

TROPICAL NATURAL HISTORY  
GROUP CONTRACT - FALL 1983

This program was about the natural history of the Hawaiian Islands, featuring nine weeks of field studies on Hawaii and Maui. The topics examined were geological and biological, including: tectonics, origin of magma, volcanic landforms, geomorphology of oceanic islands, shoreline processes and landforms, organic (coral) reefs, vegetation, birds, other land biota, and marine life of shores and reefs. The Hawaiian native biota was considered within the framework of biogeography, featuring evolutionary and ecological perspectives.

An important program objective was to have students make and record their own natural history observations. A rigorous field journal containing these observations was kept by each student. Another objective was to have students correlate text material (see below) with their observations and critique concepts such as adaptive radiation, attenuation of species diversity, sequential development of landforms, and others. Hopefully, each has developed lifelong skills in natural history that can be applied anywhere.

The faculty instructors were Dr. James Stroh (geology) and Dr. Peter Taylor, Coordinator, (biology).

#### Texts and References

The principle texts for assigned reading were: Volcanoes in the Sea: The Geology of Hawaii, by G.A. Macdonald and A.T. Abbott; A Natural History of the Hawaiian Islands: Selected Readings, E.A. Kay (editor); Hawaii: A Natural History, by S. Carlquist; Natural History magazine, December 1982 issue on Hawaii: "A Showcase of Evolution"; Fish Watching in Hawaii, by R. Carpenter and B. Carpenter; and Hawaii, by J. Michener. In addition, many field guides and other references were used by participants, depending upon particular interests and specialties.

#### Lectures

During the first two weeks, before travelling to Hawaii, the program instructors introduced geological and biological topics of Hawaiian natural history. In addition, invited speakers presented sessions on Hawaiian plants and Hawaiian ecology and culture. A film was shown about the ecology of coral reef fishes.

While in Hawaii, faculty lectures were related to field experience and often given in the field. They covered geological topics (J. Stroh) and vegetational ecology and coral reef ecology (P. Taylor). Invited speakers talked about recent surveys and mapping of Hawaiian native forests and birds (James Jacobi, U.S. Fish and Wildlife Service), highlights of Hawaiian Terrestrial natural history (William Mull, naturalist and photographer), and marine-resource agencies' activities in Hawaii (Fred Ball, Hawaii Dept. of Land and Natural Resources).

#### Field Trips

After two weeks in Olympia, two weeks were spent on the Island of Hawaii. There, several field trips were taken in and near Hawaii Volcanoes National Park, where the group resided, to observe geological features and local plants and animals. There were also trips to coastal areas for snorkeling and a two-day excursion around the island. Students were introduced to a wide variety of geological features, and biological habitats of the uplands and shore.

On Maui, the program was based at a group camp located on a leeward shore, at Olowalu, near Lahaina. There were day trips on the coasts of West and East Maui, and to Iao Valley and Haleakala crater, and a three-day hike within Haleakala Crater. On each of these, students observed and recorded geological and biological phenomena from a variety of environments, including recent volcanism, eroding coastlines, wet and dry forest, the alpine zone, and the coastal zone. Tours of arboretums were given by Mr. Robert Hobdy (Hawaii Department of Land and Natural Resources), and Mr. Rene Silva (Maui Botanical Garden). Ms. Ann Fielding led a trip at Cape Kinau featuring anchialine ponds. Students also made extensive use of the coral reef at Olowalu. Snorkeling and diving were regular activities. The biology and geology of the reef at Olowalu were among the most important field activities.

#### Field-Skills and Safety

Sessions were held on first aid and cardio-pulmonary resuscitation (CPR) and on snorkeling and SCUBA-diving, in preparation for the field studies in Hawaii. While in Hawaii, a Divemaster guided the snorkeling and SCUBA-diving activities based on a formalized Diving Policy. The purposes were to promote skills for making underwater natural history observations as well as for safety.

#### Seminar and Taxonomic Specialties

Seminar discussions included "tutorials" on the text readings and on special topics such as the geological and biological future of Hawaii, a comparison of the natural history of Hawaii and the Pacific Northwest, and a discussion of Michener's novel Hawaii.

Each student chose an organism or group of organisms to study and then presented his/her findings to the whole group. Library research was completed in Olympia. The oral presentation concentrated on the role, uniqueness, diversity of the taxa in Hawaii.

#### Field Project

Students prepared short reports on some aspect of individual or group projects. Skill development and report writing were the two primary objectives. The reports covered a wide variety of topics, marine and terrestrial, geological and biological.

#### Field Journal

Maintaining a field journal was one of the most important program activities. The Grinnell system was followed, stressing direct observation of geology and biology. Field notes taken during the day were transcribed into the journal back at camp. Species accounts were kept on organisms selected by the student. At the end of the quarter, the students were asked to compile from the field journal lists of species observed, organized by taxonomic groups and habitats or localities, geological features, and outlines of geological and biological concepts represented, as a synthesis of their field observations.

## TROPICAL NATURAL HISTORY

Fall Quarter 1983

The Evergreen State College

Hawaii is an outstanding place to do field-science studies in a tropical setting. Active volcanoes, high-island topography, lush tropical vegetation, exotic birds, and spectacular coasts with coral reefs and myriad colorful fishes are highlights. The Hawaiian Islands offer exceptional opportunities to study volcanic landforms and how volcanism sets the scene for island natural history. The vegetation and birds represent a native biota that has been overwhelmed by species introduced since Captain Cook's time. The geological youngness and physical isolation of the Islands, in the mid-Pacific Ocean, provides a major demonstration of how life colonizes and evolves in new environments, and how humans have affected the process. The coastal reefs are extremely attractive environments in which to study tropical marine life and the biological and geological processes which created the reefs. These topics are all parts of Tropical Natural History, a field course offered by The Evergreen State College.

The first two weeks will be spent on campus in Olympia to prepare academically and logistically. The group will then fly to the "Big Island" (Hawaii) to stay two weeks at Hawaii Volcanoes National Park. Kilauea Volcano, various natural landscapes, and marine life of the Kona Coast will be the attractions there. The Island of Maui and a field camp on the shore east of Lahaina will be home for the remaining seven weeks. A large coral reef is just a walk across the beach, and is conveniently accessible for snorkeling and SCUBA-diving. With the use of vans, much of Maui will be in reach for various natural-history studies.

The plan of study is to examine Hawaiian natural history as a whole, both terrestrial and marine environments, emphasizing field studies. Marine reef ecology and volcanic-island geomorphology will be studied most intensively, but vegetation, birds and other aspects of natural history are also featured. Lectures, reading, seminars and contact with local experts will support the field studies. There will be opportunities for specialization through individual projects.

Participants should have college-level background in biology and experience with field observation. Appropriate gear for high-country hiking will be needed. For the marine reef studies, capability for snorkel-diving is desirable.

Tropical Natural History is an upper division undergraduate course, for 16 units of credit. The Fall Quarter period is September 26 through December 16, 1983. Costs will be up to \$1650 for air fares, ground transportation, lodging and meals, based on travel from Olympia. Additional costs will be tuition, books, and personal hiking and diving equipment and supplies. Participants need also to provide personal health insurance. Enrollment will be 25-35 students. The faculty instructors are Dr. Peter Taylor (marine biology) and Dr. James Stroh (geology).

For further information, contact Dr. Peter Taylor, Lab I, The Evergreen State College, Olympia, Washington 98505. Phone 206-866-6000, extension 6730.