

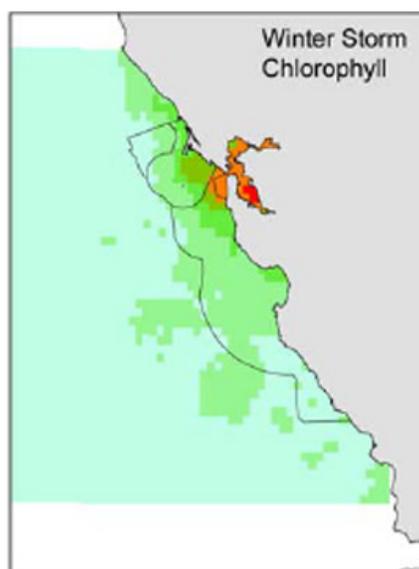
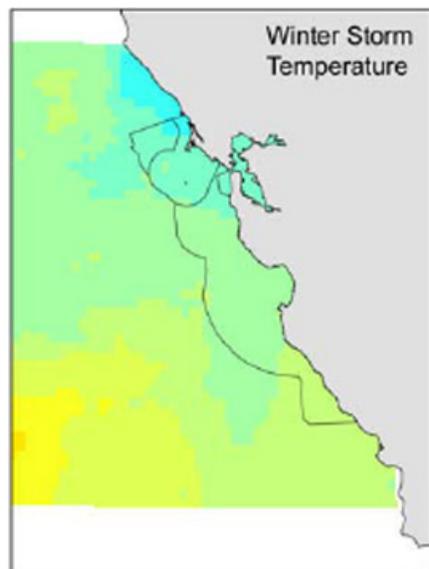
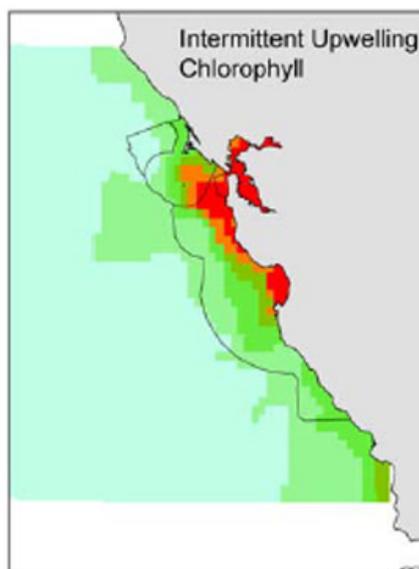
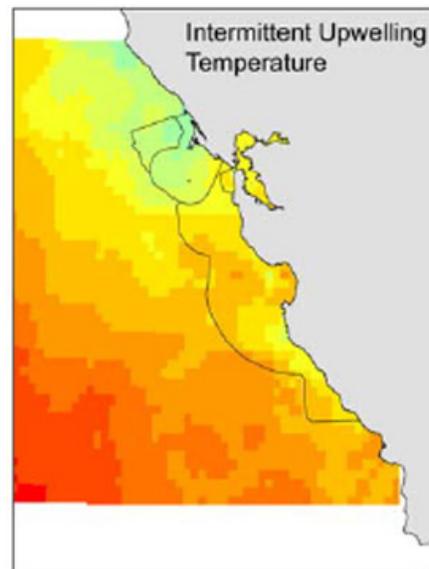
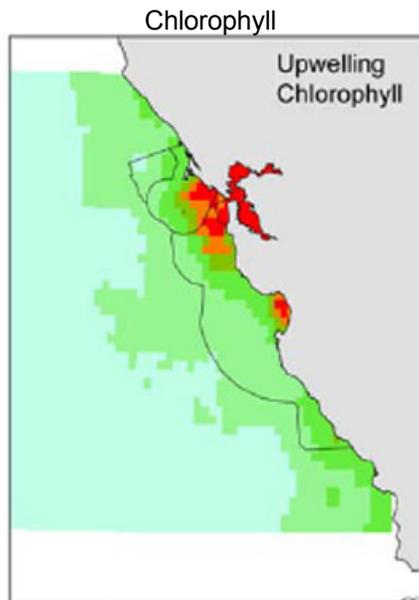
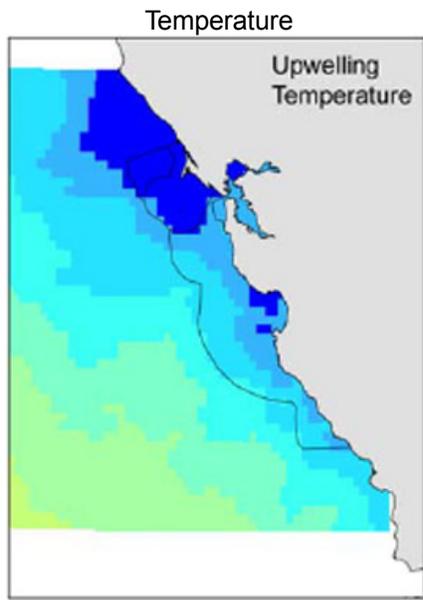
Source: John Largier, Bodega Marine Lab, University of California, Davis
 Base map provided by The Ocean Conservancy

Schematic of Major Oceanographic Features off the North Central Coast *Marine Life Protection Act*

October 1, 2007

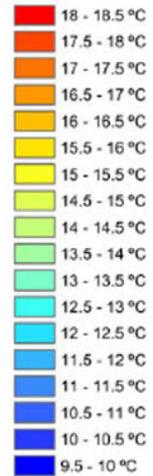


Blue zones indicate upwelling centers which are localized at capes (Pt Arena, Pigeon Pt) or expand along much of the coast, while blue arrows indicate plumes of upwelled waters moving south and offshore from upwelling centers. Green arrows indicate plumes of San Francisco Bay outflow, moving either south (during upwelling) or north (during weak winds or winter). Strong winter outflow from rivers like the Russian and Gualala is demarcated by brown arrows. Not shown is the retention zone in Drakes Bay and smaller zones in Bodega Bay and Half Moon Bay. These schematic patterns change with the wind, land runoff, seasons and years.

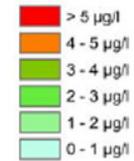


Temperature and Chlorophyll

Temperature



Chlorophyll



National Ocean Service
National Centers for Coastal Ocean Science
Office of National Marine Sanctuaries



May 02, 2007

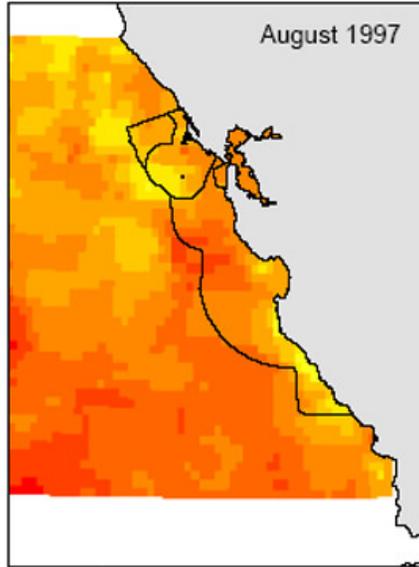
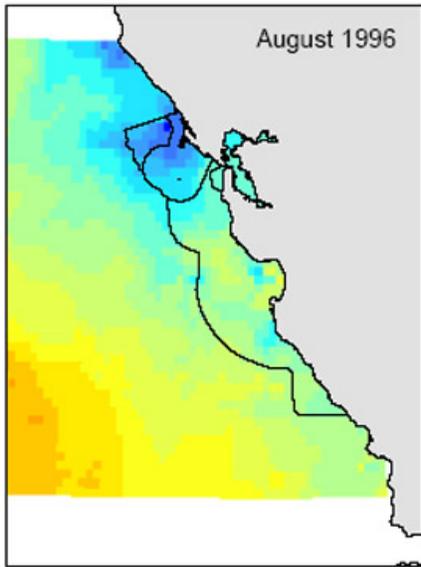


Source: NOAA Remote Sensing Team, National Oceanographic Data Center and NASA SeaWiFS; Seasonal sea surface temperature and chlorophyll. These maps were developed summarizing monthly averages for temperature (1996 - 1999) and chlorophyll (1998 - 2000) in a 9km grid. Maps are representative of upwelling, intermittent upwelling and winter storm periods.

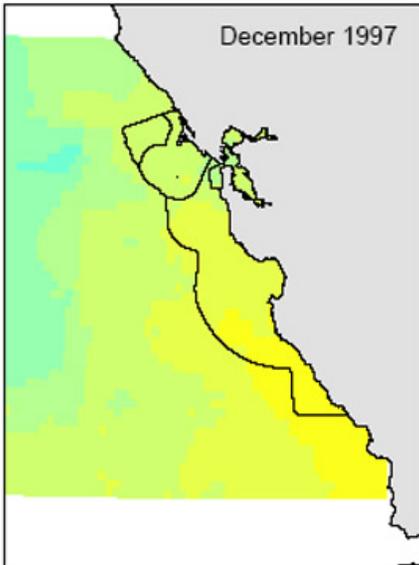
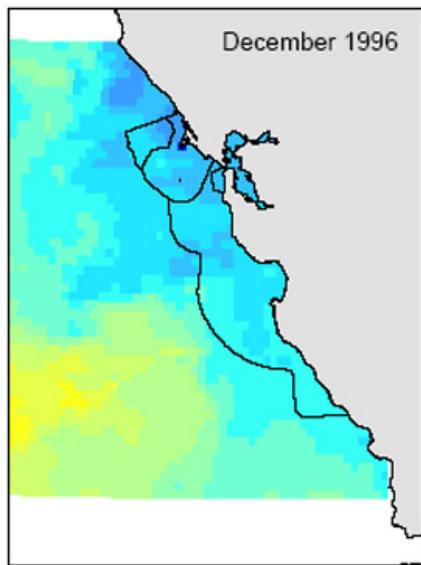
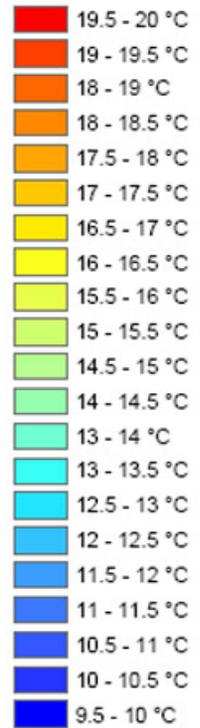
Normal

El Niño

Marine Life Protection Act



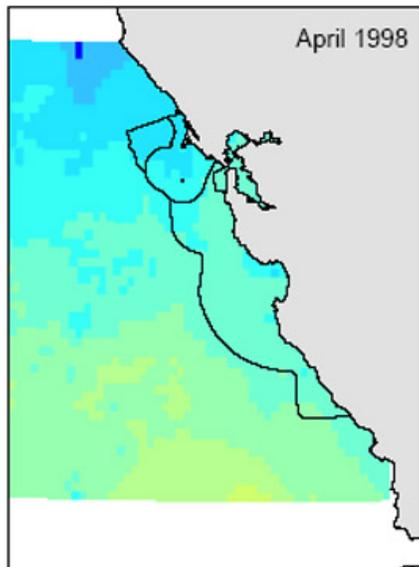
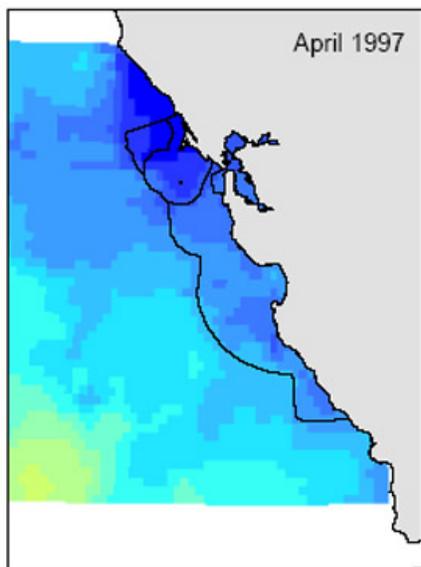
Temperature Normal vs. El Niño year



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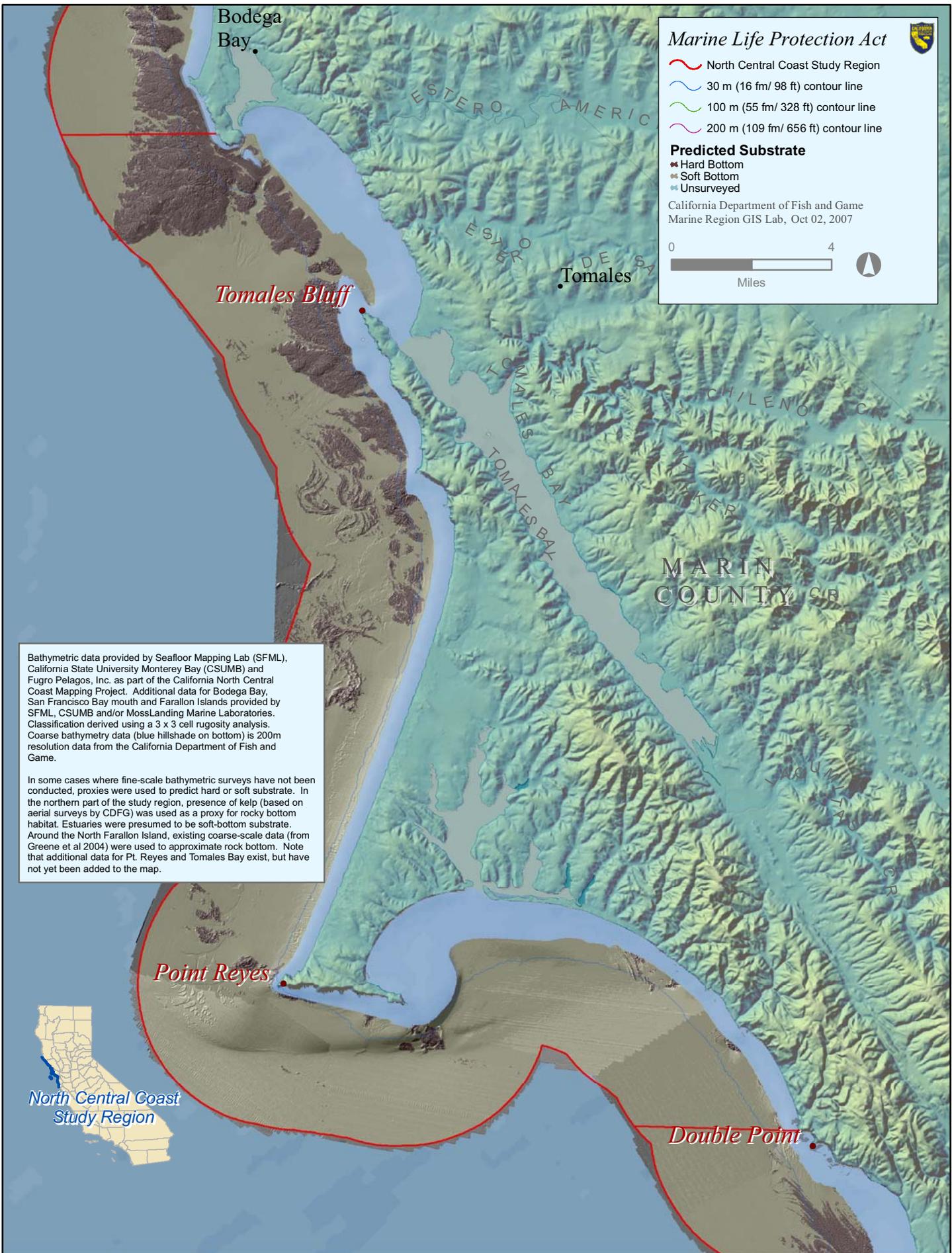
May 02, 2007



Source: NOAA, National Oceanographic Data Center; Sea surface temperatures prior to El Niño (August 1996 - April 1997) and during El Niño (August 1997 - April 1998). Data presented are averaged for the given month and summarized in a 9km grid.

Map 4b Oceanographic Patterns

Normal and El Niño Year Temperatures



Map 3 c *Soft and Hard Bottom Habitats*

Subregion 3 - Bodega Head to Double Point



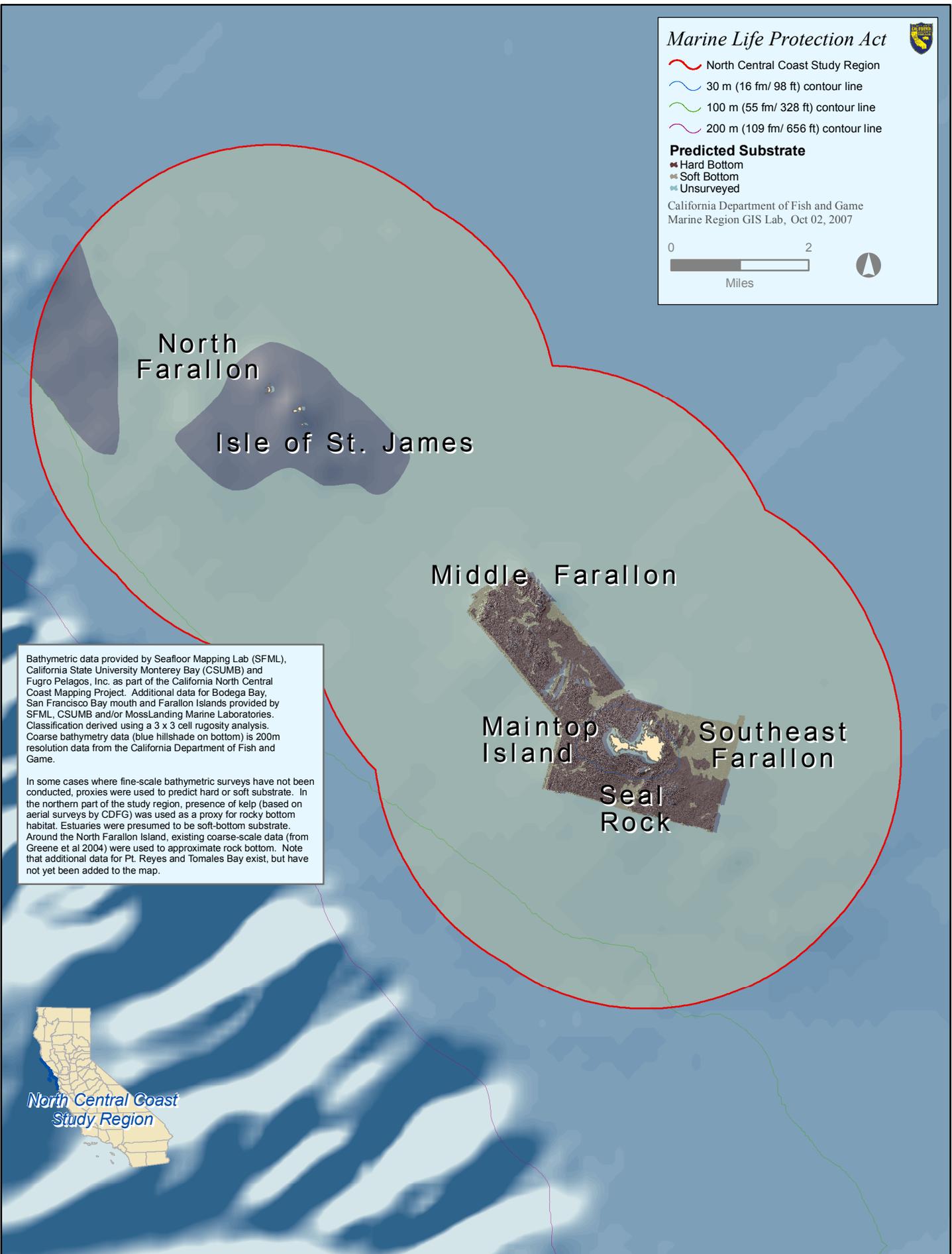
Map 3 d *Soft and Hard Bottom Habitats*

Subregion 4 - Double Point to Point San Pedro



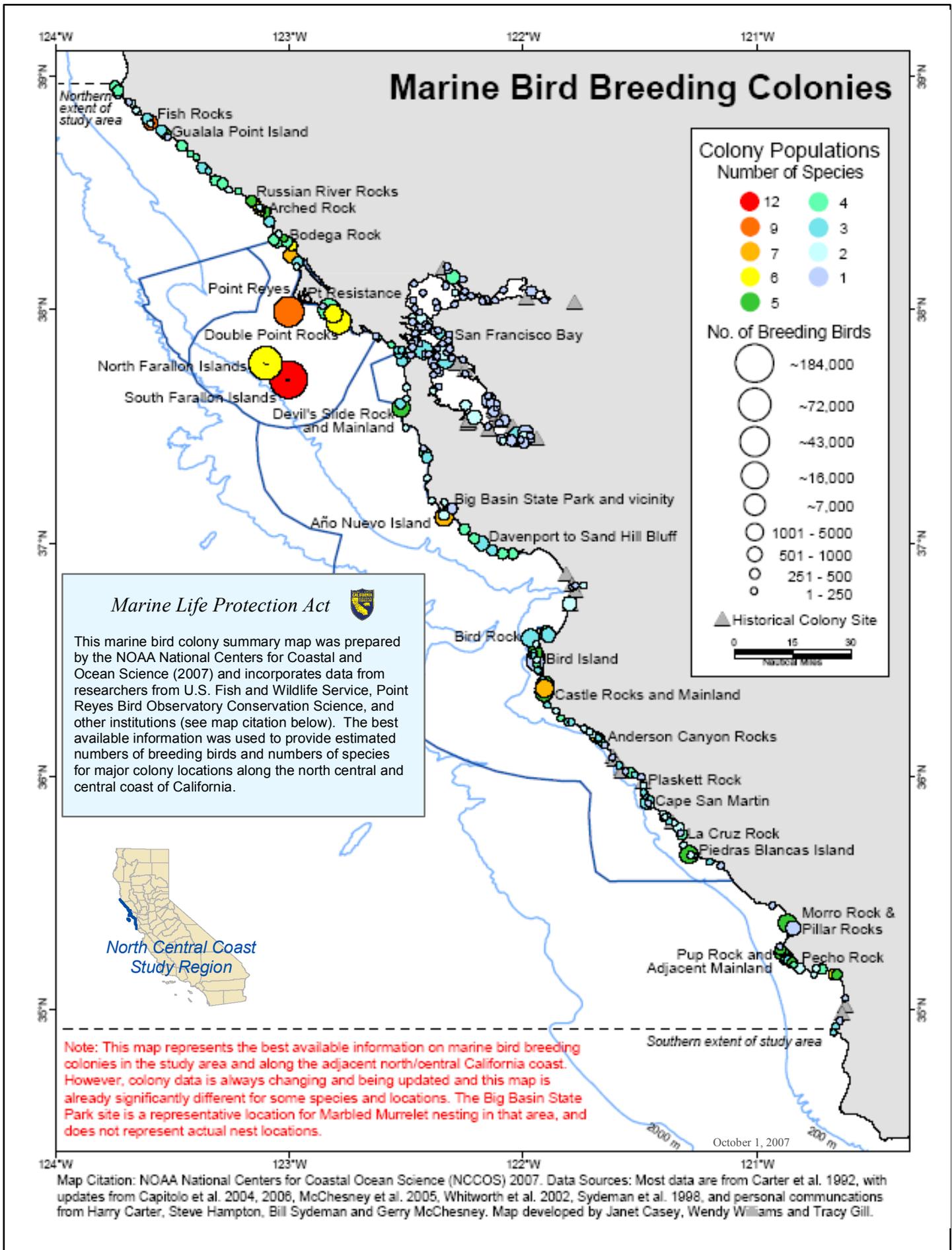
Map 3 e Soft and Hard Bottom Habitats

Subregion 5 - Point San Pedro to Pigeon Point



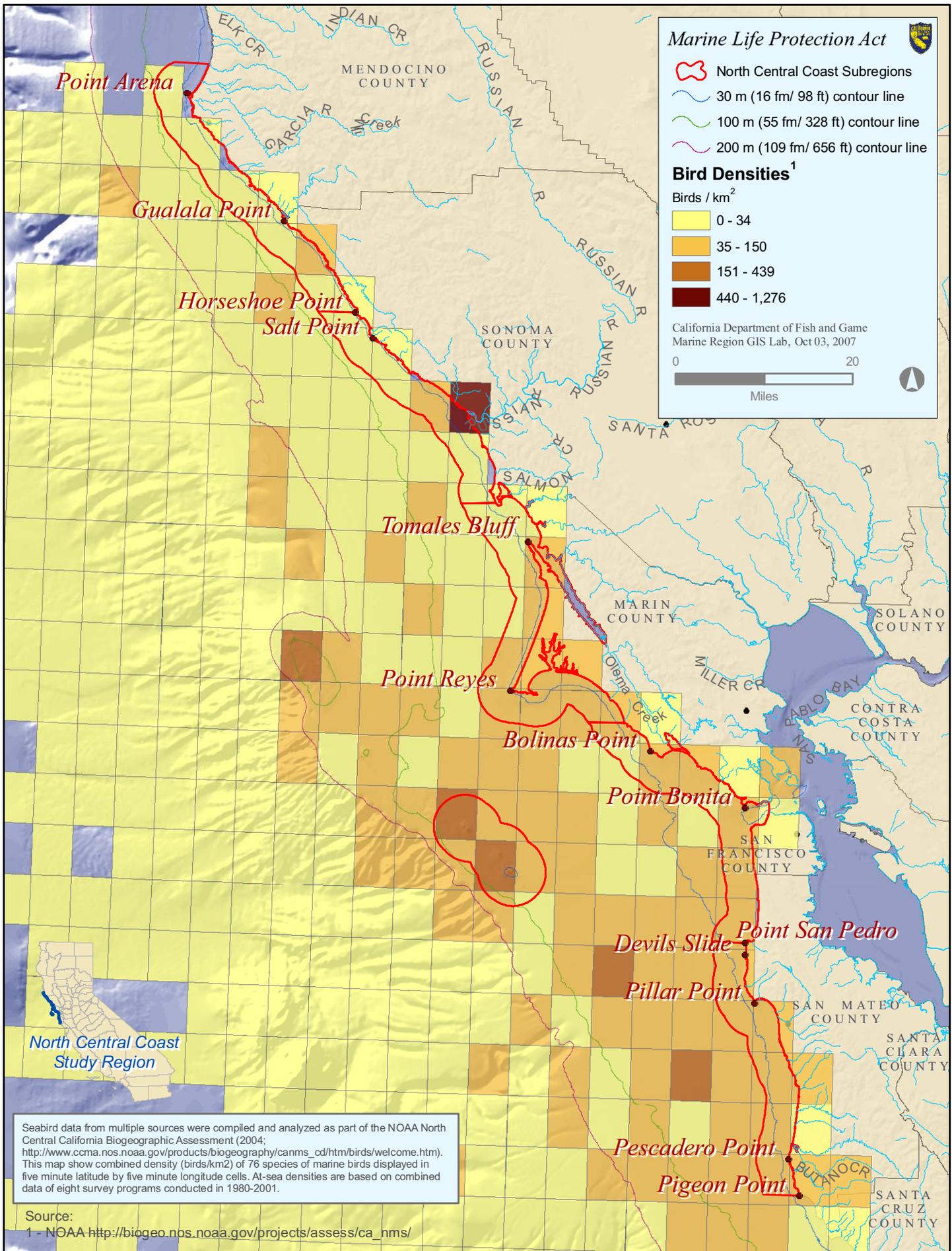
Map 3 f *Soft and Hard Bottom Habitats*

Subregion 6 - Farallon Islands



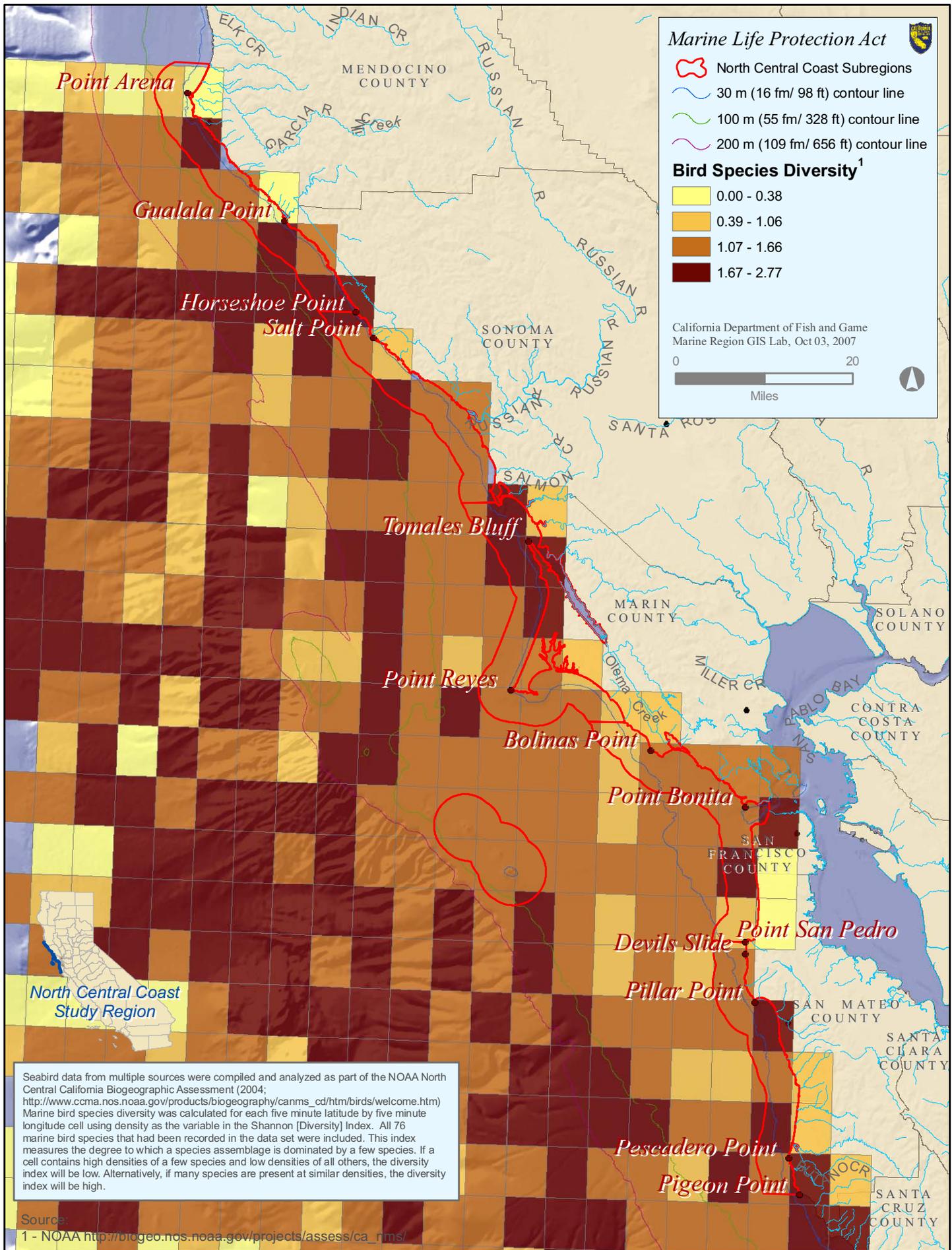
Map 5a *Marine Bird Breeding Colonies*

North Central Coast Study Region



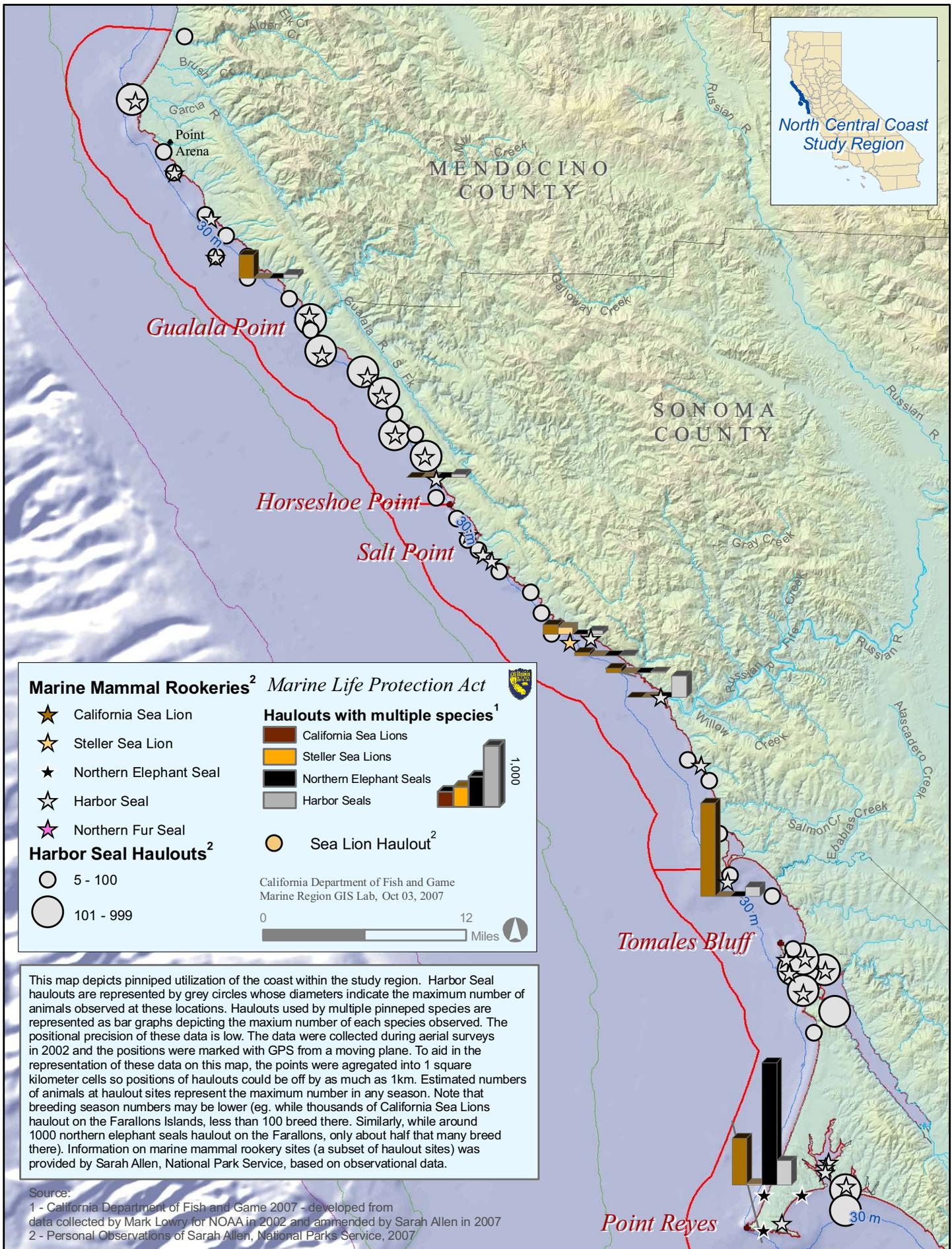
Map 5b Marine Bird Density

North Central Coast Study Region

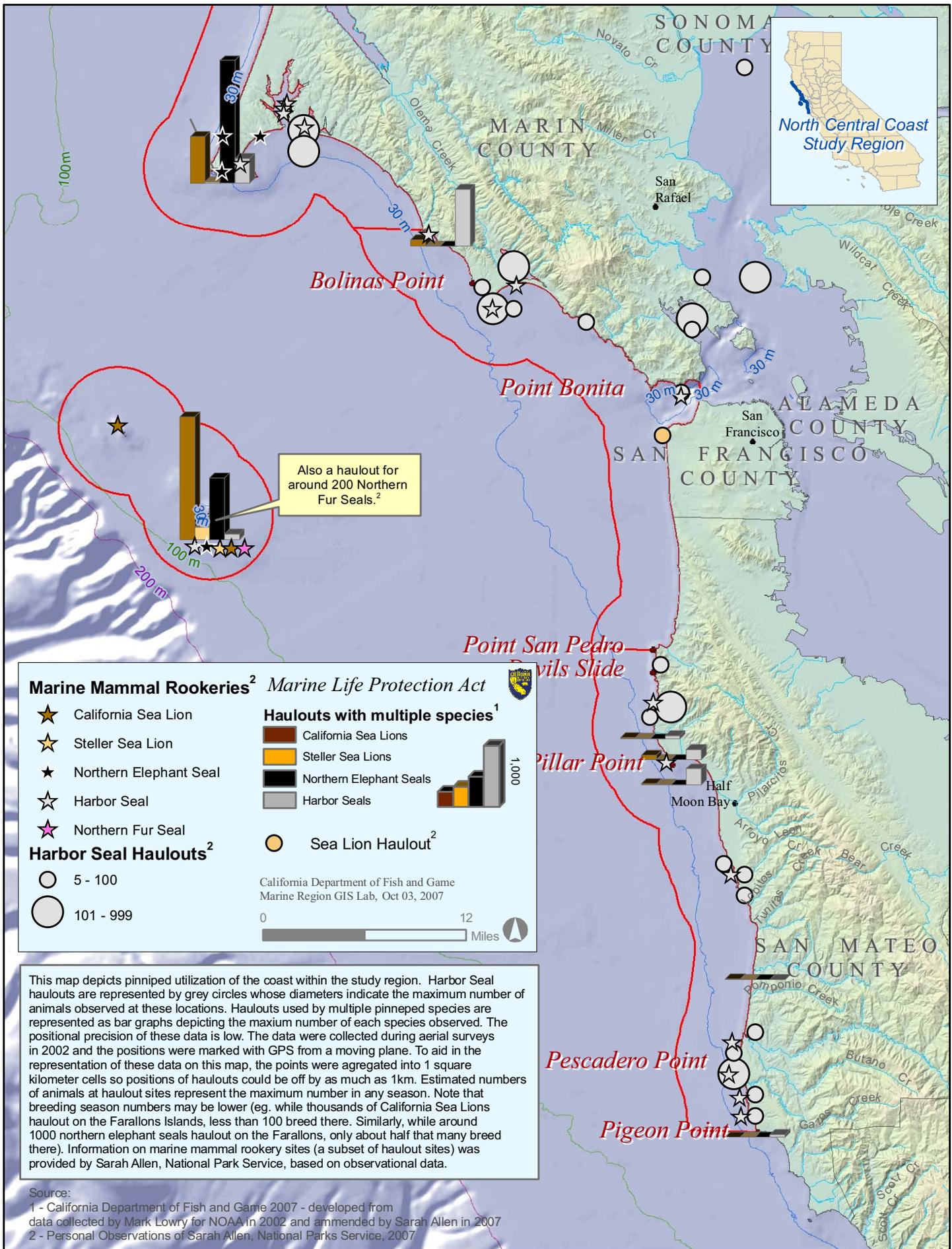


Map 5c Marine Bird Diversity

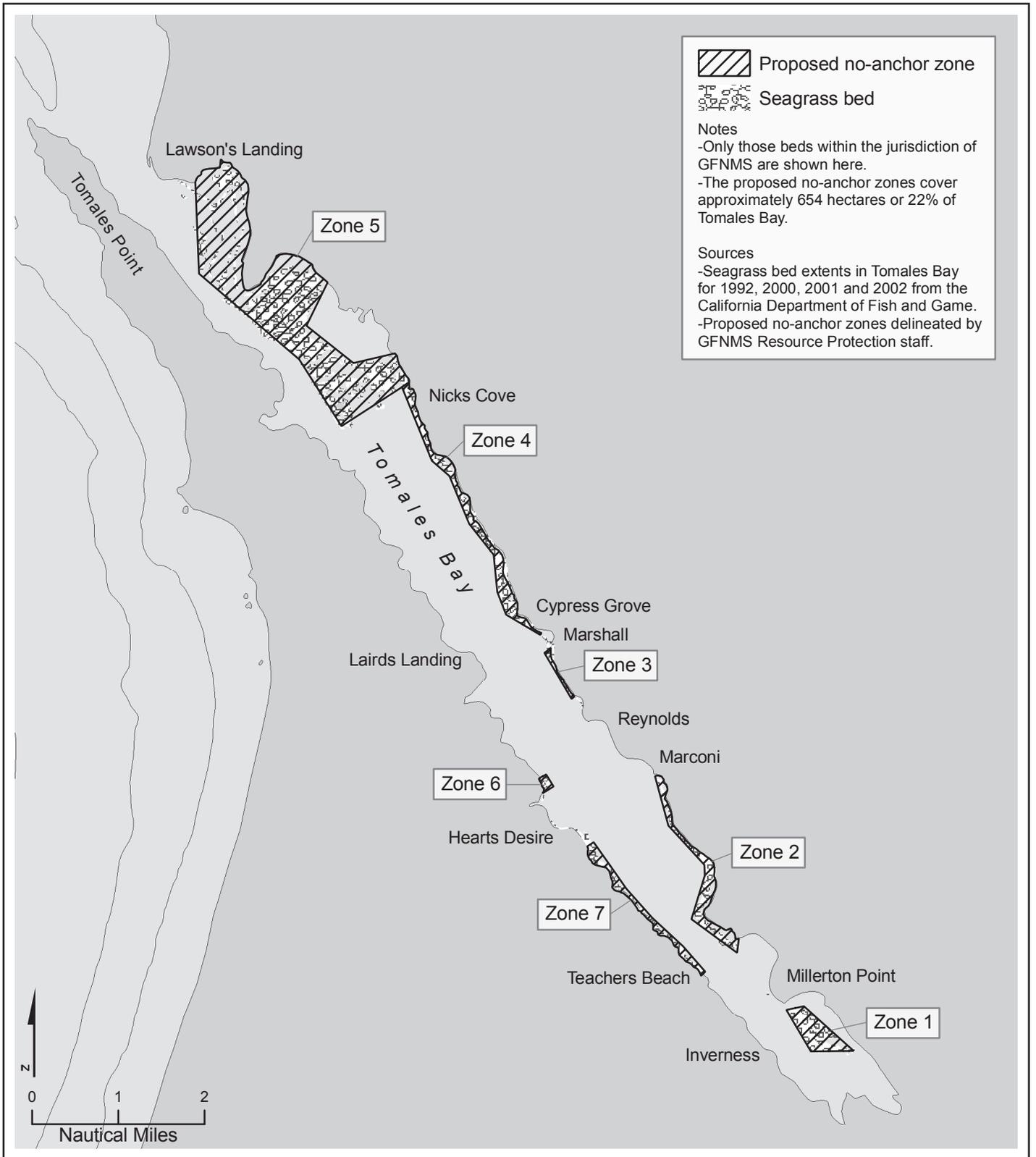
North Central Coast Study Region



Map 5d Marine Mammal Haulouts and Rookeries



Map 5e Marine Mammal Haulouts and Rookeries



**Seagrass Bed Protection
Tomales Bay
Proposed No-Anchor Zones**

Gulf of the Farallones National Marine Sanctuary, California

Figure 2-3