

SCHOOL OF LIFE SCIENCES

The School of Life Sciences presently consists of four Departments namely, Biochemistry, Botany, Forestry and Zoology. Two other Departments namely, Microbiology and Home Science are yet to start. This School is an active centre for post-graduate teaching and research in frontier areas of Biology. The major thrust areas of research activities include Immunology, Endocrinology, Reproductive Physiology, Limnology, Genetics, Forestry, Enzymology, Medical Biochemistry, Radiation Biology, Carcinogenesis and Nitrogen Fixation.

The Departments under this School have well qualified faculty members, actively involved in teaching and research, many of whom have an international reputation and collaborative research programmes in international research groups. They have won wide acclaim in their areas of research and have received several awards. The Departments of Botany and Zoology are currently being supported by UGC under the Special Assistance Programme (SAP) and COSIST, respectively. The graduates from this School are successful in obtaining good employment and research positions both nationally and internationally.

DEPARTMENT OF BOTANY

The Department of Botany was established in 1974. Since its inception, the Department has been conducting teaching and research in priority areas of regional and national importance. Forest Biology is the thrust area of research. During the past 26 years, the department has made valuable contributions in different disciplines of Forest Biology. The department is fulfilling the regional aspirations through its well developed teaching programme. The students passing out from the department are occupying important positions in prestigious educational institutions and research organisations, both in the NE region and the country.

The Department is covered under the Special Assistance Programme (SAP) of the U.G.C. The Department implemented the II phase of the programme at the level of DSA(1995-2000). The UGC review committee recommended the continuance of the programme for a further period of five years at the level of DSA. The thrust areas(s) identified by the UGC are: Ecology conservation and management of forests in North Eastern India, projecting the following task:- (i). Ecology of forest ecosystems (including Microbial Ecology) (ii). Genetic diversity of forest trees and Molecular Ecology (iii). Biology, Bio-technology and conservation of rare and endangered species and unexploited plants with potential economics values. The Department has also been extended assistance by the UGC for strengthening infrastructure under the Science & Technology Infrastructure Development Programme (COSIST). Ecology, Biodiversity and conservation in NE India are thrust areas of the COSIST programme.

Head : Professor H. N. Pandey

Faculty :

Professors : R. R. Mishra, M.Sc., Ph.D (B.H.U)

R. S. Tripathi, M.Sc., Ph.D. (B.H.U.)

P. Tandon, M.Sc., Ph.D. (Jodh)

H. N. Pandey M.Sc., Ph.D. (B.H.U)

Readers : A. K. Misra, M.Sc., Ph.D (Meerut)

N.K. Chrungoo, M.Sc., Ph.D. (Kashmir)

M. S. Dkhar, M.Sc., Ph.D (NEHU)

Lecturers : Y. Kumar M.Sc., Ph.D (NEHU)

L. Kharlukhi M.Sc. (NEHU), Ph.D. (I.A.R.I)

N. Venugopal, M.Sc., Ph.D (Madras)

H. Kayang M.Sc., Ph.D (NEHU)

S. Kumaria, M.Sc., Ph.D. (NEHU)

Student Intake: a) Enrolment capacity : M.Sc - 20,

b) Actual admission :	SC/ST	Genl.	Male/Female	Total
	16	4	9	11
				20

Degrees awarded :

Ph.D.

John Augustine, " Experimental Taxonomy and Bio-Diversity on Selected *Bulbophyllum* of North East India". Supervisor: Dr. Yogendra Kumar

Gopa Sarma, " Use of Molecular Characteristics in *Frankia* for Strain Identity". Supervisor: Dr. A. K. Misra.

Talijungla, " Effects of Heavy Metal on the Structure and Function of Ectomycorrhizae of *Pinus kesiya* Royle ex. Gordon". Supervisor: Dr. G. D. Sharma, Jt Supervisor : Dr. M. S. Dkhar.

Limasenla, " Studies on Indian Species of *Vanda* Jones Ex. R. BR with Respect to Experimental Taxonomy". Supervisor: Dr. Yogendra Kumar.

Funds received from agencies other than NEHU/UGC : DBT - Rs. 6.80 Lakhs, ICFRE - Rs. 1.00 Lakhs, DST - Rs.11.25 Lakhs, CSIR - Rs. 1.11 Lakhs, DST - Rs. 8.0 Lakhs, IIRS-DOS - Rs .3.69 Lakhs, Ministry of Environment & Forests, Govt. of India - Rs. 4.0 Lakhs.

Courses Conducted :

Core papers: 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 Papers: Forest Ecology; Microbial Ecology; Plant Biotechnology.

Seminar/Conferences:

Attended:

Prof. R. S. Tripathi participated in (i) the workshop on JFM and microplanning" held at Aizawl during April 12-13, 1999 and delivered a talk on "Joint Forest Management: an overview". (ii) Participated in the workshop on "Strategies for strengthening community forest management in north-east India" held at Shillong during 25-26 August, 1999 and chaired the Inaugural Session. (iii) Delivered an invited lecture on "Trends in plant population ecology in India" in the symposium on "Excitement and challenges in Botany" organised during the course of the 87th session of Indian Science Congress Association held at the University of Pune, Pune during 3-7 January, 2000.

Professor P. Tandon delivered the Platinum Jubilee lecture at the 87th session of Indian Science Congress at Pune during 3-7 January, 2000 on "Role of Biotechnology in Conservation of Plant Genetic Resources in the 21st Century-an Indian perspective".

Prof. H. N. Pandey acted as a resource person in the training Workshop on Natural Disaster Management held at Shillong during 13-15 October, 1999.

Dr. A. K. Misra delivered lectures as a resource person in the ICAR sponsored Winter School on Molecular Marker Techniques at I.A.R.I., New Delhi in December 1999.

Dr. N.K. Chrungoo was a resource person for the UGC sponsored seminar on "Research & Development for Life Sciences" for College Teachers held at Imphal from 12-17 March, 2000.

Visiting Professors/Fellows:

Professor A. K. Pandey, Department of Botany, TM Bhagalpur University, Bhagalpur was invited as Visiting Professor during May, 1999.

Professor Dorothy L. Parker, University of Wisconsin, U.S.A visited the Department and delivered a talk on "Ecological and Biotechnological Implications of Metal Sorption by Purified Capsular Polysaccharide from Water bloom-forming Cyanobacteria" during the month of October, 1999.

Professor H. K. Das of Genetic Engineering Unit, Jawaharlal University visited the Department and delivered a lecture on "Molecular Genetics of Nitrogen fixation in *Azotobacter vinelandii*" during the month of March, 2000.

Publications

Tawnenga, Shankar, U. and Tripathi, R. S. (1999). "Slash once, cash twice". In . R. C. Sundriyal, Uma Shankar & T.C. Upreti (eds) "Perspectives for Planning and Development in North East India" G. B. Pant Institute of Himalayan Environment and Development. HIMAVIKAS, Koshi-Katarmal, Almora. Occasional Publication No. 11, pp. 246-256

Dhyani, S. K. and Tripathi, R. S. (1999). "Tree growth and crop yield under agri-silvicultural practices in north-east India". *Agroforestry Systems* (The Netherlands), 44:1-12.

Kayang, H. & Sharma, G. D. (1999) "Microorganisms in the food, gut contents and faeces of *Burmoniscus kempi* (Isopoda; Philosciidae)". *Journal of Hill Research*, 1999 volume 12(2):114-118.

M. K. Rout & Chrungoo N. K. (1999) "The nutritionally rich 26kD seed storage legumin of common Buckwheat: A structural insight". *Biochem & Mol. Biol. Intl* : 47: 921-926

Tandon. P, Ishikawa. M, Komamine A., & Fukuda F, (2000) "Incorporation of antibodies into tobacco cells treated with solutions similar to vitrification solutions", in Englemann, F and Takagi H (eds) P.P 352-354. *Crypreservation of tropical plant germplasm, Current research progress and application International Plant, Genetic Resources Institute, Rome. Italy.*

Tiwari, B. K., Barik, S. K. and Tripathi, R. S. (1999). *Sacred Forests of Meghalaya: Biological and Cultural Diversity*. Regional Centre: NAEB, North-Eastern Hill University, Shillong, Graftek Pvt. Ltd., Bhubaneshwar, pp.120.

Thrust Area of Research: Forest Biology.

Research Programme/Project :

A project was sanctioned to Prof. R. S. Tripathi by Department of Space, Govt. of India under the project entitled "Biodiversity characterization at landscape level using remote sensing and GIS" to collaborate with Dr. P. S. Roy, Dean, IIRS, Dehra Dun.

A project entitled, "Improvement of infrastructural facilities in existing Botanical Garden of North-Eastern Hill University, NEHU Campus, Shillong" was sanctioned to Prof. R. S. Tripathi by the Ministry of Environment and Forests, Govt. of India.

ICFRE- World Bank Project on Alder was sanctioned to Dr. A. K. Misra

A DST Project on "Cloning & Characterization of for lysine rich seed storage protein of common Buckwheat" was sanctioned to Dr. N. K. Chrungoo.

A DST Project entitled "Moisture oriented feasibility for storage of seeds of timber yielding wild Species of Meghalaya" was sanctioned to Dr. L. Kharlukhi.

A Research Project entitled "A Study on the Environmental Information in Tree Rings of North Eastern Himalayan Tree Species" was sanctioned to Dr. N. Venugopal by the CSIR, New Delhi.

Other activities :

Prof. R. S. Tripathi was (i) nominated a member (as "the Eminent Scientist in the key area of Advance studies") of Research Advisory Group of the Institute of Rain and Moist Deciduous Forests Research of the ICFRE at Jorhat, Assam, for a period of five years. (ii) Appointed as a member of the "National Scientific Advisory Group for research under the Biosphere Reserve Programme" of the Ministry of Environment & Forests, Government of India, for 3 years. (iii) Elected as a member of the Central Executive Council of the National Institute of Ecology for a three year term. (iv) Appointed as a member of a Consent Committee of the Meghalaya Pollution Control Board constituted for the purpose of granting permission to establish industries/ industrial units in Meghalaya.

Prof. P. Tandon was (i) awarded the Platinum Jubilee Lecture Award of Indian Science Congress Association. (ii) appointed Convenor of local chapter, Indian Science Congress Association and (iii) elected Fellow of the Botanical Society of India.

DEPARTMENT OF BIOCHEMISTRY

The coherent and young members of the faculty of this department have been engaged in different areas of high quality research of practical significance, which is evident by the publications from this department. Our M.Sc./Ph.D. students compete successfully at NET and GATE every year. Students of this department have been manning various educational institutions, research centers, hospitals, forensic departments, pharmaceutical companies in this region, and thereby meeting the hopes and aspirations of the people of this part of India. The members of the faculty have made special efforts to attract research grants from India and abroad and have established collaborative research links with institutions of eminence abroad.

Head : Dr. R. N. Sharan (Until 29th November 1999)

Dr. R. Sharma (Present)

Faculty :

Professors : R. Lalthantluanga, M. Sc., Ph. D. (Poona) (on lien)

A.N. Rai, M. Sc. (BHU), Ph. D. (Dundee)

Readers : R. Sharma, M. Sc., Ph. D. (BHU)

R.N. Sharan, M. Sc., Ph. D. (JNU)

A. Alam, M. Sc. (AMU), Ph. D. (Moscow)

Lecturers : D. Syiem, M. Sc., Ph. D. (NEHU)

A.K. Singh, M. Sc. (Gorakh.), Ph.D. (Hyd.)

Student intake: a). Enrolment capacity : 10

b). Actual Admission	: SC/ST	Genl.	Male/Female	Total
	M. Sc. 7	3	4 6	10

Funds received from agencies other than NEHU/UGC : Rs. 6.28 lakhs (CSIR-project)

Courses conducted : Chemistry, Introductory Biochemistry & Environmental Biochemistry, Enzymology and Biochemistry Practicals. Techniques in Biochemistry, Physiological Chemistry, Bioenergetic pathways and Biochemistry practicals. Genetics, Medical Biochemistry, Biosynthetic pathways and Biochemistry practicals. Molecular Biology, Microbiology, Immunology and Biochemistry practicals.

Seminars/Conference:

Attended :

R. Sharma presented a paper entitled "Purification and characterization of adenosine deaminase from the small intestine of immature and mature mice, at IX Biennial National Conference of Association of Gerontology (India): Challenges of ageing in the 21st century, at Heritage Medical Centre, Hyderabad, Aug. 20-21, 1999.

H.N. Lyngdoh and R. Sharma presented a paper entitled "Differential expression of malate aspartate shuttle during postnatal development of chicken" at 68th Annual Meeting of Soc. Biol. Chemists, Dec. 27-29, 1999, IISC, Bangalore.

H.S. Ranhotra and R. Sharma presented a paper entitled "Streptozotocin induced diabetes and glucocorticoid receptor regulation: tissue and age specific correlation", at International Conference On Geriatrics and Gerontology, New Delhi, Nov. 12-14, 1999.

L.K. Imliwati, C. Rapthap and A. Alam presented poster entitled " Liposomal Tumor associated antigens formulation elicited humoral and cellular immune response in mice bearing tumor", at 19th Annual Conference Of Indian Association for Cancer Research and Symposia on Cancer Biology", Thrissur, January 2000.

L.I. Singha and A. Alam presented poster entitled " Over expression of a membrane glycoprotein on hepatocytes of N-nitrosodibutylamine exposed mice" at 19th Annual Convention Of Indian Association for Cancer Research and Symposia on Cancer Biology", Thrissur, January 2000.

R.N. Sharan presented three posters at the 11th International Congress of Radiation Research at Institute of Technology, Dublin (Ireland), July 1999.

R.N. Sharan delivered invited talk titled "Radiation induced damage to DNA may be influenced by nucleotide sequence" at International Meeting on Trends in Radiobiology at University Hospital, Essen, Germany, July 1999.

R.N. Sharan delivered an invited talk titled "Western blot based assay of poly-ADP-ribosylation as tumor predictor: case of ascites tumorigenesis in mice" at the Indo-German workshop on Biological Aspects of Individualization of Radiotherapy at Regional Cancer Centre, Trivandrum, February 2000.

R.N.Sharan delivered an invited talk titled "Probing molecular intricacies of radiations: Plasmid model" in the Radiobiology 2000: International Conference on Radiation biology, Regional Cancer Centre, Trivandrum, February 2000.

A.N. Rai visited Stockholm University, Sweden from March 1999 to October 1999 as a Visiting Professor. He also delivered a talk on "Artificial Symbiosis" at Department of Physiological Botany, Uppsala University, Sweden.

Publications:

Singh, L. and Sharma, R. 2000. "Purification and characterization of intestinal adenosine aminase from mice", *Molecular and Cellular Biochemistry*, 204: 127-134.

Borbhuiya, M.A. and Sharma R. 1999. "Physicochemical characterization of hepatic glucocorticoid receptors from pre and post weaned mice", *Indian Journal of Biochemistry and Biophysics*, 36: 240-247.

Schneeweiss, F.H.A.; Sharan, R.N. and Brown, I. 1999. "211-At-alpha-dose dependence of poly ADP-ribosylation of human glioblastoma cells in vitro: suitability in cancer therapy?", *Radiotherapy Oncology*, 175: 458-461.

Schneeweiss, F.H.A.; Sharan, R.N.; Hautzel, H. and Muller-gartner, H.W. 1999. "Effect of gamma-radiation on the ratio of 18-FDG to glucose utilization in human glioblastoma cells in vitro", *Journal of Biosciences*, 24: 49-51.

Saikia, J.R.; Schneeweiss, F.H.A.; and Sharan, R.N. 1999. "Arecoline induced changes of poly-ADP ribosylation of cellular proteins and its influence on chromatin organization", *Cancer Letter*, 139: 59-65.

Singh, V.; Singh, R.C.; Dubey, R.K. and Alam, A. 1999. "Purification of gelonin from seeds of gelonium multiflorum and characterization". *Indian Journal of Biochemistry and Biophysics*, 36: 258-265.

Sharma, R. 1999. "Steroid hormone action mechanism", *Current Science*, 76: 271-273.

Schneeweiss, F.H.A. and Sharan, R.N. 1999, *Recent Aspects of Fundamental and Applied Radiobiology*, Vol. 30, Forschungszentrum Juelich, Germany-ISBN 3-89336-238-X.

Schneeweiss, F.H.A. and Sharan, R.N. 1999, "Study of effects of radiation on poly-ADP-ribosylation: what have we learnt ? In: *Recent Aspects of Fundamental and Applied Radiobiology*", eds. F.H.A. Schneeweiss, and R.N. Sharan., *International Cooperation Bilateral Seminar series* Vol.30, Forschungszentrum Juelich GmbH, Germany. 62-72.

Alam, A., Chakraborty, S., Raptap, C., Srivastava, P.N. and Sharan, R.N. 1999. "Enhancement of radiomodulatory effect through liposome encapsulated radiomodifiers on cancer bearing mice. In: *Recent Aspects of Fundamental and Applied Radiobiology*", eds. F.H.A. Schneeweiss, and R.N. Sharan, *International Cooperation Bilateral*

Seminar series Vol.30, Forschungszentrum Juelich GmbH, Germany. 83-88.

Saikia, J.R., Schneeweiss, F.H.A. and Sharan, R.N. 1999, "Chronic low dose arecoline exposure affects DNA, RNA and protein contents and cellular poly-ADP-ribosylation in mice *In Vivo*". in Recent Aspects of Fundamental and Applied Radiobiology, F.H.A. Schneeweiss, and R.N. Sharan (eds), *International Cooperation Bilateral Seminar series* Vol.30, Forschungszentrum Juelich GmbH, Germany. 149-152.

Pariat, T., Balachandran, B. and Sharan, R.N. 1999. "Effects of carcinogen exposure on poly-ADP-ribosylation of HMG protein and on chromatin organization". in Recent Aspects of Fundamental and Applied Radiobiology, F.H.A. Schneeweiss, and R.N. Sharan, (eds). *International Cooperation Bilateral Seminar series* Vol.30, Forschungszentrum Juelich GmbH, Germany. 158-161.

Sharan, R.N. 1999. "Effects of high and low-LET radiation: A brief review of animal studies *in vivo* and *in vitro*". in Advances in Radiation Biology and Peace, S. C. Goel, (ed). *UP Zool. Soc.*, India. 19-26.

Thrust Area of Research: Nitrogen Fixation, Protein Chemistry, Hormone and ageing, Carcinogenesis and Radiobiology, Drug delivery, Drug targeting and Immunotherapy, Medicinal plants and Biodiversity.

Research Programme/Project : CSIR-project sanctioned to Dr. R. Sharma entitled "Regulation of adenosine deaminase in mice: Hormonal and dietary intervention".

Other activities:

R. Sharma appointed judge for selection of the Tilak prize for best paper presentation at IX Biennial Natl. Conf. Of Assoc. Gerontology (India) at Hyderabad, Aug. 20-21, 1999.

Dr. R.N. Sharan participated as a special invitee in the 16th RBC International Symposium: Bioregulation of Radiation Response held at Kyoto University, Kyoto, Japan, December 12-13, 1999.

Dr. R.N. Sharan visited Department of Radiation Biology, Osaka University, Japan as Visiting Professor, December 1999 to February 2000.

Dr. R.N. Sharan elected President, Indian Society for Radiation Biology for the year 2000-2002.

DEPARTMENT OF FORESTRY

The Department of Forestry was created in the VIth Five Year Plan to bring out highly skilled technical, extension and researchers in multi-disciplinary areas of Forestry for rendering valuable services to the people of this region. It has started M.Sc. programme from the year 1997. It offers specialisations in Agroforestry at Masters level.

Head : Dr. Rakesh Mohan

Faculty :

Professor : L K Jha, M.Sc.(Bhagal), Ph.D. (L.N.Mith)

Reader : Rakesh Mohan, M.Sc. (Kanpur), Ph.D. (BCKV)

Lecturers: U K Sahoo, M.Sc., M.Phil. (Utkal), Ph.D. (NEHU)

D Paul, M.Sc., Ph.D. (NEHU)

Student Intake : a) Enrolment Capacity : 6

b) Actual admission : SC/ST Genl. Male/Female Total

SC/ST	Genl.	Male	Female	Total
6	2	4	6	

Courses conducted : General Silviculture; Tree seed technology & propagation; Forest Policy, Acts & Law; Silvics of tree species; Forest Management; Pasture & Grassland Management; Forestry in Watershed management; Tree Improvement; Soil Science; Disease, Pest & Weed management; Research methodology, Design, Analysis of field experiment & Computer programming; Principles of social forestry; Practice of Social forestry; Principles of Agronomy & Cropping systems; Research Project.

Research projects undertaken by the M.Sc. students :

- (i) Study on the effect of Tung (*Aleurites fordii*) on the yield of ginger (*Zingiber officinale* Rosc.) Supervisor : L.K. Jha.
- (ii) Spatial effect on the growth behavior of *Leucaena leucocephala* (Lam) de wit along with *Zea mays* L. on a hill agroforestry system of Mizoram. Supervisor : Rakesh Mohan.
- (iii) Growth behavior of *Michaelia champaca* L. and *Toona ciliata* M.Roem along with hedges of *Cajanus cajan* L. and *Leucaena leucocephala* (Lam) de wi in an agroforestry system of Mizoram. Supervisor : U.K. Sahoo.
- (iv) Effect of *Leucaena leucocephala* on the yield of *Zea mays* in the humid subtropics of Mizoram. Supervisor : U.K. Sahoo.
- (v) Soil nutrient budgets and yield of intercrop *Zea mays* (Maize) as affected by *Leucaena leucocephala* (Subabul) in an agroforestry trial in Mizoram. Supervisor : D. Paul.

Seminars/Conferences/Symposia organised and attended :

Rakesh Mohan : Attended seminar on better environment for new millennium at Aizawl during 27-28th October 1999 organized by Endangered Species Protection Group (ESPG) and presented a paper entitled "Environmental conservation through Agroforestry".

D. Paul : Presented a paper entitled "Fire and its implications on tropical forest ecosystems" at seminar conducted by NEICSSR, Shillong during 5-6th June, 1999.

D. Paul : Attended consultative committee meeting on Joint Forest Management held by Department of Forests & Environment, Government of Mizoram during 12-13th April, 1999.

Publications :

Lalnundaanga, Sahoo, U.K., Lalthantluanga, R. and Jha, L.K. (1999). "Ethnobotanical flora in the humid subtropical semi evergreen forests of Mizoram." in Puri, S & Williams, A.J. (eds), *Health care & Development of Herbal medicinal plants*, pp.161-171, Baba printers, Raipur.

Lalramnghinglova, J.H., Mohan, R. and Jha, L.K. (1999). "Ethnophytomedicinal practice in Mizoram (North-East India) based on Indigenous classification of diseases". in Puri, S & Williams, A.J. (eds), *Health care & Development of Herbal medicinal plants*, pp.195-201, Baba printers, Raipur.

Lalramnghinglova, J.H. and Jha, L.K. (1999). "Ethnobotany : A review". *J. Econ Taxon Bot.* 23 (1) : 1-27.

Study Tour/Field trip :

Dr. Rakesh Mohan, Reader & Head escorted the study tour of M.Sc. IVth Semester students to IGFR, Jhansi and FRI, Dehradun in connection with study on various agroforestry model for 20 days from 21.8.99 to 09.09.99.

Dr. D. Paul escorted the M.Sc. Ist Semester students to Assam and Meghalaya forest areas to study various aspects of forest management for a period of 14 days from 14.03.2000 to 28.03.2000.

Thrust Area of Research : Sustainable Hill Farming system, Ethnobotany, Agroforestry and Watershed Management.

Research Programmes/Projects : ICAR funded research project entitled "Qualitative and quantitative survey of insect pests of Agroforestry systems in Mizoram" under the supervision of Dr. D. Paul & Prof. L.K. Jha.

Other activities : Dr. Rakesh Mohan was appointed as advisor of Endangered Species Protection Group - Centre for Environment Protection, Aizawl (Mizoram).

DEPARTMENT OF ZOOLOGY

The Department of Zoology was established in 1974. In the last two decades, this department has made all round progress. It offers specialisations in all major disciplines of Zoology. The Department has been selected by UGC for conducting Refresher courses in Zoology for the 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.

Based on overall academic and research contributions, this Department was awarded DRS scheme by the University Grants Commission under special Assistance Programme to promote higher research with special reference to the N.E. region. We have already completed the first phase of DRS-I and the 2nd phase of the scheme is in progress. During the last financial year, the Department was sanctioned financial assistance by UGC under COSIST programme.

Head : Prof. K. Chatterjee

Faculty :

Professors : K. Chatterjee, M.Sc., Ph.D. (Kaly)

A. Raghavarman, M.Sc., Ph.D. (Madr)

V. Tandon, M.Sc.(Hons.), Ph.D. (Panj)

B.K. Sharma, M.Sc.(Hons.), Ph.D. (Panj)

Readers : B.B.P. Gupta, M.Sc., Ph.D.(BHU)

S. B. Prasad, M.Sc., Ph.D. (BHU)

R.N.K. Hooroo, M.Sc., Ph.D. (NEHU)

B. Kharbuli, M.Sc., Ph.D. (NEHU)

N saha, M.Sc., Ph.D. (NEHU)

Lecturers : A. Chatterjee, M.Sc. (Burd), Ph.D. (BHU)

A.K. Yadav, M.Sc.(Agra), Ph.D. (NEHU)

Students intake : a) Enrolment capacity: M. Sc. : 20

M. Phil./Ph. D. : 10

b) Actual Admission : SC/ST GEN MALE/FEMALE Total

M.Sc: 14 7 9 12 21

PhD: 5 7 6 6 12

Degrees Awarded :-

M.Phil :

Mumubai Lakiang : Thesis entitled "Composition and ecology of Planktons in Thadlaskein Lake (Meghalaya)". Supervisor : Prof. B. K. Sharma.

Jenifer Lyngdoh : Thesis entitled "Species composition and ecology of Planktons in a subtropical lentic ecosystem of Meghalaya". Supervisor : Prof. B. K. Sharma.

Ph.D :

D. S. Lynshiang : Thesis entitled "Role of hormones in regulation of the oxidative metabolism in fish". Supervisor : Dr. B. B. P. Gupta.

Bendang Ao : Thesis entitled "Studies of certain physiological and biochemical aspects of vision in some birds". Supervisor : Prof. A. Raghavarman and Joint Supervisor Dr. B.Kharbuli.

Funds received from agencies other than NEHU/UGC : Rs. 39.55 Lakhs.

(Ministry of Environment and Forest : Rs. 2.75 Lakhs; NEC : Rs. 30.0 Lakhs (Joint project with the Department of Botany and Biochemistry); DST : Rs. 5.60 Lakhs; AIU : Rs. 0.75 Lakhs; CSIR : Rs. 0.35 Lakhs; Meghalaya Pollution Control Board : Rs. 0.10 Lakhs).

Courses conducted : Cell Biology & Immunology; Molecular Biology; Animal Physiology; Biological Chemistry; Genetics and Developmental Biology; Parasitology and Entomology; Ecology and Environmental Biology; Endocrinology and

Reproductive Biology; Aquatic Biology and Fisheries. Biosystematics & Evolution; Techniques in Biology and Biometrics; Special Paper - I.
Special Papers offered : Biochemical Adaptation, Cell Biology & Immuno-biology, Endocrinology and Reproductive Physiology; Entomology, Genetics.

Seminars/Conferences :

Organised :

The Department of Zoology organized National Symposium on Trends In Environmental Biology (23rd to 25th June, 1999)

Attended :

Prof. K. Chatterjee attended (i) the XIth All India Congress of Cytology and Genetics held at Kalyani University, Kalyani, and presented a paper entitled "Genetic expression of glucose-6-phosphate dehydrogenase in *Channa* spp. (ii) the National Symposium on Trends in Environmental Biology (23-25 June, 1999) held at NEHU, Shillong, and chaired a session.

Prof. A. Raghuvarman attended (i) National symposium On Trends in Environmental Biology held at NEHU Shillong and presented papers entitled (a) Some physiological aspects of color vision in the freshwater fish, *Catla catla* (Ham), (b) Fluorescent compounds and their role in the compound eyes of some arthropods, (c) Causal factors responsible for the blue color of the beetle, *Apolosonyx chalybaeus*, (d) the pheromones of the Queen substance of the wasp, *Vespa structor* : n-hexadeca-lactone, and (e) Retinal pigment migration in response to various physiological states in the eyes of *Gallus domesticus*, (ii) 10th Annual meeting of the Indian Society for the Study of Reproduction and Fertility (ISSRF) (8th - 10th September 1999) in Rajiv Gandhi Centre for Biotechnology at Thiruvanthapuram and presented papers entitled (a) Hormonal control of differentiation of secondary sexual character in the female of the grasshopper, *Tettigidae lateralis* (Say) and (b) Adenosine 3', 5' cyclic monophosphate-mediated response of colour change of the cuticle of the IV instar larvae of *Chelura bifasciata* (Lepidoptera : Insecta), (iii) Radiobiology 2000 - International Conference on Radiation Biology (17th to 19th February 2000) held at Trivandrum and presented a paper entitled "Physics of the bioluminescence of the firefly *Photuris pennsylvanica*".

Prof. V. Tandon Attended (i) National Symposium on 'Trends in Environmental Biology', NEHU, Shillong, 23-25 June, '99 and presented a paper entitled "Helminth infections of zoonotic potential in Northeast India.

Prof. B. K. Sharma attended (i) National Symposium on Man, Environment and Pollution, Shillong college, Shillong (June 15-16, 1999) and presented three papers (ii) National Symposium on Trends in Environmental Biology, Department of Zoology, NEHU, Shillong (June 23-25, 1999) and presented seven papers (iii) National Seminar on Strategies for Agricultural Research, North-East, ICAR NEH Complex (November 10-12, 1999) and presented two papers (iv) 9th International Rotifer Symposium, Khon Kaen, Indonesia (January 16-23, 2000) and presented one paper.

Dr. B. B. P. Gupta attended National Symposium on Trends in Environmental Biology, Department of Zoology, NEHU, Shillong (June 23-25, 1999) and presented two papers entitled (a) Involvement of thyroidal and gonadal hormones in regulation of

tissue respiration in male air-breathing fish, *Clarias batrachus* and (b) Prevalence of hypothyroidism in women of Meghalaya State of North-Eastern India.

Dr. R.N.K. Hooroo attended (i) Workshop on Peoples' participation in Biodiversity conservation (4th to 6th March 1999) held at NEHU, Shillong, and presented a paper entitled "Significance of sensory structures of certain butterflies of East Khasi Hills as an adaptive device to diverse environmental conditions : Scanning electron microscopy" (ii) National Conference on Electron Microscopy and XXIII Annual Meeting of Electron Microscope Society of India (1st to 3rd December 1999) held at D.M.S.R.D.E, Kanpur and presented a paper entitled "Fine ultrastructural specialisation of the integument in the frog (female) *Rana limncharis* during the breeding period".

Dr. N. Saha attended (i) National Seminar on Environmental Biology and Fish Biology (April 6-7, 1999) held at the Department of Zoology, Visva Bharati University, and presented papers entitled (a) Effect of alkalinity on ureogenesis in a freshwater air-breathing teleost, *Clarias batrachus*, (b) Changes in free amino acid synthesis in perfused liver of an air-breathing walking catfish *Clarias batrachus* infused with ammonium chloride : A strategy to adapt under hyper ammonia stress, and (c) Glucose, pyruvate and lactate efflux by the perfused liver of an air-breathing teleost, *Clarias batrachus* during aniso-osmotic exposure, and (ii) National Symposium on Trends In Environmental Biology (23rd to 25th June 1999) held at Department of Zoology, NEHU, Shillong and presented papers entitled (a) Changes of amino acid synthesis in an air-breathing catfish, *Clarias batrachus* exposed to higher ambient ammonia, (b) Changes of glycogenesis and glycogenolysis in the perfused liver of an air-breathing teleost, *Clarias batrachus* during osmotic stress, and (c) Stimulation of ureogenesis in the perfused liver of an Indian air-breathing catfish, *Clarias batrachus* infused with different concentrations of ammonium chloride.

Dr. A. K. Yadav attended (i) National Conference on Pollution, Man & Environment June (15 - 16, 1999) held at Shillong College, Shillong and presented a paper entitled "Environmental contamination with nematode parasite eggs of public health significance in the city of Shillong."

Visiting Professors/Fellows : Dr. R. Gulati, Sr. Scientist, Institute of Limnology, Newversilus, The Netherlands visited the Department on February 23-24, 2000 and delivered a lecture on "Eutrophication and Lake Management".

Publications:

Dey, S., Hooroo, R.N.K., Biswas, N., Raghuvarman, A. and Choudhury, S. 1999. Cellular features of the Muga silkworm (*Antheraea assama* WW, Lepidoptera : Saturniidae) midgut and its possible impact on indoor rearing. *Sericologia* 39 (4) : 1-7.

Dutta, M. & Tandon, V. 2000. Developmental pattern and larval stages of *Polystoma indicum* Diengdoh & Tandon, 1991 (Monogenea: Polystomatidae) in rhacophorid anurans, *Journal of Zoology, London* 250 : 129-139.

Haussinger D. Kubitz R., Schlies F., Wettstein M., Warskulat U., Kurz A.K, Saha N. and vom Dahl S. (1999) Regulation of canalicular conjugate exosrt pump by osmolariy, endotoxin and glucocorticoids in rat liver. In: *Bile Acids and Cholestasis*.

Eds : Paumgartner G., Stiel A., Gerok W., Keppler D. and Leuschner U. Kluwer Academic Publications, Boston, pp. 137-141.

Khynriam, D. and Prasad, SB. 1999. Effect of cisplatin on *Allium cepa* root meristem cells. *Cytobios*, 100 : 171 - 180.

Lyndem, L.M., Tandon, V. & Yadav, A.K. 1998. Hookworm infection: A cross-sectional study of a rural community in a subtropical, high-rainfall area of Meghalaya, India, *Journal of Parasitic Diseases* 22 (1) : 45-48.

Prasad, SB. and Giri, A. 1999. Cisplatin-induced changes in tissue calcium and potassium concentrations in tumour-bearing mice. *Medical Science Res.*, 27 (7) : 459 - 462.

Prasad, SB. and Giri, A. 1999. Effect of cisplatin on the lactate dehydrogenase activity and its isozyme pattern in Dalton's lymphoma bearing mice. *Cytologia*, 64 : 259 - 267.

Prasad, SB., Giri, A., Khynriam, D., Kharbangar, A., Nicol, BM. and Lotha, C. 1999. Cisplatin-mediated enzymatic changes in mice bearing ascites Dalton's lymphoma. *Medical Science Res.*, 27 : 723 - 730.

Roy, B. & Tandon, V. 1999. Flukicidal activity of *Alpinia nigra* (Zingiberaceae) against the trematode, *Fasciolopsis buski*, in humans, *Biomedical Letters* 60: 23-29.

Saha N. and Das L. (1999) Stimulation of ureogenesis in the perfused liver of an Indian air-breathing catfish, *Clarias batrachus*, infused with different concentrations of ammonium chloride. *Fish Physiology and Biochemistry* 21: 303-311.

Saha N., Das L. and Dutta S. (1999) Types of carbamyl phosphate synthetases and subcellular localization of urea cycle and related enzymes in air-breathing walking catfish, *Clarias batrachus*. *Journal of Experimental Zoology* 283: 121-130.

Saha N., Dutta S. and Haussinger D. (2000) Changes in free amino acid synthesis in the perfused liver of an air-breathing walking catfish, *Clarias batrachus* infused with ammonium chloride: A strategy to adapt under hyperammonia stress. *Journal of Experimental Zoology* 286: 13-23.

Sharma, B.K. 1999. Faunal Diversity in India: Rotifera. In : *Faunal Diversity in India*. pp. 57-70. ENVIS Centre, Zool. Surv. India, Calcutta.

Sharma, B.K. and Hussain, Md., 1999. Temporal variations in abiotic factors of a tropical floodplain lake, Upper Assam (N.E. India). *Rec. Zool. Surv. India* 97 : 145-150.

Tandon, V. & Imkongwapang, R. 1999. Natural infection of *Sparganum* in frogs in Nagaland (North-eastern India)- An Amphibia-borne Zoonosis?, *Zoos' Print Journal* 14 (5): 13-16.

Study Tour/Field Trips of Students : Dr. B. Kharbuli and Dr. N Saha took the M. Sc. Students on a study tour (duration : 21 days w.e.f. January 6 to 26, 2000) to Jaipur, Jodhpur, Bharatpur, Agra and New Delhi.

Thrust Area of Research : Environmental Biology.

Research Project : Prof. V. Tandon started All India Co-ordinated project on Taxonomy Capacity Building Research on Helminths and Nematodes funded by the Ministry of Environment, Government of India.

Other activities :

Prof. V. Tandon was nominated as a member on the Scientific Advisory Committee to the Cabinet, Govt. of India.

The Department was sanctioned financial assistance (Rs. 66.00 Lakhs) by the UGC, New Delhi under COSIST programme.

Dr. B. B. P. Gupta was awarded the Fellowship of Zoological Society, Calcutta (FZS Cal).

Dr. S. B. Prasad was awarded SERC Fellowship for three months.

Dr. R. N. K. Hooroo was given the Best Micrograph Award by the National Conference on Electron Microscopy at the XXIII Annual Meeting of EMSI at DMSRDE, Kanpur.