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## Eddy off N.J. spells danger for ocean life

Tuesday, April 19, 2005

**BY ALEXANDER LANE**  
Star-Ledger Staff

Ocean researchers have discovered a giant whirlpool off Sandy Hook that is circulating the pollution-laden waters of the Hudson River, causing alarmingly low oxygen levels, they said yesterday.

The whirlpool, or eddy, comes and goes depending on currents and wind conditions, and grows 6 miles wide or larger, said Scott Glenn, a professor in Rutgers' Center for Marine and Coastal Sciences.

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It moves far too slowly to threaten vessels, and is not even detectable except by special instruments, Glenn said. However, it is stubbornly circulating nitrogen-laced river water, encouraging runaway plant growth that eventually could starve bottom-dwelling organisms of oxygen.

While the level of dissolved oxygen in the area should be about 8 milliliters per

liter of water, it has dropped to 5.2 in the eddy, a level that would not be unexpected in late summer but is alarming at this time of year, Glenn said.

"None of us have seen it this low this early," Glenn said. "We're checking the historical records."

Researchers from several universities discovered the eddy about two weeks ago, in the course of a five-year study of what happens to Hudson River water after it enters the ocean. Using red dye, shore-based radar equipment, satellite imagery and a fleet of research vessels, they tracked the river water and discovered that rather than hugging the shore or dissipating into the ocean, it often traveled in a loosely circular pattern.

The discovery led the researchers to take a close look at the water quality in the whirlpool.

"We started putting boats in it," Glenn said, speaking from the Coastal Ocean Observation Lab in New Brunswick. "The boats that are out there now see the dissolved oxygen continuing to decrease."

Initial research suggests that microscopic plants called phytoplankton are feasting on the nitrogen and other pollutants from the sewage and fertilizer-laced Hudson. When the plants die, bacteria are eating them and consuming oxygen, throwing the ocean's chemistry out of balance, Glenn said.

If the dissolved oxygen level drops to about 3, bottom dwellers likely would start to die, Glenn said. "Fish can swim away, but the clams can't," Glenn said.

Ocean observers have long known that an area of low dissolved oxygen forms off Sandy Hook from time to time, usually in late July. But previously, its cause had been unknown. The discovery of the eddy will allow researchers to monitor the situation much more closely, Glenn said.

Oxygen levels have not dropped low enough to harm sea life since the summer of 1976, a year of unusually high precipitation and runoff, Glenn said. Researchers are exploring the question of whether this year's low oxygen level is related to the recent flooding.

The westernmost edge of the eddy is located just offshore, Glenn said. In fact, one of the floating transmitters they put in the plume of the Hudson River five or six miles offshore washed up on Monmouth Beach, Glenn said.

"Understanding this (whirlpool) more is going to help us understand more about what washes up on the beaches," Glenn said.

Elaine Makatura, spokeswoman for the state Department of Environmental Protection, said the department had been alerted to the problem.

"We are evaluating this new information in the context of historical data. We're not pleased to see these levels at this point in the year, but we need a full analysis before we can make any kind of judgment," Makatura said.

More extreme areas of low dissolved oxygen can become "dead zones." A large dead zone, caused by the farm runoff-rich waters of the Mississippi, forms just about every year in the Gulf of Mexico. That problem is far more extreme than what New Jersey is facing.

"They have a bad year every year, and our last bad year was 1976," Glenn said.

*Alexander Lane covers the environment. He may be reached at*

*alane @starledger.com or (973) 392-1790.*

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