

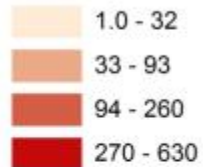
Ecosystem Protection Working Group: Human Use Information for the Middle Keys

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



Middle Keys Orientation

Total Population (Census Block)



Watercraft-related businesses

Marinas

Mooring Fields

Lignumvitae Key Aquatic Preserve

State Park

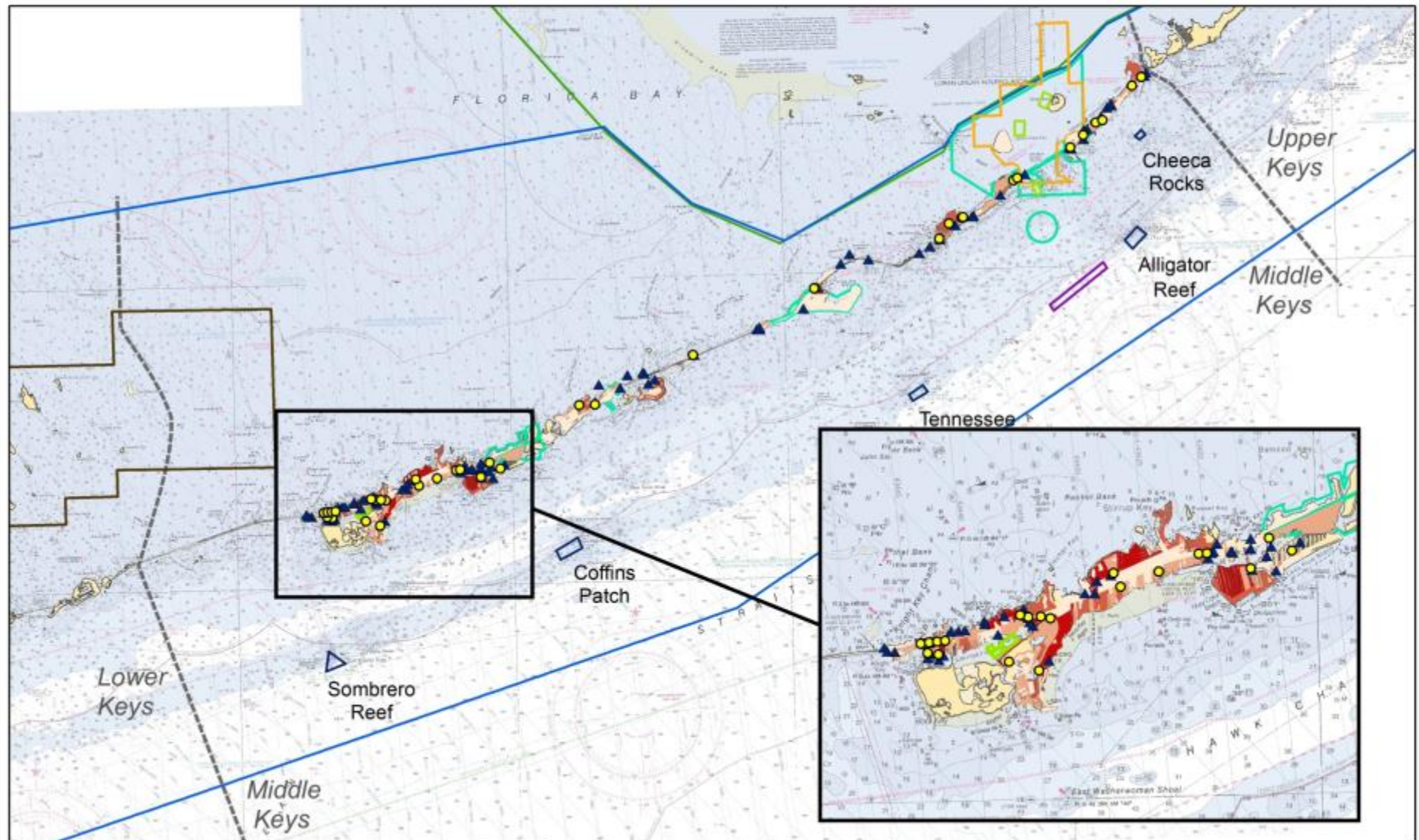
FKNMS Boundary

SPAs, SUAs

Everglades National Park

Great White Heron National Wildlife Refuge

NMFS FMP Lobster Trap Exclusion Areas



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

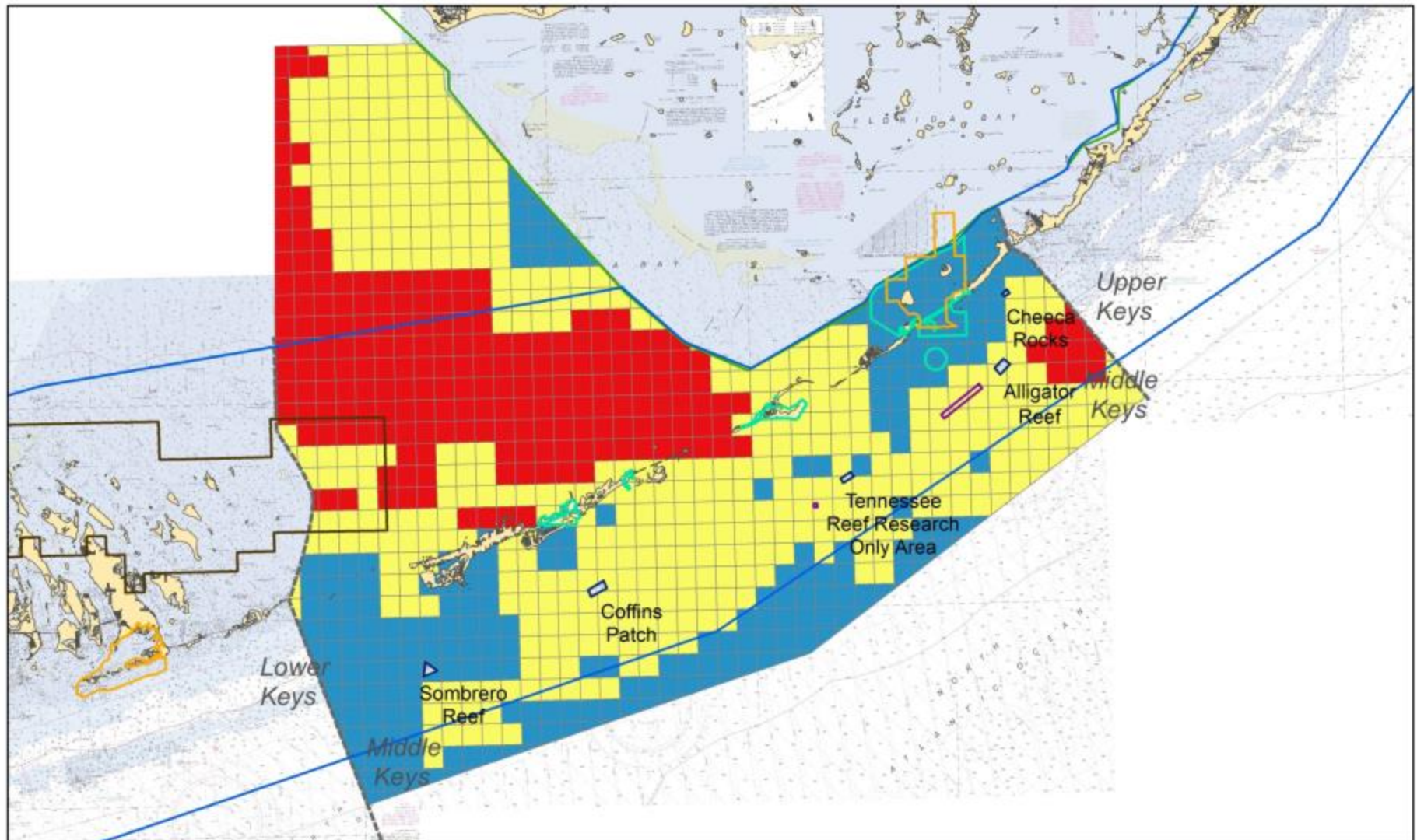
Manoj Shivilani et al (2008). Knowledge Attitudes and Perceptions of Management Strategies and Regulations of the Florida Keys National Marine Sanctuary by Commercial Fishers, Dive Operators, and Environmental Group Members: A Baseline Characterization and 10-year Comparison.

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

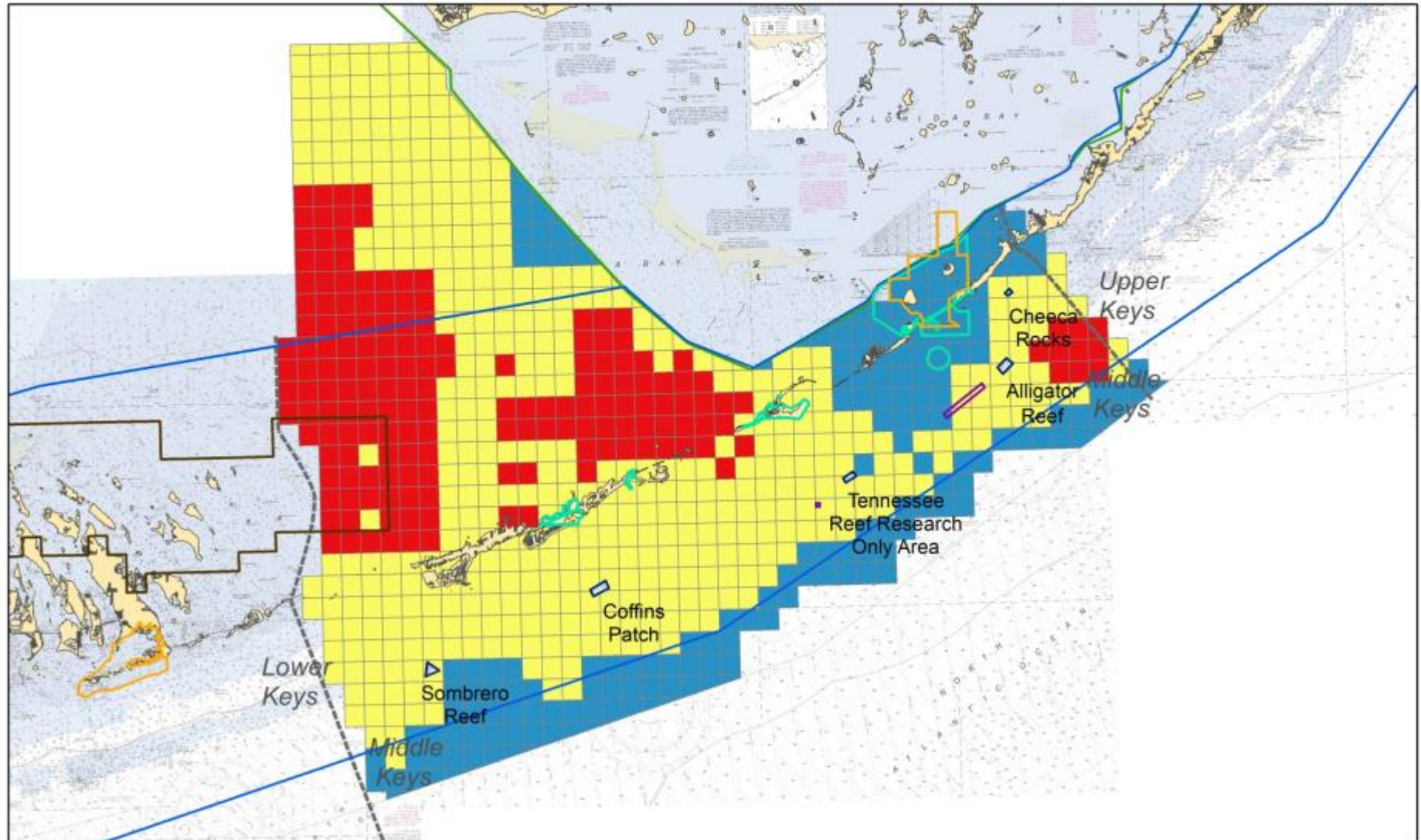
All Commercial Fishing - Middle Keys Region

Number of Fishers



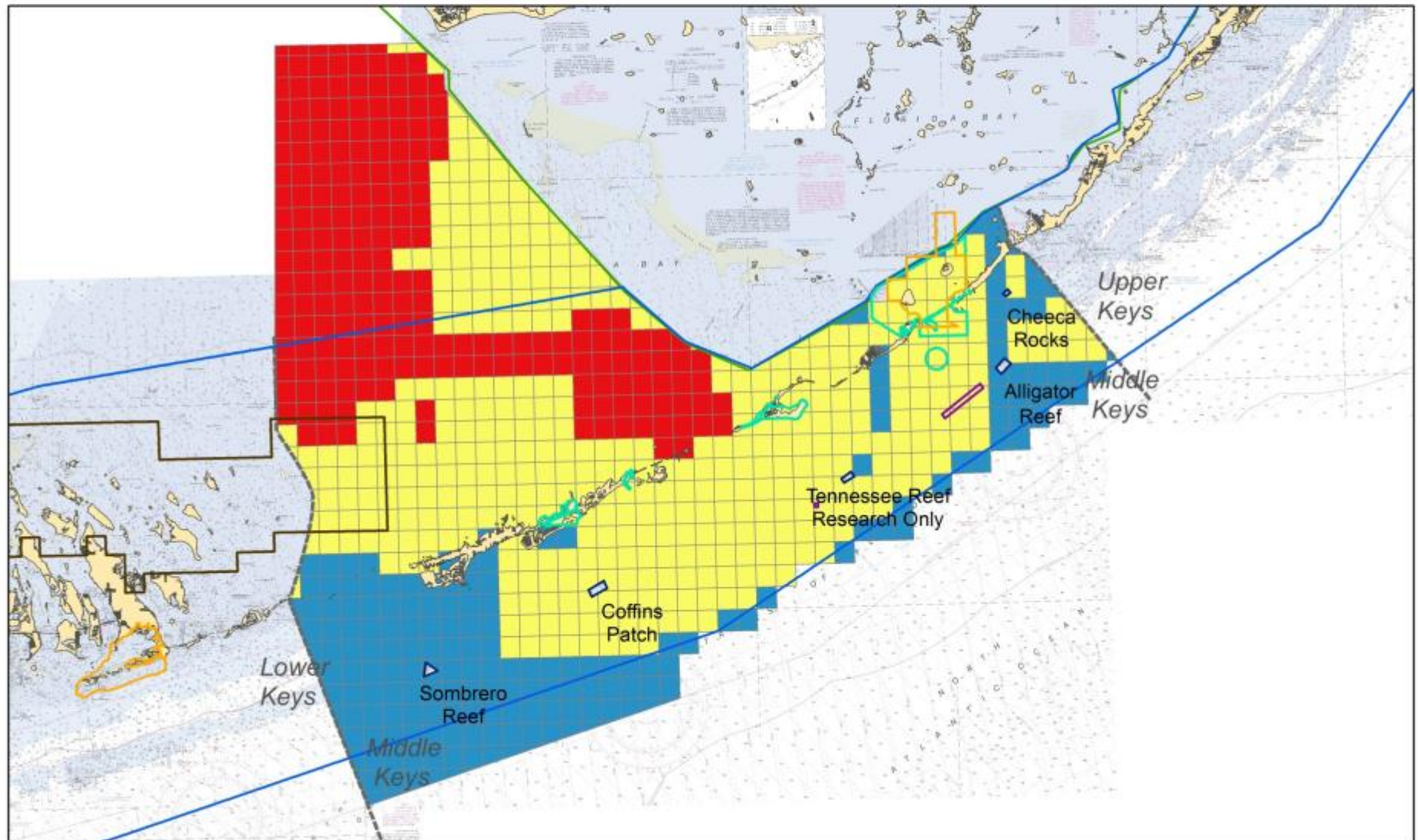
Spiny Lobster Fishers

Number of Fishers



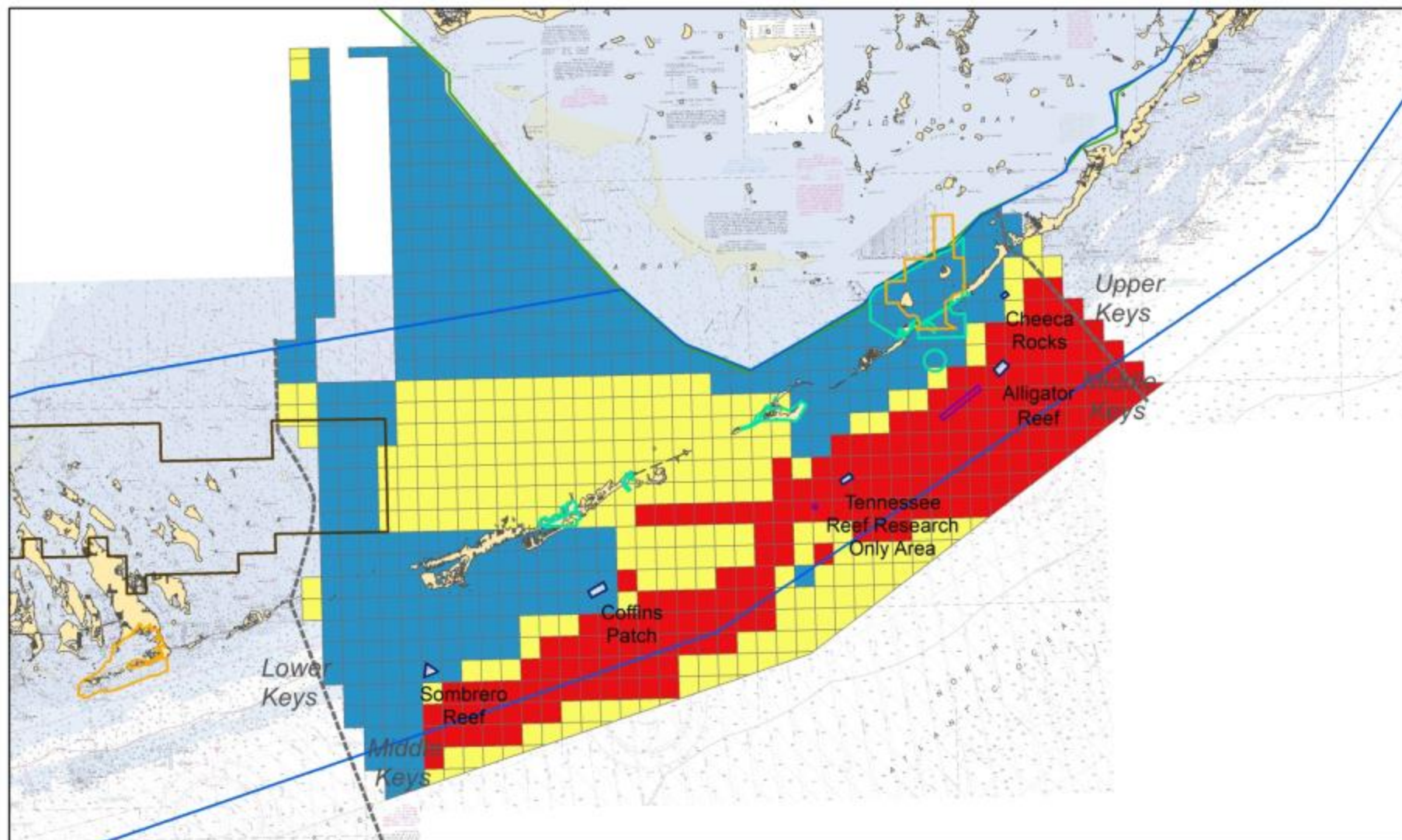
Stone Crab Fishers

Number of Fishers



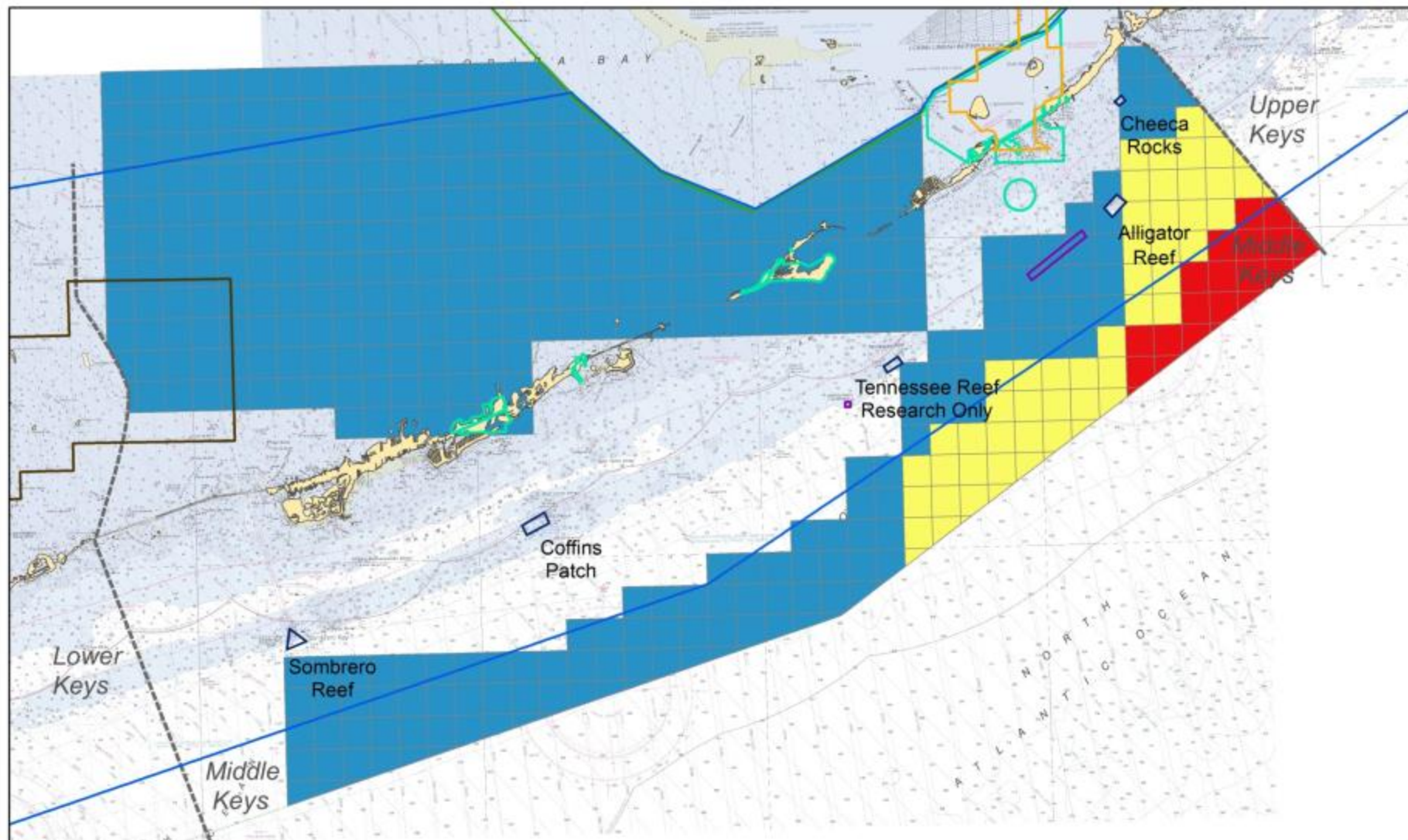
Reef Fish (Snapper/ Grouper) Fishers

Number of Fishers



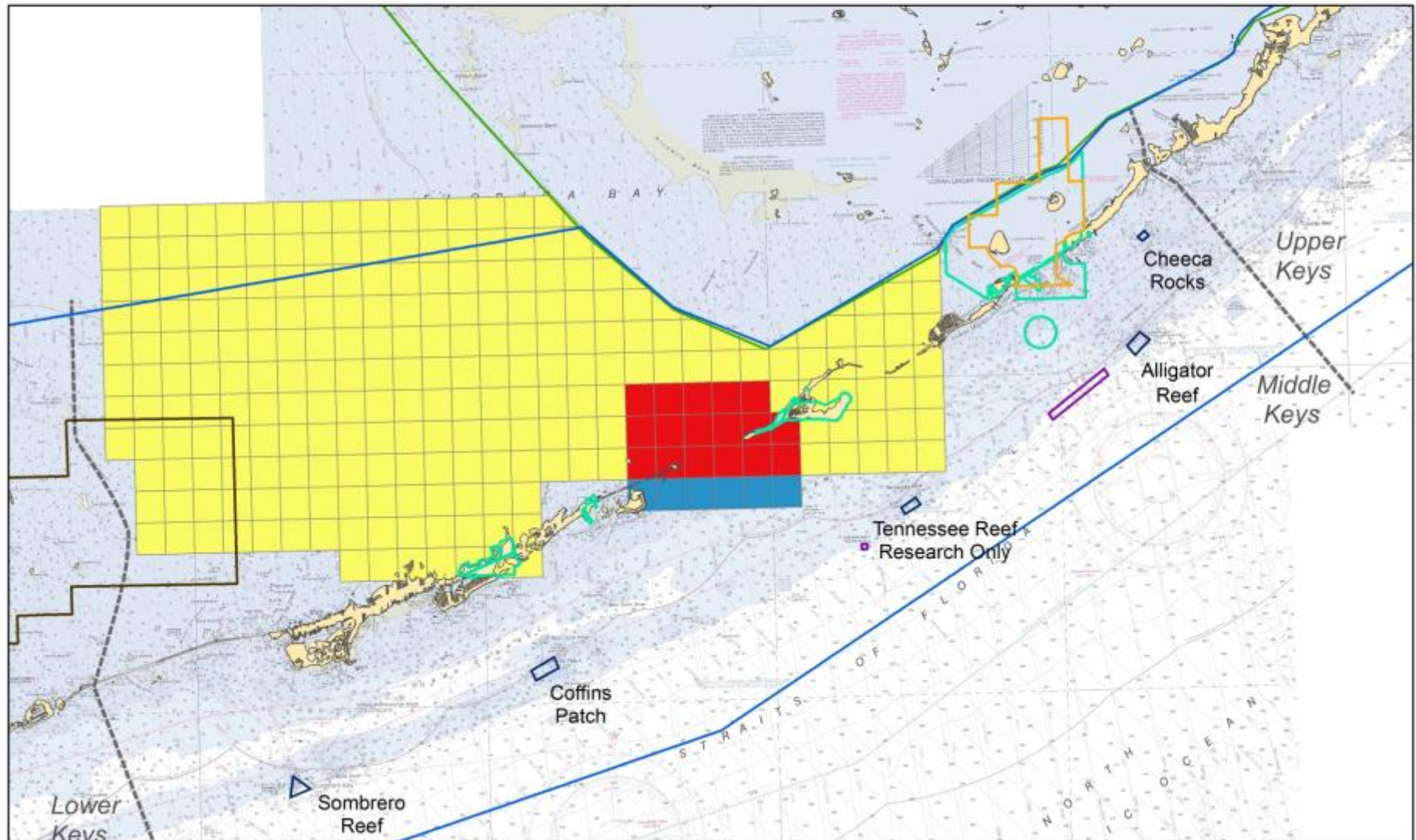
King Mackerel Fishers

Number of Fishers



Spanish Mackerel Fishers

Number of Fishers



Other Pelagics (Cobia, Dolphin, Wahoo) Fishers

Number of Fishers



Lignumvitae Key Aquatic Preserve

State Park

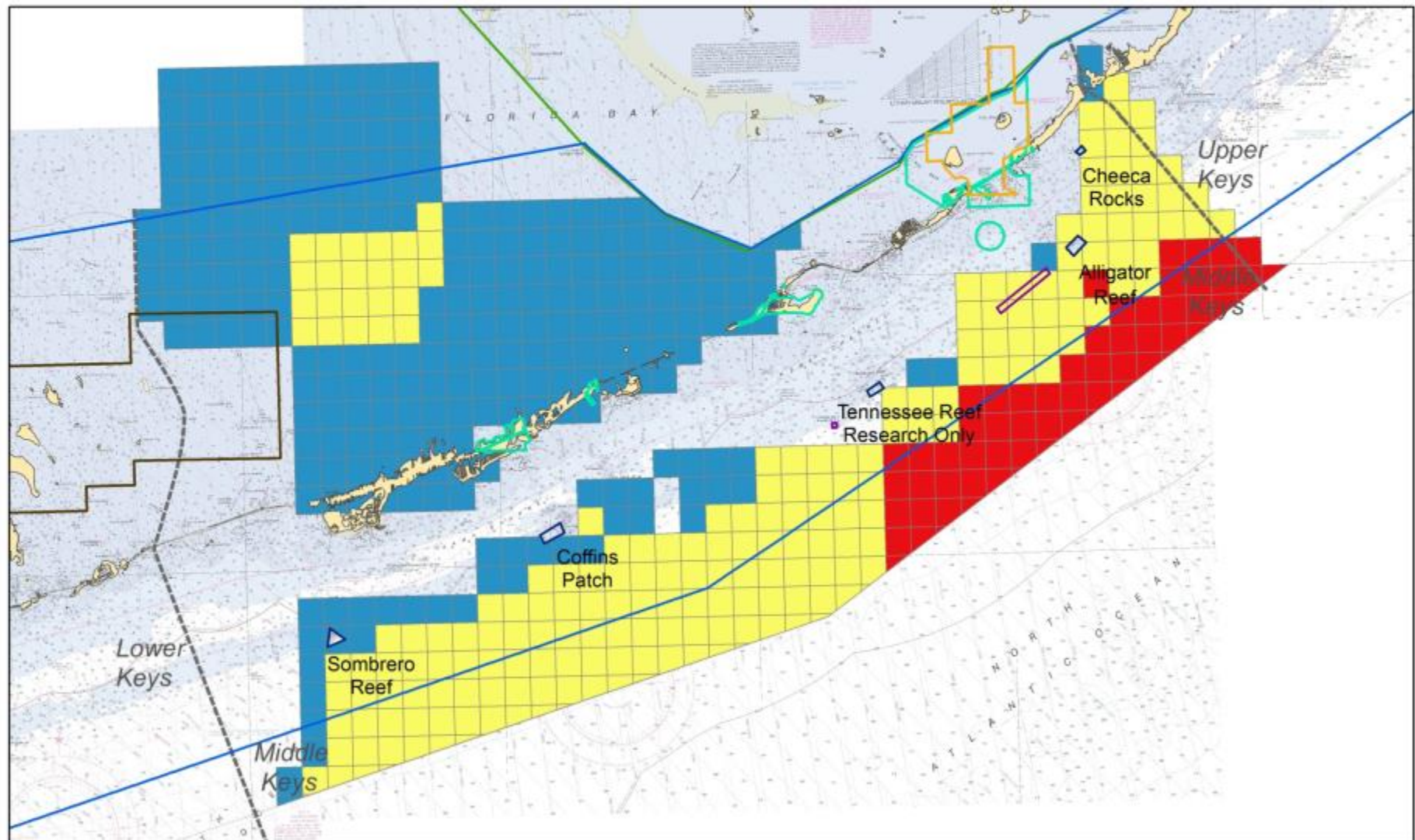
FKNMS Boundary

SPAs, SUAs

Everglades National Park

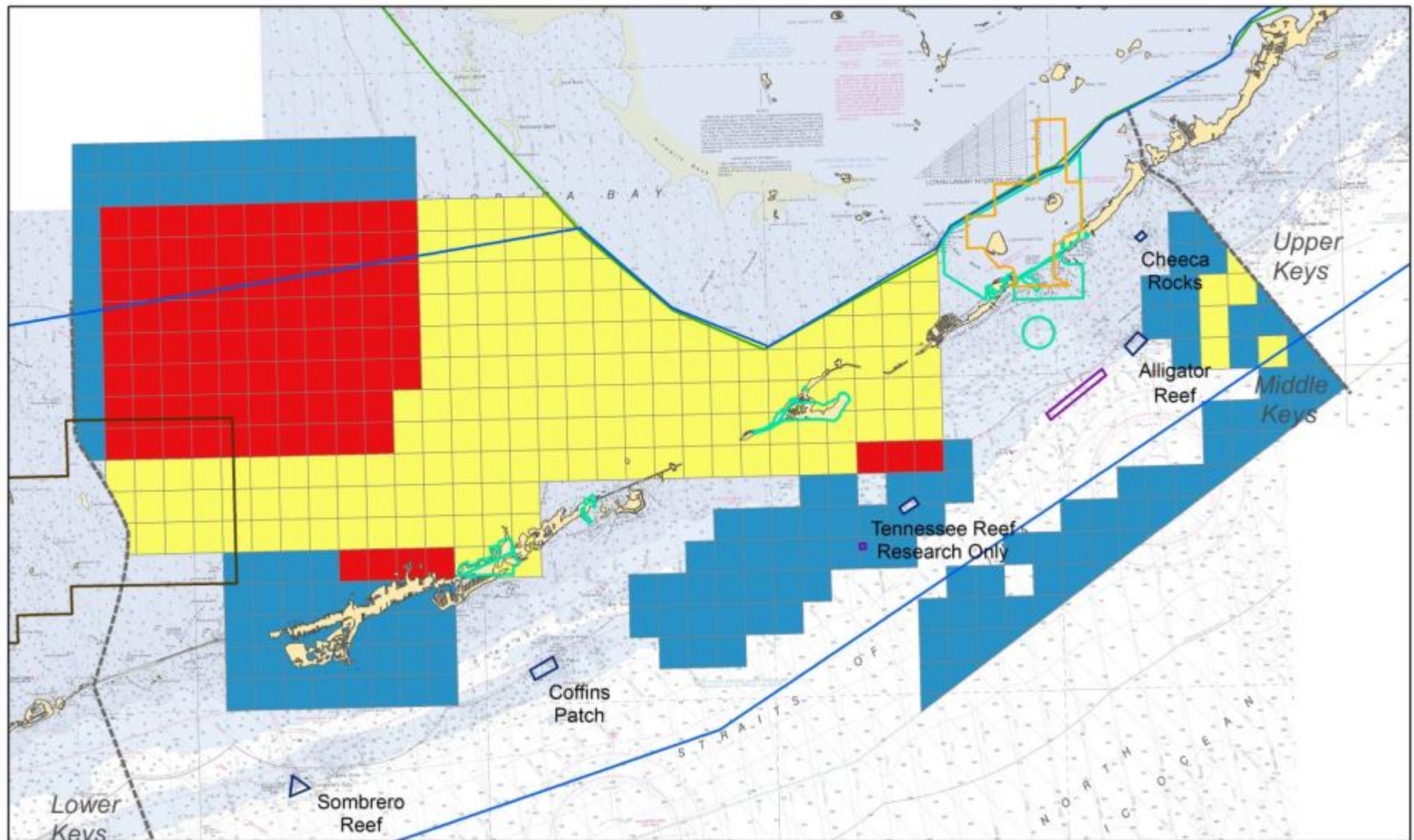
Great White Heron National Wildlife Refuge

NMFS FMP Lobster Trap Exclusion Areas



Bait Fish Fishers

COUNT_Fish



Recreational and Charter Fishing



Data source

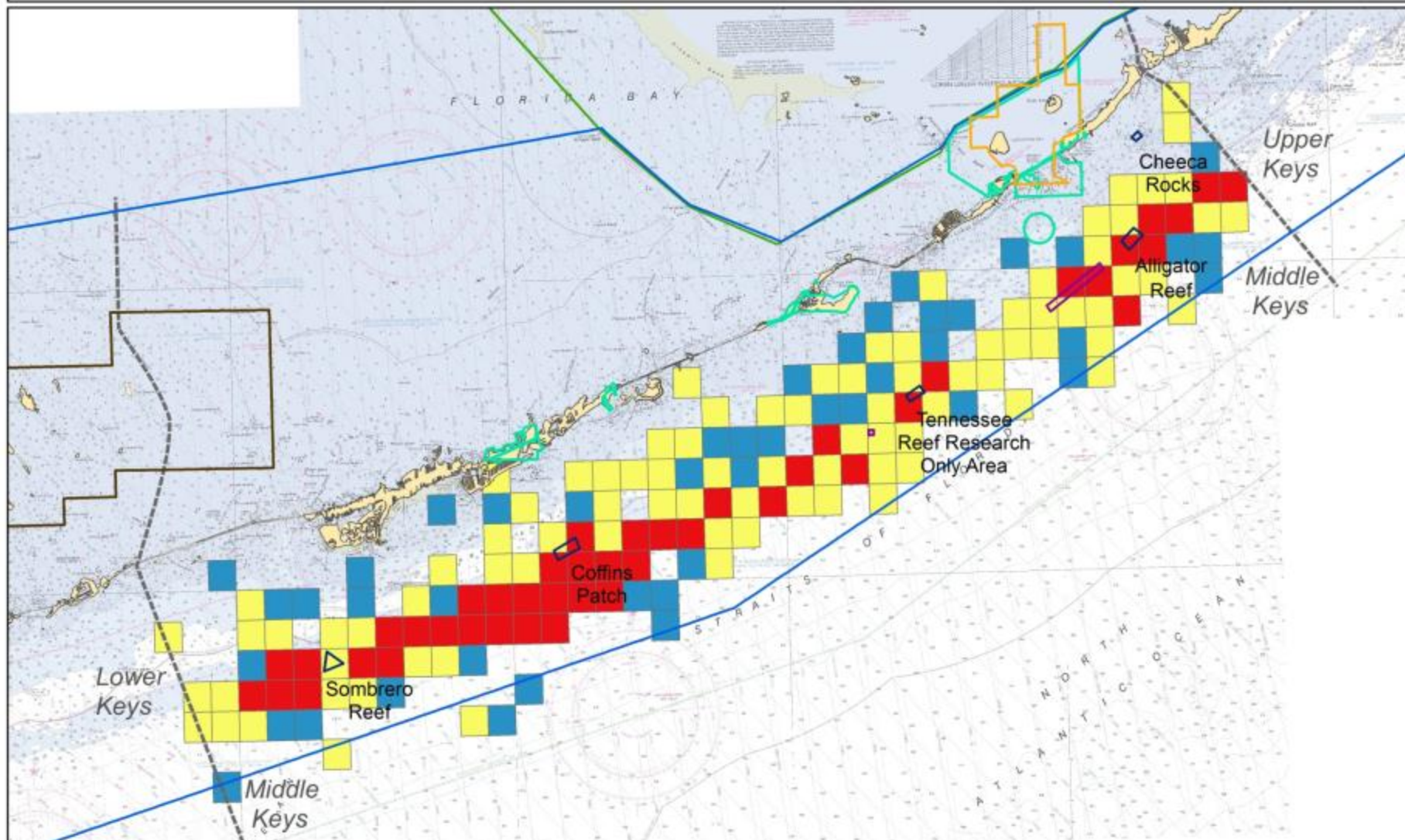
FWC. Aerial surveys of the Florida Keys Reef Tract.

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





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

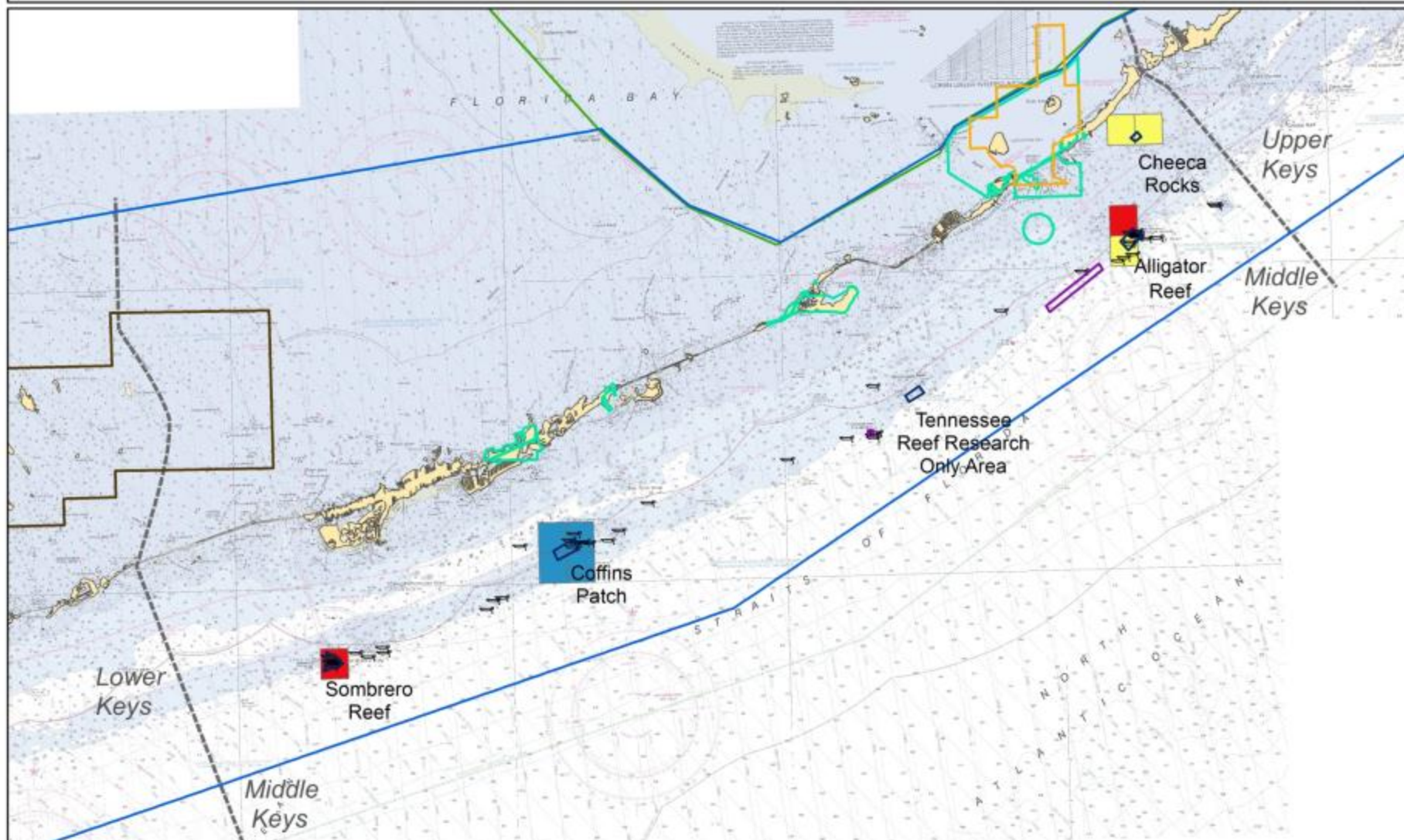
- Dive Boats with Dive Flags Observed, May – August 2010-2012
- Density of Divers on Commercial Dive Boats per 1 nautical mile², 2005

Diving Activity

Number of Divers, 2005



Dive Boat(s) Observed



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

□ Lignumvitae Key Aquatic Preserve

□ State Park

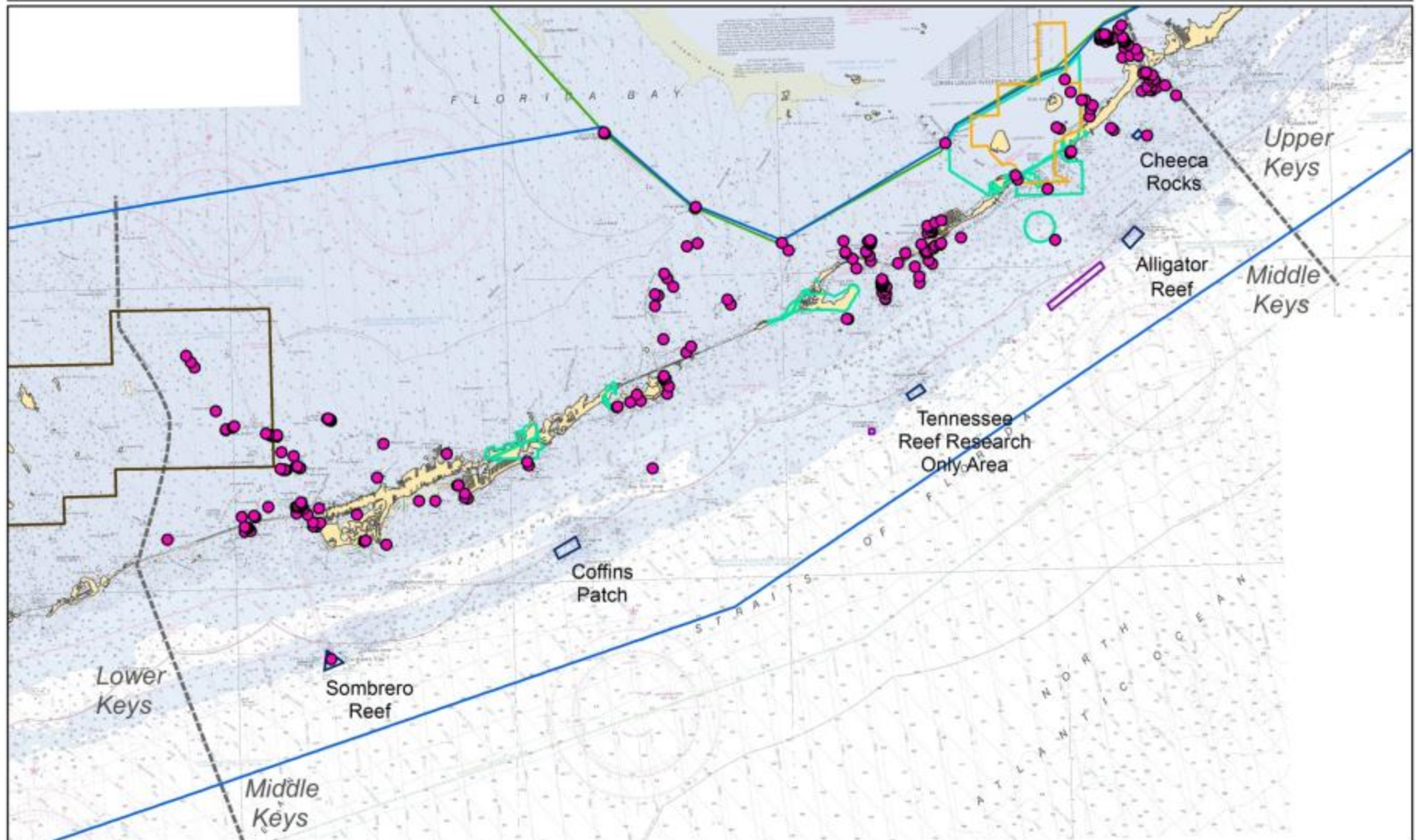
□ FKNMS Boundary

□ SPAs, SUAs

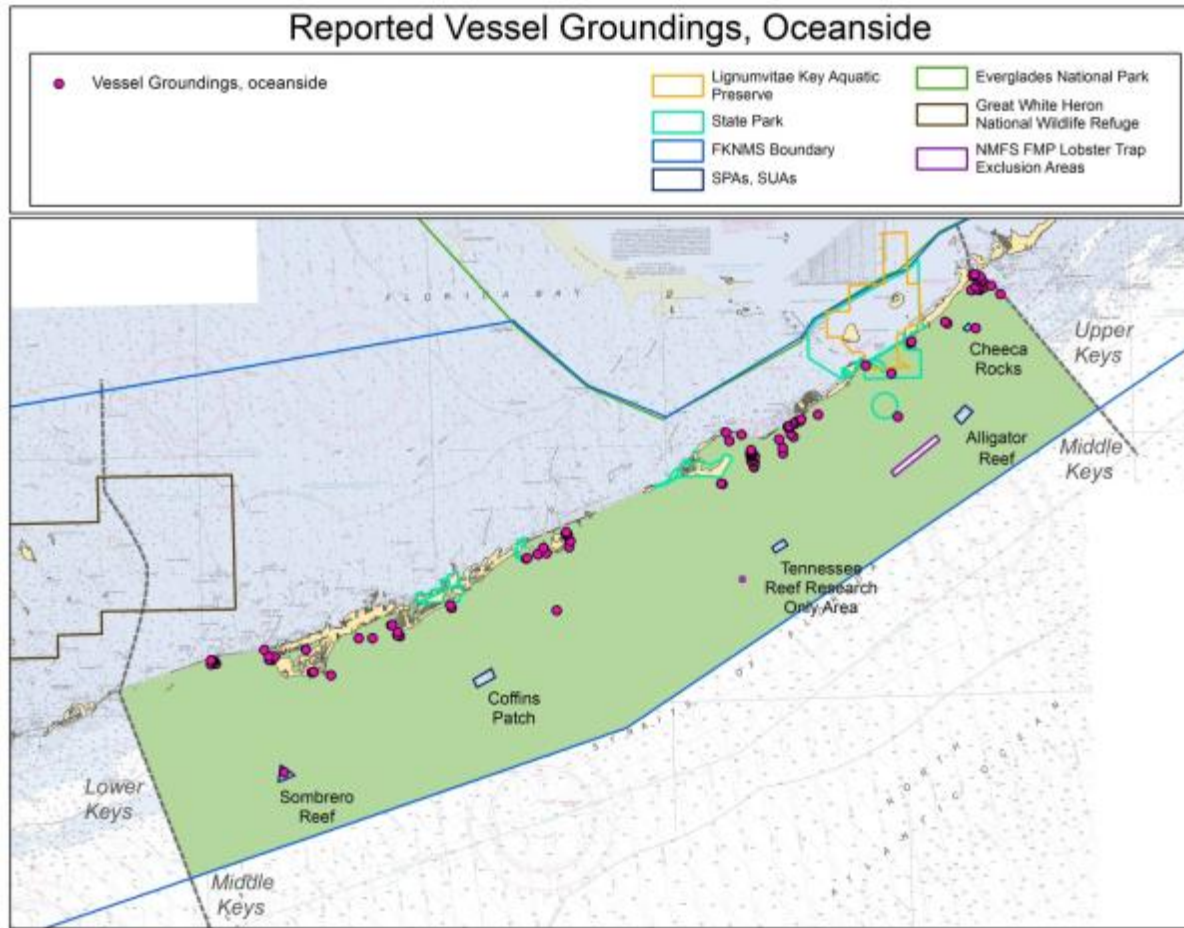
□ Everglades National Park

□ Great White Heron National Wildlife Refuge

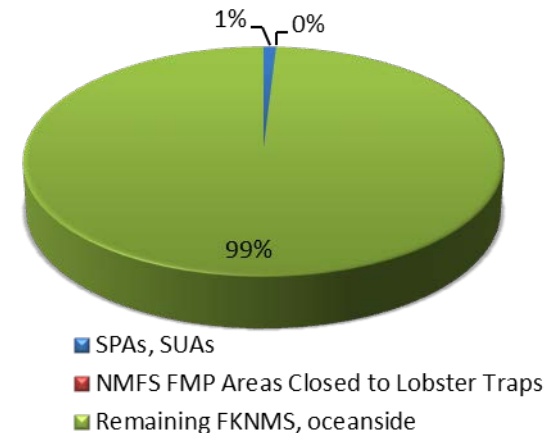
□ NMFS FMP Lobster Trap Exclusion Areas



Reported Vessel Groundings



Management Zone	Groundings (#)
SPAs, SUAs	1
NMFS FMP Areas Closed to Lobster Traps	0
Remaining FKNMS, oceanside	105
Total	106



Marine Debris

Data sources

NOVA Southeastern University (SCREAM)

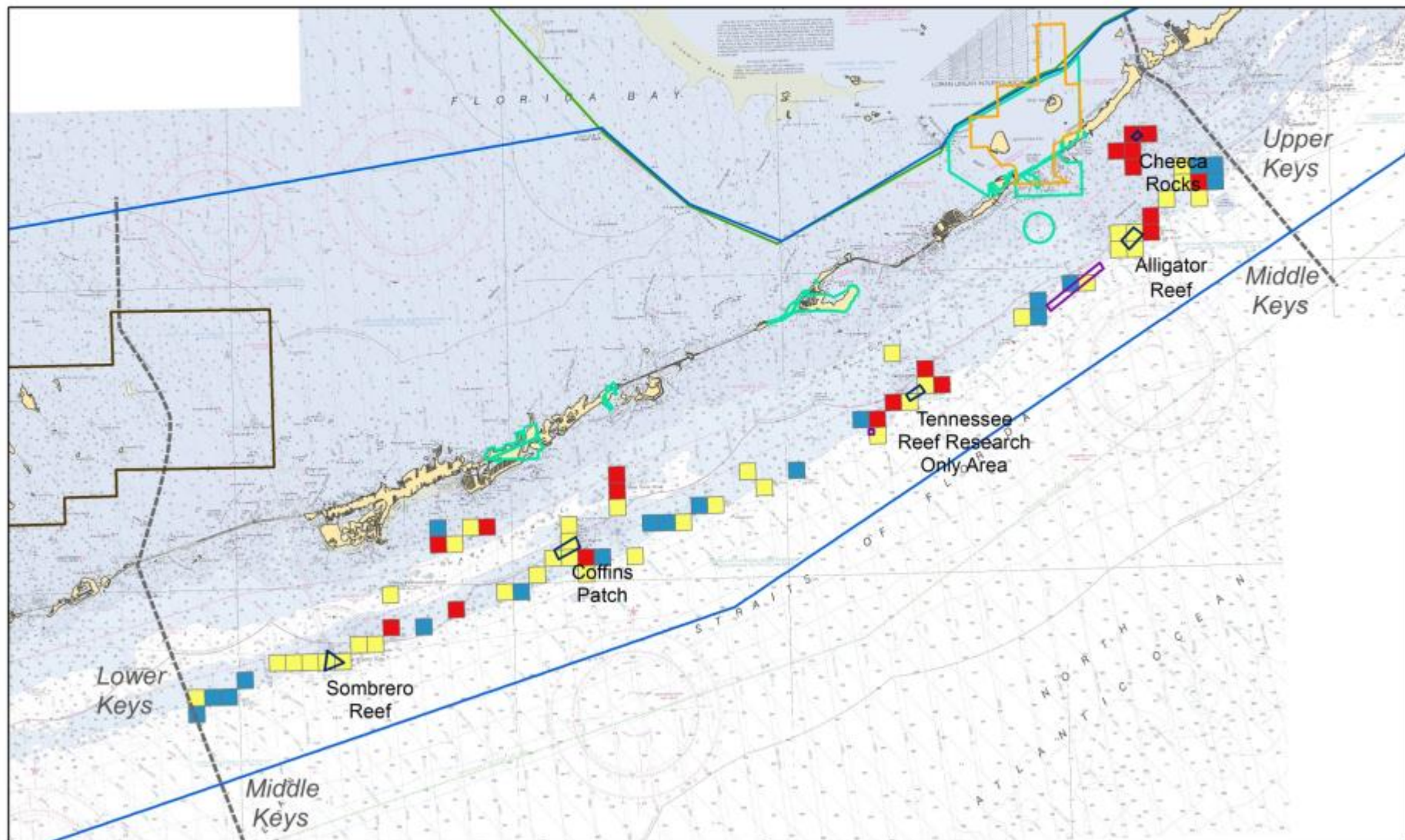
Metric

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

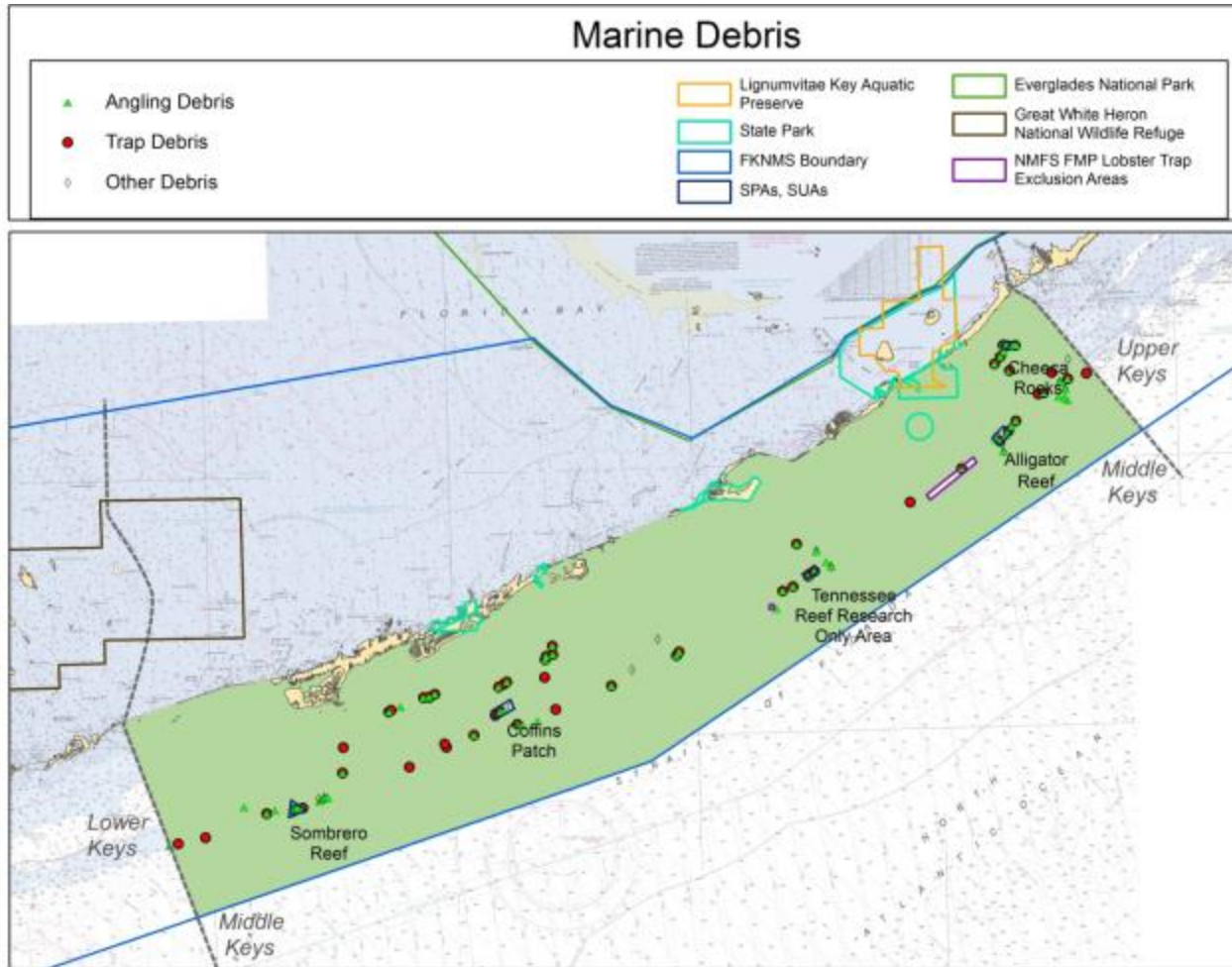


Marine Debris Density

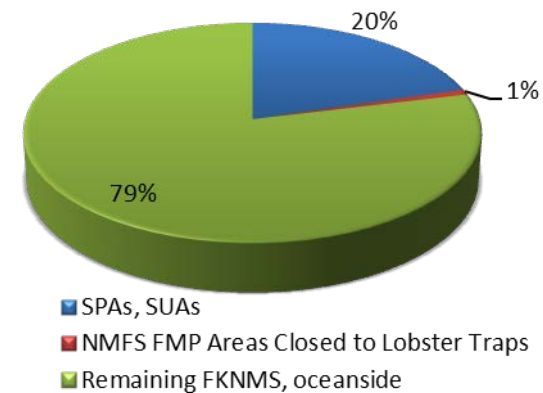
Debris Density (1k)



Marine Debris



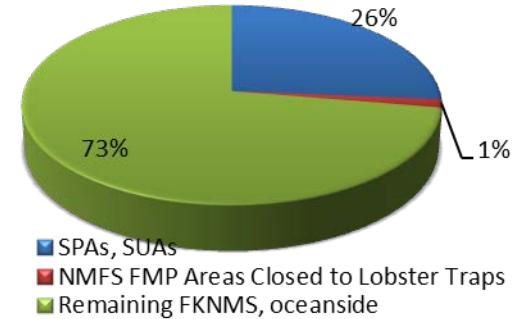
Management Zone	Debris Locations (#)
SPAs, SUAs	27
NMFS FMP Areas Closed to Lobster Traps	1
Remaining FKNMS, oceanside	104
Total	132



Debris Types

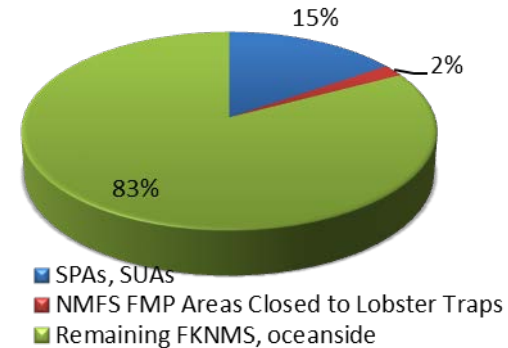
Angling Debris

Management Zone	Angling Debris Locations (#)
SPAs, SUAs	20
NMFS FMP Areas Closed to Lobster Traps	1
Remaining FKNMS, oceanside	55
Total	76



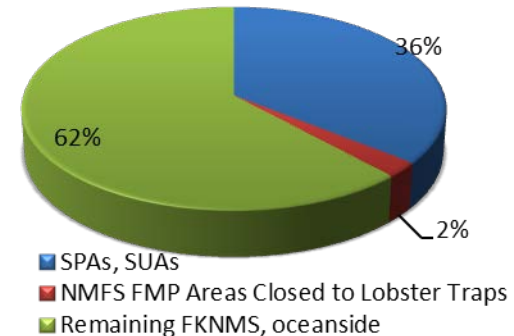
Trap Debris

Management Zone	Trap Debris Locations (#)
SPAs, SUAs	8
NMFS FMP Areas Closed to Lobster Traps	1
Remaining FKNMS, oceanside	43
Total	52



Other Debris

Management Zone	Other Debris Locations (#)
SPAs, SUAs	15
NMFS FMP Areas Closed to Lobster Traps	1
Remaining FKNMS, oceanside	26
Total	42



THANK YOU

