

# Bay Fish & Wildlife

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A belted kingfisher prepares to enjoy a hard-won killifish breakfast. Kingfishers are common inhabitants of low-salinity wetlands bordering the bay, where they are often seen diving for small fish and crustaceans.

Photo by Bryon Chamberlin

## **Increase On-Water Enforcement of Environmental Regulations on the Bay**

**FW-1****ACTION:**

Continue to seek ways to improve enforcement of environmental regulations on the bay.

**STATUS:**

Ongoing.

**BACKGROUND:**

In the original CCMP, strategies for implementing this action focused on increasing the percentage of revenues from the Saltwater Fishing License allocated to marine law enforcement – an objective which has not yet been achieved, and for which prospects appear dim in the near future.

Despite this, some progress has been made in improving on-water enforcement of environmental laws in the Tampa Bay region. For example, the merger of fresh and saltwater law enforcement agencies within the relatively new Florida Fish and Wildlife Conservation Commission has expanded the pool of officers trained to enforce both salt and freshwater regulations, and provided officials the flexibility to shift officers around to target “hot spots” or priority problems, such as illegal gill-netting. And the revamping of the Wildlife Alert program to offer rewards to citizens who report marine – as well as inland – fishing violations also has helped to boost compliance with on-water laws.

Additionally, an unusual coalition was formed between traditional adversaries on the question of enforcing manatee speed zone laws. Marine manufacturers and boat owners joined conservationists in supporting a bill that redirected part of the fuels tax paid at marinas to the Fish and Wildlife Conservation Commission. The money will grow from \$2 million in 2004 to \$12 million after five years and will pay for an increase in law enforcement on the water. This should save both manatee and human lives as boats slow down in some coastal waters in response to a greater presence of wildlife officers.

Local governments have generally expanded their on-water enforcement presence, as well as assuming a larger role in resource protection and regulation in general. In fact, two substantial manatee/seagrass protection zones have been created by local ordinance in the last three years – one expanding the Weedon Island Preserve in Pinellas County, and another creating a 7-mile-long slow speed buffer in southeastern Hillsborough County. Additional manatee protection zones were established by the state in Terra Ceia Bay and the Alafia River in 2002, and can be enforced by both state and local marine enforcement personnel. Pinellas County expects to adopt yet another seagrass protection zone in 2004, a slow speed zone stretching from the Courtney Campbell Causeway north to the Safety Harbor area. Additionally, several

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new state manatee protection zones, both year-round and seasonal, were adopted in 2004, including an extensive slow-speed zone along the shoreline of eastern Tampa Bay from the Courtney Campbell Causeway to the Gandy Bridge.

But, as with the state, local communities also have limited resources to devote to on-water law enforcement, and the recent shift in focus to Homeland Security has further strained existing capabilities.

To maximize manpower commitments, FWC is piloting a program called “Trained Eyes – Coastwatch” with members of the Florida Guides Association in Tampa Bay. FWC law enforcement officers train professional guides to recognize and report fisheries violations – especially netting infractions. Participating guides are equipped with mobile phones that allow them to contact law enforcement officers directly without having to go through emergency operators. Local FWC officials report that this system has resulted in several arrests and citations of net fishermen violating state law. The program has been so successful that it may be expanded to other parts of the state.

A promising potential substitute for law enforcement may be the increasing number of community-driven boater education initiatives, such as those developed by Tampa BayWatch and TBEP’s Manatee Awareness Coalition. These efforts help to foster good environmental stewardship among boaters and anglers, while also serving as additional eyes on the water to report violations.

Adequate marine enforcement in a water body as large as Tampa Bay will remain a challenge for the foreseeable future. Currently, there are only 28 full-time state marine patrol officers in the Tampa Bay region – or about one officer for every 3,867 registered boats. That is triple the statewide average of one officer for every 1,200 boats – and the Tampa Bay area remains one of the state’s fastest growing.

This action is being redirected to support expansion of boater education initiatives to reduce the need for enforcement, and to promote increased cooperation among federal, state and local law enforcement agencies to maximize effectiveness. Additionally, TBEP will encourage the utilization of new Homeland Security personnel at area ports to identify and investigate fisheries and other marine violations.

**STRATEGY:**

STEP 1 Continue support for boater and angler education initiatives which reduce the need for enforcement.

*Responsible parties:* TBEP, Tampa BayWatch, local governments, FWC, FDEP

*Schedule:* Ongoing

STEP 2 Train homeland security personnel at area ports and waterfront military installations to report and/or investigate fish and wildlife law violations as part of their duties.

*Responsible parties:* FWC Law Enforcement, Tampa Port Authority, Manatee Port Authority, St. Petersburg Port

Authority, MacDill AFB, US Coast Guard  
Auxiliary

**Schedule:** If this option proves to be feasible, training could begin in late 2006

STEP 3 Convene a workshop for federal, state and local law enforcement officials to encourage joint enforcement of new manatee zones, and to discuss efficient methods of maximizing enforcement of marine laws in general.

**Responsible parties:** TBEP, FWC

**Schedule:** Workshops for local and state law enforcement personnel were held in summer 2005 to familiarize them with new state manatee zones in Upper Tampa Bay. Additional workshops will be scheduled in 2006 as manatee zones elsewhere in the bay are posted.

**FW-1**

**FW-2**

**Establish and Enforce Manatee Protection Zones**

**ACTION:**

Increase manatee protection around the bay.

**STATUS:**

Complete. Continue to monitor implementation and support boater education programs.

**BACKGROUND:**

This action appears to be complete as outlined in the original CCMP. Substantial manatee protection zones have been established by local ordinance or state rule near Weedon Island in Pinellas County, around TECO's Big Bend and Port Sutton power plants in Hillsborough County, along the southeastern shore of Tampa Bay from Apollo Beach to Ruskin, and in Terra Ceia Bay. Additional state manatee protection zones were adopted by the FWC in September 2004 and should be posted sometime in 2005. These zones protect shallow-water manatee habitat in the Manatee and Braden rivers, Anna Maria Sound, the Rocky Creek area of Hillsborough County, the South Tampa area between the Courtney Campbell and Gandy Bridges, and Pinellas County from the Courtney Campbell north to Oldsmar.

The Tampa Bay Estuary Program's Manatee Awareness Coalition (MAC) has played a key role in this issue, as has a lawsuit agreement between several environmental groups and state and federal wildlife agencies that has accelerated the creation of manatee refuges and sanctuaries throughout Florida. The counties surrounding Tampa Bay have led the way statewide in manatee protection efforts, opting to designate many protection zones proactively through community negotiation and consensus rather than waiting for state or federal mandates.

Initiated in 1998, the Manatee Awareness Coalition has served as a community forum for open discussion of manatee protection issues, bringing together often-conflicting interests in a cooperative atmosphere. The MAC also spearheaded the creation of the Tampa Bay Manatee Watch program, an innovative education effort that recruited and trained more than 100 volunteers to provide safe boating information and tools to boaters, both on the water and at key boat ramps.

From 1999-2002, Manatee Watch volunteers contributed more than 1,500 volunteer hours and distributed some 1,000 boater kits (containing polarized sunglasses, nautical charts and other useful tools) to area boaters, encouraging boaters to "go slow, pole or troll" in shallow waters where manatees feed or rest. A companion 3-year monitoring program conducted by the Florida Marine Research Institute assessed the effectiveness of the program compared to regulatory initiatives.

Other accomplishments of the MAC include:

- Forging a partnership with U.S. Coast Guard Auxiliary flotillas in Tampa Bay wherein Auxiliary instructors were trained by MAC members to incorporate key messages about manatee and seagrass protection in their popular Safe Boating Course.
- Expanding the Manatee Watch program to waterfront neighborhoods with a high percentage of boat owners. “Neighborhood Manatee Watch” encourages communities to protect manatees by selecting from a menu of activities, such as posting manatee caution signs on docks or creating a neighborhood manatee sighting network. Neighborhoods completing a minimum number of activities are designated “Manatee Friendly Communities” and receive a special sign to post at their entrance. A MAC member serves as a personal advisor for each neighborhood to help them implement their Manatee Watch program.

**FW-2**

Despite this intensive educational effort, monitoring of boater compliance with voluntary go-slow zones indicates that regulation is generally more effective than education in changing boater behavior. While it is possible that more official manatee speed zones may be designated in Tampa Bay in the future, it is not feasible to expect that all areas of Tampa Bay used by manatees will be placed under regulatory protection. Therefore, education will continue to be an important component of manatee protection strategies. The MAC continues to support boater education as a valuable tool in protecting manatees and encouraging bay stewardship in general, and in 2005 launched a new “Bay Friendly Boater” education campaign to provide safe boating tools and information specifically to new boaters.

**STRATEGY:**

STEP 1 Continue to monitor implementation.

- Support local government initiatives to designate additional manatee protection zones if warranted.

**Responsible parties:** TBEP, FWC

**Schedule:** Ongoing, as needed

- Work with the Manatee Awareness Coalition, Tampa BayWatch and other education-oriented groups to refine educational materials and messages to improve boater compliance with non-regulatory manatee protection efforts.

**Responsible parties:** TBEP, all member organizations of the Manatee Awareness Coalition

**Schedule:** Ongoing. The MAC revised its boater education strategy in 2005 and will be producing new programs and materials as a result.

**FW-3**

## **Support Bay Scallop Restoration**

**ACTION:**

Continue to support and monitor bay scallop restoration.

**STATUS:**

Ongoing.

**BACKGROUND:**

While water quality in lower Tampa Bay appears to be sufficient to allow bay scallops to survive, efforts at restoring a viable recreational scallop fishery in the bay have not yet been successful after a decade of work. Possible reasons for this include: high rates of predation on juvenile and adult scallops; historic loss of preferred seagrass habitats; susceptibility to red tide; and mortality caused by excessive turbidity from boat wakes and roller trawls used by bait shrimpers in areas where scallops have been transplanted. The Great Bay Scallop Search, an annual Tampa BayWatch event that recruits volunteers to snorkel grass beds in the lower bay looking for scallops, was halted when the number of scallops reported during the event dipped over time to only a handful and finally to none. The event was revived in 2004 and volunteers found 12 scallops in the bay, giving hope to restoration efforts and incentive to continue the community monitoring survey on an annual basis. However, a severe and prolonged red tide that reached into the lower bay in 2005 impacted scallop survival, and only one live scallop was found in the 2005 Scallop Search.

Previous research efforts have vastly increased scientific knowledge of the water quality and habitat needs of bay scallops, and improved techniques for successfully rearing scallops in hatcheries such as those operated by the University of South Florida.

Currently, the Fish and Wildlife Research Institute, Tampa BayWatch and USF are collaborating on another study of scallop survival in Tampa Bay, funded through the Pollution Recovery Trust Fund. This one-year study will expand transplanting efforts – concentrated in past years on the waters between Tierra Verde and the Sunshine Skyway Bridge — to other areas of the bay where good scallop habitat remains and boat access is restricted. Study sites in this new project include Weedon Island, Cockroach Bay, Coquina Key and waters around MacDill Air Force Base.

Scallops will be placed in these areas in both protected cages within seagrass beds, and in mesh bags suspended from nearby homeowner docks. Scientists will track and compare growth, survival, mortality, and recruitment of scallops in both the cages and the mesh bags, to assess which method works best and which locations appear favorable for scallop survival and reproduction. Funding to expand this project is being sought from the National Marine Fisheries Service.

Recognizing that the factors that led to the bay scallop's decline in Tampa Bay occurred over a long period, and that efforts to bring scallops back to the bay will

likely take a comparable period of time, the Tampa Bay Estuary Program will continue to encourage and support research and restocking efforts.

**STRATEGY:**

- STEP 1 Continue to monitor restocking efforts in the bay. Assist in identifying potential funding sources for research and restocking, and lend support to grant requests for transplanting of scallops in Tampa Bay.  
*Responsible Parties:* TBEP  
*Schedule:* Ongoing
- STEP 2 Continue to support the Great Bay Scallop Search and other scallop monitoring programs.  
*Responsible Parties:* Tampa BayWatch, TBEP, FWC, Mote Marine Laboratory  
*Schedule:* Ongoing, annually or whenever the Scallop Search is held

**FW-3**

**FW-4**

## **Assess the Need to Investigate the Cumulative Impacts of Power Plant Entrainment on Fisheries**

**ACTION:**

Assess the need to investigate cumulative impacts of power plant entrainment and impingement on fisheries.

**STATUS:**

Complete. Monitor implementation of new EPA power plant intake rule.

**BACKGROUND:**

New rules proposed by EPA under section 316b of the Clean Water Act could significantly reduce the number of aquatic creatures killed in power plant cooling water intakes. The proposed rule would require new and aging power plants to install technology to reduce impacts or demonstrate to permitting authorities that protecting wetlands or restoring degraded habitat provides a comparable environmental benefit. The new standards will apply unless a power plant can show its costs for compliance are significantly higher than EPA estimates and outweigh environmental benefits.

Few large power plants in the U.S. have installed the technology necessary to combat significant mortality from entrainment. TECO's Big Bend power plant — where some equipment and screens have been installed to keep organisms from washing through — is an exception.

Most casualties are fish eggs and larvae that pass through the power plant cooling systems (entrainment). Others aquatic animals die after hitting metal screens or racks designed to keep debris outside the plant (impingement). EPA estimates that the rule would affect 550 facilities nationwide and cost \$265 million annually to implement, while producing an economic benefit to recreational and commercial fisheries of as much as \$700 million per year.

EPA expects to finalize the new rule in early 2005, but implementation will not occur all at once. Power plants would be required to comply as their permits come up for renewal.

The rule would affect 25 of 43 power plants in Florida including three in Tampa Bay – TECO's Big Bend and Gannon/Bayside complexes on Tampa Bay's eastern shore and the Progress Energy Bartow Plant at Weedon Island. Collectively, these plants use more than 2 billion gallons of bay water per day to cool power plant boilers that generate steam to produce electricity.

While it is difficult to assess the impact of power plant entrainment and impingement on fisheries because of the absence of baseline studies, estimates from power plant monitoring in the 1980s suggest that more than 350 billion fish eggs and larvae are

lost annually in Tampa Bay. What actual impact that represents, however, is uncertain since only a fraction of larval fish survive to adulthood under natural conditions.

A case study of Tampa Bay conducted as part of the technical review for the new EPA rule estimates that power plants cost the bay almost \$22 million annually in recreational fish losses. Information on the proposed rule and the Tampa Bay case study is available online at [www.epa.gov/waterscience/316b](http://www.epa.gov/waterscience/316b).

Further studies on entrainment and impingement in Tampa Bay are unwarranted at this time.

**STRATEGY:**

STEP 1 Track implementation of new EPA power plant intake rule, expected to be finalized in 2005.

*Responsible parties:* EPA

*Schedule:* Report annually after implementation is initiated

STEP 2 Provide an overview of the new power plant intake rules to the TAC and Management Board, including entrainment and temperature requirements.

*Responsible parties:* EPA and TBEP

*Schedule:* 2005, following finalization of rule

**FW-5**

## **Continue and Expand the Critical Fisheries Monitoring Program**

**ACTION:**

Continue the Critical Fisheries Monitoring Program.

**STATUS:**

Complete. Continue to support long-term funding of the program.

**BACKGROUND:**

The Florida Fish and Wildlife Research Institute's Fisheries Independent Monitoring program (FIM) evaluates the status and trends of fisheries in Tampa Bay and is a key component of the bay's overall monitoring program. The FIM program employs stratified random sampling to determine the abundance and distribution of adult and juvenile species. Two hundred samples are collected monthly at randomly selected sites. Surveys record the number, species and length of fish captured, and other environmental indicators. Researchers also sample fish flesh for mercury contamination and conduct a quick visual inspection for lesions. Monthly fixed-station monitoring has been discontinued in lieu of continuing year-round random sampling, which is a better method for assessing changes in the status of fisheries baywide.

The program is financed by state saltwater fishing license revenues, supplemented by federal dollars from the Sport Fish Restoration Fund and local funding from Tampa Bay Water and SWFWMD. Each year, about \$3 million is allocated for the FIM program statewide, with roughly \$600,000 dedicated to sampling in Tampa Bay.

The FIM program was expanded in 2000 as a result of a comprehensive hydro-biological monitoring program (HBMP) funded by Tampa Bay Water to assess impacts from freshwater withdrawals. Additional monitoring also has been supported by the Southwest Florida Water Management District as a part of the field work being conducted to establish minimum flows and levels.

Sampling has increased substantially in the Alafia River, and the Hillsborough and Palm rivers have been added to the monitoring program. These rivers are being sampled up to the fresh water regions or water control structure. Fisheries monitoring continues in the Little Manatee and Manatee rivers.

Expansion of the program to include sampling further upstream and in under-sampled rivers is yielding a better overall picture of the status of bay fisheries. Permitted water withdrawals from these rivers have made monitoring a key priority. However, the funding for the expanded monitoring is available only for a few years and no long-term sources have been identified.

The pre-operational phase of the HBMP is now complete and a baseline report was submitted to SWFWMD in July 2003. The first post-operational report is due in July 2006.

**STRATEGY:**

STEP 1 Continue the Critical Fisheries Monitoring Program, and evaluate sampling near the new seawater desalination plant to assess potential fisheries impacts. Ensure long-term funding to maintain the program so that it continues to include oligohaline regions.

*Responsible parties:* FWC-FWRI

*Schedule:* Ongoing

**FW-5**

**FW-6**

**Preserve the Diversity and Abundance of Bay Wildlife**

**ACTION:**

Protect important wildlife populations in the Tampa Bay watershed.

**STATUS:**

New action to support research, management and education to protect populations of listed species and other important wildlife in the Tampa Bay watershed.

**BACKGROUND:**

The Tampa Bay watershed supports more than 40 species currently listed as rare or endangered by the Florida Fish and Wildlife Conservation Commission. These animals span the range of bay habitats, from those that dwell in the bay or its major tributaries, to those that reside in the marshes, tidal streams, freshwater wetlands, sandy beaches and upland forests surrounding the bay proper.

Several of these species have been well-documented; the status of others is unclear and warrants further investigation. Additionally, many other species not currently listed as rare or endangered may deserve protection, based on best available information.

For example:

- Recent landings data for blue crabs, a commercially and recreationally important species, indicate a decline in crabs of harvestable size in the bay. However, whether this decline represents a long-term trend, or a temporary downturn based on rainfall, fishing pressure, or other factors, is uncertain. Researchers with the Fish and Wildlife Research Institute are currently conducting a study of blue crabs in the bay which may lead to harvest restrictions – such as a closed season on harvests – by the FWC in the near future.
- Population estimates of horseshoe crabs also are unknown, and this species may face increased pressure from harvest for medical purposes as well as continued loss of spawning beaches due to development. FWRI currently is compiling an inventory of important nesting beaches for horseshoe crabs in Tampa Bay as an important step toward assessing the status of this species.
- Anecdotal reports indicate that seahorses were once common in the seagrass meadows of the bay, and may have declined significantly in recent decades due to loss of habitat or water quality. But no census of seahorses has been conducted, and this species also may face pressure from harvest for the aquarium or medicinal trades. A small survey of seahorses was

conducted in 2004-2005 by University of Tampa researchers with a grant from the Tampa Bay Estuary Program. This study provides important baseline data on abundance, species composition, and habitat utilization.

- Diamondback terrapins are a shy, infrequently seen reptile that inhabits mangrove forests in the bay. Mortality of terrapins in crab traps is thought to be a significant threat to the long-term health of this species throughout its range, but research in Tampa Bay is lacking. As part of a planned derelict crab trap removal program to be launched in Tampa Bay in 2004, herpetologist George Heinrich is documenting terrapin deaths in crab traps, providing important baseline data that may assist in developing effective management strategies for this species.

**FW-6**

A key theme of the October 2003 Bay Area Scientific Information Symposium was the need to better define the role and function of small tidal streams in the bay ecosystem. Although FWRI has documented the importance of the major rivers in the bay system to commercially and recreationally important fish, a similar effort is needed to assess the use of smaller streams and creeks by juvenile or adult fish and shellfish. There are an estimated 100 of these smaller streams flowing into the bay. A two-year Tidal Tributaries Habitat Assessment project will address four tidal tributary systems in 2005-2007.

In addition to these emerging research and management needs, the bay's spectacular bird populations warrant additional monitoring. Audubon of Florida manages and posts some 15 critically important natural or manmade islands in the bay system that annually host as many as 40,000 pairs of approximately 25 species; however, as restoration of manmade spoil islands continues through the efforts of local governments and the Florida Department of Environmental Protection, additional efforts will be needed to protect these expanded nesting areas. Beach-nesting species such as terns, plovers and black skimmers also warrant special attention as their habitat is increasingly limited by coastal development, as do species such as the white ibis which are especially vulnerable to losses of freshwater wetlands that provide food for their young.

This action will serve as an umbrella action to encourage protection of all bay wildlife, and to support research and land acquisition/restoration efforts aimed at preserving the abundance and diversity of Tampa Bay's wildlife.

**STRATEGY:**

- STEP 1 Continue to implement the Tampa Bay Habitat Restoration Master Plan.  
*Responsible parties:* Local governments, state and federal agencies, private entities  
*Schedule:* Ongoing; Updated Habitat Masterplan due in 2006
- STEP 2 Convene a TAC workshop to identify key species at risk and in need of management action in Tampa Bay.  
*Responsible parties:* TBEP, FWC and USFWS  
*Schedule:* 2005

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**ACTION PLAN**

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- STEP 3 Support research/assessment of existing populations of key indicator species.  
*Responsible parties:* FWC-FWRI, USFWS  
*Schedule:* Ongoing
- STEP 4 Solicit TBEP Mini-Grants for specific education, research, or management projects that address key species.  
*Responsible parties:* TBEP Mini-Grant program  
*Schedule:* Initiated in 2005 Mini-Grant cycle
- STEP 5 Increase awareness of bird rookeries with signs, PSAs, and at boat and jet ski rental businesses. Recruit citizen groups and neighborhoods to monitor nesting areas through the Project Colony Watch program.  
*Responsible parties:* Audubon of Florida and local Audubon chapters; local governments; TBEP MAC; FDEP Aquatic Preserves; FWC  
*Schedule:* Ongoing