

2024 Iowa Envirothon Study Guide

Preparing for the Envirothon

While this program culminates in a competition, it is first and foremost an educational program designed to increase knowledge and awareness of our natural environment. Students should put as much time and effort into preparation as they would for any competitive event, such as football or band, in which they hope to be state champions. With the opportunity to win an expense-paid trip for five students and two chaperones to a week-long competition, significant effort is expected.

Preparation should be on-going throughout the school year. While knowledge of basic ecological concepts is essential, equally important is the exploration of sampling and testing procedures and techniques used in water quality analysis, soil evaluation, wildlife management, and forestry. Familiarity with identification guides for land and animal species is helpful. It is recognized that few schools have the equipment and expertise needed to study all of these topics, but all schools have a wealth of information available from local county conservation boards, Natural Resources Conservation Service, Iowa Department of Natural Resources, and local experts on environmental issues.

Teamwork should also be emphasized. Learning to work together to explore new topics is important. While independent study is encouraged, students should meet regularly to discuss ideas and share different viewpoints. In the field of natural resource management, few issues are black and white. Consideration of many options and opinions should be encouraged to develop solutions that are environmentally, socially, and economically viable. Some teams prefer to have students specialize in specific areas of the competition, while others prefer that all team members have a solid background in all the competitive categories.

Most importantly, this program should be fun! Field trips, speakers, demonstrations, and study should focus on increasing the interest of students in the natural environment. Certainly, winning the Regional and State competitions may be an important goal for some teams, but creating a desire to learn more about environmental issues and increasing students' awareness of their natural environment should be paramount.

While some coaches use this program as part of their classroom curriculum, additional effort may be required to explore all the topics. It should also be stressed that because of the highly competitive nature of this program at the National Conservation Foundation Envirothon, some of the material may be beyond the level normally taught in high school, especially for students in 9th and 10th grades.

How to Use this Guide

This guide is intended to provide basic, yet comprehensive information on each of the topics covered in the Envirothon. It is a compilation of numerous publications from a variety of Federal, State, Local and private agencies, and organizations.

It is intended to:

1. Give all teams a common starting point.
2. Provide readily accessible information for team coaches who may be unfamiliar with some of the topics.
3. Alert coaches and students to the various agencies and organizations that are involved in the natural resources field.

This guide is not intended to be a complete, definitive guide to each of the topics. It is hoped that as teams develop their competencies and skills, they will seek out additional information.

Be sure to review the National Conservation Foundation Envirothon theme for the current year including the learning objectives, key topics, and background information given on the topic. The basic ideas will be applied at the state level competition.

Testing Format

Students and coaches can anticipate a testing format for the Regional and State Competitions based on the following:

- Terms & Definitions
- Calculations
- Matching
- Identification
- Multiple Choice
- Fill-In the Blank
- Sampling and Testing (State Competition Only)

The Regional competition will be held online and will include a test over each of four areas including aquatics ecology, forestry, soils, and wildlife. Each test will include 25 questions with each question worth one point. The total potential top score for each team would be one-hundred points.

The State competition will be held at Jester Park Nature Center near Granger, Iowa and will include a test over each of five areas including aquatics ecology, forestry, soils, wildlife, and a current issue. Each test will be worth 75 points and will include approximately 25 questions. There will also be an oral presentation worth 150 points presented by the team based on a scenario that will be provided to each state qualifying team approximately two weeks prior to the state competition. The scenario for the oral presentation will relate to the current issues topic. The top score possible for each team would be 450 points.

Aquatic Ecology Recommended Resources

- **Clean Water Iowa**

<https://www.cleanwateriowa.org/>

- **Iowa Benthic Macroinvertebrate Flow Chart**

[https://www.iowadnr.gov/Portals/idnr/uploads/water/watershed/volmon/Benthic Flow Chart vMar2018.pdf](https://www.iowadnr.gov/Portals/idnr/uploads/water/watershed/volmon/Benthic_Flow_Chart_vMar2018.pdf)

- **Iowa Fish Species**

<https://www.iowadnr.gov/Fishing/Iowa-Fish-Species>

- **Iowa Watershed Approach**

<https://iowawatershedapproach.org>

- **Rainscaping Iowa**

<https://iowastormwater.org/campaigns/rainscaping>

- **Iowa's Nature Series - Aquatic Environments (March 2021)**

<https://store.extension.iastate.edu/product/16124>

- **Water Quality Monitoring and the Water Quality Initiative (July 2022)**

[https://www.iaenvironment.org/webres/File/Water Quality Monitoring and the Water Quality Initiative_June 2022\(1\).pdf](https://www.iaenvironment.org/webres/File/Water_Quality_Monitoring_and_the_Water_Quality_Initiative_June_2022(1).pdf)

- **Iowa Nutrient Reduction Strategy: Aiming to Improve Water Quality (March 2023)**

<https://store.extension.iastate.edu/product/16734>

Forestry Recommended Resources

(This area may also include a few questions relating to Prairies)

- **About Prairies - Iowa Prairie Network**

<https://www.iowaprairienetwork.org/prairie-history>

- **Forestry Management Basics – NC Forestry Association**

<https://www.ncforestry.org/education/education-materials/forest-management-basics>

- **Forestry Management for Landowners**

<https://www.fs.usda.gov/managing-land/private-land/landowner-resources>

- **Tree Anatomy 101**

https://naturalresources.extension.iastate.edu/forestry/tree_biology/101.html

- **Identification of Hardwood Trees in Iowa (May 1996)**

<https://www.iowadnr.gov/portals/idnr/uploads/forestry/hardwoodid.pdf>

- **Pruning Trees – Shade, Flowering, & Conifer (March 2008)**

<https://store.extension.iastate.edu/product/6191-pdf>

- **Looking for Emerald Ash Borer In Iowa (April 2015)**

<https://store.extension.iastate.edu/product/14307>

- **Iowa's Forest Birds (August 2020)**

<https://store.extension.iastate.edu/product/15963>

- **Iowa's Nature Series – Plants (March 2021)**

<https://store.extension.iastate.edu/product/16127-PDF>

- **Iowa's Nature Series – State Symbols (March 2021)**

<https://store.extension.iastate.edu/product/16129>

- **Iowa's Nature Series – Forests (May 2021)**

<https://store.extension.iastate.edu/product/16122-PDF>

- **Iowa's Nature Series – Prairies (Sept 2021)**

<https://store.extension.iastate.edu/product/16123>

Soils Recommended Resources

- **Daily Erosion**

<https://www.dailyerosion.org>

- **From the Surface Down, Published by the USDA-NRCS (2010)**

<https://www.nrcs.usda.gov/sites/default/files/2022-11/from-the-surface-down.pdf>

- **Soil Quality Indicators – Soil pH (April 2011)**

https://www.nrcs.usda.gov/sites/default/files/2022-10/soil_ph.pdf

- **Soil Quality Indicators - Biological Indicators and Soil Functions (Feb 2015)**

https://www.nrcs.usda.gov/sites/default/files/2022-10/biological_indicators_overview.pdf

- **Conservation Choices - Soil Health Practices (April 2017)**

<https://www.nrcs.usda.gov/sites/default/files/2022-09/SoilHealthPractices.pdf>

- **Web Soil Survey - Accessing Web Soil Survey (April 2020)**

<https://www.nrcs.usda.gov/sites/default/files/2022-08/WSS-brochure-print-at-home.pdf>

- **Soil Judging In Iowa (February 2021)**

<https://store.extension.iastate.edu/product/Soil-Judging-in-Iowa>

- **Soils – Iowa Nature Series – WL17b (March 2021)**

<https://store.extension.iastate.edu/product/Soils-Iowas-Nature-Series>

- **Iowa's Nature Series – State Symbols (March 2021)**

<https://store.extension.iastate.edu/product/16129>

Wildlife Recommended Resources

(This area may also include a few questions relating to Prairies)

- **Amphibians and Reptiles of Iowa**

<http://www.herpnet.net/iowa-Herpetology>

- **Iowa DNR Wildlife Section**

<http://www.iowadnr.gov/Education/lowasWildlife.aspx>

- **Mammals of Iowa Field Guide (April 2018)**

<https://store.extension.iastate.edu/product/15391>

- **Iowa Bats (August 2018)**

<https://store.extension.iastate.edu/product/15456>

- **Iowa's Nature Series – Invertebrates (March 2021)**

<https://store.extension.iastate.edu/product/16125>

- **Iowa's Nature Series – State Symbols (March 2021)**

<https://store.extension.iastate.edu/product/16129>

- **Iowa's Nature Series – Vertebrates (March 2021)**

<https://store.extension.iastate.edu/product/16126>

- **Iowa's Nature Series – Prairies (Sept 2021)**

<https://store.extension.iastate.edu/product/16123>