

# Ecosystem Protection Working Group: Human Use Information for the Marquesas

- 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

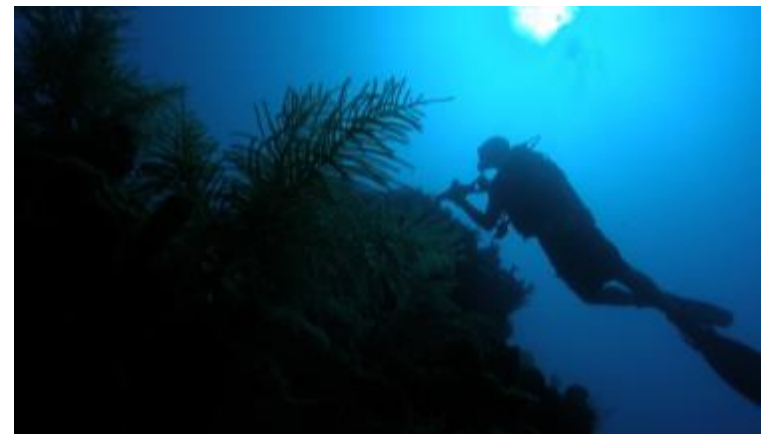
## Human use

- 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

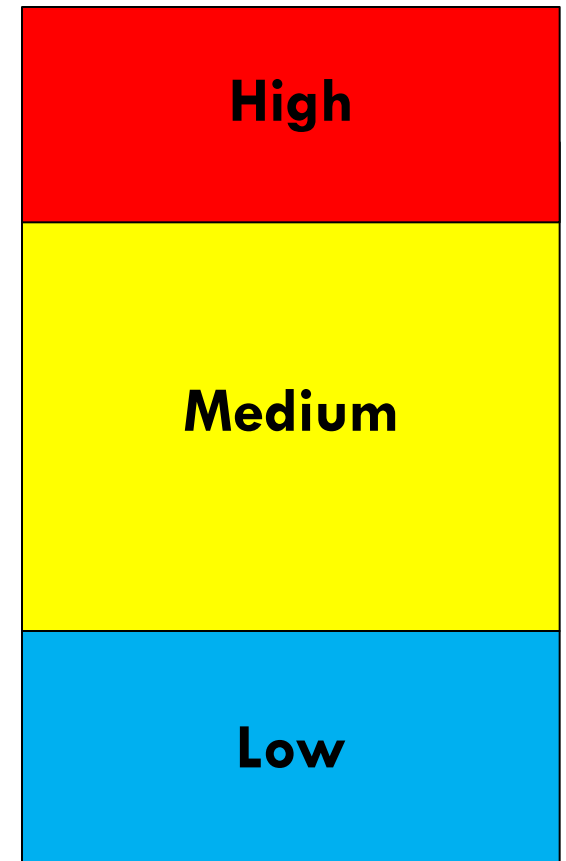
- Density of Commercial Fishers per 1 nautical mile-squared (2004-2005):
  - Available for: Spiny Lobster, Stone Crab, Reef Fish (Snapper/Grouper), King Mackerel, Spanish Mackerel, Other Pelagics (Cobia, Dolphin, Wahoo), Bait Fish, Shrimp and Total Fishers

# Prioritizing Locations

**Rank data in given locations by highest to lowest score**

**Lump them relative to each other:**

<b>High</b>	<b>75 – 100 %</b>
<b>Medium</b>	<b>25 – 75 %</b>
<b>Low</b>	<b>&gt;0 – 24 %</b>



# All Commercial Fishers, Marquesas Region, 2004-2005

## Number of Fishers

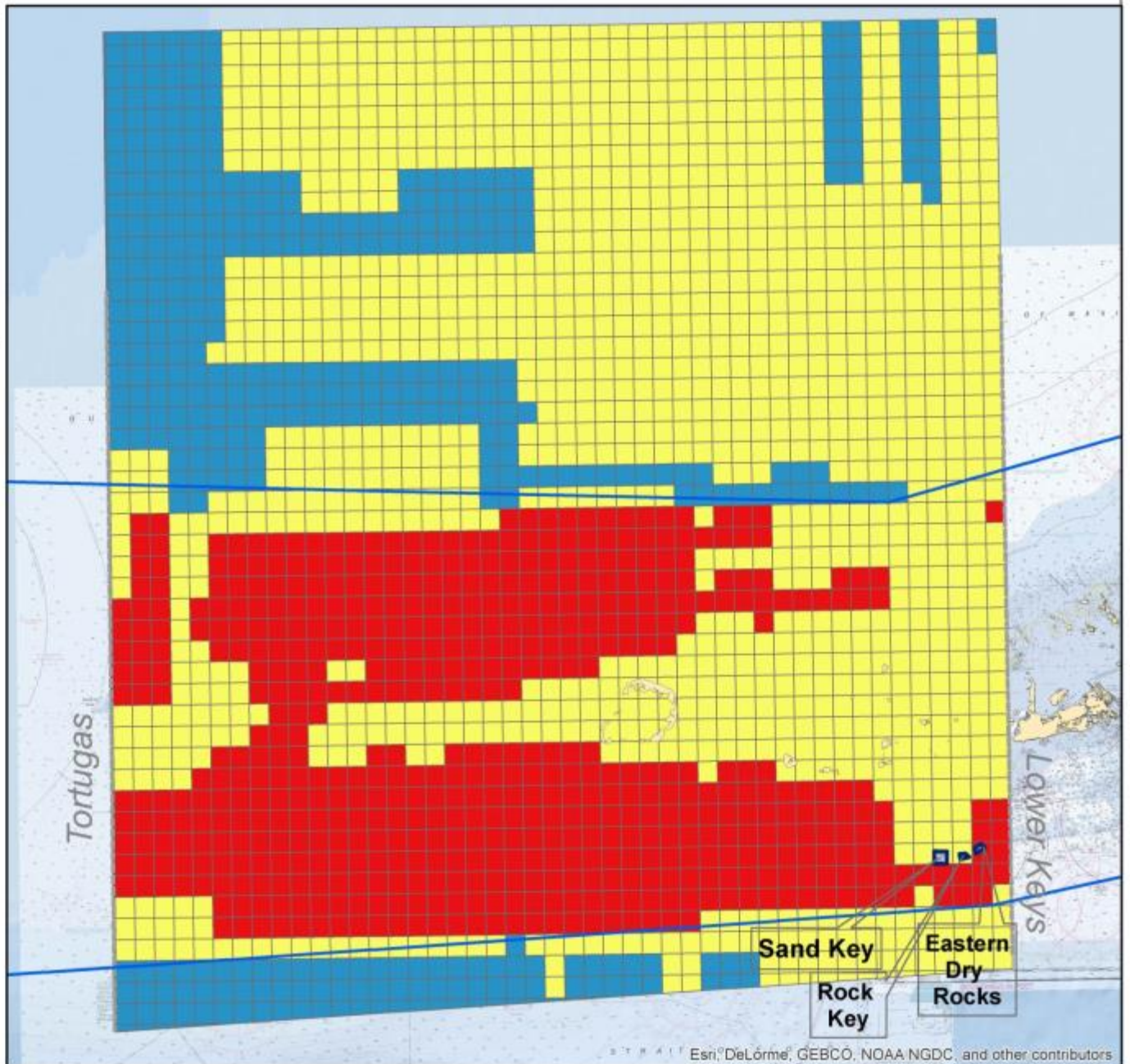
High (28-46)

Medium (14-27)

Low (6-13)

FKNMS Boundary

SPAs



# Spiny Lobster Fishers

## Number of Fishers

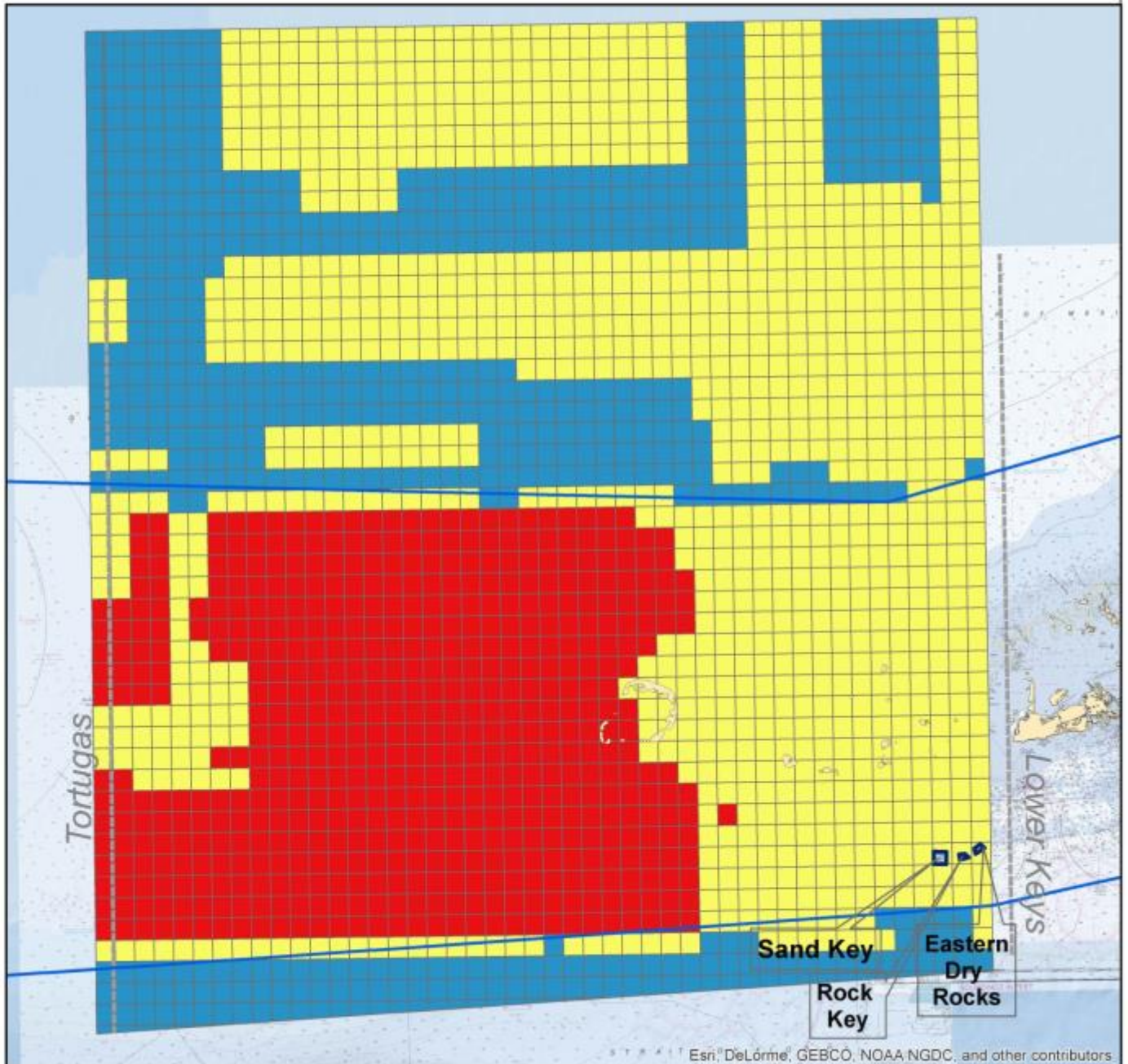
High (12-19)

Medium (5-11)

Low (1-4)

FKNMS Boundary

SPAs





# Stone Crab Fishers

## Number of Fishers

High (5-10)

Medium (3-4)

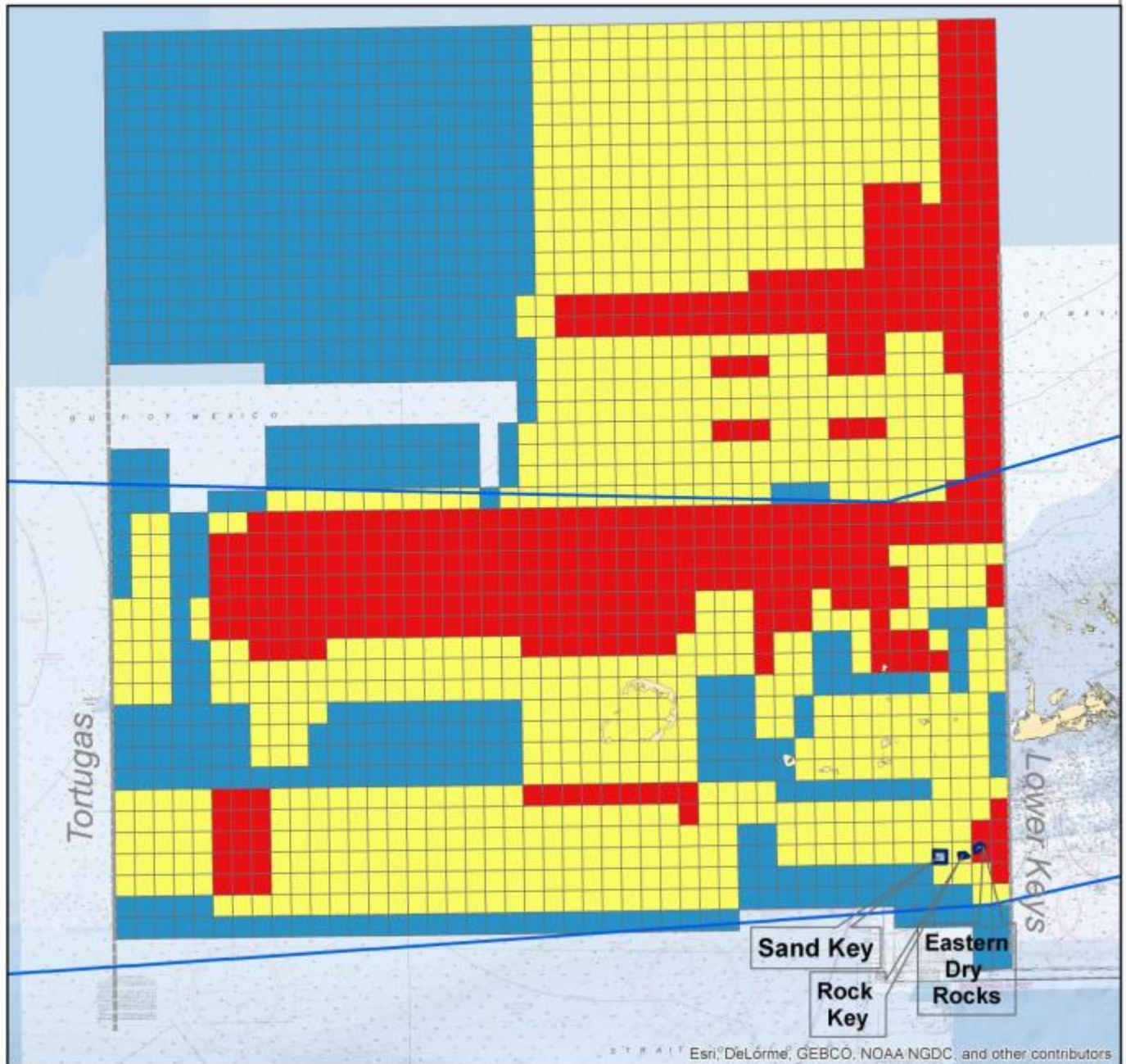
Low (1-2)

FKNMS Boundary

SPAs



0 5 Miles



# Reef Fish (Snapper/ Grouper) Fishers

## Number of Fishers

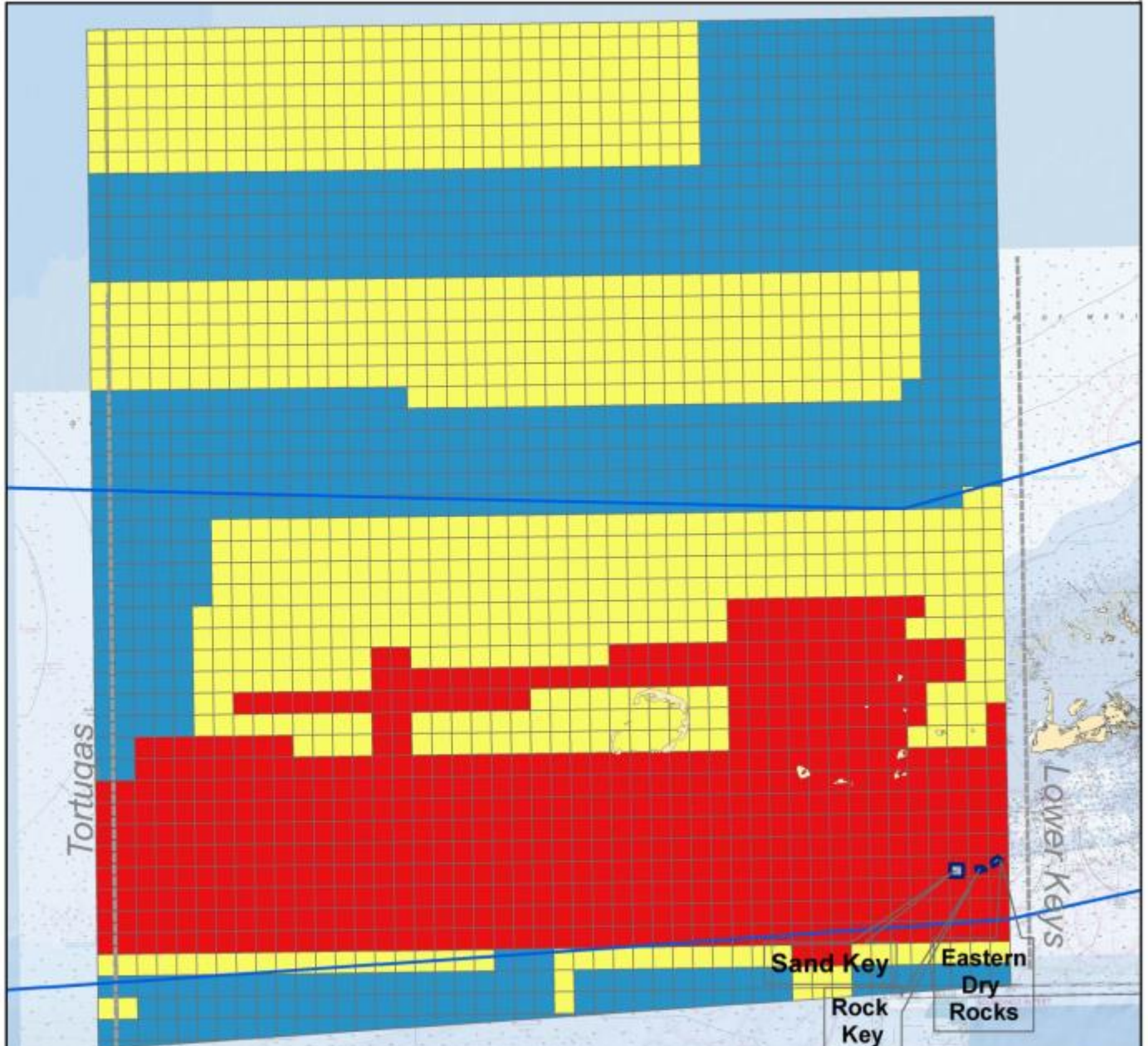
High (6-16)

Medium (4-5)

Low (2-3)

FKNMS Boundary

SPAs

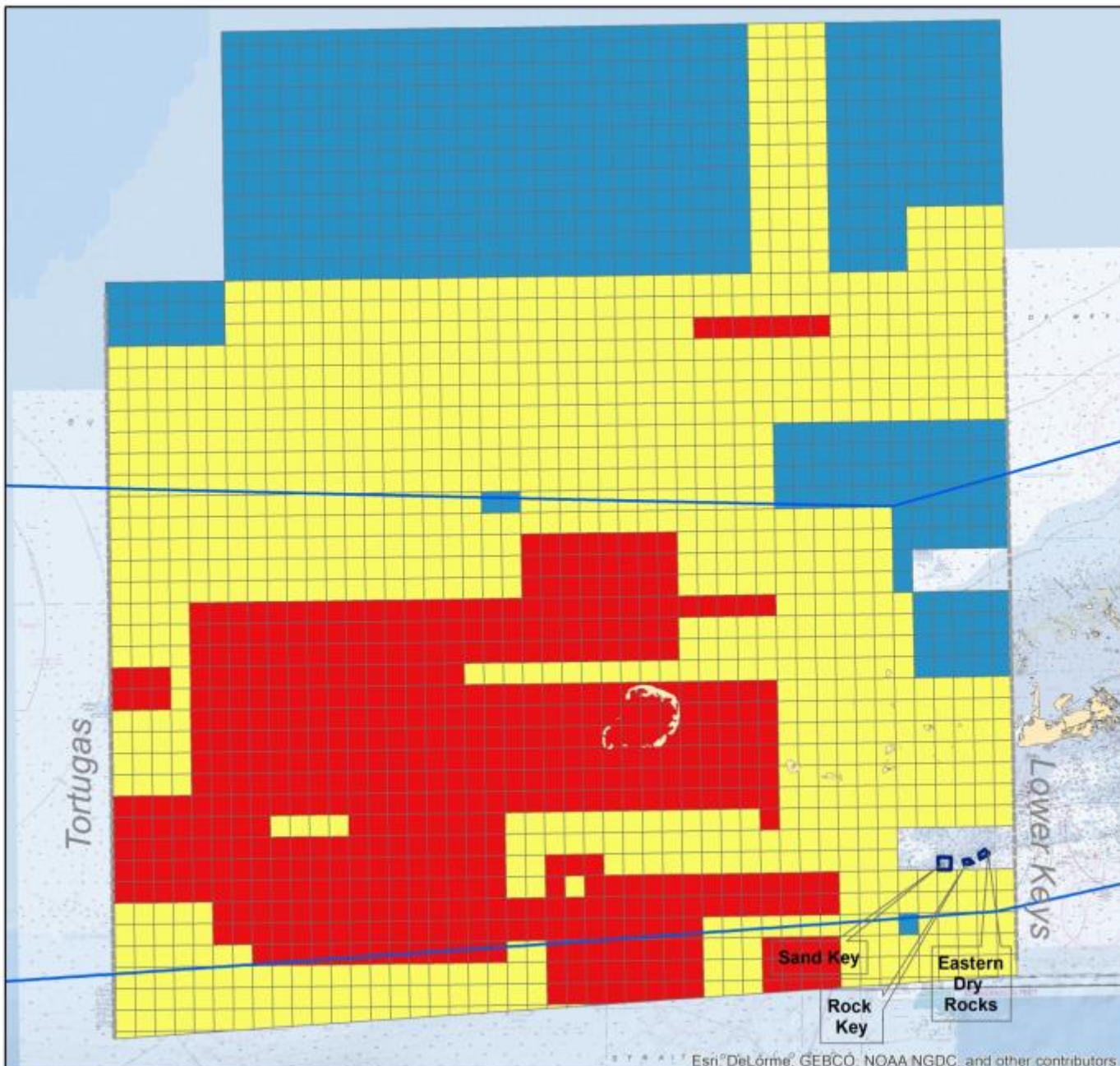


# King Mackerel Fishers

## Number of Fishers

- High (4)
- Medium (2-3)
- Low (1)

- FKNMS
- SPAs



# Spanish Mackerel Fishers

## Number of Fishers

High (3)

Medium (2)

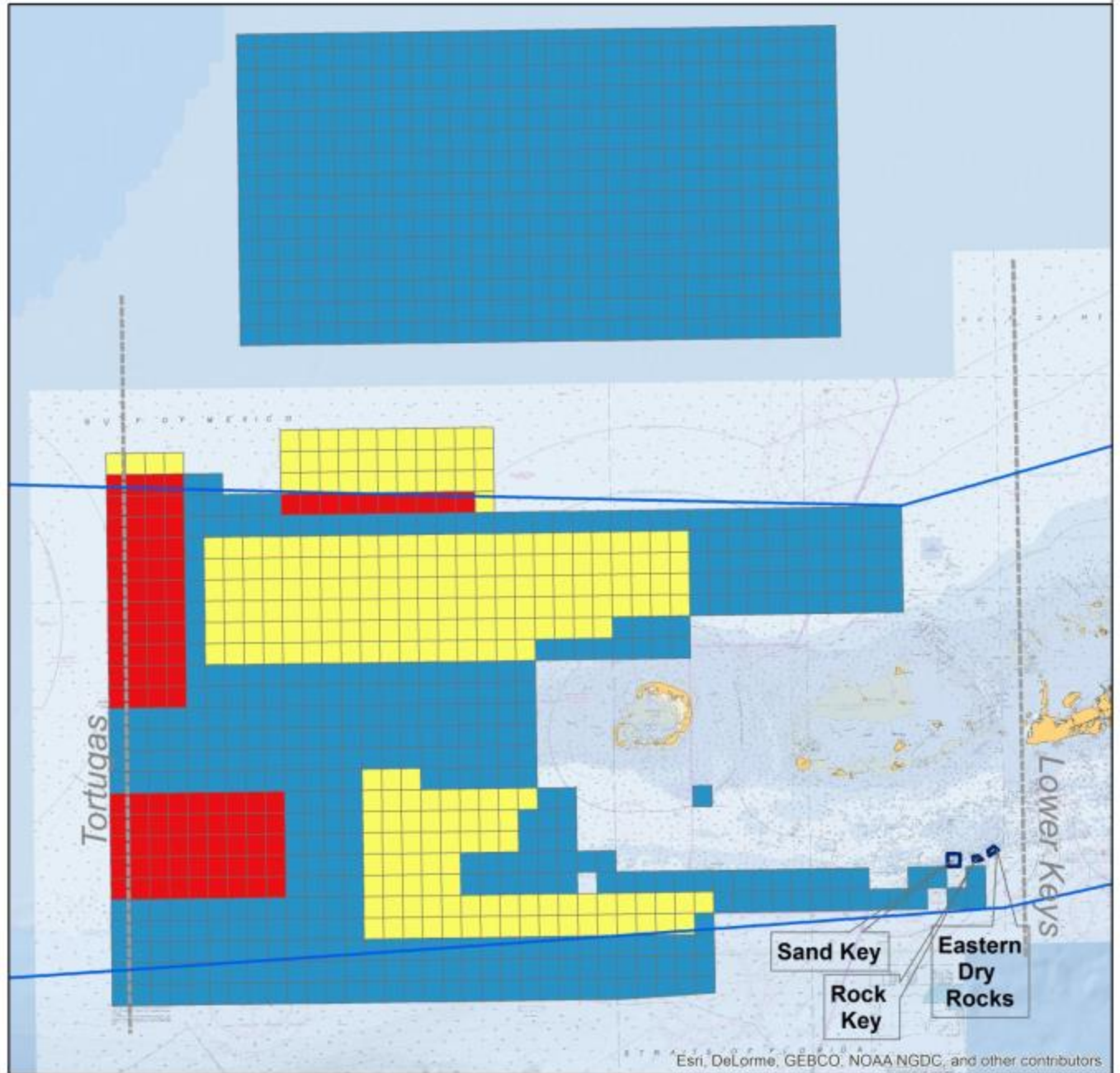
Low (1)

FKNMS Boundary

SPAs



0 5 Miles



# Other Pelagics (Wahoo, Cobia, Dolphin) Fishers

## Number of Fishers

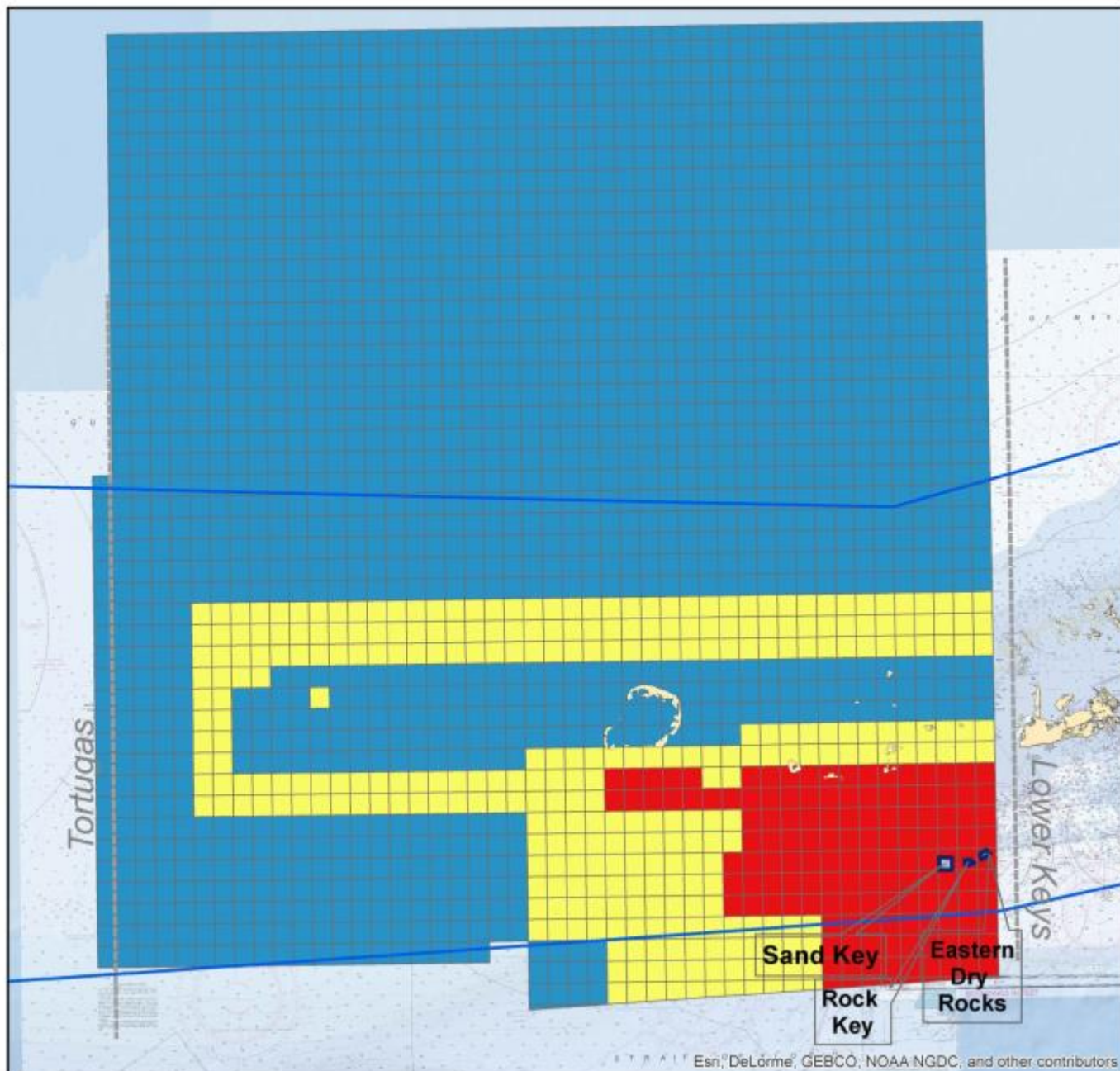
High (4-5)

Medium (2-3)

Low (1)

FKNMS Boundary

SPAs



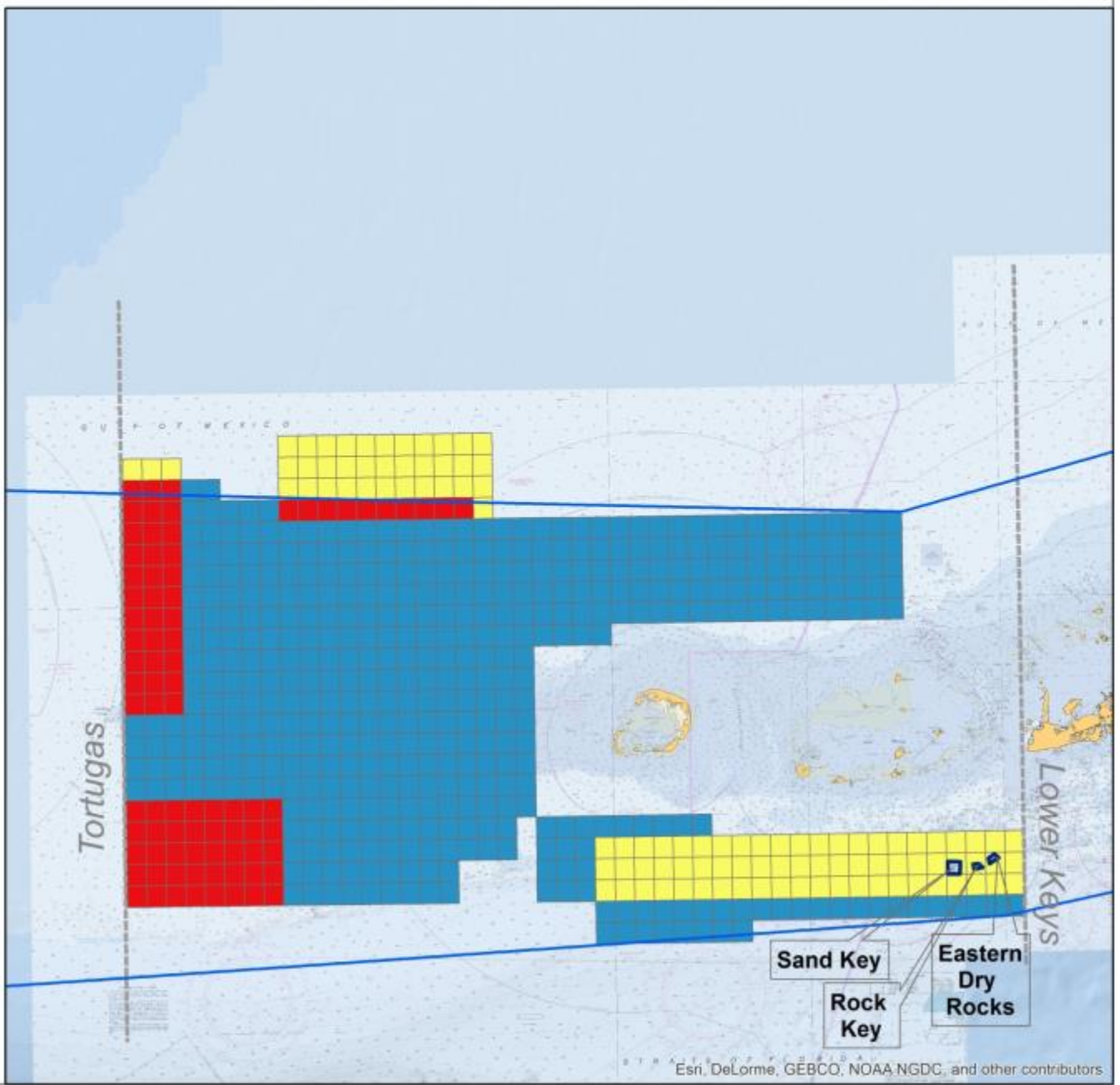
# Bait Fish Fishers

**Number of Fishers**

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

□ FKNMS Boundary

□ SPAs



# Shrimp Fishers

## Number of Fishers

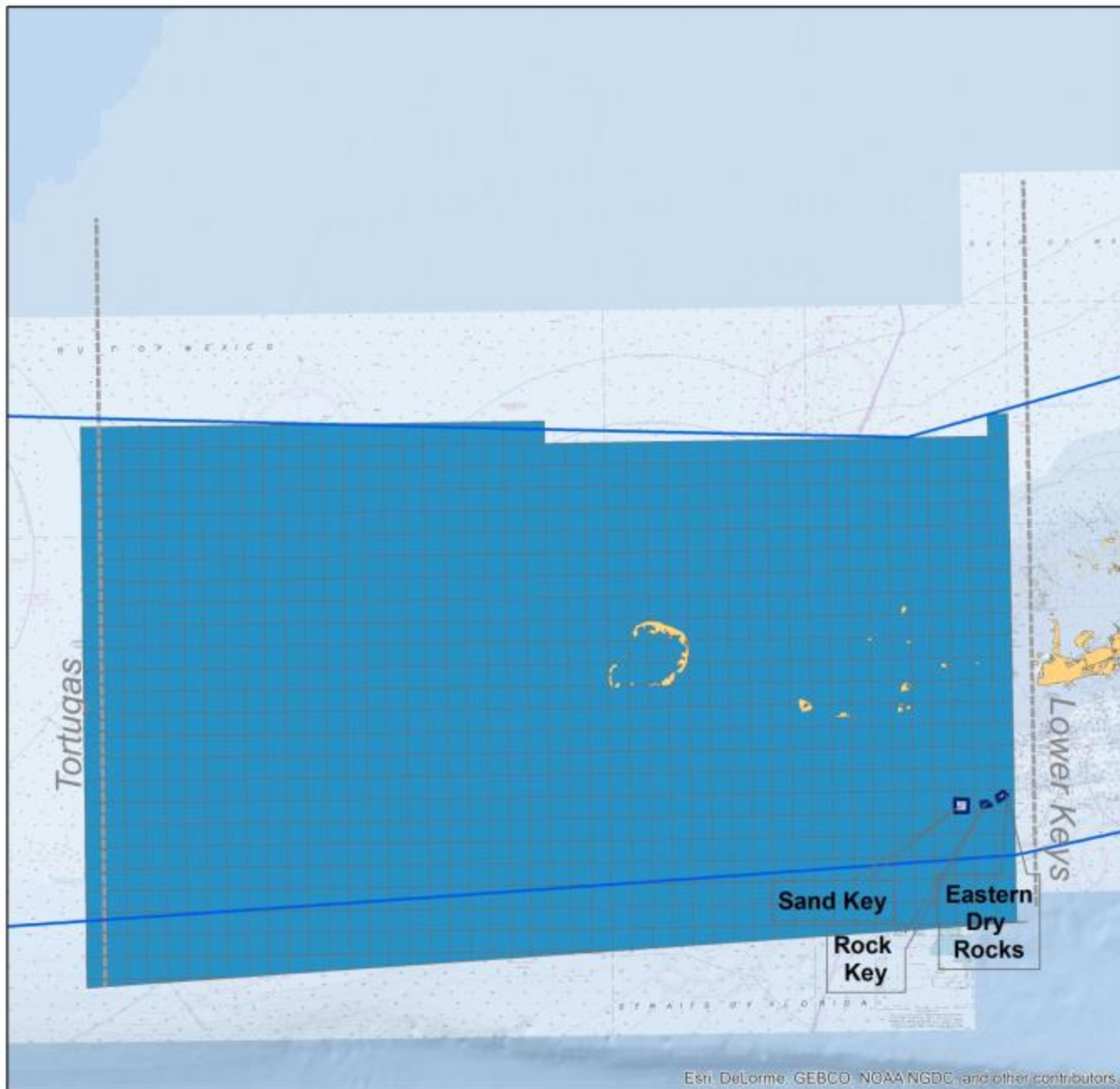
Low (1)

FKNMS Boundary

SPAs



0 5 Miles



# Recreational and Charter Fishing



## **Data source**

FWC. Aerial surveys of the Florida Keys Reef Tract.

## **Metric**

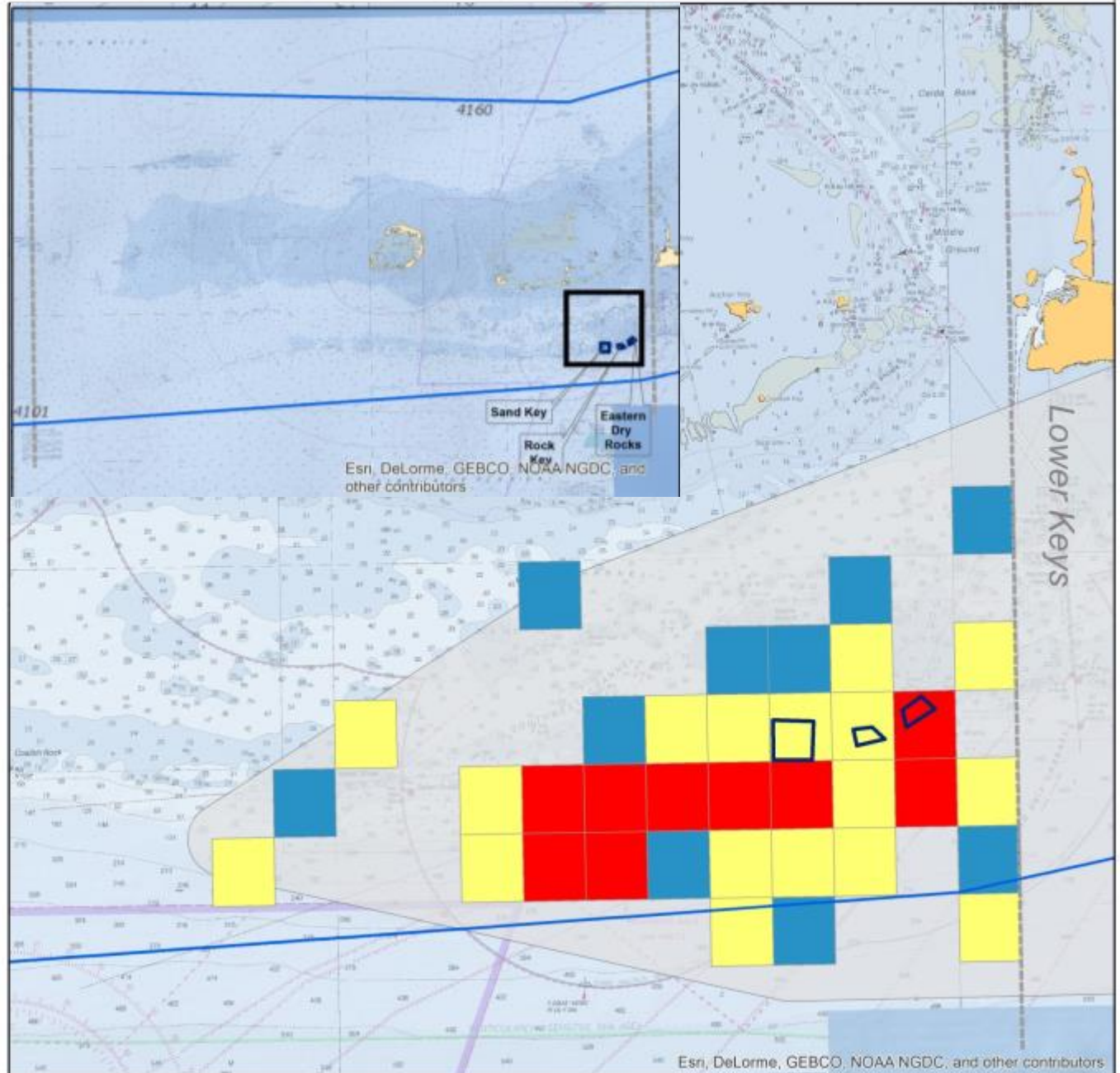
- Density of Recreational and Charter Fishing Vessels Observed per 1 nautical mile<sup>2</sup>, May – August 2010-2012 (full moon)



# Recreational and Charter Fishing Vessels Observed, 2010 - 2012

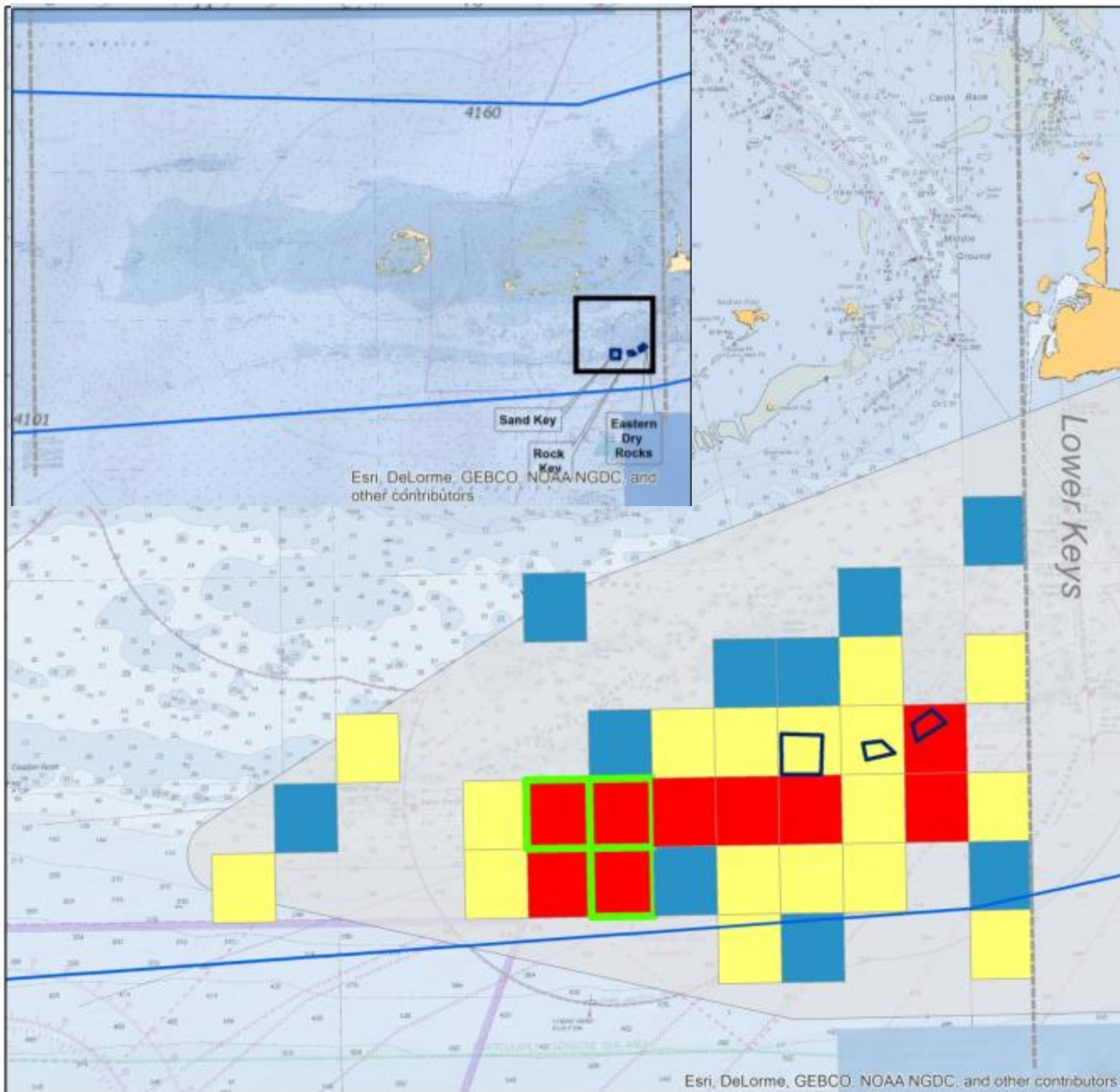
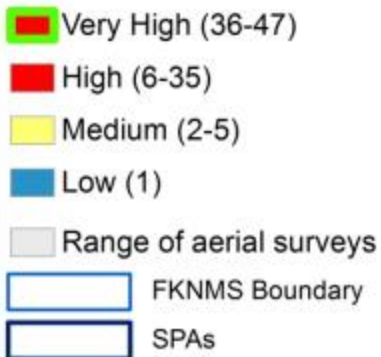
## Number of Vessels

- High (6-47)
- Medium (2-5)
- Low (1)
- Range of aerial surveys
- FKNMS Boundary
- SPAs



# Recreational and Charter Fishing Vessels Observed, 2010 - 2012

## Number of Vessels





# Diving Activity

## Data sources


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

-Manoj Shivlani 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 mile<sup>2</sup>, 2005

# Diving and Snorkeling

 Dive Boat(s) With Dive Flags Observed

## Percent Divers, 2005

 High - Eastern Dry Rocks (80.4)

 Low - Rock Key (11.7)

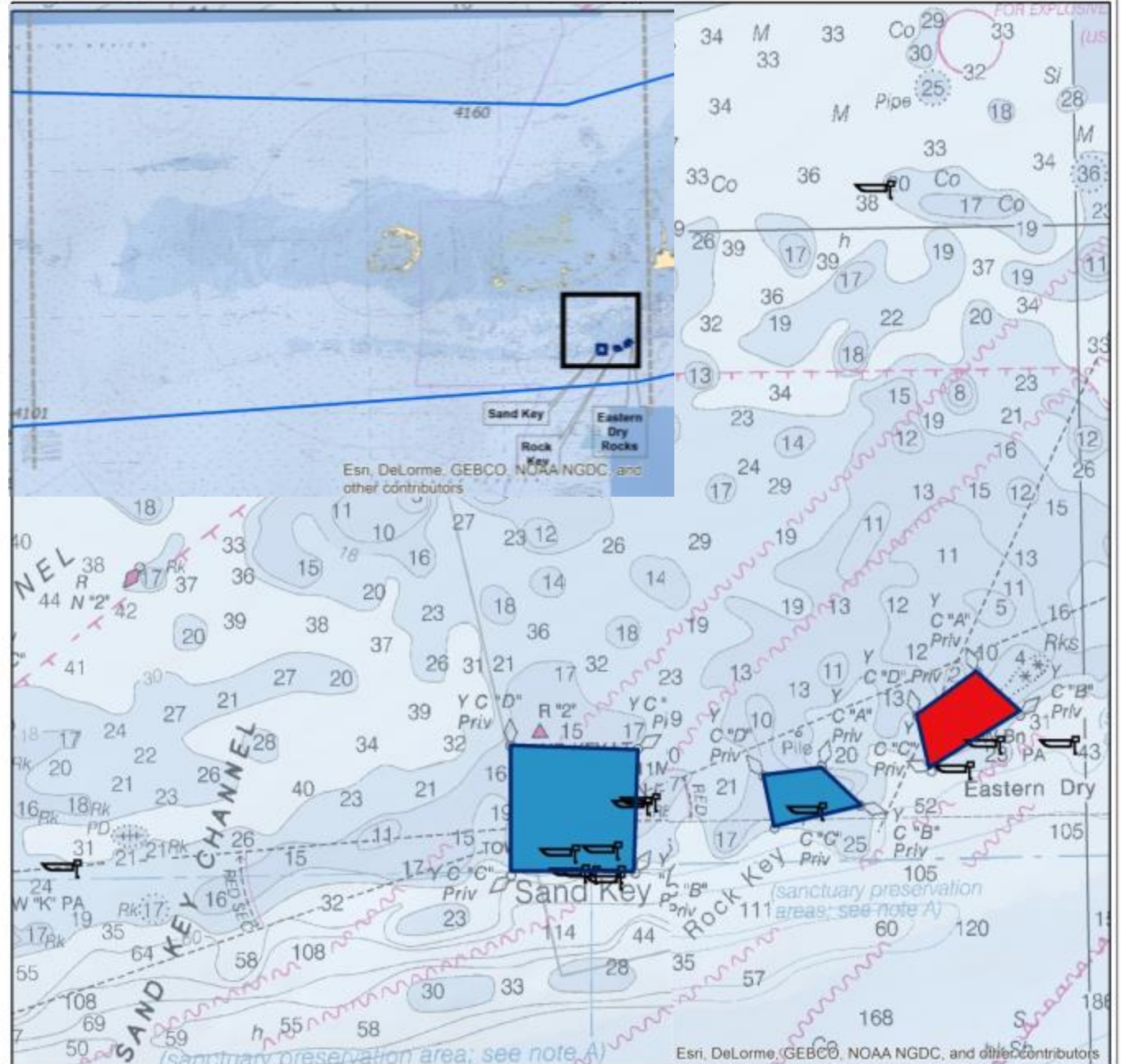
 Low - Sand Key (7.9)

 FKNMS Boundary

 SPAs

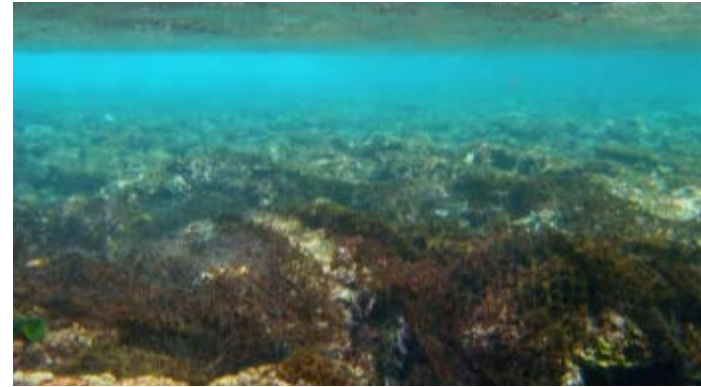


0 0.7 Miles



# Impacts Metrics

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



# Vessel Groundings

## **Data source**

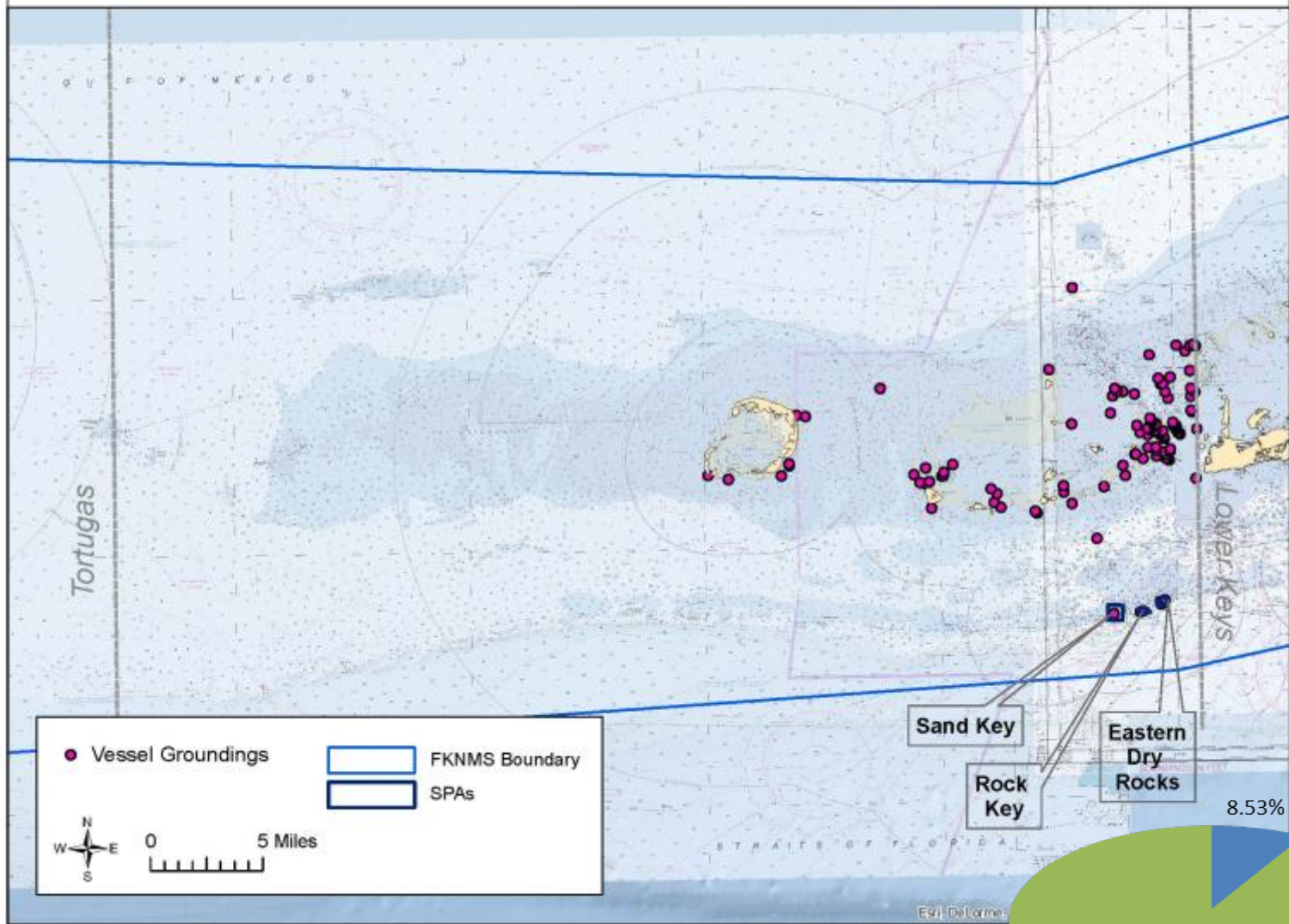
Florida Keys National Marine Sanctuary

## **Metric**

- Distribution of Reported Vessel Groundings, 2000-2012



# Reported Vessel Groundings, 2000 - 2012



Management Zone	Groundings (#)
SPAs	11
Remaining FKNMS (Marquesas)	118
<b>Total</b>	<b>129</b>

■ SPAs ■ Remaining FKNMS (Marquesas)

# Marine Debris

## Data sources

NOVA Southeastern University (SCREAM)

## Metric

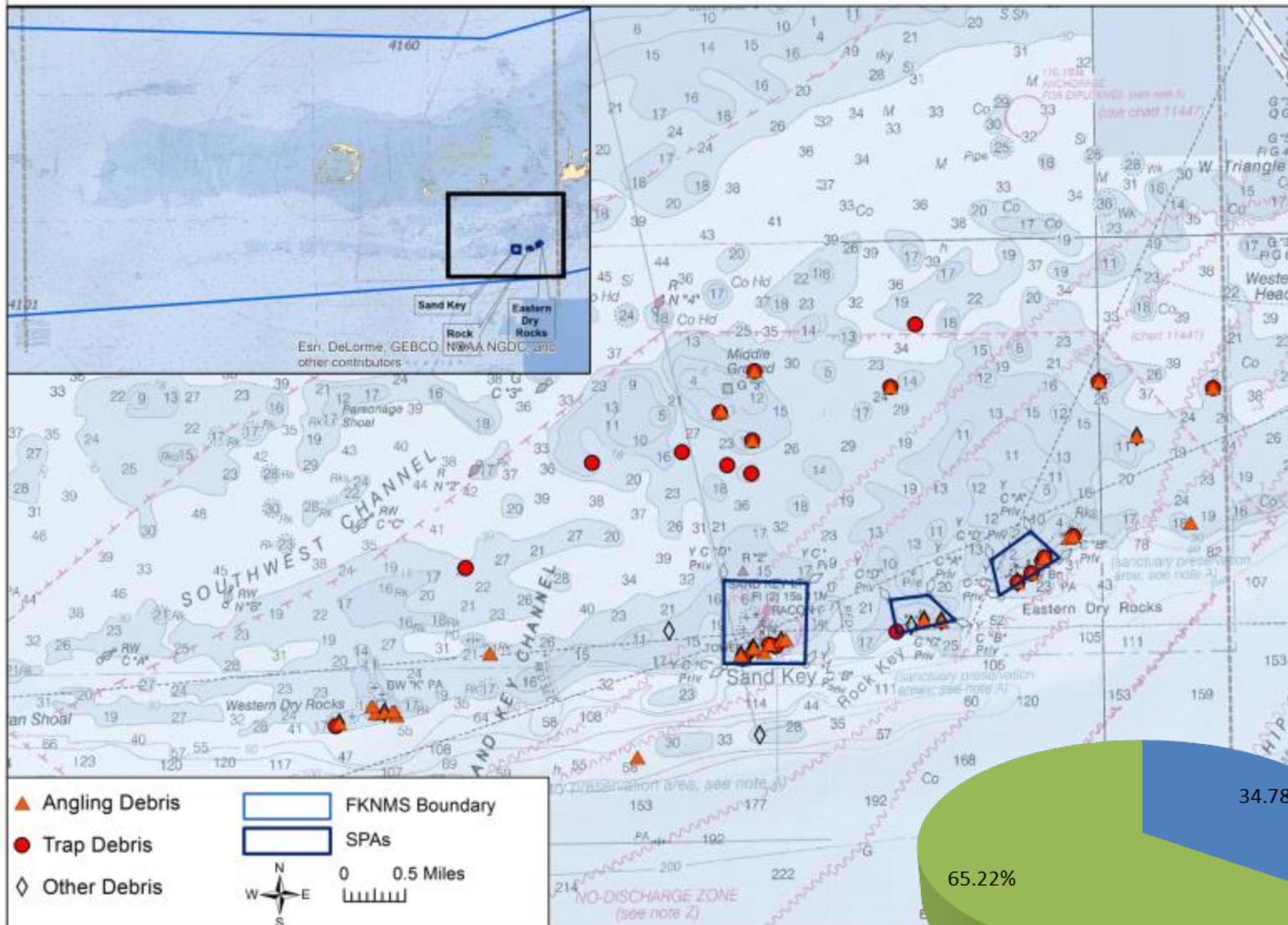
- Average Marine Debris Density per 1km<sup>2</sup>, 2000-2012







# Marine Debris Types



Management Zone	Debris Locations (#)
SPAs	16
Remaining FKNMS (Marquesas)	30
<b>Total</b>	<b>46</b>

■ SPAs ■ Remaining FKNMS (Marquesas)

**THANK YOU**

