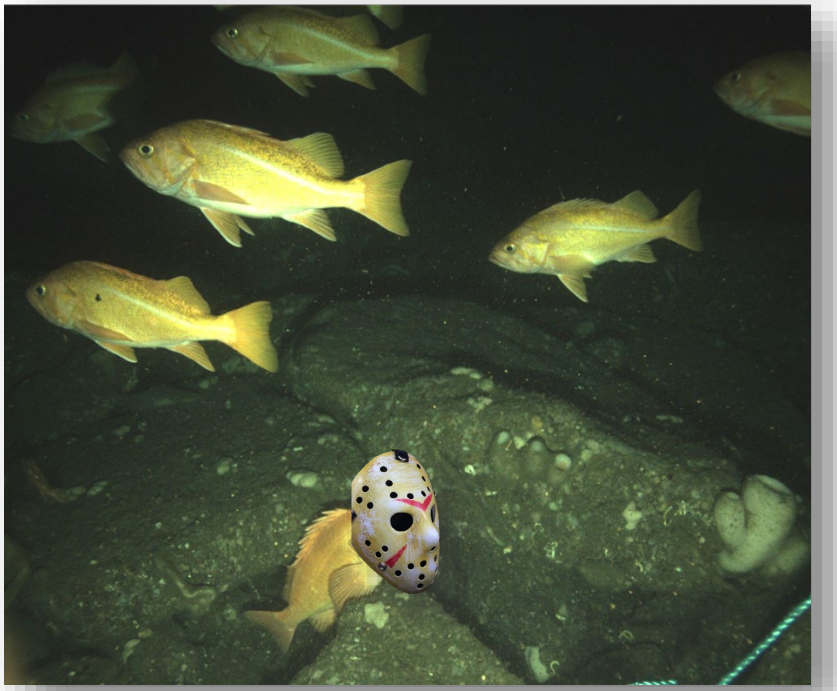
Halloween in the Untrawlable



Comparing different tools for surveying groundfish in untrawlable habitats

Peter Frey- Fishery Resource Analysis and Monitoring Division, Northwest Fisheries Science Center

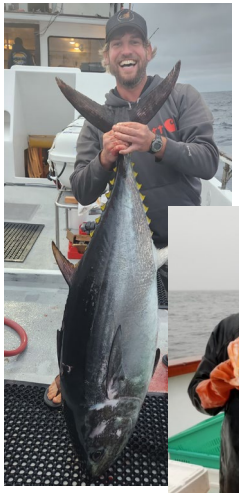
If you are seeing this slide, you're probably a Co-author

NWFSC: Dr. Aimee Keller, Victor Simon, John Harms, Aaron Chappell, Laurel Lamb, Keith Bosley, Dr. Linda Park, Abigail H. Wells, Dr. Meredith Everett

ODFW: Matt Blume, Dr. Leif Rassmuson, Kelly Lawrence, Elizabeth J. Bailey

AFSC: Dr. Kresimir Williams, David Bryan

NOAA Cooperative Research $$$









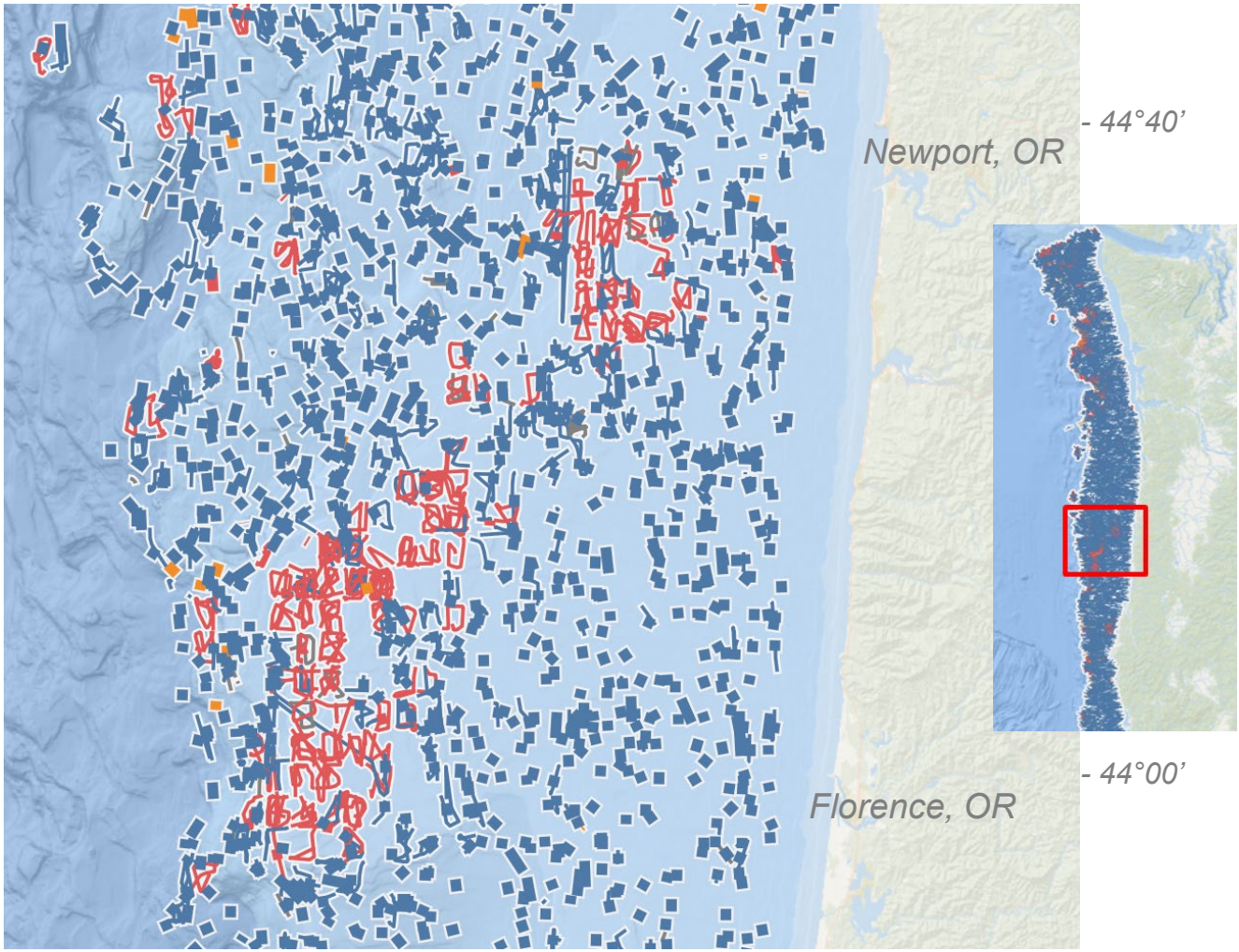
Talk Overview

- Background and purpose of project
- Survey tools and sample design
- Selected (i.e., half-baked) results
- Project takeaways and global view

Background

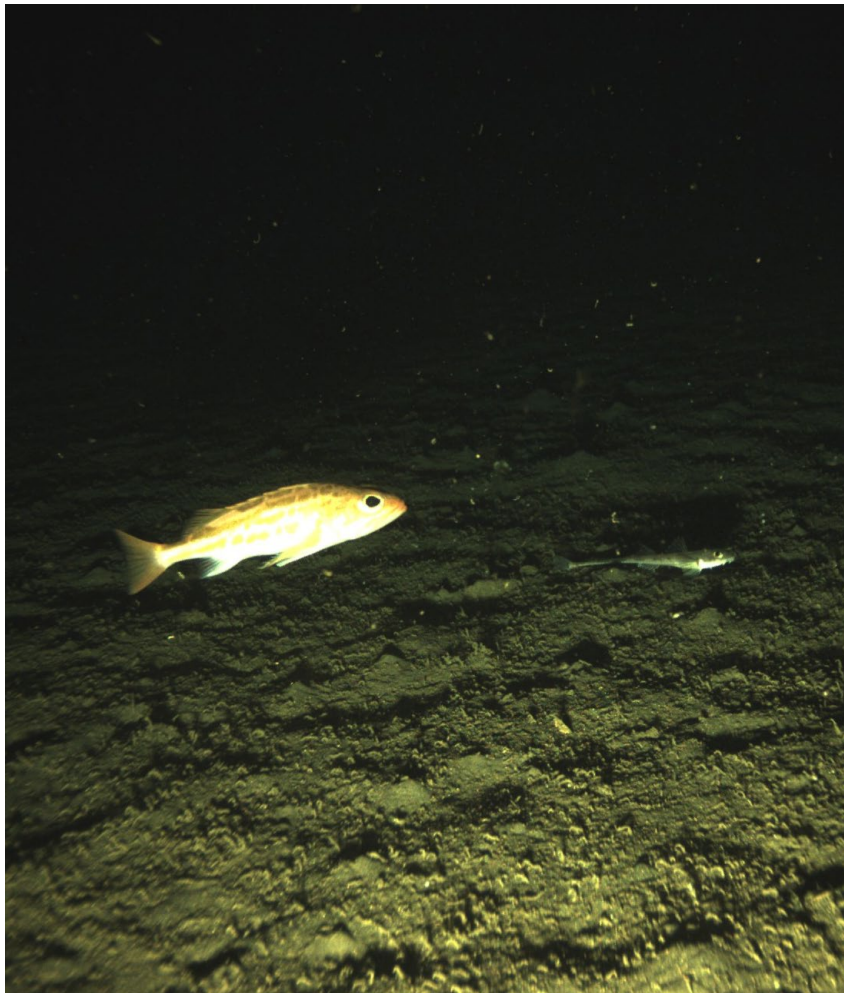
‘Untrawlable’ in a survey context

The **West Coast Groundfish Bottom Trawl Survey** provides pretty good coverage of shelf / slope habitats **that can be sampled with standard 8-10” footrope trawls**



Background

Trawlable



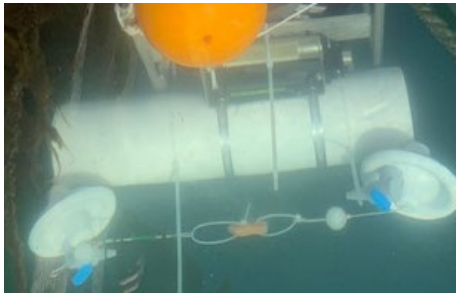
Untrawlable

Purpose: Test the efficacy of various methods to survey groundfish in untrawlable shelf habitats

AFSC TrigCams: Stationary paired stereo images

ODFW Lander: Stationary High Def Video

AFSC TowCam: Towable stereo image platform



Environmental DNA: Near-bottom water samples


TowCam
Niskin bottle
Video Landers
TrigCams

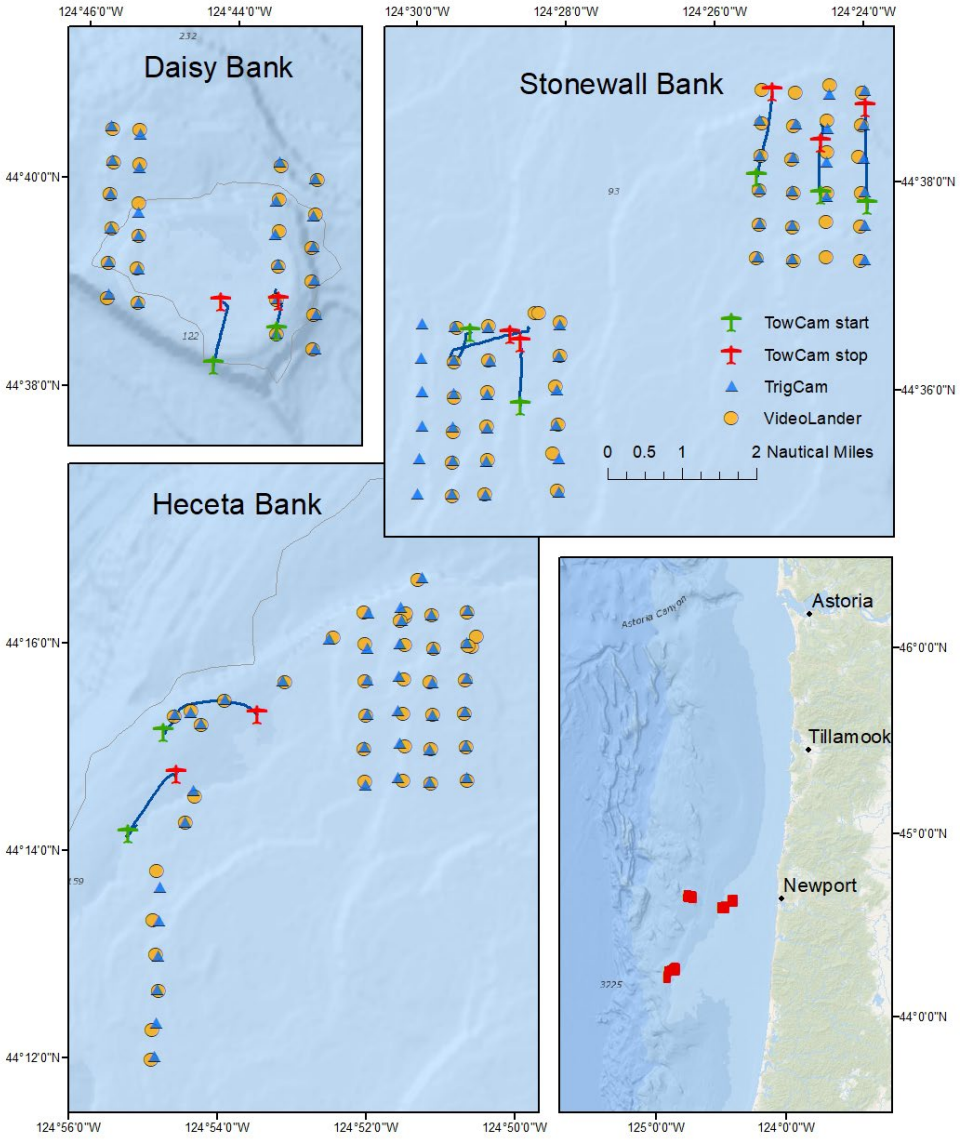
Methods: Sampling Design and Effort

Design

- 5 Sample days
- 3 Banks, 55 – 225 m depth
- Station grid design (600 m between drops)

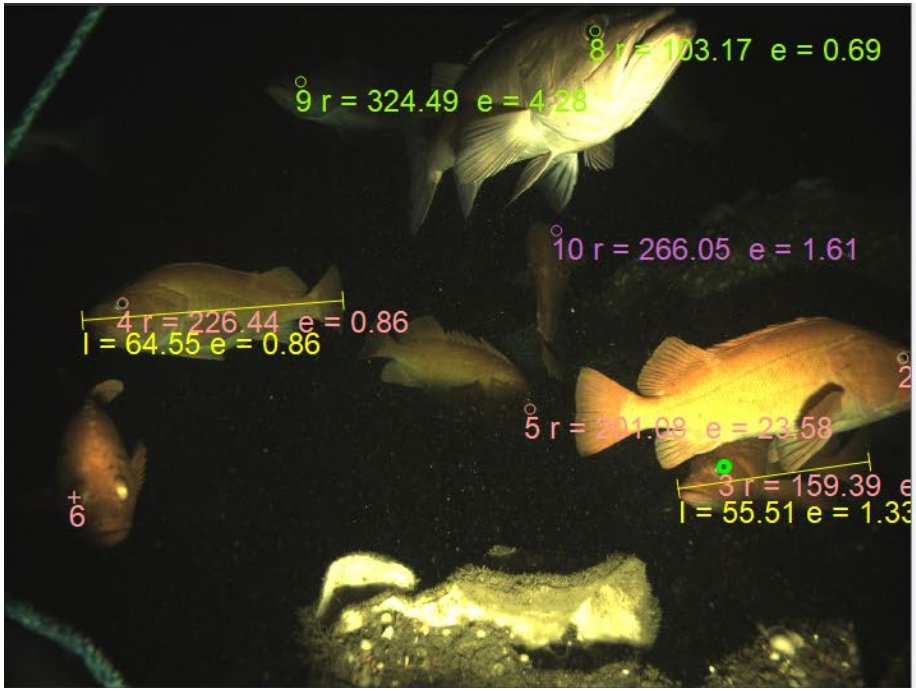
Effort

- 108 Paired drops w/ Trig Cam and Video Lander, offset by 1 to 3 hrs.
- 83 eDNA collections
- 9 Opportunistic tow cam deployments



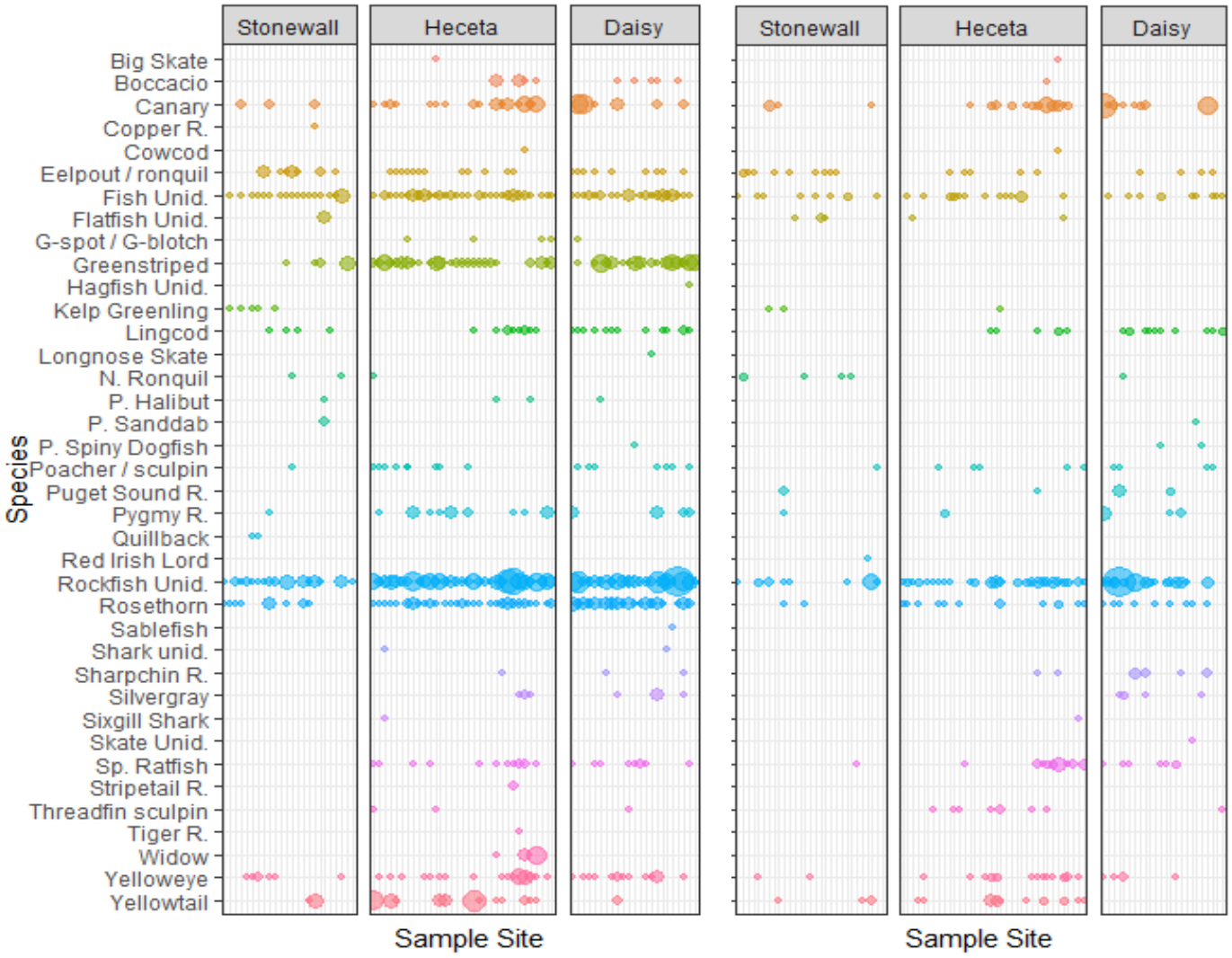
Results: TrigCam review stats

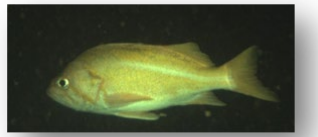
- 77% Satisfactory drops based on visibility and view
- 29,864 reviewed frames, 12,504 ID targets, 1,171 length targets
- Analysis time: roughly one global pandemic

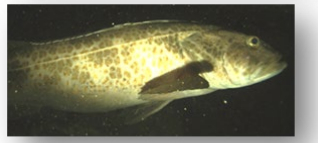


Results: Species totals / MaxN

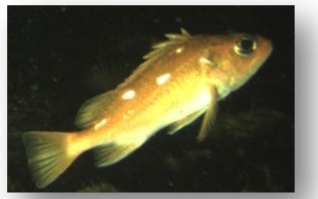
TrigCam: **29** Species Video Lander: **21** Species



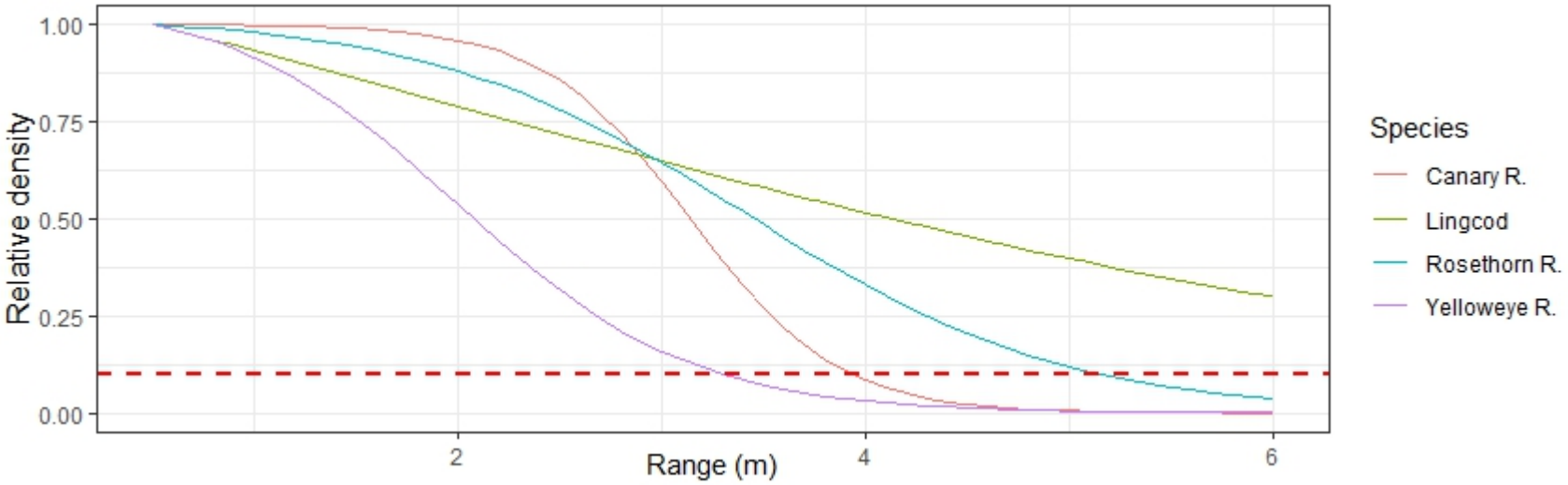


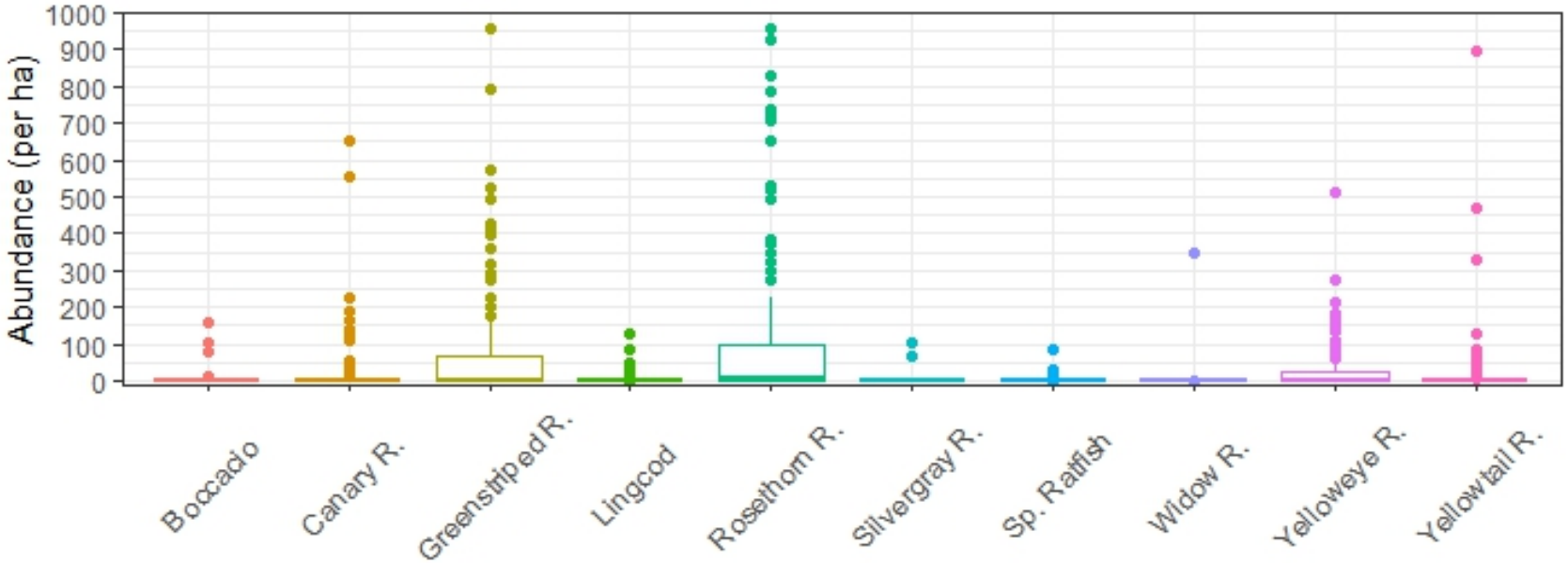


MaxN
- 1
- 5
- 10
- 30

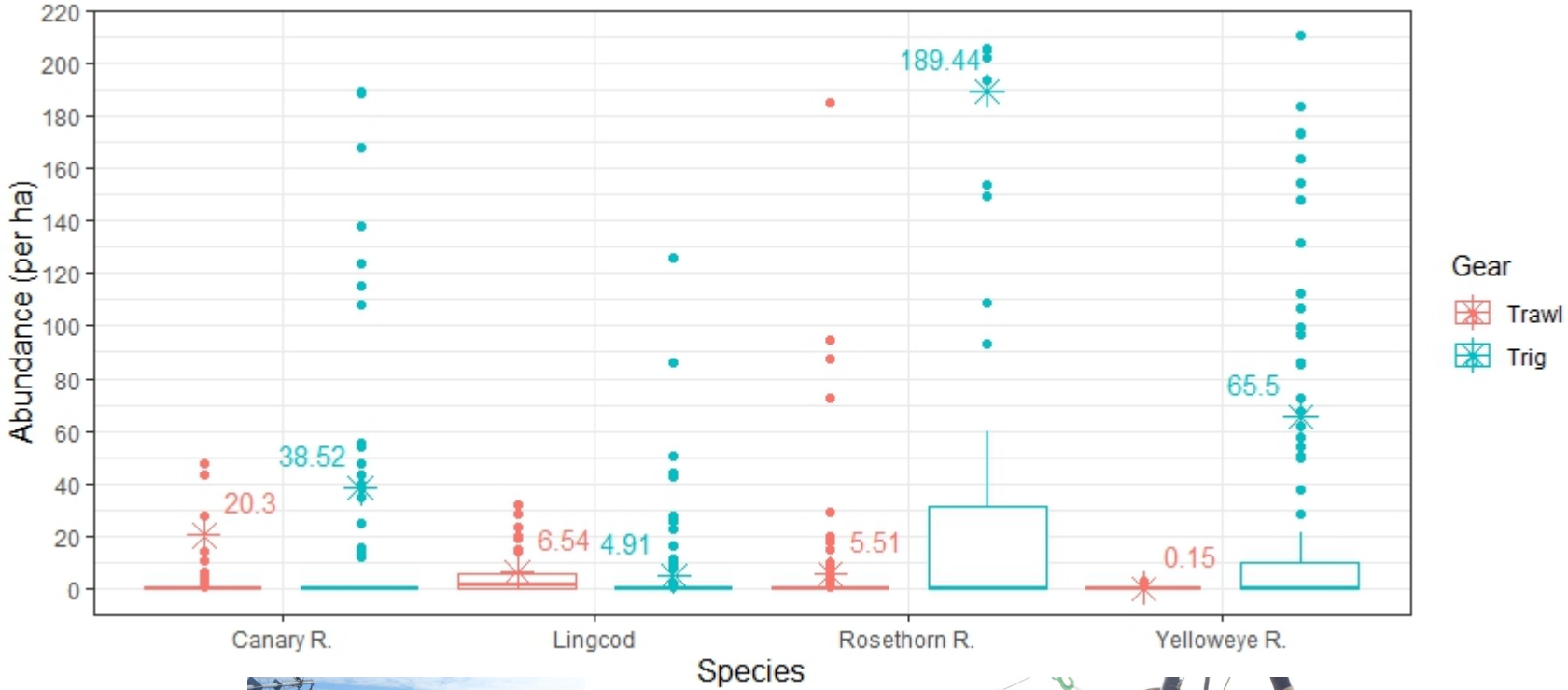


Results: TrigCam density / abundance

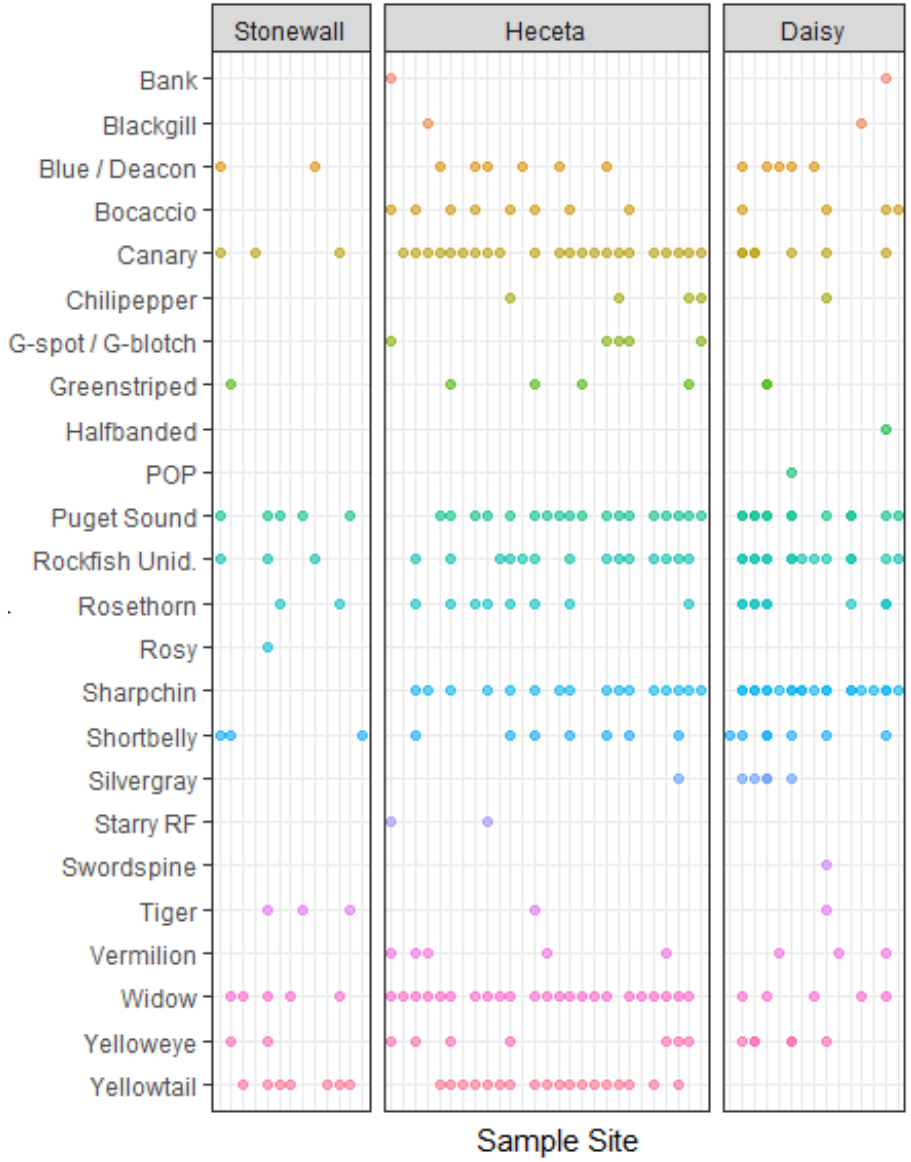




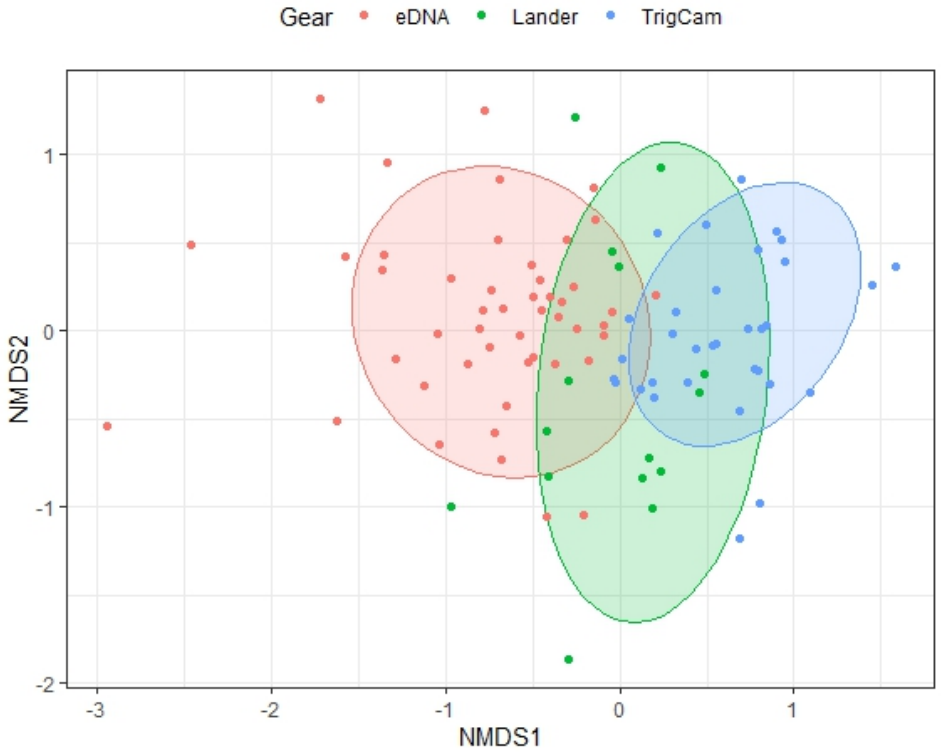
Results: TrigCam vs NEARBY trawl abundance



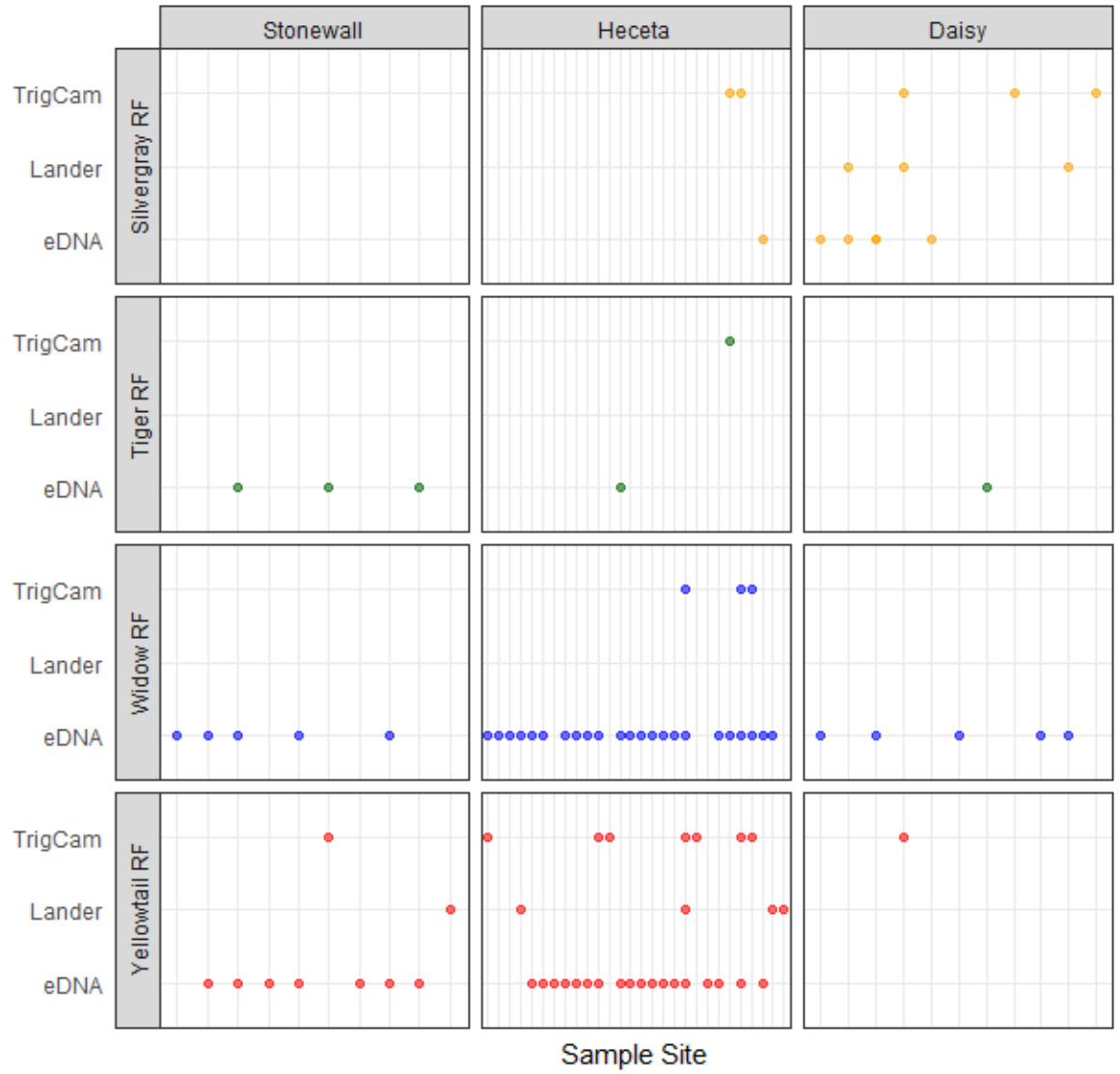
Results: eDNA species presence (rockfish only)



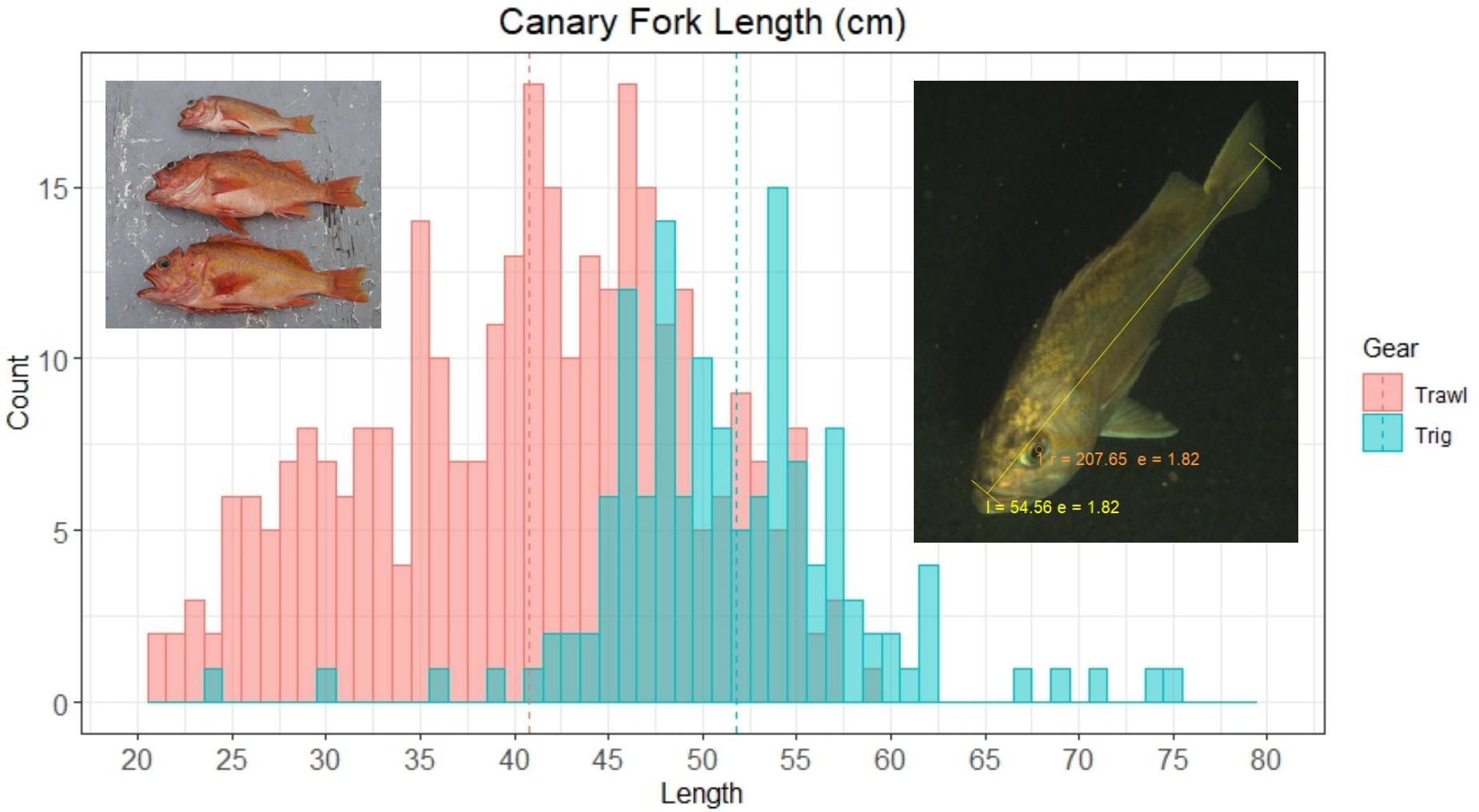
23 Rockfish species, 11 of which had not been identified in image analysis



Results: Species presence

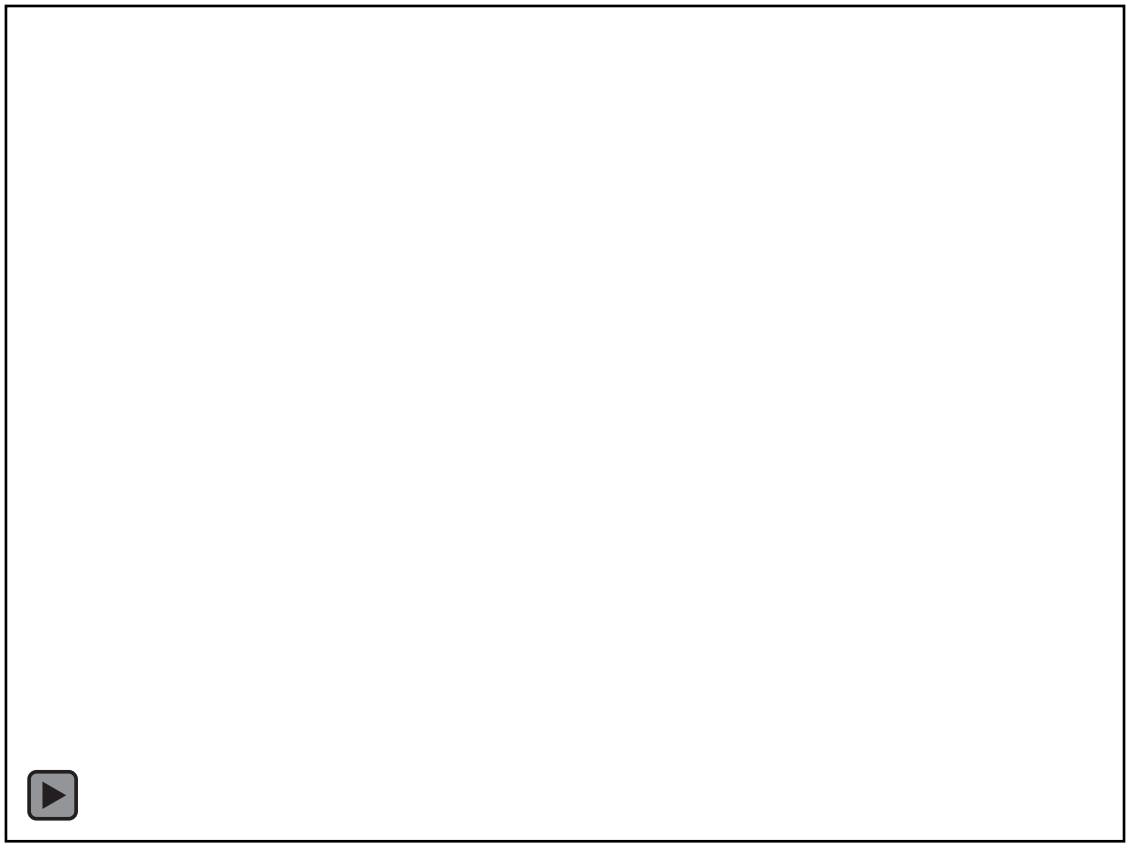


Results: length frequency



Results: TowCam

- 9 Tows performed opportunistically, zero cameras lost!
- Analysis in progress, great coverage, easy deployment, a few kinks to work out



Key takeaways

- Camera systems have the **potential to provide presence, abundance, and length data** indices in critical habitats that are inaccessible to trawl sampling.

- Crab gear-style systems **require a lot of deck space and time** and probably warrant a vessel dedicated to the task. A self-contained **towable camera system might fit right in on a trawl survey**.

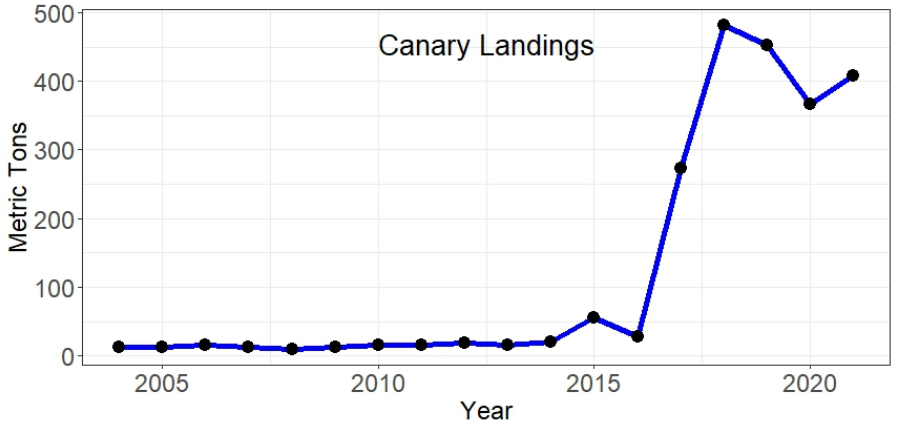
- Image analysis for a scaled up camera survey would be a **full-time job.**

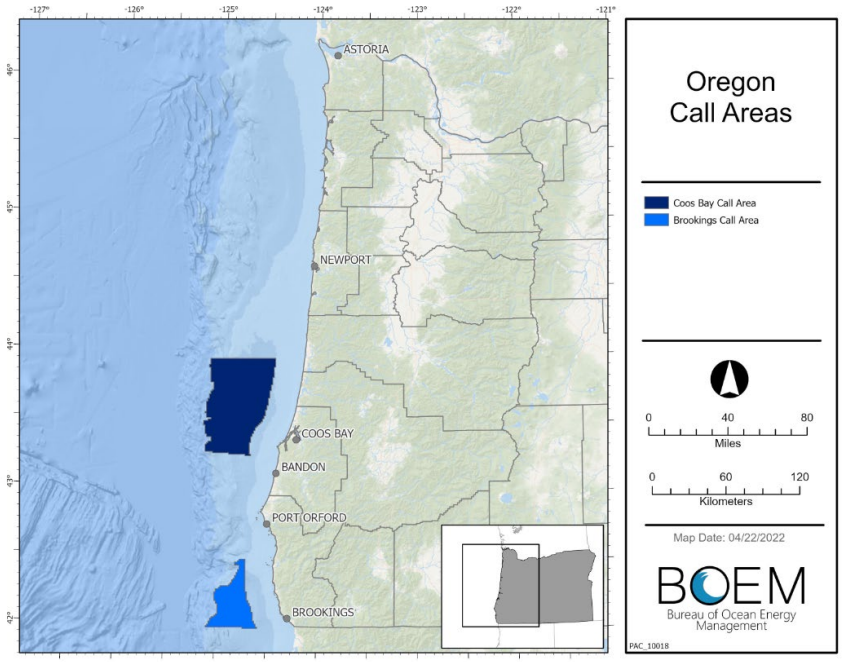
- eDNA can compliment other sampling methods in revealing species presence, but requires some **special treatment of samples onboard**.

Zoom out- Why invest in untrawlable sampling?

- If the rockfish good times don't last, we will once again have to answer shareholder questions about **why we don't count fishery-limiting species where they live?**

- Significant areas may cease to be accessible to trawl sampling with the development of offshore wind. **Change is hard, but overlapping time series can make it easier.**





Special thanks to Captain Mike Retherford Sr. and the second-to-none crew of the F/V Excalibur

Fish Quiz, dark and blurry edition!!!