Illinois Envirothon | Aquatic Ecology

**AQUATIC ECOLOGY OBJECTIVES**

Envirothon aquatic ecology contestants should be able to:

**1.** Define and understand watersheds and their importance.

**2.** Briefly explain water quality, the difference between surface water and ground water,

 and the condition of these water sources in Illinois.

**3.** Differentiate between non-point source and point source water pollution.

**4.** Recognize types of water pollution such as organic, inorganic, thermal, toxic, etc.

**5.** Recognize behaviors of urban, rural, agricultural, and industrial people that have an

 effect on a watershed & steps that can be taken to enhance a watershed.

**6.** Using a key of pictures or descriptions, identify aquatic organisms found in rivers and

 their indication of river health.

**7.** Differentiate between complete and incomplete metamorphosis and recognize to which

 group an aquatic insect belongs.

**8.** Describe how sustainable agriculture can serve to manage water pollution by

 managing sedimentation, nutrients, confined animal facilities, irrigation, pesticides, and

 grazing.

**9.** Discuss land uses that benefit, both economically and environmentally, the soil and

 water ecological systems, including riparian buffer strips.

**10.** Be able to identify fifteen species of fish native to Illinois waters.

**11.** Be able to discuss the various impacts that can occur on aquatic ecosystems.

**12.** Understand the main cause of summer and winter fish kills.

**13.** Be able to explain thermal stratification in lakes and lake turnover.

**14.** Be able to identify common aquatic plants of Illinois and methods used to control aquatic

 vegetation.

**15.** Understand common fish diseases and their possible causes.

**16.** Be able to discuss fish stocking of small ponds in Illinois and to explain carrying capacity.

**17.** Be able to identify and discuss aquatic invasive species in Illinois.

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**AQUATIC ECOLOGY RESOURCES**

**A. websites and pdf files**

U.S. Environmental Protection Agency. Managing Non-Point Source Pollution from Agriculture.

<http://water.epa.gov/polwaste/nps/outreach/point6.cfm>

U.S. Environmental Protection Agency, Illinois. Lake Stratification & Mixing.

<http://www.epa.state.il.us/water/conservation/lake-notes/lake-stratification-and-mixing/lake-stratification.pdf>

U.S. Environmental Protection Agency. What are Wetlands?

 <http://water.epa.gov/type/wetlands/what.cfm>

U.S. Environmental Protection Agency. Wetlands & Nature.

 <http://water.epa.gov/type/wetlands/nature.cfm>

Iowa State University, Department of Forestry. Stewards of our Streams - Buffer Strip Design,

Establishment and Maintenance. <http://www.extension.iastate.edu/Publications/PM1626B.pdf>

Iowa State University, Department of Forestry. Stewards of our Streams - Riparian Buffer Systems.

<changed saved to zip>.

U.S. Environmental Protection Agency, Illinois. The Condition of Illinois Water Resources.

<http://www.epa.state.il.us/water/water-quality/report-2000/index.html>

Conservation Technology Information Center. Know Your Watershed. Getting to Know Your Local

Watershed. <http://www2.ctic.purdue.edu/KYW/Brochures/GetToKnow.html>

Invasive Species Information

• What are Aquatic Nuisance Species? – <http://www.fws.gov/fisheries/ans/index.html>

• Asian Carp -

 <http://www.paseagrant.org/wp-content/uploads/2013/10/Asian-Carp_2013_reduced.pdf>

• Purple Loosestrife -

 <http://www.paseagrant.org/wp-content/uploads/2012/11/purpleloosestrife2013_reduced.pdf>

• Water Milfoil -

 <http://www.paseagrant.org/wp-content/uploads/2013/10/EWM2013_reduced.pdf>

• Zebra Mussels –

 <http://www.paseagrant.org/wp-content/uploads/2012/11/zmqm2013_2013.pdf>

**B. material located in packet**

Voshell, Jr., J. Reese. A Guide to Common Freshwater Invertebrates of North America. Virginia: The

McDonald & Woodward Publishing Company, 2002.

Izaak Walton League of America. A Volunteer Monitor’s Field Guide to Aquatic Macroinvertebrates. Maryland.

Illinois Department of Natural Resources. Aquatic Plants, Their Identification and Management. Illinois. 1997.

Illinois Department of Natural Resources. Management of Small Lakes and Ponds in Illinois. Illinois. 1997.

Illinois Department of Natural Resources. What Fish is This? Illinois. 1996

\*\*Students are encouraged to search online resources to

view color photos of fish and aquatic plants.\*\*