

## LESSON #7 - WHAT CAN STUDENTS DO TO HELP?

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### **OBJECTIVES:**

- 1 Students will be able to determine the difference between those actions and practices that add to the problem of water pollution and those that help control water pollution, both at home and within the community.
- 2 - Students will use the above mentioned knowledge to participate in activities (both at home and within the community) that will aid in cleaning up polluted waters and help to reduce further pollution of our waters, and be eligible for a New York Sea Grant Water Quality Stewardship Certificate.

### **ACTIVITIES:**

- 1 - Students will engage in sound practices at home to help reduce pollution from stormwater runoff (i.e. cleaning up pet wastes from lawns and streets).
- 2 - Students will educate their family members about sound practices to use about the home to help reduce pollution from stormwater runoff (i.e. composting yard wastes, minimizing use of chemical fertilizers, and/or pesticides).
- 3 - Students will get involved in at least one community project to help clean up or reduce water pollution. Projects could include:
  - A - Adopting a stream, salt marsh or area beach to be cleaned periodically.
  - B - Participation in a DEC-sponsored Adopt A Wetland Stewardship Program.
  - C - Involvement in a storm drain painting project sponsored by New York Sea Grant Extension Program.
- 4 - Students will apply for a New York Sea Grant Water Quality Stewardship Certificate, based on adoption of at least ten (10) environmentally sound practices.

## BACKGROUND

The Peconic Bay Estuary consists of numerous bays, harbors, tidal wetlands, rivers, tidal creeks and 340 miles of coastline. Water enters the bay's waterways by direct stormwater runoff; and groundwater flow from a drainage watershed area of approximately 110,000 acres. The bay and its surrounding watershed is a unique natural resource used by hundreds of thousands of Long Islanders and tourist annually. People from all walks of life use the Peconic Bay Estuary for clamming, fishing, boating, swimming, hiking, and sightseeing.

Historically, the Peconic Bay system has been a major resource for commercial shellfishing and finfishery. Its shallow bays and tidal creeks in the past has annually produced millions of dollars in shellfish and finfish. In 1982 the scallops industry alone generated \$1.8 million in revenue for local bayman. The oyster industry as well was a thriving fishery and in 1982 had a dockside worth of over \$3.4 million. By 1987 and 1988 both of these industries were devastated as a result of the Brown Tide. In 1992 the scollop industry brought in only \$3,000 and the oyster fishery less than \$10,000 (a 99% drop). Hopefully Brown Tide can be controlled, pollution levels reduced and our fisheries can recover in the near future.

The Estuary system also has many diverse and unique habitats within its boundaries. More than 50 state and or federal endangered species are found in the water's and surrounding region. Okeanos Marine Research Foundation has reported evidence that the Kemp's Ridley Turtle (on federal endangered species list) uses the bay as a nursery

## MATERIALS:

### Informational Brochures:

Storm Sewers  
The Rivers Beneath Our Feet  
Citizen Water Quality Monitoring Fact Sheet  
Clear Water - A Guide to Reducing Water Pollution  
Long Island Sound Study Fact Sheet #7  
Coastal Connection  
New York Sea Grant Water Quality Stewardship Certificate Application Form  
Our Water Planet is Becoming Polluted With Plastic Debris

## PROCEDURE:

- 1 - Review information in "Clear Water - A Guide to Reducing Water Pollution," "Storm Sewers - The Rivers Beneath Our Feet," and "Our Water Planet is Becoming Polluted With Plastic Debris". Discuss with students the actions that they can take around the home to help reduce water pollution via stormwater runoff.
- 2 - Discuss sound practices that can be adopted by the adults in your students' households to help reduce water pollution via stormwater runoff. Ask students to educate their family members about these practices and to encourage them to adopt them.
- 3 - Review lists of environmentally sound practices on the New York Sea Grant Water Quality Stewardship Certificate Application Form for additional practices to be adopted by students and their families.
- 4 - Choose a community project for the class to become involved in during the school year.
- 5 - Based on adoption of at least ten (10) environmentally sound practices, have students complete and sign the New York Sea Grant Water Quality Stewardship Certificate Application Form. Students will receive an official Certificate and decal of Water Quality Stewardship. (See samples included.)

# MARINE NETWORK NEWS



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## New York Sea Grant Water Quality Stewardship Certificate Application Form

Become a certified Water Quality Steward by adopting at least ten of the recommended environmentally-sound practices listed below. Have your school certified and encourage each student to become a steward at home as well. The more people that get involved, the cleaner our coastal waters will be!

Put a checkmark by all the practices you have adopted. You must adopt at least ten to become a certified Water Quality Steward.

### Environmentally Sound Gardening

Planted species or varieties that are insect and/or disease resistant.

Had soil tested before applying nutrients and lime, and followed recommendations for application.

Selected the least toxic approach to controlling pest problems. If pesticides were used, label was followed exactly and leftovers were properly disposed of or shared with a friend.

Began composting.

Used mulches to prevent weed germination.

Planted low water use plants.

Adopted trickle and/or drip irrigation.

Used permeable paving materials and maintained ground covers to control runoff from my property.

Left clippings on lawn to recycle nutrients.

Installed splashblocks under gutter downspouts to prevent erosion.

Maintained proper soil pH to aid with nutrient uptake.

Followed Sound Gardening lawn mowing height recommendations.

Encouraged birds, many of which are natural predators of bothersome insects, by providing nesting sites and creating wildlife habitat.

other (please specify) \_\_\_\_\_

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**Water Conservation**

- Checked for and fixed all leaks around the house.
  - Installed water-conserving showerhead and aerators in all faucets.
  - Washed only full loads in washing machines and dishwashers.
  - Kept a container of water in the refrigerator so I did not have to let water run to get cold.
  - Turned off the water when its not actually in use (as during tooth brushing, shaving and dishwashing).
  - Placed a plastic jug filled with water in the toilet tank to reduce the amount of water flushed.
  - Cleaned my sidewalks, driveway, patio or deck with a broom instead of washing with water.
  - Tried to get by on as little water as possible during one week.
  - Started taking shorter showers.
  - Installed soaker hoses or trickle irrigation in my garden and around shrubs and trees.
  - Washed my car on the lawn.
  - Brought my water conserving habits to work or school and spoke up when I saw water being wasted.
  - other (please specify) \_\_\_\_\_
- 

**Community Stewardship Projects**

- Participated in beach clean up program.
  - Participated in a storm drain painting program.
  - Participated in a water quality monitoring program.
  - Participated in an "Adopt-a-Wetland" or "Adopt-a-Stream" program sponsored by the New York Department of Environmental Conservation.
  - Reduced erosion along a stream, river, or coastal beach through planting programs.
  - Improved wildlife habitat for coastal birds.
  - Let my elected representatives know that I am concerned about water quality issues.
  - Participated in a local "Adopt-a-Highway" program.
  - Joined or renewed membership in a responsible, local environmental organization.
  - other (please specify) \_\_\_\_\_
- 

**Safe Disposal of Toxic Materials Around the Home**

- Participated in household hazardous waste collection day.

- Chose household cleaners carefully, using least toxic product available.
- Cleaned with non-toxic items such as baking soda or salt.
- Used more old fashioned "elbow grease" to get things clean.
- Recycled used oil from my car.
- Learned what products were hazardous by conducting a household hazardous waste audit in kitchen, bathroom, garage and basement.
- Saved old batteries for a collection day.
- Gave hazardous products to someone else to use properly rather than disposing of them.
- other (please specify) \_\_\_\_\_

### Teaching Young People About Stewardship

- Began a recycling project with a local youth group.
- Started a composting project with a local youth group.
- Involved a youth group in a beach clean up day.
- Involved a youth group in a wildlife habitat improvement project.
- Took a youth group fishing, taught them how to practice catch and release fishing.
- Involved a youth group in a storm drain painting project.
- Took a youth group to a store, and taught them how to be environmentally-conscious shoppers.
- Had a youth group participate in beach grass planting or similar program to control erosion.
- Had a youth group study the ecology of an aquatic ecosystem.
- Began an environmental education program in a school (provide brief description).

other (please specify) \_\_\_\_\_

### Fishing

- Practiced catch and release fishing.
- Disposed of fishing line properly
- Was careful not to disturb coastal wildlife or their habitat while fishing.
- Participated in a fish stocking program.
- Participated in fish tagging program.
- Limited my catch to what I could realistically consume.



New  
York  
Sea  
Grant

*Certificate of*

# **WATER QUALITY STEWARDSHIP**



Cornell  
Cooperative  
Extension

*Be it known that*

*\_\_\_\_\_*  
  
*has adopted at least ten strategies  
to protect New York's precious water  
resources as part of  
New York Sea Grant's  
Water Quality Stewardship program.*

*The bearer of this certificate is hereby known as a*

## **WATER QUALITY STEWARD**

*and is commended for the hard work and concern  
shown for local aquatic resources.*

*Signed:*

\_\_\_\_\_  
*Program Coordinator, New York Sea Grant Extension Program*

*Signed:*

\_\_\_\_\_  
*Sea Grant Specialist, Marine Environmental Quality*

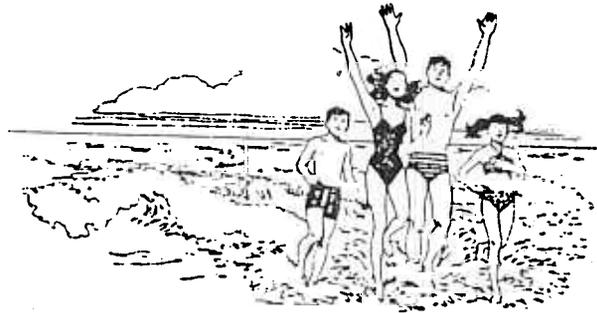


**CITIZEN WATER QUALITY MONITORING**

**YOU CAN HELP KEEP OUR WATERS CLEAN!**

Background

Long Islanders are surrounded by water. Surface water quality on Long Island affects all of our lives either directly through employment or recreation, or indirectly through quality of life or the economics of tourist dollars at the shore. New York's marine waters are incurring impacts from a wide range of pollution sources. Increasing underwater acreage is becoming uncertified or conditionally certified for shellfish harvest, and bathing beaches are being closed. Waters are suffering from point sources such as intermittent failures of sewage treatment plants and other direct discharges, as well as from nonpoint sources such as stormwater runoff, failing home septic systems and boat pollution.



Most of the sources degrading Long Island's marine waters are from nonpoint sources. Marine surface water quality is decreasing on Long Island and is not likely to improve unless remedial actions are undertaken. Often the most puzzling aspect of mitigation is determining the exact source of pollutants and the most cost-effective means of correcting those sources of pollutants.

Much work needs to be done to address and mitigate the problems caused by pollution. Many towns and municipalities have begun the process by conducting shoreside surveys to identify possible sources of pollutants in terms of storm drains, obviously failing septic systems, overland runoff, drainage ditches, etc. Some towns have even begun implementing stormwater runoff control programs to help abate pollutant loads to local bays and creeks. Steps are being taken in many areas to ensure proper efficiency of sewage treatment plants. Agencies such as the New York State Department of Environmental Conservation and county health departments monitor waters for shellfish harvest and bathing beach standards. However, they cannot be in all places at all times and are limited to monitoring for certain standards as required by law.

The ability to supplement agency monitoring to include additional parameters can come from citizen volunteers. The use of trained volunteers for environmental monitoring is an excellent way to obtain certain kinds of reliable data in a cost-effective manner that can be used in research and regulation. Volunteers have a long and honored role in some aspects of science. For example, the National Weather Service has used a network of volunteers to collect reliable weather data for the past 100 years. Citizen monitoring

*Helping You Put Knowledge to Work*

programs have been established around the country for freshwater lakes and streams. However, only recently have scientists utilized citizen volunteers to supplement water quality monitoring of our nation's marine surface waters.

In order to undertake mitigating activities, regulators must know what materials are polluting marine surface waters and where those materials come from. The answers to those questions can come from regularly sampling waters over a long time period. This is where volunteer organizations can play an important role. While citizen volunteers may not have the technical background, they are often committed to a particular creek or embayment. Monitoring programs also provide the volunteers a sense of value and importance in the water quality of their favorite water body.

### How You Can Become Involved

Starting, or participating in, a citizen volunteer monitoring program is fun, easy and rewarding. A scientific or technical background is not needed, only an interest in environmental quality and an appreciation of Long Island's natural resources.

Have you ever looked at a favorite creek or embayment and wondered if its polluted, or where the pollution is coming from? Citizen participation is vital to save America's surface waters. Currently, across the United States, federal and state agencies are only able to monitor 30 percent of U. S. surface waters. Monitoring the remaining 70 percent is where citizen volunteer monitoring programs can play an important role.

Citizen volunteers are becoming increasingly involved in monitoring the quality of our Nation's waters. Volunteer monitoring programs are being formed at a rapid rate throughout the country. Many states are becoming increasingly aware of the value of volunteer programs both in collecting usable water quality information and in developing an educated and involved constituency committed to protecting water resources. We can -- and must -- all help to protect the quality of our waters and resources such as wetlands and beaches.

Citizen volunteers for marine waters typically monitor the following parameters: temperature; salinity; dissolved oxygen; pH, ammonia; nitrite; nitrate. Fecal coliform bacteria are also monitored in some programs. These are all important in terms of defining water quality and their impact on marine life. These parameters are monitored with easy-to-use test kits that require no technical background. Start-up costs for a basic sampling program are typically about \$200.00. Sampling programs can run with as few as one person or can include as many as possible. Youth as well as adults are appropriate for water quality monitoring programs.

If you and your group or organization are interested in starting a citizen water quality monitoring program, contact Emerson Hasbrouck at the Cornell Cooperative Extension Marine Program, 39 Sound Avenue, Riverhead, New York 11901, 516-727-3910.

