Overview of ROV Research Efforts in California

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Research Recap

- ROV work with Marine Applied Research and Exploration since mid 2000s for baseline long-term MPA monitoring
- Previous efforts with 20 m segments of transects and 10 m segments capturing finer scale associations with terrain attributes. Single super year
- Methodology review in 2020, guidance and analyses for OR and CA ROV projects, with workshop proposed
- Full state coverage for two periods 2014-2016 and 2019-2021, treated as super years
- Nick Perkins paper 10 m segment resolution analysis
- Transect level analysis began in 2022 working on copper rockfish
- Indices for two super years and design-based estimates of abundance

Methodology Review

Addressed

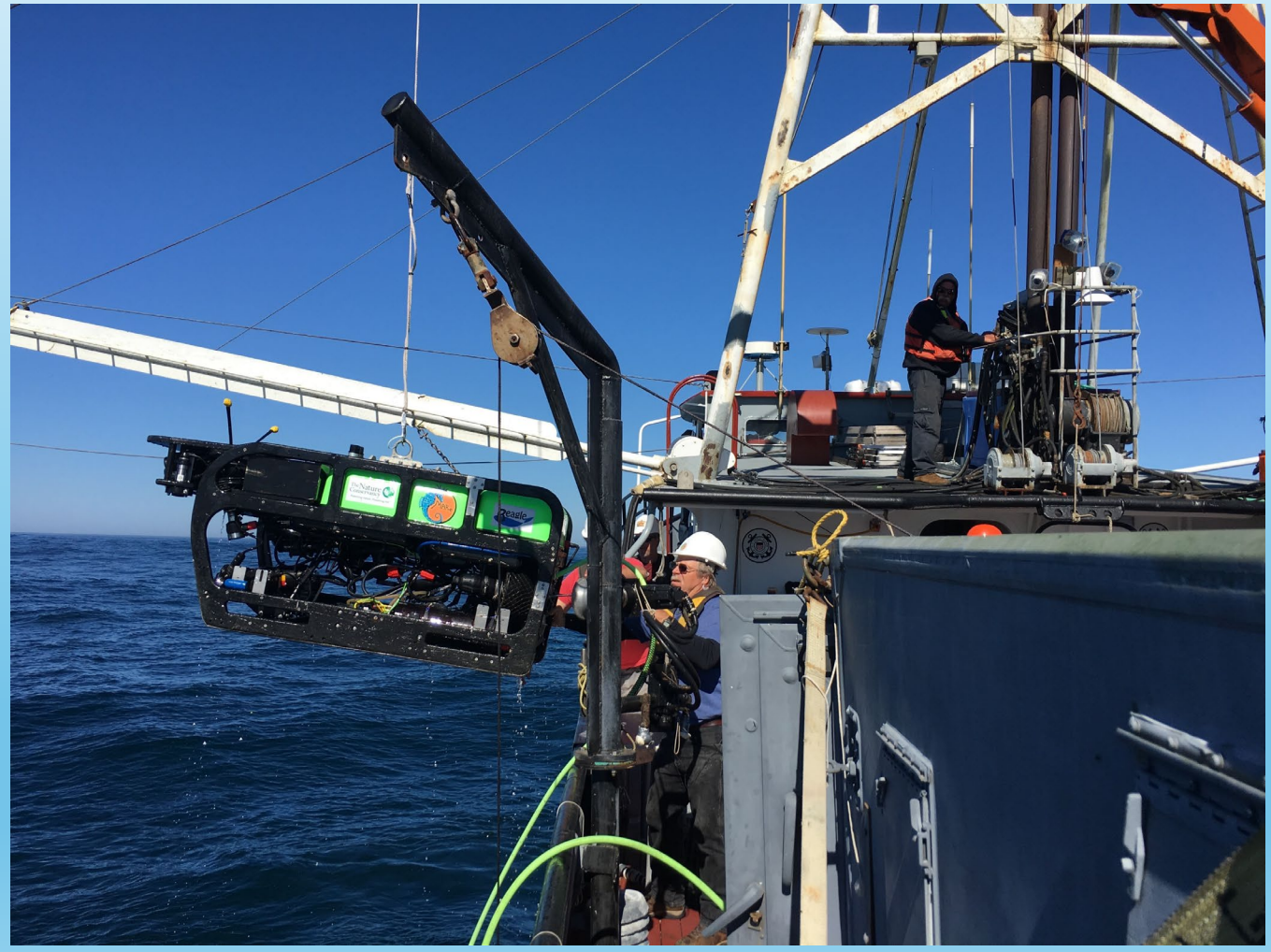
- Evaluation and comparison of segment vs. transect level scale analyses.
- Site as a random effect in transect and segment level analyses.
- Evaluate coverage of the survey and seafloor mapping to inform spatial coverage.
- Identify spatial and depth strata for design-based estimates of absolute abundance using length and density data.
- Design-based estimates with bootstrap CI.
- Orienting future data users to the ROV data set.

Remaining

- Model-based estimates of abundance-OR variance estimates.
- Comparison of seafloor from ROV and CSMP.
- Evaluate correlations with higher resolution habitat types vs. percent rocky reef or soft/rock/mixed.
- Examine the appropriate temporal scale for deriving indices or absolute estimates of abundance given regional data availability and sampling frequency.
- Evaluate the effect of zero values with various levels of resolution in segment length on indices and estimates of absolute abundance.

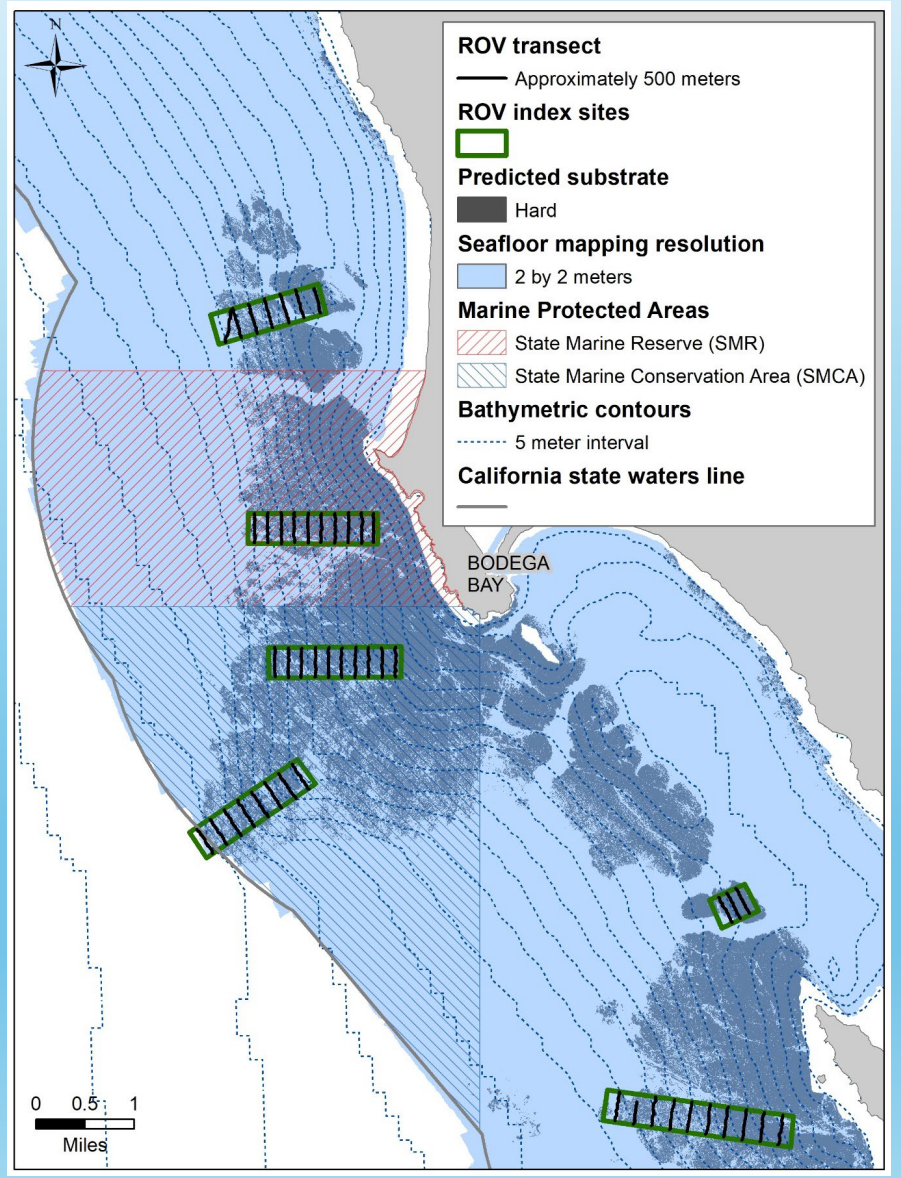
Sampling

- Second pass of the state between 2019 and 2021 for a 2020 super year of estimates
- Sampling continues in 2024 with reduced coverage
- Need more sampling locations in current depths within 100 m
- Need more coverage in deeper waters for shelf and nearshore Federal waters



Data

- SQL database compiling multiple projects
- Resolution from microframe to transect level.
- Microframe (1 second observation, 10 m segment and transect currently available
- Length data from stereo cameras
- Data user manual to facilitate use by academics and NMFS staff
- Improved seafloor layers for Federal waters CMECS essential fish habitat



Methods

- Transect level analysis vs. 10 m segments
- Analysis of spatial autocorrelation Dr. Nick Perkins
- Site level random effect
- How to address protection
- Preferred distribution
- Stereo camera length composition
- Design-based estimates of abundance

Incorporation in Assessments

- Index of abundance
- Abundance estimates as an index
- Absolute estimates of abundance to directly inform scale through catchability
- Independent estimates of OFL using proxy groundfish Fmsy with category 3 buffers

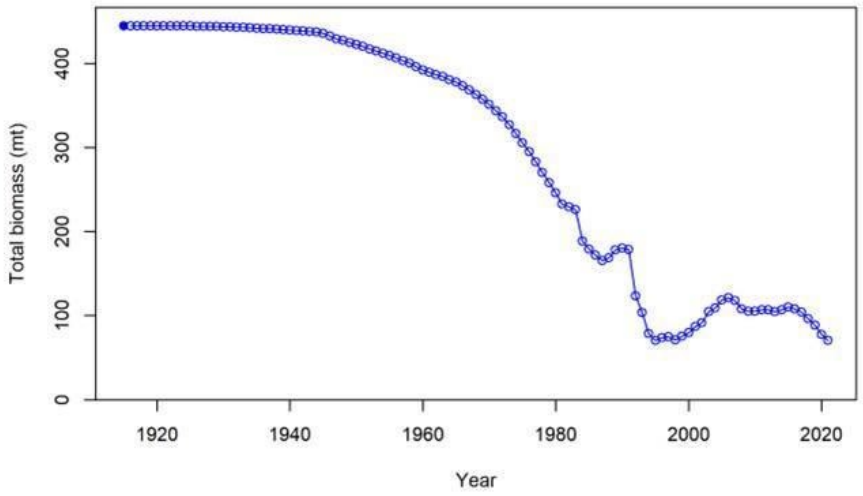


Figure 23: Estimated time series of total biomass.

Workshop

- Habitat Association
- Model-based Estimates of Abundance
- List of analyses for a workshop
- Oregon and California Assignments for Next Winter