EcoBeakerHS

Publisher: SimBiotic Software

Developer: Eli Meir, BeakerWare

Grade levels: 8–12

Scientific domains: Biology, ecology

Web site: http://www.simbio.com

Year profiled: 2002

EcoBeakerHS, developed in 2001, is a set of 10 labs on CD-ROM with a closely matched student workbook and teacher's guide. The labs are intended for use as part of a regular biology, environment, or ecology course. Each lab is a highly interactive simulation of an investigation in field phenomena. Students must make a number of decisions during the course of each investigation and record their findings.

SCOPE/CONTENT

EcoBeakerHS labs—covering topics in biology, environmental science, and ecology—explore population and community, ecosystems, pollution, evolution, genetics and heredity, diversity, diseases and epidemics, energy flow, and other topics. The labs are case studies in which students change variables to investigate their relationship to the case. Specific labs are listed below:

- Isle Royale: Study of wolves' impact on a moose population in various ecological dimensions.
- Keystone Predator: Study of the impact of predator removal on an intertidal food web.
- The Heterozygote Advantage: Study of the relationship between sickle cell anemia and malaria.
- Lake Sewage: Study of the impact of phosphorus on lake biota and algal bloom.
- Barnacles and Tides: Study of the different distribution of barnacle species in the rocky intertidal zone.
- Genes of the Nene: Study of genetic diversity and inbreeding in the nene bird of Hawaii.
- Cheetah Challenge: Study of the amount of plains area needed to save a cheetah population in Kenya.
- Sick Fish: Study of various strategies to control bacterial disease on a fish farm.
- Oil Spills and Logistical Bacteria: Study of the impact of bacteria in eating up an oil spill.
- Killer Ladybugs: Study of the impact of five ladybug species in the control of wheat-eating aphids.

FORMAT

The program is completely contained on a single CD-ROM that runs on Windows or Mac OS. Each lab consists of a number of exercises, often including large amounts of data that students can manage to affect the simulation. For example, upon entering the Cheetah Challenge, students learn background information on the shrinking plains in Kenya and become aware of the threat to the cheetah population. Students have access to key terms and descriptions of the species, as well as to the procedures for various exercises they will perform within the software. Students can also use the simulation software to pursue questions of their own, while recording their findings in the student workbook. The teacher's guide includes a list of the major concepts, recommended prior knowledge, science standards, and a summary of each lab. It also includes background information for the teacher, objectives, preparatory questions, supplementary student activities, and notes on each exercise, including the answers to the questions.

ASSESSMENT INSTRUMENTS

The teacher's guide contains two assessment instruments for each lab, each at a different level of difficulty. Answer keys are provided.

PROFESSIONAL DEVELOPMENT SUPPORT

In addition to the teacher's guide, the *EcoBeakerHS* Web site also provides information and recommendations on the use of the program. It also lists workshops that are conducted at various locations around the country. The program provides a free workshop to school districts that purchase a districtwide license.

STAND-ALONE VS. SUPPLEMENTAL

The *EcoBeakerHS* labs are considered supplemental, and should be used within an existing biology, environmental science, or ecology course.