



- **Project title: NY-NJ Harbor Estuary Earthcache Discovery Trail**
- **Goals:** We developed this project to share our interest in using technology to encourage and foster a personal connection with the Harbor Estuary, an appreciation for nature, and to promote good stewardship. The goals of the project include:
  - To engage people of all ages with the Harbor Estuary
  - To improve community environmental stewardship
  - To promote sustainable, low impact environmental education among young and new audiences
  - To increase environmental awareness of the estuary
  - To develop new ways to interpret the estuary
- **Project summary:** Going Coastal has taken one of the most popular emergent outdoor activities of our day, geocaching and developed an exciting educational activity about the NY-NJ Harbor Estuary. It is a high tech treasure hunt revealing the estuary's immense resources as it demonstrates how it was shaped, how we manage the resources and how it directly affects our quality of life. Visitors use mobile devices with GPS apps or handheld GPS units to explore the Estuary Discovery Trail.

The first program of its kind in the region, the NY-NJ Harbor Estuary Discovery Trail is fully operational and any educator can access program materials without difficulty through the online platform at [earthcache.org](http://earthcache.org) or partake in a self-guided Estuary Discovery tour or schedule a structured GPS-guided Estuary Earthcaching Field Trip with the Nature Center staff at Inwood Hill Park and Liberty State Park.

- **Course of action:** Building on experiences acquired from other digital projects, especially location based technology; Going Coastal began development on two NY-NJ Harbor Estuary Earthcache Discovery Trails immediately after we received the grant notification. The Inwood Hill Park trail is developed in partnership with the NYC Department of Parks and Recreation Urban Park Rangers. The Liberty State Park trail is produced in collaboration with the Nature Interpretive Center. The series of online earthcaches are created in affiliation with the Geological Society of America (GSA) and Groundspeak (owner of [geocaching.com](http://geocaching.com)), which hosts [earthcache.org](http://earthcache.org).

#### **Earthcache Educational Program at Nature Centers.**

A turnkey earthcache educational program was developed for Inwood Hill Park and Liberty State Park to offer to school, camp and youth groups. After meeting with park's interpretive staff, we identified the need to develop an alternate program (from the online component) tailored to a younger population, 4<sup>th</sup> to 8<sup>th</sup> graders. This resulted in the creation of the Inwood Hill Park and Liberty State Park Field Guides, two pamphlets designed to augment each nature center's exhibits and existing curriculum that contains site map, waypoint descriptions, instructions for using Geomate Jr. units, and serves as a logbook for data collection and completing logging tasks and drawing a map. Everything needed for the groups to explore the trail is provided through the Inwood Hill Park Nature Center and Liberty State Park Interpretive Center: Geomate Jr.

GPS unit preloaded with estuary earthcaches, Field Guide and Logbooks, pencil, “Certificate of Completion” presented to those who finish all the logging tasks, promotional materials to raise awareness of the program, and an instructional video explaining earthcaches and how to use the GPS unit.

As of Estuary Day, each Nature Center received Geomate Jr. devices preloaded with their 10 custom waypoints. The Geomate Jr. customization allows the park to login to the website to add, edit, delete items, create new waypoints. To familiarize new users to earthcaching and the Geomate Jr. GPS device, Going Coastal produced an animated tutorial that offers step-by-step instructions for exploring the trail for the park to use in its programs.

#### **Estuary Earthcache Discovery Trail on [earthcache.org](http://earthcache.org).**

High School groups and adults can visit the easy-to-use online component at [earthcache.org](http://earthcache.org); detailed waypoint descriptions are provided, including photographs and links to additional resources. Park visitors called “cachers” enjoy self-directed exploration with a GPS device or smart phone with the free earthcache app. Once a waypoint is discovered, cachers can read information about the history, geology and ecology on the spot and then “log their find” by e-mailing Going Coastal the answers to the logging tasks, testing their observations and ensuring they visited the actual waypoint. They can join the growing number of explorers who have uploaded photographs and comments on [earthcache.org](http://earthcache.org). The [earthcache.org](http://earthcache.org) platform launched on Earth Day.

The Geological Society of America administers the listing of earthcaches around the world. A geologist was assigned to review and approve the 20 earthcaches developed by Going Coastal’s team. We incorporated their feedback into the waypoint descriptions and logging activities and we continue to seek their insight and advice.

Throughout the earthcache development process, we tested often and engaged our partners, and the growing community of earthcachers in various ways. The Urban Paleontology Club of the Brooklyn High School for Collaborative Studies was one of the early groups to explore the Inwood Hill Park trail and the Metro NJ Geocachers & Treasure Hunters provided feedback for the Liberty State Park trail. We learned from their knowledge and their experiences to launch and modify the online project.

Initially, the waypoint documentation on [earthcache.org](http://earthcache.org) was written and edited by a team of environmental and earth science educators, but after conferring with the Geological Society of America, we reached out to geologists to improve documentation about the processes that formed the Harbor Estuary. Sidney Horenstein, geologist with the American Museum of Natural History provided a private tour of the geology of Inwood Hill Park. Then to implement better ways of incorporating geology into the Liberty State Park we engaged a local geologist to conduct soil sampling and edit and submit new waypoint descriptions to [earthcache.org](http://earthcache.org).

Educators visiting the Estuary Discovery Trail webpage at [goingcoastal.org](http://goingcoastal.org) will find detailed information, teacher resources and downloads of all program materials. Our volunteers are joining Liberty State Park in October to introduce the program to school groups and obtain direct feedback from the young participants and teachers. With this view for the long-term, we look forward to getting started on more trails and bringing GPS-based learning into the classroom. A promotional postcard has been

produced to raise awareness of NY-NJ Harbor Estuary Earthcache Discovery Trails with both school groups and individual cachers.

➤ **Accomplishments**

In our proposal, we identified our primary goal of engaging people of all ages in the Harbor Estuary and this was the priority that we addressed in building and launching of the NY-NJ Harbor Estuary Earthcache Discovery Trails. Visitor comments reveal an enthusiasm for family adventure and learning about the Harbor Estuary that has exceeded our expectations. Both the onsite and online interactions with the Earthcaches are designed to further project goals. Fortunately, once approved, the earthcache.org platform has little need for maintenance and Going Coastal volunteers cover those needs.

Project Deliverables:

- 20 downloadable caches on earthcache.org-hosted platform
- 54 Geomate Jr. GPS units & 3 Geomate Jr. updater kits
- Training webinar “How to Use & Update Geomate Jr.” conducted with Nature Center staff
- 3,000 Inwood Hill Park Earthcache Field Guide & Logbooks
- 3,000 Liberty State Park Earthcache Field Guide & Logbooks
- 720 Harbor Estuary Earthcache Discovery Trail logging pencils
- 1,000 Certificates of Completion
- 10,000 NY-NJ Harbor Estuary Earthcache Discovery Trail promotional postcards
- Estuary Earthcache animated instructional video
- Webpages and resources on [www.goingcoastal.org](http://www.goingcoastal.org)



Visitor comments show that the project is reaching the target population:

- “Thanks for the great caching day and wonderful learning experiences for my incoming 5th and 8th grade children.” Matt
- “I was out for a day of geocaching adventure with my high school students. It was a beautiful day and we had a fantastic time.” Beth
- “All of these Earthcaches were excellent, cool stories, factual information, and neat geological formations. Thanks for the great geo-tour around Inwood Going Coastal!” Team Magic Parrot

➤ **Project evaluation**

- 20 earthcaches in 2 parks in 2 states
- Participant logging tasks/comments submitted: 1200
- Participating groups & families exploring the trails: 60
- Rate of visitor interactions on earthcache.org: 100 %
- Participant logs on earthcache.org: 60
- Number of volunteers engaged: 8
- Volunteer hours: 324

## Methodology:

Our best resource for collecting information on project outcomes is the earthcache.org website. Each earthcache has a built in learning experience that the participant completes through a logging task to demonstrate learning. Through the website we gather information and impressions quickly and easily from people visiting the park's earthcaches. More than 60 groups of adults and families have "logged tasks" on earthcache.org. Beyond these metrics, direct participant feedback through the emails and comments displayed on the earthcache website provides a good indicator that we are meeting project goals and the positive impact of the program on participants. Visitor participation reached 100%, exceeding our target goal of 25%.

The project's progress toward achieving school and youth groups' participation in the Nature Center program is only now reaching fruition, as the program is being tested and introduced in the parks. The initial metrics outlined to measure project success were altered when we adapted the project into two distinct targeted programs – (1) an online platform and (2) Nature Center program. Originally, the online platform was supposed to accommodate the onsite programming. This modification prolonged the project development period so that full application occurred at the end of the grant period. In October, Liberty State Park will introduce the program to school groups and we will be able to obtain direct feedback from the participants and teachers.

Awareness raising plans were delayed in tandem with the project changes. We expect the number of individual cachers to increase as we raise awareness about the trails. To this end, we are issuing a project press release and a joint press release with Apisphere, maker of the Geomate Jr. and the project is slated to be featured on their website. We have launched a publicity effort and dissemination of the promotional postcards. The project outreach to teachers and outdoor educators continues beyond the grant period.

The trails continue to be well received by individual cachers utilizing the earthcache.org platform. Our team worked consistently throughout the grant period to introduce and respond to questions and comments posted to the earthcache.org listings. We implemented many of these suggestions. We continue to introduce teachers and outdoor educators to these Estuary Discovery Trail's pilot.

- **Lessons learned:** Overall lessons learned while developing and launching the Estuary Trails project concern aspects of time and resource allocation. Limited time by already resource stretched park's staff and personnel changes delayed early planning of the trails so that by the time it was determined that it was necessary to take a two-pronged approach in order to broaden the reach of the program to younger age groups, we were halfway through the grant term.

To effectively involve partners we needed to engage as many park personnel as possible to create a vested interest in the success of the project at the earliest stage. The trail waypoint development process and coordination with partners took more time than initially planned in the project timeline. These time constraints delayed the launch of the Nature Center GPS-guided educational program, so that park staff is only now beginning to implement the program. Going Coastal volunteers continue to facilitate park's adoption of the program.

Additional delays occurred when we ran into technical difficulties in programming the Geomate Jr. units for Liberty State Park. To overcome a programming

anomaly we finally had to be resolved by sending the units to Apisphere for their technical staff to program the GPS devices.

Additionally, the volunteers of the GSA that worked with the earthcache.org approval process commended our educational approach and approved all waypoints. But after feedback on the Groundspeak forum questioned their allowance of too much ecology and not enough geology in the lessons at Liberty State Park, we were required to reassess each waypoint, which required further time and resources to address. The GSA required more emphasis on geology in the online waypoint descriptions and each earthcache underwent a lengthy approval process and further documentation was required before to keep all ten waypoints of each trail.

## Earthcache.org

**Begin exploring via GPS device or smart phone by visiting our Estuary Earthcaches online at earthcache.org. Complete PDF versions of these online waypoint descriptions are available for download at goingcoastal.org along with other educator resources.**



The screenshot shows the Geocaching website interface. At the top, there is a navigation bar with links for Play, Your Profile, Community, Videos, Resources, and Shop. Below this, the breadcrumb trail reads 'Geocaching > Hide and Seek A Geocache > Geocache Details'. The main heading is 'Liberty State Park Nature Interpretive Center', with a sub-heading 'A cache by Going Coastal' and a hidden date of '04/09/2011'. The difficulty is indicated by two stars, and the terrain is also marked with two stars. The size is listed as 'Other'. There are buttons for 'Print', 'Download', and 'Send to My Phone'. The coordinates are 'N 40° 41.901 W 074° 03.250'. Below the coordinates, there is a note about the location being 3 miles from the user's home location in New Jersey, United States. A 'Please note' section at the bottom states that the use of geocaching.com services is subject to the terms and conditions in their disclaimer.

### Liberty State Park Estuary Discovery Trail begins here:

200 Morris Pesin Drive, Jersey City, NJ 07305

Phone: (201) 915-3440 or 915-3409

1. Interpretive Center <http://coord.info/GC2RW4D>
2. Freshwater Pond <http://coord.info/GC2T1ER>
3. Urban Forest <http://coord.info/GC2T1FV>
4. Living on the Edge: Beach Habitat <http://coord.info/GC2T1H6>
5. Wet Meadow <http://coord.info/GC2T1JQ>
6. NY-NJ Harbor Estuary <http://coord.info/GC2T1KZ>
7. Remnant Salt Marsh <http://coord.info/GC2T1MP>
8. Communipaw Cove <http://coord.info/GC2T1ND>
9. Apex of the New York Bight <http://coord.info/GC2T1N4>
10. Black Tom <http://coord.info/GC2T1NG>
11. Mudflats <http://coord.info/GC2TFHP>

### Inwood Hill Park Estuary Discovery Trail begins here:

W 218 Street & Seaman Avenue, Manhattan

Phone: (212) 304-2365 <http://www.nycgovparks.org>

1. Inwood Hill Park Nature Center <http://coord.info/GC2RWW2>
2. Gneiss Place for a Wigwam <http://coord.info/GC2RQ4P>
3. Landscape Architects of the Estuary <http://coord.info/GC2RQ80>
4. Kidneys of the Estuary <http://coord.info/GC2RWCG>
5. Shorakkopock Rock's Deviant Past <http://coord.info/GC2RWJ1>
6. Manhattan Island's Sheltering Rocks <http://coord.info/GC2RWJR>
7. Bird Alley in an Urban Forest <http://coord.info/GC2RWME>
8. Glacial Pothole <http://coord.info/GC2RWPQ>
9. Whale Back Rock <http://coord.info/GC2RWQK>
10. Hudson River on the Rocks <http://coord.info/GC2RWRK>



The Urban Paleontology Club Brooklyn High School for Collaborative Studies earthcaching at Inwood Hill Park



Geologist, Machel Rhoden  
Taking soil samples at Liberty State Park



Volunteer, CUNY Hunter graduate student  
Elizabeth Sibley, researching the waypoints at  
Liberty State Park

Intrepid earthcachers logging their 4000 find on the  
Estuary Discovery Trail at Liberty State Park



Tourist from Germany taking time out in his NYC stay to visit  
Liberty State Park Estuary Earthcache Discovery Trail