

Biscayne Bay Regional Restoration Coordination Team
July 20, 2016

Status of the General Management Plan and Fisheries Management Plan for Biscayne National Park

Elsa Alvear, Chief Resource Management
Biscayne National Park

- General Management Plan finalized, August 2015
- Over 90% of park has no change in management from current management

Status of reefs

- Bleaching events in 2014, 2015
- Problems with disease, marine debris
- 20% increase in fish size and abundance (goal of Fisheries Management Plan) wouldn't be enough for visitors to experience "big fish"

Marine Reserve

- 30% of park's reefs, 6% of waters
- Enhance visitor experience

Alternatives to Marine Reserve

- Alternative 6: zone with permit fishing only- supported by FWC in 2013, roundly criticized by public
- Alternative 7: zone with seasonal fishing- supported by FWC in 2014, public still favored marine reserve
- NOAA Fisheries- new alternatives would not meeting zone objectives

Status of GMP Implementation

- All zones except GMP are in Superintendent's Compendium
- Zones except marine reserve are awaiting installed markers
- Concessions- hoping service will start in 2017 including service at Dinner Key Marina
- Record of Decision
 - Implemented via Federal Regulation- in development
 - Includes monitoring to create baseline
 - In process of entering into agreements with State and Federal agencies
 - Report on monitoring results every five years, consider management recommendations from partner agencies

Related Legislation

Senate Bill 2807- Would require State approval before NPS restricts access to waters for recreational or commercial fishing

Senate Bill 3099- NPS can't implement any restrictions on fishing in Biscayne National Park

- Creates problems for implementation of GMP
- FWC considers most marine zones to restrict fishing in some way, could zones beyond marine reserve

House 2017 DOI Appropriations Bill

Marine Debris in Biscayne Bay

Dave Doebler, Co-Founder and President
Dara Schoenwold, Executive Director
VolunteerCleanup.Org

- Shoreline cleanups to raise awareness and inspire action
- Website platform- will post cleanup events organized by other groups
- Citizens can add their names to messaging list

Ways to Get Involved

- Join a cleanup
- Host your own cleanup
- Hire group for Corporate Day of Service Event
- Sponsor community cleanup in your area

International Coastal Cleanup Day

- World's largest single-day coastal cleanup

Marine Debris Problem in Biscayne Bay

- South Florida depends on healthy, vibrant ecosystem
- Huge problems with trash and debris

Plastic marine debris

- 20% ocean based sources
- 80% land based sources

Solutions- 5 Key Areas

1. People- education, reduce consumption of single-use, non-biodegradable places
2. Proper disposal- proper placement of trash cans, easy and mandatory recycling
3. Capture- proper gratings
4. Trapping- effective filtration systems
5. Cleanup

Where Should Government Start?

1. Conduct baseline monitoring
2. Evaluate trash pollution controls
3. Adopt voluntary maximum input level for trash
4. Implement and use measures to meet total input levels

Comments/Questions

- Elsa Alvear- marine debris in Biscayne National Park
- Much of marine debris on keys is from far away
 - Majority of marine debris on reefs is from local sources

The Science behind Trash

Chelle King, Museum Volunteers for the Environment (MUVE) Coordinator
Frost Science Museum

- Volunteers go out on a monthly basis to clean up beaches

- Marine Debris Trapper App
 - Can log all marine debris removed from beach cleanups
- Employing different methods to learn more about origins of trash
 - Drifter methods
 - Painted coconuts
 - Bamboo drift cards- can look at where they land vs. where they started

Questions/Comments

- What information informed the release location of drifters?
 - Based on scientific recommendations on location and tide time
 - Two are water based and five are land based
- DEP's Adopt an Island program collects trash, contributing to database of where they are collecting items, and origin of items when possible
- Align deployment of drifters with major events like Baynanza or International Coastal Cleanup Day

Florida's Coral Reef System in Rapid Decline

Chris Langdon, Professor and Chair
RSMAS Department of Marine Biology and Ecology

- Ocean Acidification- some reefs in Florida are starting to dissolve today
- Heterotrophy- the breakdown of organic substances in the water, adds CO₂ to the water

Take Home Messages

- Evidence of seasonal dissolution of reefs (late fall and winter months)
- Greatest dissolution in upper Keys
- Best predictor of when, where, and how much dissolution is respiration (heterotrophy)
- Region-wide decline in structural complexity of Caribbean reef
- All trophic groups and fished and non-fished species decline points to general habitat degradation as the cause
- Are reefs in FL producing enough calcium carbonate to offset losses from acidification?
 - 10% cover might be critical amount of coral cover for coral to produce enough calcium carbonate to maintain reef
 - Present day rates of calcification are 10-20% of historical rates but still positive (except in the upper Keys)

Conclusions

- Natural biological activity explains some acidification, but not enough on its own for dissolution of reefs
- Breakdown of organic matter is necessary and could explain patterns we are seeing

Implications

- Breakdown of organic matter in sediments seems to account for dissolution in upper Keys
- If we could reduce the supply of organic matter to the sediments we might be able to reduce or eliminate dissolution for many years
- Seems to be excess amount of organic matter, coming from nutrients

Comments/Questions

-Largest concentrations of nutrient levels in water was after big rain events

Recent Developments in Algal Bloom Studies in Biscayne Bay

Ania Wachnika, Assistant Research Professor
Florida International University

Factors Affecting Biscayne Bay Ecosystem

Sources of pollution: agriculture, Turkey Point, landfills, Port of Miami, marinas, canals

Restoration projects along coasts: Biscayne Bay Coastal Wetlands

Causing: habitat loss, shift in species richness & diversity, algal blooms, saltwater encroachment, altered water quality

-Ecosystem state changes- don't want to end up with ecological regime shift

-Could be very expensive and perhaps impossible to reverse

-To avoid future algal blooms, need to identify threshold water quality conditions

-Four types of algae cause blooms: blue-green, diatoms, dinoflagellates, brown algae

-Uncertainty about what combination of factors promotes one kind of bloom over another

Clean water is hugely important to the local economy

Climate Change and Algal Blooms

-In addition to anthropogenic factors, we have factors caused by climate change-

-Warmer water temperatures

-Changes in salinity

-Changes in rainfall

2014/2015 Surveys

Goals: assess nearshore conditions in Biscayne Bay, identify "hot spots" or areas with bad water quality conditions

Algae- powerful ecological indicators

-Ubiquitous distribution

-Base of food web

-Easy to identify

-Diverse and species rich

-Strong relationships between algae and water quality

-Respond quickly to environmental changes

Final Recommendations

-Need more algal studies in Biscayne Bay to better understand the extent, origin, and possible harmful effects of algal blooms on the Bay's biota

-Develop nutrient criteria for water bodies delivering water to Biscayne Bay

-Develop ecological models for nearshore areas of the Bay to evaluate current and predict future effects of different water management scenarios on nearshore areas

-Potential effects of warming climate, extreme weather events, and large-scale climate oscillation patterns

Comments/Questions

- Concerns about current bloom in north Biscayne Bay
- DERM may do expanded sampling

Marine Debris Education/Offshore Cleanups in Biscayne National Park

Tracy Nolan, Education Director
Debris Free Oceans (Miami)

Marine debris is a global crisis

- 700 marine species threatened by plastic debris
- More than 5 trillion plastic pieces weighing over 250k tons floating at sea
- Plastic debris \$13B damage to US economy
- Global plastic production increasing
- Lack of technology to deal with amount of waste generated

Effects of Marine Debris in Miami

- Harms marine ecosystems
- Wildlife
- Much of the marine debris is from other areas, brought in from Gulf Stream

Organization Vision: A World without Waste

- Focus on reducing consumption of plastic, especially single use plastic packaging

Plan to Meet Goal

- Education and outreach
- Lifestyle awareness events
- Research
- Law and policy
- Cleanups
- Sustainability consulting

How has Miami Addressed Marine Debris?

- Groups/organizations: Surfrider, Volunteer Cleanup, ecomb, Sea Grant, Coastal Cleanup Corporation
- Coral Gables sued over plans to ban Styrofoam
- Miami Beach banned Styrofoam

How has Miami Addressed Marine Debris?

- Groups/organizations: Balloons Blow, Sea2Shore Alliance, Planet Love Life, Beach Guardians Atlantic
- Florida Marine Debris Reduction Plan
- Florida Microplastic Awareness Project
- Ban on banning plastic bags in Florida

Announcements

Gary Milano: Virginia Key decided to throw out marina RFP that violated city master plan

Captain Dan: appointed to Southeast Florida Coral Reef Initiative (SEFCRI)

Caroline McLaughlin: appointed to SEFCRI

Jennifer Tisthammer: Deering Estate finished edits to peer review on marine conservation curriculum, wants to share with BBRRCT as beta test

Craig Grossenbacher: will talk to DERM's water quality team about algal bloom in north Biscayne Bay to see if more sampling is possible

Lisa Krinsky: Lisa will be taking a new job with University of Florida, Miami-Dade Sea Grant position will be hiring soon

Eric Buck: new staff member at Biscayne Bay Aquatic Preserve, working with Data Management and GIS, will be contacting BBRRCT members to gather data/information

Rachel Silverstein:

- Environmental Regulation Commission will be voting to loosen regulations on toxic chemicals on July 26- will increase allowable limits of toxic chemicals in waterways
 - Use new model to determine safe levels of carcinogens
 - Levels of dozens of carcinogenic chemicals in waterways will increase
 - Public comment period less than 30 days
 - None of three public meetings were held in South Florida
 - Asking now for them to postpone vote
- Dredging lawsuit
 - Over 200 football fields worth of coral were buried during PortMiami dredging
 - Filed ESA lawsuit in 2014
 - Similar dredging planned for Port Everglades- doesn't include lessons learned from devastation that occurred in Miami
 - Surveys will be taking place soon in Miami to determine impacts, than will put a mitigation plan together
 - Mitigation plan is mandated in State's permit, doesn't address ESA issues
 - Corps- doesn't believe they have any responsibility under ESA to do further mitigation
 - Goal is adequate mitigation to fix reefs, find Corps liable for ESA violations