ROV Field Methods and Data Collection

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Talk Outline

At-Sea

- ROV System
- Positioning and Transect Swath Measurement
- ROV and Vessel Maneuvering

Post Processing

- Imagery and Data Timestamping
- Data Management
- Fish Scoring and Enumeration
- Substrate Determination and Scoring

Sample Design

- Spatial Distribution
- Detection Probability

Background

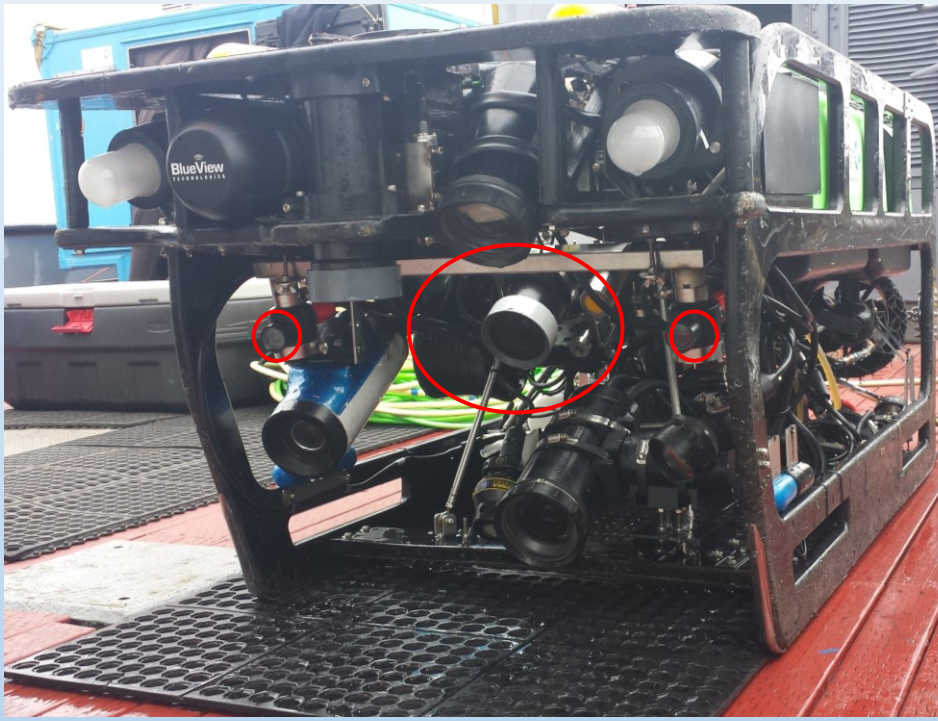
- 2014 to 2016
- 2019 to 2021
- Data Collected by Marine Applied Research and Exploration (MARE)
- Funded by Coastal Impact Assistance Program grant, CDFW, OPC Baseline and Long-TermvMPA Monitoring
- Focuses on Rocky habitat 20-120m
- Fixed Index Sites at MPAs and Fished Reference Areas
- Survey and Video Processing Methods Developed by CDFW and MARE

ROV Sites

ROV System

- Cameras
  - HD forward (2014 and 15)
  - Rear view
  - Stereo sizing cameras
  - Digital Still
  - Switch to Fiber optic in 2016
- Paired scaling Lasers (10 cm)
  - Forward and Down

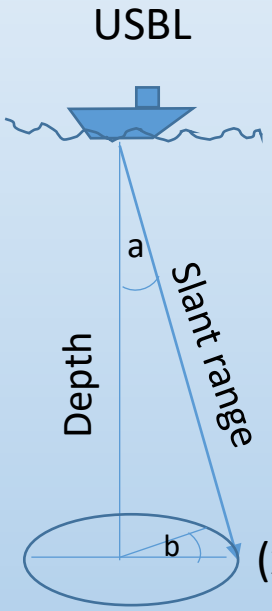
"ROV Beagle"



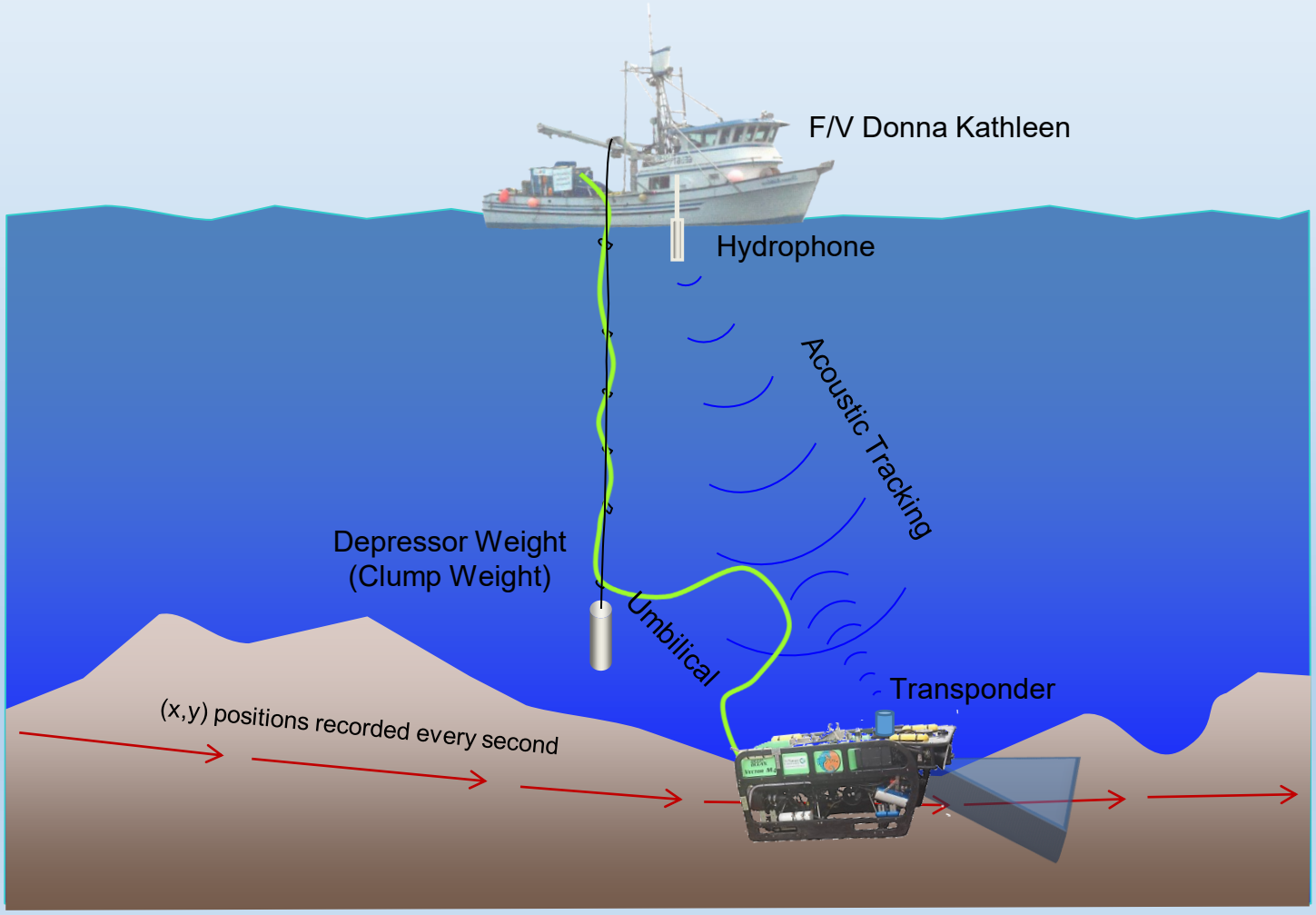
MARINE APPLIED RESEARCH & EXPLORATION

Positioning and Transect Swath Measurement

- USBL Trackpoint III
- Hypack chart plotting and data logging software

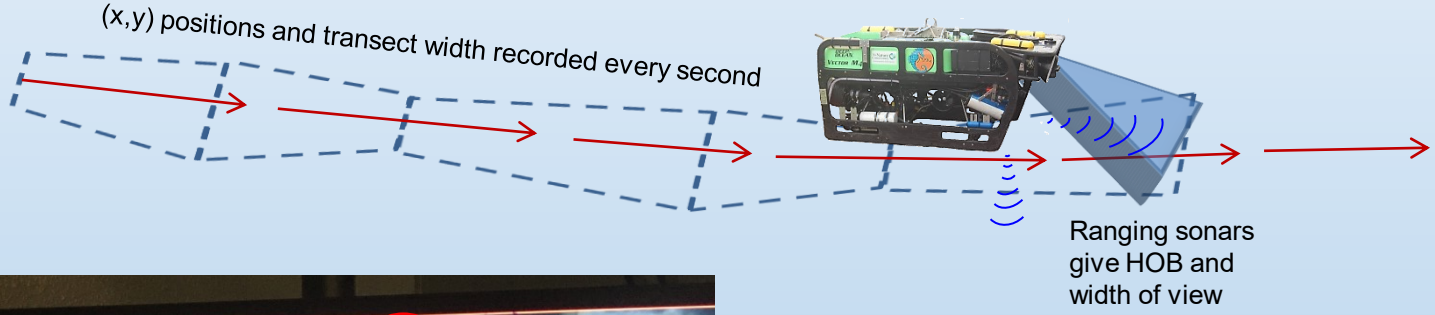


- **Acoustic noise**
- **Heave, pitch**
- **Angular errors**



Positioning and Transect Swath Measurement

- Forward ranging sonar establishes width (0.85 scaling constant)
- Transect width recorded every one second
- Area summed across X time period



0.85 * 2.7 = 2.3 m

Post Processing

MARINE APPLIED RESEARCH
& EXPLORATION

Imagery and Data Timestamping

- All observations recorded with time to the second
- Fish and Inverts ID to lowest taxa.
- Still imagery assists species ID
- Species validation

Fish Scoring and Enumeration

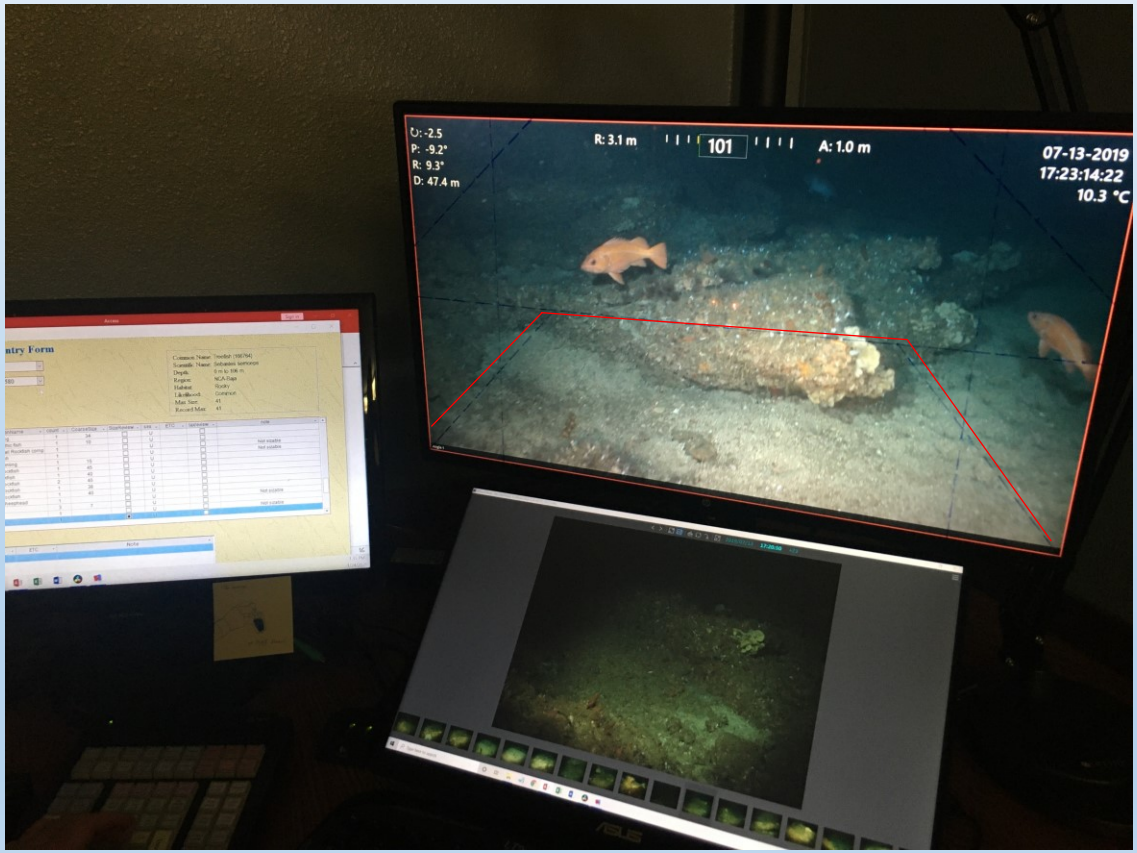
- Species
- Schools counted together across time
- Upper corners excluded

Fish Length Determination

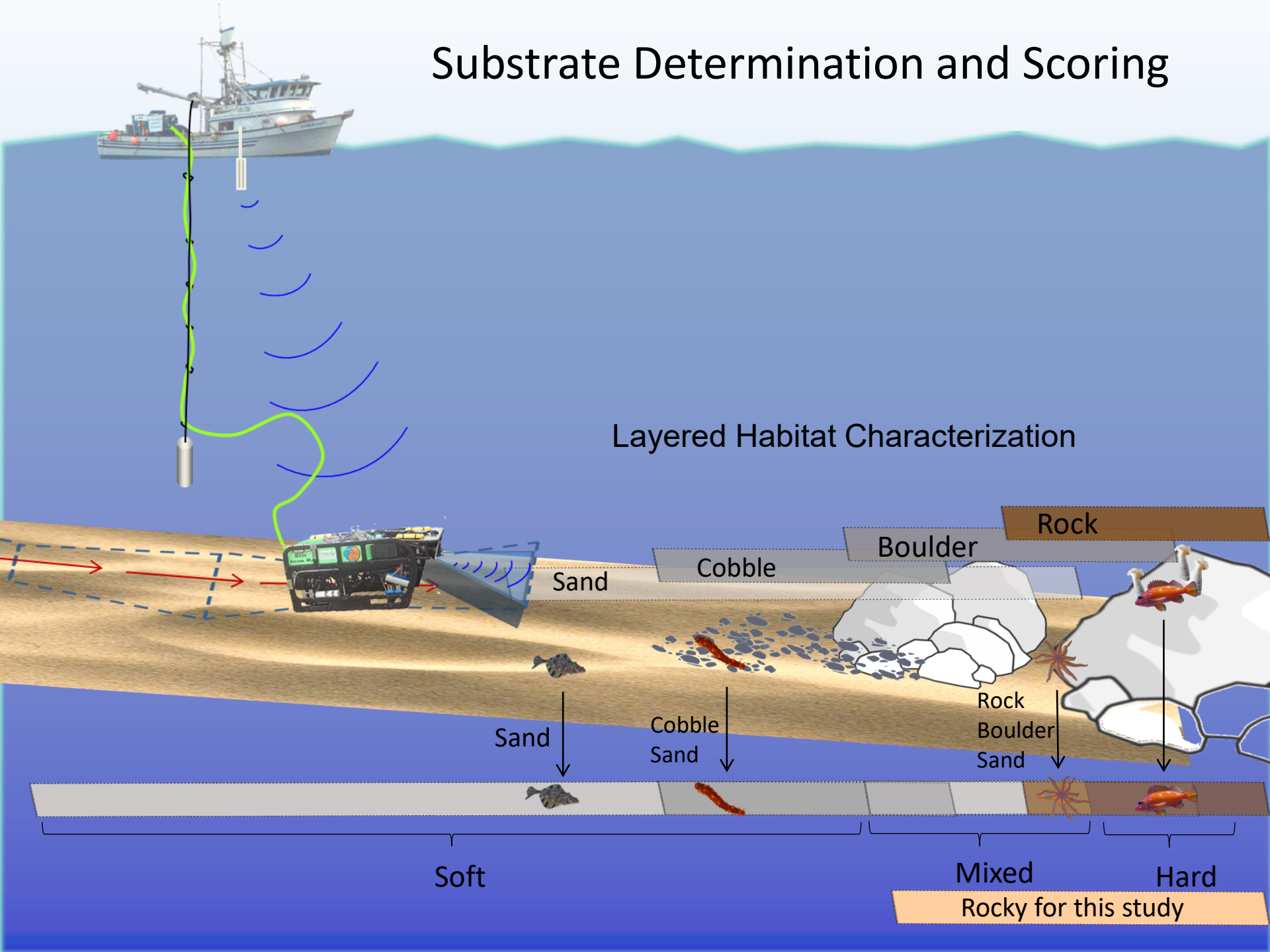
- Laser (captured during scoring)
- Stereo (separate processing)

In-situ Substrate Determination and Scoring

- Overlapping time referenced layers (Sand, cobble, boulder, rock)

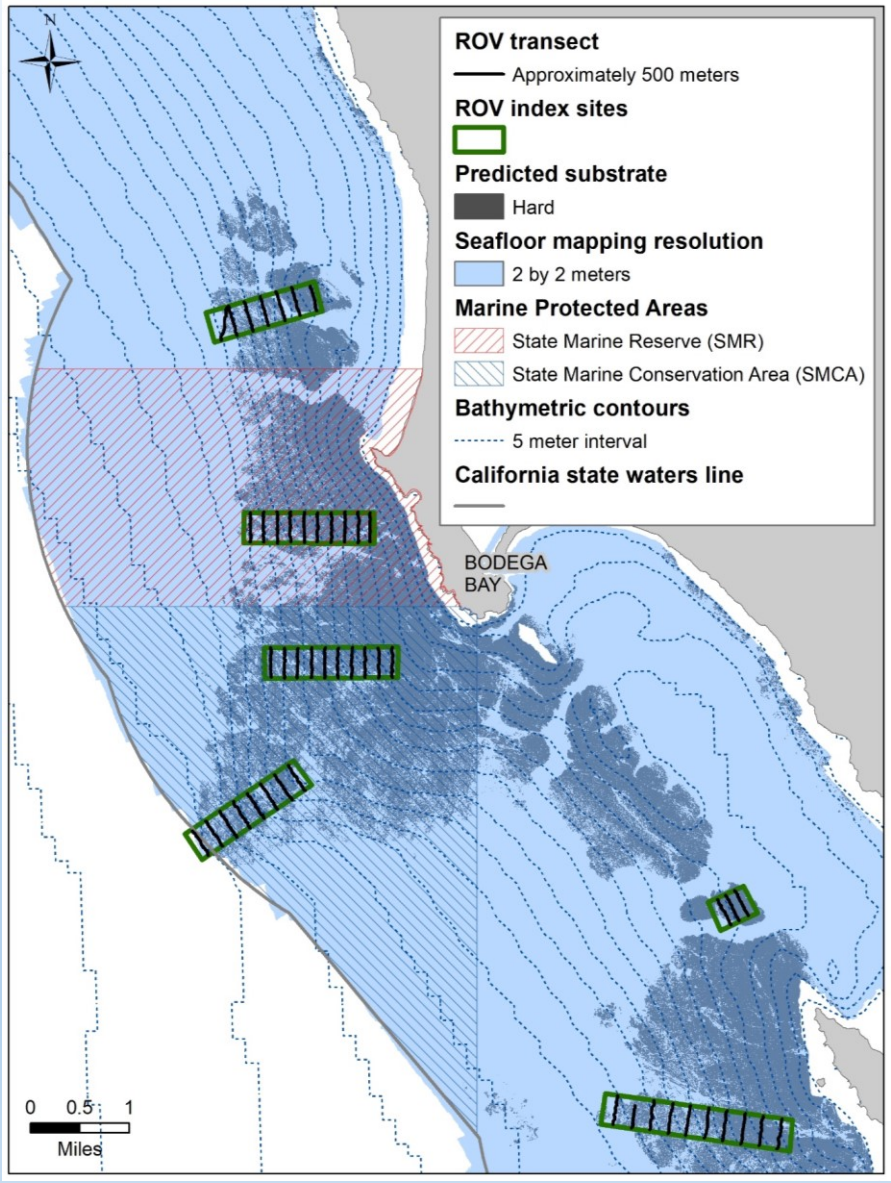


Substrate Determination and Scoring



Spatial Distribution

- MPA sampling design
- Index Sites
- Time Series



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