limited, Shillong.- Rs.1.05 lakhs.
- Total = Rs. 5.79 lakhs.

Seminar/Conference etc. :

The Centre organised the following: in collaboration with the Regional Centre, National Afforestation and Eco-development Board, NEHU, Shillong.

- (i) Experience sharing Workshop among NGOs and VAs involved in afforestation and eco-development activities in North East India, 4-5 March, 1997 at Burnihat, Assam.
- (ii) Consultative Meeting Cum Training Programme on Joint Forest Management in Meghalaya 11-12 March, 1997 at Shillong.

Dr B K Tiwari:

(i) Presented a paper entitled "Use of Microbial parameters as indicators in monitoring of soil ecosystem functioning" at XII International Colloquium on Soil Zoology held at University College of Dublin, Ireland on 21-26 July, 1996; (ii) Presented a paper on 'Eco-restoration of forest ecosystems' at the Workshop on Experience Sharing among NGOs and VAs Involved in Afforestation and Eco-development Activities in North Eastern India on 4-5 March, 1997; (iii) served as a member of working group on "Policy and Legal Issues" during workshop on JFM in Meghalaya, 11-12 March, 1997.

Publications:

Tiwari, B.K. "Impact of Coal mining on ecosystem health in Jaintia Hills, Meghalaya". In: Ramakrishnan, P.S, Purohit A.N. Saxena,

K.G., Rao K.S. and Maikhuri, R.K. (eds) Conservation and Management of Biological Resources in Himalaya pp. 466-475; G.B.Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Almora and Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi (1996).

Tiwari, B.K. Barik, S.K. and Tripathi, R.S. "Sacred Groves of Meghalaya: Status and Strategies for their Conservation". A Report submitted to North Eastern Council, Shillong. (1995)

Research Programmes/Projects :

Preparation of Environmental Impact Assessment Report and Environmental Management Plan for Limestone Mining in Nongtra Village of Meghalaya, Sponsored by Lum Mawshun Minerals Private Ltd, Shillong. Budget Rs. 4.00 lakhs.

Other Activities :

During the year the Centre established a Consultative Group for Environmental Impact Assessment (CGEIA) under its aegis with the objective to conduct Environmental Impact Assessment of development projects.

(i) Dr.B.K.Tiwari worked in the Department of Soil Science, Institute of Arable Crops Research, Harpenden U.K. in the capacity of Rothamsted International Fellow w.e.f. 1st July 1995 to 31st July, 1996. His area of research was Microbial biomass: an indicator for monitoring of Soil ecosystem functioning. The work was presented in two International Conferences Viz, Chromium Workshop, Rome, Italy and International Colloquium on Soil Zoology, Dublin, Ireland; (ii) served as expert member to the IFAD team working for the formulation of the project on Sustainable Community Development of Uplands of North Eastern India; (iii) continued to be Member of National Support Group on Joint Forest Management constituted by the Ford Foundation and Society for Promotion of Wastelands Development, New Delhi.

Department of Forestry

The Department was established in 1990 to bring out highly skilled technical, extension and researchers in multi-disciplinary area of forestry for rendering valuable service to the people of this region. It is conducting research and extension programme to tackle the problem associated with North-Eastern region.

Head : Professor L K Jha

Faculty :

Name and Degree

Designation

L K Jha, MSc (Bhagal), PhD (LNM)

Professor

Fund received from agencies other than NEHU/UGC :

Ministry of Agriculture, Government of India under NWPRA sanction Rs. 3.60 lakhs (1996-97).

Publications :

Jha, L.K. Forestry for rural development, APH Publishing Corporation, New Delhi (1996).

Shifting Cultivation, APH Publishing Corporation, New Delhi (1997).

(ed) Natural Resource Management (Vol.I) Mizoram. Ashish Publishing House, New Delhi (1997).

"Need to adopt Tree-Greenhedge-Crop farming system under N L U P programme". in: Jha, L.K. (ed), Natural Resource Management, Vol.I, pp.162-186, Ashish Publishing House, (1997).

Jha, L.K. and Upadhyaya, K.K. "Financial viability of Tree-Greenhedge-Crop-farming system vis-A-vis Shifting Cultivation: A discounted cost benefit Analysis". in: Jha,L.K. (ed), Natural Resource Management, Vol.I, pp.187-2020, Ashish Publishing House (1997).

Lalramnghinglova, J.H. and Jha, L.K. "Prominent Agroforestry systems and important MPTs in farming system of Mizoram". Indian Forester. 122 (7); 25-31 (1996).

Upadhyaya,K.K. and Jha,L.K. "Role of tenancy in Mizoram and some measures of its control". Indian Journal of Regional Science Vol.XXVIII: 1-12 (1996).

Thrust Area of Research : Sustainable Hill Farming System, Ethnobotany, Estimation of biophysical problems associated with Hill Farming System.

Research Programmes/Projects :

Survey, collection, identification of Plants of - 1.80 lakhs ethanobotanical importance of Mizoram NWDPRRA, Govt. of India, Ministry of Agriculture.

To estimate soil and nutrients status of soil - 1.80 lakhs under different cropping system.

Other Activities :

1. The Department is providing technical guidance to the NGOs to motivate the farmers to adopt tree based farming system; preparation of project proposal for financial assistance from funding agencies.

2. The Department also publishes technical and extension reports in Mizo to create awareness among the farmers.

3. Professor L.K. Jha is appointed as member of expert team of soil, watershed and agroforestry ICAR, New Delhi.

Department of Zoology

The Department was established in 1974. In the last two decades, this department has made all round progress and acquired a position among the leading departments of NEHU and other universities of India. It offers specializations in all major disciplines of Zoology. The Department has been granted the second phase of DRS project under Special Assistance Programme by the University Grants Commission to undertake advanced research work in leading branches of Zoology. For the last many years, the Department has been selected by UGC for conducting Refresher Courses in Zoology for college and university teachers. Several research students have qualified NET and GATE. A large number of its students are holding important faculty positions in the colleges, universities and research institutions of the N.E. region and other parts of our country.

Head : Professor B K Sharma.

Faculty

Name	Degree	Designation
K Chatterjee, MSc, PhD (Kalyani)		Professor
A Raghvarman, MSc, PhD (Madras)		Professor
V Tandon, MSc, PhD (Panjab)		Professor
B K Sharma, MSc, PhD (Panjab)		Professor
B B P Gupta, MSc, PhD (BHU)		Reader
S B Prasad, MSc, PhD (BHU)		Reader
R N K Hooroo, MSc, PhD (NEHU)		Reader
B Kharbuli, MSc, PhD (NEHU)		Reader
N Saha, MSc, PhD (NEHU)		Reader
A Chatterjee, MSc (Burdwan), PhD (BHU)		Lecturer
A K Yadav, MSc (Agra) PhD (NEHU)		Lecturer

Student intake :

- (a) Enrollment capacity: 1. M. Sc. - 20
2. M. Phil.-10

(b) Actual Admission under the following headings:

	SC	ST	GEN	MALE	FEMALE	TOTAL
1. M.Sc.	0	15	5	9	11	20
2. M. Phil.	0	0	0	0	0	00
3. Ph. D.	0	4	0	3	1	04

Degrees Awarded :

Ph.D :

1. Malay Dey, "Studies on certain aspects of biochemical genetics in selected species of frogs from North-Eastern region of India". Supervisor, Prof. K. Chatterjee.
2. Anirudha Giri, "Studies on the effect of Cisplatin on malignant and normal cells : Preliminary investigations on Cisplatin combination chemotherapy". Supervisor, Dr. S.B.Prasad.

Courses conducted :

M.Sc. :

Cell Biology & Immunology; Molecular Biology; Animal Physiology; Biological Chemistry; Genetics and Developmental Biology; Functional Anatomy - II; Animal Ecology and Behaviour; Parasitology, Applied Entomology, Fish & Fisheries; Special Paper-I; Biosystematics & Evolution; Techniques in Biology and Biometrics; Special Paper - II. (Special Papers offered : Cell Biology & Immunobiology, Endocrinology and Reproductive Physiology; Entomology, Genetics, Limnology).

M.Phil. :

Animal Cytogenetics; Animal Parasitic Helminthology; Adaptational Physiology; Entomology; Freshwater Ecology; Basic Techniques in Biological Research.

Seminar/Conference etc. :

The Department organized the following refresher courses sponsored by the UGC (New Delhi) for college and university teachers:

1. "Recent Advances in Zoology - I" (9.10.96 to 29.10.96)
(Course Co-ordinator: Dr. N. Saha)
2. "Recent Advances in Zoology - II" (26.11.96 to 16.12.96)
(Course Co-ordinator : Dr. A. Chatterjee)
3. "Recent Advances in Zoology - III" (1.3.97 to 21.3.97)
(Course Co-ordinator : Dr. A.K. Yadav)

Faculty of the Department attended the following seminars/symposia/conferences etc.

1. Prof. K. Chatterjee attended All India Congress of Cytology and Genetics held at Chandigarh (November 22-25, 1996), and presented a paper entitled "Biochemical Genetics of Acid phosphatase and alkaline phosphatase in Chocolate Mahseer".

2. Dr. S.B. Prasad attended 4th International Symposium on metal ions in Biology and medicine held at Barcelona, Spain (May 19-22, 1996), and presented a paper entitled "Protective effect of Vitamin C on cisplatin induced mutagenicity".

3. Dr. R.N.K. Hooroo attended the National Conference on Electron Microscopy held at Jadavpur (December 5-7, 1996), and presented papers entitled "Scanning Electron microscopic studies of the morphology and distribution of the sensilla and cuticular structures on the proboscis of a male butterfly Graphium sarpedon (Lepidoptera-Papilionidae)"; She also attended National Symposium on Developmental Biology held at Utkal University (February 21-23, 1997). She delivered an invited lecture entitled "Variations in the mineral contents in the liver of the common frog, Ranalinnocharis during the post-breeding period" and presented a paper entitled "Morphological and histological changes of the normal neuroectoderm of the chick (allus domesticus embryo during normal development"

4. Dr. A Chatterjee attended the XX All India Conference and Symposia at Cancer Research Institute, Mumbai (January 13-15, 1997), and presented papers entitled "Delayed expression of lethal mutation in tumor cells that survive ionizing radiation in vivo" and "Role of glutathion in DNA repair".

Publications:

Giri, A. and Prasad, S.B. "Protective effect of vitamin C on cisplatin induced mutagenecity", in : Collery, P., Corbella, J., Domingo, J.L., Etienne, J. and Llobet, J.M. (eds) Metal Ions in Biology and Medicine, Vol. 4, pp. 306-308, John Libbey Eurotext, Paris (1996).

Gupta, B.B.P. and Mahanta, A. "Role of thyroidal and testicular hormones in regulation of tissue respiration in hibernating and non-hibernating species o f frogs". Current Science 72(5) : 326-330 (1997).

Gupta, B.B.P. and Mahanta, A. "Involvement of adrenal hormones in tissue respiration of sub-tropical hibernating and nonhibernating species of frogs". Indian Journal of Experimental Biology 35 : 244-249 (1997).

Kayang, H., Sharma, G.D. and Kharbuli, B. "The effect of isopod feeding activities on litter microbial population", Geobios 24 : 42-46 (1997).

Kharbuli, B. "Effect of different plants on life cycle of Pieris napi montana variety", Geobios 23 : 269-270 (1996).

Lyngdoh, R.D. and Tandon, V. "Surface topographical and ultrastructural studies of a caryophyllidean cestode, Lytocestus Indous (Lytocestidae)". Journal of Parasitology and Applied Animal Biology 5 : 67-74 (1996).

Ratha, B.K., Saha, N., Rana, R.K. and Choudhury, B. "Evolutionary significance of metabolic detoxification of ammonia tourea in an ammoniotelic fresh water teleost, Heteropneustes fossilis during temporary water deprivation", Evolution Biologica 8&9 : 107-117 (1996).

Roy, B. and Tandon, V. "Effect of root tuber extract of *Flemingia vestita*, a leguminous plant, on *Artyfechinostomum sufrartifex* and *Fasciolopsis buski* : A scanning electron microscopy study", Parasitology Research 82 : 248-252 (1996).

Roy, B. and Tandon, V. "Occurrence of *Orthocoelium dinniki* Eduardo, 1985 and *Orthocoelium parvipapillatum* (Stiles & Goldberger, 1910) Edoardo, 1985 among *Bos indicus* and *Ovis aries* in India". Journal of Bengal Natural History Society, N.S. 15 : 49-50 (1996).

Roy, B. and Tandon, V. "In vitro flukicidal effect of leaf extract of *Cannabis sativa* Linn. on the trematode *Fasciolopsis buski*". Indian Journal of Experimental Biology 35 : 80-82 (1997).

Saha, N., Dkhar, J., Anderson, P. M. and Ratha, B.K. "Carbamyl phosphate synthetases in an air breathing teleost, *Heteropneustes fossilis*", Comparative Biochemistry and Physiology 115B : 125-131 (1996).

Sharma, B.K. and Naik, L.P. "Results on planktonic Rotifers in the Narmada river (Madhya Pradesh, Central India)", in : Schimer, F. and Boland, K.T. (eds) Perspectives in Tropical Limnology, pp. 189-198, SPB Academic Publishing bv. Amsterdam, The Netherlands (1996).

Tandon, V. and Roy, B. "Stereoscan observations on the tegumental surface of *Catantropis indicus* Srivastava, 1935". Acta Parasitologica 41 : 115-119 (1996).

Study Tour/Field Trip of students:

Students of M.Sc.(Zoology) III Semester were taken on study tour by Prof. A. Raghavarman and Dr. B. Kharbuli for 19 days (January 18 to February 5, 1997). They visited several academic and research institutions in Bombay, Goa and Calcutta and collected marine and freshwater specimens for preparing field reports.

Thrust Area of Research : Environmental Biology.

Other Activities :

- (1) The Department was sanctioned the 2nd phase of DRS by UGC, New Delhi (Total Project Cost : Rs. 26 Lakhs).
- (2) Prof. B.K. Sharma was awarded the Fellowship of National Institute of Ecology (FNIE), New Delhi.
- (3) Prof. B.K. Sharma attended workshop on Electron Microscopy (November 18 - 20, 1996) at RSIC, NEHU, Shillong.