

2025 Iowa Envirothon Study Guide

Preparing for the Envirothon Competition

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 represent Iowa in a week-long North American Envirothon competition, significant effort is expected. The North American Envirothon competition is sponsored by the National Conservation Foundation.

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 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, 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 event. It is a compilation of numerous publications and other resources 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 that will include the following:

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

*Most test questions will come from the recommended resources listed in this guide. Additional resources will be added for the State competition.

The Regional competition will be conducted 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 is worth one point. The total potential top score for each team would be one-hundred points (25 points for each of the four areas).

The State competition will be held at the 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. The top 15 teams from the regional competition will be eligible to compete at the State level.

Aquatic Ecology Recommended Resources

"A win-win": The impact of the Iowa Watershed Approach (YouTube)

<https://www.youtube.com/watch?v=M4yh2PlhPuQ&t=4s> **New 2025**

Clean Water Iowa – “Practices” link **New 2025**

<https://www.cleanwateriowa.org/ag-conservation-practices>

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%20Flow%20Chart%20vMar2018.pdf)

Iowa Fish Species

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

Iowa Watershed Approach – Home page

<https://iowawatershedapproach.org>

Otter Creek Success Story, Iowa DNR (YouTube) **New 2025**

<https://www.youtube.com/watch?v=5WKAES7ysYI&list=PLwHjhP4BtLzZ-Ybc4aQSAXYnv0BCCo9NO&index=2>

Rainscaping Iowa

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

Explore More: Water Quality - Full Program (April 2012) **New 2025**

<https://www.youtube.com/watch?v=RMycCwECbNE>

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%20Quality%20Monitoring%20and%20the%20Water%20Quality%20Initiative%20June%202022(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>

Emerald Ash Borer **New 2025**

http://www.iowatreepests.com/eab_home.html

Planting and Maintaining a Healthy Tree **New 2025**

<https://www.iowadnr.gov/Portals/idnr/uploads/forestry/urban/Healthy%20Tree.pdf>

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>

Tree Measurements – Using a Biltmore Stick (Sept 1998) **New 2025**

<https://eec.ky.gov/Natural-Resources/Forestry/educational-programs/Documents/Using%20a%20Biltmore%20Stick.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>

Soil Health Assessment **New 2025**

<https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soils/soil-health/soil-health-assessment>

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 - Aggregate Stability (April 2008) **New 2025**

https://www.nrcs.usda.gov/sites/default/files/2022-10/nrcs142p2_051276.pdf

Soil Quality Indicators - Slaking (June 2008) **New 2025**

<https://www.nrcs.usda.gov/sites/default/files/2022-10/Slaking.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>

Iowa Soil Health Field Guide, Soil Health Concept, pages 4-28 (Aug 2017)

<https://store.extension.iastate.edu/product/Iowa-Soil-Health-Field-Guide> **New 2025**

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, **pages 5 - 16** (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>

Chronic Wasting Disease **New 2025**

<https://www.iowadnr.gov/Hunting/Deer-Hunting/Deer-Health#Endemic-Disease-160>

Iowa DNR Wildlife Section

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

Pileated Woodpecker **New 2025**

<https://iowaaudubon.org/Documents/IBA/27IBA%20Pileated%20Woodpecker.pdf>

Mammals of Iowa Field Guide, **pages 76-103** (April 2018)

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

Iowa Bats (August 2018)

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

Listen for bird calls with the DNR's avian biologist (May 2020) **New 2025**

<https://www.facebook.com/watch/?v=553283672240708>

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>

3 Billion Birds Gone - Iowa Ornithologists' Union (April 2022) **New 2025**

<https://www.youtube.com/watch?v=ajS276bJ5GE>

Northern Bobwhites in Iowa (Feb 2023) **New 2025**

<https://store.extension.iastate.edu/Product/16716>