



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute

1999 Volume VI: Human-Environment Relations: International Perspectives from History, Science, Politics, and Ethics

Human-Environment Relations: A Case Study of Do'ana National Park, Andalucia, Spain and the Los Frailes Mine Toxic Spill of 1998

Guide for Curriculum Unit 99.06.01

by Stephen P. Broker

Abstract: This curriculum unit on contemporary human-environment relations focuses on the interplay of cultural, ecological, environmental, and human health issues. It is a case study of an environmental disaster near Do'ana National Park, Andalucia, Spain. Do'ana is considered the most important wetland in Europe. Its marshes, mobile dunes, and forests are unique. In April 1998, a sudden burst in a zinc mine waste reservoir released a billion gallons of heavy metal contaminants into the Guadiamar River, a tributary of the Guadalquivir River, which forms the eastern boundary of Do'ana National Park. The toxic spill quickly was regarded as a national disaster in Spain, and it received extensive coverage in the press and in science journals. The highly acidic sludge, zinc, cadmium, arsenic, and lead pollutants that were released into the environment continue to threaten the ecology and the biota of this internationally significant wetland.

The unit is intended for high school juniors and seniors in a year-long environmental science elective, and for juniors and seniors in an honors anatomy and physiology elective. For the environmental science students, I intend the unit to raise topics relating to groundwater contamination, the threatened loss of biological diversity, land management, and risks to human health. For the anatomy and physiology students, the unit will introduce subjects that lead to further study of environment/human health problems. My primary purpose in developing the unit, however, is to show all my students how they might undertake a broad-based investigation into a contemporary environmental issue.

The classroom activities which are presented in the unit follow from the development of an historical narrative about Coto Do'ana, the name for this long time nature preserve, and they include cultural, ecological, environmental, and land management components. Students' research skills are developed in an attempt to develop an understanding of a complex set of issues. The unit considers the geography of Spain, the historical and cultural heritage of Andalucia Province, the biogeographical province in which Do'ana is found, and the legal protections that are afforded Do'ana by national governance and international designation.

(Recommended for Environmental Science and Honors Anatomy and Physiology, grades 11-12.)

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