

A bracing checkup

UNCW team measures health of Cape Fear River

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SOUTHPORT - On the day that parts of Southeastern North Carolina braced for their first snowfall of the season, Tara MacPherson, with teeth chattering, found herself repeatedly dipping her hand into the 50-degree Cape Fear River.

The University of North Carolina at Wilmington graduate student was collecting water samples just north of Southport for the Lower Cape Fear River Program, something UNCW researchers have been doing faithfully at least once a month since 1996.

The aim of the program, funded through private and public sources, is to build a scientific database that can be used to monitor, understand, manage and hopefully protect the watershed.

Along with water samples, which are used to test for traits like chlorophyll and fecal coliform, researchers also take physical measurements from different depths at each of the 35 monitoring stations scattered throughout Southeastern North Carolina.

"Some are based on geography and some are based on a particular point of interest," said Mike Mallin, a UNCW water-quality expert who runs the program, about why some stations are at waterway junctions and others are near outflow pipes or major industries.

Parameters measured at each station include dissolved oxygen, acid levels, turbidity, temperature, salinity and conductivity.

Although it will take several more years of monitoring before scientists can come up with a baseline of normal conditions for the watershed, Dr. Mallin said the past year's sampling

has provided some unique and valuable information.

The reason was the severe drought that left much of the state parched for moisture, especially the Piedmont, which provides the headwaters of the Cape Fear.

"Now we have a range of data from extreme drought to extreme flooding, which helps us understand the river better," Dr. Mallin said as he quickly put his gloves back on after helping with a round of sampling.

Thanks to the region's lousy luck with hurricanes in the late 1990s, researchers had plenty of opportunity to measure the impact of flooding on the watershed.

Although the hurricanes skewed the data, it presented a valuable chance to gauge the influence of heavy storms on the river's ecosystem, Dr. Mallin said.

The same thing happened this year when the rains basically stopped for months.

Dr. Mallin said the dry weather allowed researchers to see the influence that runoff from crop fields, roads, construction sites, lawns and animal farm operations has on the river.

With runoff into the river system much lower than in previous years, sampling during the drought showed a significant dropoff in levels of fecal coliform, a bacteria that can cause diarrhea and other gastrointestinal problems.

Turbidity or cloudiness of the water also were lower thanks to less sediment washing into the river. Dirt can smother aquatic life and block the sunlight algae need to grow at the base of the food chain.

But the news this year wasn't all good for the Cape Fear.

The lower water flow tied to the drought allowed saltwater to move farther up the river, and also increased salinity in lower parts of the watershed, Dr. Mallin said.

It's too early to tell if the increased saltwater intrusion this summer will have any long-term impacts on flora and fauna. But fishery surveys earlier this year showed a huge increase in the number of spot and croakers in areas of the river farther inland from their favored estuarine habitat, which could bode badly for those plants and animals that aren't salt-tolerant.

Although salinity levels have dropped recently, Dr. Mallin said it will be interesting to see what impact, if any, the drought has on the river. And that requires the continued regular collection of data.

As a strong current and a bone-chilling wind pushed the UNCW research boat Sturgeon from across from the Fort Fisher ferry terminal and down the

Cape Fear River, Ms. MacPherson and program researcher Matt McIver dipped plastic bottles and instruments into the wavy water.

Mr. McIver, who has been with the program since its inception, said that Wednesday was one of the coldest sampling days he's had, noting that the air temperature was significantly colder than the water temperature.

"It's real nice out here most times, especially during the summer when we try and sample weekly," he said as the outgoing current and winds conspired to push the small vessel several hundred feet down the river in just a few minutes.

Ms. MacPherson, who would end up collecting more than a half-dozen water samples at each of the 10 stations sampled Wednesday, nodded in agreement.

"It's true," she said smiling. "But today obviously isn't one of those days."



STAFF PHOTO | KEN BLEVINS

Mike Mallin, a UNCW water-quality expert, transcribes readings from a device attached to a probe taking temperature, salinity and other measurements of Cape Fear River water.