

# Kansas Envirothon Goals and Objectives

## AQUATICS

1. Identify the processes and phases for each part of the water cycle.
2. Describe the chemical and physical properties of water and explain their importance for freshwater and saltwater ecosystems.
3. Discuss methods of conserving water and reducing point and non-point source pollution.
4. Analyze the interaction of competing uses of water for water supply, hydropower, navigation, wildlife, recreation, waste assimilation, irrigation, industry and others.
5. Identify common aquatic organisms, aquatic plants, fish, game and non-game species.
6. Delineate the watershed boundary for a small water body.
7. Explain the different types of aquifers and how they relate to water quantity and quality.
8. Describe the benefits of wetlands and riparian areas, both function and value.
9. Describe the changes to the aquatic ecosystem based on alteration to an aquatic habitat.
10. Know methods used to sample, assess and manage aquatic environments and utilize water quality information to assess the general water quality of a given body of water (includes sampling techniques and water quality parameters to monitor point and non-point source pollution).
11. Be familiar with major methods and laws used to protect water quality (surface and ground water) and utilize this information to make management decisions to improve the quality of water in a given situation.

## FORESTRY

1. Identify common trees, grasses, shrubs, weeds, and wildflowers without a key.
2. Understand forest ecology concepts and factors affecting them, including the relationship between soil and forest types, tree communities, regeneration, competition, and succession.
3. Understand the cause and effect relationship of factors affecting tree growth and forest development (climate, insects, microorganisms, wildlife etc.)
4. Understand how wildlife habitat relates to: forest communities, forest species, forest age structure, snags and den trees, food availability, and riparian zones.
5. Understand the value of trees in urban and suburban settings and factors affecting their health and survival.
6. Understand how the following issues are affected by forest health and management: biological diversity, forest fragmentation, air quality, fire, and recreation.
7. Understand basic forest management concepts and tools such as:
  - a. how silvi-cultural practices are utilized
  - b. use of tree measuring devices, i.e. biltmore stick
  - c. best management practices
8. Identify complex factors which influences forest management decisions (economics, social and ecological).
9. Apply silviculture concepts and methods to develop general management recommendations for a particular situation and management goals.

## **SOILS**

1. Recognize soil as an important resource.
2. Describe basic soil properties and formation factors.
3. Understand soil drainage classes and know how wetlands are defined.
4. Determine basic soil properties and limitations, such as mottling and permeability, by observing a soil pit or soil profile.
5. Identify types of soil erosion and discuss methods for reducing erosion.
6. Utilize soil information, including soil surveys, in land use planning.
7. Discuss how soil is a factor in, or impacted by non-point source pollution.

## **WILDLIFE**

- 1.** Identify common wildlife species based on wildlife signs including fur, hair, feathers, gnawing, nests, rubbings, pellets, tracks, bird calls and scat from list provided.
- 2.** Identify basic wildlife survival needs.
- 3.** Describe specific adaptations of wildlife to their environment and role in the ecosystem.
- 4.** Describe predator-prey relationships and examples.
- 5.** Describe the potential impact of the introduction of non-native species.
- 6.** Describe the major factors affecting threatened and endangered species and methods used to improve the populations of these species.
- 7.** Describe ways habitat can be improved for specific species by knowing their requirements.
- 8.** Discuss the concepts of carrying capacity and limiting factors.
- 9.** Discuss various ways the public and wildlife managers can help in the protection, conservation, management, and enhancement of wildlife populations.
- 10.** Describe food chains and webs and cite examples.
- 11.** Describe factors that limit or enhance population growth.
- 12.** Evaluate a given habitat for its suitability for designated species, given a description of their habitat needs.