

# Ecosystem & Socioeconomic Profile: GOA Pacific Cod Report Card

Kalei Shotwell, November Groundfish Plan Team 2022



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# Overview

- Appendix in SAFE Report
  - Draft Full ESP in 2020
  - Full ESP in 2021
  - Report Card in 2021
- Report Card in 2022
  - Simplified template, current data
  - 5 editors, 19 contributors
- Full Update ESP in ~2025

## Appendix 2.1 Ecosystem and Socioeconomic Profile of the Pacific cod stock in the Gulf of Alaska - Report Card

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November 2022



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# Ecosystem Summary Table

Indicator category	Indicator	2018 Status	2019 Status	2020 Status	2021 Status	2022 Status
Physical	-Spawning Heatwave GOA Model	neutral	high	neutral	neutral	neutral
	+Winter Spring Pacific Cod Spawning Habitat Suitability	neutral	low	neutral	neutral	neutral
	-Summer Temperature Bottom GOA Model	neutral	high	neutral	neutral	neutral
	+Annual Eddy Kinetic Energy Kodiak Satellite	neutral	neutral	high	neutral	neutral
Lower Trophic	+Spring Chlorophyll a Peak WCGOA Satellite	low	high	low	neutral	neutral
	+Summer Large Copepod Abundance Shelikof Survey	NA	neutral	NA	NA	NA
	+Summer Euphausiid Abundance Kodiak Survey	NA	neutral	NA	NA	NA
	+Spring Pacific Cod CPUE Larvae Shelikof Survey	NA	neutral	NA	neutral	NA
	+Common Murre Reproductive Success <u>Chowiet Survey</u>	neutral	high	NA	neutral	high
	+Summer Pacific Cod CPUE YOY Nearshore Kodiak Survey	neutral	neutral	high	neutral	high
	+Summer Pacific Cod Condition Juvenile GOA Survey	NA	neutral	NA	neutral	NA
	+Summer Pacific Cod Condition Adult GOA Survey	NA	neutral	NA	neutral	NA
Upper Trophic	-Summer Pacific Cod Center Gravity Northeast Model	NA	high	NA	neutral	NA
	+Summer Pacific Cod Area Occupied WCGOA Model	NA	high	NA	high	NA
	-Annual Arrowtooth Biomass GOA Model	neutral	neutral	low	low	NA
	-Annual Steller Sea Lion Adult GOA Survey	neutral	neutral	neutral	neutral	NA

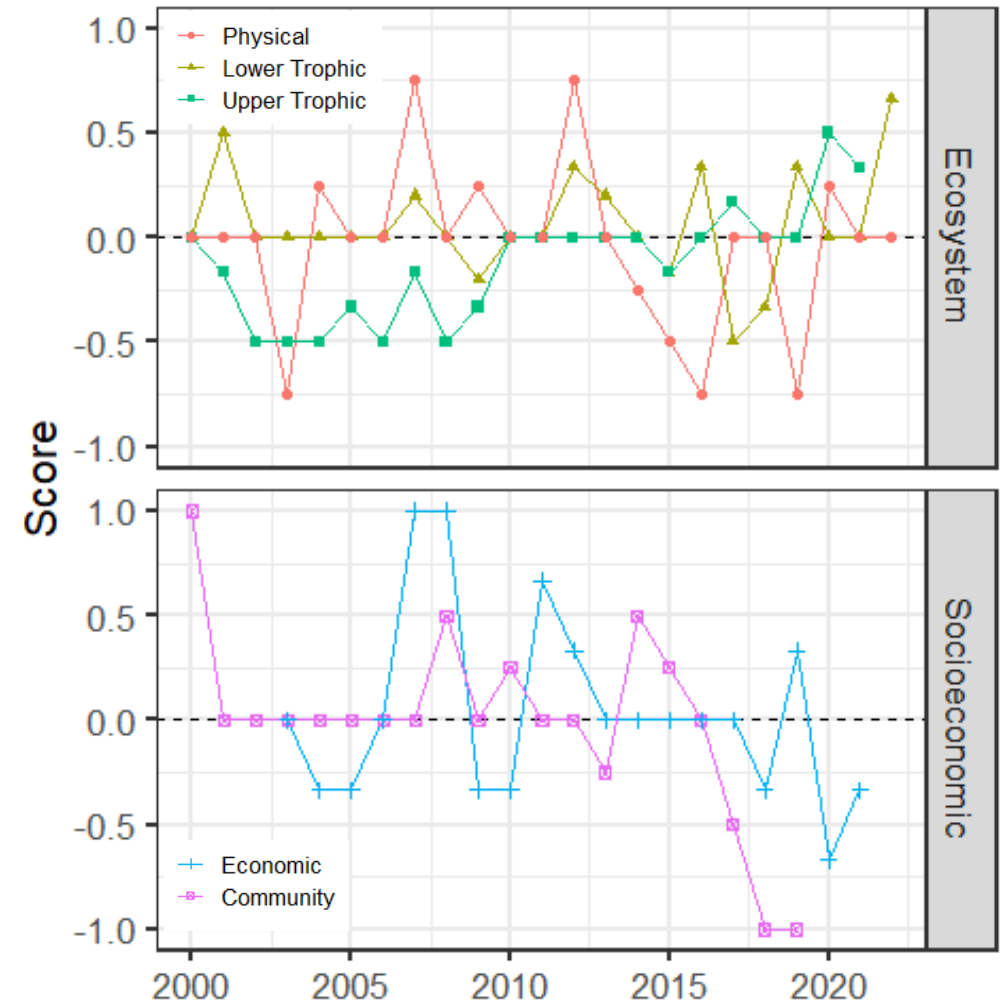


# Socioeconomic Summary Table

Indicator category	Indicator	2018 Status	2019 Status	2020 Status	2021 Status	2022 Status
Economic	Annual Pacific Cod Real <u>Exvessel</u> Value GOA Fishery	low	low	low	low	NA
	Annual Pacific Cod Real <u>Exvessel</u> Price GOA Fishery	neutral	high	neutral	neutral	NA
	Annual Pacific Cod Real Revenue Per Unit Effort GOA Fishery	neutral	high	low	neutral	NA
Community	Annual Pacific Cod RQ Harvesting Revenue Kodiak Fishery	low	low	NA	NA	NA
	Annual Pacific Cod RQ Processing Revenue Kodiak Fishery	low	low	NA	NA	NA
	Annual Pacific Cod RQ Harvesting Revenue Small Communities GOA Fishery	low	low	NA	NA	NA
	Annual Pacific Cod RQ Processing Revenue Small Communities GOA Fishery	low	low	NA	NA	NA

# Traffic Light Score

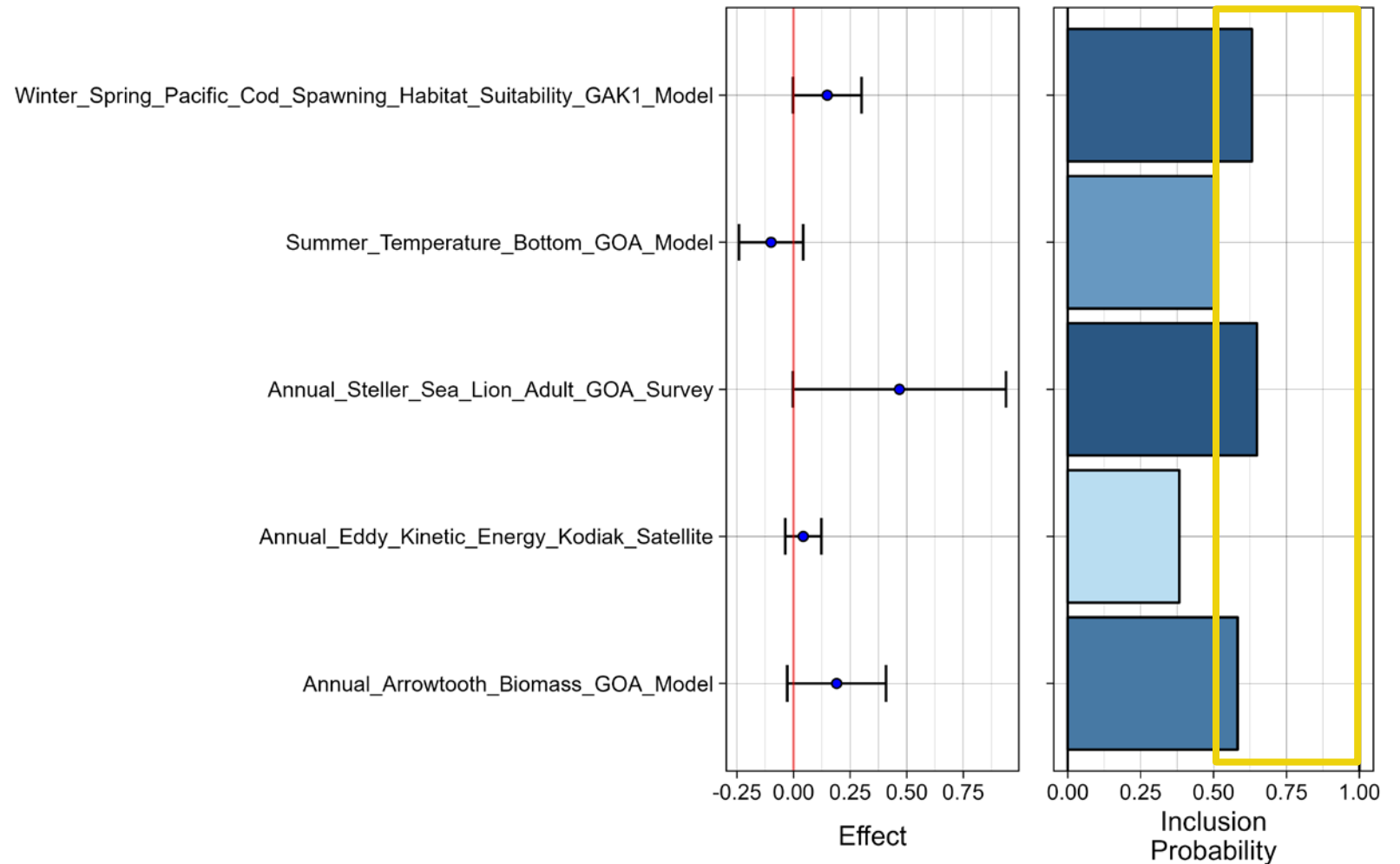
- Ecosystem (9 of 16 total)
  - Physical remained average
  - Lower trophic > to above average
  - Upper trophic < but still above average
- Socioeconomic (3 of 7 total)
  - Economic > but still below average
  - Community not updated



# Importance Results

One indicator with importance  $> 0.5$ , same indicators as last year:

- Winter Pcod spawning habitat suitability
- Summer bottom temperature
- Adult SSL GOA
- Arrowtooth biomass



# Considerations Highlights

## ■ Management Summary

- Bottom temperatures increased to above average but habitat suitability improved suggesting temperatures are within the suitable range for Pacific cod, eddy kinetic energy shifted to low suggesting lower retention
- Spring bloom near average and seabird reproductive success suggests sufficient forage fish prey resources
- Off-cycle survey year so few upper trophic indicators were updated, but recent estimates of arrowtooth flounder remain low suggesting less competition with Pacific cod
- Ex-vessel value remains low, price near average and revenue per unit effort near the mean in 2021

## ■ Modeling Summary

- 4 potential covariate for EBS Pacific cod recruitment, consistent with last few years
- Ecosystem research models of temperature, habitat suitability, nearshore surveys, CEATTLE





## Next Steps

- 1) Request for Indicators (RFI) in 2023, use ESP data gaps and research priorities, indicators submitted in Jan-Feb, reviewed by ESP teams in spring, then develop partial if new indicators or report card if not
- 2) Plan to run report card or partial in 2023 and 2024 (depending on RFI) and potentially a full update in 2025
- 3) Consider how to use the GOA R-CEATTLE model output in the ESP, increase visibility of multi-species model in 2023, predation M or bioenergetics indicators to compare with the condition indicators
- 4) Economic and community section updates TBD



# Questions?



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