

# Research in the Department of Biological Sciences

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Research in the Biological Sciences was initiated in the Vidyodaya University of Sri Lanka (now the University of Sri Jayawardenapura) in 1968 when two graduate students were registered for M. Sc. degrees by research in the field of Fisheries; one, to study the Prawn Fishery at Bolgoda Lake, and the other to study the Biology of the Flying Fish off the coast of Trincomalee. Since then, the research activities of the Department have expanded to include, apart from fisheries biology, subject areas such as Genetics (Plant and Animal), Entomology (Insect Pests), Pollution, Soil Biology, Microbiology and Plant Pathology.

Apart from the M.Sc. (and Ph.D) research activities, from 1972, a research component has been added to the undergraduate biology courses as well. For the General Degree Course, the students have to carry out a 2-year unguided ecologically oriented research project, the results of which are presented as a dissertation and tested at the B.Sc. General Degree Examination. The Biology Special Students (one year course after the General Degree Course) have to carry out a 9-month guided laboratory oriented research project the results of which are presented as a dissertation and tested at the B.Sc. (Special) Examination. The B.Sc. (Gen) research projects given at the undergraduate level are many and varied, eg. seasonal variations in populations of insects, fishes, plants (weeds), etc, or migration pattern of butterflies, or fluctuations in the population of seaweeds and many more. The B.Sc. (Special) projects are more precise and have been the study of the uptake of  $N_2$  fertilizer as foliar spray to soya beans, the biology of matapenaeid prawn at Bolgoda, or the study of the biology of anchovy, to name just a few.

At present, the following research projects are going on in the Department.

1. A study of the effect of radiation and chemical drugs on the induction of sterility of the mosquito vector of filariasis (*Culex quinquefasciatus*). This is in order to obtain data about recovery from genetic damage to male germinal cells from the treatment, which information is important if the sterile male technique is to be adopted for the control of the mosquito. These experiments also would enable us to obtain genetic strains which can also be used in control programmes of the mosquito.
2. A study of the biology of an insect parasite of the house cockroach (*Periplaneta americana*) which is found in the ootheca of the cockroach.

The name of the oothecal parasite is *Evania appendigaster*. Studies were made earlier on another hymenopteran insect pest of *P. americana*, namely, *Tetrastichus hagenowii*. It is possible to use both parasites in the control of the cockroach. Tentative comparison between the two parasites show that *T. hagenowii* is the better parasite for control of the cockroach.

3. A survey is being conducted of the recruitment of prawn fry into the Bolgoda Lake. Earlier studies on the Bolgoda Lake had given information with regard to various hydrochemical factors, now hydrobiological studies are being extended.
4. The biology of an insect pest of brinjals has just been started. The purpose is to study the biology of the pest in order to be better able to control it, either with the use of parasites of the pest or by chemical means.
5. A study is being made of the spontaneously arising mutant load in *Drosophila ananassae*, which is the local species of *Drosophila* found in Sri Lanka. By this means, we built up stocks of *Drosophila* flies for use in our practical classes as well.
6. Various research activities are carried out at the Rubber Research Institute by students registered for M.Sc. degrees in this Department. For instance, some work on tissue culture techniques to evolve easily cultivable rubber clones, as tissue culture clones have been carried out. Not much success has been achieved yet. Other work on the biology of the various fungal pathogens of rubber for which two M.Sc. theses have been presented and accepted have helped considerably to control diseases of rubber plant.
7. A member of the staff is making a survey of plant extracts for pesticidal properties, while at the same time he continues his studies on the foliar application of  $N_2$  - Fertilizers on soya beans. He has to use isotopes as tracers for these latter experiments.
8. Another member of the staff is attempting to recruit into artificial ponds, prawn fry at Bolgoda Lake using tidal fluctuations of water level. If this is proved successful then prawn farming can be started by the villagers with greater economy benefits than the present "Ja-kotu" trapping system. The ponds being sited at Bolgoda has led to some extraneous problems about squatters at the moment.