

Florida's Ocean Challenges

Interim Progress Report
to the Governor



FLORIDA GOVERNOR'S OCEAN COMMITTEE



FLORIDA GOVERNOR'S OCEAN COMMITTEE

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Florida Governor's Ocean Committee

The sound of the sea is the most time-effacing sound there is. The centuries reroll in a cloud and the earth becomes young again when you listen, with eyes shut, to the sea — a young green time when the water and the land were just getting acquainted and had known each other for only a few billion years and the mollusks were just beginning to dip and creep in the shallows; and now man the invertebrate, under his ribbed umbrella, anoints himself with oil and pulls on his Polaroid glasses to stop the glare and stretches out his long brown body at ease upon a towel on the warm sand and listens.

E. B. White, On a Florida Key, 1941

Introduction

Florida is a state that is of the sea. Millions of years ago, back during that “young green time,” land that would come to be known as Florida was being molded by the sea — forming, changing in size and shape, and ultimately becoming a peninsula situated between the Atlantic Ocean and the Gulf of Mexico. Today, the state is a thin strip of land measuring nearly 35.7 million acres, and bounded on three sides by water. In fact, Florida’s ocean has always been its most distinctive feature. Approximately 8,400 miles of tidal coastline wrap around it, and off of its southern tip lie the only living coral reefs in North America. Its territorial waters stretch for three miles off the Atlantic coast and three marine leagues in the Gulf of Mexico, with approximately six million acres of submerged lands underneath.

Indeed, the state’s very identity is fundamentally linked to the ocean. While its first residents, known by names such as Panzacola, Apalachicola, Timucua, Apalachee, Calusa, and Matecumbe, were descendants

of Eurasians who crossed from Siberia to Alaska and literally walked to Florida across an entire continent, Florida's next wave of settlers — Europeans — came to the state over the water. These navigators reached Florida by traveling from the Caribbean, setting the stage for an important link with the south Americas that continues to this day.

And today, millions continue to come - over land or over water - to live and vacation in *La Florida* and to be near its welcoming waters. Inevitably, these millions are attracted by the ocean's beauty, power, and majesty, as well as its infinite ability to relax, rejuvenate, comfort, and inspire.

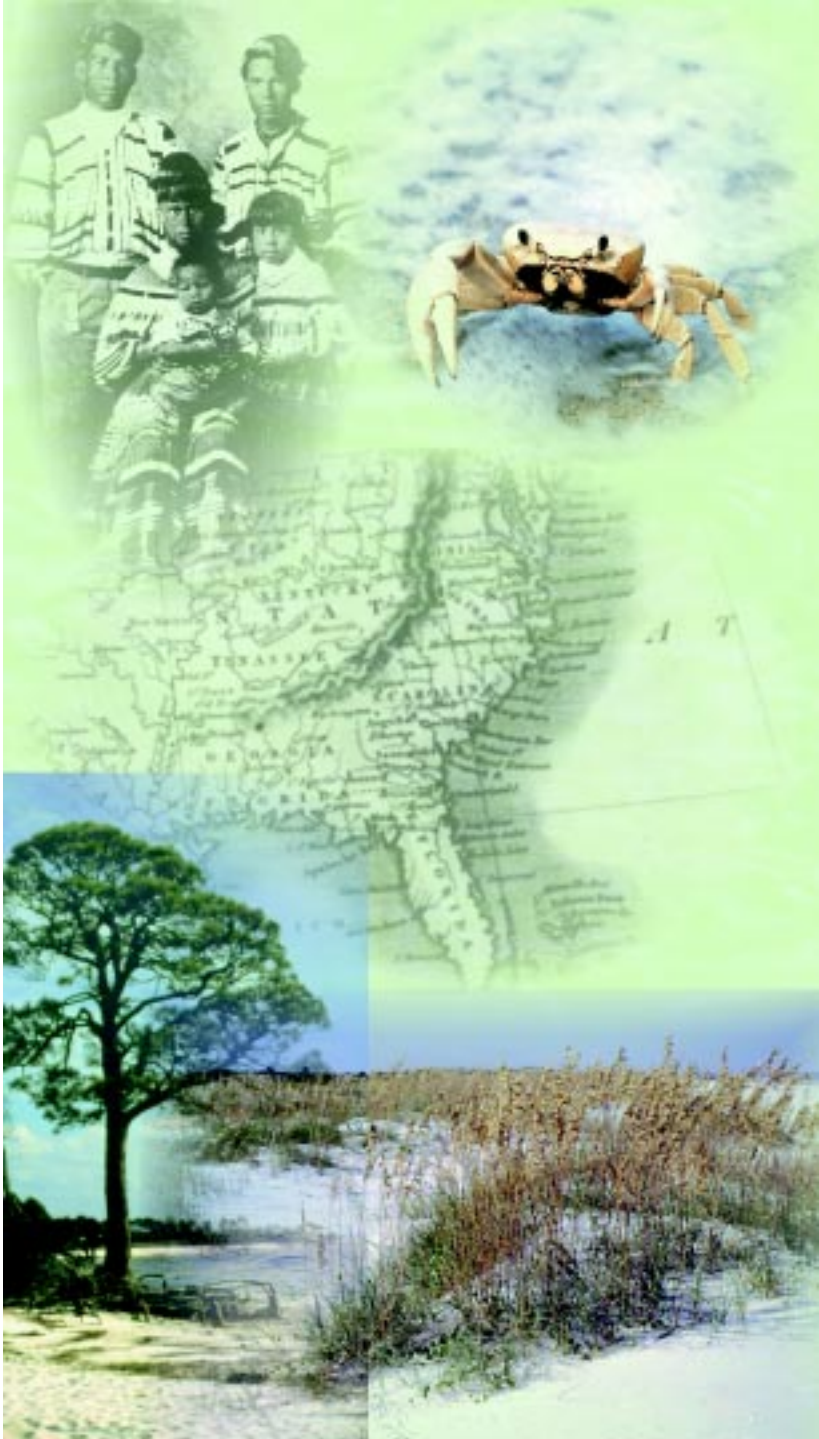
In addition to its intangible powers, Florida's ocean is of profound importance environmentally and economically. It is the source of oxygen we breathe, rain for our crops, water we drink, food we eat, and medicines that maintain our health. As an economic engine, it is the basis for some of Florida's most important industries, including fishing, shipping, and tourism. But while its abilities are great and its resources vast, they are not inexhaustible. Increasing demands for Florida's ocean resources, coupled with an ever-growing ability to recover those resources, are threatening the health and vitality of Florida's ocean.

The United Nations proclaimed 1998 to be the International Year of the Ocean. In so doing, it provided an excellent opportunity to highlight the importance of the ocean to life on this planet. The proclamation has spurred many efforts and activities aimed at raising awareness of the ocean's value. In addition, it has encouraged individuals, organizations, and governments to look for ways to make changes needed to sustain the world's precious ocean resources.

Similarly, Governor Lawton Chiles proclaimed 1998 Year of the Ocean for Florida, encouraging the state to focus on the importance of the ocean to its cultural, economic, and environmental health. Governor Chiles also appointed the Florida Governor's Ocean Committee (FGOC). This Committee is responsible for promoting public awareness of the significance of the ocean to Florida, as well as guiding the state's efforts to develop and implement a coordinated and comprehensive ocean resources management strategy.

The Florida Governor's Ocean Committee met for the first time in February 1998. Since that time, the Committee has held additional meetings to discuss ocean issues of concern to the state. The Committee has also learned from leading experts about those issues, and has begun to formulate what will become a Final Report to the Governor. The Final Report will contain a number of recommendations about actions the state can take to better manage ocean resources in a way that balances protection with reasonable and responsible use.

This Interim Progress Report to the Governor out-





lines the Committee's work so far. It describes what the Committee sees as Florida's "*Ocean Assets*" — those resources that make such a valuable contribution to the quality of life that Floridians enjoy. Further, the document summarizes what the Committee has identified as "*Ocean Management Challenges*" — those issues, conflicts, or problems that threaten the health of Florida's ocean resources. Finally, the report concludes by discussing what the Florida Governor's Ocean Committee will accomplish in the next several months as it prepares its Final Report to the Governor.

The Florida Governor's Ocean Committee

The Florida Governor's Ocean Committee was created by executive order on January 9, 1998. The Committee is composed of 24 members, representing government, conservation, education, science, recreation, and business interests. The FGOC is chaired by University of South Florida President Betty Castor, with Department of Community Affairs Secretary Jim Murley serving as vice-chair. The Committee is assisted by six ex officio members representing federal agencies, and is staffed by the Florida Coastal Management Program, Florida State University, and 1000 Friends of Florida. Process design and facilitation services for the Committee's meetings are provided by the Florida Conflict Resolution Consortium.

The FGOC is charged with several important goals. Governor Chiles has asked the Committee to identify instances where current responses to ocean issues are inadequate or conflicting, and to develop strategies that address those inadequacies or conflicts. The Governor has also asked the FGOC to make recommendations for improving the coordination of management efforts by local, state, and federal governments. Finally, one of the Committee's most important goals is to promote public awareness of the importance of the ocean to Florida.

As the FGOC began its work, one of the first tasks it faced was how to organize its consideration of Florida's many ocean issues. Consequently, considerable effort was put into developing a structure for the Committee's discussions, and a process was designed for formulating a package of recommendations to the Governor. The discussion of ocean issues was organized into three broad topics: environmental protection, living marine resources, and economic development. Issues related to public outreach and education were also added to the Committee's work plan. Finally, the Committee acknowledged the importance of intergovernmental coordination and is addressing those issues as it formulates strategies for the substantive issue areas.

Florida's Ocean Assets

The ocean is of tremendous value to all Floridians. Its living resources provide us with food for our plates, raw materials for industry, and ingredients for new drugs and pharmaceuticals. It offers incredible recreational activities that include fishing, diving, boating, and beachcombing. Millions of passengers and cargo tons pass through the state's ports, generating billions of dollars in revenue. The ocean is a source of energy and minerals. It is also important as the location for a number of military activities. Finally, millions visit Florida each year, making tourism one of the state's largest industries. The following describes some of the value of various ocean resources.

Living Marine Resources

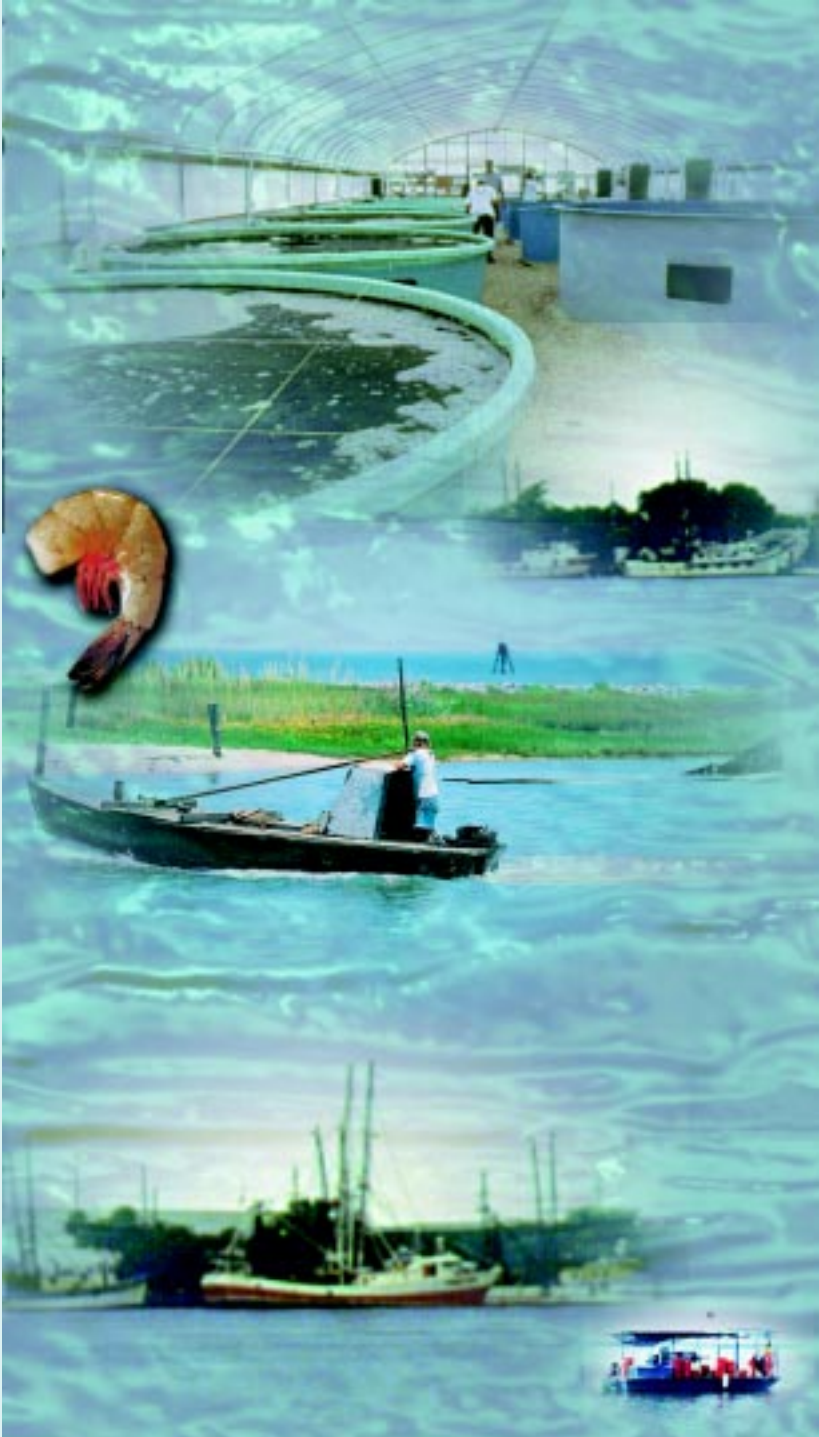
Even though Florida is bordered on three sides by water, many of its residents and visitors remain relatively unaware of the abundance of life within those waters. Florida's ocean is home to a vast array of living marine resources: fish, shellfish, marine mammals, sea turtles, coral reefs, seagrasses, and mangroves are just some of the sea life that add to the state's rich biological diversity. Florida's living resources provide the state with significant economic, environmental, aesthetic, and cultural benefits.

The value of living marine resources

The most obvious benefits of living marine resources are the **direct use values**, which provide both primary and secondary impact. Take fishing as an example. Not only does a commercial fisherman receive value for his landings, but the bait shop owner, the boat retailer, and the gas station owner all profit. In addition, the state receives revenues in the form of sales taxes and license fees. And when one considers recreational fishing by tourists, economic values also include the money spent on hotels, restaurants, and transportation.

In addition to direct use benefits such as the revenue and jobs from commercial fisheries, Florida's living marine resources provide significant indirect use values. **Indirect use values** are those values provided by the natural functioning of an ecosystem. For example, marine ecosystems regulate the Earth's weather, provide oxygen, cycle nutrients, and treat waste. Coral reefs and mangroves protect the coastal areas from the onslaught of storms and provide important habitat for fish, shellfish, and other wildlife. Although indirect use values often outweigh direct use values, they are difficult to measure and are frequently ignored in economic calculations.

Living marine resources also possess **option values** in that various organisms may have as yet undiscovered uses. With advances in technology and growing scientific understanding, the list of benefits from living marine



resources will continue to grow. Finally, there are **non-use values** which capture the spiritual, cultural, and aesthetic qualities of the ocean. While these aesthetic values may be unquantifiable, generations of writers, poets, and artists have documented the inspiration provided by the ocean and its resources.

The value of fishing

As one example of living marine resource use, the economic advantages fishing brings to Florida is substantial. Within the fishing industry, studies show that both commercial and recreational fishing generate significant dollars and jobs. Florida's commercial species include finfish such as bluefish, shark, spotted seatrout, mullet, grouper, pompano, king mackerel, Spanish mackerel, swordfish, red snapper, and menhaden. Invertebrate commercial species include blue crab, spiny lobster, stone crab, scallops, and oysters, and shrimp. Besides feeding people, these harvested resources provide fertilizers and livestock feed, raw materials for industry, and ingredients for medicines.

The commercial fishing industry represents an important component of Florida's natural resource-based industries. In 1997, the commercial fishing industry in Florida landed 121 million pounds of fisheries products, valued at \$211 million dockside. The nation's supply of some species, such as spiny lobster, stone crab, pompano, pink shrimp, and grouper, are supplied almost entirely by Florida production.

Approximately 17,000 commercial fishers, working aboard 11,000 boats and vessels, are employed in the harvest sector of the industry. In addition, Florida has more seafood processing and wholesale facilities than any other state except California. Approximately 6,300 people are employed at over 530 processing and wholesale facilities in the state. Additional people are employed by the various seafood distribution firms, retail operations, brokerages, food service businesses, grocery markets, and restaurants that specialize in seafood.

While Florida-produced seafood is demanded by markets all over the nation and the world, a strong market also exists within the state. Florida residents consume approximately 35 pounds of seafood per capita annually — over twice the national average. Furthermore, the commercial fisheries industry contributes significantly to the Florida economy. Estimates indicate that the economic impact (including direct, indirect, and induced effects) associated with the value-added component of Florida seafood totals approximately \$900 million annually. In addition, the annual wages and salaries associated with commercial seafood related jobs amount to approximately \$600 million.

According to a 1993 study, of the nearly 18 million tourists over the age of 18 who visited Florida in 1991, almost three million participated in saltwater recreational fishing. These saltwater anglers spent an average of \$110 per day for lodging, food, rentals, bait, and other items and services. Multiplying these figures by the number of days fished yields expenditures of \$1.3 billion in 1991. This spending was estimated to support 23,518 retail and service jobs and to generate \$235 million in wages and \$62 million in revenue to the state in the form of sales, gasoline, and corporate income tax.

The same study predicted that the number of saltwater angling tourists will rise to nearly six million by the year 2010, and that days fished and dollars spent will double. Recent data already support this prediction. A study funded by the United States Fish and Wildlife Service shows that angler expenditures in Florida were approximately \$2.2 billion in 1996. Furthermore, this study estimated the overall economic impact of recre-

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ational fishing to the state at over \$4 billion, with approximately \$1.2 billion going to salaries and wages.

Finally, the National Marine Fisheries Service reports that in 1997 Florida led as the top state for all measures of saltwater fishing activity – a distinction the state has garnered for the ninth straight year. Florida led in numbers of participants and numbers of recreational saltwater fishing trips, with 4.4 million saltwater fishing participants, who took 24 million fishing trips. Florida also led in catch and harvest numbers: 69 million fish were harvested, and 72 million were released alive.

The value of aquaculture

Aquaculture has the potential to increase wild stocks in Florida oceans through stock enhancement efforts and to reduce the fishing pressure on native food fish populations. Aquaculture can provide a sustainable supply of reasonably priced, high-quality products to consumers year round. This industry is making a name for itself in the state and the nation. The Florida Agricultural Statistics Service recently reported that Florida's aquaculture industry had sales of \$102 million in 1997, an increase of

29 percent over 1995 farm sales. Florida leads the country in production of farm-raised ornamental fish, with annual sales of \$57.2 million. Aquatic plants are the second most valuable industry segment at \$13.2 million, with clams following closely at \$12.7 million in sales during 1997.

Aquaculture operations depend on clean air and water, and stringent environmental controls have been put in place for any farming in Florida's waters. The industry, as well as state agencies responsible for protecting Florida natural resources, are very aware of problems experienced in other parts of the world with intensive aquaculture farming. The aquaculture industry is working in cooperation with these resource agencies to determine how to avoid any negative environmental impacts to Gulf and Atlantic waters.

The non-consumptive value of living marine resources

Non-consumptive uses of living marine resources, such as wildlife watching, birding, and ecotourism, also generate big dollars in Florida. Experts estimate that total expenditures by residents and non-residents participating in what has been termed "watchable wildlife recreation" (observing, photographing, or feeding wildlife) was \$1.7 billion in 1996. Coastal and marine ecosystems and species draw millions of tourists to watch wildlife. For 1996, as many as 1.8 million people participated in watchable wildlife recreation, taking 8.8 million recreational trips. Of these millions of tourists, approximately 1.3 million people visited wetlands, 1.2 million visited the ocean, 1.3 million people observed, fed, or photographed shorebirds, 1.1 million observed, fed, or photographed fish, and 900,000 observed, fed, or photographed marine mammals.

The true economic magnitude of wildlife watching is not clear until one considers the money spent by those involved in this activity. Participants in watchable wildlife recreation spent the following sums in 1996:

- \$253 million on food, drink, and refreshment
- \$186 million on lodging
- \$127 million on private transportation
- \$63 million on public transportation
- \$18 million on public land access fees
- \$15 million on boats
- \$10 million on boat fuel
- \$51 million on other boat costs

When indirect and secondary economic impacts are considered, the total economic effects generated by watchable wildlife recreation in 1996 are estimated at \$3.5 billion.





Recreation and Tourism

Florida's coastal and ocean areas are a favorite location for leisure and recreational activities for Floridians and visitors alike. The state's beaches hold worldwide appeal as a destination for sun-bathing, swimming, and relaxing. Coral reefs and an impressive number of historic shipwrecks offer adventure to snorkelers and divers. Recreational boaters ply Florida waters, and anglers relish in the bounty of the state's waters. The number of people who partake in these various activities continues to grow. When one accounts for the coastal development and infrastructure that accompanies these activities, such as hotels, restaurants, retail shops, marinas, bait and tackle shops, dive shops, and fishing piers, the magnitude of the impact of recreation and tourism on Florida's economy quickly becomes apparent. The following offers some statistics on the economic value of recreation and tourism activities in Florida.

Tourism

Tourism is a major contributor to the Florida economy. In 1997 the state hosted approximately 47 million domestic and international visitors. The tourism industry directly employs more than 799,000 persons and generates more than \$40.8 billion in taxable spending.

In addition, counties may levy a tourist development tax at the rate of one to five percent of the total charge for the lease or rental of any hotel, motel, rooming house, or apartment. Currently, 41 of Florida's 67 counties levy this tax. The money generated from the tax is distributed to various sectors of the state, with some funds going to beach enhancement, and others to roads and police protection. Revenue generated from the tourist development tax in 1997 was \$266,716,741.

Beaches

The recreational dollars spent by beach-goers alone is significant. In January 1998, the Florida Shore and Beach Preservation Association reported that Florida's beaches host approximately 22.9 million tourists annually. These beach-goers spend \$9.7 billion directly, and the ripple effect on the overall economy is estimated at \$18.9 billion, with 442,124 jobs created, and \$580 million in state sales tax generated.

Diving

Diving, including skindiving, snorkeling, and scuba diving, is a very popular activity in Florida. Not only is Florida the number one dive destination in the United States, it is one of the five most popular dive destinations in the world. Divers are attracted by clear waters, coral reefs, historic shipwrecks, and nearly three hundred freshwater springs. And of course, all of these divers need dive shops and services to support their participation in this popular pastime.

Recreational diving takes place in private, state, and federal areas, including Crystal River Springs, Crystal River State Archaeological Site, John Pennkamp Coral Reef State Park, St. Lucie Inlet State Preserve, and the Florida Keys National Marine Sanctuary. All of these sites attract large numbers of divers. For example, John Pennkamp Coral Reef State Park attracts more than 750,000 divers per year. A reflection of the popularity of diving in Florida is documented by a survey conducted by the Professional Association of Diving Instructors, which shows that for the last twelve years Florida has led the nation in numbers of diving students who are certified, with 22,486 students certified in Florida in 1997.

Recreational Boating

Recreational boating, including sailing, power boats, and personal watercraft, is enormously popular in Florida. According to the Florida Department of Environmental Protection's Office of Waterway Management, approximately 732,000 pleasure boats were registered in Florida in 1996, with about 530,000 of these located in coastal counties. The Marine Industry Association of Florida estimates that recreational boating contributes over \$3.5 billion per year to the state's economy.

Ports

Florida has fourteen publicly owned deepwater seaports: Port of Pensacola, Port of Panama City, Port St. Joe, Port of St. Petersburg, Port Manatee, Port of Tampa, Port of Key West, Port of Miami, Port Everglades, Port of Palm Beach, Port of Fort Pierce, Port Canaveral, Port of Jacksonville, and Port of Fernandina. These port facilities offer easy access to the state's major rivers, waterways, highways, rail lines, and airports, and are important distribution centers for both national and international trade. The ports are economically important to the state and local entities that operate them, and are essential to manufacturers who depend on waterborne transportation for their goods. They are also of great importance to the cruise industry, which increasingly depends on Florida locations as homeports for their growing operations.

Florida's geographic location as a gateway across the Americas, coupled with the fact that Florida is primarily a non-manufacturing state, make international trade an enormously important economic activity. In 1997, \$40.9 billion worth of imports and exports flowed through Florida ports. Commodities included automobiles and other high value equipment and machinery, manufactured consumer goods, bananas, coffee, citrus, sugar, cement, lumber, steel, phosphates, and petroleum products.

In keeping with Florida's historical connection with countries to the south, Florida ports are a major passage-way for imports and exports between the United States

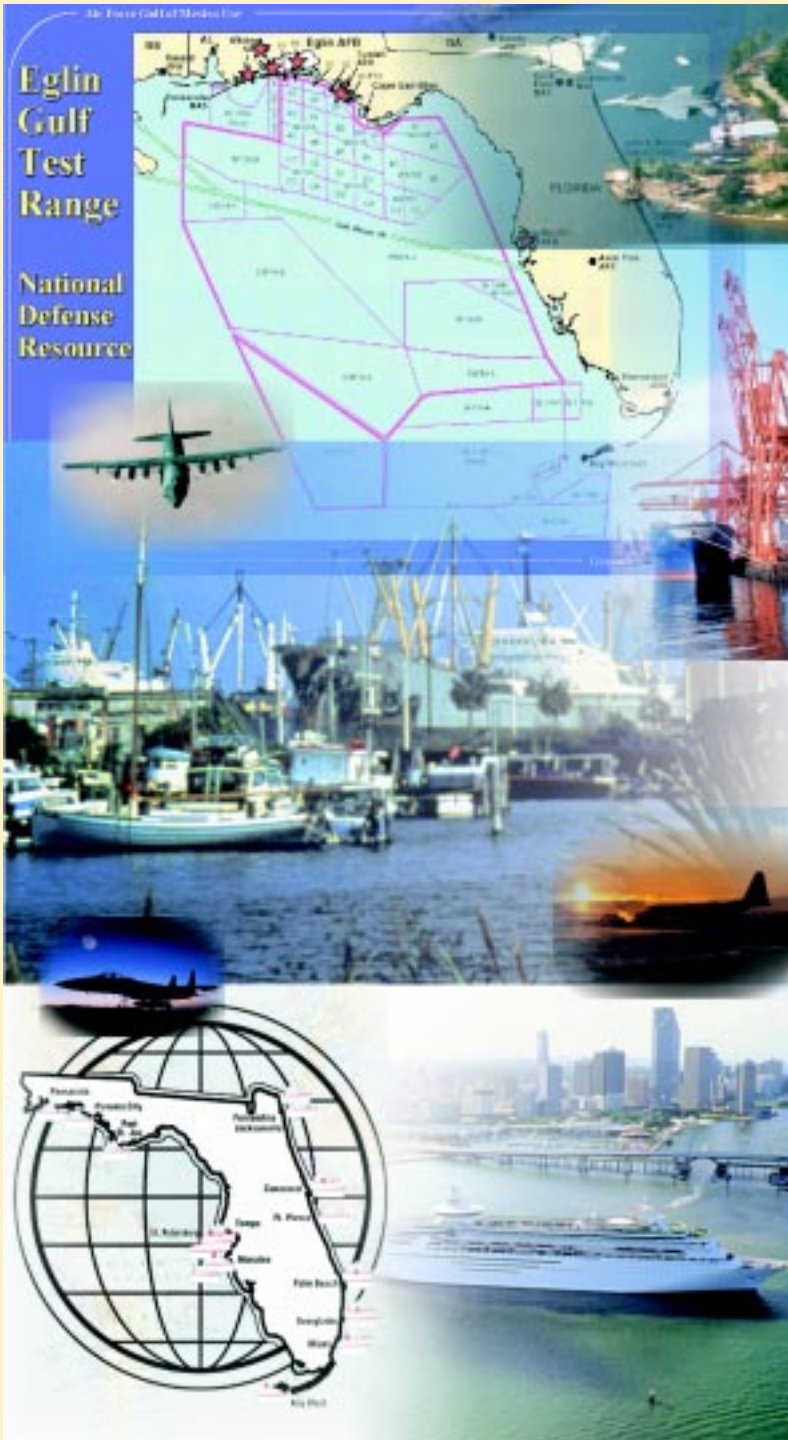
and Latin America. The state is an important part of the federal Caribbean Basin Initiative, a program intended to stimulate the economies of Caribbean nations and to improve trade between Caribbean countries and the United States. In addition, there are a number of federal legislative proposals that, if passed, would significantly increase the amount of goods passing between Florida ports and Latin America. In any event, experts estimate that Florida's trade will reach \$130 billion by 2005, largely due to expected economic progress by Latin America and the Caribbean, which are the state's top trading partners.

Facilities such as the newly created Florida Trade Data Center are helping the state continue as a leader in international trade. Using the latest technology and on-line systems, the FTDC provides a centralized location

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for international exporters, importers, manufacturers, trading companies, agents, distributors, and shippers to obtain current trade information. Services such as those provided by the FTDC are those that strengthen Florida's competitive edge in the international trade arena.

In addition, cruise boat operations are an important component of Florida port activity. Passengers can take transatlantic crossings, multiday cruises, weekend cruises, or one day cruises. The Florida Seaport Transportation and Economic Development Council reports that the Port of Miami, Port Everglades, and Port Canaveral are the world's three busiest cruise ports, with Florida serving almost eighty percent of all North American homeport passenger movements. In 1997, more than 8.3 million cruise ship passengers embarked or disembarked at Florida cruise ports. This is a rapidly growing industry, calling on Florida ports to prepare for increased activity as cruise ship fleets grow in size and numbers to meet the demand of increasing numbers of passengers interested in this leisure activity.



National Defense Operations

Florida oceans provide a unique training and operational environment for 24 Air Force and Navy installations located in the state of Florida. In terms of annual economic value, these installations produce \$18 billion in payroll, construction, and purchased services. Their presence in our state translates into steady, year-round employment for 45,000 military and 25,000 civilian personnel and produces large indirect and secondary economic impacts for the counties in which they are situated.

The military value of Florida-based installations relates directly to ready access of their aircraft and ships to the air and sea space of Florida's oceans. From Pensacola to Tampa, there are six major Department of Defense (DOD) installations. The Eglin Gulf Test Range, largest test and training area in the continental United States, illustrates the heavy dependence of Florida-based Gulf Coast installations upon the eastern Gulf of Mexico.

Through agreement between the U.S. Air Force and the Federal Aviation Administration, the airspace overlying 130,000 square miles of the eastern Gulf of Mexico is cordoned into military restricted and warning areas. This highly instrumented airspace is operated and scheduled by the Air Armament Center located at Eglin Air Force Base in Okaloosa County. During 1997, approximately eighty percent of all scheduled military test and training flights were flown over the vast Gulf water range.

The special features of the eastern Gulf of Mexico have long made it a critical military resource. Its immense size, relative freedom from surface shipping activity, and small volume of non-military air traffic produce a unique environment not easily found in other areas of the United States. Each day Air Force and Navy organizations use this space for training and for testing and evaluating weapon systems for our military forces. Annually, 45,000 missions are conducted, which often require the release of bombs, missiles, flares, and smoke. Additionally, there are more than 340 cross-Gulf missile firings and 1200 manned and unmanned drone flights over Gulf waters. These activities make the skies above the Gulf of Mexico an extremely busy place

Marine Education and Research Capacity

Not only does Florida have one of the nation's longest coastlines, it also has a large number of marine educational institutions and programs, aquariums, and research facilities. Several public agencies are also dedicated to understanding, protecting, and developing Florida's ocean resources. At the primary and secondary education level, a number of environmental education programs are offered by schools, private organizations, and state agencies. All of Florida's public and private universities and colleges offer courses on marine topics, and some of them offer specific marine-related academic programs and degrees. Many of these institutions support research on



topics such as marine biology, coastal geology, fisheries economics, maritime history, and ocean dynamics. Several of them have labs on the water and operate their own research vessels to gather data for marine research.

Florida is also home to a number of marine laboratories. In addition to state university labs, institutions such as Mote Marine Laboratories in Sarasota, the Harbor Branch Oceanographic Institution in Fort Pierce, and the Dolphin Research Center in Marathon are just a few of the facilities conducting research. In addition to research, most of these facilities offer educational programs. Educational programs are also offered by many programs and institutions across the state. The International Oceanographic Foundation and the Museum of Science in Miami, the Newfound Harbor Marine Institute in Big Pine Key, Pigeon Key Foundation in Marathon, as well as smaller facilities such as the Panacea Marine Specimen Laboratory are just a few examples.

State agencies such as the Florida Department of Environmental Protection and federal agencies such as the National Marine Fisheries Service have offices in various locations throughout Florida. These agencies are engaged in short term and long term research that enables them to constantly improve management. In particular, the Florida Marine Research Institute serves as the marine research arm for the Department of Environmental Protection. It conducts research, monitors coastal resources, and also works to educate the public about marine resources through various programs and public outreach activities.

The Florida Sea Grant Program makes a valuable contribution to marine education and research in Florida. Part of the National Sea Grant College Program, the Florida Sea Grant Program administers marine-related grants and education programs. It also works to foster awareness of the importance of marine resources through activities such as funding research, supporting graduate student work, and holding seminars and workshops. Extension offices throughout the state expand its capabilities to disseminate information.

The Florida Coastal Management Program (FCMP) is the lead agency that coordinates state government activities related to protecting, preserving, and managing Florida's natural, cultural, and economic coastal resources. In its capacity as coordinator, the FCMP is involved in a number of activities. One of the most important is to develop and execute programs and activities aimed at raising public awareness about marine issues and fostering a sense of stewardship and responsibility for using and managing those resources.

Four of Florida's estuaries — Sarasota Bay, Tampa Bay, Indian River Lagoon, and Charlotte Harbor — are part of the National Estuary Program. Estuaries are cho-

sen for inclusion in the program based on a number of criteria, including the nature and scope of environmental threats, and the demonstration of strong public support for the effort. The program has many aspects, but key among them are assessing and monitoring the area's environmental problems, and public education and involvement. In addition, another federal program, the National Estuarine Research Reserve System, was created to provide funds for acquiring estuarine areas for conducting research and administering educational programs. Rookery Bay, Apalachicola River and Bay, and Guana Tolomato Matanzas are Florida estuaries that are part of the national estuarine reserve system. Florida's

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estuaries that are part of both the National Estuary Program and the National Estuary Research Reserve System serve as living laboratories for gathering and studying data on natural coastal systems and human impacts on the resources.

The Florida Keys National Marine Sanctuary contains over 2,600 square miles of federal and state waters as a specially protected area. The Sanctuary encompasses the length of the Florida Keys on both the Gulf and Atlantic sides. It also includes two existing marine sanctuaries, three national wildlife refuges, a state park, and state aquatic preserves within its boundaries. The Sanctuary aims to protect, preserve, and manage the ecological, historical, and aesthetic resources of the area. It pursues its goals in a number of ways, including a very creative and well-developed education and public outreach program.

Together these public and private institutions provide an impressive capacity for marine education and research in Florida. It is essential that our state continue to support the efforts of these impressive facilities. Enhancing our ocean activities and soundly managing those activities and resources requires not only informed managers, but also educated decision makers and citizenry.

Challenges To Maintaining And Sustaining Florida's Ocean Assets

Even though Florida is blessed with a rich abundance of ocean resources, as well as a wealth of ocean dependent educational and business enterprises, there are a number of challenges that make it difficult to maintain and sustain these valuable resources. For example, there is a need for greater scientific understanding and information about marine resources and how they are affected by human activity. There is also a need for better understanding about the symbiotic relationship between the health of our economy and the health of our ocean resources. Finally, citizens must be educated about the importance of Florida's ocean to develop a sense of stewardship toward our coastal and ocean areas.

Florida needs an ocean resource management framework that is coordinated, comprehensive, and sensitive to the state's important relationships with neighboring states, as well as nations to the south. The state also must determine how to achieve and sustain diverse marine ecosystems. Otherwise, many of the living marine resources we value will continue to decline in health and numbers. Finally, the financial resources needed to improve our understanding, protection, use, and management of ocean resources are required. Paramount to the state's ability to address many of the problems associated with the use of marine resources is the fact that existing mechanisms for managing and protecting these resources are often conflicting, contradictory, or inadequate,

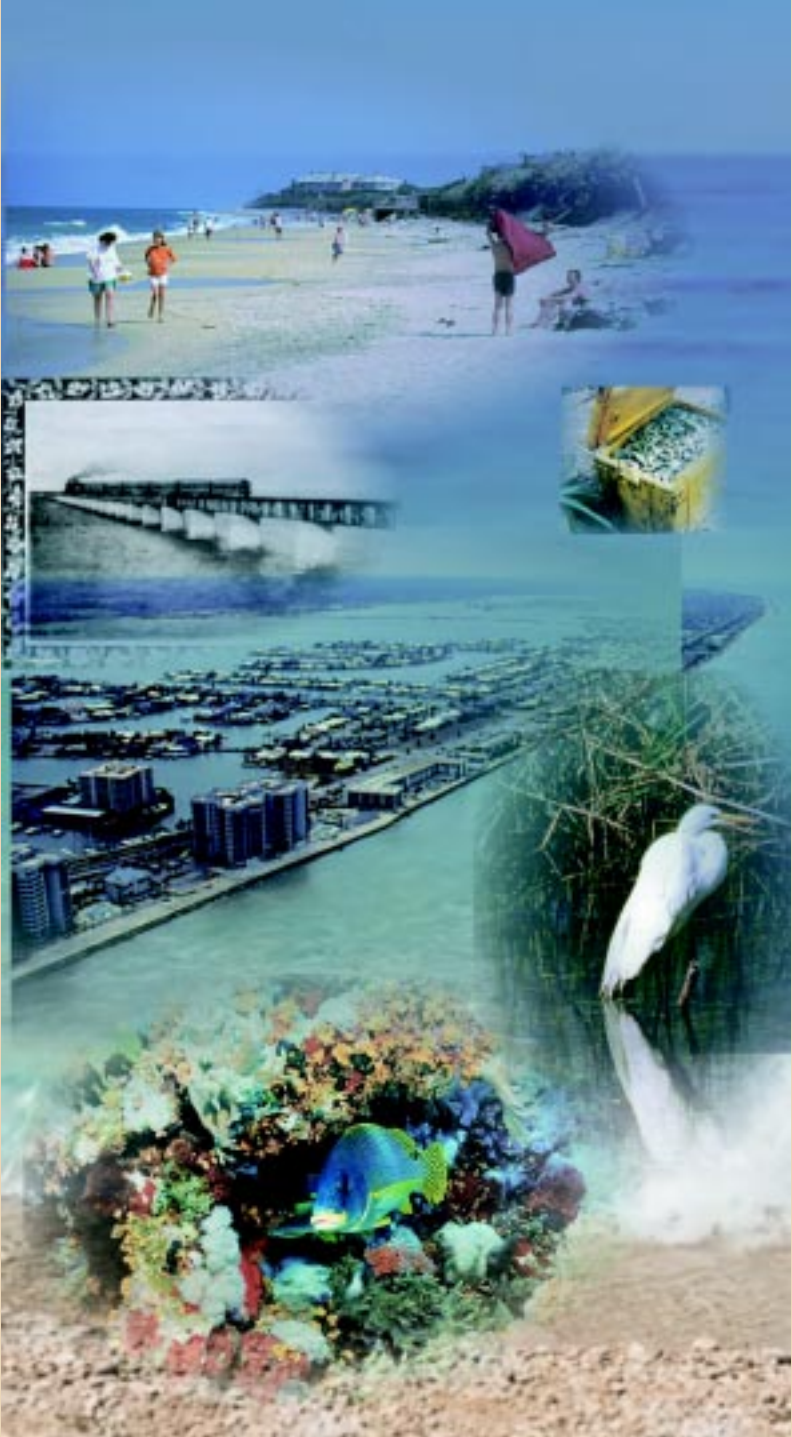
In addition to learning about Florida's "Ocean Assets," the Florida Governor's Ocean Committee has spent the last seven months identifying the "Ocean Management Challenges" the state faces in maintaining and sustaining those valuable assets for the future. The word "Challenge" was chosen by the Committee as encompassing issues, conflicts, problems, or opportunities that must be addressed by the state in order to effectively and comprehensively manage Florida's ocean resources.

In its Final Report to the Governor, the FGOC will delineate a set of Ocean Management Strategies that it recommends the state pursue in order to address the Challenges it has identified. Those Strategies are presently under development and are not included in this Interim Progress Report. Rather, the Challenges, as articulated by the Florida Governor's Ocean Committee, appear below.

Florida's Ocean Management Challenges

Need for Scientific Information and Understanding about Ocean Resources.

Our understanding of basic ocean processes and the ability of the ocean to assimilate many human actions and influences is rudimentary at best. Significant gaps exist in our understanding of the quantity, quality, and value



of Florida's ocean resources. For example, even though scientists have learned much about Florida's living marine resources, there is still a great need for more detailed and comprehensive information. There is an ongoing need for more extensive monitoring of living marine resources and the nature and quality of their habitats. The relative and absolute value of Florida's living marine resources and marine ecosystem functions is poorly understood. Lack of recognition of the linkages among various habitat types and species may limit the effectiveness or efficiency of habitat restoration efforts, and disagreement exists over the value and use of marine reserves to improve fisheries yields.

Furthermore, there is widespread recognition that many of the threats facing marine areas are the result of human encroachment upon the resources. However, significant improvements are needed in our awareness of the interactions between land-based sources of pollution and their effects on the near coastal and marine environments. For example, although many questions remain, there is growing evidence to suggest that human actions either cause or contribute to coastal algal bloom events. These events can have detrimental impacts on fish and shellfish, and cause public health concerns due to exposure to algal toxins. The resulting economic impact of these events on fisheries, shellfisheries, and tourism could be substantial.

In addition, there is growing legal pressure on all coastal states to implement, under expedited schedules, key pollution control requirements under the Clean Water Act. Those requirements call for identifying pollution sources, quantifying pollutant loads, and implementing plans to reduce the loads in order to achieve state water quality standards. This legal framework strains our current scientific understanding of coastal processes; our ability to establish protective levels of pollutants through state standards; and our ability to model or predict the fate and transport of those pollutants as they move from freshwater to estuarine to marine waters.

There is also a need to enhance the development and sharing of information on economic development and employment opportunities for industries using ocean resources, not only across the state, but across the region. Florida is connected physically, chemically, biologically, and socially to the Caribbean. However, there is no baseline of information on existing conditions, and no clearinghouse for ocean resource data integration. While the Florida Trade Data Center is a new resource that attempts to address this need, there must be further sharing of information on both economic development activities and environmental protection strategies with partners in neighboring states, the Caribbean, and the Americas, for the benefit of the entire region.

Finally, while Florida's capacity for conducting marine research is impressive, there is no comprehensive repository or guide to coastal and marine research data,

and no consistent forum for scientists to integrate their knowledge. Without basic, accessible information and scientific understanding, the state's ability to effectively and efficiently use its ocean assets in a sustainable manner or to diagnose and anticipate threats to those assets will continue to be compromised. Furthermore, if the state does not translate the scientific understanding of marine resources and deliver that understanding to the public, it will be difficult to promote the citizen stewardship ethic that is necessary for the continued health and vitality of Florida's fragile marine areas and resources.

Need for a Coordinated and Comprehensive Ocean Management Framework.

Florida's sandy beaches, warm weather, fertile soil, and abundant marine resources have always attracted newcomers, but astronomical growth began about fifty years ago, as trains, cars, and airplanes made the state more accessible, and air conditioning made it more hospitable.

As population figures climb and tourism remains a cornerstone of the state's economy, the state will have to deal with continued pressures as tourism, land development, and their accompanying pollution threaten the very qualities that attract people to the state.

Today Florida is populated by approximately 14 million people, with 78 percent of them living in coastal counties. Future growth is expected to escalate, with projections showing a population of 17 million people by 2010.

Florida's historical growth and prosperity have depended on the quality of life the state offers its residents and the quality of experience it offers its visitors. As population figures climb and tourism remains a cornerstone of the state's economy, the state will have to deal with continued pressures as tourism, land development, and their accompanying pollution threaten the very qualities that attract people to the state.

Population growth has a number of implications for ocean resources, for as the population increases, so do the demands on the resources. Those demands are felt directly in the form of increased use, and also indirectly, because the health of our ocean depends on the quality of the near shore and land environments. Our understanding of marine areas and resources is growing. Along with that understanding is the recognition that all resources near the coast or in the ocean are interconnected, and that the use of any marine resource will have a lasting impact on other marine resources.

Because decisions regarding the uses of the state's

land and freshwater resources will directly affect the health of the near shore and ocean environments, it is imperative that the management of land and water resources and the activities that affect them be interconnected. Florida currently employs mechanisms to balance long term protection of coastal resources with the state's social and economic needs. For example, the Florida Coastal Management Program is a partnership of ten state agencies that works to preserve coastal and ocean resources while providing for their wise and responsible development. Further, Florida's growth management legislation is among the most progressive in the nation—through its mandates the state seeks to manage population growth by steering it toward existing population centers and away from fragile natural areas. Even with these strong initiatives, Florida lacks a comprehensive management framework that integrates the management of ocean resources with land based practices.

The combined and inter-related stresses of population growth and tourism, with their requisite demands for expanding development, are felt directly near coastal areas. Coastal habitats are necessary for fish, shellfish, and wildlife, yet they are being converted to alternate uses. Current development practices are allowing ineffective and inappropriate methods of sewage treatment. This results in excessive nutrient enrichment and bacterial contamination of near shore waters, thereby restricting shellfish harvest and causing public health concerns at swimming beaches. Similarly, pollution from stormwater draining from agricultural, suburban, and urban landscapes is the primary source of water quality degradation for many areas of the state.

As a result of these growth pressures, the ability of natural systems to accommodate coastal development and various land uses is being exceeded, which requires more expensive management and treatment. In addition, many problems result from conflict between existing laws, regulations, and policy. Examples include:

- conflicts between navigational requirements and environmental protection laws (for example, boating impacts on Florida manatees);
- conflicts with state ecosystem management and environmental protection policies and federal requirements for implementing dredging for navigation purposes, as well as least-cost dredge disposal; and,
- funds devoted to attracting visitors to Florida's marine areas greatly exceed those allocated to address the environmental impact caused by increased use of the resource.

In addition to integrating ocean resource management with land-based activities, there is a great need for the state to coordinate and develop a comprehensive policy regarding ocean based activities. Both tourism and

population growth stimulate these activities, including the need for oil and gas exploration and production, mineral extraction, and recreational opportunities. Florida's current policy regarding Outer Continental Shelf oil and gas development activities is to suspend all leasing off Florida's coast until environmental, economic, and sociological studies are completed and to adopt a permanent ban on any further leasing within one hundred miles of the entire coast. Many argue that this policy is at odds with the fact that Florida ranks eighth in the nation in total energy consumption, consuming 802 thousand barrels of petroleum and 516 billion cubic feet of natural gas per day. Nonetheless, even with the Florida ban, the Gulf of Mexico contains the highest levels of drilling and permitting activity of any Outer Continental Shelf area in the United States. The transport of oil (both tanker transport and pipelines) creates an even greater danger of spills, both in number and magnitude, than oil production itself, making effective oil spill response a necessity.

Unlike oil and gas development, Florida currently has no stated policy or program to address marine mining in state waters. Ocean deposits of phosphates, heavy minerals, calcium carbonate sands, and gravel in Florida's near shore and offshore areas will most certainly prompt industry interests in the future. In addition, sand — the state's most common mineral resource — will continue to be in demand for beach renourishment projects.

As more people situate themselves near Florida's beaches, the state will continue to be plagued by beach management problems. Florida's coastline is a dynamic physical system. When it erodes, mechanisms are often employed to control that erosion and protect structures. Those mechanisms, both structural controls such as jetties and seawalls, and nonstructural, such as beach renourishment, can have negative impacts to the beach system and must be employed carefully.

In 1998, the Florida Legislature sought to address beach management problems by enacting the Statewide Strategic Beach Management Plan. The Act calls for a long term management plan that will address erosion control, beach preservation, beach restoration, beach renourishment, and hurricane protection on a statewide level. Funding will start at \$10 million for the first year, \$20 million the second year, and \$30 million in the third and subsequent years for at least 15 years. This new program, however, will not solve all beach management problems by itself. Local governments must continue to make difficult decisions about placement of land uses near our shoreline.

Fisheries management is plagued with jurisdictional conflicts and issues that impede the effective management of living marine resources. Fisheries policy and regulation are determined at the state and federal level by governing bodies created to represent the interests of managers, consumers, and recreational and commercial



fishermen. To effectively address the many conflicts facing Florida fisheries management, the state must continue to work to ensure that representatives on policy making boards are well-balanced.

An additional concern involves Florida's participation on the South Atlantic and Gulf Fishery Management Councils. These councils are responsible for formulating federal management plans under the Magnuson-Stevens Fishery Conservation and Management Act. Florida's representation on each of them is not proportional to the state's population, the length of Florida's coastline, or the value of the state's fishery resources. As a result, federal plans, especially in the Gulf, are not responsive to Florida's particular fisheries management problems.

Economic development activities that include or involve navigation, boating, beach use and development, aquaculture, artificial reef development, recreational and commercial fishing, tourism, mineral development, military activities, and the space industry all have the potential to have profound effects on marine resources. For all of these activities, coordination is needed to ensure that Florida's future economic development is maintained while minimizing the impact of development on ocean and coastal natural systems.

In addition to the need for comprehensive management among local, state, and federal agencies, the state must coordinate its activities with the other states and nations with whom it shares this part of the globe. All states bordering the Gulf of Mexico share many of the same ocean resource issues, as do Caribbean nations and Mexico, especially with regard to environmental protection and fisheries management.

These issues and others place increasing pressure on local, state, and federal officials to make difficult management decisions, to formulate effective and comprehensive policies on the use of ocean resources, and to work with regional officials to coordinate those policies with the policies and activities of other states and nations. All too often, the state's water and ocean resources fall victim to a patchwork of fragmented and frequently contradictory land-use, resource-use, and development regulations. While the decisions are almost always controversial, they could be made more objective and environmentally benign if the proper management tools and associated incentives were available and uniformly implemented.

To ensure that Florida's marine-related policies are implemented uniformly and consistently, the FGO is planning to recommend to the Florida Legislature that an ocean management council be established. The council should effectively represent private resource users, groups interested in resource protection, and the state management agencies. Recommendations about the structure of this council will be included in the FGO's Final Report to the Governor.



Need to Achieve and Sustain Diverse Marine Ecosystems.

To ensure the continued health and vitality of Florida's wealth of living marine resources, the state must work to achieve and sustain diverse marine ecosystems that are capable of supporting multiple uses. Currently, the pressures of growing development continue to cause loss and degradation of important habitat such as wetlands, estuaries, and mangrove forests. In addition, the balance of delicate and complicated marine ecosystems is threatened by overfishing and bycatch in some fisheries. Marine mammals, sea turtles, and seabirds are threatened by increased pollution and disruption of the ecosystems that provide their habitat.

Existing tools could be improved to address some of these threats to living marine resources and the marine ecosystem. For example, protected area management does not always maximize the existing potential to protect resources. Artificial reef development is uncoordinated and impacts are inadequately understood. Restoration and mitigation activities are not evaluated to determine their success. While controversial, there are many potential benefits of marine reserves that should be explored. Finally, the state should have more influence in the federal and international management regimes that address offshore fisheries, marine mammals, sea turtles, and seabirds in order to more effectively participate in efforts to protect those species.

Need for Education about the Ocean.

Education regarding the importance of Florida's ocean resources to the future health of its citizens, to the quality of life that the state offers, and to the continued economic vitality of the state and the region is essential to effectively manage and sustain those resources, and to prevent careless disregard for their conservation. Therefore, in addition to improving our scientific understanding and information about ocean resources, the state must also take care to disseminate that knowledge and information in an effective way to the public and to principal decision-makers throughout the public and private sectors.

"Public" is a broad term that includes Florida residents as well as over 47 million tourists who visit Florida each year. These millions of people often engage in various marine recreational activities, such as swimming, fishing, and boating. Unfortunately, many of these individuals do not feel any "ownership" of Florida's ocean resources, and as a result feel little responsibility to care for them. Many do not understand the delicate nature of Florida's marine environment, and are unaware of many of the state's most pressing ocean issues.

And while the situation is improving, there still exist broad gaps between the public's perceptions of key environmental issues, including the causes and consequences of various actions, and the scientific or professional judge-

ment as to the significance of particular issues. For example, various surveys continue to indicate that a majority of the American public believes most water pollution is the result of wastewater discharges from large corporate entities. On the other hand, most environmental professionals are looking to solve diffuse, nonpoint source problems associated with land use and development as the key to addressing our most critical water quality problems. Reaching the public with information about the importance of ocean resources and the issues they face is the key to creating a stewardship ethic that can help preserve Florida's valuable ocean resources.

Educating students about the ocean is vital to the health of its resources. All too soon, these future leaders will be making critical decisions regarding Florida's precious ocean resources. Furthermore, it has been shown in a number of recent surveys that many parents learn about the environment through their children, lending a "trickle up" effect of educating parents and even grand-

Currently, the pressures of growing development continue to cause loss and degradation of important habitat such as wetlands, estuaries, and mangrove forests. In addition, the balance of delicate and complicated marine ecosystems is threatened by overfishing and bycatch in some fisheries.

parents about important environmental issues. Moreover, formal education provides students with hard facts on ocean issues, filling the gap between public perception and scientific conclusions.

Technological breakthroughs in the last five years have enabled inexpensive video conferencing that uses existing phone lines instead of expensive satellite time. The State of Florida and the U. S. Congress have recently passed telecommunications legislation to encourage the use of videoconferencing in classrooms, known as "distance learning." All state universities, especially the Florida Gulf Coast University, are committed to distance learning and are in the process of building the necessary infrastructure. Mote Marine Lab, Harbor Branch Oceanographic Institution, Seaworld, and other aquariums also have distance learning infrastructure. This network could be a valuable resource for exposing students to pressing ocean issues.

Even with excellent educational programs and resources, Florida faces a number of problems in educating its students about the ocean. Teachers often lack the training necessary to teach ocean issues. While there is a strong, active group of teachers educating their students



about ocean issues, more educators must take advantage of available opportunities to learn more about Florida's coastal and ocean resources as well as methods to teach others about them. Information about marine resources can be incorporated into the curriculum in various ways — from reading *Moby Dick* in literature class, to studying water rights as part of social studies, to measuring the size and weight of fish in a math course. The Florida Department of Education sponsors teacher attendance at marine science workshops, and also supports an environmental education office at the department's headquarters. More specifically, the Florida Marine Science Education Association is dedicated to teaching students about marine science and is an excellent resource for teachers who need information about what and how to teach their students about the marine environment.

It is often difficult to ensure that all young Floridians are learning about ocean issues, not just those in advanced course work. School curriculums are already crowded and new courses are not always feasible. Therefore, in addition to formal education, young people (and their families) should be encouraged to take advantage of the many opportunities for informal learning. Many of Florida's residents live in close proximity to Florida's spectacular ocean resources — visiting them often fuels interest in learning more about them. In addition, marine industries are not only opportunities for student employment, but also indispensable educational assets. Educational efforts targeting ocean issues can lead to the promotion, or even creation, of more marine-related jobs.

Need for Financial Support for Ocean Research, Education, and Management.

Every constituency benefits, in qualitative and quantitative terms, economic and otherwise, from a better understanding of our ocean resources and how our activities enhance or impact those resources; from more effective and efficient management of our environmental assets and wiser decisions regarding development, conservation, and pollution control; and from a broader awareness of the facts and serious issues that will affect the quality of our lives. And, necessarily, financing must be secured to implement both public and private actions that must be undertaken to ensure that ocean resources are managed and used in a sustainable manner for the long term interests of the citizens of Florida.

The time is past for government to be viewed as the solution to all our problems. Surely the time is also past for government to be viewed as the sole financier of solutions. Collective action and investment by the public and private sectors, including “for profit” as well as nonprofit, sectors will be needed. Because all sectors ultimately benefit, all sectors need to make the up front investments to get the returns.

Creating public-private partnerships between ocean related industries and governmental and educational en-

ties responsible for ocean issues will generate a higher awareness of ocean issues. In turn, this type of partnership could foster stewardship and encourage further financial support for the ocean and its resources.

Conclusion

This Interim Progress Report describes the work completed by the Florida Governor's Ocean Committee to date. As the Committee enters the next phase of its work plan, it will be finalizing its recommended strategies for addressing the challenges it has identified as compromising the health and effective management of Florida's ocean resources and their economic uses.

Beginning in January 1999, the Committee will spend several months meeting with citizens from around the state to gain feedback on its recommendations. The Committee will factor that public input into its Final Report, which will be delivered to the Governor on June 30, 1999.

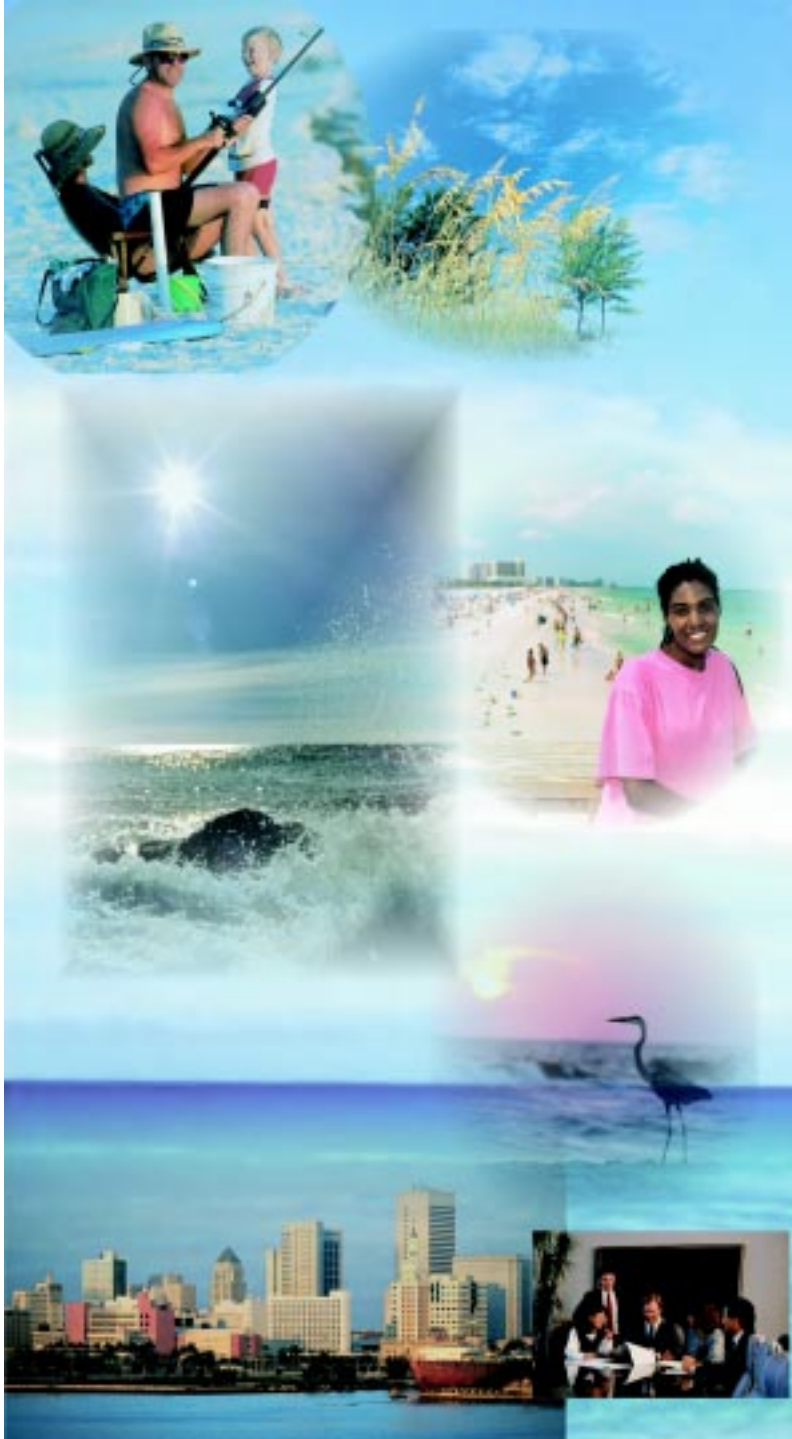
E. B. White continues,

The sea answers all questions, and always in the same way; for when you read in the papers the interminable discussions and the bickering and the prognostications and the turmoil, the disagreements and the fateful decisions and agreements and the plans and the programs and the threats and counter threats, then you close your eyes and the sea dispatches one more big roller in the unbroken line since the beginning of the world and it combs and breaks and returns foaming and saying "So soon?"

For the continued vitality of Florida's ocean the answer must be "yes, this soon."

Florida's ocean resources are an essential part of its environmental and economic well-being, and are integral to its identity. We *must* act — *soon* — to promote the sustained health, beauty, and bounty of our ocean waters.

In this International Year of the Ocean, Florida joins many efforts being conducted globally to raise public awareness of the ocean's importance and to determine how best to manage the ocean resources on which we depend. Through the leadership of the Florida Governor's Ocean Committee, Florida stands poised to develop a truly comprehensive ocean management strategy. As a result, the state will be able to manage its ocean resources in a manner that balances protection with responsible use and ensures the continued existence of a healthy, vital ocean for future generations.



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