



## **NBNERR TOTE 2011 Stewardship Projects**

**Teacher: Teresa Gable**

**Location: 7<sup>th</sup> graders at Seneca Falls, NY**

**Project Summary:**

The students will travel to the Montezuma National Wildlife Refuge on a field trip. This is an optional field trip to Montezuma National Wildlife Refuge. The refuge was established in 1938 as a refuge and breeding ground for migratory birds and other wildlife. The Refuge has established a volunteer group called MARSH. MARSH stands for the Montezuma Alliance for the Restoration of Species and Habitats. The MARSH group helps refuge and NYSDEC biologists and partners combat invasive species and restore healthy homes for wildlife.

The field trip will involve taking a group of 7<sup>th</sup> grade students to get a tour of the refuge and visitor center, have a discussion with a biologist about the MARSH program and participate in planting trees for two hours alongside other adult volunteers and refuge staff. They will receive insight on what goes on in the life of a wetland area and planning for the preservation of a natural habitat. They will plant trees and develop pride in accomplishing a task.

**Teacher: Michelle Polselli**

**Location: Melville Elementary School, Portsmouth, RI**

**Project Summary:**

Through the use of a watershed model, students build a town and then pollute it to see how human actions on land affect our rivers and our Bay. Participants define a watershed, locate their place within the Narragansett Bay watershed and discuss various pollutants that impact their local waterways. I will take various pictures of students creating their watershed models and post them on The Portsmouth Patch's Blog for education so that our community will become aware of the new learning our students are gaining. On November 9<sup>th</sup>, 2011, Norman Bird Sanctuary educators will meet all third graders at Melville Pond, which is adjacent to our school in Portsmouth. This program is called "The Pond and Beyond". Again, meeting science standards, students will dive into the life aquatic and study pond ecology. Students will use dip nets, magnifying glasses, and charts to identify a variety of plants and animals in the pond. Entrusting the students to be the scientists of Melville Pond, they will make predictions about how light and temperature affects life in and around the pond. Starting in March, each third grade classroom will visit the pond weekly to monitor the light and temperature in and around the pond with digital monitors provided by TOTE. After gathering the data, students will focus on third grade math standards related to data and statistics and as an integral part of our math classes, they will create graphs depicting the data collected. This data will show the changes that effect the environment over time. Real life, hands on data collecting will develop meaningful math and science understandings. In March through June of 2012, observations/measurements will be made to determine if there is any change. Students will make a site map showing the location of the study using Google Earth or an online topographic map. Students will access real-time data from Hobo loggers and analyze graphs.

**Teacher: Jacob Tannenbaum**

**Location: Cottage Lane Elementary School, Blauvelt, NY**

**Project Summary**

Students will begin by taking an online course on climate science located on my Moodle: [moodle.jacobtannenbaum.com](http://moodle.jacobtannenbaum.com). When they complete the course, the class will then design and build a wooden picture post (<http://picturepost-dev.sr.unh.edu/>), which will be mounted in or near the Piermont Marsh. Following their time at the marsh, each student will be assigned to take a camera home one weekend and return with pictures from the post. The photos will be uploaded to the University of New Hampshire site for a study of our marsh over time. Finally, the students will study one issue that affects our marsh: Plastic bags. The students will dedicate one month to have a plastic bag drive to collect all the bags that the entire school community throws out in a month. At the end of the month, they will calculate the weight, number and carbon footprint of the bags using the figures on this website: (<http://timeforchange.org/plastic-bags-and-plastic-bottles-CO2-emissions>). They will report their findings to the entire school. Data will include the photos from our picture post, which, if continued over the course of several years could begin to give us an idea of how the marsh is reacting to climate change. In addition, our plastic bag recycling program will give us an idea of the carbon footprint of a largely unnecessary commodity which could, with some simple changes, allow our students to make a reduction in the amount of carbon they use each day. We will also take water quality measurements and post them to a sharing moodle located at [moodle.jacobtannenbaum.com](http://moodle.jacobtannenbaum.com).

**Teacher: Deborah Coury**

**Location: Mount Hope High School, Bristol, RI**

**Project Summary:**

The goal is to reach out to the whole high school and teach the estuary principles in a five-part project. Project 1 is to grow salt marsh cordgrass from seeds in the greenhouse, then plant them at Silver Creek using biology, marine biology and life skills classes. For the 2<sup>nd</sup> project, students will build wood duck boxes and install them at Silver Creek in the winter. The goal is to attract Wood Ducks to lay their eggs in them in the spring of 2012. The boxes will be checked and monitored in the late spring and will involve students from Biology and Woodshop classes. The third project have students collecting data at Colt State Park by counting and identifying the invasive Asian shore crabs in the fall, winter and spring. It will be tied into research about invasive species and their impact on the environment. This will involve students in Biology and Marine Biology and the outside resource utilized will be the Narragansett Bay Research Reserve. For the fourth project, students will plant and grow a rain garden by using rain water collected from drainage from the rooftops into barrels. The goal is to minimize harmful impacts on local waters caused by toxins that are in the water run-off from the roof. Native plants will be used as opposed to invasive plants. Students from Biology and Lifeskills will be involved. The final part of this project will be a Grand Opening of the greenhouse in late spring that will be open to the community and will include a plant sale. All resources that were utilized in this project will be invited to share information about their programs. Students will create brochures and posters about their experiences that also provide information to the community about what they can do to preserve and restore their environment.

**Teacher: Erin Carr**

**Location: 4<sup>th</sup> graders at The Pennfield School, Portsmouth, RI**

**Project Summary:**

The fourth grade students (10 students) will create an interpretive trail brochure for the Sakonnet Greenway Trail. This is a project the students have been interested in developing since our first trail visit. I pitched this idea of interpretive signs to our Aquidneck Land Trust representative. The Aquidneck Land Trust (ALT) is particularly interested in the inclusion of local rare or endangered species seen along the trail such as the barn owl, glossy ibis and northern harrier. The students also want to include features along the trail such as a tree struck by lightning and a man-made stream. These features would be decided upon by the students. The guide would include research completed by students as well as a combination of student drawings and photography. The ALT does not want signs installed along the trail, so the students have come up with two options. The first is a printed, laminated guide to be placed at the entrance of the trail with a slot for the maps to be returned on the other end. The other idea is a website accessible to smartphones. They are even interested in getting a QR code that would be scannable by an iPhone to access the website. Through this project, we have several goals. The first is to raise awareness and personal responsibility among the students for the Sakonnet Greenway Trail. In researching the species and features of the trail, the students will learn about property and hopefully take some ownership of its well-being. We also hope to increase this awareness in the greater Portsmouth community as people use this guide while walking the trail.

**Teacher: Hilary Downes-Fortune**

**Location: The Compass School, Kingston, RI**

**Project Summary:**

The ultimate outcome of our stewardship project is to assist Save The Bay with their salt marsh restoration program by growing *Spartina alterniflora* (saltmarsh cordgrass) in our classroom and greenhouse. Students collect, store, germinate, and plant the *Spartina* seeds and grow them until they are ready for transplanting to a marsh restoration area the following spring. However, this project also provides students with an opportunity to experience firsthand some of the different organisms and habitats found in the Narragansett Bay ecosystem and to explore the geology, history, and importance of the Narragansett Bay estuary. Further, students gain an understanding of cycles in the estuary by camping overnight by the bay and observing the changes the marsh undergoes over multiple tidal cycles and in different weather conditions. This project directly involves the 36 students of the Navigator class (grades 7 & 8) at The Compass School. As a charter public school, these students come from throughout southern Rhode Island. Because we grow the *Spartina* plants in our school's greenhouse (as of last year), other students, teachers, and parents at the school are also able to observe the growing process and are sometimes enlisted to assist in watering the plants while they are growing.

**Teacher: Susan Costa**

**Location: Ocean Tides School (alternative school for boys in the judiciary system), 10<sup>th</sup>-11<sup>th</sup> graders, Providence, RI**

**Project Summary:**

*Spartina* seeds from Fields Point were collected to use with students to help them understand the watershed, human impacts, invasive species, develop responsible community practices and help contribute to the restoration of the RI marshes. Students will research various aspects of estuarine environments on various websites, and identify the watershed boundaries of the Fields Point salt marsh using Google Earth and USGS topographic maps. Students will make graphs showing growth of the plants and design posters to put around the school as well as write articles for school paper. The project supports the estuary principles, particularly the respect for life. Students will be able to describe how

the project can affect the bay. Most students do not know about the history of the bay and its importance to RI. They will donate the plants to a local restoration project in late May for planting.

**Teacher: Jean Blackburn**

**Location: Rhode Island School of Design (Scientific Illustration class for undergrads), Providence, RI**

**Project Summary:**

Students study natural structures, then do a project on something like seed dispersal, mussel integration, or fireflies. In the past, they have worked in the Great Swamp, and with the Audubon Society to study a specific species. This year, students will be brought to the Audubon Society to get a sense of the context, before they study their plant. Students will be shown different visual interpretations of things like beach profile interpretations. Students will work in groups: beach profiles, plant succession, healthy vs. unhealthy marsh (species distribution). This is for a spring semester course with this as a 4-5 week project in cooperation with Audubon. Students will first learn about different types of estuaries, characteristics, data collection methods, and nature of the project (2 days). Then they will visit the site and do field sketches. They will work with quadrats (especially in the high marsh) to collect data. Students will be encouraged to include different perspectives and types of information, (text and visuals) to portray complicated information in beautiful ways.

**Teacher: Sarah Galliher**

**Location: Evansville High School, Evansville, Indiana**

**SG, Native Plant Garden**

**Project Summary:**

There are six students in my Environmental Science class, and as a group, they will be cleaning out the space behind the school adjacent to the building at the biology and chemistry classrooms, as well as the garden boxes outside the art room. In both locations, the plants are overgrown and there are several broken birdhouses, planters and shelves. The students plan to remove the this trash, remove invasive species ad non-native plants, and create native plant gardens. At the biology and chemistry rooms, students also plan to install owl and bird houses to promote a habitat for native animal species. As a second phase of the project, students also plan to build a sustainable railing to help people down the hill to Pigeon Creek so that it is more accessible. This sill clarify the path intended to be taken to the creek and will prevent tail erosion and unnecessary destruction of plants and habitats.

**Teacher: Betsy Dickinson**

**Location: Charter Middle School, Fall River, MA**

**Project Summary:**

“Keeping an Eye on Ecology” is a two-fold project about helping students school-wide (grades 5-8) raise awareness about environmental issues and impacts of their living in their daily lives

Part One: Through the creation of an Ecology Club in the second and third trimesters at the Atlantis Charter School. The school will support this weekly meeting club with a \$400 stipend for the club leader and materials for the project(s) selected by the students. I will keep its focus on how they can start a sustainable practice in the school. We are reading and watching Dr. Seuss’s The Lorax at our first meeting!

Part Two: An “advanced” group of 7<sup>th</sup> graders (23 in all) are already embarking on the Estuaries 101 curriculum and will spend the school year relating our studies of chemistry to the estuary at the bottom of the hill. I intend to facilitate their weekly 20 min. discussions and investigations into its chemical and biological diversity, including indicators of its health. They will be taking a field trip to the Brayton Point power plant, hear a speaker from the Taunton River Watershed Association, and collecting data about

water quality on the shoreline of Mt. Hope Bay. I am hopeful that the integration of the field studies portion of this lab course becomes a permanent curricular addition at the school.

**Teacher: Helaine Hager**

**Location: Mount Pleasant High School, Providence, RI**

**Project Summary:**

Students will travel to Sachuest Point National Wildlife Refuge, an area that has several habitats and will be beneficial for comparison purposes (open ocean, salt marsh, freshwater). The class will conduct a population study of invasive Asian shore crabs on the rocky beach at the Refuge as well as experience seine netting in the Sakkonet River in order to better understand the estuarine food web through identification of species caught in the net. In order to better understand water quality parameters, the students will collect at three different locations and measure pH, turbidity, salinity, dissolved oxygen and temperature. Students will also pick up monofilament line as part of a clean-up effort at the Wildlife Refuge.

**Teacher: Melissa Peplinski**

**Location: White Mountains Regional High School, Whitefield, NH**

**Project Summary:**

The Green Team, our high school environmental education club, implemented paper recycling last year throughout the school and have decided that they would like to add another step. The students have been researching other schools that have done this, what can be recycled, how many and what type of containers we need, who at the school collects the recycling, how recycling can make a difference in our watershed, how to educate the school, and how to present the information that they have found. Over the next couple of weeks, we will be have a school-wide assembly, hanging up informational posters that the students have made, ordering and decorating bins and collecting aluminum cans and plastic bottles. We are also going to feature our project in the district wide newspaper as well as the town newspaper. We are developing a newsletter to also be sent home to families. In addition, we have created a pre-test to give to all students, and one month later, we will be giving them the post-test. We have also discussed have a school wide competition to see which class year can recycle the most in one week. Created a green team at her high school, which will look into recycling, cafeteria trays, and set up recycling. Surveyed students about what they recycle.

**Teacher: Alissa Murfitt**

**Location: Taunton High School, Taunton, MA**

**Project Summary:**

Students will develop a green roof project with sedum pallets. In December they will seek approval from the TPS community, then reach out over the winter to businesses to sponsor pallets and order the pallets by the end of April. Students will collect data on the effect on air conditioning costs. Students will create signs to explain the project and “350” schools, get businesses to adopt a pallet, do rainwater mitigation, reduce CO2 emissions, track HOB0 data year to year, and educate others about what they can do to reduce their own carbon footprints. Over the summer, student volunteers, summer school students and student work students will work with Taunton Area Schools to Community to check and maintain the pallets.