2011 Maine Envirothon Theme
"Protection of salt and fresh water marshes"

Current Issue Testing Station

Testing at the Current Issue Station – ***Protection of salt and fresh water marshes*** - will be different than at the other stations. This station involves a written exam (that will include questioning about BOTH freshwater and saltwater marshes) and an oral presentation. Teams will present their poster to two or three judges, with an additional judge overseeing the written testing.

POSTER AND ORAL PRESENTATIONS: All teams should investigate, research and prepare a poster that focuses on either a freshwater marsh OR a salt water marsh **and include** a **5-minute oral presentation** addressing it for ***Regionals.*** Teams should practice presenting in the allotted time. **Please note that team members <u>are</u> allowed to refer to note cards when presenting**. Posters should be used during the presentation. If time allows, judges may pose a few questions. Judges will use the enclosed scoring rubric to score each team's presentation. (NOTE: A **7- minute oral presentation** and 2-minute Q&A format will be used for the **State Final**.)

Rules regarding the poster presentations:
·Each team is allowed to create 2 posters. Posters can be attached but can be no larger than a total of 1,232 square inches. This is equal to two poster boards 22 x 28 inches each.

Teams may redesign their posters into other shapes (ovals, etc.) or even three dimensional designs, however, the total area cannot exceed 1,232 square inches. All fonts must be at 18 pt. Teams cannot make posters with removable parts for use at the competitions. The poster(s) must remain intact.
There should be no writing, other than the Team/School name, on the back of the posters.
Any medium may be used to create the poster(s).
Teams should bring their posters to the registration desk when they arrive at the competition.
Overlays are permissible but can not exceed the poster size of 22 x 28 inches or 1232 square inches. Multiple overlays are permissible but total overlays can not exceed poster size.

Rules regarding the written test:
Teams cannot use note cards during the written portion of the test.

Testing and Judging Process
The total time period at the **Current Issue** Station is 30 minutes. This is a very tight time schedule! Teams will rotate through the testing and presenting sequence. As one team is making its oral presentation (5 minutes), another is taking the written exam (20-25 minutes). Any team may be interrupted during the written portion and asked to present their poster. If so, a judge will keep track of the remaining time and allow the team to

return to the written exam once finished with the presentation portion.

Scoring
The poster presentation is worth 60 points at Regionals and 100 points at the State Final. The written test is worth 40 points at Regionals. There will be no written test at Finals. The three teams closest to the Finals will begin CI presentations 30 minutes early to accommodate the longer presentation format; which is more similar to the National Envirothon competition format.

If you have questions **please email them to** tish.carr@maineswcds.org

Good Luck and Have Fun!

MAINE ENVIROTHON 2011 CURRENT ISSUE

RATIONALE:
Marshes are defined as wetlands frequently or continually inundated with water, characterized by emergent soft-stemmed vegetation adapted to saturated soil conditions. The water tends to move through a marsh and does not remain stagnant year round.

Saltwater marshes are "grasslands" periodically flooded by tides; primarily salt or brackish tidal water. These marshes are flooded by the tides at various intervals, ranging from once daily to a few times a year. When not flooded, however, the soils remain saturated near the surface, at least during the high tide stage. Salt marshes are represented by grasses and grass-like plants such as smooth cord grass, salt hay cord grass, salt grass, salt marsh bulrush, glasswort, black grass, baltic rush, salt marsh sedge and seaside arrow-grass. Salt marshes in Maine are part of a larger estuarine system which may include bays, harbors, clam flats, and in some cases, sand dunes.

Fresh water marshes are nontidal wetlands usually dominated by grasses or grass-like plants. They are seasonally flooded and usually saturated at or near the surface when not flooded. Dominant plants include broad-leaved cattail, tussock sedge, wool grass, bluejoint, reed canary grass, manna grasses, rice cutgrass, three-way sedge, soft-stemmed bulrush, hard-stemmed bulrush, common three-square, pickerelweed, big-leaved arrowhead, giant bur-reed, wild rice, white water lily, horsetails and beggars-ticks. Fresh water marshes frequently occur along streams in poorly drained depressions, and in the shallow water along the boundaries of lakes, ponds, and rivers. Highly organic, mineral rich soils of sand, silt and clay underlie these wetlands.

Salt and freshwater marshes are among the most productive ecosystems on earth, and have been considered by some to be second only to the rainforests in productivity. Both marshes are rich in biodiversity, but fresh marshes tend to have a higher diversity of organisms then salt water marshes. Both types of marshes aid in flood control. Salt marshes are important as a first line of defense against the destructive power of the oceans caused by hurricanes, tropical storms, strong gales, abnormally high tides, tidal surges and other natural disturbances.

As an example, one of the largest saltwater marsh areas in Maine is the Scarborough Marsh. Marshes in Maine, as in other parts of North America, are under developmental pressure for human habitation, industrial uses and recreation. Since at least the early 1800s, salt marshes have been dyked and drained for farming; starting in the early 1900s, they were also dyked for mosquito control. Even prior to this, the Wabanaki native Americans used these lands for bird hunting, shellfish gathering and fishing; sometimes modifying streams and drainages to facilitate their gathering.

Current threats impacting all marshes include: loss due to development and road construction - with improperly sized culverts and subsequent fragmentation of the marsh habitats. Saltwater marshes are especially affected by development when it restricts normal tidal flow. Salt marshes and fresh water marshes are threatened by nonpoint

pollution, such as fertilizers and pesticides from agricultural operations and suburban lawns, soil erosion and storm water runoff. They are also affected by point pollution; for example oil spills, industrial waste and sewage discharges from homes, municipal wastewater treatment plants and boats. Another threat to marshes take over by non native invasive plants. Water level changes initiated by dams and river releases can be an additional problem for fresh water marshes.

Despite these challenges, marsh systems still provide valuable ecosystem functions such as habitat for wildlife, important migratory stopovers for birds, filtering sediments and pollutants, and aid in flood control. Salt marshes are also a place for hundreds of marine species to spawn, and act as a buffer between the land and ocean by absorbing floodwaters and dissipating storm surges.

(Excerpts above are taken from the Maine DEP website, http://www.maine.gov/dep/blwq/wetlands/inland.htm and EPA website, http://water.epa.gov/type/wetlands/marsh.cfm)

Below are some questions that can help you clarify fresh and saltwater marshes issues and help to plan your presentations and posters:

· What are some human uses for fresh and saltwater marshes?
· What are the environmental functions such as habitat, filtration of pollutants, flood control, and migratory stopover ?
· How are healthy fresh and saltwater marshes connected to human health and the environment?
· How do regulatory agencies regulate the use and protection of fresh and saltwater marshes?
· What is the role of nonpoint and point source pollution in fresh and saltwater marshes protection?
· What are some of the pollution threats to fresh and saltwater marshes and how can these threats best be addressed?
· Who should have jurisdiction to oversee the protection and management of fresh and saltwater marshes for both quality and quantity?
· What are the consequences of not planning or taking effective action for fresh and saltwater marsh protection?
· How can stakeholders such as individual land owners, business people, recreational users, concerned citizens, etc. take proactive actions to protect fresh and saltwater marshes from future threats?

MAINE'S ENVIROTHON –CURRENT ISSUE PROBLEM STATEMENT 2011:

1. **Your team will discuss the importance of fresh OR salt marshes and research information about issues in your community.**

Why are healthy fresh and saltwater marshes important?
What are the major threats to fresh and saltwater marshes? How do these threats affect biotic and abiotic factors in fresh and saltwater marshes? How can deteriorating conditions in fresh and saltwater marshes affect human health, the environment and the

economy?

2. **Choose one threat to fresh OR saltwater marshes identified through your research findings; and identify efforts and techniques that can be applied to manage and mitigate these threats in your area.** What is the threat and how does it affect the overall health and functioning of fresh and saltwater marshes in your community? What efforts have already been implemented to try to combat the problem? What actions have local government and regulatory agencies taken to ensure that fresh and saltwater marsh protection practices are applied during development activities? What are some additional techniques (short term and/or long term) that can be applied through urban, agricultural, and/or environmental planning to improve and protect fresh and saltwater marshes? What actions can an individual take to ensure that fresh and saltwater marshes remain healthy and functional? How will these efforts improve and/or protect fresh and saltwater marshes?

3. **Develop an oral presentation that shows the results of your research.** Why are fresh and saltwater marshes important and what are the threats to fresh and saltwater marshes? What impacts does a dysfunctional fresh and saltwater marsh have on human health, the environment and the economy? What techniques and practices can be applied to mitigate these effects and possibly improve, expand and/or create fresh and saltwater marshes?

4. **Create a poster to show your plan to manage and mitigate the effects of your specific threat to fresh OR saltwater marshes.** Your poster should include an outline of the threat and its effects on fresh and saltwater marshes, any current efforts in place to mitigate these effects; as well as your proposed ideas on how to further improve and protect fresh and saltwater marshes. Also include the potential positive or possibly negative consequences to human health, the environment and/or the economy that may results from your plan being implemented.

EXPECTATIONS FOR POSTER PRESENTATION:

Project Overview: Provide a title for your plan with a brief description of the fresh OR saltwater marsh concern. What does the fresh OR saltwater marsh issue affect – human health, the environment, the economy? What is the geographic range of the concern? (You may want to include a map here.) What is the history of this concern – has it only been an issue for the past 10 years, or much longer?

Implementation Details: Clearly describe your plan to manage and mitigate the effects of your chosen threat to fresh OR saltwater marshes. Provide a timeline for implementation of your plan. Include goals for each component of your plan. Identify community and government agency partners who could be involved in overseeing the implementation of your plan.

You will be judged on your overall understanding of how your chosen threat to fresh OR saltwater marshes has and/or will impact the local community, environment and/or

economy and how your proposed efforts to mitigate and reduce the negative effects of your chosen threat will impact the local community, environment and/or economy.