



**NOAA  
FISHERIES**



# Status of Rougheyeye and Blackspotted Rockfishes off the U.S. West Coast in 2025

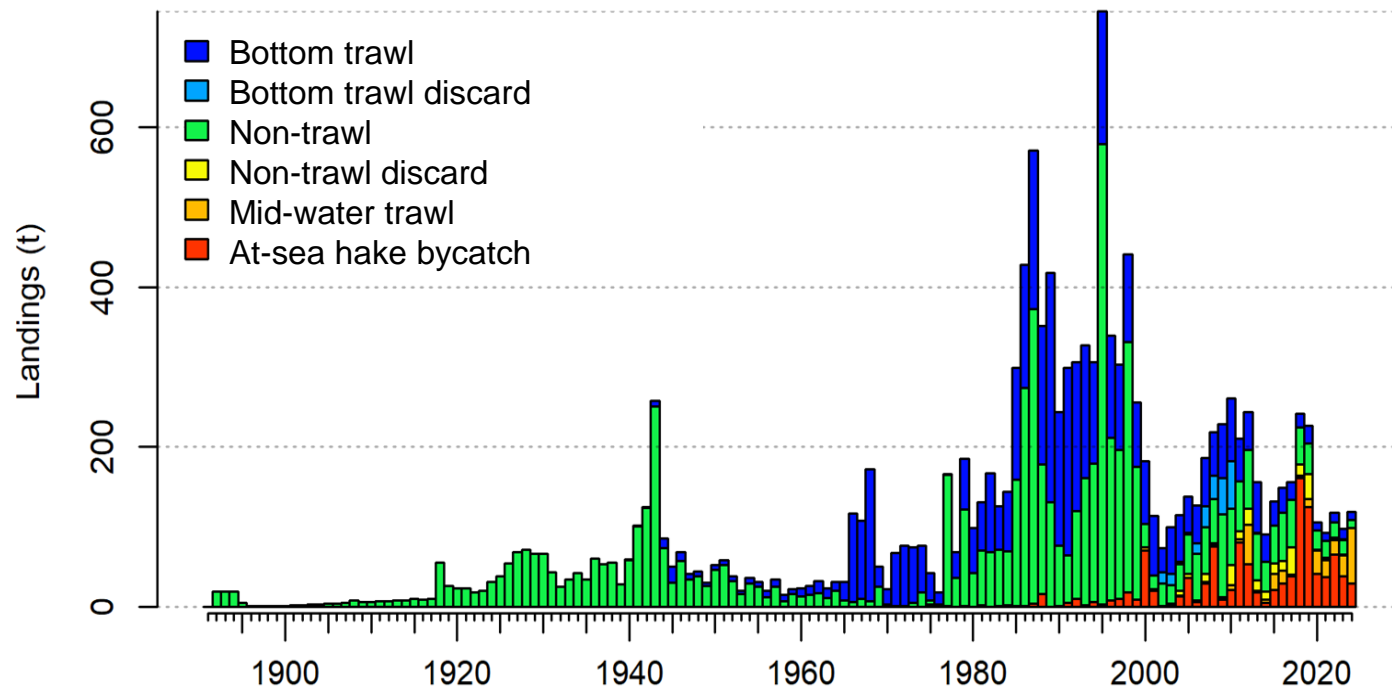
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# Background

- Rougheye and Blackspotted - two genetically distinct species
  - Visual identification is imperfect
  - Historical data only available for complex
- Known for its remarkable longevity (>200 years reported)
- Non-targeted, but marketable – retained when caught
- Last assessed in 2013



## 2013 assessment

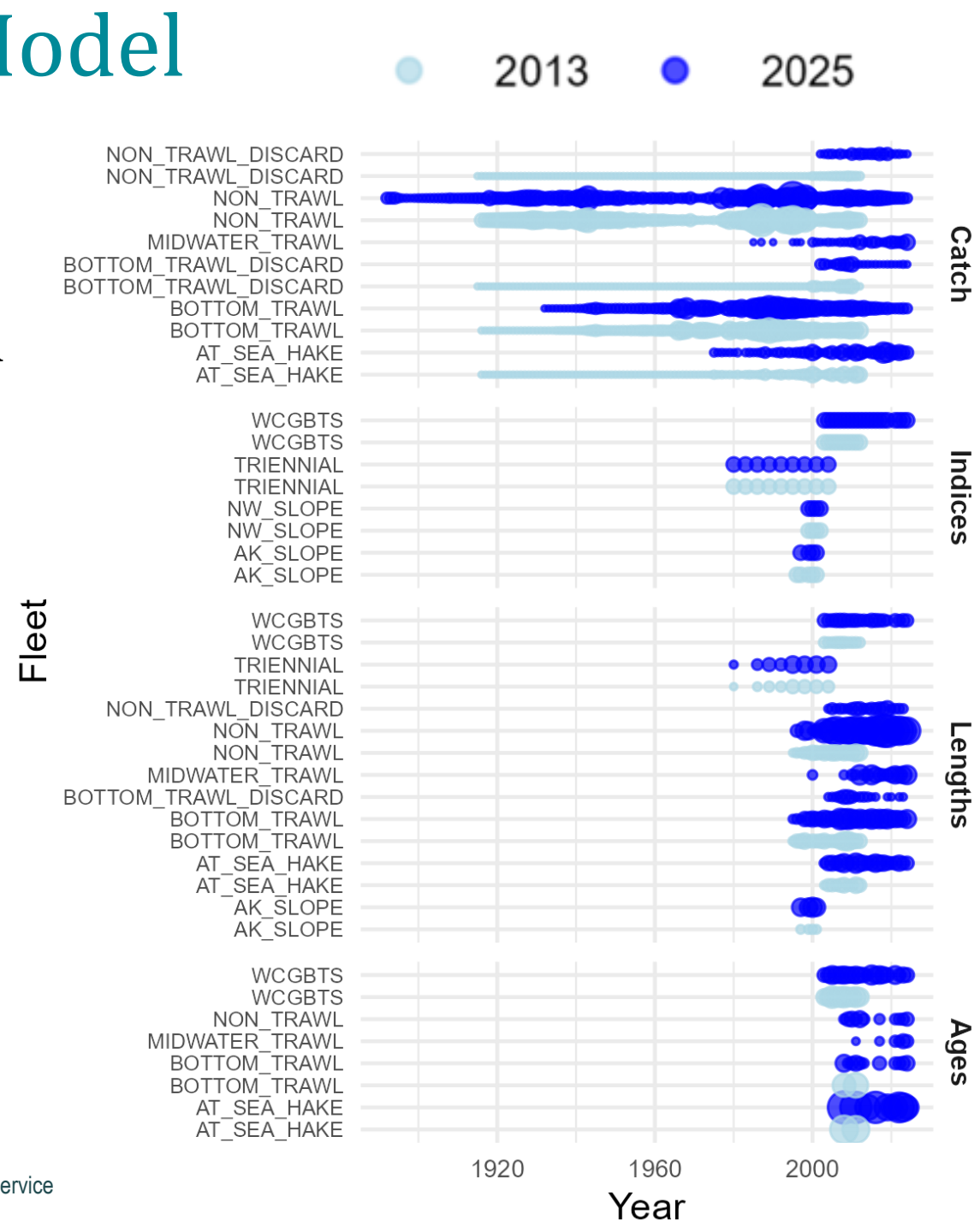
- Model starts in 1916.
- One sex model.
- Discard is modeled with retention.
- Growth fully estimated for combined sexes.
- A single  $M$  estimated for combined sexes, using a prior.
- Selectivity fixed asymptotic for all fleets (except Triennial shelf survey).

## 2025 assessment

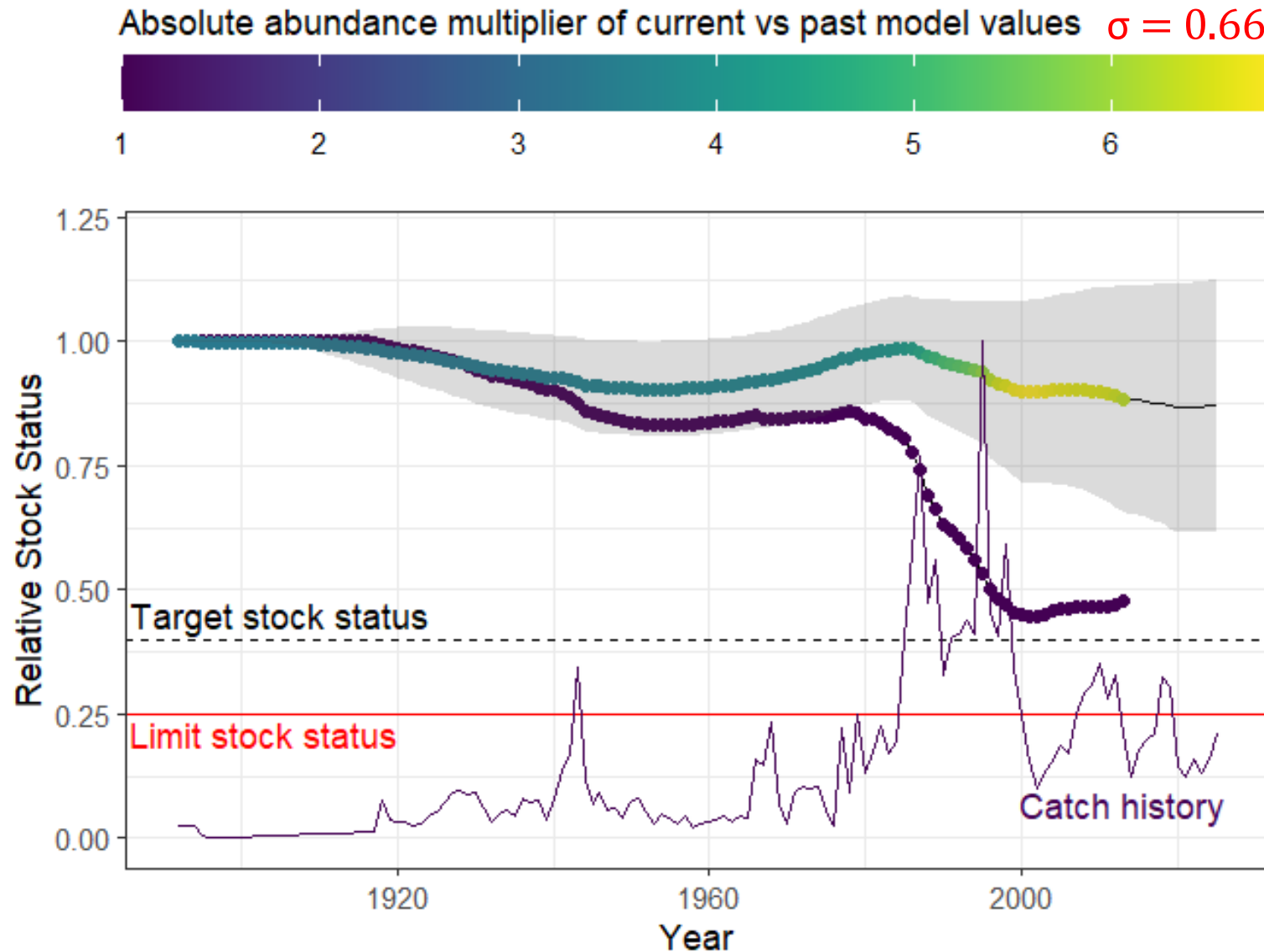
- Model starts in 1892.
- Two-sex model
- Discards treated as separate fleets.
- Growth is fully estimated for females and males separately.
- $M$  estimated with a prior for females and fixed for male (based on likelihood profile and prior).
- Reproductive biology updated
- Selectivity curves are a combination of dome-shaped and asymptotic.

# 2025 Assessment: Data and Model Structure

- Thousands of added ages updated the stock status (signal in lengths lead to more depleted stock)
- Length data important for updated selectivity and recruitment estimation
- Robust life history estimates, but sensitive to choice of male  $M$ .
- Ageing error and need for more ages increase uncertainty in status
- Scale highly uncertain, largely because of the limited depletion of stock



# Model output comparison with 2013 assessment

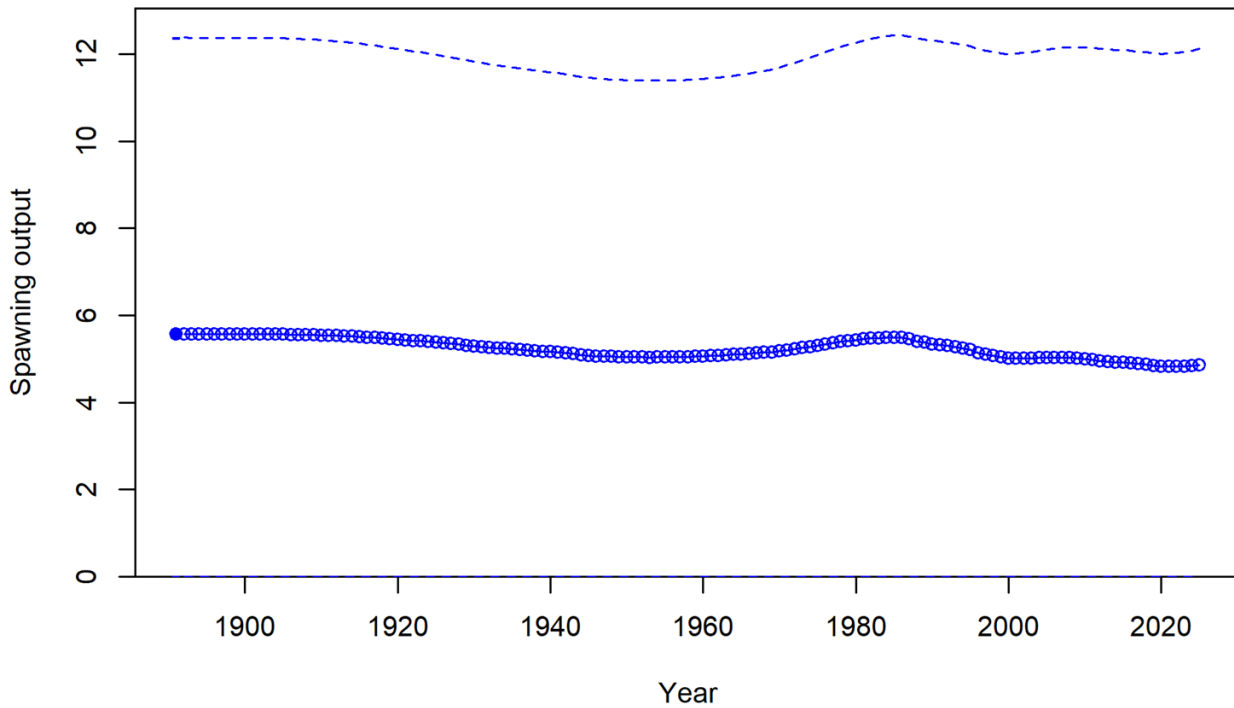


How much did the estimated **absolute** size of the population change?

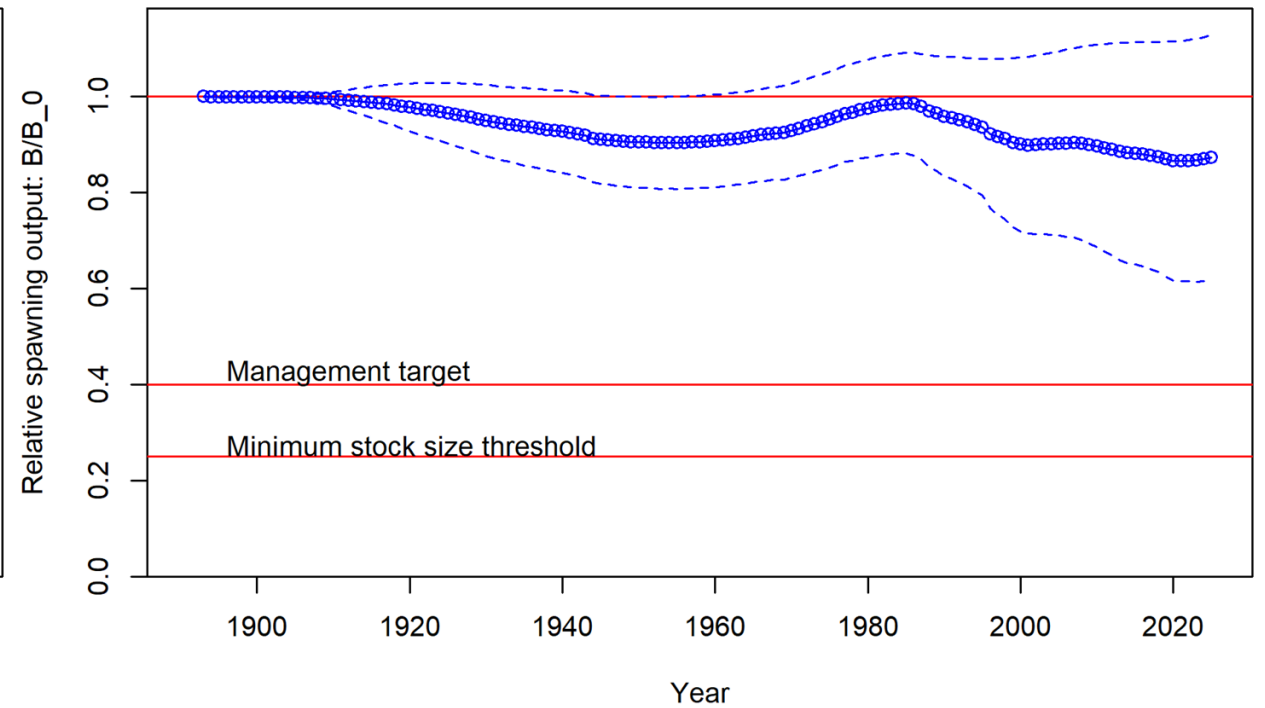
How much did estimated **relative** size of the population change?

# Key assessment outputs

## Spawning biomass



## Fraction unfished



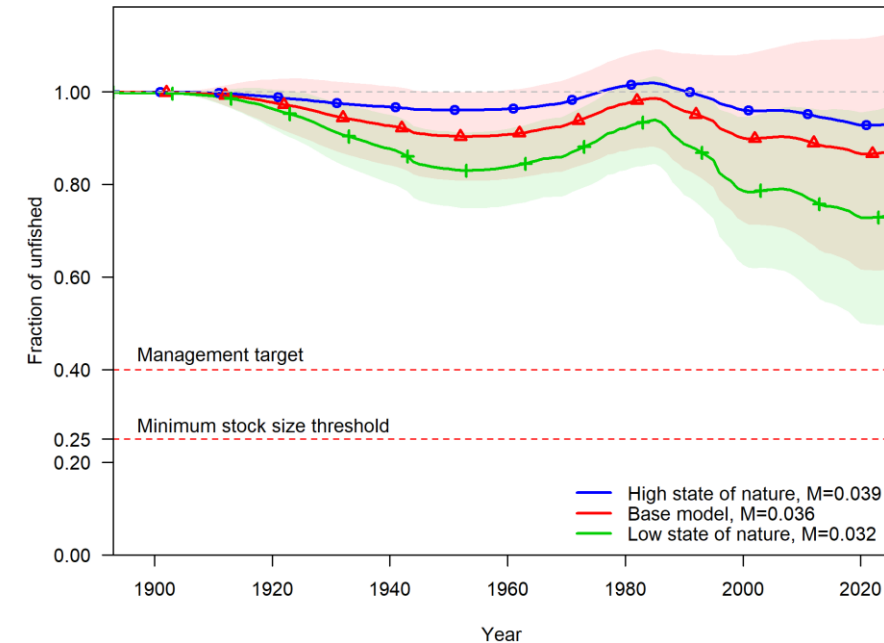
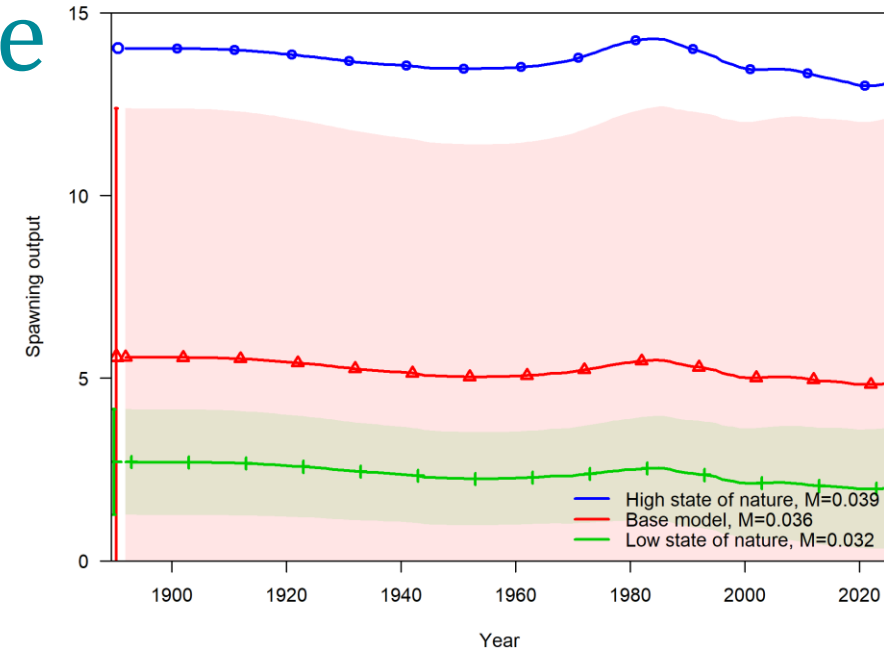
# Major uncertainty highlighted by the STAT

Source	Source category	Change	Scale	Status
<b>Nautral mortality</b>		Increase	Up	Up
<b>Bottom Trawl Selectivity</b>				
	Logistic		Down	Down
	Dome-shaped		Up	Up
Ageing Error		Less bias and imprecision	Down	Same
Data weighting				
	Lengths	Higher weight	Down	Down
	Ages	Higher weight	Up	Up
	WCGBTS Index	Remove	Down	Down
Recruitment estimation		Estimate fewer years	Up	Up

- Scale is highly uncertain
  - More ages are needed
  - More work needed on lowering ageing error for older individuals in some of the data sets
- Despite scale uncertainty, status shows population consistently well above target relative biomass

# Axis of uncertainty/states of nature

- States of nature are based on natural mortality ( $M$ ).
- Middle state (base model): the male  $M = 0.036$ , informed by likelihood profile and corresponds to the maximum age of 150 years.
- High state of nature: male  $M = 0.039$ , selected based on likelihood profile to be higher than the base model and corresponds to maximum age of 138 years.
- Low state of nature: male  $M = 0.032$ , correspond to maximum age of 169 years, oldest (male) fish observed in the dataset used in the assessment.



# Risk Table

Ecosystem and environmental conditions	Assessment data inputs	Assessment model fits and structural uncertainty
<p>Recruitment: Moderate abundance of fish less than 6.5 years old. Slightly lower abundance in 2024, but slightly more biomass than in 2010. High uncertainty in estimate [Neutral].</p> <p>Habitat: No obvious changes in spatial distribution. Juvenile distributions have been fairly stable through time but with interannual fluctuations [Neutral].</p> <p>Prey: Stable or slightly increasing forage (euphausiid and pink shrimp) [Neutral].</p> <p>Predators: Predation by skates, fur seals, and California sea lions is unlikely to have changed much in recent years. Potential increase in predation by sablefish, but very uncertain [Neutral].</p> <p>Competitors: Some potential for hake competition for krill and pandalid shrimp but highly uncertain [Neutral].</p>	<p>Catch, indices of abundance, lengths and ages are available [Neutral].</p> <p>Catch data are not disaggregated by species. Combined species catch reconstruction is based on reviewed sources and methods, with uncertainty in historical years when rockfish were not always sorted to species. Additional uncertainty in catches may be due to the fact that this complex is a minor portion of the catch. There is also uncertainty in roughey versus blackspotted contribution to the catch history of the complex [Unfavorable].</p> <p>Indices of abundance are generally uninformative [Unfavorable].</p> <p>Many samples and years of sex-specific length data are available from the surveys and commercial fisheries [Favorable].</p> <p>Some age data are available, but substantial gaps do exist [Unfavorable].</p> <p>Species specific growth and maturity estimates for both species and species combined available. No species-specific information on fecundity, the unobserved genus <i>Sebastes</i> values are used [Neutral].</p>	<p>The model expresses a large amount of uncertainty and sensitivity in both scale and status [Unfavorable].</p> <p>The model captures the appropriate amount of uncertainty [Favorable].</p> <p>Scale uncertainty is high primarily on the upper end. No evidence the stock is being below or close to the target relative spawning output [Neutral].</p> <p>Model scale is sensitive to retrospective peels, indicating a lack of stability and a dependence on recent age data [Unfavorable].</p> <p>The model fits data generally well with realistic selectivity assumptions [Favorable].</p> <p>The parameter estimates are robust across a variety of model specifications [Favorable].</p> <p>Natural mortality is fixed for males, while being estimated for females [Neutral].</p> <p>The assessed area covers the lower end of the species complex distribution range. Stock structure is not well understood. Dispersal patterns and connectivity beyond the assessment area are also not well understood [Unfavorable].</p>
Level 2: Neutral	Level 2: Neutral	Level 2: Neutral