

Ecosystem Protection Working Group: Human Use Information for the Lower Keys

- **NOAA – Florida Keys National Marine Sanctuary**
- **Florida Fish and Wildlife Commission**
- **NOAA – National Centers for Coastal Ocean Science**



Human Use Information

Activities:

- **Commercial Fishing**
- **Recreational and Charter Fishing**
- **Diving**

Impacts:

- **Vessel Groundings**
- **Marine Debris**



Datasets

Human use

- Commercial Fishing
 - Distribution of **Commercial Fishers**
 - Distribution of Commercial Fishing Landings
- Recreational Fishing
 - Distribution of **Recreational and Charter Fishing Vessels**
- Recreational Diving
 - Distribution of **Diving Vessels**
 - Distribution of **Recreational Divers**
- Distribution of **Marine Debris**
 - **SCREAM**
 - NOAA
- Location of **Vessel Groundings**



Activity Metrics

- **Commercial Fishing** – How many people fish in a given area?
- **Recreational and Charter Fishing** – Where are boats located?
- **Diving** – How many people dive in a given area; where are dive boats located?



Commercial Fishing



Data source

Manoj Shivilani et al (2008). Knowledge Attitudes and Perceptions of Management Strategies and Regulations of the Florida Keys National Marine Sanctuary by Commercial Fishers, Dive Operators, and Environmental Group Members: A Baseline Characterization and 10-year Comparison.

Metrics

- Density of Commercial Fishers per 1 nautical mile-squared (2004-2005):
 - Available for: Spiny Lobster, Stone Crab, Reef Fish (Snapper/Grouper), King Mackerel, Spanish Mackerel, Other Pelagics (Cobia, Dolphin, Wahoo), Bait Fish, Shrimp and Total Fishers

All Commercial Fishers - Lower Keys Region

Legend

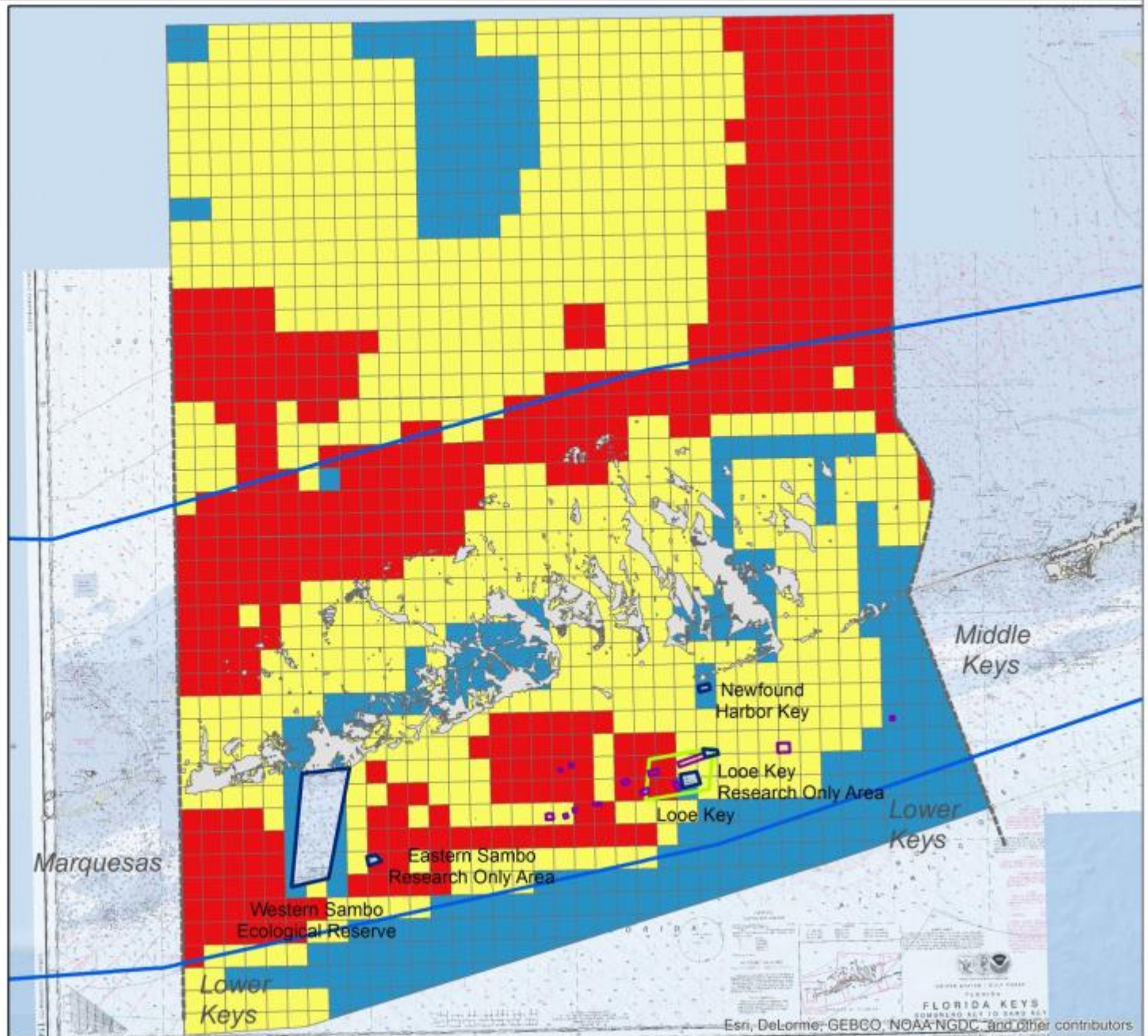
Number of Fishers

- High (24-41)
- Medium (16-23)
- Low (1-15)

- SPAs, SUAs, ERs
- NMFS FMP Areas Closed to Lobster Trap Gear
- FKNMS Boundary
- Looe Key Existing Management Area



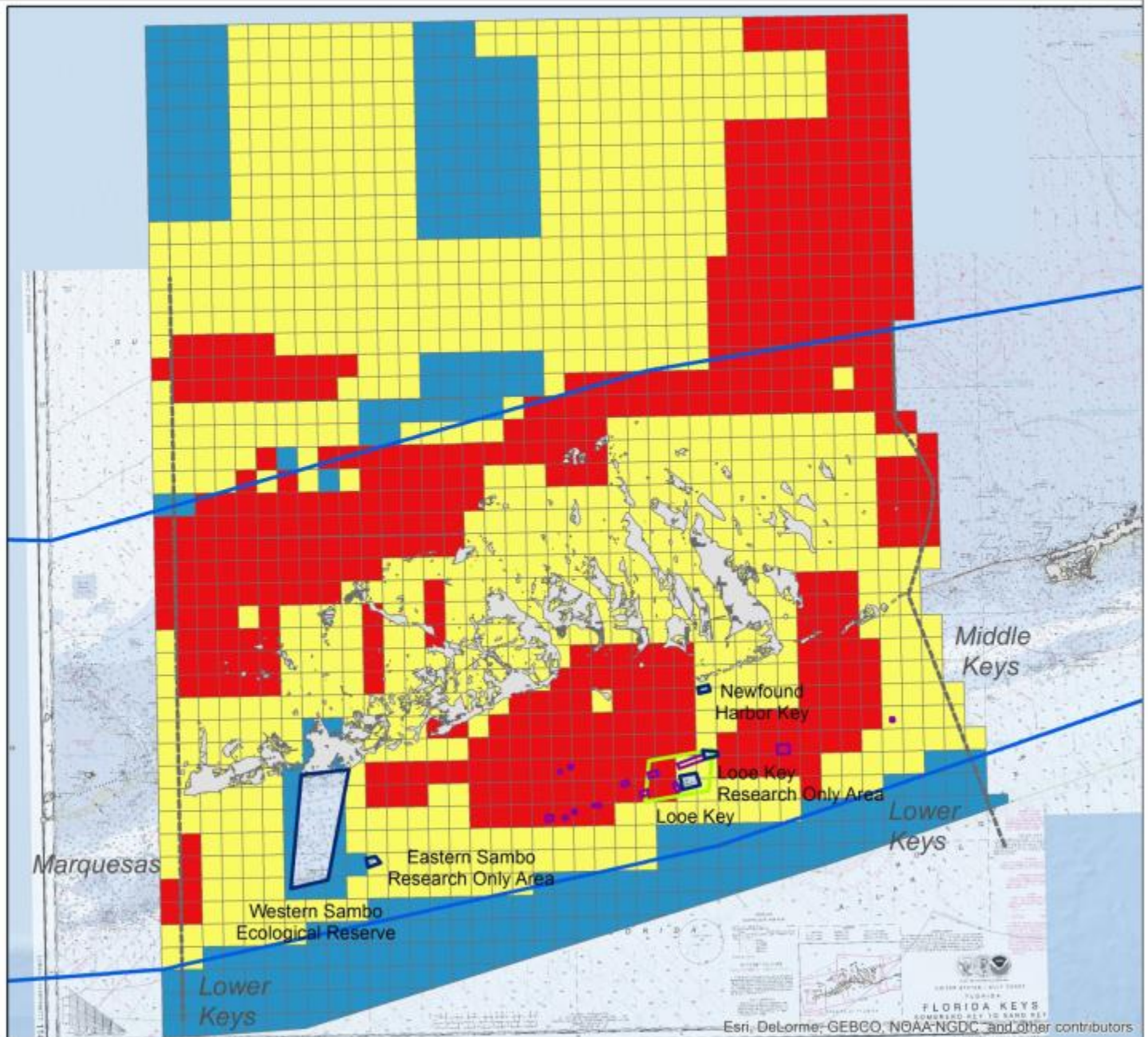
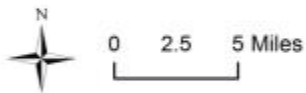
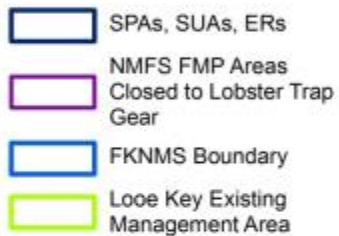
0 2.5 5 Miles



Spiny Lobster Fishers

Legend

Number of Fishers



Stone Crab Fishers

Legend

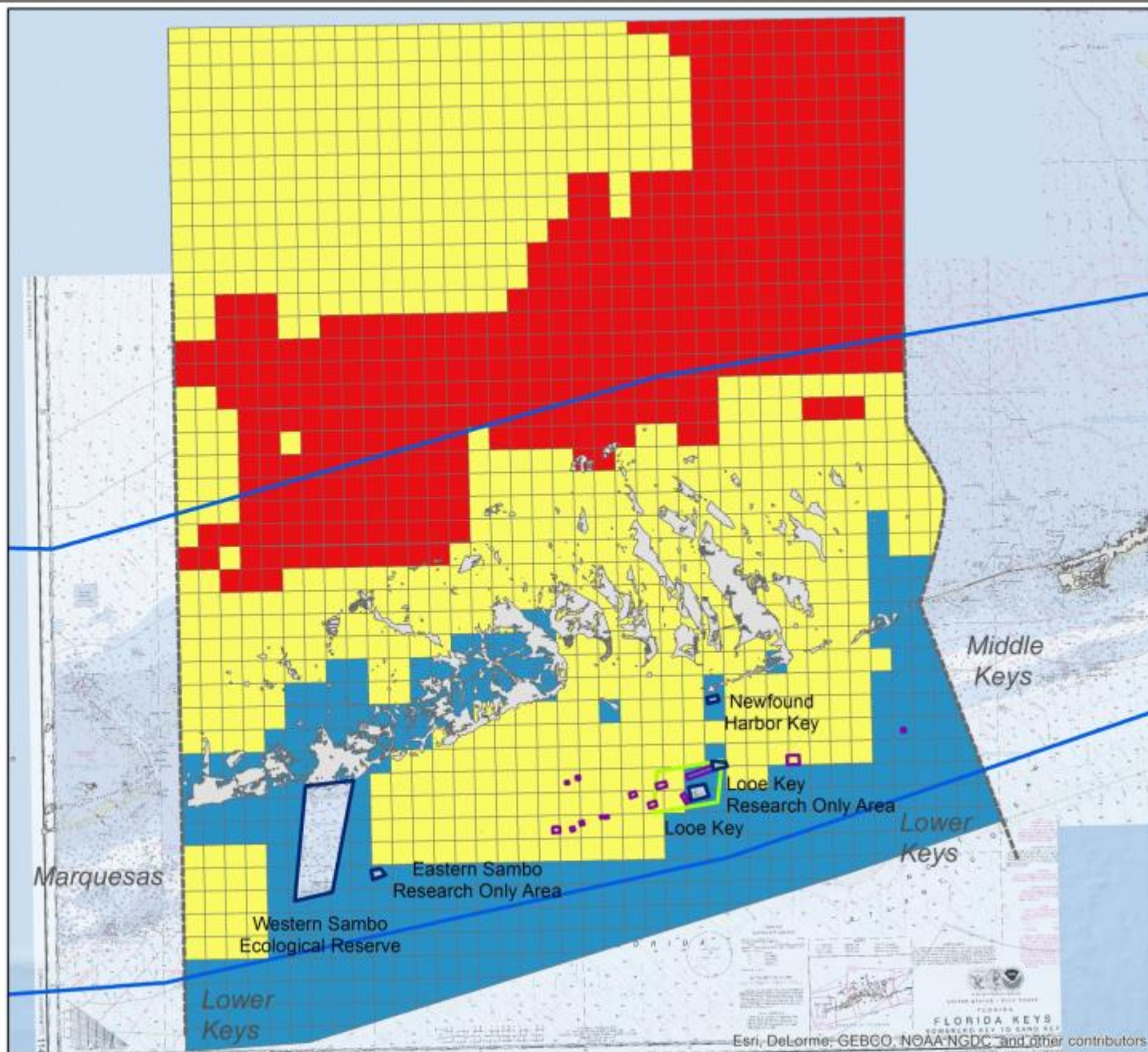
Number of Fishers

- High (11-16)
- Medium (4-10)
- Low (1-3)

- SPAs, SUAs, ERs
- NMFS FMP Areas Closed to Lobster Trap Gear
- FKNMS Boundary
- Looe Key Existing Management Area



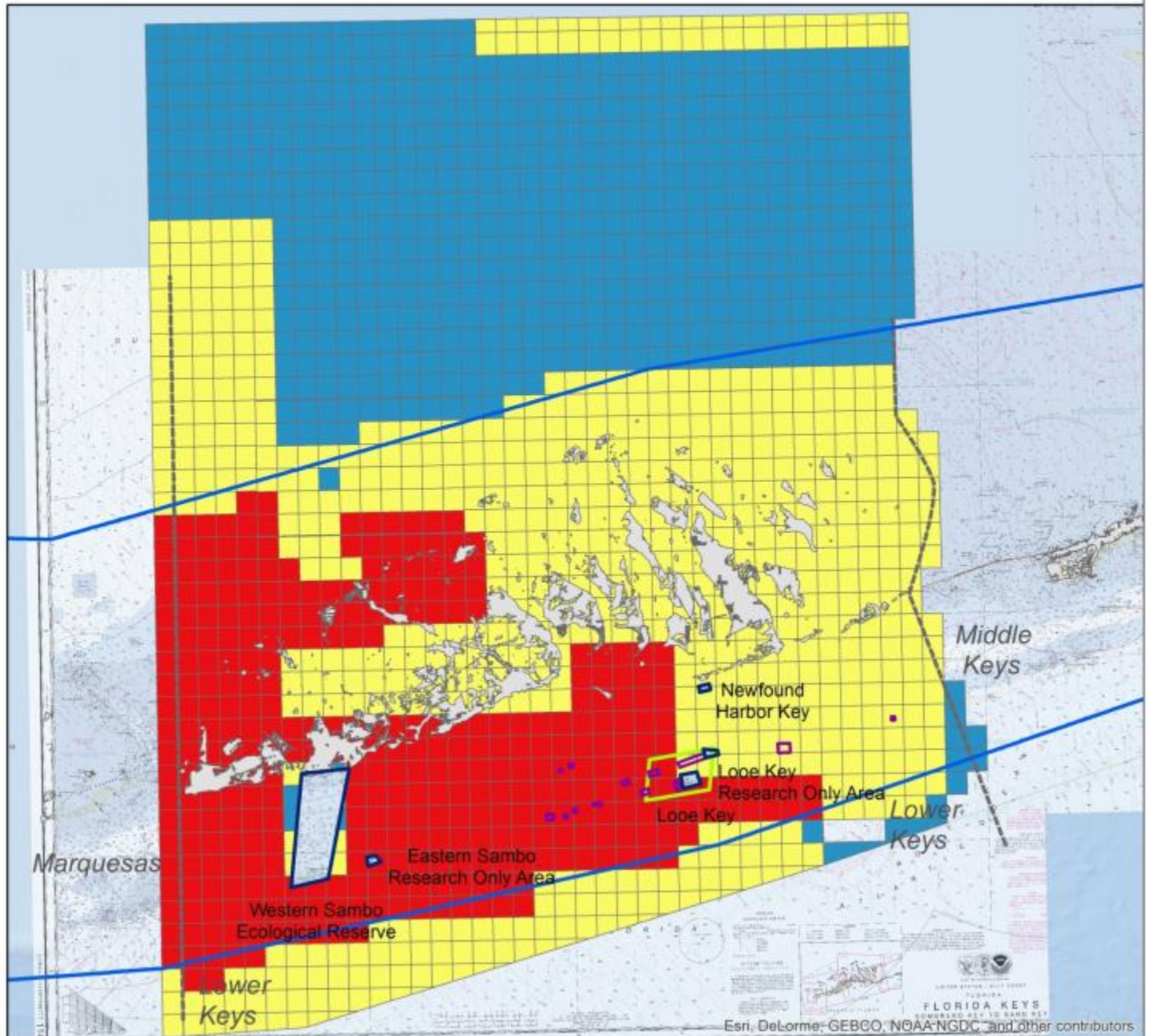
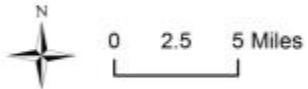
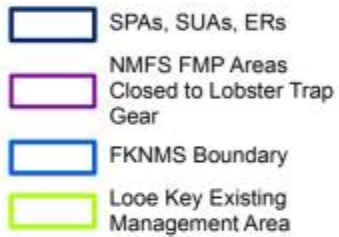
0 2.5 5 Miles



Reef Fish Fishers

Legend

Number of Fishers



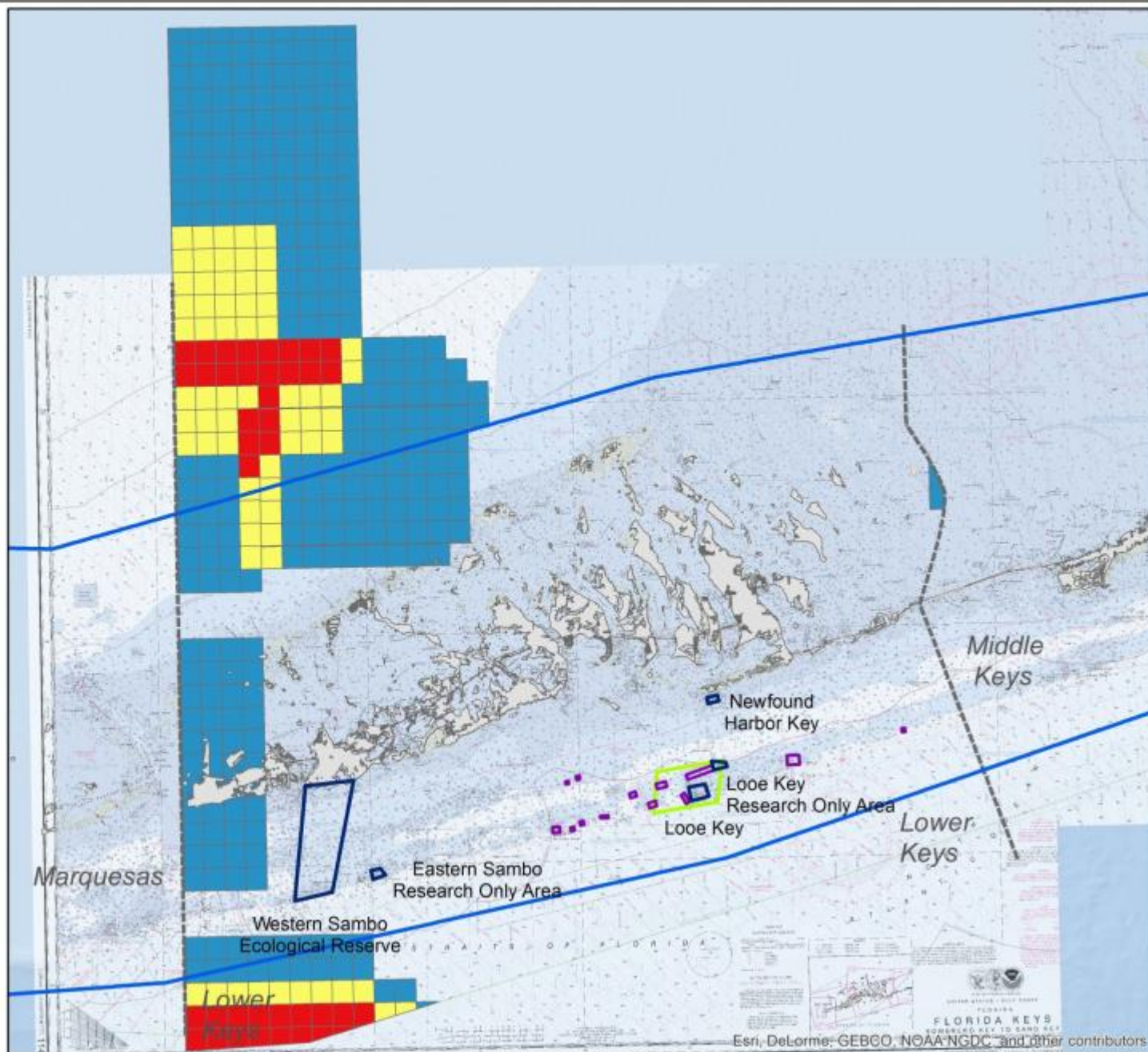
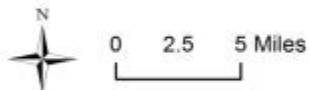
King Mackerel Fishers

Legend

Number of Fishers



- SPAs, SUAs, ERs
- NMFS FMP Areas Closed to Lobster Trap Gear
- FKNMS Boundary
- Looe Key Existing Management Area



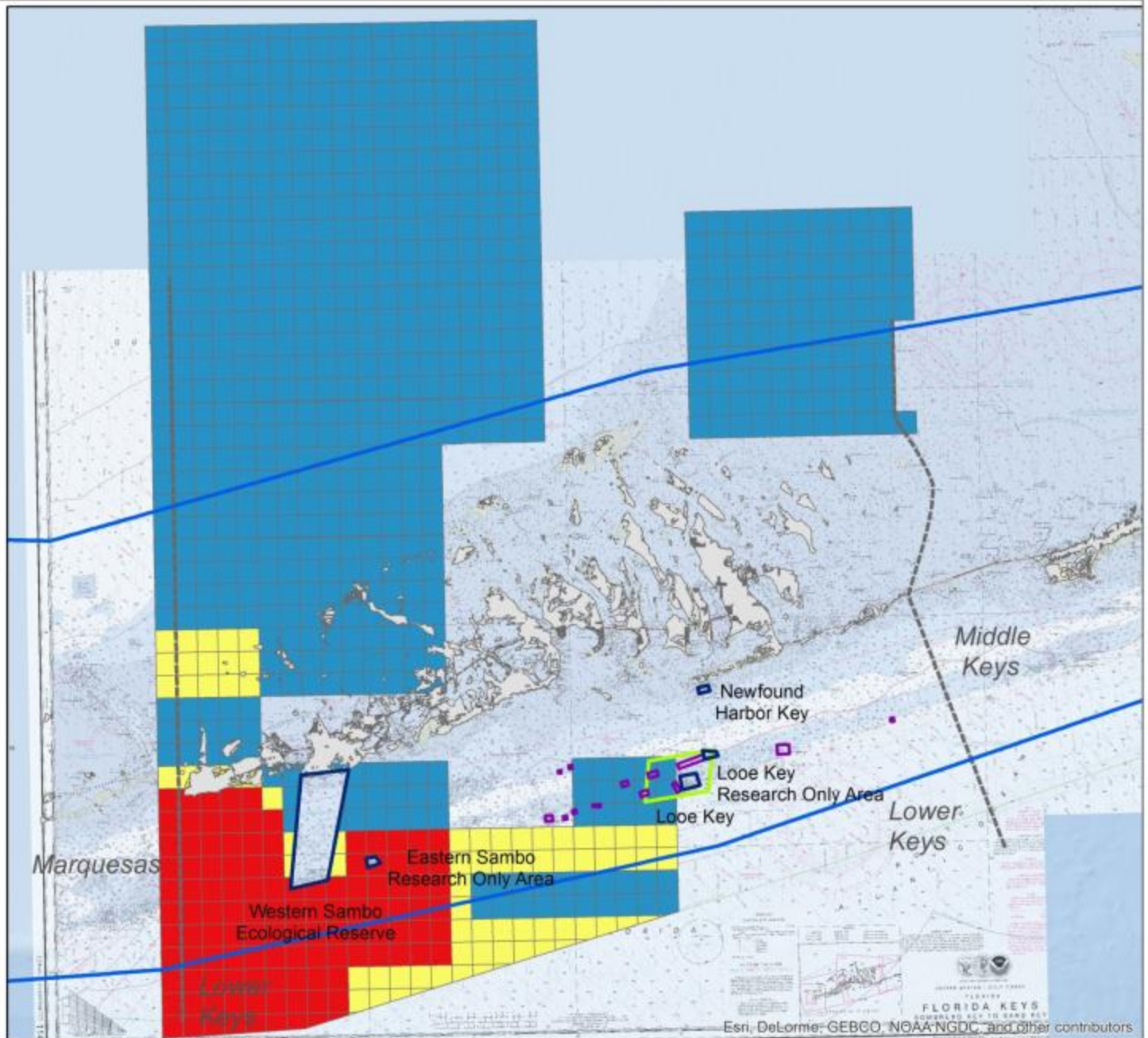
Other Pelagics (Cobia, Wahoo, Dolphin) Fishers

Legend

Number of Fishers

- High (3-6)
- Medium (2)
- Low (1)

- SPAs, SUAs, ERs
- NMFS FMP Areas Closed to Lobster Trap Gear
- FKNMS Boundary
- Looe Key Existing Management Area



Bait Fish Fishers

Legend

Number of Fishers

Medium (2)

Low (1)

SPAs, SUAs, ERs

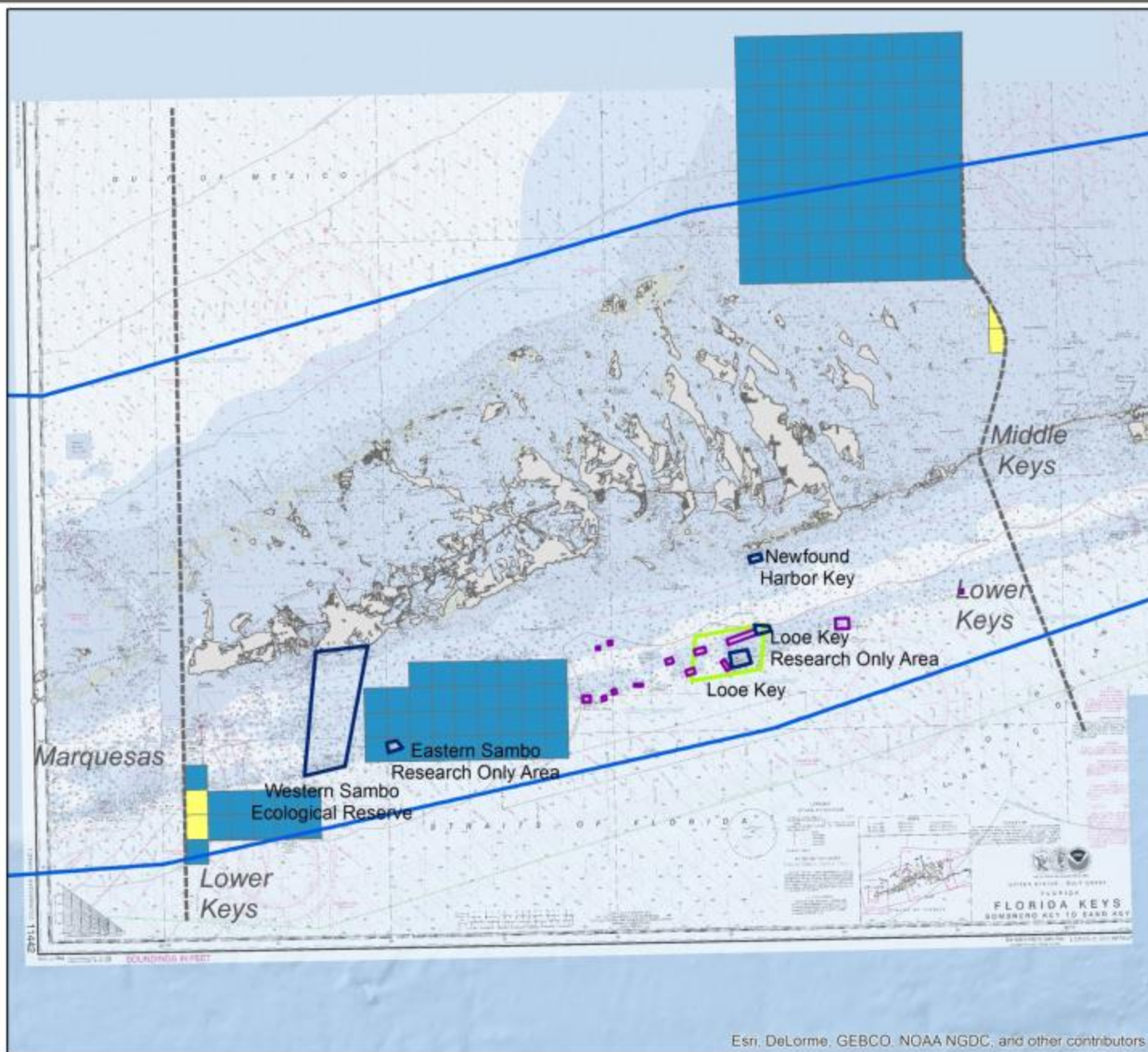
NMFS FMP Areas
Closed to Lobster Trap
Gear

FKNMS Boundary

Looe Key Existing
Management Area



0 2.5 5 Miles







Shrimp Fishers

Legend

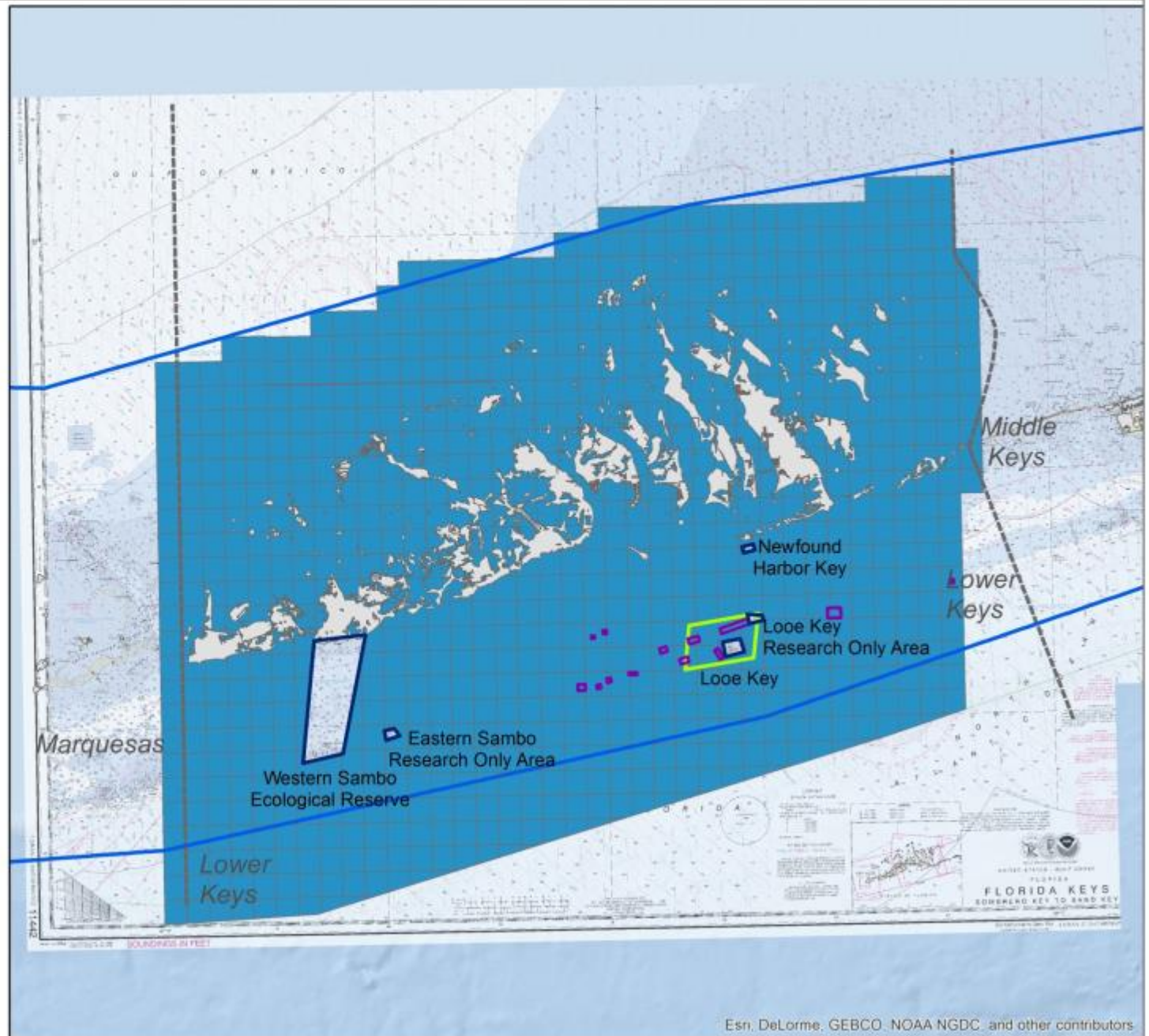
Number of Fishers

Low (1)

-  SPAs, SUAs, ERs
-  NMFS FMP Areas Closed to Lobster Trap Gear
-  FKNMS Boundary
-  Looe Key Existing Management Area



0 2.5 5 Miles



Recreational and Charter Fishing



Data source

FWC. Aerial surveys of the Florida Keys Reef Tract.

Metric

- Density of Recreational and Charter Fishing Vessels Observed per 1 nautical mile², May – August 2010-2012 (full moon)

Recreational and Charter Fishing Vessels - Flyovers



Number of Vessels

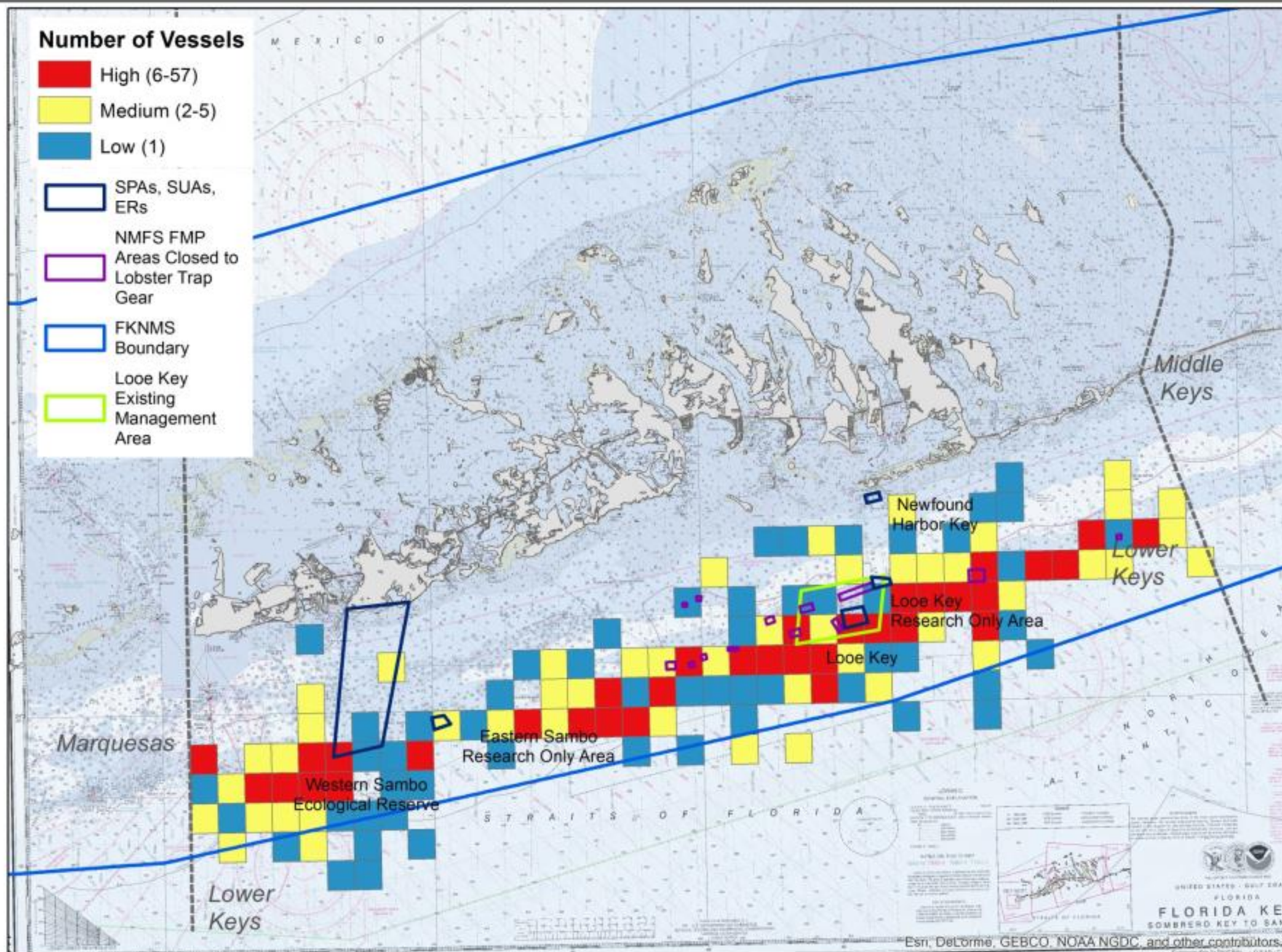


SPAs, SUAs, ERs

NMFS FMP
Areas Closed to
Lobster Trap
Gear

FKNMS
Boundary

Looe Key
Existing
Management
Area



A diver is seen from behind, swimming towards the right in clear blue water. The diver is wearing a mask, snorkel, and fins. To the left of the diver, there is a large, dark, branching coral structure. The title 'Diving Activity' is overlaid in white text on the left side of the image.

Diving Activity

Data sources

-FWC. Aerial surveys of the Florida Keys Reef Tract.

-Manoj Shrivani et al (2008). Knowledge Attitudes and Perceptions of Management Strategies and Regulations of the Florida Keys National Marine Sanctuary by Commercial Fishers, Dive Operators, and Environmental Group Members: A Baseline Characterization and 10-year Comparison.

Metrics

- Dive Boats with Dive Flags Observed, May – August 2010-2012
- Density of Divers on Commercial Dive Boats per 1 nautical mile², 2005

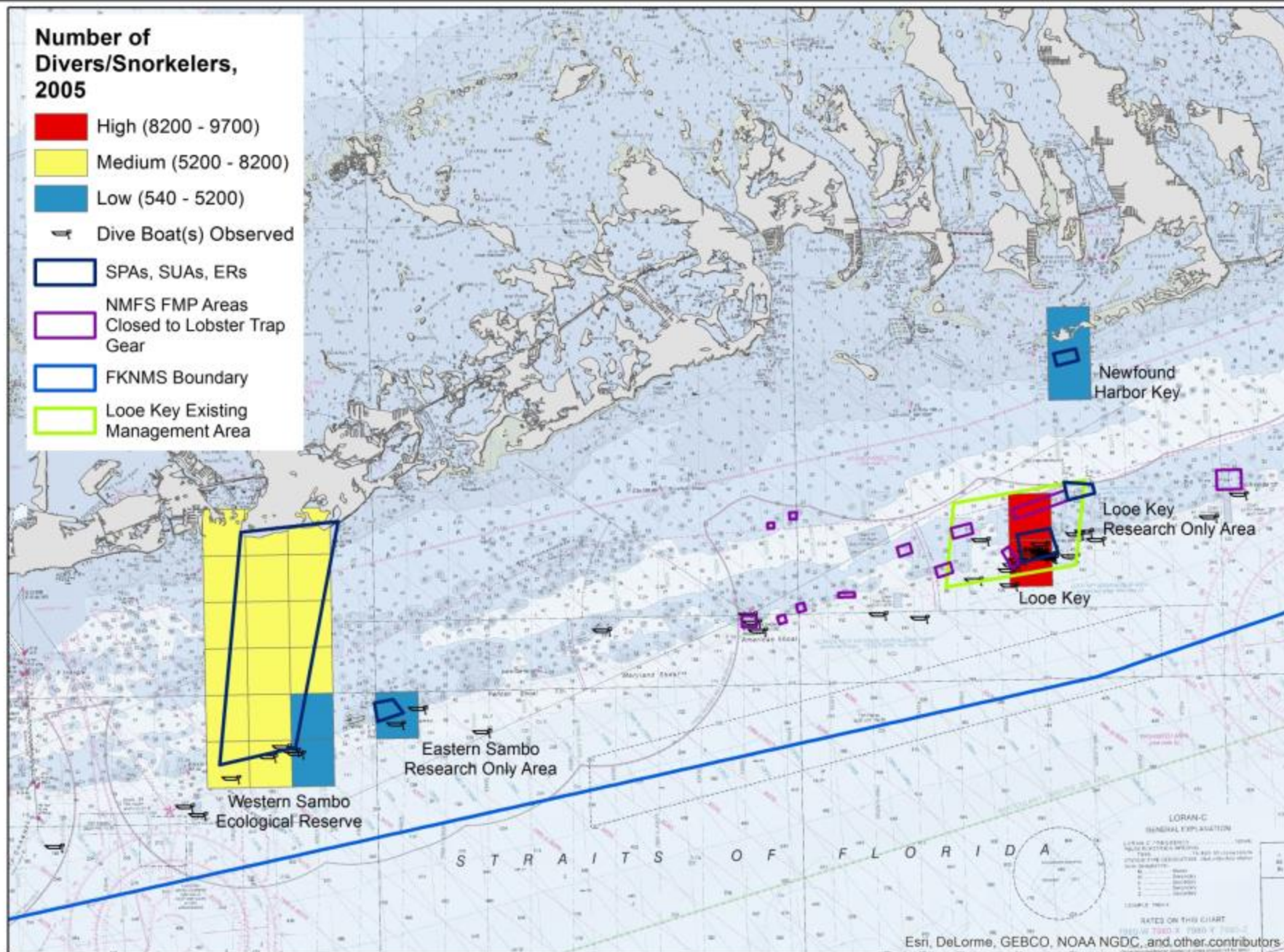
Diving and Snorkeling



0 1.5 3 Miles

Number of Divers/Snorkelers, 2005

- High (8200 - 9700)
- Medium (5200 - 8200)
- Low (540 - 5200)
- Dive Boat(s) Observed
- SPAs, SUAs, ERs
- NMFS FMP Areas Closed to Lobster Trap Gear
- FKNMS Boundary
- Looe Key Existing Management Area



Impacts Metrics

- Where were vessel groundings reported?
- What is the distribution of marine debris?



Photo credits: NOAA

Vessel Groundings

Data source

Florida Keys National Marine Sanctuary

Metric

- Distribution of Reported Vessel Groundings, 2000-2012



Reported Vessel Groundings



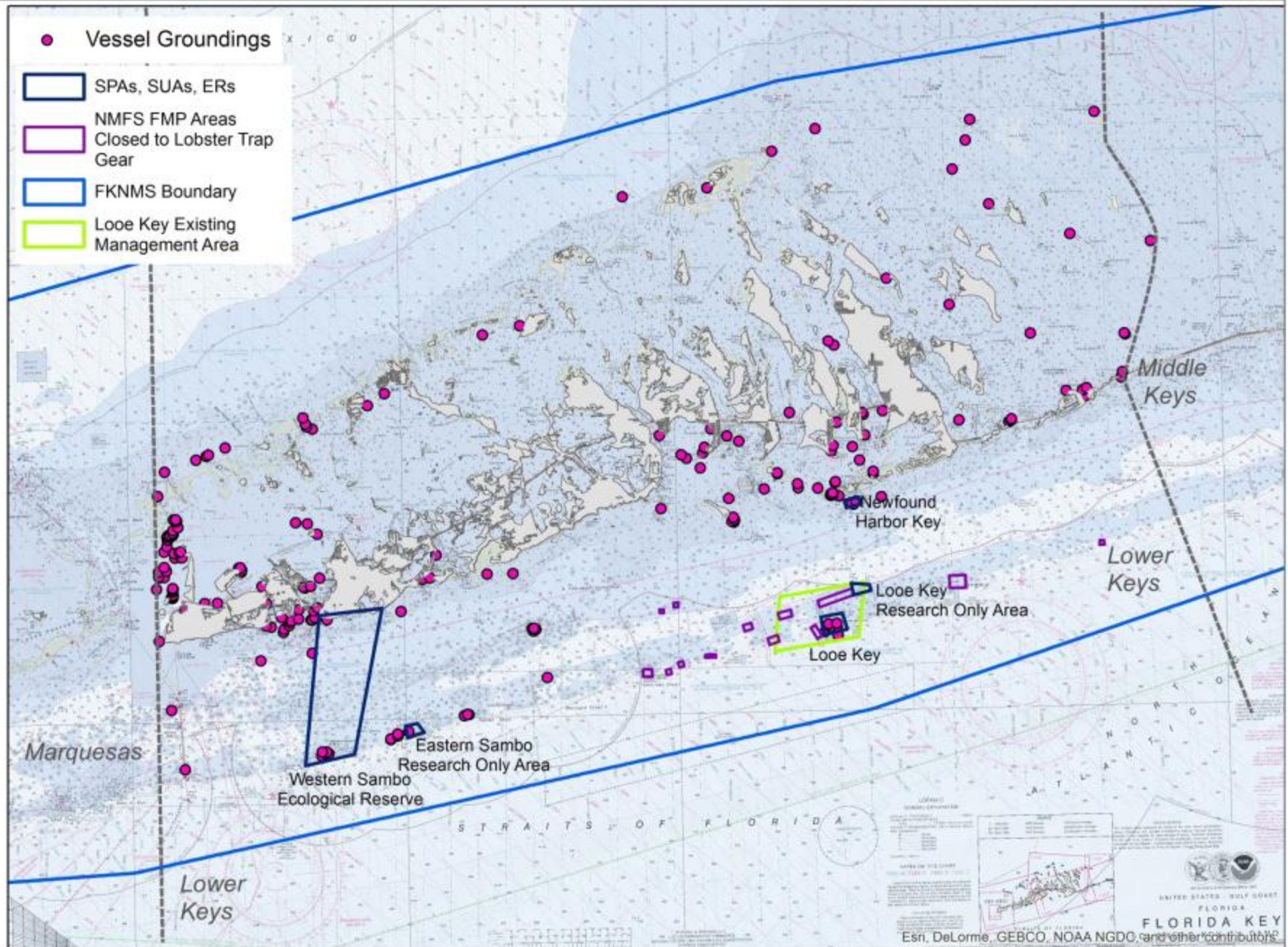
● Vessel Groundings

▭ SPAs, SUAs, ERs

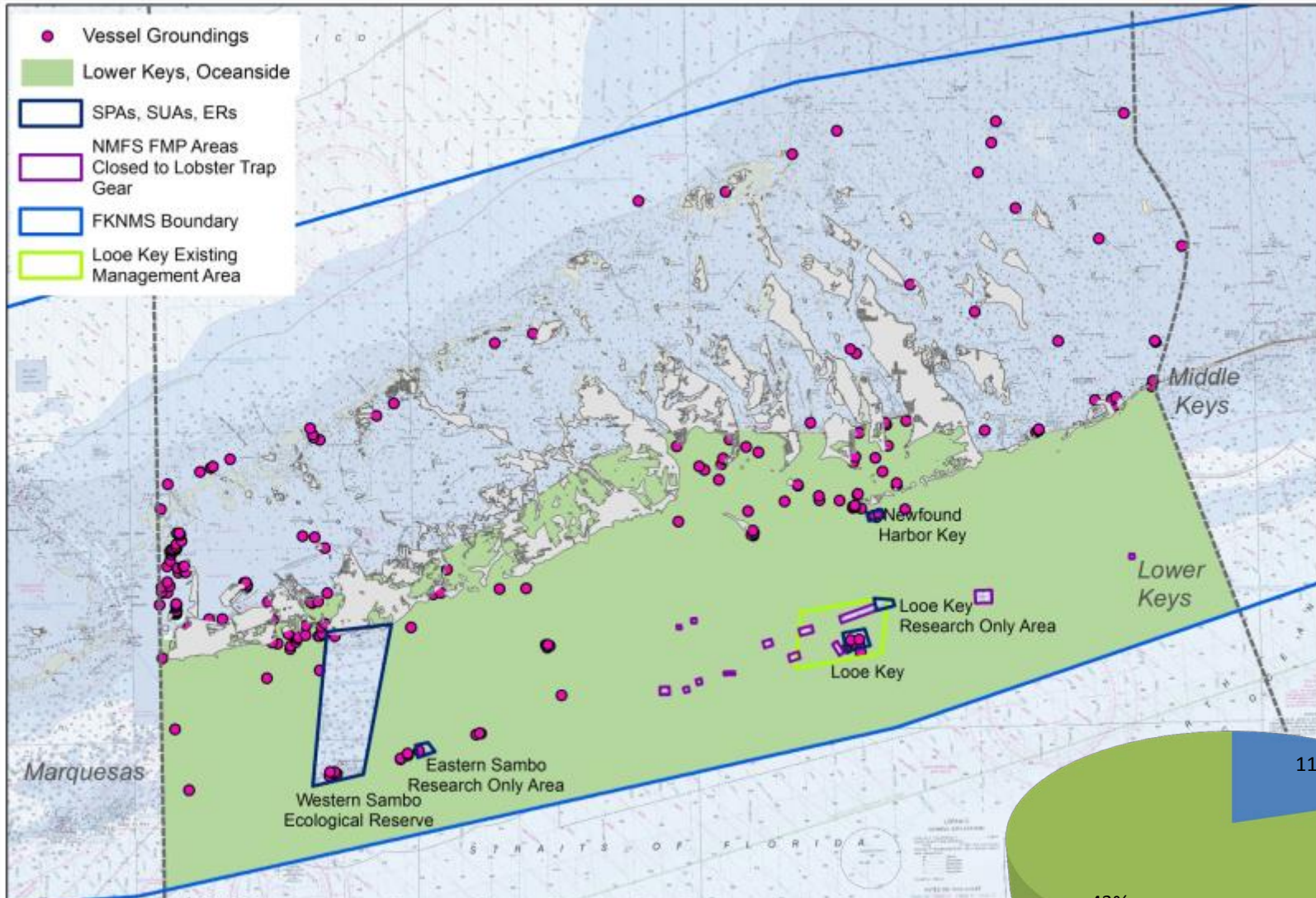
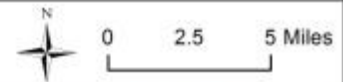
▭ NMFS FMP Areas
Closed to Lobster Trap
Gear

▭ FKNMS Boundary

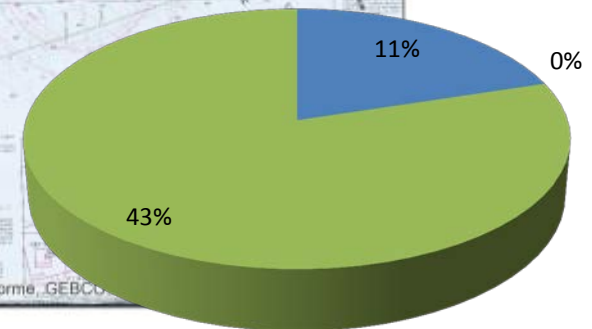
▭ Looe Key Existing
Management Area



Reported Vessel Groundings



Management Zone	Groundings (#)
SPAs, SUAs, ERs	24
NMFS FMP Areas Closed to Lobster Traps	0
Remaining FKNMS, oceanside	95
Total	119



■ SPAs, SUAs, ERs
■ NMFS FMP Areas Closed to Lobster Traps
■ Remaining FKNMS, Oceanside

Marine Debris

Data sources

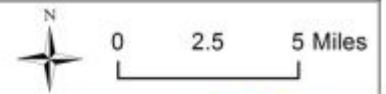
NOVA Southeastern University (SCREAM)

Metric

- Average Marine Debris Density per 1km², 2000-2012

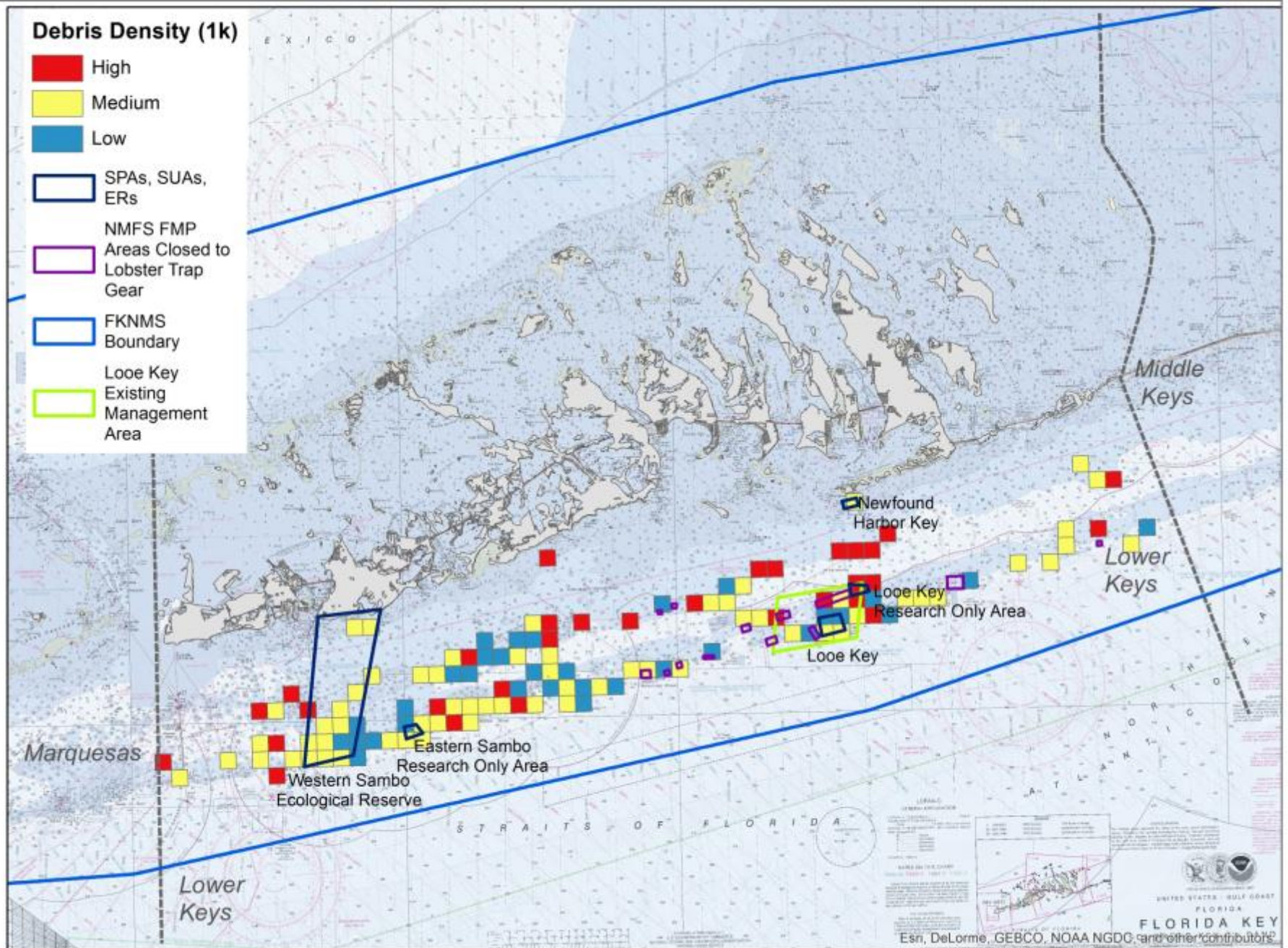


Marine Debris Density

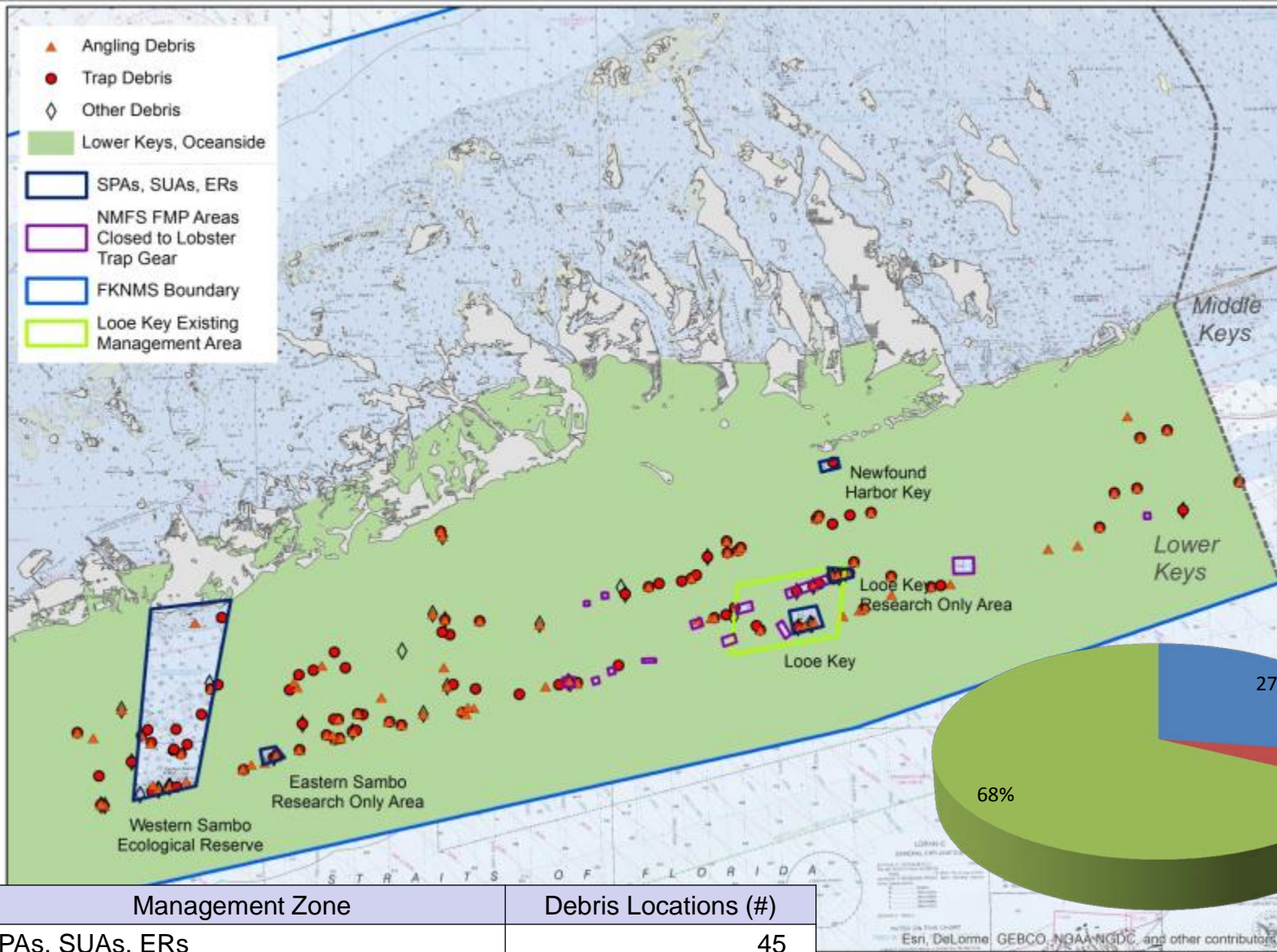


Debris Density (1k)

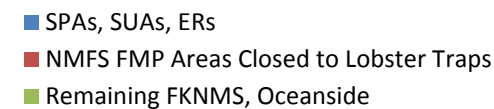
- High
- Medium
- Low
- SPAs, SUAs, ERs
- NMFS FMP Areas Closed to Lobster Trap Gear
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Marine Debris



Management Zone	Debris Locations (#)
SPAs, SUAs, ERs	45
NMFS FMP Areas Closed to Lobster Traps	8
Remaining FKNMS, oceanside	112
Total	165



THANK YOU

