Protecting Deep-sea Corals and Sponges (DSC) through the Pacific Fishery Management Council and the state of California: Case Study at Central Coast Sanctuaries

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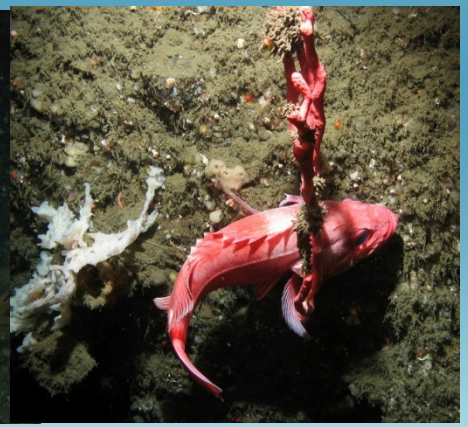
Ocean Climate Summit 2019

Yellowtail and Canary Rockfish Hovering over Biogenic Habitat: Rittenburg Bank

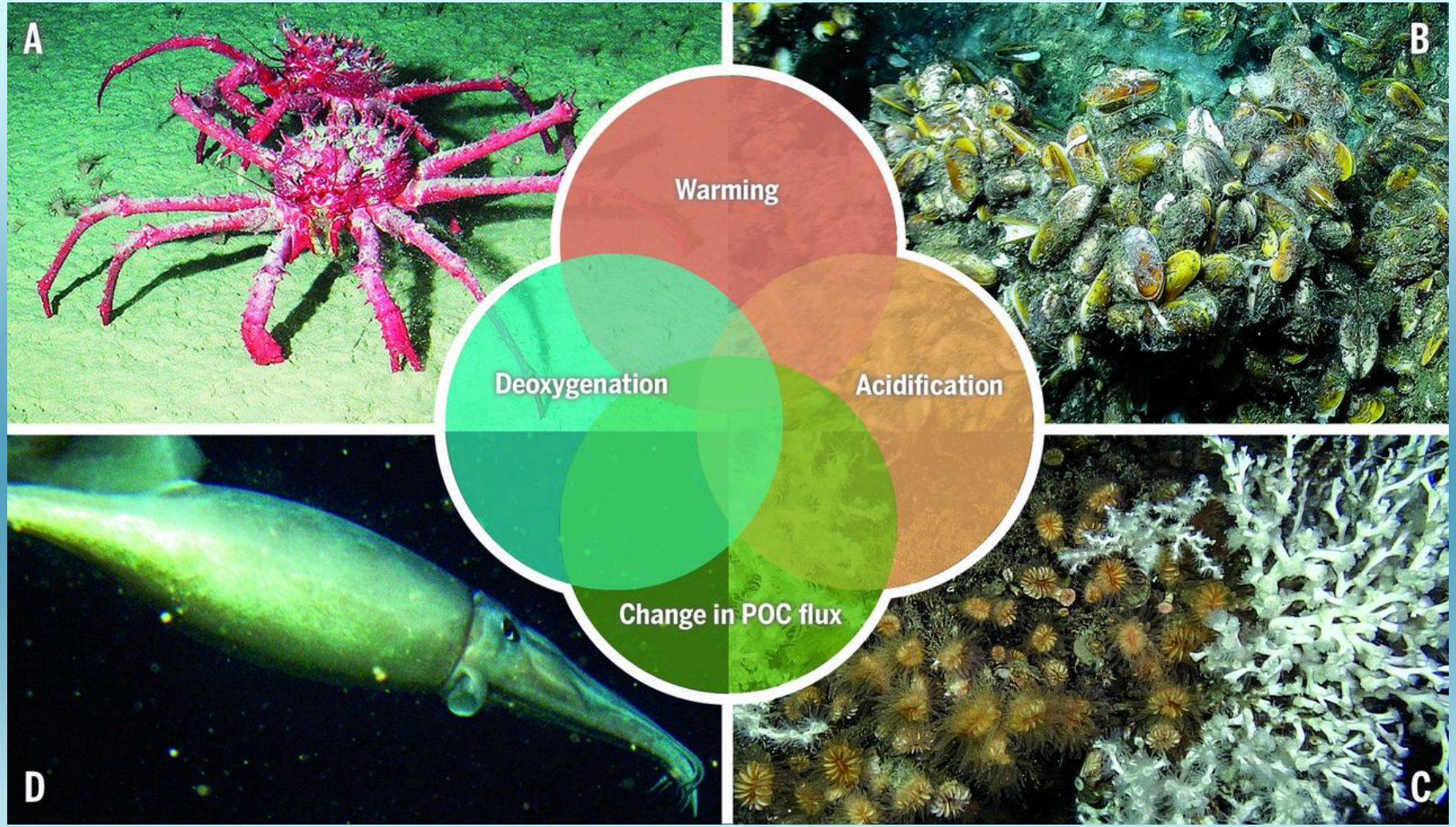
Greenspotted Rockfish resting on a Yellow Vase Sponge with Crinoids and Exposed Rock: "Cochrane" Bank



Red Bubblegum Coral (*Paragorgiidae)* and Rockfish (short spined thornyhead): Farallon Escarpment

Research • Education • Conservation • Stewardship

Winners and losers from exposure to interacting climate stressors.



Lisa A. Levin, and Nadine Le Bris Science 2015; 350:766-768

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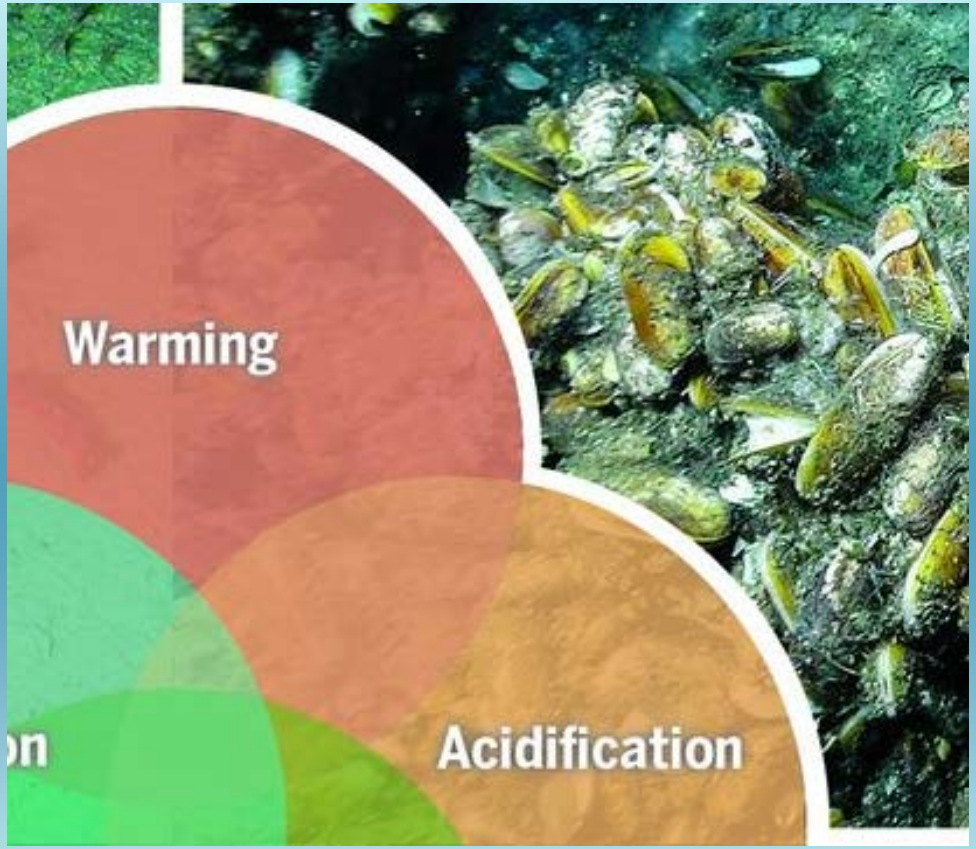

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Science
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Research • Education • Conservation • Stewardship

Vulnerability of Deep-Sea Corals and Sponges (DSC) to impacts from Climate Change on the West Coast

- **Ocean Acidification is predicted to affect corals worldwide, but maybe more immediately in the North Pacific .** ***(Guinotte et al. 2006)***

- **The Intergovernmental Panel on Climate Change (IPCC) concluded that ocean warming has affected DSC at least down to 2000m.** *(IPCC Fifth Assessment Report)*

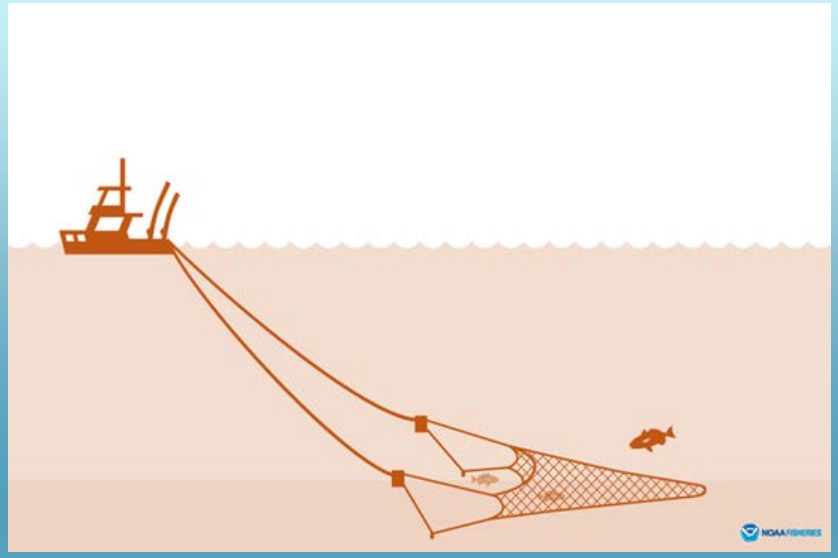
Christmas Tree Coral and Rosy Rockfish: "Cochrane" Bank

Vulnerability of Deep-Sea Corals and Sponges (DSC) to impacts from Climate Change on the West Coast

THREATS	Alaska		West Coast	
	2007	2017	2007	2017
Bottom Trawl Fishing Impacts	High	High	High	High
Other Bottom Fishing Impacts	Low - Medium	Medium	Low - Medium	Low - Medium
Climate Change	Unknown	Unknown	Unknown	Unknown
Ocean Acidification		Medium		Medium

Hourigan TF, Etnoyer PJ, Cairns SD (2017). The State of Deep-sea Coral and Sponge Ecosystems in the United States. NOAA Technical Memo. 467 p.

Bottom Contact Fishing & Coral and Sponge Habitat



Bottom trawling is the most immediate and serious threat. *(Hourigan TF, Etnoyer PJ, Cairns SD, 2017; Ragnarsson et al. 2017)*

Other bottom contact gear may be used in steep and rocky habitats that are inaccessible for trawling and can be placed directly on a DSC colony. *(Baer et a. 2010, Sampaio et al. 2012)*

Crab Trap at “Cochrane” Bank

The risk posed by fishing pressures has been reduced through several actions at the state and federal level in this region and a current proposed federal action will continue this trend.

Quillback and Juvenile Yelloweye Rockfish: Rittenburg Bank

Protecting DSC: CA State Waters Bottom Trawl Closures

Senate Bill No. 1459

CHAPTER 721

An act to amend Sections 8495 and 8842 of, to add Sections 8841 and 8494 to, and to repeal Section 8836.5 of, the Fish and Game Code, relating to fishing.

[Filed with Secretary of State September 23, 2004. Approved by Governor September 23, 2004.]

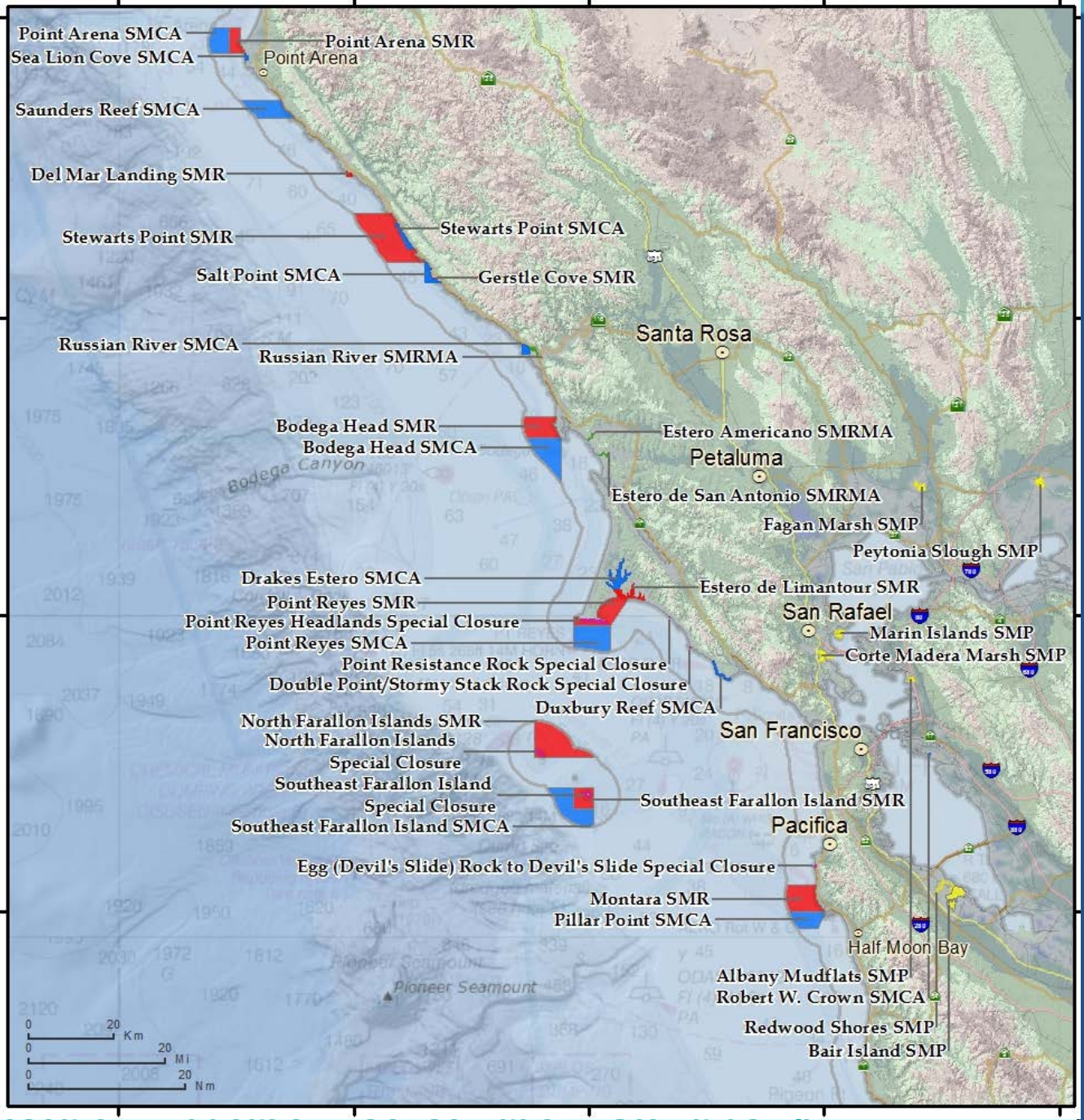
LEGISLATIVE COUNSEL'S DIGEST

SB 1459, Alpert. Fishing: trawl nets.

RESULT: In 2005 all state waters within Greater Farallones National Marine Sanctuary and Northern Monterey Bay National Marine Sanctuary (off San Mateo County) are closed to bottom trawling.

CA North-Central Coast Protection from Bottom Contact Gear:

State Marine Reserves and Marine Conservation Areas Established in 2010



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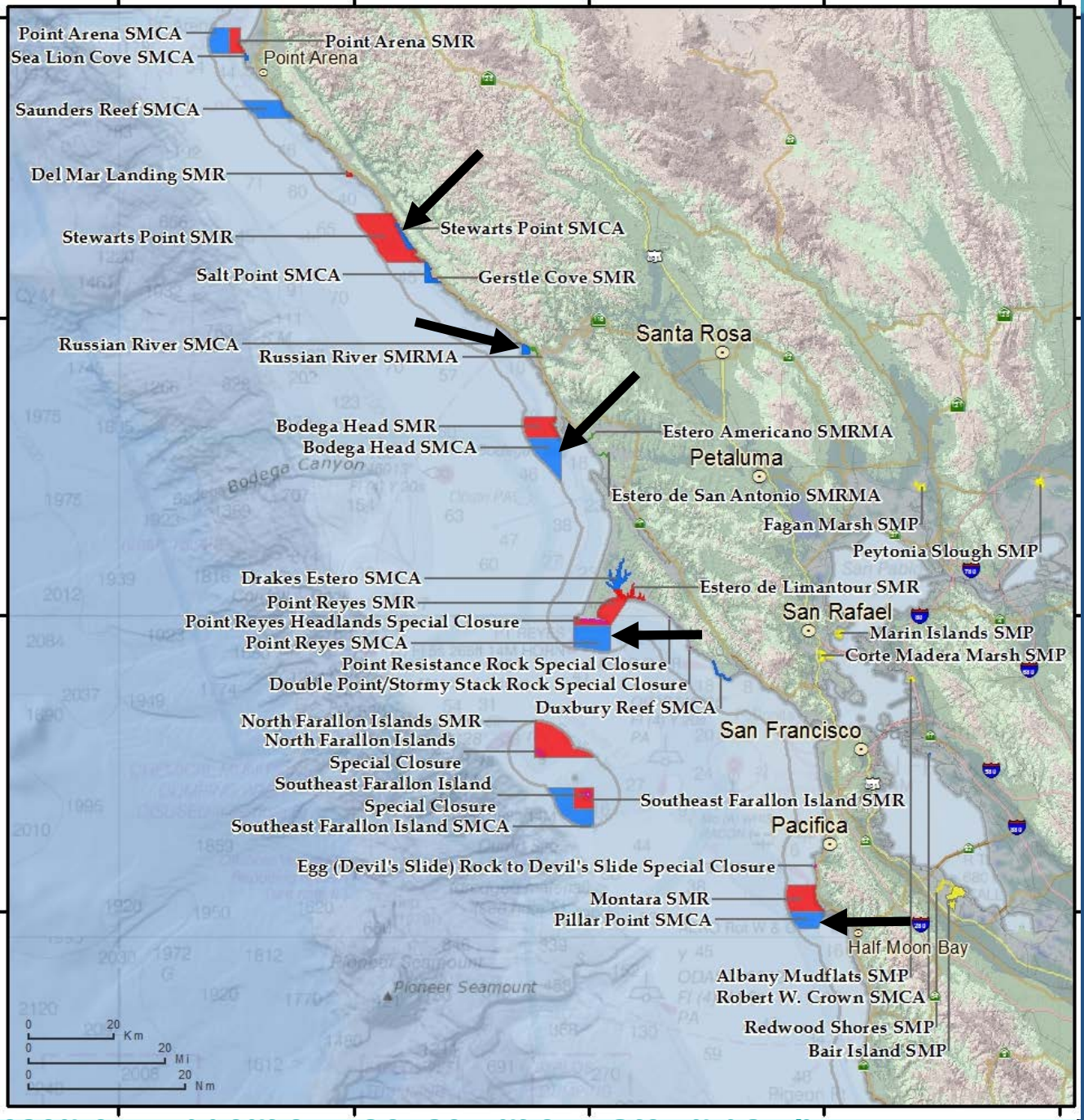
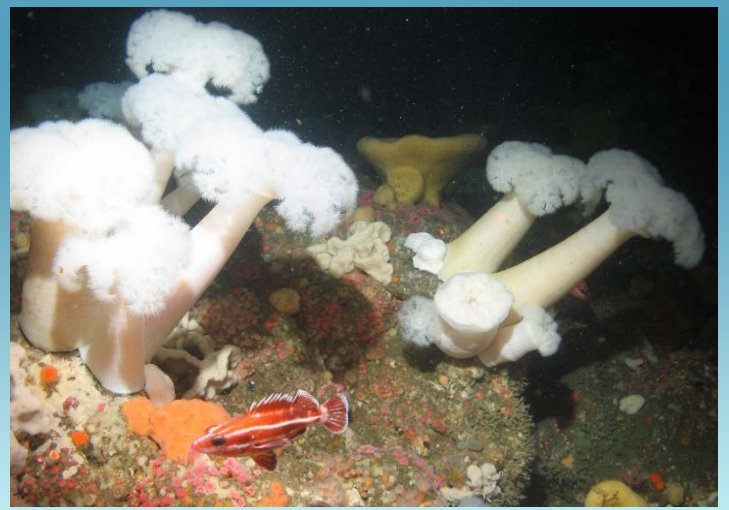


Essential Fish Habitat (EFH) & Pacific Council Responsibility

- **The Pacific Fisheries Management Council is responsible for minimizing adverse effects from fishing on EFH to the extent practicable.**

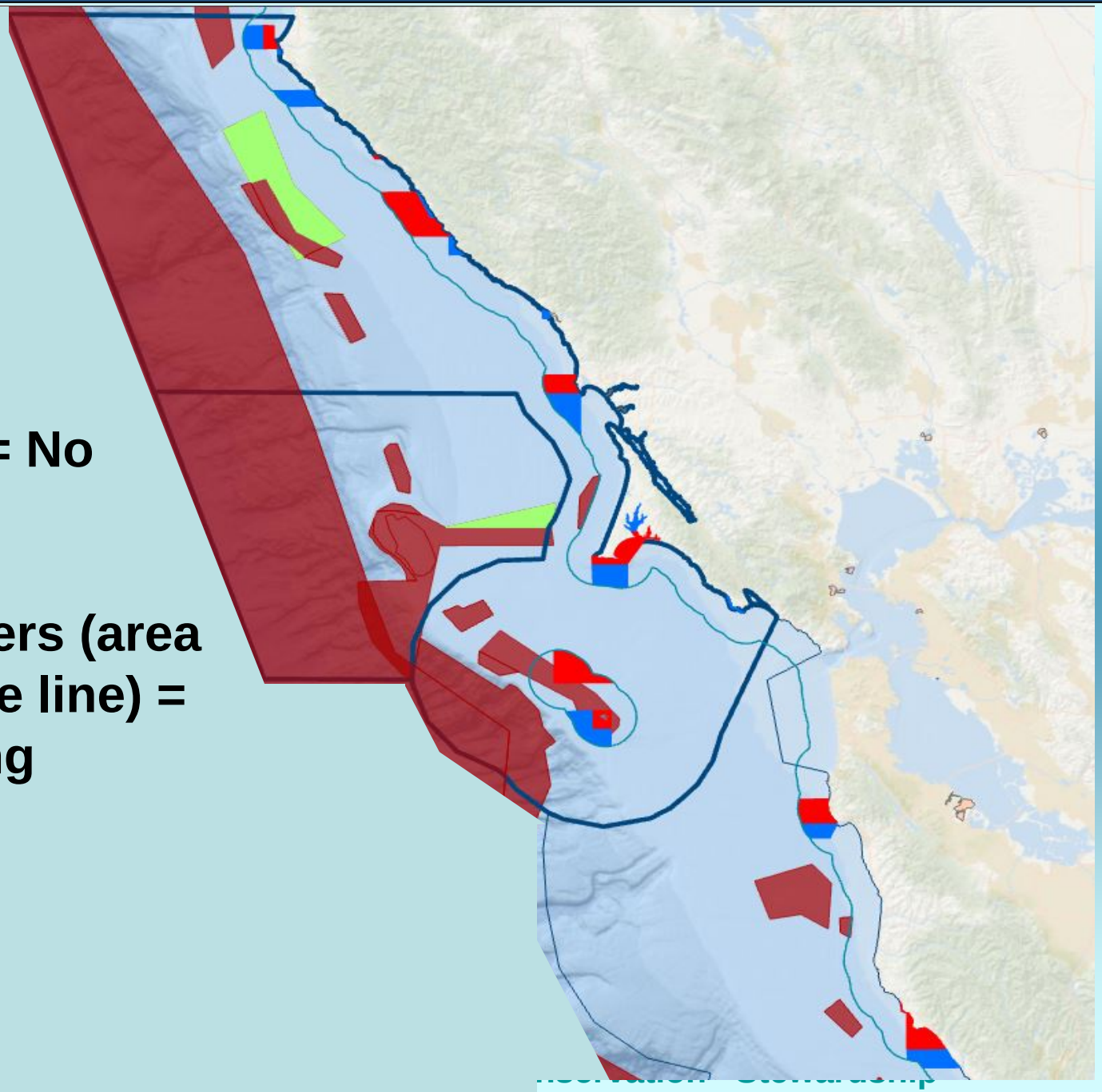
- **For benthic fish, this is accomplished through creating Groundfish EFH Conservation Areas in habitats that can include DSC.**

Rockfishes in Crevices, and Aurora Rockfish Habitat with Sponge and Sun Star



Juvenile Yelloweye Rockfish with *Metriduim*, Biogenic Habitat, and Exposed Rock

Protecting DSC



Dark Red= No trawling

State Waters (area within blue line) = No trawling

Protections within Sanctuaries

Federal/EFH Closures- No Trawling	6,519 km^2
State Waters – No Trawling	1,046 km^2
Percentage of Sanctuaries	42%
State Waters – No bottom contact	327 km^2
Federal/EFH Closures – No bottom contact (Cordell Bank)	68 km^2

Caveats

- Not all of this habitat is DSC habitat:
  - The majority of state waters is shallower than DSC depths
  - A large percentage of these areas in federal waters are considered soft bottom or areas with no data
- The majority of the areas are on the continental slope where there is much less or no fishing pressure.

QUESTIONS?

Ledge Habitat, Rockfish, Brittle Stars and Crinoids: The Football