2014 AQUATICS OBJECTIVES

2014 Regional Stewardship Challenge

Key Point 1 *Understand Aquatic Environments*

a. Identify aquatic and wetland environments based on their physical, chemical and biological characteristics
b. Understand societal benefits and ecological functions of wetlands
c. Understand the concept and components of a watershed and be able to identify stream orders and watershed boundaries
d. Understand how to read a topo map
e. Describe the features and benefits of wetland and riparian areas, including both functions and value
f. Understand the main cause of summer and winter fish kills
g. Be able to explain thermal stratification in lakes and lake turnover
h. Be able to identify common aquatic plants of Illinois and methods used to control aquatic vegetation
i. Be able to discuss fish shocking of small ponds in Illinois and explain pond carrying capacity

Key Point 2 *Aquatic Species and Organisms*

a. Identify macro-invertebrate and fish water quality indicator species and understand why they are classified as intolerant and tolerant of pollution
b. Be able to interpret a water sample using a macro-invertebrate key to assess water quality
c. Using a key of pictures or descriptions, identify aquatic organisms found in rivers and their indication of river health
d. Identify five major families of fish native to Illinois waters using fish characteristics
e. Know and understand fish anatomy
f. Know the fish tolerances as water quality indicators
g. Differentiate between complete and incomplete metamorphosis and recognize to which group an aquatic insect belongs
h. Understand common fish diseases and their possible causes
i. Be able to identify and discuss aquatic invasive species in Illinois

Key Point 3 *Water Protection and Conservation*

a. Understand threats to water resources such as land use, aquatic nuisance species, point and non-point source pollution and be familiar with methods to prevent these threats
b. Know the physical, chemical and biological monitoring indicators that are used to assess the general water quality of water bodies and how they interact to create an assessment of water quality
c. Understand methods of conserving water and reducing point and non-point source pollution of surface and groundwater, including Best Management Practices (BMPs) for managing Stormwater
d. Identify agencies, programs and laws that govern Illinois waters and their specific roles
e. Be able to explain water quality, the difference between surface water and ground water, and they condition of these water sources in Illinois

f. Recognize types of water pollution such as organic, inorganic, thermal, toxic, etc.
g. Know how sustainable agriculture can serve to manage water pollution by managing sedimentation, nutrients, confined animal facilities, irrigation, pesticides and grazing
h. Discuss land uses that benefit, both economically and environmental, the soil and water ecological systems, including riparian buffer strips

Key Point 4 ***Watersheds and Watershed Protection***

a. Define and understand watersheds and their importance
b. Recognize behaviors of urban, rural, agricultural, and industrial practices that have an effect on a watershed and know steps that can be taken to enhance the quality of a watershed
c. Know the features of a healthy watershed and an unhealthy watershed