

Bight '08 Rocky Subtidal Reef Survey



Rocky Reef Is Important To Our Member Agencies

- | **Focal point for consumptive and non-consumptive beneficial uses**
- | **Two POTWs discharge near rocky reefs**
 - All contribute to a kelp canopy monitoring program
- | **Focal point for ASBS dischargers**
 - All stormwater dischargers have the potential for impact

Rocky Reef Management Challenges

- | **Water quality not the only impacts**
 - Fishing, natural cycles

- | **Biological community is dynamic and strongly influenced by biogeography**

- | **Overlay of multiple jurisdictions**
 - SWRCB, RWQCB, CDFG, NOAA, NMFS, National Parks, State Parks, City/County

Bight '08 Rocky Reef Questions

- | What is the distribution of hard bottom habitats in the Southern California Bight?**
- | What is the range of natural biological conditions in these reef assemblages?**
- | How do these conditions overlay or correlate with anthropogenic factors?**

Major Findings

- | **Most comprehensive reef survey in So Cal to date**
 - Established a great pre-MPA baseline characterization

- | **Rocky reef is extensive**

- | **We've got a handle on natural variability**
 - Diagnosing anthropogenic stress will require more work

Mapping Rocky Reefs

- Multiple GIS layers
 - Sonar/multi-beam
 - Kelp overflight
 - CA Coastal Records
 - Google Earth
- Past survey site recon
- Local interviews

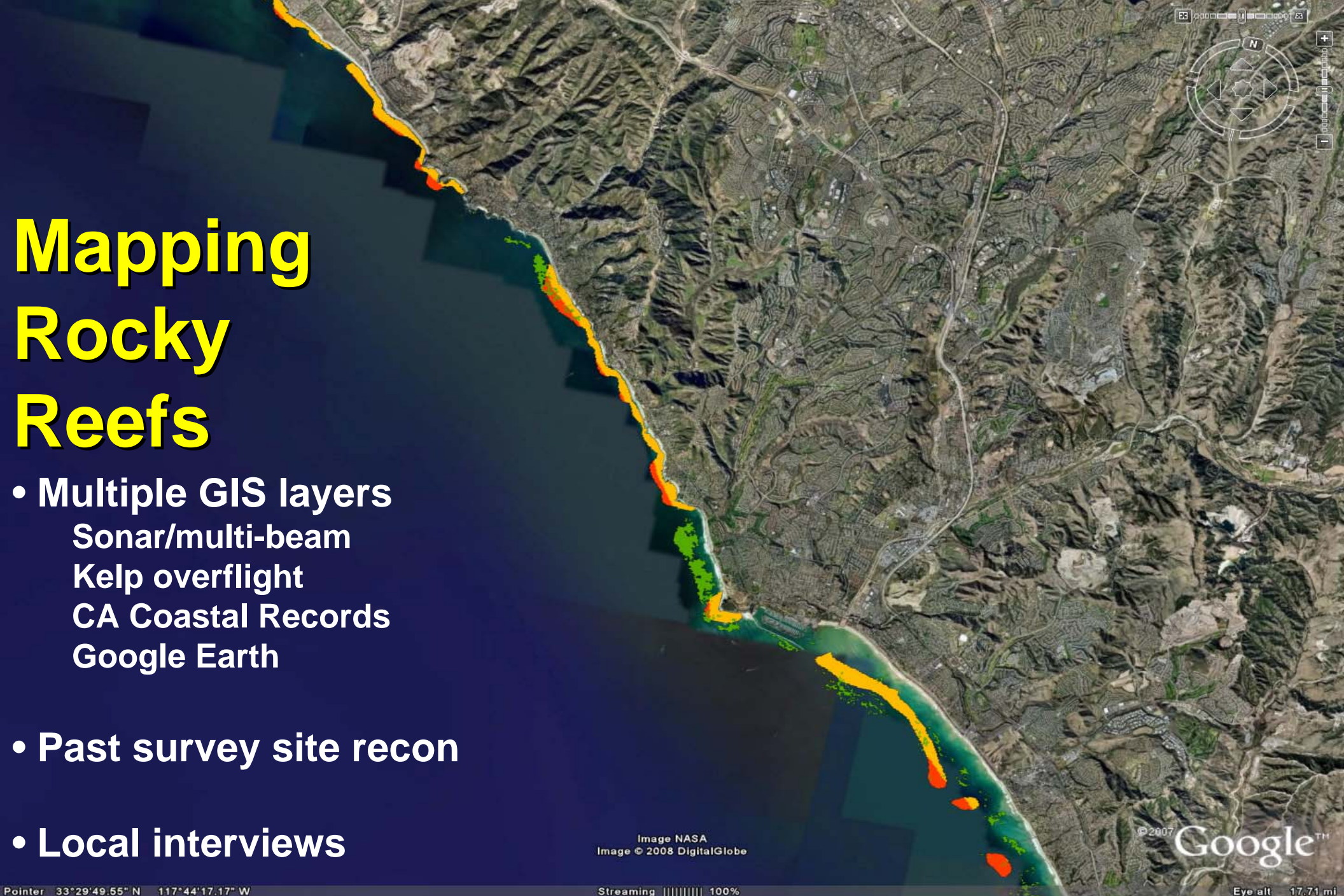
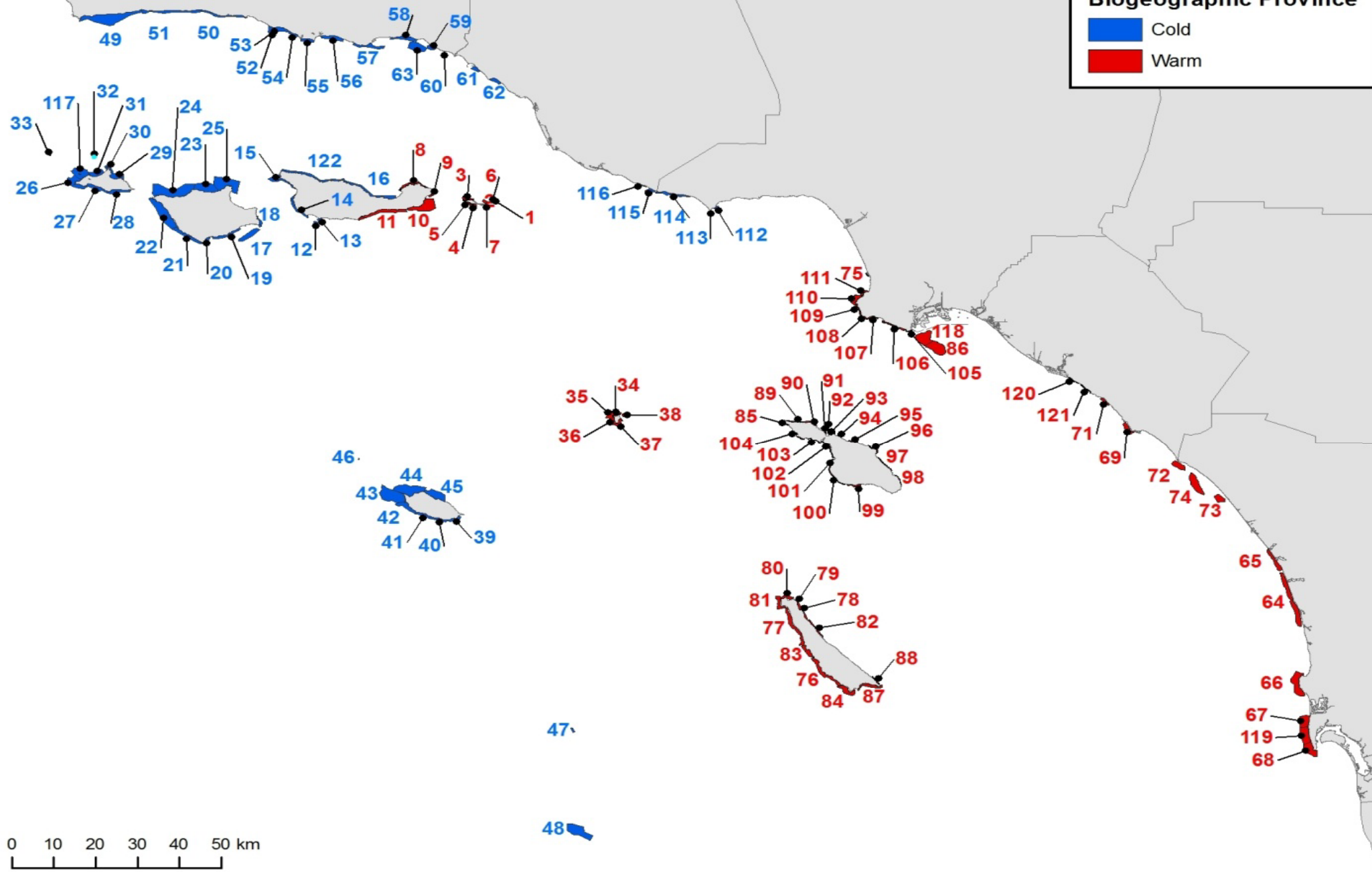


Image NASA
Image © 2008 DigitalGlobe

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Biogeographic Province

- Cold
- Warm



Rock Reefs Comprise Large Portions of Nearshore Habitat in the SCB

	Linear Coastline (km)	Area (HA<30m)
All Coastline	1,197	184,439
Rocky Coastline	554	38,057

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- **Sampled 60 reefs bight-wide**

- Warm, cold
- Island, mainland

- **Fishes-belt transects**

- density and biomass

- **Swath-Invertebrates and algae**

- density

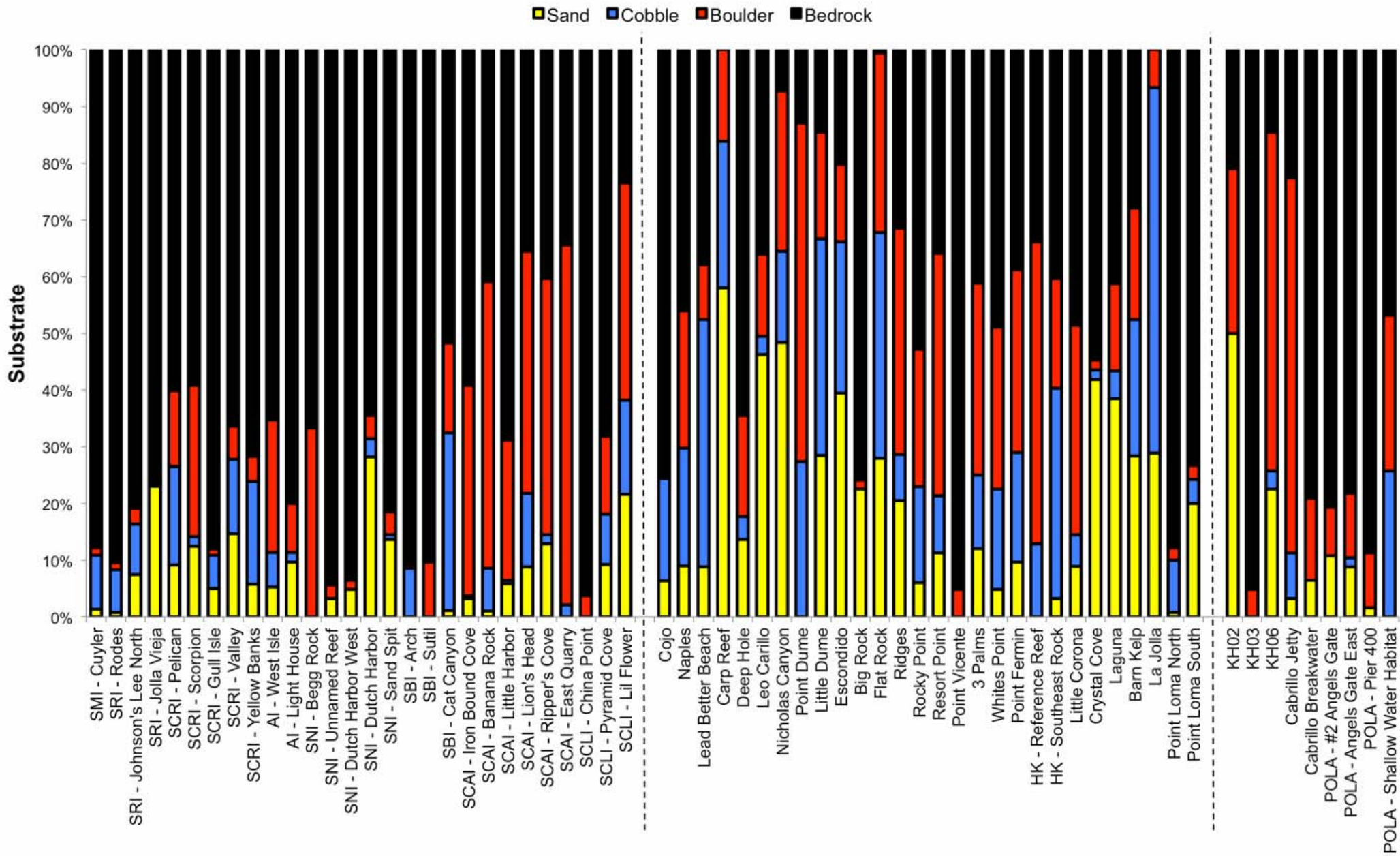
- **Unified Point Contact (UPC)**

- habitat characteristics
- invert and algae % cover

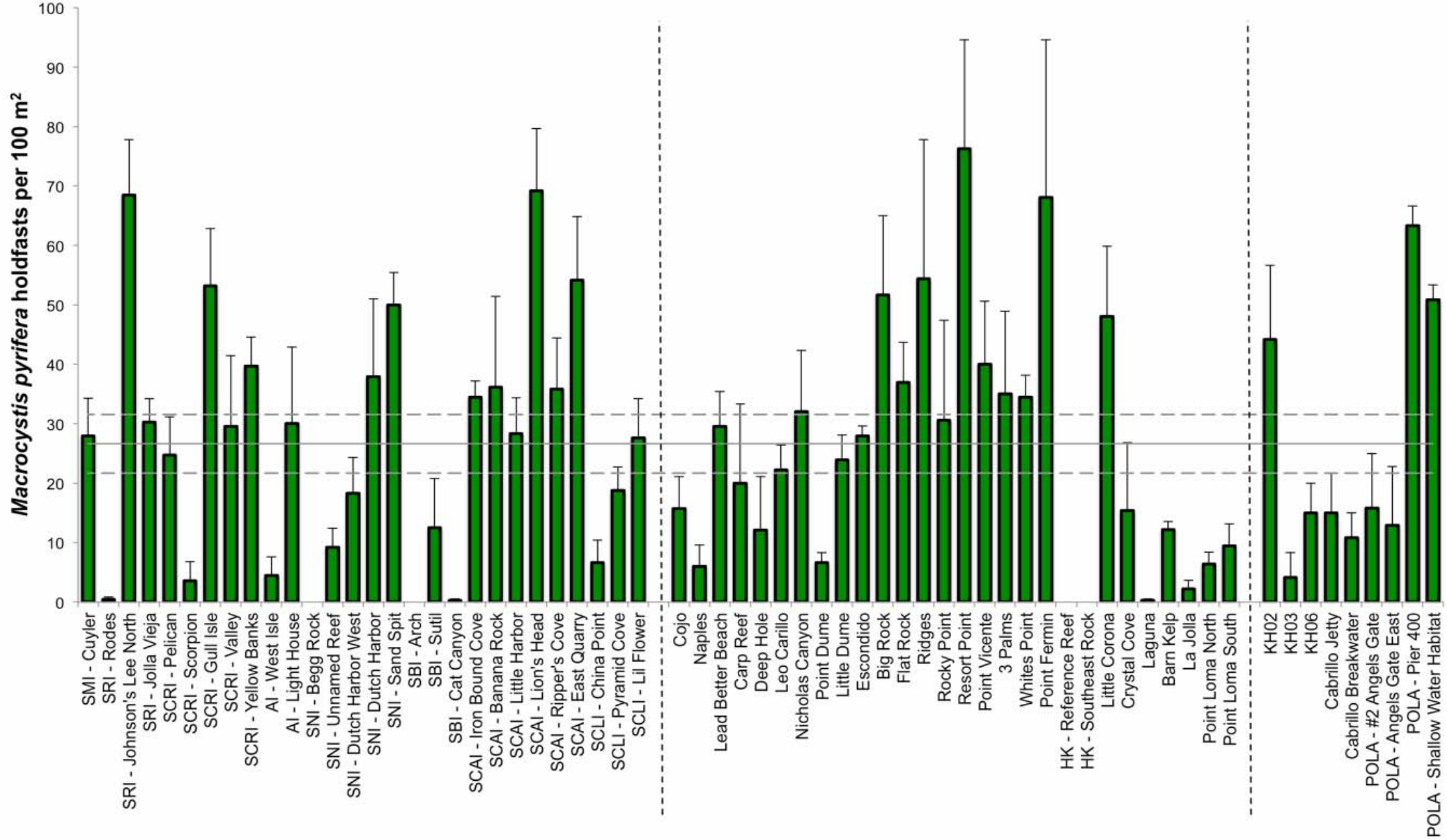
- **Invertebrate Fishery Data**

- Urchin
- Abalone
- Lobster
- Kellet's Whelk
- others

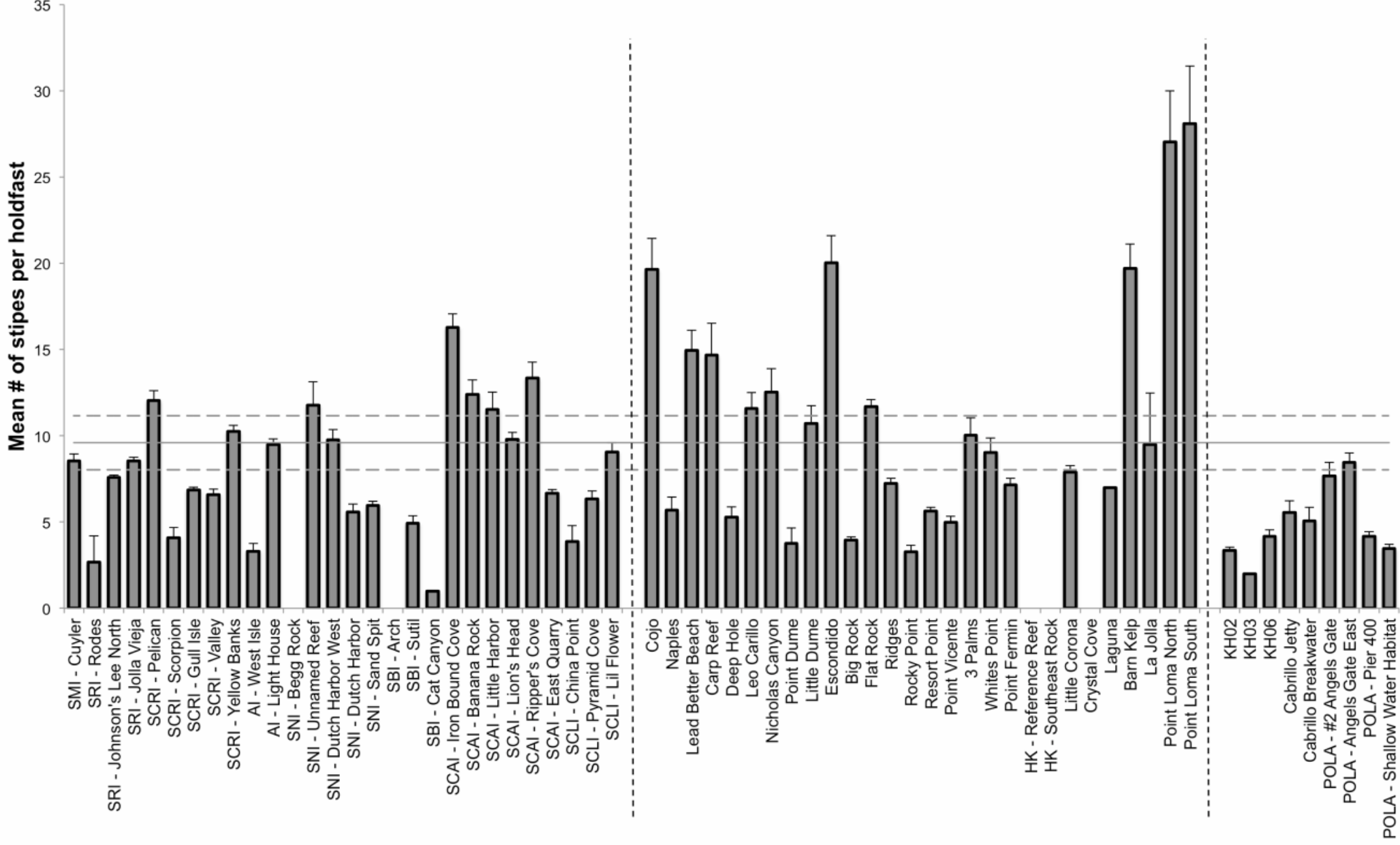
Distribution of Substrate in SCB Reefs



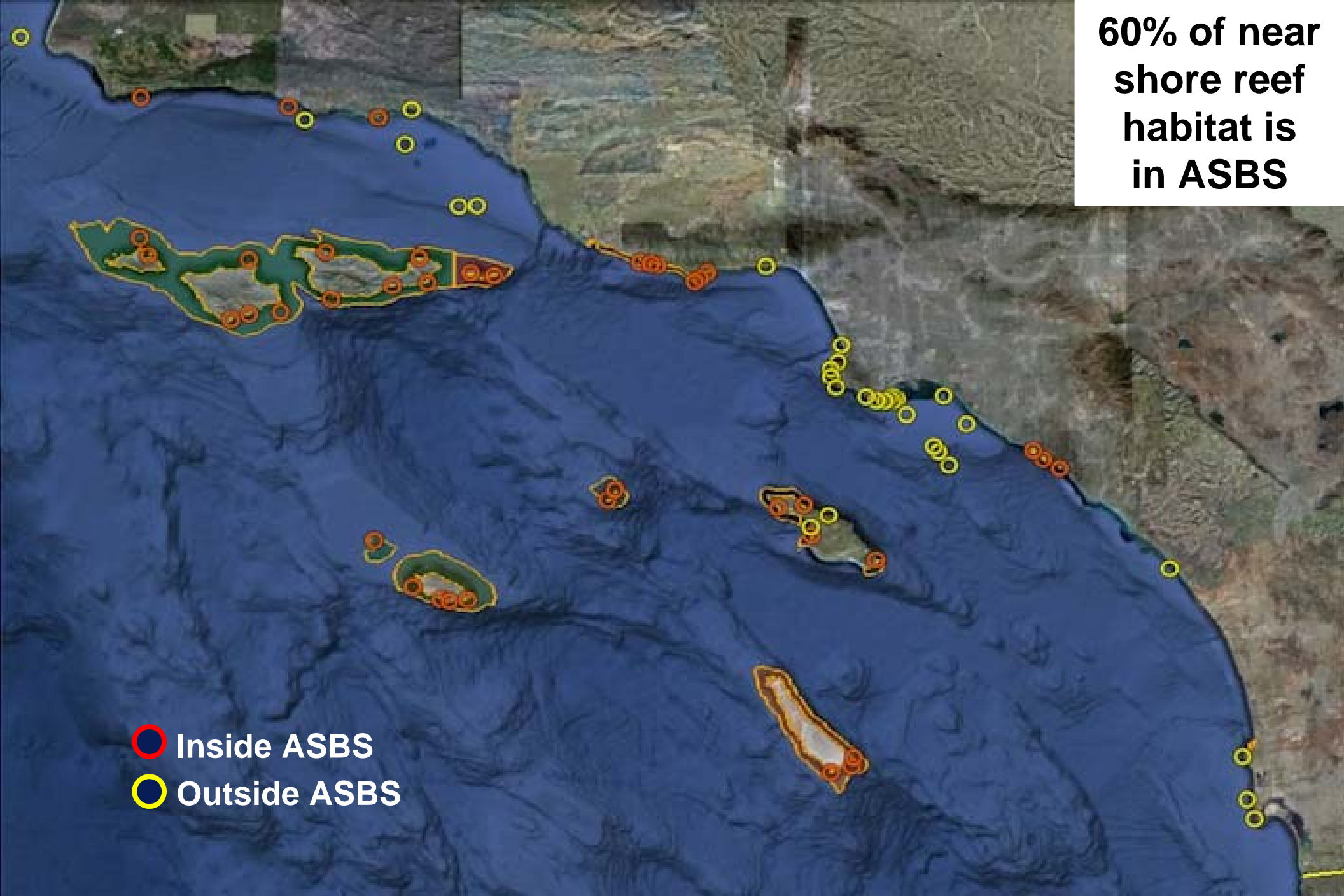
Kelp Density in SCB Reefs



Kelp Maturity in SCB Reefs



60% of near shore reef habitat is in ASBS



- Inside ASBS
- Outside ASBS

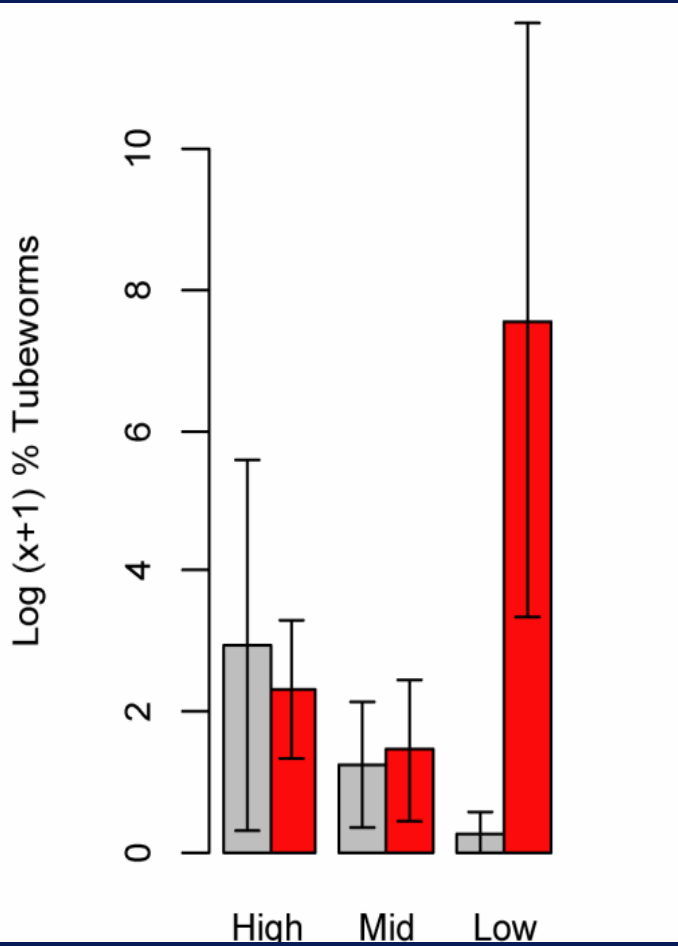




**Sedimentation, turbidity
and continued reef burial**

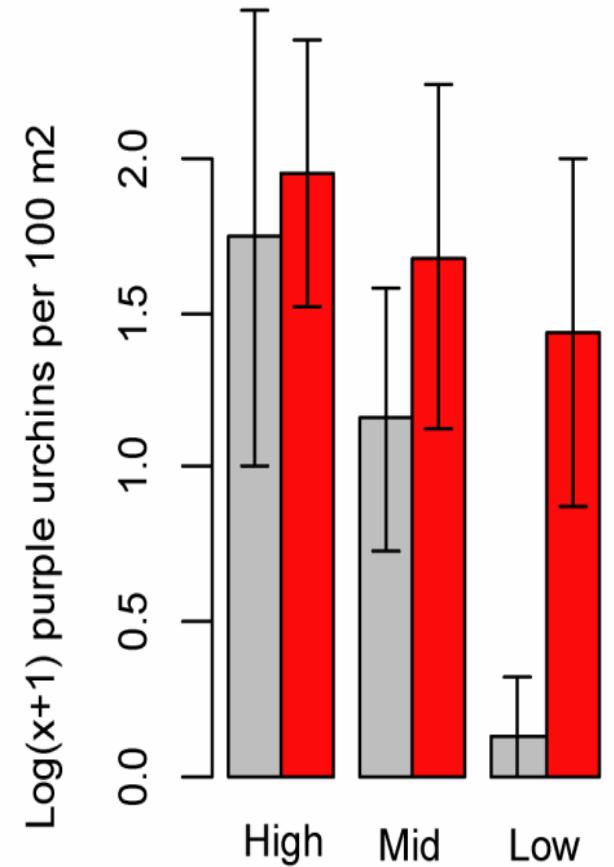
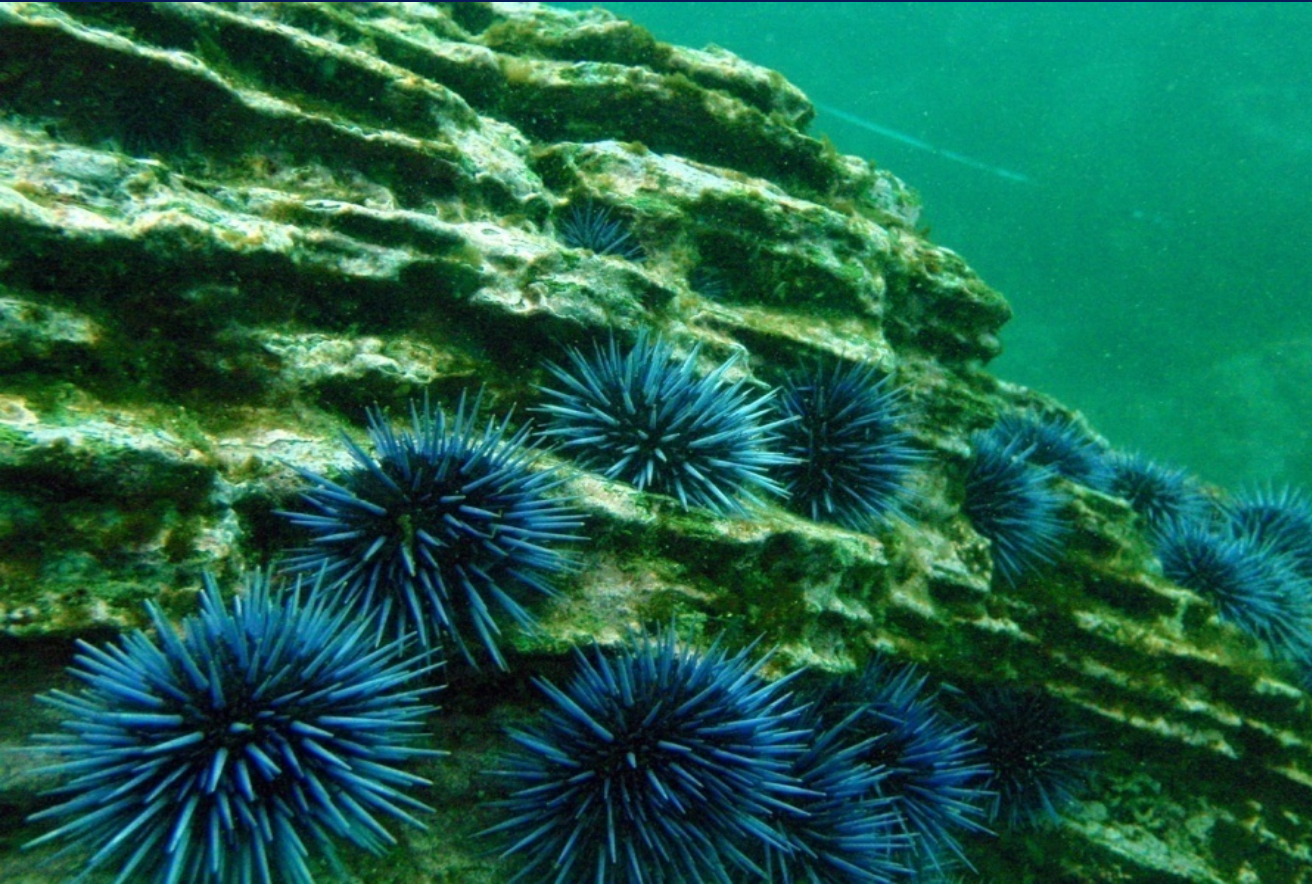


Tubeworms – Sedimentation Indicator



Significantly higher on low relief ASBS reefs

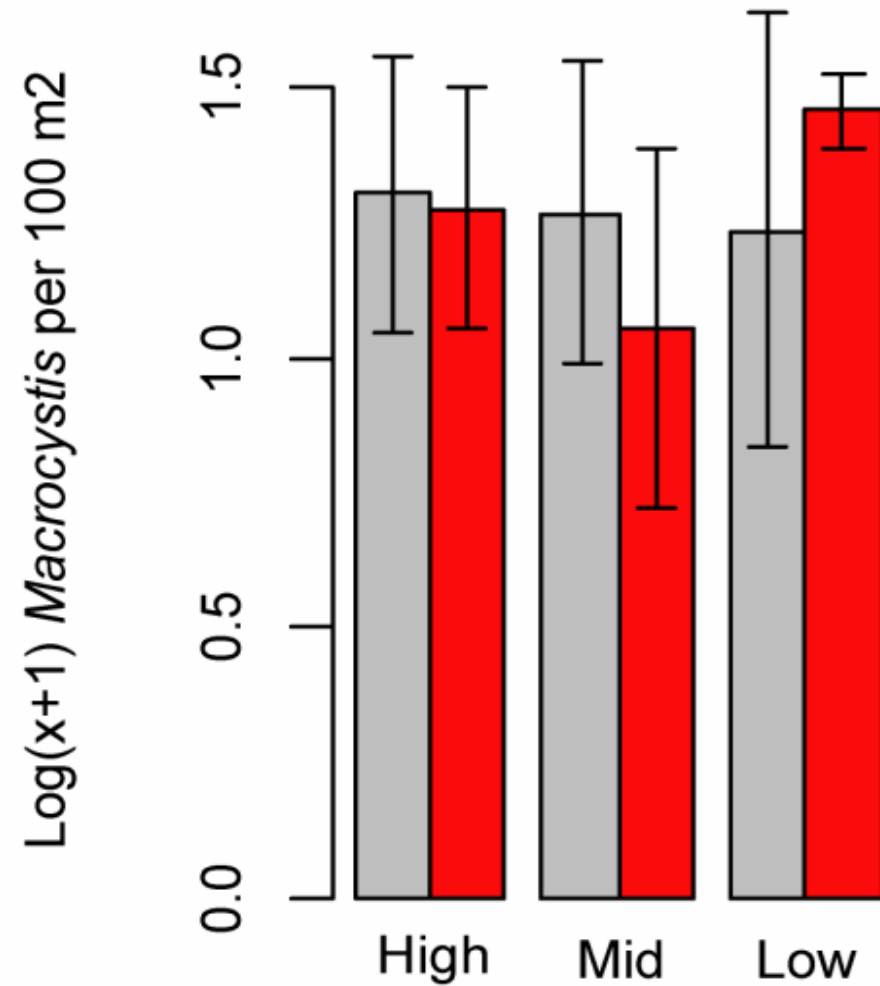
Urchin Barrens



Significantly higher on ASBS reefs



Giant Kelp Density



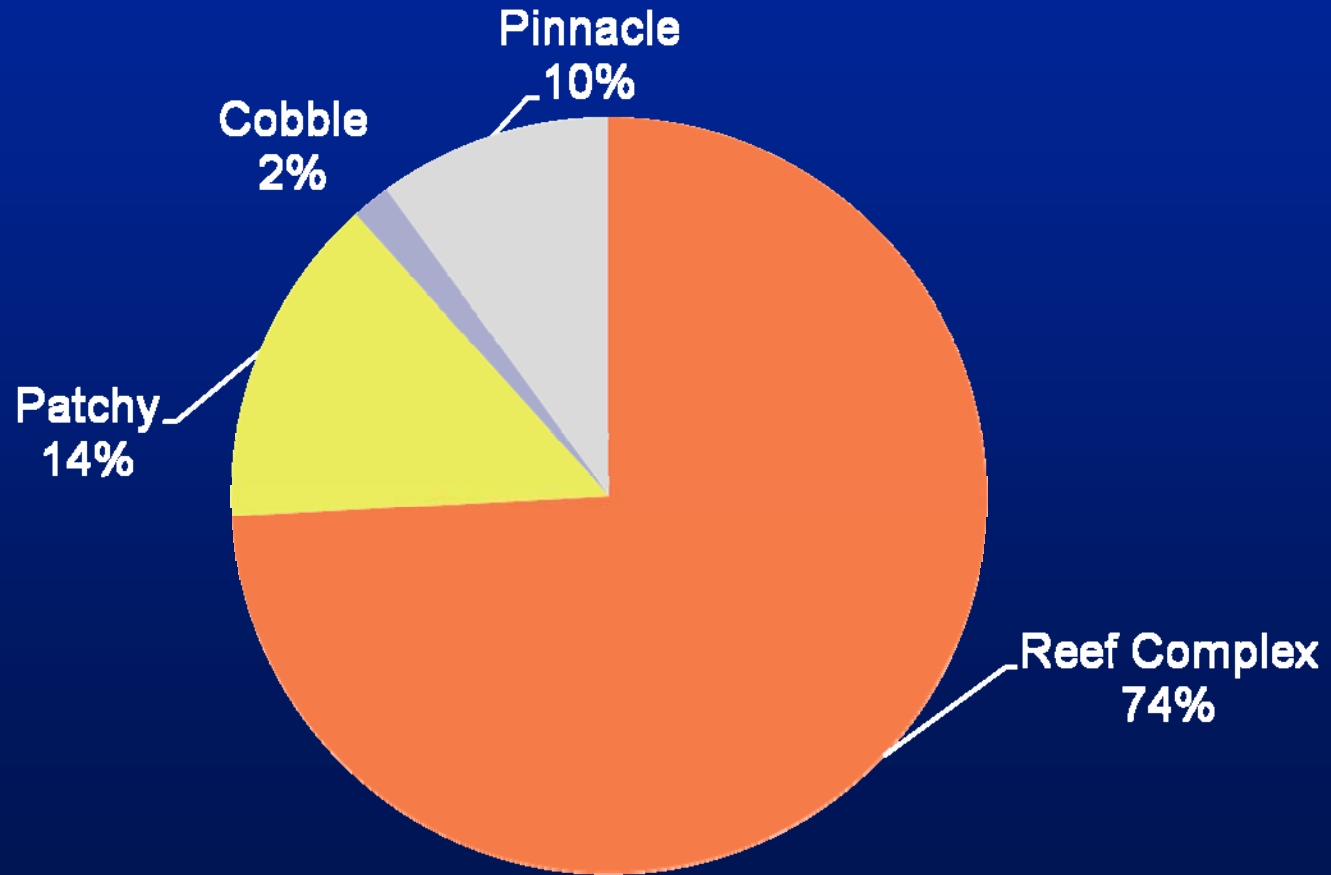
**No difference between
ASBS and non-ASBS**

Our Next Steps

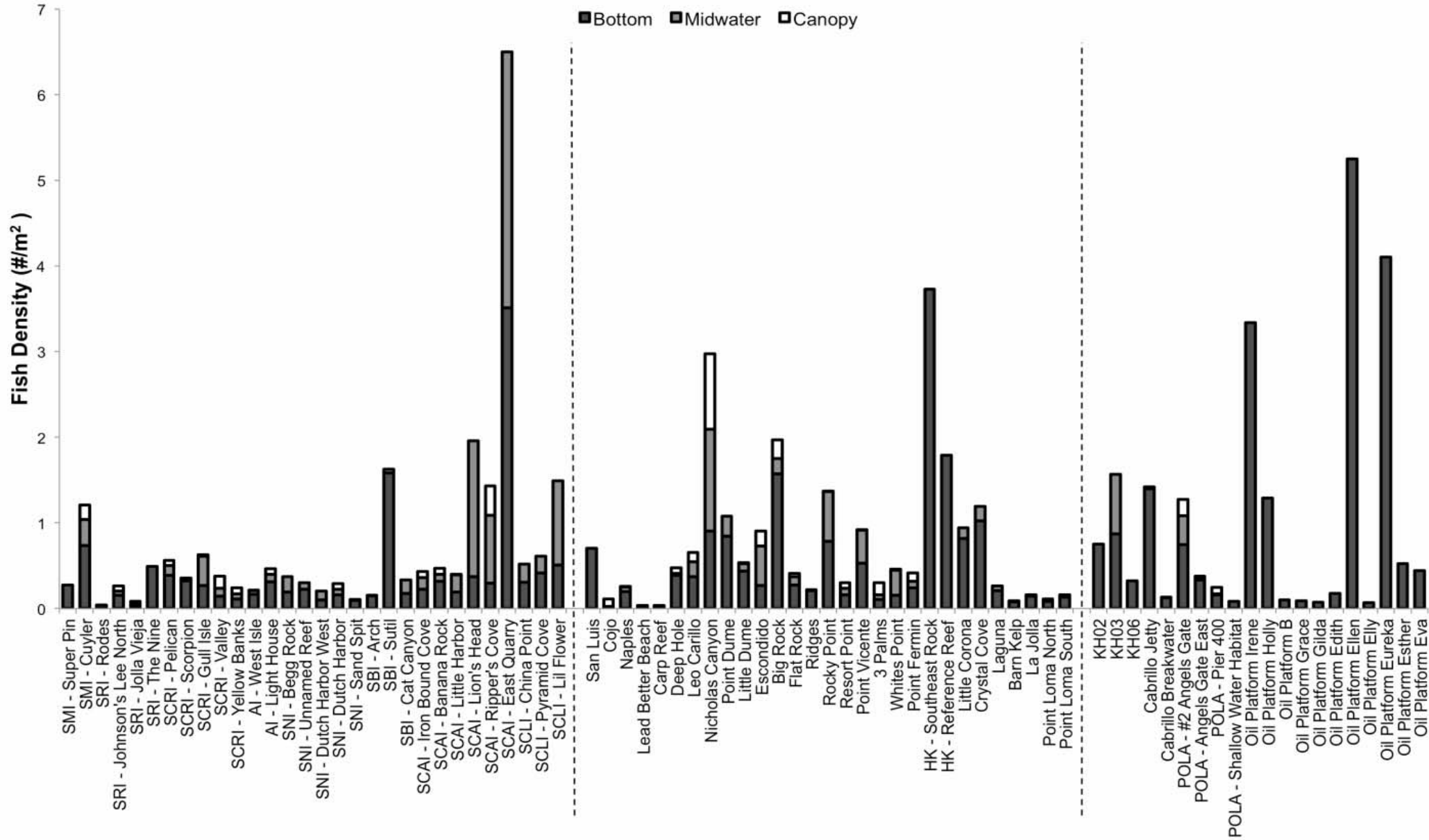
- | **Assessment tools are needed**
 - We are helping develop a “Rocky reef health index”
- | **Focused interactions with the MPA Monitoring Enterprise**
 - Our data can inform MPA and ASBS decision making
- | **Exploring process-based studies to determine cause and effect of anthropogenic impacts**



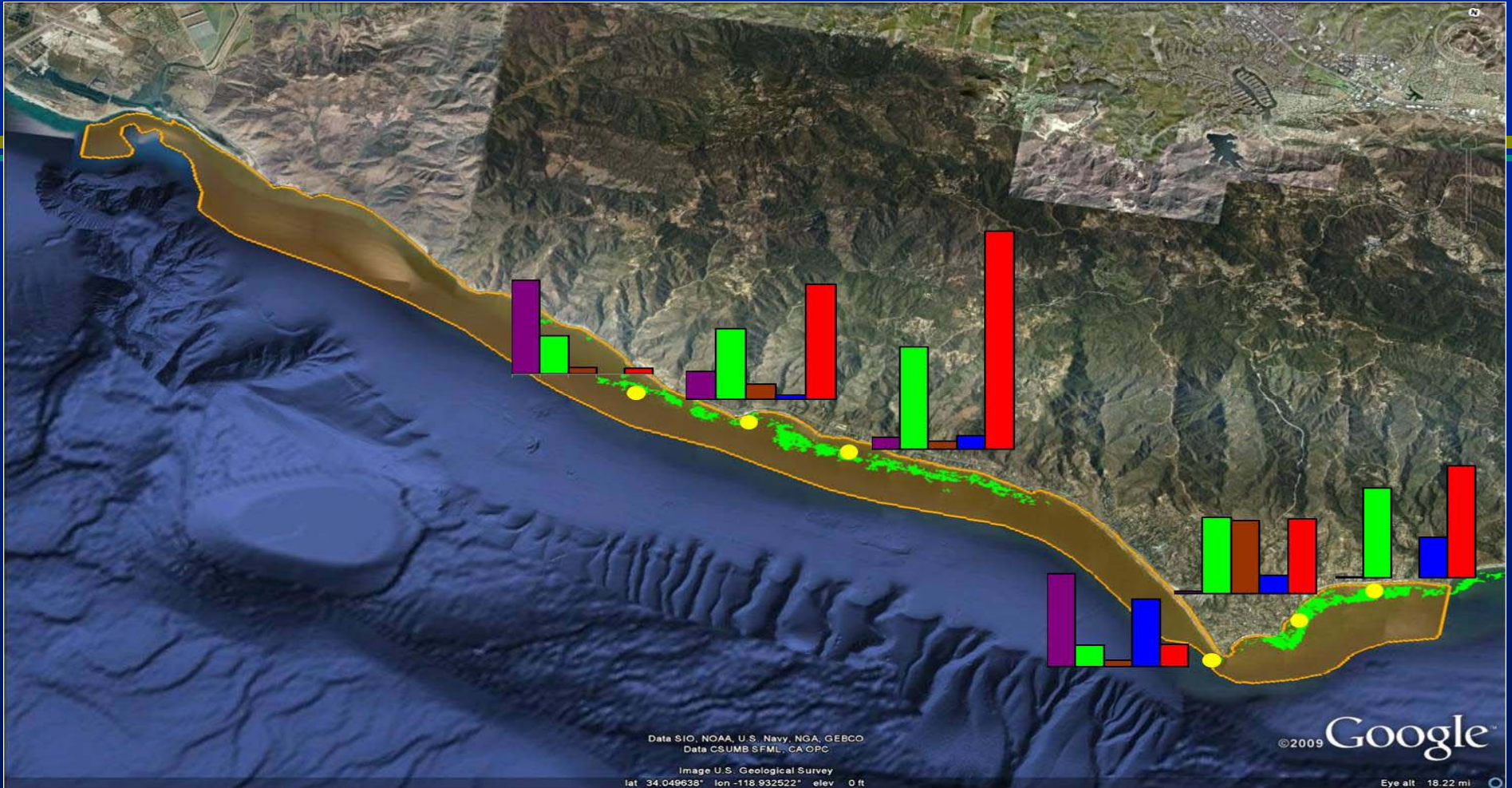
120 Rocky Reefs in the SCB



Fish Density in SCB Reefs

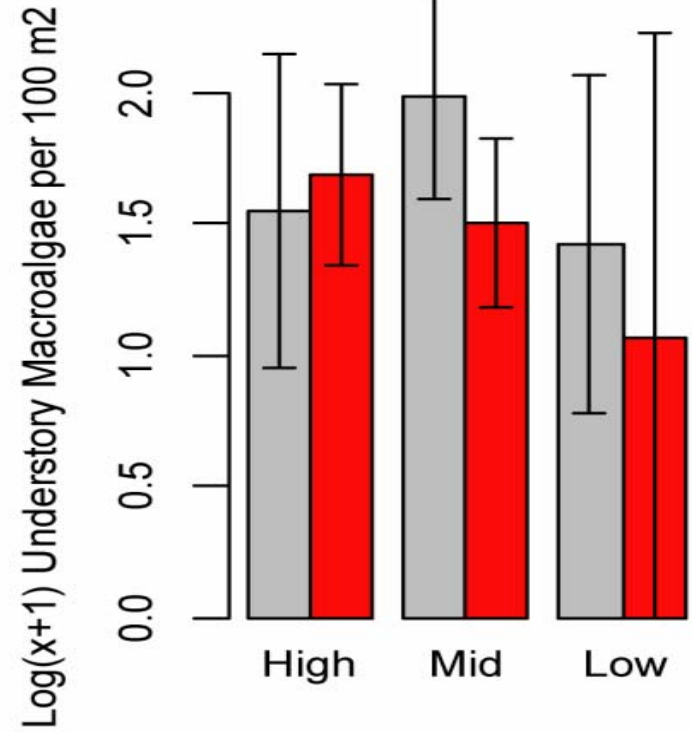


Malibu/Latigo (ASBS 24)



purple = urchins green = kelp brown = understory algae
blue = bare rock red = % tubeworms

Understory Algae



No difference between ASBS and non-ASBS