

Corps Fish Study Nets Useful Data **JoAnne Castagna, Ed.D., New York District**

In a New York City conference room with large windows overlooking the Port of New York and New Jersey, Dr. Mary Fabrizio, Chief of the Behavioral Ecology Branch of the Northeast Fisheries Science Center, recently presented to scientists the results of an extensive fish tagging study she performed for the U.S. Army Corps of Engineers.

As the study's principal investigator, Fabrizio told the scientists, "The findings will be used to update the Environmental Protection Agency's criteria that determine what dredged material from the port is environmentally safe to place in the Historic Area Remediation Site."

After undergoing a series of biological and chemical analyses, dredged sediment from the channels within the Port of New York and New Jersey is placed in the Atlantic Ocean at the HARS if found acceptable as remediation material.



HARS Study Site.

of Engineers, New York District.

"One of the parameters that goes into creating this risk-based criteria is the residency time of fish in the HARS because it is assumed that the more time the fish spend at the HARS, the more organisms they will eat that have been impacted by dredged material placed there."

"The New York District felt that the EPA's information on residency time was incomplete and needed to be improved, so we initiated and funded a fish tag study to better answer the question of how much time the fish actually spent within the HARS boundary," said Greges. "The results from this study will be provided to the EPA for use in their development of this risk-based criteria for dredged material proposed for HARS placement."

The Corps' U.S. Engineer Research and Development Center, Waterways Experimental Station in Vicksburg, Miss. managed the study and contracted the NEFSC to perform it.

The study was from June 2003 to June 2004 and included 145 healthy adult fish captured at the HARS. The species captured included 122 black sea bass (*Centropristis striata*) and 23 summer flounder (*Paralichthys dentatus*) or "fluke," both important recreational and commercial fishing. The two species studied were active at the HARS from May to December. During the winter these species move to deeper offshore waters.

To monitor activity, fish were tagged with ultrasonic transmitters that were surgically implanted in their abdominal cavities. The transmitters are 30 mm long and 9 mm in diameter and were programmed to send 68KHz signals, or pings, once every 3 to 5 minutes for about an entire year.

The HARS is an approximately 15.7 square nautical mile area - 3.5 nautical miles east of Highlands, New Jersey and 7.7 nautical miles south of Rockaway, New York.

Remediation material is used to cover or "cap" the dredged sediment that was placed there previously which does not meet EPA's current placement standards. This cap remediates the site and improves the habitat conditions for aquatic life in the HARS.

"After consultation with the Corps' New York District, the U.S. EPA Region 2 sets the final criteria for what is suitable for placement in the HARS. Several years ago the EPA indicated they wanted to update this criteria by using a risk-based approach," said Monte Greges, Chief of Dredged Material Management Section, U.S. Army Corps



Inserting a transmitter into a black sea bass.



Scientists disassembling an array that holds the receiver in order to retrieve the data.

Preliminary Results

- Habitat usage: The ocean floor of the HARS is composed of varying levels of dredged sediment. During the summer, both fish species spent most of their time in the shallow areas of the placed sediment.
- Seasonal activity: Black sea bass exhibited greater activity in the HARS during the summer than during the fall. Summer flounder activity patterns were more complex.
- Dispersal: All of the fish were captured and released within the HARS boundaries, but each species moved or "dispersed" out of the HARS at different times and rates. A handful returned to the HARS one year later.



Retrieving an array that holds the receiver. The array is also composed of mooring and a pop-up buoy.

To pick up the signals, 72 receivers were strategically moored throughout the HARS, 800 meters apart. Every signal detected by a receiver was decoded electronically and the receiver recorded the identification number of the transmitter, the date, and the time of the day the signal was detected.

These records were accumulated in the memory of the receiver. The receivers were retrieved in Summer 2003 and Summer 2004. When the receiver was retrieved, scientists downloaded the data to a computer. Scientists had collected 1.4 million records.

Recently, preliminary results revealed information on the fishes' use of the HARS habitat, seasonal activity and dispersal out of the HARS.

Fabrizio said the study was extremely interesting and she learned the importance of using appropriate equipment, selecting sufficient staff to conduct the work at sea, and coordinating the logistics required for a large field study.

"Deploying and retrieving sensitive acoustic equipment at sea for long periods of time is difficult," said Fabrizio. "Each time we attempted to retrieve the 72 receivers, we usually needed about 10 full days, which we had to schedule around the weather, including Hurricane Isabel in September 2003."

"If I did the study again I would use acoustic receivers with modem capabilities - this allows the scientists on board the vessel to download the information from the receiver's memory without having to retrieve the gear off the bottom of the sea," she said. "However, this equipment was not yet developed when we started our work and it's very expensive."

Fabrizio was still satisfied with the equipment used and was confident it would work because she performed pilot studies prior to performing this study at the HARS.

When it came to field deployments and retrievals of the receivers, Fabrizio said that the most important aspect was the skill of the captain and the capabilities of the vessel. "Never underestimate the complexity of these tasks! Hire a captain who has years of experience and is a good trouble shooter - he or she is worth every penny!"

She added, "It was also very interesting learning from, and working with the captains of the vessels that assisted us on this study."

The results of the study answered questions about the length of time fish reside at the HARS, but there are additional data that were obtained that still need to be analyzed. "In complex studies such as these, it is not unusual for the analysis phase to require as much time, or sometimes more, as the field work," said Fabrizio.

"Some of the findings we will examine further include the black sea bass's increased activity during dusk, the bass's dispersal out of the HARS early in the summer, and both species preference for the shallow complex habitats at the HARS."

"Data from this study will benefit both the public and the environment. Scientifically defensible data will be used by the EPA to create the new HARS criteria, a more realistic picture of human and ecological risk will be ascertained and dredged material that poses an unacceptable risk for introduction into the food chain will not be disposed in the ocean," Greges said.

For additional information about the U.S. Army Corps of Engineers, New York District dredging projects and studies, please contact the author at Joanne.castagna@usace.army.mil

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PLANNING CENTERS OF EXPERTISE

NATIONAL MEETING OF THE PLANNING CENTERS OF EXPERTISE

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A national meeting of the technical leaders of the Planning Centers of Expertise was held at Headquarters, USACE on 28-29 June 2005. The purposes of the meeting were to meet each other and gain familiarity with all of the Planning Centers of Expertise (PCXs), exchange products and ideas developed by the Centers, discuss an approach to resolving one or two major problems facing the PCXs and to set an agenda for future activities. The meeting was well attended; each of the six PCXs had at least one representative present (except for the Flood Damage Reduction Center that was tied into the meeting via teleconference). Representatives of the Assistant Secretary of the Army (CW), the Environmental Advisory Board, Engineer Research & Development Center, Headquarters and the Institute for Water Resources, were also present.

All of the basic objectives were met, and indeed surpassed the expectations of the meeting organizers. The most pressing needs were identified to be lack of specific funding for the CPXs and the ability to implement the newly published ECs. Other items needing immediate action were identified as:

- Modify DR Checks to make it planning friendly.
- Reconcile national PCX structure with the previous requirement to designate District centers of expertise (by business line within each MSC).
- In the spirit of shared support, the Centers need to share more products -PgMPs, PA curricula, SOPs for ITR, etc.
- PCXs need to help the MSCs with delegated policy reviews- are they doing that?
- Need rosters of technical experts for each Center/business line.
- Communicate the Commanders a corporate commitment to the Centers (from Chief, or Director of Civil Works).

The next meeting of the PCXs is scheduled for March 2006 to be hosted by the Ecosystem Restoration Center. There are also opportunities PCX representatives to meet with the Planning Advisory Board in the spring of 2006 and the Planning Associates course owners meeting in the summer or 2006. It was also established that when there were no scheduled face to face meetings, there would be quarterly teleconferences of the PCXs starting in September 2005.

Complete documentation of this meeting has been prepared and has been posted on a newly established PCX website. <http://www.iwr.usace.army.mil/iwr/plannersweb/PCXmeeting28june.htm>

For additional information on the meeting or other data on the Planning Centers of Expertise please contact Ted Hillyer at: Theodore.M.Hillyer@usace.army.mil