



**ENVIROTHON**

2009 Advisors Handbook

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# Introduction

## **Envirothon Philosophy**

The goal of environmental education is the development of knowledgeable, skilled and dedicated citizens who are willing to work toward achieving and maintaining a natural balance between quality of life and the quality of the environment. Several state agencies, universities and other partners collaborate through the Louisiana Envirothon to promote and strengthen environmental education in Louisiana.

## **The Louisiana Envirothon**

The Louisiana Envirothon is a multidisciplinary, environmental problem-solving competition for teams of students in grades 6 through 12. Teams will be comprised of five students from the same school or associated with an organized group (i.e. FFA, 4-H, home-school groups, conservation districts, etc.). Participating teams train and compete in natural resource areas: soils, aquatic resources, forestry, wildlife, energy and a current environmental issue. There is also an oral presentation component of the competition. In the oral presentation, each team presents a plan and proposes a solution to an environmental problem related to the current issue. Throughout the competition, students learn in a real-life context the complexities of solving environmental problems while working as a team and having fun.

The Louisiana Envirothon will be held at the Model Sustainable Agriculture Center (MSAC) of the University of Louisiana at Lafayette on April 25, 2009. The MSAC is located at the Cade Farm facility on 1234 W. J. Bernard Road in St. Martinville, Louisiana.

The team of 9<sup>th</sup> -12<sup>th</sup> grade students with the highest overall score and meeting the organizers performance standards will travel to the Canon Envirothon competition in the summer to represent Louisiana. The Louisiana Envirothon committee will pay the team's expenses to the Canon Envirothon Competition. Information on the Canon Envirothon Competition can be found at [www.envirothon.org](http://www.envirothon.org).

# Advisors

Advisors are adults responsible for coordinating local Envirothon groups/teams. Their duties include promoting the Envirothon program, recruiting students to participate, and arranging for or ensuring team members locate learning activities, curricula, and anything else necessary to prepare the group for competition.

Many resources are available to assist an advisor with his/her responsibilities and can be obtained from the Louisiana Envirothon Committee.

## Goals

### **Goal 1:**

To promote a desire to learn more about the natural environment and equip students with the knowledge and skills needed to apply the basic principles and practices of resource management and ecology to complex environmental issues.

- a.** Students should be able to demonstrate a basic knowledge of concepts in natural resource management and ecology, especially in the areas of soils/land use, aquatic ecology, forestry, wildlife, and current environmental issues.
- b.** Students should be able to analyze soil, aquatic resources, forestry, wildlife, and current environmental issues in problem-solving activities involving resource issues.

### **Goal 2:**

To promote stewardship of natural resources and to encourage the development of the critical thinking, cooperative problem-solving, and decision-making skills required to achieve and maintain a natural balance between the quality of life and the quality of the environment.\*

- a.** Students should be able to identify environmental issues in a given situation and the various interests involved, while taking into consideration ecological, social, and economic factors.
- b.** Students should be able to investigate issues using both primary and secondary sources of information and synthesize the data gathered. Additionally, students should demonstrate the ability to:

- Listen with comprehension;

- Collect, organize, and analyze information;
- Frame appropriate questions to guide their investigation;
- Use a range of resources and technologies in addressing questions; and
- Critically examine information from a variety of sources.

**c.** Students should be able to assess the nature of information and materials from a variety of different viewpoints and evaluate their implications.

**d.** Students should be able to identify alternative solutions for various issues and their associated value perspectives. They should be able evaluate alternative solutions with respect to their ecological and cultural implications. Additionally, the alternative solutions generated should attempt to take into consideration the variety of interests involved, while maintaining a healthy environment.

**e.** Students should be able to identify and evaluate their own position on environmental issues and their associated solutions. These positions should be based on balanced information, critical analysis, and logical deduction. Moreover, students should be able to test their position against new information, personal experiences and beliefs.

**f.** Students should be able to evaluate the interaction of the proposed solution with other ecological and social factors and anticipate having to plan ahead when evaluating the long and short-term implications of possible solutions to environmental problems.

### **Goal 3:**

To provide students with experience in environmentally-oriented activities, enabling them to become environmentally-aware and action-oriented.\*

**a.** Students should have knowledge of a wide range of action strategies involved in seeking solutions to environmental problems.

**b.** Students should have a knowledge of agencies and organizations that can be used as resources to seek solutions to environmental problems.

**c.** Students should be able to evaluate the impact of their own actions affecting a particular environmental problem and devise alternative actions to work towards improving environmental conditions.

**d.** Students should be able to work independently and/or collaboratively to solve environmental problems.

\*Adapted from the draft National Standards for Environmental Education (NAAEE), August 1995 draft.

## The Training

Teams that have notified Louisiana Envirothon organizers of their interest by registering or emailing a request for inclusion, will be notified of training opportunities offered by the organizing committee and their partners.

Additionally, team members and advisors are encouraged to seek training opportunities on their own. These would include, but not be limited to, discussions with local naturalists, geologies, foresters, scientists and bio-ethesists.

## The Competition

### **Overview**

Students, competing as a team, rotate through a series of stations managed by natural resource specialists. The teams will be given a written test (which involves hands-on field activities) to complete. Each test is taken as a team with each team member participating in answering the questions. Test questions may be asked in a variety of ways, including but not limited to, multiple choice, true/false, essay or fill-in-the-blank.

Each team will also be presented with an environmental problem that is based on the "current environmental issue." The hypothetical environmental problem situation will be given to each team several days before the competition. Each team will be required to develop and present a management plan for the hypothetical problem. All team members must verbally participate in the oral presentation.

The top scoring team at the state competition may represent Louisiana at the Canon Envirothon.

## Competition Scoring

1. There will be a first-place winner in each of the following areas of the competition: Aquatic Resources, Forestry, Soils, Wildlife, Current Issue and Oral Presentation.
2. The winner of each testing station — Aquatics, Forestry, Soils, Wildlife, Energy and Current Issue, will be the team with the highest test score (100 points possible). The Oral Presentation is judged by a panel of experts. The Oral Presentation score will be the average of all the judges' scores (200 points each).
3. There will be one overall winner. The overall winner is determined by the cumulative total (800 points possible) of the station test scores (100 points each) plus the final oral presentation score (200 points). This team with the highest score and meeting the committee's achievement requirements will represent Louisiana at the Canon Envirothon.
4. If needed, the tiebreaker shall be in the following order: Oral Presentation Score, Current Issue score, Aquatic resources score, Forestry score, Soils score, Wildlife score, Energy score.

## Rules and Regulations

The Louisiana Envirothon shall be conducted under the following rules and regulations:

1. Only students enrolled in grades 6 through 12 or equivalent home school ranking in the current school year are eligible to participate in the Louisiana Envirothon. Teams may be composed of 6<sup>th</sup>- 8<sup>th</sup> grade students, 9<sup>th</sup> – 12<sup>th</sup> grade students or a combination of the two. Only teams composed of 9<sup>th</sup> -12<sup>th</sup> grade students will qualify to represent Louisiana at the Canon Envirothon.
2. A school or organization may send multiple teams to the Louisiana Envirothon. Each team will compete independently.
3. Each team must consist of five students from the same school or organization. Only the five team members will be allowed at the testing stations. Team members may be substituted by submitting written notification to the Louisiana Envirothon committee prior to April 10.

4. Teams must be accompanied to Cade Farm by an adult advisor. Advisors are required and will be responsible to ensure that the team members display proper conduct.
5. There will be no access to the testing stations for advisors or teams before the competition or during breaks.
6. No advisor, sponsor, teacher, alternate or parent may communicate with team members once the competition begins. When messages between competing team members and others are necessary, they shall be delivered by members of the Louisiana Envirothon Committee. No contact between advisors and their team shall be made until after all testing and oral presentations are completed.
7. Each team will be assigned a team buddy who will accompany them throughout the competition.
8. Weapons, tobacco, illegal drugs, and alcohol are not permitted during any part of the competition. No backpacks will be allowed on the testing circuit.
9. Only content keys, reference materials, and equipment provided by the Louisiana Envirothon Committee will be allowed for use at the event. No electronic, battery-operated or solar-powered equipment including cell phones may be used by teams during any portion of the competition.
10. Judges' decisions are final on all events.
11. Noncompliance with any of the aforementioned rules will be grounds for disqualification.
12. Competition fees are non-refundable.

## The Oral Presentation

Advisors will receive, by email, notification of the oral presentation scenario approximately three weeks before the Louisiana competition. Teams should begin immediately formulating their plan for presentation during the competition. Oral presentation preparation time will not be provided the day of the competition.

Team members are encouraged to hone oral presentation skills prior to receipt of the scenario.

## **Oral Presentation Rules**

1. Oral presentations must be 10-15 minutes in duration.
2. Each team member must have an equal part in the oral presentation.
3. There will be a question period by judges.
4. Visual aids must be prepared by team members using only materials from the list provided by the Louisiana Envirothon Committee. No computer generated materials may be used. No photographs or printed material may be used. Prepared presentation materials will be turned in at competition registration and returned to teams just prior to their presentations.
5. Oral presentation judging will follow the Canon Envirothon protocol.

### **Visual Aids Material List**

2 sheets of newsprint, not to exceed 27"x 33"

8 waterbase markers

4 sheets of 8.5" x11" construction paper (blue, green, red, yellow)

Glue stick

Ruler

No. 2 Pencil

10 note cards 3" x 5"

Black ballpoint pen

Standard office scissors

**The Rules and Regulations of the Louisiana Envirothon are subject to change. Changes to these rules will be communicated through the Louisiana Envirothon website, by email, or during the event.**

# State Competition Preparation Checklist

Maintain close contact with the Louisiana Envirothon committee contacts prior to the competition. Ensure the following checklist is completed:

- Your team is registered and the registration fee has been paid.
- Transportation has been arranged to the competition location.
- Team members are familiar with the rules of the competition.
- Team members are trained in each of the test areas: soils, aquatic resources, forestry, wildlife and the current environmental issue. Study guides are available on the Louisiana Envirothon web site [www.deq.louisiana.gov/envirothon](http://www.deq.louisiana.gov/envirothon) Canon Envirothon web site [www.envirothon.org](http://www.envirothon.org) .
- Team members are developing oral skills presentation.
- Program updates and FAQs are posted periodically on the Louisiana Envirothon web site [www.deq.louisiana.gov/envirothon](http://www.deq.louisiana.gov/envirothon). Check it frequently.

## Learning Objectives

### **Aquatic Resources**

Students should be able to:

1. Describe the processes of the hydrologic cycle including transpiration and aquifer recharge.
2. Describe water in its three states of matter, the structure of the water molecule and relate it to water's ability to dissolve substances, cohesion and capillary action.
3. Discuss what causes nitrate contamination of well water; where in the U.S. you would most likely find it, what can happen if you drink nitrate contaminated water and what can be done to reduce it. Understand basic well construction and the importance of well grouting. Know what wellhead protection is and what constitutes a wellhead protection program.

4. Discuss what ground water and the processes that cause it to become stored and replenished mean. Understand recharge and how it occurs. Learn the processes of ground water contamination and what can be done to clean contaminated ground water. Discuss how an on-site waste disposal system works.
5. Explain how drinking water is monitored using the Safe Water Drinking Act. Be able to discuss the importance of the Clean Water Act.
6. Discuss coliform bacteria and explain why they are used as indicator organisms in drinking water.
7. Know what water conservation is and steps that can be taken at both the individual and government levels. Understand some of the basics of water resource management.
8. Discuss what causes lead contamination in drinking water and what can be done to decrease it.
9. Understand what is meant by non point source pollution and be able to give some examples, including plant nutrients, sediment and toxic chemicals.
10. Explain some basic water quality parameters such as pH and toxic chemicals. Be able to identify the equipment used by scientists who monitor water. Know how to use a pH meter, a thermometer and a dissolved oxygen meter.
11. Describe a wetland. Discuss why wetlands are important and what steps might be taken to preserve them. Know the difference between several types of wetlands such as marshes and estuaries.
12. Describe a simple aquatic food web, including producers and consumers, herbivores, omnivores, carnivores and detritivores.
13. Describe a watershed. How could you use a topographic map to outline a watershed?
14. Describe and identify simple aquatic insects, especially those which can be used to indicate clean or polluted water.
15. Explain the water treatment processes used to produce clean drinking water or to treat sewage.

## **Forestry**

Students should be able to:

1. Identify common trees without a key.

2. Understand the uses of different trees for pulp, lumber, wildlife, etc.
3. Identify specific or unusual species of trees or shrubs through the use of a key.
4. Understand tree anatomy and physiology.
5. Understand how wildlife habitat relates to: forest communities, forest species, forest age structure, snags and den trees, availability of food and cover and riparian zones.
6. Understand basic forest management techniques and the purpose for their use- harvesting regulations, intermediate cutting and TSI (timber stand improvements) protection.
7. Be familiar with the use of a Biltmore Stick and other forestry tools.
8. Understand the value of trees in urban/suburban/rural settings and the factors affecting their health and survival.
9. Understand the multiple use concept in the management of forests.
10. Be familiar with forest history, forest inventory and what is meant by sustainable forestry.

## **Soils**

Students should be able to:

1. Know the characteristics of soil horizons and the features of a soil profile.
2. Identify and understand soil properties (including color, texture, structure, porosity, etc.) and their relation to soil characteristics, uses and limitations.
3. Know the characteristics of soil constituents (clays, organic matter, sand and silt).
4. Understand soil drainage classifications and know how wetlands are defined.
5. Know how to use and understand a soil survey.
6. Know how soil can be used as a filter for pollutants.
7. Be aware of the effects of land uses on soils.
8. Identify the factors affecting soil erosion by wind and water.
9. Understand the origin of soil parent materials and be familiar with glacial geology.

10. Understand the nature of plant nutrients and how they are held by soil material.
11. Understanding of soil water, its movement, storage and uptake by plants.
12. Know how to measure soil slope.

## **Wildlife**

Students should be able to:

1. Identify common wildlife species (game animals, furbearers, endangered species, etc.) and be able to identify biofacts (hair, fur, feathers, gnaw marks, etc.) wildlife signs. Keys will be used for more extensive identification.
2. Identify basic wildlife habitat and survival needs (food, water, shelter/cover, space).
3. Describe specific adaptations of wildlife to their environment and their role in the ecosystem.
4. Describe predator - prey relationships and give examples.
5. Describe food chains and food webs and cite examples.
6. Evaluate a given habitat for its suitability for a designated species, given a description of the habitat needs of the species.
7. Describe ways that habitat can be improved for specific species by knowing their habitat requirements.
8. Describe factors that limit or enhance population growth. Discuss the concept of carrying capacity and limiting factors.
9. Discuss various ways the public and wildlife managers can help in the protection, conservation, management and enhancement of wildlife populations.
10. Describe the potential impact of the introduction of non-native species.
11. Describe major factors affecting threatened and endangered species and methods used to improve the populations of these species.
12. Identify species from given natural history information.
13. Understand the roles of wildlife in an ecosystem.
14. Understand some key wildlife laws and the reasons behind many regulations. (i.e. regulations designed to protect the resource and spread it out among would-be users).

15. Understand some of the basic “tools” of wildlife managers (hunting, habitat manipulation, population census techniques, people management, etc.)

## **Current Issue**

Visit [www.deq.louisiana.gov/envirothon](http://www.deq.louisiana.gov/envirothon) or [www.envirothon.org](http://www.envirothon.org).

# Partners

The Louisiana Envirothon is made possible by the cooperative efforts of the following organizations:

## **Sponsored by**

- Canon USA
- University of Louisiana at Lafayette
- Barataria-Terrebonne National Estuary Program
- Louisiana Department of Agriculture and Forestry
- Louisiana Department of Wildlife and Fisheries
- Louisiana Department of Natural Resources
- Louisiana Department of Environmental Quality
- Acadiana Resource Conservation & Development Council, Inc.
- National Forest Service
- Louisiana Arts & Science Museum
- Governor's Office of Environmental Education
- Louisiana Environmental Education Commission
- Louisiana Cooperative Extension Service
- Cheniere Energy
- Southern University
- Louisiana Association of Conservation Districts
- St. Martin Parish Government
- Air & Waste Management Association - Louisiana Section
- Louisiana Environmental Health Association
- Borden's Milk Products, LP
- McDonald's of Acadiana
- Louisiana Science Teachers Association

# Resources

## **Sample Test Questions**

Sample tests are available on the Canon Envirothon website at [www.envirothon.org](http://www.envirothon.org) .

## **Oral Presentation Judges' Scoring Sheets**

The Louisiana Envirothon will use the Canon Envirothon Judges' Scoring sheets for the state Envirothon competition. The Canon Envirothon Judges' Scoring sheets are available at the Canon Envirothon website at [www.envirothon.org](http://www.envirothon.org) .