Southland Trip Emphasizes Ecology

By JOHN E. STENCEL, JR.

James D. Welker (1970: "Field Biology for the Junior College," *ABT* 32 [1]: 18-19) outlined a field-biology course offered annually from Olney Central College, in Illinois, to the Gulf shore of the United States. This article adds details about the planning of that trip and emphasizes ecology in field studies. Also, in 1971 we patterned our course after one offered by Hurst Shoemaker at the University of Illinois; this included visits to the Edward Ball Marine Station, near Tallahassee, Fla., the Florida Everglades and Keys, and the Miami Seaquarium.

Selecting and Preparing the Students

Months before the trip, interested students were given an informational sheet indicating the prerequisites, purposes, credits, general itinerary with dates, classroom sessions before the trip, estimated costs, living accommodations, and personal equipment needed. A sign-up sheet soon followed. Students were selected by their major in biology, their priority in signing the list, and their interest in ecology. During the quarter break these students read a short book about general ecology and some pertinent articles about oceanography, the Everglades, and southern wildlife. All received an outline for each seminar meeting. The outline noted class dates and times, major topics, related problems about the trip, and additional references.

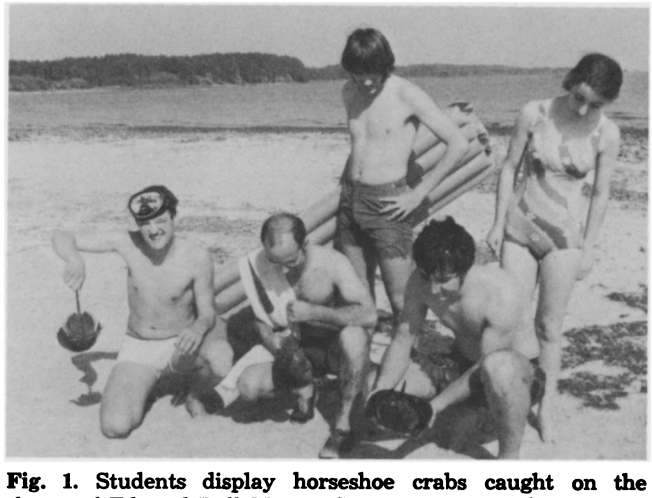

Fig. 1. Students display horseshoe crabs caught on the shores of Edward Ball Marine Station, near Sopchoppy, Fla.

Our seminars were informal. Students and this teacher, all wearing name tags, were seated in a circle. The teacher would briefly introduce the topics and then, in keeping with the outline, ask questions and provoke discussion. It was exciting to see students with little background in ecology provide good questions and comments and discuss information among themselves. To guide the discussion, terms and illustrations were placed on a large clipboard; this saved writing time and aided students in

The author, a graduate of the University of Illinois, obtained his master's degree in biology at the American University, Beirut, Lebanon. He has taught general science in junior high school, and biology in senior high school. At present he teaches zoology and is chairman of science and mathematics at Olney Central College, 405 N. West St., Olney, Ill. 62450. Stencel is working on another article: about the acquisition of, and master plan for, a nature preserve, which is managed by Olney students and community representatives.

Fig. 2. On Lookout Mountain, near Chattanooga, Tenn., the South lost a decisive battle. Illinois visitors here blend history into their curriculum.

taking better notes. At the beginning of each seminar, chairmen from various planning committees—camping and cooking equipment, transportation, food and menu, photography, insurance (see Welker's article)—gave progress reports. Consequently, the whole group could be reached at one time, so as to be asked to bring in equipment, pay fees, and give suggestions.

In years past our seminars consisted of lectures about the South in general, its physiography, the climate, the typical plants and animals, and the like. Now, by using ecology as the focus, this diverse group of biology students seemed academically united. They could relate their first-hand experiences to some basic concepts and interrelationships learned in the classroom. One student remarked that she had not really understood the pyric factor limiting the growth of broadleaf trees in the South until she witnessed a number of small forest fires. Most students saw the north-south ecocline as we passed through it and were able to differentiate the changes in soil types, flora, and fauna. Several recognized that Gloger's rule and Bergmann's rule were exemplified by the raccoons and swamp rabbits near Olney, as compared with those in the Everglades.

Before leaving Illinois, students attended eight classroom meetings, as follows:

1. Introduction: informational sheets, textbooks and references, seminar outlines and dates, and a movie from last year's trip.

2. Introduction to ecology: definitions, importance, and levels; community structure and composition.

3. Environmental gradients: major ecoclines; biomes pertinent to the trip; community adaptations; succession and climax.

4. Production and food webs.

5. Circulation and pollution; intimate relationships among organisms.

6. Oceanography: some physical aspects; biologic adaptations.

7. Florida Keys and Everglades: general description and biologic importance; natural communities and dominant organisms.

8. Essay quiz.

100-Point Evaluation

Grades were based on 100 points. Five points were awarded for preparing a paper about the student's specialty. Early in the course, every student (alone or paired) had selected a group of organisms to study on the trip: mollusks, plankton, trees, algae, mammals, and so on. In his paper the student had to explain the collecting or observing techniques, the equipment needed, and the methods of preservation, and he had to list several references.

At the last seminar meeting, the student could earn up to 15 points by writing an essay on a topic selected from the seminar outline.

After returning from the trip the student was judged and given up to 10 points for his help on the planning committees and for his cooperation during field studies.

The remaining 70 points included the final paper, a scientific account of field experiences, and library research. The paper was subdivided as follows:

1. The ecology of the South and the Gulf shore, including observations of the north-south ecocline, food webs, and plant and animal relationships.

2. Oceangraphy: a brief summary of the work and facilities of the Edward Ball Marine Laboratory and an annotated list of organisms obtained on the boat trip there.

3. Florida Everglades and Keys: a brief description of the ecologic importance, conservation, and adaptations noted there. A student on the trip taped a lecture given by one of the park rangers at a slide show in Everglades National Park. This information helped the students when writing up their reports.

4. An annotated list of their specialty organisms with properly labeled collections (if possible).

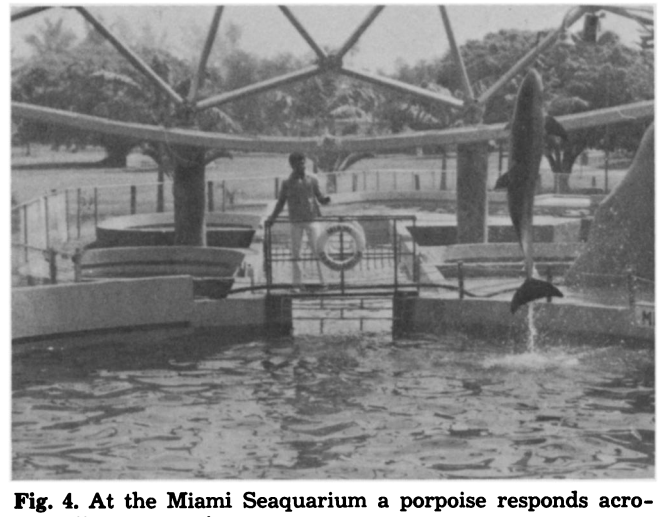

Fig. 4. At the Miami Seaquarium a porpoise responds acrobatically to trainer's gesture.

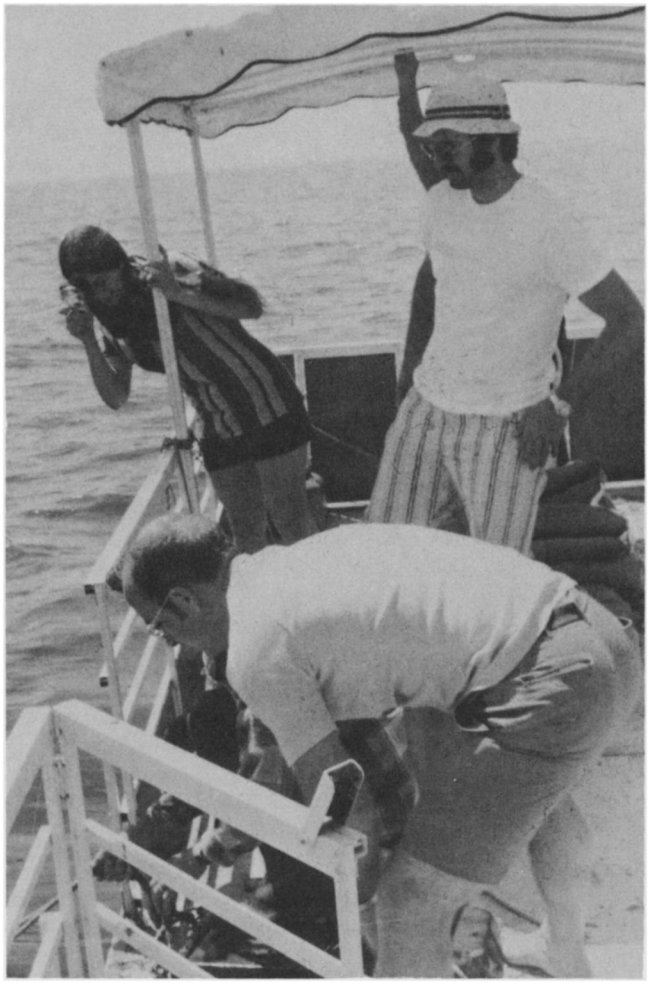

Fig. 3. On the marine exploration vessel "Kontiki" a net laden with sea creatures is pulled aboard. Girl photographs the emerging trove.

Cross-Country Discipline

For a trip to be successful the instructor must plan thoroughly, but he must be flexible enough to allow for changes, which usually occur. It is necessary to write to most campsites for reservations, obtain collecting permits from state conservation agencies, and get as much information about the region as possible, from state travel agencies, gasoline companies, and other sources.

Each driver is given a three-ring notebook with pockets for maps, brochures, and traveler's checks. One set of pages includes the itinerary. It lists main towns and cities and the approximate mileage between them. Along the route are checkpoints, where all cars will rendezvous before proceeding to the next town. The general rule is this: never pass a checkpoint unless all cars are accounted for. Checkpoints usually are meal stops, gas stops, or campsites. Another page lists all the cars by description and license number and each car's passengers by home address and phone number. One page contains information about emergencies; for example, if a car is lost for more than an hour the party at the checkpoint is instructed to call the local police or the highway patrol. Similarly, the driver is told what to do if he has an automobile accident, car trouble, or a sick student.

We use the college's station wagons. Each student may take only a suitcase, a small overnight case, and a sleeping bag. Most of these items are stored in the overhead luggage-rack. The lead car takes the tents; each of the other cars is the special carrier of food and cooking equipment, collecting equipment, and so on. On such long trips, each wagon transports only five students.

At most campsites the students gather at an evening campfire and discuss the day's observations: types of vegetation, plant and animal relationships, economic use of the land, and cultural aspects. This helps the student to associate what he saw with certain ecologic concepts. Each has a chance to ask questions in a group and thus to use the group specialists to give reasons or explanations. At times park rangers, research professors, and other experts provide such information.

"Blowing" Porpoises and Other Rewards

For about nine days and at a fee of $35 each (meals en route not included) the students learned about the ecology of the South, the wildlife of the Everglades, and the exciting features of the sea. Also, they visited historical sites. A marine station provided them with a laboratory and a library to aid in their observations. Most students were amazed at the sight and loud blowing of porpoises late one evening near the shores of the station—one of many surprises in the adventure of field biology.

Over the years, Olney students have brought back many specimens of sea creatures—so many that we didn't know what to do with the surplus. Then someone suggested: why not give them to nearby public schools? We prepared "marine life kits," each containing a hermit crab, a ghost crab, a mantis shrimp, a sea squirt, a cow fish, a flounder, a butterfish, and other specimens. These were presented, last September, to the schools, which will use them as teaching aids.

Grants Encourage Research

Research extension grants designed to assist 142 college teachers to improve science-teaching have been announced by the National Science Foundation. The grants were made mainly to smaller colleges and universities with limited research facilities and funds. These grants reflect a belief that a small active research activity in a department—especially when it involves students as well as faculty—adds an important intellectual component to the department's educational program and enlivens instruction.