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MODEL

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Concurrent Session #1 (Predators)

THE COYOTE AS AN ECOLOGICAL MODEL

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Abstract: Teachers (K-12) in a prairie ecology workshop in Kansas used the coyote as the focus for the design of an educational strategy to integrate many concepts and principles of ecology into the various subject areas of the curriculum. A topical outline was developed as a guide for implementing the study.

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Key Words: predation, damage control, education, *Canis latrans*, coyote

Teachers from rural schools (K-12) in North Central Kansas came to my prairie ecology workshop in the spring of 1997 seeking a model for a "learning in place" approach to education. Their studies were to be in and about their home communities. The focus was to be on a single life form that would capture the interest of rural children and was deeply entrenched in the lore, history, ecology, and economy of the prairie. The selection of the coyote (*Canis latrans*) as the ecological model was based on the prescribed criteria, the available learning resources, and an interest in examining the parallel struggle of the coyote and the human population for survival on the prairie landscape.

The workshop participants designed an outline as a guide to introducing the coyote as an ecological model in their schools. The outline will be modified as the teachers gain experience in this innovative educational approach.

Planning the Study

In preparation for the study the teacher should first examine the popular and technical literature in the community and regional libraries. A list of names and addresses of resource persons from the home community, region, and state should be assembled and contacts should be made. The teacher should design classroom and field activities related to the history, ecology, and

economic impacts of the coyote on the community. A strategy should be developed for integrating the principles, concepts, and understandings related to coyote history, ecology, and management into the existing curriculum. Finally, the teacher should develop pre-study and post-study exams to evaluate knowledge and attitudinal changes acquired during the study.

Learning about the Coyote

Material Resources include local and school libraries (books, articles, Internet, etc.) and university and city libraries (accessible by friends or relatives). Human resources include local ranchers and farmers with known experiences with coyotes, local hunters and trappers, agricultural extension agents, State and Federal agency personnel (Wildlife and Parks, U. S. Fish and Wildlife Service), high school science teachers (as resources for elementary teachers in the school district), naturalists (park personnel, Audubon Society members, etc.), artists, poets, and writers.

Material on the natural history, ecology and management of coyotes can be presented in a variety of ways. The classification of the coyote in the animal kingdom and relationships to other dog-like relatives should be established. The history of the

distribution of the coyote on the North American continent and factors promoting range changes are important ideas to include. Material pertaining to special physical adaptations of the coyote such as teeth, color and pattern, size, form, movement, and senses is important to the understanding of the animal. Other important life history concepts such as habitat requirements (food, water, cover, etc.) and special behavioral adaptations of the coyote (prey search, feeding, marking and defense of territories, den selection, reproduction and care of young, social organization and dominance) are also important. Finally, information on population dynamics (annual growth curves, breeding potential, decimation factors, carrying capacity) management strategies and control methods can be discussed.

Coyote ecology can be brought into the personal lives of the students through learning of the history and folk lore associated with the species. Discussions of the coyote's conflicts with human interests are a natural part of the study. Native American coyote lore and stories of the coyote in the

exploration and settlement of the West provide historical understanding. The role of the coyote on ranches and farms, the new role of the urban coyote, and coyote interactions with other wildlife are important ecological factors that should be dealt with. Student projects are an important component of the learning process. Using the coyote model, the student teams can design project with guidance from their teachers. Activities should be experimental or involve the gathering and organization of information. For elementary classrooms scrapbooks, bulletin boards, and comparisons of comic coyotes with actual coyote behaviors are suggested. Middle school programs might want to add a comparison of dog and coyote behaviors. High school students could be taken out for field trips with biologists or animal damage control specialists, or do habitat evaluations or food habit studies.

Integrating coyote studies into the existing curriculum can help generate enthusiasm for a variety of subjects. Table 1 lists just a few suggestions.

Table 1. Integrating coyote studies into the existing curriculum.

Subject	Elementary	Middle School	High School
Biology, Life Science	Food chains	Habitat needs	Population Biology
Language Arts	Vocabulary Story Telling	Creative writing	Interviews
Health	Basic canid nutrition	Parasites	Rabies
Social Science	History of the coyote	Human conflicts with coyotes	Conflict resolutions
Economics		Supply and demand - Predators and prey	Cost/Benefit studies
Computing & Mathematics	Census of predators and prey	Population growth graphing	Statistical tests

At the close of the coyote project, both pre-test and post-test items should be evaluated. Items from the pre-test to be considered include empathy for prey, understanding of food chains and violence in nature, experiences with predators (cats, dogs, hawks, etc.), needs and benefits of controlling problem predators etc. Post-test items to be considered include responses to pre-test items as well as understanding of a predator's role in the natural community and in the agricultural community, knowledge of survival adaptations in coyotes, attitudinal changes towards predators and predation, and interest in becoming more involved in predator management education.

In summary, the use of the coyote as an ecological for education has many advantages. The focus on this charismatic species allows the integration of many important ecological concepts with the regular learning curriculum. Use of the real-life model generates enthusiasm and promotes interest in learning a variety of skills. Many resources are available for use in the educational model and local interest in the project is likely. Students have the opportunity to interact with the community and teachers can broaden their resource base. The workshop participants believe that the coyote is an excellent ecological model for promoting cooperation, enthusiasm, and ecological understanding across the curriculum.

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