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REPORT OF THE DIRECTOR OF REELFOOT LAKE BIOLOGICAL STATION

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Through the graciousness of the General Assembly and Governor of Tennessee, the Tennessee Academy of Science received a grant of \$5,000 for expenses of operation of Reelfoot Lake Biological Station for the biennium, 1937-1938.

A budget adopted by the Executive Committee and Director includes a distribution of this appropriation in the following manner:

For the session, 1937.....	\$2,500.00	
Scholarships, Director's salary	\$1,200.00	
Operating expenses	275.00	
Permanent equipment	200.00	
Temporary and replacable equipment.....	175.00	
Building repair; caretaker	150.00	
Printing of the Annual Report.....	500.00	
For the session, 1938.....	\$2,500.00	
Total	\$5,000.00	

The laboratory building remains in excellent condition, the only repairs needed during the past session being the repainting of the bridge across the bayou. There has been purchased for equipment one large boat with accessories, several nets, fish traps and an automobile.

The research workers of this session of the Biological Station excelled in quality and experience those of any previous session.

Miss Nelle Bevel, of the Graduate School of the University of Arkansas, made a qualitative study of the protozoa of the lake and

identified a number of aquatic and semiaquatic plants from which a key for identifications has been completed.

Dr. Homer R. Bolen, Professor of Biology at State Teachers College, Cape Girardeau, Missouri, studied the planarians of the lake.

Dr. Elon E. Byrd, Associate Professor of Biology, of the University of Georgia, autopsied several hundred turtles of various species and collected a large number of blood flukes, several of which will prove undoubtedly to be new species. Each species of blood fluke identified probably has a life history which includes a secondary host found in Reelfoot Lake and Dr. Byrd plans to continue his investigations during future sessions.

Compton Crook, Professor of Biology, Matthew-Whaley School, Williamsburg, Virginia, studied the stomach contents of egrets, cormorants, and herons of the lake in order to determine whether or not they are destroyers of game fishes.

Malcolm V. Parker, graduate of Southwestern, and at present a graduate student in the University of Georgia, continued his studies on amphibia and reptiles of Reelfoot and vicinity and assisted in a survey of the smaller fishes. In addition Mr. Parker kept on exhibition during the entire summer numerous specimens of living snakes, turtles, frogs, and salamanders which were viewed and studied by hundreds of visitors.

Dr. Robert J. Schoffman, O. S. V., Associate Professor of Biology of St. Viator College, Bourbonnais, Illinois, studied the growth rate of Reelfoot Lake game fishes by scale examinations. Age-size-weight correlations were made on approximately 1,000 blue-gills (*Helioperca macrochira*), one hundred fifty white crappie (*Pomoxis annularis*), and seventy-five large-mouth black bass (*Huro salmoides*). This is the first study of this type ever made on southern fishes and will furnish very important data regarding rate of growth of game fishes.

David Taylor, graduate of Southwestern, conducted a creel survey with the cooperation of the National Park Service and C. C. C. camp and obtained complete records of the catch of more than seven hundred fishermen. While this is only a small portion of the total number of fishermen of the lake the results obtained will furnish a valuable index of fishing conditions throughout the summer.

Mike Wright, of the graduate school of Vanderbilt, studied the ecology of Odonata nymphs and made a very valuable personal collection.

The Division of Malarial Investigation of the U. S. Public Health Service used the facilities of the station for a continuation of their researches on the life histories and habits of certain malarial mosquitoes. Frank R. Brown, of Vanderbilt Medical School, and Jed Pierson, of the University of Indiana Medical School, represented this department. The Director has granted Dr. J. A. LePrince permission to build a walk from the laboratory out to the lake, a distance of several hundred yards. On the edge of the lake a boat house and

observation platform will be erected, the ownership of which will revert to the Biological Station.

The Director continued the survey of the fishes of the lake, paying special attention to the smaller forms which are an integral part of the food relationships of the fauna and flora of the lake. Many collections were made with the assistance of M. V. Parker and distributional studies of each species was considered. Sixteen new types were added to the annotated list making a total of fifty-six different species positively identified from Reelfoot Lake.

The experimental work begun by Louise C. Baker in 1937 on the effects of pituitary injections on *Amphiuma tridactylum* was continued. This strange amphibian is quite abundant along the shores of the lake and by the use of refined methods of laboratory technique it is believed that the mating habits will soon be known.

The tremendous areas of vegetation on the lake still offer an excellent problem for future investigators. The increase of saw-grass and submerged "moss" each year indicates that some drastic measures must be taken very soon to preserve the open areas of the lake for future generations of fishermen. Before man intervened there might have been a "biological balance" existing in this area where vegetation, fishes, birds, fur-bearing animals, and water maintained a stable relationship. The once abundant musk-rats, otters, and beavers have all been almost exterminated and their replacement might be the key to the solution of the present problem of vegetation increase. It is known that musk-rats feed on *Sagittaria*, *Ceratophyllum*, *Potamogetons*, and other water plants which are so abundant on and in the lake. The fluctuating water levels, climatic conditions, and available foods are all conducive to musk-rats and it is believed that if these valuable fur bearers could be reintroduced in the lake our major problems would be solved.

Preliminary experiments were conducted on the use of sodium arsenite in controlling the submerged vegetation. During August, 1938, several clumps of sawgrass were sprayed with a solution of one part sodium arsenite to ten parts water. Two days were required to kill these plants. Experiments conducted by Surber, of U. S. Bureau of Fisheries, on certain northern lakes shows that sodium arsenite may be used in waters in only one part to one million of water to kill submerged vegetation yet not affect the plankton or fish life. This weed killer will be used during the spring on submerged and emergent vegetation near the Biological Station and through controlled experiments we shall try to determine its effectiveness.

Thus we see opportunities for extensive researches in all phases of biological activity which are of tremendous economic importance to the residents of the lake, the fishermen and sportsmen of the state, and the citizens of Tennessee.

We come now to a consideration of the future of our Biological Station. We are extremely fortunate in receiving financial aid from

the State of Tennessee. Should we be content to depend entirely on the State for our support or should a special effort be made to enlist the aid of the schools and colleges of Tennessee? Our Station is supposed to be operated and controlled by the Tennessee Academy of Science which represents these schools and colleges, yet less than half of the workers of the past two years have been from Tennessee schools. Scholarships have been awarded in most all cases to attract more desirable workers. The original plan was that the school should furnish one-half of the scholarship, the Academy one-half. Only one school in Tennessee has contributed in any way towards equipment or scholarship aid to workers.

Financial aid and competent workers are necessary for the success of the Station. It is questionable as to which is the easier to obtain. Educational institutions of Tennessee are urged to assist us by recommending research scholars to whom the Academy will award scholarships and furnish certain equipment. Special equipment such as microscopes, books, and cameras should be furnished by the schools which are represented.

The Biological Station has established a reputation throughout the nation and there is an excellent possibility that extensive financial aid can be secured from outside educational funds. Such funds would be much easier to obtain if it were known that we are supported by the schools of Tennessee. Research in the South has been retarded in the past by lack of finances and opportunity. Reelfoot Lake Biological Station offers both.

CASTING OBJECTS IN A ONE-PIECE FLEXIBLE GELATINE MOLD

Under the above title one of our own Tennesseans, Professor Reid Davis of Union University, describes a very useful method of making castings of animals, plants, or other material in gelatine that should be very valuable to high school teachers. Gelatine is inexpensive as compared with the imported materials sometimes used for this purpose. This article is on pages 74-75 of *Turtor News*, April, 1938, number. This is the trade publication of General Biological Supply Co., 761-763 East 69th Place, Chicago, Illinois. They will be glad to send a copy of this number to any interested member.