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Mysterious Manatee and Dolphin Deaths in Florida Confound Scientists

- By Nadia Drake
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Once a lush and healthy estuary, the Indian River Lagoon is now an enigmatic death trap. Running along 40 percent of Florida's Atlantic coast, the lagoon's brackish waters harbor a mysterious killer that has claimed the lives of hundreds of manatees, pelicans, and dolphins.



Dolphins are dying in the Indian River Lagoon. Only one sick dolphin, above, has been rescued alive. (*Hubbs-SeaWorld Research Institute*)

Nobody knows why.

In April, NOAA declared the spate of manatee deaths an Unusual Mortality Event, a designation granted when marine mammal deaths or strandings are significantly higher than normal, demand immediate attention, and are the result of a common but unknown cause. Soon, the bottlenose dolphin die-off may be given the same designation.

"We have to hope we can find the answer, because until we do, we don't know how we can help prevent it in the future," said Jan Landsberg, a research scientist with the Florida Fish and Wildlife Conservation Commission.

Since last July, 51 dolphins, 111 manatees, and as many as 300 pelicans have perished in the lagoon. The deaths don't follow an obvious pattern: Manatees are dying so quickly that some still have food in their mouths, while the dolphins and pelicans appear to be starving to death.



Mangrove islands in the Indian River Lagoon, a treasured estuary on Florida's eastern shore. (*South Florida Water Management District*)

Investigators don't know if the die-offs are the work of the same killer, or if by some coincidence, nature has produced three unrelated carcass piles at once. The only clear link so far is the lagoon, a treasured and frail ecosystem that's home to more than 3,500 species of plants and animals.

Scientists searching for the killer are following a long, branching trail; the story begins years ago, when a prolonged drought and cold snap set the lagoon's resources toppling like a string of dominoes. Now, a multi-year, \$3.7 million protection initiative has been adopted in an attempt to put the brakes on the lagoon's collapse, and prevent future crashes. But its success depends on scientists uncovering the culprit behind the ecological mayhem.

Imperiled Paradise

Designated an "estuary of national significance" by the EPA in 1990, the Indian River Lagoon system stretches for 156 miles along Florida's eastern coast. Though less than 6 feet deep on average, the lagoon is stuffed with more species of marine life than any other estuary in the continental United States. Salt marshes, mangrove swamps, oyster reefs, fish nurseries, and one of the densest sea turtle nesting sites in the western hemisphere are some of the ecological stars studding the stretch of coastline. Estimates suggest the barrier island complex brings in more than \$3.7 billion each year from citrus farming, fisheries, recreation, and employment.

But there's a darker side to the Sunshine State's eastern oasis. Surrounded by developments, the lagoon has, for decades, been the drainage pool for leaking septic tanks, polluted streams, and storm water rich with nutrients from fertilizers. It's a wind-driven system, and without tides to push the water around and flush it out, segments stagnate and pollutants accumulate.

Running from Ponce de Leon Inlet in the north to Jupiter Inlet in Palm Beach county, the lagoon's waters flow into canals and through locks, twisting and pooling into three main segments: The Indian River, the Mosquito Lagoon, and the Banana River.



In 2011, a blue-green algae superbloom turned the waters of the northern lagoon a sickly green color. (*SJRWMD*)

It's here, in and around the Banana River that scrapes the shores of Cape Canaveral, that the animals are dying.

The trouble, scientists suggest, began a few years ago when a prolonged drought descended upon the region. Normal evaporation combined with scarce rainfall boosted the lagoon's salinity; at one point, it was saltier than the ocean – an environment that tipped the normal balance of species and created a shifting, wobbling base for the ecosystem to rest on.

Then, in winter 2010, a cold snap settled in.

Freezing temperatures killed the macroalgae that normally live near the lagoon's surface. As these seaweeds withered and died, their sequestered nutrients flooded the already nutrient-saturated, saline water, creating a potent soup that would fuel the lagoon's collapse: A blue-green algae superbloom.

For nine months, beginning in early spring 2011, the northern lagoon's waters were seasick-green. The bloom intensified through the summer and fall, at one point covering 130,000 acres. Cloudy, phytoplankton-filled waters shaded the lagoon's floor, depriving its seagrasses of the sunlight they needed for photosynthesis and life, and stealing oxygen from fish.

Eventually, about 60 percent – or 47,000 acres – of the lagoon's seagrasses died, including most of the seagrass beds in the Banana River. "We've used seagrasses since the 1980s to assess the lagoon's environmental condition," said Troy Rice, with the St. Johns River Water Management District, and director of the Indian River Lagoon National Estuary program. "They're considered the primary indicator of the lagoon's health."

Rice has been studying and tracking the lagoon's changes in fortune for years. Without those seagrass beds, he says, the estuary lost its ability to buffer environmental insults. Sediments that would normally be trapped by the grasses were left floating; nutrients normally sequestered were free to feed further algal blooms. Invertebrates and fish that lived in the seagrass beds were left homeless, manatees left without their primary, grassy food source.

In the summer of 2012, the lagoon turned the color of paper bags as a brown algal bloom took hold, further shading and choking off any recovering seagrasses.



Something mysterious is killing manatees in the Indian River Lagoon. (Patrick M. Rose/Save the Manatee Club)

Manatees in Distress



Scientists measuring seagrass coverage from aerial surveys have recorded a 60 percent decline. (*SJRWMD*)

Manatees started dying in the Banana River last July. First a trickle and then a flood, the die-off reached its peak this spring, when more than 50 manatees were found in March. Since then, it has slowly tapered off. Now, the Florida Fish and Wildlife Conservation Commission, in charge of investigating the manatee deaths, reports that carcasses are retrieved every other week or so. "At least the deaths from this cause are not showing up as frequently," FWC spokesperson Kevin Baxter said in early June.

So far, the 111 carcasses recovered have provided little information about what's killing the gentle marine mammals. Other than being dead, the manatees look remarkably normal. Whatever is killing them strikes quickly and without much warning. Biologists haven't been able to find any suffering manatees – just dead ones – and are missing crucial behavioral observations.

"They're in good body condition from what we can tell, no other diseases or signs of trauma," said Martine DeWit, a veterinarian with the FWC who does necropsies on the dead manatees.

It appears the animals are dying from shock and drowning. Some still have food in their mouths – but it's the wrong kind of food, if you're a manatee. Instead of sea grass, pathologists are finding macroalgae, mostly *Gracilaria*, in the manatees' digestive tracts. This type of seaweed is normally not toxic. But, "on microscopic examination of the tissues, we found some inflammation in the wall of their gastrointestinal system," DeWit said, noting that the changes were only minor. "Our first thought is it has to be something associated with the algae – something in the sediment, absorbed by the algae, or a compound of the algae itself."

Searches for signs of infection or toxin exposure have produced nothing. Looking in the lagoon for toxins, such as brevetoxin, saxitoxin, domoic or okadaic acids has also led nowhere. "None of the usual culprits are out there," Landsberg said. "But then there's always the unknown ones."

If an anonymous toxin is on the loose in the Indian River Lagoon, finding out what it is will take time. If microbes or sediments are hitching a ride on macroalgae and killing the manatees, finding out why, and what, will also take time. "It's not CSI, it doesn't take an hour," Landsberg said.

So far, scientists' best guess is only that the manatee die-off is linked to the loss of seagrass, though the connection isn't obvious. But even if that manatee mystery is solved, there's no guarantee the same culprit is responsible for the demise of the lagoon's other victims.

And Then There Were Dolphins

Starting in February, pelicans in the lagoon began dying. For two months, starving birds fell from the sky, spotting the shores with their skinny, wrecked bodies. But by the time manatee mortalities were at a peak this spring, the pelican die-off had waned.

And then the calls started coming in about dead dolphins.



Dolphins dying in the lagoon are skinny bags of bones. (Hubbs-SeaWorld Research Institute)

As of July 3, 51 dolphins have been pulled from the northern and central parts of the Indian and Banana Rivers. It's the largest dolphin die-off in the Indian River Lagoon system, said Megan Stolen, a biologist with Hubbs-Sea World Research Institute. Stolen is part of the team responding to reports of dolphin carcasses; she says only one suffering dolphin has been found alive, and that he's doing well in dolphin rehab.

Unlike the manatees, the dolphins Stolen finds are not in good shape. Some carcasses are in pieces and too incomplete to learn anything from; many bear the marks of a puzzling plethora of postmortem shark bites. The ones that are intact are mostly sacs of skin and bones. "About 85 percent of those are emaciated," Stolen said. "Which is pretty extreme."

Whether the skinny dolphins are the result of depleted or shifting fish stocks, parasites, toxins, disease, or something that simply makes it hard for them to catch fish, is unknown. What scientists do know is that the number of dolphin mortalities during the first half of a normal year is around 17. With roughly 700 dolphins living in the entire lagoon, this year's mortality rate is already approaching 10 percent of the population.

If NOAA declares an Unusual Mortality Event, the teams attending to the dolphins will get some help from the federal government, in the form of labs, scientists, and funding. That should help narrow the search for suspects.

"The entire lagoon is changing," Stolen said. "We're trying to look at the whole picture."

But putting that picture together is not only difficult, it may be impossible.



Hundreds of brown pelicans in the Indian River Lagoon died earlier this year from an unknown cause. (*Andrea Westmoreland*/*Flickr*)

"I think, always, the best approach with these investigations is to start with the most obvious hypothesis first," Landsberg said. "Since these are all occurring coincidentally, is it coincidental or not?"

The scariest option is that the deaths might be unrelated to one another, and simply the result of a multi-pronged ecological catastrophe. Connecting crashing seagrasses with vegetarian manatees, fish-eating mammals and fish-eating birds is not easy. Complicating the picture is that other seagrass-eating species, such as sea turtles, appear unaffected. Other fish-eating species, such as cormorants and herons, are mostly unperturbed. The bull shark population scavenging the dolphin carcasses doesn't appear to be in trouble. And though the dolphins and pelicans both eat fish, they're not necessarily eating the same fish. Feasibly, Landsberg says, a toxin could be involved — but for whatever reason is not working its way evenly through the food web.

"It's like trying to do this big jigsaw puzzle, looking at all this environmental information," Landsberg said. "You could spend forever going down all these different rabbit holes and getting nowhere."

The different teams working on solving the mysteries are still assuming the deaths are linked: Whatever is at large in the lagoon is exacting its effects on very specific populations, in a very specific area – for now.

Molecular Detectives

A new project could help investigators find out if a toxin is harming the Indian River Lagoon manatees. At the University of Florida, veterinarians and scientists are testing the genes and proteins expressed when manatees are exposed to toxins, using blood samples from 12 animals: Four that have been exposed to red tide toxins, and eight animals that live on either of Florida's two coasts. Funded in part by the Save the Manatee Club, the project is still in its pilot stage. The goal is to see if differences between affected and healthy animals carry the biological signature of an immune system responding to toxin exposure — a signature they can then test for in the Lagoon's manatees. "You can, potentially, see changes in the protein levels related to genes turning off or on that are now out of whack," said Mike Walsh, an aquatic animal veterinarian at the University. "Could we back in to the idea that yes, this is a toxin, and we need to figure out what it is?"

Uncertain Future

With no clear culprit in sight, scientists, rescuers, and residents of the six counties bordering the estuary are on alert. A brown algal bloom is already coloring the Mosquito Lagoon, appearing earlier than it did last year. Florida newspapers are criticizing the state's inability to enact tougher environmental regulations and keep Florida's waterways clean, claiming that "State leaders won't act to stop summer slime" and "Gov. Rick Scott does not seem to care" (estimates place the 2011 algal bloom-related economic losses at somewhere between \$230 and \$470 million, but Florida's governor vetoed a \$2-million grant for the Harbor Branch Oceanographic Institute to study the lagoon), and applauding the Sierra Club for its move to report "Slime Crimes."

"Any issues in the environment that are associated with animals or people affect the other," said Mike Walsh, a a veterinarian at the University of Florida. Walsh and his colleagues are helping with the investigations (see sidebar). "If you have an algal overbloom that kills the seagrass, that affects the fish, affects dolphins, affects manatees — every one of these changes can have substantial long term side effects."

The manatee population in particular is suffering. In addition to the mysterious east coast killer, hundreds of manatees have died from a particularly vicious red tide that settled off the state's southwest coast. Those mass mortality events, plus boating accidents and deaths from natural causes, bring the total manatee deaths this year to 672. That's already higher than five of the last six years, and is more than 10 percent of the state's manatee population, estimated to be roughly 5,000 animals. In 2007, the U.S. Fish and Wildlife Service recommended upgrading the manatees' listing from "endangered" to "threatened." Now, budget cuts have put that move on hold, says U.S. Fish and Wildlife spokesman Chuck Underwood. "This isn't an indication that we know something about what the recent deaths mean," he said. "It is strictly budget-related."

What this year's grim total means for the manatee population is still unknown, but it might take years for the population to recover.

"It's a huge number, more than any other year at this point in time," said Patrick Rose, president of the Save the Manatee Club, an aquatic biologist who's studied manatees for decades. Rose suggests the Lagoon could take as long as a decade to recover. "From this point forward, if we do everything

right, we're still talking maybe 5-10 years for recovery," he said. "The system is so unstable right now that it's going to have to stabilize, even if it stabilizes in a much worse state."



Aerial view of the Indian River Lagoon (U.S. Fish and Wildlife Service).

The lagoon is not without hope, though. Late last year, the St. Johns River Water Management District announced the adoption of a four-year, \$3.7 million Indian River Lagoon Protection Initiative. Designed to help heal the ailing estuary, the initiative is still in its early stages. But a multidisciplinary taskforce of scientists is already studying and monitoring the embattled ecosystem, trying to sort out what triggered the blooms in 2011 and 2012.

"The lagoon's health had been improving, and then out of the blue came this unforeseen superbloom," said William Tredik, the Indian River Lagoon Protection Initiative's team leader. "The algal blooms seem to have been the catalyst for a lot of other things, but we don't have all those links figured out yet."

Initial work is focusing on the northern lagoon, the killing zone that has been the most besieged by blooms. Then, when the taskforce has a better idea of what ignited the algal explosion, potential solutions will be suggested — ideas that could range from adding drainage canals to transplanting seagrasses to overhauling septic systems.

"It's a beautiful area down there, just breathtaking when you're out on the water," Tredik said. "We want to make it as good as we can."

End

Additional Links & Article Below:

Manatees Dying in Droves on Both Coasts of Florida

- By Nadia Drake
- 03.22.13
- 2:05 PM
- Categories: Animals



Rescuers attend to a manatee affected by red tide near Fort Myers, Florida. *Florida Fish and Wildlife Conservation Commission*

Large numbers of manatees are dying on both coasts of Florida.

In the southwest, a persistent red tide in the Gulf of Mexico has killed nearly 200 manatees this year. These tides are algal blooms, and occur when microorganisms called dinoflagellates proliferate, staining oceans and releasing toxins into the water and air. Harmful to organisms including fish, manatees and humans, the toxins attack the nervous system, causing short-term memory loss, paralysis, seizures and ultimately death.

In the east, near Cape Canaveral on the Atlantic Ocean, manatees are also dying. But there the cause is unknown.

"There are indications of the animals being otherwise completely healthy — but having died of shock and drowning," said marine mammal biologist Ann Spellman, with the Florida Fish and Wildlife Conservation Commission, the state agency tasked with the investigation.

In July 2012, manatees started turning up dead in the Indian River Lagoon; now, there are 80 dead animals, 50 of them since the beginning of February.

"They're all dying from a cause that we suspect is a common one — common to those manatees — but right now, is still unknown," said Kevin Baxter, spokesman for the Florida Fish and Wildlife Conservation Commission.



Alligators aren't a threat to manatees, but microorganisms and boat propellers are. *Photo: Patrick M. Rose/Save the Manatee Club*

The gentle, blimp-shaped animals, with their bristled snouts and large, fanlike tails, have been on the federal endangered species list since 1967 (.pdf). Scientists estimate that roughly half the world's West Indian manatees (*Trichechus manatus*) live in the shallow waters in and around Florida, where aside from microorganisms and mystery killers, the thousand-pound animals are threatened by watercraft, fishing gear and the loss of their warm-water habitats.

Now, the simultaneous mass-mortality events are threatening the state's manatee population.

"This is very unusual and is unprecedented in magnitude," said Patrick Rose, a former government biologist and current director of Save the Manatee Club. Rose has studied and worked with manatees since the late 1960s. "This is fast approaching the all-time record catastrophic mortality from cold shock and cold stress experienced in 2010," he said. During that winter, more than 250 manatees died. "The difference here is that by this time, the cold stress issues were abating with the arrival of spring — and we don't know when either of these unusual mortality events will extinguish."

Red Menace

Red tides have thrived for as long as people have kept records of Florida's seas, with centuries-old descriptions of fish kills and human illness. Now, Florida's west coast sees a bloom almost every

year, Baxter said, though the duration and location are hard to predict in advance. The last time red tide-related mortality was this high was in 1996, when 151 manatees were killed by algal blooms.

In September, a red tide began blooming off Florida's southwest coast. In October, Sarasota newspapers called it the "worst red tide" in years, reporting tons of dead fish along Florida's Gulf Coast beaches. Biologists and oceanographers tracked the bloom, watching its progress and sampling the stained waters. "This tide has pretty consistently been over 100, 150 miles long," said Jason Lenes, a biological oceanographer with the University of South Florida. "The average bloom is generally between two and four months, and this one is lasting for almost six months at this point," he said.

Occasionally, water tests have come back packed with more than 10 million cells per liter. The threshold for a "high" concentration is one-tenth of that. Though not anomalously high, Lenes said the bloom's concentrations of cells have been sustained for a long period of time.

'They're not finding them alive. They're finding carcasses.'

The bloom microorganisms are called *Karenia brevis*, dinoflagellates that thrive in warm water and are photosynthetic. But *K. brevis* excrete toxins into the water, compounds that attack nervous systems and cause paralysis, seizures and drowning. Brevetoxins are absorbed by shellfish, can lead to massive fish kills, and stick to seagrasses and other plants, contaminating food sources for herbivorous animals like manatees. At very high concentrations, such as those present periodically during the southwest Florida bloom, brevetoxins can also be inhaled by marine mammals and humans.

As of March 21, 193 manatees have died from the tide since January. Recently, many of the manatees recovered have been found in the vicinity of the Orange River, site of a warm-water aggregation spot near a power plant, where the animals go when ocean temperatures are too cold to tolerate.

The Orange River spills into the Caloosahatchee River, which opens into the Gulf. "Right in that mouth area, where they go to get to the river, is one of the areas where the bloom has been persistent," Lenes said. With the bloom parked near the river's mouth, the manatees upstream are trapped behind a wall of toxic water — an unfortunate collusion of timing and location.

Now, Rose says, the waters are warming and the manatees are heading back out to the sea and brackish estuaries nearer the coast. There, the seagrasses are likely coated with toxins — toxins that will stick to the grasses even after the bloom dissipates.

Rescuers hoping to help manatees have to act fast. Toxins can harm an animal within a few hours, depending on its size and location. Telltale signs of brevetoxins include listing while floating, muscle twitches and difficulty breathing — all signs that, since the beginning of the bloom, officials have been patrolling the waters and keeping an eye out for, Baxter said.



One of the red tide patients at the Lowry Park Zoo. Photo courtesy of Lowry Park Zoo

So far, a dozen animals have been rescued early enough to be helped. The 12 manatees were taken to Lowry Park Zoo in Tampa, where they've all recovered. "If we can get them early enough, we can usually get them through it," said Larry Killmar, the zoo's vice president for animal science and conservation. "But what's happening is, they're not finding them alive. They're finding the carcasses."

After they're admitted, the zoo's red tide patients — who now have names like "Threepio" and "Cheer" — are given antibiotics and rigged with a buoy system to keep them afloat. Then, staff members sit with the animals until they're well enough to float on their own. Instead of seagrass, which is difficult to harvest and potentially contaminated, the zoo's patients are fed romaine lettuce.

A lot of it.

"Manatees eat 10 percent of their body weight in food a day," Killmar said. "At our peak, with 22 manatees on site, that was 5,200 heads of romaine lettuce a week."

The animals won't be released into the wild until the bloom is gone. As of this week, it's still offshore and in the area of Lee and Charlotte counties, though the concentration of cells is decreasing. But danger lingers even after the blooms have dissipated, since toxins stick to and encrust the seagrasses manatees rely on for food. Just last week, 13 dead animals were recovered near Lee County.

"The good part is, if you can rescue the manatees, there are good methods for eliminating toxins from their system and their recovery is pretty quick," Rose said. "In contrast, I don't know of any manatees that have been found alive from what's happening on the east coast."



Manatees playing in Blue Spring. Photo: Patrick M. Rose/Save the Manatee Club

Eastern Mystery

The Indian River Lagoon runs for 150 miles along Florida's eastern shores. One section, the Banana River, shapes the western bank of Cape Canaveral, near where NASA launches rockets into space.

It's here, near the Kennedy Space Center, that manatees are mysteriously dying. Since the beginning of February, 50 animals have been pulled from the lagoon's estuarine waters – that's more than half of the 80 manatees who've died in the area since July.

The killer in the east slays swiftly and leaves behind nary a clue.

"They were big adults, they had good fat storage. But they seem to have died very acutely," said Martine deWit, a veterinarian who oversees the state's marine mammal pathology lab. "Whatever killed them, it happened really fast."



Two manatees found dead in the Indian River Lagoon. *Photo: Florida Fish and Wildlife Conservation Commission*

Other than being dead, the animals look normal. They're not starving and show no signs of sickness. Many have bellies stuffed full of macroalgae, including *Gracilaria*, a nontoxic seaweed, but one that manatees rarely eat. Most look as though they've gone into shock and drowned – some so quickly that by the time rescuers respond to calls of a strangely behaving manatee, the animal is dead.

"Some still have intact pieces [of algae] in their mouths," deWit said.

Without a live, sick animal to monitor, scientists are stuck searching for patterns, playing the roles of forensic investigators and looking for clues.

So far, there's no easily identifiable affected age or size class. Tests for toxins in the water have turned up nothing. No brevetoxin, no domoic acid, no signs of anything known to kill manatees. The

animals' tissues don't show signs of viral or bacterial infection, though deWit said a few show minor pathological signs associated with a toxin having entered their gut.

"We have tested for a couple biotoxins that do occur in Florida, and so far those are negative," she said.

The most obvious links are where the animals are found, and their bellies full of the wrong kind of food.

'The mechanism has not been identified.'

Scientists suspect the manatees are turning to a foreign food source because their preferred meal, seagrass, is no longer around. Since 2011, two algal blooms have destroyed the lagoon's invertebrates and grasses. The first was a green algae superbloom; the second, a brown algal bloom that turned the lagoon brown and wiped out 32,000 acres of seagrass. Together, the blooms shaded the water and prevented grasses from growing.

But, "The brown algae causing the death in the sea grasses is not killing these manatees," said Dana Wetzel, a chemical oceanographer with Mote Marine Laboratory in Sarasota.

On their own, these blooms are harmless. Some suspect, though, that the blooms are fed by nitrogen- and phosphorous-containing nutrient-rich runoff – the wash that flows into the sea from fertilizer-laced lawns, storm drains and septic fields after it rains. Normally, seagrasses would sequester these extra nutrients or metabolize them, keeping the ecosystem balanced. But after the algal blooms kicked off and the grasses died, nutrients flooded the lagoon, fueling further algal growth and concentrating in the water.

How that's related to manatees' demise is unclear; scientists are still hard at work trying to figure out what's going on. "As of right now, the mechanism has not been identified," Spellman said "We don't necessarily feel that where the animals are dying, the animals are eating." But the fact that so many are recovered from the same place suggests that whatever is going wrong is something local. Wetzel and others say it's possible a yet-to-be identified biotoxin is circulating in the ecosystem.

End



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title="warm water manatee" src="http://www.wired.com/images_blogs/wiredscience/2013/03/warm-water-manatee-300x200.jpg" alt="" width="400" height="266" />

Manatees aggregate near warm-water sources; cold snaps, like in the winter of 2010-2011, can killhundredsoftheanimals.Photo: Ann Spellman

And there are other signs that the Indian River Lagoon is in distress: As of March 21, 200 dead brown pelicans have been found there this year, emaciated and infested with parasites. But right now, Baxter says, there's no evidence that pelican and manatee mortality are linked.

It's possible that something in the lagoon is affecting dolphins as well. Megan Stolen, a research scientist with Hubbs-SeaWorld Research Institute, says teams in the area have recovered a slightly higher-than-normal number of deceased dolphins – four in January, five in February, three so far in March. "A number of them have been emaciated," she said. "They're really thin, skinny, and starvation mode."

But there's no lack of fish in the lagoon. "It's not that they're starving because there's no fish. If they're starving it's because they can't find food, can't chase the food, can't metabolize it," she said.

So far, though, the numbers aren't statistically significant – averages for those months are between two and three dolphin deaths — and again, there's no obvious connection to the manatees' demise. "I would say we're on alert," she said. "But right now, there's not a reason to be worried."

What does worry scientists is that there's no way of knowing when the manatee die-offs in the lagoon will end – or when they'll know what's going on.

"That's probably one of the most disturbing things," Spellman said. "If this were a cold snap, we'd know. Right now, we don't even know what to look for. They're not even showing any outward signs. We have no idea when this will end. "