EARTH ENVIRONMENTS: PAST AND PRESENT

Group Contract, Winter-Spring 1977
Faculty - Jim Stroh (geology), Peter Taylor (biology)

This group contract is about the earth and its biosphere strongly emphasizing a historical perspective. An interdisciplinary integration of the following geological and biological subjects was featured: general earth science, historical geology, evolution and ecology.

First Quarter - Winter 1977

Lectures and Films. Topics of lectures by the sponsors were: geologic history of southwest Washington, world-wide topography, internal structure of the earth, plate tectonics, geologic time, rock cycle, carbon cycle, phosphorus cycle, origin of petroleum, marine environments and marine organisms, marine zoogeography, and ecology and paleoecology of coastal marine benthos. Additional lectures were heard on: land vertebrate zoogeography (D. Humphrey), hereditary mechanisms (D. Humphrey), evolutionary relationships of molluskan classes (L. Kahan), tropical natural history (D. Paulson) and geology of the San Juan Islands (D. Cowan and J. Whetten). Films shown were: The Restless Earth - Plate Tectonics, The Weather Machine.

Texts. Colinvaux, P. 1973. Introduction to Ecology. Wiley; Cloud, P. (ed.) 1970. Adventures in Earth History. Freeman; Dott, R.H. Jr. and R.L. Batten 1976. Evolution of the Earth. 2d Ed. McGraw-Hill; Strahler, A.N. and A.H. Strahler 1973. Environmental Geoscience. Hamilton; Stebbins, G.L. 1971. Processes of Organic Evolution. 2d Ed. Prentice-Hall.

Reading, Study Questions and Weekly Review. For the above texts a weekly schedule of reading was followed for eight weeks. Study questions, designed to guide the reading, were assigned for written responses. Weekly sessions were held for the whole group to review and discuss topics in the reading. For the winter quarter the proportion of the texts covered were (by authors): Colinvaux - two-thirds, Cloud - less than one quarter, Dott and Batten - complete, Strahler and Strahler - one-half, and Stebbins - complete.

Laboratories. Sessions were held on: sediments, sedimentary rocks, Tertiary molluscan fossils, modern mollusks, and Foraminifera fossils. Laboratory notes were required and reviewed.

Field Trips. Field trips were made: to nearby Puget Sound intertidal sandflat sites (marine intertidal organisms and environments), twice to nearby exposures of the Lincoln Creek Formation of southwestern Washington (marine fossiliferous Tertiary deposits), and to the San Juan Islands for four days (geology and modern marine biology). Field journals were required and reviewed.

Second Quarter - Spring 1977

Lectures and Films. Topics of lectures by the sponsors were: geology, geologic history, vegetational zones and biomes of principle areas visited during the field trips (six lectures); evolutionary history of selected biological taxa; and concluding review of geology and biology of Earth Environments. An additional lecture was presented by Dr. O. Soule on desert vegetation. Films shown were: The Beach - A River of Sand, The Salt Marsh - Border Between Land and Sea, and Signals for Survival (seagull behavior).

Reading and Review Sessions. Reading was completed in the texts by Colinvaux (1973) and Strahler and Strahler (1973) listed for the First Quarter. Sessions were scheduled during weeks on campus to review and discuss the texts.

Laboratories. Scheduled sessions were held on the characteristics and identification of minerals and rocks, on exercises from Historical Geology - Manual of Laboratory Exercises by F. Robertson and F.C. Marshall (1975, Burgess Publishing Company), and on methods of vegetation survey. Laboratory notes were required and reviewed.

Field Trips. Three major field trips were conducted: 12 days, April 11-23, to Death Valley, and eastern Oregon (geology, paleontology, and arid land ecology); 5 days, May 2-6, to the Oregon coast (geology, paleontology, and marine intertidal coastal forestland biology); and 5 days, May 16-20, to the Columbia Basin and Cascade Mountains of Washington (geology and forest and steppe vegetational zones). Written Field Journals were required and reviewed. A brief written report on some selected aspect of the Death Valley trip was assigned.

Special Interest Projects. Optional interest-groups were formed to study the techniques of palynology (pollen analysis), dendronology, sampling and identification of megafossils and microfossils from the Lincoln Creek Formation (southwestern Washington), and instruments used in petrological analysis. A written report was assigned to be based on this project or some other topic suited to the program theme.