



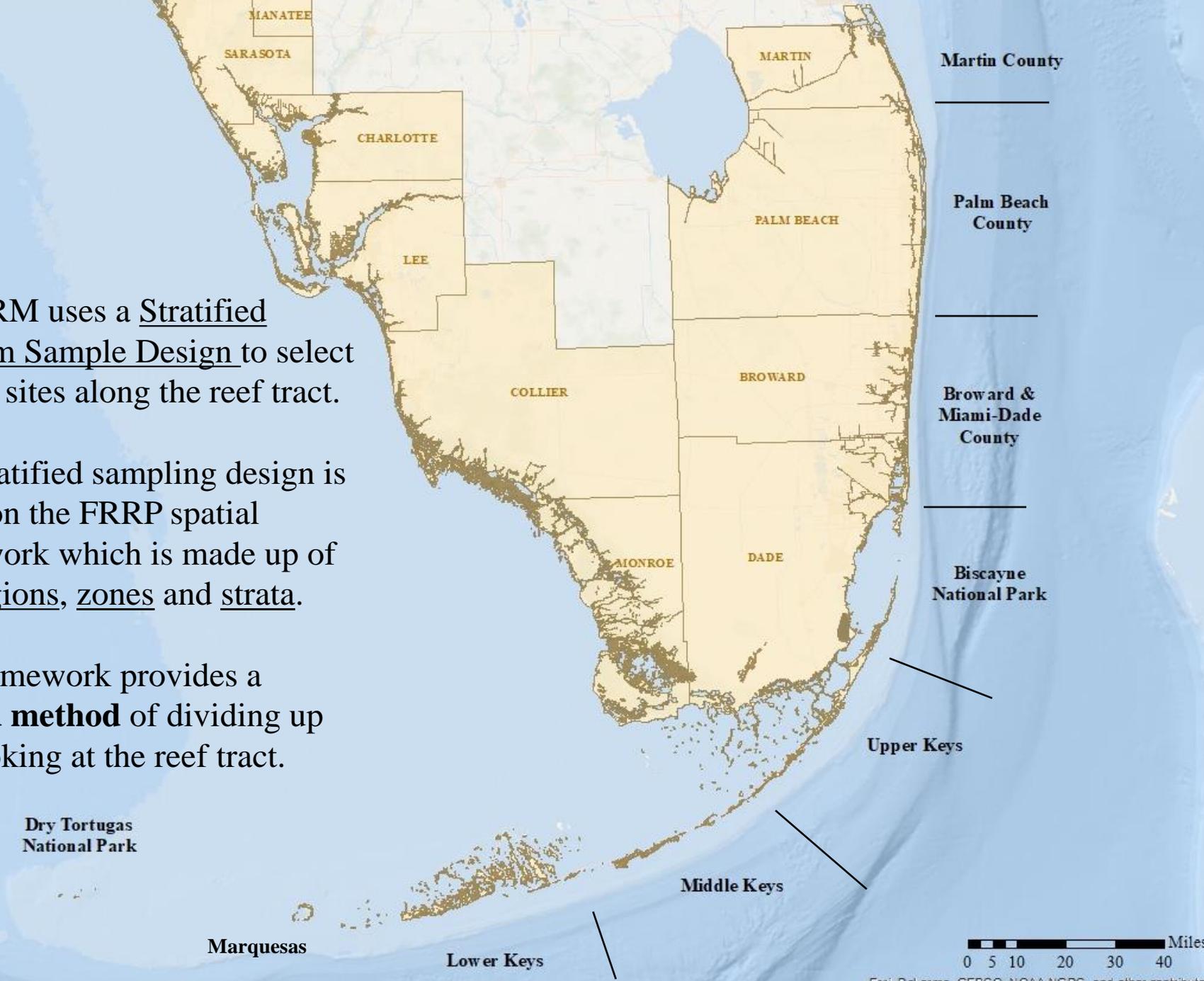
# Sampling Design



The DRM uses a Stratified Random Sample Design to select sample sites along the reef tract.

The stratified sampling design is based on the FRRP spatial framework which is made up of sub-regions, zones and strata.

The framework provides a **unified method** of dividing up and looking at the reef tract.



Martin County

Palm Beach County

Broward & Miami-Dade County

Biscayne National Park

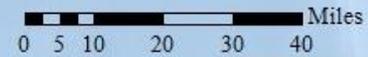
Upper Keys

Middle Keys

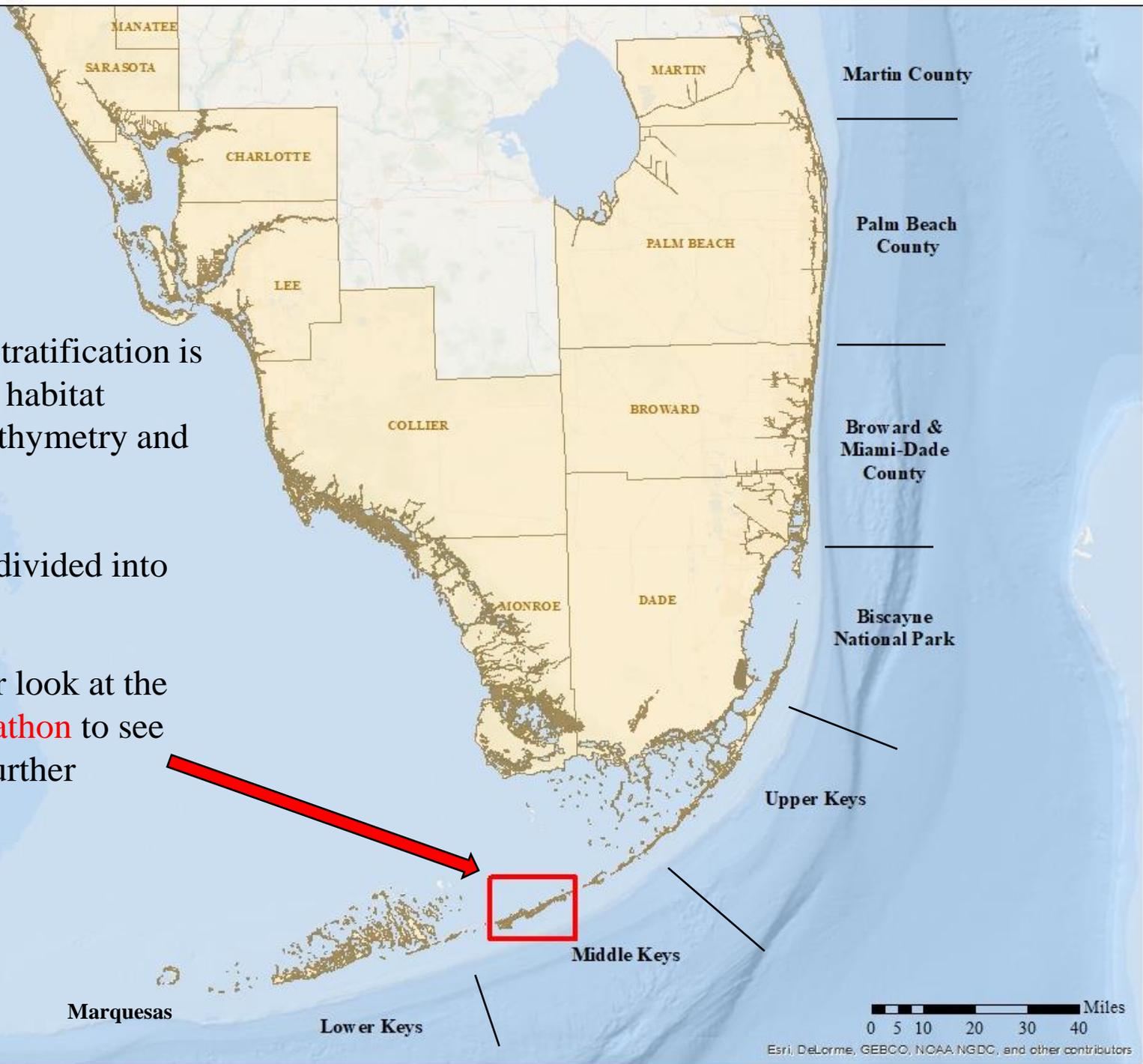
Lower Keys

Dry Tortugas National Park

Marquesas



Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors



The framework stratification is based on benthic habitat classification, bathymetry and satellite data.

Here, the reef is divided into sub-regions.

Lets take a closer look at the reef just off **Marathon** to see how the reef is further stratified.

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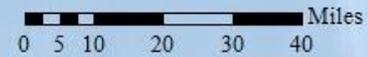
Upper Keys

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Dry Tortugas National Park

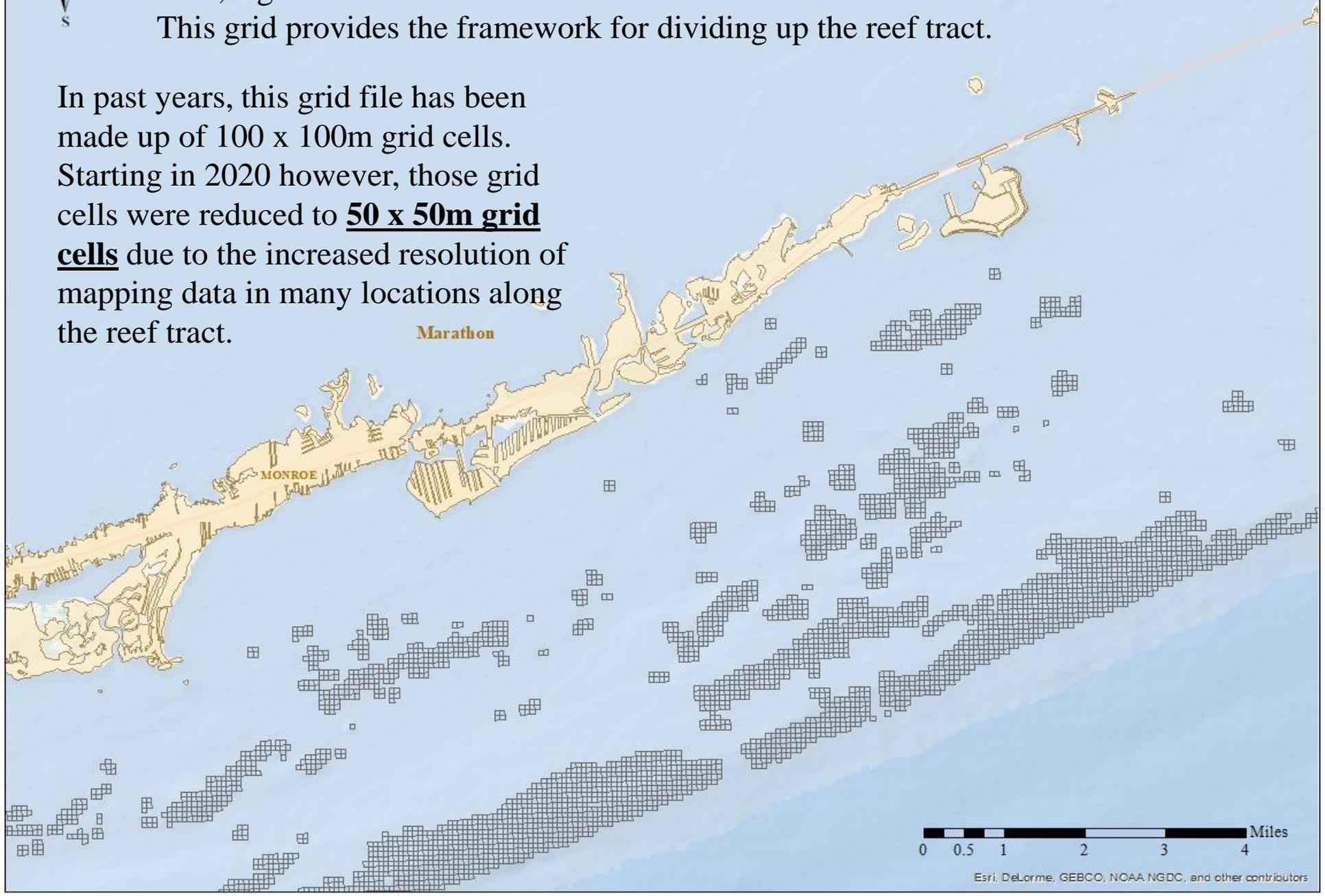
Marquesas





First, a grid file is overlaid on the areas identified as coral reef habitat. This grid provides the framework for dividing up the reef tract.

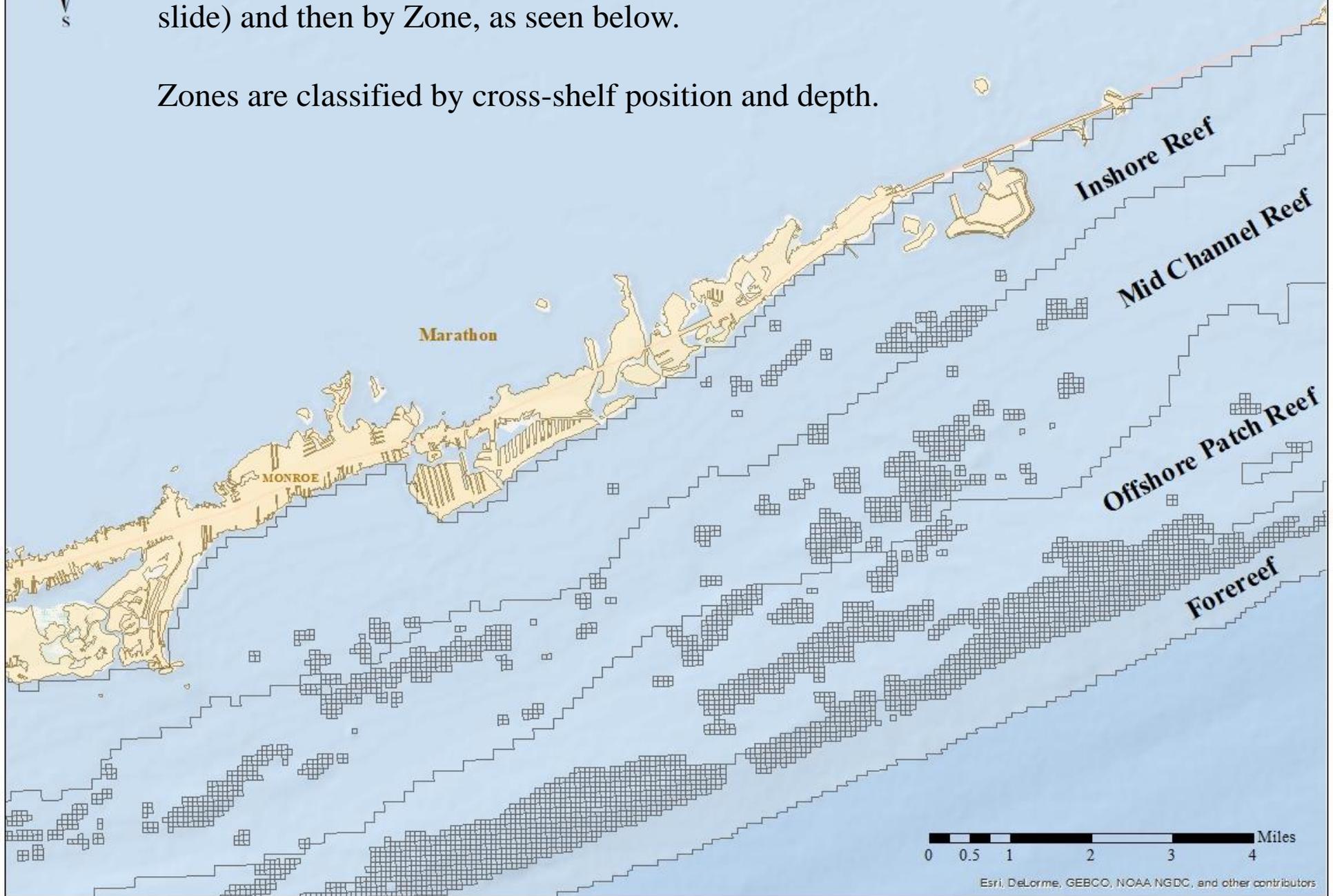
In past years, this grid file has been made up of 100 x 100m grid cells. Starting in 2020 however, those grid cells were reduced to **50 x 50m grid cells** due to the increased resolution of mapping data in many locations along the reef tract.





The grid file is divided by Sub-region (as seen in a previous slide) and then by Zone, as seen below.

Zones are classified by cross-shelf position and depth.



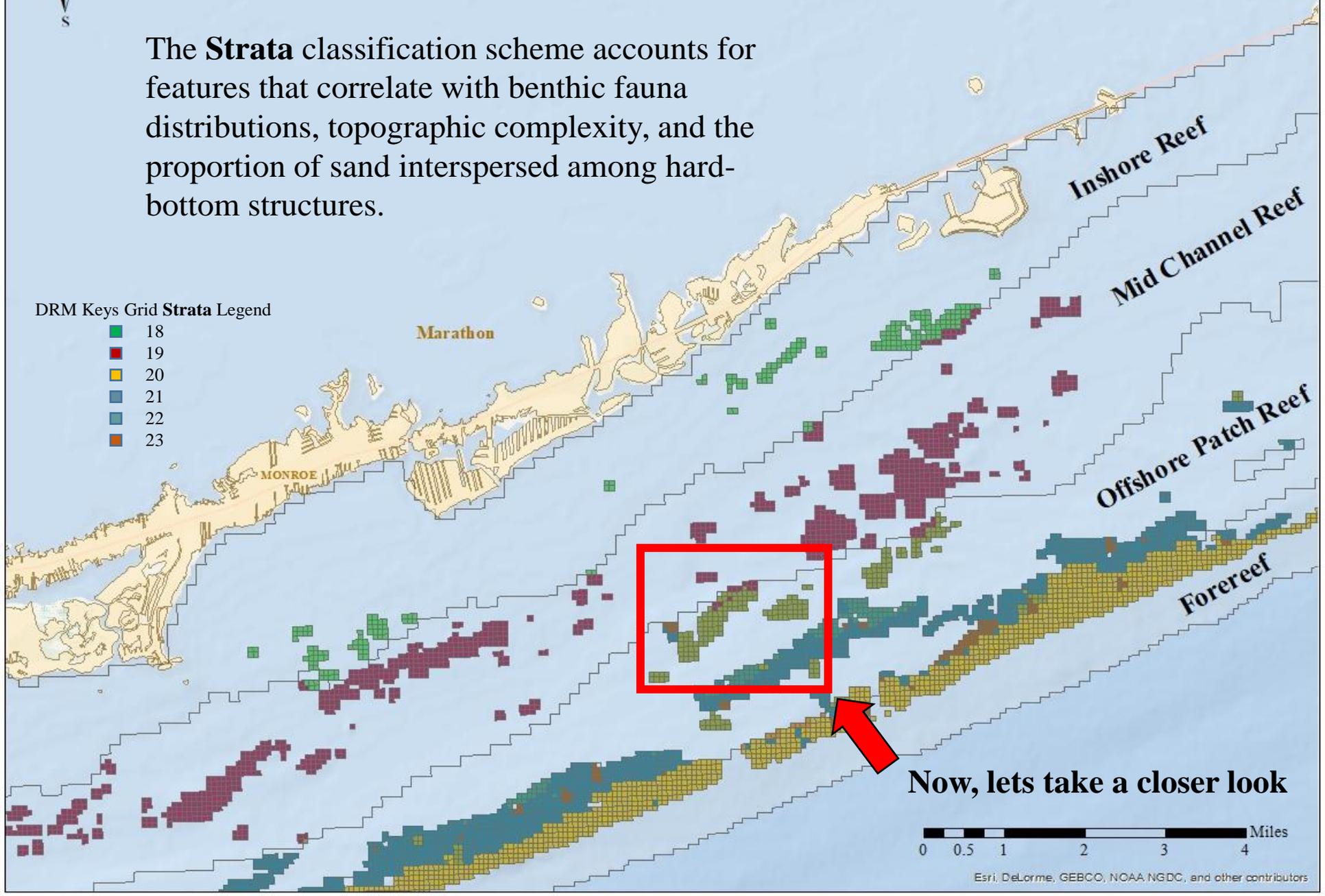


Zones are further subdivided into Strata.

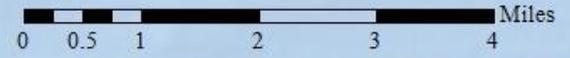
The **Strata** classification scheme accounts for features that correlate with benthic fauna distributions, topographic complexity, and the proportion of sand interspersed among hard-bottom structures.

DRM Keys Grid Strata Legend

- 18
- 19
- 20
- 21
- 22
- 23



Now, lets take a closer look





Here is a larger scale look at the grid file....

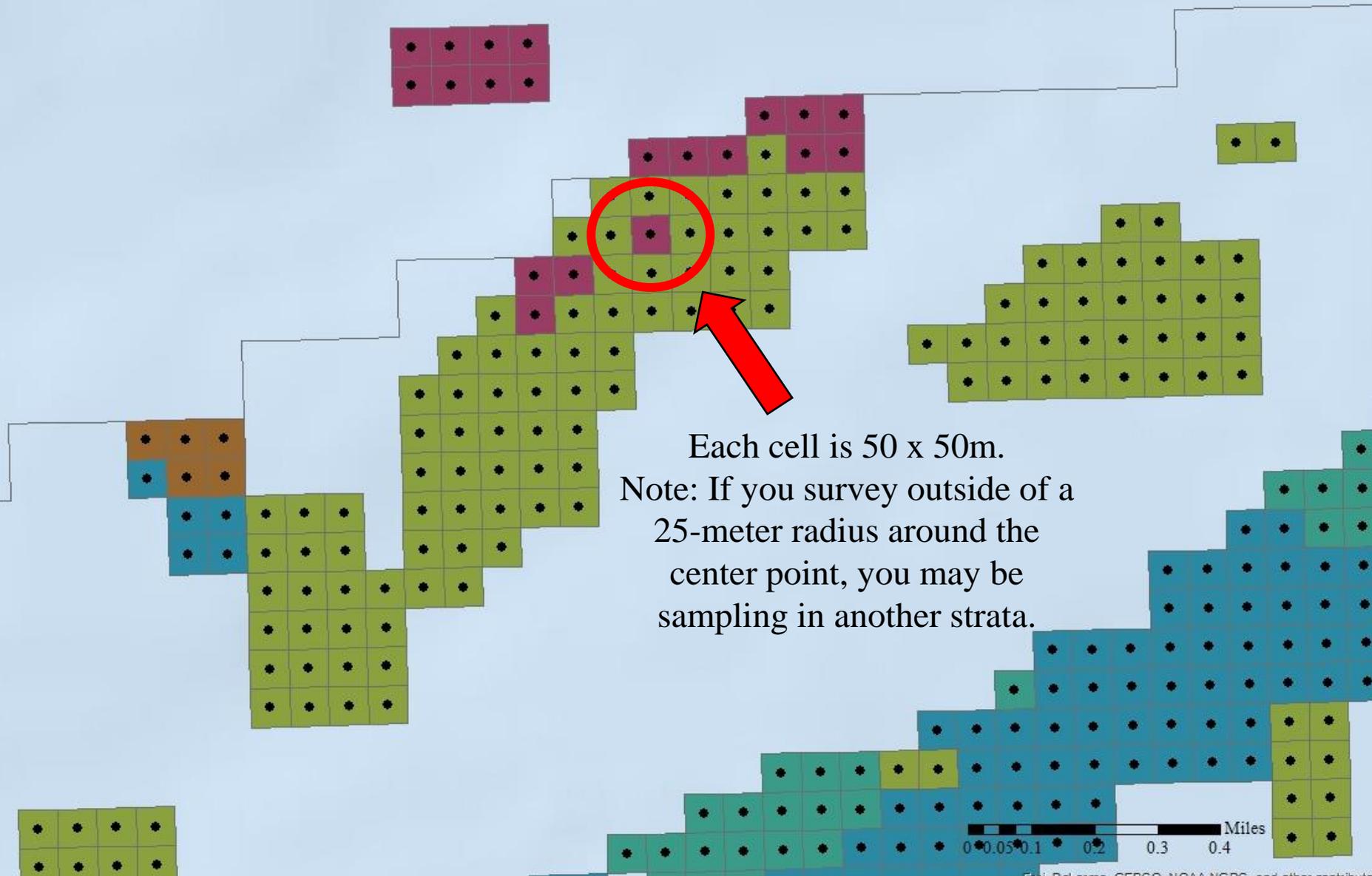
Using the Stratified Random Sampling Design, sample sites (or individual grid cells) are randomly selected from the grid file within each strata.

In this view, the different colors represent different strata.





Each cell has a center point which is the coordinate used to navigate to a site.

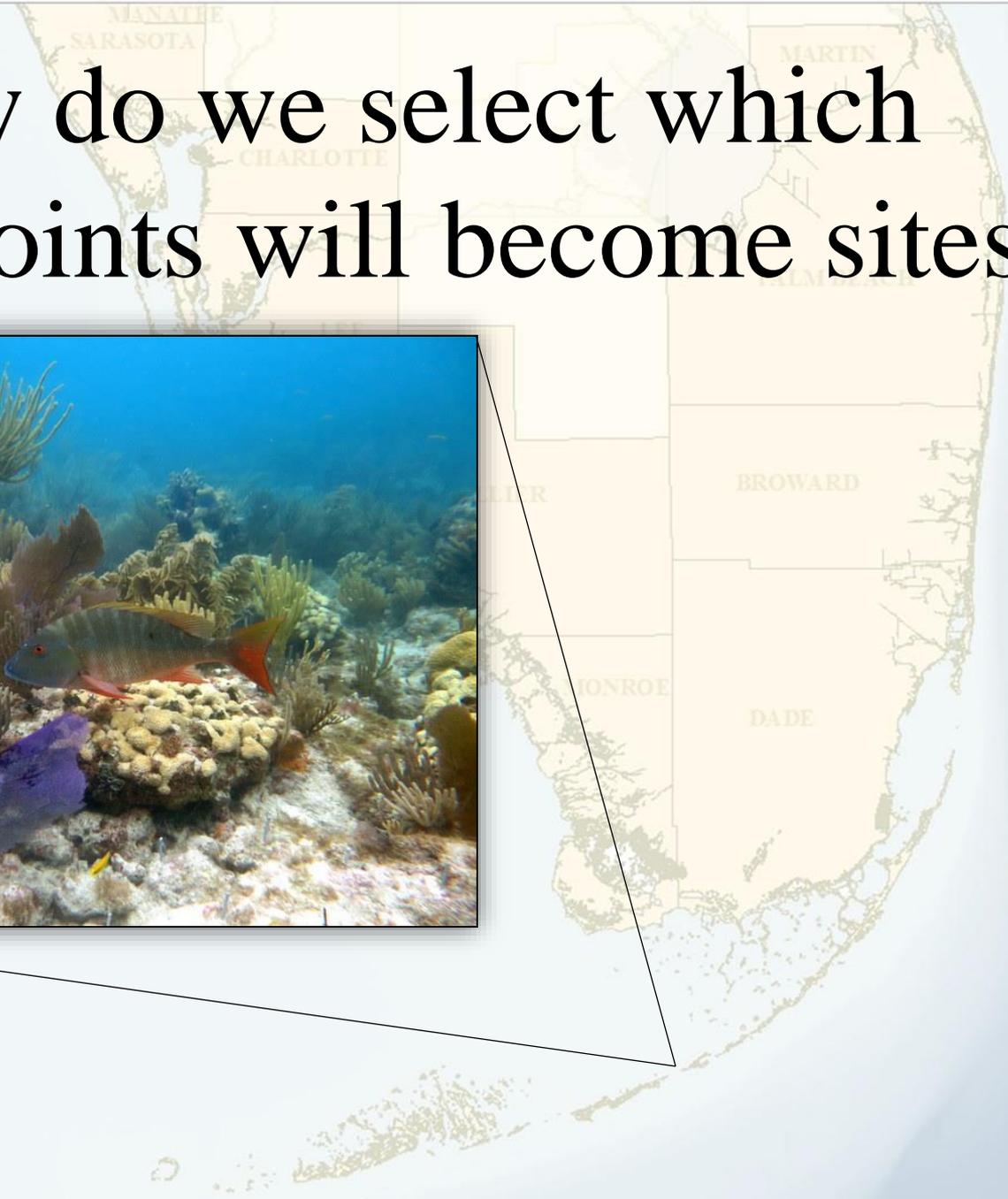


Each cell is 50 x 50m.  
Note: If you survey outside of a 25-meter radius around the center point, you may be sampling in another strata.





How do we select which center points will become sites?..





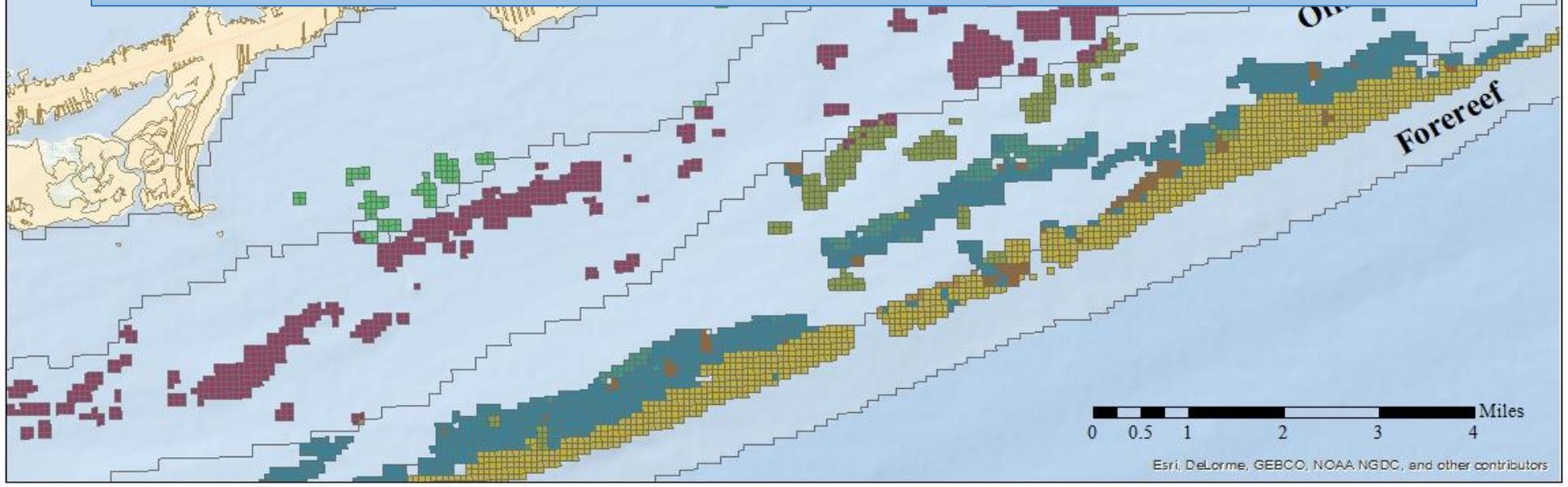
# Random Selection of Sites

The number of random sites allocated to each strata are based on:

- **Area** – Strata with more reef area have more sample sites
- **Density** of reef building corals that show sensitivity to coral bleaching
- **Variance** – Strata with higher variance of the bleaching sensitive corals have more sample sites
- The available **effort/time** our partners can contribute

Once we know how many sites to assign each strata, we conduct a random selection of sites (grid cells) within each of those strata.

This is called a **stratified random sample design**.





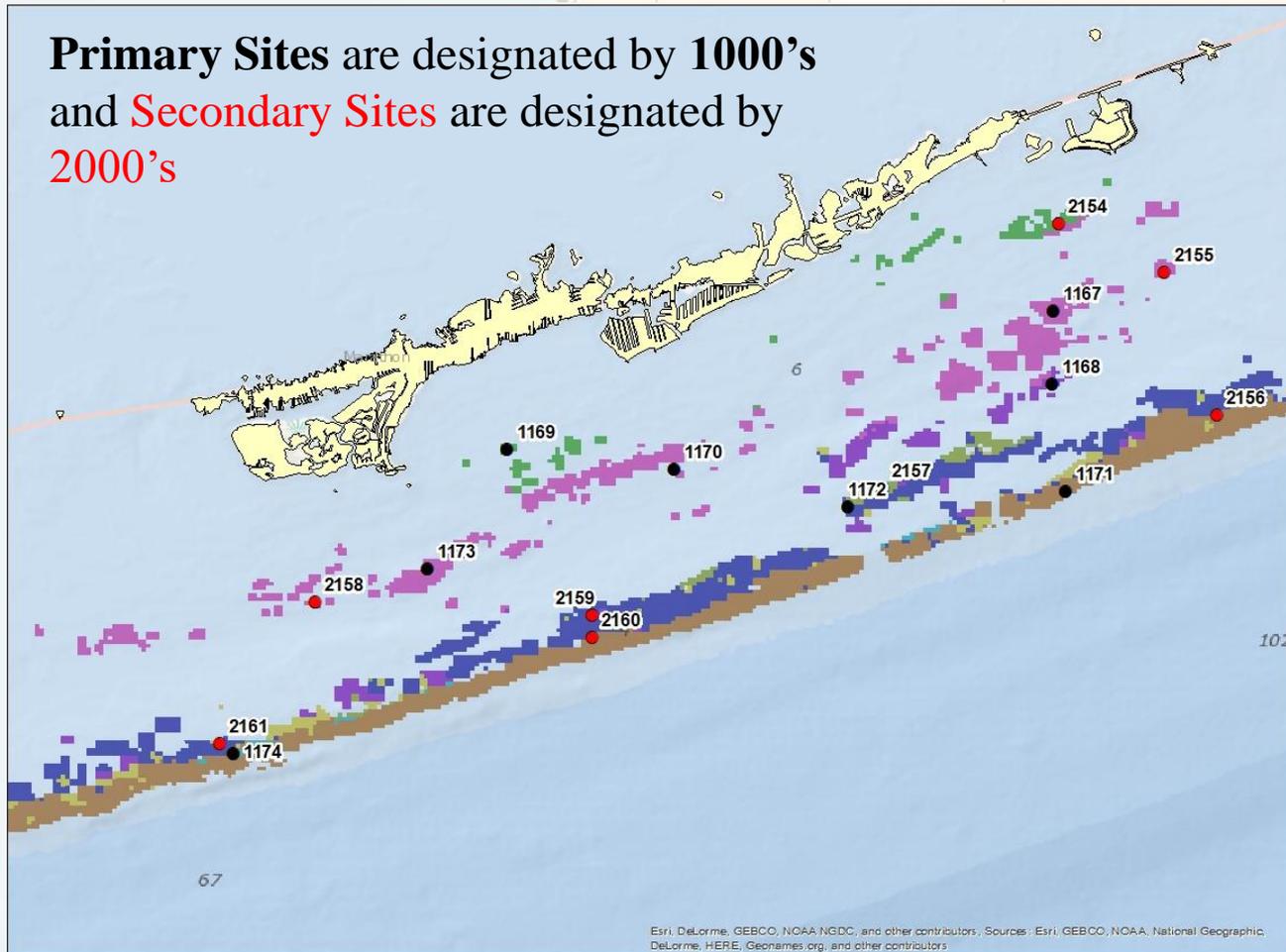
# Sample Sites

Two sets of sites are generated each survey season.

## Primary Sites and Secondary Sites

Secondary sites are generated as backup sites in case the primary site is not suitable for a coral survey.

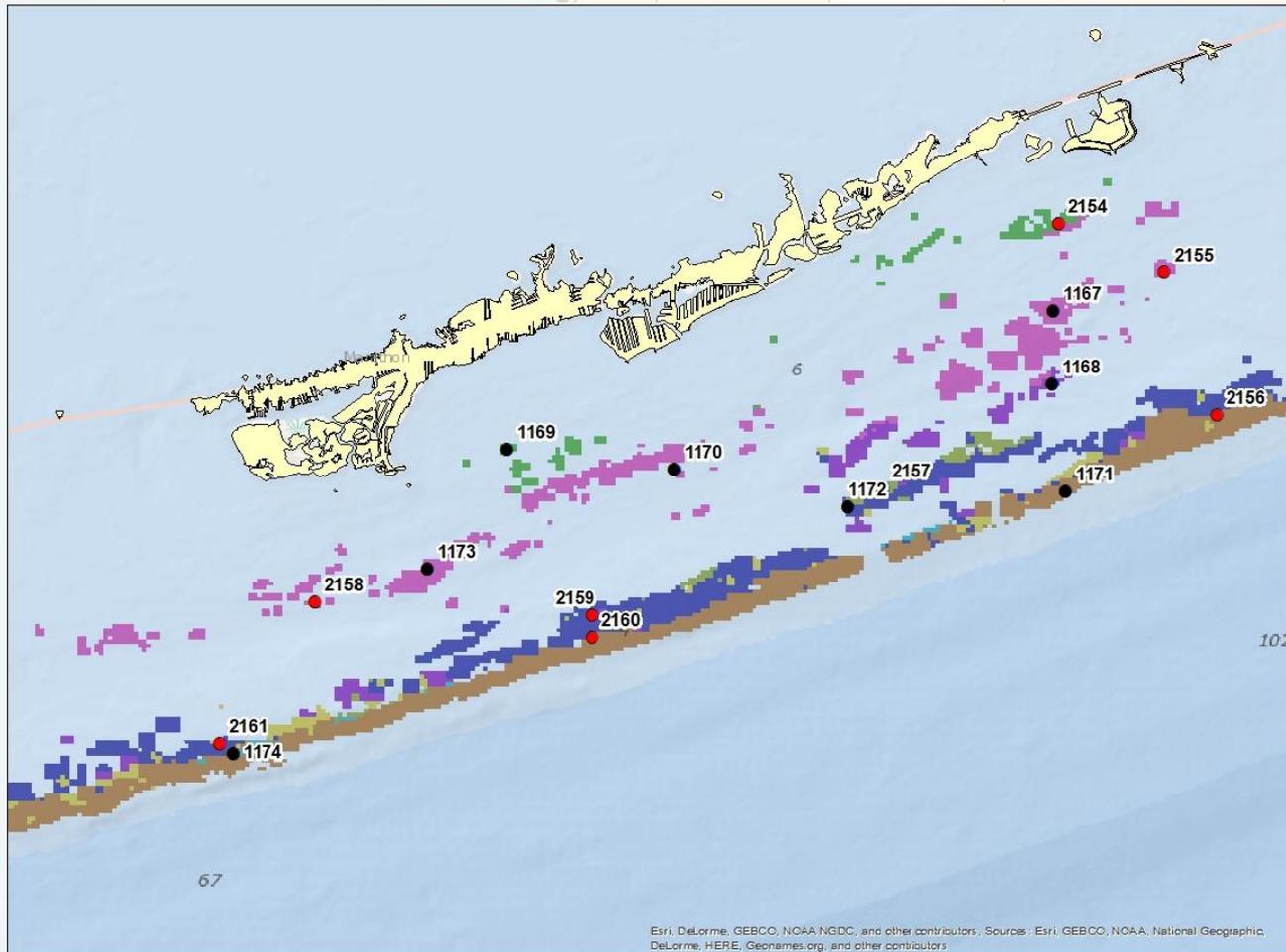
**Primary Sites** are designated by **1000's**  
and **Secondary Sites** are designated by  
**2000's**





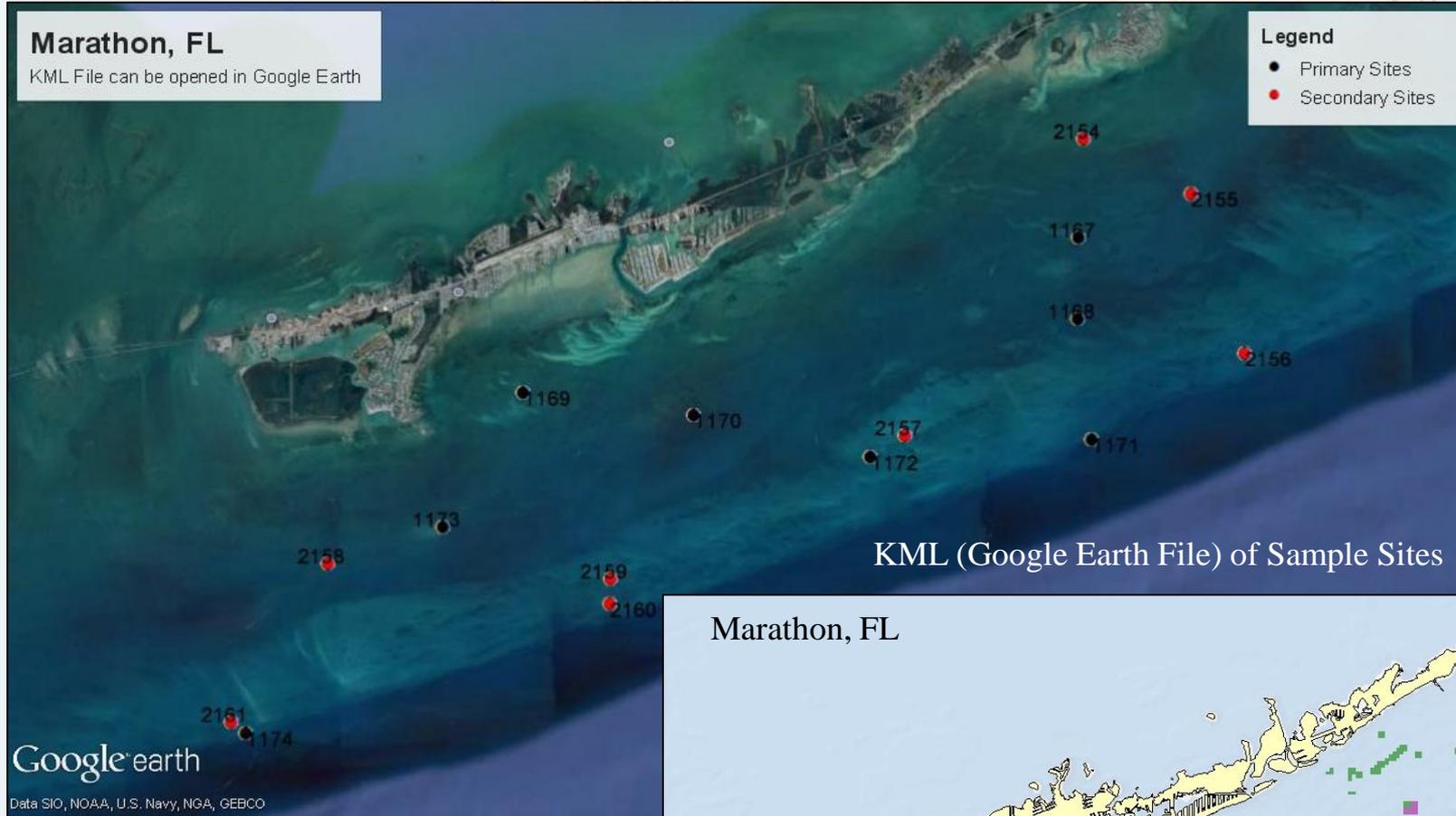
# Sample Sites

The decision to either search for coral habitat at a primary site or to move to a secondary backup site is discussed in **LESSON 3 – DRM In-Water Methodology.**



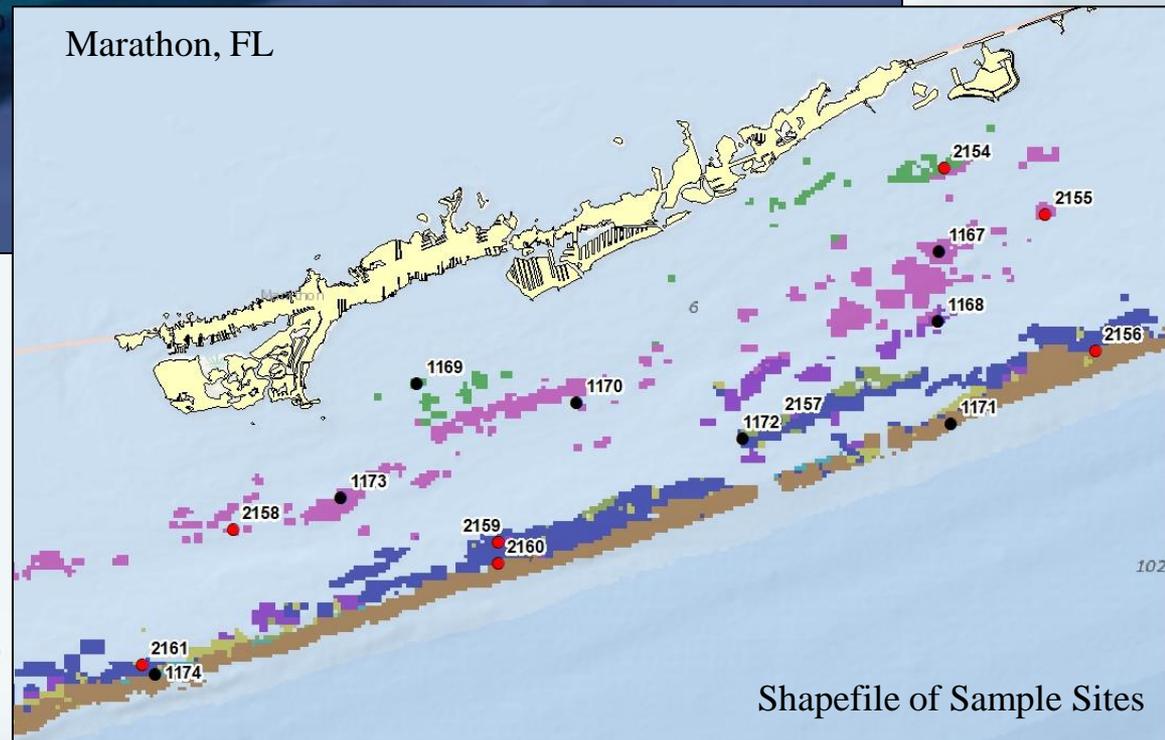
## Marathon, FL

KML File can be opened in Google Earth



KML (Google Earth File) of Sample Sites

## Marathon, FL



Shapefile of Sample Sites

For field planning purposes, a zipped file containing a GIS shapefile and a Google Earth KML file of the 2022 sample sites will be posted to the DRM website on the ‘Surveyor Trainings and Resources’ page.