



Tab N, No. 4

Gulf of Mexico Fishery Management Council

# Spatial Decision-Support Tools for Coral Ecosystems

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# 2011-2013 Grant Milestones

## Gulf of Mexico Fishery Management Council Workshop on Interrelationships between Coral Reefs and Fisheries

May 20-22, 2013  
Tampa, Florida

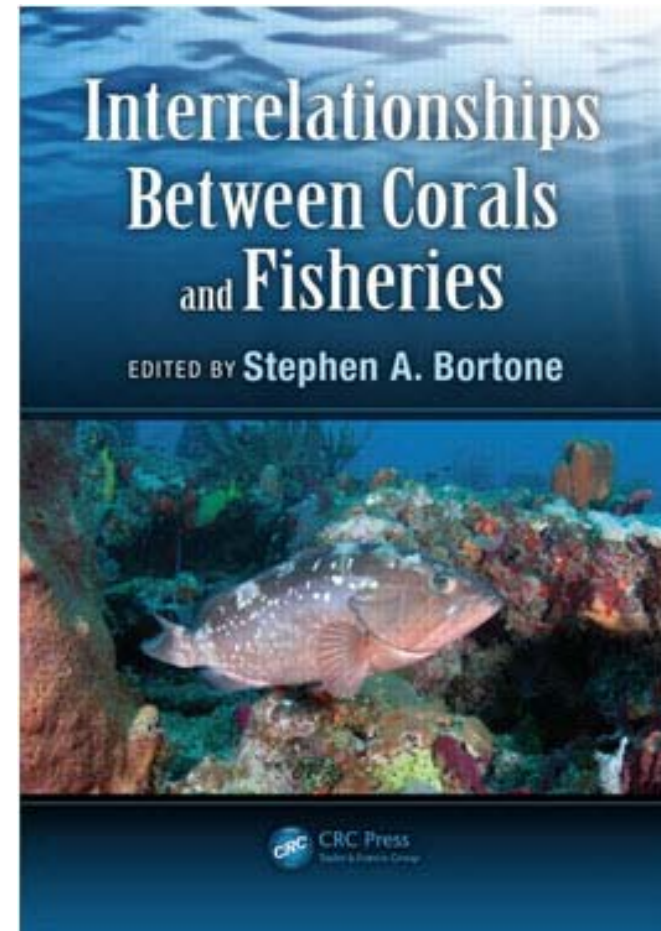
### Final Summary Report



Funding provided by:



[http://portal.gulfcouncil.org/Coral\\_Workshop\\_Final\\_Summary\\_Report.pdf](http://portal.gulfcouncil.org/Coral_Workshop_Final_Summary_Report.pdf)



<https://www.crcpress.com/Interrelationships-Between-Corals-and-Fisheries/PhD/9781466588301>

# 2011-2013 Grant Milestones

## Inspiring deep-sea learning

- Deep-sea ecosystems
  - Biologically important
  - Little known outside scientific community
- Print and digital posters highlighting Deep-sea species & ecosystems
- Wide-spread distribution of outreach materials
- Enhanced content on digital versions

*Lophelia (Lophelia pertusa)*



Photo Credit: S.W. Ross and M. Rhode (UNCW)

**Description:** This hard, branching, colonial coral occurs nearly world-wide. It is the most common structure-forming deep-sea coral making up the foundation for many deep reefs and creating significant complex habitat that other animals use. In addition to attaching to rocks and artificial structures (shipwrecks, oil platforms), it forms mounds and ridges that can be over 330 feet tall. The living coral is bright white because, unlike many shallow corals, it does not have a symbiotic partnership with algae.

Geographic Distribution

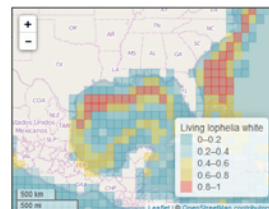


Figure 1: Relative probability of occurrence of *Lophelia (Lophelia pertusa)* based on computer generated distribution maps. Data source: [Aquamaps](#)

Depth Profile

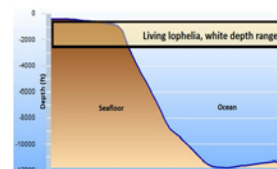
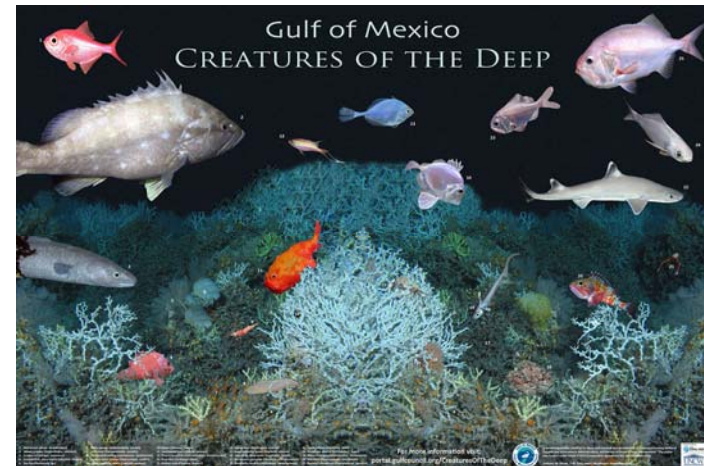


Figure 2: Approximate depth range of *Lophelia* (black line). Slope of seafloor is a generalized representation of the Gulf of Mexico shelf and outer continental shelf

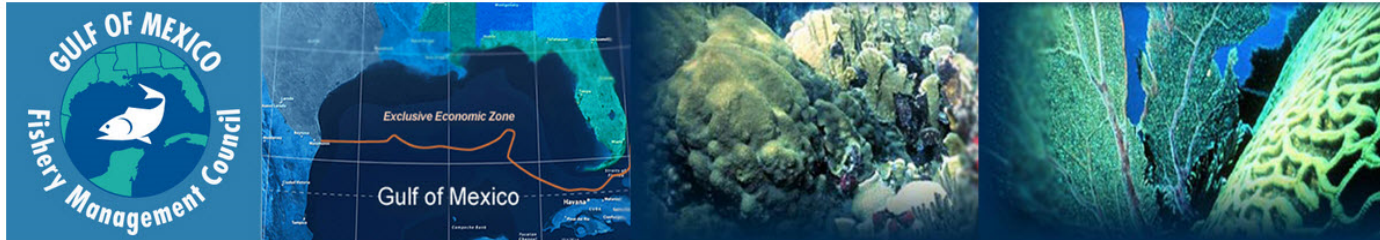


<http://portal.gulfcouncil.org/CreaturesOfTheDeep/>



<http://portal.gulfcouncil.org/EcosystemsOfTheDeep/>

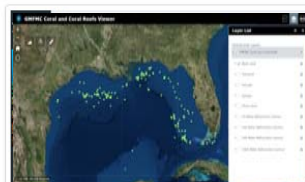
# 2014-2016 Current Grant



## Gulf Council Portal

- [Map Apps](#) ▾
- ["NEW"](#) ▾
- [Blog](#)
- [Learning](#) ▾
- [Decision Support Tools](#) ▾
- [Help Videos](#) ▾
- [Coral Literature](#) ▾
- [GIS Data Download](#) ▾
- [Contact Us](#) ▾

### Gulf Council Mapping Applications:



#### Coral Viewer

This viewer displays coral locations in the Gulf of Mexico.

[Coral Viewer](#)



#### Predictive Modeling of Deep-sea Coral Habitat Viewer

This viewer displays predictive modeling of Deep-sea Coral Habitat in the GOM.

[Predictive Model Viewer](#)



#### Coral HAPC Viewer

This viewer displays Coral Habitat Areas of Particular Concern in the Gulf of Mexico.

[HAPC Viewer](#)



#### Spiny Lobster Management

This viewer displays Closed Lobster Areas in the South east Gulf of Mexico.

[Spiny Lobster Closed Area Viewer](#)

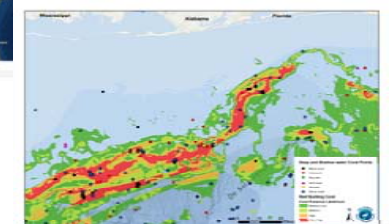
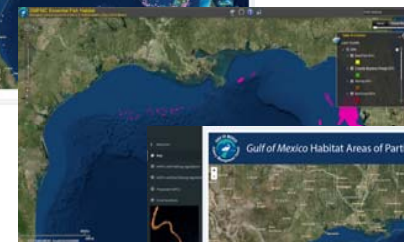
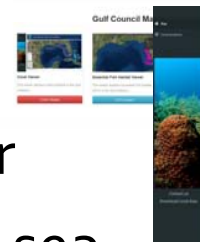
# Where are we now?

- Expanding digital content
  - More data, more products, better decision support, better management
  - Identify data gaps
    - Corals
    - Other important habitats
  - Developing species-habitat models
  - Decision support tools
  - Working with Gulf partners and stakeholders



# Data Portal Visual Products

- Data/mapping applications
  - Coral viewer
  - Essential fish habitat mapper
  - Predictive modeling of deep-sea coral habitat viewer
- Decision support tools
  - GMFMC king mackerel migratory zones
  - Spiny lobster mapper
- Coming soon
  - Mapping other important habitats
  - Goliath grouper learning module
  - Lionfish learning module



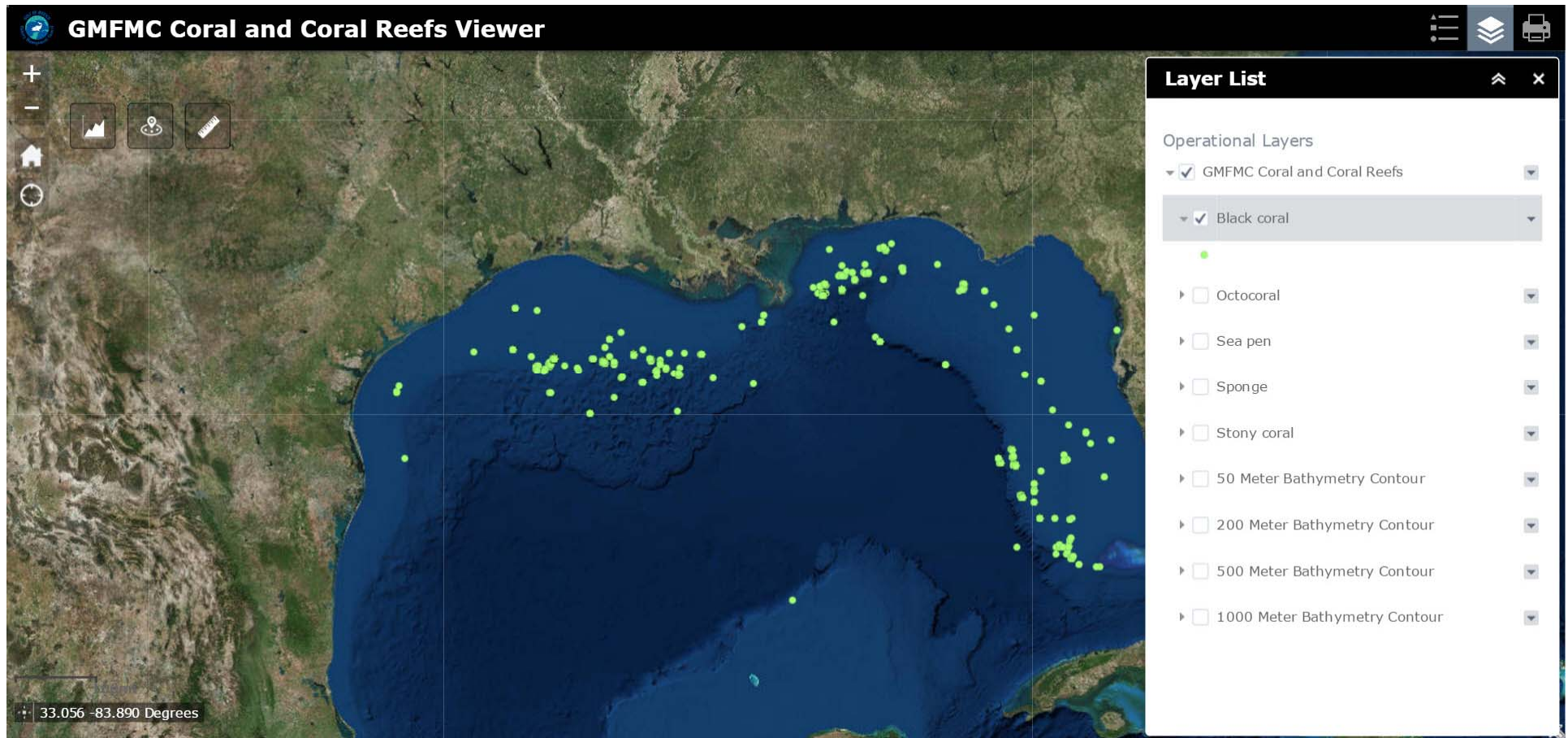
Portal Progress

# Gulf of Mexico Corals and Coral Reefs Viewer

- Online mapping application that facilitates review, discussion, and decision making regarding coral management.
- Improved access to the 'data' supporting management decisions.
- Explore distribution and diversity patterns of corals in the Gulf of Mexico.
- GIS data download capabilities to allow users to perform their own analysis.
- View individual coral record information. (Name, Species, Depth, and Source)



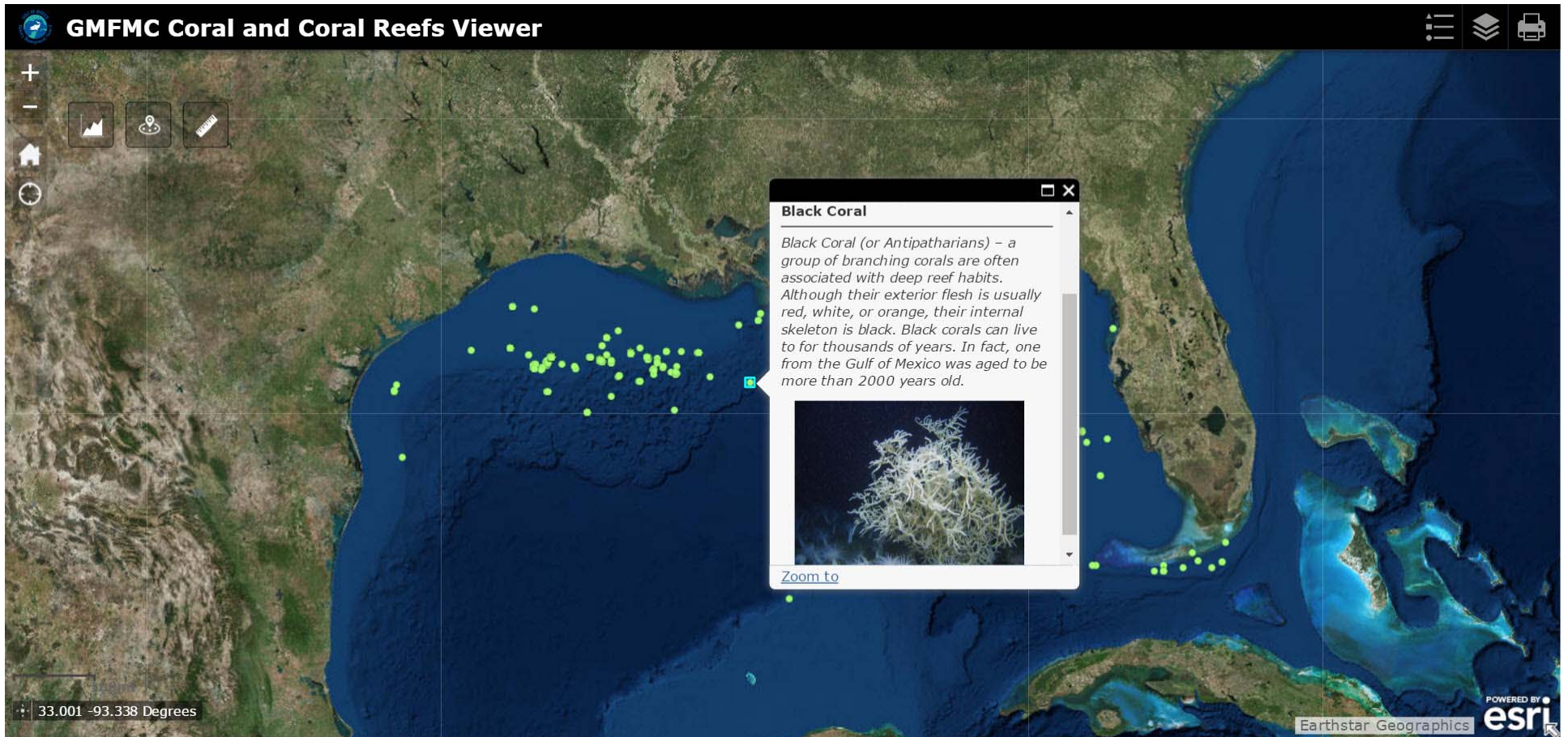
# Gulf of Mexico Corals and Coral Reefs Viewer



<http://portal.gulfcouncil.org/coral.html>

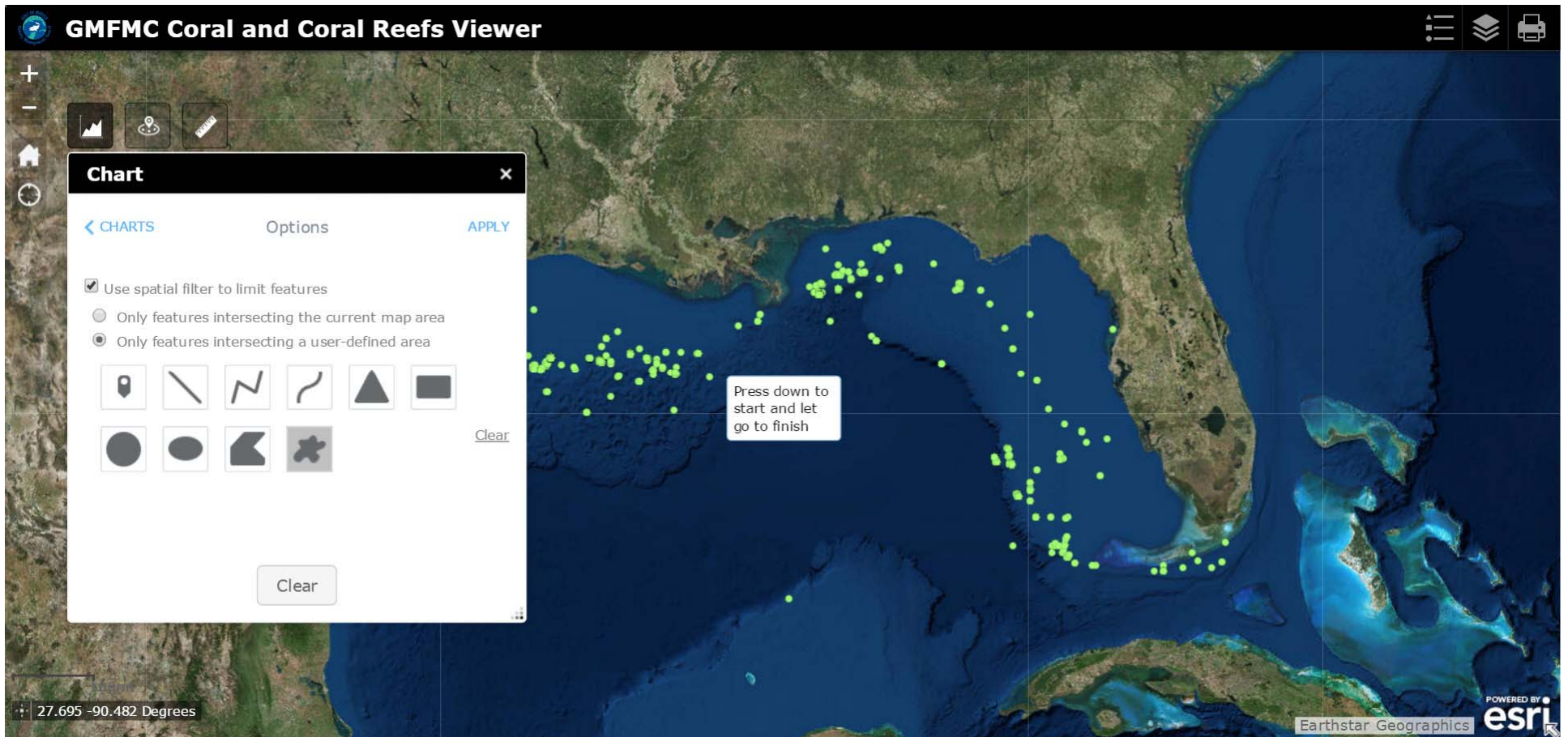


# Gulf of Mexico Corals and Coral Reefs Viewer



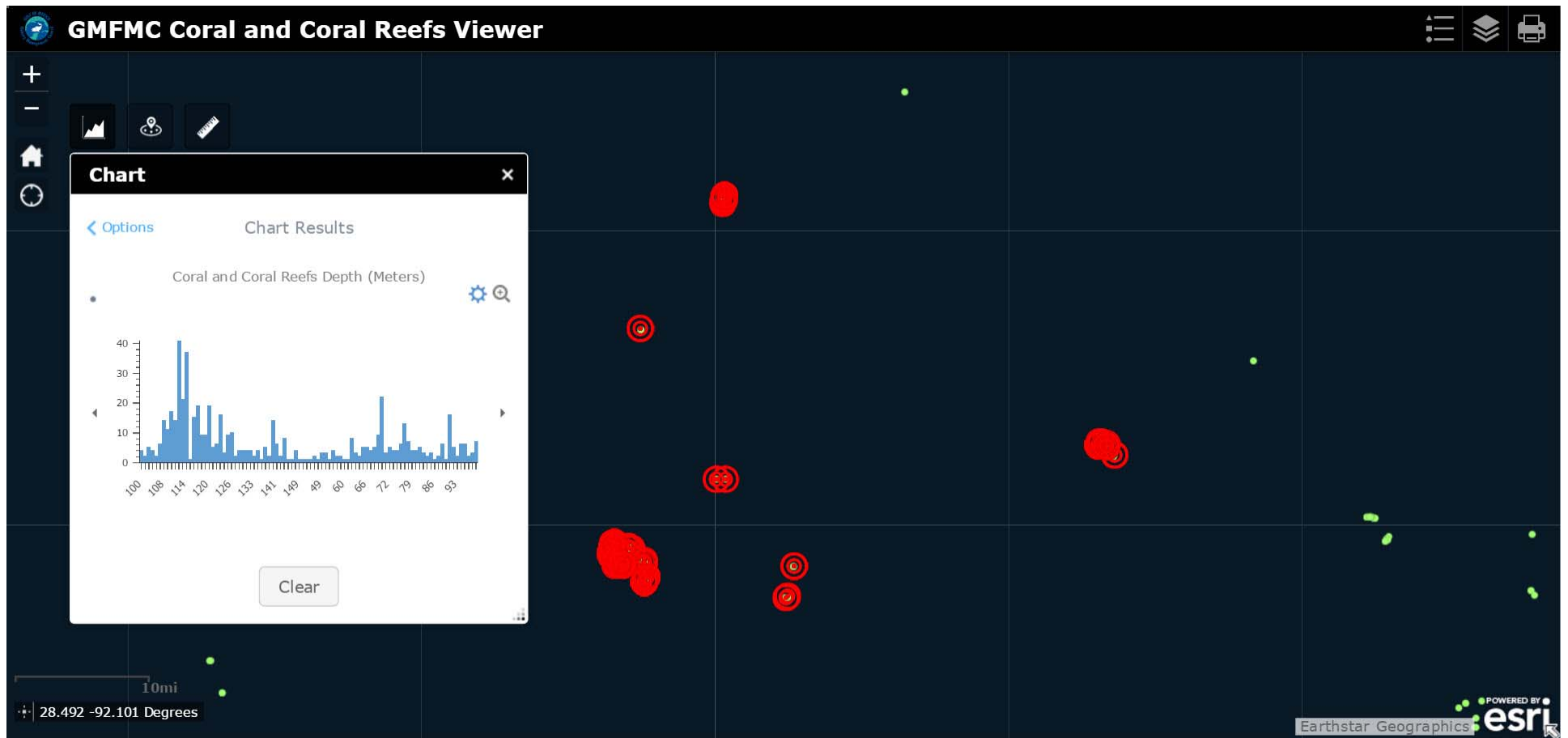
Screen Capture showing Gulf of Mexico Corals and Coral Reefs Viewer Pop-up

# Gulf of Mexico Corals and Coral Reefs Viewer



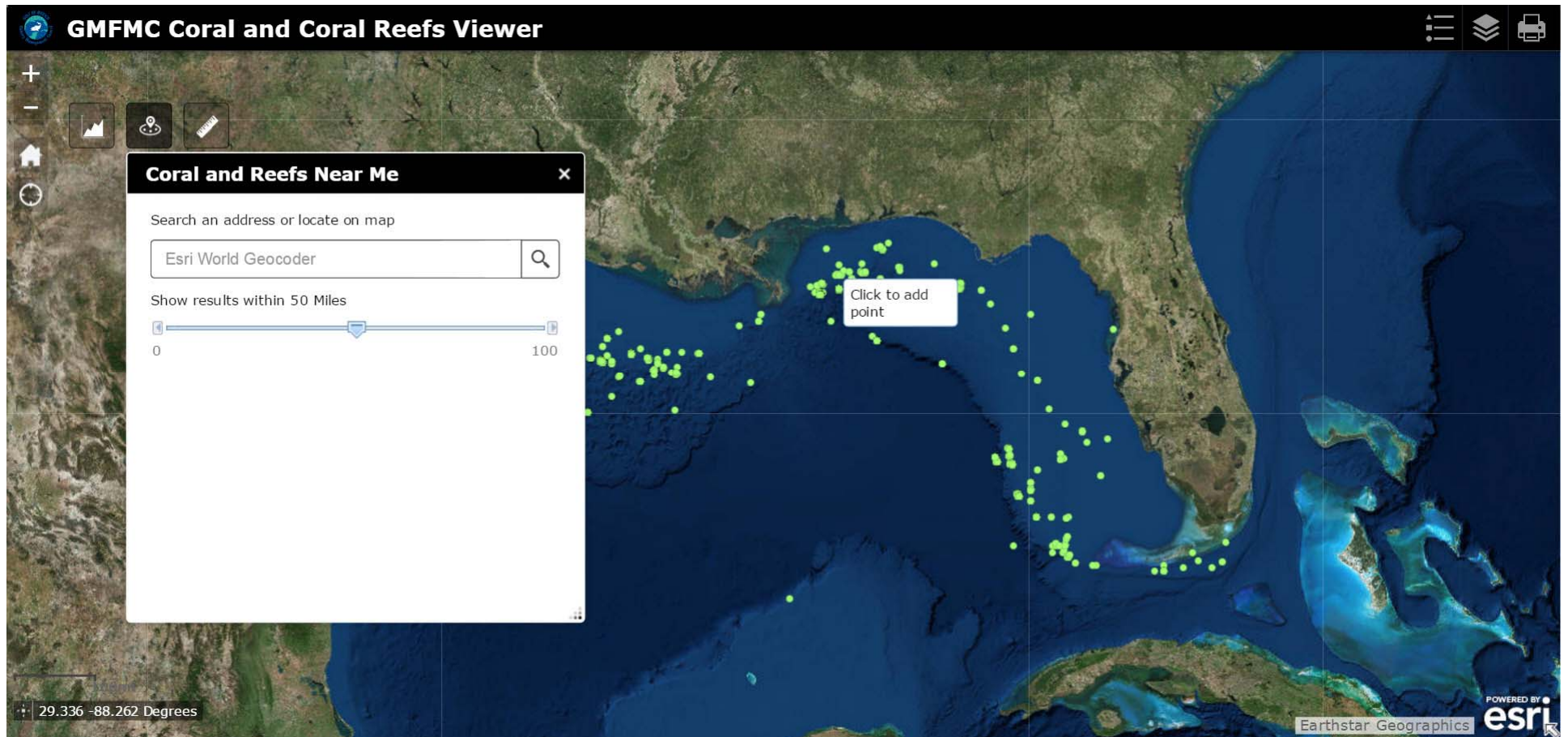
Screen Capture showing Gulf of Mexico Corals and Coral Reefs Viewer Chart Tool

# Gulf of Mexico Corals and Coral Reefs Viewer



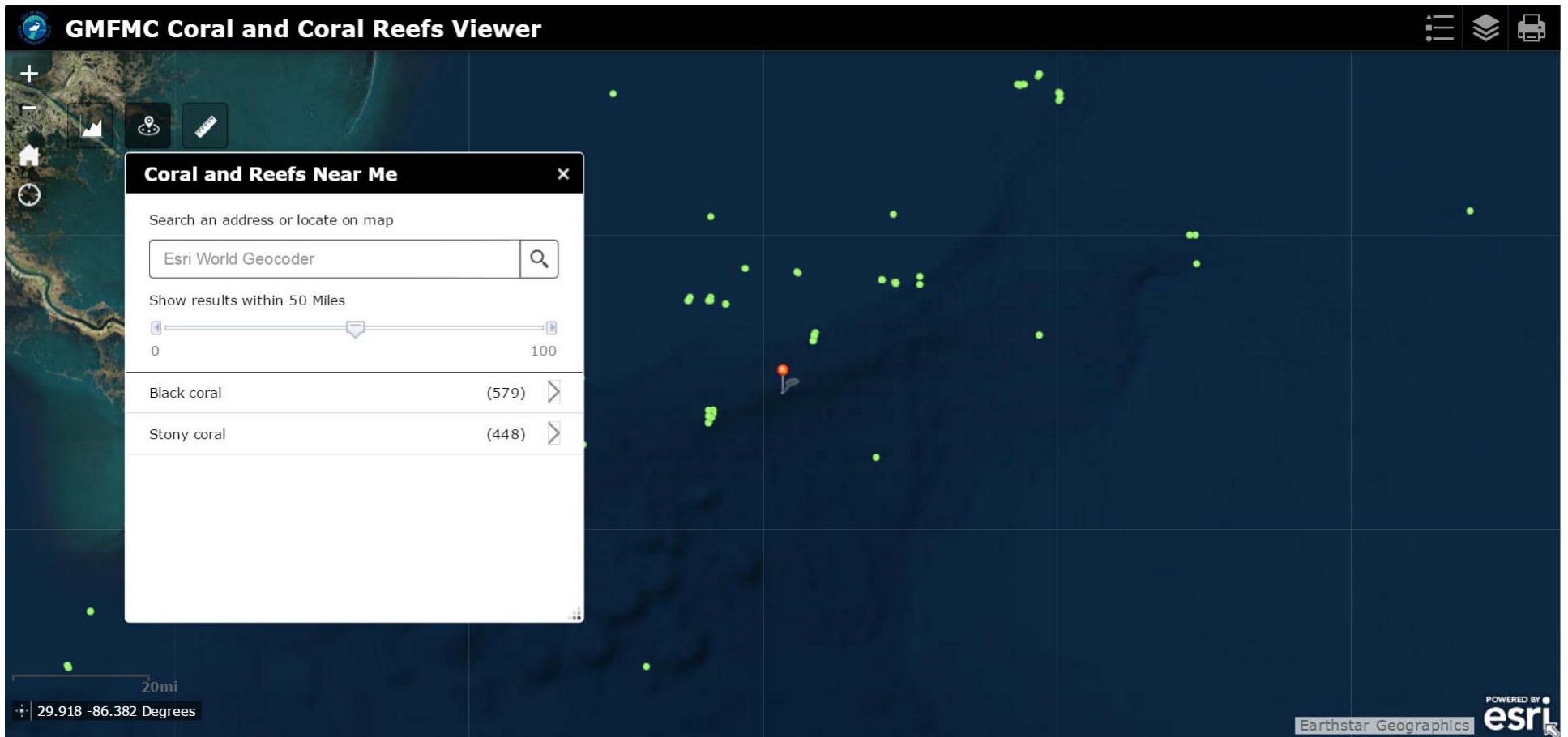
Screen Capture showing Gulf of Mexico Corals and Coral Reefs Viewer Chart Tool Results

# Gulf of Mexico Corals and Coral Reefs Viewer



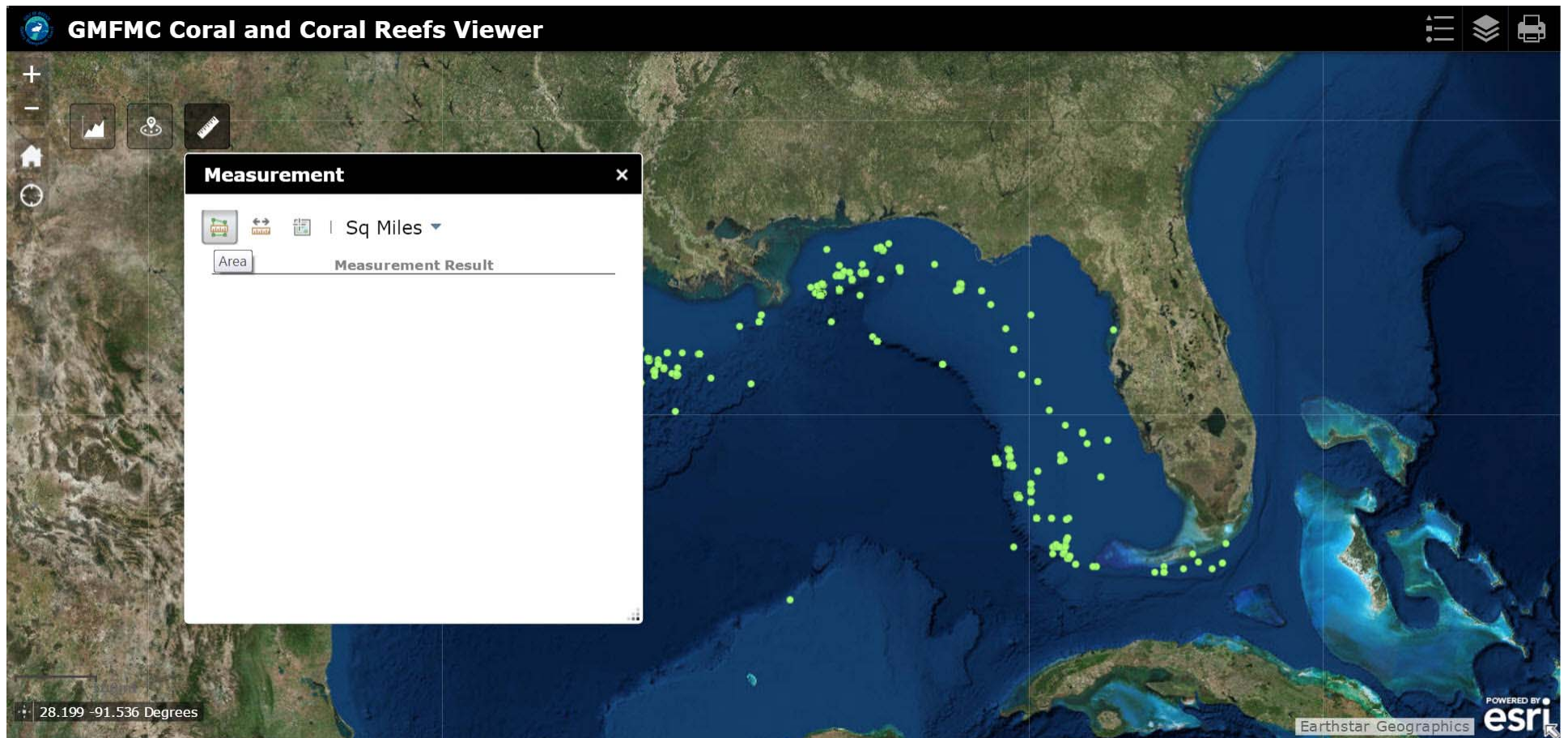
Screen Capture showing Gulf of Mexico Corals and Coral Reefs Viewer Coral & Reefs Near Me Tool

# Gulf of Mexico Corals and Coral Reefs Viewer



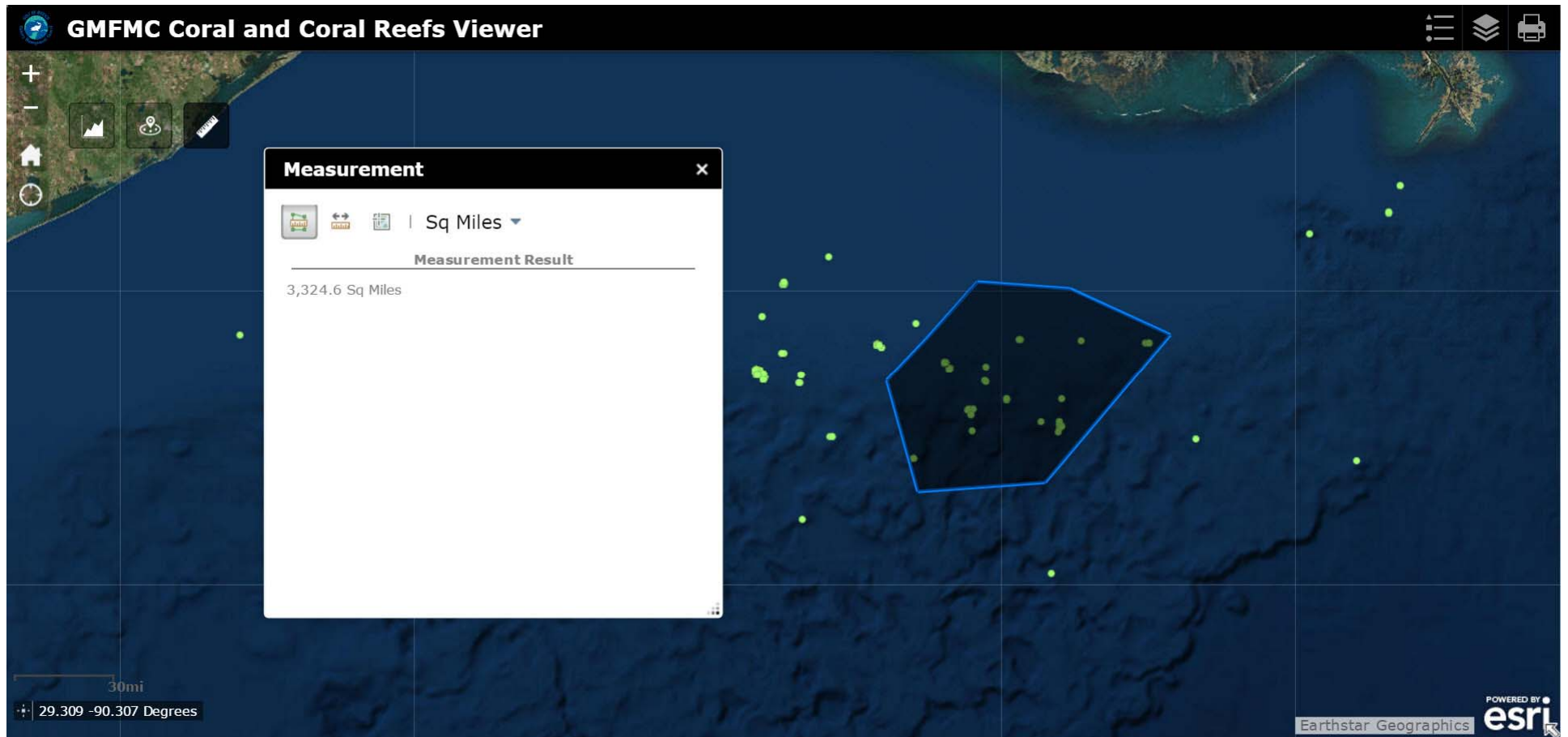
Screen Capture showing GOM Corals and Coral Reefs Viewer Coral & Reefs Near Me Tool Results

# Gulf of Mexico Corals and Coral Reefs Viewer



Screen Capture showing GOM Corals and Coral Reefs Viewer Measurement Tool

# Gulf of Mexico Corals and Coral Reefs Viewer



Screen Capture showing GOM Corals and Coral Reefs Viewer Measurement Tool Results

# How the data are being used

- Management
  - Deep-sea coral workshop
  - Decision support tools used to improve coral HAPC designations
- Scientific research
- Non-governmental organization (NGOs)
- Public (fishermen, stakeholders)
- Other countries (Mexico)





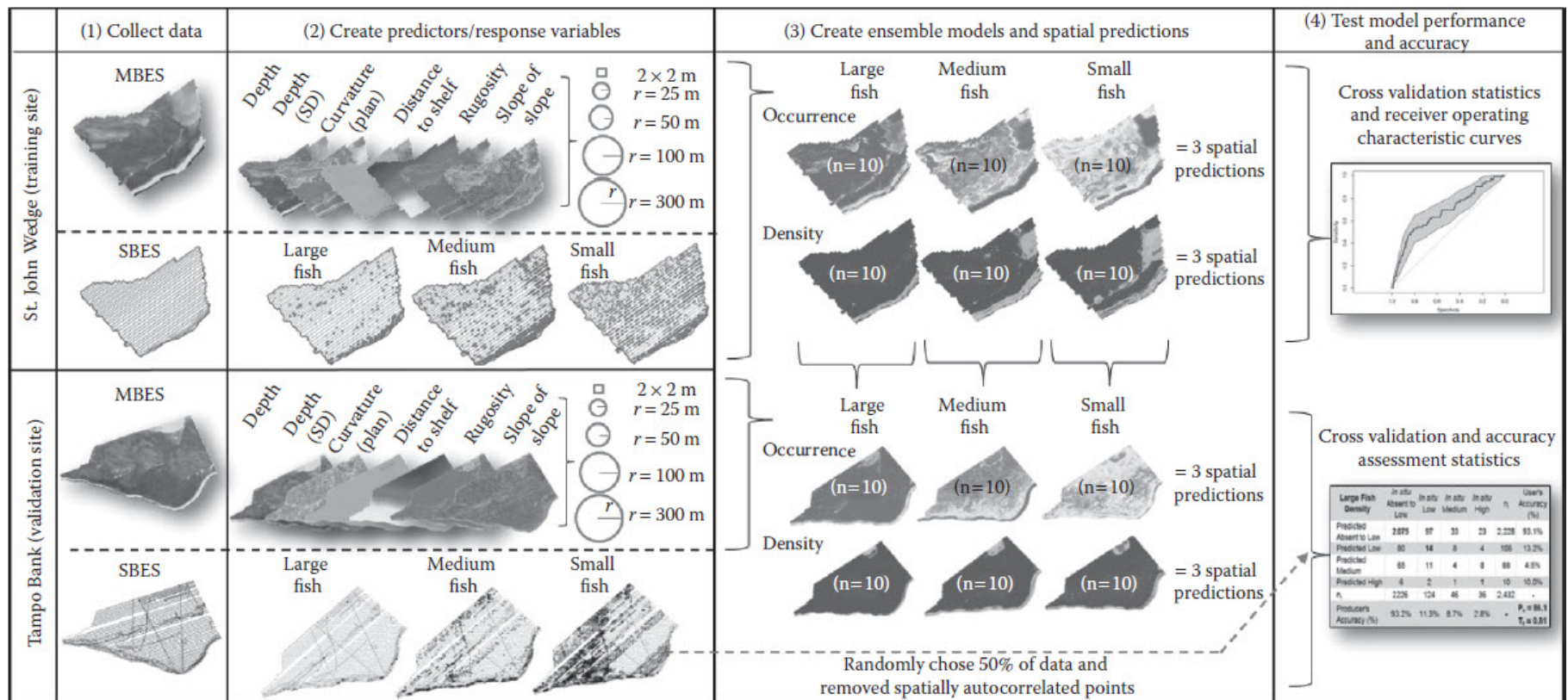
# Future Steps

- Continue enhancement the portal site to better inform public and stakeholders.
  - Continue expanding GIS database
    - Collaborate with more GIS data providers
    - Gather GIS data during stakeholder workshops
  - Habitat mapper to link other important habitats with corals



# Future Steps

- Spatially explicit species-habitat model



Source: Costa, B., Taylor, C.J., Kracker, L., Battista, T., and Pittman, S.J. *Plos ONE*, 9(1), e85555, p1-7, 2013.

# Future Steps

- Learning modules
  - Gulf of Mexico coral reefs and management
  - Lionfish in the Gulf of Mexico
  - Goliath grouper population ecology
  - Consequences of coral reef decline
  - Fishery management efforts



# Future Steps Continued

- Outreach
  - Public stakeholder workshops
  - Webinars
  - In-person presentation
- Management Strategy Evaluation (MSE)



# Questions?

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- (813) 348-1630 ext. 232
- Coral portal website:  
<http://portal.gulfcouncil.org/>

