

Digging deep on ocean floor

Scientists collect samples off Atlantic City's coast



Nancy Immesberger from the state DEP reads data being collected from the ocean floor.



Press photos by David Griffin

Rose Petrecca and Mike Kennish prepare to dump samples retrieved from the ocean floor.

Researchers are taking 100 sediment samples from various points between Sandy Hook and Cape May.

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Scientists are digging into the ocean floor one to three miles off the coast of New Jersey in a first-of-its-kind study of the soil, sediment and life 30 to 60 feet below the surface of the sea.

Using a small, crane-style grabber, and a \$500,000 grant from the federal Environmental Protection Agency, researchers aboard the EPA's Clean Waters vessel are checking the health of the ocean by taking 100 sediment samples from random points on the ocean bottom, from Sandy Hook to Cape May.

"Not a lot of states have done this kind of work," said Nancy Immesberger, a scientist with the state

Department of Environmental Protection. "It's cutting-edge."

The EPA provided the 65-foot research boat for the Coastal New Jersey Ocean Assessment.

State and federal researchers joined Rutgers University scientists Friday to pull sample No. 62 from the ocean bottom about a mile off the coast of Atlantic City.

Two-foot swells rolled the boat as Rose Petrecca, a Rutgers scientist, reached out to snag the bottom-grabber. As big as a wagon wheel at its widest, and narrowing like a funnel to about 3 inches, the 100-pound apparatus uses a small jawed bucket at its center to scoop out chunks of

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sediment from the bottom. The grabber is weighted so that it drops firmly into the sea bottom.

It was a sunny day, but breezy. When the grabber was hoisted from the ocean, it swung wildly with the pitch of the boat.

Petrecca gripped the chain railing with one hand and used her free hand to catch the grabber and pull it over the stern. "Set it on the table," she called out over her shoulder.

Behind her, Randy Braun, a scientist with the EPA, hit a button on the winch to settle what's known officially as the "Modified Young Van Veen Grab" onto a makeshift table on the back of the boat.

Mike Kennish, a Rutgers scientist leading the assessment, helped Petrecca steady the grabber. Braun thumbed the buttons to set it lightly onto the table, then moved it to a barrel.

Petrecca and Kennish twisted thumbscrews to open the top of the bucket to make sure they had enough of a sample to check life and the levels of dissolved oxygen on the sea's floor.

"Dissolved oxygen levels have been mostly good on this project," Immesberger said. "We have come up with some D.O. (dissolved oxygen) levels that are low, but that could be a natural phenomenon."

Immesberger worked in the boat's cabin, monitoring a video feed for the drop and retrieval of the grabber. She said part of the research is to find out whether any low levels of dissolved oxygen are natural or manmade.

Above 5 parts per million is good, she said. Below that, life struggles.

"It's too easy to point the finger and blame industry," she said. "We're trying to do a profile."

It's important, Immesberger said, to know where the currents come from and where they go.

On the deck, Kennish and Petrecca flipped open the top of the crane-style bucket. Sometimes a shell jams the jaws open. If that happens, sediment and critters leak out, and the scientists have to try again.

It was the fifth try for sample #62. A swivel given to the researchers by the U.S. Coast Guard to aid in the sample-collection process was too large. They swapped it out for a smaller one.

"It's a good sample," Petrecca said. The bucket was filled with sandy, gritty soil, scallop shells, sea worms and life too small to easily identify.

Immesberger charted oxygen levels and sediment types, while Petrecca gently washed the sediment from the bucket into a pair of sieves. She was careful not to brush the sediment against the fine screen. "The analysts don't like it if the

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Press graphic

critters are smashed," she said.

The stacked sieves are like a double set of screens with openings too small for a gnat to climb through: 500 microns for the top screen, 300 microns for the bottom. Openings smaller than a pinpoint, and then smaller still.

After sieving, samples are poured into bottles and then marked by the site number. "We mark and label what stays in each screen," Petrecca said. "Some of the life is microscopic." A protein dye is added that highlights anything organic — or living.

"I basically get paid to play in the mud," Petrecca said. "I used to get yelled at all the time by my mother when I was young for being dirty and muddy." She brushed back dark curls with the side of her hand. "Then I got this job."

For 10 months after the site surveys, scientists at Rutgers and EPA labs will analyze the life inside the sediment samples. "The EPA is looking at what's appropriate at the bottom," Immesberger said. "The results of the grab tells us what's important."

For an unbiased study, the EPA used a computer to randomly choose 100 sites. With 62 samples so far, the researchers had good news.

"You can tell a lot about the health of the ocean from the sediment," Petrecca said. "From what I've seen, the New Jersey coast is healthy."

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