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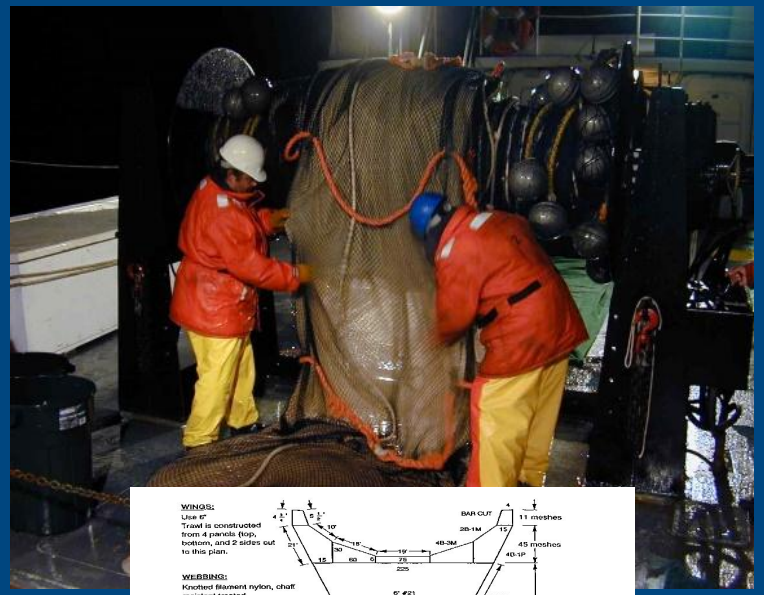
NWFSC

Juvenile Rockfish and IPHC surveys

FISH 576, Week 2

Rockfish Recruitment and Ecosystem Assessment Survey: 41 years of data!



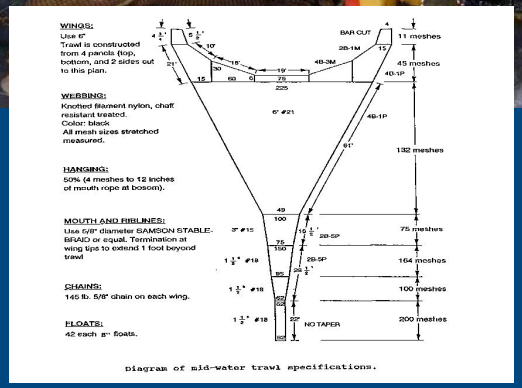
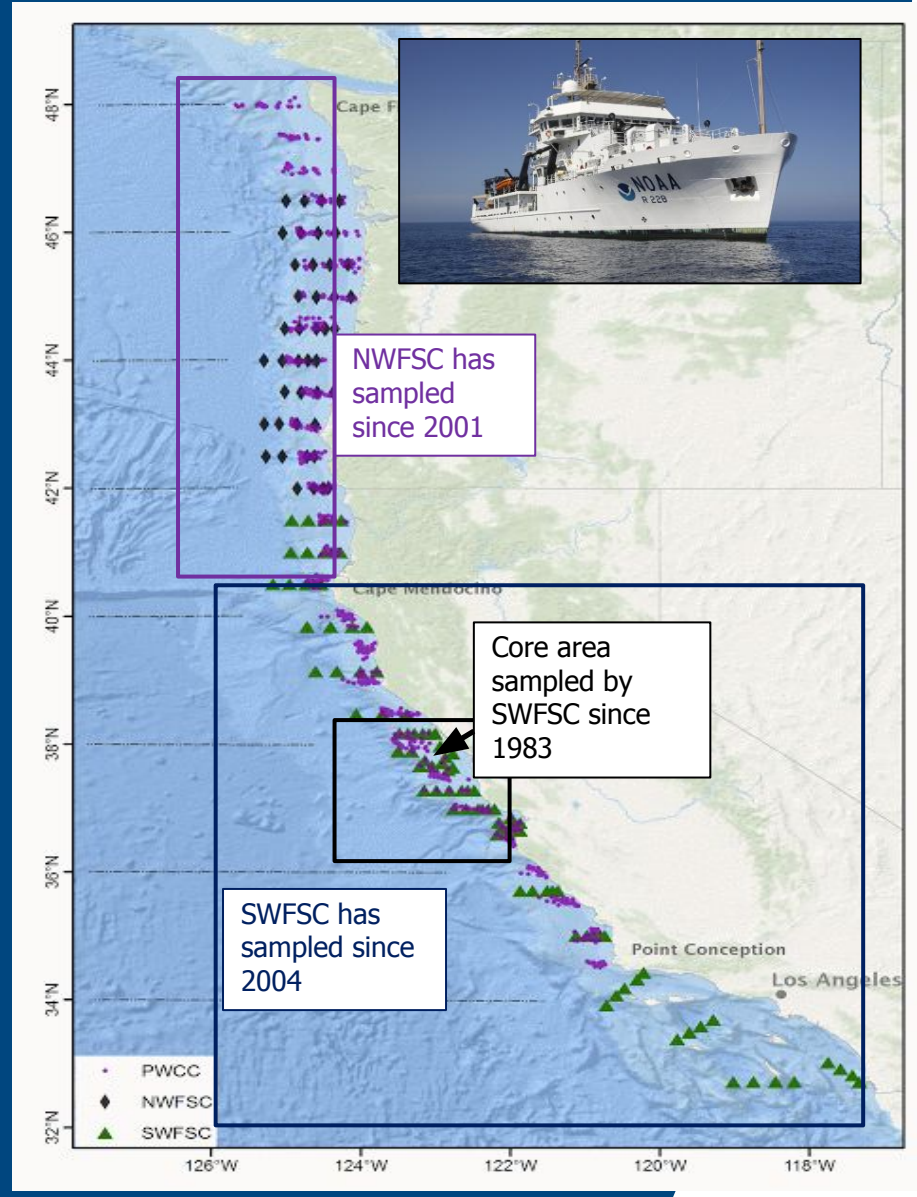


Diagram of mid-water trawl specifications.



Survey began in 1983, coastwide data available from 2001 to present. Midwater trawling conducted at night using a modified Cobb midwater trawl. Catches sorted, measured at sea.

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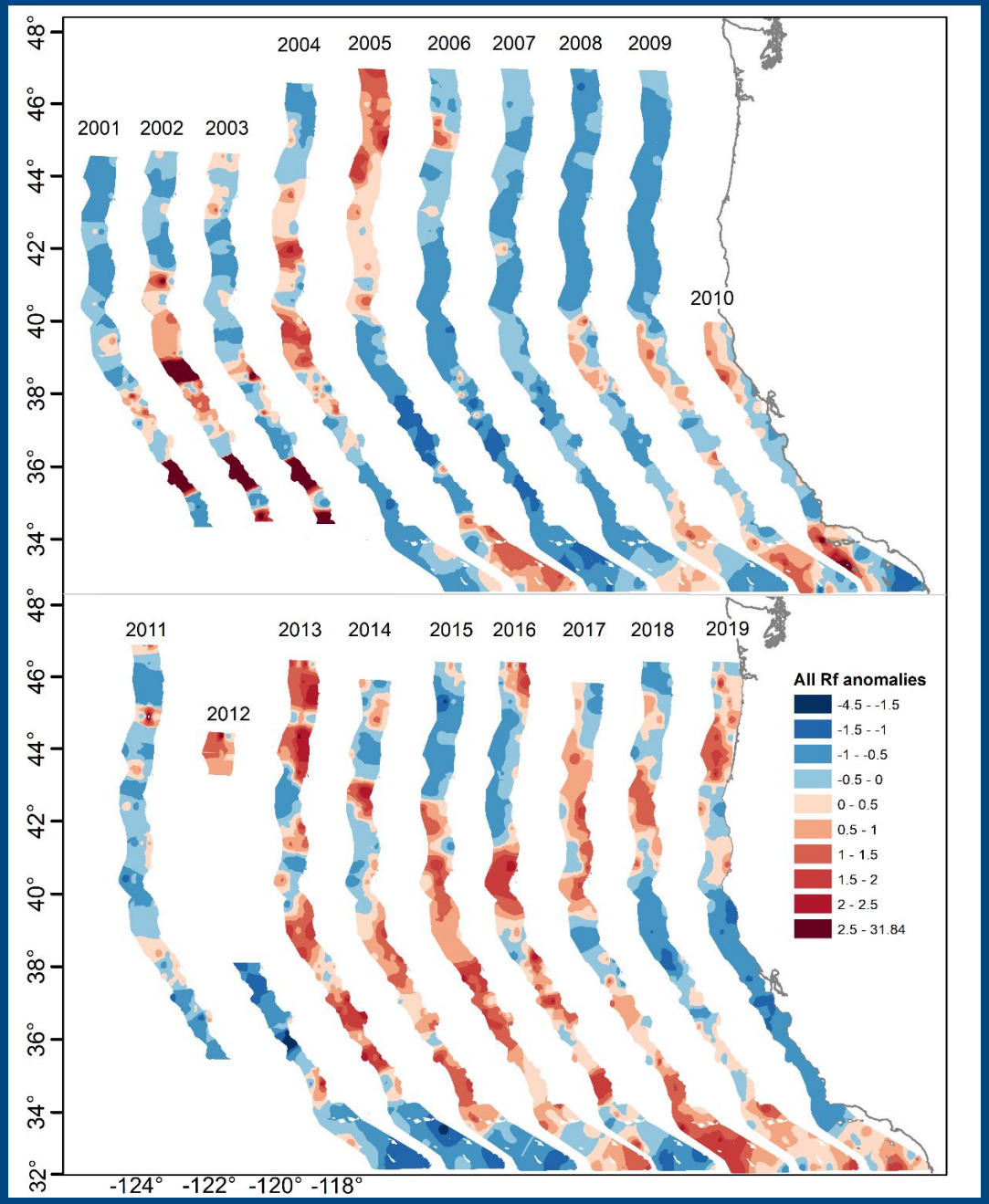
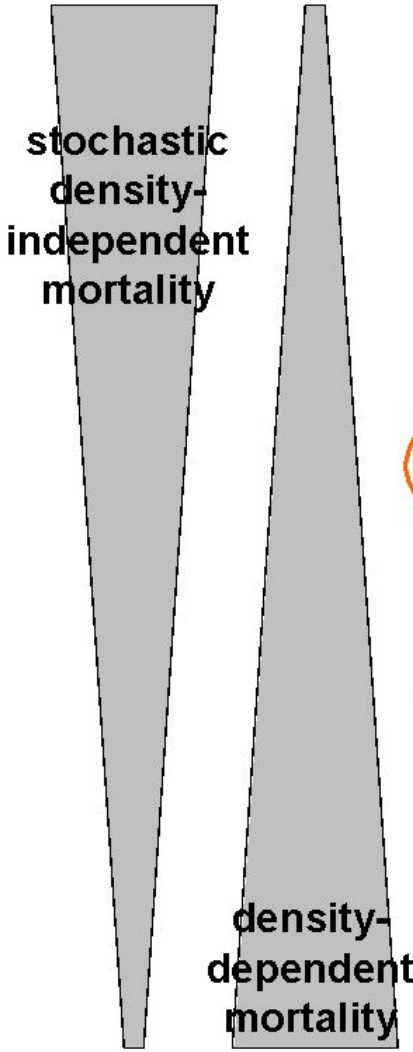
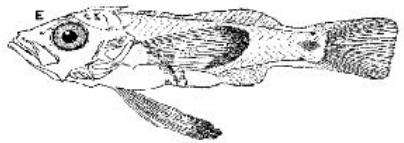
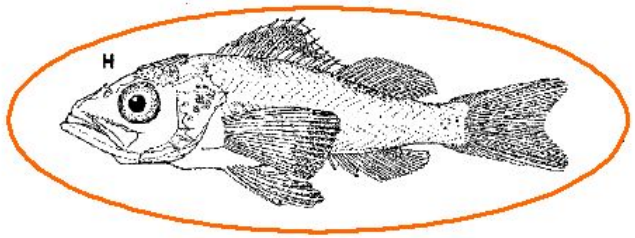


- Nearly 20 years of coastwide data .
- A lot of patchiness over large scale regions for pelagic Young-of-the-Year abundance.
- Signal often quite different north and south of Point Conception, Capes Mendocino and Blanco (Field et al. 2021).
- Consequently, indices limited to coastwide data, to 2001 or 2004 period onward (depending on species).

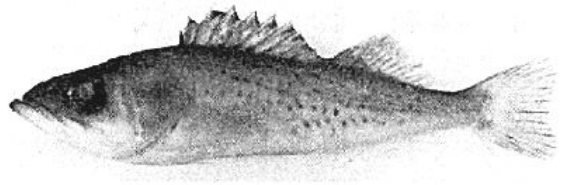


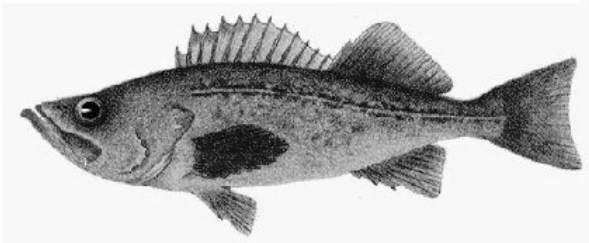
Larval abundance used as index of spawning biomass (cowcod, bocaccio, others)





Pelagic YOY used as an Age 0 (recruitment) index (standardize to 100 days)





Fisheries and survey data used to inform abundance trends, population structure

Pelagic YOY abundance reflects year class strength after most of the density-independent processes have taken place. However there are clearly complex dynamics across all life history stages!

Indices are treated in assessment models as estimates of age 0 abundance (relative).

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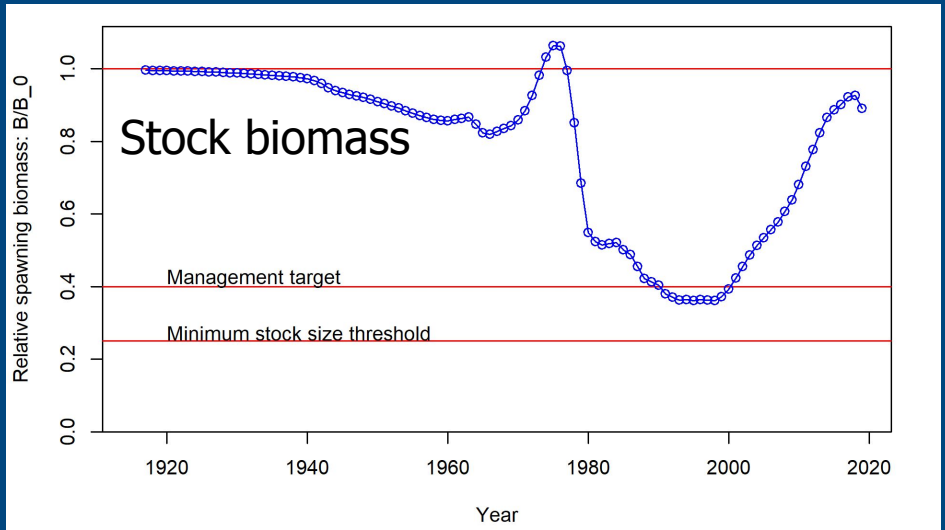
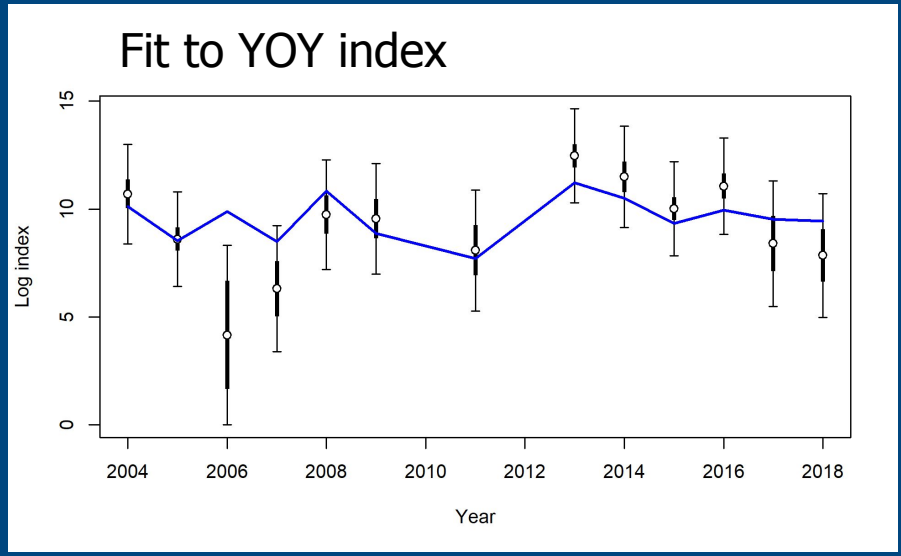
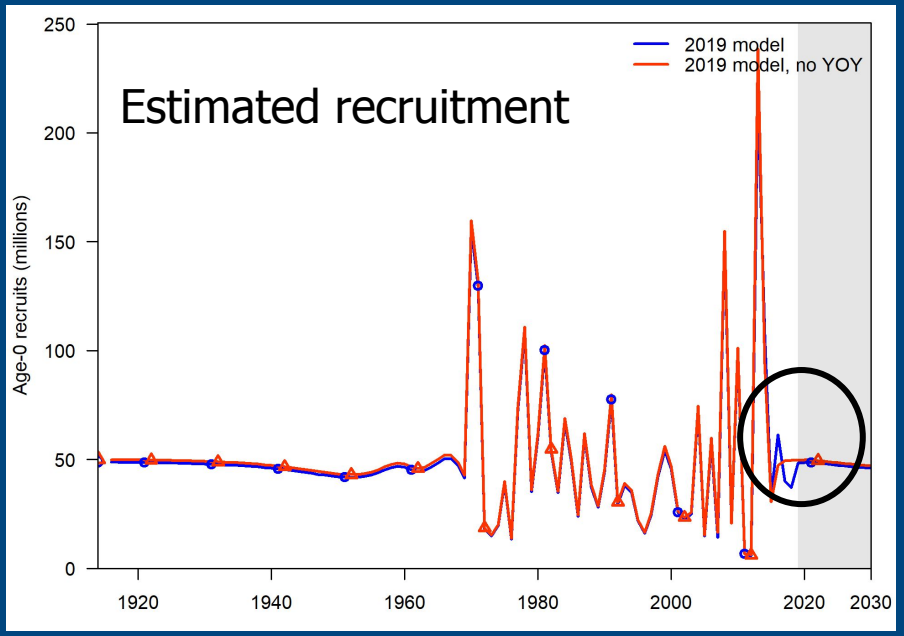
Rockfish recruitment survey and studies- multiple objectives

- Develop estimates of abundance for Young-of-the-Year (YOY) rockfish and other species as pre-recruit indices in stock assessments (Assessment survey)
- Improve our understand of the physical and biological factors that lead to strong or weak year classes (Fisheries Oceanography, Process Studies)
- Improve our understanding of the spatial and temporal variability in the micronekton (forage) assemblage, and impacts to predators, as related to climate and ocean conditions (Ecosystem Oceanography)

Widow rockfish assessment model (2019)





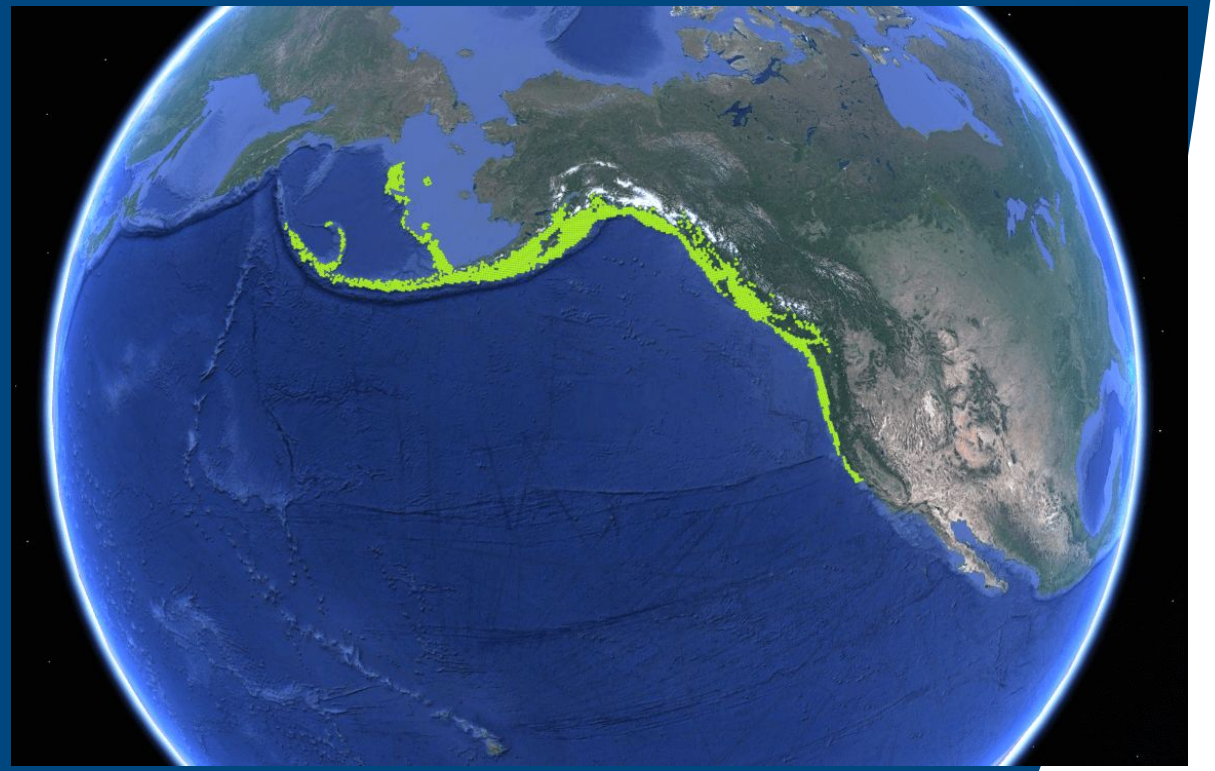


- YOY index consistent with other data.
- YOY index provides additional information in most recent years.
- Impact on model results is minimal:
  - Other data sources support the estimates.
  - YOY index has extra variance added.

International Pacific Halibut Commission Fishery-Independent Setline Survey (a.k.a. "IPHC survey")

INTERNATIONAL PACIFIC HALIBUT COMMISSION

- 1,200 standard stations surveyed each year
- stations at the intersections of a 10 x 10 nmi square grid within the depth range occupied by Pacific halibut during summer months (~37-503 m in most areas)
- Lots more info at [Fishery-Independent Setline Survey (FISS) - IPHC]



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International Pacific Halibut Commission Fishery-Independent Setline Survey (a.k.a. "IPHC survey")

- 84 of the stations are off the coast of Washington and Oregon (IPHC area 2A)
- WDFW has funded 8 additional stations (figure right) focused on rockfish habitat
- Survey costs offset by sale of the halibut catch (catch rates significantly lower now than 30 years ago)

INTERNATIONAL PACIFIC HALIBUT COMMISSION

WDFW #21-16914

APPENDIX I
WDFW Rockfish Stations - FY2021-FY2025

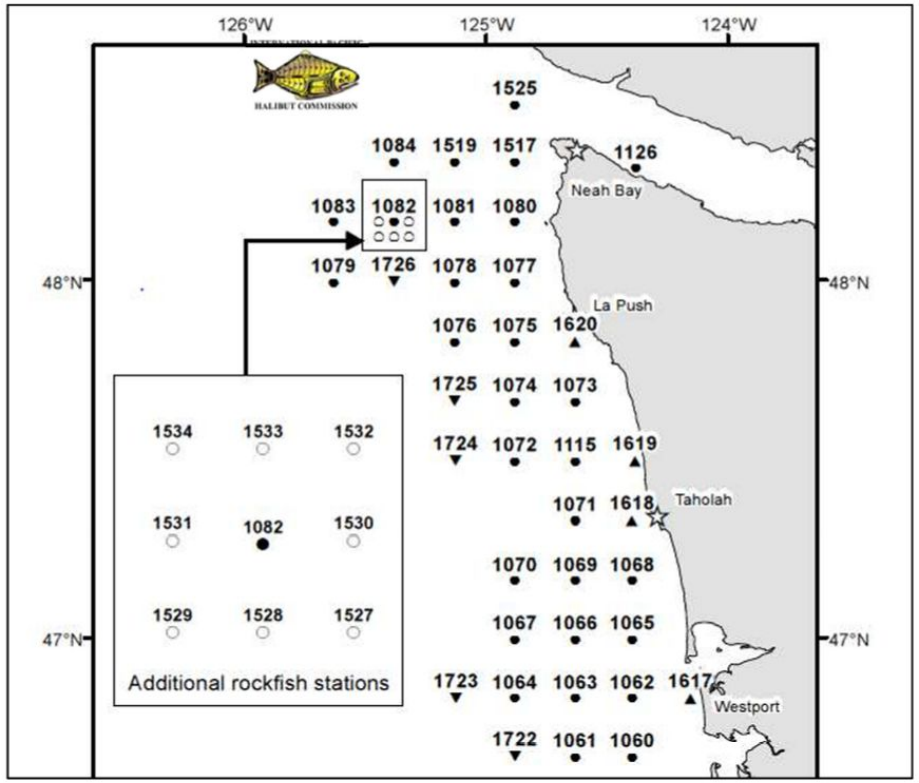

Figure 1. Rockfish Index stations.

from https://iphc.int/uploads/pdf/documents/mou/iphc-2021-mou-wdfw.pdf

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International Pacific Halibut Commission Fishery-Independent Setline Survey (a.k.a. "IPHC survey")

- IPHC survey data have been used for U.S. west coast assessments of yelloweye rockfish and spiny dogfish
- catch per hook is a binomial process that is often modeled using different approaches than trawl surveys
- preliminary index for yelloweye has been developed by WDFW (see discussion 7)

uncredited photo from https://www.iphc.int/research/vessel-recruiting/

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