NOAA CORAL REEF CONSERVATION PROGRAM

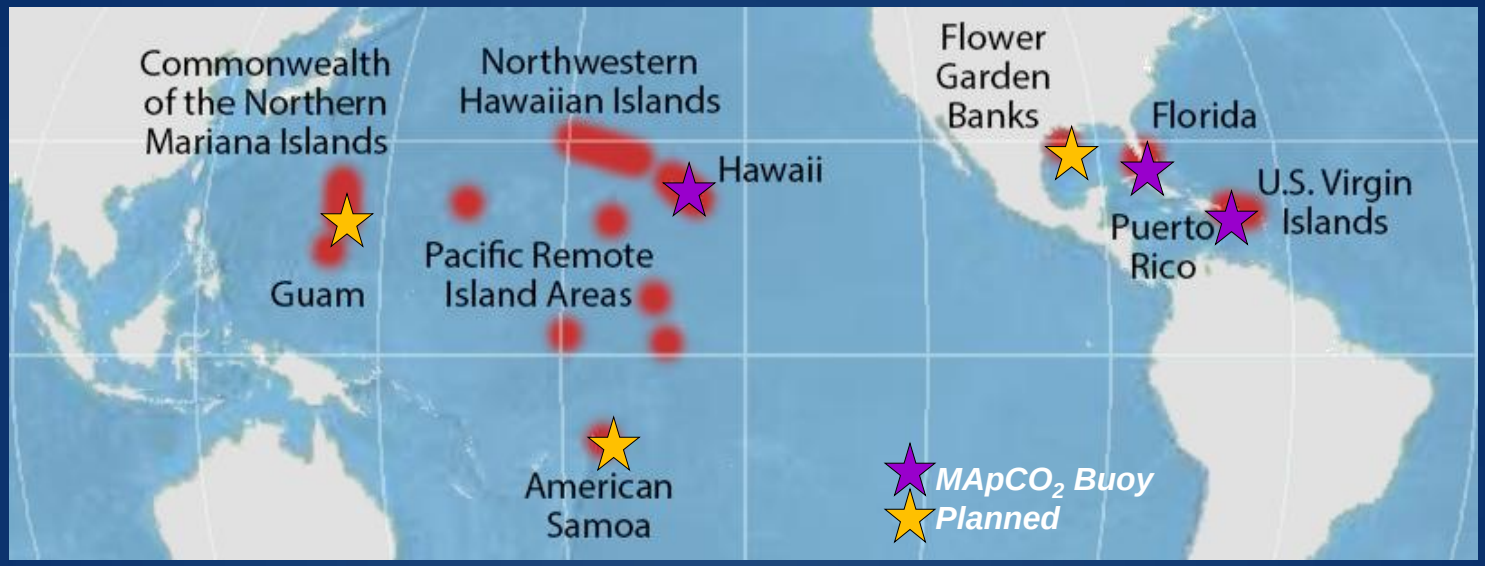
Photo credit: Mark Eakin, NOAA

National Coral Reef Monitoring Program (NCRMP)

MISSION

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

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)

NOAA National Coral Reef Monitoring Program
Foundational Survey Design

USVI, Puerto Rico and FGBNMS Field Method:

- In-situ observations using Scuba
- 25x4 m belt transect, 15 minute duration

FISH:

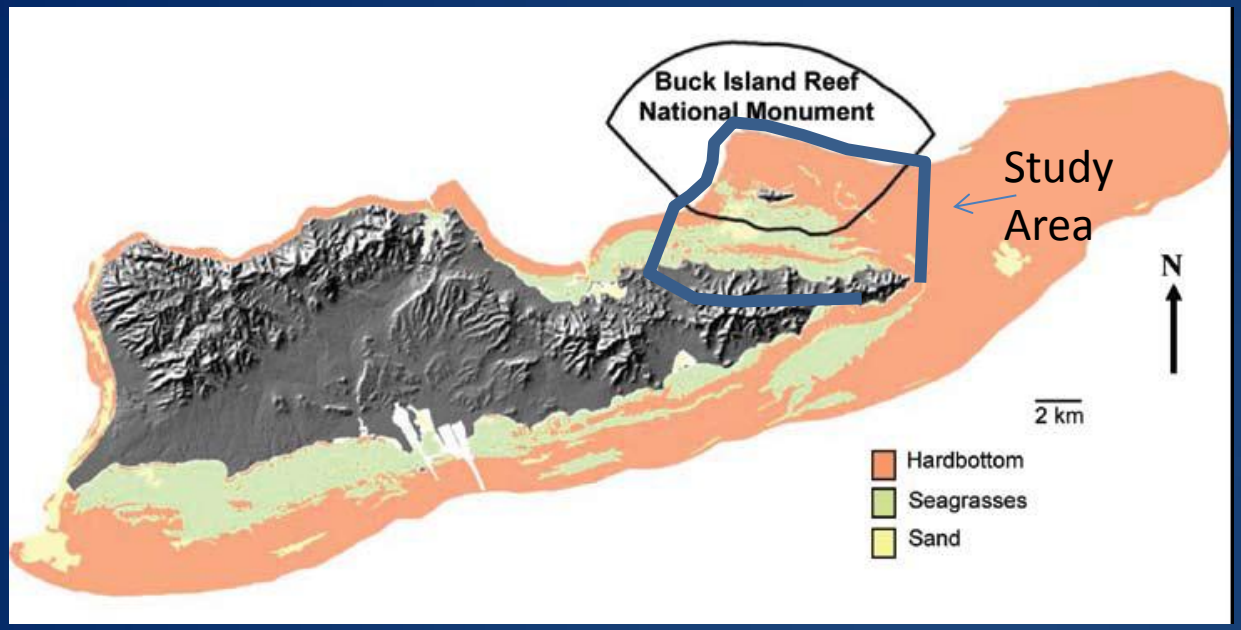
ID to species

Size (FL) in 5 cm bins

BENTHIC:

1m^2 quadrat to measure benthic % cover (5 random placements along transect)

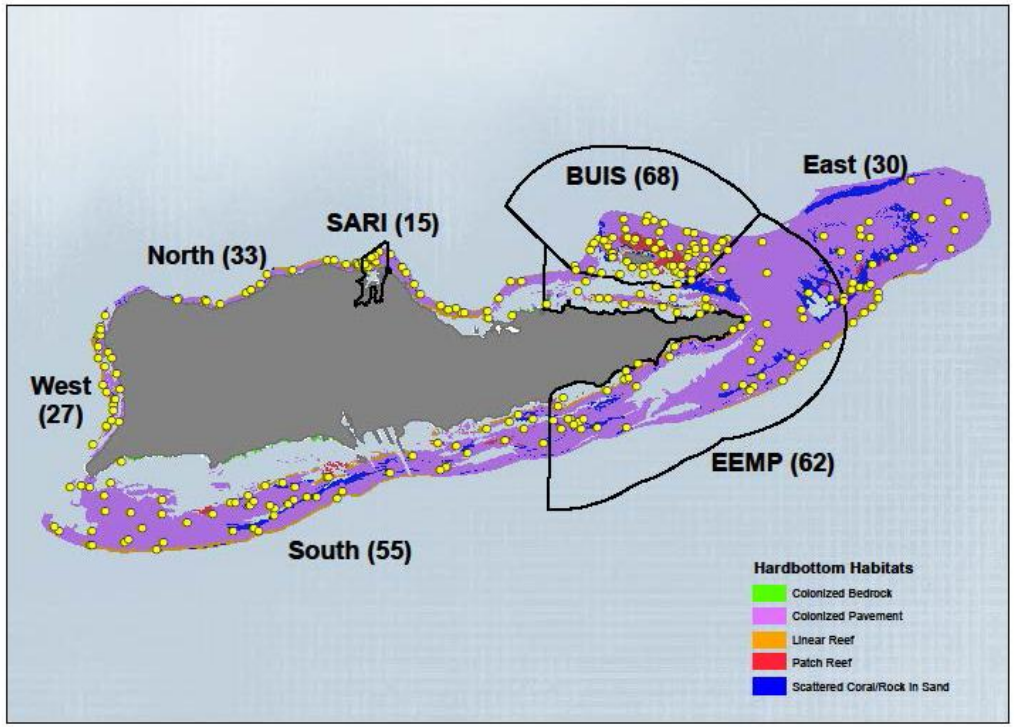
NOAA National Coral Reef Monitoring Program
Historical Biological Component – St. Croix



- Fish surveys:
  - Hardbottom – 1336
  - Softbottom – 787
- Allocation:
  - Power analysis to develop site allocation
  - Species specifc
  - Biodiversity indices
  - Targeting 20% CV

- Funded by CRCP, NCCOS and NPS
- Developed benthic habitat map, 1998-2000
- Revised map @ Buck Island in 2005
- Stratified random design: charactize community & inside/outside effects
  - Hardbottom/softbottom
- Fish and benthic monitoring, 2000-2011
- Temporal resolution: biannual-Spring/Fall

NOAA National Coral Reef Monitoring Program
St. Croix 2012



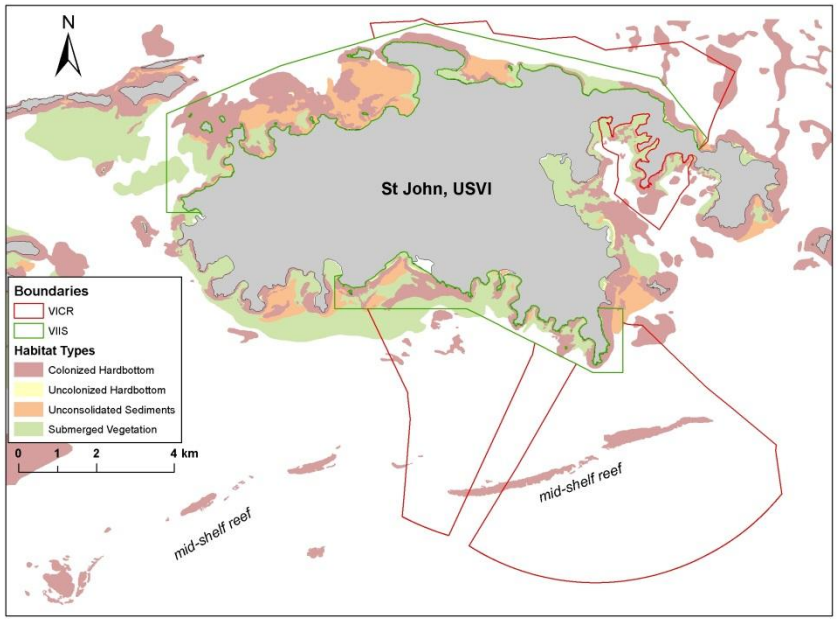
STRATA:

- Region (North, South East, West, 3 MPAs)
- Depth (shallow, deep)
- Habitat type (Pavement, Patchreef, Bedrock, Linear Reef, Scat coral/rock)

HIGHLIGHTS

- NCRMP prototype
- 276 surveys complete in 2012
- Fish modifications: Exact FL estimate for groupers/snappers
- Site allocation will be statistically driven in 2015; CV=20%

NOAA National Coral Reef Monitoring Program
Historical Biological Component –St. John



Fish surveys:

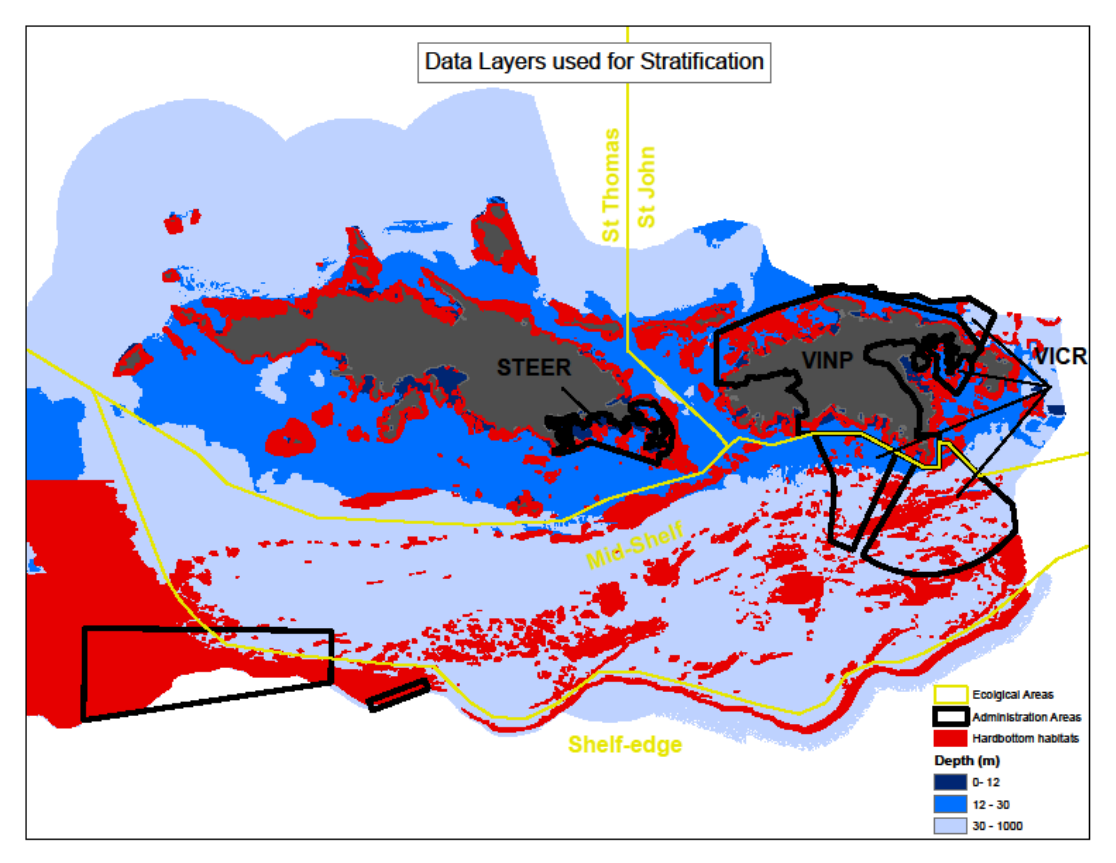
- Hardbottom – 1336
- Softbottom – 787

Allocation:

- Power analysis to develop site allocation
- Species specific
- Biodiversity indices
- Targeting 20% CV

- Funded by CRCP, NCCOS and NPS
- Developed benthic habitat map, 1998-2000
- Revised map 2008
- Stratified random design: characterize community & inside/outside effects
  - Hardbottom/softbottom
- Fish and benthic monitoring, 2001-2011
- Temporal resolution: biannual-Spring/Fall

NOAA National Coral Reef Monitoring Program
St. Thomas & St. John

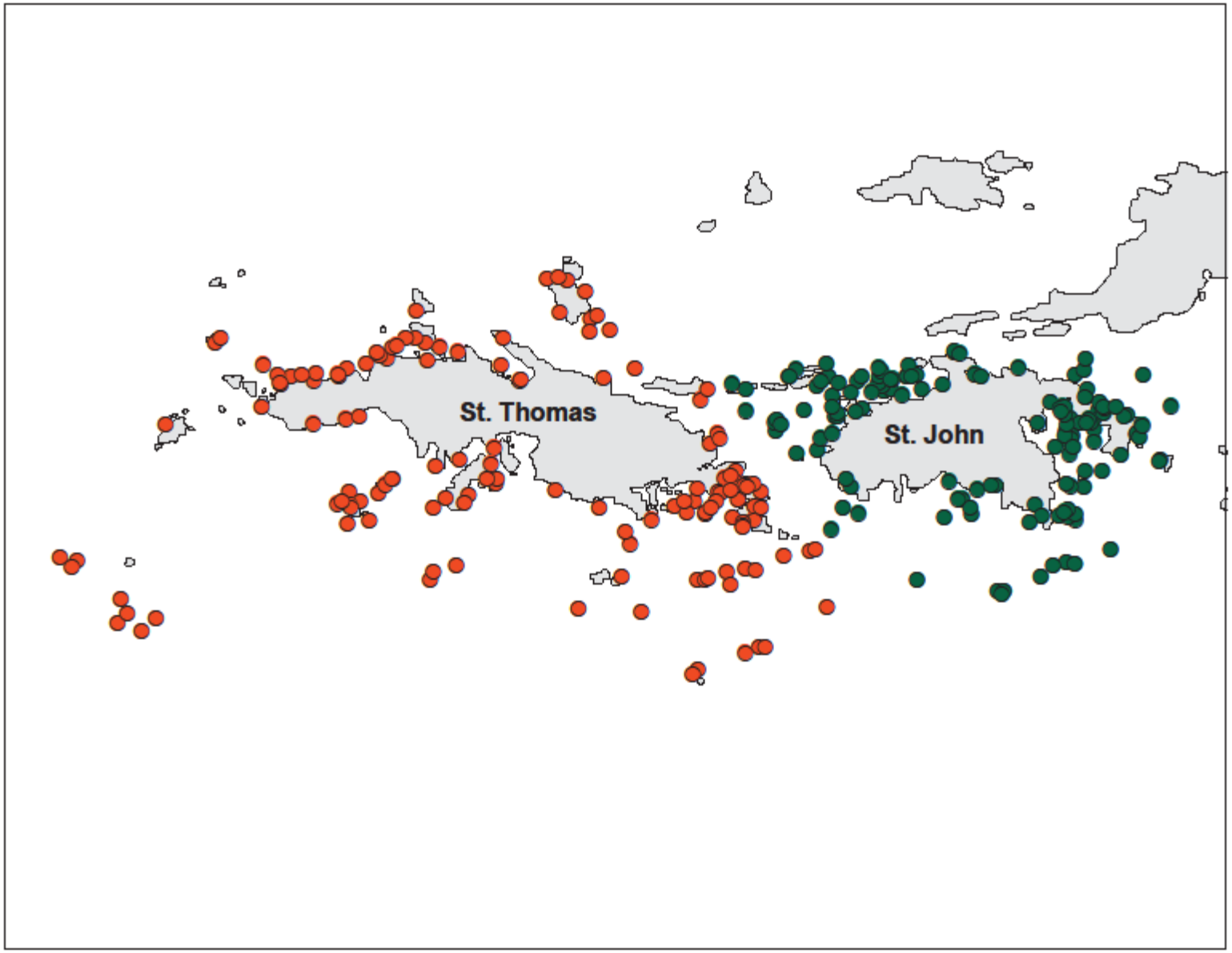


STRATA:

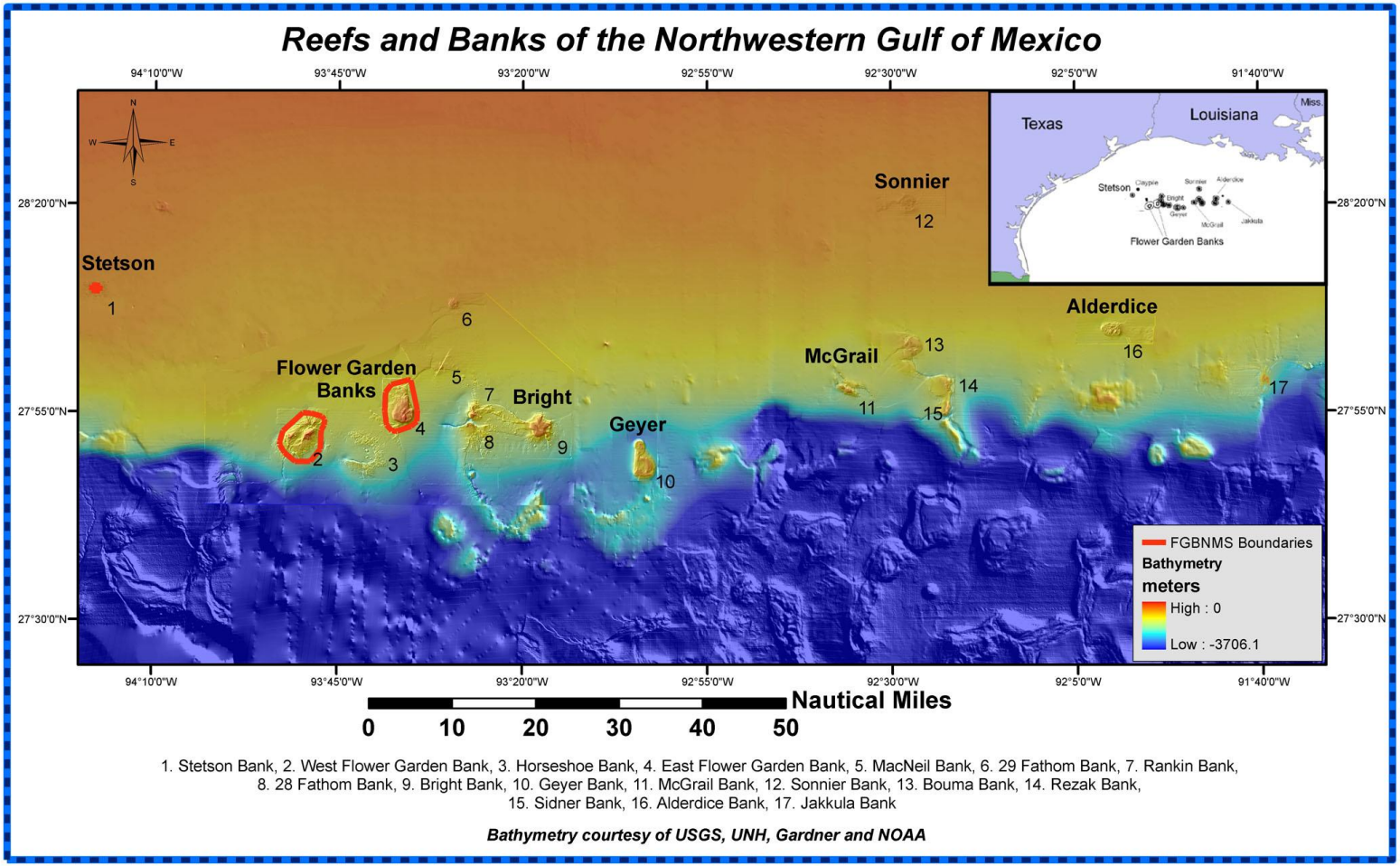
- Region (St. Thomas, St. John, VINP, VICRM, STEER)
- Depth (shallow, deep)
- Habitat type (Pavement, Patchreef, Bedrock, Linear Reef, Scat coral/rock)

HIGHLIGHTS

- First spatially comprehensive monitoring
- 284 surveys complete in 2013
- Fish modifications: Exact FL estimate for groupers/snappers
- Site allocation will be statistically driven in 2015; CV=20%


St. Thomas
St. John

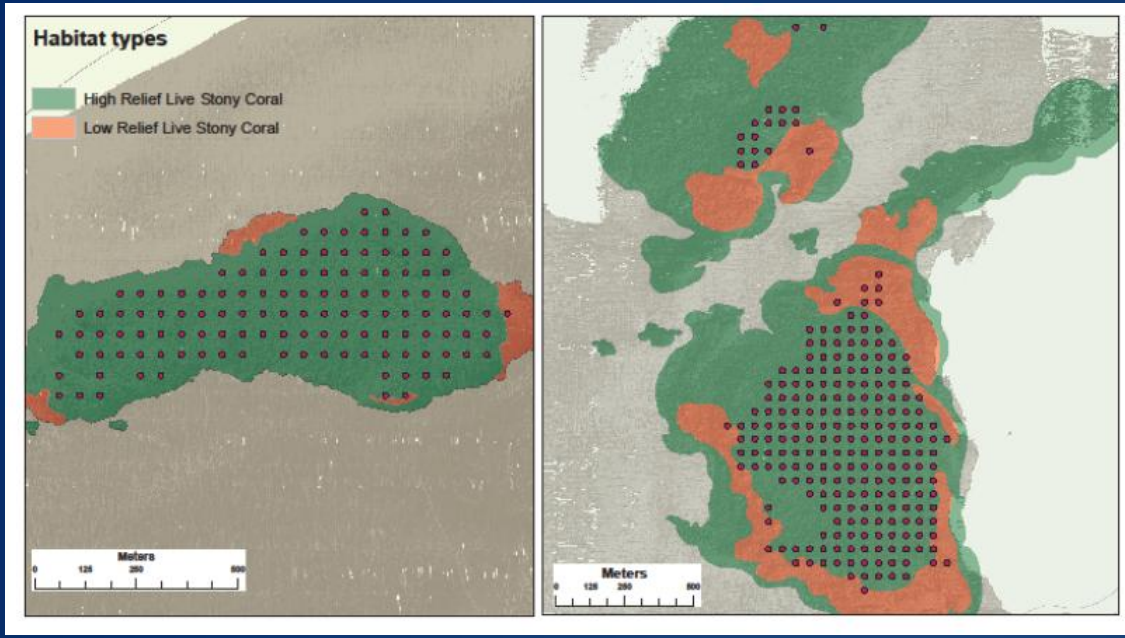
NOAA National Coral Reef Monitoring Program
Historical Biological Component –FGBNMS



1. Stetson Bank, 2. West Flower Garden Bank, 3. Horseshoe Bank, 4. East Flower Garden Bank, 5. MacNeil Bank, 6. 29 Fathom Bank, 7. Rankin Bank, 8. 28 Fathom Bank, 9. Bright Bank, 10. Geyer Bank, 11. McGrail Bank, 12. Sonnier Bank, 13. Bouma Bank, 14. Rezak Bank, 15. Sidner Bank, 16. Alderdice Bank, 17. Jakkula Bank

Bathymetry courtesy of USGS, UNH, Gardner and NOAA

NOAA National Coral Reef Monitoring Program
Historical Biological Component –FGBNMS



Fish surveys:

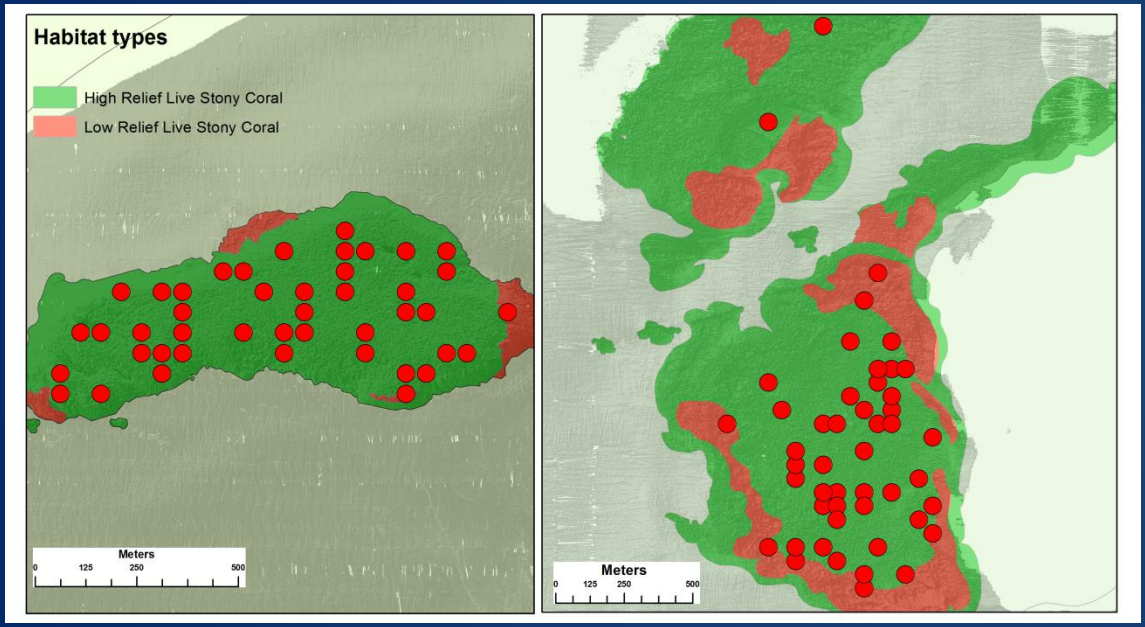
- High Relief – 310
- Low Relief – 55

Allocation:

- Based on time/resources & logistics

- Funded by CRCP and ONMS
- Developed benthic habitat map, 2005
- Stratified random design:
  - High relief/low relief
- Fish and benthic monitoring, 2006-2007 (to 110’);
  - 2010-2012 (to 150’)
- Temporal resolution: summer
- Logistics difficult, 5 day cruises

NOAA National Coral Reef Monitoring Program
FGBNMS



STRATA:

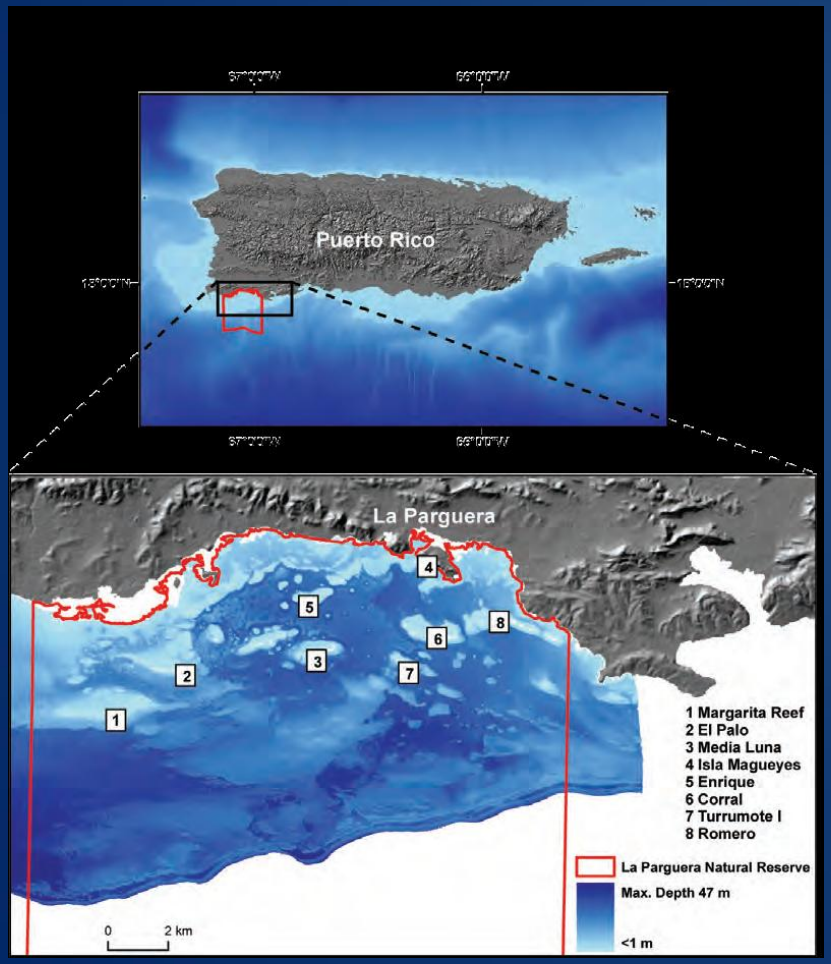
•Bank (East, West), Relief (Low, High)

HIGHLIGHTS

- 69 surveys complete in 2013
- Fish modifications: Exact FL estimate for groupers/snappers
- Groupers and snappers are abundant!
- Site allocation will be statistically driven in 2015; CV=20%

NOAA National Coral Reef Monitoring Program
Historical Biological Component – Puerto Rico

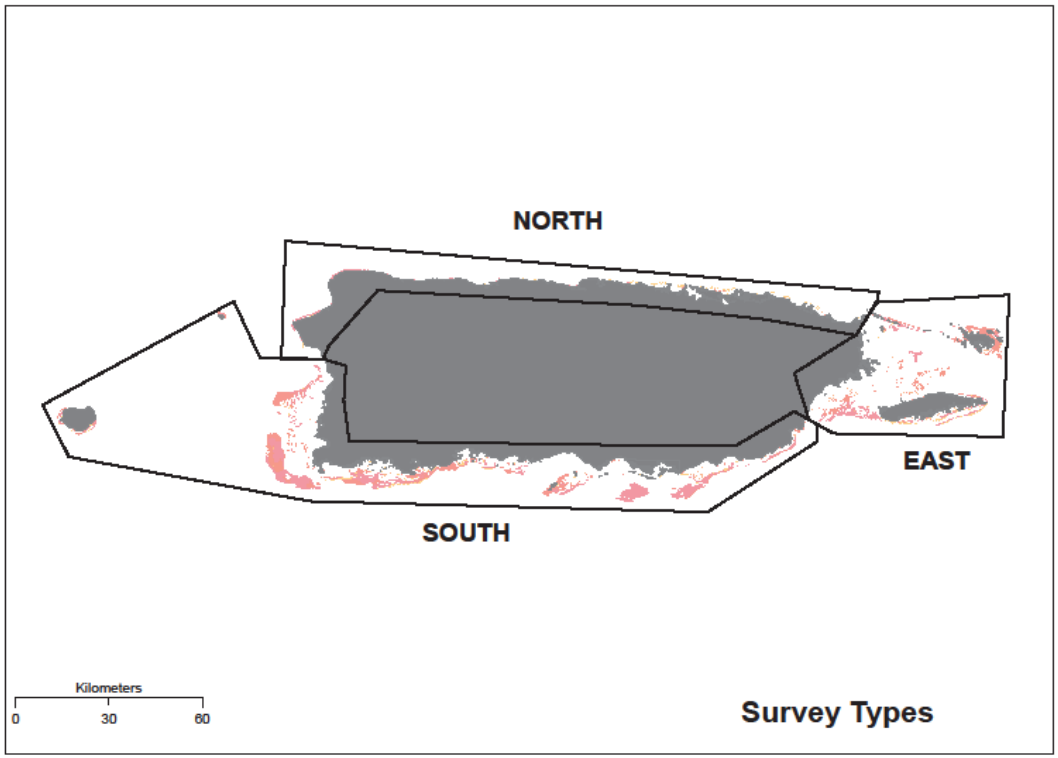
NCRMP PUERTO RICO



- Funded by CRCP
- Developed benthic habitat map, 1998-2000
- Revised map in 2005
- Stratified random design
  - Hardbottom/softbottom/mangroves
- Fish and benthic monitoring, 2000-2012
- Temporal resolution: biannual-Spring/Fall

- Fish surveys:
  - Hardbottom – 860
  - Softbottom – 754
  - Mangrove – 239

NOAA National Coral Reef Monitoring Program
Puerto Rico Survey Design



STRATA

- Region (North, South East, 4 MPAs)
- Depth (shallow, deep)
- Habitat type (Pavement, Patchreef, Bedrock, Linear Reef, Scat coral/rock)

HIGHLIGHTS

- ~220 surveys complete in 2014
- Fish modifications: Exact FL estimate for groupers/snappers
- Site allocation will be statistically driven in 2016