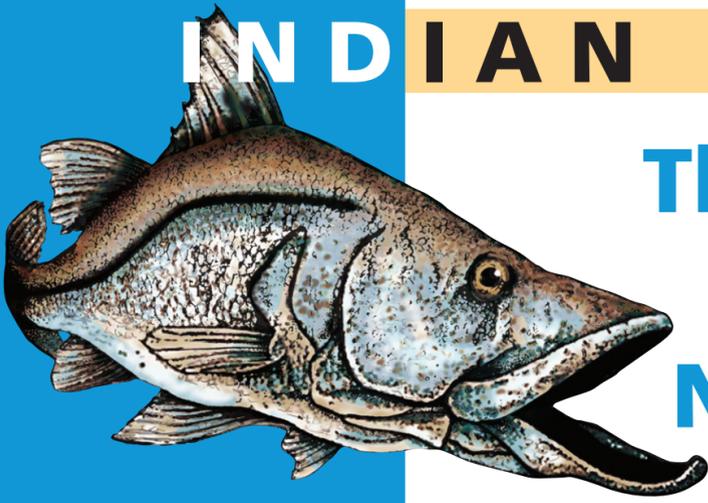


The health and future of this Estuary of National Significance



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Water quality assessment

A breakdown of the indicators of a waterway's health.

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Exotic challenges

Nonnative species threaten lagoon's habitat, other wildlife.



Mat O'Malley/SJRWMD

Lagoon is more than a shimmering backdrop in coastal region

It is our weekend playground, an ever-changing tableau of water and light, a solace to the soul.

On any day along the Indian River Lagoon, you'll find people fishing from causeways, plying the waters in pleasure boats, observing wildlife or simply relaxing at one of many waterfront parks. While the aesthetics and recreational amenities offered by this waterway are readily apparent, the lagoon has many values that may not be obvious to the casual observer.

The Indian River Lagoon is a misnomer; the lagoon is not a river at all, but a special place called an estuary. Here, in this mingling of fresh and salt water, are more than 4,300 species of plants and animals, including 35 that are listed as threatened or endangered — more than any other estuary in North America.

More than just a shimmering backdrop, this productive and diverse waterway is an important element in the economy of the region and the nation. Commercial and recreational fishermen harvest thousands of pounds of fish and shellfish in the lagoon each year while water-related businesses, services and activities all contribute substantially to the economy. All of these factors contribute an estimated \$750 million to the region's and nation's economies annually.

Stretching approximately 156 miles along the east coast of Florida, the lagoon region encompasses portions of Volusia, Brevard, Indian River, St. Lucie, Martin and Palm Beach counties. The lagoon system actually encompasses a series of shallow, interconnected lagoons — the Indian River, the Mosquito Lagoon and the Banana River. Six small and widely spaced inlets connect the lagoon to the Atlantic Ocean. The size of these inlets and the shallow nature of the lagoon allow for a limited exchange of waters between the lagoon and the ocean. One of these inlets, Port Canaveral, is separated from the lagoon by locks, further reducing tidal exchange with the ocean.

Within this same stretch of coastline, tropical and temperate climatic zones and biological provinces meet and overlap. This convergence has resulted in a unique and extremely diverse collection of habitats and species that occur nowhere else.

The mild climate and the bounty of natural resources found in the region support a vigorous local economy and attract numerous visitors and new residents each year.

Lagoon Under Stress

This valuable resource is showing signs of stress, however. Like much of Florida, the lagoon region has seen a substantial population increase since the 1940s. Census data since that era show population growth approaching 50 percent during each decade. Much of the development and infrastructure constructed to serve this rapidly growing population did not consider the sensitivity of the lagoon. Causeways across the lagoon were built and channels were dredged. Wetlands were filled for development or impounded for mosquito control. Storm water and wastewater were discharged to the lagoon with little or no treatment.

While many of these activities are no longer allowed or are strictly regulated, the cumulative impacts of past activities have degraded water and sediment quality in the lagoon. Water quality in many areas is no longer sufficient to support healthy seagrass beds or to allow the unrestricted harvest of shellfish. The abundance of many important fish and wildlife species has declined.

Significant amounts of time and effort have been expended in efforts by federal and state agencies, local governments, interested groups and concerned individuals to protect and restore the resources of the lagoon. As a result, the discharges from most domestic wastewater treatment plants have been eliminated. The few wastewater plants that continue to discharge to the lagoon have limits on the volume of their discharge and must meet strict standards for the quality of those discharges.

State of the Indian River Lagoon — 2004

The following overview of the current conditions in the lagoon is largely drawn from the recent update of the Indian River Lagoon Surface Water Improvement and Management (SWIM) Plan. The lagoon SWIM Plan update was developed and produced by SWIM staff from the St. Johns River and South Florida water management districts in conjunction with Indian River Lagoon National Estuary Program (NEP) staff. A copy of the complete plan update is available from the lagoon NEP or may be found online at http://www.sfwmd.gov/org/wrp/wrp_ce/projects/irl_swim.html.

Sea grass is the proverbial measuring stick for determining the health of the lagoon. One of the fundamental objectives of the lagoon program is the recovery and maintenance of a healthy and productive seagrass community in the lagoon. Preliminary analysis of lagoon data indicates that inadequate light is the primary factor limiting seagrass growth in the lagoon. Other factors, such as salinity, sediment quality, hydrology and physical disturbance may also affect seagrass growth and health.

The same analysis also found that turbidity, chlorophyll *a* and color are the principal factors affecting water clarity in the lagoon. Turbidity is influenced by the amount of total suspended solids in the water, while chlorophyll *a* is influenced by nitrogen and phosphorous concentrations. Given that the lagoon is 156 miles long, water clarity can vary throughout its reaches; however, the identified pollutants and factors that influence them are involved to some degree in reducing light penetration of the water column in all segments of the lagoon.

Seagrass Resource Assessment

Scientists look to the sea grass to measure the health of the lagoon. When sea grass thrives, so does the lagoon; when water quality diminishes, so does sea grass.

Evaluation of seagrass resources in the lagoon is based on three measurements:

- Changes in the acreage of seagrass coverage over time (gain or loss)
- Maximum depth of the edge of seagrass beds
- Percent of surface sunlight reaching seagrass restoration depth targets

See Lagoon on Page 2

"In the end we will conserve only what we love; we will love only what we understand; and we will understand only what we have been taught."
– Baba Dioum



Mat O'Malley/SJRWMD

Above: Mangroves offer a source of food and shelter to many lagoon wildlife.

Top: An ibis searches the lagoon shore for a meal at sunrise.

Lagoon Continued from Page One

General seagrass coverage distribution and trends in the lagoon can be summarized as follows:

- Segments containing the largest acreage of seagrass coverage are found around north Merritt Island, within and adjacent to the federally protected NASA/Kennedy Space Center/Merritt Island National Wildlife Refuge complex (north Indian River Lagoon and northern Banana River) and Canaveral National Seashore (southern Mosquito Lagoon). These segments have shown little change in seagrass coverage since the 1940s.
- The largest area of poor seagrass coverage extends from the Cocoa area to the Palm Bay area. This area has experienced the greatest loss of seagrass coverage since the early 1940s (70 percent).
- Within the Mosquito Lagoon, Banana River and north/central Indian River Lagoon areas, the most recent data available (1996) show 57,179 acres of sea grass is 56 percent of the potential 101,997 acres of sea grass. The 1940s seagrass coverage was 63,238, or 62 percent of the potential seagrass acreage.
- Within the south Indian River Lagoon, the current (1999) seagrass cover is 7,808 acres, or 39 percent of the potential 19,799 acres. The 1940s acreage is similar (7,688 acres) and also 39 percent of the potential acreage.
- For the entire lagoon, the potential seagrass acreage is 113,073 acres. Present seagrass acreage is 69,692 (1999), or 62 percent of the potential acreage.

Water Quality Assessment

Salinity

The lagoon is an estuary, a water body where the freshwater of its tributaries mixes with the salt water of the Atlantic Ocean. During the 1990s, average salinities throughout the lagoon (with the exception of the tributaries) were well above 20 parts per thousand (ppt), the optimum range for seagrass growth. With the exception of widgeongrass, *Ruppia maritima*, salinity of 20 ppt appears to be a minimum growth threshold for lagoon seagrass species. Sea grasses may survive if the average annual or seasonal salinity is less than 20 ppt; however, growth may be impaired even if other environmental conditions are optimal. Maintaining salinities of 20 ppt or greater appears to be particularly important during the growing season.

The highest average salinities were found in the Mosquito Lagoon and the south Indian River Lagoon, followed closely by the north Indian River Lagoon (north of Titusville). The lowest average salinities during the 1990s were found in the southernmost reach of the Banana River and in the Melbourne area of the central area of the lagoon. These areas are distant from oceanic influence and receive large volumes of freshwater discharges from tributaries and associated drainage systems. In these segments, salinities can drop below 20 ppt for extended periods of time.

Color

Water color is another indicator of water quality in the lagoon. Color generally tracks salinity trends in the Banana River and the central and south Indian River Lagoon. Tributaries and canals in these areas discharge large volumes of freshwater that, in addition to reducing salinity, have relatively high color.

Scientists measure the color of water in platinum cobalt units (pcu). Relatively clear water will generally measure about 10 pcu. Climb higher on the pcu scale, and the water darkens to a tea-colored hue. With the exception of the central lagoon region, the 10-year average for color ranges between 15 and 20 pcu; in the central lagoon, 20 and 30. The highest 10-year average color was found in the Newfound Harbor area of the Banana River, with the highest individual measurements found in the Vero Beach area.

Turbidity/Total Suspended Solids

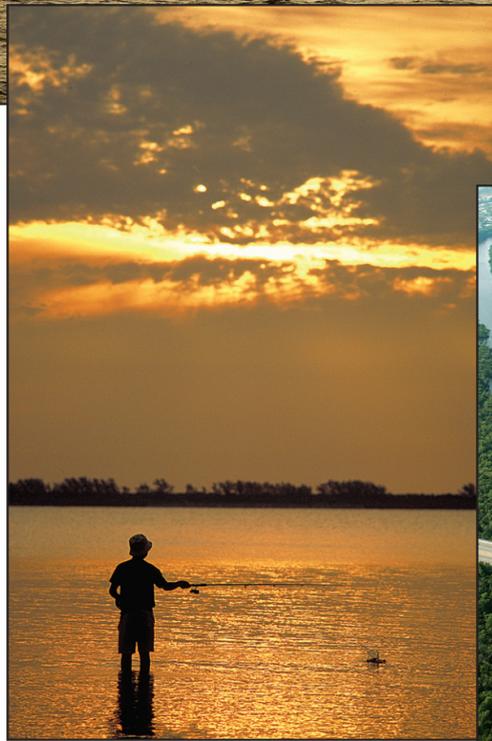
Turbidity is a word often bandied about when the lagoon's water quality is discussed. In simplest terms, turbidity describes the cloudiness of the water. The more turbid the water, the less light reaches the sea grass.

Water clarity is measured in nephelometric turbidity units (NTU), with lower numbers representing clearer water. Average turbidity levels in the Banana River and the north and central Indian River Lagoon generally do not exceed six NTU, and are typically half that level. In contrast, the Mosquito Lagoon and the south Indian River Lagoon frequently average above six NTU. Both the highest 10-year average and the highest variability in monthly turbidity were found south of Fort Pierce Inlet.

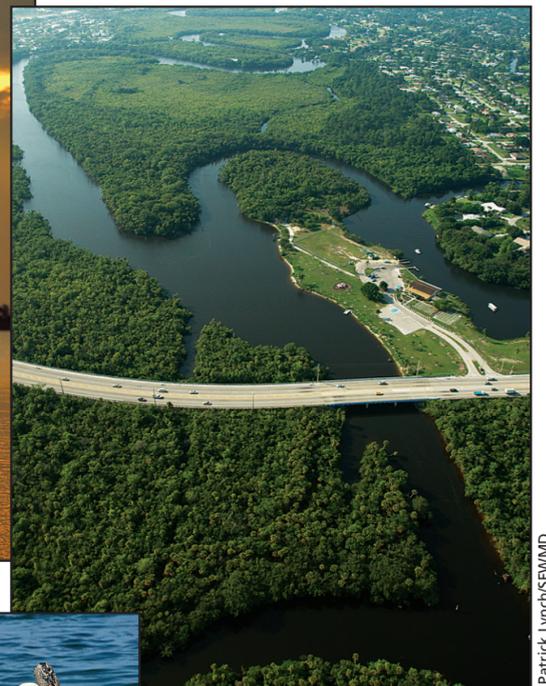
These turbidity trends are likely explained by the presence of total suspended solids (TSS), the organic and inorganic particles found floating in the waterway. Further analysis indicates that these suspended solids contribute significantly to turbidity levels in several segments, especially in the Mosquito Lagoon, Banana River and north Indian River Lagoon.



Mat O'Malley/SJRWMD



Patrick Lynch/SFWMD



Patrick Lynch/SFWMD



Mat O'Malley/SJRWMD

About the photos: Sailing and fishing are just a couple of the recreational activities enjoyed along the lagoon. Wood storks, an endangered species, can be found along lagoon shores.

About the aerial photo: Port St. Lucie is seen from the air in this shot of the North Fork of the St. Lucie River.

Average TSS levels throughout the lagoon system range from 18 to 34 milligrams per liter (mg/L). The lowest 10-year average TSS (18 mg/L) was found in the Cocoa-Melbourne area, a pleasant surprise, considering the area's booming development, associated drainage and the relatively small area of open water in that reach.

Nitrogen/Phosphorus

Heavy concentrations of nitrogen and phosphorus can fuel algal blooms in the lagoon.

Studies have shown that there is a general north-south decrease in total nitrogen (TN) concentrations from the north Banana River and the northern lagoon through the southern lagoon. Exceptions to this trend are upward spikes in Palm Bay and Vero Beach, areas compounded by a lack of tidal flushing and situated near the discharges of major drainage systems. The higher concentrations of TN in the northern lagoon area may be due to:

- Large standing pools of organic nitrogen and plant material that may remain for months to more than a year
- Distance from oceanic influence
- Small drainage basins

A similar trend is seen in the Mosquito Lagoon, but TN decreases from the southern Mosquito Lagoon to the north. Once again, distance from oceanic influences, a small drainage basin and few tributaries affect the amount of time nitrogen stays in one place and flushing in this area. Vero Beach, another hot spot, receives discharges from three large drainage canals which, when combined, constitute about 35 tons of phosphorus per year, the largest loading in the lagoon basin. The lowest phosphorous concentrations are found in Hobe Sound.

Chlorophyll *a*

In recent years, algal blooms in the lagoon have been a concern to scientists. These blooms, fueled by an overabundance of nutrients, can rob the water of oxygen and lead to fish kills.

Elevated levels of Chlorophyll *a*, the green photosynthetic pigment in phytoplankton (algae), is usually a warning sign that nutrient concentrations may be excessive. Elevated concentrations have been found in the southern Banana River and the Cocoa-Melbourne area where the 10-year chlorophyll *a* average concentration is greater than 8 micrograms per liter. Levels are lower in the Vero Beach area, most likely due to increased flushing (2–3 weeks versus 3–6 months) and higher average color. A similar reduced algal response is seen in the Fort Pierce and St. Lucie River area, where shorter residence times and increased flushing may also play a role.

Water Quality and Seagrass Resources Summary

The lagoon areas with the poorest water quality are Cocoa to Palm Bay, the southern Banana River, Vero Beach, Fort Pierce, and the St. Lucie River area. Low salinities, elevated color, nutrients and chlorophyll *a* contribute to the poor conditions in the Cocoa-Palm Bay segments. The southern Banana River is also impacted by low salinities, elevated color, nutrients and chlorophyll *a*. The Vero Beach segments are affected by elevated color, turbidity and nutrients. The southern lagoon segments near Fort Pierce and the St. Lucie River are impacted by elevated turbidity, TSS, nutrients and chlorophyll *a*. Areas adjacent to larger tributaries and major drainage also experience higher than typical levels of TSS, color and nutrients.

In general, seagrass coverage tracks water quality trends. Areas with good seagrass coverage are located adjacent to relatively undeveloped watersheds or in close proximity to inlets, while areas of extensive losses and sparse sea grass are adjacent to highly developed watersheds and shorelines.

Progress report on implementation of the Indian River Lagoon's Comprehensive Conservation and Management Plan

By the 1990s, it was apparent that the Indian River Lagoon, the very thing that lured thousands to the east-central Florida coastline, was in dire straits. In response, more than 100 agencies and local governments with management responsibilities for the Indian River Lagoon developed a united strategy to restore and preserve this idyllic, yet fragile, water body.

The finished product, the Indian River Lagoon Comprehensive Conservation and Management Plan (CCMP), was approved in 1996 by the U.S. Environmental Protection Agency (EPA) and Florida's governor. The Indian River Lagoon National Estuary Program (IRLNEP) has addressed many challenges by implementing projects in the plan and has achieved many successes in partnership with federal, state and local governments and private nonprofit organizations.

Recent CCMP implementation achievements include:

- Funding the nation's second-largest citizen's volunteer water quality monitoring network
- Implementing the Lagoon Biototoxin and Aquatic Animal Health Working Group to address wildlife diseases and mortality events
- Expansion of the DockWatch volunteer jellyfish reporting network through an EPA aquatic nuisance species grant
- Supporting ongoing wetlands and shoreline restoration and enhancement through mosquito control impoundment reconnection and the restoration of mangrove shorelines lagoonwide
- Promoting the Lagoon Blueway land acquisition initiative to the state's "A" funding list, increasing the state's participation in the acquisition of priority environmentally endangered lands along the lagoon
- Funding for a local government grants writer to assist county and municipal governments in receiving more than \$15 million in state and federal grants for stormwater retrofits and localized flood control projects. This leveraged more than \$75 million in water quality implementation projects.

Emerging Challenges

Many new and ongoing projects and programs have helped the IRLNEP to increase public involvement in CCMP implementation activities. These include:

- Periodic lagoonwide and regional forums providing information on lagoon projects and programs, offering individuals an opportunity to discuss these projects and provide feedback
- Regular "State of the Lagoon" conferences, offering information on the current state of the lagoon's natural resources
- Citizens volunteer water quality monitoring network
- DockWatch volunteer jellyfish monitoring and survey project
- Regular "Pepperbusts," or workdays, where volunteers participate in the removal of Brazilian pepper and other exotic or nuisance vegetation
- Shoreline plantings
- Shoreline and spoil island "trash-bashes" or cleanups
- Production of new and ongoing outreach and education materials, such as the "Ethical Angler" wallet cards, the annual photo contest/lagoon calendar and the quarterly Lagoon Update newsletter

The CCMP is not a static document, as evident by the new challenges and priorities being met. The IRLNEP has identified invasive, exotic species and aquatic animal health as emerging challenges to the lagoon's ecosystem, while stormwater management and enhancing seagrass production remain the highest priorities.

Over the past several years, there has been increasing concern over the number of wildlife-related disease and mortality events in the lagoon, possibly a symptom of a wider-scale problem regarding the overall "health" of the lagoon system. Despite considerable progress and success in rehabilitating impounded wetlands as habitat and improving water quality conditions in the lagoon during the past two decades, a number of fairly recent, possibly interconnected wildlife-related mysteries remain unsolved. They include:

- The skin disease *Lobo mycosis* occurring on much of the lagoon's resident dolphin population
- Fibropapillomas lesions on many of the green turtles found in the lagoon
- Increased incidence of tumors in hard clams
- Decreases in the population of horseshoe crabs
- The recent appearance of saxitoxin in puffer fish in the northern lagoon, resulting in a ban on catching puffers throughout the lagoon and health advisories regarding human consumption of these fish
- Sporadic occurrence of "spicy" tasting clams
- The appearance of invasive species such as the Australian spotted jellyfish (*Phyllorhiza punctata*) in the central lagoon and the exotic macroalgae *Caulerpa brachypus* in the southern portion of the estuary



To address these problems, the IRLNEP is taking the lead in forming an Indian River Lagoon Task Force. The task force's goals will be to integrate monitoring and research results to determine if a commonality of cause exists and how we might prevent or reduce future occurrences.

Key stakeholders in supporting CCMP implementation have continued to respond to IRLNEP's priority challenges of reducing stormwater discharges to the lagoon and enhancing valuable wildlife habitat through invasive plant control, endangered lands acquisition and reconnection of impounded wetlands to the estuary. The St. Johns and South Florida water management districts continue to work in unison, collecting and managing technical data to develop pollutant load reduction goals (PLRGs) as a precursor to the setting of total maximum daily load (TMDL) allocations by the Florida Department of Environmental Protection (FDEP). The water management districts, the U.S. Fish and Wildlife Service, mosquito control districts and others continue to reconnect marshes previously impounded for mosquito control purposes, restoring the wildlife and water quality benefits of these wetlands.

Local governments continue to pursue partnerships with the water management districts and FDEP and funding from EPA to implement stormwater retrofit, sediment source reduction and habitat restoration projects valued at over \$30 million annually. Citizen volunteers continue to monitor water quality and collect valuable data for lagoon managers on a weekly basis. School children are learning about lagoon ecology issues through the Martin County Environmental Studies Center Camp WET program, the St. Lucie County Marine Center, the Environmental Learning Center in Indian River County, the Brevard Zoo, Volusia's new Marine Science Center at Ponce Inlet, and the Marine Discovery Center in New Smyrna Beach. Other residents are educated about the lagoon's diversity and value at numerous festivals, sportfishing venues and local environmental events.

Knowledge of the lagoon's unique and varied biodiversity continues to grow through the success of the Indian River Lagoon online Species Inventory directed by the Smithsonian Marine Station at Fort Pierce at <http://www.serc.si.edu/sms/irlspec/index.htm>. NASA is enhancing the quality of diagnostic research into seagrass and water quality conditions through multi-spectral imagery and mapping. Citrus growers are implementing agricultural best management practices (BMPs) to reduce nutrient and suspended solids discharges to the lagoon under the direction of the U.S. Department of Agriculture's Natural Resources Conservation Service and the state's Institute of Food and Agricultural Science's Cooperative Extension Service and local soil and water control districts.

Following the successful environmental muck dredging projects in Crane and Turkey creeks in southern Brevard County, the St. Johns River Water Management District prepared plans for the dredging of the St. Sebastian River, targeting the removal of more than 2 million cubic yards of sediment, with funding assistance from the



Mat O'Malley/SJRWMD

Mangroves are important to many of the lagoon's resident wildlife for food and habitat.

Young mangroves are held in place and protected along the lagoon's shoreline by plastic pipe that allows the trees to become established.

Florida Inland Navigation District. St. Lucie County, working in cooperation with various partners, is targeting 300,000 cubic yards of muck for removal in Taylor Creek, and will soon begin working on a muck removal plan for the St. Lucie Estuary under the

Restore a Florida Treasure

Hook up now at your local tag office

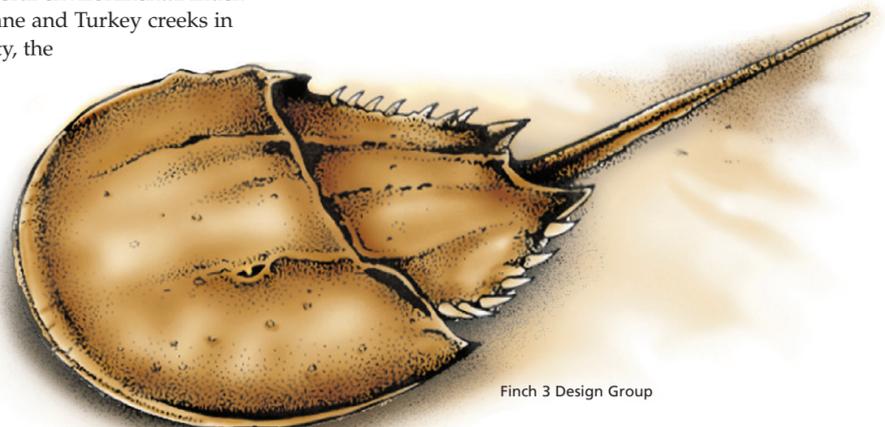


South Indian River Lagoon Restoration Plan in conjunction with the U.S. Army Corps of Engineers.

Since 1995, motorists have been pitching in by buying Indian River Lagoon specialty license plates. So far, the "snook tag" has raised more than \$3 million dollars for projects that include sediment traps, mangrove plantings, shoreline enhancements, Brazilian pepper tree "busts," and environmental education programs and centers throughout the estuary. Every dollar raised is returned to the county where it was generated. What's more, license plate funds are used to leverage millions in matching project dollars.

To learn more about the Indian River Lagoon and the many projects being implemented throughout the estuary, please visit the following Web sites:

- <http://irl.sjrwmd.com>
- <http://141.232.1.11/org/exo/mslsc/irl/index.html#>
- <http://www.epa.gov/owow/oceans/lagoon/>
- http://www.sfwmd.gov/org/wrp/wrp_ce/2_wrp_ce_lagoon/snook_tag.html



Finch 3 Design Group

Indian River Lagoon challenges/emerging issues

Australian spotted jellyfish

(*Phyllorhiza punctata*)

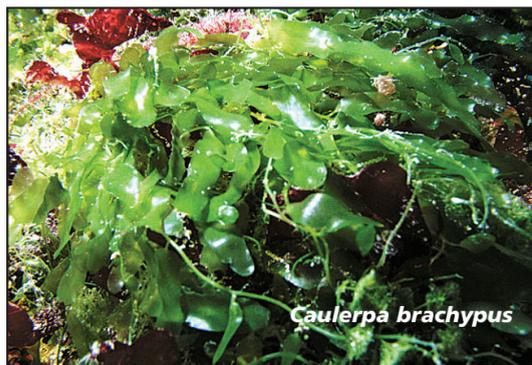
The Australian spotted jellyfish, a native of the Indo-Pacific, was first found in the Indian River Lagoon in the Melbourne area in the summer of 2001. Spotted jellyfish were also seen in the summer of 2002, but none were sighted in 2003.

Spotted jellies devour huge numbers of fish eggs, larvae and other microzooplankton. It is believed that this species reached the lagoon as polyps attached to the hulls of ships passing through the Panama Canal.

You can help by joining DockWatch, a program that allows the public to monitor spotted jellyfish and other invasives and share their sightings with scientists. For more information, visit DockWatch online at <http://dockwatch.disl.org>.



Harbor Branch Oceanographic Institution



Harbor Branch Oceanographic Institution

Caulerpa brachypus

The marine algae *Caulerpa brachypus* is a nonnative species originating in the Pacific Ocean. It may either have arrived in the lagoon region in ship bilges or have been discarded by aquarium hobbyists. This algae has no known natural controls in Florida waters and can spread rapidly, blanketing valuable natural submersed aquatic vegetation communities such as sea grass or coral reefs. In recent years, scientists have observed this species encroaching over large areas of coral reef in the ocean offshore of Palm Beach County.

In the spring of 2003, several small patches of *Caulerpa brachypus* were observed in the lagoon near the St. Lucie Inlet and Fort Pierce Inlet. By summer, these patches had disappeared. The potential still exists for this species to become established in the lagoon and displace the native submersed aquatic vegetation community.

Several agencies, including the Florida Department of Environmental Protection, the Florida Marine Research Institute, the Indian River Lagoon National Estuary Program, the St. Johns River Water Management District, the South Florida Water Management District, Florida Sea Grant and Harbor Branch Oceanographic Institute, have joined together in an effort to educate the public about this potentially invasive species and have coordinated monitoring programs to detect the presence and possible spread of this species.



Tom Norwood

Toxic puffer fish

Between January and June 2002, 19 cases of puffer fish poisoning were reported to state and federal health officials. In all of these incidents, the affected individuals reported consuming puffer fish caught in the lagoon. Nearly all of the puffers involved in these incidents were caught in the Titusville area, with two separate cases occurring in the Cocoa and Pineda Causeway areas.

Puffer fish poisoning is usually caused by the ingestion of tetrodotoxin, which is found in the internal organs of some species of puffer fish. The recent poisoning cases in the lagoon are unusual. Analysis of the fish tissue found that the toxin involved was saxitoxin, not tetrodotoxin. Saxitoxin is usually found in shellfish, which can cause paralytic shellfish poisoning when affected shellfish are consumed.

None of the numerous algal species found in the lagoon are known to produce saxitoxin. After extensive investigation by the Florida Marine Research Institute (FMRI), it was determined that a common algal species in the lagoon was producing saxitoxin.

Finding that an algal species native to the lagoon is now known to produce saxitoxin is a public health concern, an environmental concern and an economic concern. Public health may be threatened should significant concentrations of saxitoxin be found in clams, oysters or other lagoon species that are commonly caught and eaten. The presence of saxitoxin in the food chain may have contributed to several unusual events that recently occurred in the lagoon (for example, fish kills, horseshoe crab mortalities and dolphin mortalities). Should saxitoxin be detected in shellfish in concentrations greater than allowed by the Food and Drug Administration, this fishery may be closed and its economic benefits to the region lost.

The Florida Fish and Wildlife Conservation Commission has prohibited the harvest of puffer fish from the entire lagoon. FMRI, along with the Florida Department of Agriculture and Consumer Services – Division of Aquaculture, continues to monitor shellfish and several other species for saxitoxin.

Who to call to volunteer

If you would like to join the efforts to help protect the Indian River Lagoon, you can call:

Volusia County

- Marine Discovery Center (386) 257-4828
- Marine Science Center (386) 304-5545
- Environmental Management (386) 423-3303
- Keep Volusia Beautiful (386) 943-4905

Brevard County

- Marine Resources Council (321) 504-4500
- Environmentally Endangered Lands Program (321) 633-2016
- Merritt Island National Wildlife Refuge (321) 861-0667
- Turkey Creek Sanctuary (321) 952-3433
- Keep Brevard Beautiful (321) 631-0501
- Natural Resources Management Office (321) 633-2016
- Environmentally Endangered Lands Program (321) 255-4466
- Brevard County Watershed Action Volunteers (321) 633-2016, Ext. 6073

Indian River County

- Environmental Learning Center (772) 589-5050
- Keep Indian River Beautiful (772) 978-0722
- Indian River County Watershed Action Volunteers (772) 567-8000, Ext. 1511

St. Lucie County

- Harbor Branch Oceanographic Institute (772) 465-2400

Martin County

- Florida Oceanographic Society (772) 225-0505
- Hobe Sound National Wildlife Refuge (772) 546-6141
- Keep Martin Beautiful (772) 781-1222

Learn about the lagoon

Many free sources are available with news about the Indian River Lagoon.

The Indian River Lagoon Update, an eight-page newsletter, is published quarterly by the St. Johns River Water Management District and the lagoon National Estuary Program, in cooperation with the South Florida Water Management District. To be placed on the mailing list to receive a paper copy, call (800) 725-5922 or visit www.sjrwmd.com. The newsletter is also available online.



The two water management districts and various organizations maintain lagoon information on Web sites, including the following:

- <http://lirl.sjrwmd.com>
- www.sfwmd.gov/org/exo/mls/clirl/index.html
- www.epa.gov/owow/estuaries/programs/lirl.htm

Tag sales benefit lagoon



Let others know you support Indian River Lagoon restoration efforts by purchasing a lagoon license plate.

Fifteen dollars from the sale of each lagoon license plate is combined with funding from other sources and used in a variety of ways to restore and protect the most diverse estuary in North America. At least 80 percent of the plate proceeds go to habitat restoration and up to 20 percent to environmental education focusing on the lagoon. No administrative salaries or studies are paid for from license plate revenue.

Proceeds from the sale of the plate are used to protect and restore lagoon habitat and water quality through reconnection of impounded salt marshes, shoreline stabilization, spoil island and mangrove restoration, stormwater treatment and environmental education projects. The tag, sporting a lagoon snook, has raised more than \$3 million, with annual revenues of about \$400,000. With local funding matching tag grants, money for lagoon projects is usually double!

Lagoon license plates are available at all Florida tag offices.

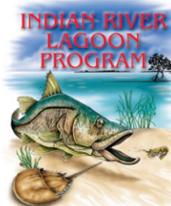
For more information



St. Johns River
Water Management District
4049 Reid Street • P.O. Box 1429
Palatka, FL 32178-1429
(386) 329-4500
(800) 451-7106
www.sjrwmd.com



South Florida
Water Management District
Martin/St. Lucie Service Center
210 Atlanta Ave.
Stuart, FL 34994
(772) 223-2600
(800) 250-4100
www.sfwmd.gov



Indian River Lagoon
National Estuary Program
St. Johns River
Water Management District
Palm Bay Service Center
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Palm Bay, FL 32909
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<http://lirl.sjrwmd.com>



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(404) 562-9345
www.epa.gov/owow/oceans/lagoon/



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701 San Marco Blvd.
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www.saj.usace.army.mil