

NOAA CORAL REEF CONSERVATION PROGRAM

[U.S.] National Coral Reef
Monitoring Program (NCRMP)



MISSION

*"To support conservation through
documenting and understanding U.S.
coral reef ecosystems"*

Presented by
Chris Jeffrey
on behalf of
Randall Clark



Photo credit: Mark Eakin, NOAA



NOAA Coral Reef Conservation Program National Coral Reef Monitoring Program

Overview

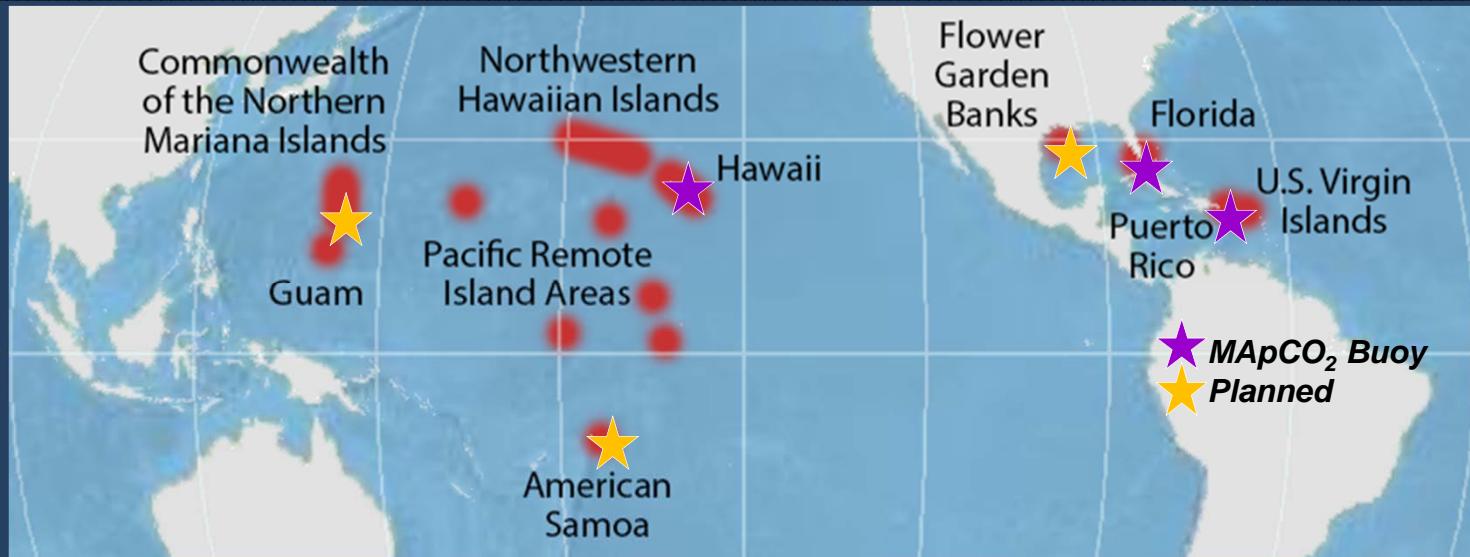
- NCRMP conducts **nationally coordinated, sustained, and consistent** coastal ocean observations to develop **biological, climate, and socioeconomic status and trends indicators** for priority U.S. coral reef areas
- NCRMP goals include:
 - Collect **geographically comprehensive status and trends data**
 - Develop scientifically sound, **consistent methods through strong partnerships**
 - Deliver **products and tools** as a national context for **localized monitoring & management**.
- NCRMP data provide a **robust picture** of the **status and trends** of U.S. **coral reef ecosystems** and the **human communities** dependent on them.





NOAA National Coral Reef Monitoring Program

Who, What, Where, When



- U.S. Pacific **triennial biological** and **climate monitoring**
NMFS CRED (Honolulu, HI)
- U.S. Atlantic **biennial biological** and triennial **climate monitoring**
NOS NCCOS (Silver Spring, MD), NMFS SEFSC, OAR AOML (Miami, FL)
- 7 States and Territories **quadriennial socioeconomic monitoring**
NOS NCCOS Hollings Marine Lab (Charleston, SC)
- Satellite **thermal stress monitoring** - NESDIS Coral Reef Watch (College Park, MD)
- **Data stewardship** – NESDIS NODC CoRIS (Silver Spring, MD)
- **Planning, coordination, reporting** – NOAA Coral Program (Silver Spring, MD)



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- **CRCP established 2001**
- CREIOS established 2003
- External Program Review **2007**
 - Roadmap Process 2008-2010
 - CREIOS Workshops 2008-2009
- NCRMP Planning 2010-2012
- NCRMP Implementation began **2013**
- **NCRMP Strategic Framework finalized 2014**

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NOAA
Coral Reef Conservation Program

Roadmap for the Future

A Plan for Developing CRCP Direction Through 2015

July 2008

Photo credit: Mark Eakin, NOAA

NOAA Coral Reef Ecosystem Integrated Observing System (CREIOS) Workshops Report

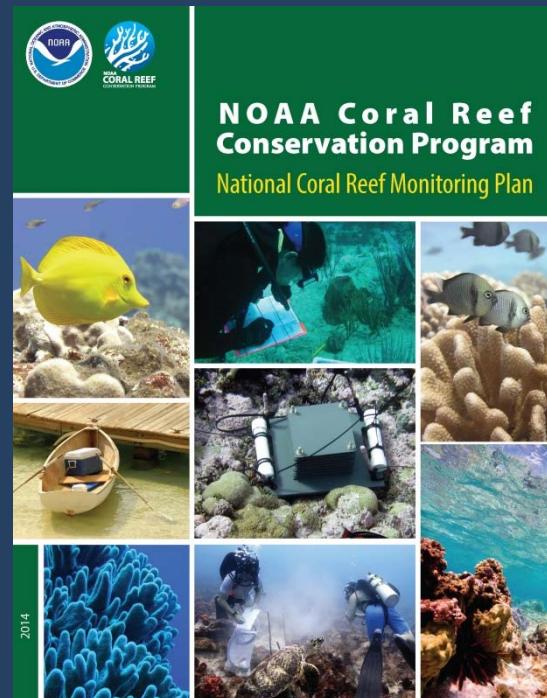
J.A. Morgan and J.E. Waddell (eds.)
National Oceanic and Atmospheric Administration

NOAA Technical Memorandum CRCP 9
November 2009

United States Department of Commerce
Gary Locke, Secretary

National Oceanic and Atmospheric Administration
Jane Lubchenco, Administrator

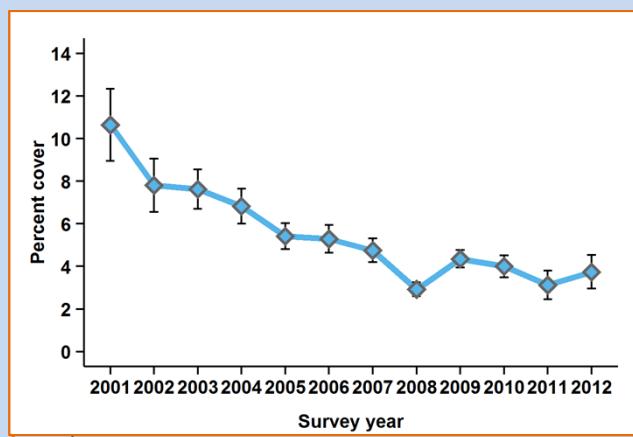
National Ocean Service
John H. Dunnigan, Assistant Administrator



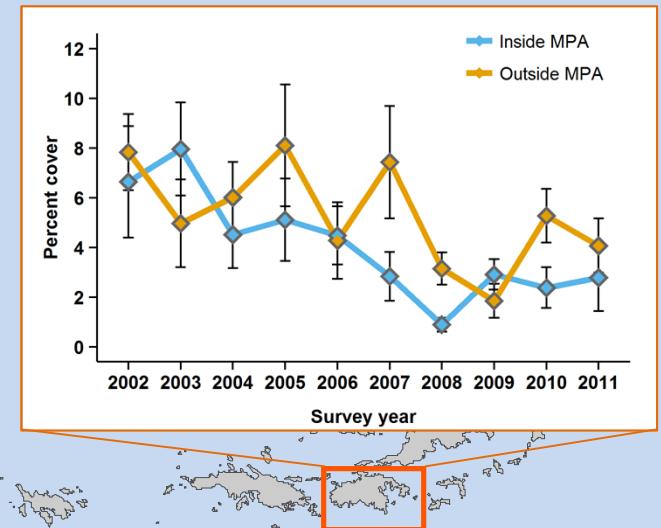
U.S. Caribbean Coral Reef Status and Trends

Long-term decline in hard coral cover at three monitoring locations

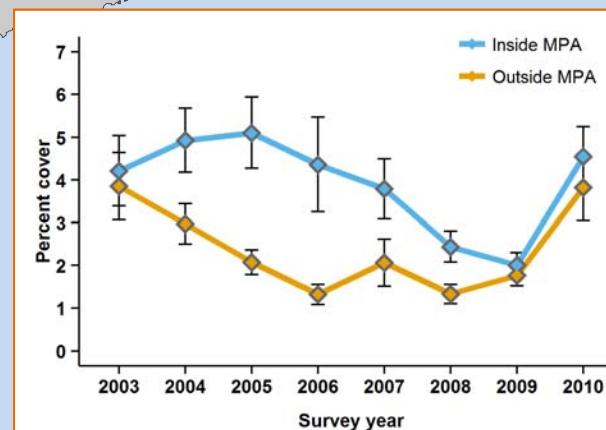
Southwest Puerto Rico



*Virgin Islands National Park
St John, USVI*



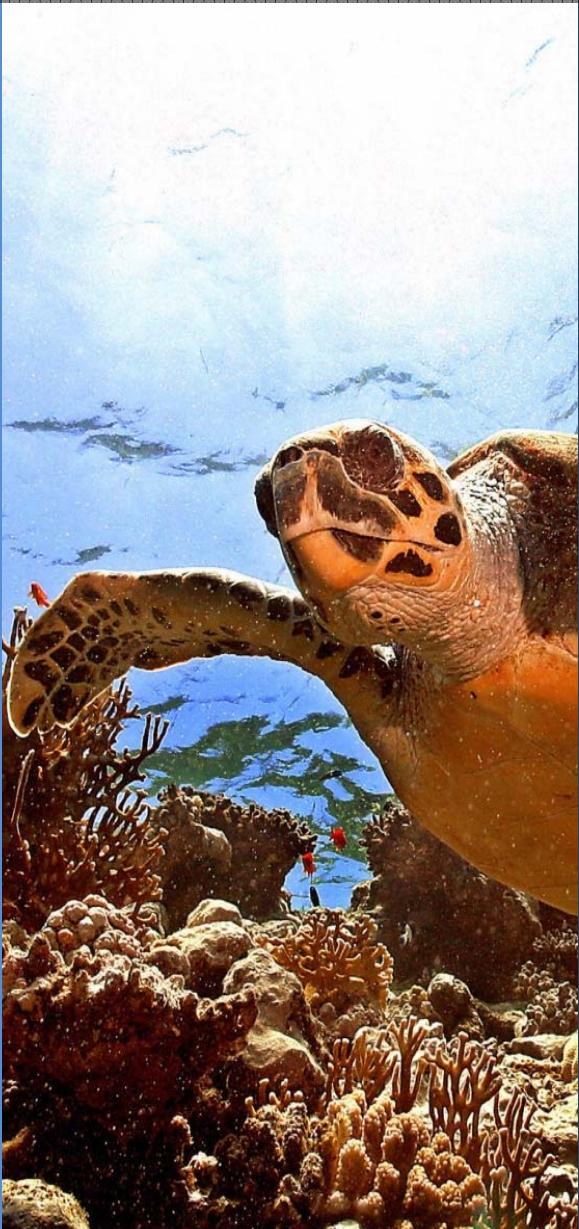
*Buck Island Reef National Monument
St Croix, USVI*





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National Coral Reef Monitoring Program



Tracking Biological Trends

- Biological indicators to assess the condition of coral reefs and associated reef fish communities:
 - **Coral abundance, size, and condition**
 - **Reef fish abundance and size**
 - **Habitat composition, complexity, and key species**
- Data are collected through **diving surveys** of shallow-water (**0-30 meters**) **hard-bottom** areas.
- **Scientists and coastal managers** can use these data to evaluate coral reef and fish population **management strategies**, document endangered or invasive marine species, and assist with local monitoring efforts.



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Monitoring Climate-Driven Impacts

- Climate indicators identify and monitor climate-driven trends:
 - Thermal stress
 - Ocean acidification
 - Ecological impacts on coral growth rates, erosion, and community structure
- Data are collected by moored instruments at fixed points, water samples via diver surveys, and satellite-based observations.



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Understanding Socioeconomic Connections

- Socioeconomic indicators:
 - Knowledge, attitudes, and perceptions
 - Participation in coral reef activities
 - Economic and cultural value of coral reefs
 - Community well-being
 - Human population distributions
- Researchers collect data through periodic surveys that include standardized questions, as well as questions specific to local management needs.



Photo credit: Mark Eakin, NOAA



National Coral Reef Monitoring Program

IS NOT:

- Monitoring...
 - Land-Based Sources of Pollution (LBSP)
 - Commercial or recreational fishing effort
 - MPA effectiveness
- Does not replace ...
 - Stock Assessments
 - Local state/jurisdictional monitoring





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Atlantic – Caribbean Biological Monitoring



- Co-led by NCCOS and NMFS/SEFSC
- Biennial fish and benthic surveys
- Grid based stratified random design
- Hardbottom habitats to 30 m
- Fish and coral independent survey design



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METHODS - FISH



- 25 x 4 m transect/7.5 m radius point count
- Species ID
- Size Frequency
- Density
- Biomass
- Species Richness



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METHODS – Line Point Intercept

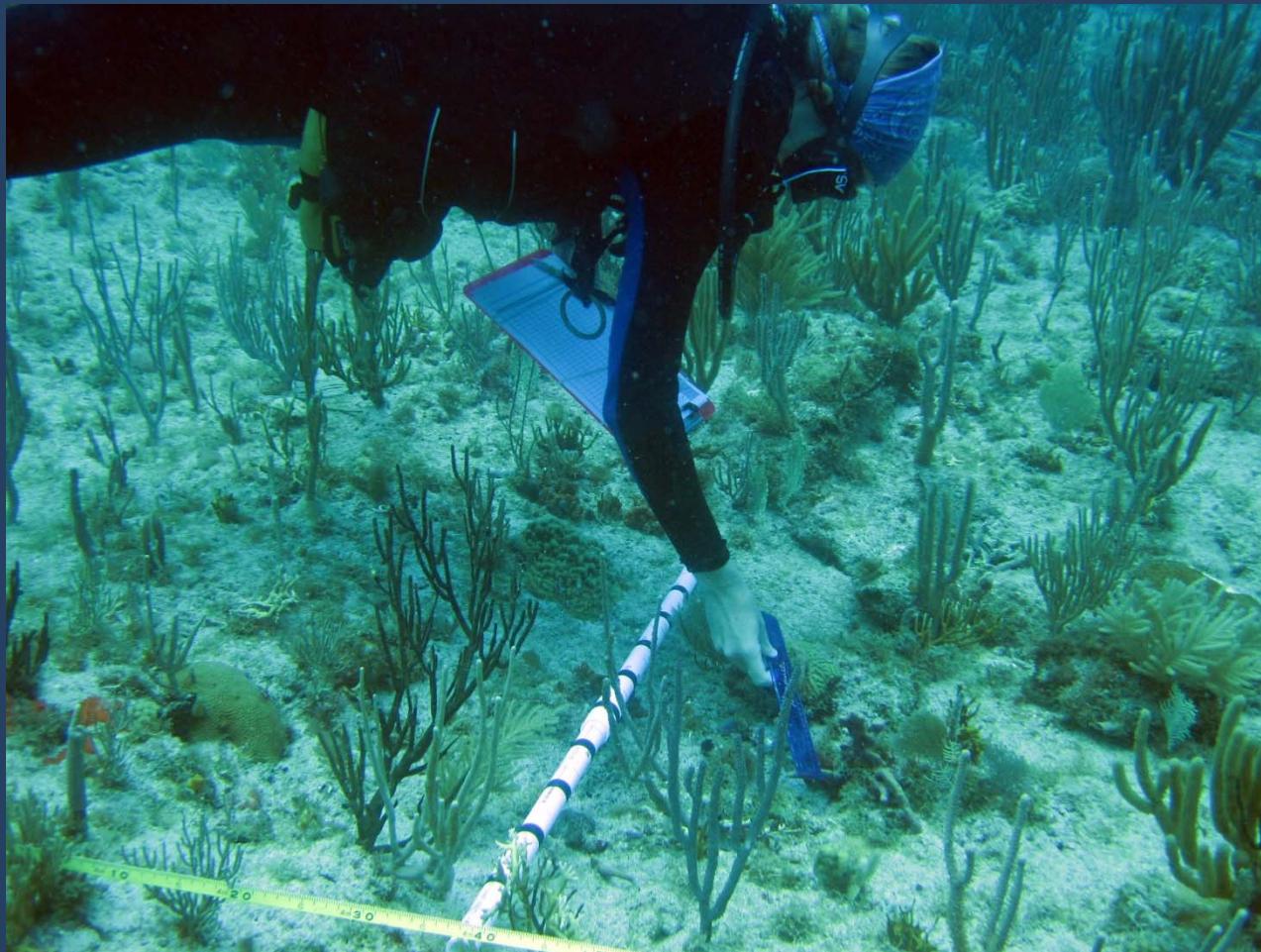


- Percent cover of major benthic taxa
 - Coral
 - Algae
 - Gorgonians
 - Sponges
- Accompanies all fish counts



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METHODS – Coral Demographics



- Measure all corals >4 cm
 - Length/Width/Height
- % Live/Dead
- P/A Bleaching
- P/A Disease
- Colony Density
- Species richness



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METHODS – Other data

ESA Corals

- Dedicated search for presence/absence of ESA species along transect

Benthic Complexity

- Generate an index of complexity on every transect

Other invertebrates

- Lobster, conch, spiny sea urchins

Video/photos of habitat

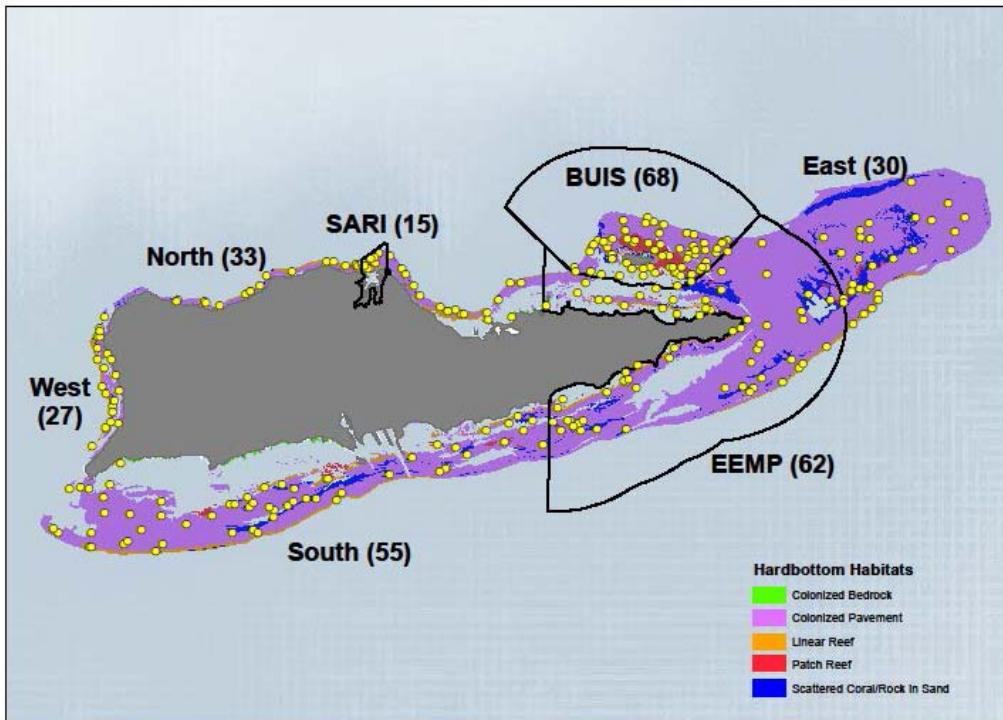
- Useful for mapping
- Validation of habitat types





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NCRMP 2012 – St. Croix USVI



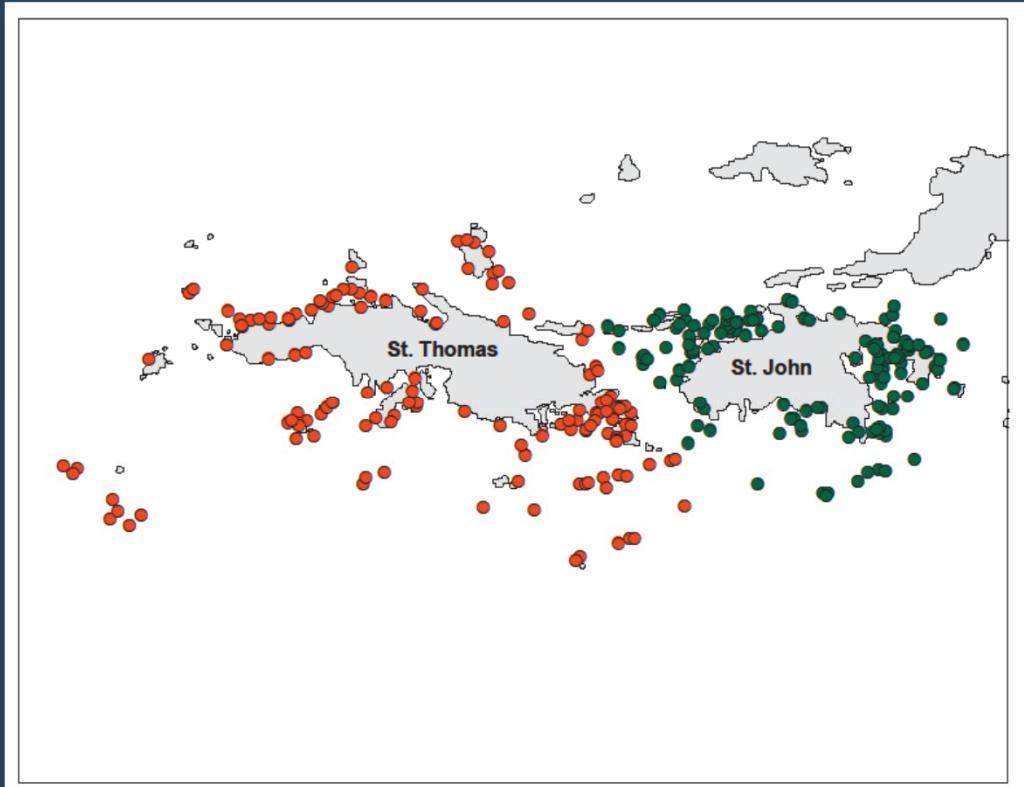
HIGHLIGHTS

- 234 KM² survey domain
- Fish prototype
- 276 surveys in 10 days; 7 boats, 40 field staff



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NCRMP 2013 – USVI & Flower Garden Banks



HIGHLIGHTS

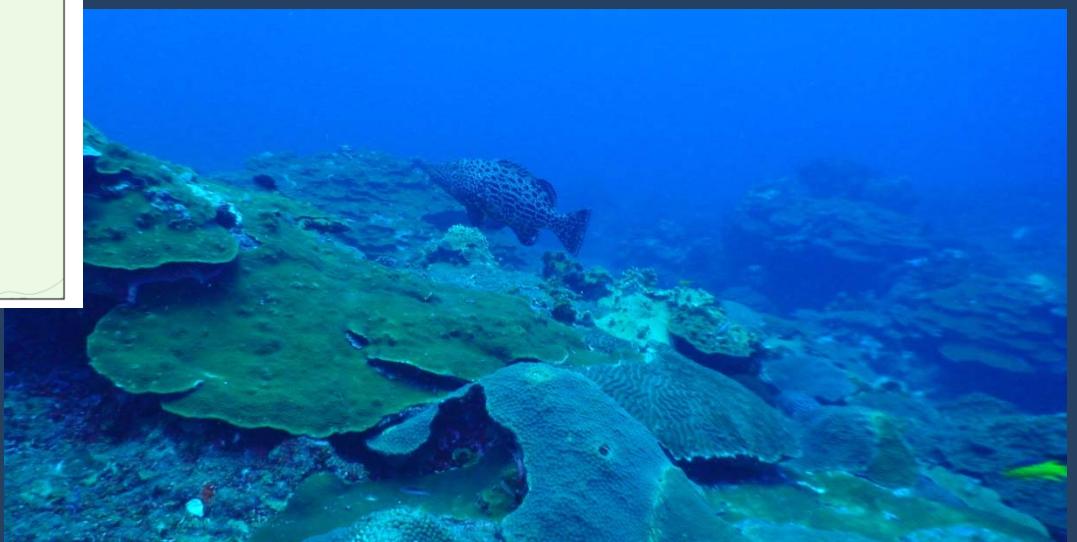
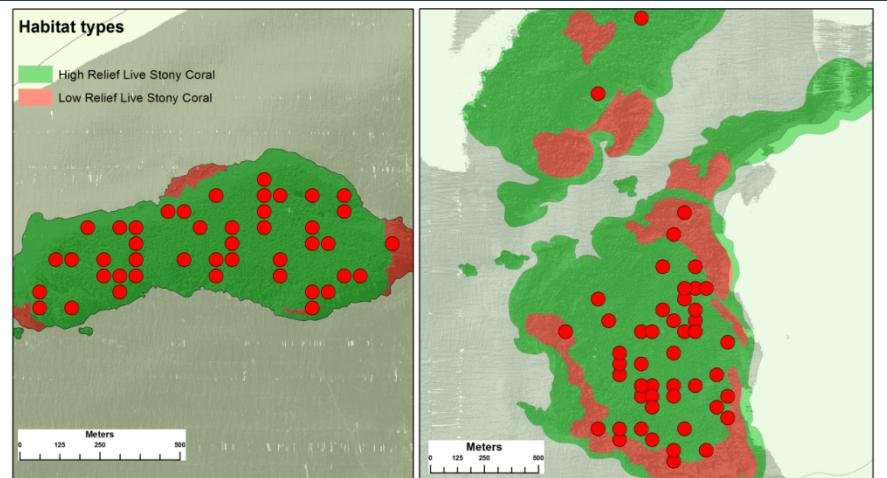
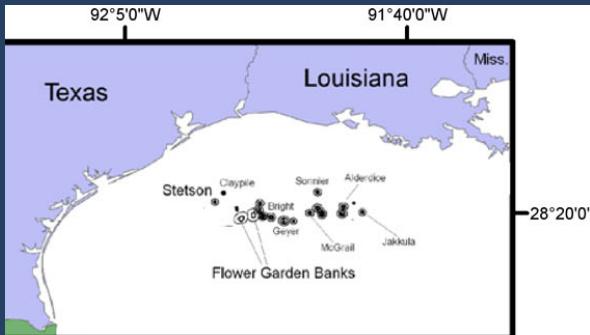
- 85 KM² survey domain
- First time to implement new benthic monitoring protocols
- 284 surveys in 10 days; 6 boats, 35 field staff



NOAA National Coral Reef Monitoring Program NCRMP 2013 – USVI & Flower Garden Banks

HIGHLIGHTS

- 1 KM² survey domain; no shallow reef extends from 60-150'
- First time to implement new benthic monitoring protocols
- 69 surveys in 5 days; 1 boat, 10 field staff

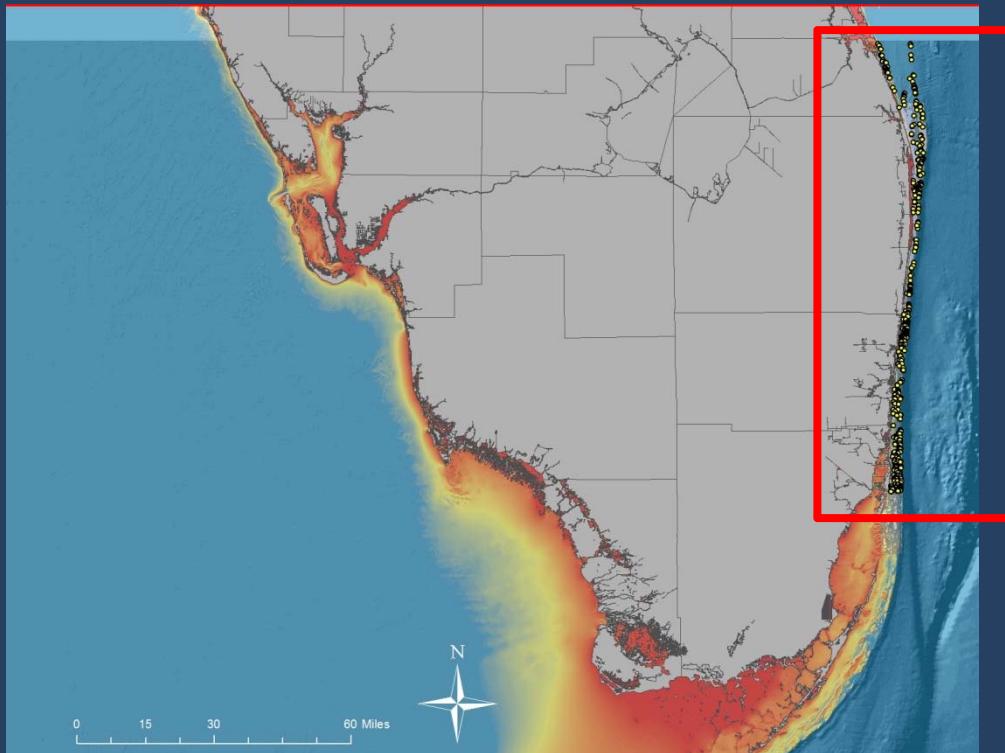




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NCRMP 2014 – Florida & Puerto Rico

SEFCRI Domain



HIGHLIGHTS

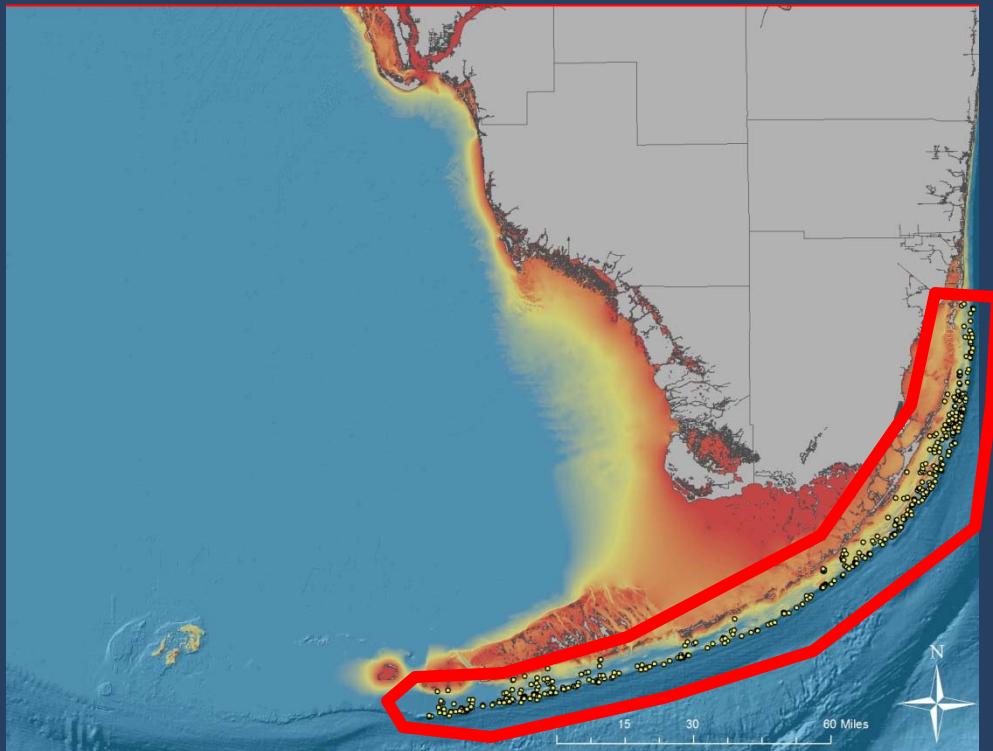
- 273 km² survey domain
- Includes hard bottom from Port St. Lucie to Miami,
- First time to implement new benthic monitoring protocols
- 286 surveys in 6 months
- 5 cooperative agencies involved



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NCRMP 2014 – Florida & Puerto Rico

Florida Keys Domain



HIGHLIGHTS

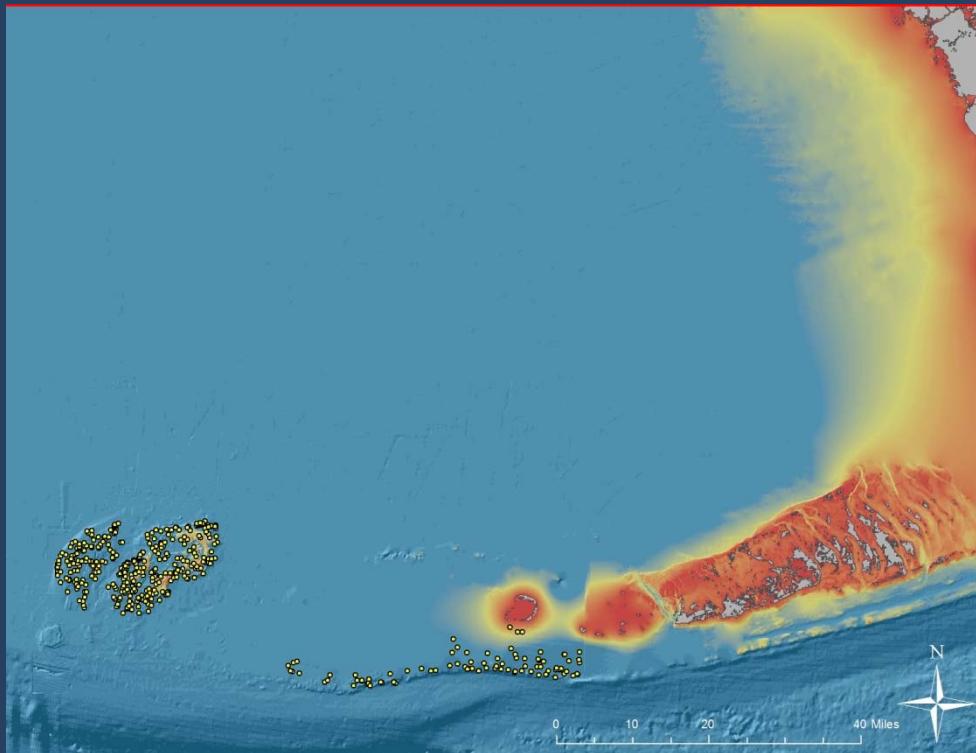
- 1163 km² survey domain
- Includes hard bottom from Miami to Key West
- First time to implement new benthic monitoring protocols
- 422 surveys in 6 months
- 5 cooperative agencies involved



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NCRMP 2014 – Florida & Puerto Rico

Dry Tortugas Domain

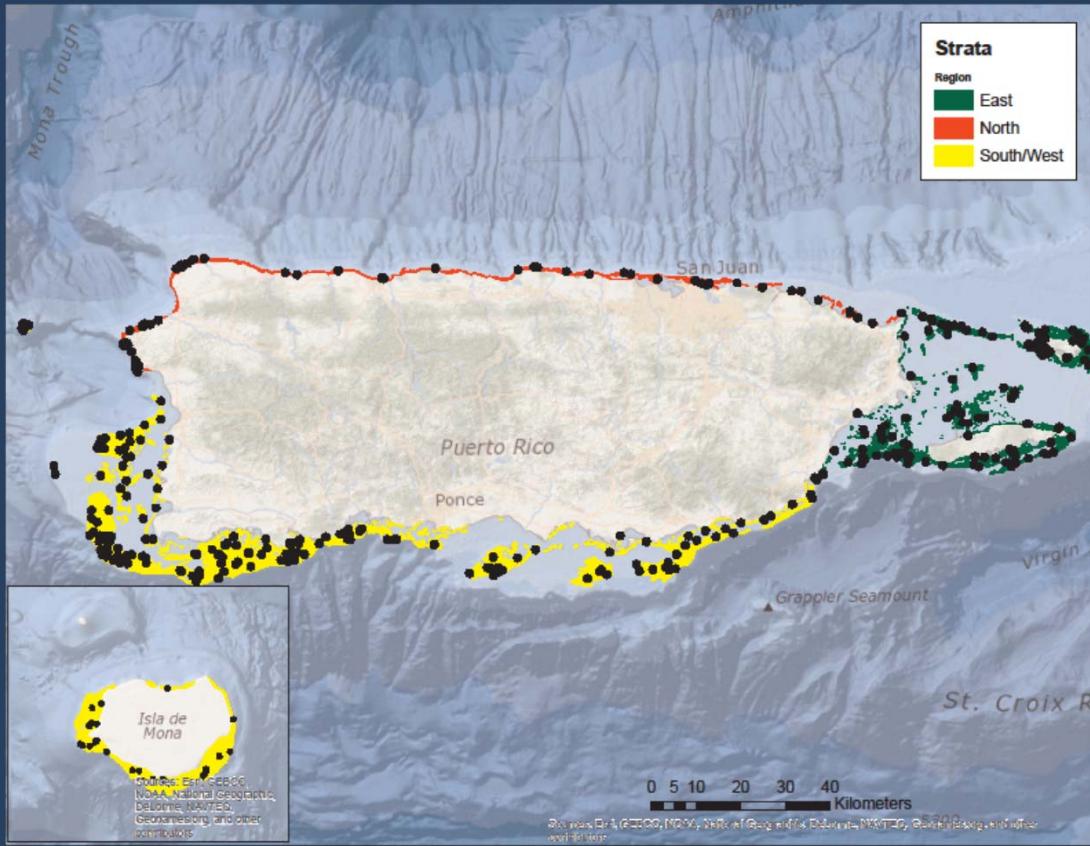


HIGHLIGHTS

- 1155 km² survey domain
- Includes hard bottom from Marquesas to Dry Tortugas
- First time to implement new benthic monitoring protocols
- 424 surveys in 6 months
- 9 cooperative agencies involved



NOAA National Coral Reef Monitoring Program NCRMP 2014 – Florida & Puerto Rico



HIGHLIGHTS

- 849 KM² survey domain
- First time to implement new benthic monitoring protocols
- 225 surveys in 6 months; limited partnerships but GROWING!



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NCRMP CHALLENGES

- Logistically complex
 - Large sampling areas
 - Boats
 - Divers
 - Scuba tanks/fills
 - Training
- Data management
- Limited resources



CHALLENGE ACCEPTED



NCRMP

WHAT MAKES IT WORK??

PARTNERSHIPS!

Examples:

*USVI - NPS

*FLORIDA





NCRMP BENEFITS

- Spatially comprehensive FIM data/2 yrs.
- Fish population data
- Coral population data
- NOAA handles data management & dissemination
- Complement local/jurisdictional monitoring
- Leveraging resources
- Cross-training





NCRMP Reporting

- Data delivery to partners within 12 months of surveys
- Data summary report within a year of survey
- Data queries available online 12-15 months after survey
- 4 yr. report, including all aspects of NCRMP. May be report card type style





NCRMP DATA

NCCOS | National Coral R x

www8.nos.noaa.gov/bpdmWeb/queryMain.aspx

Time & Attendance TRAVEL MANAGER calendar noaa mail QuikPAY(R) Login National Coral Reef ... NCCOS | Project Det... Yahoo Sports Fantas... December 2010 HOF... Daily MLB Pitcher A... Site Tracker Other bookmarks

The National Centers for Coastal Ocean Science is the research office of the NOAA National Ocean Service

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You are here:

Region	Sub Region	Study Area	Year	Management	Structure
All Regions	All Sub Regions	All Study Areas	All Years	All Management	All Structures
Hawaii	Hawaii	Buck Island	2000	FMA	Colonized Hardbottom
Puerto Rico	Lanai	Coral Bay	2001	None	HARD
US Virgin Islands	Maui	East	2002	SARI	MANGROVE

Fish Benthic Debris Metadata

Query Type	Trophic Level	Family	Species
Full Data Download	All Trophic	All Family	All Species
Abundance	C	Acanthuridae	Ablennes hians
Biomass	D	Albulidae	Abudedefduf abdominalis
Diversity	H	Antennariidae	Abudedefduf saxatilis

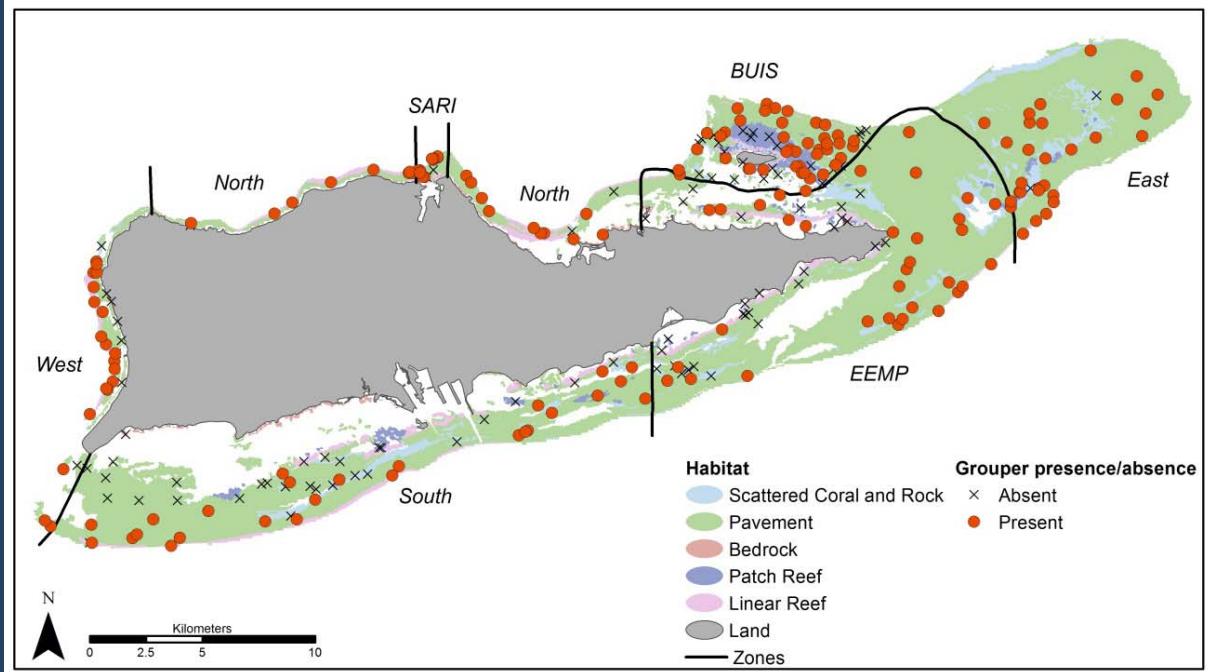
Preview Query

Scientific Name

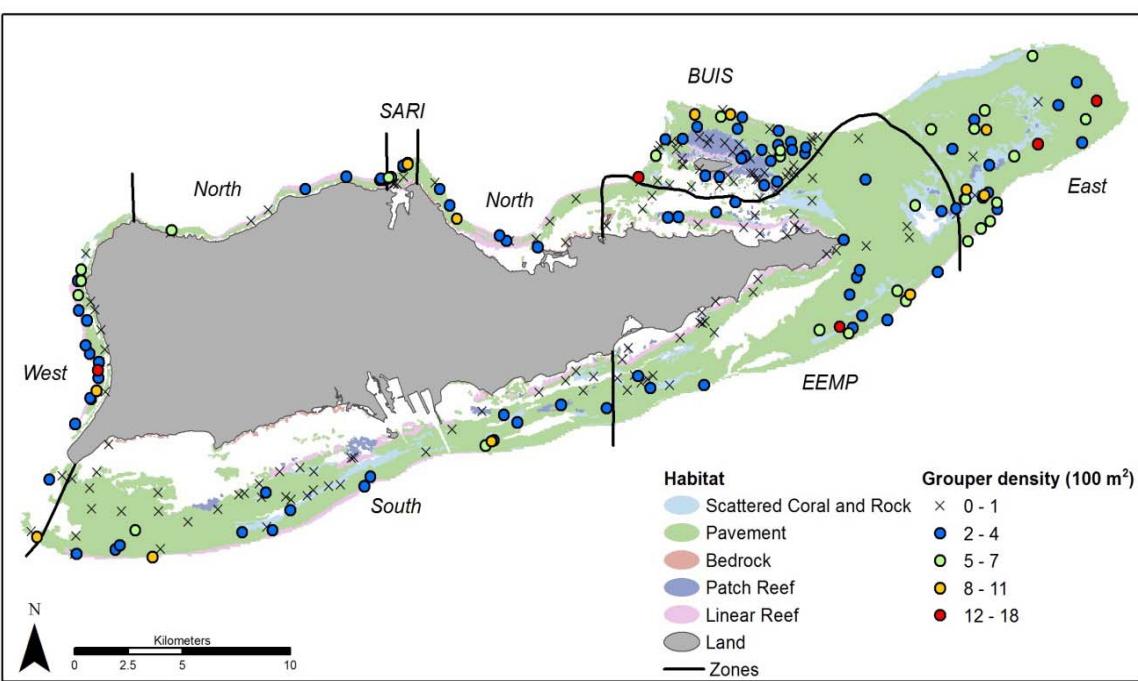
Common Name

Download Data

Example data products and tools to support local monitoring and management actions

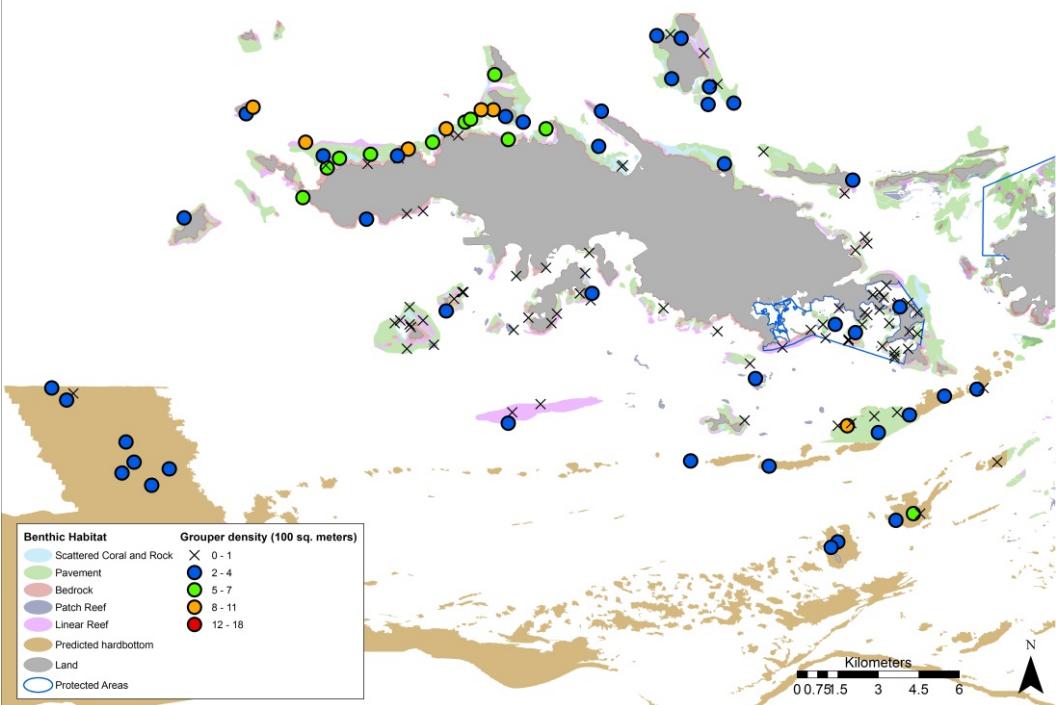
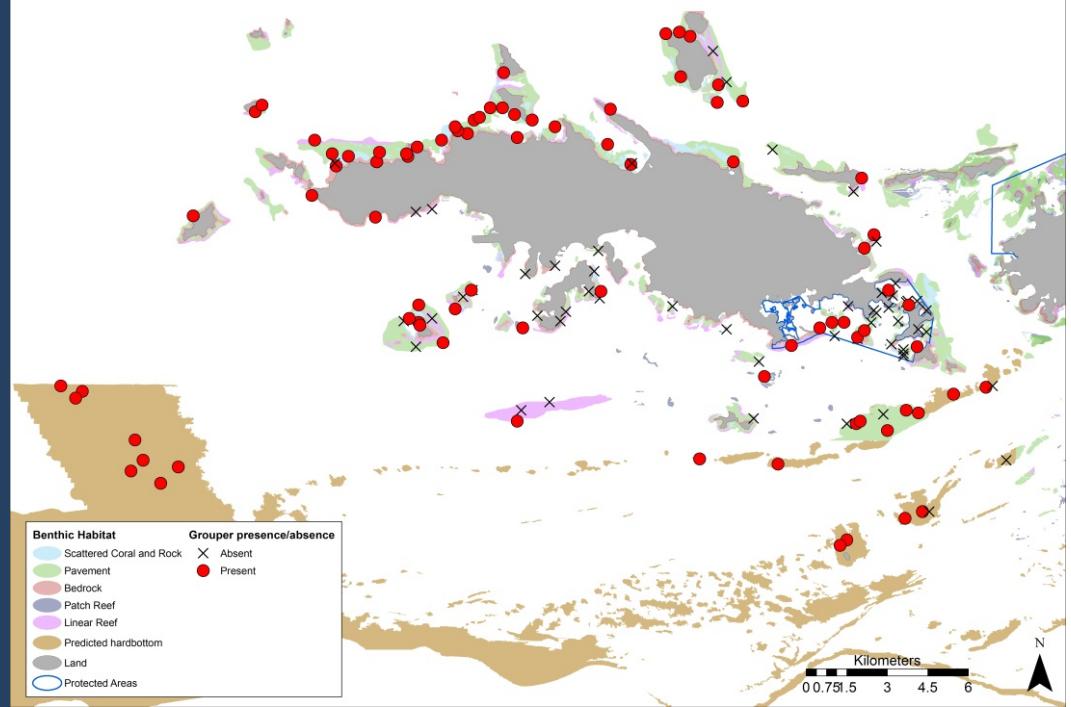


Groupers



<i>Cephalopholis cruentata</i>	Graysby
<i>Cephalopholis fulva</i>	Coney
<i>Epinephelus adscensionis</i>	Rock Hind
<i>Epinephelus guttatus</i>	Red Hind
<i>Epinephelus morio</i>	Red Grouper
<i>Epinephelus striatus</i>	Nassau Grouper
<i>Mycteroperca bonaci</i>	Black Grouper
<i>Mycteroperca interstitialis</i>	Yellowmouth Grouper
<i>Mycteroperca tigris</i>	Tiger Grouper
<i>Mycteroperca venenosa</i>	Yellowfin Grouper
<i>Mycteroperca phenax</i>	Scamp

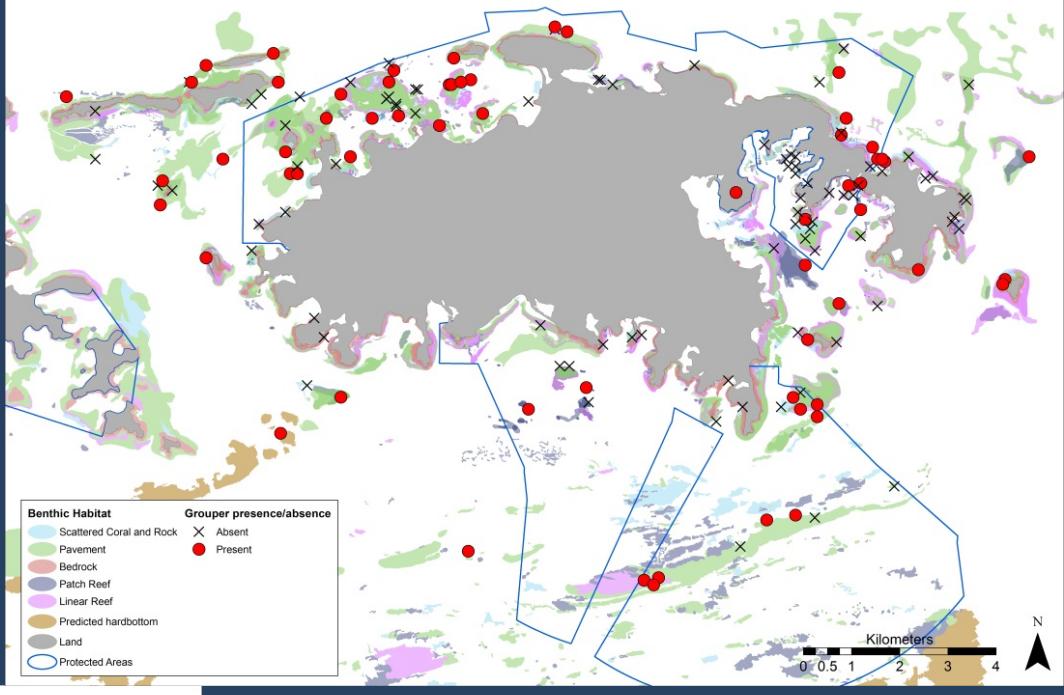
Example data products and tools to support local monitoring and management actions



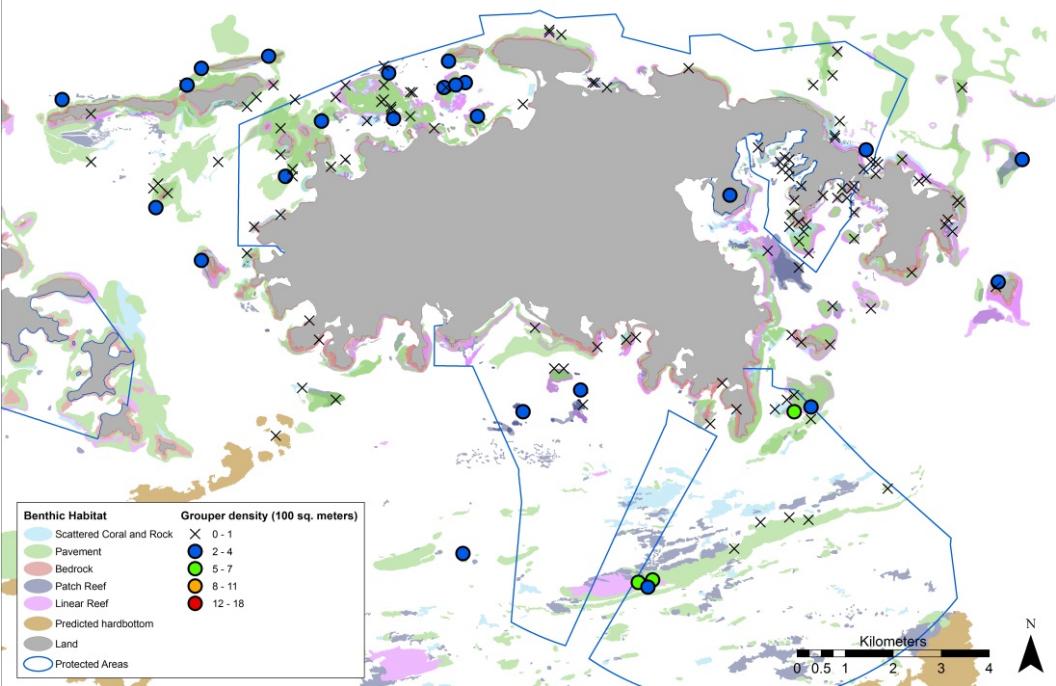
Groupers

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Example data products and tools to support local monitoring and management actions



Groupers



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For More Information:

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- Socioeconomics
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- Climate
 - Derek Manzello – AOML (derek.manzello@noaa.gov)

