Wildlife Learning Objectives for the NHE, adapted from the NCF-Envirothon

Wildlife may be the first topic that comes to mind when you think of conservation: the panda, the elephant, the snow leopard, the grey wolf, the bald eagle, or any other well-known current or former endangered animal. These charismatic species are easy to rally behind, but the wildlife in your backyard or local park need the same basic resources as a rhinoceros: food, water, shelter, and space. Conservation for local wildlife is just as important as conservation for big-name species in exotic locales. Through understanding wildlife biology, ecology, and conservation, humans can reduce our negative impacts to wildlife and implement management strategies to help species thrive, both locally and globally.

Just like the ecosystems we study, human society and culture are incredibly diverse. In the same way that biodiversity makes ecosystems more resilient, these differences in human perspective and experience make us stronger as a global community. Every person's story and relationship with the environment is important, and we must work together to ensure that everyone's stories are heard, including the historically marginalized and economically disadvantaged. We invite you to seek out stories from your own communities – to discover the unsung conservation heroes, to learn the histories that aren't typically taught in classrooms, to highlight local environmental issues, and to explore what types of natural resource conservation are occurring in your local community, state/province, and nation.

Students should be able to:
• Provide an informed opinion about current issues in wildlife conservation.
• Think critically about solutions to current wildlife conservation issues.
• Work collaboratively in a team to synthesize and apply knowledge.
• Make connections between concepts in Wildlife and the subjects of Soils and Land Use, Forestry, Aquatic Ecology, and the Current Issue.

Wildlife Learning Objectives:

Students will be able to:

Wildlife Biology

- Distinguish between major taxonomic classifications of wildlife, their typical roles in ecosystems, and their habitat requirements (including mammals, birds, fish, reptiles, amphibians, and insects).
- Identify the different stages in a species' life cycle and describe how each stage relates to the species' biology, behavior, adaptions, habitat requirements, and ecological niche.
- Provide examples of physical and behavioral adaptations (such as mimicry, camouflage, freeze response, hibernation, special organs, et cetera) and how these adaptations benefit wildlife.
- Describe the significance of migration in the life cycle of certain wildlife species.
- Explain how the needs of a species might change throughout its life cycle, and how these changing needs are addressed in management strategies.
- Differentiate between a territory and a home range and discuss how each is important for wildlife species.

Wildlife Ecology

- Identify the essential components of a habitat and recommend suitable habitat for local wildlife species.
- Identify biotic and abiotic factors in ecosystems and how they are related to wildlife habitat requirements, ecosystem variation, and wildlife conservation.
- Describe the roles of producers, consumers, and decomposers in various ecosystems and identify their trophic levels.
- Identify the effects of various environmental impacts on the energetic relationships in food chains and webs.
- Describe how changes in demographic parameters (such as birth, mortality, reproduction rate, immigration, emigration, age structure, sex ratio, et cetera) affect wildlife populations.
- Apply concepts of landscape ecology as they relate to wildlife conservation, including:
    a) Patterns in landscape and habitat type, and how this affects the distribution of wildlife species
    b) Use and proximity of different habitat types over the course of a species' life (migration, species that undergo metamorphosis, et cetera)
    c) Effects of disturbance on an ecosystem and its impacts to wildlife
    d) Habitat connectivity and importance of wildlife corridors
    e) Genetic diversity in species across landscapes and the importance of this genetic diversity to healthy species populations
- Describe the different levels of ecosystem organization, including individuals, populations, communities, and ecosystems.
- Describe different habitat characteristics that are important to wildlife (such as ecotones, edges, snags, downed logs, riparian areas, early successional stages, et cetera).
- Describe wildlife adaptations to unique ecosystems (such as high elevations, deserts, fire-dependent ecosystems, et cetera).
- Identify sources of disturbance in an ecosystem and predict how different types of disturbance may impact wildlife species.
- Define resilience and describe what it means for ecosystems and wildlife species.
- Identify the importance of major migratory flyways.
- Explain the importance of pollinators in natural and agricultural ecosystems.

Wildlife, Conservation, and Society

- Identify major legislation (local and national) and international agreements pertaining to wildlife and describe how they provide protection for natural resources.
- Explain the distinctions between species designations (such as common, rare, endangered, threatened, endemic, extirpated, and extinct) and provide examples of each type.
- Recognize important issues facing wildlife on a local, state/provincial, national and international scale, propose solutions to current problems, and evaluate viability of solutions.
- Identify positive and negative human-wildlife interactions and describe how these interactions are taken into consideration when creating management plans.
- Describe the impact of changes in climate on wildlife and their habitats.
- Explain the roles of local, state/provincial, national, and international agencies in wildlife protection and management.

- Describe the use of technology such as remote sensing, GPS, and GIS in wildlife management.
- Describe the roles of key leaders in the conservation movement, both historical and present (such as Michael Werikhe, Rachel Carson, Dr. Drew Lanham, Aldo Leopold, John Muir, Christian Cooper, Corina Newsome, Jason Ward, Anna Botsford Comstock, et cetera).

Field Skills

- Identify common local wildlife species from preserved specimens, skulls, skeletons, pelts, tracks, scat, and other animal signs without the use of a key.
- Explain an animal's habitat, dietary requirements, and life cycle based on animal signs.
- Use a field guide or dichotomous key to identify uncommon wildlife species.
- Assess a particular site for wildlife and make recommendations for best management practices.
- Recommend wildlife management practices for a variety of uses (including conservation, connectivity, and hunting) for a variety of landscapes (including grasslands, forests, croplands, wetlands, and urban settings).