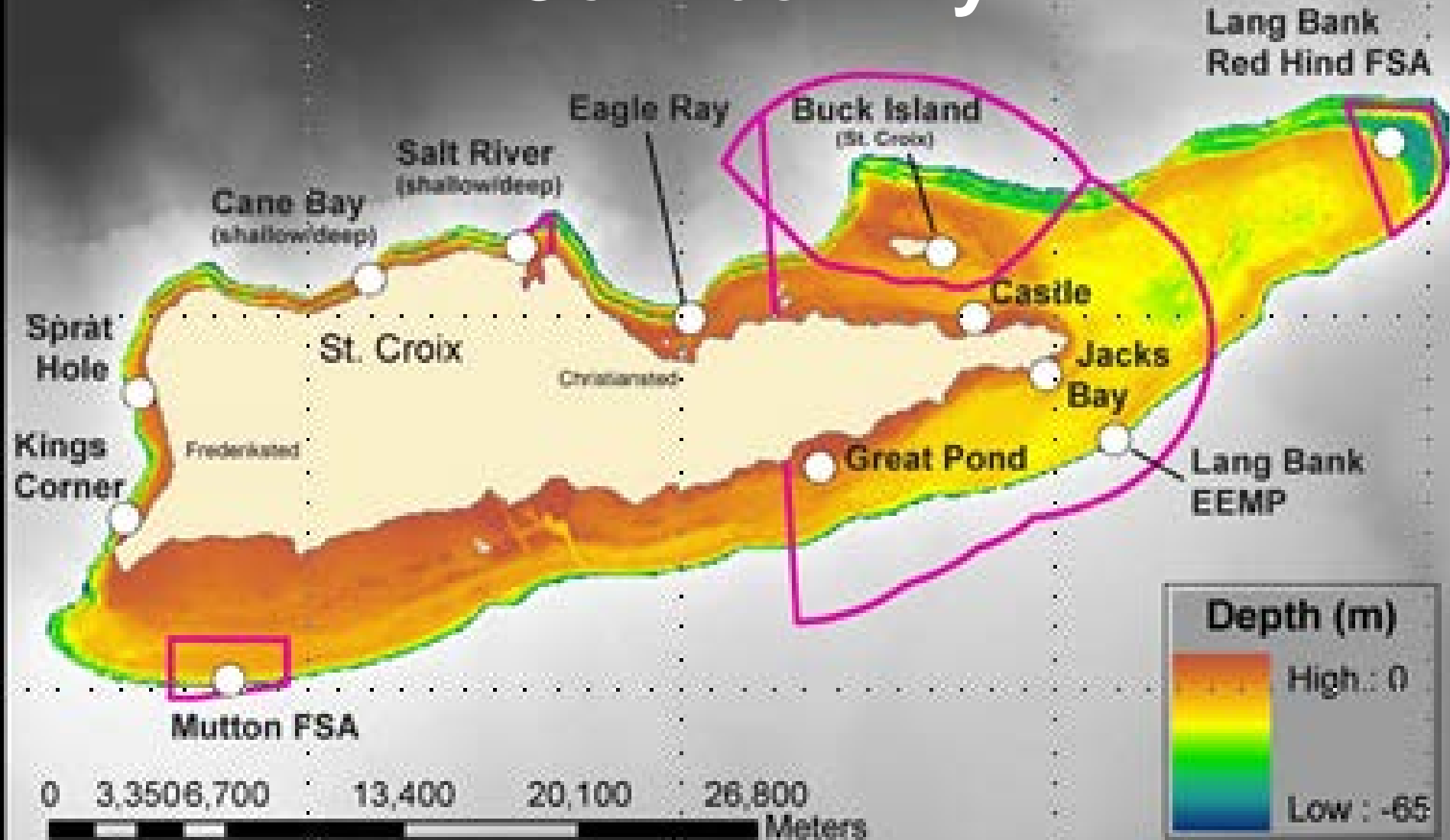


Connectivity



OUR St. Croix National Parks Resources & Research



Zandy Hillis-Starr, Chief of Resource Management
Christiansted NHS, Buck Island Reef NM, & Salt
River Bay NHP & EP

Christiansted National Historic Site

- **Established 1952 - 7.5 acres**
- **Six 18th -19th c structures in the heart of Christiansted**
- **Finest example of Danish Colonial site in West Indies**
- **Provide exhibits, tours, education, historical publications**
- **Significant pre-historic & military museum collections**
- ***Potential site of World Class Slave Trade Museum***



Christiansted NHS Harbor waterfront



Five acre site , heart of downtown historic Christiansted. Public bulkhead and harbor primary passage for fuel barges to VI Water Power Authority to west.

Salt River Bay National Historical Park & Ecological Preserve



Salt River Bay NHP & EP

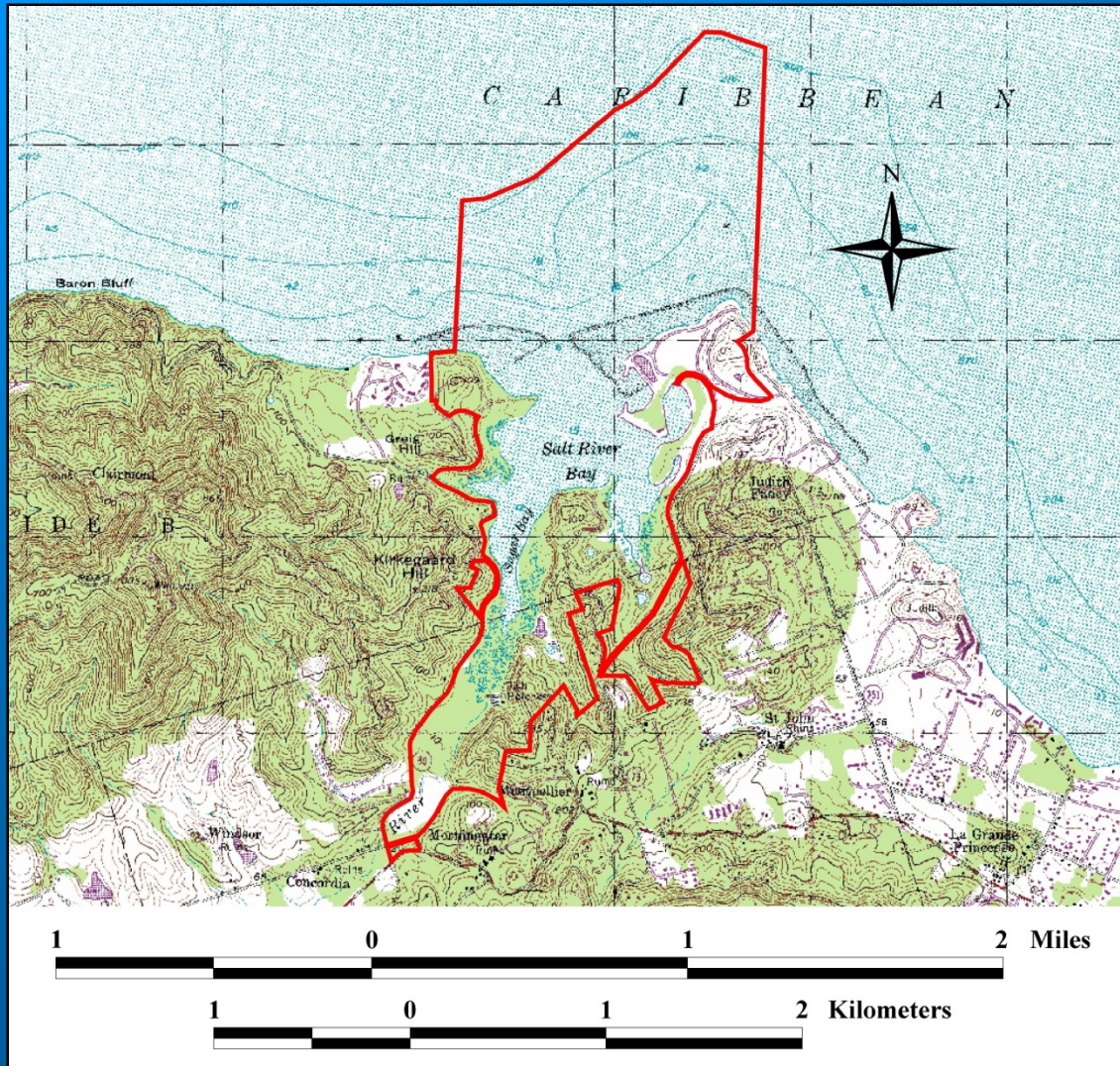


Taino artifacts

- **Established 1992**
- **1015 acres land and water**
- **2000 years of human history**
- **1493 Columbus' crew landed at Salt River during his 2nd voyage**
- **Preserves upland watershed & largest remaining intact mangrove forest on St. Croix**
- **Unique submarine canyon & deep water coral reefs**



Co-Managed National Park



Salt River Bay
Park Boundaries
are 1015 acres

Located on the
north shore of St.
Croix

Only 224 Acres
NPS Owned;
Water jurisdiction
of GVI

Ridge to Reef Ecosystem – Mangroves, Coral Reef to Deep Submarine Canyon



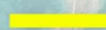
Red mangroves to Coral Wall Formations and into Deep Submarine Canyon



Buck Island Reef NM

NPS *first* fully protected
Marine Protected Area

Buck Island Reef NM Expansion

 Original Boundary
880 acres

 Expanded Boundary
19015 acres



Number One Visitor Destination in St. Croix

- Over 50,000 visitors per year
- Famous “Underwater Snorkel Trail”
- Nesting destination for four species of sea turtle
- Migratory bird nesting



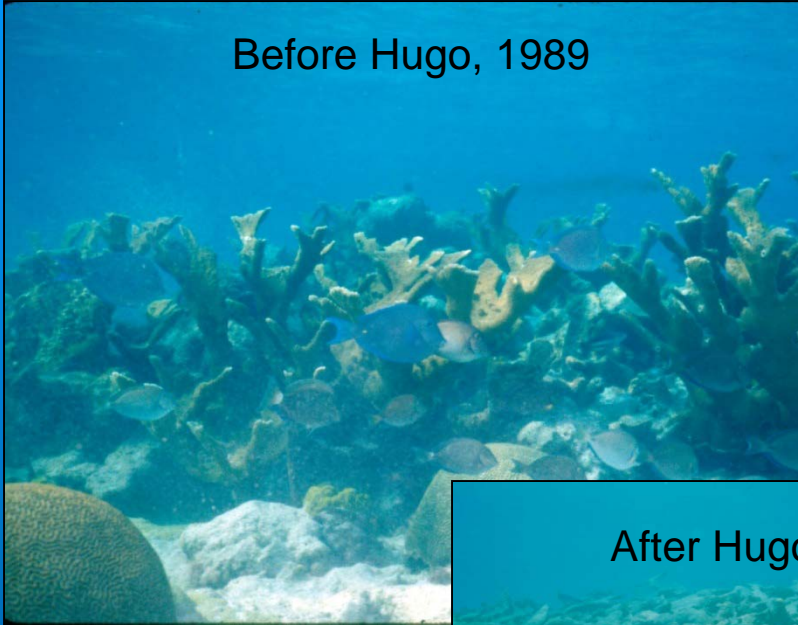
What's in the Park?

- T&E conservation status
- Important ecological function
- Commercial fisheries



Coral Reefs

Before Hugo, 1989



After Hugo, 1989



- Diseases
- Hurricanes
- Bleaching Events
- Recruitment & Recovery

- 
- Coral Colony Monitoring
 - UW Video Transects
 - Water Temperature
 - Diversity/Rigosity
 - Live vs Dead % Cover

Threatened & Endangered Corals

- All 7 Caribbean T&E coral species are located within BUIS

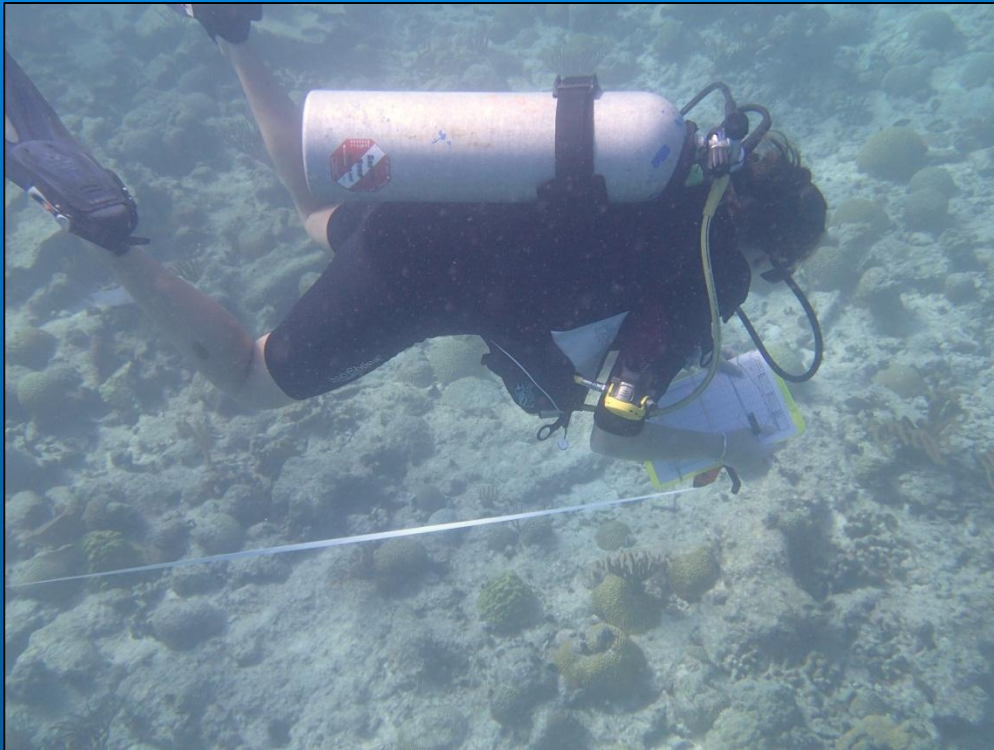


Seagrass Meadows



Reef Fish

**Visual Reef Fish surveys
inside & outside Monument
1999 – 2017**



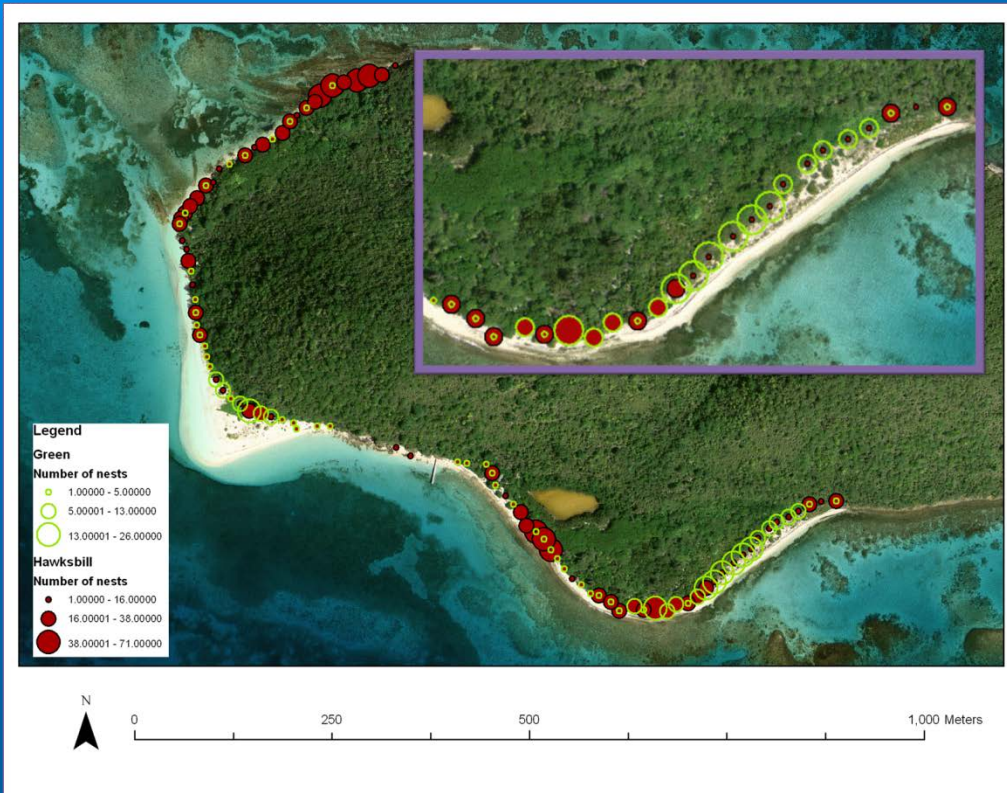
Sea Turtle Research & Monitoring

Juvenile sea turtle surveys,
habitat use & residency 1994
– 2004/ USGS; 2013-Present



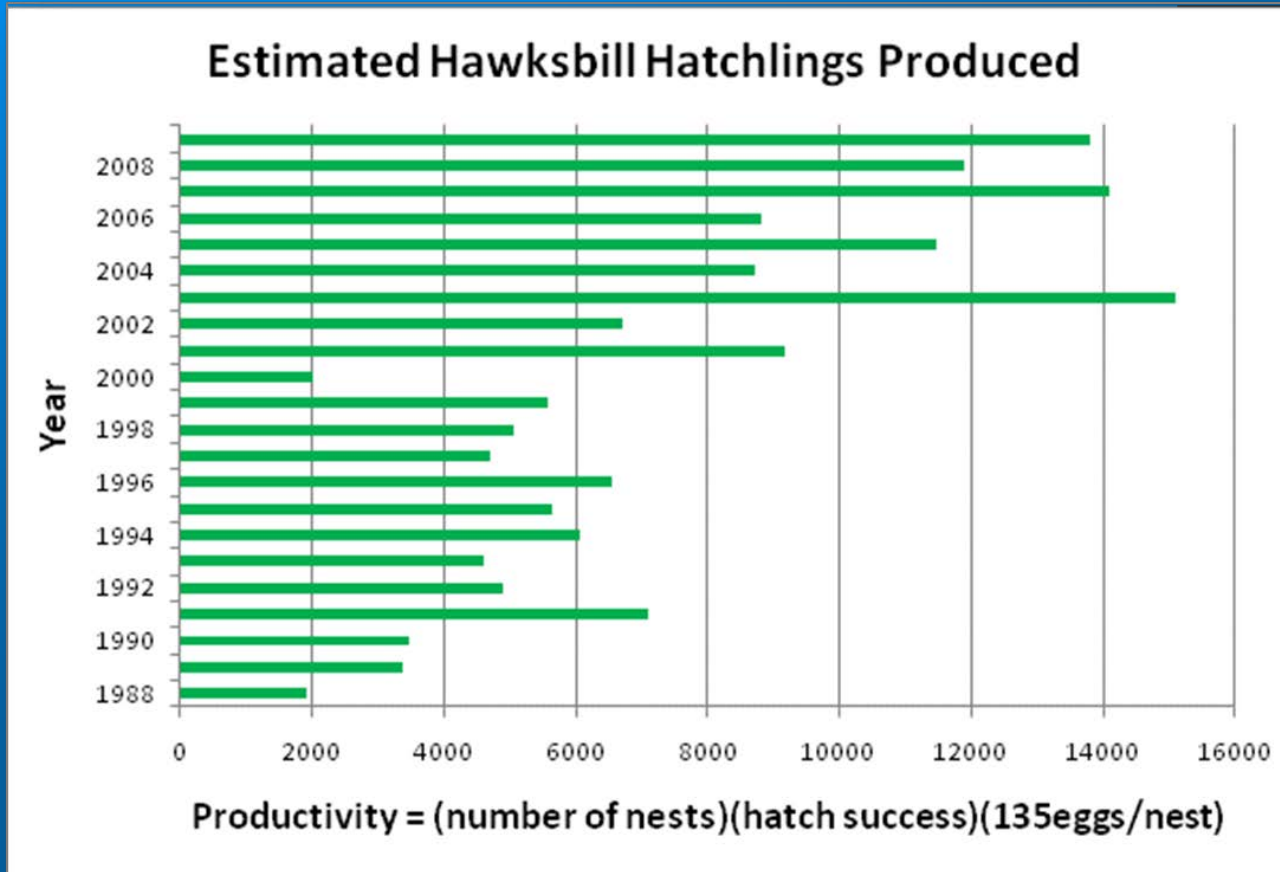
Night patrols & tagging
since 1988 / Improved
beach management &
hatch success

Nesting Activities



176 acres island; 1.5 km nesting beach –
increasing number of nesting Cm impacting Ei
nests

Critical Sea Turtle Nesting Area



Buck Island Reef In-Water Monitoring & Research

- Relative Abundance
- Distribution surveys
- Site specific monitoring using
Catch per Unit Effort

- Mark/Recapture study
- Acoustic and satellite tagging
- Health assessments
- Genetic analyses
- Stable isotopes
- Diet - gastric lavage study





Sharks

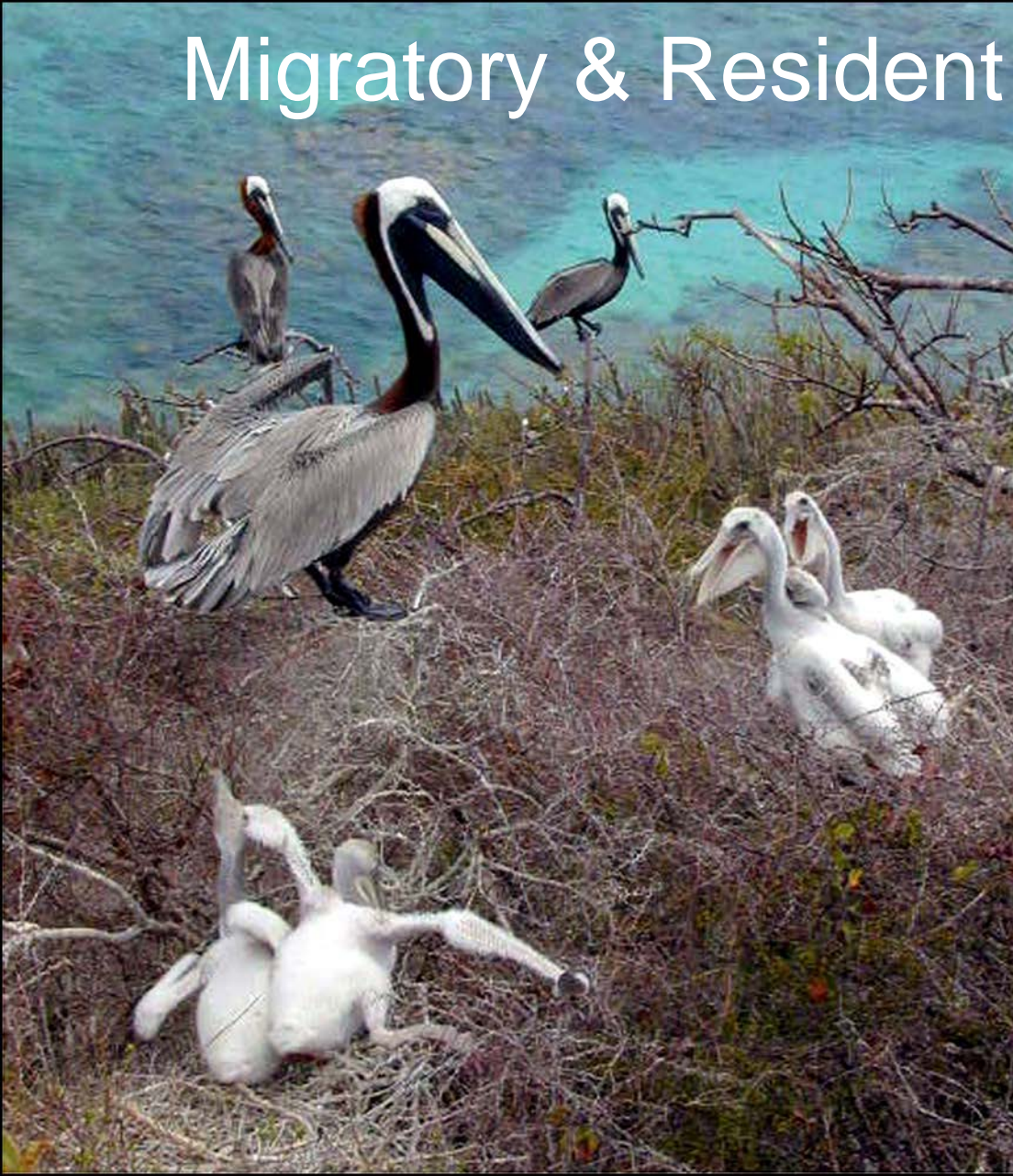




Marine Mammals



Migratory & Resident Seabirds



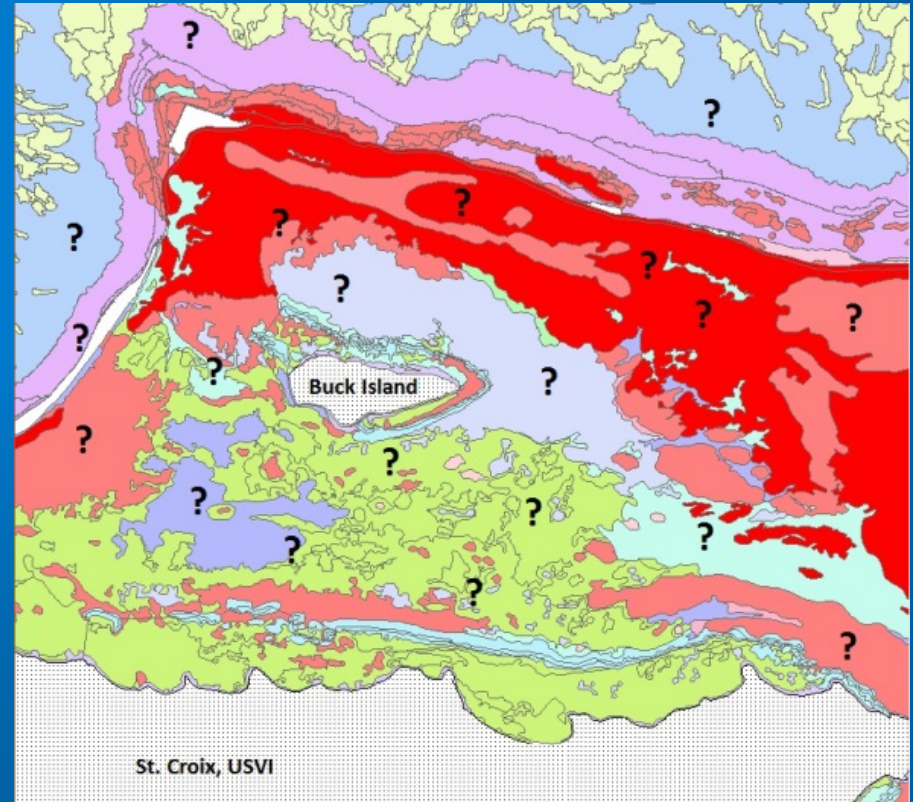


Partnership Acoustic Array Project



Research Objectives

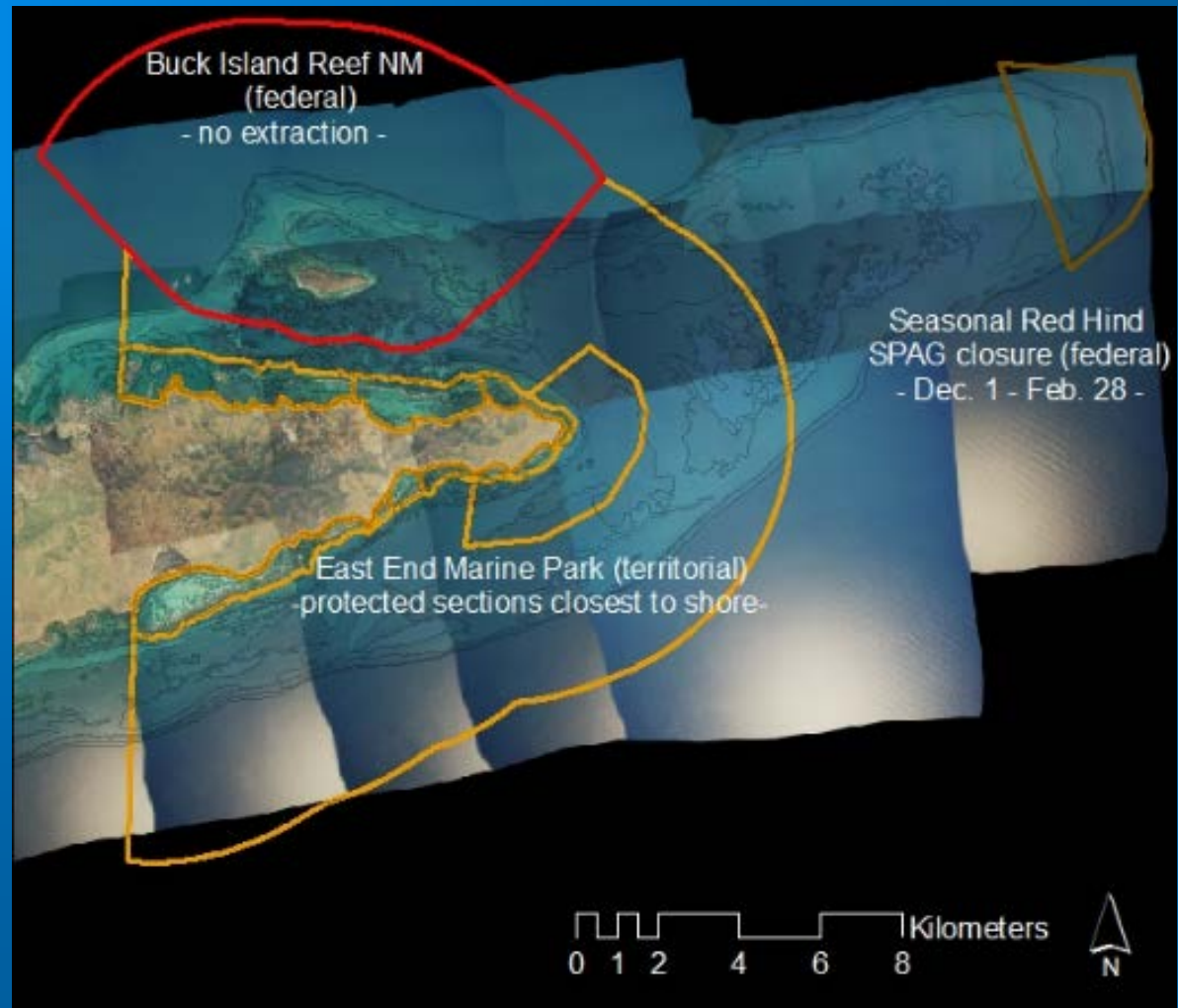
1. Quantify habitat usage and home ranges multiple species
2. Determine migration timing and spawning aggregation sites



Research Objectives Continued

3. Evaluate site fidelity and connectivity between MPAs

4. Determine the efficacy of the MPAs





Legend

- STX_BIRNM
- STX_EEMP
- STX_LANG
- STX_MSSCA
- STX_SARI

□ Boundaries



Maintenance



Bi-annual Maintenance
and Download Cycle

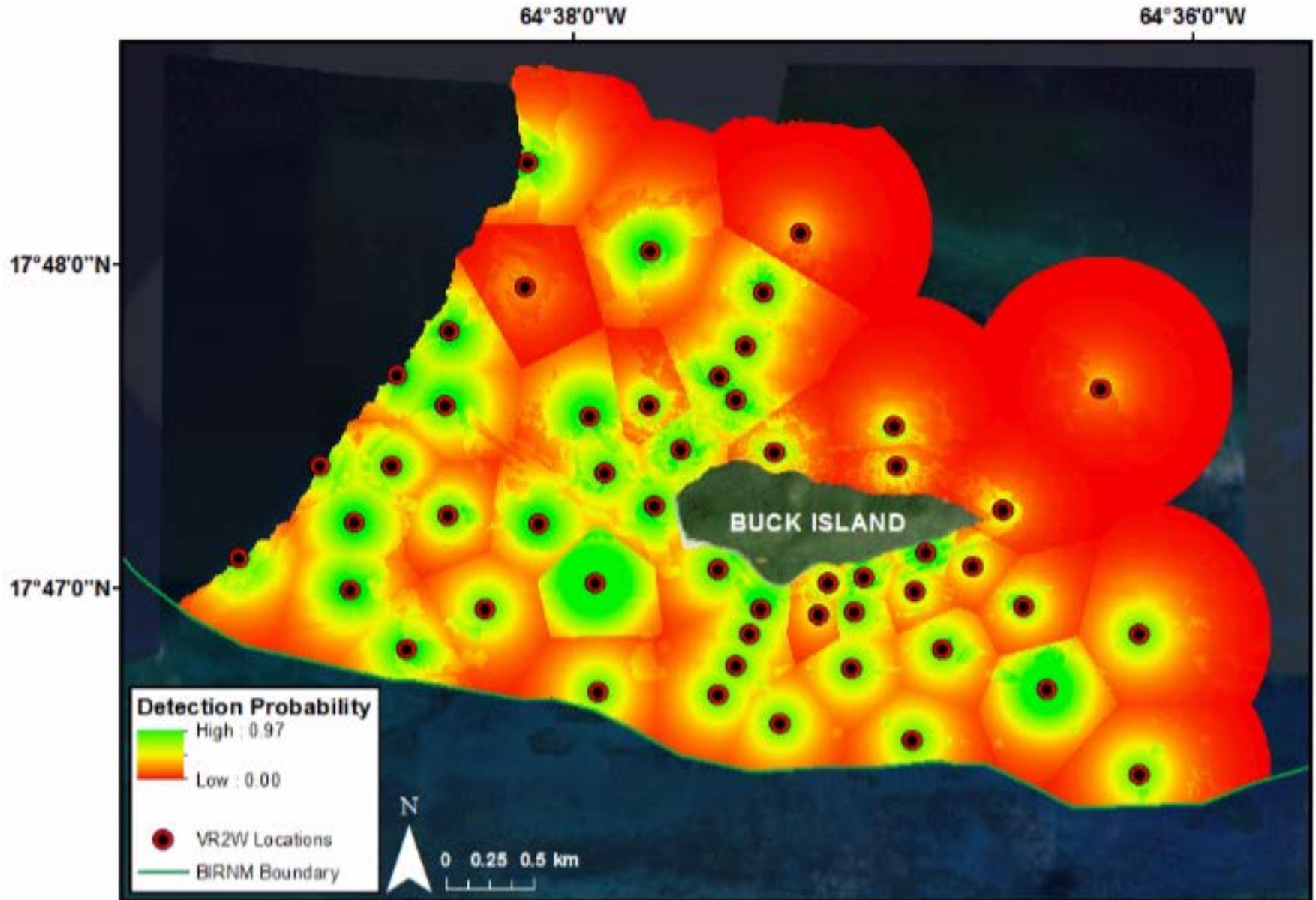
More Effective Tracking of
Receiver History and
Needs

Collaborations to Preserve
Data Integrity



Transmitters Deployed by Species

		St Croix	STT + STJ	Total
# of all transmitters		584	322	906
	turtle	144	15	159
	shark	49	1	50
	fish	316	306	622
	conch	75	0	75
# of Active transmitters		441	180	621
	turtle	97	10	107
	shark	49	0	49
	fish	259	170	429
	conch	36	0	36





Queen Trigger's Movements

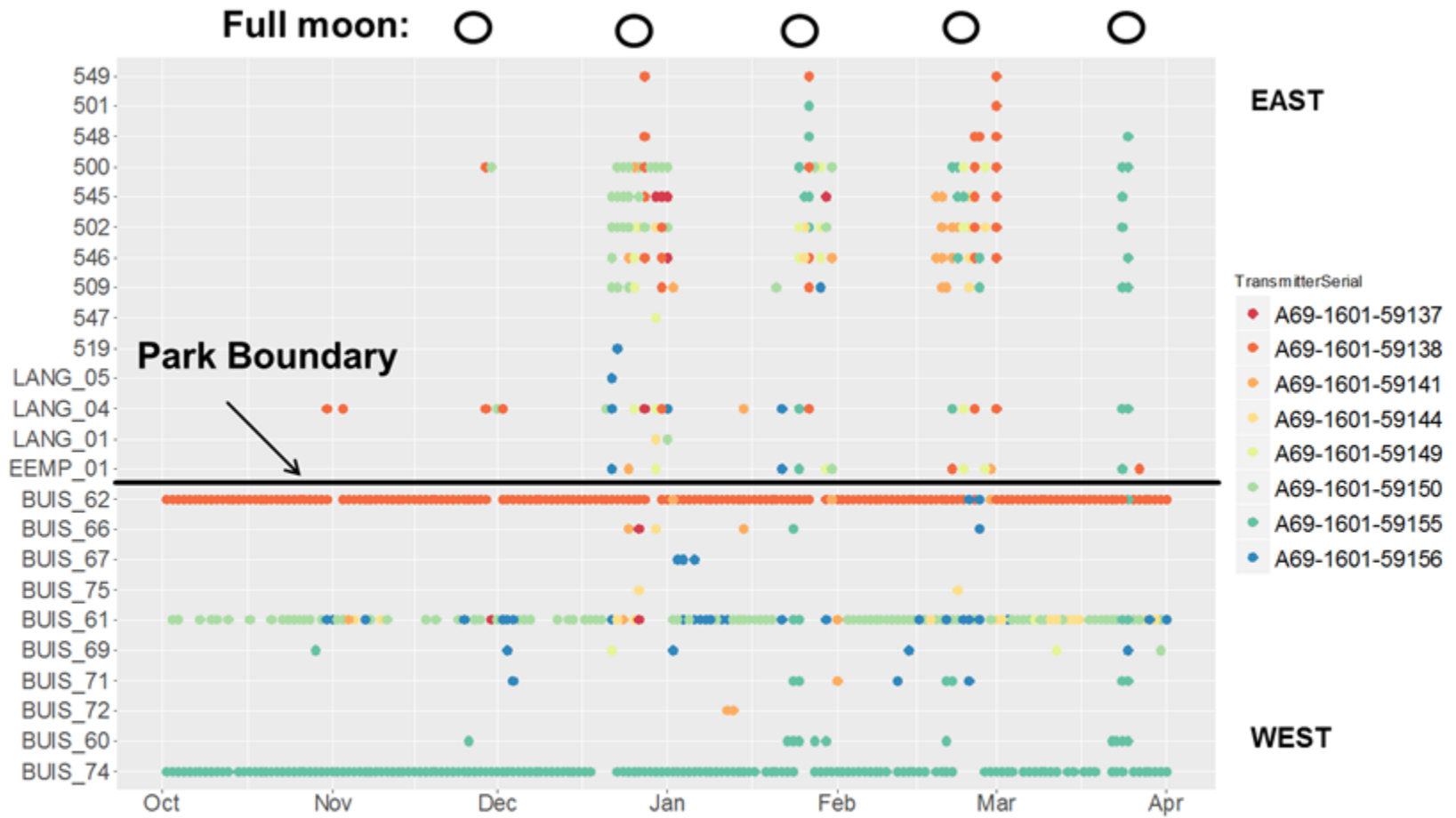
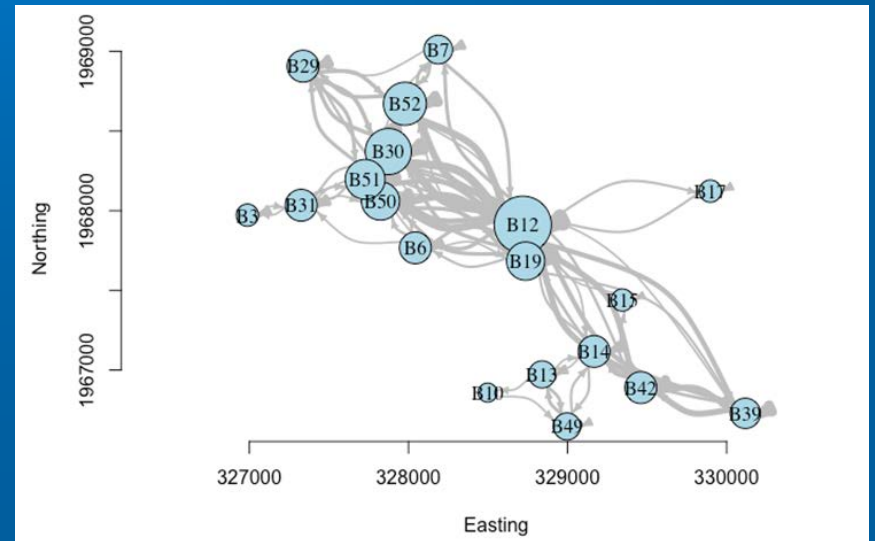
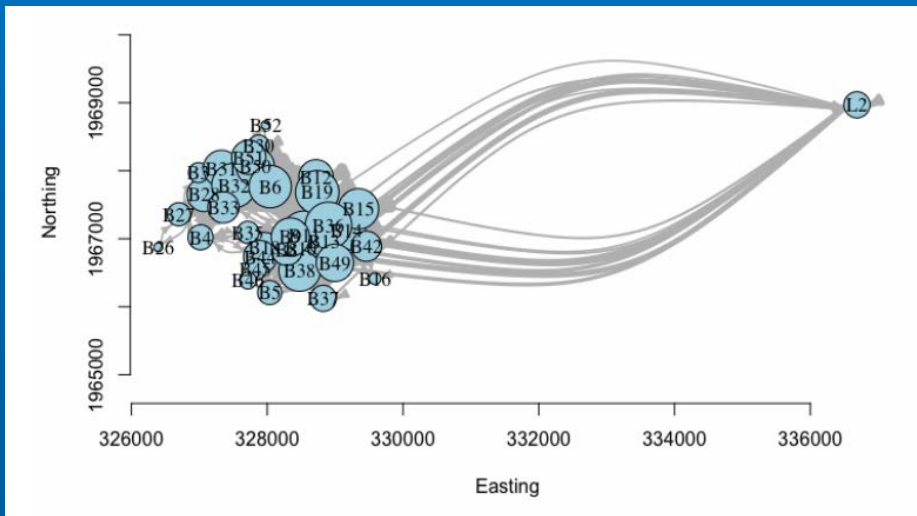
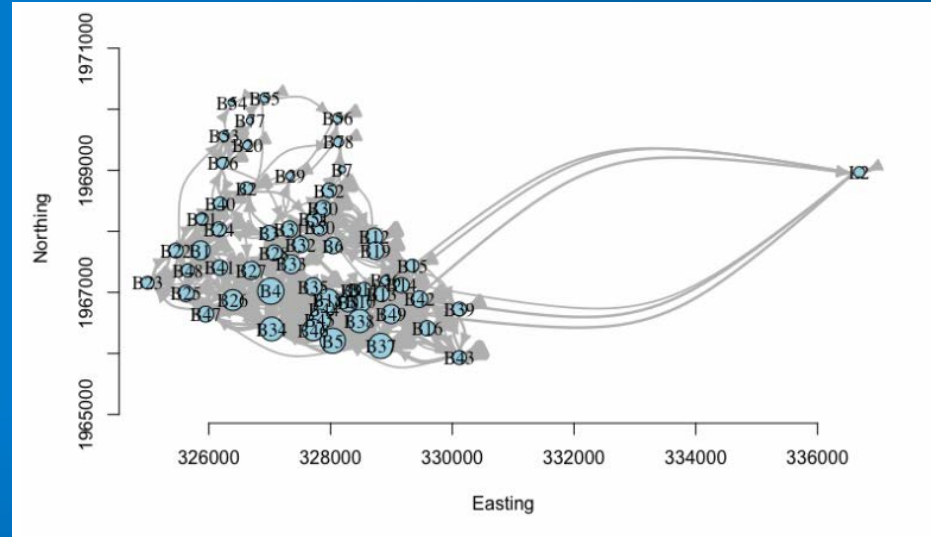
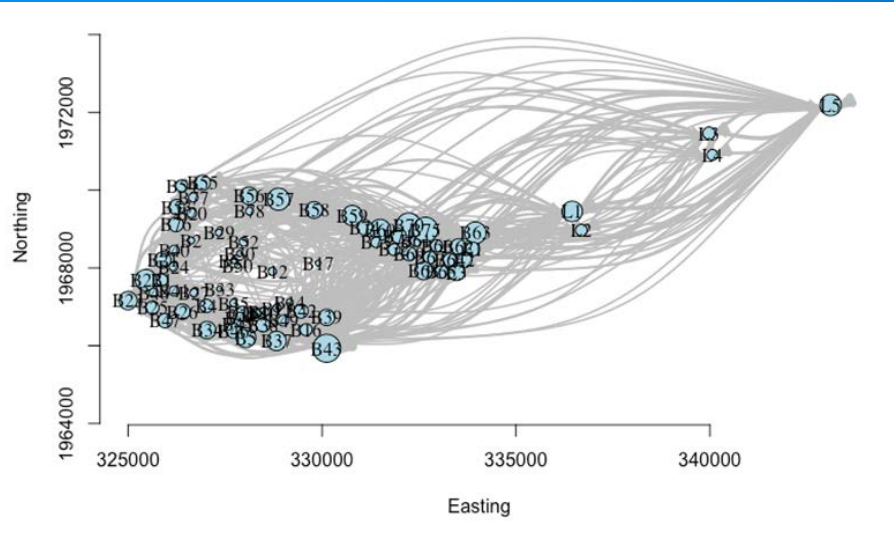


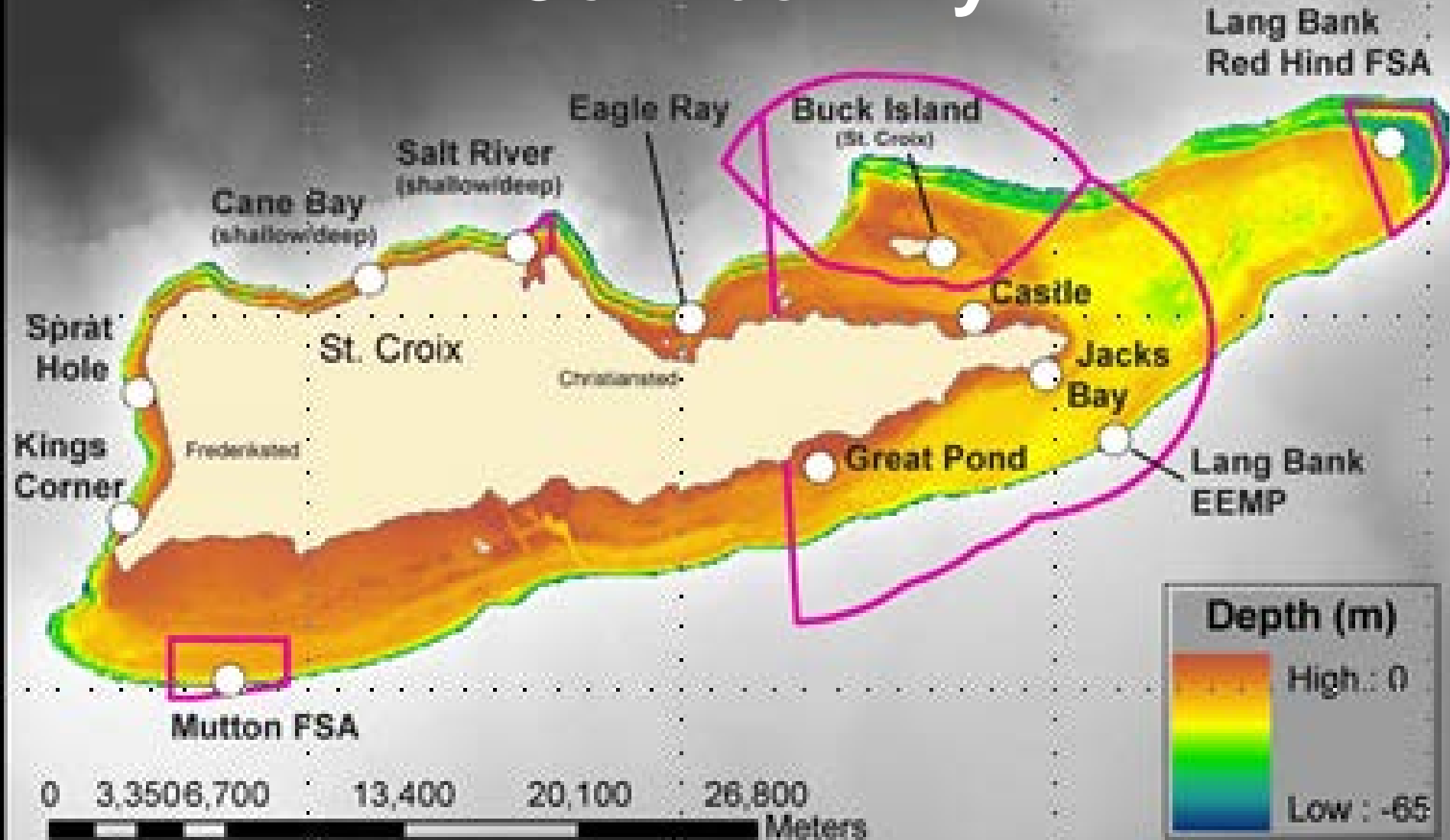
Figure 7. Daily locations of eight queen triggerfish from October 2015– April 2016 illustrating timed migrations to Lang Bank (Stations 500- 549) during the full moon in winter month.



Sharks



Connectivity





Legend

- STX_BIRNM
- STX_EEMP
- STX_LANG
- STX_MSSCA
- STX_SARI

□ Boundaries

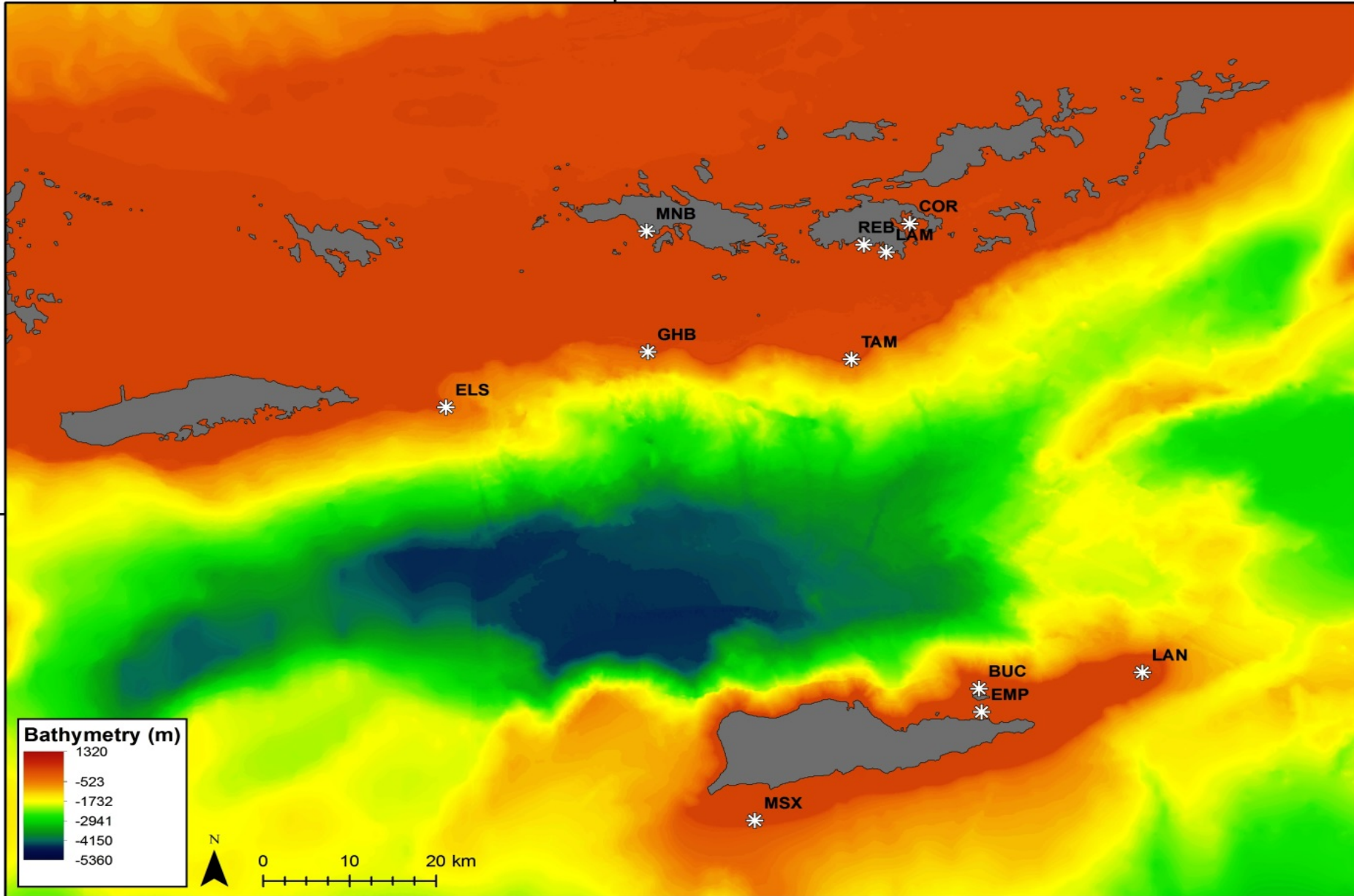


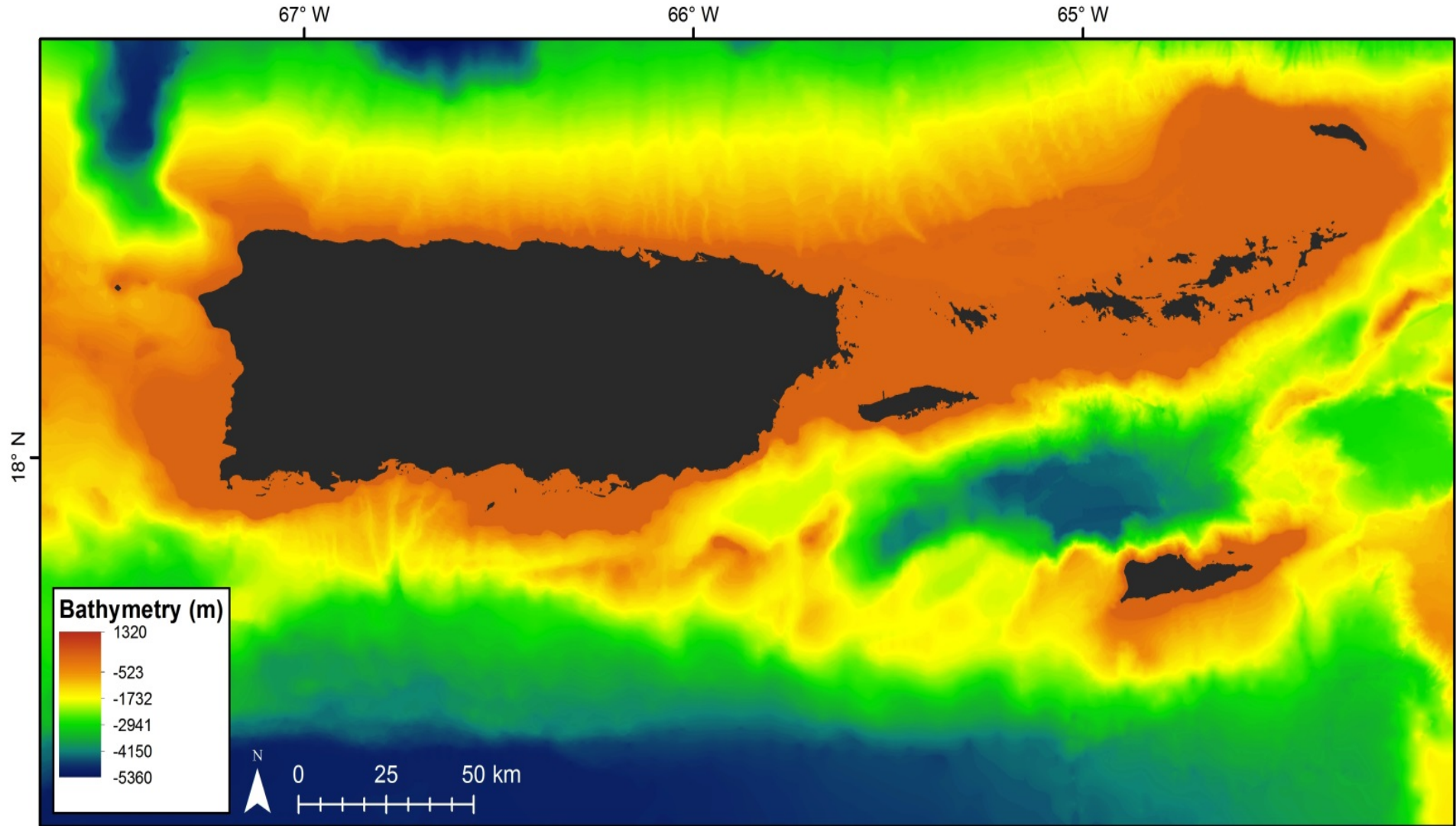


Christiansted NHS / Buck Island Reef National Monument / Salt River Bay NHP & EP

65° W

18° N





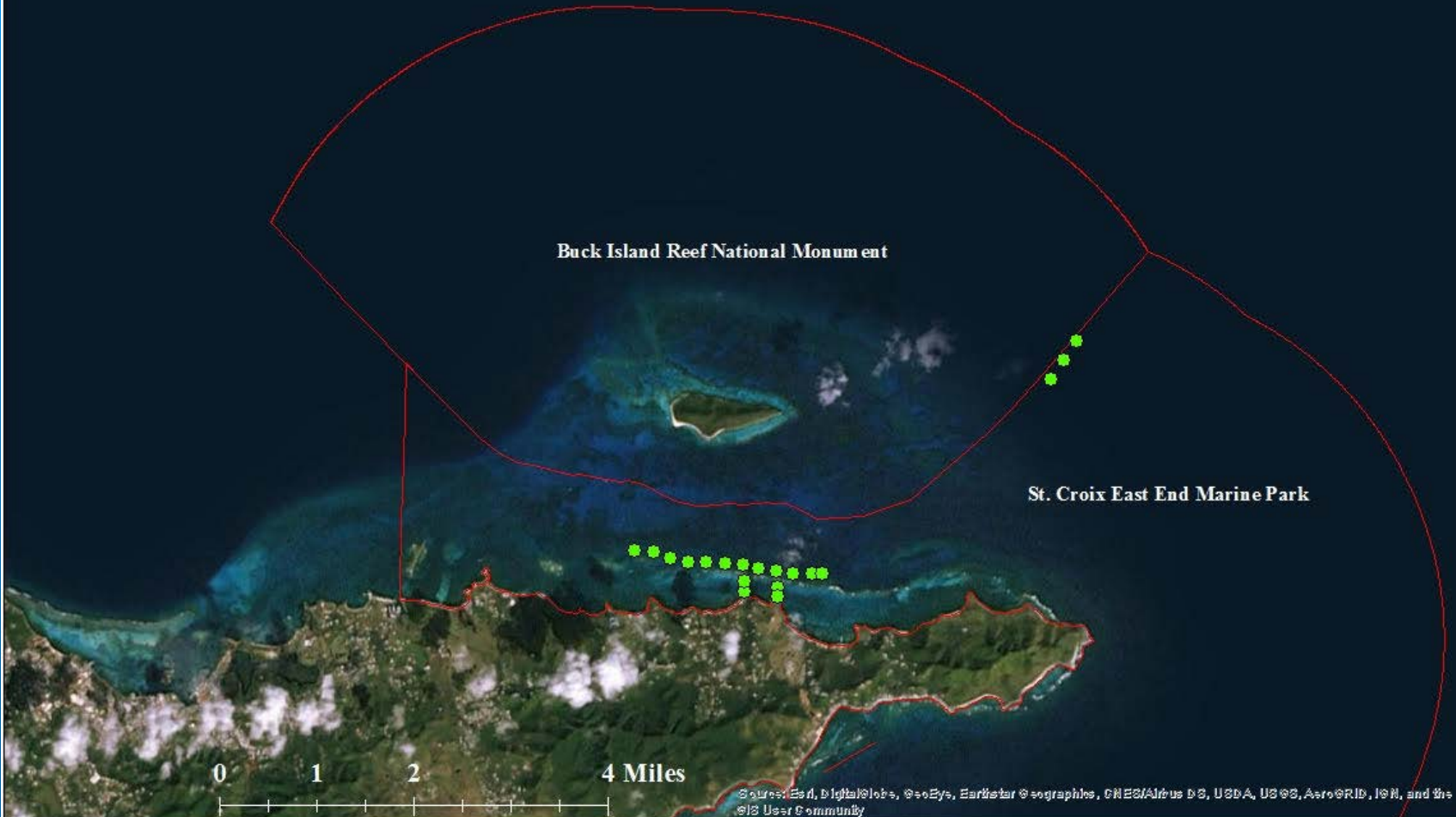


**Thank You All
for the Work you do to
protection & preserve our
VI Resources!**



Legend

- STX_EEMP
- Boundaries

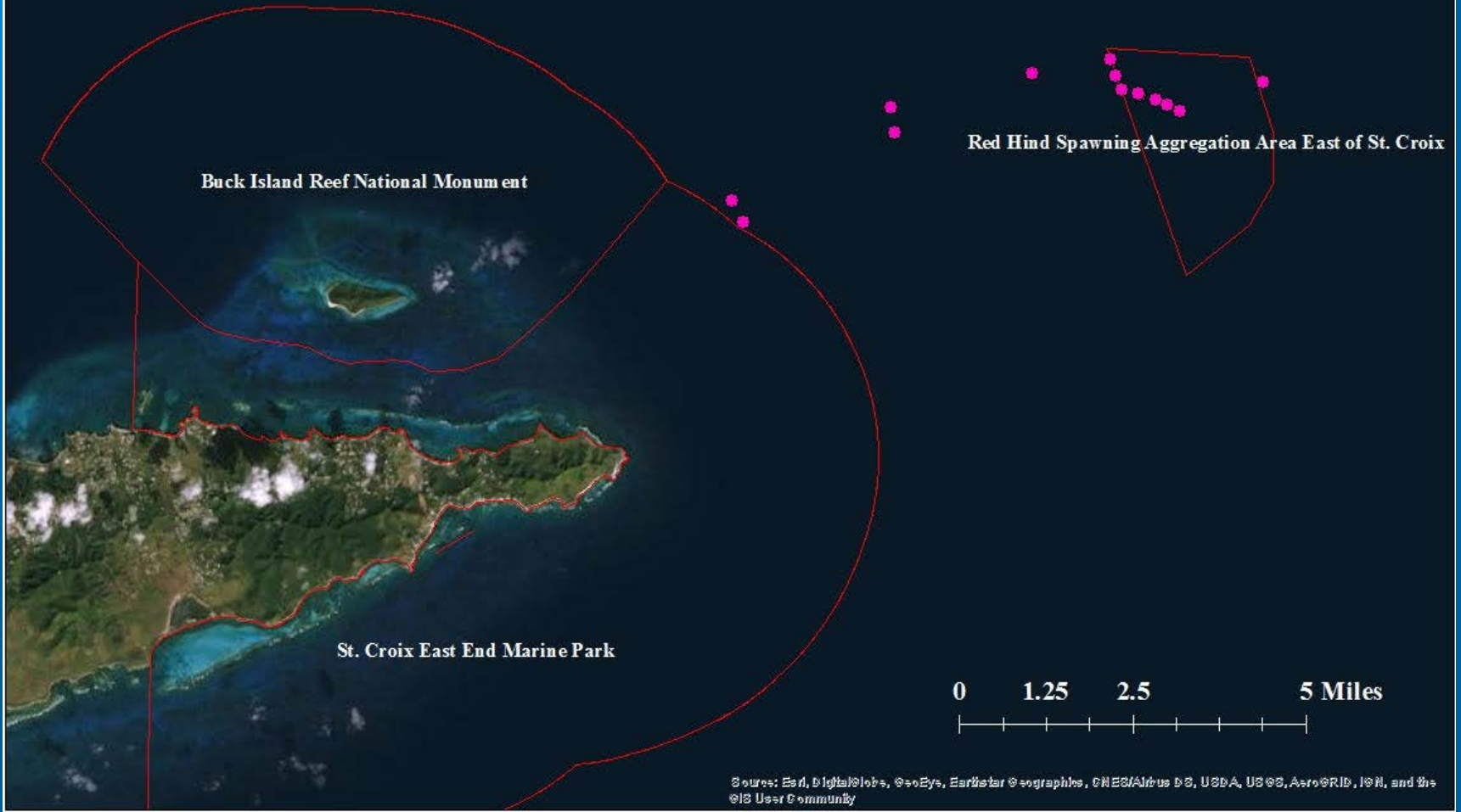




Legend

● STX_LANG

□ Boundaries





Legend

- STX_MSSCA
- ▭ Boundaries



Mutton Snapper Spawning Aggregation Area





Legend

- STX_SARI
- Boundaries



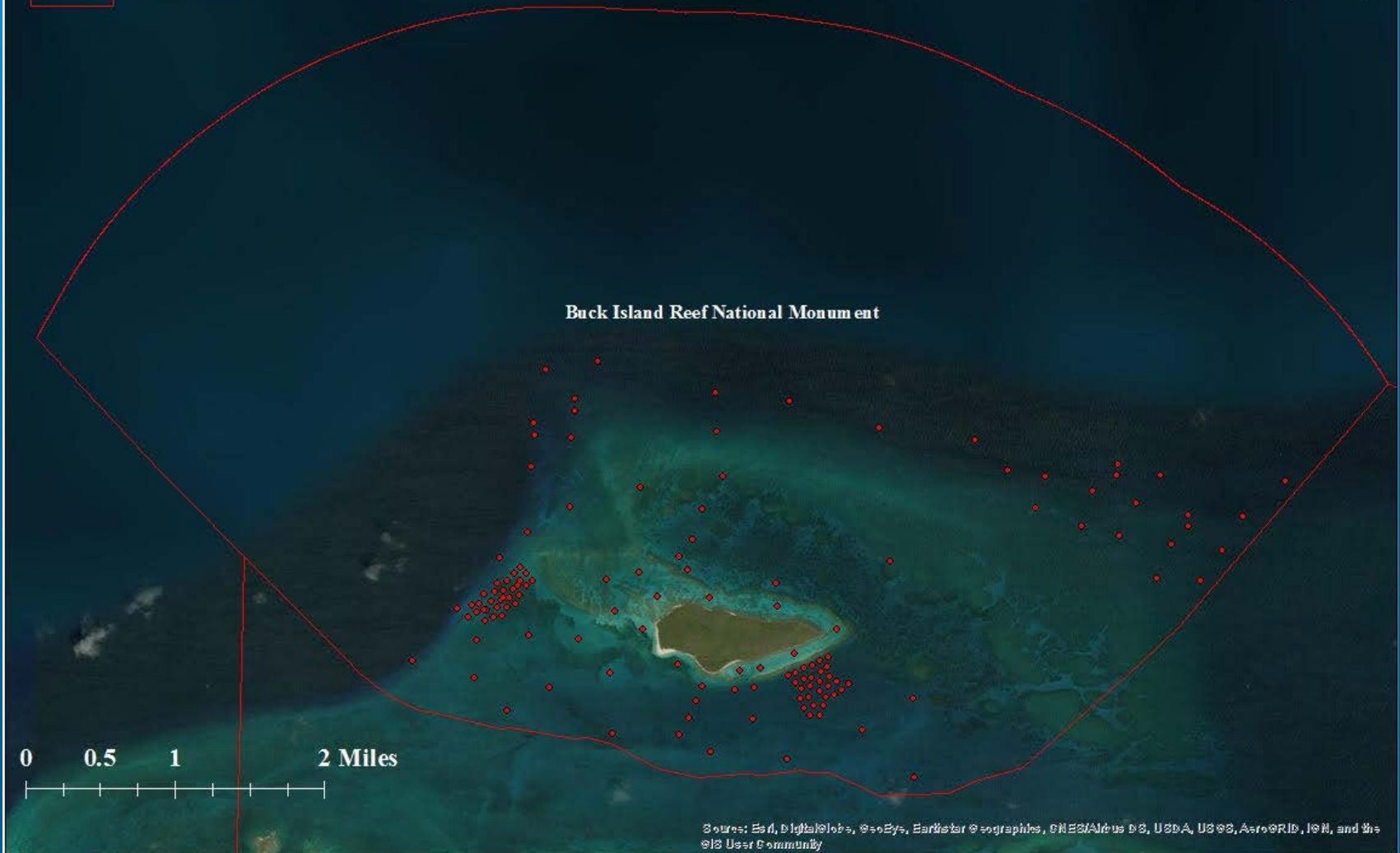
Salt River Bay National Historic Park and Ecological Preserve





Legend

- STX_BIRNM
- ▭ Boundaries



Fish

UVI – Dr. Richard Nemeth



Sharks

State of Massachusetts & TNC –
Dr. Greg Skomal and Bryan DeAngelis



Fish & Methods

NOAA –

Dr. Mark Monaco and Dr. Matt Kendall



Baffling telemetry detections can be useful: an acoustic receiver design to monitor organisms along reserve boundaries and ecotones

Conch

NOAA – Dr. Ron Hill and Jennifer Doerr



Fish

NPS SFCN & RSMAS –
Dr. Michael Feeley and David Bryan



Fish

UMass Amherest – Dr. Adrian Jordaan and
Dr. Andy Danlychuk



Sea Turtles

US Geological Survey - Dr. Kristen Hart

