

THE INDIAN RIVER LAGOON

Connecting People to the Sea

by Duane E. De Freese, Ph.D.

The Indian River Lagoon ecosystem is one of the great estuarine ecosystems in North America. Stretching 156 miles along Florida's east central coast from Ponce Inlet to Jupiter Inlet, the system is composed of three inter-connected estuaries — the Mosquito Lagoon, Banana River Lagoon and Indian River Lagoon. The ocean, through global changes in sea level, shaped these estuaries along with Florida's eastern barrier islands, over many thousands of years. This complex ecosystem represents a unique geological and ecological feature of Florida with profound historical, social, economic and environmental significance.

What Goes in the Lagoon, Stays in the Lagoon

Along the length of this narrow water corridor, a diverse variety of natural habitats are linked to form a complex coastal ecosystem. The Indian River Lagoon exchanges seawater with the ocean between two natural inlets (Ponce de Leon and Jupiter), three man-made inlets (Sebastian, Fort Pierce, St. Lucie) and a lock system at Port Canaveral, which limits water exchange between the Atlantic Ocean and the Banana River Lagoon. This limited exchange with the ocean is the reason these estuaries are referred to as lagoons - shallow bodies of seawater generally isolated from the ocean by a series of barrier islands.

Wind is the primary force affecting water circulation of the shallow lagoon system with tidal influences restricted to a few miles north or south of ocean inlets. As a result, water flushing is limited in most areas, making the lagoon sensitive to pulses of fresh water from land and ocean water at inlets. This exchange is pronounced during seasonal storm events, especially hurricanes. The narrow, shallow lagoon and its poor flushing characteristics also make this system highly vulnerable to pollution from land-based sources.

Connecting People – Providing Lasting Community Value

The Indian River Lagoon connects land and sea. It links human communities in a great blueway that enhances the quality of our lives. It represents an important regional economic engine that provides significant benefits to Florida. So what are some of the capital assets of the lagoon that provide community value, and why should we work together as a region to protect them?

Ecological Value

Stretching from north to south along a climatic transition from the temperate Carolinian Province to the subtropical/tropical West Indian Province, species of plants and animals from both climate zones overlap along the lagoon. This unique geographical feature contributes to its rich biological diversity and recognition as one of the most biologically diverse estuaries in North America. With over 4,000 plant and animal species, the lagoon is a resource of national significance. Many species are economically important, endemic (only found in Florida), or considered rare, threatened or endangered. Many of these species are migratory, linking Florida's eastern coastline to the world.

Social Value

The Indian River Lagoon is an inter-dependent network of people, places and natural resources. While the communities and people along its length are diverse, the lagoon represents a social space, a unique geographical place, and a regional community all linked by its waters. Whether you boat, fish, bird watch, duck hunt, swim, ski or just enjoy the beautiful water vistas and sunsets, the lagoon is a great place for residents to live, work and play. It is a





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natural playground for residents and visitors from around the world.

Historic Value

Evidence of human historic and pre-historic activities exists throughout the Indian River Lagoon region, with some dating back to over 4,000 years ago. Much has changed since these early native Floridian tribes inhabited the region. Dramatic changes occurred after the Spanish Conquistadors and French Huguenots arrived in the mid 1500s. More changes occurred after Henry Flagler realized his 1878 dream to connect Florida's east coast with a railroad. More recently, profound changes

occurred after the creation of NASA's John F. Kennedy Space Center in 1962 - America's premier gateway to the universe. Each of these events, along with many others, shaped the history of human population growth and development along the lagoon. This history defines who we are, where we came from, and provides important insights to develop a unified community vision for the future.

Research and Education Value

The Indian River Lagoon represents a regional corridor of high-technology, scientific research and educational activities. Anchored by the facilities of

Kennedy Space Center and surrounded by over 140,000 acres of natural coastal habitats, the lagoon represents a nexus between technology and nature. Throughout the region, centers for scientific research and education contribute knowledge about the living resources of the lagoon, create jobs, and provide revenues to local communities.

Economic Value

In 1995, the Indian River Lagoon National Estuary Program contracted with Apogee Research Inc. of Bethesda, Maryland to estimate the economic value of the Indian River Lagoon. This research concluded that the total economic value of the entire lagoon system exceeded \$750 million per year. They discovered that the "Indian River Lagoon is many things to many people." Whether it's the contribution of economic value to coastal properties, boating, fishing, swimming, hunting, nature-based tourism or other water-based activities, the lagoon contributes significantly to the region's economic prosperity.

Threats from a Growing Human Population

Today, threats to the Indian River Lagoon come primarily from human



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population growth and coastal development. Storm water and tributary discharge contributes significant pollutants to the lagoon ecosystem. A number of emerging issues have scientists and resource managers concerned about the lagoon's future, including declines in water quality, habitat loss and alteration, loss of biological diversity, invasive exotic species, declining fisheries, toxicity in pufferfish, and symptoms of degrading ecosystem health. There is evidence to suggest that new diseases may be expanding in some of the lagoon's sentinel species--bottlenose dolphin and sea turtles. These emerging issues must be addressed through scientific research and continuous monitoring. A better understanding of complex ecosystem processes in the lagoon will help to ensure that the values it provides are not lost to future generations.

Meeting the Challenge

In the early 1990s, six counties, two water management districts and the National Estuary Program proposed a comprehensive Indian River Lagoon "Blueway" Initiative. The plan was based on a premise that willing seller-willing buyer acquisition of wetlands and their associated uplands was the best way to protect the living resources of the lagoon and maintain public access to its

resources. Over 9,000 acres representing over 626 parcels in 45 targeted areas were identified for future acquisition. In 2005, over a decade after this visionary conservation initiative was created, land acquisition continues through the leadership of county-wide efforts and support from Florida's premier land acquisition program, Florida Forever. In 2005, the Acquisition & Restoration Council of Florida Forever listed the Indian River Lagoon Blueway as a "priority project." With continued rapid coastal development, success of the Blueway project depends on buying land as quickly as possible.

The future of the Indian River Lagoon relies on a greater public awareness of how its resources enrich our lives. Land acquisition is an effective, non-regulatory tool for watershed conservation, and we must support high-quality scientific research to guide decisions affecting resource management and ecosystem protection. All citizens and visitors have a vested interest in sustaining the living resources of the lagoon. Respect for the views of all stakeholders and resource users will be critical to its survival. Working together as a regional community to address issues and solve problems, we can ensure that the Indian River Lagoon continues to provide lasting benefits to our prosperity and quality of life.



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EXPERIENCE THE INDIAN RIVER LAGOON

- Fish, canoe, kayak or hike anywhere along the Indian River Lagoon with an expert guide. Find fishing info at **Coastal Angler Magazine** or **Florida Guidelines** www.flguidelines.com. For nature experiences check out **Volusia ECHO Tourism** <http://echotourism.com>; **Space Coast Birding** www.spacecoastbirding.com; **Space Coast Paddling** www.spacecoastpaddling.com; **Space Coast Hiking** www.spacecoasthiking.com.
- Experience the annual **Space Coast Birding & Wildlife Festival** in Titusville. This annual festival in November has grown to become one of the top environmental events in the United States. Over 100 field trips are offered including great birding and nature trips for beginners and experts. Experience the IRL region with expert nature guides. Meet new friends from all over the world. www.nbbd.com/fly.
- **Canaveral National Seashore**: From pristine beaches to the historic Eldora State House, enjoy nature at every turn. Be sure to visit the trails at **Turtle Mound**, **Eldora** and **Castle Windy**. Marvel in the natural diversity of **Mosquito Lagoon** with awesome canoe, kayak and fishing opportunities. www.nps.gov/cana.
- **"String of Pearls"**- The Indian River Lagoon has three National Wildlife Refuges with world-class activities: **Merritt Island National Wildlife Refuge** includes over 140,000 acres that overlay the John F. Kennedy Space Center. An excellent place to see wildlife, **Black Point Wildlife Drive** is a seven mile, one-way loop which traverses several shallow marsh impoundments www.fws.gov/merrittisland. **Pelican Island** is America's first national wildlife refuge dedicated by President Theodore Roosevelt in 1903 www.fws.gov/pelicanisland and **Archie Carr National Wildlife Refuge** is one of our most important premier sea turtle nesting habitats www.fws.gov/archiecarr in the western hemisphere.



Dr. De Freese, Florida Vice President of Research for Hubbs-SeaWorld Research Institute, holds a B.S. degree in Zoology from the University of Rhode Island; M.S. and Ph.D. degrees in Marine Biology from Florida Institute of Technology. A leader in Indian River Lagoon conservation for over two decades, he maintains an active public speaking schedule with a central message - the living resources of Florida's marine and coastal areas are an engine that drives the economy and quality of life of Florida.

