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Researchers and volunteers take summertime pulse of Narragansett Bay

A group of faculty, researchers, and students hop aboard the *Bear Cub* to check the health of Rhode Island's most valuable resource. What's going on under the bay's sparkling waves?



Professor Warren Prell, incoming freshman Andrea Weber, and research technician Joe Orchardo aboard the Bear Cub on Narragansett Bay.

Credit: Richard C. Lewis

By **Richard C. Lewis** | July 29, 2008 | [Email to a friend](#)

BARRINGTON, R.I. – Think summertime on Narragansett Bay, and chances are you envision yourself fishing, swimming, kayaking, or enjoying a host of other activities.

But the bay is more than a recreational gem. It is a vital estuary that harbors an abundance of marine life and is an anchor of the state's shellfish industry. Its condition has a direct impact on the fiscal health and quality of life in Rhode Island.

With that in mind, a volunteer group of Brown faculty, researchers, and students is conducting regular field surveys to make sure the bay stays healthy amid the challenges of pollution and climate change.

On a sunny morning in late July, the Brown team chugs out of Striper Marina to begin its latest survey. "It looks pretty calm out there. Lucky me," announces Warren Prell, chair of the geological sciences department, who is at the helm of the 18-foot, Brown-owned skiff he calls the *Bear Cub*.

Prell has been a longtime participant in the monitoring program, which began in 1999. Some years ago, he and the other volunteers called themselves the Insomniacs, because they performed the surveys in the dead of night. When they switched to non-vampire hours, they rechristened themselves the Day Trippers.

Today, Prell is joined by Joe Orchardo, a research technician in geological sciences, and Andrea Weber '12, an incoming first-year student who was been hired for the summer by the University of Rhode Island to assist with managing the project's data. Steve Clemens, associate professor of geological sciences, and David Murray, of the Center for Environmental Studies, have helped out in the past.



Andrea Weber '12 learned about the project from Brown geological sciences professor Jan Tullis.

The group plans to stop at about two dozen points stretching from Bristol to Warwick. Two other boats staffed by volunteers from the University of Rhode Island, Save the Bay, and the state Department of Environmental Management will take surveys of other sections of the bay. The result: a comprehensive physical.

The good news is that Narragansett Bay enjoys strong tidal flows, which help minimize the effects of nutrient runoff; and sustained breezes, which churn the waters and distribute oxygen at various depths. Despite nature's safeguards, though, the bay has had bouts of ill health. In August 2003 more than 1 million fish, primarily menhaden, were killed as concentrations of oxygen plummeted at various locations, especially in Greenwich Bay, an offshoot of upper Narragansett Bay. Officials called it the worst die-off in a half-century.

Climate change, with expected warming water temperatures, could further stress the bay by causing an increase in algal blooms, which suck up the oxygen in the water and leave less for the fish and other marine organisms that depend on it. "We hope to predict how the bay will change with changing [climate] conditions," Prell says.

At each stop, Prell cuts the engine and the team gets to work. Orchardo grabs an elongated canister encased in a metal cage and begins lowering it by hand in the water. The device, a Sea-Bird SBE 19, measures the water's temperature, salinity, dissolved oxygen, chlorophyll production, and clarity, processing the information four times per second as it drops through the water column to the bottom. The data are relayed via cables to an onboard laptop computer that Weber is monitoring.

The group is especially interested in how the bay has responded to torrential rains two days earlier. They speculate that it will be stratified, with an upper zone rich in oxygen and a lower zone depleted of it. That could create harmful conditions for bottom-dwelling organisms. "Like oil and water," Orchardo explains of waters that become segregated in oxygen-rich and oxygen-deprived zones.



A Sea-Bird in hand: Joe Orchardo lowers a measuring device into the bay.

But at this and other stations, the oxygen levels are fairly constant. There are no hypoxic layers – places where dissolved oxygen levels have become dangerously low. The group is upbeat. Of course, the summer’s hottest weather is yet to come, and the bay may suffer from the effects.



Prell, at right, reconnoiters off Warwick Neck with another monitoring team.

less metal in the water now that Rhode Island textile manufacturing has declined.

Prell notes that while runoff from algae-producing nutrients has remained constant or has risen, there is far

“We’re lucky,” he says. “It’s a pretty healthy ecosystem.”