Videos From the Sea: The Fish and the Wrecks

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Managing Yelloweye Rockfish

Yelloweye rockfish comprise most of the commercial demersal shelf rockfish (DSR) harvest in southeast Alaska, about 95%! The other six species in the DSR complex include quillback, tiger, China, canary, copper and rosethorn rockfish. Rockfish are a long-lived, slow-maturing species. A habitat-based, fishery-independent survey was developed to asses this fishery in a non-lethal visual underwater survey using distance sampling methodology.

The ROV helps us better manage the fishery, however it comes with challenges. There are often times when the visibility is poor or the ROV may be hung up. We account for this in the quality review to make sure the assumptions of distance sampling methodology are met.

ROV Buttercup

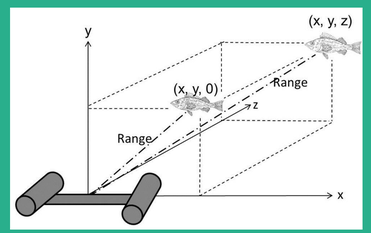
Subdistricts Surveyed

What is Distance Sampling Methodology?

Objects on the line must be detected with certainty, every object on line must be detected

Objects must be detected at their initial location

Distances from the transect line to each object are measured accurately



The components of a 3D point measurement used in calculated fish size and distance from the transect line in ROV surveys of yelloweye rockfish in Southeast Outside (SEO) Subdistrict of the Gulf of Alaska. The ROV moves in the direction of the *z* plane and the *x* component represents the distance from the transect line.

Yelloweye rockfish are measured from tip of nose to fork of tail. Measurement are taken when the fish are visually well defined enough to produce quality estimates.

Qualifications for Quality

ROV is moving normally at a constant speed of 0.5 knots

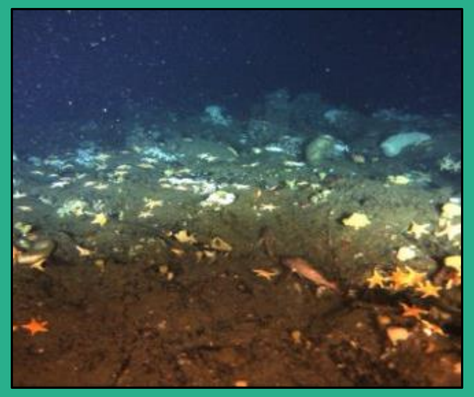
Seafloor is in view approximately 1 meter from the bottom

Visibility is clear enough to view fish on the transect line

Anything that doesn't make all three of these assumptions gets flagged and cut from final analysis

Stereo Camera View

The stereo camera review shows what is in front of the ROV and aids us in identifying any fish on or near the transect line.

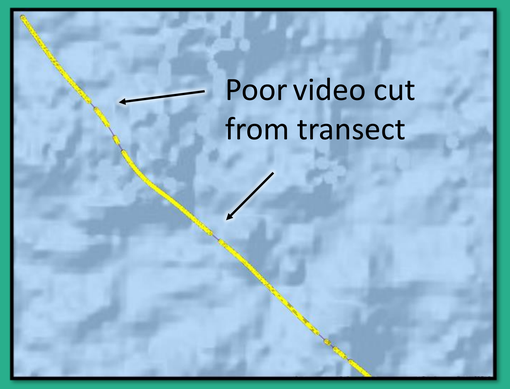


Belly Camera View

The belly camera aids us in identifying any fish that were missed in the initial stereo review.

Good video overlaid onto a survey transect

1 km line transect surveyed at sea → Video reviewed for segments of poor quality → Segments overlaid with navigation data → Total line of transects = 1km – poor segments → Used in Density and Biomass calculations



We account for the segments of poor quality by excluding them from final data analysis since these segments do not meet the assumption of distance sampling methodology. For each survey transect, we survey about a 1 km transect line at sea, the video for the dive is then reviewed and segments of poor quality are marked and flagged. Then the segments are overlaid on to the navigation data using R and ArcGIS. The total line of the transect becomes the 1 km area surveyed minus the areas with poor video. This final total line is what is used in the density and biomass estimates.

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