# Coral Reef Conservation Program Grant Update

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Agenda Item X
Coral SSC, AP & Shrimp AP Joint Meeting

Tampa, Florida
September 16, 2019

# What does the current grant include?

- A three year proposal addressing threats to **Endangered Corals** from **Climate Change** and **Fishing** to Coral Reef Ecosystems and Associated Fisheries in the Gulf of Mexico using:
  - Spatial Decision-Support Tools
  - Broad Stakeholder Engagement
  - Comprehensive Scientific Review

# ESA Coral Species

- In September 2014, NOAA Fisheries published a federal register notice that listed seven coral species as threatened under the Endangered Species Act

- Several storyboards and tools were developed as outreach materials to increase awareness about them

# Task 1: ESA Corals

Assessing our understanding and importance of the 2014 listing of threatened coral, their abundance, and distribution in the Gulf of Mexico.

- Identify baseline abundance and distribution of ESA coral species in the gulf region.
- Generate story maps from extensive literature search to highlight current distribution, life history information, and potential threats to coral distributions in the Gulf.
- Create metadata and maintain Coral Portal with up to date information.

# Outreach Materials

Storyboard on life history and Climate Change Impacts to ESA-listed corals. This can be accessed online at https://portal.gulfcouncil.org/esagmxcoralhi/

## Life History and Climate Change Impact to ESA-listed Corals

In September 2014, NOAA Fisheries published a federal register notice that listed seven coral species as threatened under the Endangered Species Act. Understanding life history and the effects of climate change on these species is crucial to protect them.

The seven listed species include:
Elkhorn coral *(Acropora palmata)*
Staghorn coral *(Acropora cervicornis)*
Pillar coral *(Dendrogyra cylindrus)*
Rough cactus coral *(Mycetophyllia ferox)*
Lobed star coral *(Orbicella annularis)*
Mountainous star coral *(Orbicella faveolata)*
Boulder star coral *(Orbicella franksi)*

This story board explores what life history means and why it's important, how life history and climate change are linked, how climate change is impacting these ESA-listed corals, and what (if anything) can be done to mitigate the impacts of climate change on these species.

Photo (right): Pillar coral. Image courtesy of NOAA Fisheries.

# Outreach Materials

Storyboard on causes and consequence of coral reef decline.  The storyboard can be accessed online at https://portal.gulfcouncil.org/CoralDecline.html

# Outreach Materials

Story board highlighting the life history and threats specific to endangered species act (ESA) listed individual shallow-water coral species in the Gulf of Mexico.  It can be accessed online at https://portal.gulfcouncil.org/esagmxcoralth/

# Outreach Materials

Pamphlets on ESA listed coral species were produced and will be available in electronic form on the portal. We are also in process of preparing Coral ID booklets that divers could use. These booklets will also link to additional info in the coral portal.

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# Outreach Materials

We coordinate with federal, state agencies and partners to host ESA coral observation data in the Coral Portal. A new ESA Coral Explorer web application/interface has been developed. The web application can be accessed online at https://portal.gulfcouncil.org/ESACoralDB.html

# ESA Coral Explorer Live Demo

# Spatial Management

Documenting climate change in the EEZ that may affect the health of corals and translating that information to the public

- Compile climate, biological and environmental data into a platform that is user friendly for managers and the public.
- Develop spatially explicit model incorporating climate change and its potential effects on coral reefs.
- Develop a white paper and learning module describing climate change, storm activity and other habitats linked to coral reef health.

# Task 2: Spatial Management

Coral Amendment 9 was submitted to NOAA Fisheries Nov 2018. Waiting for implementation by the Secretary of Commerce.

Revised 11/16/2018

**Coral Habitat Areas Considered for Habitat Area of Particular Concern Designation in the Gulf of Mexico**

**Final Amendment 9**
**to the Fishery Management Plan for the Coral and Coral Reefs of the Gulf of Mexico, U.S. Waters**

**Including Final Environmental Impact Statement**

**November 2018**

# Outreach Materials

HAPC explorer with new recommended regulation areas and HAPC area shapefile download option. Accessible at https://portal.gulfcouncil.org/coralhapc.html

# Predictive Models

Developing spatially explicit models for ESA coral species in the Gulf.

# Task 3: Updating Baseline

Assessing effectiveness of spatial management areas and coral reef associated species diversity between selected sites across the Gulf of Mexico

- Conducting a Gulf-wide review of existing literature in collaboration with federal and academic partners to evaluate the effectiveness of MPAs in the Gulf by developing hotspot maps of selected sites and comparing them to appropriate control sites.

- Provide a Gulf-wide hotspot map of coral and fish species richness and analysis to evaluate the effectiveness of spatial management areas with current form of fishing gear regulation in conserving corals and reef fishes.

- Story maps to raise awareness on deep sea coral species in the gulf.

# Compare MPA/Non-MPA Sites

Compiling coral and other species data from Flower Garden Banks and Stetson Bank and compare them with data from South Texas and Madison-Swanson and Edges and Steamboat Lump sites.  Hotspot maps of coral and other fish species richness will be generated and analyzed to evaluate the effectiveness of spatial management areas.

# Outreach Materials

Story board on the deep sea coral species in the Gulf.

Lophelia (*Lophelia pertusa*)

Ivory Tree Coral (*Oculina varicosa*)

Orange Sea Fans (*Swiftia exserta*)

Black Corals (*Antipathes* sp.)

# Improvements in Web Services

New Public Geospatial Open Data Portal at
https://gmfmc.maps.arcgis.com/home/index.html

# Improvements in Web Services

Upgraded new GIS server to host Council produced Geospatial Data for both internal and external use via REST services available from https://portal.gulfcouncil.org/portal

# Improvements in Web Services

New enhanced Coral Portal

# New Coral Portal Live Demo

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# Outreach Materials

- ESA Coral Pamphlets and upcoming dive booklet
- New Coral Portal
- GMFMC Geospatial Server

# Future Tasks

- Develop spatially explicit model with climate change projected layers and incorporate hurricane information as overlay
- Compare effectiveness of MPA/Non-MPA sites based on available data
- New storyboards and white papers from ongoing analysis

# Questions & Discussion