The Stuart News
SCRIPPS TREASURE COAST NEWSPAPERS

Septic tanks are fouling our lagoon

Study found nutrient levels in Indian River Lagoon as high as Boston Harbor's when raw sewage was dumped there

By Scott Wyland
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An angler launches a boat from his Sebastian waterfront home and zooms across the Indian River Lagoon to where his favorite sea grass bed was once teeming with fish he could almost grab with his bare hands.

But the sea grass and fish are gone. Clumps of algae now mottle the sandy bottom in the nearly barren, tea-colored water.

Harlan Franklin glances at several dolphins frolicking in the distance, a majestic sight for many people but a frustrating one for him. He would rather see fish.

Franklin, a former fishing columnist, blames the runoff funneled through canals into the lagoon for killing the sea grass. Septic tanks that leach into canals, groundwater and the lagoon contribute to the pollution, he said, though he's not sure how much.

"I moved here to fish," said Franklin, who has lived near the lagoon since 2006. "It's a major disappointment."

Researchers at Harbor Branch Oceanographic Institute in Fort Pierce have found sewage contaminating the entire 156-mile lagoon. Indian River County's levels are comparable to Boston Harbor's when raw sewage was dumped there, a new water analysis shows.

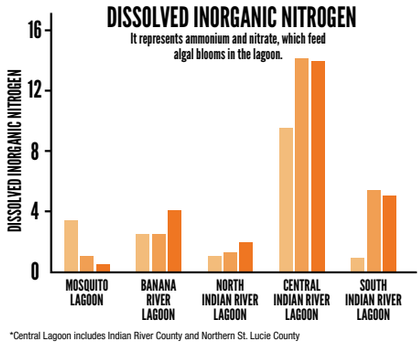
Despite growing evidence that septic tanks play a role in the lagoon's degradation, most elected leaders are hesitant to tackle this part of the problem, largely because many property owners oppose increased septic regulations, a Scripps Treasure Coast Newspapers investigation found.

Some scientists and regulatory agencies point to fertilizers as the main source of the nutrient runoff generating heavy algae in the lagoon. But Harbor Branch professor Brian LaPointe believes sewage carries more of the nutrients spurring algae growth.

"It's really unclear how much fertilizer is reaching the lagoon," LaPointe said. "But one septic tank on 4 acres — that's enough to create a nutrient problem."

Algal blooms block sunlight that sea grass needs to thrive. As the algae decompose, they deplete oxygen, which can suffocate sea grass and fish, turning clear, biodiverse waters into a murky dead zone.

Local treatment plants discharge some effluent, though most wastewater in the lagoon comes from septic tanks, said



*Central Lagoon includes Indian River County and Northern St. Lucie County

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LaPointe, who has studied sewage impacts on waterways for 30 years.

There are about 120,000 septic systems on the Treasure Coast, the newspaper investigation found. As many as half were installed before stricter regulations were enacted in 1983, making them more likely to drain sewage into groundwater that ends up in the lagoon, according to data from the counties and Harbor Branch.

No one knows how many systems affect the lagoon, and recordkeeping is sketchier on older septic tanks that could cause the most harm.

One thing is certain: sewage taints the estuary.

LaPointe's research team took a total of three lagoon-wide samples in 2011 and 2012 and found nitrogen isotopes in the algae, an element directly linked to sewage. Elevated levels of ammonium and nitrate also were detected, LaPointe said, noting anything above 3 parts per million indicates sewage.

He called the findings a smoking gun.

All three counties on the Treasure Coast showed at least 5 parts per million. Indian River County had as much as 9 parts per million, putting it on par with troubled water bodies such as Boston Harbor, according to the research.

"I was taken aback by that," LaPointe said. "We don't just have a problem, we have a serious problem."

OWNERS RESIST

North America's most biodiverse estuary is losing some of its wildlife.

Much of the red algae, known as gracilaria, has a toxic residue LaPointe and other researchers think might have killed 145 manatees, more than 50 dolphins and about 300 pelicans in the lagoon earlier this year in Brevard County. Manatees munched on the stringy algae when it overtook sea grass, their normal dietary staple. Dolphins and pelicans eat fish that ingest the algae.

Sea grass is a vital part of the lagoon's food web, feeding small fish and mussels larger creatures eat. An estimated 47,000 acres of sea grass has died north of Fort Pierce since 2007, experts say. In areas where it has vanished, most manatees and many fish species have left in search of better pickings, creating dead zones.

Aside from nutrients — such as nitrogen and phosphorous — sewage also contains coliform bacteria, viruses, prescription drugs and anything else flushed down the toilet, LaPointe said.

A conservationist criticizes what he says is public leaders' reluctance to impose measures to keep septic sewage from harming the lagoon's ecosystem.

"They have been neglecting, ignoring these septic systems," said Richard Baker, president of the Pelican Island Audubon Society in Indian River County. "It's very frustrating that we don't see more actions taking place. There's a lot of evidence that groundwater is carrying sewage into the lagoon."

One option would be to install public sewer lines in areas that don't have them and order nearby septic tank users to hook in, Baker said. Another would be toughening codes to require faulty systems to be fixed or scrapped.

Property owners are some of the staunchest opponents to government telling them what to do with their septic systems, especially if the changes cost money. Elected leaders tend to align with their constituents.

Replacing a tank and drainfield costs between $5,000 and $7,000 depending on the size of the home, according to vendors. If soil must be replaced, the cost of trucking in sand can bump the price to $10,000 or more.

"You start telling people they got to pay that, they're going to tell you to stuff it," said Franklin, who's hooked to county sewer but is sympathetic to neighbors with septic tanks.

In 2003, Indian River County attempted to connect residents in Wabasso and Pine islands to county sewer and water lines. County officials backed off when residents complained they couldn't afford the costs, estimated at $5,000 or more.

SEEKING SUBSIDIES

Indian River County Commissioner Tim Zorc, who wants to restore the lagoon's health, believes a surgical approach — targeting subpar septic tanks — is less divisive than trying to overhaul an entire area such as the barrier island.

"We want to be practical," Zorc said. "You have to prioritize your areas. Not all systems have to be replaced."

Newer septic tanks have better filtration and funnel less solid waste to underground drainfields, which means less sewage would leach into groundwater and the lagoon, said Zorc, a longtime builder.

Still, even well-functioning systems can pollute the lagoon if they were built too close to the water, Zorc said. In that case, the household should connect to a central sewer.

The main snag is cost, Zorc said.

Baker said there are loan programs that let people pay for sewer connections over time at a lower interest rate. So fees should not be a barrier, he said.

County and city programs differ.

County residents close enough to sewer lines to hook up would pay could pay the $2,800 connection fee over five years at a 5.75 percent interest rate, said Cindy Corrente, county utilities manager.

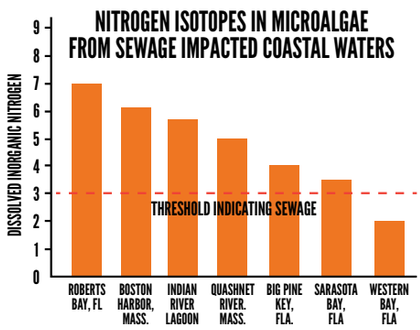
About 3,000 households in Vero Beach's service area are on septic, but only 10 have access to city sewer, so the rest would need to pay $15,000-plus to have new lines installed, said Rob Bolton, the city's water and sewer director.

> Urbanization has dealt a double blow to the lagoon. Marshes that captured and filtered runoff were replaced with subdivisions that drain more waste into the lagoon.

These customers could spread the payments throughout 20 years while paying interest at about the prime rate, Bolton said.

Grants also might be available to help homeowners pay for upgrades or to hook to a municipal sewer if it protects a major water resource, Zorc said, adding he will ask water management officials, state lawmakers and congressional leaders about possible grants.

However, state Sen. Joe Negron, R-Stuart, said he's not inclined to change people's methods for sewage disposal or pursue state and federal grants to pay for the changes. He said he voted to repeal the state law requiring septic tank inspections, believing it was undue government intrusion.



*Source: Harbor Branch Oceanographic Institute

BEFORE 1983

- Septic systems could be 25 feet from waterways, and some were allowed to be closer.
- Drainfields that hold waste can be 6 inches above groundwater at seasonal high.
- Roughly half of Florida's 2.7 million septic systems were installed before 1983.

1983 AND LATER

- Septic systems must be at least 50 feet from waterway
- Drainfields must be at least 2 feet above groundwater at seasonal high.
- Pre-1983 systems grandfathered in.

Negron, who spearheaded a state Senate committee to study the lagoon's ills, said he wants to concentrate on restoring the Everglades and countering the harmful effects of Lake Okeechobee releases. Still, he is willing to listen to LaPointe, whom U.S. Rep. Patrick Murphy, D-Jupiter, invited to speak about septic pollution at the committee's Aug. 22 meeting in Stuart.

AGING SYSTEMS

Septic systems installed before 1983 cause the most concern.

Aside from aging, the systems can be 25 feet from waterways — some are closer — and the drainfields that hold waste can be 6 inches above groundwater.

State codes enacted in 1983 require the systems to be set back at least 50 feet from a waterway and the drainfield to be at least 2 feet above groundwater. However, the old systems — some of them installed in the 1960s — were grandfathered in. Even if they're replaced, the owners can keep the 25-foot setback from surface water, said Cheryl Dunn, Indian River County's environmental health director.

If well-maintained, the average septic system works properly for about 18 years, Dunn said.

Dunn said her health agents don't look at a septic system unless someone complains, usually because of a stench. A failing system leaks long before it emits foul odors, she said.

"That's the problem with septic systems," Dunn said. "They're put into the ground and forgotten."

SEWAGE BUILD-UP

Lagoon sewage is the worst in Indian River County, especially during the rainy season.

Heavy storm runoff funneled through the main relief canal combined with a lack of incoming saltwater cause sewage levels to swell, experts say.

Tests show the nutrients that feed algal blooms were the highest when salinity was the lowest, and it coincided with water control districts releasing a high volume of stormwater, LaPointe said.

Dumping stormwater here has a similar effect, though on a smaller scale, as Lake Okeechobee's freshwater being released into the St. Lucie River, LaPointe said. Increased stormwater carries more sewage, he said, noting the nitrogen isotopes — a chief sewage indicator — spiked to 9 parts per million during the wet seasons.

Another lagoon researcher said the water is often stagnant, allowing nutrients to build up.

Much of the lagoon north of Fort Pierce is enclosed, and the Sebastian Inlet is too small to flush it out adequately, said Grant Gilmore, senior scientist for Estuarine, Coastal and Ocean Science, a Vero Beach research firm.

The county also has thousands of septic systems in low areas near the lagoon, which itself is troublesome, LaPointe said.

In the coming year, a Harbor Branch student will trace the sources of the lagoon's sewage. That will include looking at canals that link the lagoon to areas with septic systems.

LaPointe and Franklin both say urbanization has dealt a double blow to the lagoon.

Marshes that captured and filtered runoff were replaced with subdivisions that drain more waste into the lagoon, they say.

Franklin slows his boat as he cruises through a manatee protection zone not far from his house. He grumbles that the slow zone is pointless because there are no more manatees here.

"I'm 84, and they're not going to fix this in my lifetime," he said.