Elements of a Successful Envirothon Program

A Teachers Guide

from

Rhode Island Envirothon, Inc.

Last revised 9/15/10

WELCOME

The Rhode Island Envirothon is an environmental education program for Rhode Island High School Students.

This practical guide has everything you need to establish a successful Envirothon program in your high school. Whether you are an experienced Envirothon Advisor or new to the program, you'll find this guide a useful tool. It contains helpful information and plenty of ideas for recruiting students, team building exercises, and curriculum suggestions, plus a handy timetable to make sure you're on the right track as the year progresses.

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Contact Information

The first thing to remember is: Relax! You're among friends. The Envirothon program may be a competition, but it's a friendly competition. There are plenty of resources to support you as you build your Envirothon program. Here's a handy list of some of them:

RI Envirothon, Inc

President:	Paul Ricard	president@rienvirothon.org
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Teacher Mentors

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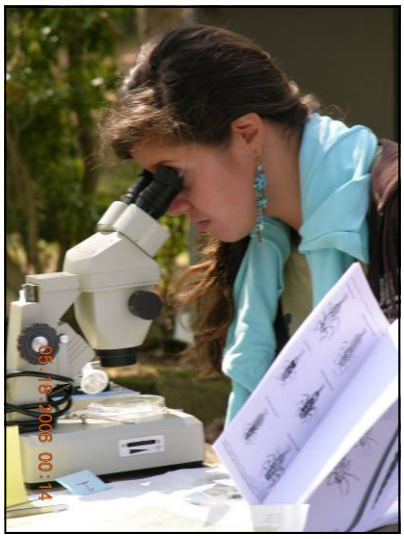
Mission & Program

"Live with the understanding that we are here because of the environment and not in spite of it."

Mission

The mission of Rhode Island Envirothon, Inc., is to develop knowledgeable, skilled and dedicated citizens who are willing and prepared to work towards achieving and maintaining a balance between quality of life and the quality of the environment. The mission is fulfilled by developing in young people an understanding of the principles and practices of natural resource management and ecology, and an appreciation for the difficulties and complexities of achieving this goal.

Program



RI Envirothon, Inc., offers a year long program of study in the natural resource sciences of Forestry, Aquatic Ecology, Wildlife, and Soils/Land Use, and of a special "Environmental Issue", which changes yearly. Studies may be undertaken in the classroom where appropriate, and/or as an after school program, club, or informal group of like-minded individuals. RI Envirothon, Inc. may provide additional training or assistance in the form of workshops, mini-training sessions, or individualized training, etc, and through the use of items from our lending library, or other teaching resources as they may become available. A workshop for the *Environmental Issue* will be held whereat students will be given formal training on the subject matter by professionals in the area of study. The student's experience culminates in the Spring at the annual "Envirothon".

FACT:
There are no statewide standards or requirements for environmental education in Rhode Island.

OUR OPINION:
They're long overdue!

As with any recipe for success, the first thing to do is gather your ingredients. Luckily for you, many of them are right here in this guide!

WHAT YOU'LL NEED

ACTIVITIES

Teambuilding Exercises
Instructional Ideas

MATERIALS & RESOURCES

Learning Objectives
Study Guides
Soils Kits (contact us for kit)
Sample Tests

LOGISTICS

Support from School Administration
Substitute Teachers for time out of School
Transportation
Place to meet
Budget

USEFUL TIPS

Get parents involved
Use outside resource professionals for specialized training
Partner with experienced Envirothon teachers
Combine Envirothon with another school discipline and team teach — be creative! History? Art? Math? Sociology?

SEPTEMBER/OCTOBER

- ❑ Obtain administrative approval for the Program
- ❑ Register school with RI Envirothon, Inc. (*fee*)
- ❑ Visit RI Envirothon website for information and calendar of meetings and workshops.
- ❑ Incorporate Envirothon program into classroom curriculum, and begin recruiting students for your Envirothon team
- ❑ Establish goals/schedule for team
- ❑ Decide topics to cover and timetables for each
- ❑ Recruit teacher(s) and assistant(s)
- ❑ Team teach when possible

NOVEMBER/DECEMBER

- ❑ Assure team is beginning to meet and studying basic materials
- ❑ Take club photo for yearbook
- ❑ Partake in Fundraising Opportunities in time for Holidays
- ❑ Develop Study/Competition strategies for your team
- ❑ Continue team teaching

JANUARY/FEBRURY

- ❑ Visit websites as suggested in the Section study guides
- ❑ Use resource professionals to provide team with specialized training
- ❑ Begin research into Environmental Issue, and incorporate into curricula
- ❑ Continue Team teaching

MARCH

- ❑ Obtain "*problem scenario"* from Environmental Issue workshop
- ❑ Study, study, study!

APRIL

- ❑ Research Environmental Issue as it relates to "problem scenario".
- ❑ Begin preparation of oral presentation for Envirothon

MAY

- ❑ Compete in the Envirothon & have fun!

JUNE, JULY, AUGUST

- ❑ Cheer on the winners as they compete nationally-it could be you!
- ❑ Coaches—participate in professional development workshops, classes, and externships as may be made available through RI Envirothon, Inc.

Remember, your relationship with RI Envirothon, Inc. doesn't have to

Listed below are preliminary suggestions to get you started. There are plenty of other resources for you to pursue, and this list is far from inclusive

TEAMBUILDING EXERCISES

- Make apple cider in the fall
- Participate in the annual "Walk in the Woods" in the fall (Society of American Foresters)
- Kayak on a local waterway
- Participate in Earth Day or neighborhood clean-up programs
- Develop lessons using nearby "natural areas" (you'd be surprised what you can find to teach about even in heavily urbanized areas!)
- Have a team scavenger hunt based on the curricula
- Hold a "Natural Resource Olympics"

Have any ideas you'd like to share? We'd love to hear from you!

WEBSITES TO VISIT

www.envirothon.org (national information; links to state and provincial sites)
www.rienvirothon.org (our website)
www.riscienceteachers.ning.com (forum for local Envirothon teachers/advisers)
www.epa.gov/teachers

Please visit our website regularly as we are continually improving, upgrading, and updating it.

Competition Overview

Rhode Island's Envirothon

Rhode Island Envirothon, Inc., hosts a one-day competition (the "Envirothon) as the culmination of its year-long program of environmental study, and is held at a local venue which changes annually. It is usually scheduled for one day in the third week in May, from about 8:30 in the morning to about 1:00 in the afternoon. A lunch is served followed by the awards presentations.

Envirothon is active in forty-five U.S. states and nine Canadian Provinces.

Envirothon tests student's knowledge in the four standard subject areas: Aquatic Ecology, Forestry, Soils/Land Use, and Wildlife. Test questions are T/F, multiple choice, and fill in the blank. Many questions require students to participate in hands-on practical demonstrations of their knowledge and skills. As a team they are also given a written examination testing their knowledge of the Environmental Issue. Each team is also required to give a short presentation to a panel of judges, in an oral format, their solution to the *Problem Scenario* given to them previously by RI Envirothon. The *Scenario* is based on the Environmental Issue topic, which changes annually. Each member of the team is required to participate

After the written exam each team of five students receives a "rotation schedule" telling them the order in which they will take their other tests, or oral presentation. At any given time, different teams will be working in different areas of the venue so that Team A may be giving an oral presentation while Team B is walking in the woods identifying trees for the Forestry test.

The results of each teams' test and oral presentation scores are compiled, and medals are awarded for the winning team in each study area, as well as for the overall Envirothon winner. Some Envirothon students have gone on to receive internships and, in some cases, employment opportunities from our sponsor organizations.

Canon International Envirothon

The Canon International Envirothon is held for five days each summer, and follows the same format as our Envirothon. Winning state and provincial teams from the United States and Canada vie for the honor of first place. Scholarship money, and other prizes are awarded to each member of the top 10 teams. The team winning Rhode Island's Envirothon is given first chance to represent Rhode Island at the "Nationals". If they decline, or are otherwise unable to participate, the honor to represent us may be offered to the second place team, and so on. RI Envirothon, Inc. will assist the team representing Rhode Island in any way we are able, but ultimately it is the representing team's responsibility to provide for their own participation.

Appendices

Rhode Island's Envirothon Rules and Regulations

1. Only students enrolled in grades 9 through 12 (or equivalent home school ranking as recognized by their home school district) are eligible to compete in the Rhode Island Envirothon.

2. A school, 4-H club, Boy/Girl scout troop or other recognized youth group may enter 1 or 2 teams in the Envirothon. Club or troop members must be from a single group.

3. All teams must pay the team registration prior to the date established by RI Envirothon Inc. No team will be allowed to participate in the Envirothon without payment of registration.

4. A registration form listing names of team members and advisor/teacher/coach must be submitted to the Envirothon Coordinator *at least* two weeks prior to the Envirothon.

5. Each team will consist of five students from the same school or organization. NO alternates will be permitted to participate.

6. Ninth grade students attending a junior high/middle school may be on the team if the junior high/ middle school is a feeder to the named high school.

7. An advisor/coach/teacher or other adult with responsible charge must accompany a team on the day of the Envirothon.

8. All tobacco, drugs, and alcohol are prohibited.

9. Advisors/Coaches/Teachers will be responsible for the proper conduct of their team at all times.

10. RI Envirothon, Inc. may provide workshops in the topics of Forestry, Soils, Aquatic Ecology, Wildlife and an Environmental Issue, at times and places that would be announced to all registered teams. Study materials, reading lists, web-sites, and contact individuals may be made available at these workshops. Teams unable to attend a workshop(s) may be able to pick up study materials by making arrangements with the Envirothon Coordinator. The Environmental Issue may or may not be related to the current Environmental Issue of the Canon Envirothon.

11. No reference materials or tools, except those provided on site, will be allowed during the Envirothon.

12. Generally there shall be four (4) resource test stations: Aquatic Ecology, Forestry, Soils, and Wildlife. Some years there may be a station related to the Environmental Issue. In some instances multiple areas of study may be tested at any station.

13. Testing at the resource stations shall consist of written tests (multiple choice, true/false, fill in the blank) and/or problem solving scenarios.

14. During testing, the advisors/coaches/teachers will not be allowed to have any contact with their respective teams.

15. The Problem Scenario for the Environmental Issue shall be provided to all registered teams at least three weeks prior to the date of the Envirothon. At the Envirothon, Teams shall present an Oral Presentation addressing the Problem Scenario to a panel of judges selected by RI Envirothon, Inc.

a. The Team's Oral presentation will be 8 to 10 minutes in length. (Penalty for over or under time shall be 1 point per minute.)
b. Judges shall have a maximum of 5 minutes questioning time.
c. All five team members **MUST** participate orally in the presentation.
d. **NO** electronic equipment will be permitted.
e. Visual aids are limited to those listed in the rules sent with the Problem Scenario each year, or

as allowed by RI Envirothon, Inc.

f. Oral presentation scores will be based on a criteria sheet approved by RI Envirothon, Inc. A copy of the scoring criteria sheet may be included with the Problem Scenario.

g. Advisors/teachers/coaches may make arrangements to record ***their*** team's oral presentation, if there are no objections from other advisors/coaches/teachers and if it does not interfere with the presentation schedule.

h. Competing Teams/Advisors/Coaches/teachers are not allowed to observe other team's presentations.

17. Scoring:

a. Each station shall be scored on a 100 point basis.

b. The Oral Presentation shall be scored on a 100 point basis.

c. RI Envirothon, Inc. will determine the tiebreaker for naming a winning team.

d. The respective Section supervisor will determine tiebreakers for the individual site awards.

18. The decision of the judges and/or RI Envirothon, Inc shall be final.

19. Awards. RI Envirothon, Inc. at its sole discretion, shall determine the most appropriate way to recognize the overall winning team, and the top-scoring team in each of the resource areas.

Generally, the overall winning team, as determined by the sum of each team's resource station and oral presentation scores, shall have their school/organization name engraved on the John H. Chaffee Memorial Envirothon Plaque, and may be presented with a plaque for their school, or other such recognition as determined by RI Envirothon, Inc.

Site awards may also be presented to the top scoring team from each resource station, and individual awards may be presented to each member of the winning team(s).

20. Disqualification:

a. A team may be disqualified for violation of any rules or regulations of Rhode Island Envirothon, Inc.

b. A team may be disqualified for unauthorized access to the Envirothon testing site within 2 days of the competition.

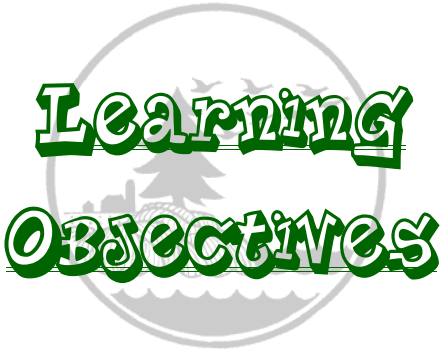
21. These rules and regulations are subject to change by RI Envirothon, Inc. All rules and regulations will be provided to teams and advisors/teachers/coaches prior to the Envirothon.

Learning Objectives

Aquatic Ecology

For the aquatic ecology discipline, students should be

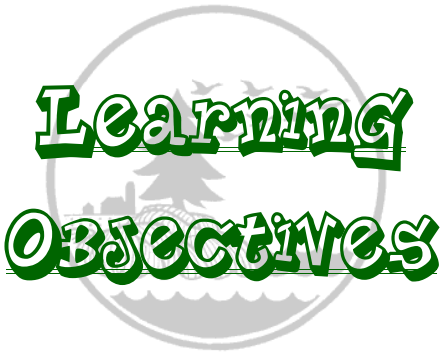
- Identify the processes and phases for each part of the water cycle.
- Describe the chemical and physical properties of water and explain their implications for freshwater and saltwater ecosystems.
- Analyze the interaction of competing uses of water for water supply, hydropower, navigation, wildlife, recreation, waste assimilation, irrigation, industry, and others.
- Discuss methods of conserving water and reducing point and non-point source pollution.
- Identify common aquatic organisms through the use of a key.
- Delineate the watershed boundary for a small water body
- Explain the different types of aquifers and how each type related to water quantity and quality.
- Briefly describe the benefits of wetlands, including both function and value
- Describe the benefits of riparian areas, including both function and value
- Describe the changes to the aquatic ecosystem based on either natural or man-made alteration of the aquatic habitat
- Know methods used to assess and manage aquatic environments and be able to utilize water quality information to assess the general water quality of a specific body of water. This includes sampling, technique, and water quality parameters used to monitor point and non-point source pollution.
- Be familiar with major methods and laws used to protect water quality (i.e. both surface and ground water) and utilize this information to make management decisions to improve the quality of water in a given situation.
- Be able to identify locally common animals that depend on wetlands
- Be able to identify common fishes and discuss their management



Forestry

For the forestry discipline, students should be able to:

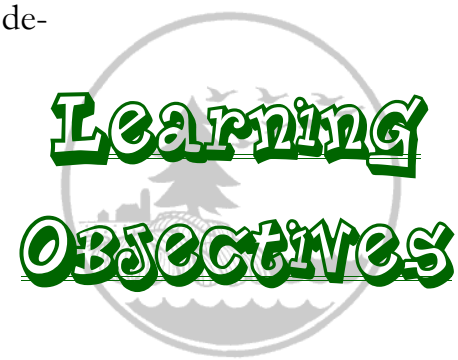
- Identify common trees without a key and identify specific or unusual species of trees or shrubs through the use of a key
- Understand forest ecology concepts and factors affecting them including the relationship between soil and forest types, tree communities, regeneration, competition, and succession.
- Understand the cause and effect relationship of factors affecting tree growth and forest development (climate, insects, microorganisms, wildlife, etc.)
- Understand how wildlife habitat relates to forest communities, forest species, forest age and structure, snags and den trees, availability of food, and riparian zones.
- Understand how the following issues are affected by forest health and management biological diversity, forest fragmentation, air quality, aesthetics, fire, global warming, and recreation.
- Understand basic forest management concepts and tools such as how various silvicultural practices and utilized, the use of tree measuring decives, and the best use of management practices.
- Apply silvicultural concepts and methods to develop general management recommendations and goals for a particular situation.
- Identify the complex factors that influence forest management decisions (e.g., economic, social, and ecological)
- Understand the value of trees in urban/suburban settings and the factors affecting their health and survival.



Soils/Land Use

For the soils & land use discipline, students should be able to:

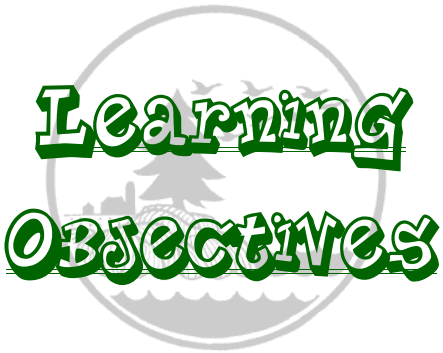
- Recognize soil as an important and dynamic resource.
- Recognize and understand the features of a soil profile
- Describe basic soil properties and soil formation factors
- Understand the origin of soil parent materials
- Identify soil constituents (e.g. clay, organic matter, sand and silt)
- Identify and list sil characteristics (e.g. texture, structure, etc.) and their relation to soil properties.
- Determine basic soil properties and limitations (e.g. mottling and permeability) by observing a soil pit or a soil profile
- Understand the types and nature of plant nutrients and how they are held by soil
- Recognize the characteristics of soil types (e.g. "hydric", "xeric", etc)
- Understand soil drainage classes and know how wetlands are defined
- Understand soil water, its movement, storage, and uptake by plants
- Understand the effects of land use on soils
- In land use planning discussion, discuss how soil is a factor in or is impacted by non-point source pollution
- Identify types of soil erosion and discuss methods for reducing erosion
- Utilize soil information, including a soil survey, etc. to determine site suitability for various uses (development, infrastructure, septic systems, agriculture, etc.)



Wildlife

For the wildlife discipline, students should be able to:

- Identify common wildlife species using guides, formulas, etc, and from tracks, teeth, bones, scat, feathers, fur, scratchings, and other wildlife sign.
- Identify basic wildlife survival needs.
- Describe specific adaptations of wildlife to their environment and their role in the ecosystem.
- Describe predator/prey relationships and identify examples.
- Describe food chains and food webs and cite examples.
- Describe factors that limit or enhance population growth.
- Evaluate a given habitat and its suitability for a designated species.
- Describe ways a habitat can be improved for specific species.
- Be able to describe and discuss the concepts of carrying capacity (each kind) limiting factor, biotic potential, immigration, emigration, migration
- Discuss various ways the public and wildlife managers can help in the protection, conservation, management, and enhancement of wildlife populations.
- Describe the potential impact of invasive, exotic, and nuisance species on both wildlife and society.
- Describe major factors affecting threatened and endangered species and methods used to improve the populations of these species.
- Understand and describe how habitat changes in the past have affected wildlife populations, and predict how changes will affect future populations.
- Within the field of Wildlife management, understand and discuss the life cycles and impacts of infectious insects and the diseases they may carry, and prevention and control methods to prevent disease transmission.



SAMPLE ORAL PRESENTATION

SCORE SHEET

Team School/Number

Judge's Number or Initials

A. Presentation was well organized with a clear introduction and strong conclusion.

B. Participants enhanced the presentation (eye contact, gestures, voice inflection, originality, exhibited professionalism, etc.)

C. Visual aids were used to make major points and show conclusions. (Visual aids should be correct, eye appealing, readable, neat, etc.)

D. Questions were answered logically and concisely by all team members participating.

Part I Sub-total _____

A. Team demonstrated a solid understanding of political issue(s) related to the problem (regulations, mandates, impact on political system/community).

B. Team demonstrated a solid understanding of ecological/environmental issue(s) related to the problem.

C. The team demonstrated a solid understanding of the economic issues(s) related to the problem including the cost and benefits of the proposed plan, (cost of implementing the plan, economic impact on local resources, cost of doing nothing, future costs, funding source(s), etc.)

D. The team demonstrated a solid understanding of social and/or cultural issue(s) related to the problem (private property rights, traditions, clean and healthy environment, right to farm, urban issues, cultural issues, environmental justice).

E. The team presented one viable solution to the problem addressing the resource issue.

F. The main parts were clearly stated and supported.

G. Solution in the presentation has potential to be applied or implemented with long term sustainability to natural resources.

H. Did the solution reflect or address the concerns of all affected groups and issues?

Part II Sub-total _____

A. How well did the presentation address or identify:
- The interrelationship between the environment (surroundings), natural resources, and the different natural resource management strategies?
- All the different players/interest groups affected by the problem?
- The major natural resources area (soils/land use, aquatic ecology, forestry, wildlife)?
- The current issue of alternative energy?
- The specific environmental problem and related issues regarding the problem?

B. Were references and resources cited in the team presentation?

Part III Sub-total _____

A. Add up to five points for team member participants in presentation. (Each team member gets up to 1 point for equal oral participation in presentation).

B. Add up to five points if the presentation accomplished the task of presenting a plan.

Part IV Sub-total _____

Total Points for Part I	(20 Maximum)
Total Points for Part II	(40 Maximum)
Total Points for Part III	(30 Maximum)
Total Points for Part IV	(10 Maximum)

TOTAL SCORE

_____

Deduction of points for time of presentation. Subtract 1 point for every minute under 10 or over 12 minutes with a grace period of 30 seconds. **(SUBTRACT)**

_____

FINAL SCORE