Resource Management Division
and
Marine Reserve Zone monitoring for
General Management Plan

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Resource Management programs

Divisions: Interpretation, Maintenance, Administration, Law Enforcement, RM

• Habitat Restoration Program
• Fish, Wildlife, and Inventory & Monitoring Program
• Cultural Resources Management
• Water Quality & Adjacent Lands
Habitat Restoration Program

- Injury assessment and restoration of grounding injuries in seagrass and coral reef ecosystems.

- Successful settlement of Natural Resource Damage Assessment (NRDA) cases (> $5 million in case settlements)

- Provides funding to restore and monitor multiple injuries.

- Restoration goals:
  - Create a stable ecosystem of similar structure to that which existed prior to the injury
  - Allow natural recovery processes, enhanced if needed, to lead to a fully functioning community
Habitat Restoration Program

- Coastal Habitat Restoration (Mangrove Forests, Spoil Islands)
- Derelict Trap and Debris Removal Projects on Reef
- Boating Education Class ("traffic school" for boaters)
- Research on Restoration Techniques and Ecosystem Function of Restoration Sites
- Installation of New Hazard Markers on Seagrass Shoals
Fish and Wildlife Inventory and Monitoring Program

- Program comprised of a staff of biologists, technicians and interns
- Main focuses of this program are on the park’s marine and terrestrial natural resources
- Program staff engages in a variety of monitoring and assessment activities
  - Underwater reef fish and benthic surveys
  - Fishery dependent (creel surveys)
  - Fishery Awareness Class
  - Exotic animal species removal (e.g. removed over 6,200 lionfish to date)
  - Oversee exotic plant treatment
Fish and Wildlife Inventory and Monitoring Program

- Special-status species monitoring and management activities are also diverse
  - Staff assists UF researchers with surveys of the endangered Schaus swallowtail butterfly
  - Sea turtle nest monitoring
  - Nesting shorebird surveys
  - Semaphore cactus population monitoring
Biscayne National Park is made up of an estuary, islands and reef tract that are downstream of 5 million people in three counties and Miami, the largest metropolitan area in Florida.

Biscayne Bay water quality is degraded due to untreated or poorly treated surface water runoff and groundwater from urban and agricultural sources with sediment, nutrients, pesticides and pollutants of special concern.
National Park Service

Water Resources and Adjacent Lands: Responsibility Areas

- Water Quality Monitoring
- Sea Level Rise
- Fresh Water Inflow
- Algal Blooms
- Land Acquisition Local Government Coordination
- Planning and Impact Review eg Utility effects on the Park: Turkey Point Nuclear Power Plant
- Comprehensive Everglades Restoration & Ecosystem Planning
- Water Resources Management and Water Supply Planning
The Cultural Resources Program works to preserve unimpaired; and manage for the public’s enjoyment and education; the historic, archeological and other cultural resources of the park. At BISC these resources are primarily **Historic Structures**:

- Boca Chita Key Lighthouse c.1937
- Fowey Rocks Lighthouse (built 1878)
And **Archeological Sites**, both prehistoric and historic sites on the islands, and historic shipwrecks submerged on the Park’s waters:

- **HMS Fowey** Shipwreck, 1768
- **Mandalay** Shipwreck, 1969
- **Prehistoric Shell Midden Site** 19th to early 20th Century
- **Homesteading Ruins**
Status of park fishery resources

• Of 17 studied fish species, 71% were overfished, most fish captured before they have a chance to spawn (Ault et al 2001)

• Fish studies in seven reef sites studied 1977-1980 and again 2006-2007; 64% of species declined in frequency of observation; every site showed declines in species (Kellison et al 2011)

• 1/5 hogfish taken was undersized, and 4/5 spearfishing trips took hogfish (Ault et al 2007)

• Park creel survey data: In 2009, 50% of landed red grouper and 100% of landed gag grouper observed during creel surveys were undersized.

Hours of fishing effort for 1 legal size black grouper in Biscayne NP (Ault et al 2007)
Status of park’s coral reefs

- 2014 bleaching, 2015 bleaching and disease, 2016 bleaching
- Elkhorn coral, pillar coral genotype rescue with FWC and NOAA Fisheries
- Fishing-related marine debris:
  - average of 77 pounds of debris and 33 separate pieces of debris per 1000m² of offshore reef. Of all pieces removed:
    - Hook-and-line debris is 35%
    - Trap fishery debris is 31%
  - one 1000m² site had 368 lbs, ~50% trap-related
  - benthic life ave. 94 injuries/24 deaths/site
General Management Plan history

• To preserve/protect resources and provide visitor enjoyment
• Final plan approved August 31, 2015
• Plan includes 10,512 acre marine reserve zone (no fishing) that requires federal regulation to implement the zone
• Economic study must accompany fed reg
Marine reserve

- Designed by public, with a science review
- Opportunity to spear lionfish
- Mooring buoy transition instead of anchoring ban
- Great visitor experience, healthier reef
- 10,502 acre zone
- **6.3% of total park waters, protects 30% of park’s reefs**
- Improve fishing opportunity outside due to spillover
- High scientific support on beneficial impacts of marine reserves
Objective of marine reserve

• “To provide swimmers, snorkelers, scuba divers, and those who ride a glass bottom boat the opportunity to experience a natural, healthy coral reef with larger and more numerous tropical reef fish and an ecologically intact reef system.”


Not a panacea for reef management
Record of Decision: marine reserve

• Would be implemented via Federal Regulation (more public involvement) – in development
• Would enter into agreements with State and Federal agencies to share info/monitor/results – in process
• Reports every five years; would consider recommendations from partner agencies
(1) distribution and cover patterns of stationary benthic organisms

Coral, soft coral, algae, etc.

Many sources of data:

• NPS monitoring
• Fla Reef Resilience Program
• NCRMP and SCREAM surveys
• FWRI ESA-listed coral monitoring
(2) abundance and size structure for reef-associated fishes

Snappers, groupers etc.

Sources of data:

• Multi-agency RVC fishery-independent survey
• BISC creel survey
(3) prevalence of marine debris

Relatively new.

Sources of NPS data in marine reserve zone:
• Derelict trap removal projects
• Marine debris study
(4) the condition of submerged archeological resources

Submerged archeological monitoring performed by NPS

Received concurrence from State Historic Preservation Office
(5) estimated visitation

Sources of data:
2003/2004 Aerial Boater Survey
2016/2017 Aerial Boater Survey
Transects are flown 5x/month over the park to count boats and record boat type, activity, and location
(6) enforcement effort and results

Enforcement of the marine reserve zone will be performed by NPS LE rangers.

Source of data: NPS
(7) Economic data...

7) economic data measuring the zone’s direct and indirect impacts on jobs, income, spending, and local and state tax revenues related to commercial fishing, recreational fishing, diving, and related economic sectors.

- NPS contracting out an economic study
Questions?