

# 2021 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 determinations, 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.

Team work 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 of 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 in order to explore all of the topics. It should also be stressed that because of the highly competitive nature of this program at the National Envirothon, some of the material may be beyond the level normally taught in high school, especially for students in 9<sup>th</sup> and 10<sup>th</sup> 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 active 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 view the National 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
- Calculation
- Matching
- Identification
- Fill-In the Blank
- Free Response/Essay
- Multiple Choice
- Sampling and Testing (State Competition Only)

## Recommended Resources

### Aquatics

- IOWATER  
<http://www.iowadnr.gov/Environment/WaterQuality/WaterMonitoring/IOWATER/Library.aspx>
- Rainscaping Iowa  
<https://iowastormwater.org/rainscaping/>
- Iowa Association of Naturalists Booklets, Booklets IAN-103, 104,204, 205, and 701  
<https://www.iowanaturalists.org/resources-booklet-series>
- Biological Monitoring Manual and Keys; Introductory Manual and Bacteria Monitoring Manual  
<http://www.iowadnr.gov/Environment/WaterQuality/WaterMonitoring/IOWATER/Library.aspx>
- Stormwater Information  
<http://www.iowadnr.gov/Environment/WaterQuality/WatershedImprovement/WatershedBasics/Stormwater.aspx>

### Forestry

- Forestry Management for Landowners  
<https://www.fs.usda.gov/managing-land/private-land/landowner-resources>
- Iowa Forests Today, Pages 1-17  
<https://drive.google.com/open?id=0Bwi3c-f1WyAgN1dwT2hOc3RDTVU>
- Working Trees for Ag  
<https://drive.google.com/open?id=0Bwi3c-f1WyAgaHVmcUNUOF9rZkU>
- Working Trees for Water Quality  
<https://drive.google.com/open?id=0Bwi3c-f1WyAgY29vTXFPNFI3MVU>
- Forestry Study Guide  
<https://drive.google.com/file/d/0Bwi3c-f1WyAgMohja1ItYoNWSVE/view>

## Recommended Resources (Continued)

### Soils

- From the Surface Down, Published by the USDA-NRCS  
[http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_053238.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053238.pdf)
- Soil Biology Primer. See Soil Biology Primer Chapters: Overview, Soil Food Web, Food Web & Soil Health, Soil Bacteria, Soil Fungi, Soil Protozoa, Soil Nematodes, Soil Arthropods and Earthworms  
<http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/health/biology/>
- Soil Quality Indicator Facts Sheets  
<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/health/assessment/?cid=stelprdb1237387>
- Farming in the 21<sup>st</sup> Century, Published by the USDA-NRCS  
[http://www.nrcs.usda.gov/wps/PA\\_NRCSCconsumption/download?cid=stelprdb1245068&ext=.pdf](http://www.nrcs.usda.gov/wps/PA_NRCSCconsumption/download?cid=stelprdb1245068&ext=.pdf)
- Understanding Erosion with the Revised Universal Soil Loss Equation  
[http://www.5counties.org/docs/roadedu/2012\\_5c\\_roads/rusle.pdf](http://www.5counties.org/docs/roadedu/2012_5c_roads/rusle.pdf)

### Wildlife

- Iowa State University Wildlife Extension Publications  
<https://naturalresources.extension.iastate.edu/wildlife/iowa-association-naturalists-publication-series>
- Native Plant ID  
<https://drive.google.com/open?id=0Bwi3c-f1WyAgNXNNcW5OTUFqV2s>
- Iowa DNR Wildlife Section  
<http://www.iowadnr.gov/Education/lowasWildlife.aspx>
- Iowa Herpetology  
<http://www.herpnet.net/lowa-Herpetology/>