



Summary of Wells NERR 2011 TOTE Stewardship Projects

Teacher: Brian White

Location: Danvers High School in Danvers, Massachusetts

Project Summary:

Sixty-eight students participated in a beach clean-up where they collected garbage, identified it, and kept numbers of each item on a common reporting form. Ten Massachusetts beaches were canvassed, half of which are part of an estuary. After the data collections were completed, the students determined:

1. Which beaches are the most "abused" and what are the possible reasons for this?
2. What are the five most common refuse items encountered?
3. What steps may be taken by concerned individuals/groups to alleviate this habitat interference?

It is hoped that this activity is continued for years to come in an effort to identify trends/assess improvement, or otherwise.

Teacher: Claire Ross

Location: Lyman Moore Middle School in Portland, Maine

Project Summary:

Sixth and seventh grade students will install picture posts in two environmentally diverse sites within the school neighborhood. The first one will be within the schools grounds and will document seasonal changes of a suburban site with the goal of monitoring local biodiversity. As a collaboration with Portland Trails Greening School Grounds, Lyman Moore opened a garden site in November 2011. The picture post will observe changes there as well as the opposite view of a rainwater retention basin. Students will attach a data logger to this post to conduct experiments about light and temperature. The second post will be placed along the Oat Nuts Trail, part of Portland Trails, and will document the changing woodland canopy along the Presumpscot River.

Photographs providing a complete 360 degree landscape will be taken at both these sites and uploaded to the Picture Post site on a bi-monthly basis, or on a more frequent basis if students choose to take this on as an extra assignment. Additionally as part of the installation, students will compose and publish a public information brochure which will be distributed to the public and will educate them about Picture Posts (<http://picturepost.unh.edu/>). Lastly, students will request an opportunity to present their project to the Portland School Committee. As a looping 6/7 team, this project enables students to compare data over a two year span, recognizing that

extended records are important for scientific research. Students will also be familiar with the Picture Post site and check out posts at other schools.

Teacher: David Word

Location: St. Francis High School in Louisville, Kentucky

Project Summary:

After studying the concept of restoration, the five AP Environmental Science students (high school juniors and seniors) wanted to develop a project that would allow them to help a local urban stream. Beargrass Creek is an urban stream that runs through Jefferson County and it has three major forks. Over the years, it has been impacted by humans in many ways, including being straightened, adding many combined sewer overflows, as well as many inputs of non-point source pollution throughout its watershed. The Southern Fork of Beargrass Creek runs through the 41-acre Beargrass Creek State Nature Preserve (managed by the Louisville Nature Center). The Nature Center is about 10 minutes from the school and is a partner in the school's community service program.

Since a stream restoration project is not feasible for many reasons, the students decided to develop this project to help improve water quality and provide habitat along the stream as it flows to its confluence with the Ohio River (about 5.5 miles downstream of the Nature Center) by improving a small section of the riparian zone. After consulting with the staff at the Nature Center, the students will determine the area where the invasive species will be removed. The class (with the possible help of our environmental club) will remove the non-native plants and will follow the planting of native species. Before removal occurs, the students will collect various data, using both data loggers and hand-held sensors, to get a baseline to compare the post-planting success. Future students will continue to monitor the site and make improvements as necessary. The students will also install a picture post, as well as educational signage, for use before the invasive plant removal and after native species planting.

Teachers: Cheryl Oakes and Pam Parrott

Location: Wells High School in Wells, Maine

Project Summary:

The goal of this project is for students to adopt a local harbor and become citizen scientists through a Picture Post project, phenology study, and fecal ecoli study. Students will promote tidal, weekly, seasonal and yearly changes to the harbor, which will affect the environment and the local economy. Wells High School will team up with the Wells harbourmaster to install a picture post at the Wells Harbor, and collect water quality samples.

Students will make monthly trips to the harbor and document the change to one area of the harbor, ecosystem, animals or plants, seasonal changes and/or weather changes, including pictures at the picture post.

- Students will collect monthly water samples for a fecal ecoli study
- Students will post their documentation to a web-based site which will be linked to school and town. <http://tote-2011-phenology.posterous.com/phenology-yes-in-my-backyard>

- Students will present their findings to the school committee and local town committee.
- Students will explain the picture post concept in the blog and in letters to outside organizations.

Teacher: Amanda Roy, a student in the Extended Teacher Education Program (ETEP) at the University of Southern Maine in Portland, Maine

Location: Portland area school

Project Summary:

Students will create water cycle models that can be set up in the classroom windows to measure temperature and light changes using a data logger (acquired at the TOTE workshop). The students will design and construct their own models, collect data and make observations, take pictures of their models and water in the different phases (using a Flipcam acquired at the TOTE workshop), and create tables and graphs. These concepts will be extended to cover global climate and water availability to go beyond the classroom walls. Students will complete a performance assessment on these topics.

Teacher: Beth O'Connell

Location: Guana Tolomato Matanzas (GTM) National Estuarine Research Reserve (NERR) in Ponte Vedra, Florida

Project Summary:

Five picture posts were installed at the GTM NERR:

- Two posts by the dam, where students often do seining and fish identification, to watch for changes in the water body and see if there is a correlation between these changes and the types of organisms they catch.
- One post in a wetlands restoration project area so plant progression can be monitored as this area reverts back to being a freshwater wetland.
- One post was mounted by an historic well, on the banks of the Tolomato River, which has significant shoreline erosion due to boat wakes, etc. These photographs will help to document the rate and process of erosion.
- The fifth post is located on the beach and will help to monitor the changes in the beach profile and plant communities.

Links to picture post images:

1. <http://picturepost.unh.edu/post.jsp?postId=228>
2. <http://picturepost.unh.edu/post.jsp?postId=209>
3. <http://picturepost.unh.edu/post.jsp?postId=211>
4. <http://picturepost.unh.edu/post.jsp?postId=244>
5. <http://picturepost.unh.edu/post.jsp?postId=230>

An updated GTM NERR website will contain a place for students to enter their field data when they return to school after a field trip to the GTM NERR. They will also upload their photographs to the UNH picture post web page and supply the link to their data. This will keep

the field data and the photographs linked for ongoing analysis. GTM NERR will also post the photographs in a panoramic view on their Flickr account, allowing for further access to the data.

Teacher: Roy Arezzo

Location: The Urban Assembly New York Harbor School on Governors Island in New York

Project Summary:

In the fall of 2010, The Urban Assembly New York Harbor School (NYHS) moved to a new campus on Governors Island. The island, sitting between Manhattan and Brooklyn in Upper New York Bay, is a suitable location to monitor and learn about the harbor. Working on the island poses challenges – there is no road/bridge and thus everything comes off and on by boat. The island thus has limited vehicle traffic and affords a great opportunity to model sustainability. In this vein, the school was designed with two in-vessel *Earth Tub* compost systems to reduce the amount of waste exported. Last year, the school began collecting food waste from the common areas of the school. By winter, approximately 25 pounds of waste was collected each school day – most of it from the kitchen prep area and the dining hall.

The goal of the stewardship project is to assemble a team of students charged with decreasing the amount of waste produced at the school. Waste will be collected each full school day, starting in the fall. To achieve this goal, a team of “master-composter” students (4-6 interns) will participate in an after school internship, earning stipends for their work. To train youth “master composters,” the school will continue to partner with local greening groups and tap into their expertise. Current partnerships already exist with Brooklyn Botanic Garden, Earth Matter, GrowNYC and Green Map System. Through field trips and guest consultants, the group will learn how other compost systems operate. Interns will educate the entire NYHS community of approximately 500 Harbor staff and students in an attempt to increase participation in the project through signage, presentations, class visitations, workshops and staff development. Interns will also be responsible for collecting and analyzing data on compost batches. In addition to research, education and outreach, the students will learn how to operate and maintain the Earth Tub systems so that the school can effectively manage the increased waste flow. The soil produced through the project will be used in the school’s organic garden. NYHS receives a regular flow of visitors. It is possible to expand the project to establish the Earth Tubs and garden as a compost demo site to include volunteers, tourists and visiting educational institutions in the process of waste reduction. Part of the project will include presentations to reach audiences outside the school through school tours (already in place), workshops, and presentations. Interns will meet twice a week after school - some of this time will be used to assess and guide the direction of the project.