

# Artificial Reef Site Selection



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# Introduction



Artificial reefs are typically expected to...


- Enhance or restore marine habitats of specific biological communities that have well-defined depth ranges and seafloor constraints.
  - Maintain their structural and functional integrity for many years without deteriorating or being permanently covered by sediment.
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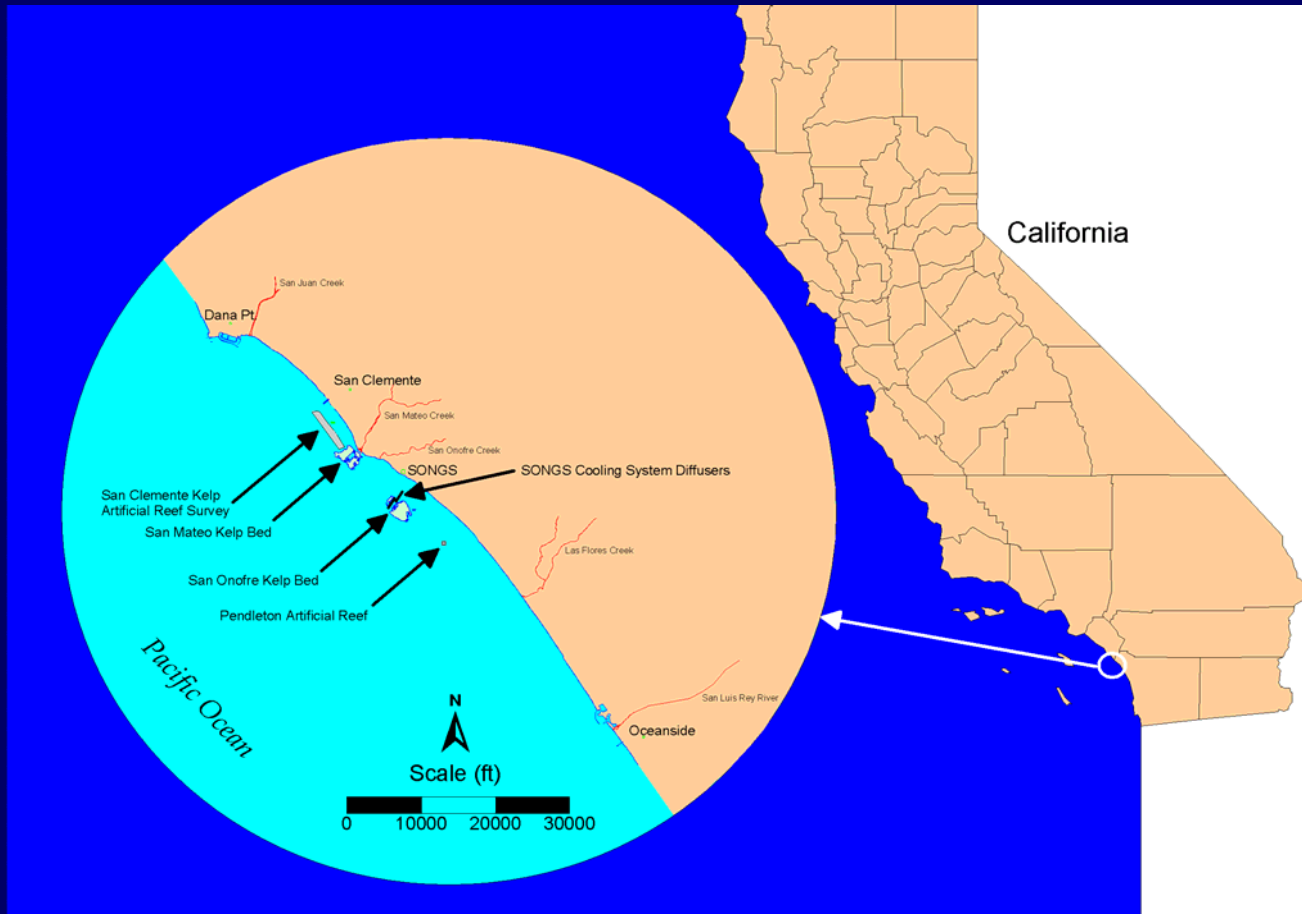


# Siting Guidelines

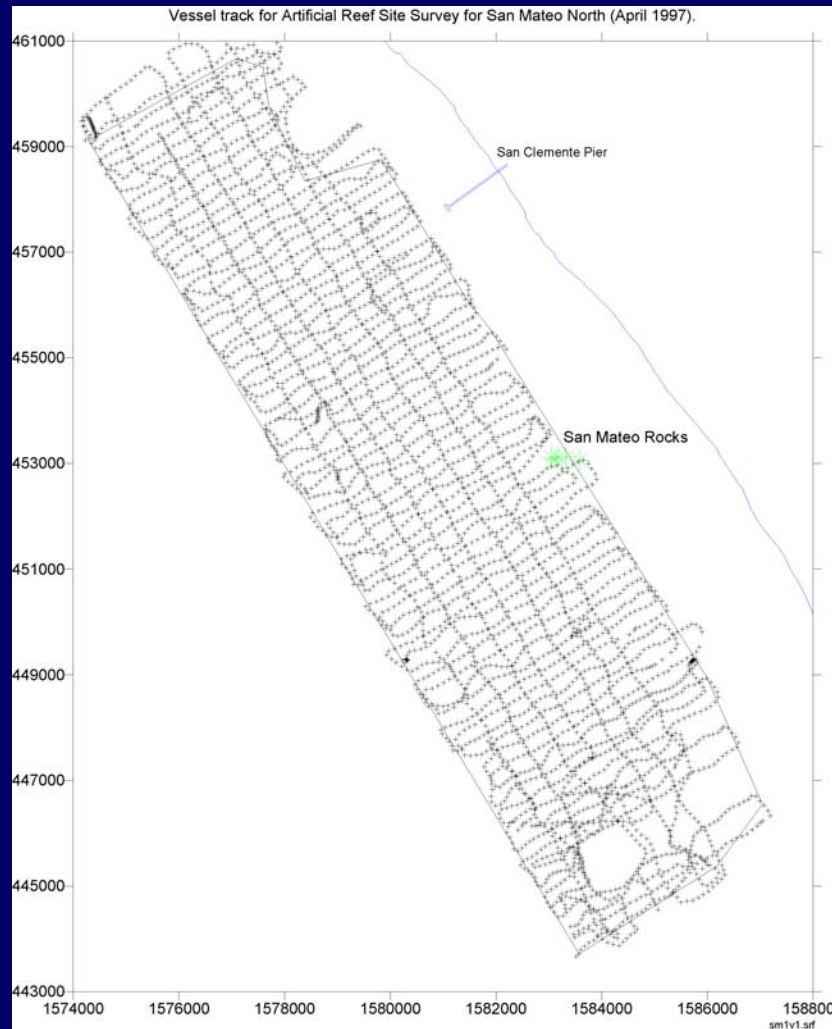


As governed by physical conditions and CCC-permit constraints...

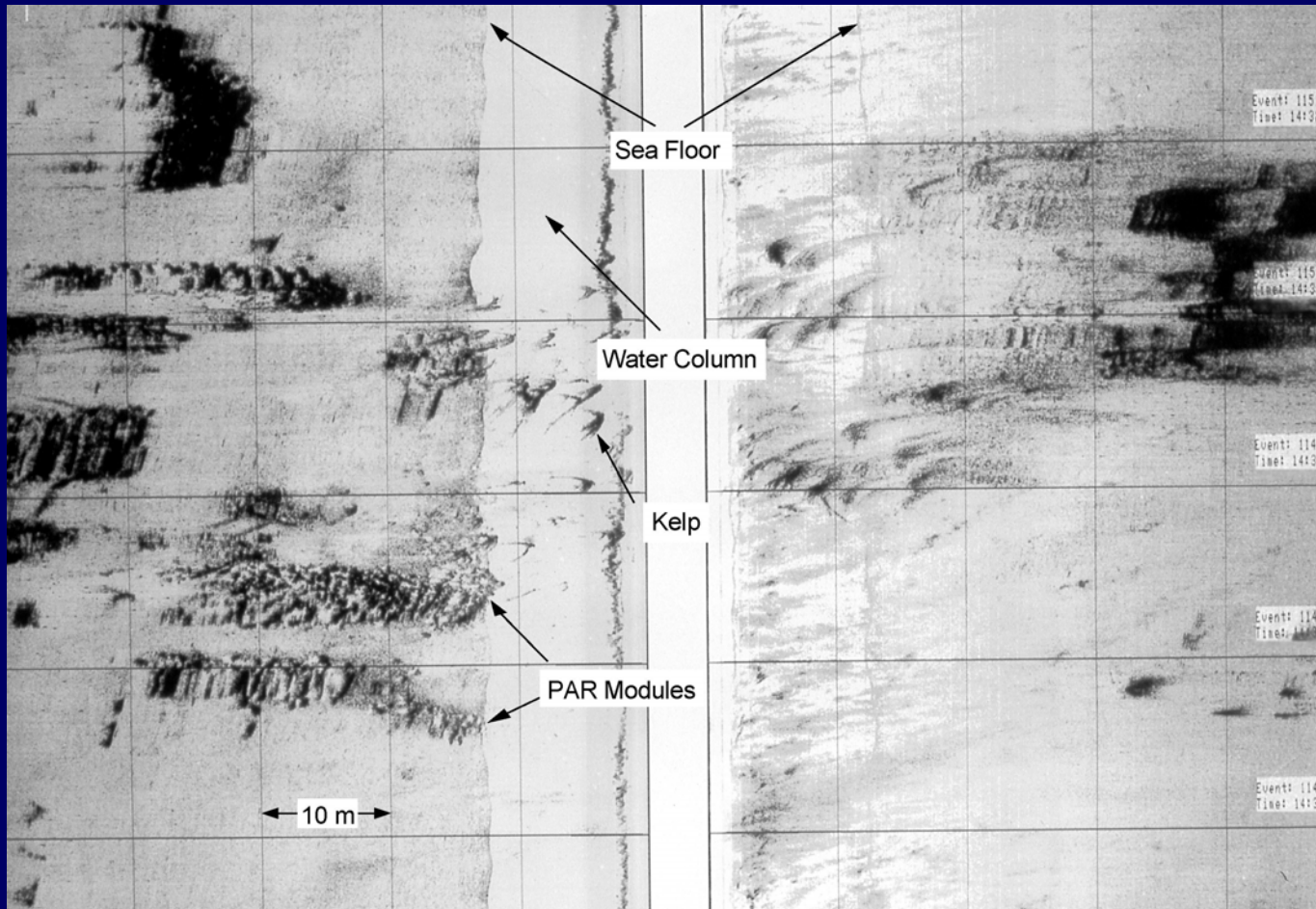
- Suitable kelp growth depths ~ 11 to 16 m.
  - A thin < 0.5 m layer of sediment on top of bedrock or existing natural hard substrate.
  - Near-persistent natural kelp forests.
  - Not directly on existing natural hard-bottom substrate.
  - At a distance from areas with major sediment deposition.
  - At a distance from areas near wastewater discharge or other human perturbations.
  - At a distance from areas of historical or cultural resources.
  - As near as practical to the SONGS-impacted natural kelp reef.
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Locations of San Clemente Kelp Mitigation Artificial Reef, San Onofre Nuclear Generating Station, and Pendleton Artificial Reef.



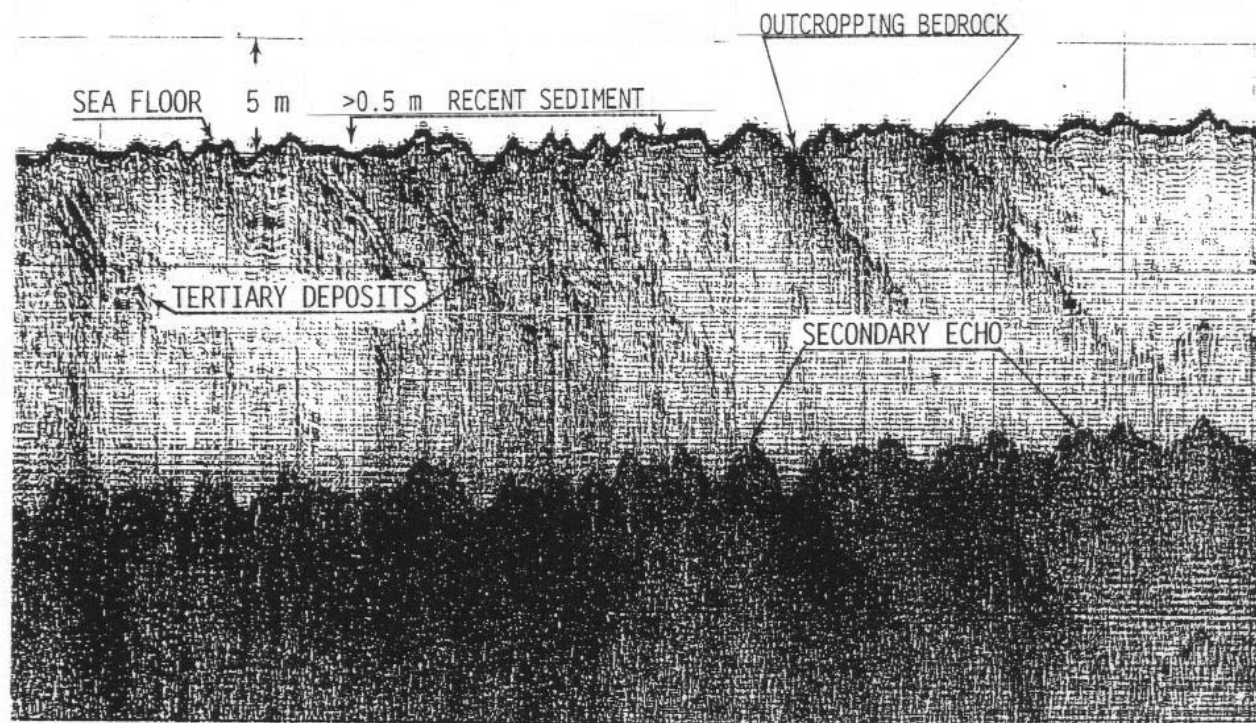
Survey vessel track plot for the San Clemente area. The open circle in the lower part of the track plot is the San Mateo Kelp Bed.



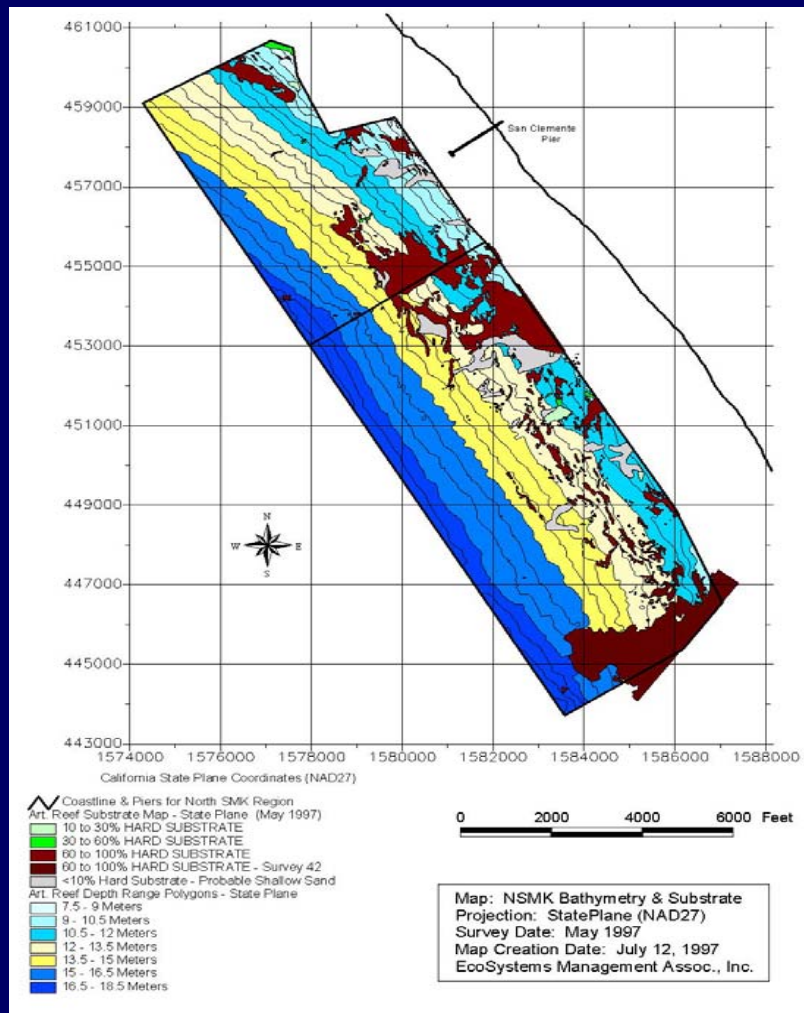
Side-scan sonar record defining hard substrate outcropping on sediment-covered seafloor.



### 3.5 kHz SUB-BOTTOM PROFILER

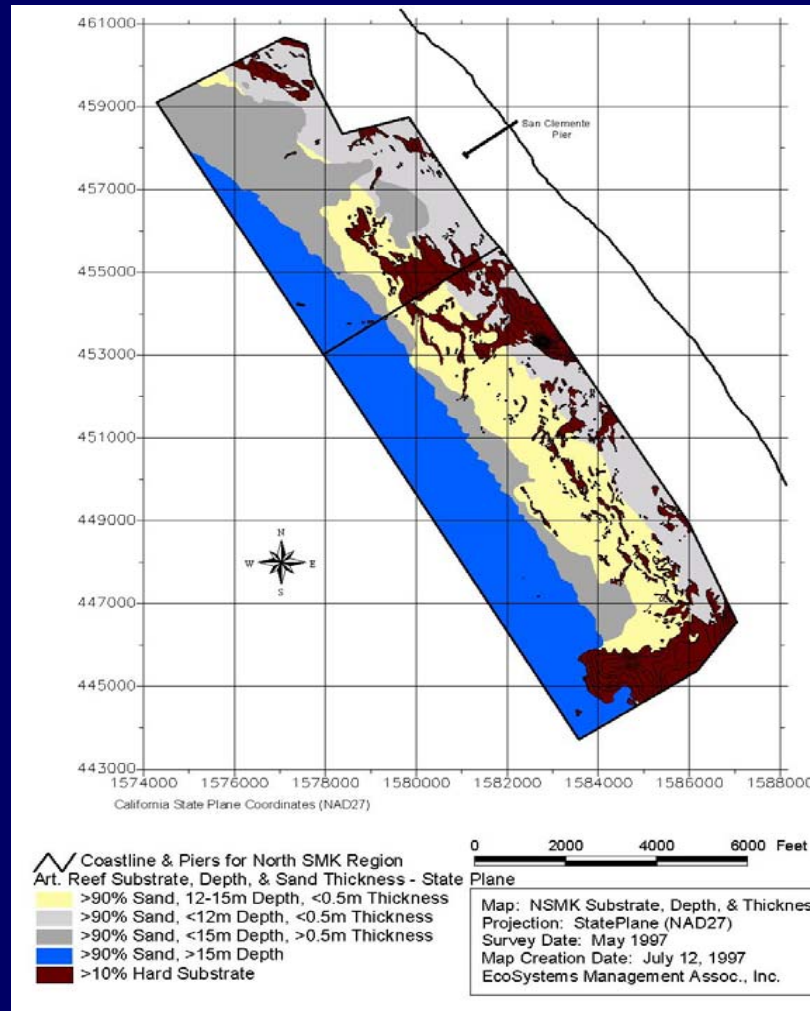


Sub-bottom 3.5 kHz profiler data showing one type of San Clemente area seafloor.

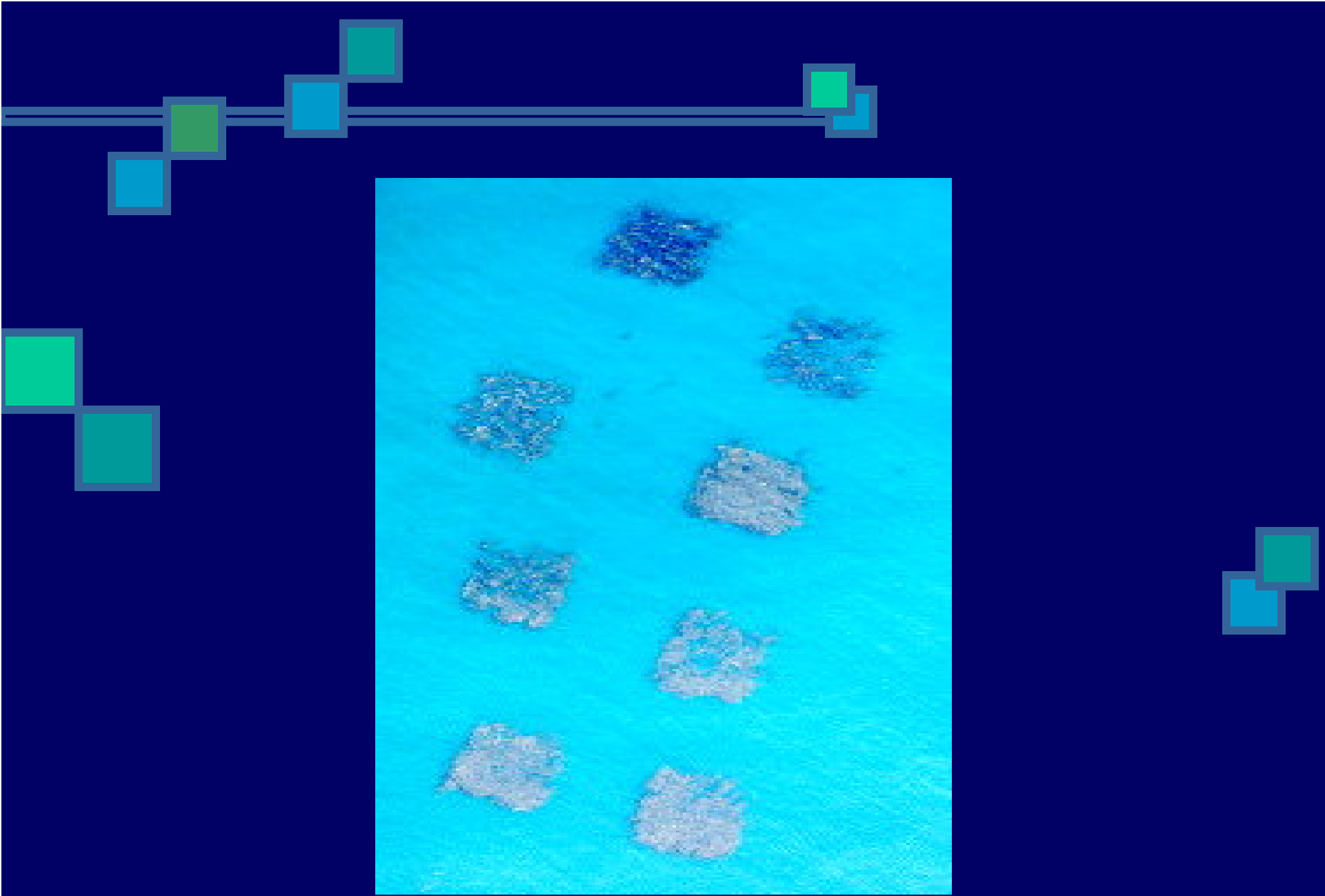


San Clemente Artificial Reef area bathymetry (in meters) and substrate types (in % exposed hard substrate).





San Clemente Artificial Reef area (sand cover depths) showing suitable kelp reef habitat (sand depth from 0 to 0.5 m; the light area) representing 356 acres.



San Clemente Kelp Mitigation Artificial Reef performance.