

## DEPARTMENT OF BOTANY

The School of Life Sciences with a thrust area in Ecology in the broadest sense and the Department of Botany with forest Biology as its main emphasis was active both in teaching and research. The Department also collaborated with the Department of Zoology in the area of fresh water Biology. Collaborative teaching upto about 50% of the total course work at the M. Sc level was maintained with Zoology and Biochemistry. Collaborative research started earlier with the Department of Sociology on jhum shifting cultivation continued during the year.

A major recognition for the research work done by Dr. Ram Boojh, one of the Ph. D research students under the supervision of Prof. P. S. Ramakrishnan was the award of the Indian National Science Academy. Young Scientist Award for 1983 for his outstanding work on "Tree Architecture in Forestry". This is the first time this recognition has come to the North-Eastern region and to forestry since award was instituted by INSA. Dr. Ram Boojh would receive a gold medal and a cash award of Rs. 5000/- from the Prime Minister of India at a special function.

A 3-day symposium on "Recent Trends in Microbial Ecology" organised by the society for Microbial Ecologists of Tropics for which Prof. R. R. Mishra was the convener-secretary was inaugurated at NEHU, Shillong by Dr. B. D. Sharma, Vice-Chancellor. The volume of abstracts containing 52 papers accepted for presentation was published. A number of faculty members and research students of the department of Botany participated in the symposium. Prof. R. R. Mishra presided over one of the sessions.

Dr. R.C. Laloo, Lecturer, joined the Cabinet of the Meghalaya Government and presently is the Minister of Education.

Eighteen students obtained the M. Sc. degree in Botany in 1983 examination. Nine students were awarded Ph. D in Botany.

The floristic collections from Tuensang and Mokokchung districts of Nagaland were added to the herbarium. A few high altitude species from Saramati peak were also added. The herbarium now has a collection of about 4000 species belonging to 800 genera and 200 families.

#### Students Intake

M. Sc	S. T.		Others		Total	
	M.	F.	M.	F.	M.	F.
Semester I	7	4	5	2	12	6
Semester II	11	2	4	1	15	3
Total	18	6	9	3	27	9

#### Research Scholars registered for Ph. D

Name	Scholarship/ Fellowship	Research Topic	Supervisor
1. Mr. S. N. Sharma.	DST	Biology and control of Imperate cy-linderica.	Prof. P. S. Ramakrishnan.
2. Mr. U. Baruah.	DST	Ecophysiological attributes of shrubs communities.	Prof. P. S. Ramakrishnan.
3. Mr. P.S. Wawmy.	DST	Ecophysiological attributes of herveaceous communities.	Prof. P. S. Ramkri-shnan.
4. Mr. R. S. Khiewtam.	DST	Ecosystem structure and function of seral communities	Prof. P. S. Ramakri-shnan.
5. Mr. S. C. Ram.	UGC	Ecosystem structure and function of forest communities	Prof. P. S. Ramakri-shnan.

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| 6. Mr. K. S. Rao                         | DST  | Ecophysiological attributes of bamboos in North East India   | Prof. P. S. Ramakrishnan             |
| 7. Mr. A. S. Reddy                       | DST  | Studies on ecosystem function of some plantation forests of North East India.  | Prof. P. S. Ramakrishnan             |
| 8. Mr. K. K. Achuthan (to be registered) | DST  | Village ecosystem function   | Prof. P. S. Ramakrishnan.            |
| 9. Mr. A. N. Raghuvanshi                 | DST  | Studies on orchids of North-East India : Influence of Ecophysiological factors and mycorrhizal association on germinating seeds and some aspects of metabolism | Prof. R. R. Mishra & Dr. P. Tandon.  |
| 10. Mr. Subodh Dhar                      | DST  | Studies on orchids of North-East India : Metabolism and growth factor requirements in seed germination of some orchids.  | Prof. R. R. Mishra. & Dr. P. Tandon. |
| 11. Mr. R. S. Katiyar                    | DST  | Studies on orchids of North-East India : mycorrhiza  | Prof. R.R. Mishra & Dr. G.D. Sharma  |
| 12. Mr. Satish Kumar                     | ICAR | Ecophysiological studies on endomycorrhizae of certain important timber tree species of North-East India.  | Prof. R.R. Mishra                    |

13. Mr. Meji- Govt. Studies on m commizie Prof. R. R.  
pokyim of Na- and its role in Biological Mishra.  
galand control of root diseases  
of Pine (*Pinus Kesiya*  
Roylaex Gordon
14. Miss B. UGC Ecological studies of some Dr. T. S.  
Wankhar. medicinally important Tripathi.  
weeds of Meghalaya.

**Names of the Scholars who have submitted Ph. D. thesis**

1. Mrs. Rajeevalo. Prof. R. R. Ecological studies on the  
Mishra. phylloplane of paddy.
2. Miss M. Dkhar. Prof. R. R. Studies on microbiologi-  
Mishra. cal and biochemical  
aspects of maize fields  
soils of N. E. India.

**Post Doctoral Fellows/Research Associates**

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|------------------------|------|-------------------------|
| 1. Dr. D. P. Toky.     | CSIR | Research Associate.     |
| 2. Dr. B. K. Mishra.   | CSIR | PDF/Research Associate. |
| 3. Dr. A. K. Das.      | DST  | Senior Research Fellow. |
| 4. Dr. Ram Boojh.      | CSIR | PDF                     |
| 5. Dr. R. P. Shukla.   | CSIR | PDF                     |
| 6. Dr. H. K. Deka.     | DST  | Research Associate.     |
| 7. Dr. P. Chakravorty. | BARC | PDF                     |
| 8. Dr. J. P. N. Rai.   | CSIR | PDF                     |

**Research Projects presentiy in operation**

- |  | Sponsoring<br>Agency | Investigators             |
|--|----------------------|---------------------------|
| 1. Centre for plant physiology research in India-Ecophysiology of successional forest communities. | DST                  | Prof. P. S. Ramakrishnan. |

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| 2. Anthropogenic, geologic and climatic factorial interaction contributing to ecosystem desertification at Cherrapunjee and adjoining areas  | UGC   | Prof. P. S. Ramakrishnan.   |
| 3. Ecology of shifting agriculture and its impact on forested ecosystems of North-Eastern Region- Further extended and indepth study on the MAB project on "Ecological implications of Jhum cultivation on the ecosystem functions of sub-tropical humid forest stands". | MAB<br>Deptt. of En-<br>vironment.                      | Prof. P. S. Ramakrishnan.   |
| 4. Field investigations on the land use pattern and village ecosystem function of different tribal communities in the North-Eastern Hill Region.   | DST   | Prof. P.S.<br>Ramakrishnan. |
| 5. Parameters for classification of forests for ecological purposes.   | Eco-De-<br>velopment.<br>Deptt. of<br>Environ-<br>ment. | Prof. P.S.<br>Ramakrishnan. |
| 6. Ecology of shifting cultivation in East Khasi Hills.  | Eco-De-<br>velopment<br>Deptt of<br>Environ-<br>ment.   | Prof. P.S.<br>Ramakrishnan. |

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| 7. Studies on Mycorrhizae of timber yielding trees of North-East India   | ICAR                                   | Prof R.R. Mishra and Dr. G. D. Sharma.                   |
| 8. Studies on fungal associations of orchids and physiological factors that influence germination, growth and development of orchids of North East India.    | DST                                    | Prof. R.R. Mishra.<br>Dr. P. Tandon<br>Dr. G. D. Sharma. |
| 9. Radiological studies on a forest tree species (Pinus) of North-Eastern India and radioecology of its root region in relation to mycoorhizal associations. | Deptt of Atomic Energy                 | Prof. R.R. Mishra<br>Dr. Y.S. Chauhan & Dr. G. D. Sharma |
| 10. Investigations in Microbial communities in relation to different edaphic and agricultural practices of North-East India.                                 | ICAR                                   | Prof. R. R. Misra  |
| 11. Classification of major ecological sub-regions of the Himalayan system and determination of their present ecological status.                             | Eco-development Deptt. of Environment. | Dr. R. S. Tripathi (Co-Investigator)                     |
| 12. Ecology at Mawphlang forest  | Eco-development Deptt. of Environment  | Dr. R. S. Tripathi.                                      |
| 13. Metabolism of auxin in mite induced cinnamom leaf gall formation on yield of essential oils.   | CSIR                                   | Dr. P. Tandon.   |

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| 14. Aerobiology of Shillong.   | CSIR                       | Dr. B. K. Dutta.     |
| 15. Studies on cellular differentiation and nitrogen fixation in blue-green algae (Minor Project). | UGC                        | Dr. P. M. Reddy.     |
| 16. Flora of Mokokchung District, Nagaland   | Botanical Survey of India. | Dr. M. N. V. Prasad. |
| 17. Paleobotanical investigations of some sedimentary basins of North-East India (Minor Project).  | UGC                        | Dr. M. N. V. Prasad. |

#### Papers presented in Seminar and Conferences

Authors	Title of paper	Seminar	Place & Date
1. M. Baruah & R. R. Mishra	Dehydrogenase and urease activity in flooded and dryland rice field soil	"Recent Trends in Microbial Ecology" organised by the society for Microbial Ecologists of the Tropics.	NEHU, Shillong March 1983.
2. M. S. Dkhar & R. R. Mishra.	Microflora of Maize field soils.	-do-	-do-
3. P. Chakravorty & R. R. Mishra	Studies in forest pathology white rot of certain living trees,	-do-	-do-

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| 4   | Indira D. Bhatta-<br>charjee &<br>R. R.<br>Mishra. | Effect of G.<br>Tennis on the<br>nutrient uptake<br>in <i>Zea mays</i> .  | -do- | -do- |
| 5.  | R. Menon<br>and R. R.<br>Mishra.                   | Studies on the<br>control of<br>brown leaf<br>spot of rice by<br>seprophytic<br>phylloplane<br>fungi in vitro.                            | -do- | -do- |
| 6.  | N. K. Verma<br>& R. R. Mishra.                     | The VAM status<br>of <i>E. Adenopho-</i><br><i>rum</i> & <i>E. Riparium</i>   | -do- | -do- |
| 7.  | P. Chakravarty<br>& R. R. Mishra.                  | Influence of VAM<br>on <i>Fusarium</i> wilt<br>of <i>Alvizia lebbek</i> .   | -do- | -do- |
| 8   | H. K. Deka &<br>R. R. Mishra.                      | Microbial popula-<br>tion of soil after<br>different amount of<br>fuel burning.   | -do- | -do- |
| 9.  | R. S. Katiyar,<br>G. D. Sharma &<br>R. R. Mishra.  | Mycorrhizal infec-<br>tion of epiphytic<br>orchid in trophytic<br>orchid in tropical<br>forest of Meghalaya.                              | -do- | -do- |
| 10. | J. P. N. Rai &<br>R. S. Tripathi.                  | Allelopathic effect<br>of <i>E. reparium</i> on<br>population regula-<br>tion of two species<br>of <i>Galinsoga</i> and<br>soil microbes. | -do- | -do- |

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| 11. B. K. Dutta,<br>G. R. Das &<br>P. R. Deb.               | Some aspects in soil<br>fungistasis   | -do- | -do- |
| 12. P. M. Reddy,<br>D. D. Yumnam<br>& T. Y. Imchen.         | Distribution of blue-<br>green algeae in North-<br>East India : a preli-<br>minary report.                                    | -do- | -do- |
| 13. Meyipolyim,<br>R. R. Mishra &<br>G. D. Sharma.          | Studies on VAM in<br>certain families : cruci-<br>fereae, chenopodiaceae,<br>cyperaceae, amaran-<br>thaceae and polygonaceae. | do   | do   |
| 14. G. D. Sharma.   | Mycorrhiza and<br>Plant Productivity.   | do   | do   |
| 15. W. R. Lyngdoh<br>G. D. Sharma.<br>& R. R. Mishra.       | Influence of copper<br>and formaline on<br>the mycorrhiza of<br>Pine ( <i>Pinus Kesiya</i><br>Royalex Gordon).                | do   | do   |
| 16. N. Nagavardha-<br>nam, G. D.<br>Sharma R. R.<br>Mishra. | Effect of heavy<br>metals on the effieie-<br>ncy of mycorrhiza<br>in crop plants.   | do   | do   |
| 17. R. P. Shukla.   | Loss of Ectomyeor-<br>rhizal propagulus in<br>the soil of the land<br>distributed by shifting<br>cultivation.                 | do   | do   |

18. Y. S. Chauhan & S. Ravindran. Gammaray. New approaches to Plant Science Researches effects on the short apex and growth of solasodine yielding solanums. University of Kashmir, Srinagar Oct, 1983
19. Y. S. Chauhan & J. S. Kharbteng. Studies in the reproductive biology of alkaloid yielding solanums. IV. Effect of ethrel on pollen germination and pollen tube growth. Development and comparative aspects of plant structure and function. University of Allahabad Oct. 1982
20. P. Tandon. Metabolism of auxin in Eriophyes incited zizyphus gall growth in culture. V International Congress of Plant Tissue and Cell Culture. Tokyo, Japan July 1982
21. T. Y. Imchen & P. M. Reddy. Interacting effects of light and nitrate on heterocyst differentiation in a nitrogen fixing blue-green Nostoc calcicola. Indian Science Congress (70th session) S.V. University Tirupati Jan. 1983

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| 22. M. N. V. Prasad.                | The changing pattern of landscape architecture in the Shillong plateau.  | Resource survey for land use planning and Environmental conservation | Indian Photo Interpretation Institute Jan. 1983. |
| 23. P. S. Ramakrishnan.             | Environmental Degradation and strategies related to shifting agriculture in north-east India (Plenary lectures). | Strategies for environmental management.                             | Lucknow March 1983.                              |
| 24. Ram Boojh & P. S. Ramakrishnan. | Tree growth strategies   | International Society for Tropical Ecology Symposium                 | Bhopal November, 1982                            |
| 25. Ram Boojh.                      | Canopy architecture and Productivity.  | Tree Physiology  | Rubber Research Institute, Kerala. March 1982.   |
| 26. Q. P. Toky.                     | Ecology of Shifting agriculture.   | Symposium organised by Indian society of tree scientists.            | Dehradun Nov. 1982.                              |

### Research Publications

1. Boojh, R and Ramakrishnan, P.S., 1981. "Phenology of trees in a sub-tropical evergreen montane forest in North East India". *Geo-Eco-Trop.*, 5 : 189-209.

2. Grooves, R.H. , Hagon, M.W. and Ramakrishnan, P. S. 1982 "Dormancy and germination of seed of Eight populations of *Tremeda australis*" *Augst. J. Bot.* , 30 : 373-86.
3. Mishra, B.K. and Ramakrishnan, P.S. 1982 "Energy flow through a village ecosystem with slash and burn agriculture in North-eastern India." *Agricultural systems* 9 : 57-72
4. Das, C. Ramakrishnan, P.S. and Das A.K. , 1982. "Estimating fascicle surface area of Khasi pine *Pinus kesiya* Royle ex Gordon." *Proc. Indian natn. Sci. Acad.* , 848 : 361-366
5. Shukla, R.P. and Ramakrishnan, P.S. 1982. "Phenology of trees in a sub-tropical humid forest in North Eastern India." *Vegetation* 49 : 103-109.
6. Toky, O.P. and Ramakrishnan, P.S. , 1982. "A comparative study of the energy budget of hill agro ecosystems with emphasis on the slash and burn system (Jhum) at lower elevations of North-eastern India." *Agricultural systems* 9 : 143-154.
7. Boojh, R and Ramakrishnan, P.S. 1982 "A comparative study of the energy budget of hill agro-ecosystems with emphasis on the slash and burn system (Jhum) at lower elevations of North-Eastern India." *Agricultural systems* 9 : 143-154.
8. Boojh, R. and Ramakrishnan, P.S. 1982. "On bifurcation ratio in *Schima* species." *Current Science* 51 : 436-437.
9. Boojh, R and Ramakrishnan, P.S. 1982. "Growth strategy of trees related to successional status I. Architecture and extension growth" *Forest Ecology and Management* 4 : 359-437.

10. Boojh, R and Ramakrishnan, P. S. 1982. "Growth strategy of trees related to successional status II. Leaf dynamics. Forest ecology and Management 4 : 375-386.
11. Kushwaha, S.P.S. and Ramakrishnan, P.S. 1982. "Observations on growth of *Eupatorium odoratum* L. and *Imperata cylindrica* (L.) Beauv. Var. Major. Under different Light and moisture regimes." Proc. Indian natn. Sci. Acad., B48 : 689-693.
12. Saxena, K.G. and Ramakrishnan, P.S. , 1982. "Partitioning of biomass and nutrients in the secondary successional herbaceous populations subsequent to slash and burn". Proc. Indian natn. Sci. Acad. , B48 : 807-818
13. Boojh, R and Ramakrishnan, P S. , 1982. "Growth and architecture of two altitudinal populations of *Schima wallichii*." Proc. India natn. Sci. Acad., B48. 534-545
14. Ramakrishnan, P.S. and Shukla, R.P. 1982. "On the relation among growth strategies, allocation pattern, productivity and successional status of trees of a sub-tropical forest community." Symp. Improvement of forest Biomass (Ed. P.K. Khosla), 403-412.
15. Kushwaha, S.P.S. Ramakrishnan, P.S. and Tripathi, R.S. 1983. "Competitive relationships of the plants of *Imperata Cylindrica* established from rhizomes and from seeds". Trop. Plant Sci. Res., 1 : 53-57.
16. Ramakrishnan, P.S. and Das, A.K. , 1983. "Studies on pine ecosystem function in Meghalaya." Trop. Plant Sci. Res. , 1 : 15-24.
17. Kushwaha, S.P.S., Ramakrishnan, P.S. and Tripathi, R.S 1983. "Competitive between *Imperata cylindrica* and *Eupatorium odoratum* at two levels of NPK treatment." Proc. Indian natn. Sci. Acad., 498 : 50-56.

18. Mishra, B.K. and Ramakrishnan, P. S., 1983. "Slash and burn agriculture at higher elevations in North-Eastern India.  
I. Sediment, water and nutrient losses." *Agric. Ecosystems Environ.*, 9 : 69-82
19. Mishra, B K. and Ramakrishnan, P.S. 1983 "Slash and burn agriculture at higher elevations on North-Eastern India. II Soil fertility changes." *Agric. Ecosystems Environ.* . 9: 83-96.
20. Mishra, B K. and Ramakrishnan. P. S. 1983 "Secondary succession subsequent to slash and burn agriculture at higher elevations of North-East India. I. Species diversity, biomass and litter production." *Acta Oecologica, Oecol. Applic.*, 4 : 95-107.
21. Mishra, R. R. and Tiwari B. K. , 1982 "Seasonal variation in estimated viable population of planktonic bacteria in a small lake. " *Tropical Ecology* 23 : 91-299.
22. Mishra, R.R. and Tiwari, B.K., 1982. 'A study on biological activity measurements and heterotrophic bacterial population in a small freshwater lake,' *Hydrobiologia* 96 : 257-269.
23. Chakravorty, P and Mishra, R.R. 1982. "Studies in forest pathology III. Root rot due to *Rhizoctonia solani* Kuhn, Group" *J. For. Pathol.* 12 : 308-316.
- 24 R.R. Mishra and Kharbuli, P.P., 1982. "Survey of mycorrhizal association in some trees of N.E. India." *Acta Botanica Indian* 10 : 192-195.
25. Deka, H. and Mishra, R.R. 1982 "Decomposition of Bamboo (*Dendrocalamus hamiltonii* Nees) leaf litter in relation to age of Jhum fellows in N. E. India."
26. Mishra, R.R. and Tiwari, B K. 1983. Dry weight loss and changes in a chemical composition of terrestrial plant litters during processing in a fresh-water lake." *Hydrobiologia*, 98 : 249-256.

27. Dkhar, M.S. and Mishra, R.R. 1983. "Dehydrogenase and urease activity of maize (*zea mays* L.) field soils." *Plant and Soil* 70 : 327-333.
28. Mishra, R.R. and Tiwari, B.K. 1983. "Fungi and Bacteria associated with territorial plant litter during processing in a freshwater lake." *Hydrobiologia* 102 ; 123-130.
29. Rai, J. P.N. and Tripathi, R.S. 1982. "Allelopathy as a factor contributing to dominance of *Eupatorium raparium* Regel" *Indian J Ecol* 9 : 14-20.
30. Rai, J.P.N. and Tripathi, R.S. 1983. "Population regulation of *Galinsoga ciliate* and *G. parviflora* : Effect of sowing pattern population density, moisture and texture" *Weed Research* 23 : 151-163.
31. Pradhan, P. and Tripathi R.S. 1983. "Competition between *Trifolium repens* and *Paspalum dilatatum* as related to trampling" *Oecologia Plantarum* 4 (4) : 345-353.
32. Tandon P. 1982. "Metabolism of auxin in Eriophyes incited *Zizyphus* of Plant tissue and cell culture" (Ed. A Fugiwawa), Abe Photo Printing Co. Ltd. Tokyo, Japan.
33. Reddy, P.M. 1983. "Changes in polyphosphate bodies during sporulation and spore germination in cyanobacteria" *Biochem, Physiol. Pflanzen* 178 : 77-79.
34. Reddy, P.M. 1983. "Control of sporulation in some bluegreen algae" *Archiv fuer Hydrobiologie (Algeological studies)* 63 : 433-440.
35. Reddy, P.M. 1983. "Lipid composition of akinetes, heterocysts and vegetative cells of cyanobacteria" *Biochem. Physiol. Pflanzen* 178 : 575-578.
36. Prasad, M.N.V. 1982. "An annotated synopsis of Indian Palaeozoic gymnospermous woods" *Rev. Palaeobot Palynol.* 38 (1-2) : 119-156.

37. Prasad, M.N.V. and Ramesh, N. R. 1983 Fungal spores from the Holocene of Tripura, India" *Curr. Sci.* 52 (5) : 254 : 256.
38. Jamir, N. S. and Rao, R. R. 1982 "Ethnobotanical studies in Nagaland II. 54 medicinal plants and by Nagas". *J. Econ. Tax. Bot.* 3 : 11-17.
39. Jamir, N.S. Rao, R.R. 1982. Ethnobotanical studies in Nagaland I. Medicinal plants". *Eco. Bot.* 36 (2) : 176 -181.
40. Kumar, Y. Haridasan, K. and Rao, R.R. 1982 "Ethnobotanical notes on certain medicinal plants among some Garo people around Balphakram sanctuary in Meghalaya" *Bull. Bot. Surv. India* 22 (1-4) : 161-165.
41. Haridasan, K. Kumar, Y. and Rao. R.R. 1982. "New distributional records of plants for North-East India E. *JBNHS* 79 : 455-458.
42. Baishya, A. Rao R.R. 1981. "Fern and Ferns of Meghalaya" Published by Scientific Publisher, (Jodhpur).
43. Rao, R.R. Neogi, B. and Haridasan, K. 1982. "Stachytarheta dichotoma Vahl (verbenaceae) - A new record for India" *JBNHS.* 79 (1) : 233-234.

## 2. DEPARTMENT OF ZOOLOGY

The Department of Zoology was established in 1974 to provide post-graduate teaching and undertake research programmes. The Department identified Freshwater Biology as the thrust area has always used the local fauna as the experimental research material. Thus during the course of the years several branches have developed in their own areas of research and at the same time the regional relevance has always been taken care of.

The specialised areas of teaching are Development and Morphogenesis, Cytogenetics and Physiology, Fish and Fisheries and Parasitology Endocrinology, Biosystematics, Developmental Biology, Evolution, Zoogeography, Entomology, Environmental Biology and Fish Biology are taught as general courses at the departmental level; Cell Biology, Biological Chemistry, Biostatistics, Forest/Freshwater Biology and Ecology are taught as integrated courses at the school level.

The student trained so far have taken up jobs in educational institutions, Departments of Fishery, Agriculture, Sericulture and Forests. Many have taken up research studies and a number of them have gone abroad for higher studies.

### Students Intake

	Male	Female	Total	of which	
				SC	ST
M. Sc. I & II Semesters	12	4	16	1	6
M. Sc. III & IV Semesters	10	8	18	—	7
M. Phil.	7	2	9	—	1
Ph. D.	14	4	18	—	6

During the period under report, 19 students passed the M. Sc. examination and the fellowship students qualified for admission to the Ph. D. Degree.

<i>Name</i>	<i>Year of submission</i>	<i>Guide</i>
1. Mr. Ajai Kumar	1980	Dr. M. K. Khare
2. Miss Manashi Das Gupta	1982	Dr. J. R. B. Alfred
3. (Bhattacharya)		
4. Mr. Mrinal Das Gupta	1982	Dr. S. A. K. Nasar
5. Mr. Sisir Kumar Shaha	1982	Dr. S. A. K. Nasar
6. Mr Simon N. Dzuvichu	1982	Dr. J. R. B. Alfred
7. Mr. Shyama Prasad Biswas	1982	Dr K. Chatterjee & Dr. S.A.K. Nasar
8. Mr. Ajitkumar Bhagowati	1982	Dr. B. K. Ratha
9. Mr. Nabendu Jyoti Dhar	1982	Dr. K. Chatterjee

**Ph. D. students on roll as on 31st March, 1983**

<i>Name</i>	<i>Area of Research</i>
1. Mr. A. K. Z. Ahmed	Ecology
2. Mr. Rashad-ul Islam	Freshwater Biology
3. Mr A. Bhattacharya	Biochemical Taxonomy
4. Mr B. Kharbuli	Ecophysiology
5. Mr, N. G. Goswami	Biology of Prawns
6. Mr. A. Roy	Survey & Control of Insect Pests
7. Mr. S. Chaudhury	Insect integument
8. Mr. S. N. Dutta	Cytotaxonomy
9. Miss Sati Choudhury	Reproductive Biology
10 Mr. M. Ao	Fish Ecology and Zoogeography
11. Miss C. Rodrigues	Parasitology

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|--------------------------|------------------------------------|
| 12. Mr. I. Longkumer     | Ecology                            |
| 13. Miss N. Mishra       | Neuroendocrinology                 |
| 14. Mr. Kiyasetuo        | Amphibian Ecology &<br>Development |
| 15. Mr. O. Pal           | Ecology                            |
| 16. Mr. J. Serr          | Genetics                           |
| 17. Mr. H. Nuri          | Physiology and Bio-<br>chemistry   |
| 18. Miss R. Bhattacharya | Parasitology                       |

**Pre-Ph. D./M. Phil. students enrolled during 1982-83**

1. Mr. J. N. Verma
2. Miss A. P. Shabong
3. Mr. A. L. Paul
4. Mr. N. Saha
5. Mr. S. Prakash
6. Mr. A. Gupta
7. Mr. S. Deb
8. Mr. G. S. Das
9. Miss U. K. Jaiswal

**List of on-going research projects**

<i>Name</i>	<i>Agency</i>	<i>Supervisor</i>
1. Studies on the Ecology and Culture possibility of Mashseers.	Hindusthan Lever's	Dr. S. A. K. Nasar
2. Cytogenetic studies on Tasar Silk Worm.	UGC	Dr. K. Chatterjee
3. Regulation of Ureogenesis in an airbreathing fish.	UGC	Dr. B. K. Rath

4. Scanning Election  
 Microscopic observations UGC Dr. V. Tandon  
 on the surface topography  
 of paramphistome flukes  
 parasitizing ruminant  
 hosts in Meghalaya.
5. Genetic studies on frogs UGC Dr. K. Chatterjee  
 from North-East India.

### Visitors

The Department received a number of eminent scientists/academicians during the period.

1. Prof. U. S. Srivastava, Allahabad University.
2. Prof. G. K. Manna, Kalyani University.
3. Dr Santosh Kumar, Bhopal University.
4. Dr Maitrayi Das, Gauhati University.
5. Prof. S. R. V. Rao, Delhi University.
6. Dr T. C. Deka, Gauhati University.
7. Prof. Jagdis Bahadur, Dean, Jiwaji University, Gwalior.
8. Dr. T. Bhattacharya, Post-Graduate Centre, C. U. Agartala.
9. Late Prof. D. I. Sunderaj, Delhi University.
10. Dr. Mrs. Raj Baweja, Professor & Head of Geneacology Medl. College, Allahabad.

### Participation in Conference/Symposium/Seminar

1. Dr M. K. Khare participated in International Conference on the teaching and research in Developmental Biology in Afro-Asian countries organised by Indian Society of Developmental Biologists at Pune during November, 1982 and presented three papers.
2. Dr. B. K. Sharma presented a research paper at the 3rd International Rotifer Symposium during August-September, 1982 at Uppsala University, Sweden. He also participated in a workshop organised during the Rotifer Symposium.

### **Award of honour/distinction/membership of learned societies**

Dr S. A. K. Nasar has been declared Fellow of the Academy of Environmental Biology and Indian Association of Pollution Chemists and Biologists. He has also been nominated as a member of the Network of Tropical Fisheries Scientists which has its headquarters in Philippines. He was awarded a Research Associateship of CSIR to work on 'Flood-Plain Ecology' with Prof. J. S Dutta Munshi at Bhagalpur University. Shri H. C. Sharatchandra has been nominated by the Meghalaya Government as member of the Greater Shillong Environmental Committee.

### **Special Training**

1. Dr B. K. Sharma attended intensive course in Water Chemistry at Limnological Institute, Uppsala University, Sweden during September, 1982. He is currently undergoing the International Post-Graduate Training Course in Limnology in Austria (February-October, 1983).

### **Publications**

1. Ratha, B K. & Bhagwati A. K., "Biochemical composition and nutritional value of three species of hill stream fish belonging to the genus *Garra* from North-Eastern India" Proc. Indian Natn. Sci. Acad. 48B: 67-72, 1982.
2. Ratha B. K., & Ramanujan, S. N., "Bio-assay and neurotoxic effect of the fruit extract of a piscicidal plant, *Xanthoxylum armaum* on freshwater fishes". Proc. Indian Natn. Sci. Acad. 49B: 93-100, 1983.
3. Nasar, S A K, & Kumar, S, "Observations on the abiotic factors and planktonic periodicity in a shallow pond from the highlands of Shillong (India)". Acta Hydrochim-Hydrobiol. 10 (2) : 167-175, 1982.

4. Nasar, S. A. K., & Dasgupta M., "A Record of an abnormal specimen of the Indian Carp. *Labeo rohita* (Ham)" U. P. Jour. Zool. 2 (1) 56-57, 1902.
5. Nasar, S. A. K., Biswas, S. P. & Chatterjee, K., "Studies on the age and growth of two species of Carp. *Labeo pangusia* and *L. Dera*". J. Biol. Research 2(2) : 116-120, 1982.
6. Nasar, S. A. K. "Seasonal periodicity of Zooplank on in a tropical freshwater swamp in Bhagalpur (India)". Int. J. Ecol. Environ. Sci. 9. 37-43 1983.
7. Nasar, S. A. K. & Biswas, S. P., "Studies on the lengthweight relationship of *Puntius clavatus* from Simsang river, Meghalaya (India)". *Matsya* 9: 59-60, 1983.
8. Nasar, S. A. K., & Kumar, S., "On the length weight relationship and condition factor of *Channa Gachua*". *Arq. Mus. Bos.* 2 (9) : in Press) 1983.
9. Tandon, V & Maitra, S. C., "Scanning electron microscopic observations on the tegumental surface of two rumen flukes (Trematoda: paramphistomata)". *Journal of Helminthology*, 56 (2), 95-104 (1982).
10. Tandon, V & Gupta, N. K. "On some blood flukes (Spirochidae: Coeuritremitinal) from freshwater chelonians in India". *Proc. Ind. Acad. Sci.*, 91 (3) 275-282.
11. Tandon, V, Meeker, R., Oishi, K., & Tiwari, K. K., "Sequence Organisation of Rat brain mitochondrial DNA". *Brain Research*, 245, 293-305, (1982).
12. Tandon, V & Maitra, S. C., "Surface morphology of *Gastrodiscoides hominis* (Lewis at Meconnel, 1876) Leiper, 1913 (Trematoda: Digenea) as revealed by scanning electron microscopy" *Journal of Helminthology* (1983-Press).

13. Tandon, V & Gupta, N. K., "On the blood fluke, *Cardiotrama roparensia* Mehrotra, 1973 and validity of *C. longivestimentata* Durvedi, 1967 (Spirorchidata : Coeuri-trematinal)" Res Bull. Punjab University (in Press).
14. Tandon V & Gupta N J, "On some already known pronocephalids (Trematoda Pronocephalidea) with a discussion on the synonymy of *pleurogenius liveararis* loss, 1901 with *P. Longisculus* Loss., 1901 and an amended key to the species of the genus (*Pleurogonis* Loss 1901)". Res. Bull. Punjab University, (in Press).
15. Sharma, B. K., 1983 "The Indian species of the genus *Brachionus* Eurotatoria : Monogononta : Brachionidae" *Hydrobiologia*, 104 : 29-38.
16. Sharma, D K. & Michael, R. 1983/84. "Redescription of *Alona taraporevalae* Shirgur & Naik, 1977 (Cladocera : Chydorioae ; Aloninae)". *Rec. Zool. Surv. India*, 81 (Press).
17. Sharma, B. K. & Sharma, S., 1984. "A note on some eurotatoria from Punjab State, India". *Hydrobiologia* (Press).
18. Varman, A. R. & Dey, S, "Acid mucopolysaccharides in the lens outicle of the freshwater prawn," *Macrobrachium* *Curr. Sci.* 52, 219, 1983.
19. Chatterjee, K., Saila, J., Stich, H. F. & Bahim, B. "The role of saliva-borne mutagens and carcinogens in the stiology of oral and oesophageal carcinomas". In Stich H. F. (ed) *carcinogens and mutagens in the Environment* Vol. III (Rc Press USA 1983).
20. Chatterjee, K. & Dhar, N. J., "Food feeding habits and alimentary canal of an Indian Hill stream fish". *Journal of Beng. Nat. Hist. Soc.* Vol. 2 (in Press) 1983.
21. Chatterjee, K. & Dhar, N. J. "Electrophoretic investigations on *Channa* sp. I". *Proc. 4th All India Congress of Cytology and Genetics* (in Press) 1983.

22. Chatterjee, K & Datta, S. N., *Chromosome number and sex determining system in fifty two species of spiders from North-East India CIS*". (in Press) 1988.
23. Chatterjee, K. & Dhar, N. J., "*LDH isozymes in the genus channa. Biochemical systematics and Ecology*" (in Press) 1983.
24. Khare, M. K. & Sahu, A. K. "*Field key of Rana alticola tadpoles*". Bom. Nat. Hist. Soc. (in Press).
25. Khare, M. K. & Sahu A. K. "*Diagnostic lectures of Rama danieli tadpoles amphibian reptilia*". (in Press).
26. Khare. M. K. & Sahu A. K., "*Description of Rana cyanophlyctes tadpoles Bionature*". (in Press).

### **3. DEPARTMENT OF BIO - CHEMISTRY**

Biochemistry constitutes a very important component of Biological Sciences. For proper and full understanding of biological systems, it is necessary to have information about the biochemical processes involved at the molecular level. The Departments of Botany and Zoology were the only Departments in the School of Life Sciences until 1980. Realising the importance of Biochemistry for achieving the objectives of the School, the UGC Visiting Committee for the Fifth Plan recommended opening of the Department of Biochemistry in the School of Life Sciences. The fact that there was no institution in the whole of North-East India which offers post-graduate course in Biochemistry added to the need for opening of the Department. Hence, the Department was established in 1980.

Besides pursuing its own research programmes, keeping in view the regional needs such as nutritional studies, biochemical aspects of diseases, biochemical adaptation, etc, the Department will be instrumental in supplementing the research programme of its sister Departments. As it took sometime to set up the infrastructure required for teaching and research, the first batch of M. Sc. students could be admitted only in this academic session. Due to constraints in terms of space and laboratory facilities, only seven students could be admitted to the M. Sc. course. In collaboration with the other two Departments in the School, the Department offers the M. Phil course to a limited number of students. The Department runs Ph.D. programmes as well. The Department also helped one of the affiliated colleges in teaching some of its under-graduate courses.

**Students Intake**

M.Sc	Male	Female	Total	SC	ST
Semester-I	4	3	7	—	3
M.Phil	1	0	1	—	—
Ph.D.	1	1	2	—	—

The following are the names of research scholars in the Department

Name	Research Topic
1. P.K. Prabhakaran	: Multiple hemoglobins in two air breathing fishes: <i>H. fossilis</i> and <i>C. b. trachus</i> : Structural and functional aspects.
2. R.C. Paul	: Studies on Biochemical aspects of environmental and other toxic agents.
3. Rishi Das	: Hemoglobin polymorphism in chironomus Sp.

Dr. R. Lalthantluanga, Head of the Department attended the workshop on "Strategies of Biochemical Education" organised by the International Union of Biochemistry in Perth, Australia from August 12-14, 1982. He also attended the 11th International Congress of Perth from August 15-21, 1982 and presented a paper.

Dr R' Lalthantluanga collaborated with the Max-Planck Institute of Biochemistry, Martinsried (Munich) on "The Molecular Biology of Hemoglobins" and visited the Institute from December, 1982, to February, 1983.

Prof. (Mrs) S. Gujaral, Department of Food and Nutrition, M.S. University of Baroda spent three weeks in the Department from May 23 to June, 11, 1983 and delivered a series of lectures on Food and Nutrition to M. Sc. students. She also delivered two popular lectures: "Nutritional deficiency diseases" on 1 June, 1983 and "Assessment of Nutritional Status" on 7 June, 1983.

Prof. N. Appaji Rao, Department of Biochemistry Indian Institute of Science Bangalore delivered a popular lecture on "Screening of new-born babies for disorders of amino acid metabolism leading to mental retardation" on 7 September, 1982.

### Publications

1. M. Yahiya Khan & A. Salahuddin : *"A cyanogen bromide fragment of bovine serum albumin : Properties and its unfolding"* in proceedings of the 51st Annual Meeting of S B C , November 16-20, 1982.
2. M. Yahiya Khan & A. Salahuddin : *"A possible relation between the saking out behaviour of proteins and their surface hydrophobicity"* in Ind. J. Biochemistry, Biochemistry, Biophysics, 20, 127-131 (1983)

3. **R. Lalthantlugnga k** : "*Comparative studies on the structural, functional aspects of animal hemoglobins*" presented at the 12th I. U.B. Congress, Perth, Australia August, 1982
4. **R. Lalthantluang & C. Braunitzer** : "*Complete amino acid sequences of the I & II chains of yak.*"