



Agenda Item H.2.a  
Supplemental ONMS Presentation 1  
September 2023

# Deep-Sea Coral Research and Restoration Scoping

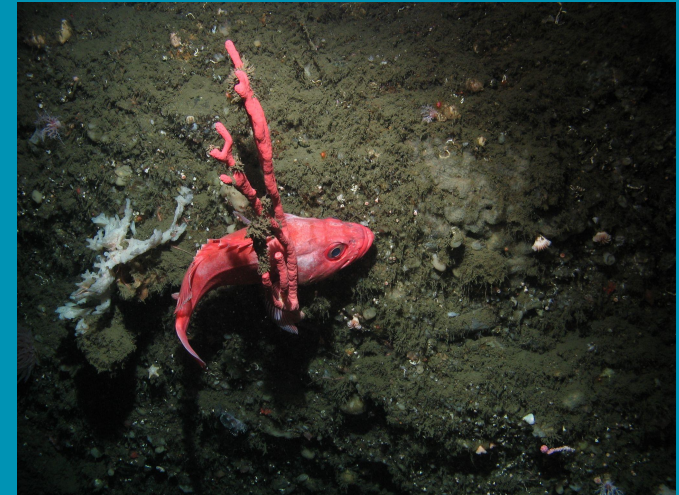
Karen Reyna and Karen Grimmer  
Greater Farallones and Monterey Bay National Marine Sanctuaries

Sept 11, 2023

# Overview



- Context
- Provide a high-level overview of the scoping document
  - Criteria used to select suitable areas for deep-sea coral (DSC) research and restoration
  - Overview of the five locations and 10 areas identified
  - Unique attributes and biota of each area



Bubblegum Coral and Blackgill Rockfish  
*credit: NOAA*

# Context



- The sinking of the YFD-70 Dry Dock resulted in substantial, persistent, and ongoing impacts.
  - Removal of the YFD-70 is not feasible and therefore restoration actions at the location are not viable.
  - There is no anticipated recovery time.
- The scoping document is *not* a part of the draft YFD-70 restoration plan.
  - It is not tied specifically to the draft YFD-70 restoration plan, except insofar as ONMS was put on notice that portions of the locations suitable specifically for restoration were opening through the NT-RCA action.

# Context



- The draft YFD-70 restoration plan and scoping document both identify the same five locations for restoration.
- The scoping document provides areas that can accomplish deep-sea coral research and restoration within the five locations given the current technical feasibility of deep-sea coral restoration capabilities.
- The scoping document is based on a broader, long-term need for both sanctuaries that is aligned with National Marine Sanctuaries Act mandates.

# Context



- Initiating a Council process for establishing areas where deep-sea coral research and restoration may occur without impacts to the seafloor would:
  - Allow for implementation of requisite protections in areas suitable for long-term DSC research and restoration activities,
  - Allow for possible future restoration projects, and
  - Allow for the draft YFD-70 restoration plan to be finalized.

# Context

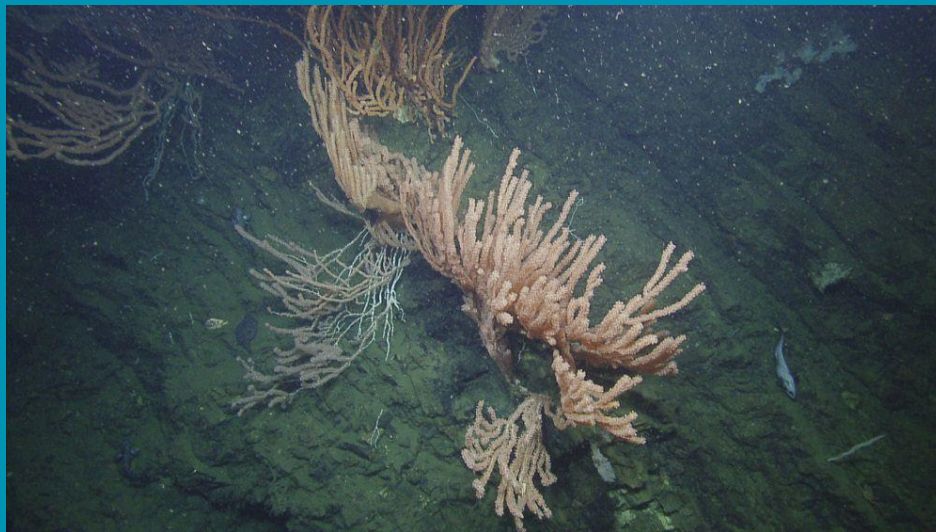


- Better ocean management within two large sanctuaries:
  - Restore and enhance DSC communities and the ecosystem functions they provide;
  - Enhance our understanding;
  - Respond to future research and restoration needs; and
  - To meet our mandates, shared interests, and desired outcomes.
- Intent is to partner and collaborate.

# Purpose of the Scoping Document



The scoping document represents Greater Farallones and Monterey Bay National Marine Sanctuaries long-term need for DSC research and restoration areas so that research and restoration may occur without intentional impacts to the seafloor from bottom-contact fishing gear.



Bamboo and Bubblegum corals  
*credit: NOAA*

# Location and Area Criteria



- Appropriate range of depths (27 - 853 fathoms)
- Appropriate substrate (hard or mixed)
- Known coral locations
- Proximity to source corals for outplanting
- Sufficient in size for research and restoration



# Locations and Areas



- Five potential locations
- 10 potential areas within the five locations, all protected by National Marine Sanctuary regulations and all overlap with EFH Conservation Areas that prohibit groundfish bottom trawling.



# Potential Locations



- Offshore South Point Area (OSPA)



# Potential Locations



- Offshore South Point Arena (OSPA)
- The Football (F)



# Potential Locations



- Offshore South Point Arena (OSPA)
- The Football (F)
- Cochrane Bank/Fanny Shoals (CBFS)



# Potential Locations



- Offshore South Point Arena (OSPA)
- The Football (F)
- Cochrane Bank/Fanny Shoals (CBFS)
- Año Nuevo (ANC)-Ascension (AC) Canyon Complex



# Potential Locations



- Offshore South Point Arena (OSPA)
- The Football (F)
- Cochrane Bank/Fanny Shoals (CBFS)
- Año Nuevo (ANC)-Ascension (AC) Canyon Complex
- Sur Ridge (SR)



# Potential Locations



- Offshore South Point Arena (OSPA)
- The Football (F)
- Cochrane Bank/Fanny Shoals (CBFS)
- Año Nuevo (ANC)-Ascension (AC) Canyon Complex
- Sur Ridge (SR)



# Potential Areas: Table 2



Location	Area Name	Size (sq. nautical miles)	Depth Range feet (fathoms and meters)	Target Coral Species Suitable for Outplanting	Potential Source Coral Locations
Offshore South Point Arena	Offshore South Point Arena 1 (OSPA-1)	10.06	524–1,541 (87–256 fm.; 160–470 m)	<i>Swiftia</i> sp. (stalk and fan morphology), <i>Paragorgia arborea</i>	Within and adjacent to the Point Arena South Biogenic Area EFHCA
	Offshore South Point Arena 2 (OSPA-2)	16.52	524–1,935 (87–322 fm.; 160–590 m)	<i>Swiftia</i> sp. (stalk and fan morphology), <i>Paragorgia</i> spp. (e.g., bubblegum, peppermint), <i>Plumarella longispina</i>	
	Offshore South Point Arena 3 (OSPA-3)	22.01	524–1,935 (87–322 fm.; 160–590 m)	<i>Swiftia</i> sp. (stalk and fan morphology), <i>Paragorgia</i> spp. (e.g., bubblegum, peppermint), <i>Plumarella longispina</i>	
The Football	The Football (F-1)	5.04	623–787 (103–131 fm.; 190–240 m)	<i>Swiftia farallonesica</i>	Within and adjacent to the Football and Point Arena South Biogenic Area EFHCA
	The Football (F-2)	6.57	623–918 (103–153 fm.; 190–280 m)	<i>Swiftia farallonesica</i>	
Cochrane Bank/Fanny Shoals	Cochrane Bank (CB)	4.58	295–524 (49–87 fm.; 90–160 m)	<i>Chromoplexaura marki</i>	Cordell Bank, Farallon Escarpment at shelf break
	Cochrane Bank/Fanny Shoals (CBFS)	15.11	196–524 (32–87 fm.; 60–160 m)	<i>Chromoplexaura marki</i>	
Año Nuevo-Ascension Canyon Complex	Ascension Canyon (AC)	2.96	1,640–4,790 (273–798 fm.; 500–1,460 m)	<i>Keratoisis</i> sp.	Sur Ridge
	Año Nuevo (ANC)	6.5	1,574–4,658 (262–776 fm.; 480–1,420 m)	<i>Paragorgia</i> sp., <i>Keratoisis</i> sp., <i>Swiftia</i> sp.	
Sur Ridge	Sur Ride (SR)	36.64	2,690–5,118 (448–853 fm.; 820–1560 m)	<i>Trisopathes</i> sp., <i>Lillipathes</i> sp., <i>Isidella tentaculum</i> , <i>Keratoisis</i> sp., <i>Parastenella</i> sp., <i>Acanthogorgia</i> sp., <i>Swiftia hofoidi</i> , <i>Paragorgia arborea</i> , <i>Sibogorgia cauliflora</i> , <i>Corallium</i> sp.	Sur Ridge

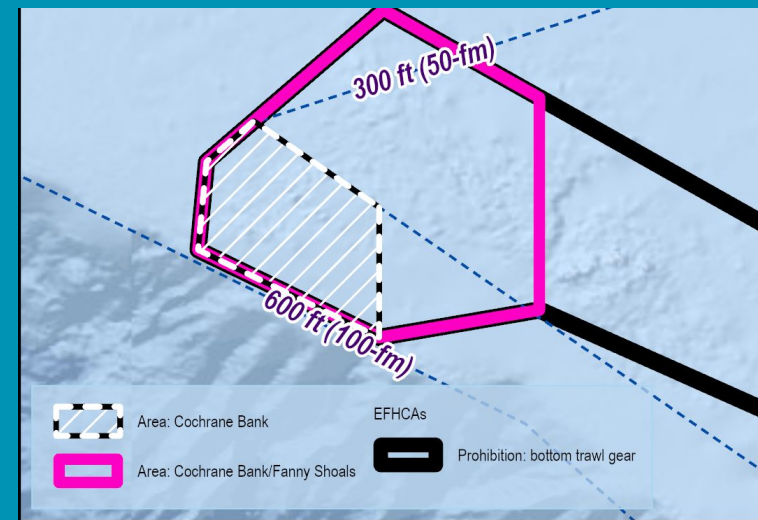
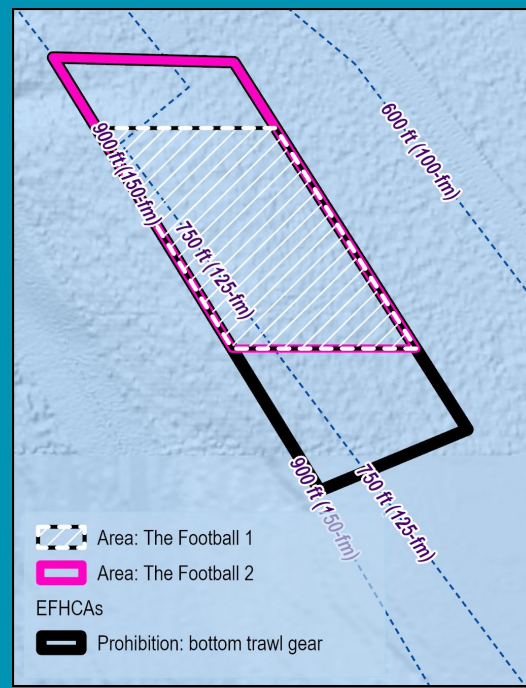
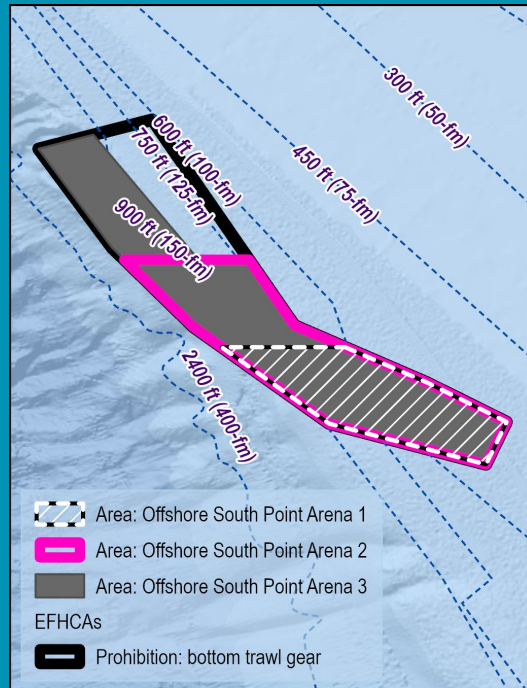


# Potential Areas: Table 2



<b>Location</b>	<b>Area Name</b>	<b>Size (sq. nautical miles)</b>	<b>Depth Range feet (fathoms and meters)</b>	<b>Target Coral Species Suitable for Outplanting</b>	<b>Potential Source Coral Locations</b>
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# Greater Farallones National Marine Sanctuary Locations

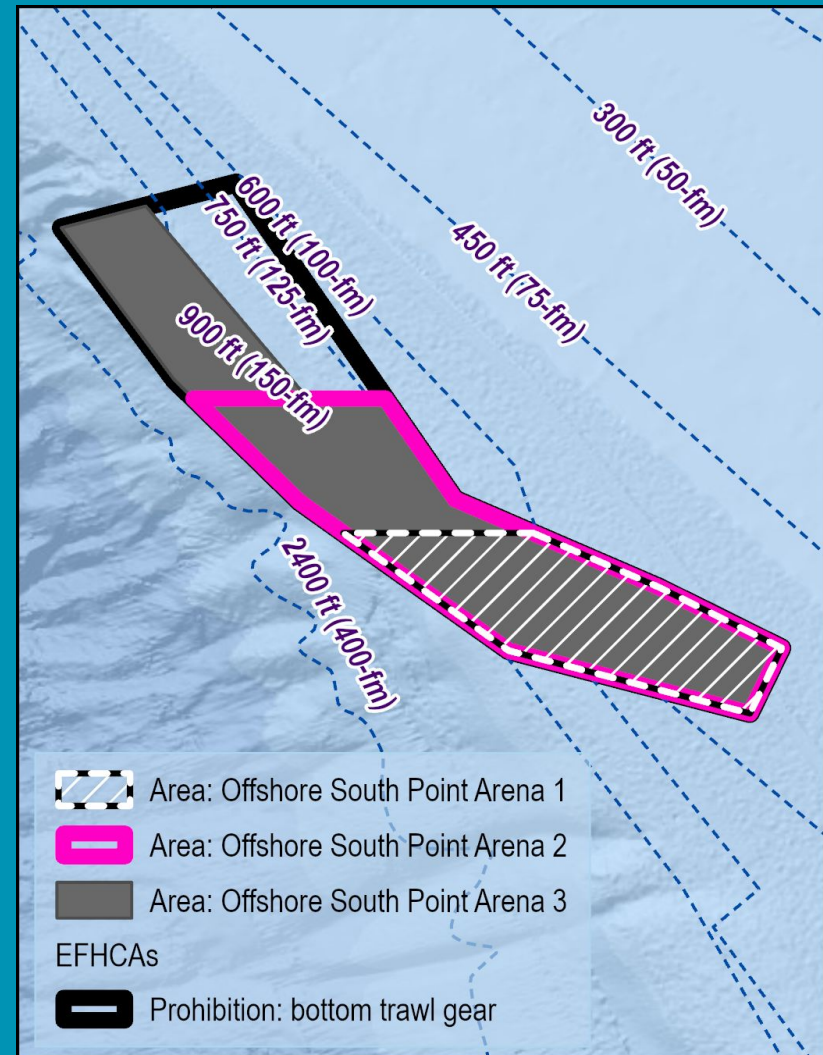


- Three locations identified.
- Nested areas that offer alternatively-sized configurations.

# Offshore South Point Arena (OSPA)



Three potential areas at Offshore South Point Arena (OSPA) that range in size from 10.06 nm<sup>2</sup> to 22.01 nm<sup>2</sup>.



# OSPA Areas



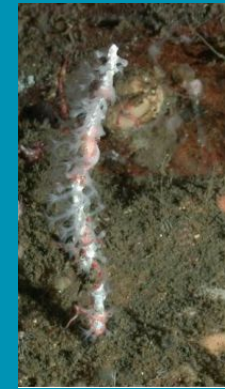
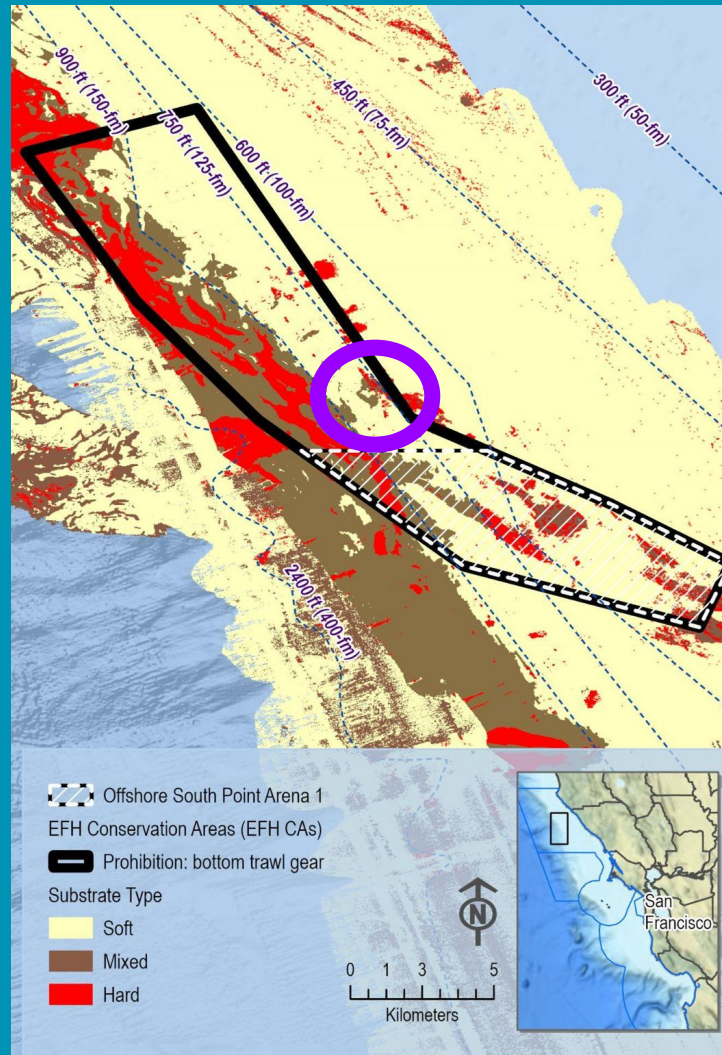
## OSPA-1

Size: 10.06 nm<sup>2</sup>

Depth Range: 87-256  
fm (524-1,541ft)

Target Coral Species  
Suitable for Outplanting:

- *Swiftia* sp. (stalk and fan morphology)
- *Paragorgia arborea*



*Swiftia  
farallonesica*  
credit: NOAA



*Paragorgia  
arborea*  
credit: NOAA

# OSPA Areas



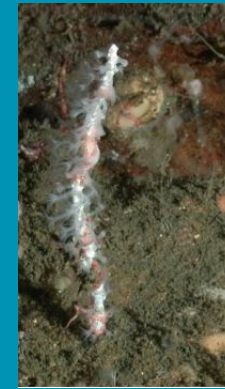
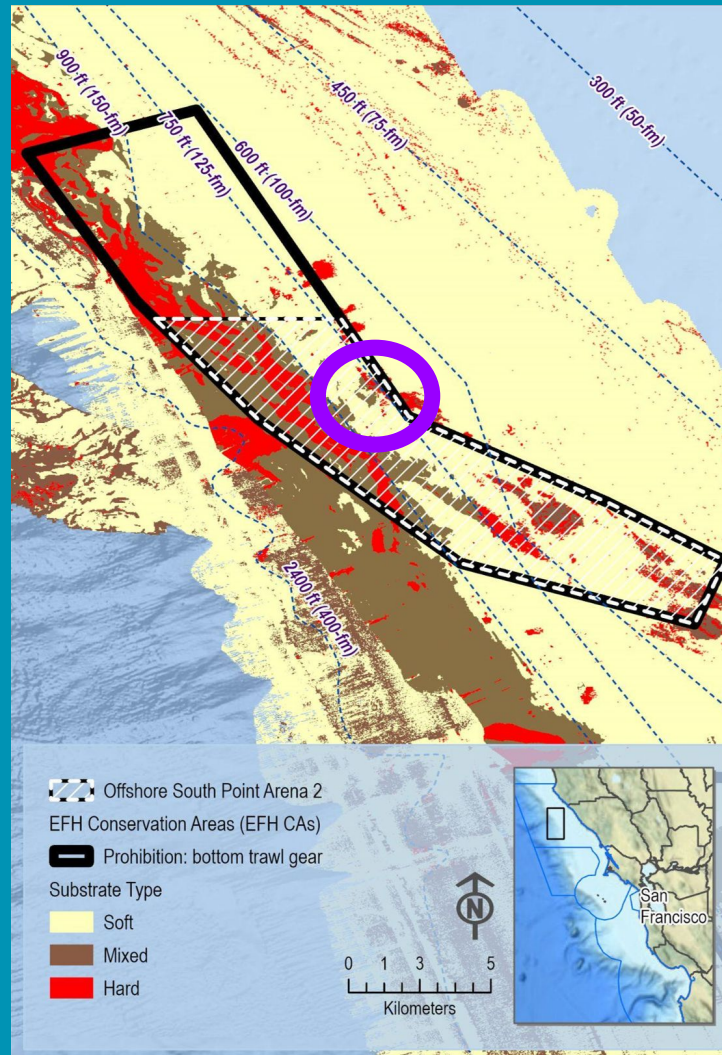
## OSPA-2

Size: 16.52 nm<sup>2</sup>

Depth Range: 87-322  
fm (524-1,935 ft)

Target Coral Species  
Suitable for Outplanting:

- *Swiftia* sp. (stalk and fan morphology)
- *Paragorgia* sp. (e.g., bubblegum, peppermint)
- *Plumarella longispina*



*Swiftia farallonesica*  
credit: NOAA



*Plumarella longispina*  
credit: NOAA

# OSPA Areas



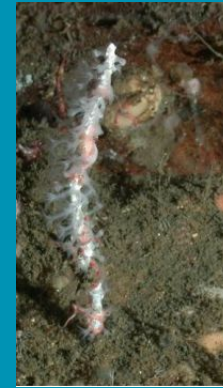
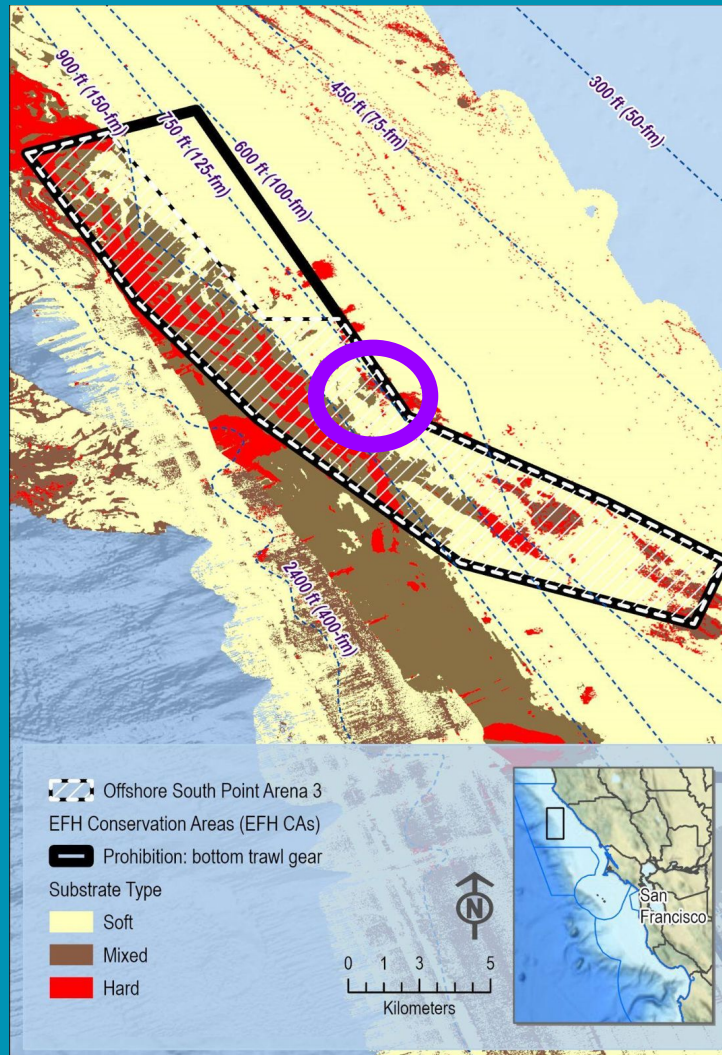
## OSPA-3

Size: 22.01 nm<sup>2</sup>

Depth Range: 87-322  
fm (524-1,935 ft)

Target Coral Species  
Suitable for Outplanting:

- *Swiftia* sp. (stalk and fan morphology)
- *Paragorgia* sp. (e.g., bubblegum, peppermint)
- *Plumarella longispina*



*Swiftia farallonesica*  
credit: NOAA

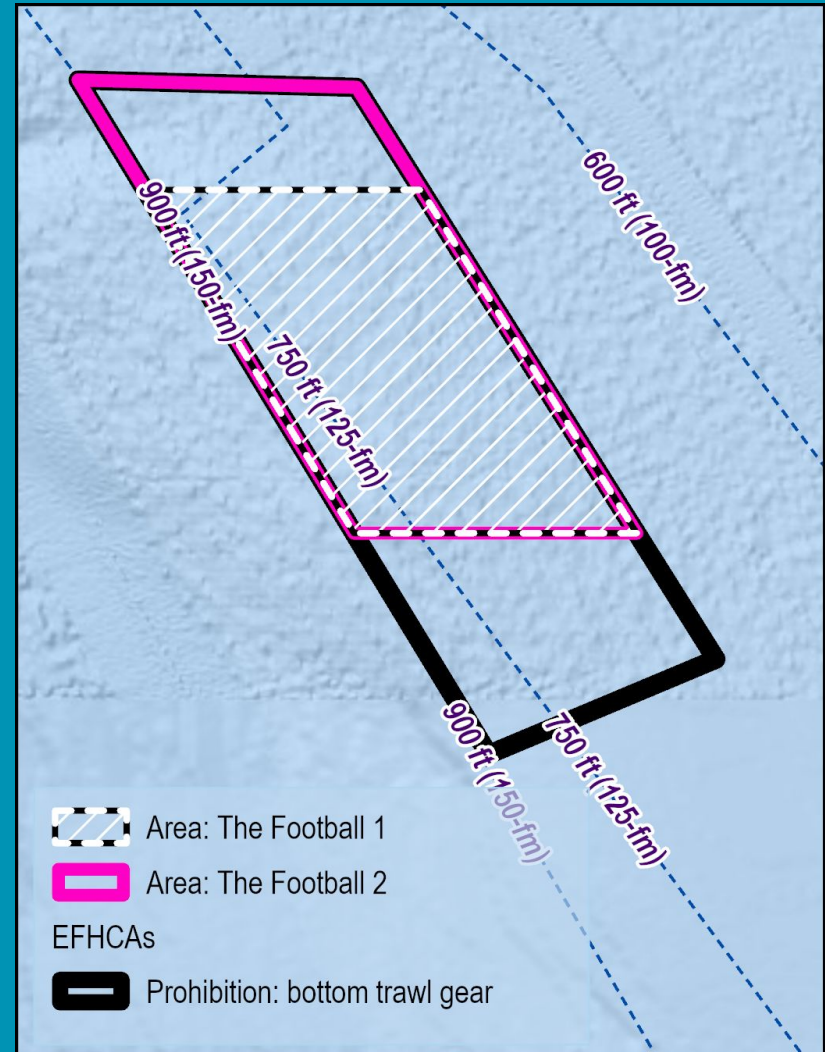
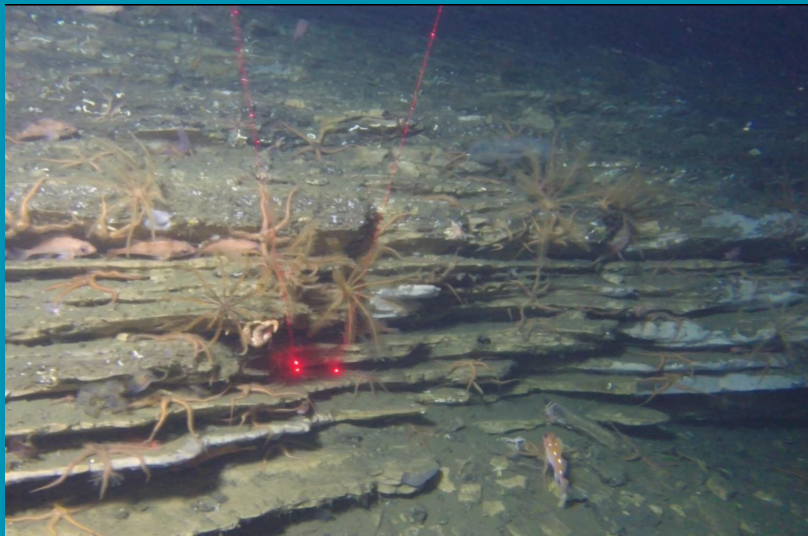


*Plumarella longispina*  
credit: NOAA

# The Football (F)



Two potential areas at The Football (F) that range in size from 5.04  $\text{nm}^2$  to 6.57  $\text{nm}^2$ .



# F Areas



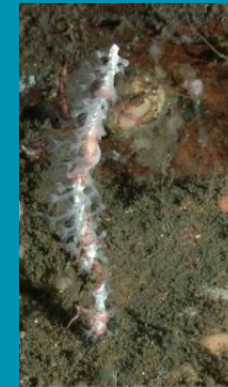
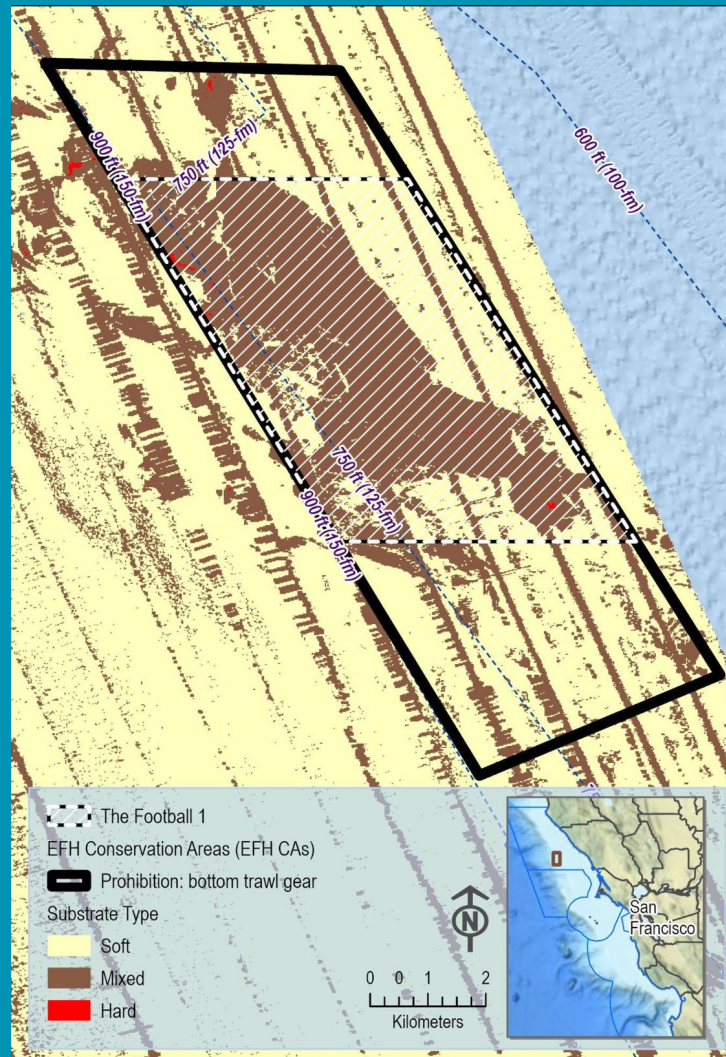
## F-1

Size: 5.04 km<sup>2</sup>

Depth Range: 103-131  
fm (623-787 ft)

Target Coral Species  
Suitable for Outplanting:

- *Swiftia farallonesica*



*Swiftia farallonesica*  
credit: NOAA



# F Areas



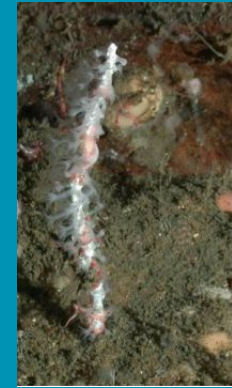
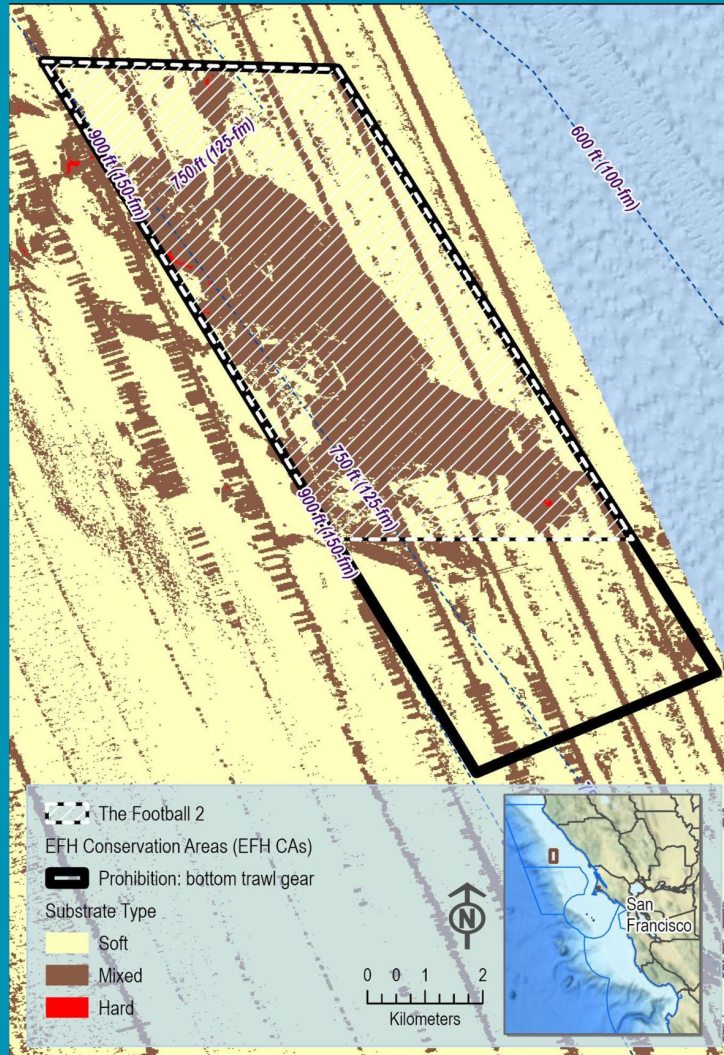
## F-2

Size: 6.57 km<sup>2</sup>

Depth Range: 103-153  
fm (623-918 ft)

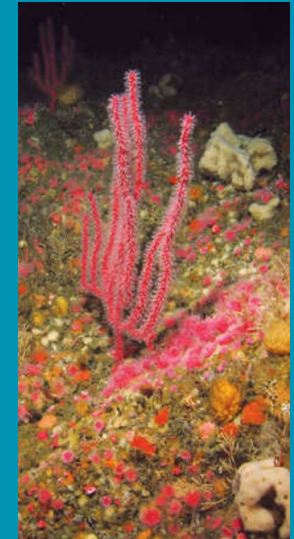
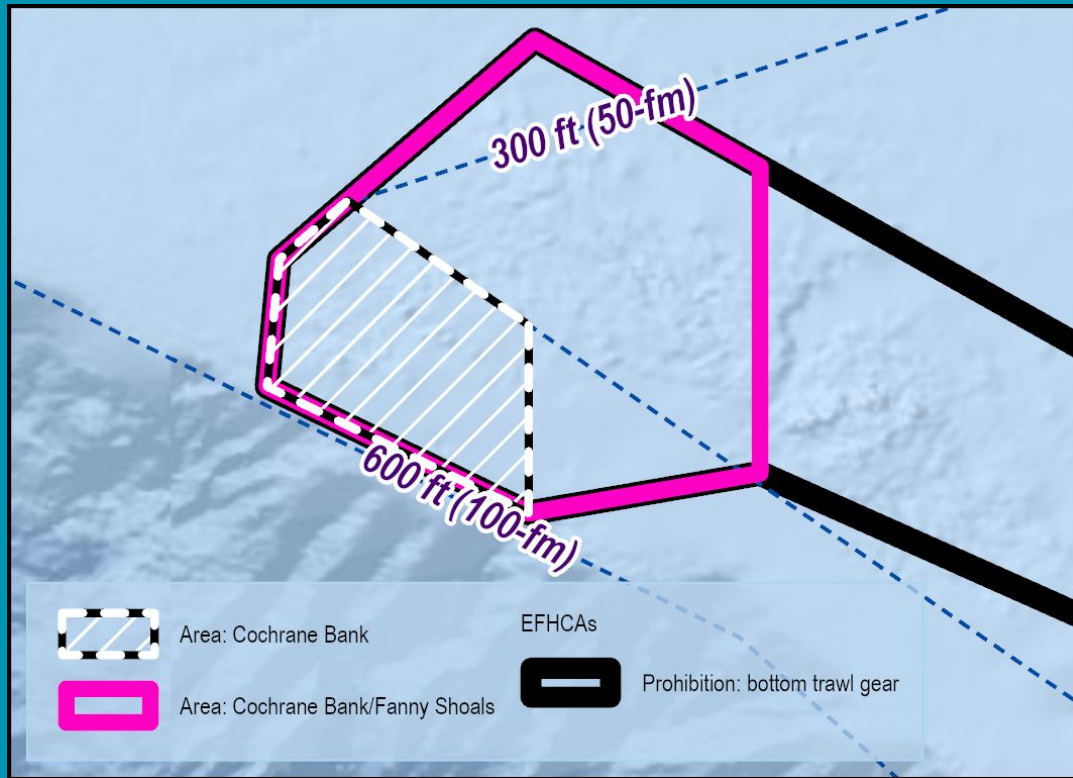
Target Coral Species  
Suitable for Outplanting:

- *Swiftia farallonesica*



*Swiftia farallonesica*  
credit: NOAA

# Cochrane Bank/Fanny Shoals (CBFS)



*Chromoplexaura marki*  
credit: CA Academy of Sciences

Two potential areas at Cochrane Bank/Fanny Shoals (CB/CBFS) that range in size from 4.58 nm<sup>2</sup> to 15.11 nm<sup>2</sup>.

# CB/CBFS Areas



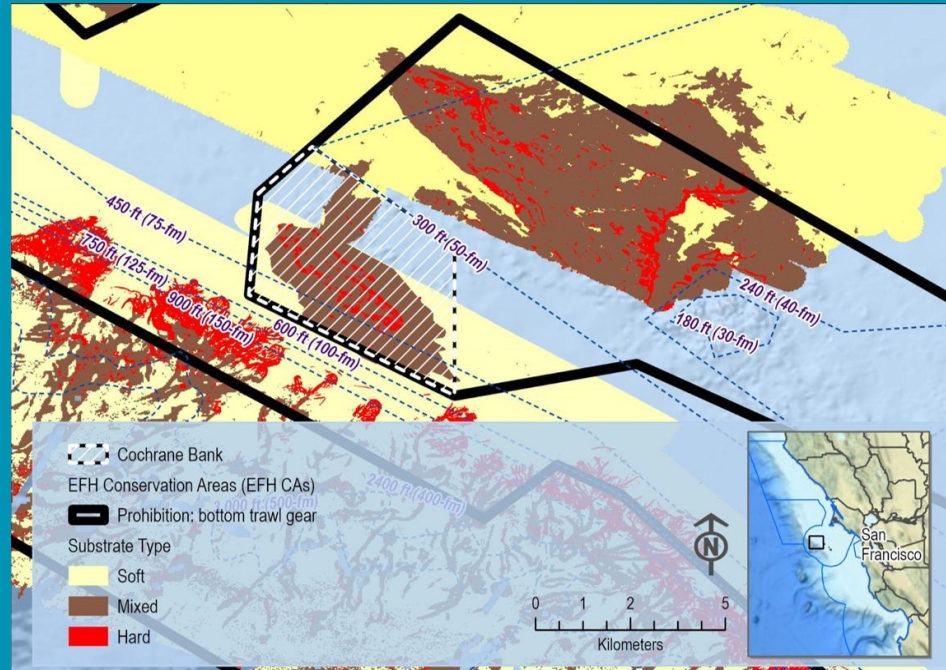
## CB

Size: 4.58 nm<sup>2</sup>

Depth Range: 49-87 fm  
(295-524 ft)

Target Coral Species  
Suitable for Outplanting:

- *Chromoplexaura marki*



*Chromoplexaura marki*  
credit: CA Academy of Sciences



Christmas Tree Coral with  
Yellowtail and Yelloweye Rockfish  
credit: NOAA

# CB/CBFS Areas



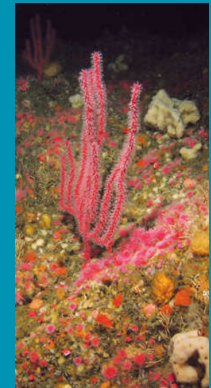
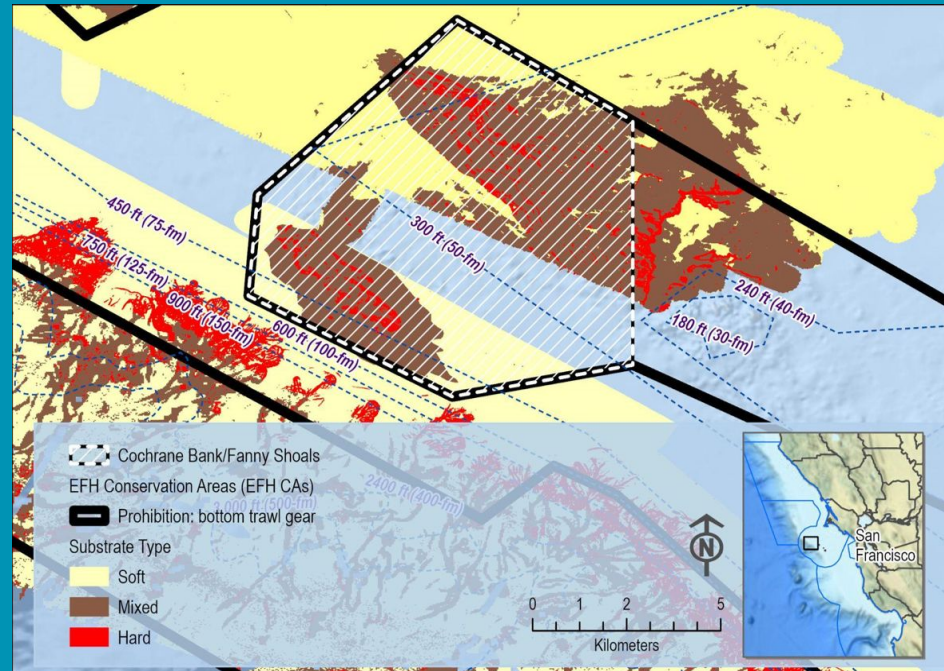
## CBFS

Size: 15.11 nm<sup>2</sup>

Depth Range: 32-87 fm  
(196-524 ft)

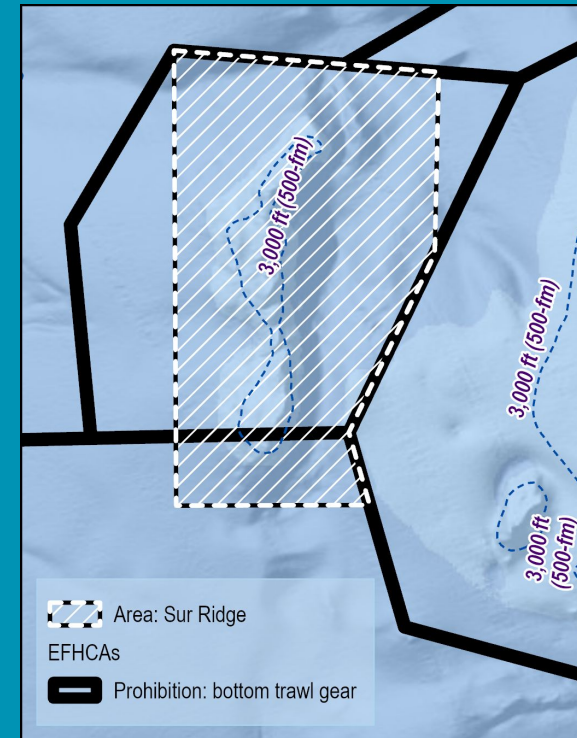
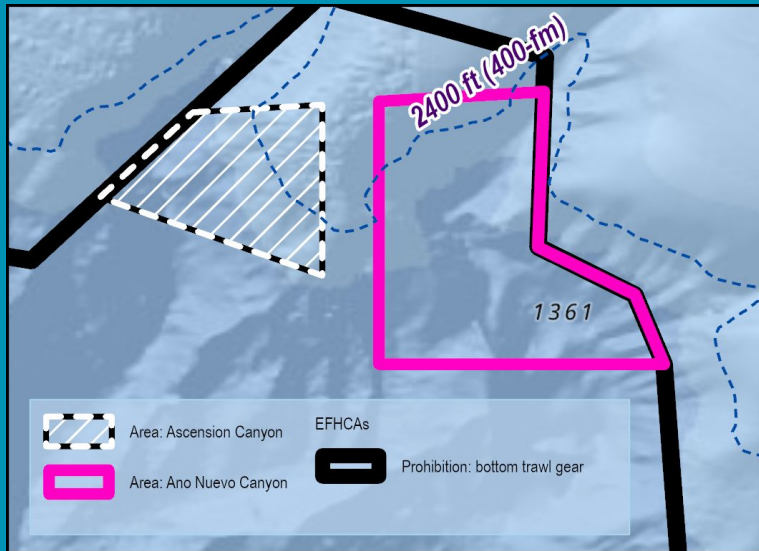
Target Coral Species  
Suitable for Outplanting:

- *Chromoplexaura marki*



*Chromoplexaura marki*  
credit: CA Academy of Sciences

# Monterey Bay National Marine Sanctuary Locations



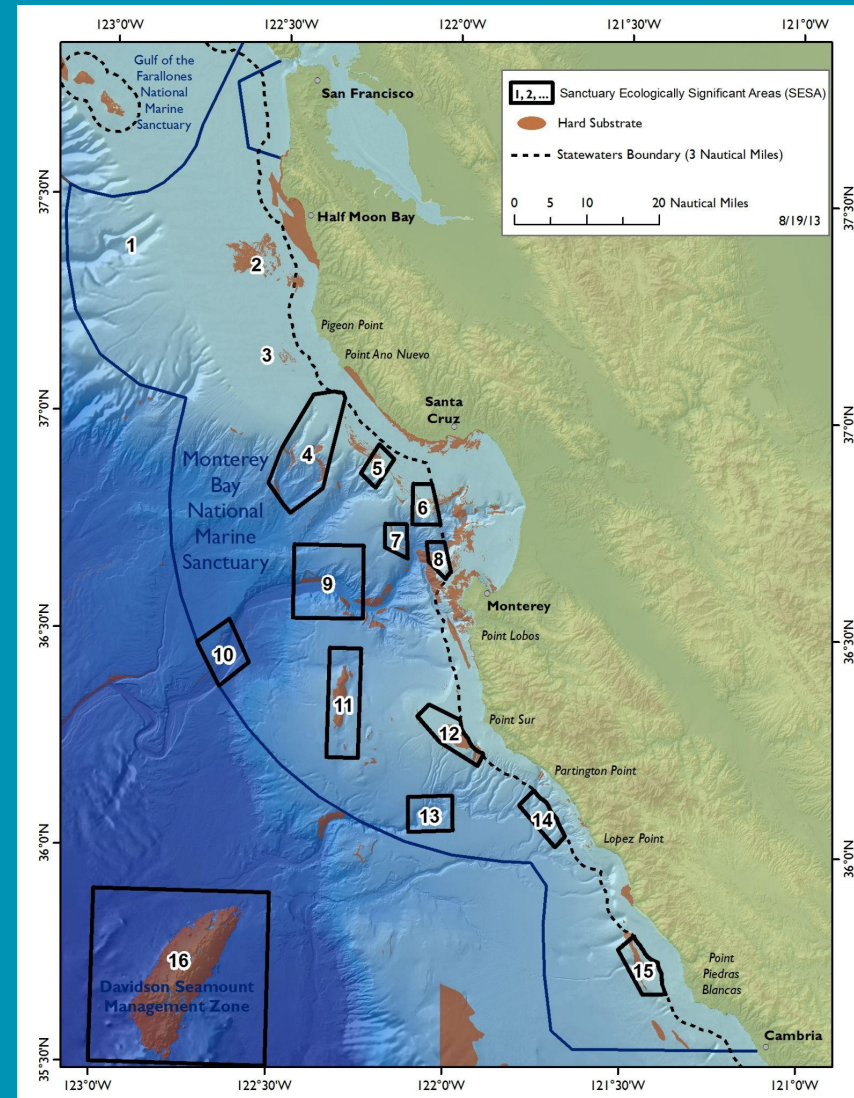
- Overview of Sanctuary Ecologically Significant Areas (ESAs)
- Two locations with depths ranging from 262 fm to 853 fm (the deepest of all locations)
- 3 separate areas

# Monterey Bay National Marine Sanctuary Locations

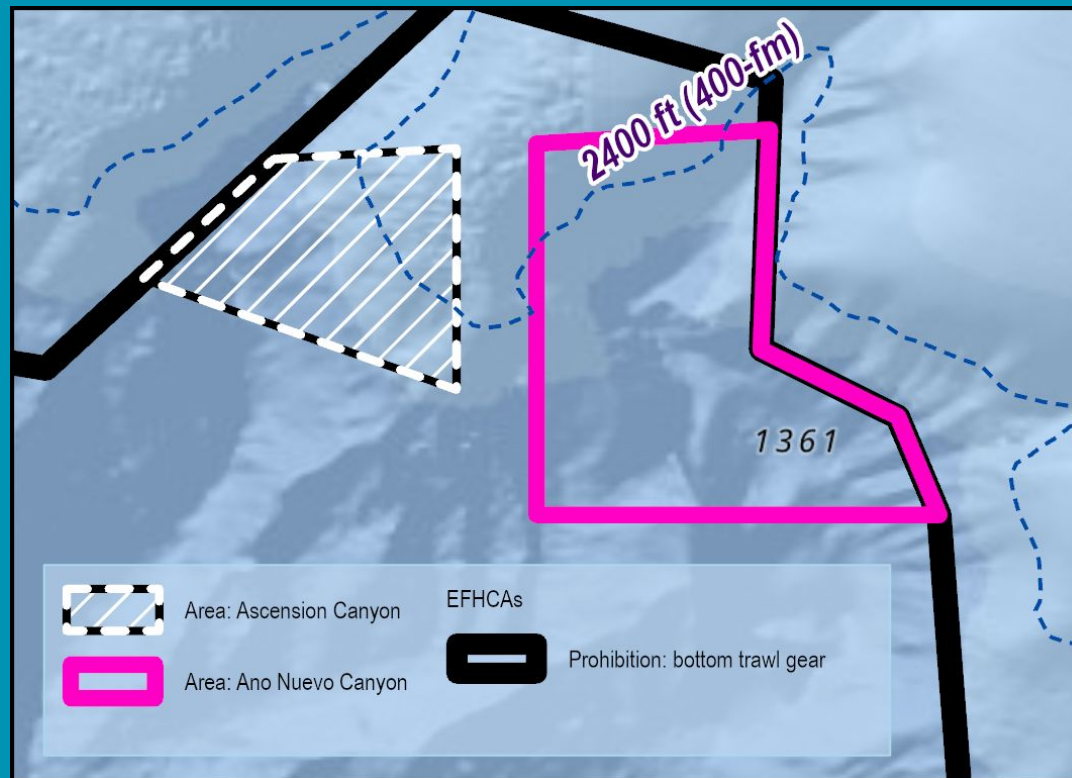


## Sanctuary Ecologically Significant Areas (SESAs)

- Areas that encompass remarkable, representative and/or sensitive marine habitats, communities and ecological processes
- focal areas for facilitating research to better understand natural and human-caused variation
- Informed by scientists, fishermen, conservation NGOs, and other agencies
- Over 150 layers of Geographic Information System (GIS) data to establish areas
- Data fed into process for selection of Año Nuevo/Ascension Canyon and Sur Ridge deep sea coral R&R areas



# Año Nuevo - Ascension Canyons Complex (ANC - AC)



Two potential areas at the Año Nuevo - Ascension Canyons Complex (ANC - AC) that range in size from 2.96  $\text{nm}^2$  to 6.5  $\text{nm}^2$ .

# ANC Area



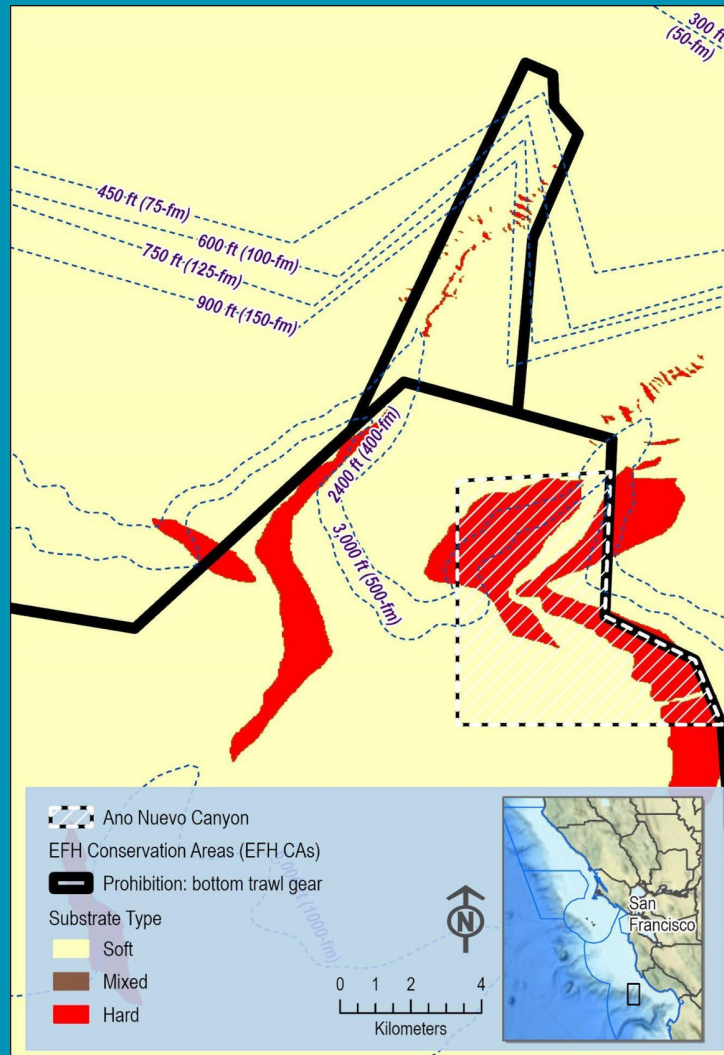
## ANC

Size: 6.5 sm<sup>2</sup>

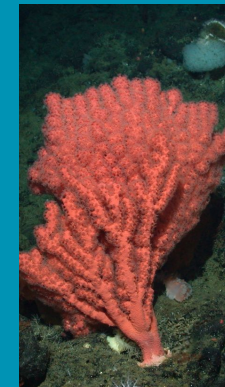
Depth Range:  
262–776 fm  
(1,574–4,658ft)

Target Coral Species:

- *Paragorgia* sp.
- *Keratoisis* sp.
- *Swiftia* sp.



*Keratoisis* sp.  
credit: MBARI



*Paragorgia* sp.  
credit: MBARI



# AC Area



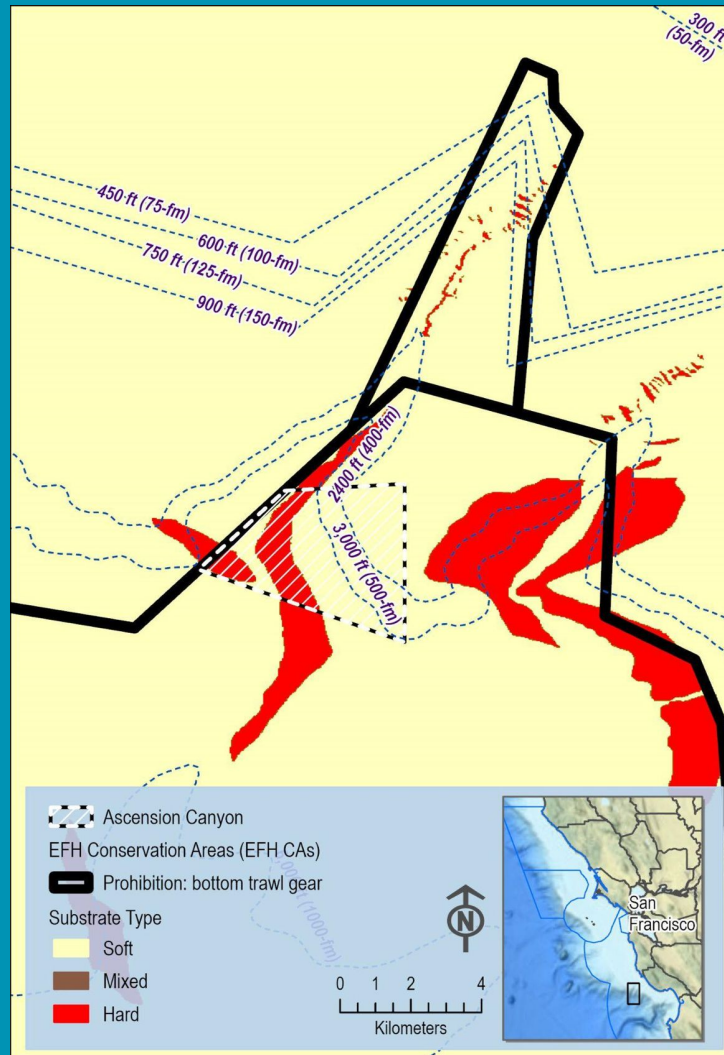
## AC

Size: 2.96 nm<sup>2</sup>

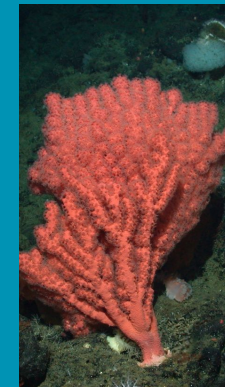
Depth Range:  
73–798 fm  
(1,640–4,790 ft)

Target Coral Species  
for Outplanting:

- *Keratoisis* sp.
- *Paragorgia* sp.



*Keratoisis* sp.  
credit: MBARI



*Paragorgia* sp.  
credit: MBARI

# Sur Ridge (SR)



Size: 36.64 nm<sup>2</sup>

Depth Range:  
448–853 fm (2,690–5,118 ft)

Target Coral Species:

- *Trissopathes* sp.
- *Lillipathes* sp.
- *Isidella tentaculum*
- *Keratoisis* sp.
- *Parastenella* sp.
- *Acanthogorgia* sp.
- *Swiftia kofoidi*
- *Paragorgia arborea*
- *Sibogagorgia cauliflora*
- *Corallium* sp.



# SR Area



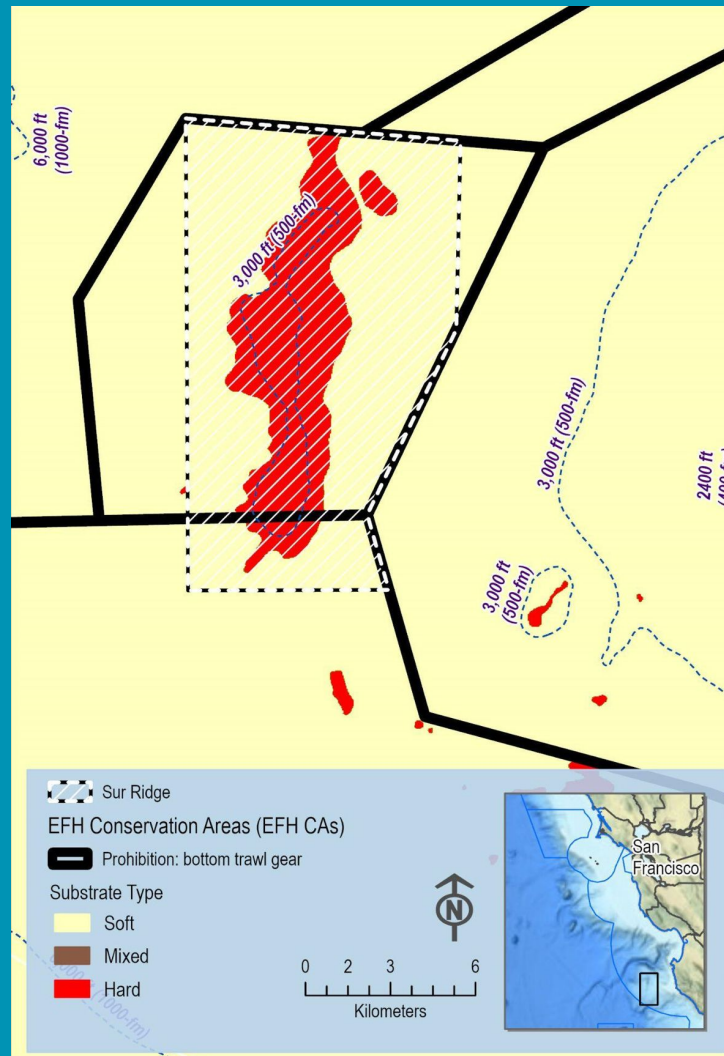
## SR

Size: 36.64 nm<sup>2</sup>

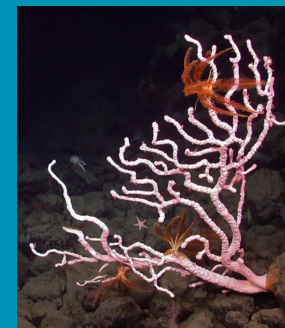
Depth Range:  
448-853 fm  
(2,690-5,118 ft)

Target Coral Species  
for Outplanting:

- *Keratoisis* sp.
- *Paragorgia* sp.



*Isidella tentaculum*  
credit: NOAA

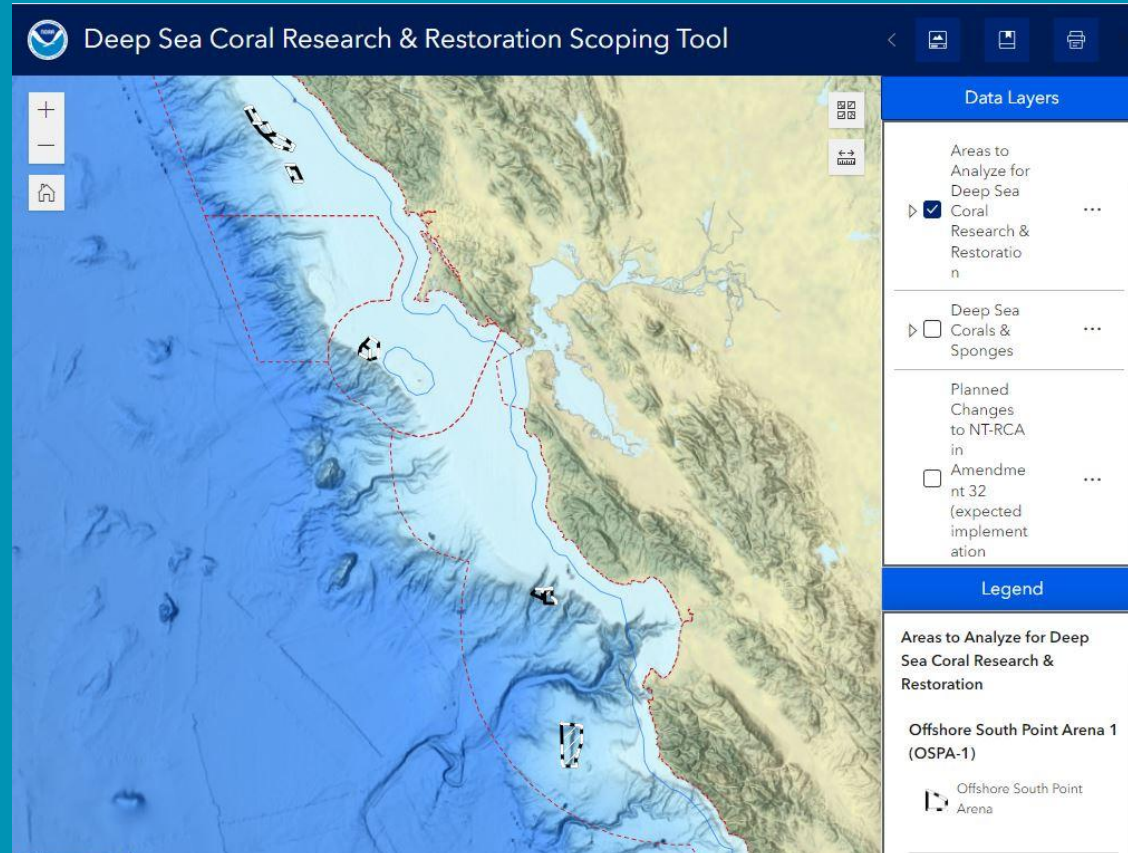


*Sibogorgia cauliflora*  
credit: NOAA

# Geospatial Tool



This tool accompanies the Deep Sea Coral Research and Restoration Scoping Document.



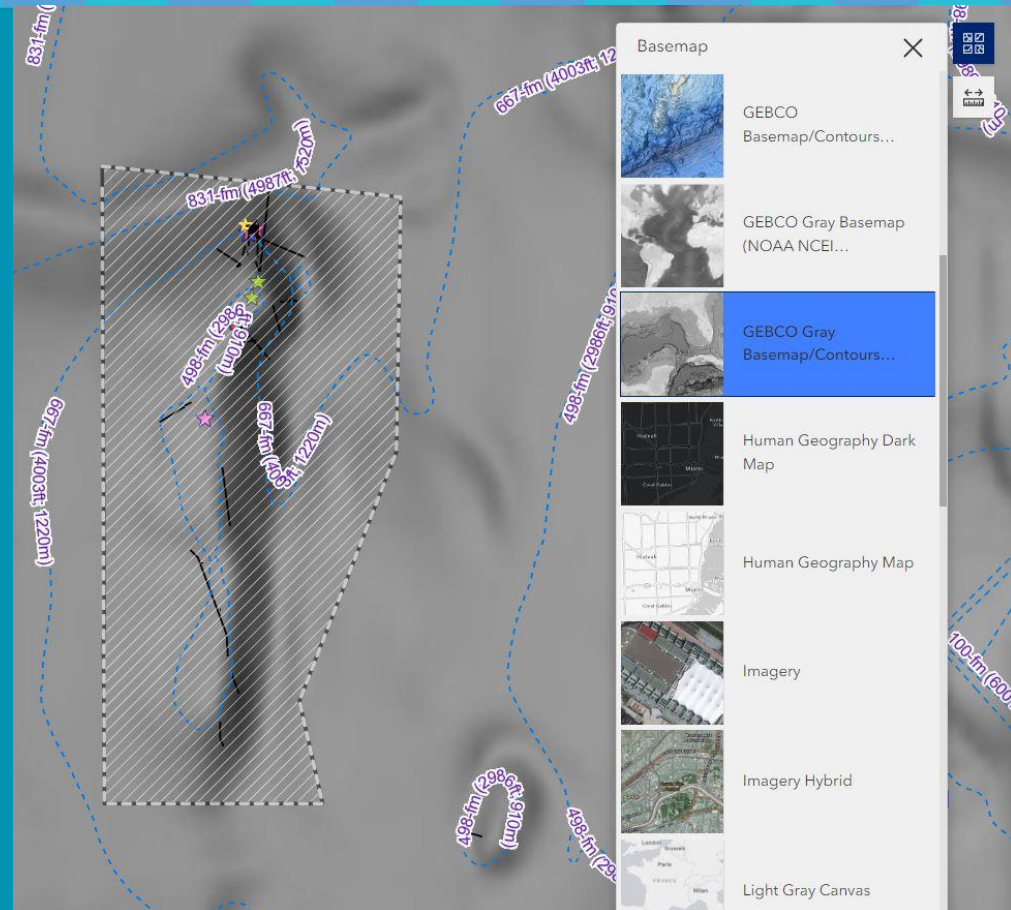
DSC Research and Restoration Geospatial Tool

# Geospatial Tool



Over 60 layers of data including:

- bathymetry
- deep sea corals
- seafloor habitat
- groundfish fishing data
- EFHCAs
- NT-RCA
- explored transects and deployed gear
- observations/ habitat suitability of relevant fish species



DSC Research and  
Restoration Geospatial Tool

Office of National Marine Sanctuaries  
National Oceanic and Atmospheric Administration

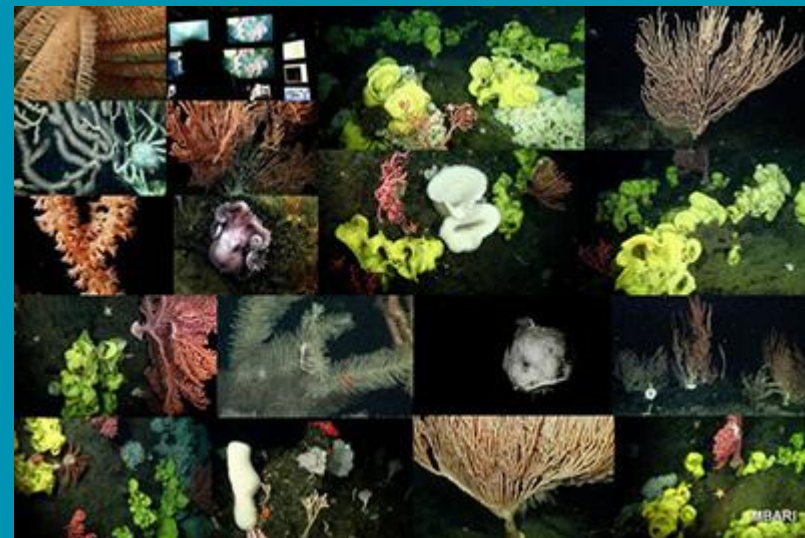


NATIONAL MARINE  
**SANCTUARIES**

# Questions?



- For general questions or additional information contact Darrell Gregg at [darrell.gregg@noaa.gov](mailto:darrell.gregg@noaa.gov)
- For technical questions related to the Geospatial Scoping Tool contact Sage Tezak at [sage.tezak@noaa.gov](mailto:sage.tezak@noaa.gov)



# Other Considerations



- EFH Conservation Area(s) boundaries that prohibit groundfish bottom trawling.
- Accessible to ports and available research vessels.
- Proximity between source and outplanting sites.



# Purpose details



- allow for both DSC research and restoration
- are of sufficient size to answer research and restoration questions related to species and communities at different depths
- are of sufficient size to outplant DSC for restoration
- include buffers for DSC propagule dispersion and establishment of additional populations
- further understanding of DSC community and ecosystem contributions to Essential Fish Habitat and other socioeconomically important biota

# How We Got Here

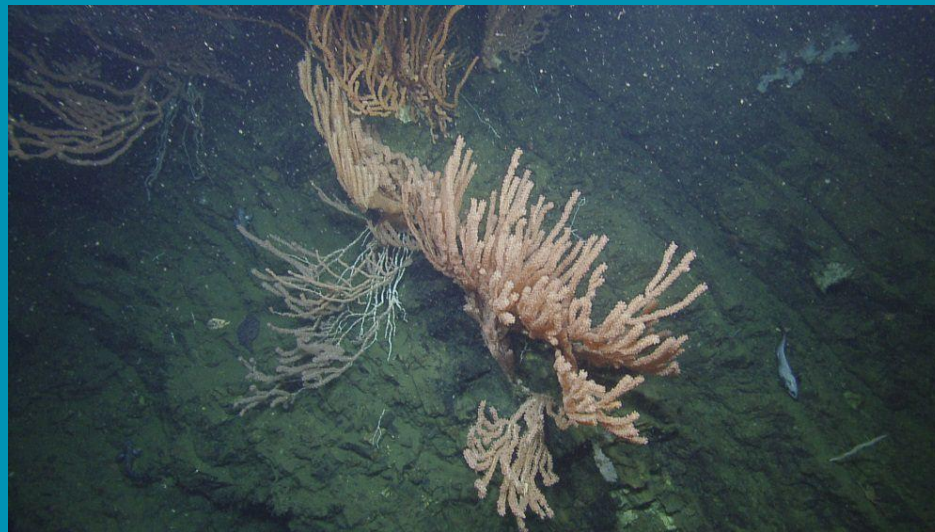


- Deep-sea coral habitat has been impacted by lost or sunken vessels and large objects since the establishment of the sanctuaries. The most recent large incident was the sinking of the YFD-70 Dry Dock (size).
- Deep sea coral restoration has proven successful, and is a requirement for restoring natural resource damages in the sanctuaries.
- The designation of DSC research and restoration areas would allow planning and implementation without intentional impacts to the seafloor, including bottom-contact fishing gear.
- The intent is to address multiple future scenarios without having to approach the Council each time a sanctuary resource is damaged.

# Purpose of Briefing



The purpose of this briefing is to provide a high-level overview of the scoping document and a geospatial tool for a potential public process for the Pacific Fishery Management Council to consider designating areas within Greater Farallones and Monterey Bay National Marine Sanctuaries that allow for both for deep-sea coral (DSC) research and restoration.



Bamboo and Bubblegum corals  
*credit: NOAA*