

mimicry as one type of adaptation. Program 8, Forest School, focuses on human adaptation and follows the livelihood of school children in a tropical forest. Program 9, Don't be Part of the Problem, and Program 10, Act with the Facts, call attention to environmental concerns and the importance of preparing oneself with sufficient and factual information before reaching any conclusions regarding maintenance and improvement of the environment in which we live.

The photography is excellent and there is sufficient exchange between animation and real life photography to maintain audience interest. The accompanying music is light and attention getting. The narrative is clear and simple for the intended audience. Key words are prominently flashed on the screen as the narrative defines them. Relatively long pauses between changing scenes may make the pace of the presentation a little slow for adult audiences. There is also some repetition of picture sequences from one program to another. For the projected age group, however, the pace is appropriate and the repetition desirable.


The small, 31-page pamphlet accompanying the program is well organized. It presents an overview of the

activities and lists learning objectives addressed. These objectives relate to the science guidelines for 5th and 8th grade as set forth by the American Association for the Advancement of Science Project 2061. Introductory activities, follow-up activities, and wrap-up activities, including long term related projects, are suggested for each program. These all seem to be well thought out and doable in most classrooms without extraordinary expense or time commitment. The last two programs on environmental quality would also serve nonscience classes well.

The programs are both informative and entertaining. They would enrich any class in which they are shown.

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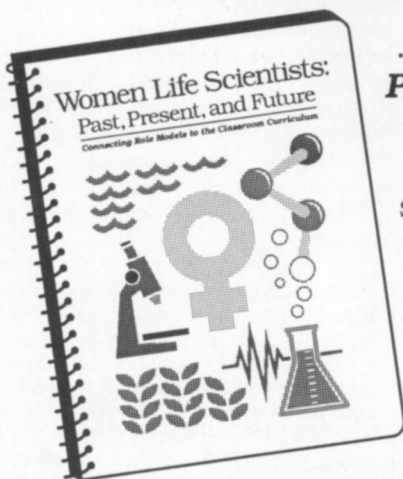
Gene Guns. 1998. Hawkhill Associates, Inc. (125 East Gilman St., Madison, WI 53703; (800) 422-4295; <http://www.hawkhill.com>). Videotape. 16 min. Purchase \$79.

 This program presents a description and demonstration of the particle bombardment method of gene transfer. It does so in the context of genetically improving barley

for resistance to a fungal pathogen using a resistance gene found in oats. The program features several scientists who describe the techniques used in gene transfer via particle bombardment, including recombinant plasmid construction, selective screening for putative transformants, and transgenic verification using PCR and gel electrophoresis. In addition, the program briefly presents microinjection of animal embryos and its applications, including production of pharmaceutical proteins in cow milk, creation of animal models for human diseases, and advances in organ transplantation research. The program concludes with a discussion of human gene therapy, using the recent example of the human vegF gene transferred to muscle cells for promoting the development of new blood vessels. This program is packaged with a booklet consisting of a text version of the narration.

Initially, the futuristic-style synthesized music, and the very simplistic and basic explanations of why organisms have DNA, give the impression that this program is designed for younger audiences (the program is intended for high school and college students.). While this program is very up-to-date, it unfortunately suffers

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from an uninspiring, monotone narrator who will challenge the attentiveness of all but the most determined viewers. The program benefits from the examples of actual research, however the scientists shown are also uninspiring in their narrations, and they provide inadequate, and even inaccurate explanations of the technologies. In the explanation of the use of restriction enzymes. One researcher states "...they cut at specific amino acid sequences, uh-bases..." Descriptions of the basic concepts of DNA and DNA manipulation are given verbally, accompanied by still diagrams. Visual learners will have difficulty understanding what is being described. The program would have benefited from the use of animation in these areas. The description of the particle bombardment method is thorough and the viewer is presented with a demonstration of the gene gun being used to transfer a fungal resistance gene into barley embryo cultures.

You would be best served using this video after a discussion of DNA manipulations and gene transfer technologies, as the descriptions in this program are not suitable for the students' first exposure to these concepts. However, if you really desire to have your students see the operation of a gene gun, and you don't have access to one for a hands-on demonstration, this video is the next best thing. Sixteen minutes might be a little long for just the demonstration that occurs about half-way through the program. More animation would make it a better use of class time.

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Microcosms. 1997. Miramax Home Entertainment (available from retail video stores). Videotape. 75 min. Purchase \$14.99.

 French film makers Claude Nuridsany and Marie Perennou create a "bug's-eye view" of insects going through their daily struggles for survival. This young child's video is real-life film of the insects that inhabit our world. The footage includes clear, crisp, sharp images of the world moving from the larger human perspective downward towards the trees and grasses as the viewer gets a closeup of the insect's world.

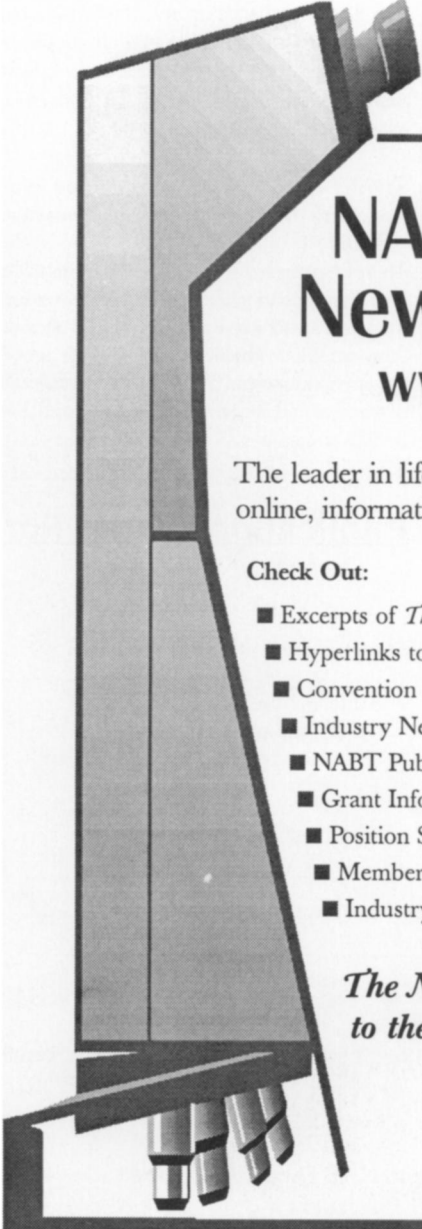
There is great video of beetles taking flight, eating aphids, competing, and even mating. There is little oral narration to accompany the video, so there is limited information for the instructor

who does not understand the entomological world. An instructor could use special knowledge of biology and ecology to interpret the diversity within the tape, though each segment would need to be cued up in advance. Each segment plays for 30 seconds to 5 minutes, with an average segment running about two minutes.

Aquatic scenes show a myriad of interactions within an ecosystem. Food web and predator/prey relationships are focused on in many of the segments. Nuridsany and Perennou have created a fine video of some of their best work, though narration or music would have helped a great deal. The tape might be used for specific segments within an ecology course or as

a running tape during a quiet time for young children. For older students, another approach might still make this a useful video. Are your students careful observers? Could they use some practice writing descriptions of what they see? You might consider using short segments to help them develop that skill. Consider taking them beyond that level by having them extend their observation to questions about the observed behaviors and relationships. Could some of the mating behavior scenes be used as lead-ins for the fruit fly mating behavior lab?

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