

Rep A # 16371

**RESOURCE MANAGEMENT ANNUAL REPORT
Biscayne National Park**

**Natural and Cultural Resources Management
2004**

Mission Statement:

The Resource Management Division of Biscayne National Park works towards the preservation, conservation and protection of the natural and cultural resources of the park with a goal to manage these resources in such a way that they are unimpaired for the benefit and enjoyment of present and future generations. We strive as an integrated, professional team to understand the natural and cultural processes and human induced effects on the indigenous wildlife, plants, archeological/cultural resources and their associated communities. Managing with an ecosystem approach, we work closely with other agencies, managers, scientists and staff as partners toward fulfilling the park's enabling legislation and providing recommendations for science based decision making with emphasis upon inventory, monitoring, assessment and restoration of the nationally significant marine and terrestrial environments.

I. NATURAL RESOURCES MANAGEMENT

As a marine park the Resource Management Division is charged with preserving and protecting an estuarine system adjacent to one of the northern most extensions of pristine coral reefs in the world. The primary focus for the natural resources management program of Biscayne National Park (BISC) in 2004 were in the programmatic areas of; (1) water resources management, including water resources delivery systems, and water quality and quantity monitoring; (2) wildlife management, including fisheries management planning, and inventory and monitoring of sea turtle shore bird, raptor and neotropical migratory bird populations; (3) integrated pest management (IPM), including treatment of invasive plant infestations; and, (4) vessel grounding, damage response, assessment, and restoration to seagrass and coral communities. Collectively, RM program staff were able to secure \$(INSERT FY04 TOTAL) in special project, NRM funding support in fiscal year 2004 from independent, non-park sources, as detailed later in this report. Highlights accomplished in 2004 for each of the programmatic areas identified above follow.

A. WATER RESOURCES & ADJECENT LANDS MANAGEMENT PROGRAM (WRALMP)

During 2004 Water resources staff participated in a wide and diverse array of projects, forums, committees and issues. Water resources staff primarily worked on a wide variety of issues primarily related to the comprehensive Everglades Restoration Plan

(CERP), water Quality, water rights and the state regulatory process and adjacent lands issues. Additional specific ongoing projects include the water quality program, Competitive Project Funding, Biscayne Bay Regional Restoration Coordination Team, Historic Conditions, and internal chemical inventory and site plan (the Chemical Hygiene Plan).

CERP

In FY2004 two CERP projects of primary importance to Biscayne National Park were: 1) the Biscayne Bay Coastal Wetlands and Performance Measures (to improve water flow and provide additional aerial extent of coastal wetlands adjacent to the Park); 2) Waste Water Re-use (to compensate for lost water designated to be redistributed upstream). During FY04 Water resources staff primarily participated in 2 of the CERP components that affect the Park. The major component of Park participation was with the Biscayne Bay Coastal Wetland (BBCW) project.

1. Biscayne Bay Coastal Wetlands and Performance Targets for Biscayne Bay

This project will acquire land behind the Park and redistribute water to provide better volume, timing, delivery, and quality to the Bay and the Park. During FY 2004 the Performance Measures, scopes of work for project objectives and background, and project design were completed. In addition preliminary project designs were proposed. BISC Water resources staff are members of the local teams for project development and the Project Implementation Report (PIR) team. This project has the most likelihood of improving the freshwater quality, timing, distribution, and water flow problems to Biscayne National Park. This project borders the Park's boundaries and will potentially re-connect some historic freshwater wetlands to the Park's saltwater wetlands and the downstream bay. It potentially will define how much water the Bay needs. The multi-disciplinary team includes Miami-Dade County, the US Environmental Protection Agency (EPA), US Fish and Wildlife Service (FWS), the Florida Department of Environmental Protection (DEP), and Florida Fish and Wildlife Conservation Commission (FWCC), the South Florida Water Management District (SFWMD) and the US Army Corps of Engineers. The majority of the team is united in agreement on the goals and performance measures for the Bay and the coastal area.

CERP has the main focus of the water resources program for FY 2004. BISC received \$138,000 in funding to implement a large field study of salinity to provide the necessary background information to support the development of a three dimensional model version of an existing US Army Corps of Engineers (USACE) two dimensional model.

This project includes 39 sites with 53 continuous recording salinity meters that are changed every two weeks.



Locations of sample sites

This project will enable the creation of a three dimensional model that can be used to project the impacts and improvements from changes implanted by the Biscayne Bay Coastal Wetlands project of CERP. This project was the main focus of the BISC Water Resources Program and staff time in FY 04.



Buoy and Salinity meter in BISC

In addition to the extensive water resources sampling project for CERP, BISC Water Resources Program staff have participated in the development of restoration targets for Biscayne Bay and Biscayne National Park. This has included working with a multi-agency team of experts to define the water needs of the Park and the historical condition for the Bay and coastal wetlands. In defining the water needs for the Park we have worked with various university cooperators to apply paleoecological information and current distribution of organisms to develop an idea of historical water needs for Biscayne Bay. This information is then compared to present conditions allowing for informed decisions to be made about what ecological conditions are needed for restoration and how far the current conditions in the Bay are from restoration needs.

In cooperation with researchers at Florida International University (FIU) regression equations were developed to describe freshwater conditions in what are now saline wetlands along the coast of BISC prior to human intervention. Through the Cooperative Ecosystem Studies Unit (CESU) we worked with researchers at the University of Miami to understand the freshwater conditions on the reefs of BISC and what the relative contributions of groundwater were to the Bay and coastal areas by dating coral cores using stable isotopes. These pieces of information are allowing us to make informed management decisions using the most current scientific information and to influence the processes to achieve the restoration targets we believe are necessary to sustain ecological function of the Bay. Under the auspices of the BBCW project BISC Water

Resources Program staff participated in a multi-agency group to define land acquisition criteria for the areas encompassed by the BBCW project.

2. *Waste Water Re-use, Pilot Project (WWRUPP)*

BISC Water Resources Program staff worked with the multi agency team on the WWRUPP to identify the level of protection needed for the Bay and to aid in reviewing the proposed methodologies for achieving project objectives. The water resources group is overseeing a Cooperative Ecosystem Studies Initiative project with the USGS as a component of a larger funded project to identify the compounds of concern in the waste stream and potentially identify means of removing them. These compounds are EPOCs (environmental pollutants of concern) and consist of non-traditional contaminants such as drugs, caffeine, detergents, detergent components, degreasers, and other additives to common household products. Through this funding BISC is providing a significant role concerning the proposed methods to determine the level to which waste water would need to be treated. This project has the most direct connection to the Park and has potential to negatively affect the water quality and habitats of the Park. BISC staff provided multiple sets of comments concerning this CERP issue. As a result of staff contributions and close scrutiny by NPS, this project is largely on course and focused on protecting Biscayne National Park and adjacent wetlands.

The focus of this project includes: 1) the ability to remove emerging pollutants of concern (pollutants such as hormones, drugs, estrogen mimics, and compounds found in re-use water that are not usually measured); 2) what wetlands the water will be discharged into, and whether they will be natural wetlands or created wetlands prior to entering the Park; and, 3) identifying additional funding needs to enable a chemical characterization of the site before, during and after the pilot project has been executed.

3. *Restoration, Coordination, and Verification (RECOVER)*

In FY 2004 BISC Water Resources Program staff have participated in RECOVER (RE=Restoration, CO = Coordination, and VER = Verification) components of the AAT (adaptive Assessment Team) monitoring and assessment plan and the RET (Regional Evaluation Team), Southern Estuaries Team. BISC received special project funding support under the monitoring and assessment plan (MAP) of CERP to continue long-term monitoring of salinity. These dedicated funds were provided as a component of the long-term assessment of the effects of the CERP program on BISC and Biscayne Bay. This funding will enable a scaled back salinity sampling network, as well as analysis of the data collected to determine the effects of water flow changes on Bay biota. In addition water resources staff have participated in the Southern Estuaries Regional Evaluation Team (RET) setting restoration targets and identifying sampling needs.

4. Drainage and Restoration Projects

Major water resource issues facing Biscayne National Park addressed in 2004 by BISC Water Resources Program staff include: 1) inadequate quantity of freshwater; 2) poor water quality; and, 3) changing state regulations to update rules and incorporate the Comprehensive Everglades Restoration Plan (CERP). Historically Biscayne Bay was connected to the Everglades through the transverse glades and received significant freshwater through these connections which conveyed water to the Bay most of the year. Enough freshwater flowed into the Bay through the transverse glades and groundwater to produce nearly fresh water conditions in the north and allow the production of oyster bars in southern Bay (BISC) where salinity had to range from 5-20 parts per thousand along the western shore for this specie to occur.

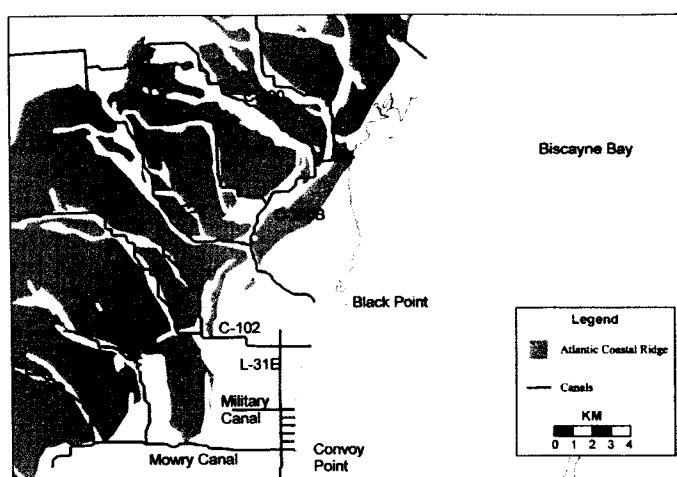


Figure 2: Location of transverse-glades and major canals.

Drainage and a lowered groundwater table exacerbated salinity problems in the Bay causing major changes to the Bay's ecosystem. The canals serve as a point source for freshwater, as well as conveying water of poor quality to the Bay. Today, virtually the only fresh water entering the Bay is through the canals as point sources rather than through wetlands, creeks and groundwater flow. Currently water flow to Biscayne National Park and Biscayne Bay is affected by the following non-CERP related water

resource issues: State Water Supply Planning, State Regulatory Rule Changes, Flood Protection, and special projects.

5. Water Rights and Water Regulatory Process:

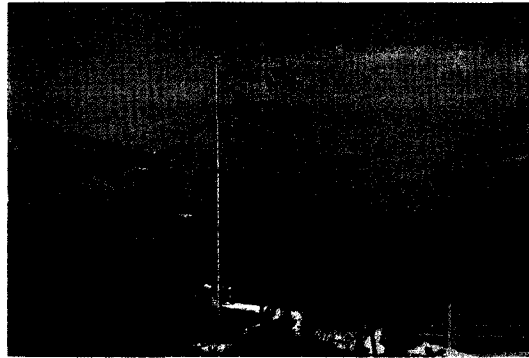
BISC Water Resources Program staff have worked in cooperation with the NPS, South Florida Natural Resources Center within the Park and in coordination with the SFWMD to provide information and direction to the development of Minimum Flows and Levels (MFL) for Biscayne Bay and Biscayne National Park. In 2004 BISC water resources staff coordinated meetings on MFLs and their impacts on the Park. We developed an agency position for the Park on MFLs and have developed a white paper on this subject. BISC Water resources staff are working with the South Florida Water Management District to address park concerns and interests regarding this crucial topic.

6. Biscayne Bay Regional Restoration Coordination Team

BISC Resources Management Staff represent the Park as members of the Biscayne Bay Regional Restoration Coordination Team (BBRRCT) which is comprised of multiple stakeholders with a vested interest in the long-term protection, preservation, and

restoration of Biscayne Bay. The group is a subteam of the South Florida Ecosystem Restoration Task Force and Working Group (SFERTFWG). The BBRRCT spent most of 2003-2004 developing an action plan designed to establish an overarching mission, values and goals, as well as to identify key issues, threats, and prioritized actions to assure the long-term health and vitality of Bay resources in perpetuity.

7. Water Quality Standards



Poor quality canal water flowing into the Park adjacent to the BISC Visitors Center

Biscayne National Park has severe water quality issues due to its proximity to agricultural areas and the City of Miami, the largest urban area of the state. Also contributing to poor water quality conditions within the Bay are the extensive canal network that has channelized the flow of freshwater into the Bay. In 2004 BISC designed a new water quality standards study that is envisioned to result in changes to State rules by establishing narrative defining water quality standards in terms of quantifiable, numeric standards. Facilitated by BISC resources managers, the study will be a collaborative process involving the state of Florida Department of Environmental Protection (FDEP) and local governments including Miami-Dade Department of Environmental Resources Management (DERM).

As part of this project, BISC resource managers have initiated work with principle investigators to collect data to support the development of water quality criteria in state law and provide information to the FDEP, who will begin the state process to change narrative criteria into numeric criteria in state rules. This project received the highest priority of unmet special project/study needs at BISC, as established by the BISC Management Team in 2003-2004. In FY04 initial seed funding was secured from the NPS, Water Resources Division through the Servicewide Comprehensive Funding Call to begin this process. Existing Florida water law outlines protection for water resources in Biscayne National Park and Biscayne Bay under Outstanding Florida Waters (OFW) and Class III (F.A.C. 62-400.). This project will collect data to supplement deficiencies, inventory, analyze, and describe the new and existing data as a member of a multi-agency process to redefine and enact numeric Class III criteria, as well as providing supplementary data to support OFW baseline conditions.

8. Development of Briefing Papers and Comments:

During FY04 water resources staff developed briefing statements on water resources impacts, historic water needs for the Bay and CERP project effects on BISC. Water resources staff have written comments on the BBCW project plans and performance measures, the WWRUPP, comments on the programmatic regulations for BISC, comments on the Pre-CERP baseline and the state's existing source definitions.

B. FISHERIES, WILDLIFE, & INTEGRATED PEST MANAGEMENT PROGRAM (FWIPM)

From a Fisheries/Wildlife/IPM perspective, many significant accomplishments were made in FY2004. These accomplishments are as follows:

1. FISHERIES MANAGEMENT

Fishery Management Plan

We continued to develop a Fishery Management Plan (FMP) to aid in the management and conservation of fishery resources in BISC, and to improve recreational fishing experience. Key steps in our continued development of the FMP are as follows:

In FY2003, we received strong public input via public meetings hosted by BISC supporting the formation of a public advisory group to make recommendations on the FMP. In early FY04, BISC requested that a working group be formed under the authority of the Florida Keys National Marine Sanctuary (FKNMS) Advisory Council. A working group was formed in January 2004 to issue recommendations on the FMP.



The working group consisted of recreational and commercial fishers, divers, scientists, and members of the conservation community (inset). The working group met six times from January to October 2004. During this time, the working group discussed the status of fishery resources, formulated a mission statement, and generated recommendations for the FMP. These recommendations were then forwarded by FKNMS superintendent Billy Causey to BISC and to the Florida Fish

and Wildlife Conservation Commission (FWC) for consideration. In FY05 the

recommendations will be integrated into a draft Environmental Impact Statement for the FMP, which is scheduled for final completion mid- to late 2005. One of the first accomplishments derived through the Park's collaborative working relationship with the State of Florida, Fish and Wildlife Conservation Commission in developing the FMP was a regulatory change in July 2004 resulting in the harvest of lobster being reduced from 12 lobster/person/day to 6/lobster/person/day during the 2-day lobster recreation (mini) season. This regulatory change is consistent with similar harvest restrictions for Monroe County, located close to the Park's southern boundary.

BISC FWIPM staff highlighted the FMP development process, including the Park's partnership with the FWC, in a presentation as part of a National Park Service symposium at the international American Fisheries Society meeting in Madison, WI in August 2004.

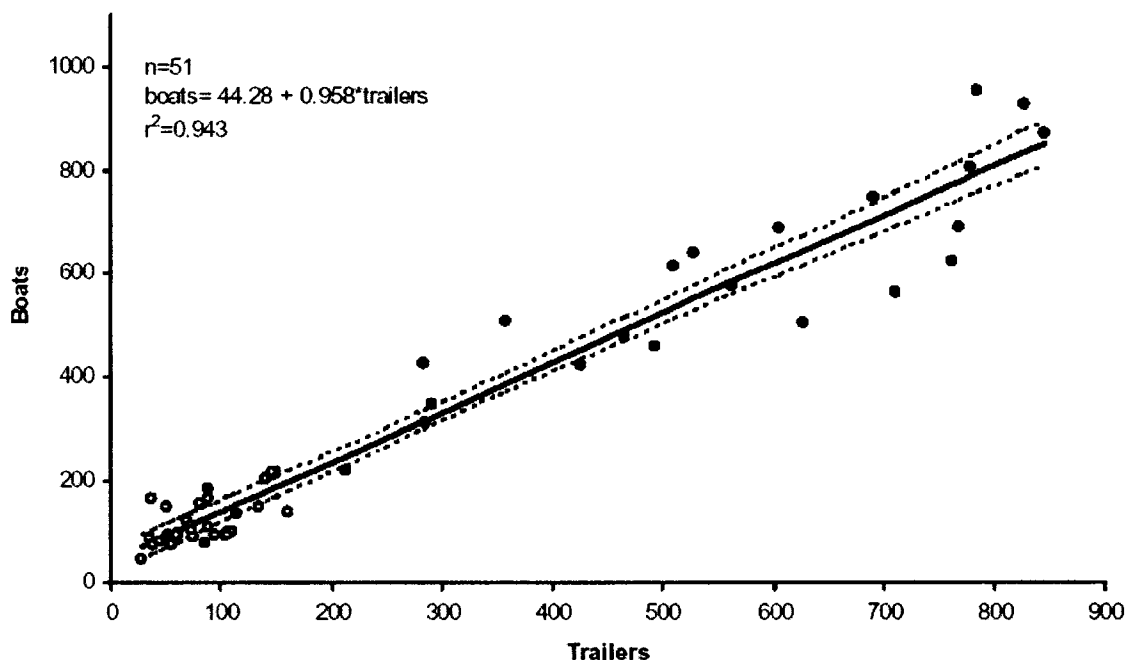
Creel Surveys

FWIPM staff continued data collection through interviews with recreational anglers at local marinas, and through more intensive efforts during the lobster two-day recreational sport season. The data collected during these surveys allows us to monitor and identify trends in factors such as fishing pressure, length and number of targeted species, catch per unit effort, and compliance with fishery regulations. Data collected from creel surveys will be vital to assessing whether goals established under the FMP are being reached.

Aerial Surveys

In FY2003, BISC began a project designed to enable estimates of fishing pressure and park usage through counts of trailers at local marinas. The goal of the study, carried out

Figure 11: Scatterplot of boat counts and trailer counts for all seasons combined, with the fitted regression model (solid line) and associated 95% confidence interval (dotted lines). points are denoted by day of week (mw = midweek, wh = weekend holiday)

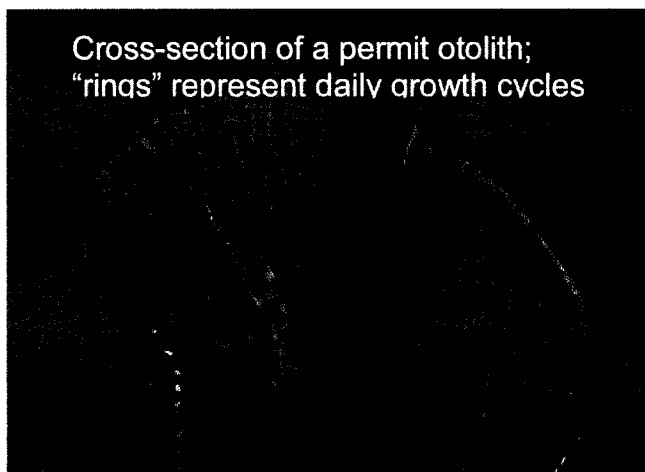


by contractors at the University of Miami, National Marine Fisheries Service employees, and BISC staff, is to establish a predictive relationship between numbers of trailers at local marinas and numbers of boats recreating in the park. Boats are counted via aerial surveys (plane) at the same time trailer counts are made at marinas from Homestead to Miami. The project was completed in FY2004. Regression analysis resulted in an extremely predictive relationship between trailers and boats ($r^2 = 0.943$); (see Figure). The results of this project enable resource managers to estimate park use levels by obtaining trailer counts from local marinas.

Juvenile Fish Research

BISC FWIPM staff continued work in a study led by Dr. Aaron Adams (Mote Marine Laboratory) to provide information on juvenile habitat utilization by bonefish (*Albula* spp.). Bonefish are an ecologically and economically important species in Florida, but little is known about their early life history. Initiated in FY2003, the study involves sampling beach and sand flat habitats with seines, and collecting information on temporal patterns in the size frequency distributions of juvenile bonefish, as well as their spatial distribution. As a partner in this research, the FWC's Fish and Wildlife Research Institute is performing genetic analysis on each bonefish collected to differentiate between bonefish species.

As an aside to the bonefish research, BISC FWIPM staff are collecting previously



Cross-section of a permit otolith;
"rings" represent daily growth cycles

unknown information on temporal and spatial patterns of juvenile permit (*Trachinotus falcatus*) distribution. This work includes analysis of juvenile permit otoliths ("ear" bones) to make inferences about larval duration and early juvenile survival (see inset).

The output of the bonefish and permit research will fill voids in current knowledge for both these species, and facilitate better fishery management for both species, both within the park and at larger, regional

spatial scales.

Great Annual Fish Count



In July, BISC teamed with the Reef Environmental Education Foundation (REEF) to host BISC's second annual Great Annual Fish Count (GAFC) event. The GAFC is an event that mobilizes and trains volunteer divers and snorkelers in established methodologies to identify and document fish diversity and population trends in marine sanctuaries and coastal areas. This event, which occurs in multiple international locations, is designed to raise awareness among both the diving community and public-

at-large regarding marine habitats and trends in fish populations, and provide researchers, marine resource managers and policy makers with useful data that would otherwise be unavailable. Twenty-five people attended the GAFC event in BISC, which included a morning fish identification and data collection class, followed by two dives to collect fish presence and abundance data (see inset for image of a number of the participants). The data was sent to REEF and entered in their database, which is accessible online (www.reef.org). The REEF data will eventually be helpful in determining whether goals established under the FMP are being reached.

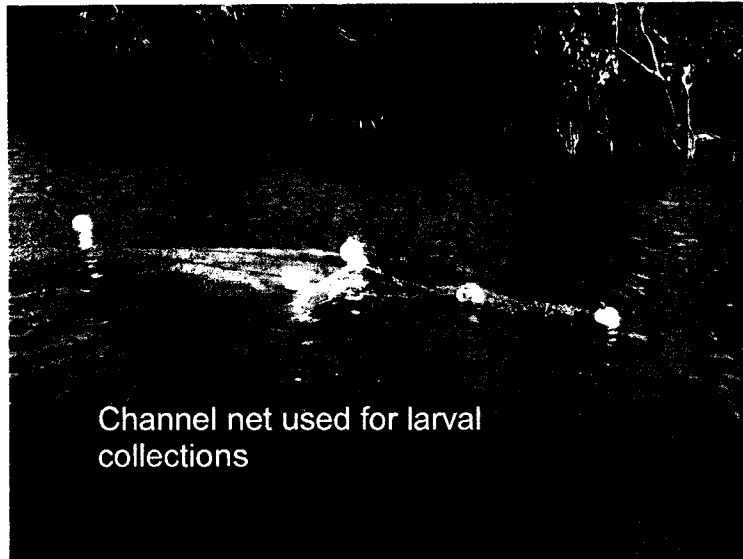
Also in July, BISC hosted a GAFC workshop to teach representatives from other NPS parks about the GAFC and the utilization of volunteer-collected data in making fishery management assessments. The workshop included participants from Alaska, California, Florida, Hawaii, and the Virgin Islands.

Cryptic Reef Fish Survey

BISC received funding through the NPS Inventory and Monitoring Program to establish a two-year project to survey cryptic reef fish in BISC. Planning for the project, which will be carried out by REEF in cooperation with BISC RM staff, began in FY2004. Actual surveys for this 2-year project will be initiated in FY2005.

Other Fishery Data Collection & Monitoring Efforts

BISC RM staff initiated or continued several monitoring or field data collection projects designed to provide baseline and assessment information for fishery management efforts. These projects included monthly larval collections of fish and invertebrates using channel nets (see figure on Page 11), and field surveys to assess the effect of the two-day lobster sport season on lobster abundance and benthic habitats. An agreement was made with the FWC to establish an "upper Keys" lobster larval monitoring station in BISC; data collection for this project will begin in FY2005.



Channel net used for larval
collections

Coral Reef Task Force – Southeast Florida Action Strategy Team

BISC continued to be involved in regional coral reef ecosystem conservation efforts through active participation in the Southeast Florida Action Strategy Team organized under the umbrella of the US Coral Reef Task Force. Involvement will continue in FY2005.

2. WILDLIFE MANAGEMENT

Sea Turtle Nesting

Nesting surveys were conducted primarily on five major ocean-side Elliott Key beaches (Petrel Point, Sawyers Cove, Adelle Cove, Palm Cove, and Tannehill Beach) during the 2004 nesting season (May – August). Twenty-two nesting activity events (crawls) were identified, all by loggerhead (*Carretta carretta*) sea turtles. Ten of the 22 crawls were identified as nests, and 12 as false crawls (i.e., no clutch was laid). Nine of the 10 nests were entirely depredated by raccoons (*Procyon lotor*). The lone non-depredated nest was protected with a self releasing wire screen. The covered nest resulted in the release of 79 hatchlings, assumed to have entered the Atlantic. The nests (predated and non-predated) that were inventoried (n=10) yielded an average clutch size of 60 eggs. BISC has received funding for FY2006/2007 to make alterations in its nesting survey methodology in an attempt to decrease the percentage of turtle nests depredated by raccoons.

Sea Turtle Strandings

Ten sea turtle strandings (dead turtles; five loggerheads, three greens and two hawksbills) and one injured turtle (loggerhead) were observed in FY2004. The strandings were reported to Florida Fish and Wildlife Conservation Commission at the

Tequesta office; the injured turtle was transported to the Miami Seaquarium for rehabilitation.

Butterfly Introduction

BISC was part of a partnership with the US Fish and Wildlife Service (FWS) and the University of Florida (UF) to re-introduce the Miami Blue butterfly (*Hemiargus thomasi*) to Elliott Key. In 2003, the butterfly, which was historically present on Elliott Key, was known to exist in the wild in only one location (Bahia Honda State Park, FL). After rearing progeny in the laboratory, workers from UF and FWS performed small-scale releases (< 150 individuals) in FY2004. Larger-scale releases and monitoring efforts are planned for 2005.

Birds

In 2004 BISC was classified as a Globally Important Bird Area by the American Bird Conservancy in recognition of the Park's combination of diverse bird habitats and geographical location along avian migratory pathways.

BISC hosted a Christmas Bird Count (CBC) event in December. The CBC is an international, annual occurrence in which groups organize to census the bird community in a given area. Results are entered into a single database (managed by the Audubon Society; <http://www.audubon.org/bird/cbc/>) and are used to analyze trends of early-winter bird populations across the Americas. BISC also organized and hosted a CBC count in 1997-2003, as well as several years in the early to mid-1980s. Eight people participated in the CBC this year, including BISC staff and park volunteers. Participants observed 65 species and a total of 2,423 individual birds.

3. INTEGRATED PEST MANAGEMENT

EPMT

The Exotic Plant Management Team (EPMT) is a joint partnership between Florida Department of Environmental Protection (FDEP) and NPS that utilizes matching federal and state funds to support the control and eradication of invasive, exotic plant species in NPS units. More than 70 exotic species have been identified in BISC, including the aggressively invasive latherleaf vine (*Colubrina asiatica*), seaside mahoe (*Thespesia populnea*), and Australian pine (*Casuarina equisetifolia*). In FY2004, contractors completed treatment of the northern mainland portion of the park, which was the last remaining untreated parcel of land in the park. Thus, funds through the EPMT program have allowed for the **treatment of all of BISC's terrestrial acreage** since efforts began in FY2000. The next stage of effort will be re-treatment of previously treated areas to control re-growth from seed banks and from seeds arriving from seed sources outside of park boundaries. Re-treatment efforts in FY2005 will focus on Elliott Key.

Raccoons

To address (1) safety issues associated with the increasing frequency of human-raccoon interactions, and (2) conservation issues associated with increased raccoon predation on threatened and endangered sea turtle nests on Elliott Key, raccoon control efforts were initiated in January 2004. Eighty four traps (~ three per day) were set on Elliott Key, resulting in the trapping and subsequent euthanasia of 34 raccoons. Raccoon population reduction is carried out under the auspices of a NEPA Categorical Exclusion completed in January 2004.

Addition of Biological Science Technicians

Two permanent, full-time (PFT) Biological Science Technicians: Shelby Moneysmith in January and Max Tritt in February joined the BISC Resources Management Division. One of the incumbents replaced RM personnel (Toby Obenauer), who transferred from the Park in late 2003, while the other position filled was identified as part of recommendations made in 2001 when the BISC Resources Management Division was reorganized. Shelby and Max have proved to be excellent workers and productive additions to the BISC Resources Management Division.

C. DAMAGE RECOVERY/INVENTORY & MONITORING PROGRAM (DRIMP)

Vessel Grounding Program Policies and Procedure Manual

The Vessel Grounding Program Policies and Procedures manual was developed in 1996, and revised in 2001. Another revision of the manual and incorporation of the 2001 comments was undertaken 2003-2004. The DRIMP coordinator completed an initial review of the manual, and circulated draft to BISC staff. The revision is expected to be complete by spring 2005.

Coral Reef and Seagrass Restoration Planning

Efforts are underway to develop Restoration Plan/Programmatic Environmental Impact Statements (RP/PEIS) to address coral reef restoration and seagrass restoration activities in BISC. When complete, these documents will aid managers in choosing restoration actions appropriate in a coral reef and seagrass environment managed by the NPS. In addition, environmental compliance for future projects will be streamlined. A cooperative team consisting of staff from BISC, WRD, ERDAR, and contractors formed in 2004 to initiate work on this project.

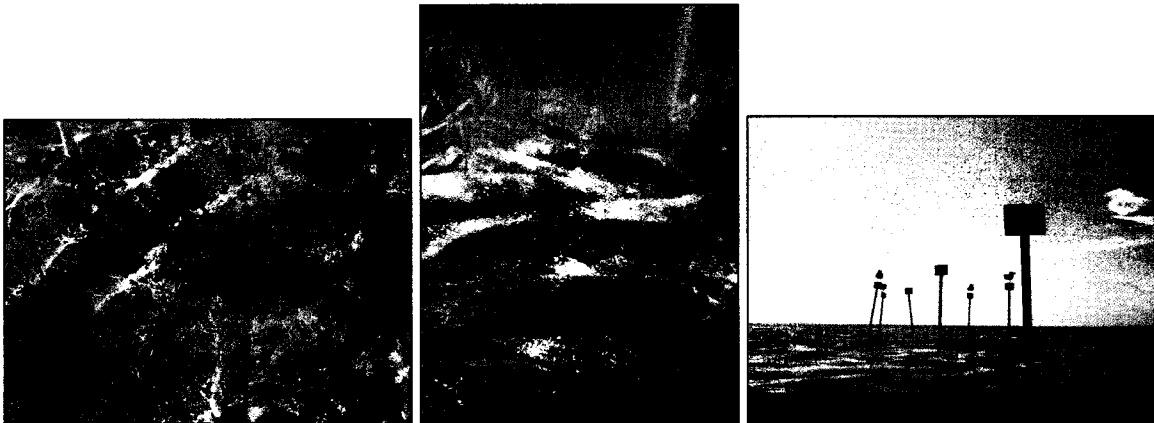
Coral Reef Restoration Planning

Efforts are underway to develop Restoration Plan/Environmental Assessments to address restoration activities at the sites of two major coral reef groundings in BISC -

the Allie B and Igloo Moon sites. A cooperative team consisting of staff from BISC, WRD, ERDAR, and contractors formed in 2004 to initiate work on this project.

Seagrass Restoration Projects

Two seagrass restorations were implemented in 2004, on the Tom's Tug and She's a Lady vessel grounding sites. Sediment fill was placed in excavated areas of both sites; in addition, seagrass was transplanted in to the Tom's Tug site. Bird stakes were placed at both sites to encourage seagrass growth through fertilization. This brings the total number of seagrass vessel grounding sites restored in the park to three.



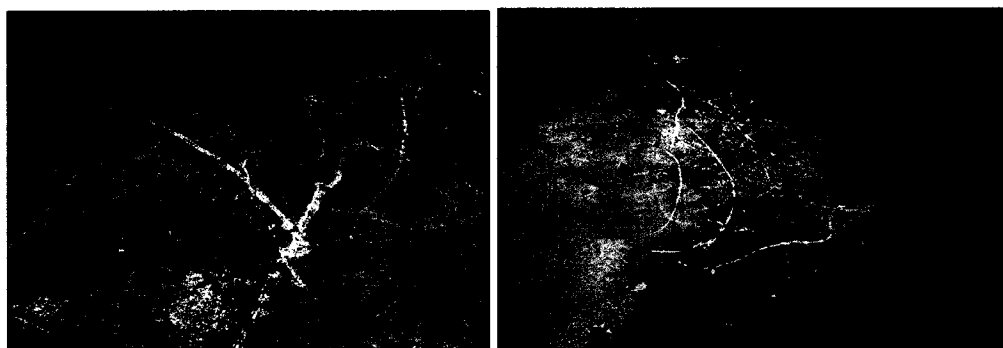
Boundary Encroachment Restoration Project

In late 2002, BISC became aware of a significant boundary encroachment resulting in several illegal structures, and a boardwalk being constructed through the mangroves that ended at an illegal rock island in Biscayne Bay also built by the same group. In 2004, park staff cooperated in several phases of restoration work at the site. The boardwalk, all decking, and other structures were dismantled and removed from the site. Mangroves were planted in the footprint of the boardwalk, and a variety of native hammock trees, shrubs, and grasses were used to revegetate the upland portion of the site. Efforts are underway to contract the removal of the rock island in 2005. Cooperators on this restoration include the Miami-Dade County Department of Environmental Resources Management, the Boy Scouts of America, and Fairchild Tropical Garden (see Page 15 for images taken of the restoration).



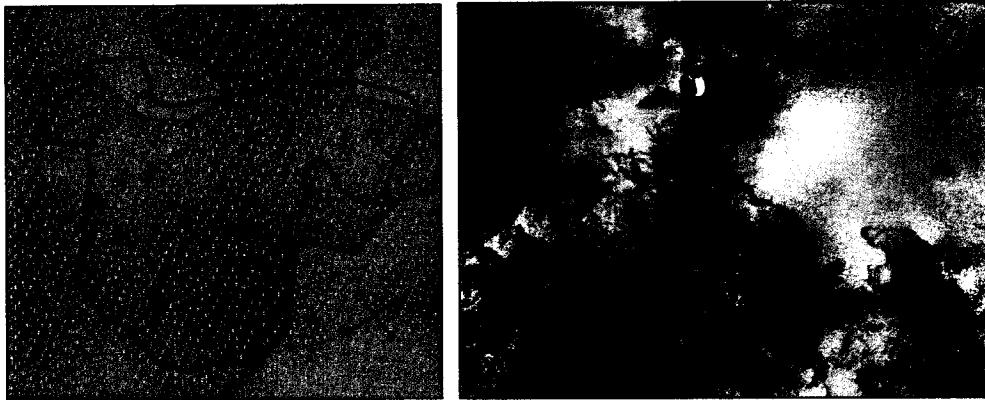
Florida Power and Light Seagrass Mitigation Project

In the South Channel Relocation Project, Florida Power and Light (FPL) proposes to relocate two underwater power lines, which will result in seagrass beds being impacted from the construction. BISC has worked with FPL and its contractors to develop a seagrass mitigation project that will be implemented in the park. The proposed mitigation project will consist of restoring approximately 2.25 acres of "orphan" vessel grounding sites in heavily impacted seagrass habitats within the park (the term "orphan site" refers to an unreported grounding injury) and installing several Aids to Navigation (ATON) to protect the restoration sites and thereby increase the likelihood of restoration success. In 2004, the individual injuries that will be restored were mapped and the mitigation plan was completed. Implementation is likely to begin in late 2005 to early 2006.



Long Term Benthic Monitoring

Biologists (Jeff Miller and Rob Waara) from Virgin Islands National Park traveled to BISC in June 2004 and established permanent long-term benthic monitoring stations on two reefs in the park. Through a combination of sonar and GPS mapping and video monitoring transects, the sites will be monitored annually to detect changes in the benthic communities at those locations (see Page 16 for images depicting this project). This work was supported by the South Florida and Caribbean Inventory and Monitoring Network.



II. CULTURAL RESOURCES MANAGEMENT

Over 2,000 years of human history are represented in Biscayne National Park's (BISC) museum objects, archeological sites, ethnographic resources, historic structures, and cultural landscapes. These cultural resources depict a continuum of human interaction with marine resources that shaped a range of human experiences as individuals manipulated, adapted to, and were constrained by the natural environment. This relationship between cultural and natural resources is central to the park's cultural resources program, which manages cultural resources in the conceptual framework of a historical maritime district. The cultural maritime heritage of the park is emphasized in all aspects of the development of the park's management plans and cultural resources initiatives.

Program Administration and Planning

During 2004, avocational archeologists, an SCA intern, and volunteers provided the necessary support to complete many of the program's goals, with combined contributions totaling over **\$25,000**. As detailed in the FY04 "Report to Congress on the Federal Archeology Program," avocational archeologists contributed approximately \$9,000 in research dollars on two archeological site documentation projects. Additionally, the Student Conservation Association provided a twelve-week resource assistant (at a cost of \$2,975). Finally, volunteers logged over 760 hours of time assisting the park's cultural resources manager. Using the 2003 National Volunteer Value Average of \$17.19/hour, the volunteers contributed over \$13,000 in assistance.

In addition to contributions provided by researchers, interns, and volunteers, over **\$31,000** of special project funding was secured for two projects. A \$5,000 Albright-Wirth Grant was received to construct a reproduction 18th century British Naval Cannon Carriage for an exhibit at the Dante Fascell Visitor's Center; and \$26,000 was received

to complete a Historic Context Study and Archeological Survey of the Israel Lafayette "Parson" Jones property for a National Register of Historic Places nomination.

Throughout 2004, the cultural resources manager was actively involved in seven concurrent, non-project planning efforts. These included:

1. BISC General Management Plan/ EIS
2. BISC Fire Management Plan
3. BISC Exotic Plant Management Plan/ EIS
4. SFCMC Collection Management Plan
5. BISC Scope of Collections Statement
6. Miami Circle Special Resources Study
7. Virginia Key Beach Park Trust Restoration Plan

During FY04, cultural resources staff invested significant resources drafting an Interagency Agreement with the Florida Keys National Marine Sanctuary (FKNMS) which addresses ways in which we can collaborate on the management of our respective cultural resources programs. The agreement outlines how we will partner to enhance social science research, resource protection, and public information and education surrounding submerged archeological sites, objects and associated records by developing joint management strategies. The Interagency Agreement will greatly improve the operational efficiency of each agency's cultural resource program considering the fact that we share a common maritime cultural history and approximately 30 miles of ocean jurisdictional boundaries.

A. ARCHEOLOGICAL SITES AND HISTORIC STRUCTURES

1. Inventory & Evaluation (Characterization)

Archeological sites and historic structures constitute a significant portion of BISC's cultural resources. The number and distribution of BISC's archeological sites is the result of systematic surveys and the dissemination of information by community members. Archeological survey is conducted under the guidance of the service's Systemwide Archeological Inventory Program (SAIP) which is a long-term systematic research effort to determine the nature and extent of archeological resources within the park. Approximately 24,000 submerged park acres have been systematically surveyed to date. This resulted in the identification of 23 geo-referenced, submerged archeological sites. Eighty-three additional submerged and terrestrial sites have been identified outside of the survey area.

In 2004 cultural resources staff collaborated with the Florida Keys National Marine Sanctuary (FKNMS) staff and their avocational archeological group the Submerged Resources Inventory (SRI) team to substantiate whether the remains of *Guerrero*, a 19th century slave ship spanned our shared southern border. Efforts began to develop a stewardship strategy that would provide optimal preservation to the site, associated objects and story of the tragedy. In 2004, the FKNMS received a Maritime Heritage Mini-Grant to hydrographically survey a section of bottomlands

south of the park's southern border in an effort to locate the remains of Guerrero. The results of the survey have provided compelling evidence to the location of the historic corridor of the vessel as it sank.

In 2004, 3 new archeological deposits were identified. In each instance, the discoveries were made by researchers or park staff. The most notable find was a 318 square meter shell deposit on Adam's Key. Further research will need to be conducted to determine cultural affiliation. The other two deposits consist of submerged historic anchors and their associated assemblages. Evidence suggests that further investigation of one anchor will lead to the identity of a previously unknown historic shipwreck on Pacific Reef. The results of this year's archeological

Categories of BISC ASMIS Records

Terrestrial

Precolumbian

- 6 Archeological sites/
Historic Structures
- 1 Archeological sub-sites
- 9 Isolated artifacts

Historic

- 8 Archeological sites/
Historic Structures
- 13 Archeological sub-sites/
Historic Structures
- 1 Isolated artifact

Submerged

Historic

- 43 Archeological sites (shipwrecks)
- 19 Archeological sites (non-shipwrecks)
- 10 Isolated artifacts

field survey have been recorded into the service wide Archeological Sites Management Information System (ASMIS) database. The archeological sites, sub-sites and isolated artifacts are noted in the following inset.

The BISC Cultural Resources Management Program's Protocol for Archeological Resource Documentation utilizes protocols and definitions consistent with service wide Resource Management planning

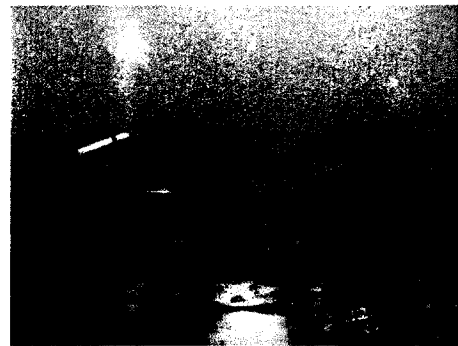
processes and Archeological Sites Management Information System (ASMIS) values to ensure that all archeological sites/ historic structures at BISC have standardized, required levels of documentation. A *fair* level (Level II) of documentation is necessary for BISC archeological site/ historic structure inventory and evaluation and monitoring data retrieval projects. Park staff generally conducts this level of documentation. A *good* level (Level III) of documentation is conducted when an archeological site/ historic structure has the potential to:

- yield a high amount of scientific information,
- possess exceptional archeological & historical significance and values, or
- provide exceptional recreational and educational opportunities.

Researchers, avocational archeologists and volunteers employing standards set forth in the BISC cultural resource management program generally conducts this level of documentation.

During 2004, park staff conducted 3 Level II investigations on the sites identified during the year bringing the total number of sites with minimal or a "fair" level of documentation up to 53, or 54% of BISC's known archeological deposits. Level II documentation provides scaled site plans that accurately reflect the presence of and spatial relationship between features and artifacts. These site plans provide the foundation for monitoring archeological sites as both site plans and condition assessment forms are utilized in the field to note site dynamics.

Level III documentation of the sites included in the shipwreck trail will continue to be conducted through partnerships with local avocational groups. In FY04, BISC cultural resources staff and Coastal Maritime Archaeology Resources (CMAR) team members continued their partnership in developing an underwater maritime heritage trail which may eventually be merged with the Florida Keys National Marine Sanctuary Shipwreck Trail, the State of Florida Shipwreck Trail, and similar resources at Dry Tortugas National Park. Initially, the trail at BISC will highlight four historic submerged archaeological sites chosen for their historic, aesthetic, and interpretive values. These sites are the remains of: SS *Alicia* (BISC00015), *Lugano* (BISC00014), *Mandalay* (BISC00013), and *Erl King* (BISC00012). During 2004, the team completed the site plan of the SS *Alicia* (with the report forthcoming) and began efforts on *Erl King* as the next site to be investigated. This trail will have substantial educational and interpretive uses. It will increase public involvement in and appreciation for the submerged resources in the park while raising awareness of shipwreck anthropology. Informative pamphlets and diver cards will provide a historical background of the site, key areas to look for, as well as logistical information such as site and mooring buoy locations. The park has a "good" (Level III) level of documentation on 8 archeological sites (and 11 historic structures).



SCA David Choate and CMAR documenting *Erl King*

Biscayne National Park has 3 properties listed on the National Register of Historic Places (NRHP): the Offshore Reefs Archeological District; the Sweeting Homestead Site; and the Boca Chita Key Historic District (which encompasses 10 historic structures listed on the List of Classified Structures maintained by WASO). At least 6 other sites (Jones Property, 4 sites; Totten Key Complex, 2 sites) are potentially eligible for the NRHP. During 2004, a contract was implemented with Florida Atlantic University Center for the Conservation of Architectural and Cultural Heritage (FAU-CCACH) to develop a Historic Context Study of the Israel Lafayette "Parson" Jones

family for a national register nomination. The Jones family were late 19th century Black pioneers that settled on the park's southern keys and made significant contributions to the early development of Miami. A proposal has been submitted to obtain funding to conduct field work on the Totten Key Complex for a national register nomination.

2. Monitoring

In 2004 Park CRM staff further developed monitoring protocol for annual, event-driven and intermittent (3-5 year) condition assessments for all of BISC's archeological sites. Utilizing BISC's Cultural Resources Program standardized field condition assessment form and corresponding site plans, park staff conducted condition assessments on 23 archeological sites. The data was incorporated into the park's ASMIS database, GIS files and centralized site files. It is important to note that during 2004, the majority of threats and disturbances on over 50% of the sites (23) that were assessed were the result of fishing apparatus impacting shipwreck sites.

As of 2004, BISC has 98 archeological sites recorded in ASMIS (71 submerged, 27 terrestrial). Per monitoring protocol, 50 undergo annual condition assessments (42 submerged, 8 terrestrial) while 48 (29 submerged, 19 terrestrial) are monitored on a 3-5 year basis.

3. Public Outreach and Education

In 2004, the park archeologist prepared and presented 3 lectures for local cultural resource preservation organizations. Additionally, 2 documentaries which highlighted the parks cultural resources were developed. The presentations and documentaries were:

- "Best Practices in Underwater Archeology," Presentation at the Miami-Dade Park & Recreation Dept. Archeology in Public Areas Workshop. March 28, 2004
- "Best Management Practices: Public Lands and Shipwreck Conservation," Presentation and Panel Discussion for "Underwater Archaeology: South Florida Shipwrecks at the Historical Museum of Southern Florida. April 15, 2004.
- "Best Management Practices: Shipwreck Archeology," Presentation for the Upper Keys Historic Preservation Society meeting on July 12, 2004.
- "The Guerrero Project," PBS documentary produced by Wandering Dog Films highlighting the research surrounding the 1827 slave ship that many believe sank in BISC waters.
- "Biscayne: Cross Road to the Caribbean," the final episode of a PBS miniseries entitled "Preserving America's Shipwrecks." Produced by Black Dog Films for Montana PBS and funded by a grant from the National Center for Preservation Training and Technology.

B. MUSEUM COLLECTIONS

1. Preservation

Biscayne National Park's museum collections include objects, voucher specimens, and archival & manuscript documents in the disciplines of archeology, ethnography, history, biology, and geology. Archival and manuscript collections are non-official documentary records by National Archives and Records Administration (NARA) definition that contribute substantially to the understanding, interpretation, and management of cultural and natural resources. Collectively, BISC collections provide invaluable historical information about processes, events, and the interaction between people and the marine and terrestrial resources of the park. The custodian of BISC collections is the curator of the South Florida Collections Management Center (SFCMC) located at Everglades National Park. While the SFCMC maintains the majority of the park's natural collections, the majority of the park's cultural collections are maintained at the Southeast Archeological Center (SEAC).

During 2004, park staff spent considerable time participating in the revision of the Collections Management Plan (CMP), a document which establishes roles, relationships and priorities for Biscayne National Park and the South Florida Collections Management Center (SFCMC). The CMP provides direction and proposed collections management actions for all three NPS unit areas in South Florida including Big Cypress National Preserve, Biscayne National Park, and Everglades National Park. The CMP is expected to be finalized in 2005.

In 2004, an archives survey at the park resulted in an estimated 753,237 items in the BISC collections (718,846 of which are archives). The total Catalog Backlog for BISC collections is 701,770. The reduction of this backlog is the primary priority of the BISC Museum Collections Program.

C. ETHNOGRAPHIC RESOURCES

1. Public Outreach and Education

During 2004, the BISC Ethnographic Overview and Assessment (EOA) was being developed in .pdf format for the NPS web site. The document provides critical information regarding how ethnically diverse community members of Miami-Dade County use park resources.

D. CULTURAL LANDSCAPES

1. Survey

In 2004, Archeologists continued to collect required baseline data necessary to include the Jones Property (Porgy, Totten, and Old Rhodes Key, along with Jones Lagoon) on the Cultural Landscapes Inventory (CLI). Jones property features display the physical evidence of how Parson Jones manipulated, adapted to, and was constrained by the natural environment during the early 20th century. The property reflects the historic vernacular cultural landscape of a 20th century plantation owner. Until such time as a CLI can be conducted, Biscayne National Park will continue to

manage Boca Chita Key Historic District and the Jones Property as cultural landscapes.