The River Project is a marine science field station founded in 1986 at Pier 26, in Tribeca. While Pier 26 is under construction, temporary headquarters are at Pier 40, in Greenwich Village. Both sites are in Hudson River Park.

The purpose of The River Project is to help protect and restore the ecosystem of New York Harbor and the Hudson River Estuary, through science and education. In 2011, the scientific research, hands-on education, and community stewardship programs included:

**Fish Ecology Study**
A 25 year survey of bottom-dwelling fishes of New York Harbor continued in 2011. This field survey to date has logged over 50 species of fishes in Hudson River Park, including four new species reports for the Hudson River. Traps are checked twice weekly following standard TRP protocols. In 2011, 18 fish species were caught.

For the first half of 2011, 20 killie traps and three crab pots hung from the historic lighthouse tender “Lilac” on the North side of Pier 40 as part of a partnership with the Lilac Preservation Project. During the summer, Lilac moved from Pier 40 to the Historic Ships Pier 25, where trapping continues.

Two skilletfish were caught in 2011. The skilletfish (*Gobiesox strumosus*) is the most recent new fish species report for the Hudson River. The first skilletfish was found in an oyster shell in an experimental oyster net on the north side of Pier 40, on April 13th. The second was caught in a killie trap on the north side of Pier 25, on September 7th. Species confirmation was conducted by Tom Lake, expert naturalist at New York State Department of Environmental Conservation (NYSDEC), and keeper of the master list of Hudson River fishes. The skilletfish becomes the 218th fish species reported in the Hudson River.

Skilletfish in the Chesapeake are almost exclusively associated with oyster reefs, and use empty oyster shells as nests during breeding. Skilletfish have not been reported in the Hudson before, though they may have been here when there were oyster reefs. Perhaps their small size, max length 8cm, made them easy to overlook. Oyster reefs are known to host more than 200 species of animals, and oysters are returning to the Harbor after a 100-year absence. Though oysters are still uncommon, they may be attracting wildlife back to the estuary.

In 2011, a working group of scientist researchers was formed to initiate analysis of The River Project’s unique continuous fish data set for the Harbor, which goes back to 1987.
R, a statistical program, will be used to perform multivariate analysis to search for trends and patterns in the data. Two types of multivariate analyses will be used: principal components analysis (PCA), and correspondence analysis (CA). Multidimensional graphs will be produced, which will then be analyzed for patterns using geometric methods. Through this study, The River Project hopes to detect seasonal or annual changes in species groups, and associations between species populations. Graduate students will be brought in to work with the researchers and plan to submit results for publication in 2012.

The Citizen’s Water Quality Testing Program
The River Project partnered this year with the NYC Watertrail Association (NYCWA) for a pilot project. This important new citizen science program, the Citizen’s Water Quality Testing Program, began in late fall to examine the levels of enterococcus bacteria, an indicator of human sewage, released into the river from combined sewer overflows. This program was inspired by large sewage overflow events during the summer of 2011, which led to the temporary closure of the estuary for recreational activities.

Community members who use the river for recreation, such as kayakers, have had difficulty obtaining timely information about the health of the water after these overflow events. TRP and NYCWA are examining the feasibility of developing a coherent water quality testing and information program for use by local boaters and swimmers.

For the pilot study TRP provided the labor and lab facilities. Every Thursday for eight weeks, eight volunteer boaters brought water samples from ten different public launch sites for analysis. TRP staff, interns and volunteers analyzed the samples using the Idexx Enterolert system, which is approved by the U.S. Environmental Protection Agency.

Funding for a full program in 2012 has been requested from the Hudson River Improvement Fund. If funded, TRP and NYCWTA will collect and analyze water samples from permanent sites, filling in information gaps for locales that people are using for recreation. If you would like more information about this program, or would like to participate, please e-mail nina@riverprojectnyc.org.

Marine Biology Internship Program
The Marine Biology Internship Program (MBIP) hosted 28 interns in 2011: 12 high school students from nine different high schools; 15 undergraduates from 10 different colleges, and one graduate student. Intern tasks included checking traps and identifying organisms; recording data for research projects; and organismal husbandry within our flow-through system.

MBIP participants learned a variety of water monitoring techniques and recorded chemical parameters for daily updates of the TRP Facebook and Twitter pages. These interns also assisted with field trips and other educational programs, providing them a chance to develop their public speaking skills and a means to convey their acquired Hudson River knowledge to groups of local teachers and students.
Interns monitored growth and mortality of a captive live collection of Eastern oysters (*Crassostrea virginica*), kept by TRP since 2005. The oldest animals are six years old; the largest measures 126mm (approximately 5 inches) in diameter. MBIP interns also participated in the Citizen’s Water Quality Testing Program, by preparing and analyzing samples. This new program provides interns with experience in a traditional lab setting with advanced equipment following specific protocols.

The internship program is meant to inspire young people to become scientists, and familiarize them with the skill sets required in the field. The program also aims to promote advanced thought processes and introduce the students to concepts of environmental stewardship.

**Marine Science Field Trips**

Field trips in 2011 were hosted at two different sites in Hudson River Park: the picnic house at Pier 40, and the Steamship Lilac, at Pier 25, thanks to cooperative arrangements with Hudson River Park Trust and The Lilac Preservation Project.

The program at Pier 40 introduces students to marine organisms; water quality testing methods; oyster restoration projects; plankton identification, and Hudson River ecology. Aboard the Lilac at Pier 25, students are introduced to the ecology of the Hudson River and the importance of science in the Harbor, and participate in The River Project’s 25 year fish-monitoring program checking traps and identifying and recording data about the animals caught.

In 2011, The River Project hosted 80 field trips: 41 were offered at a discounted price, four of which were free. A total of 1,844 students ranging from kindergarten through graduate and professional levels from all over New York City participated in these programs. Discounted trips were offered so that any interested teacher could bring students to The River Project for fun and unique experiences in real field science. To learn more or book a trip, contact Chris Anderson at Chris@riverprojectnyc.org.

**Teacher Training**

Three teacher training classes were held this summer at the Pier 40 picnic house. 77 student teachers participated in this program coming from Bank Street Teachers College, The American Museum of Natural History, and the New York University Wallerstein Collaborative. These three to six hour programs offered teachers skills to bring back to their classrooms: how to incorporate the Hudson River into lessons, water quality testing methods, and interesting and informative ways to present science curricula to their students. The teacher trainings are similar to advanced field trips, but more expansive, covering a wider variety of topics and scientific techniques. These types of customized teacher training programs have been offered annually at TRP since 2005.

**Fish Aggregation Device (FAD)**

In July The River Project deployed a Fish Aggregation Device (FAD) in Hudson River Park at the Pier 42 pile field, off Morton Street. The FAD is a simple means to expand The River Project’s survey of local fishes and invertebrates, and provide pedestrians on
the Park walkway a glimpse in to the underwater world surrounding the City. The FAD was designed by Jeremy Turner and Howard Goheen of Stevens Institute of Technology, Civil, Environmental and Ocean Engineering Department, and deployed by Jeremy, Howard, and The River Project staffer Chris Anderson and volunteer Merrill Rudd.

The FAD is self-sustaining, with a solar panel and batteries powering an LED light. The light goes on from 8pm to 11pm each night attracting light-seeking plankton, small fish, and larger fish that feed on them. Striped bass and white perch can now be seen nightly. On several occasions River Project staffers have seen fish striking at prey items at and just below the surface. Future sightings of many more species are expected.

Events

- **A Day in the Life of the Hudson River**
  A Day in the Life of the Hudson River is an annual event creating a synoptic picture of the Hudson, from the dam at Troy down to New York Harbor. This event, on October 18th, was sponsored by the NYDEC’s Hudson River Estuary Program. The River Project is one of many participating organizations that joins together to take samples of the river and monitor key environmental conditions on this day each year. 56 third-graders from Trevor Day School worked with TRP staffers and volunteers from New York University’s Wallerstein Collaborative to learn about marine biology, ecology, and water chemistry techniques, focusing on our section of the lower Hudson River Estuary. Highlights and other details of the event can be seen here: http://www.dec.ny.gov/docs/remediation_hudson_pdf/ditlalmanac11.pdf

- **NYC Environmental Education Expo**
  Every year The River Project partners with NYC Soil and Water Conservation District and the NYU Wallerstein Collaborative to host the NYC Environmental Education Expo at NYU’s Kimmel Center. The Expo hosts organizations from throughout the City to provide teachers, informal educators, and students with a variety of environmental programming options, including field trip opportunities and in-class activities. This year 75 organizations provided educational opportunities and information for 125 visiting students and educators. Patagonia and Euphoria Spa provided raffle gifts and The River Project gave away free field trips.

- **FAD at SWIFT**
  On October 26th The River Project officially launched the FAD at an event held at the offices of SWIFT, overlooking NY Harbor, and announced the report of a new fish species, the skilletfish. 100 guests from New York’s most prominent waterfront organizations gathered to celebrate and share ideas. Downtown Express, a primary community media outlet, and Sinovision, the largest Chinese broadcasting network in New York came to the FAD event and reported on the FAD launch and the exciting discovery of the skilletfish.

| Press: |
| OpEdNews: Tuesday, June 14th |
“The River Project Teaches NYC Residents about Biodiversity of Hudson River”

The WestView News: Wednesday, July 27th
“Spotted: One Scuba Diver in Hudson River Park--Yes. Really. A marine scientist and educator takes the plunge”

The New York Times: Thursday, July 28th
“With Sewage in Hudson, a Big Blow to Business”

Sinovision: Thursday, October 27th
“新鱼种重现哈德逊河 生态平衡初见效” (New Fish Species Appeared in Hudson River Showing the Effect of Ecological Balance)

Downtown Express: Wednesday, November 2nd
“Tiny fish thrills River Project researchers”

The Broadsheet Daily: Tuesday, November 29th
“River Project's Latest Effort Is No Passing FAD--Fish Aggregation Device Illuminates Hudson's Many Species”

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Thank you!

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