

New study finds evidence Lake O releases reach Estero Bay

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By Jeremy Cox

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Leaders with the city of Sanibel and Lee County have threatened water managers with lawsuits over the powerful lake releases. The nutrient-loaded discharges trigger destructive algae blooms, kill seagrass beds and upset the natural balance, they argue.

The eyes of Southwest Florida turn to San Carlos Bay whenever the fragile estuary is forced to bear the brunt of Lake Okeechobee's polluted waters.

A new federal study suggests another important waterway might be in danger, too.

The long and shallow Estero Bay, which was the first water body in the state to be named an aquatic preserve, receives some of its water from the Caloosahatchee River, the study found.

By tracking salinity patterns over more than four years, two U.S. Geological Survey hydrologists traced the Caloosahatchee's flows into the northeast corner of Estero Bay. The river water reaches as far south as Hell Peckney Bay before circling back through Matanzas Pass and into the Gulf of Mexico.

Using computer models, previous studies had concluded that river water swung to the south but didn't enter Estero Bay.

Beyond widening the political argument against the Lake Okeechobee releases, the new information will help scientists and policymakers restore south Lee County's water flows, said Mike Byrne, the study's lead author.

The South Florida Water Management District and the U.S. Army Corps of Engineers are teaming up to produce a list of ecological restoration projects across Southwest Florida. The \$12 million study is facing a 2008 deadline.

A major facelift of Estero Bay's tributaries is among the more than 60 projects under consideration. Water managers want to remove flow blockages in the Estero River and Halfway Creek, fill in Leitner Creek's manmade channel and improve the Imperial River's water quality.

Previous Estero Bay hydrologic studies calculated the volume of water entering the estuary, but researchers couldn't tell which way the water was moving. Estuaries are a mixing ground between fresh and salt water, so determining the direction of flows can be tricky, Byrne said.

His \$700,000 study employed a probe, which was lowered about 8 inches below the surface of the water. Connected to a boat and a global positioning satellite unit, the probe measured the saltiness of the water from lower San Carlos Bay to the southern end of Estero Bay.

Extremely low salinity levels in the north end of Estero Bay happened to correspond to times when the lock at Lake Okeechobee was wide open.

"For Estero Bay, that means the water quality is affected by what happens in the Caloosahatchee River," said Byrne, who is based in the USGS's Fort Myers office.

Lake Okeechobee's water is polluted with high levels of phosphorus, and a thick layer of muck on the bottom ensures the problem likely won't go away soon.

A slight rise in land elevation appears to stop the Lake Okeechobee water from moving farther south than Hell Peckney Bay, Byrne said. But it probably creeps into the southern part of the bay during heavy flows, he added.

Byrne's findings could change the direction of another Caloosahatchee study.

Last October, researchers from Florida Gulf Coast University and the Sanibel-Captiva Conservation Foundation began tracking lake water in the river and San Carlos Bay. They are using chemical "markers," such as certain pesticides and nutrients, to help them identify the source of the tiniest droplet.

Until now, they haven't been sampling Estero Bay. Steve Bortone, marine laboratory director for the Sanibel-Captiva Conservation Foundation, said he hopes to expand the search to include the bay in light of Byrne's findings.

If the polluted lake water is making its way to Estero Bay, it could be suffering the same effects as San Carlos Bay, its neighbor to the north, Bortone added.

Jim Beever, a planner with the Southwest Florida Regional Planning Council, plans to take Byrne's study one step further. He wants to find out whether the lake releases correspond to loss of sea grass in Estero Bay.

Byrne also showed that Estero Bay's water can change in a matter of a few yards. North of Mound Key, where freshwater flows from the Estero River and other waterways dominate, the water is fresh. A mud flat away to the south, the water is mainly salty.

Byrne said he expects the study to be published online by the end of the year.

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