RESTORE Council Monitoring and Assessment Program (CMAP)

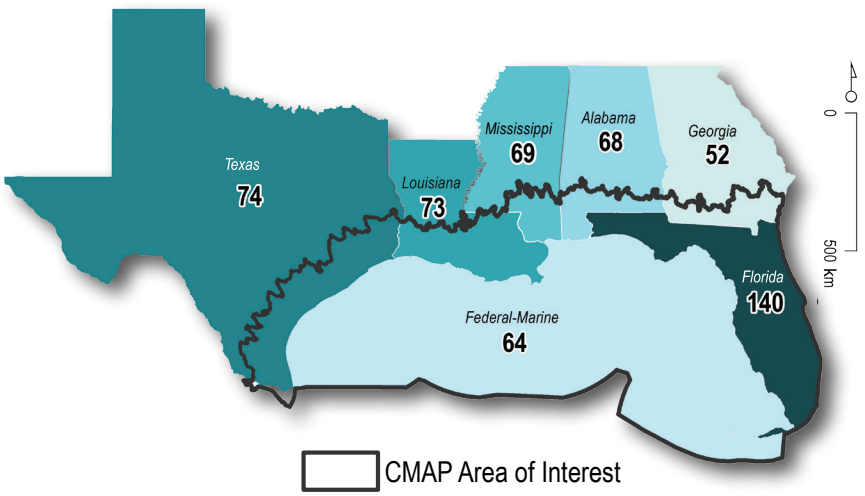
Mapping | Exploring CMAP Products

What is CMAP?

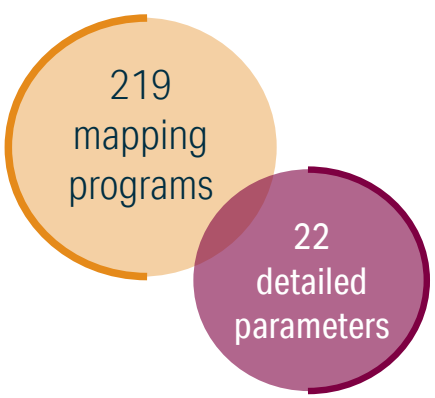
The RESTORE Council Monitoring and Assessment Program (CMAP), administered by the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS), spatially and temporally inventoried programs in the Gulf of Mexico focused on water quality and habitat monitoring and mapping.

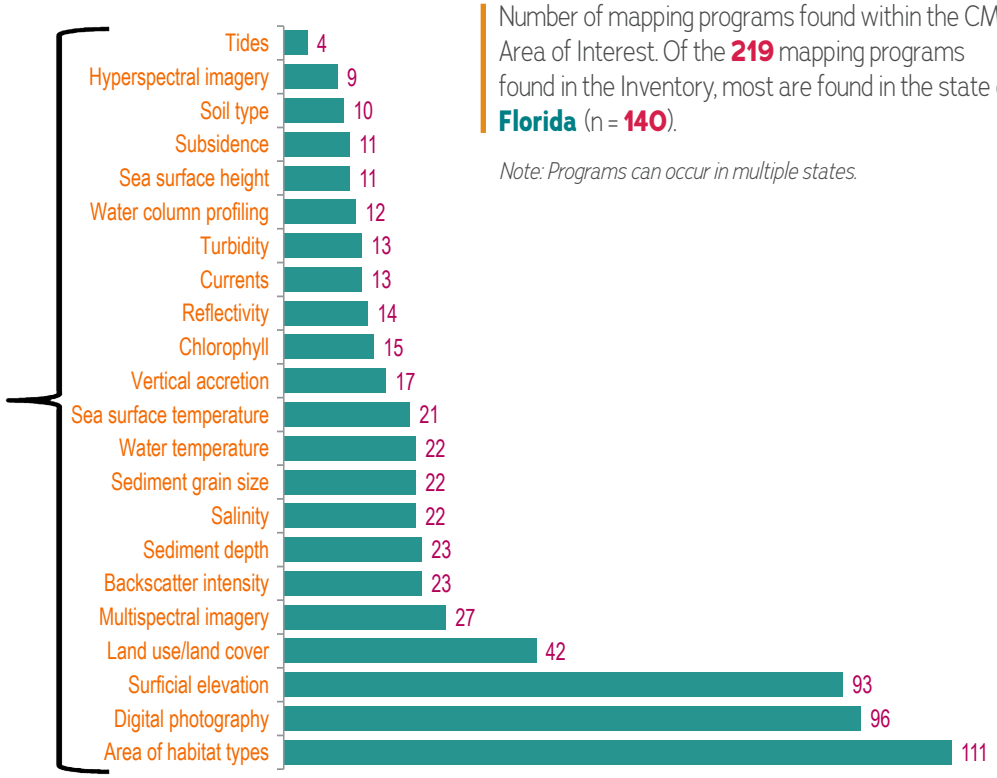
The Inventory

Over **12,500** program and project records were evaluated for inclusion in the Inventory. A total of **544** monitoring and mapping programs met the CMAP criteria (e.g., located in the Gulf of Mexico region, established since 1980, minimum data record of five years) and are cataloged in the Inventory. For more information, please see the Inventory report (NOAA and USGS, 2019).



Occurrence of **mapping parameters** in the **Inventory** (NOAA and USGS, 2019)





Number of mapping programs found within the CMAP Area of Interest. Of the **219** mapping programs found in the Inventory, most are found in the state of **Florida** (n = **140**).

Note: Programs can occur in multiple states.

NOAA and USGS. 2019. Council Monitoring and Assessment Program (CMAP): Inventory of Existing Habitat and Water Quality Monitoring, and Mapping Metadata for Gulf of Mexico Programs. National Oceanic and Atmospheric Administration and U.S. Geological Survey. NOAA NOS NCCOS Technical Memorandum 262. 155 pp. Silver Spring, MD. doi: 10.25923/gwpx-ff30

Project website | https://restorethegulf.gov/cmap

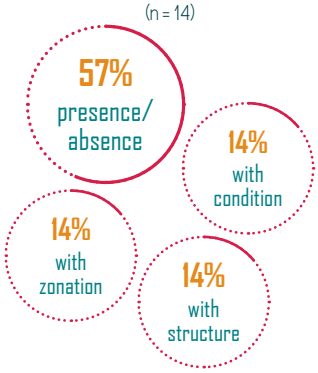
Common Monitoring Information

Protocol information from the Inventory program and guidance documents was synthesized and evaluated to determine which parameters, methods, and units were most commonly measured and implemented within each habitat type. For the programs operating within the **oyster/bivalve bed** habitat type, **37** programs were identified as mapping **area of habitat types**. Of the 37 identified, **14** specifically mapped oyster reefs (illustration on the far right).

Methodologies identified within the Inventory and additional guidance documents for programs that map area of habitat types and operate within oyster/bivalve bed (n = 37)[1].

Method	# programs documenting method
In situ data collection	16
Orthophotography	16
Satellite imagery	5
Sonar	4
Other imagery	1
Unmanned aerial systems (UAS)	2
Surficial elevation	7
Seismic/subbottom profiles	1
Ancillary data	1

Oyster reef habitat mapping classification details
(n = 14)



*In order to evaluate each of the programs in the Inventory, documentation level for each program was assessed. Programs are considered having **Complete Documentation** if all **7** Monitoring Program Elements (MPEs) are accessible:*

- Point of contact
- Web accessible data
- Machine readable data
- Accessible metadata
- Analytical procedures
- Collection procedures
- Quality assurance protocol

Gap Assessment: A Workflow

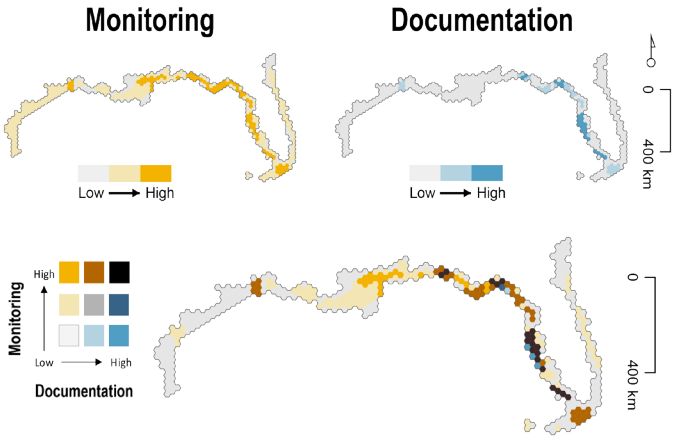
Where are mapping programs operating in oyster/bivalve bed habitats?

Parameter(s) of interest?
Area of habitat types

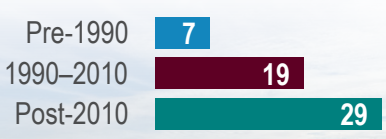
What is the area of interest and spatial unit?
Gulf-wide, estuarine zone, hexagon grid

Where is this information found?
CMAP reports and Inventory

Spatial and informational distribution of mapping area habitat types (n = **31**)[2]:



Temporal monitoring of area of habitat types in the estuarine zone of the Gulf of Mexico (n = **31**):



Note: Programs can occur in multiple temporal categories

Where do you go for **more information**?
What are **other avenues we can explore** after the initial gap assessment?

Webtool: https://restorethegulf.gov/cmap

Searchable online database providing reports, data releases, and information collected and analyzed by CMAP

1 NOAA and USGS. 2020a. Council Monitoring and Assessment Program (CMAP): Common Monitoring Program Attributes and Methodologies for the Gulf of Mexico Region. National Oceanic and Atmospheric Administration and U.S. Geological Survey. NOAA NOS NCCOS Technical Memorandum 285. Silver Spring, MD. 87 pp. doi: 10.25923/vxay-xz10

2 NOAA and USGS. 2020b. Council Monitoring and Assessment Program (CMAP): A Framework for Using the Monitoring Program Inventory to Conduct Gap Assessments for the Gulf of Mexico Region. National Oceanic and Atmospheric Administration and U.S. Geological Survey. NOAA NOS NCCOS Technical Memorandum 284. Silver Spring, MD. 55 pp. doi: 10.25923/mrdd-h727

Image credit : N. Enwright (USGS)

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