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Science Center Activities

June 26, 2021

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Overview

- Survey Updates
- NWFSC-Industry Acoustic Data Collaboration
- Recent Publication of Interest
- Staffing Change

Survey Updates



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2021 WC Groundfish Bottom Trawl Survey

Cornerstone, long-term time series for 90+ species and California Current Ecosystem.

Four vessel Survey: Two passes, two chartered vessels each, from Cape Flattery to US-Mexico border.

- **Pass 1** May 14-Jul 23 - *Ms Julie* and *Last Straw* - underway as scheduled.



2021 WC Groundfish Bottom Trawl Survey

- **Leg 3 of Pass 1** - June 27-July 16: San Francisco south to the US-Mexico border.
- **Pass 2** Aug 16-Oct 22 - *Excalibur* and *Noah's Ark*: planning five legs with 9-10 fishing days each.



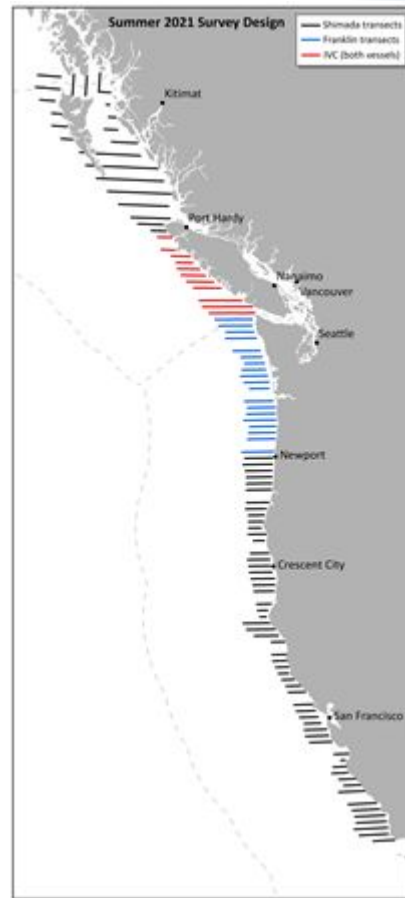
Joint U.S./Canada Integrated Ecosystem and Pacific Hake Acoustic Trawl Survey

Long-term time series (25+ years) of Pacific hake and environmental conditions in CCE

Successful pre-survey Gear Trials on *Shimada* (June 4-6)

Two vessel joint survey:

- ***Shimada*** (US) – 3 legs - June 27-July 17, July 20-Aug 9, Aug 26-Sept 24
- **IVC** with *Shimada* and *Franklin* - Aug 28-Sept 3
- ***Franklin*** (Canada) – two legs - Aug 11-24, Aug 25-Sept 6



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The Southern California Rockfish Hook and Line Survey

Planning for a 3-vessel Hook & Line Survey (Mirage, Tornado and Aggressor)

- **Mobilization:** Sept 20-21, Oxnard, CA
- **Leg 1:** Sept. 22-28
- **Port Call:** Sept. 29-30, Long Beach, CA
- **Leg 2:** Oct 1-7
- **Demob:** Oct. 8, Long Beach, CA



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SWFSC Rockfish Recruitment and Ecosystem Assessment Survey

Annually May and June - midwater trawl to collect juvenile rockfish and other plankton and nekton, and routine oceanographic observations to inform stock assessments and IEA.

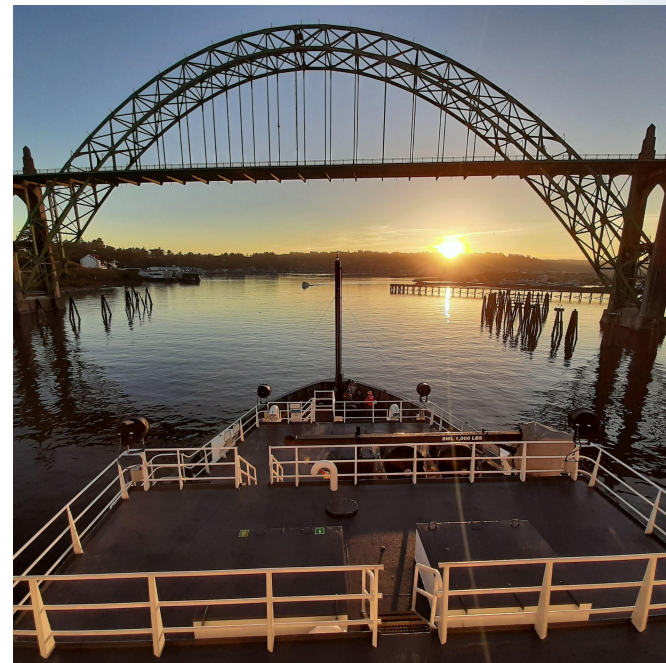
- 40-day survey was completed successfully on the NOAA Ship *Lasker* (San Diego to Columbia River).
- Catches of juvenile rockfish, juvenile Pacific hake, and other juvenile groundfish were above average but not close to record high levels.
- Nearshore stations in the southern and central portion had moderate to high catches of adult anchovy, but we observed fewer YOY anchovy this year relative to recent years.
- Pyrosomes also remain abundant, primarily in waters south of Cape Mendocino.
- Both market squid and krill catches were relatively high compared to recent years.
- Overall impression - relatively productive, cool upwelling regime.



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Northern California Ecosystem Surveys

- **Newport Hydrographic Line** bi-weekly sampling off Newport, Oregon
- **Northern California Current (NCC)** survey conducted in late May, from Crescent City, California, to La Push, Washington.
- The **NCC** survey was conducted during September 2020 on the NOAA Ship *Shimada*, and canceled during February 2021 due to the weather.
- Surveys collect data on biological, chemical, and physical indicators used in ecosystem status reports of the Northern California Current.
- Upwelling started early this year (February) with the strongest wind stress in the past 20 years, current upwelling winds are average.
- The shelf water off Newport has been cold with a high biomass of lipid-rich copepod species.



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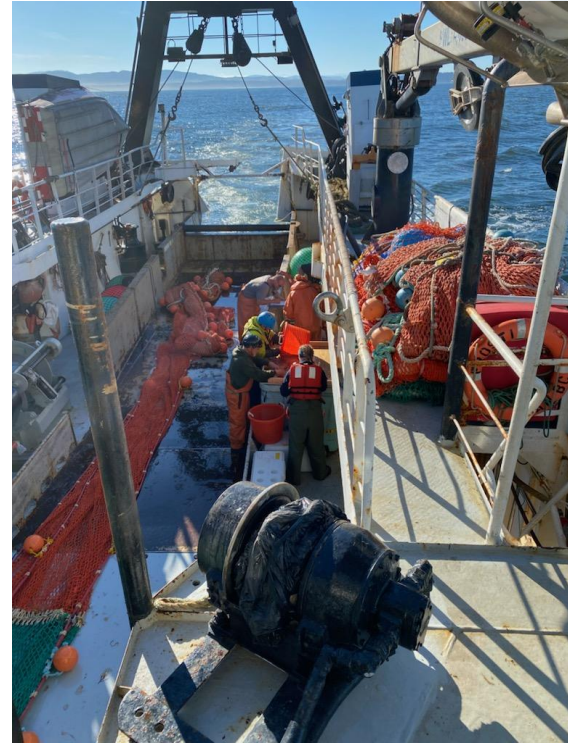
Columbia River Estuary PIT Trawl Survey

- This survey recently wrapped up its 2 1/2 month spring operations sampling PIT-tagged salmon and steelhead in the Columbia River Estuary.
- Data support the estimation of juvenile salmon survival through the hydropower system.
- Despite operating with a reduced effort this year (due to COVID restrictions), the survey increased detection efficiency from previous years to make up for some of the lost effort.



Juvenile Salmon and Ocean Ecosystem Survey

- Sampled from May 24-26 from just off the mouth of the Columbia River to La Push, Washington.
- The second Juvenile Salmon and Ocean Ecosystem Survey started sampling on June 20 off of the northern tip of Washington and will continue sampling to Newport, Oregon, through June 27th.
- Observations in addition to juvenile salmon include forage fish, such as herring and anchovy, and some gelatinous taxa.



How Will Missing Recent Survey Data Impact 2021 Stock Assessments?

The impact of having only 2 trawl survey passes instead of 8 over 2019-20 will vary, depending on:

- Whether the species live primarily outside of the trawl survey frame (e.g. shallower than 35 fm) or in rocky high-relief or mid-water habitats
 - If the survey doesn't see them: minimal-to-no impact on assessments
- How influential the survey index has been in previous assessments
- The degree to which sampling of fisheries can provide similar compositional information to foregone survey data
 - More impact if the survey selects much younger fish than the fisheries
- The presence of extreme recruitment events, which would not be signaled by the fishery, due to selectivity



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Upcoming Analysis of Missing Survey Impacts on Stock Assessments

By the Sept. Council meeting:

- Modify some prior assessments with full survey data to provide insights on potential impacts
- For example, starting with a 2017 assessment
 - Remove the 2016 survey and half of the 2015 survey data
 - Document changes in the point estimates for stock status and OFLs, and the associated uncertainty of the estimates
 - Compare with making the same reduction in two earlier years to illustrate impacts when gap is not at the end of the time series

NMFS-Industry Acoustic Data Collaboration



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Pilot Study: Collecting acoustic data from hake industry vessels



Goals

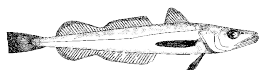
1. Assess the *quality*, *coverage*, and *suitability* of acoustic data from industry vessels to provide supplemental data to inform the stock assessment/survey
2. Promote collaboration between science and industry groups

2021 participating vessels

Vessel	Vessel Type	Location
Northern Jaeger	Catcher-processor	Seattle
Island Enterprise	Catcher-processor	Tacoma
Sea Storm	Catcher	Seattle
Northern Ram	Catcher	Newport
Seeker	Catcher	Newport
Predator	Catcher	Newport
Raven	Catcher	Newport

Thank you!

- *Dan Waldeck (PWCC)*
- *Heather Mann (MTC)*
- *Sarah Nayani (Arctic Storm)*
- *Other industry liaisons and vessel crew*



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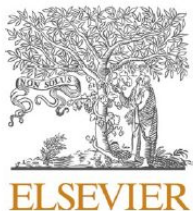
Recent Publication of Interest



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Model-based estimation of average fish weights from recreational fisheries

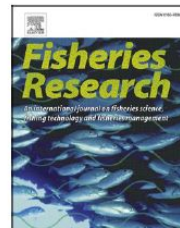
Fisheries Research 241 (2021) 106002



Contents lists available at [ScienceDirect](#)

Fisheries Research

journal homepage: www.elsevier.com/locate/fishres



Model-based estimation of average fish weights from recreational fisheries

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- Fisheries management and stock assessments rely on accurate and precise estimates of species catch amounts.
- In recreational fisheries, state agencies typically focus on accurately estimating the number of each species caught,
 - ➔ then applying avg. weights to those to calculate catch weight
- When sampling strata have insufficient weight samples, average weights can be highly-variable or missing
- Simple, deterministic borrowing algorithms have been used for decades to fill in gaps. These have:
 - Ignored considerable relevant information,
 - Relied heavily on assumptions, and
 - Yielded total catch weights that lack uncertainty estimates

- A Washington case study identified several factors that affect average weight (**year**, **month**, **port**, and **vessel type**) and showed that sharing information across strata can improve weight estimates.
- The model-based approach for estimating average weight outperformed the current borrowing algorithm in **reproducing observed data**¹, and also provided uncertainty estimates.
 - ¹ How closely can the avg. weights of well-sampled strata be replicated by either approach
- WDFW plans to implement this approach, and the method is transferable to other west coast recreational fisheries.
- The models explored in this paper provide means of improving the precision of average-weight estimates, which in turn will improve the precision of assessments which rely on them



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Questions?



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