

Management Needs to provide improved management of
Florida's coastal and oceans resources.
Submitted by the public and non-state entities June 2006

Requested submission format:

- 1) **A single sentence summary, stated as a need (for instance "Need the ability to determine the condition of the biological communities in coastal habitats");**
- 2) An explanation of the need, describing it sufficiently that the reader can clearly understand the nature of the need (for instance "Developing the ability to determine the 'health' of the biological communities would allow the agency to identify impacted areas, better determine the causes of those impacts, and develop the means to address the causes". Please keep this explanation brief (<300 words) but complete;
- 3) Optionally, provide additional background and elaborating information you think is needed for the Oceans Council to fully understand the need. This can be an attachment. Please do not send more than is necessary for understanding (<500 words).
- 4) Was this need submitted to the Council in 2005?
- 5) Is this need:
 - a) statewide.
 - b) not statewide but has statewide transferability.
 - c) local but significant (explain).

Caribbean Conservation Corp. and Sea Turtle Survival League

Caribb Conservation Corp/Sea Turtle Survival League Priority #1

- 1) **Develop and establish criteria for assessing structure, health and distribution of nearshore hardbottom (worm rock) reefs and their ecological role in the marine ecosystem.**
- 2) There is a need to determine the value of hard bottom (worm rock) reefs as essential fish habitat and in the life cycle of sea turtles. As the pace of beach renourishment increases the impacts to these near shore reefs are also increasing. Understanding these impacts will aid in the designing of renourishment projects. Understating the role these reefs play in the overall ecosystem will aid in assessing mitigation and restoration when impacts can not be avoided. The reefs serve as nursery and forage areas for hundreds of marine species, they contain unique assemblages of algal communities important as foraging habitat for green sea turtles, and provide refuge for sea turtles and other species. Recent research indicates that some of these near shore reefs located near Atlantic coast inlets contain the most genetically diverse assemblages of juvenile turtles ever recorded in their foraging habitats. These turtles found on Florida's worm rock reefs were born on distant nesting beaches throughout the Caribbean and as far away as the Mediterranean. In addition, capture rates of juvenile turtles on these reefs exceeds the capture rates for this age class for any other habitat studied.
- 2) n/a
- 3) Addressed by the Council in 2005- Partially
- 4) Regional. This need exists wherever these reefs are found. To my knowledge the most extensive area of near-shore hardbottom reefs is along the mid and south Atlantic coast of Florida.

Caribb Conservation Corp/Sea Turtle Survival League Priority #2

- 1) **Develop strategies to protect and restore frontal dunes.**
- 2) Frontal or most seaward dunes provide upland protection from storm surge, may be a substantial source of sand to an eroding beach, provide habitat to listed species, and provide important nesting habitat for marine turtles that nest at the toe of the dune in large numbers. In many areas these dunes have been and are being destroyed or built upon.
- 3) n/a
- 4) Addressed by the Council in 2005? – Not sure.
- 5) Statewide. This need may exist on all of Florida's sandy beaches with existing or historical dunes.

Caribb Conservation Corp/Sea Turtle Survival League Priority #3

- 1) **Research and assess long term strategies that help reduce the development pressures adjacent to or on the frontal dunes of eroding and critically eroding beaches.**
- 2) Even before the 2004 and 2005 hurricane seasons about 38% of Florida’s sandy beaches were designated as critically eroding and over half were eroding. At the same time, because there is essentially no coastal building setback, development continues to push seaward to the shore’s edge while the beaches erode inland. Because of the need to protect upland structures from coastal erosion, this dynamic increases the need for sea walls and beach nourishment and ultimately destroys the natural beach. Frontal dune development on eroding beaches also ultimately reduces a beaches natural resiliency to recover after storm events. Developing these strategies would enhance protection of the beach/dune system
- 3) n/a
- 4) Addressed by the Council in 2005? – No
- 5) Statewide. This need exists on most of Florida’s eroding sandy beaches.

Caribb Conservation Corp/Sea Turtle Survival League Priority #4

- 1) **Conduct an assessment of trends and cumulative impacts of sea wall construction.**
- 2) This need exists because of increasing coastal erosion and storm frequency coupled with increasing sea wall construction. Currently the state does not maintain an active sea wall construction data base. Having a better understanding of these trends and impacts may result in stronger policies discouraging sea walls and may also increase public support for coastal setbacks and other beach management strategies such as renourishment. Sea walls also have significant negative impacts to sea turtle nesting habitat. Understanding sea wall construction trends may provide information on loss of nesting habitat to support the development of a state-wide habitat conservation plan (HCP). An HCP could be designed to mitigate for and minimize the impacts.

Sea walls hold back the upland sand and prevent that sand source from being used on an eroding shore. Understanding these impacts may help predict erosion from storms and other causes.
- 3) n/a
- 4) This need was partially addressed in 2005.
- 5) Statewide. This need exists for most of Florida’s eroding sandy beaches.

Caribb Conservation Corp/Sea Turtle Survival League Priority #5

- 1) **Research and develop new coastal policy strategies that consider predicted increased storm frequency and intensity and predicted sea level rise. This includes developing erosion models that consider these potential stressors.**
- 2) The establishment of the CCCL and the 30 Year Erosion Line do not take into account these events. Consequently, they may not fully provide the life safety, property, and beach/dune protections as originally intended.

It takes 3-5 years to reestablish the CCCL when its location has been rendered inadequate by coastal erosion and/or dune recession from storm events. New strategies need to be explored to expedite the reestablishment of these lines when necessary.

- 3) n/a
- 4) Addressed by the Council in 2005? – Yes
- 5) Statewide

Charlotte Harbor National Estuary Program

Charlotte Harbor NEP Priority #1

- 1) **Need to identify gaps in flow data based on ecosystem needs and projected needs for water withdrawals due to population growth, development, agriculture, and mining and then implement data collection to address these gaps.**
- 2) To document changes in surface water flows and patterns due to hydrologic alterations, it is important that accurate, long-term data bases be developed for all basins and watersheds. While many areas have extensive historical flow records, other areas lack this historic record. Accurate data will also be needed to assess the effectiveness of the Action Plans. Action will provide accurate, long-term information on amounts and variability of surface water resources and provide a basis for planning. Identifying gaps in flow data will provide a scientific basis for the establishment of minimum flows and levels and assess future changes related to projected development and consumptive uses.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #2

- 1) **Need to identify gaps in water quality data needed to calibrate the appropriate models used to assess impairments, determine Total Maximum Daily Load (TMDL) limits, and develop Basin Management Action Plans (BMAPs).**
- 2) The Florida Department of Environmental Protection assesses impairments, establishes Total Maximum Daily Load (TMDL) for water bodies within the state which have been identified as not meeting current water quality standards, and reviews Basin Management Action Plans developed locally. For many waterbodies, there are inadequate data to determine if a waterbody is impaired. In addition, coordinating existing monitoring programs and implementing programs to fill data gaps for impairment assessments, TMDLs, and BMAPs is important.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #3

- 1) **Need to assess the bacteria, nutrient load, and base flow impacts of septic tank systems, wastewater treatment plants, and reuse water and recommend effective corrective action.**
- 2) There are potential pollutant impacts from high and moderately dense urban areas relying on septic systems to both ground and receiving surface waters.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #4

- 1) **Need to track and present environmental indicators as they relate to targets.**
- 2) Subsequent to the 1993 U.S. Government Performance and Results Act (GPRA), government agencies are required to develop performance reports that measure management success using indicators and goals. The U.S. EPA has developed 15 evaluation guidelines for developing environmental indicators that includes, among others, the following:
 - Relevance to the assessment;
 - Temporal variability across years;
 - Discriminatory Ability; and
 - Linkage to Management Action (U.S. EPA 2000).Examples of indicators of ecological condition include direct measurements (e.g., total nitrogen concentration), indices (e.g., macroinvertebrate condition index) and multimetrics (e.g., fish assemblage) (U.S. EPA 2000). The Charlotte Harbor NEP developed a series of environmental indicators and targets that was approved by the Management Conference in 2005. Numerous knowledge, monitoring and reporting gaps regarding the approved indicators were identified and will need to be addressed so that the NEP can track environmental changes and success and failures regarding management practices and landuse changes. These indicators and targets will also need refinement as the state of science advances and knowledge gaps are filled. Reference: U.S. Environmental Protection Agency, 2000. Evaluation Guidelines for Ecological Indicators, Edited by Laura E. Jackson, Janis C. Kurtz and William S. Fisher. May 2000, EPA/620/R-99/005, U.S. Environmental Protection Agency, Office of Research and Development, Research Triangle Park, NC 27711
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #5

- 1) **Need to develop methods to enhance seagrass recovery from prop scarring.**
- 2) Seagrasses damaged by scarring are very slow to recover. Research suggests that slow growth is attributable to changes in the sediments where seagrass rhizomes grow. Methods can be developed that reduce seagrass stresses and promote a rapid recovery of damaged areas.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #6

- 1) **Need to identify natural, existing and target water budgets for each basin**
- 2) Water flow has been modified by humans since they first came to the region and continues today. Inadvertent ecological degradation resulted from these modifications. To balance the demands of people for drainage, drinking water, navigation, and recreation with preservation of ecological health, one must first understand water flow. Significant benchmarks for studying volume and timing of flow include natural flows from a time before human influence, flow at the present time, and a practical estimate of future water budgets that would more wisely balance conflicting needs.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #7

- 1) **Need to conduct a variety of surveys to gauge public awareness and concerns and establish a baseline with care to remove bias to monitor awareness and concerns.**
- 2) Since the first draft of the Comprehensive Conservation and Management Plan (1999), the Program has adopted as a Mission Statement, to educate and to motivate the people in order to understand, to participate in, and to implement the CCMP. The goals of the program have been: to increase public awareness, understanding, and support of the action items in the CCMP. In addition, to develop stewardship and a sense of shared responsibility. It is in the best interest of the Program to conduct a variety of surveys in order to measure the present conditions regarding the level of public awareness, understanding, and attitude of the environmental conditions in the study area.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #8

- 1) **Need to identify more accurate nutrient loading rates from various land uses in the Charlotte Harbor Watershed.**
- 2) The amount of pollutants entering waterbodies has important effects on water quality. Thus, it is necessary to understand the relationship between pollutants and land use. Accurate pollutant loading rates from event mean concentration (EMC) and runoff estimates is useful for National Pollutant Discharge Elimination System (NPDES) permits for municipal (and county) stormwater systems and Basin Management Action Plans (BMAPs). For NPDES permits, Rule 62-624.5 FAC requires an estimate for seasonal pollutant load and the EMC of a representative storm for each major outfall or watershed within the MS4, which are included in an annual report. Parameters for all Florida Phase I permits include: Biochemical Oxygen Demand (BOD5) (mg/L), Total Phosphorus (mg/L), Chemical Oxygen Demand (COD) (mg/L), Dissolved Phosphorus (mg/L), Total Suspended Solids (TSS) (mg/L), Total Recoverable Copper (mg/L), Total Dissolved Solids (TDS) (mg/L), Total Recoverable Lead (mg/L), Total Nitrogen (as N) (mg/L), Total Recoverable Zinc (mg/L), Total Ammonia plus Organic N (as N) (mg/L), and Total Recoverable Cadmium (mg/L).
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #9

- 1) **Need to develop a historic and current estuarine mixing model, focusing on salinity, indicator species which are sensitive to salinity changes, and ability to evaluate proposed capital and operations projects.**
- 2) Benefits include improvement of previous hydrologic alterations that results from replacement of the causeway and accurate assessment of the potential for new significant unexpected impacts caused by any proposed changes.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #10

- 1) **Need to determine the relationship between macro- and micro-nutrients and phytoplankton/algae blooms.**
- 2) Land development and population rise is often linked to increased nutrient loading and eutrophication of surrounding water bodies. Locally, within the Charlotte Harbor watershed, there has been quick growth and increased development over the past several decades leading to concerns of water quality degradation, including increased

occurrence and duration of phytoplankton blooms. Phytoplankton blooms occur when conditions are adequate for rapid growth and cell division. This requires sufficient light for photosynthesis, and sufficient concentrations of macro- and micro-nutrients to fuel carbon fixation during photosynthesis. A suite of macro-nutrients (e.g., NH₄, NO₃, PO₄, SiO₂) and micro-nutrients (e.g., Fe, Cu, Zn, B, Mo, Mn) are used during the photosynthetic process at varying ratios. The general ratios of the nutrient requirements are known, however specialized phytoplanktonic groups (e.g., nitrogen fixers) will thrive under conditions outside of the defined ratios. Any one of the nutrients can be limiting phytoplankton production at any one time; if the limiting nutrient is supplied phytoplankton will bloom until something becomes limited. In the open ocean micro-nutrients are often the limiting factor, whereas in estuaries macro-nutrients (e.g., nitrogen and phosphorous) are typically limiting. Identifying the limiting nutrient and the source of nutrients within the system allows for better management.

- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #11

- 1) **Need to evaluate the Impacts of Man-made Barriers to Historic Flows.**
- 2) Historic flow patterns, including timing and volume, are critical needs for the aquatic life in the ecosystem that has evolved and adapted to natural conditions. Large and small opportunities to restore historic flows are possible if decision makers are provided with comprehensive information about them.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #12

- 1) **Need to identify the hydrologic and environmental impacts of reservoirs on estuaries within the watershed (including all types- above and below surface reservoirs for water supply, restoration, or mining).**
- 2) The hydrologic impacts of reservoirs on downstream estuaries will depend on the management priorities established for the reservoirs. If maintaining a certain water level in the reservoir is given a higher priority than maintaining a relatively natural flow to the estuary, then the estuary's water supply will be disrupted. On the other hand, a reservoir can smooth out large flow variations caused by a disturbed upstream water supply, if that smoothing is made a high priority for the reservoir's management. Identifying the impacts would require monitoring water flows and salinity variations within the system. Environmental impacts would include chemical and biological changes to water reaching the estuaries.

- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #13

- 1) **Identify and showcase accomplishments and excellent examples including research findings, restoration, legislative changes, and outreach successes using a variety of methods.**
- 2) The vision of CCMP is rooted in sound science and measured results. Successful implementation of the CCMP is only successful if results are clearly communicated and put to use by public officials, educators, and private citizens alike. Scientific findings lead to sound decision making in the hands of legislators and other public officials. Sharing effective public outreach methods serves to increase environmental knowledge and awareness exponentially across partner networks. Showcasing CHNEP project results is essential for continued legislative and public support of Charlotte Harbor NEP and highlight excellent examples for partner consideration.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Charlotte Harbor NEP Priority #14

- 1) **Develop site specific criteria for dissolved oxygen, chlorophyll a, turbidity / total suspended solids, salinity, and pesticides as applicable.**
- 2) State water quality rules allow local water quality standards called Site Specific Alternative Criteria (SSAC). SSACs provide meaningful water quality standards where:
 - 1) The natural background conditions of the water body exceeds one or more state water quality standards; or
 - 2) Current state water quality standards are not be sufficiently protective of the resource. SSACs are particularly valuable for parameters that show strong diurnal or spatial variation where a water quality standard must be more complex than a simple numeric target. In the case where the natural background conditions of a water body exceeds state water quality standards, a SSAC developed prior to the verification of a water body impairment may prevent the development of a Total Maximum Daily Load (TMDL). A SSAC may also be an important part of the Basin Management Action Plan which implements a TMDL. In this case, the SSAC is developed to help manage the parameter responsible for the impairment.
- 3) n/a
- 4) Not previously submitted to Council.
- 5) Not statewide but has statewide transferability.

Florida Coastal Ocean Observing System Caucus

FL COOS Caucus Priority #1

- 1) **Need to obtain consistent real-time (and near real-time) interdisciplinary physical, geochemical, and biological observations of the coastal oceans and major estuaries within the State of Florida and outwardly to the U.S. EEZ boundary as a basis for informed decision making regarding the conservation, management, and use of the ocean and coastal resources.**
- 2) No Florida observing system integrates physical, geochemical, and biological observations across the various eco-systems within the State. While Florida's existing observing systems have given scientists and researchers well earned expertise, inconsistent funding commitments have prevented the development of a comprehensive state-wide observations that provide, through an integrated data management system, sufficient information and analysis to conserve and manage Florida's Ocean and Coastal Resources consistent with their highest and best use.

The FOCRC Research Plan (FY 2006-2007) proposed a real-time interdisciplinary observing system best established through eight dispersed pilot prototype observing projects in three coastal regions and five major estuary regions over the next three years. Developing such projects along the northwest Florida coast, the Dry Tortugas, the east Florida coast, and in the Apalachicola / Apalachee Bays estuary region, the Tampa Bay estuary region, the Charlotte Harbor estuary region, the Indian River estuary region, and the St. Johns estuary region represents the best scientific approach for the development of statewide real-time interdisciplinary coastal ocean and estuary research, observing, and prediction system.

Such an initiative would allow Florida to coordinate its existing research programs with the national efforts to develop an Integrated Ocean Observing System (IOOS). Described in the Florida COOS White Paper proposal, these efforts would set the stage for a systems of systems providing the scientific and observational basis for well-documented national objectives: detecting and forecasting oceanic components of climate variability, facilitating safe and efficient marine operations, ensuring national security, managing resources for sustainable use, preserving and restoring healthy marine ecosystems, mitigating natural hazards, and ensuring public health.

By examining our ocean ecosystem as a whole, researchers can better predict and respond to the environmental, geological, and weather impacts on Florida's citizens and visitors and better assess and manage the impact of human activities on our ocean and coastal ecosystems.

- 3) See FL COOS Caucus Brochure (also available at:
http://www.nova.edu/ocean/flcoos/COOS_brochure_web_hires.pdf)
- 4) Yes, this need was submitted to the Council in 2005
- 5) State-wide

Indian River Lagoon National Estuary Program

IRL NEP Priority #1

- 1) **Determine the impacts of on-site sewage disposal systems (OSDS) within the watershed on water quality. Develop and implement strategies to address these impacts.**
- 2) Within the Indian River Lagoon basin, approximately 75% of all OSDS are located on soils poorly suited for their use. Similar situations may be found throughout the state. At present it is unclear what portion of the pollutant loadings to surface waters can be attributed to OSDS. In other areas OSDS have been found to be a significant source of pollutants.
- 3) n/a
- 4) Submitted 2005? No
- 5) Regional with statewide application

IRL NEP Priority #2

- 1) **Coordination of monitoring efforts**
- 2) In most basins there are several entities including federal, state, local/regional governments, academia, private industry and interest groups conducting water quality or resource monitoring. In some basins, water quality and resource monitoring programs are well coordinated with well-defined goals and objectives, consistent sampling methods/protocols and common QA/QC procedures. In other basins, there may be some coordination of portions of the monitoring effort. In still other basins there is little coordination.

Inconsistency in parameters monitored, monitoring methods and QA/QC procedures have resulted in the inability to compare results between or within basins. In an effort to improve the effectiveness and efficiency of monitoring programs a group should be established to coordinate monitoring efforts on both a regional and state-wide basis. One product that could come out of this coordinated effort would be a regular (annual? biennial? other?) Florida Coastal Conditions Report providing coastal residents with an assessment of the condition of the coastal resources throughout the state and in their vicinity.
- 3) n/a
- 4) Submitted 2005? No
- 5) Statewide application

IRL NEP Priority #3

- 1) **Need enhanced (spatial/temporal) algal monitoring**
- 2) In recent years Florida waterbodies have experienced a series of troubling events, ranging from extensive and long-lived red tide blooms on the west coast to blue-green algal blooms in the lower St Johns River and the St Lucie River to toxic puffer fish resulting from a native algae suddenly assuming toxic characteristics in the Indian River Lagoon. In order to better understand and track these events and protection of public health an enhanced algal monitoring program is needed.
- 3) n/a
- 4) Submitted 2005? No
- 5) Regional with statewide application

IRL NEP Priority #4

- 1) **Need rapid response teams for algal blooms.**
- 2) In recent years Florida waterbodies have experienced a series of troubling events, ranging from extensive and long-lived red tide blooms on the west coast to blue-green algal blooms in the lower St Johns River and the St Lucie River to toxic puffer fish resulting from a native algae suddenly assuming toxic characteristics in the Indian River Lagoon. To better understand these and other events the organization of rapid response teams is needed. Similar to oil spill or hazmat response teams, these teams would be multi-discipline, multi-agency capable of assessing a variety of significant ecological or water quality events. These teams may be organized on a regional or state-wide basis.
- 3) n/a
- 4) Submitted 2005? No
- 5) Regional with statewide application

IRL NEP Priority #5

- 1) **Need ecological indicator/index development**
- 2) Need/Background: A suite of ecological indicators or indices of the condition of coastal waters and resources is needed. The condition of these indicators or indices would provide the general public and decision makers with information on the present condition of coastal waters or resources and the ability to compare with previous conditions. These indicators/indices would also serve managers as an indication of the effectiveness of management actions. These indicators/indices may be state -wide or on a regional basis. These indicators/indices would also serve managers as an indication of the effectiveness of management actions. In addition, the indicators/indices should be able to be rapidly applied as well as understandable by the general public.
- 3) n/a
- 4) Submitted 2005? No

5) Statewide

IRL NEP Priority #6

1) **Need a coordinated public involvement/volunteer program.**

2) Given the extent of research and other needs identified by the Florida Oceans and Coastal Resources Council it is unlikely that funding will be available to provide staff to accomplish all these needs in a timely manner. One means of addressing this personnel shortfall may be the use of volunteers. Using volunteers can also increase the commitment to resource stewardship of the general public.

It is suggested that coordinated effort be undertaken to recruit and coordinate volunteers, working with existing NGOs such as Audubon, Sierra and local interest groups.

3) n/a

4) Submitted 2005? No

5) Statewide

Ocean Conservancy

Ocean Conservancy Priority #1

- 1) **Need to ascertain the ecological effects of fishing on marine habitats and communities, especially coral reef communities.**
- 2) The Oceans and Coastal Resources Act specifies the need for Florida's research management to continue transition to "an ecosystem-based management approach." As noted in the FOCRC Annual Science Research Plan, "Management of marine resources using zoning is integral to EBM." (p. 30). The direct and indirect effects of fishing are major disturbances to ocean ecosystems (id., at p. 8), particularly coral reef communities. For example, in its National Action Plan to Conserve Coral Reefs, the U.S. Coral Reef Task Force (CRTF) identified two fundamental themes for immediate and sustained national action: 1) understanding coral reef ecosystems and the natural and anthropogenic processes that determine their health and viability, and 2) quickly reduce the adverse impacts of human activities on coral reefs and associated ecosystems, by creating an expanded and strengthened network of Marine Protected Areas. One of the Core Conservation Principles of the CRTF National Action Plan is to "apply marine zoning, including marine protected areas and no-take ecological reserves – in order to protect and replenish coral reef ecosystems by minimizing harmful human impacts and user conflicts in important habitats." According to the CRTF, "although fishing is considered to be among the most destructive and pervasive threats to coral reefs in the United States and worldwide, relatively few existing MPAs address this activity directly." Consequently, there exists a great management need in Florida to ascertain the direct and indirect ecological effects of fishing on marine habitats, especially on coral reef ecosystems. In addition to degrading the ecological integrity of coral reef ecosystems, excessive fishing also conflicts with other legitimate non-consumptive use and enjoyment of these public-trust resources, such as the ability of the public to study, enjoy, and experience unexploited marine habitats with a natural abundance and diversity of native marine plants and wildlife.
- 3) Additional background and elaborating information will be provided during the public presentation period.
- 4) Unknown. This is a Council priority from 2005 (Research Component #'s 12, 15, 41, and 46).
- 5) This need is statewide.

Sarasota Bay National Estuary Program

Sarasota Bay NEP Priority #1

- 1) **Linkages between water quality and red tide.**
- 2) Worldwide, the incidence of harmful algal blooms appears to be increasing in both frequency and duration. A number of mechanisms have been proposed, including the increase in nitrogen loading to coastal waters by anthropogenic activities and long term climatic cycles, or the increase in seawater nitrogen content by precursor blooms of nitrogen-fixing phytoplankton, which, may be in turn stimulated by iron deposition associated with Saharan dust. This work proposes to complement recent research on red tides in the Gulf of Mexico, primarily along the Florida coast.
- 3) n/a
- 4) Was this need submitted to the Council in 2005? No.
- 5) Statewide.

Sarasota Bay NEP Priority #2

- 1) **Stormwater run-off reduction assessment**
- 2) Stormwater runoff from urban areas is now estimated to contribute approximately one-third of the nitrogen load to Sarasota Bay. Some information is available from various sources regarding best management practices (BMP's) to reduce stormwater run-off. However, most stormwater BMP's are focused on solids, and little work has been done on improving nitrogen removal efficiencies. If necessary, conduct tests with swales, bio-retention gardens, stormwater ponds and pervious surfaces to determine applicability in different situations.
- 3) n/a
- 4) Was this need submitted to the Council in 2005? No.
- 5) Statewide. Yes.

Sarasota Bay NEP Priority #3

- 1) **Pollutant Loading**
- 2) The existing pollutant loading model for Sarasota Bay and its watershed is based on land use data from 1990. Stormwater pollution loads priority tributaries are based, in part, on land use data that is now more than a decade old. While this past effort predicted pollutant loads expected to occur in future years, recent patterns of population growth might not be quite what was predicted in the existing effort, and sources and quantities of various pollutant might be different than what was expected. In addition, various efforts to reduce point source loads via upgrading wastewater treatment plant operations and increased reuse of wastewater treatment effluent should be examined to determine their actual, rather than expected, nutrient load reduction impact. Finally, the

previous pollutant loading model used wet deposition nitrogen concentration data from Tampa Bay that probably overestimated this loading source, while not including the potentially significant source of "dry deposition" of nitrogen. An updated pollutant loading model would involve the District partnering with the SBEP, as well as various local, state and federal agencies to design a scope of work for this effort that would update and refine the amounts and sources of various pollutant loads to the bay.

- 3) n/a
- 4) Was this need submitted to the Council in 2005? No.
- 5) Regional but has statewide transferability.

Sarasota Bay NEP Priority #4

1) Seagrasses

2) The SWFWMD conducts aerial photography to assess seagrass acreage on a biennial schedule. Over the past several observational cycles, it appears that total coverage increases seen in the mid-1990's may have slowed or stopped. However, changes in percent continuous and patchy appear to be changing. To establish goals for the restoration of seagrasses, proper protocols and better understanding of important seagrass habitat relationships (e.g., seagrass species, and/or density interacting with habitat value as measured by different biotic parameters) should be established using site specific criteria (e.g., water quality requirements and variations in seagrasses by bay segments). Also, the ability to predict changes in seagrass communities (species, density, and acreage) due to variations in water quality and clarity (e.g., light attenuation) should be improved to enhance goal-setting.

- 3) n/a
- 4) Was this need submitted to the Council in 2005? No.
- 5) Regional but has statewide transferability.

Sarasota Bay NEP Priority #5

1) Establishing Habitat Optimization Targets to Achieve Watershed Management Goals

2) A watershed management approach to habitat restoration provides an effective model to integrate and maximize the environmental benefits of separate but cumulative actions to implement land use changes, adjust the timing, duration, and volume of freshwater inputs to bay waters, and achieve targeted effects on estuarine biota (fish, invertebrate, and vegetation) and productivity. Enhancement and restoration strategies or goals may be crafted through an understanding of the full range of form, function, and need within the several, diverse tributaries of an estuarine watershed. Actions that achieve targeted goals may be implemented discretely within specific tributaries while serving an overall cumulative effect in the larger context of an entire estuarine watershed. In simple terms, not every example of habitat restoration need be implemented within every tributary or sub-basin. The challenge lies in determining through a rational process which

restorative actions should be performed where in order to maximize environmental benefits and cost-effectiveness for the estuarine watershed as a whole.

- 3) A habitat optimization analysis project is proposed in order to identify habitat restoration targets on a sub-basin or bay segment basis which can be later integrated with land use and land acquisition strategies to achieve watershed management goals. Tangible results have been achieved in constructing a variety of restored habitats at “sites of opportunity” across the Bay watershed, including artificial reefs and vegetated wetlands. Similarly, habitat assessments have been made of the functional attributes or composition of these natural and restored sites which serve as critical nursery habitat for sustaining recreationally, commercially, and ecologically important fish and shellfish populations across the Bay watershed. However, future priorities for habitat restoration need to be crafted in a watershed management context; that is, a “big picture” approach which identifies synergistic effects that may be achieved through various types of restoration implemented in optimal locations to achieve desired ecological effects. Findings of prior SBNEP habitat restoration planning and habitat assessment technical projects will be integrated to improve restoration goal setting. A spatial (GIS) analysis will be developed to identify needs, opportunities and constraints for vegetated wetlands, artificial reefs, seawall enhancement and oyster bar restoration. The analysis by bay segment will determine priorities for focus on particular or rare habitat types based on critical spawning or nursery habitat value.
- 4) Was this need submitted to the Council in 2005? No.
- 5) Regional but has statewide transferability.

Sarasota Bay NEP Priority #6

- 1) **Mangrove trimming issues**
- 2) It is recognized that the FDEP is stretched very thin with regard to mangrove trimming enforcement throughout the State of Florida. Several local municipalities (including Sarasota County) are considering requesting that DEP rescind to them the responsibility for monitoring of trimming within their sphere of influence. Although mangrove trimming is practiced widely throughout Florida, very little information exists with regard to habitat impacts from trimming mangroves at different levels. Habitat ramifications could include avifauna, benthos, leaf litter export, seed production, runoff and erosion attenuation, economics, hurricane damage, and nutrient translocation. To ensure proper protection of this important resource, effects of current trimming practices need to be examined.
- 3) n/a
- 4) Was this need submitted to the Council in 2005? No.
- 5) Statewide.

Sarasota Bay NEP Priority #7

1) Identification of fecal sources

- 2) The TMDL exercise has identified several areas in Sarasota Bay that may be impaired due to bacterial contamination. However, identification of sources of bacteria is difficult. Several techniques (*e.g.*, fluorescence tests, genetic libraries, optical brighteners, and isotope tests) are now available, and more are coming on-line that aid the identification of fecal sources. This project would investigate the accuracy, precision, and other relevant aspects of these techniques with a focus on impaired waters.
- 4) Was this need submitted to the Council in 2005? No.
- 5) Regional but has statewide transferability.

Sarasota Bay NEP Priority #8

1) Continuing assessment of restoration projects

- 2) Habitat restoration projects have occurred in Sarasota Bay for over 15 years. Areas at several different stages of regeneration are available for study. Examination of intertidal areas of restoration sites created in the Sarasota Bay watershed is important to continue to improve current restoration practices. Other ecological information for mangroves and wetlands in general could also be obtained. This project would compare the biological (*e.g.*, vegetative, fisheries, benthos) characteristics of restoration sites to nearby natural areas.
- 3) n/a
- 4) Was this need submitted to the Council in 2005? No.
- 5) Statewide.

Sarasota Bay NEP Priority #9

1) Determine the degree of nitrogen (N) loading to Sarasota Bay from different components of residential areas

- 2) Recent indications are that a greater amount of nitrogen loading to Sarasota Bay occurs from stormwater runoff from residential areas than previously expected. Unfortunately, no data exists to quantify exactly which components of residential areas are the major contributors of this nitrogen. Current residential N reduction efforts tend to target home landscape fertilization. However, other influences, such as background decomposition of organic matter, cleansing of atmospheric and other N deposition to roadways, and other sources of N need to be identified and quantified in order to appropriately target educational and regulatory programs for maximum N reduction. This would need to be compared to N loading from various types of natural areas.
- 3) n/a
- 4) Was this need submitted to the Council in 2005? No.
- 5) Statewide.

Sarasota Bay NEP Priority #10

1) Integrated Water Resource Evaluation

- 2) Significant changes in freshwater flows to the Sarasota Bay estuary have occurred during the last century. The predominant changes have been the conversion of natural upland and wetland communities to urban land uses including residential and commercial development and agriculture. With these land use changes, alterations in the timing, duration, and volume of freshwater inputs to Sarasota Bay have occurred which may have significant effects on estuarine biota (fish, invertebrate, and vegetation) and productivity.

A number of projects are currently underway or planned including a number of flood storage ponds (detention), stormwater conveyance improvements, Aquifer Storage and Recovery wells, brackish water treatment/disposal, septic tank replacement/wastewater collection system construction, reclaimed water transmission/distribution, and regional distribution of surface water supplies.

Also, pervious surfaces like porous concrete, porous rubber pavement, and various loosely aggregated materials have been developed to allow a certain degree of infiltration, minimizing stormwater runoff. Compacted fill dirt is conceptually known to decrease rainwater infiltration and increase stormwater runoff. However, the impact of these surfaces is limited by lack of data. Investigation of their effects in actual situations could allow decision-making that could minimize total stormwater runoff and decrease the destruction of natural systems during the construction of additional stormwater retention systems.

- 3) This project would: 1) evaluate the combined effects of development, stormwater management, water supply, and wastewater effluent disposal activities on the ecological resources of Sarasota Bay and its tributaries; 2) analyze the major tributaries and freshwater seeps entering Sarasota Bay to estimate the changes in hydrologic characteristics that have occurred during the past several decades; 3) Evaluate current and proposed water resource projects, their relative inputs and withdrawals from various sources, and an analysis of their potential impacts (e.g., salinity changes, effects on oligohaline-dependent vegetation/biota) on the ecological health of the estuary; 4) determine the influence of various pervious and impervious surfaces in urban developments on soil hydrology and stormwater runoff. The results of the analysis would include a series of recommendations for restoring more natural flow patterns or, at a minimum, reduce peak flows and pollutant (e.g., nitrogen) loads in tributaries to Sarasota Bay that have been impacted by development.
- 4) Was this need submitted to the Council in 2005? No.
- 5) Regional but has statewide transferability.

Surfrider Foundation

Surfrider Foundation Priority #1

- 1) **Need to assess Florida’s biological and social cumulative consequences associated with so-called beach “renourishment” and the projects’ adjacent success/failure of mitigation reefs.**
- 2) As the pace of beach “renourishment” increases the total number of impacts to these beach and nearshore environments are also increasing. Florida needs to develop the ability to determine the cumulative impacts on the interconnected biological communities, via competent pre-and postmonitoring, allowing regulatory agencies to identify a regional perspective of impacted resource areas and species, better determine the causes of those impacts (incompatible sand, project design template, time of year, etc), and further develop policy to address the causes.
- 3) Provide additional background. **SEE ATTACHED PAPERS FOR JUSTIFICATION.**
- 4) No, this need not submitted to the Council in 2005.
- 5) Statewide.

Tampa Bay National Estuary Program

TB NEP Priority #1

- 1) **Need to identify and manage sources of elevated mercury concentrations in fish tissue in Florida's coastal and estuarine waters.**
- 2) All coastal waters in the State have consumption advisories (and are listed as impaired) for several species of marine and estuarine fish due to elevated mercury concentrations in edible fish tissue. The identification and relative contributions of sources of mercury (natural vs. anthropogenic; local vs regional, national, global; atmospheric sources vs. land-based, etc) to coastal waters is the critical first step towards developing and supporting state and local management actions, and toward developing TMDL actions to address mercury-impaired coastal systems.
- 3) See work by Tom Atkeson (FDEP Mercury Coordinator)
- 4) Submitted 2005? No
- 5) Statewide

TB NEP Priority #2

- 1) **Need to develop water and sediment quality targets and habitat criteria for the restoration and protection of the biological communities in tidal rivers, streams and tributaries.**
- 2) Tidal tributaries have a major influence on the productivity and diversity of natural resources in many estuarine systems (Holland et al 2004). Based on preliminary work in Tampa Bay and other state waters, tidal tributaries appear to be subject to a range of anthropogenic impacts and are important nursery habitat for many species of fishery value. However, not enough is known of the conditions within tidal tributaries or the faunal communities that utilize these areas to develop an effective management strategy. Management needs to improve protection and management of fish populations in tidally-influenced tributary systems include 1) determining the contribution of tidal tributaries to fish production, 2) determining effects of various habitat parameters (e.g., watershed condition, water quality, structural habitat, etc.) on fish production in tidal tributaries, and 3) developing measurable water and sediment quality and habitat criteria.
- 3) n/a
- 4) Submitted 2005? No
- 5) Statewide

TB NEP Priority #3

- 1) **Need to develop and implement effective monitoring for estuarine and coastal habitat quantity and quality.**
- 2) Although some sections of the Florida coastal areas have ongoing habitat monitoring programs focused on spatial extent, there is a need to develop and implement monitoring programs to track both habitat quantity and quality in coastal marshes and mangrove forests, seagrass meadows, oligohaline habitats and isolated freshwater wetlands, hard bottom and oyster reef communities, and associated uplands, including natural, restored or created habitats. Also, there is a need to implement a mapping program for invasive plants statewide. Understanding and tracking status and trends are critical and necessary steps towards effective management of these habitats and systems.
- 3) n/a
- 4) Submitted 2005? No
- 5) Statewide

TB NEP Priority #4

- 1) **Need to assess the impacts of septic systems to coastal tributaries and estuaries.**
2. Several recent investigations have focused on the impact of nitrogen loadings from septic tanks in estuaries in Indian River Lagoon, Tampa Bay, Sarasota Bay and Charlotte Harbor. Recent studies have also included bacterial pollution from older, malfunctioning septic tanks. Sites in Tampa Bay were surveyed using a variety of traditional and alternative indicators, and included bacterial source tracking, coliphage testing (for the presence of viruses and indication of recent fecal pollution) and direct pathogen monitoring for viruses and parasites (Tampa Bay Healthy Beaches Program and other Healthy Beaches programs statewide). Some source tracking work has been initiated, but management needs concerning the impacts on nutrient loading and bacterial contamination from septic systems remain, including 1) Determining the factors contributing to failure of septic systems; 2) identifying “hot spots” of malfunctioning septic systems, specifically for nutrient or bacterial-impaired coastal waters; 3) improving effectiveness, accuracy and ease of use of bacterial and viral source tracking methods for use in coastal waters; 4) evaluating adequacy of current septage design standards and monitoring; and 5) evaluating septage spreading as a nutrient and public health concern.
- 3) n/a
- 4) Submitted 2005? No
- 5) Statewide