COMPARING THE PERFORMANCE OF THREE SAMPLING TOOLS FOR ASSESSING FISH COMMUNITIES IN OREGON'S MARINE RESERVES

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WHY COMPARE METHODS?

Hook and Line

UVC - Scuba

Video Lander

ODFW uses 3 methods to survey fishes in Oregon's marine reserves.

Accurate reserve assessment hinges on ODFW knowing the biases related to the monitoring methods being used.

Baseline data collection is underway in 5 no-take marine reserves in Oregon.

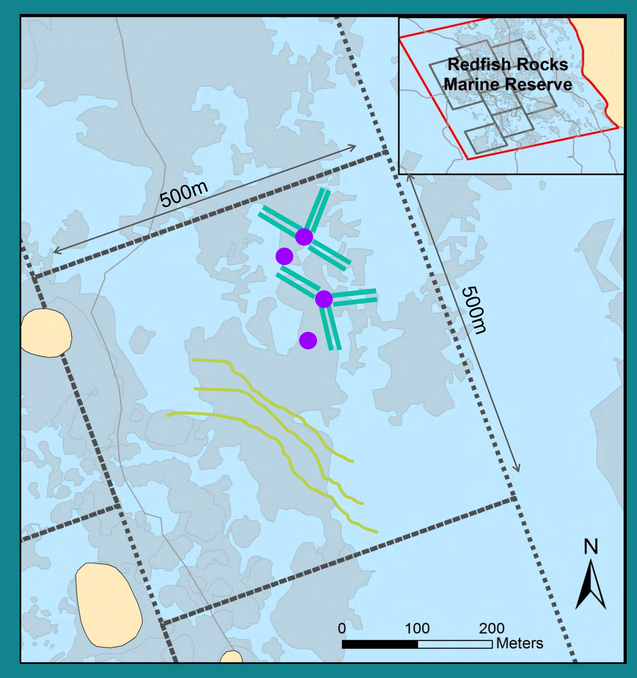
Hence, ODFW has a timely need to compare the strength and limitations of the 3 methods for the in the temperate Pacific.

In theory, the methods should produce related measures of fish abundance, size, and composition for a specific site at a given point in time.

STUDY DESIGN

Simultaneous sampling using 3 different methods

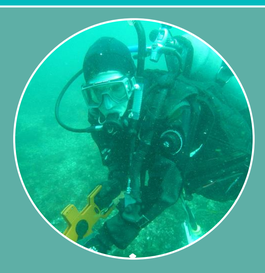
- Sample within replicate 500m x 500m cells
- Each cell was surveyed by:
  - 3 Hook and Line drifts
  - 12 SCUBA 60m^2 transects
  - 4 Video Lander drops
- To date, 29 grid cells sampled
- Analysis conducted at the cell scale



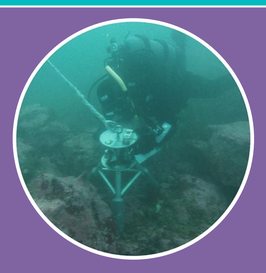
Within a 500m x 500m study cells, hook and line sampling (**yellow track lines**), SCUBA belt transects (**green rectangles**), and lander drops (**purple circles**) were sampled within 1 hour of each other

Response variables for comparison among the 3 methods

Species Richness
$CPUE_{species}$
Length
Community Composition



Species Richness
Species Density
Length
Community Composition



Species Richness
$MaxN_{species}$
Community Composition

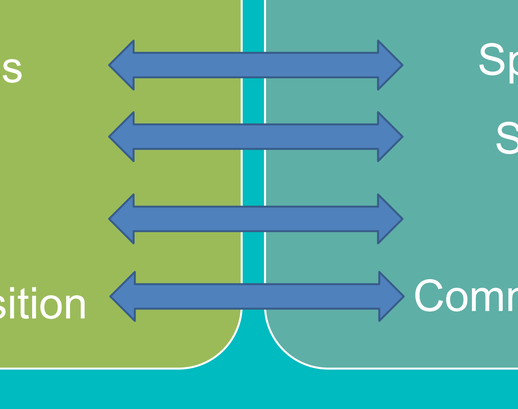
Preliminary results (data collection ongoing)

Ability to resolve individual fishes to species differs among methods

This complicates direct comparisons of lander richness & community composition to the other 2 methods

	Hook and Line	UVC SCUBA	Video Lander
% of fish observations scored to species	100%	100%	61%

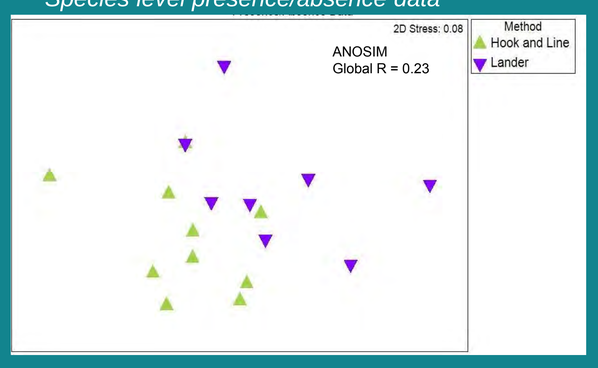
Species Richness: Confounded by differing level of species-specific identification between lander and hook and line.



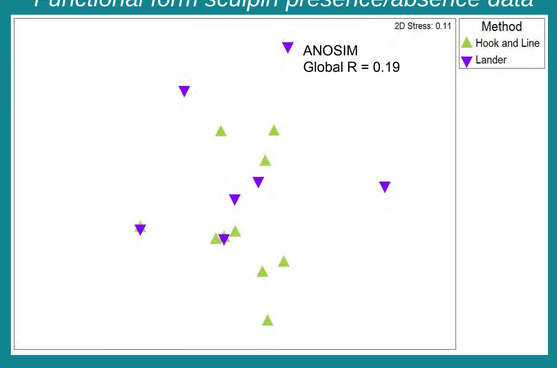
Lander samples fewer species on average compared to hook and line, this difference is not significant (paired t-test, P = 0.13). Analysis based on 10 sample grid cells.

Community Composition: Confounded by differing level of species-specific identification between lander and hook and line.

Species level presence/absence data



Functional form sculpin presence/absence data



Hook and line captured sculpins to the species levels while lander was only able to resolve functional group (i.e. Unidentifiable sculpin). Hook and line captured more rare rockfishes including China and Quillback while lander did not.