Summary of available data to support assessments of U.S. West Coast groundfish stocks

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1 Introduction

This document provides a detailed summary of select data sources that may be used to support stock assessments of West Coast groundfish in 2027 and beyond. At the March 2026 Pacific Fisheries Management Council (the Council) meeting, an earlier version of this document was presented that included only data from federal surveys. This version includes all information in the March version, but has included additional information based upon the Council motion requested additional information for select species to support final decision making.

This summary includes sampling data (i.e., length, age, and unread age structures) from the Northwest Fisheries Science Center (NWFSC) West Coast Groundfish Bottom Trawl Survey (WCGBTS) and Southern California Hook and Line Survey (HKLS) for the species and stock areas included in the Pacific Coast Groundfish Fishery Management Plan. For species with robust sampling, relative indices of abundance and sampled length compositions by year and source are also provided. A summary of the available maturity data collected by scientists at the NWFSC for each species is also provided.

For select species identified at the March 2026 Council meeting, additional information from commercial, recreational, California Collaborative Fisheries Research Program (CCFRP) Survey, and the Groundfish Cooperative Data Collection (GCDC) is also provided. Select additional species that were mentioned in advisory panel and management reports to support additional discussion at the June Council meeting. The species where additional information is provided include: black rockfish off Oregon and Washington, bocaccio, lingcod north and south of 40° 10' N. latitude, longspine thornyhead, Pacific spiny dogfish, petrale sole, redbanded rockfish, shortspine thornyhead, widow rockfish, and yellowtail rockfish south of 40° 10' N. latitude.

2 Data

2.1 Data avialable for all species

2.1.1 NWFSC West Coat Groundfish Bottom Trawl Survey (WCGBTS)

The WCGBTS is based on a random-grid design that spans coastal waters from 55 to 1,280 m deep. This survey generally uses four industry-chartered vessels per year, each assigned to an approximately equal number of randomly selected grid cells that are divided into two 'passes' of the coast. Two vessels fish from north to south during each pass between late May to early October (i.e., except for 2019, which had one vessel per pass).

Biological data samples collected by the NWFSC WCGBTS between 2003-2025, average number of tows that observe each species by year, relative indices of abundance for species with sufficient observations, and visualizations of length composition data.

2.1.2 NWFSC Hook and Line Survey (HKLS)

The NWFSC HKLS is a fishery-dependent survey conducted annually in the Southern California Bight using rod and reel gear at fixed stations to target shelf rockfish in the genus *Sebastes*. Key

species of rockfish targeted by the NWFSC Hook and Line survey are bocaccio (*S. paucispinis*), cowcod (*S. levis*), greenspotted (*S. chlorostictus*), and vermilion and sunset (*S. miniatus and S. crocotulus*) rockfishes, although a wide range of rockfish species have been observed by this survey.

Biological data samples collected by the NWFSC HKLS from 2004-2025, the average number of sets that observe each species by year, relative indices of abundance for species with sufficient observations, and visualizations of length composition data.

2.1.3 Survey length compositions

The length data collected by the WCGBTS were expanded using a generalized area-based stratification. The expanded length composition data were summarized using either a 2 or 4 cm bin structure depending upon the range between maximum and minimum lengths observed within the survey data. All length observations were grouped as unsexed fish for plotting to reveal potential trends in length compositions across time.

The length data collected by the HKLS were summarized to reflect the proportion of observations by species, length bin, and year. The length composition data were summarized using either a 2 or 4 cm bin structure depending upon the range between maximum and minimum lengths observed within the survey data, in the same manner as for the WCGBTS data.

The generalized approach for expanding the length composition data and bin structure provides a simple summary of the data that can be useful for decision making, but will likely differ from a species-specific approach that would be applied in a future assessment. Additionally, it is important to note that each survey's selectivity for each species will impact the lengths observed and has not been explicitly accounted for in this analysis.

2.1.4 Survey relative indices of abundance

Indices of abundance were estimated from the WCGBTS using a spatiotemporal model (`sdmTMB`) for species well-observed by the survey. The indices were estimated using a generalized configuration across species using either a gamma, log-normal, or Tweedie distribution, with the dispersion parameter held constant across years with 200-500 knots used to create the mesh. The model structure for each species is provided in Section 5. Species-specific indices of abundance produced for past assessments or produced for future assessments may use a modified model structure resulting in slight changes in year-by-year values for the indices of abundance presented in this document.

Indices of abundance were estimated from the HKLS for well-observed species using `sdmTMB` with a negative-binomial error structure with covariates for year, site, and drop number. The model structure is provided in Section 6. Additional covariates or error-structures to develop species-specific indices were not explored in this analysis.

The indices of abundance presented here should only be considered illustrative of potential trends in abundance across time.

2.1.5 Maturity data collections

Maturity samples for a wide range of West Coast groundfish species have been collected across multiple sources: the WCGBTS, the HKLS, the Pacific hake acoustic survey, at-sea sampling from the Pacific hake fishery, and port sampling by state agencies. A summary of the number of maturity samples collected and read between 2009 - 2024 is provided for each species. These data summaries only include collections led by the NWFSC but other collections could be available from other research groups.

2.2 Additional information for select species

2.2.1 Commcerical

Biological samples are collected by state agencies at ports along the U.S. West Coast that are then transmitted to Pacific Fisheries Information Network (PacFIN). The number of lengths and read ages by year and species were pulled from PacFIN. The number of unread otoliths collected by species and year were provided directly by state agencies.

Biological data samples collected from commercial fisheries between 2000-2025 in terms of length, age, and unread age structure samples by year and species from California, Oregon, and Washington.

2.2.2 Recreational

Biological samples are collected by state agencies at ports along the U.S. West Coast that are then transmitted to Recreational Fisheries Information Network (RecFIN). The number of lengths and read ages by year and species were pulled from RecFIN. The number of unread otoliths by year and species was available in RecFIN for Oregon. The number of unread otoliths collected by species and year were provided directly by California Department of Fish and Wildlife (CDFW) and Washington Department of Fish and Wildlife (WDFW).

Biological data samples collected from recreational fisheries in terms of length (California 2004-2025, Oregon and Washington 2000-2025), ages, and unread age structures samples (California 2022-2025 ad-hoc collections, Oregon 2000-2024, and Washington 2000-2025) by year and species from California, Oregon, and Washington.

2.2.2.1 California recreational age-structure collections

California Department of Fish and Wildlife (CDFW) provided age structure sample numbers collected via various methods from recreational fisheries. These samples were collected outside the standard sampling protocol for California Recreational Fisheries Survey (CRFS) sampling program. To date, there are no age or age structure sample data in RecFIN that have been collected from California recreational fisheries. Recent age structure collections from 2017-2025 were provided directly by CDFW. The recreational age structure collections provided by CDFW were collected by various methods: 1) from angler surrendered fish that were kept in excess of recreational bag limits or were prohibited to be retained, 2) cowcod collections under CDFW's Exempted Fishing Permit encountered incidentally by Commercial Passenger Fishing Vessels, and 3) randomly sampled species from private/rental and party/charter recreational vessels. Any future assessment, will need

to investigate the California recreational age structures for representativeness to determine whether they could be linked to a recreational fleet within a model.

2.2.3 California Collaborative Fisheries Research Program Survey (CCFRP)

The CCFRP, is a fishery-independent hook-and-line survey designed to monitor nearshore fish populations at a series of sampling locations both inside and adjacent to MPAs. The CCFRP survey began in 2007 along the central coast of California and was designed in collaboration with academics, National Marine Fisheries Service, and CDFW scientists, and fishermen. In 2017, the survey expanded beyond the four MPAs in central California (Año Nuevo, Point Lobos, Point Buchon, and Piedras Blancas) to include the entire California coast. Prior to 2017, all fish were measured for length and released or descended to depth; since then, some were sampled for otoliths and fin clips.

Biological data samples collected by the CCFRP Survey in terms of length samples (2007-2022) and unread age structure samples (2017-2025) for select species sampled in California.

2.2.4 Groundfish Cooperative Data Collection (GCDC)

The GCDC program is data collection program run by the Southwest Fisheries Science Center where biological samples are collected by participating Commercial Passenger Fishing Vessels (CPFV) in California as part of the their standard operation following random sampling protocols. Data collected by the GCDC program has been incorporated in recent assessments of California nearshore stocks (e.g., copper rockfish, quillback rockfish).

Biological data samples collected by the GCDC from 2023-2025 for yellowtail rockfish south of 40° 10' N. latitude

2.2.5 Catches

Annual catch data was included for select species using data from the Groundfish Expanded Multiyear Mortality (GEMM) report. Total catches were grouped by by commercial and recreational fisheries and gear type (commercial trawl-gear, commercial fixed-gear, and recreational). Catch data from the GEMM is available for 2002-2024.

2.3 Additional data not included in this report

Data may be available for consideration in future assessments that are currently not included in this report. A summary of potential additional data that could be available are described below:

- Totals for data collected in 2026 in PacFIN and RecFIN are incomplete for all states and these data would be included in any future assessment.

- Length data collected by the CCFPR survey in 2023-2025 were not available but would be available for 2027 assessments.

- Historical data collections from various research projects exist at the SWFSC that have not been cataloged and entered into any database. There are available unread otoliths for yellowtail rockfish south in this collection from various sources and historical years, however, specific information was not available for this report.

- State may have substantial collections from periods prior to the years summarized in this report from their commercial and recreational sampling programs.

- CDFW is undergoing a review of historical age structures collections (i.e., referred to as refugia samples) for samples from the 1980s and earlier. If sufficient documentation exists for these historical samples they could be potentially included in future assessments. Since this work is ongoing it is unclear how many samples may be available across species.

Finally, summarizing commercial and recreational data from each state accurately continues to be challenging due to differences by state in what information is transmitted to PacFIN and RecFIN. Receiving and understanding the available commercial and recreational data requires emailing various representative in each state who thankfully have been accommodating in answering questions and providing additional data summaries. However, given the challenges around acquiring and collating, data summaries may not be comprehensive or have unintentional errors. Any issues identified will be addressed in future versions.

3 Preliminary species identified for assessment in 2027

3.1 Black rockfish

The most recent assessment of black rockfish was a benchmark assessment conducted in 2023. Across available data, black rockfish have been observed and sampled by commercial and recreational fisheries and the NWFSC WCGBTS. The NWFSC WCGBTS observed black rockfish on an average of less than one tow per year. For this species, a total of 756 maturity samples have been collected coastwide (regardless of stock area), with 643 read maturities. Maturity parameter estimates would likely not be updated from those used in the previous assessment.

There are a number of ongoing research projects being led by ODFW that may inform a future assessment of black rockfish. The first research project is another year of the nearshore visual-acoustic survey for semipelagic rockfish completed in 2025. During the 2025 survey, no hook and line sampling occurred due to cost constraints. Data analysis is on going and not expected to be finish by winter of 2026 due to extremely large schools of young-of-the-year rockfish observed on the camera and acoustics. ODFW is finishing a manuscript with Dr. Dezhang Chu (NOAA-retired) developing target strength models for these species which can be considered when using these data. Comparison studies of the previously used Biosonic echosounder and the Scientific and Statistical Committee recommended Simrad echosounder are ongoing. Currently, ODFW staff anticipate completing data analysis mid-2027.

ODFW scientists are planning a research cruise to Cobb Sea Mount in the summer of 2026 to sample age and sex distributions of this rockfish species and others. This will provide additional information about age and sex distribution for black rockfish in areas that are likely not sampled by commercial and recreational fisheries. The final research project being led by ODFW scientists examines the impacts of hypoxia on the catch per unit effort for black rockfish.

Table 1: Total number of available lengths, read ages, and unread age structures by data source and state for black rockfish.

State	Source	Lengths	Ages	Age Structures
Oregon	Commercial	98,414	15,990	82,439
Oregon	NWFSC WCGBTS	12	0	12
Oregon	Recreational	259,829	34,289	9,341
Washington	Commercial	95	20	0
Washington	NWFSC WCGBTS	1	0	1
Washington	Recreational	61,846	39,816	4,500

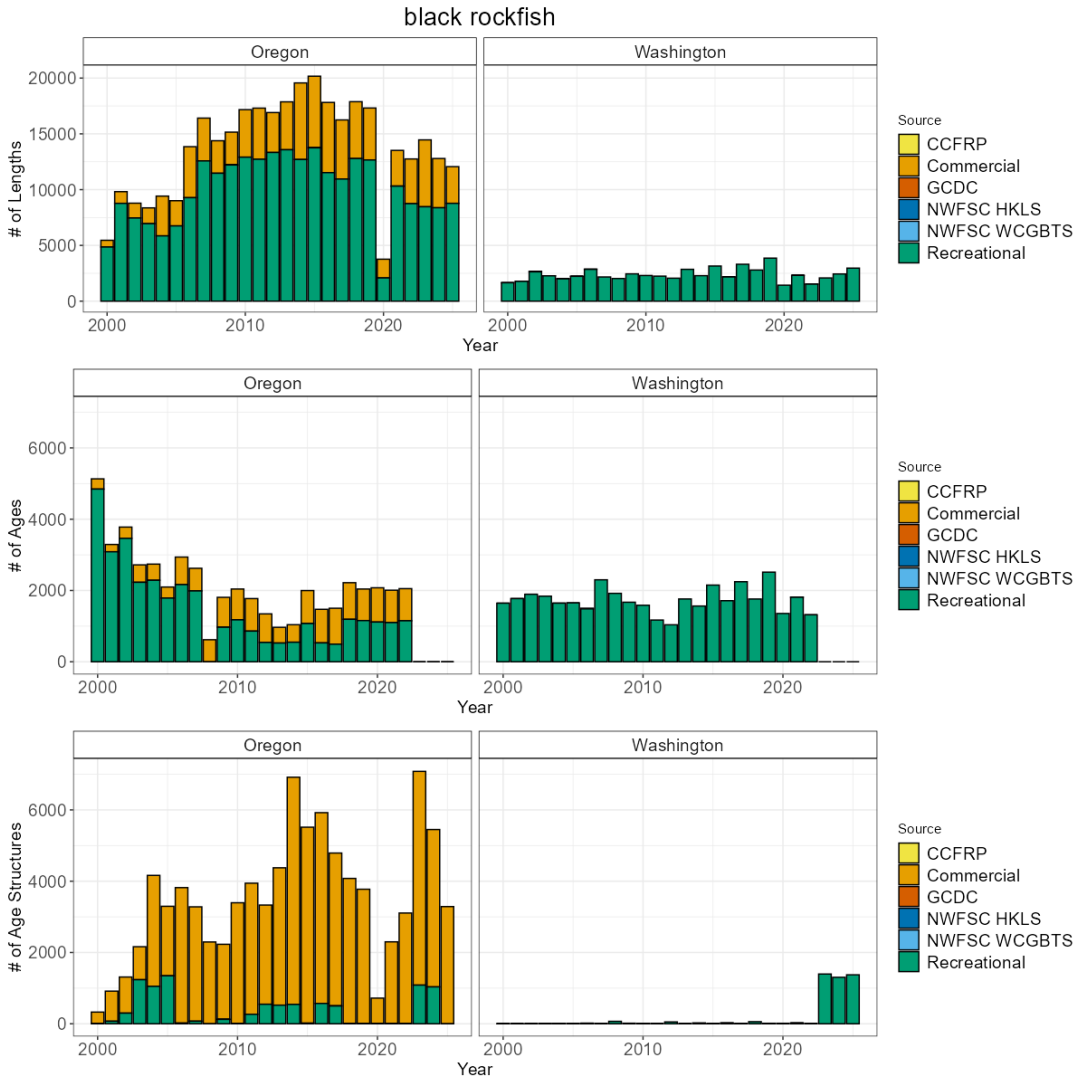

Figure 1: Total number of available lengths, read ages, and unread age structures by data source by year for black rockfish. Note the y-axis maximum may differ by data type.

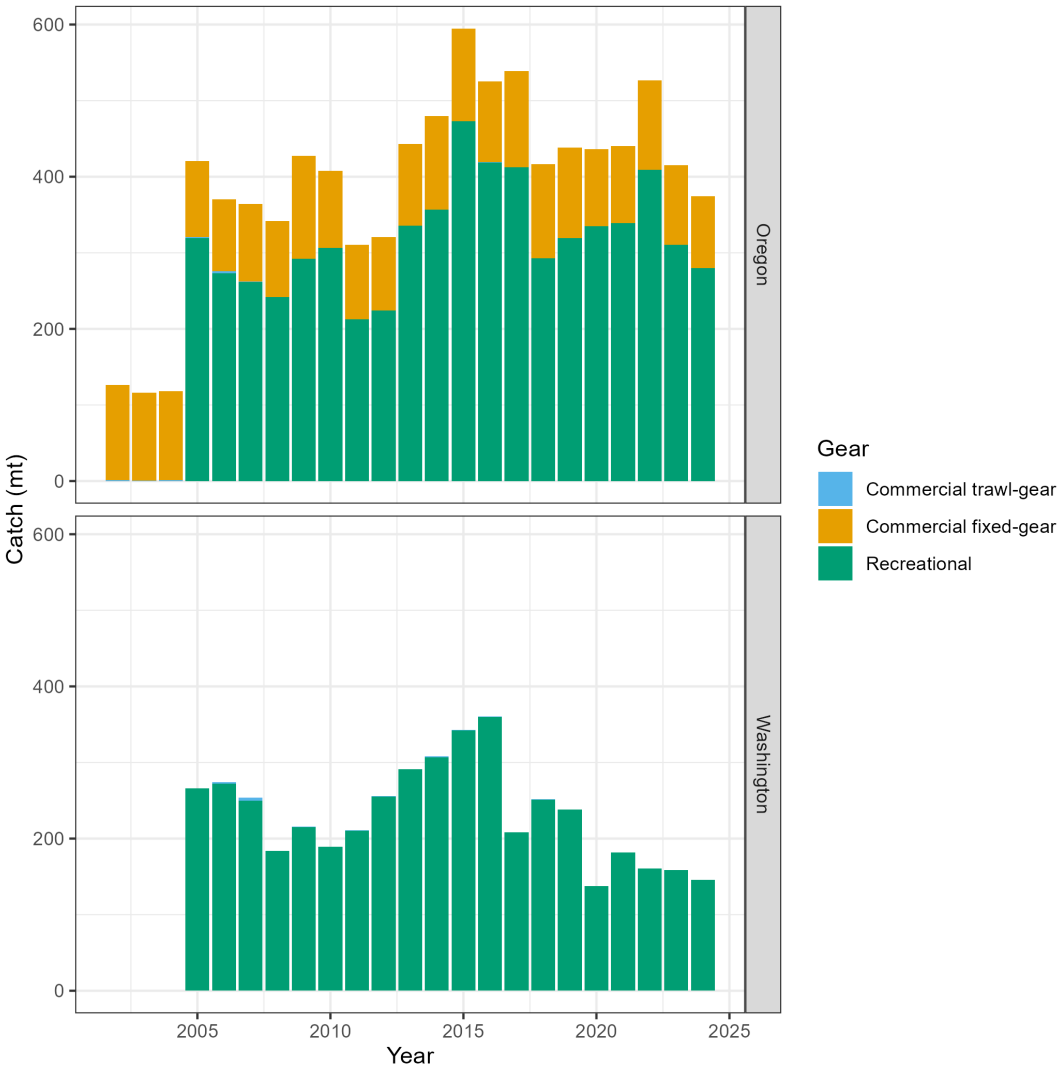

Figure 2: Estimated total catch between 2002-2024 black rockfish. Source: GEMM.

3.2 Bocaccio

The most recent assessment of bocaccio was an update assessment conducted in 2017. Across available data, bocaccio have been observed and sampled by commercial and recreational fisheries, the NWFWC HKLS, the NWFSC WCGBTS, and the CCFRP Survey. The NWFSC HKLS observed bocaccio on an average of 1 set per year. The NWFSC WCGBTS observed bocaccio on an average of 53 tows per year. Bocaccio otoliths are very difficult to read for age estimation, particularly for bocaccio in the California Bight area. Currently, ageing staff at the Cooperative Ageing Program lab do not have an ageing protocol for this species. Due to these challenges, no ageing effort is anticipated. For this species, a total of 837 maturity samples have been collected coastwide (regardless of stock area), with 737 read maturities. Maturity parameter estimates may be updated from those used in the previous assessment with additional maturity data and updated modeling methods.

Table 2: Total number of available lengths, read ages, and unread age structures by data source and state for bocaccio.

State	Source	Lengths	Ages	Age Structures
California	CCFRP	53	0	0
California	Commercial	14,780	121	4,526
California	NWFSC HKLS	22,667	0	14,376
California	NWFSC WCGBTS	11,222	2,760	4,559
California	Recreational	43,902	0	165
Oregon	Commercial	5,193	0	5,193
Oregon	NWFSC WCGBTS	297	20	183
Oregon	Recreational	1,263	0	0
Washington	Commercial	2,837	0	1,729
Washington	NWFSC WCGBTS	522	74	366
Washington	Recreational	1,817	0	1,327

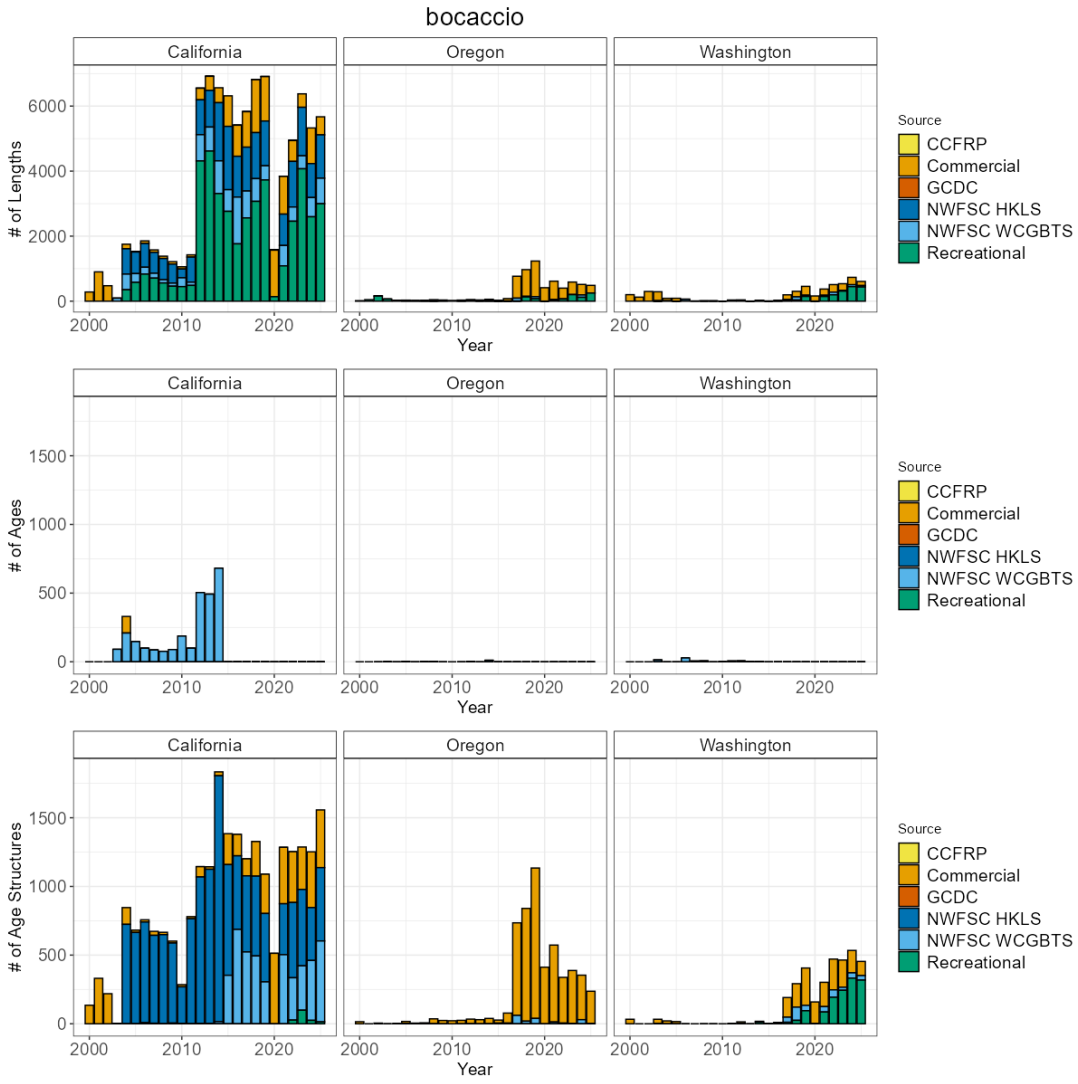

Figure 3: Total number of available lengths, read ages, and unread age structures by data source by year for bocaccio. Note the y-axis maximum may differ by data type.

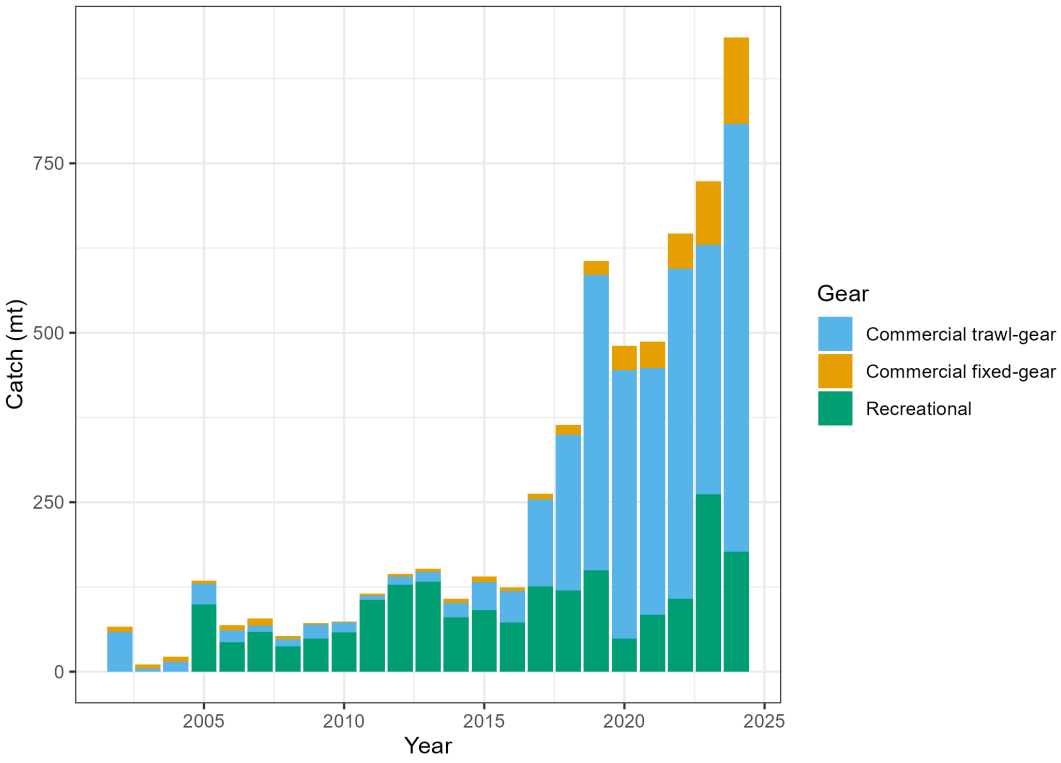

Figure 4: Estimated total catch between 2002-2024 bocaccio. Source: GEMM.

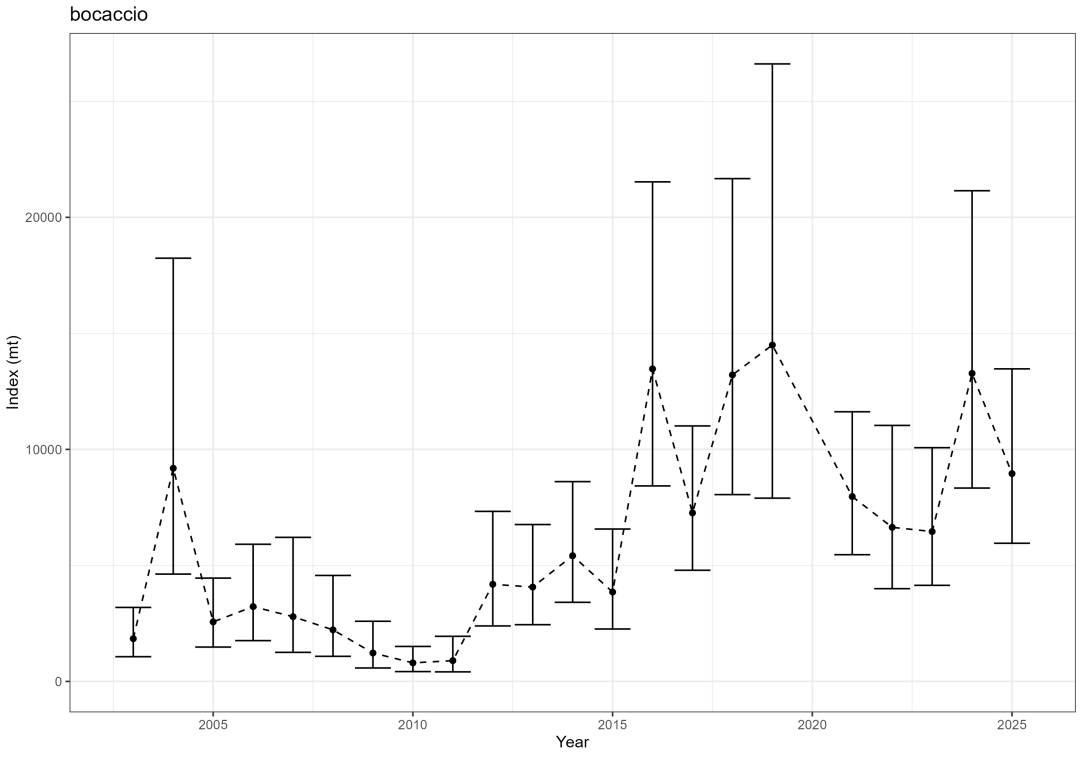

Figure 5: Estimated relative index of abundance for bocaccio from the NWFSC WCGBTS.

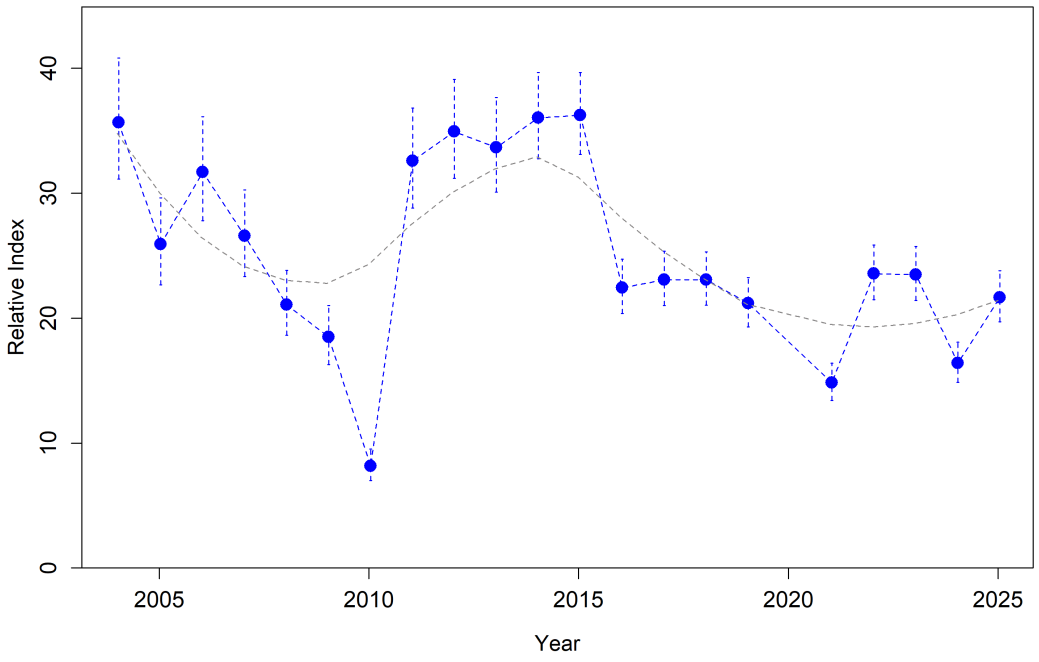

Figure 6: Estimated relative index of abundance for bocaccio from the NWFSC HKLS.

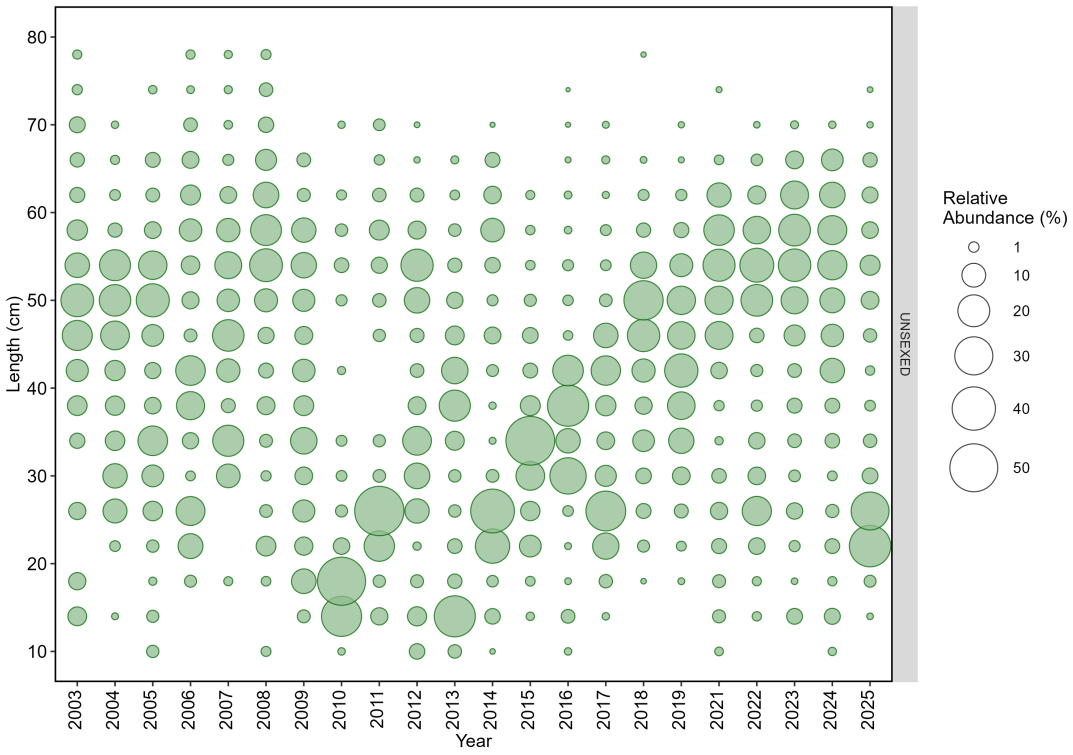

Figure 7: Length (cm) compostion data from the NWFSC WCGBTS for bocaccio. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

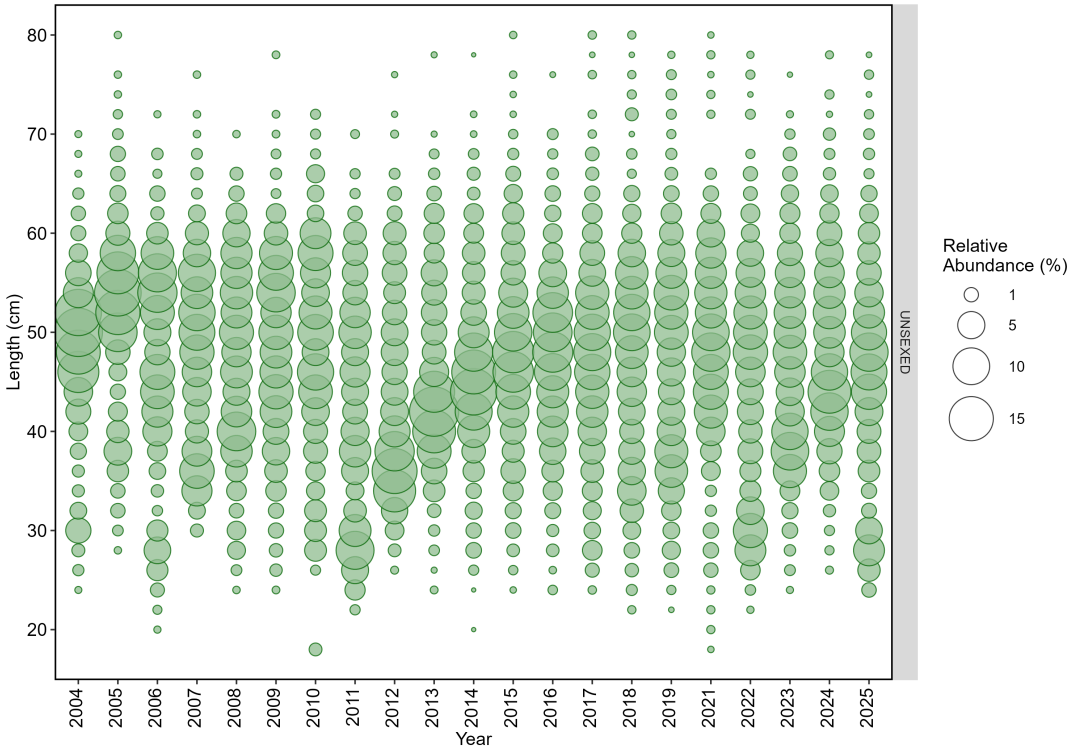

Figure 8: Length (cm) compostion data from the NWFSC HKLS for bocaccio. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.3 Lingcod north

The most recent assessment of lingcod north was a benchmark assessment conducted in 2021. Across available data, lingcod north have been observed and sampled by commercial and recreational fisheries and the NWFSC WCGBTS. The NWFSC WCGBTS observed lingcod north on an average of 130 tows per year. The ODFW aging lab has aged an additional 338 samples from commercial fisheries in 2024 that are not represented in the count of aged fish shown. For this species, a total of 1161 maturity samples have been collected coastwide (regardless of stock area), with 1031 read maturities. Maturity parameter estimates may be updated from those used in the previous coastwide assessment with additional maturity data and updated modeling methods.

ODFW scientists have conducted research looking at the influences of hypoxia on the catch per unit effort for lingcod north.

Table 3: Total number of available lengths, read ages, and unread age structures by data source and state for lingcod north.

State	Source	Lengths	Ages	Age Structures
California	CCFRP	238	0	0
California	Commercial	6,147	304	0
California	NWFSC WCGBTS	2,582	780	632
California	Recreational	13,078	0	0
Oregon	Commercial	42,873	6,488	36,392
Oregon	NWFSC WCGBTS	9,992	2,782	2,721
Oregon	Recreational	155,850	9,062	17,407
Washington	Commercial	12,759	6,319	2,114
Washington	NWFSC WCGBTS	7,151	1,582	1,513
Washington	Recreational	34,006	16,968	7,968

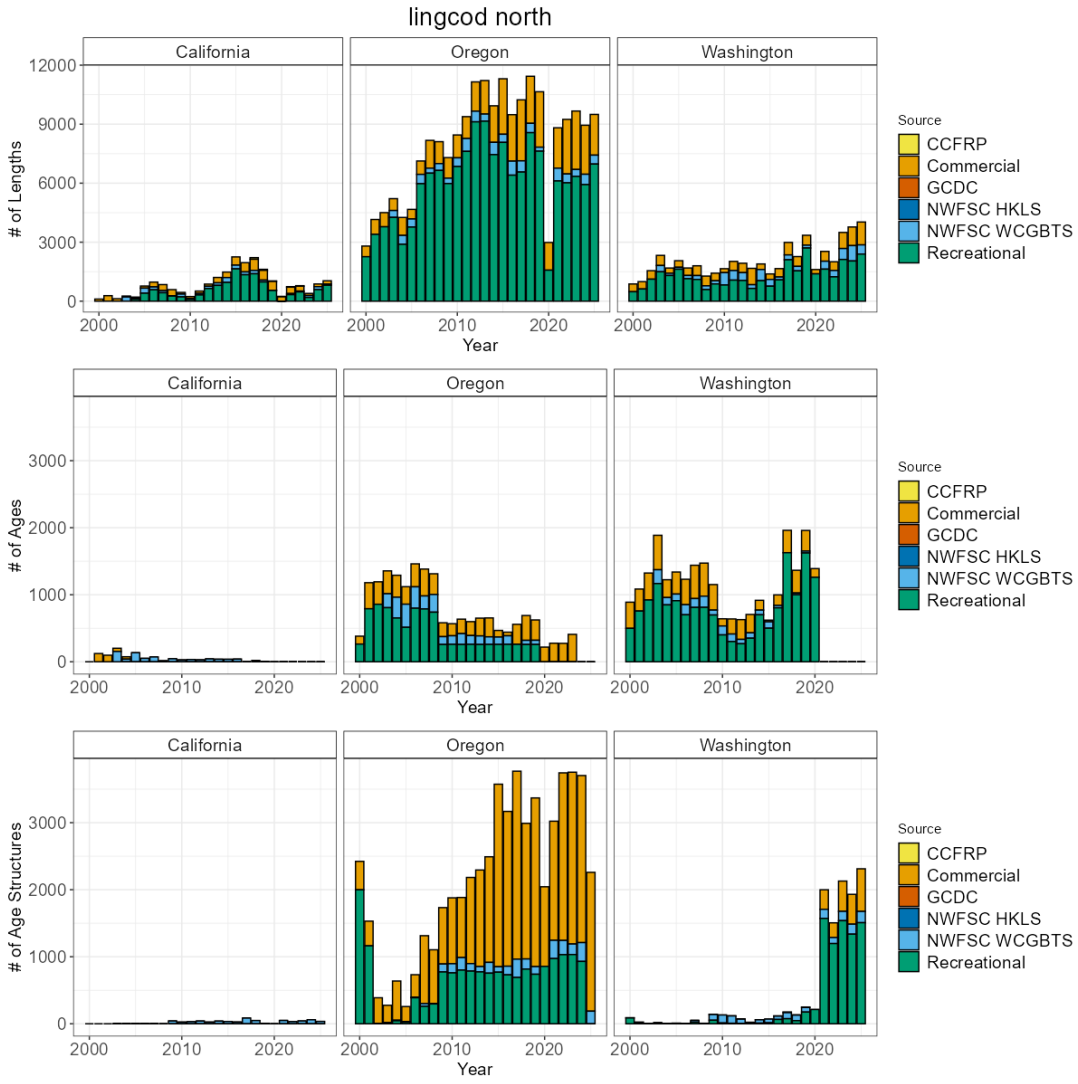

Figure 9: Total number of available lengths, read ages, and unread age structures by data source by year for lingcod north. Note the y-axis maximum may differ by data type.

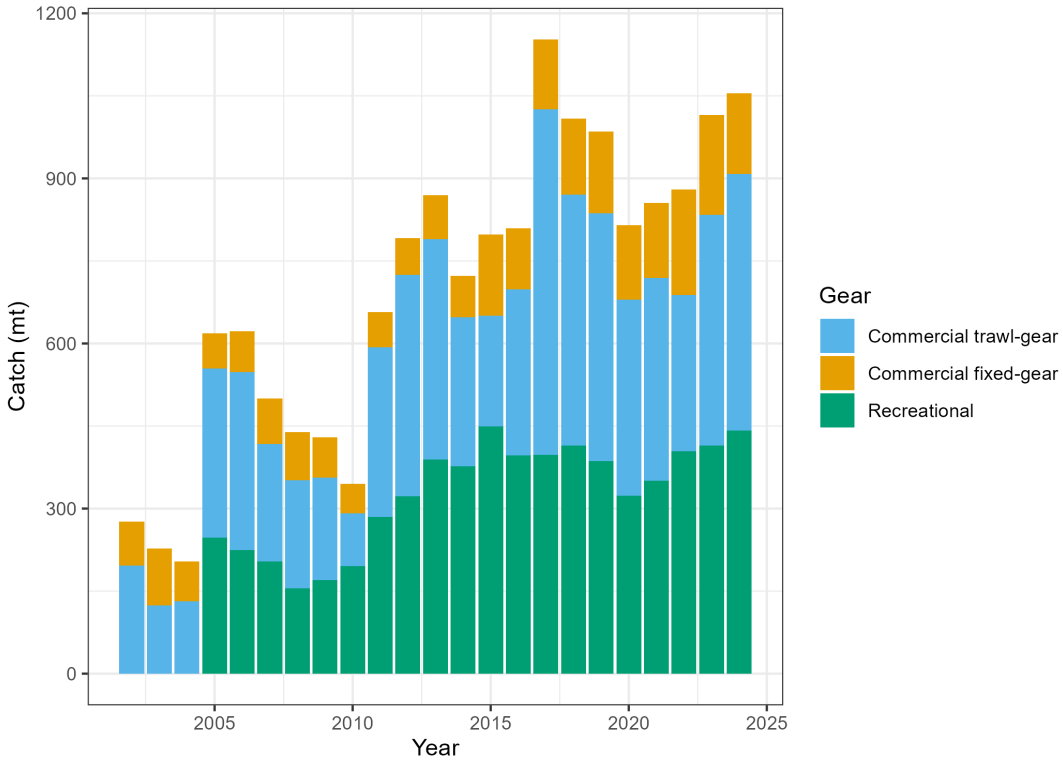

Figure 10: Estimated total catch between 2002-2024 lingcod north. Source: GEMM.

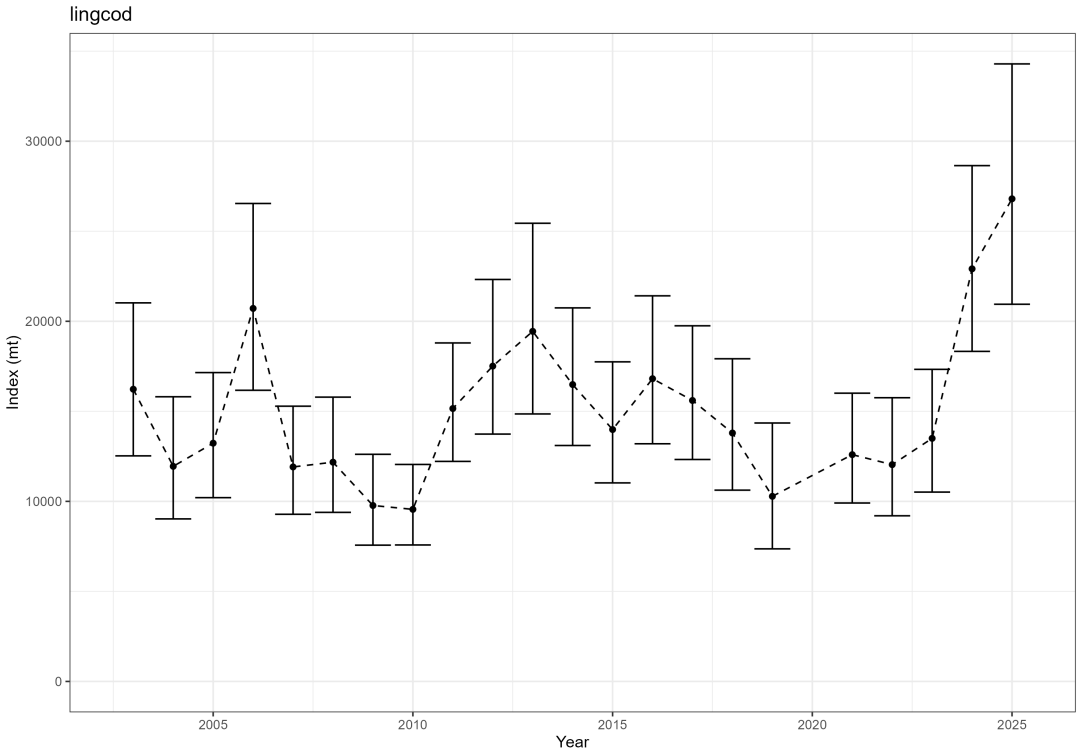

Figure 11: Estimated relative index of abundance for lingcod north from the NWFSC WCGBTS.

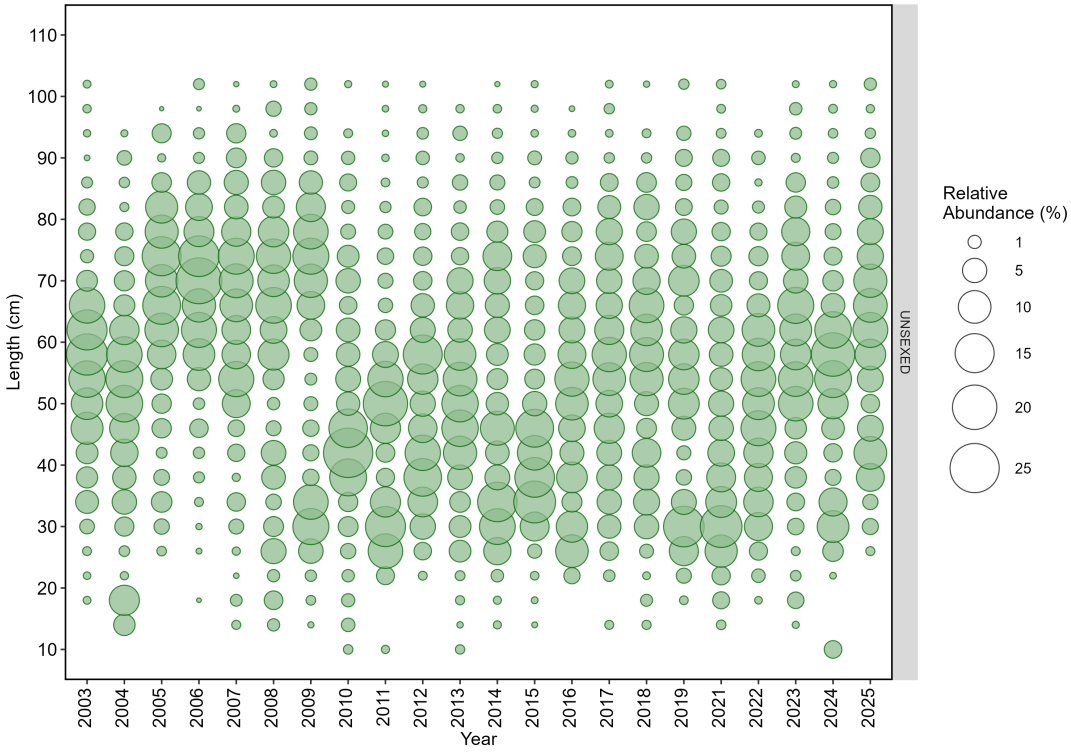

Figure 12: Length (cm) compostion data from the NWFSC WCGBTS for lingcod north. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.4 Lingcod south

The most recent assessment of lingcod south was a benchmark assessment conducted in 2021. Across available data, lingcod south have been observed and sampled by commercial and recreational fisheries, the NWFWC HKLS, the NWFSC WCGBTS, and the CCFRP Survey. The NWFSC HKLS observed lingcod south on an average of 1 set per year. The NWFSC WCGBTS observed lingcod south on an average of 79 tows per year. For this species, a total of 1161 maturity samples have been collected coastwide (regardless of stock area), with 1031 read maturities. Maturity parameter estimates may be updated from those used in the previous coastwide assessment with additional maturity data and updated modeling methods.

Table 4: Total number of available lengths, read ages, and unread age structures by data source and state for lingcod south.

State	Source	Lengths	Ages	Age Structures
California	CCFRP	5,343	0	0
California	Commercial	6,036	377	0
California	NWFSC HKLS	955	185	25
California	NWFSC WCGBTS	12,375	3,887	2,797
California	Recreational	85,228	0	0

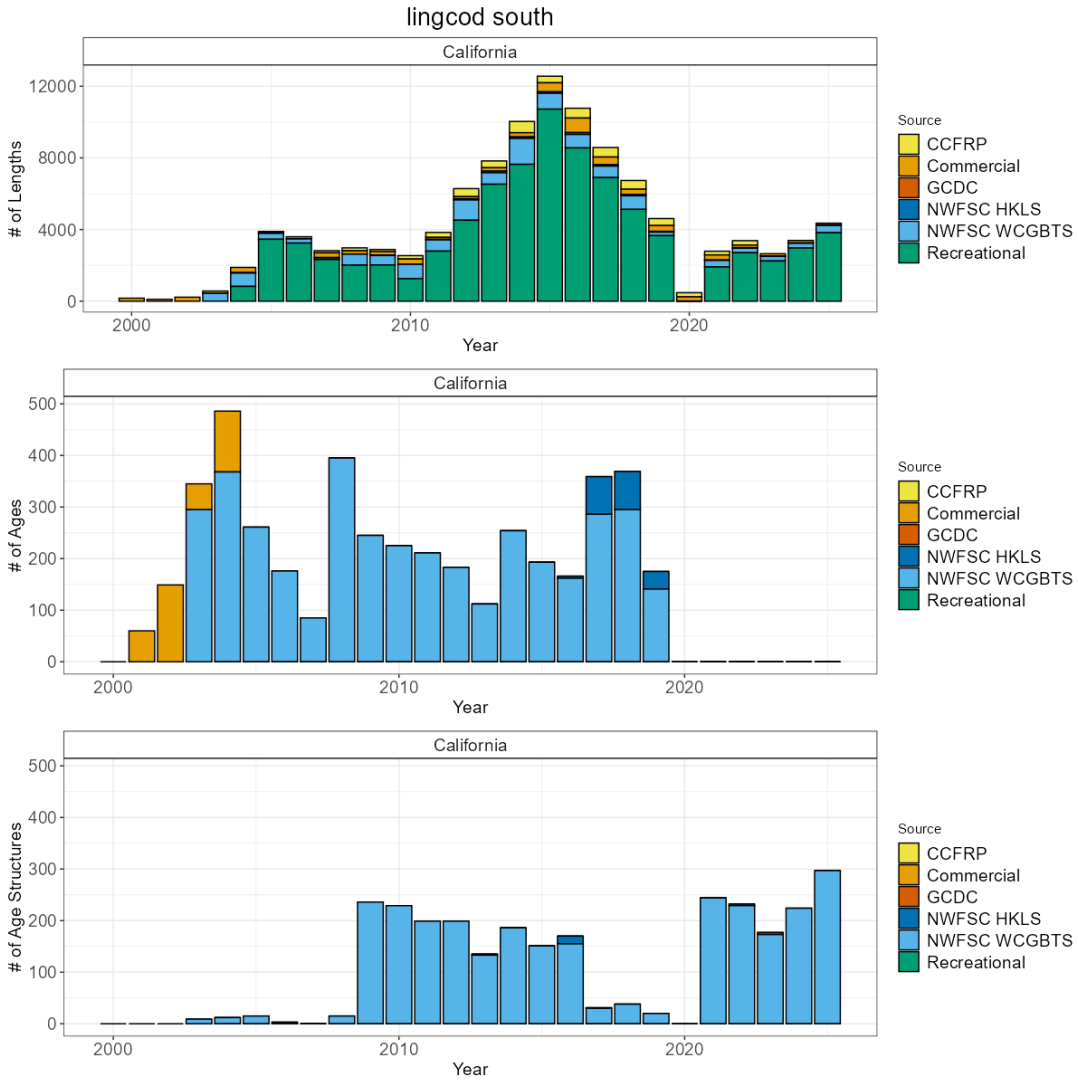

Figure 13: Total number of available lengths, read ages, and unread age structures by data source by year for lingcod south. Note the y-axis maximum may differ by data type.

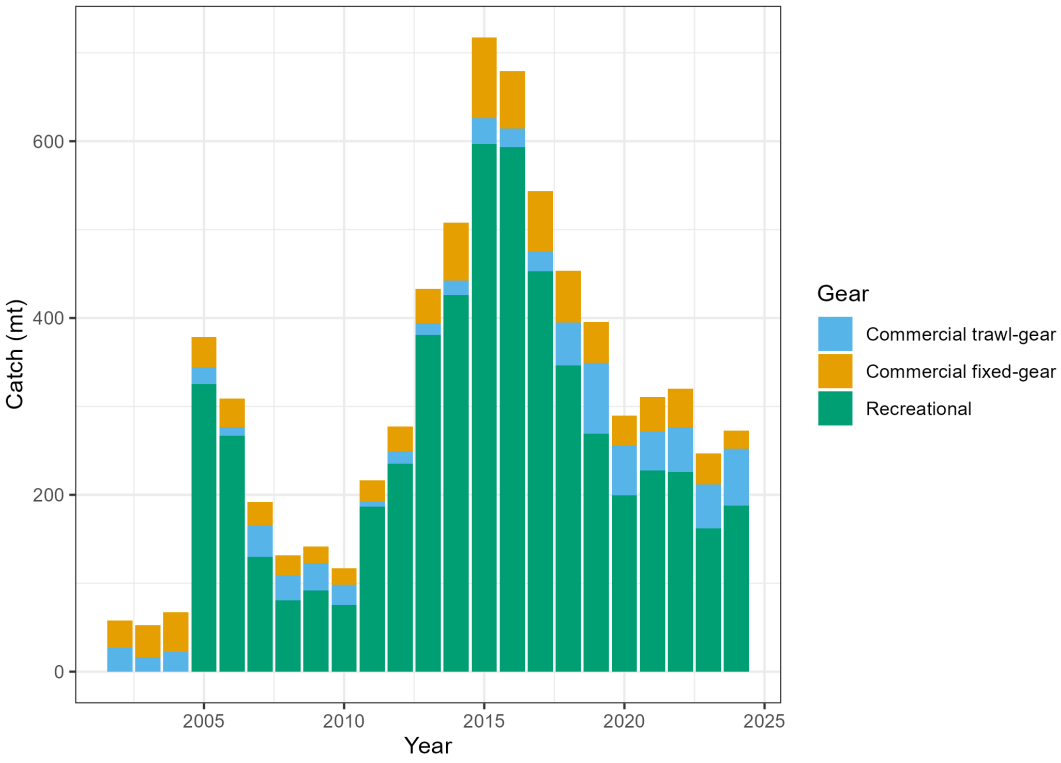

Figure 14: Estimated total catch between 2002-2024 lingcod south. Source: GEMM.

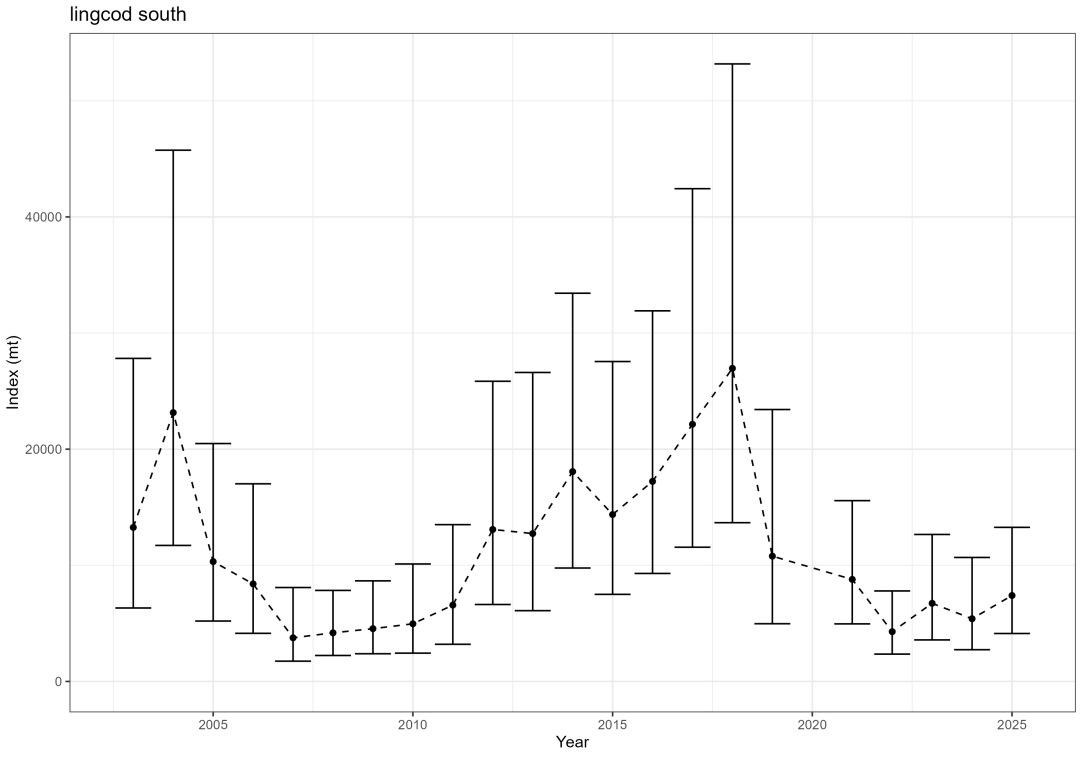

Figure 15: Estimated relative index of abundance for lingcod south from the NWFSC WCGBTS.

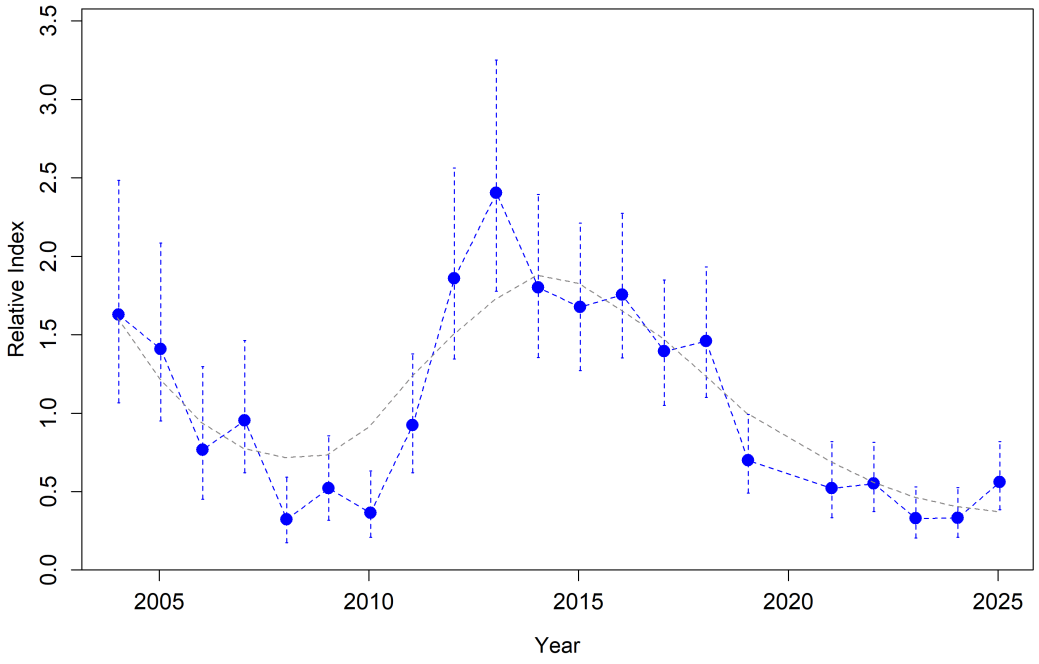

Figure 16: Estimated relative index of abundance for lingcod south from the NWFSC HKLS.

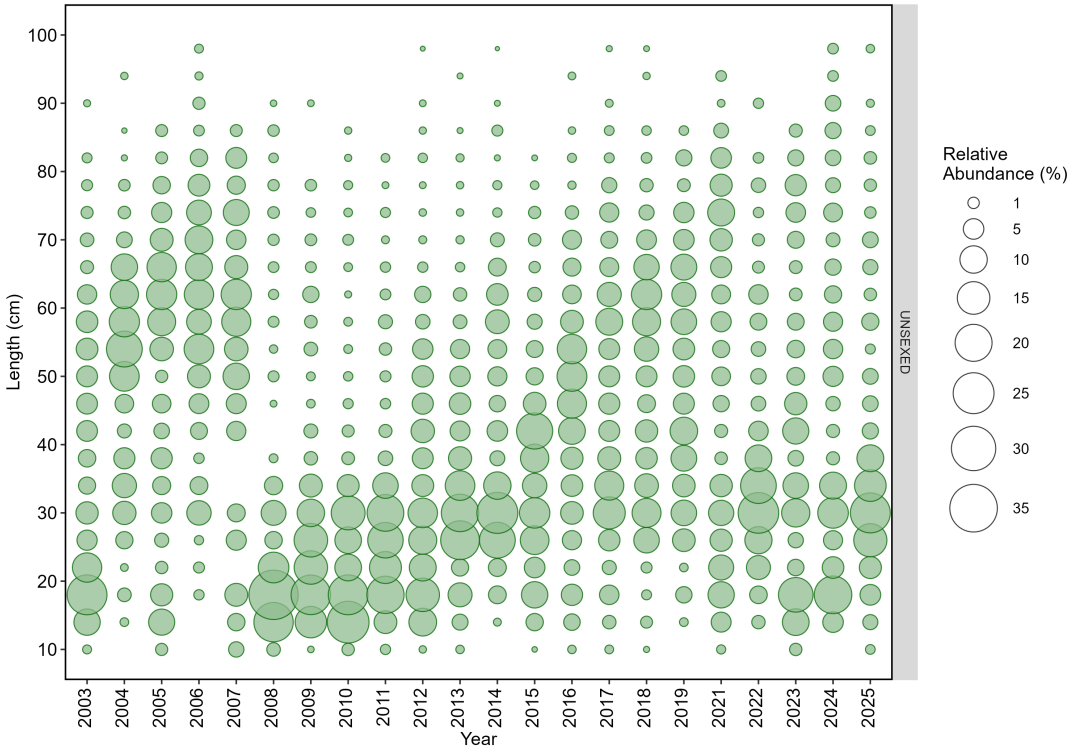

Figure 17: Length (cm) compostion data from the NWFSC WCGBTS for lingcod south. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

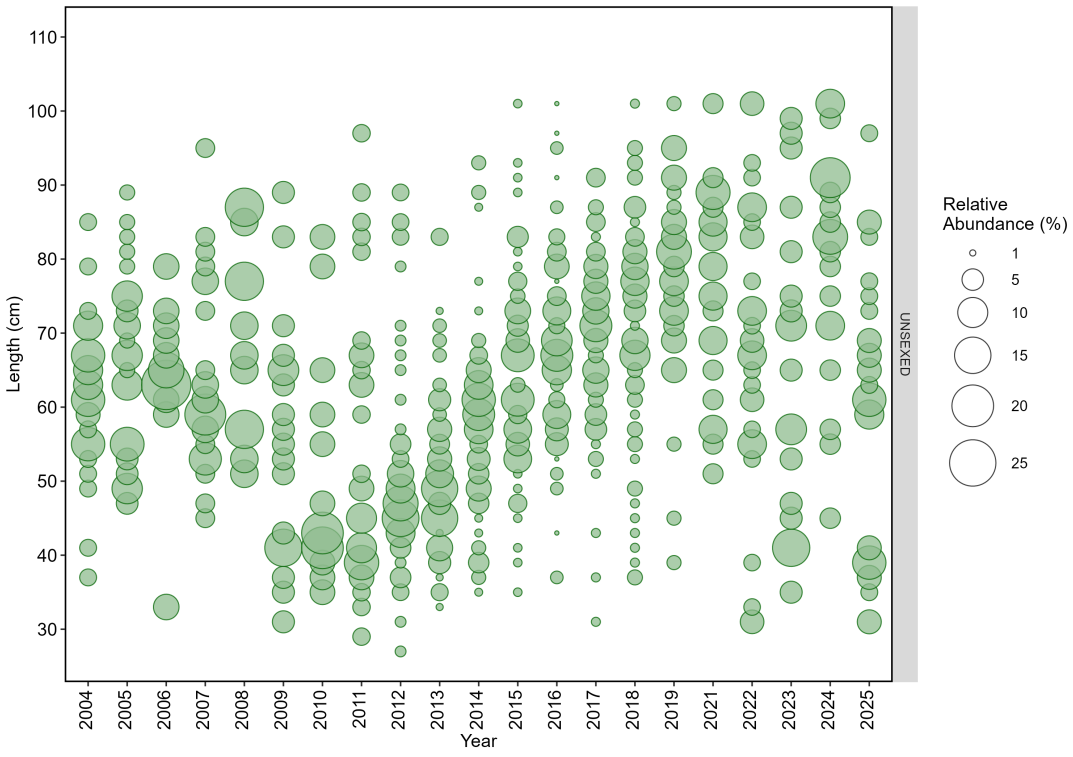

Figure 18: Length (cm) compostion data from the NWFSC HKLS for lingcod south. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.5 Longspine thornyhead

The most recent assessment of longspine thornyhead was a benchmark assessment conducted in 2013. Across available data, longspine thornyhead have been observed and sampled by commercial fisheries and the NWFSC WCGBTS. The NWFSC WCGBTS observed longspine thornyhead on an average of 222 tows per year. No validated (accurate and precise) ageing methology currently exists for longspine thornyhead. For this species, a total of 341 maturity samples have been collected coastwide (regardless of stock area), with 63 read maturities. Maturity parameter estimates may be updated from those used in the previous assessment with additional maturity data and updated modeling methods, but assigning maturity status per sample is time consuming for this species.

Table 5: Total number of available lengths, read ages, and unread age structures by data source and state for longspine thornyhead.

State	Source	Lengths	Ages	Age Structures
California	Commercial	77,995	0	53
California	NWFSC WCGBTS	76,437	0	9,925
Oregon	Commercial	30,164	30	30,136
Oregon	NWFSC WCGBTS	34,876	0	4,219
Washington	Commercial	6,167	0	302
Washington	NWFSC WCGBTS	14,741	0	1,819

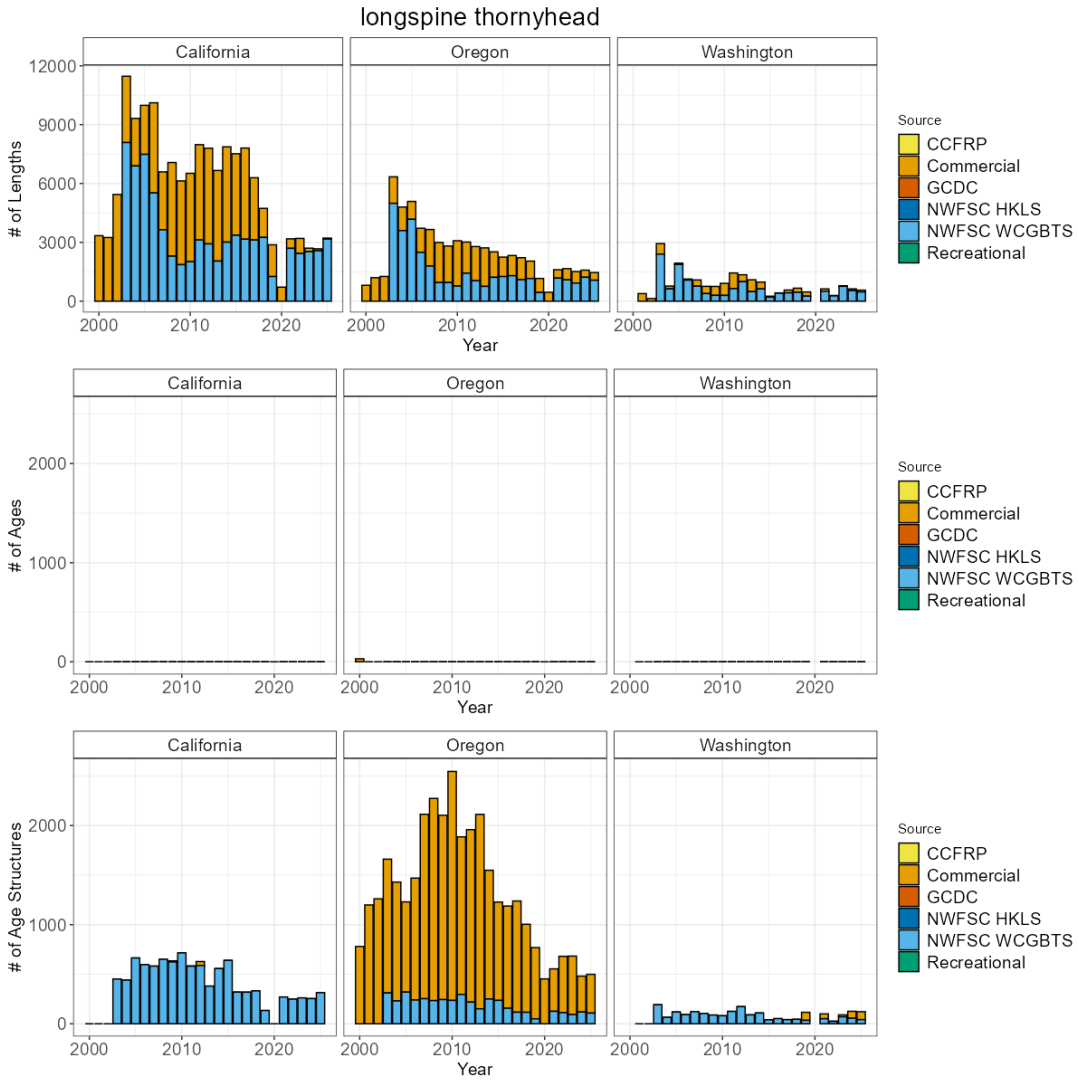

Figure 19: Total number of available lengths, read ages, and unread age structures by data source by year for longspine thornyhead. Note the y-axis maximum may differ by data type.

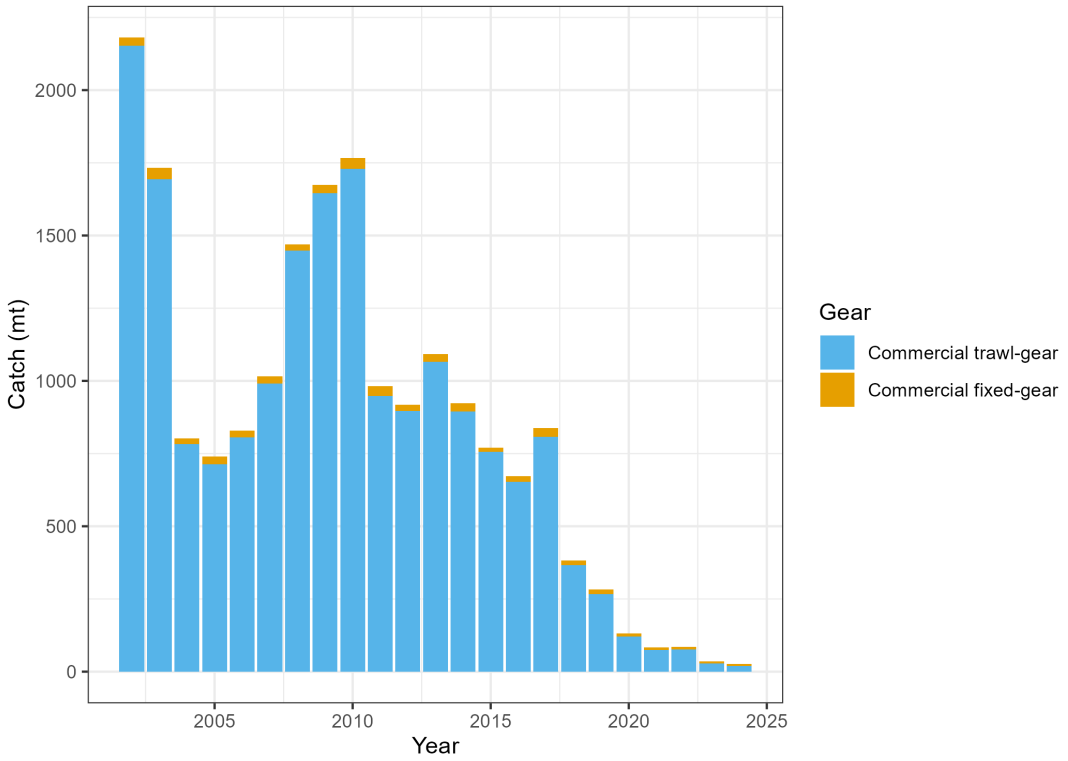

Figure 20: Estimated total catch between 2002-2024 longspine thornyhead. Source: GEMM.

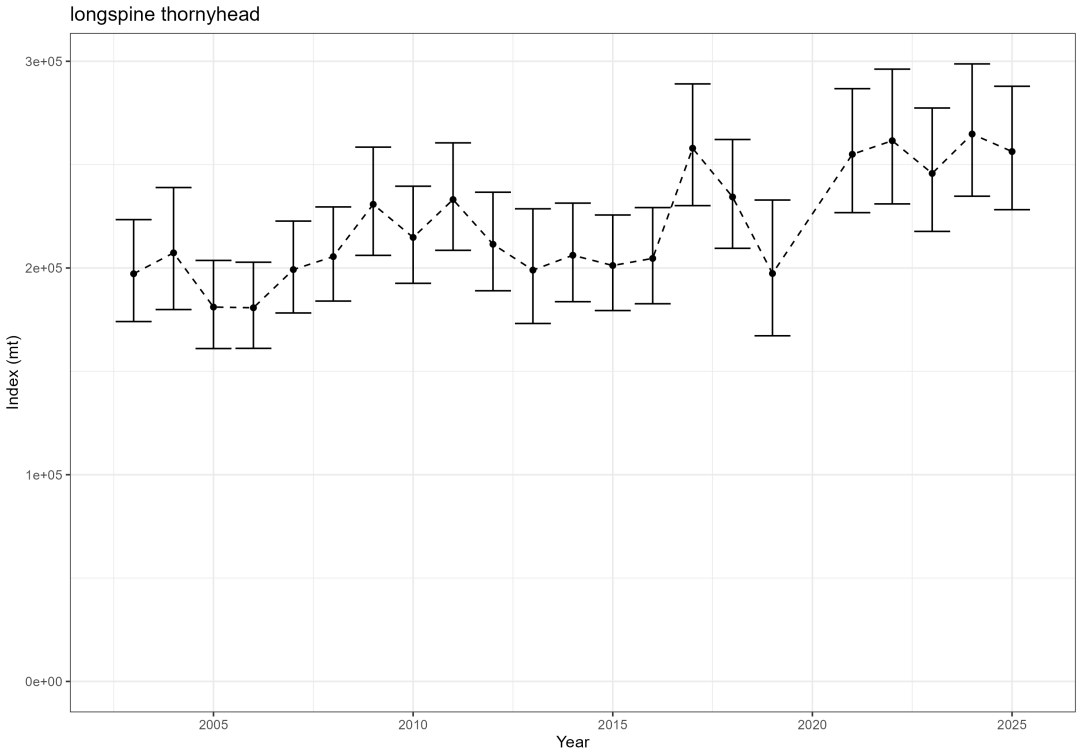

Figure 21: Estimated relative index of abundance for longspine thornyhead from the NWFSC WCGBTS.

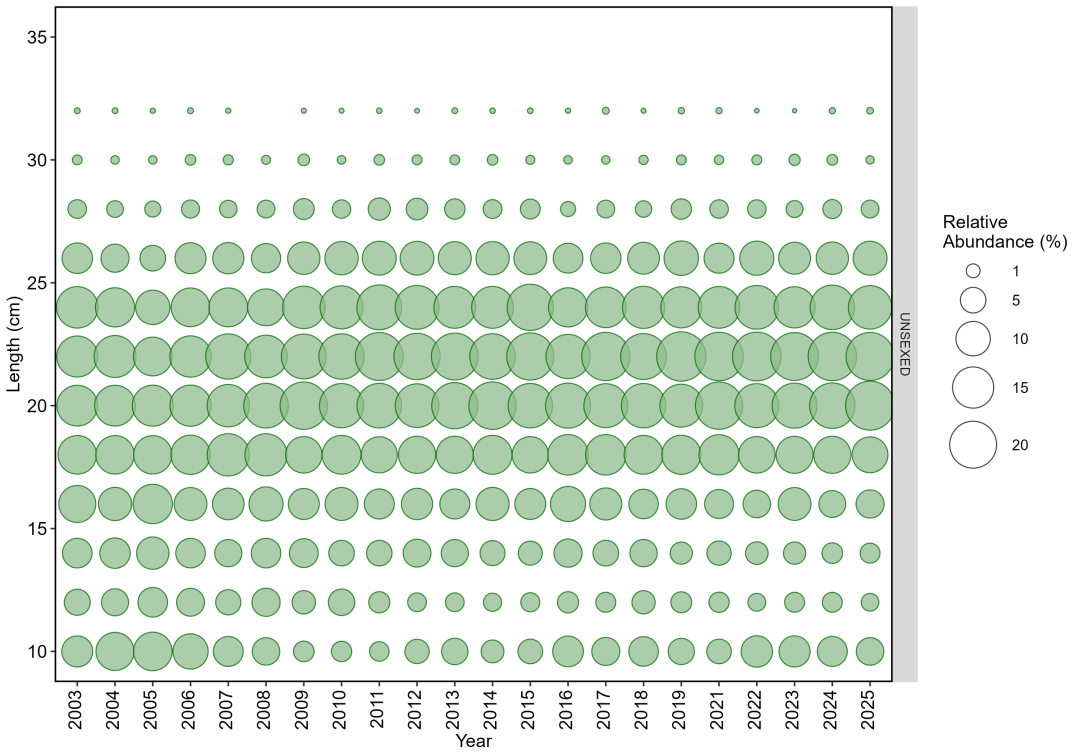

Figure 22: Length (cm) compostion data from the NWFSC WCGBTS for longspine thornyhead. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.6 Pacific spiny dogfish

The most recent assessment of Pacific spiny dogfish was a benchmark assessment conducted in 2021. Across available data, Pacific spiny dogfish have been observed and sampled by commercial fisheries, the NWFWC HKLS, the NWFSC WCGBTS, and the CCFRP Survey. The NWFSC HKLS observed Pacific spiny dogfish on an average of less than one set per year. The NWFSC WCGBTS observed Pacific spiny dogfish on an average of 161 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area). Maturity parameter estimates may be updated from those used in the previous assessment with additional maturity data and updated modeling methods, but assigning maturity status per sample is time consuming for this species.

Research has identified similar declining population trends across regions in the North Pacific (i.e., Alaska, Canada, and the U.S. West Coast) for Pacific spiny dogfish (Davidson et al. 2026). There has been additional research focusing on understanding movement of Pacific spiny dogfish. Since 2024, ODFW in collaboration with Oregon State University, has tagged 76 Pacific spiny dogfish with satellite tags in Washington and Oregon. To date 46 of those tags have been retreived and are providing information. Likelihood profiles for each tags' track are being developed to determine movements of the individuals. The goal is to understand the movement of Pacific spiny dogfish across seasons and depth which will provide improved understanding about availability to summer surveys and bottom trawl gear off the U.S. West Coast.

The Washington Department of Fish and Wildlife (WDFW) is conducting a study to improve age estimation methods for Pacific Spiny Dogfish using vertebral centra and dorsal spine–based techniques. A key challenge in accurately determining age for this species is accounting for missing growth bands caused by natural wear and spine breakage. Wear is most frequently observed in older individuals and as individuals age, where natural processes and cumulative physical damage to the spines can obscure or completely remove early growth bands, potentially leading to systematic underestimation of age.

Two methods (i.e., Ketchen, 1975, and Cheng, 2012) have been developed to account for the worn portion of the spine and to extrapolate missing growth bands. The Ketchen method incorporates an assumed diameter of the spine at birth, whereas the latter does not, allowing for extrapolation without accounting for the birth point. However, the Ketchen method does not account for natural variability in spine growth among individuals, whereas the Cheng method uses a statistical approach that accounts for individual variability. Despite these differences, both approaches introduce biases that can lead to overestimation of age when reconstructing missing growth bands.

WDFW is currently evaluating age estimates derived from vertebrae and spines through several approaches: 1) assessing ageing criteria for vertebral centra and spines (e.g., interpretation of banding patterns, including lumping versus splitting of bands); 2) determining whether vertebral centra provide more reliable age estimates and, if so, how they can be used to correct bias on damaged spines; 3) evaluating whether spine measurements (e.g., diameter at the first band, diameter at the second band, diameter at the third band, diameter at the base) can be used to improve reconstruction of missing growth bands when vertebral centra are not suitable; and 4) exploring multiple approaches for indirect age validation, such as eye lens diameter or chemical analysis.

Table 6: Total number of available lengths, read ages, and unread age structures by data source and state for Pacific spiny dogfish.

State	Source	Lengths	Ages[1]	Age Structures
California	CCFRP	2	0	0
California	Commercial	333	0	0
California	NWFSC HKLS	9	0	0
California	NWFSC WCGBTS	18,373	285	4,941
Oregon	Commercial	4,647	0	4,647
Oregon	NWFSC WCGBTS	4,454	128	1,925
Washington	Commercial	9,635	*0*	6,928
Washington	NWFSC WCGBTS	11,802	178	2,972

[1]WDFW is working on a new methodology to estimate age from spines and has temporarily removed all historical ages from PacFIN. There are a total of 6,993 age reads that may be available.

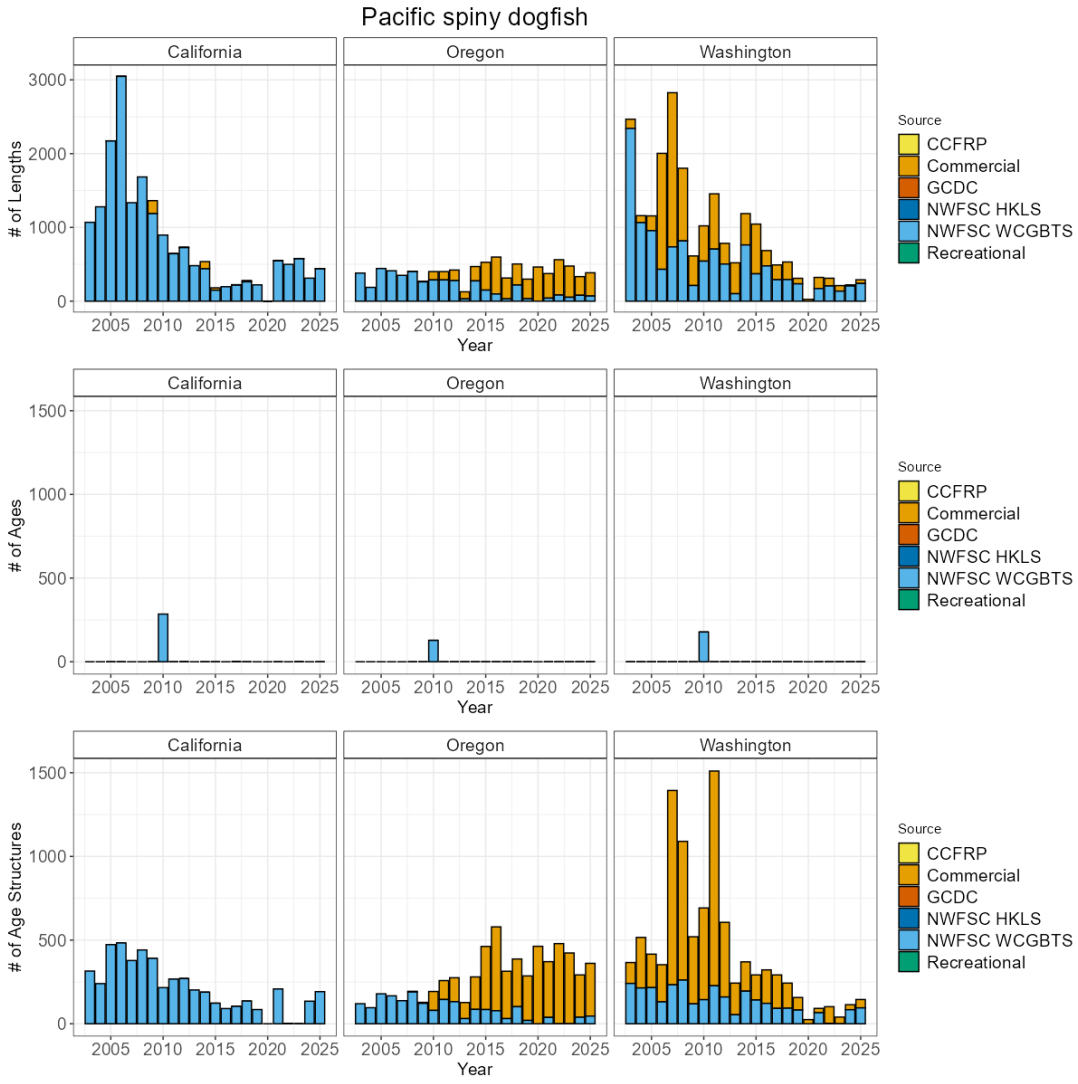

Figure 23: Total number of available lengths, read ages, and unread age structures by data source by year for Pacific spiny dogfish. Note the y-axis maximum may differ by data type.

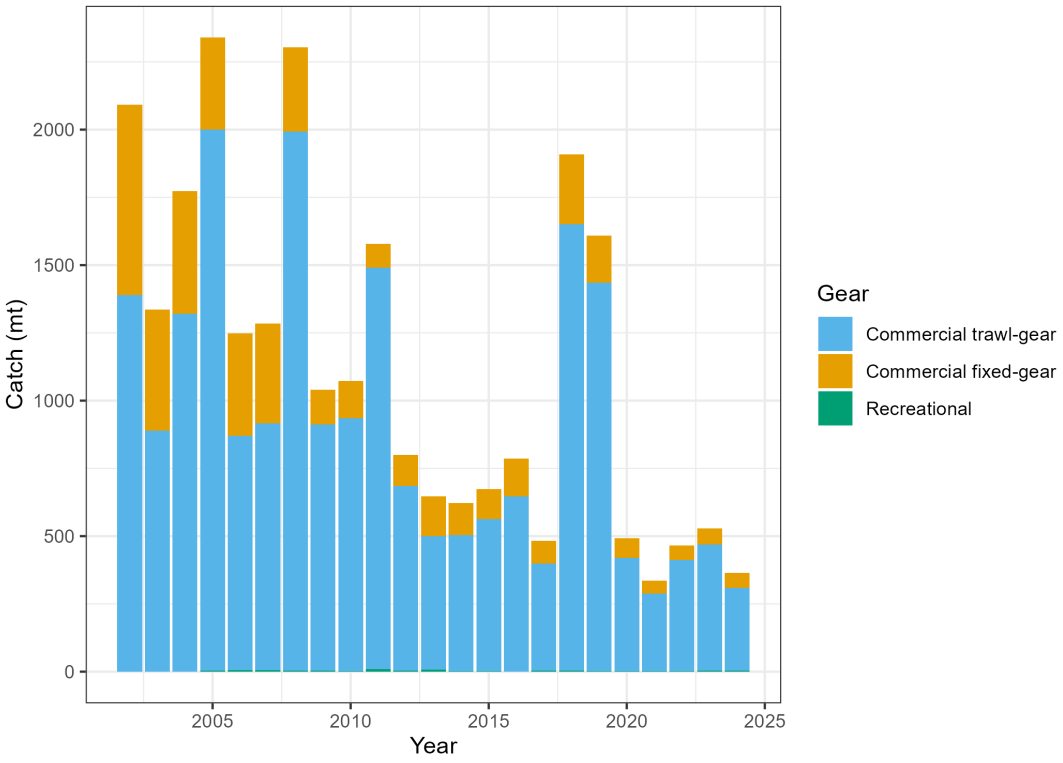

Figure 24: Estimated total catch between 2002-2024 Pacific spiny dogfish. Source: GEMM.

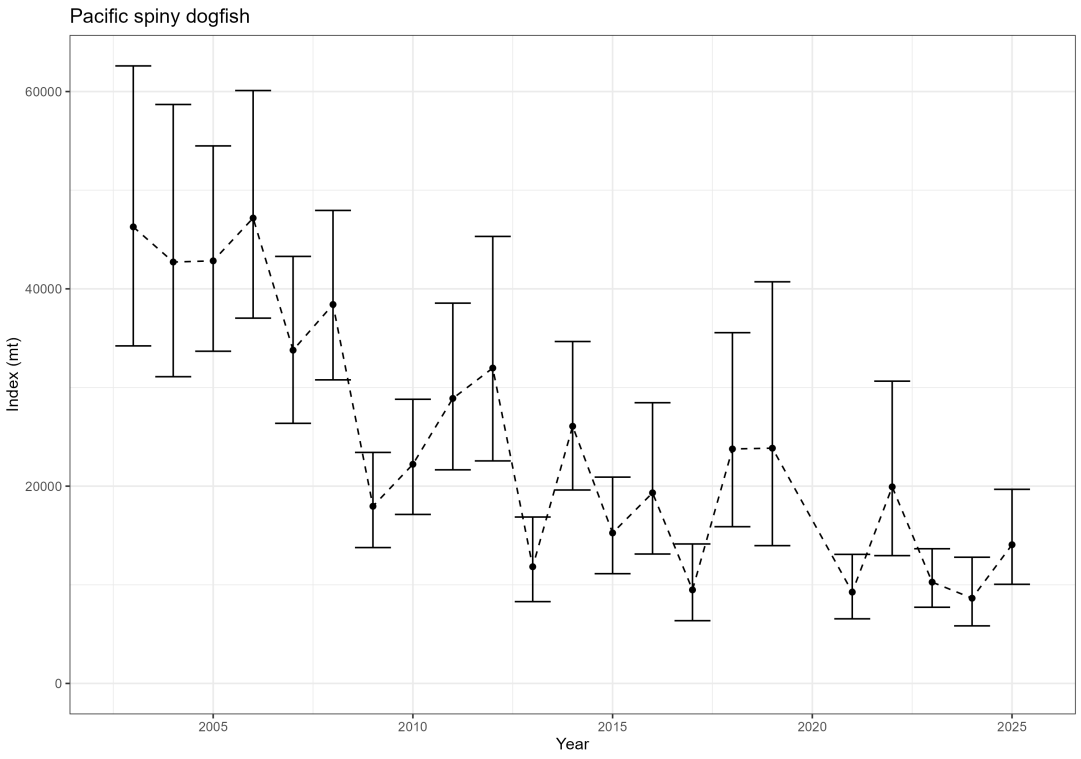

Figure 25: Estimated relative index of abundance for Pacific spiny dogfish from the NWFSC WCGBTS.

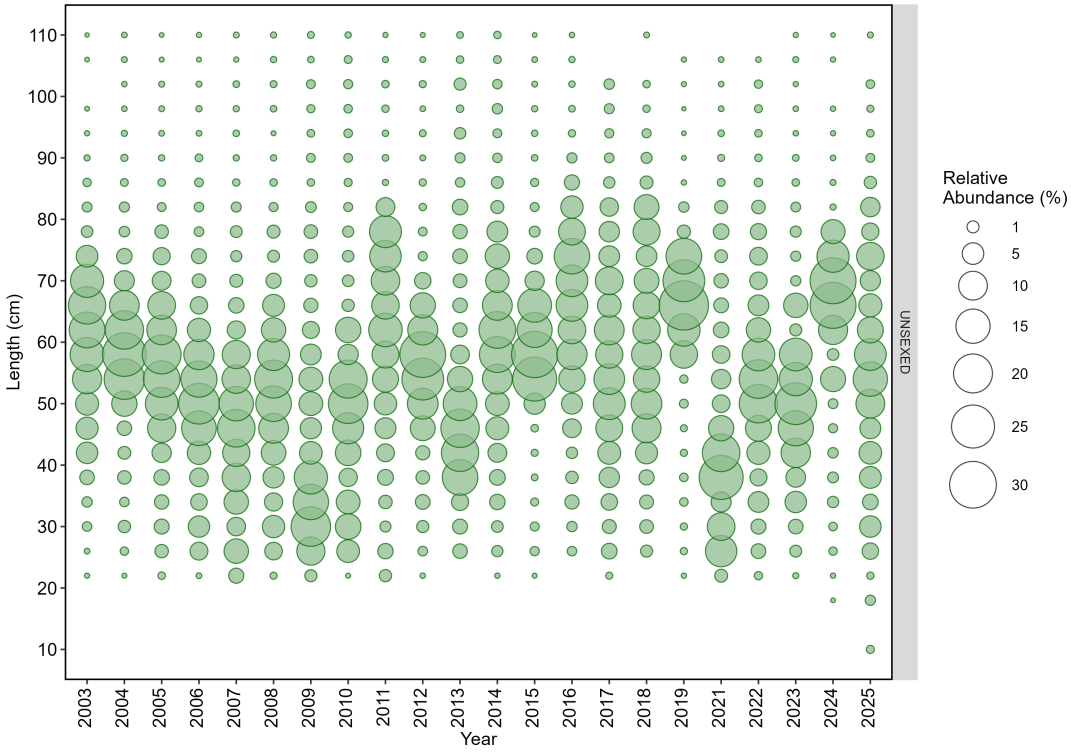

Figure 26: Length (cm) compostion data from the NWFSC WCGBTS for Pacific spiny dogfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.7 Petrale sole

The most recent assessment of petrale sole was a benchmark assessment conducted in 2023. Across available data, petrale sole have been observed and sampled by commercial and recreational fisheries, the NWFWC HKLS, the NWFSC WCGBTS, and the CCFRP Survey. The NWFSC HKLS observed petrale sole on an average of less than one set per year. The NWFSC WCGBTS observed petrale sole on an average of 275 tows per year. For this species, a total of 728 maturity samples have been collected coastwide (regardless of stock area), with 598 read maturities. Maturity parameter estimates may be updated from those used in the previous coastwide assessment with updated modeling methods.

Table 7: Total number of available lengths, read ages, and unread age structures by data source and state for petrale sole.

State	Source	Lengths	Ages	Age Structures
California	CCFRP	10	0	0
California	Commercial	61,842	4,036	3,109
California	NWFSC HKLS	8	0	0
California	NWFSC WCGBTS	37,567	7,176	3,384
California	Recreational	2,974	0	0
Oregon	Commercial	48,307	12,525	35,783
Oregon	NWFSC WCGBTS	33,022	4,860	3,910
Oregon	Recreational	3,873	0	0
Washington	Commercial	33,251	19,037	2,389
Washington	NWFSC WCGBTS	16,233	2,676	2,272
Washington	Recreational	126	76	11

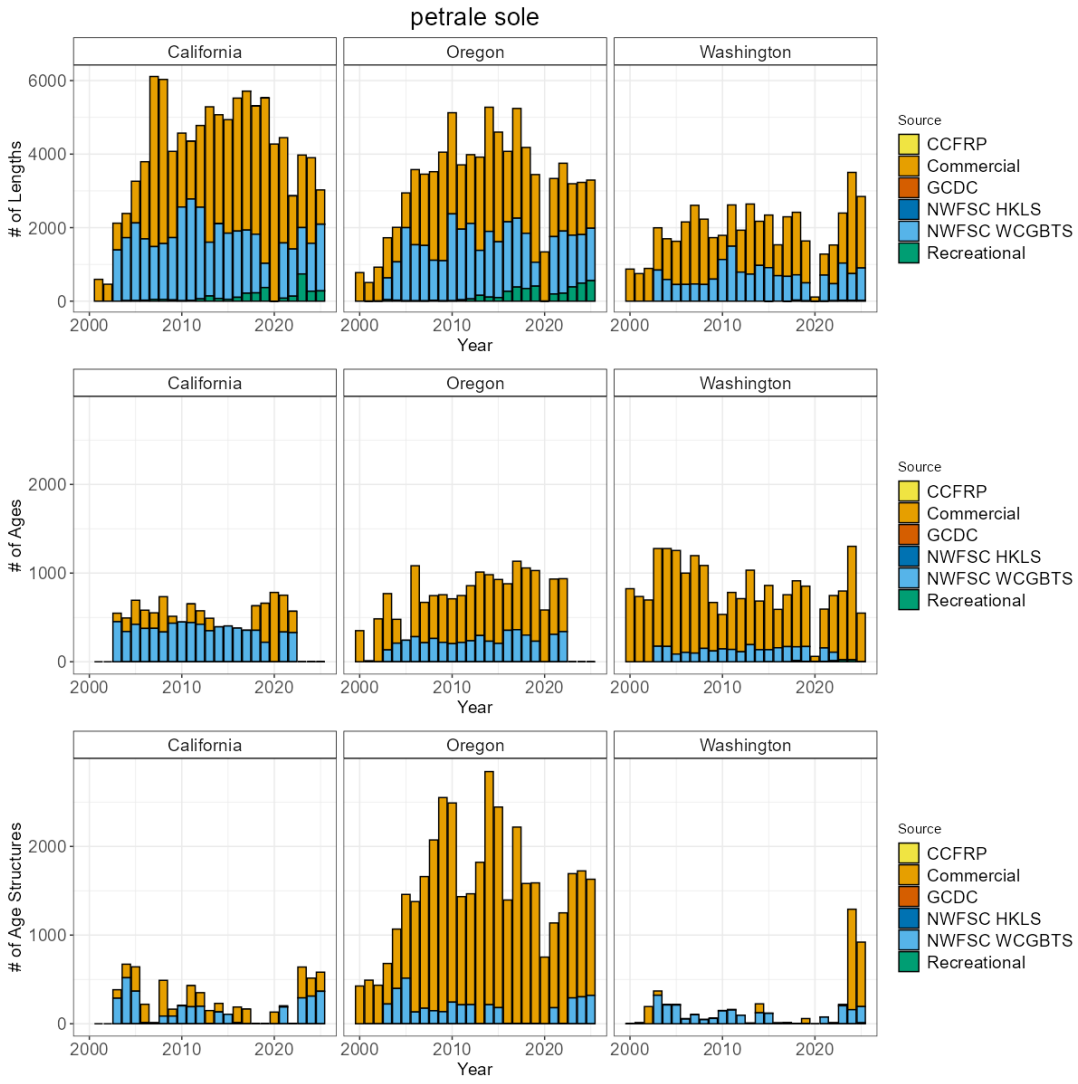

Figure 27: Total number of available lengths, read ages, and unread age structures by data source by year for petrale sole. Note the y-axis maximum may differ by data type.

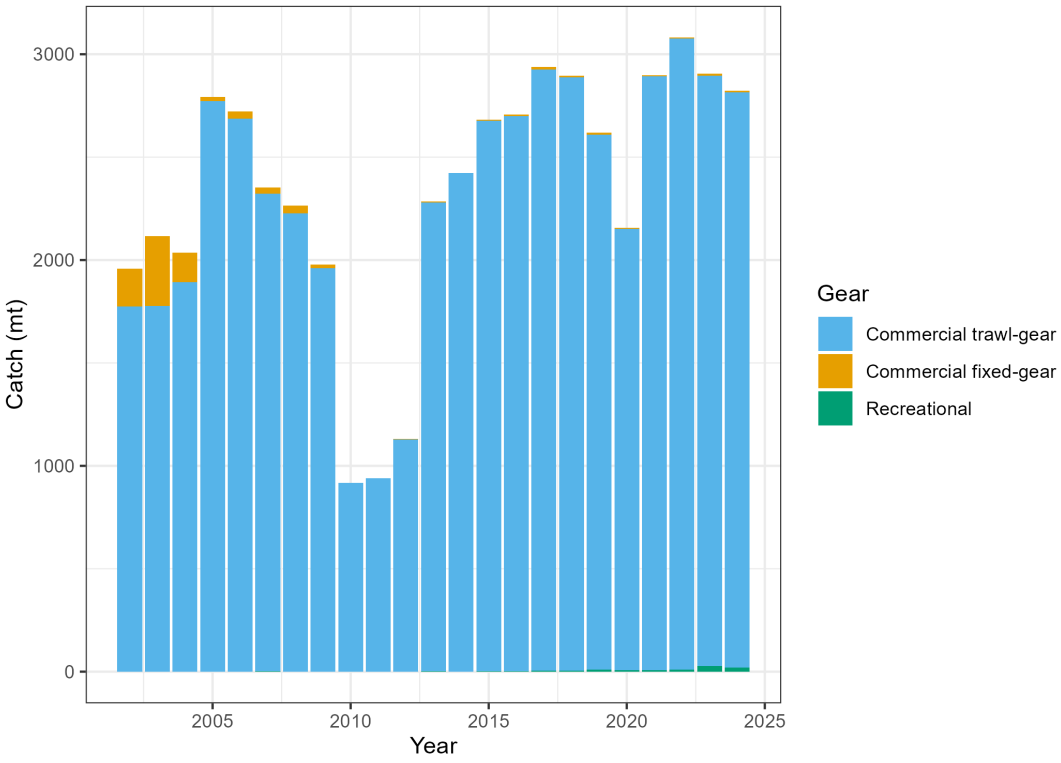

Figure 28: Estimated total catch between 2002-2024 petrale sole. Source: GEMM.

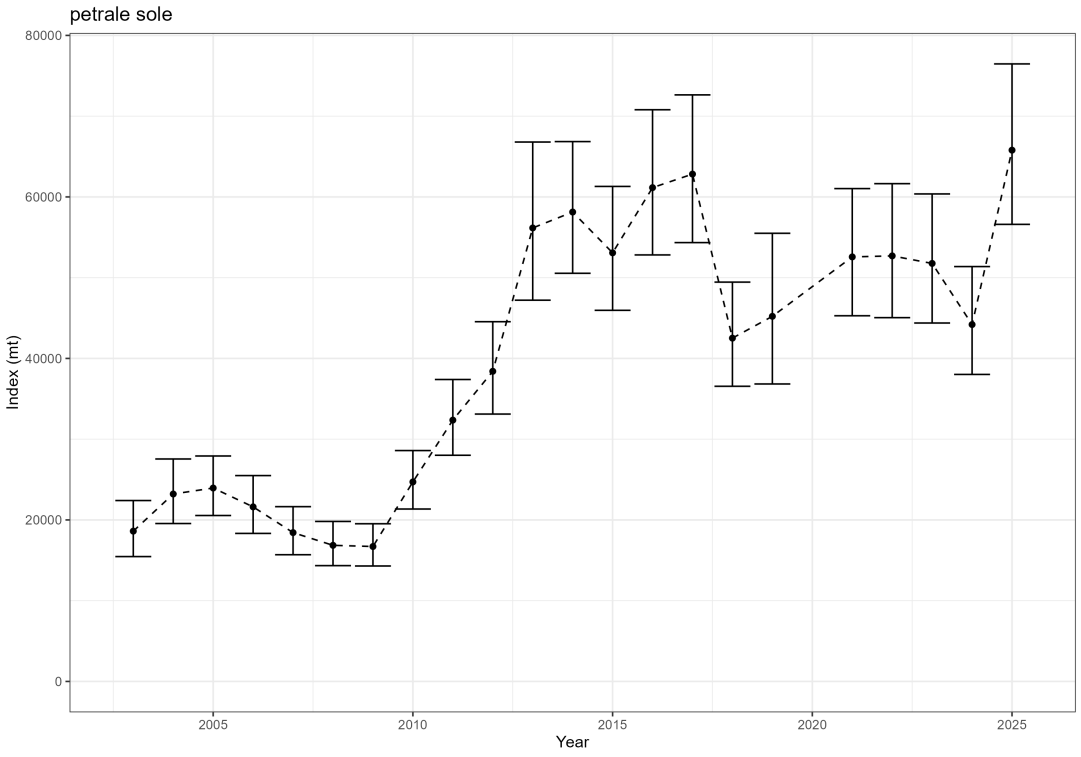

Figure 29: Estimated relative index of abundance for petrale sole from the NWFSC WCGBTS.

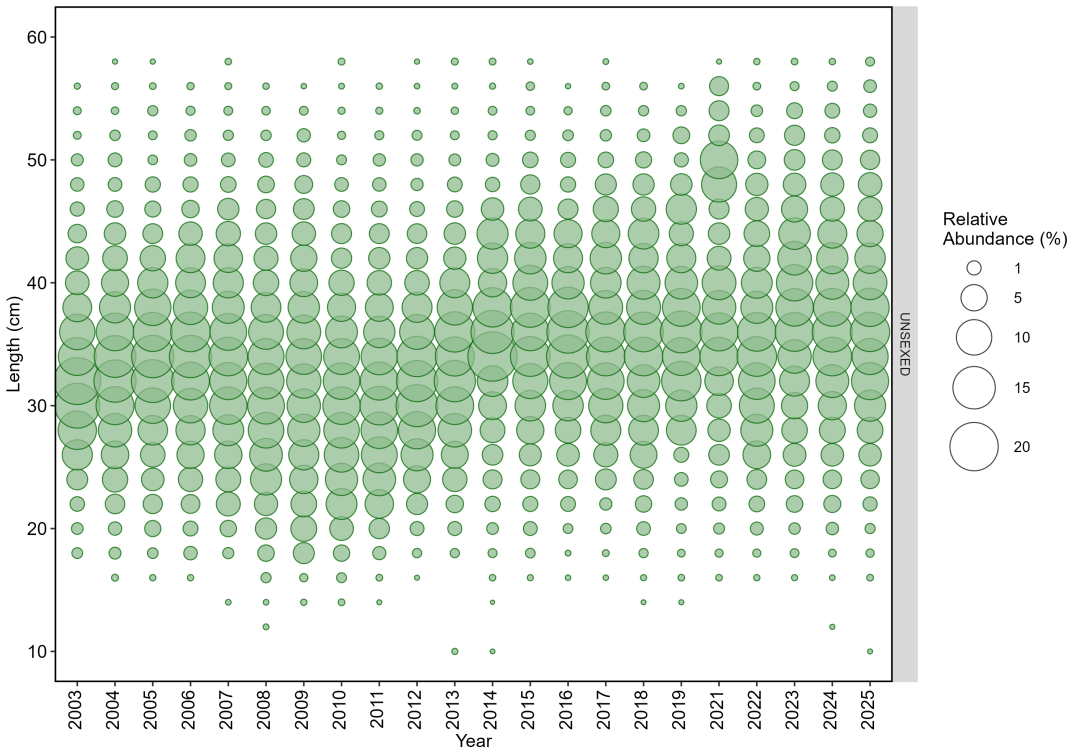

Figure 30: Length (cm) compostion data from the NWFSC WCGBTS for petrale sole. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.8 Redbanded rockfish

To date, no assessment or analysis has been conducted on redbanded rockfish. Across available data, redbanded rockfish have been observed and sampled by commercial and recreational fisheries and the NWFSC WCGBTS. The NWFSC WCGBTS observed redbanded rockfish on an average of 53 tows per year. The Cooperative Ageing Program lab has aged an additional 703 otoliths collected by the NWFSC WCGBTS that are not represented in the count of aged fish shown. For this species, a total of 330 maturity samples have been collected coastwide (regardless of stock area), with 125 read maturities. Maturity parameter estimates would be provided using available maturity data and accepted modeling methods.

Table 8: Total number of available lengths, read ages, and unread age structures by data source and state for redbanded rockfish.

State	Source	Lengths	Ages	Age Structures
California	Commercial	6,525	1	3,271
California	NWFSC WCGBTS	1,042	0	1,010
California	Recreational	1	0	0
Oregon	Commercial	15,112	278	14,835
Oregon	NWFSC WCGBTS	2,044	0	1,953
Oregon	Recreational	64	0	0
Washington	Commercial	19,556	0	10,170
Washington	NWFSC WCGBTS	1,148	0	1,075
Washington	Recreational	164	0	52

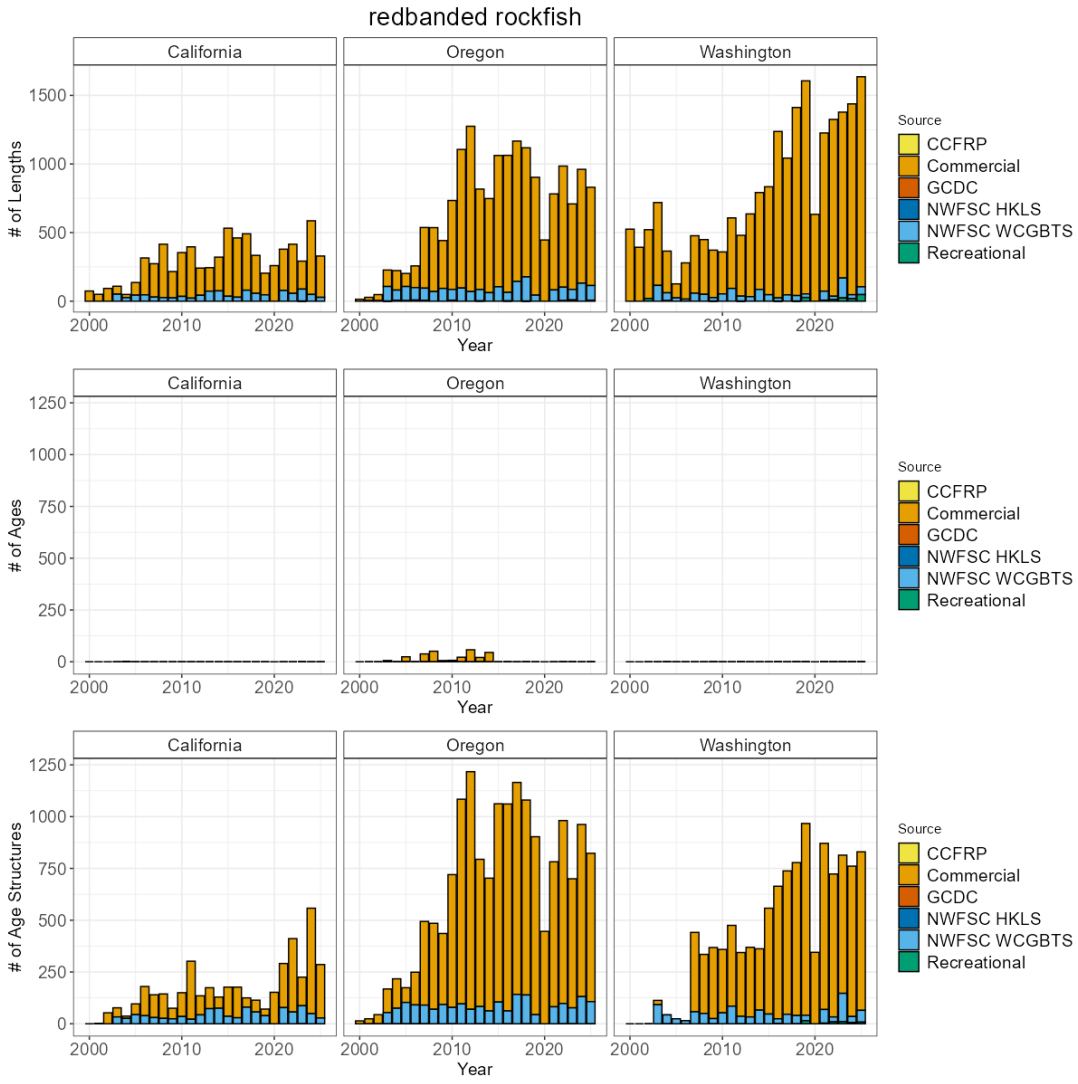

Figure 31: Total number of available lengths, read ages, and unread age structures by data source by year for redbanded rockfish. Note the y-axis maximum may differ by data type.

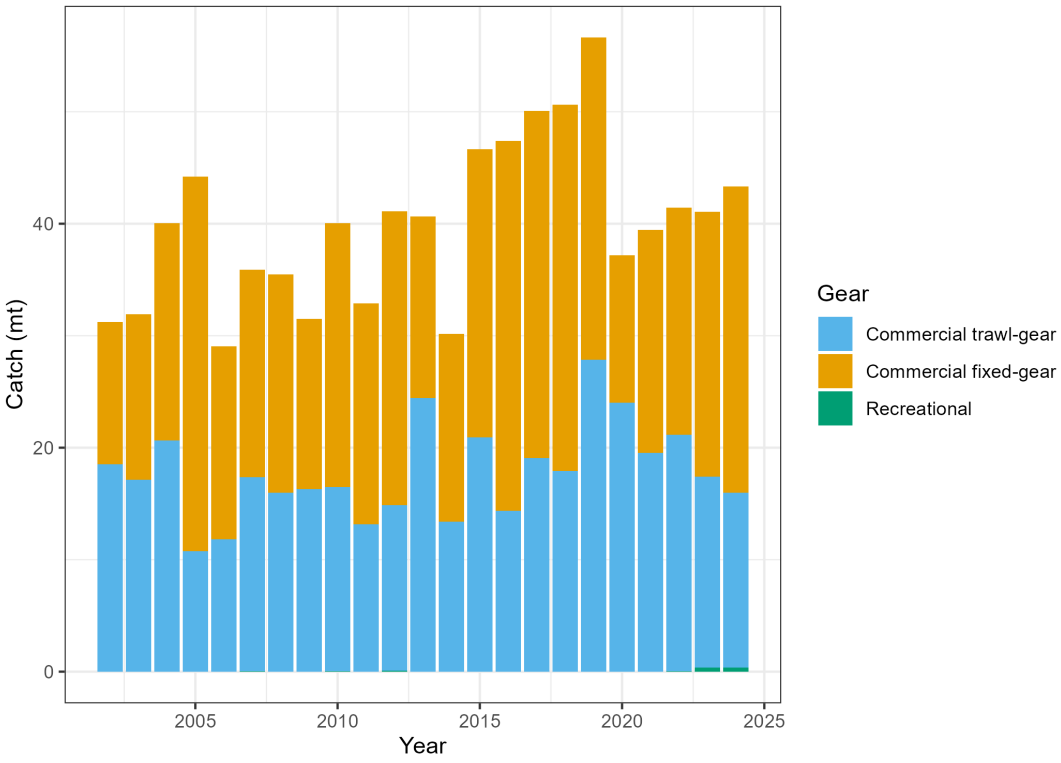

Figure 32: Estimated total catch between 2002-2024 redbanded rockfish. Source: GEMM.

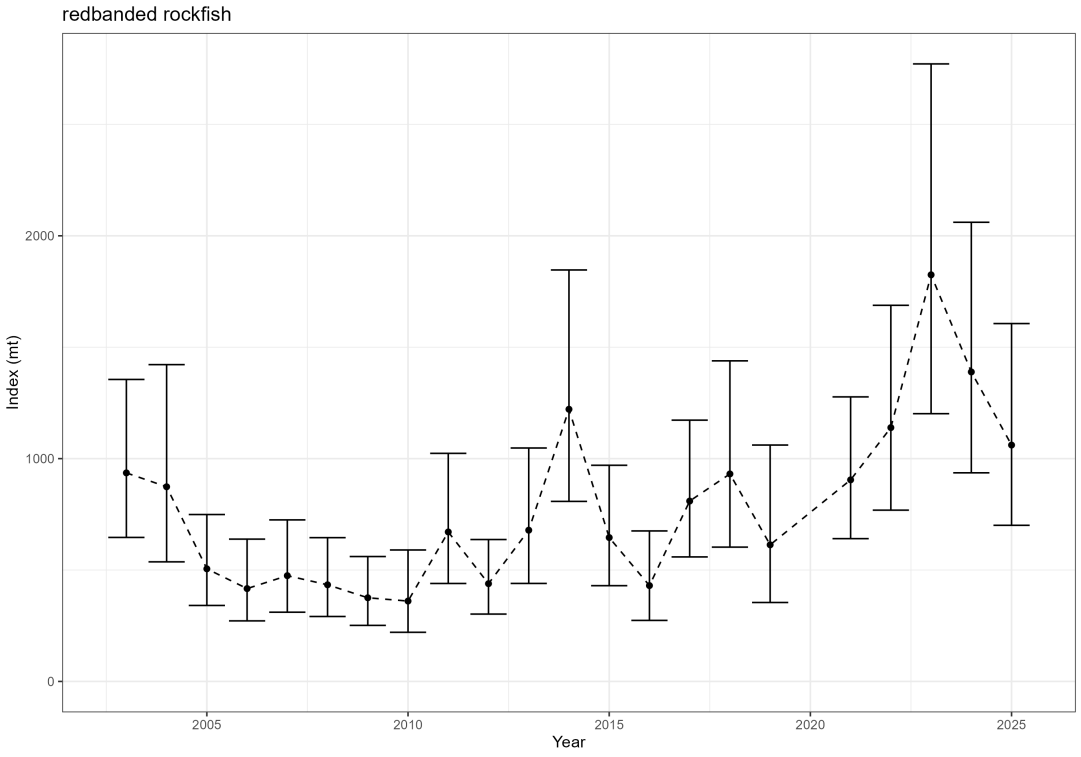

Figure 33: Estimated relative index of abundance for redbanded rockfish from the NWFSC WCGBTS.

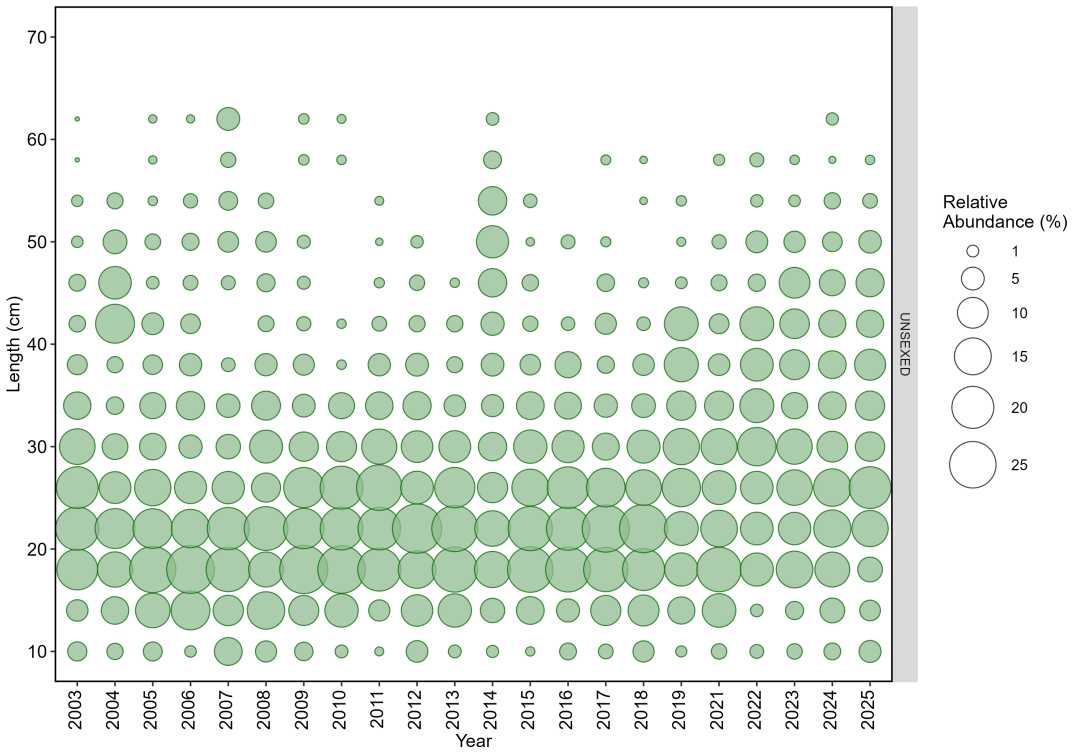

Figure 34: Length (cm) compostion data from the NWFSC WCGBTS for redbanded rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.9 Shortspine thornyhead

The most recent assessment of shortspine thornyhead was a data-moderate assessment conducted in 2023. Across available data, shortspine thornyhead have been observed and sampled by commercial and recreational fisheries and the NWFSC WCGBTS. The NWFSC WCGBTS observed shortspine thornyhead on an average of 324 tows per year. No validated (accurate and precise) ageing methology currently exists for shortspine thornyhead. For this species, a total of 1136 maturity samples have been collected coastwide (regardless of stock area), with 862 read maturities. Maturity parameter estimates may be updated from those used in the previous assessment with additional maturity data and updated modeling methods.

Table 9: Total number of available lengths, read ages, and unread age structures by data source and state for shortspine thornyhead.

State	Source	Lengths	Ages	Age Structures
California	Commercial	63,059	0	131
California	NWFSC WCGBTS	50,554	0	12,492
California	Recreational	4	0	1
Oregon	Commercial	38,536	0	38,536
Oregon	NWFSC WCGBTS	44,504	0	7,554
Washington	Commercial	23,244	0	2,765
Washington	NWFSC WCGBTS	12,983	0	2,789
Washington	Recreational	8	0	0

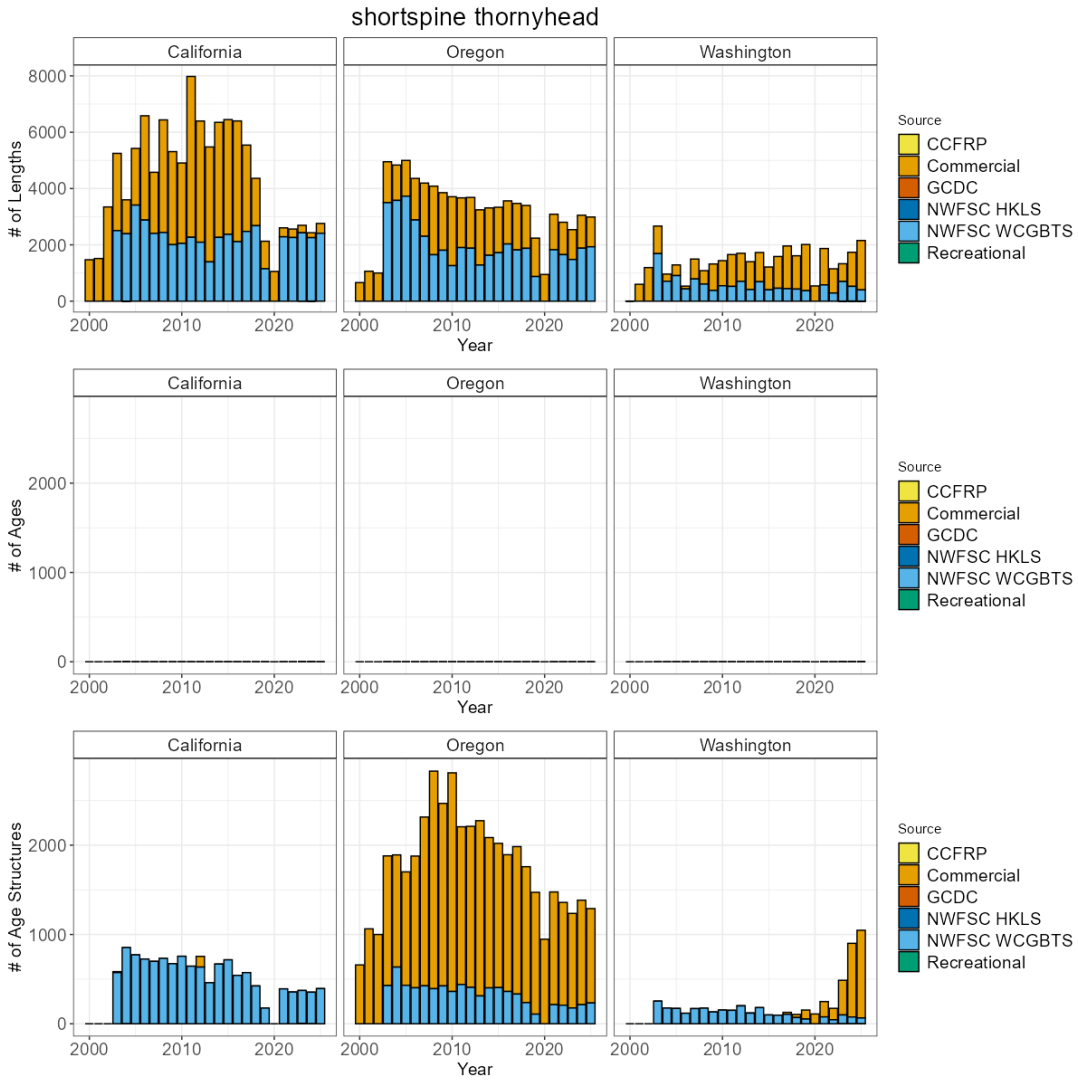

Figure 35: Total number of available lengths, read ages, and unread age structures by data source by year for shortspine thornyhead. Note the y-axis maximum may differ by data type.

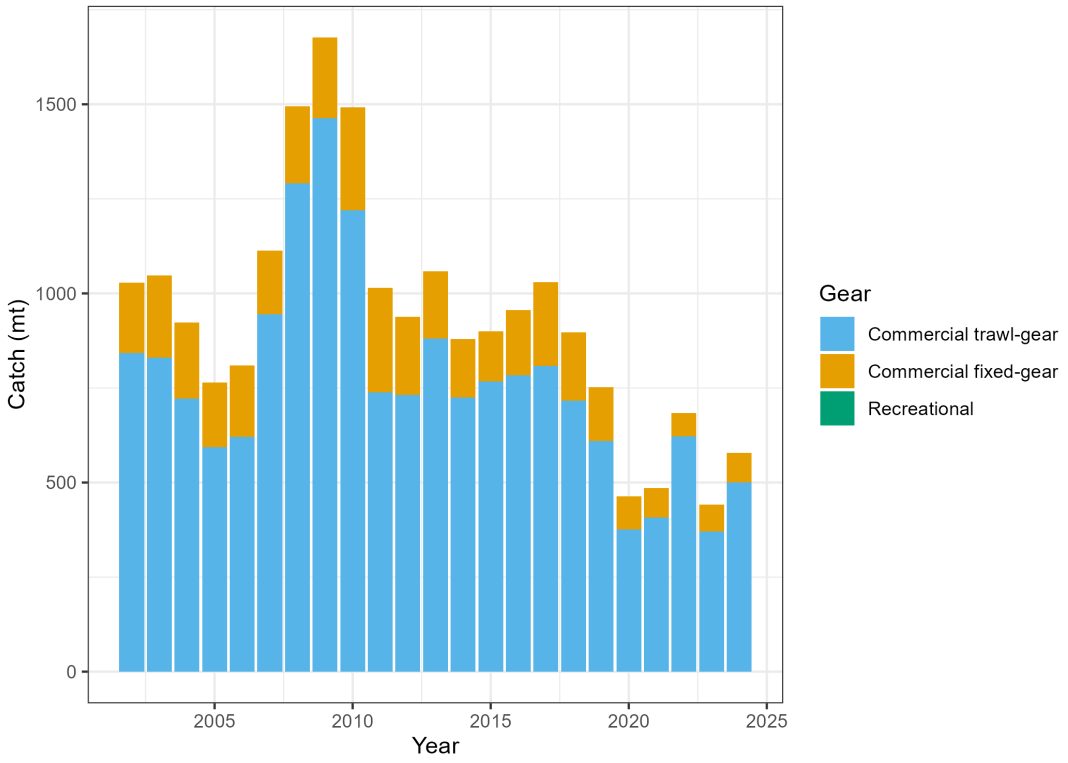

Figure 36: Estimated total catch between 2002-2024 shortspine thornyhead. Source: GEMM.

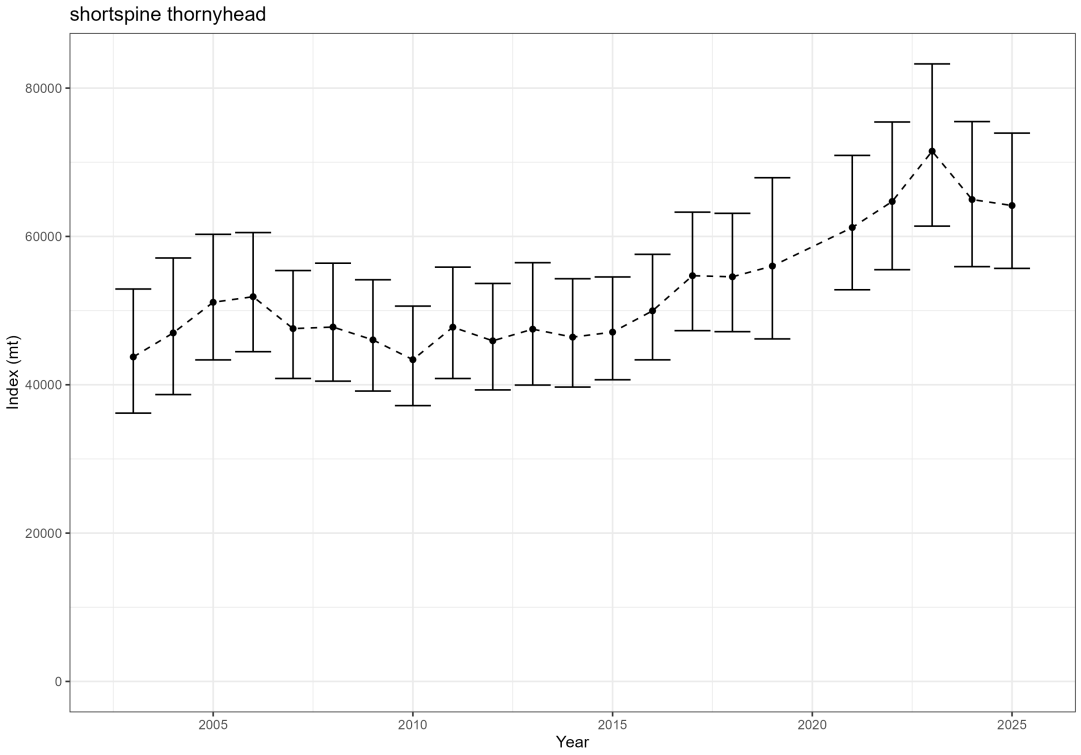

Figure 37: Estimated relative index of abundance for shortspine thornyhead from the NWFSC WCGBTS.

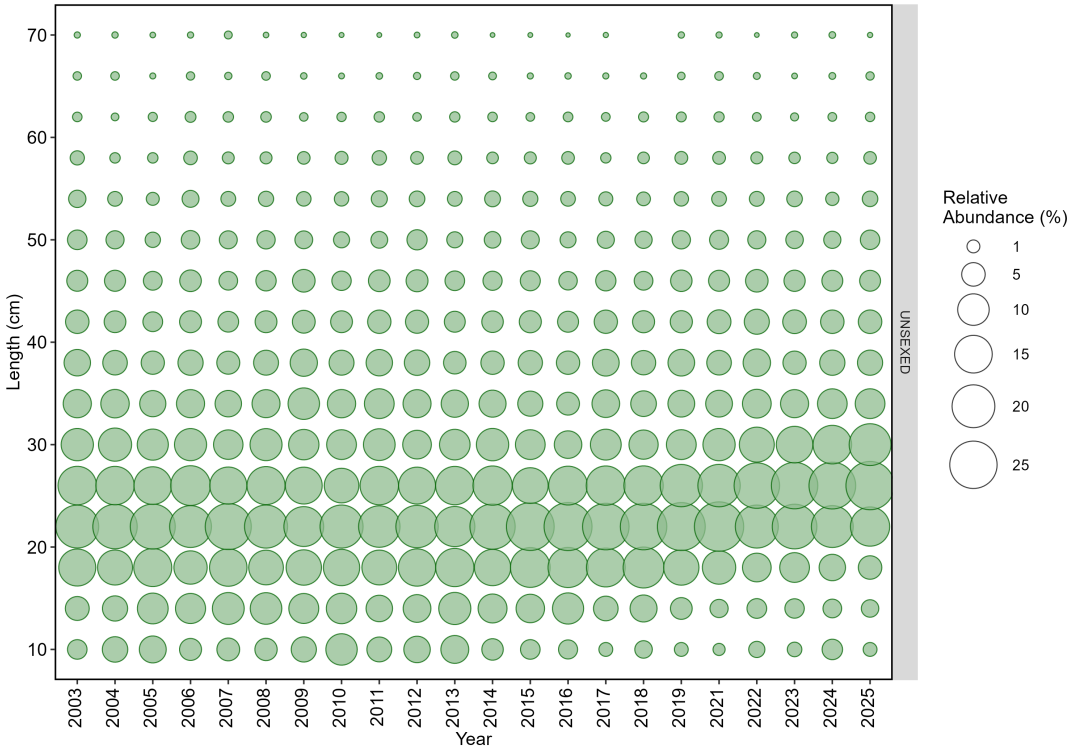

Figure 38: Length (cm) compostion data from the NWFSC WCGBTS for shortspine thornyhead. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.10 Widow rockfish

The most recent assessment of widow rockfish was an update assessment conducted in 2025. Across available data, widow rockfish have been observed and sampled by commercial and recreational fisheries, the NWFWC HKLS, the NWFSC WCGBTS, and the CCFRP Survey. The NWFSC HKLS observed widow rockfish on an average of 1 set per year. The NWFSC WCGBTS observed widow rockfish on an average of 25 tows per year. For this species, a total of 322 maturity samples have been collected coastwide (regardless of stock area), with 92 read maturities. Maturity parameter estimates may be updated from those used in the previous assessment with additional maturity data and updated modeling methods.

The Cooperative Ageing Program lab has aged 1,468 otoliths collected from commercial fisheries in California between 2019-2024 that were not available for the 2025 update assessment. The large majority of these new ages are from trawl gear, with 613 from the midwater trawl fishery and 825 from bottom trawl gear. The California midwater trawl ages were collected from Eureka (n = 613) and the bottom trawl ages were collected from Eureka (n = 199), Fort Bragg (n = 475), and Moss Landing (n = 151). The California ages from midwater trawl gear range 5-28 years with a median (i.e., the middle value in an ordered dataset, separating the higher half from the lower half) age of 11. These new ages (1,468 samples) from California would be available for use in a future assessment and are included in the summaries below.

For comparison, ages from midwater gear in Oregon and Washington collected during this same period (2019-2024), that were included in the last assessment, range from 3-39 years with a median age of 8 in Oregon (2,106 ages) and from 1-37 years with a median age of 7 in Washington (4,117 ages).

Table 10: Total number of available lengths, read ages, and unread age structures by data source and state for widow rockfish.

State	Source	Lengths	Ages[1]	Age Structures
California	CCFRP	17	0	0
California	Commercial	12,039	*3,352*	3,535
California	NWFSC HKLS	940	0	917
California	NWFSC WCGBTS	2,149	1,363	108
California	Recreational	6,142	0	18
Oregon	Commercial	38,816	15,003	23,815
Oregon	NWFSC WCGBTS	2,195	1,417	44
Oregon	Recreational	7,308	0	0
Washington	Commercial	21,715	14,288	1,930
Washington	NWFSC WCGBTS	923	520	6
Washington	Recreational	5,721	4,490	430

[1]Out of the 3,352 total ages from California Commercial collections, 1,884 ages were available and used in the 2025 stock assessment.

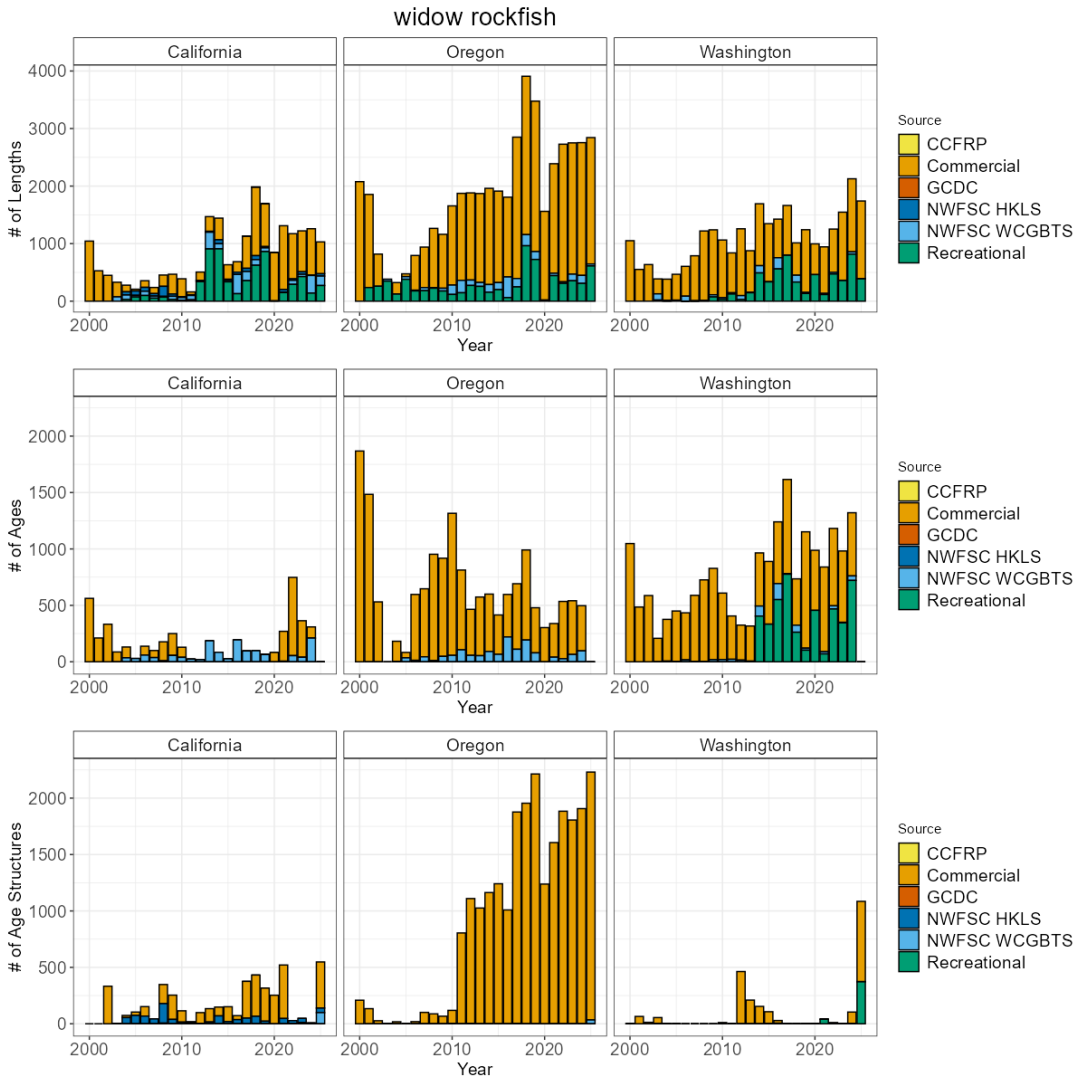

Figure 39: Total number of available lengths, read ages, and unread age structures by data source by year for widow rockfish. Note the y-axis maximum may differ by data type.

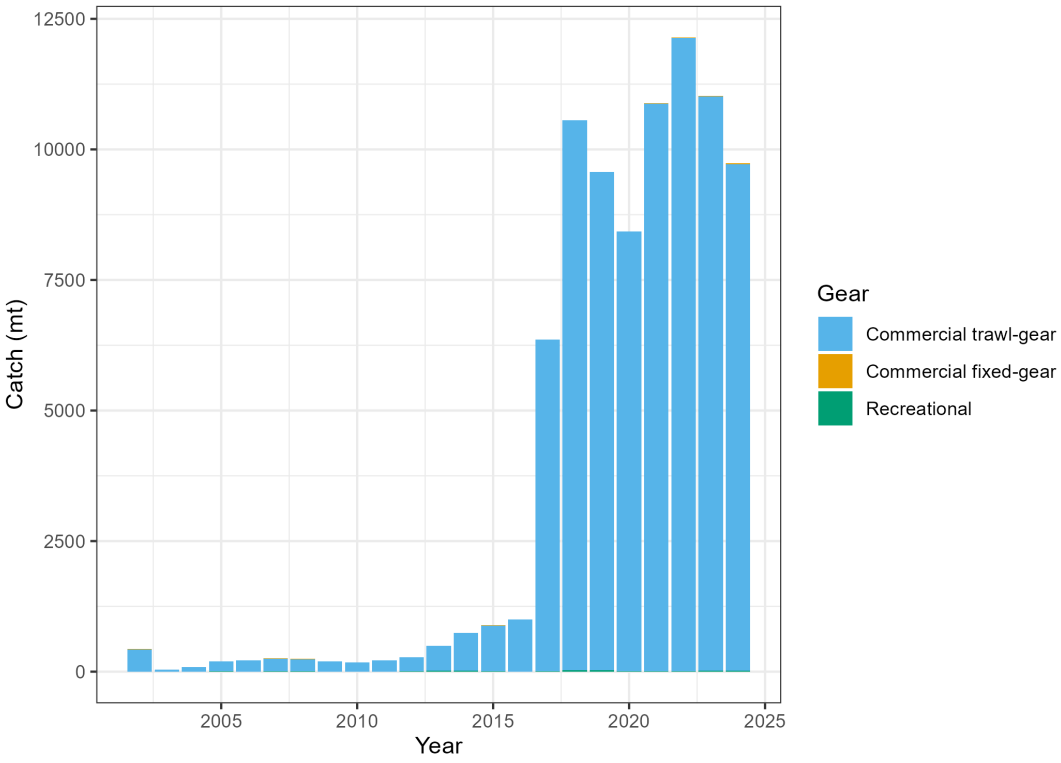

Figure 40: Estimated total catch between 2002-2024 widow rockfish. Source: GEMM.

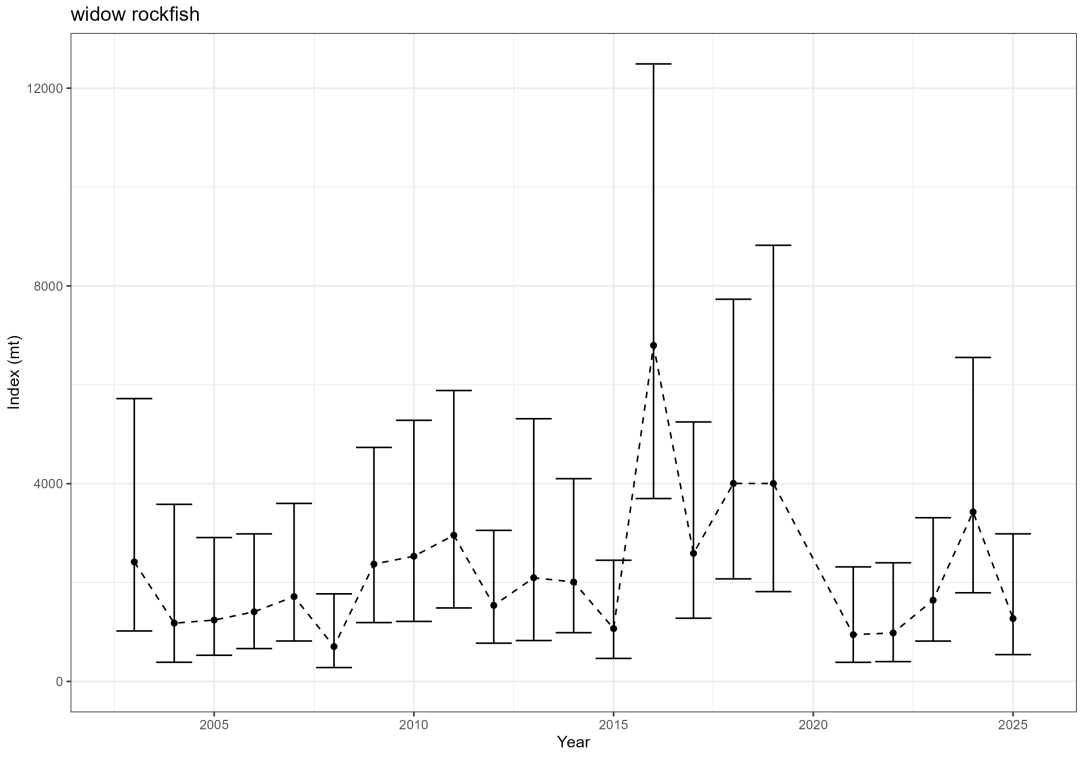

Figure 41: Estimated relative index of abundance for widow rockfish from the NWFSC WCGBTS.

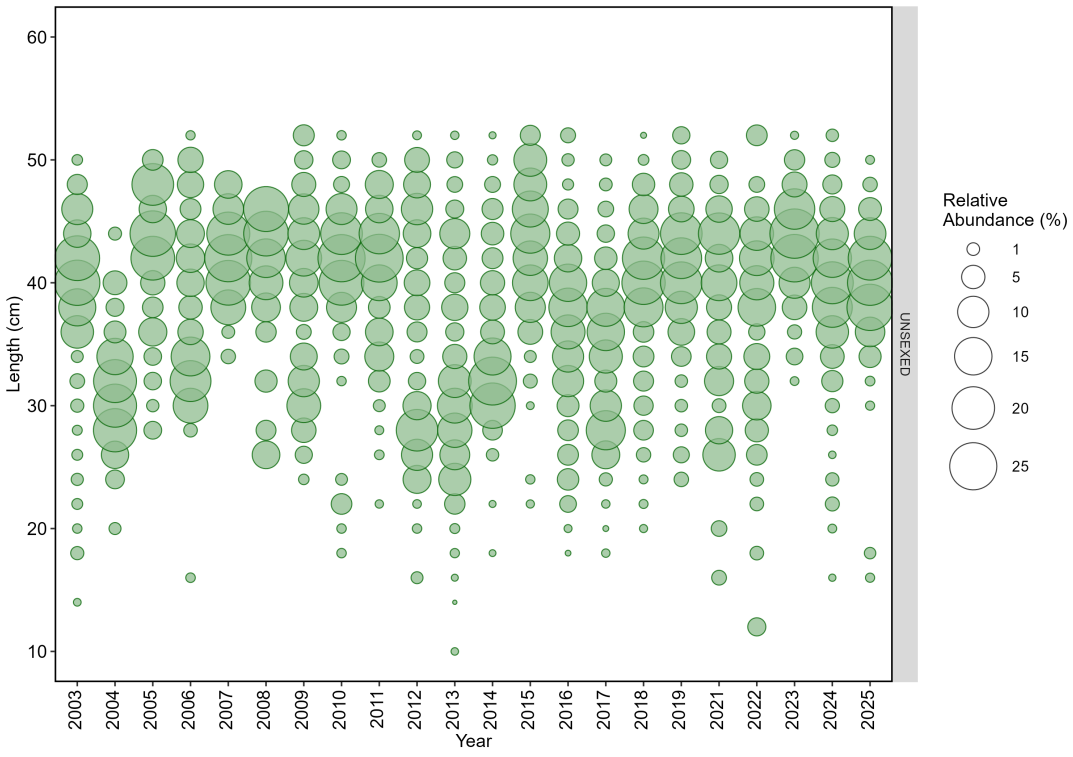

Figure 42: Length (cm) compostion data from the NWFSC WCGBTS for widow rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

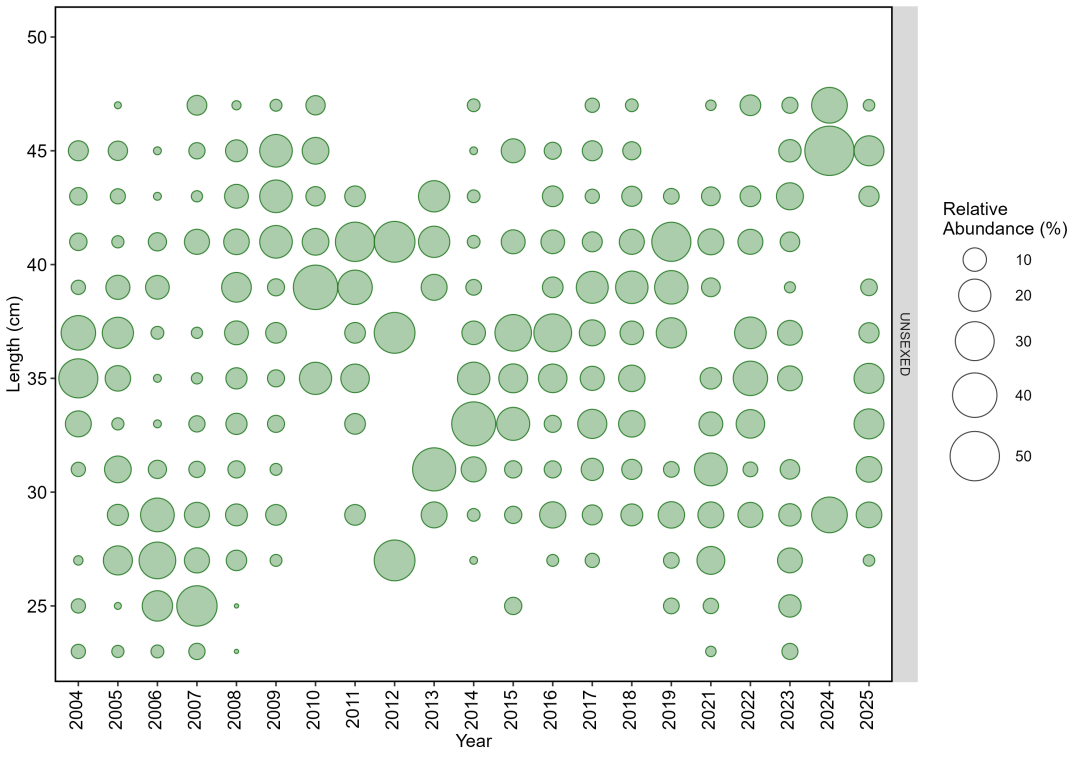

Figure 43: Length (cm) compostion data from the NWFSC HKLS for widow rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

3.11 Yellowtail rockfish south

To date, no assessment or analysis has been conducted on yellowtail rockfish south. Across available data, yellowtail rockfish south have been observed and sampled by commercial and recreational fisheries, the GCDC, the NWFWC HKLS, the NWFSC WCGBTS, and the CCFRP Survery. The NWFSC HKLS observed yellowtail rockfish south on an average of 1 set per year. The NWFSC WCGBTS observed yellowtail rockfish south on an average of 3 tows per year. The Cooperative Ageing Program lab has aged 1,271 otoliths collected by the NWFSC HKLS that are not represented in the count of aged fish shown. Additionally, there are historical otolith collections at the SWFSC that may be aged depending upon required time to catelog these collections, their quantity, the sources, and ageing capacity. For this species, a total of 739 maturity samples have been collected coastwide (regardless of stock area), with 672 read maturities. Maturity parameter estimates may be updated from those used in the previous coastwide assessment with additional maturity data and updated modeling methods.

There are a number of research pojects that could be considered in a future stock asessment of yellowtail rockfish south. Fecundity at size research found strong maternal effects on egg production (Dick et. al, 2017) as well as spatial variation (Beyers et al, 2014) and temporal variation (Beyers et al, 2024) in fecundity. Available maturity samples could also provide additional understanding of maturity-at-length and -age and how that maturity compares to the northern stocks. Finally, research using life history information to estimate stock productivity (e.g., steepness) directly from life history parameters and an estimate of early life survey is in final review (Beyer et al., in review) which would be available for consideration for a 2027 stock assessment.

Table 11: Total number of available lengths, read ages, and unread age structures by data source and state for yellowtail rockfish south.

State	Source	Lengths	Ages	Age Structures
California	CCFRP	4,485	0	445
California	Commercial	1,624	62	1,688
California	GCDC	1,003	0	1,003
California	NWFSC HKLS	2,011	124	1,666
California	NWFSC WCGBTS	1,158	534	77
California	Recreational	56,118	0	369

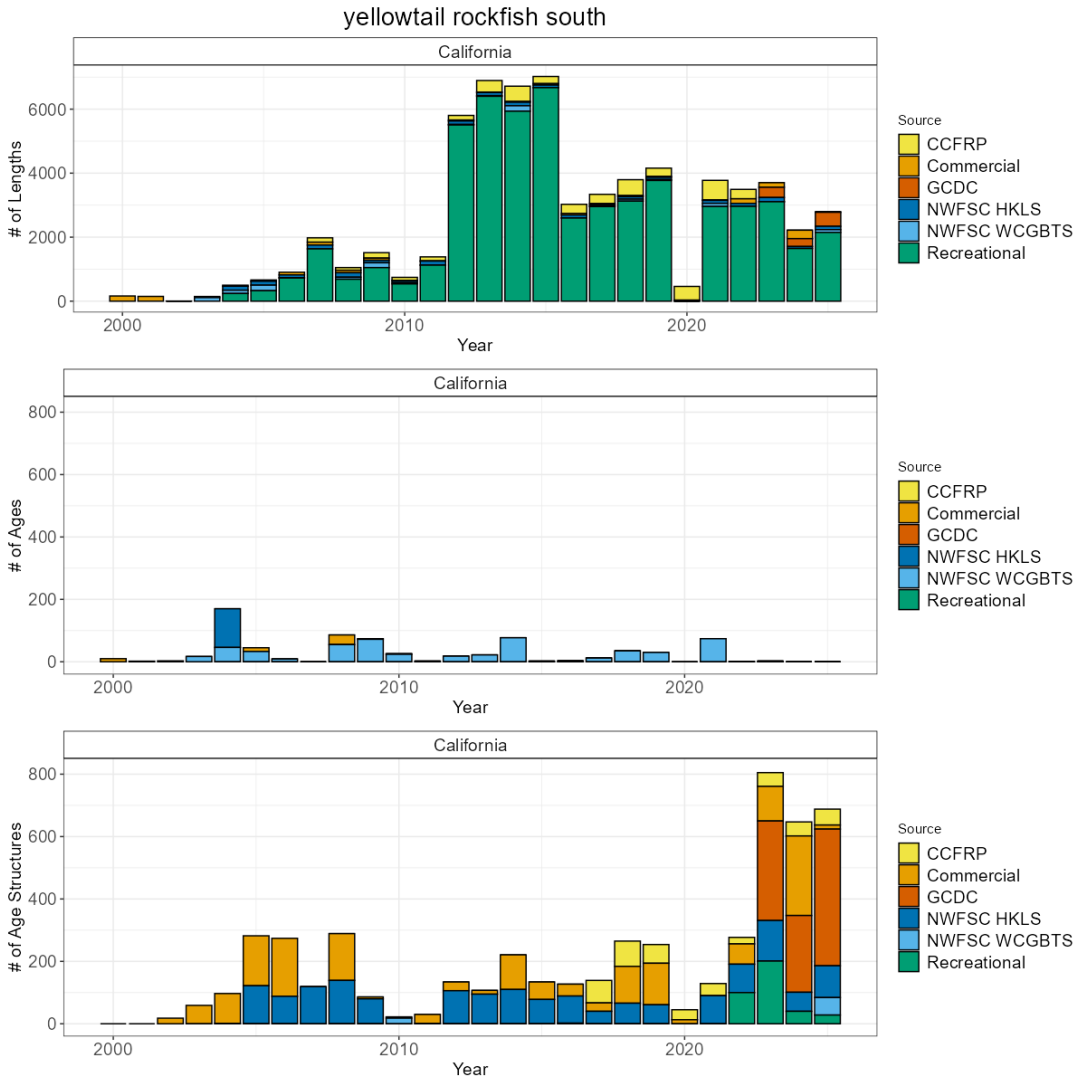

Figure 44: Total number of available lengths, read ages, and unread age structures by data source by year for yellowtail rockfish south. Note the y-axis maximum may differ by data type.

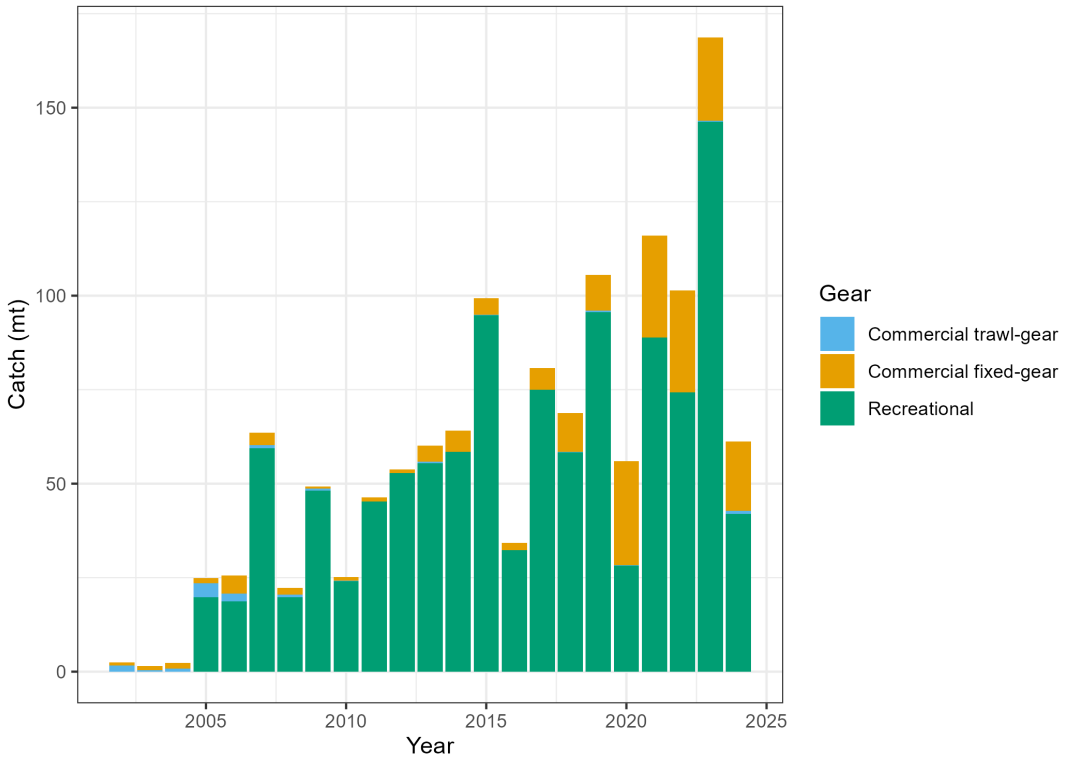

Figure 45: Estimated total catch between 2002-2024 yellowtail rockfish south. Source: GEMM.

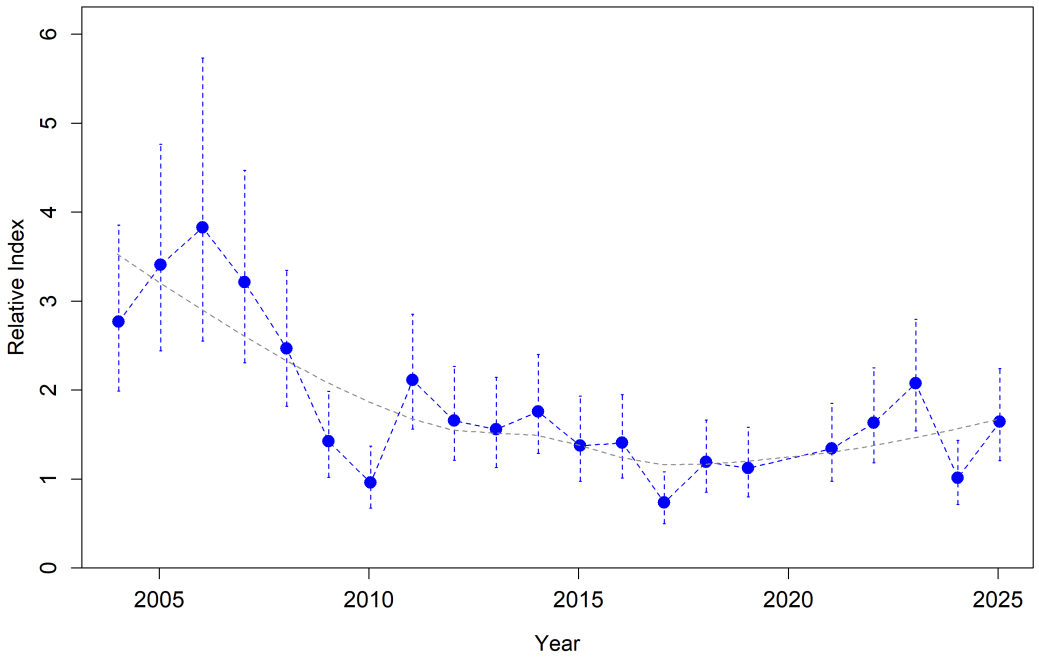

Figure 46: Estimated relative index of abundance for yellowtail rockfish south from the NWFSC HKLS.

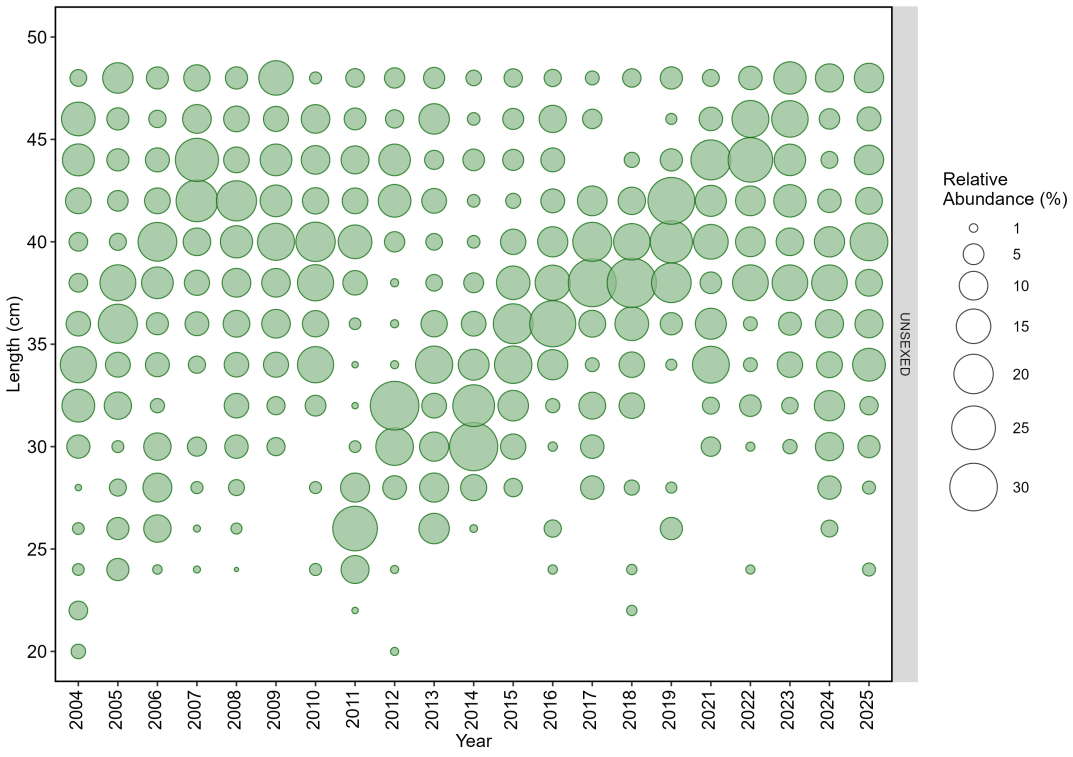

Figure 47: Length (cm) compostion data from the NWFSC HKLS for yellowtail rockfish south. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4 Other groundfish species

4.1 Arrowtooth flounder

The most recent assessment of arrowtooth flounder was an update assessment conducted in 2017. Across available data, arrowtooth flounder have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed arrowtooth flounder on an average of 226 tows per year. For this species, a total of 254 maturity samples have been collected coastwide (regardless of stock area), with 96 read maturities.

Table 12: Total number of available lengths, read ages, and unread age structures by data source and state for arrowtooth flounder.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	10,122	802	2,907
Oregon	NWFSC WCGBTS	30,417	2,245	7,466
Washington	NWFSC WCGBTS	20,170	1,281	4,082

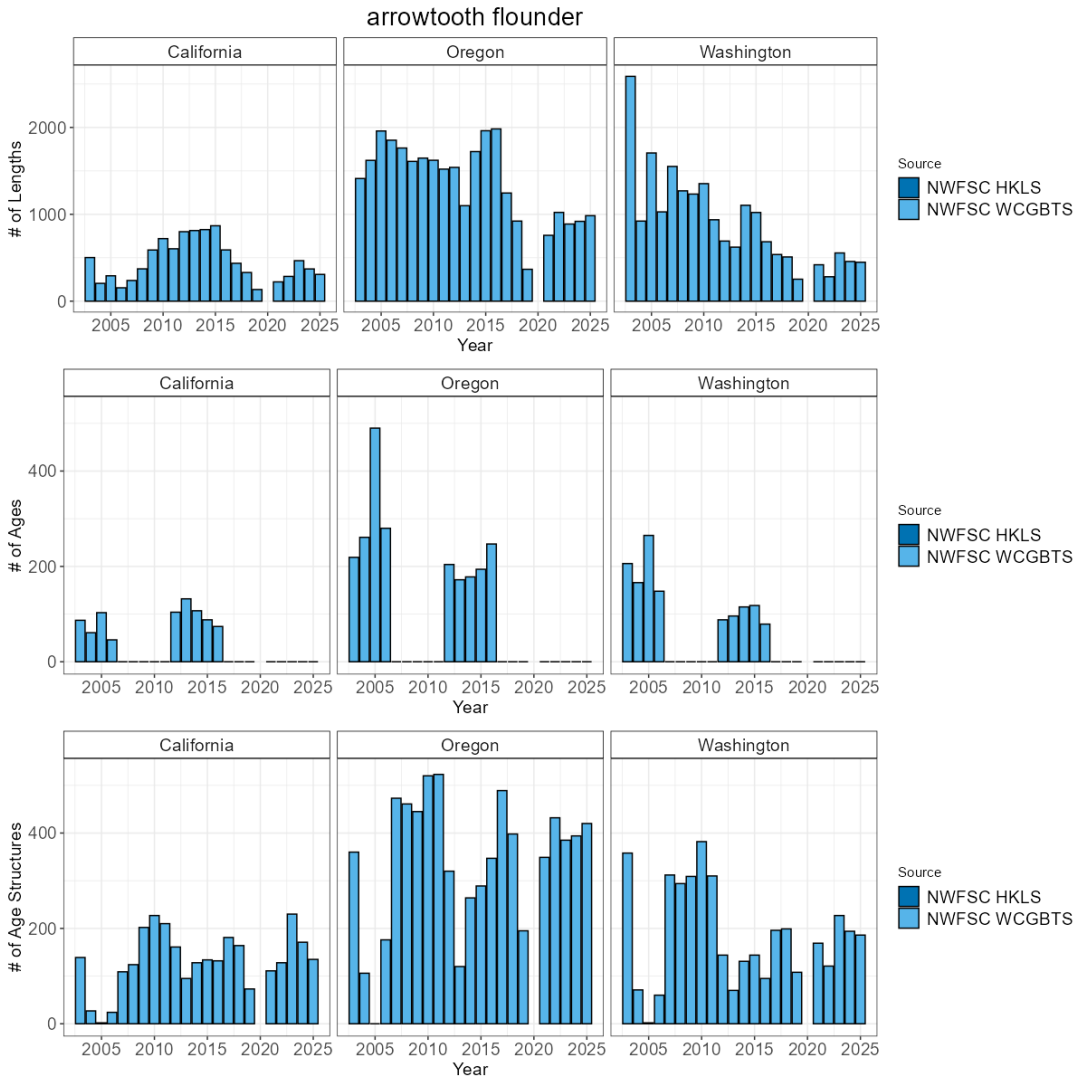

Figure 48: Total number of available lengths, read ages, and unread age structures by data source by year for arrowtooth flounder. Note the y-axis maximum may differ by data type.

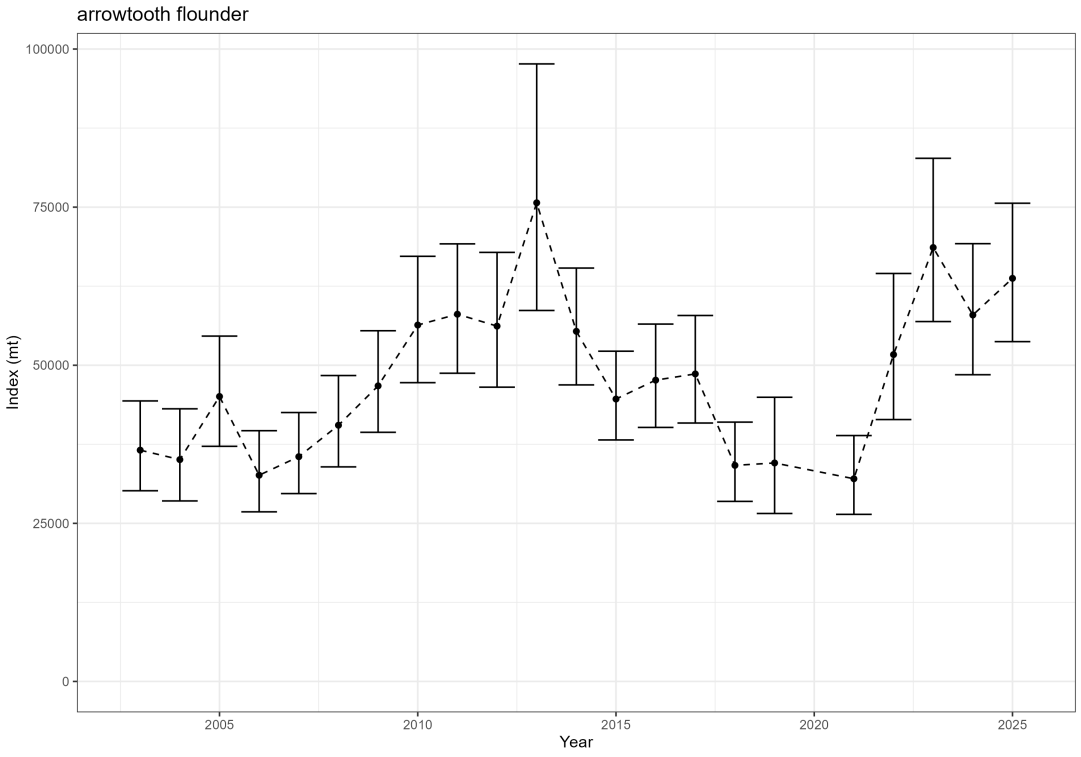

Figure 49: Estimated relative index of abundance for arrowtooth flounder from the NWFSC WCGBTS.

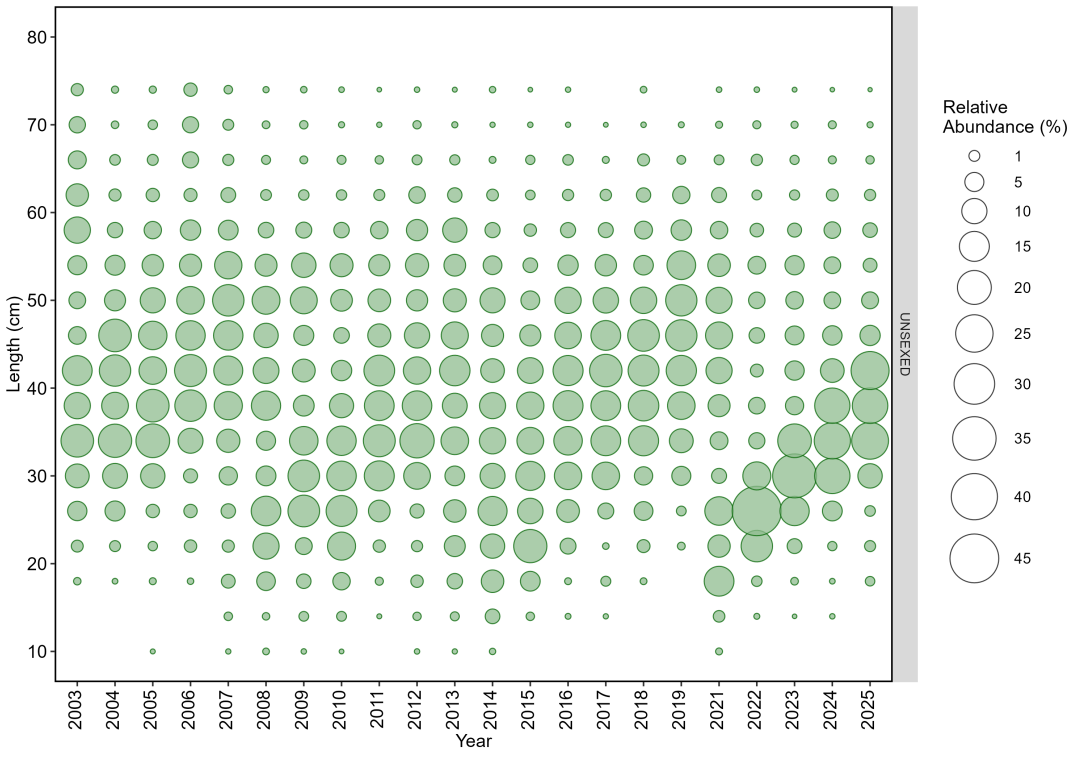

Figure 50: Length (cm) compostion data from the NWFSC WCGBTS for arrowtooth flounder. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.2 Aurora rockfish

The most recent assessment of aurora rockfish was a benchmark assessment conducted in 2013. Across available data, aurora rockfish have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed aurora rockfish on an average of 84 tows per year. For this species, a total of 617 maturity samples have been collected coastwide (regardless of stock area), with 567 read maturities.

Table 13: Total number of available lengths, read ages, and unread age structures by data source and state for aurora rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	26,965	2,269	8,409
Oregon	NWFSC WCGBTS	5,688	784	3,009
Washington	NWFSC WCGBTS	384	37	258

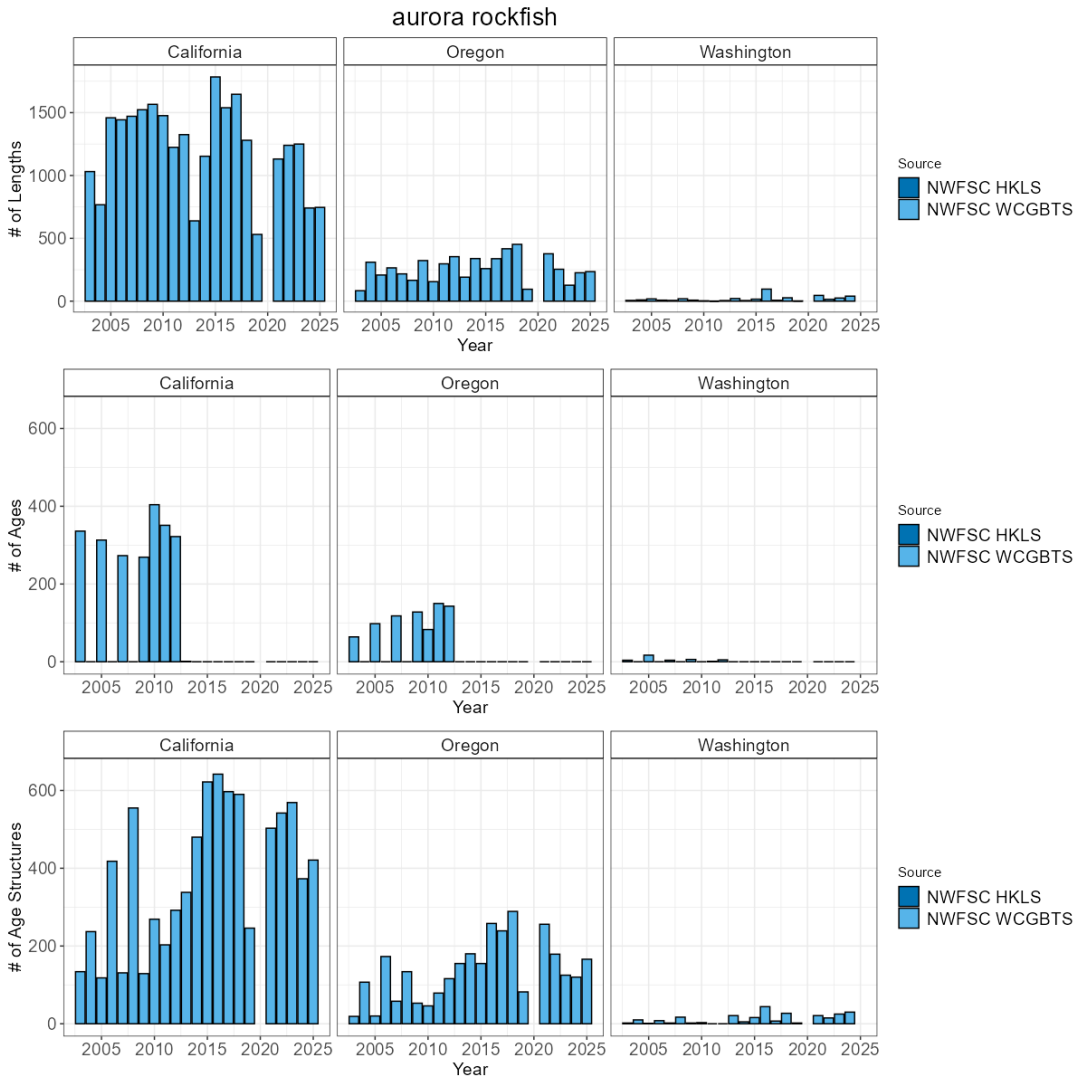

Figure 51: Total number of available lengths, read ages, and unread age structures by data source by year for aurora rockfish. Note the y-axis maximum may differ by data type.

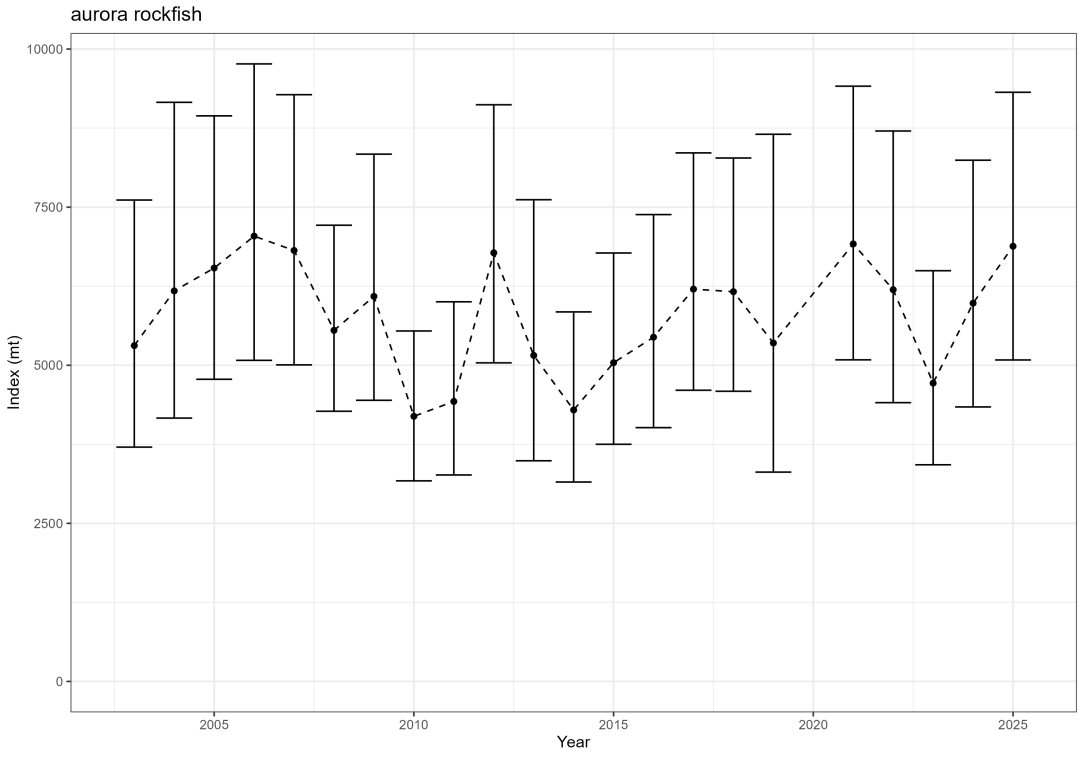

Figure 52: Estimated relative index of abundance for aurora rockfish from the NWFSC WCGBTS.

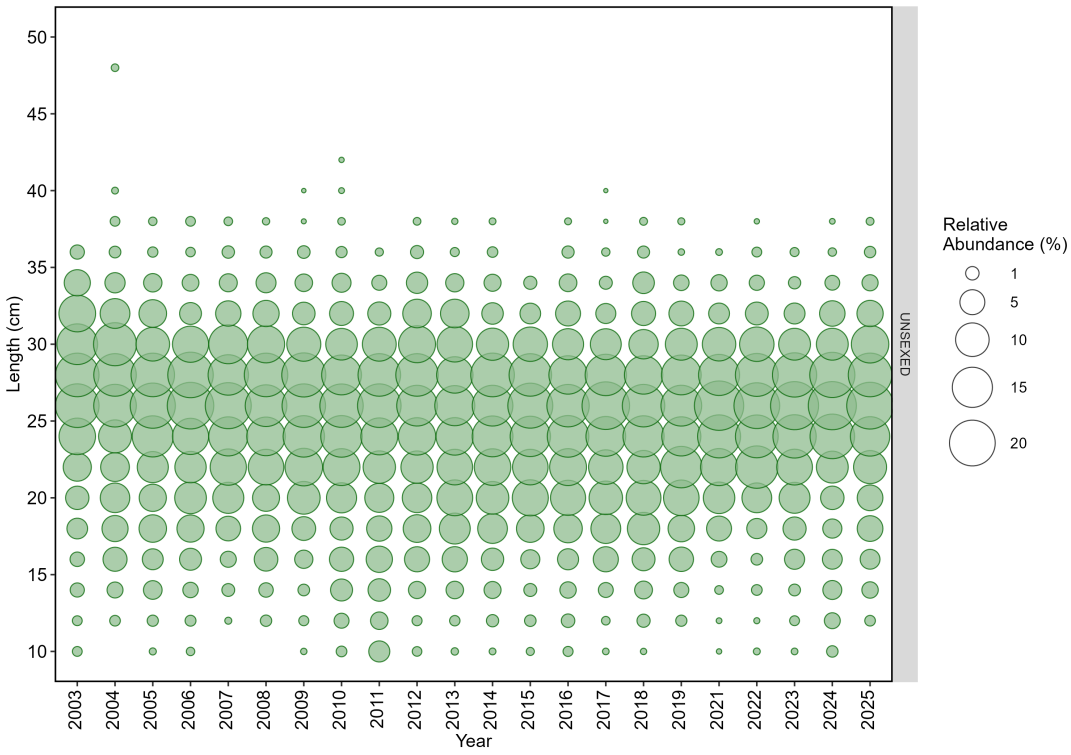

Figure 53: Length (cm) compostion data from the NWFSC WCGBTS for aurora rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.3 Bank rockfish

To date, no assessment or analysis has been conducted on bank rockfish. Across available data, bank rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed bank rockfish on an average of 1 set per year. The NWFSC WCGBTS observed bank rockfish on an average of 13 tows per year. For this species, a total of 733 maturity samples have been collected coastwide (regardless of stock area), with 85 read maturities.

Table 14: Total number of available lengths, read ages, and unread age structures by data source and state for bank rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	3,952	0	3,936
California	NWFSC WCGBTS	2,236	0	1,571
Oregon	NWFSC WCGBTS	143	0	56
Washington	NWFSC WCGBTS	4	0	4

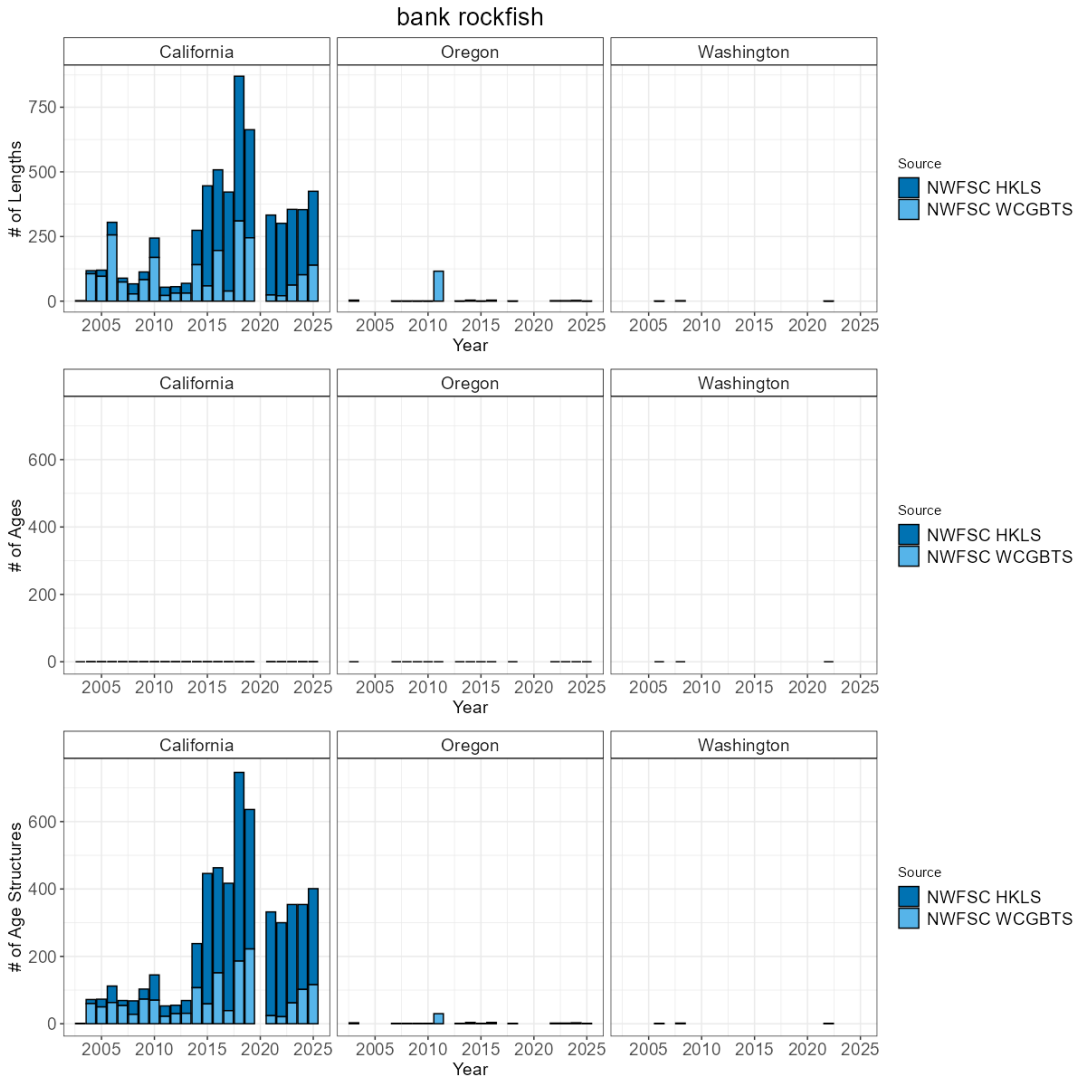

Figure 54: Total number of available lengths, read ages, and unread age structures by data source by year for bank rockfish. Note the y-axis maximum may differ by data type.

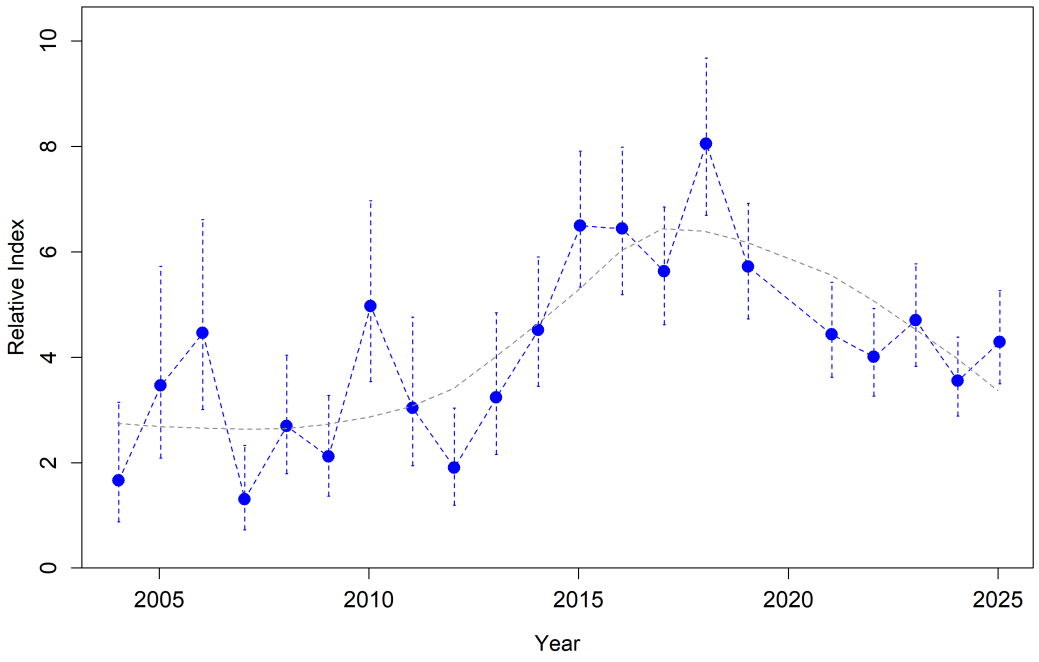

Figure 55: Estimated relative index of abundance for bank rockfish from the NWFSC HKLS.

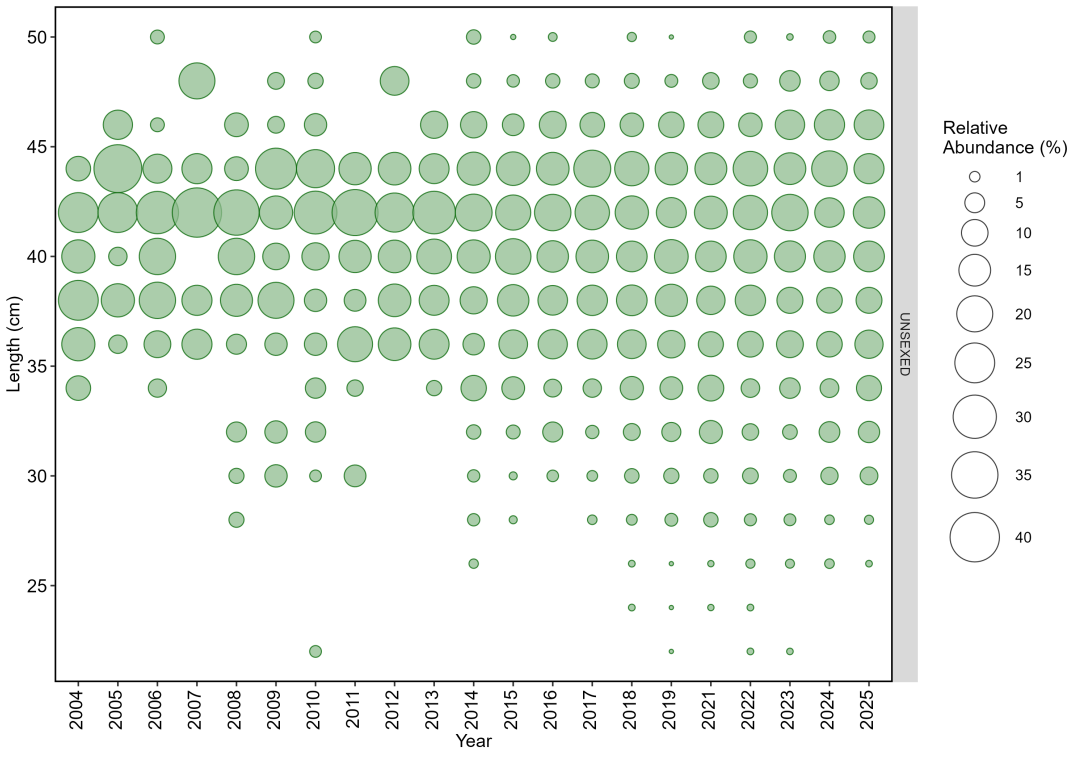

Figure 56: Length (cm) compostion data from the NWFSC HKLS for bank rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.4 Big skate

The most recent assessment of big skate was a benchmark assessment conducted in 2019. Across available data, big skate have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed big skate on an average of 96 tows per year. For this species, a total of 180 maturity samples have been collected coastwide (regardless of stock area), with 180 read maturities.

Table 15: Total number of available lengths, read ages, and unread age structures by data source and state for big skate.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	2,339	351	182
Oregon	NWFSC WCGBTS	2,719	422	369
Washington	NWFSC WCGBTS	2,023	261	261

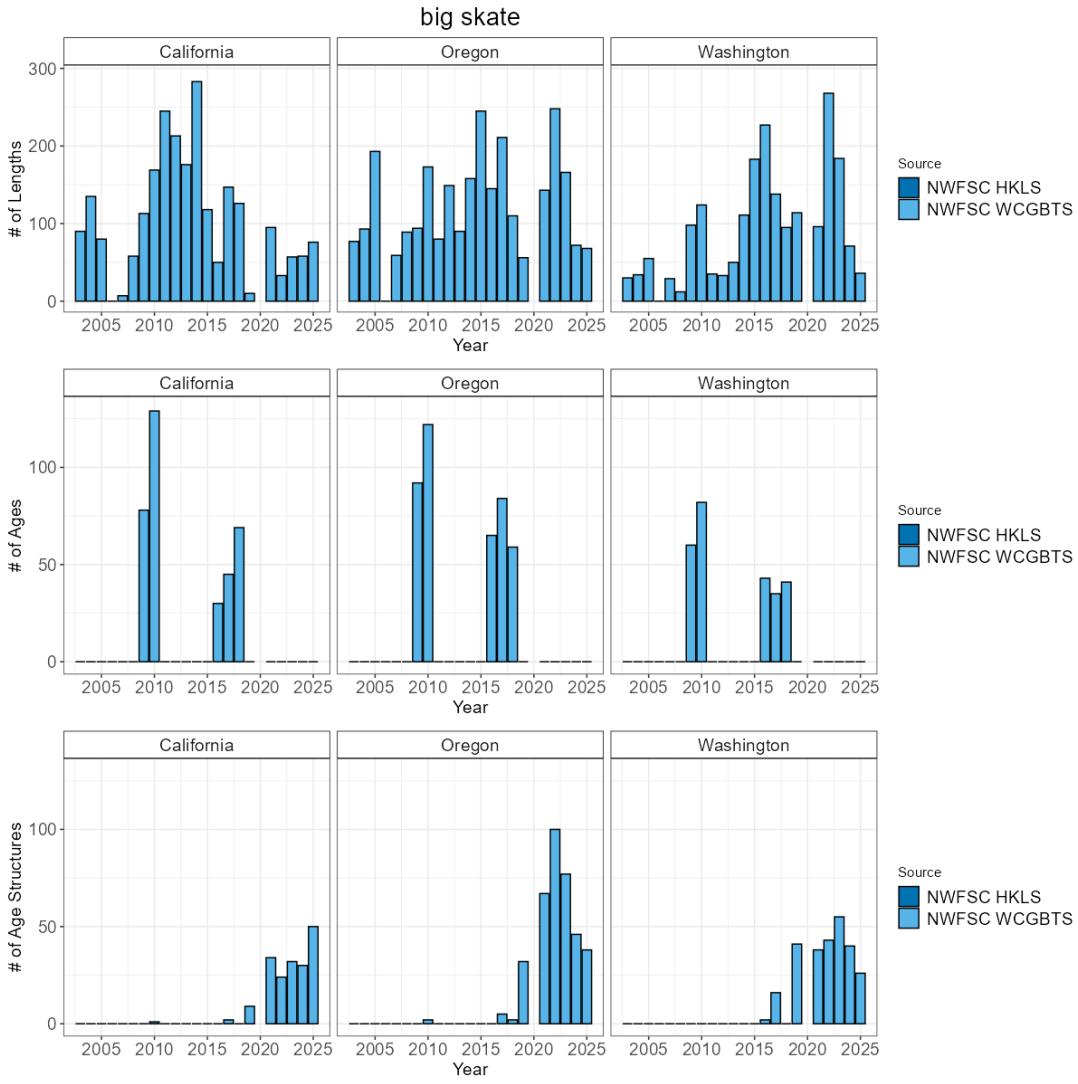

Figure 57: Total number of available lengths, read ages, and unread age structures by data source by year for big skate. Note the y-axis maximum may differ by data type.

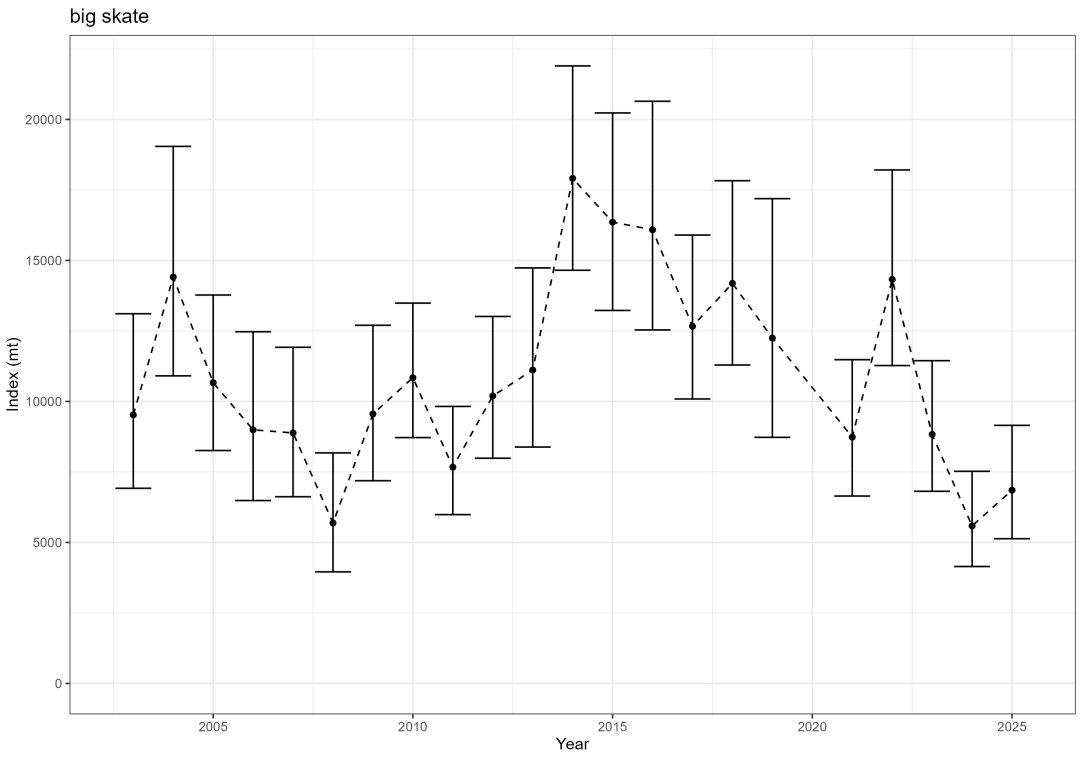

Figure 58: Estimated relative index of abundance for big skate from the NWFSC WCGBTS.

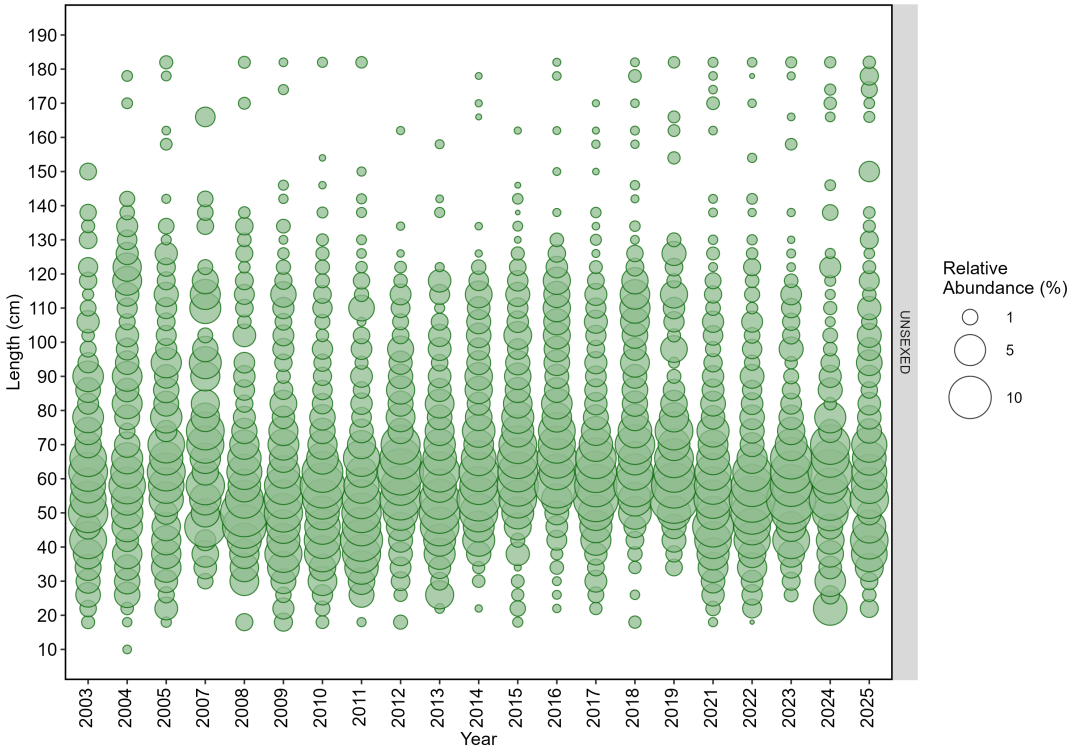

Figure 59: Length (cm) compostion data from the NWFSC WCGBTS for big skate. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.5 Blackgill rockfish

The most recent assessment of blackgill rockfish was an update assessment conducted in 2017. Across available data, blackgill rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed blackgill rockfish on an average of 0 set per year. The NWFSC WCGBTS observed blackgill rockfish on an average of 35 tows per year. For this species, a total of 126 maturity samples have been collected coastwide (regardless of stock area), with 126 read maturities.

Table 16: Total number of available lengths, read ages, and unread age structures by data source and state for blackgill rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	7	0	7
California	NWFSC WCGBTS	11,017	1,937	5,988
Oregon	NWFSC WCGBTS	295	11	263
Washington	NWFSC WCGBTS	7	0	7

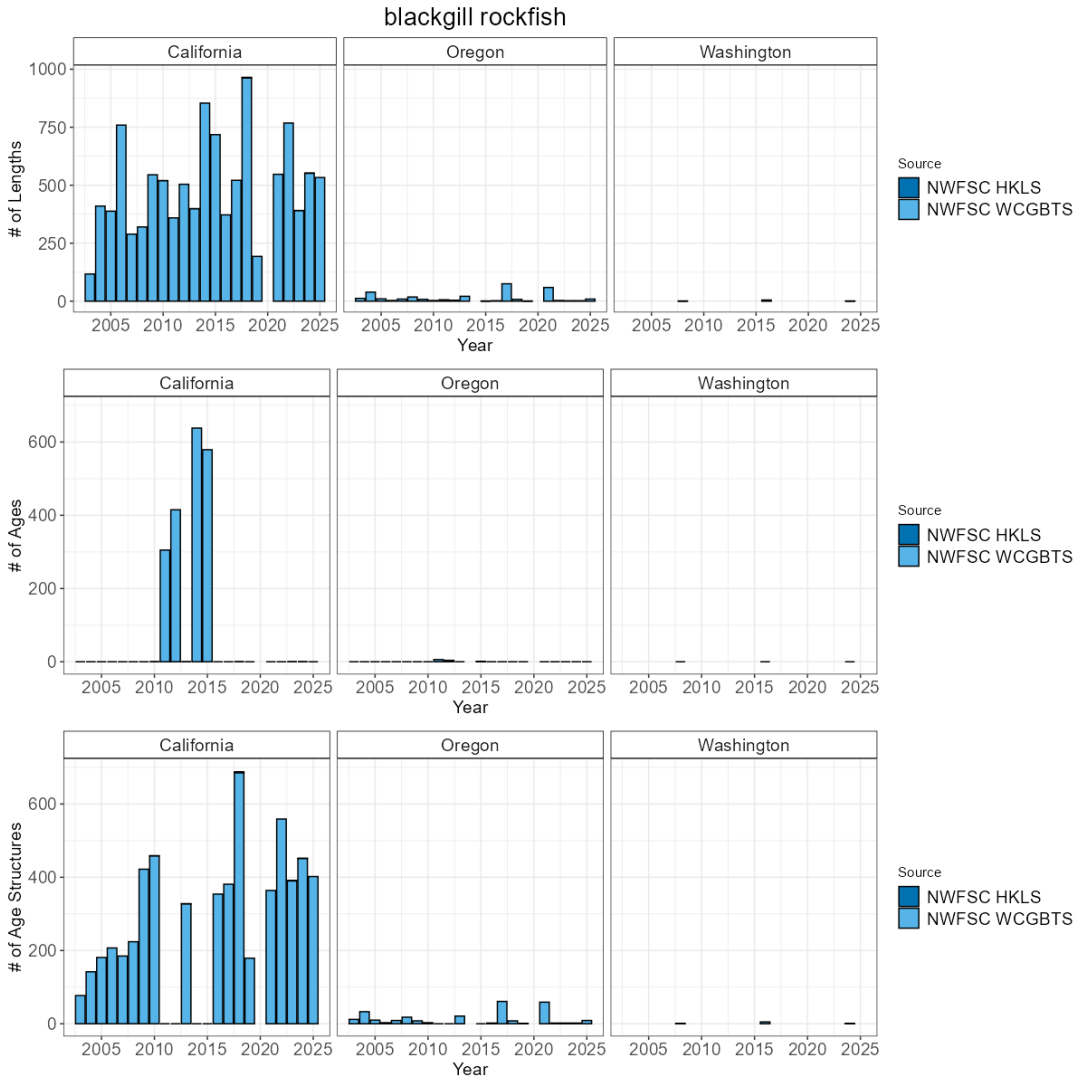

Figure 60: Total number of available lengths, read ages, and unread age structures by data source by year for blackgill rockfish. Note the y-axis maximum may differ by data type.

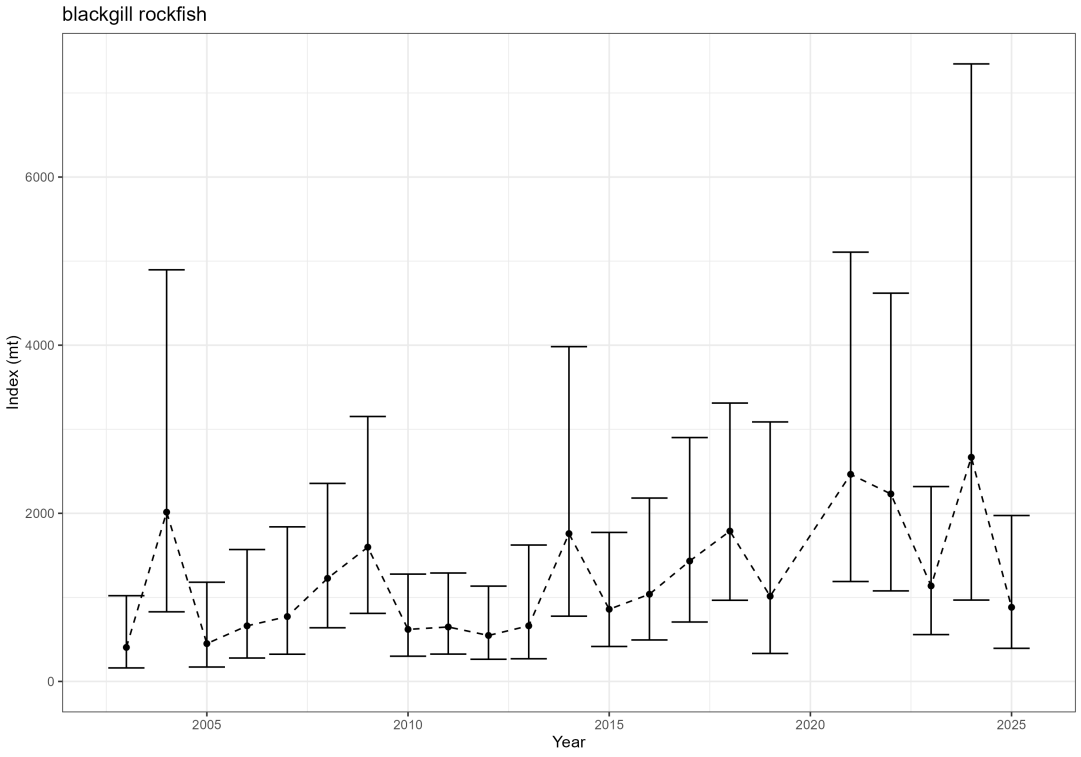

Figure 61: Estimated relative index of abundance for blackgill rockfish from the NWFSC WCGBTS.

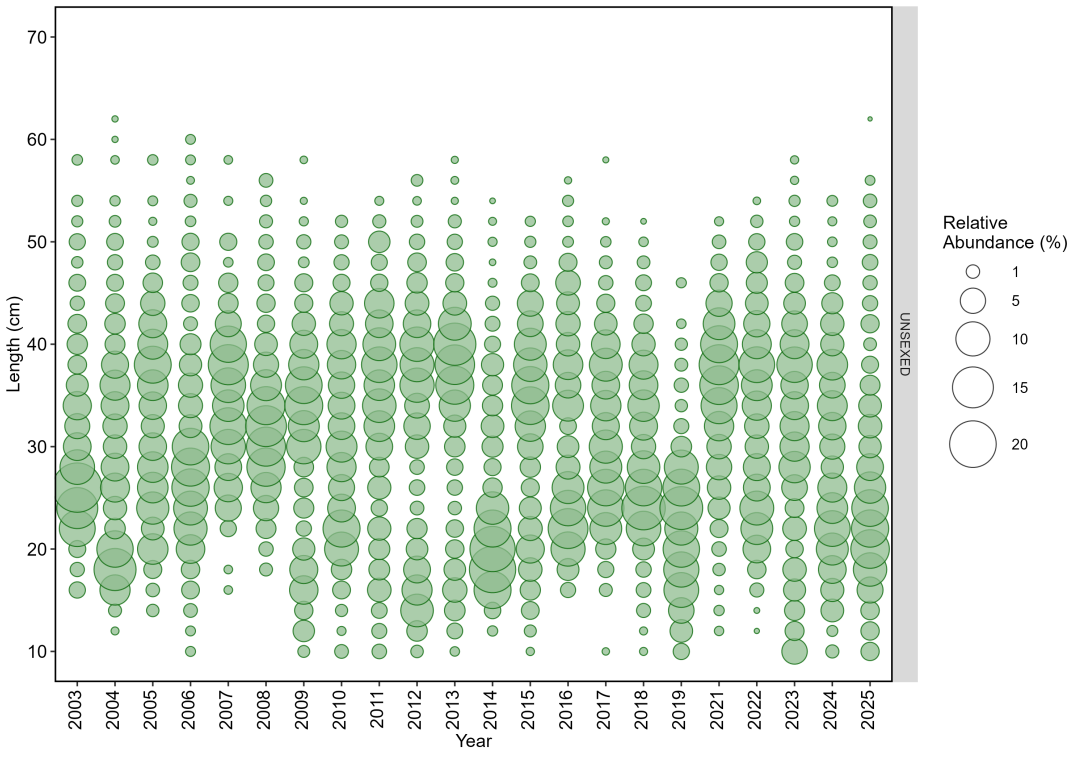

Figure 62: Length (cm) compostion data from the NWFSC WCGBTS for blackgill rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.6 California scorpionfish

The most recent assessment of California scorpionfish was a benchmark assessment conducted in 2017. Across available data, California scorpionfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed California scorpionfish on an average of 1 set per year. The NWFSC WCGBTS observed California scorpionfish on an average of 13 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 17: Total number of available lengths, read ages, and unread age structures by data source and state for California scorpionfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	45	0	25
California	NWFSC WCGBTS	4,360	911	1,174

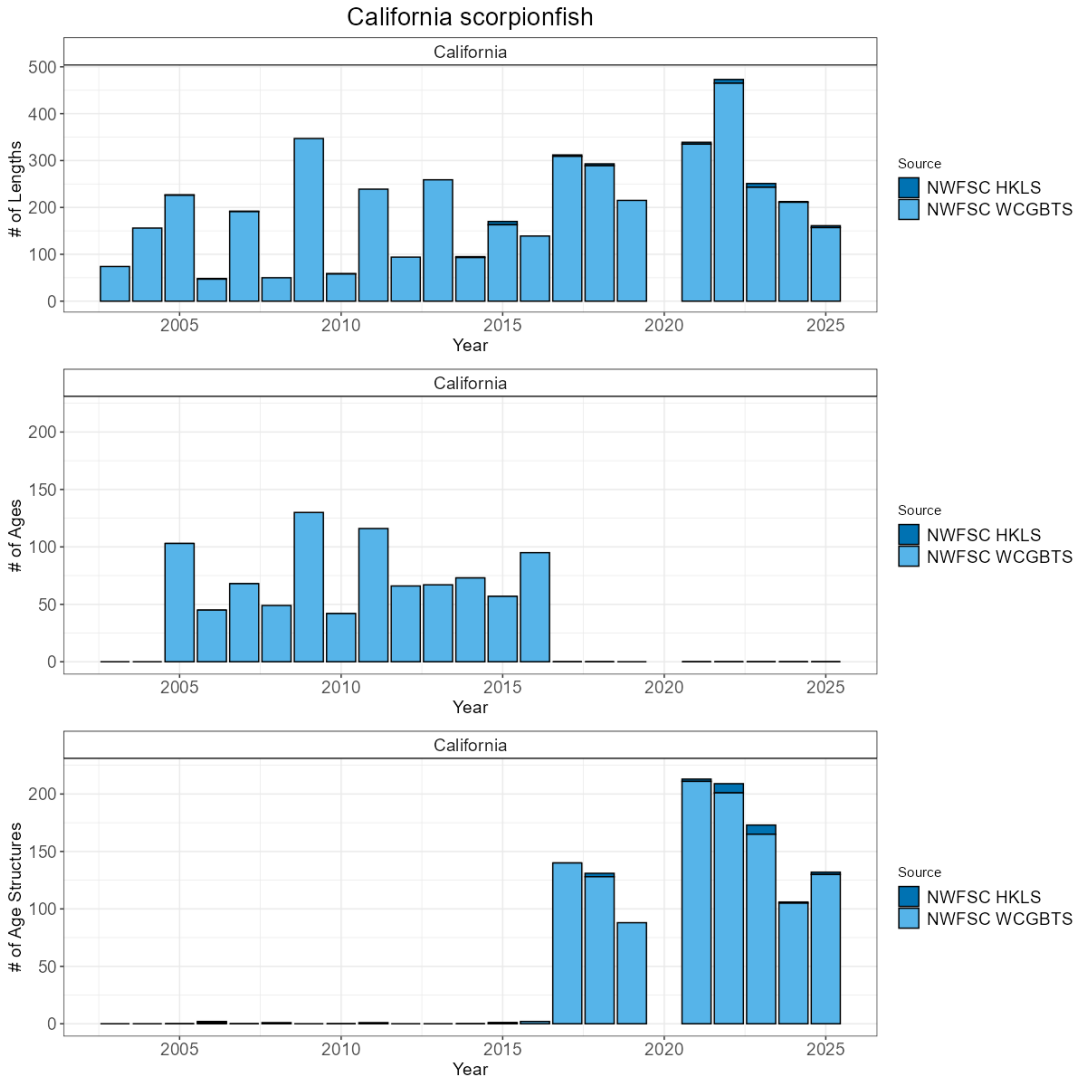

Figure 63: Total number of available lengths, read ages, and unread age structures by data source by year for California scorpionfish. Note the y-axis maximum may differ by data type.

4.7 Canary rockfish

The most recent assessment of canary rockfish was a benchmark assessment conducted in 2023. Across available data, canary rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed canary rockfish on an average of 1 set per year. The NWFSC WCGBTS observed canary rockfish on an average of 53 tows per year. For this species, a total of 1480 maturity samples have been collected coastwide (regardless of stock area), with 1184 read maturities.

ODFW scientists are planning a research cruise to Cobb Sea Mount in the summer of 2026 to sample age and sex distributions of this rockfish species and others.

Table 18: Total number of available lengths, read ages, and unread age structures by data source and state for canary rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	433	368	60
California	NWFSC WCGBTS	3,693	1,854	300
Oregon	NWFSC WCGBTS	5,103	3,189	246
Washington	NWFSC WCGBTS	6,613	3,430	521

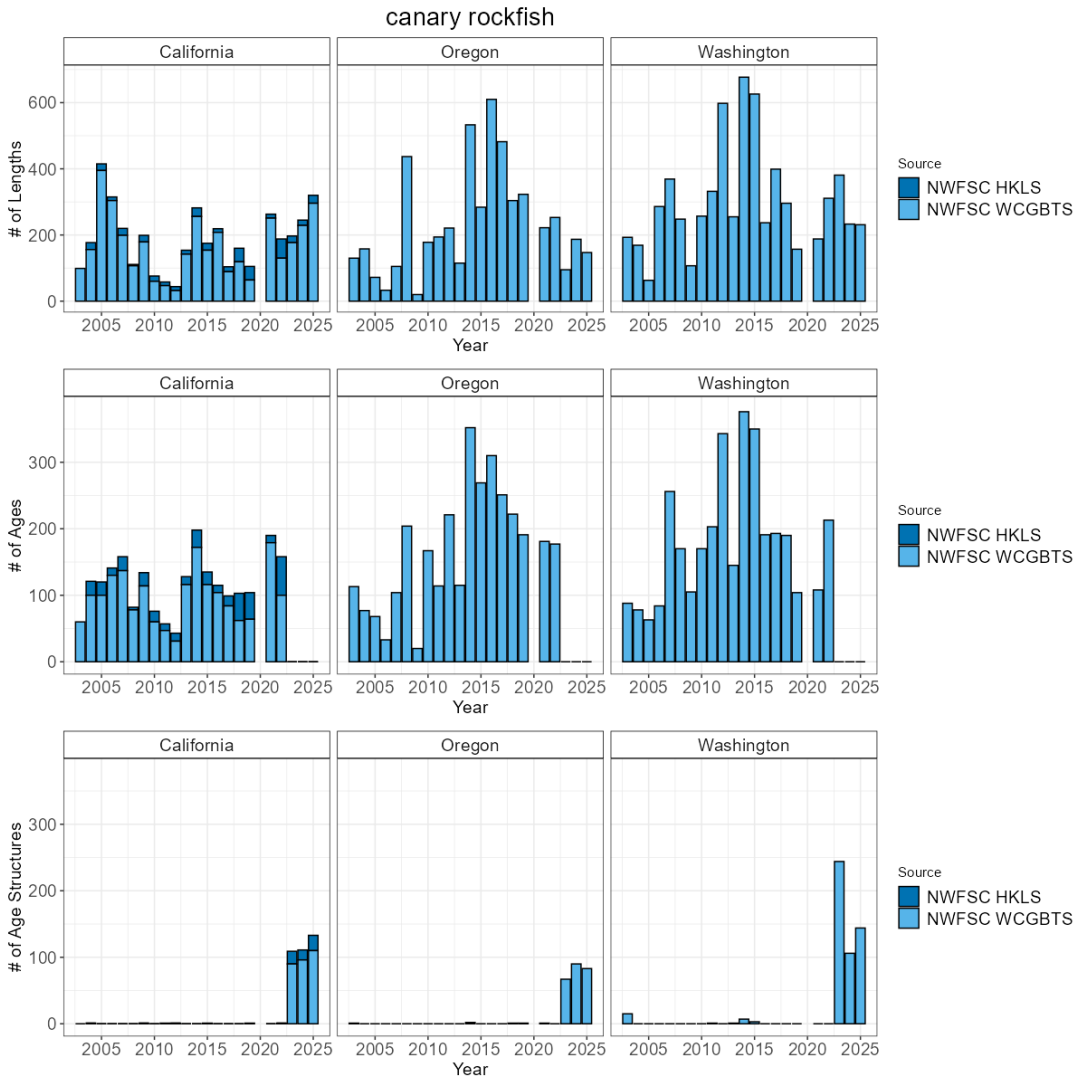

Figure 64: Total number of available lengths, read ages, and unread age structures by data source by year for canary rockfish. Note the y-axis maximum may differ by data type.

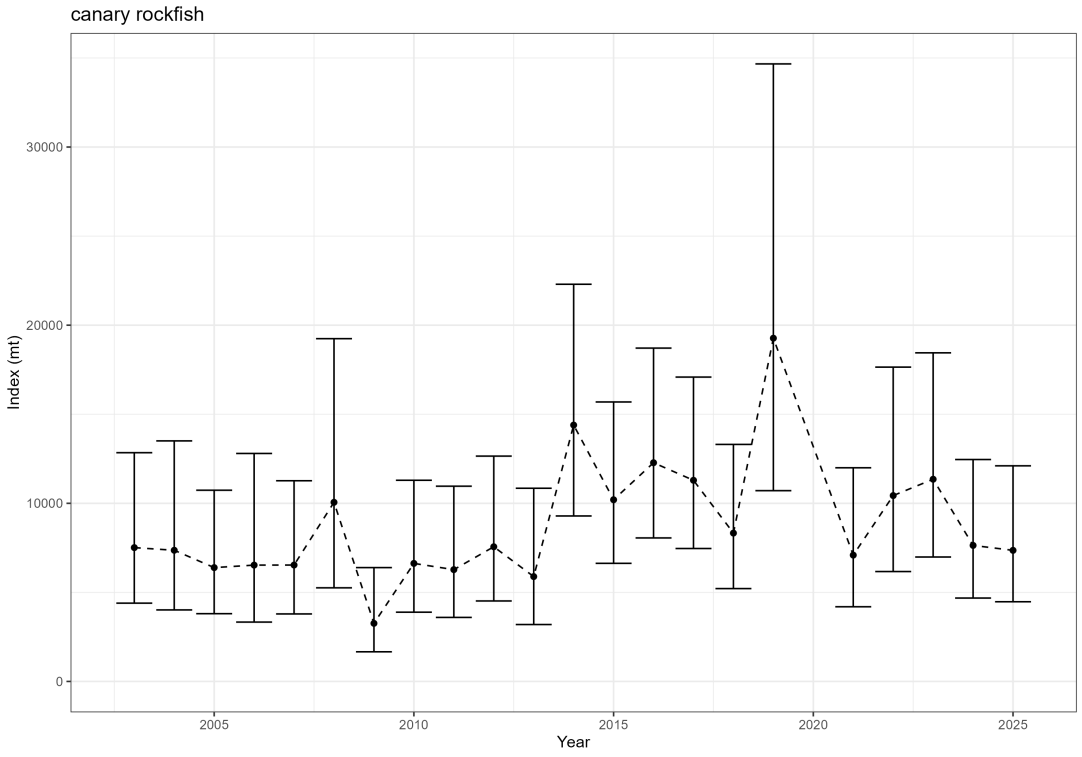

Figure 65: Estimated relative index of abundance for canary rockfish from the NWFSC WCGBTS.

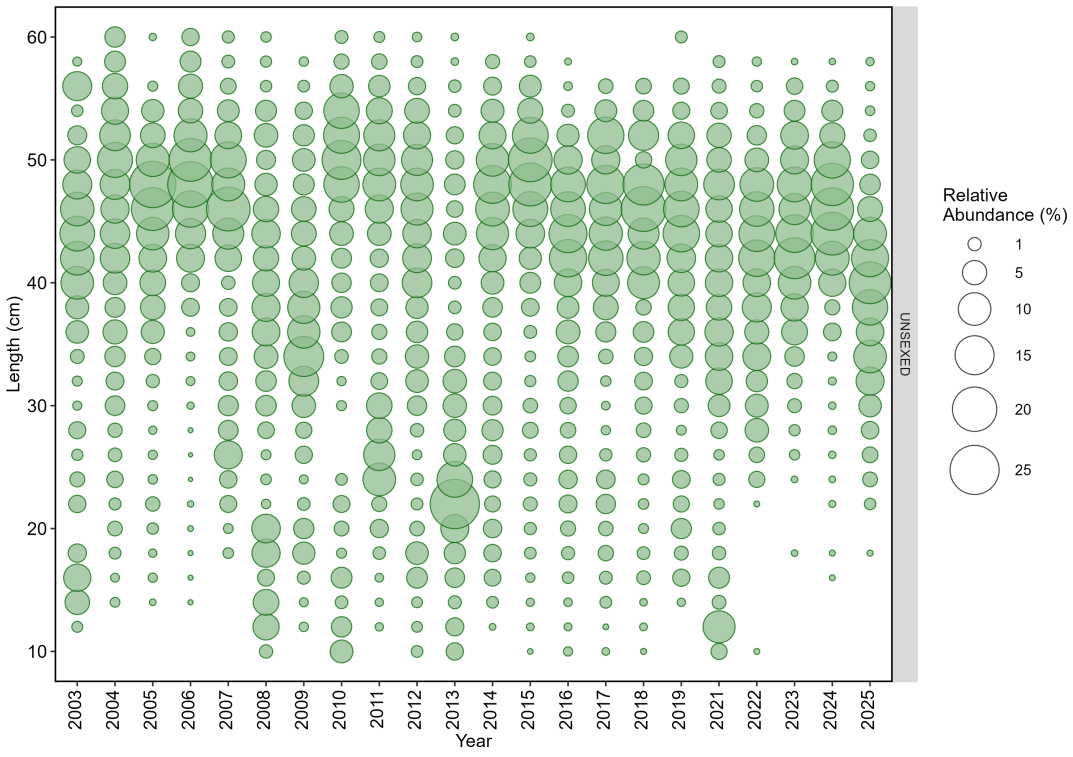

Figure 66: Length (cm) compostion data from the NWFSC WCGBTS for canary rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.8 Chilipepper

The most recent assessment of chilipepper was a benchmark assessment conducted in 2025. Across available data, chilipepper have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed chilipepper on an average of 1 set per year. The NWFSC WCGBTS observed chilipepper on an average of 93 tows per year. For this species, a total of 157 maturity samples have been collected coastwide (regardless of stock area), with 157 read maturities.

Table 19: Total number of available lengths, read ages, and unread age structures by data source and state for chilipepper.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	3,335	249	2,903
California	NWFSC WCGBTS	35,095	12,386	1,480
Oregon	NWFSC WCGBTS	2,231	904	89
Washington	NWFSC WCGBTS	34	27	7

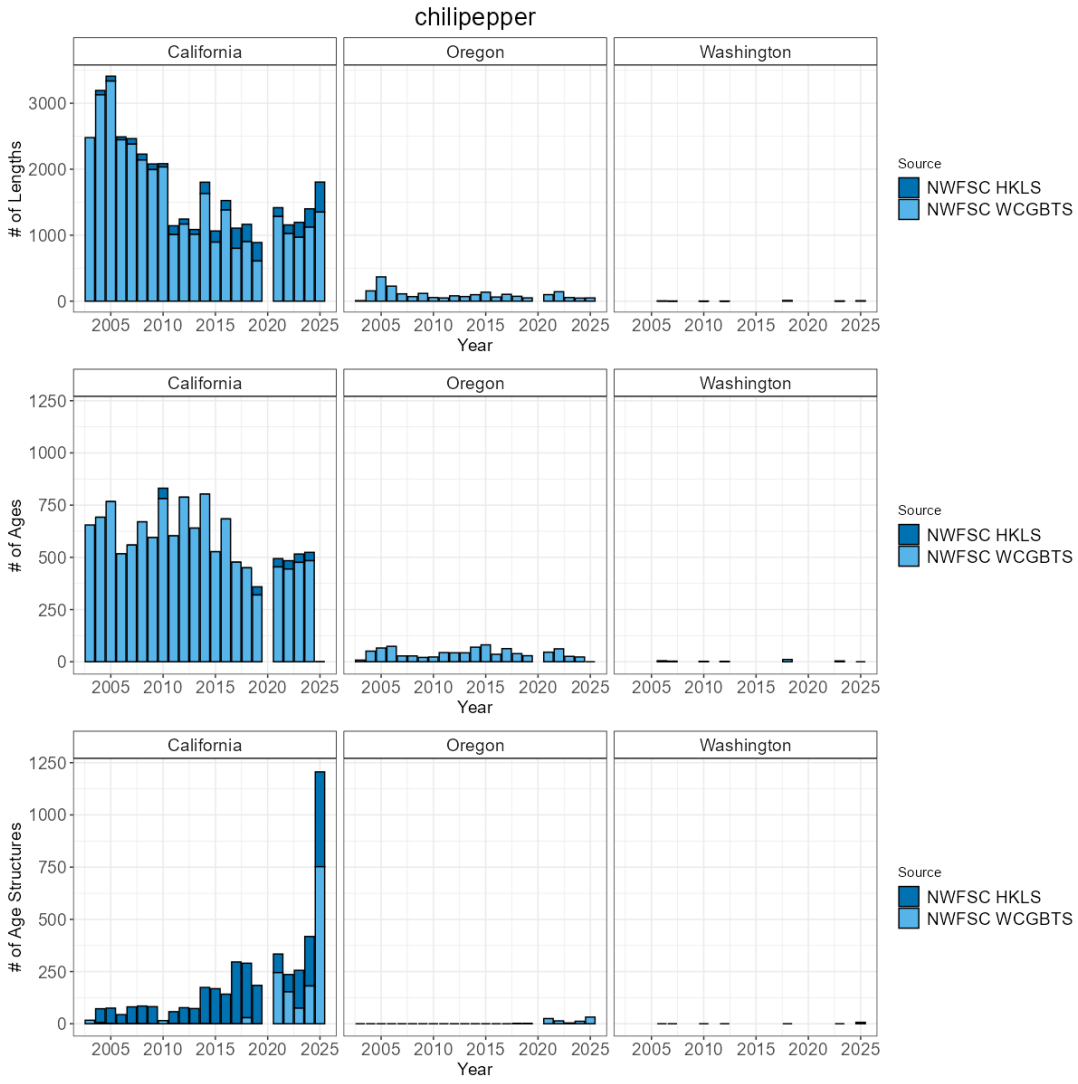

Figure 67: Total number of available lengths, read ages, and unread age structures by data source by year for chilipepper. Note the y-axis maximum may differ by data type.

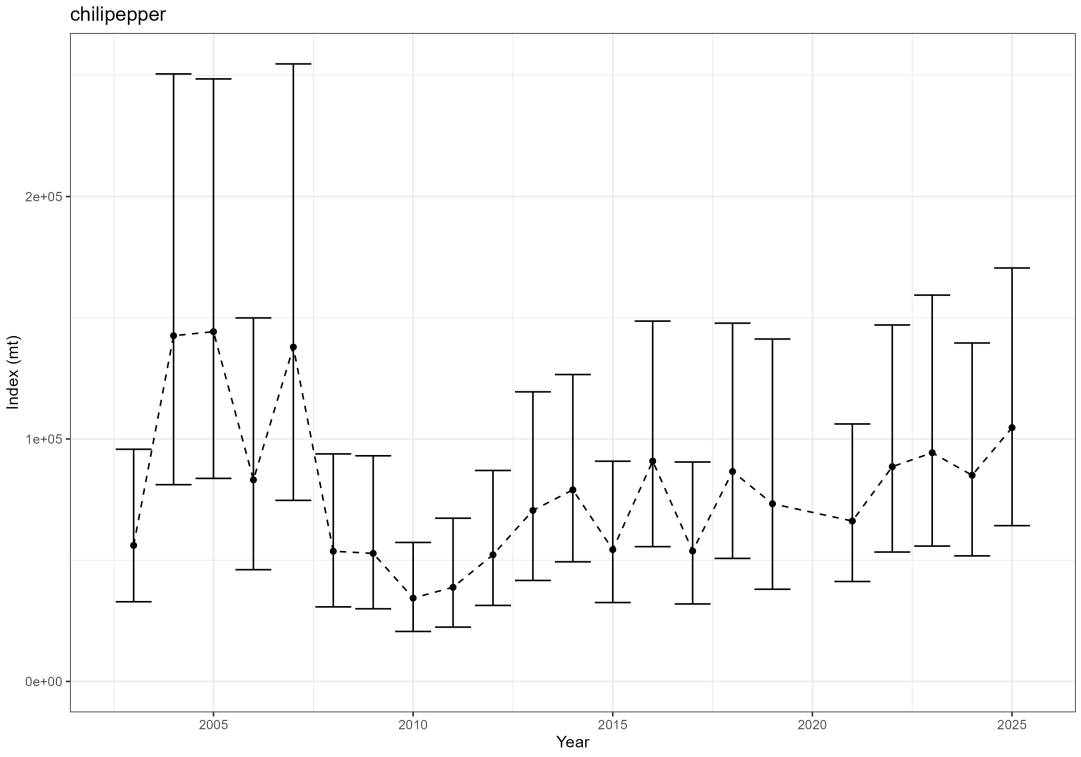

Figure 68: Estimated relative index of abundance for chilipepper from the NWFSC WCGBTS.

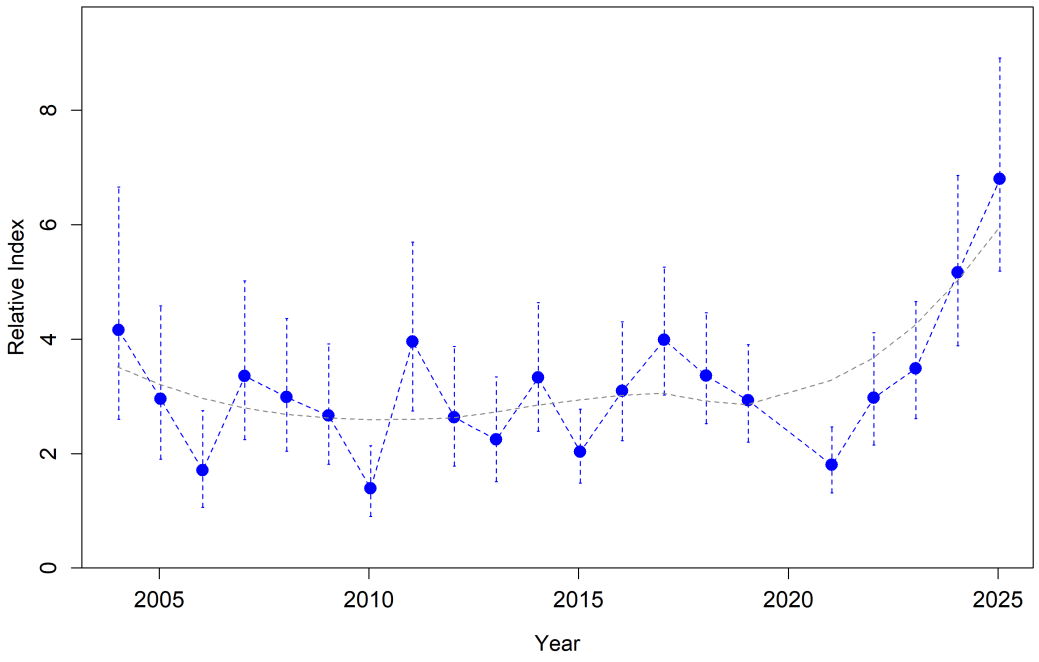

Figure 69: Estimated relative index of abundance for chilipepper from the NWFSC HKLS.

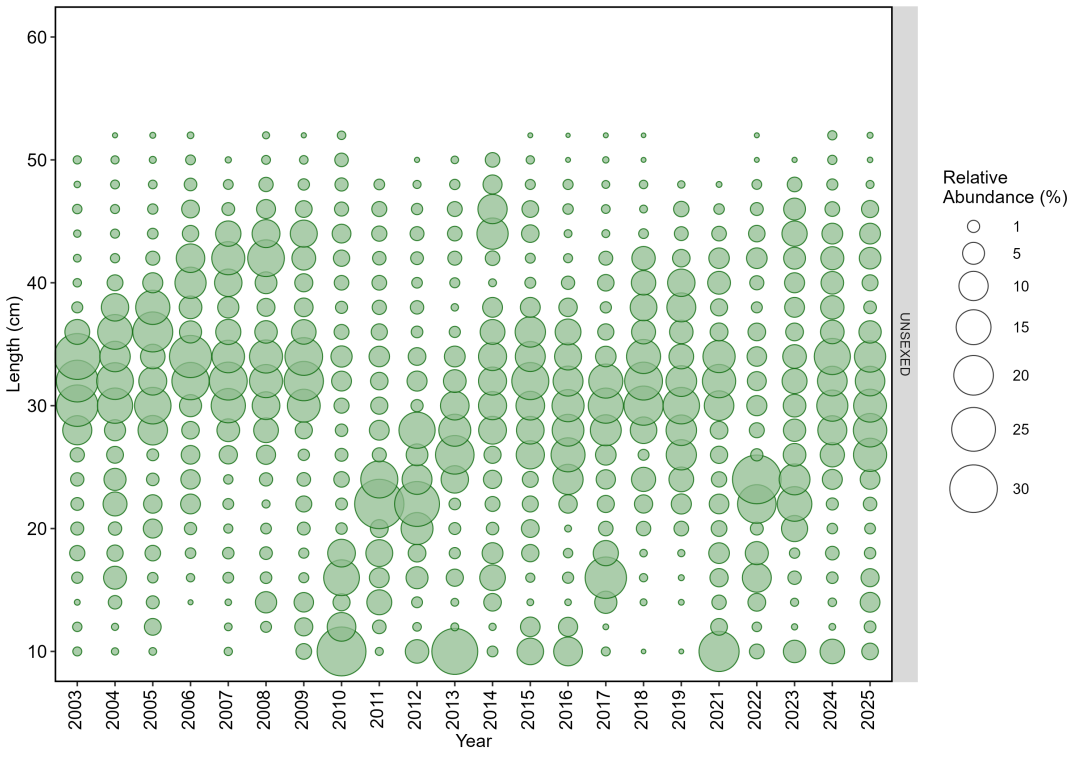

Figure 70: Length (cm) compostion data from the NWFSC WCGBTS for chilipepper. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

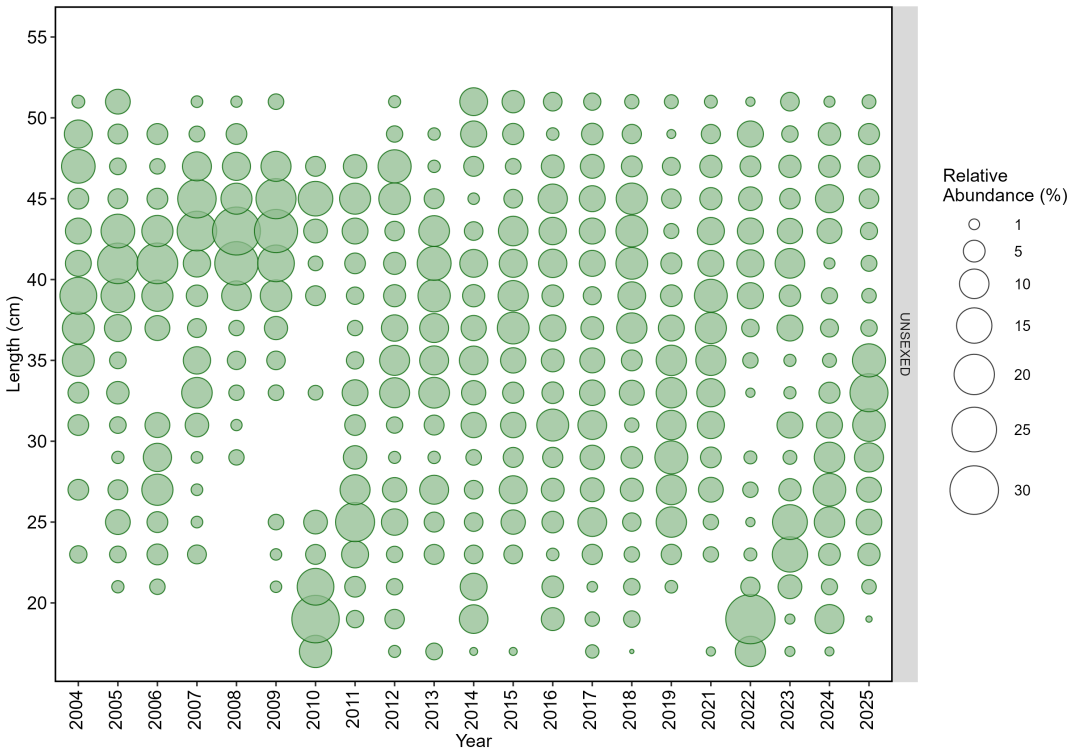

Figure 71: Length (cm) compostion data from the NWFSC HKLS for chilipepper. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.9 Cowcod

The most recent assessment of cowcod was a benchmark assessment conducted in 2019. Across available data, cowcod have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed cowcod on an average of 1 set per year. The NWFSC WCGBTS observed cowcod on an average of 20 tows per year. For this species, a total of 431 maturity samples have been collected coastwide (regardless of stock area), with 170 read maturities.

Table 20: Total number of available lengths, read ages, and unread age structures by data source and state for cowcod.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	1,099	440	629
California	NWFSC WCGBTS	1,038	465	560
Oregon	NWFSC WCGBTS	10	3	7
Washington	NWFSC WCGBTS	2	0	2

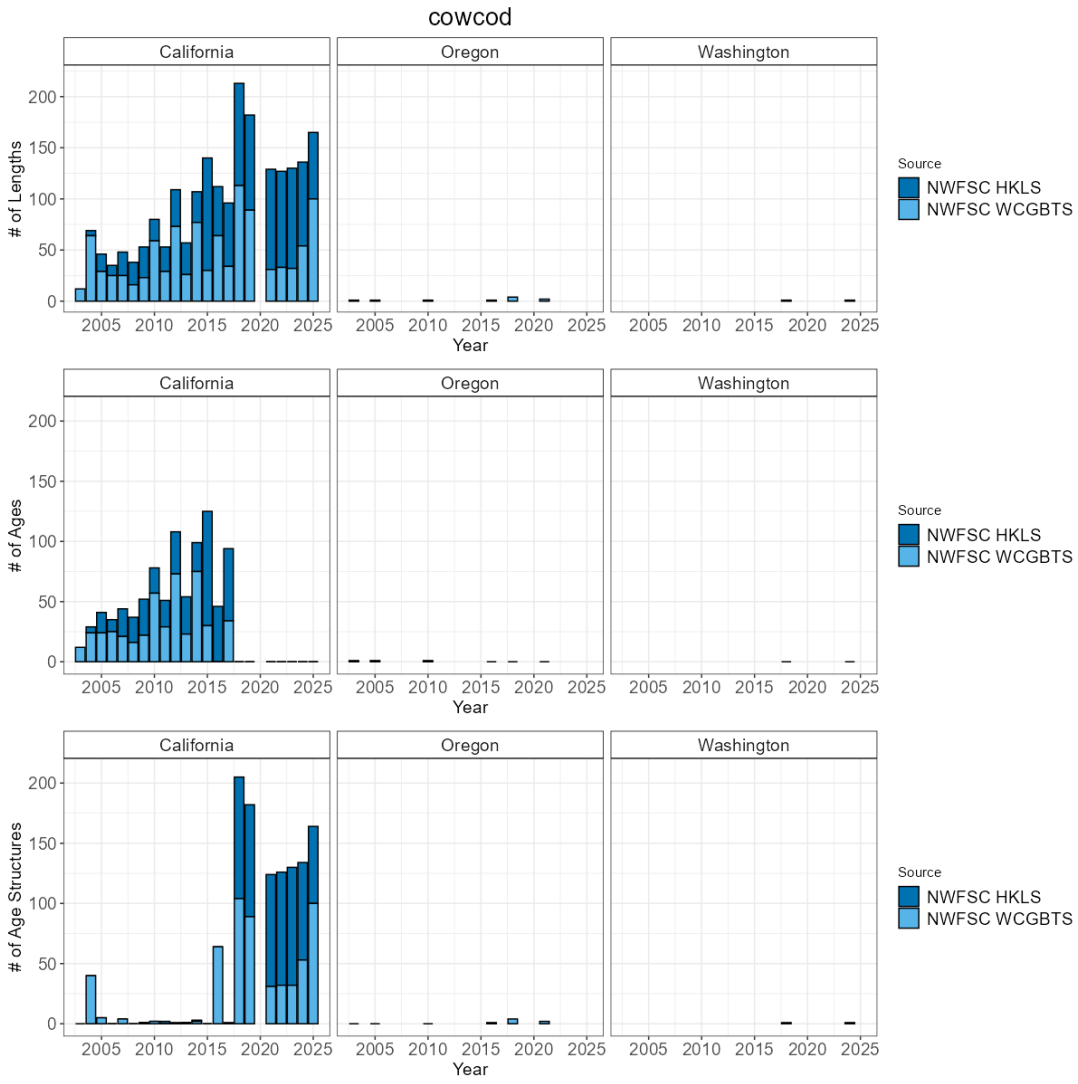

Figure 72: Total number of available lengths, read ages, and unread age structures by data source by year for cowcod. Note the y-axis maximum may differ by data type.

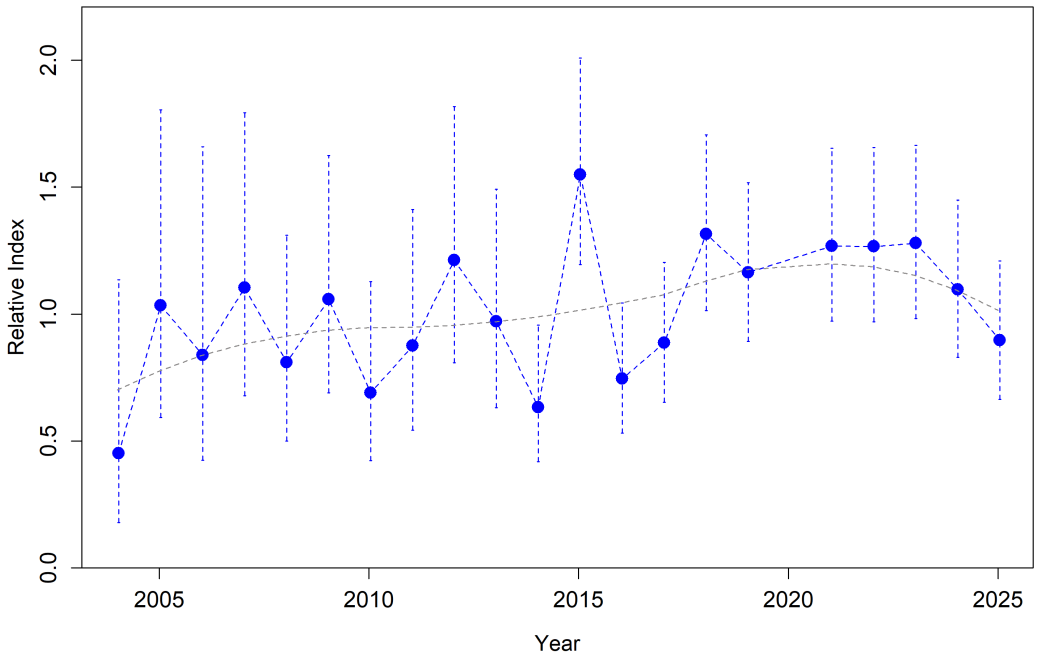

Figure 73: Estimated relative index of abundance for cowcod from the NWFSC HKLS.

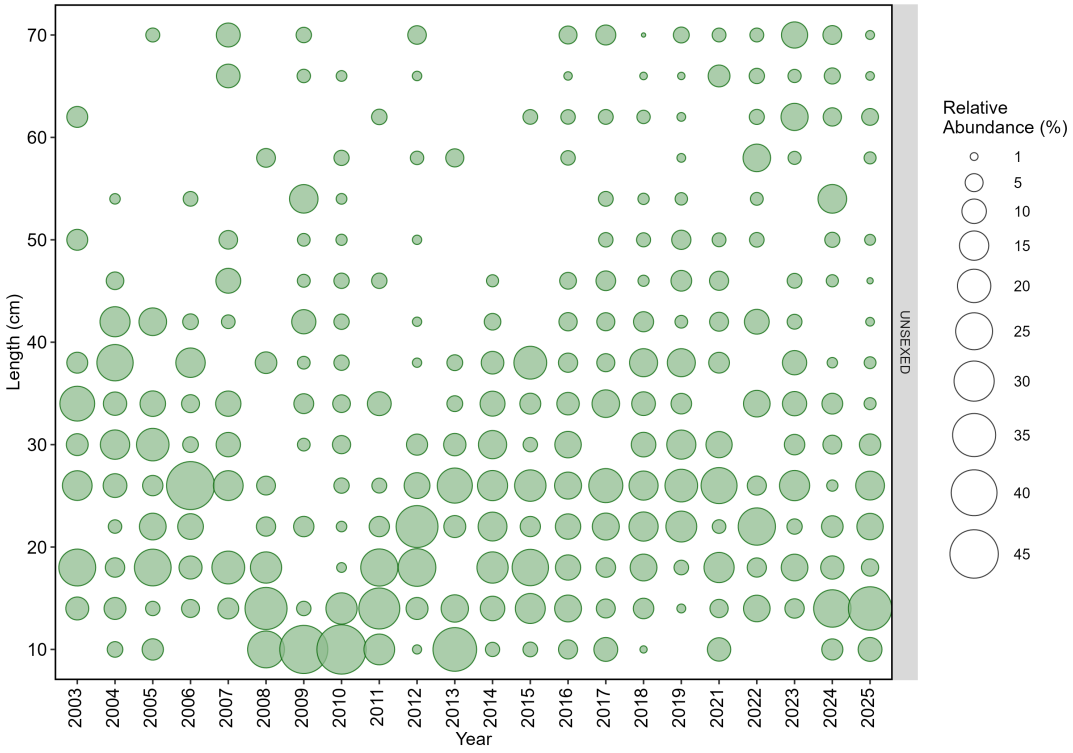

Figure 74: Length (cm) compostion data from the NWFSC WCGBTS for cowcod. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

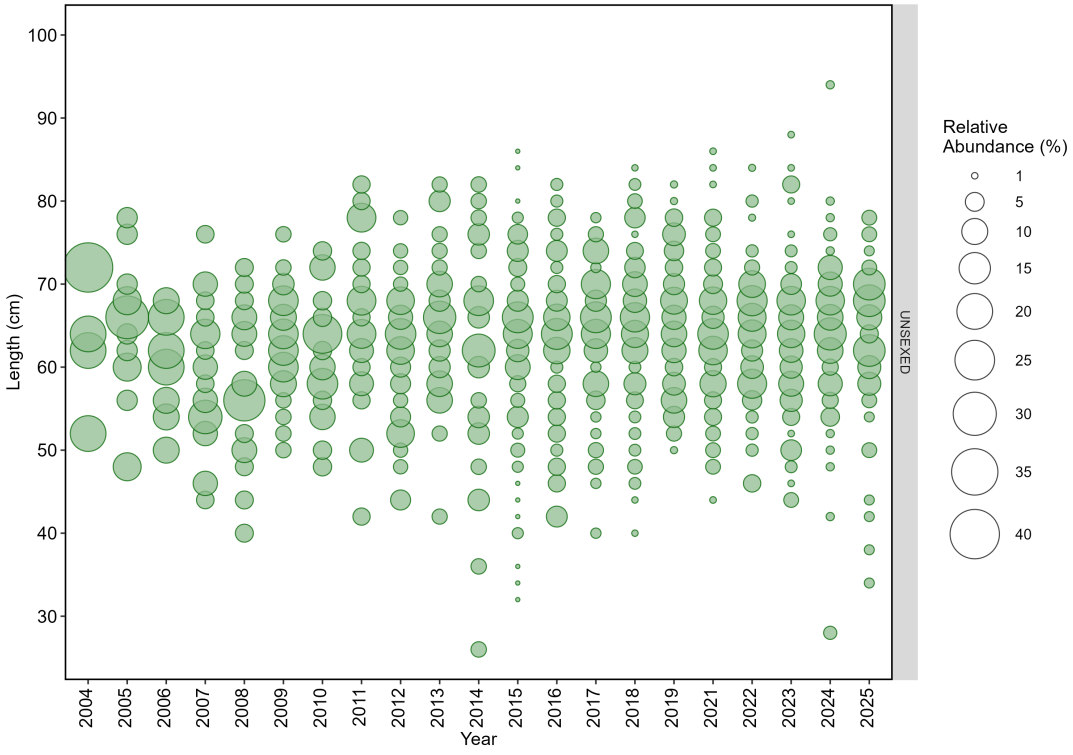

Figure 75: Length (cm) compostion data from the NWFSC HKLS for cowcod. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.10 Darkblotched rockfish

The most recent assessment of darkblotched rockfish was an update assessment conducted in 2017. Across available data, darkblotched rockfish have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed darkblotched rockfish on an average of 113 tows per year. For this species, a total of 958 maturity samples have been collected coastwide (regardless of stock area), with 927 read maturities.

Table 21: Total number of available lengths, read ages, and unread age structures by data source and state for darkblotched rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	7,784	2,568	1,038
Oregon	NWFSC WCGBTS	23,679	6,636	3,365
Washington	NWFSC WCGBTS	8,667	2,523	882

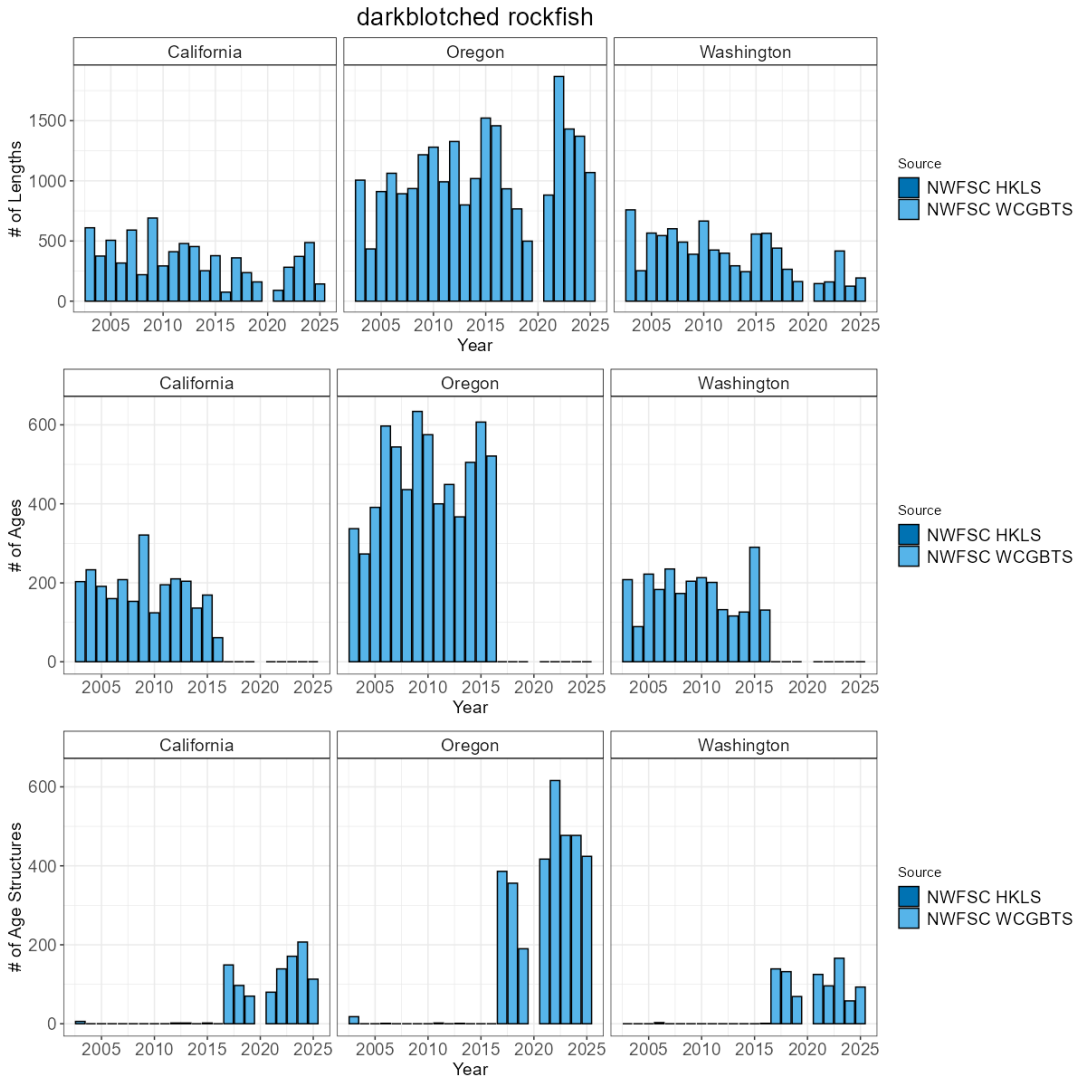

Figure 76: Total number of available lengths, read ages, and unread age structures by data source by year for darkblotched rockfish. Note the y-axis maximum may differ by data type.

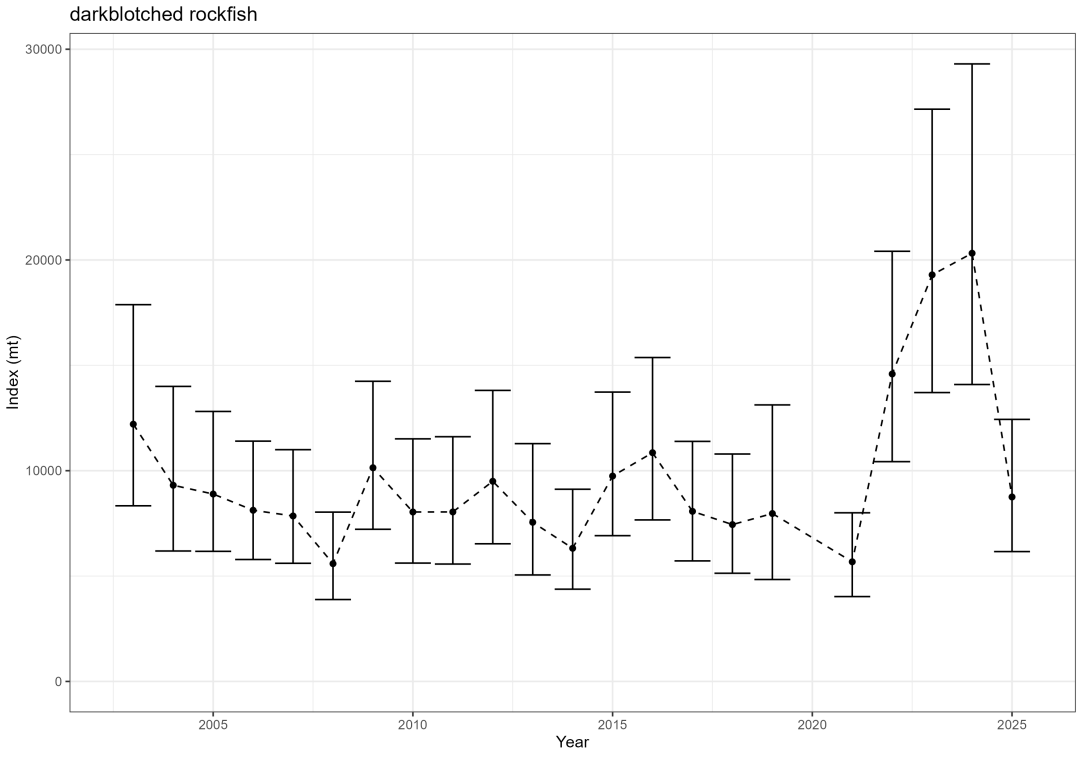

Figure 77: Estimated relative index of abundance for darkblotched rockfish from the NWFSC WCGBTS.

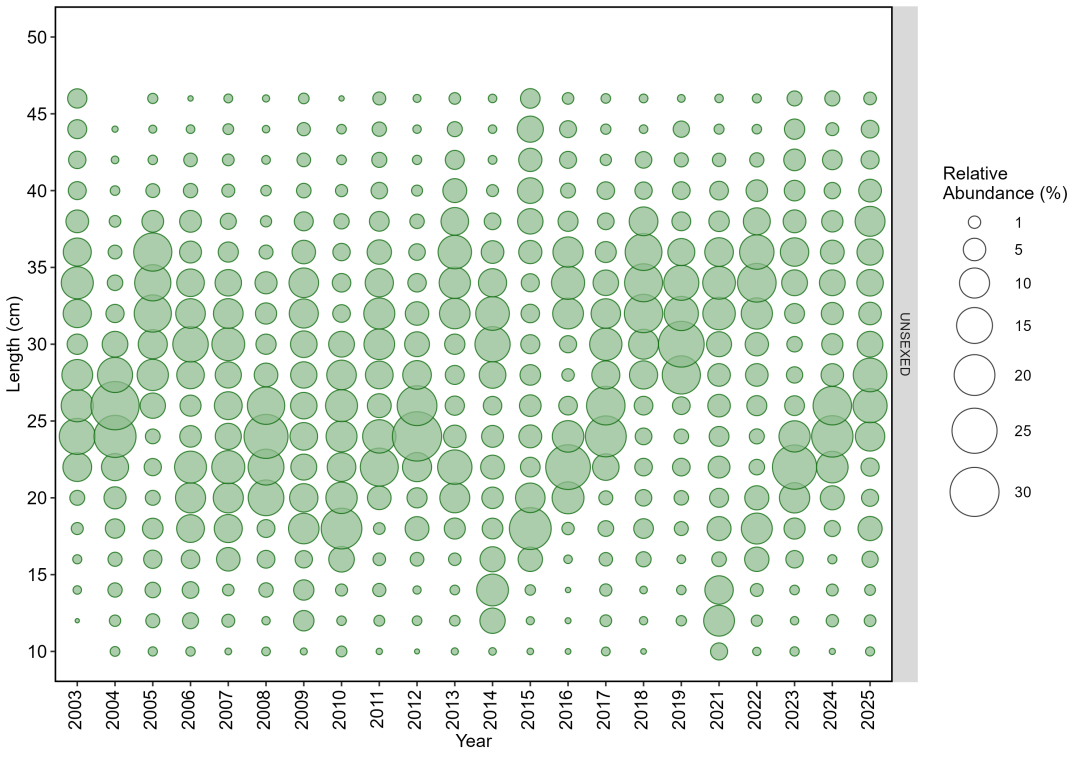

Figure 78: Length (cm) compostion data from the NWFSC WCGBTS for darkblotched rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.11 Dover sole

The most recent assessment of Dover sole was a benchmark assessment conducted in 2021. Across available data, Dover sole have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed Dover sole on an average of 536 tows per year. For this species, a total of 820 maturity samples have been collected coastwide (regardless of stock area), with 635 read maturities.

Table 22: Total number of available lengths, read ages, and unread age structures by data source and state for Dover sole.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	89,094	8,707	6,406
Oregon	NWFSC WCGBTS	71,164	5,836	4,531
Washington	NWFSC WCGBTS	33,050	2,581	2,145

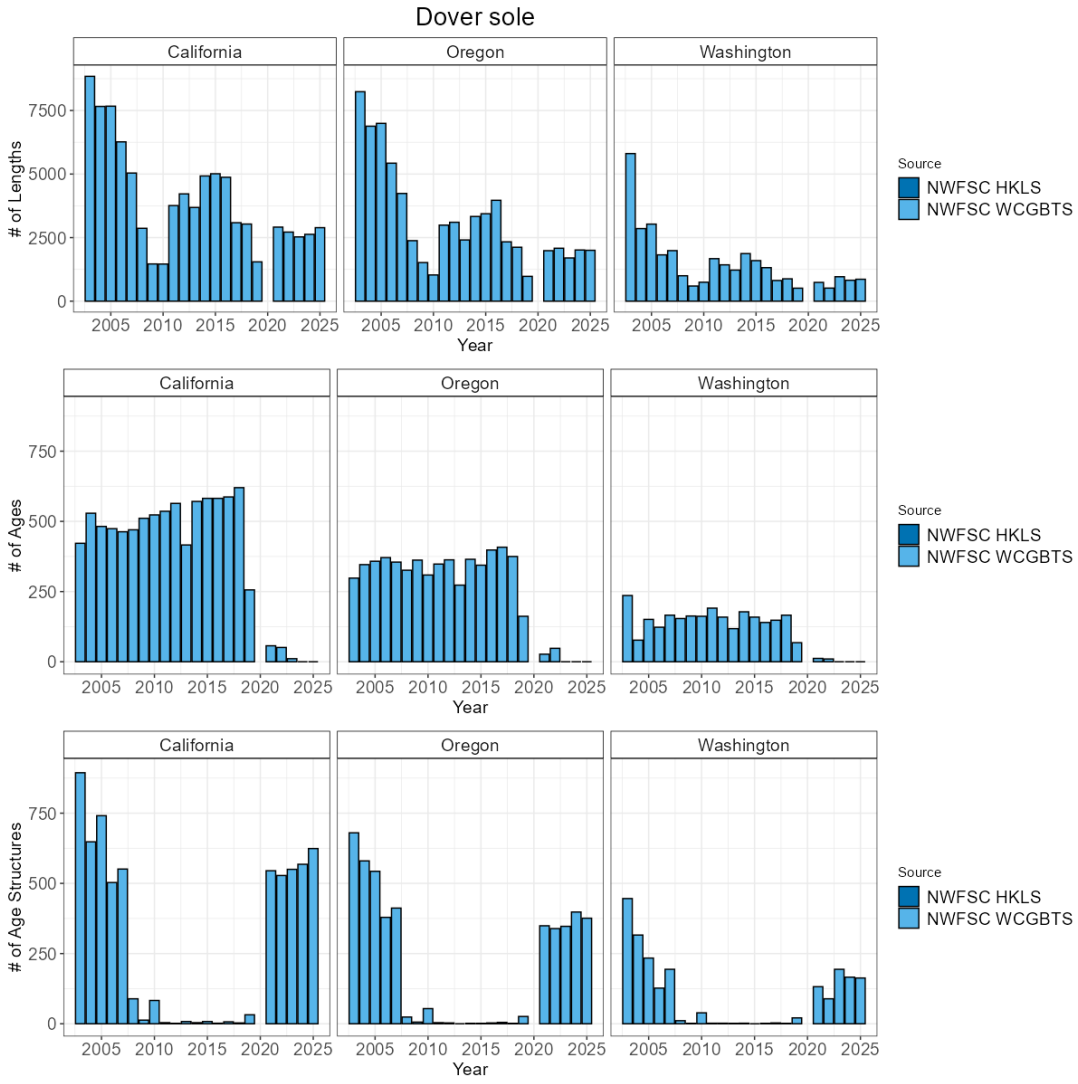

Figure 79: Total number of available lengths, read ages, and unread age structures by data source by year for Dover sole. Note the y-axis maximum may differ by data type.

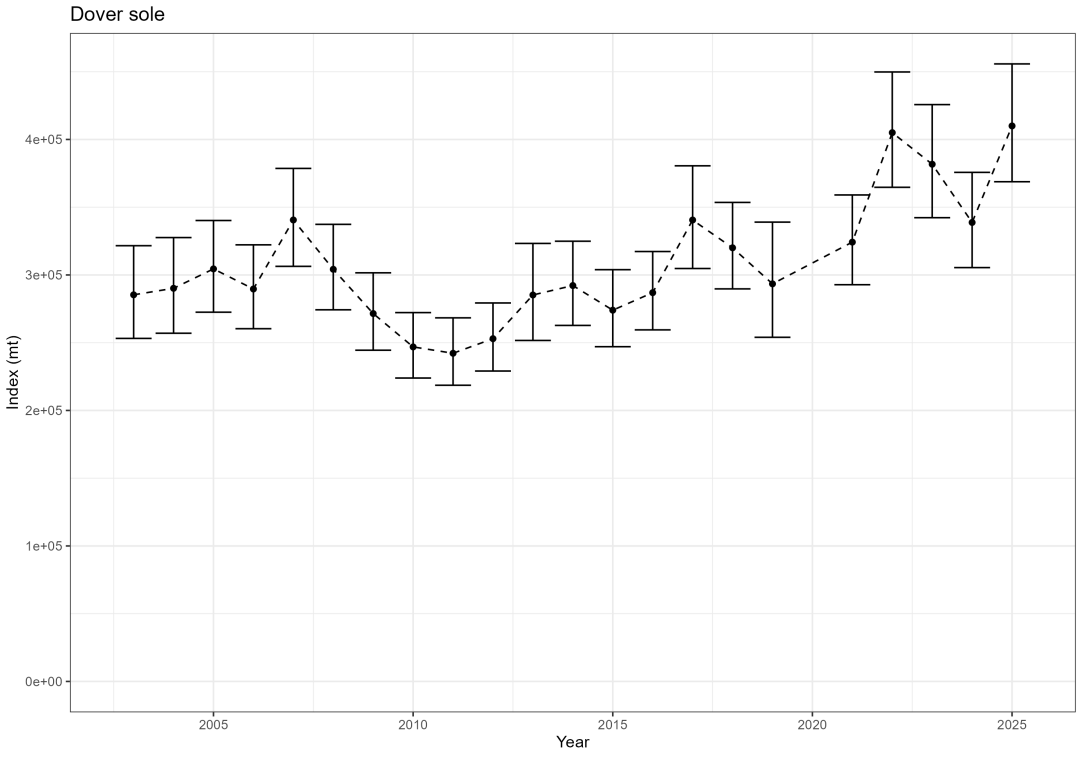

Figure 80: Estimated relative index of abundance for Dover sole from the NWFSC WCGBTS.

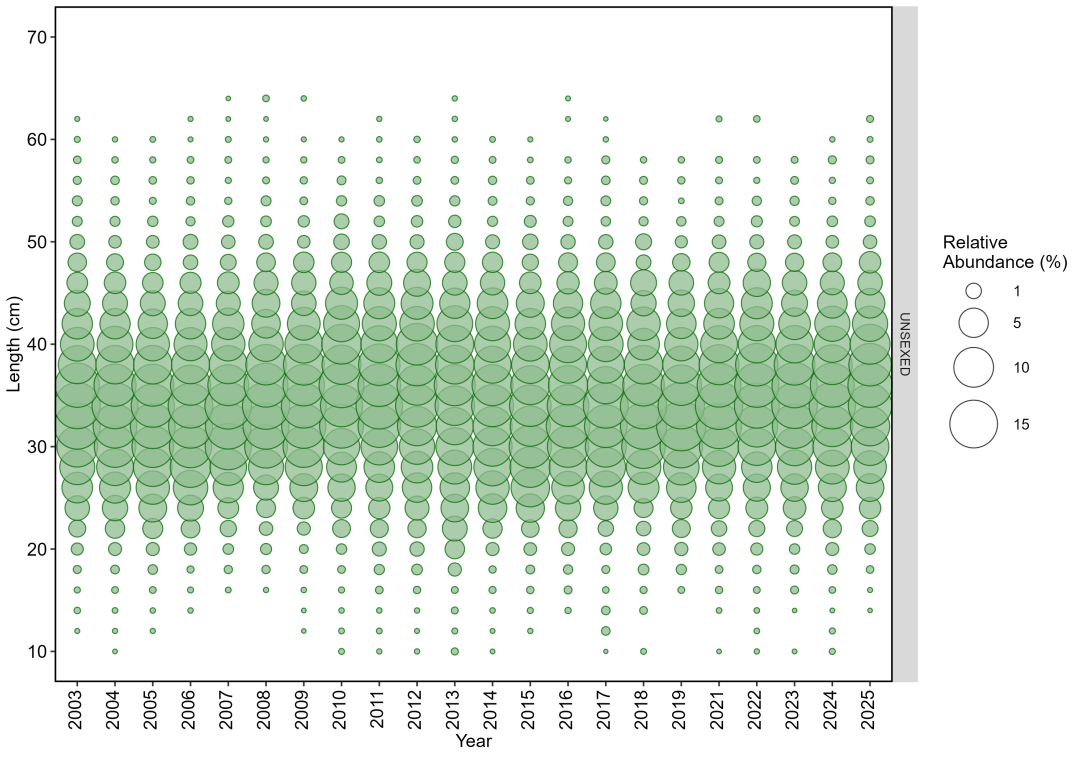

Figure 81: Length (cm) compostion data from the NWFSC WCGBTS for Dover sole. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.12 English sole

The most recent assessment of English sole was a data-moderate assessment conducted in 2013. Across available data, English sole have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed English sole on an average of 266 tows per year. For this species, a total of 174 maturity samples have been collected coastwide (regardless of stock area), with 0 read maturities.

Table 23: Total number of available lengths, read ages, and unread age structures by data source and state for English sole.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	46,065	478	9,110
Oregon	NWFSC WCGBTS	31,844	279	5,503
Washington	NWFSC WCGBTS	14,163	141	3,021

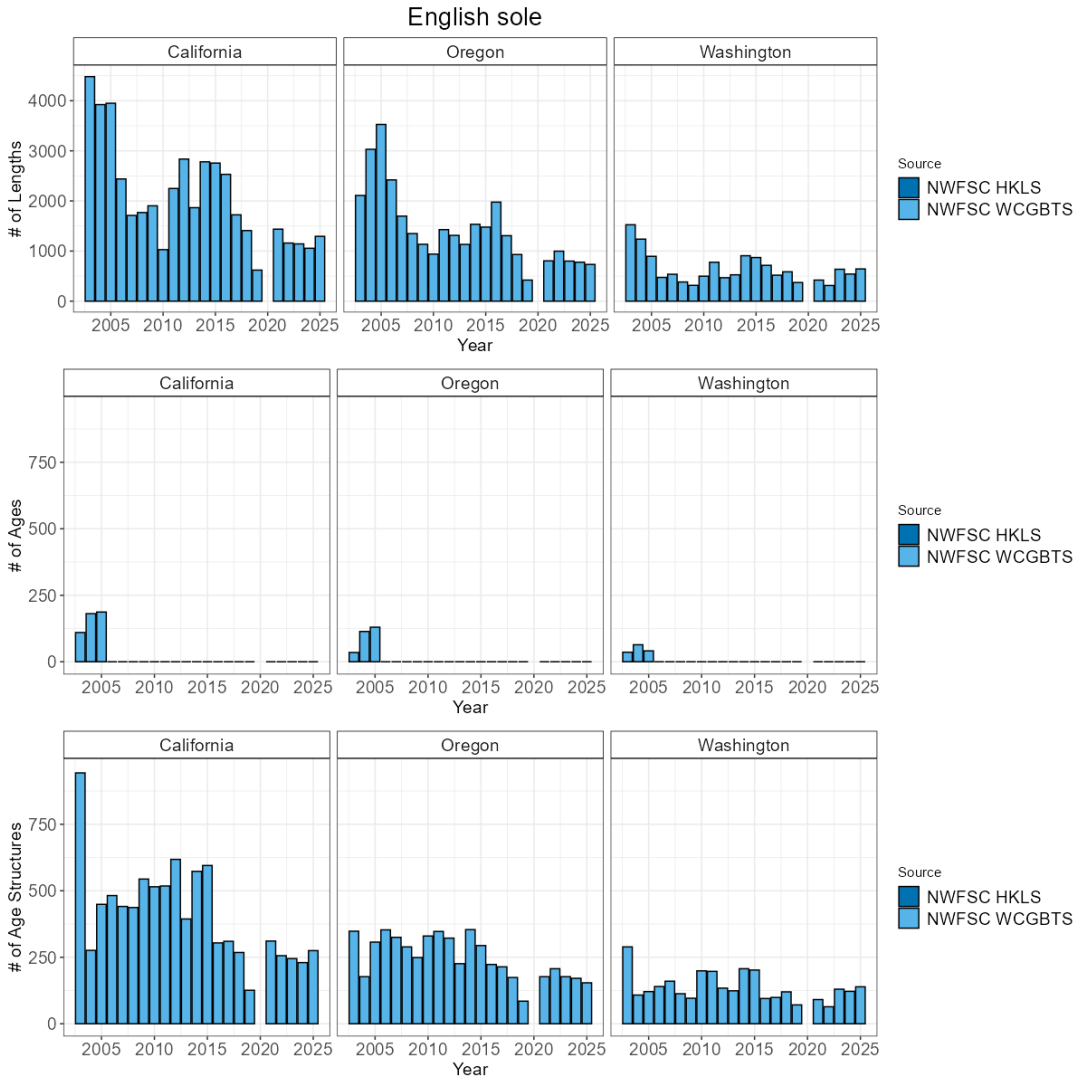

Figure 82: Total number of available lengths, read ages, and unread age structures by data source by year for English sole. Note the y-axis maximum may differ by data type.

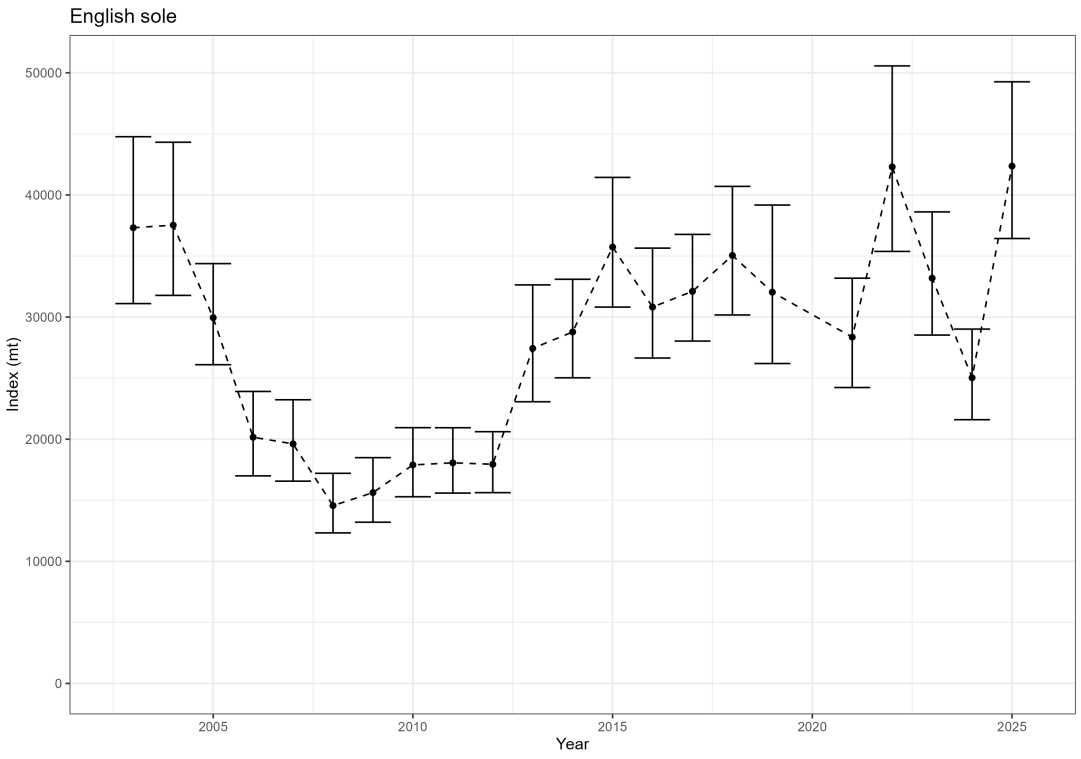

Figure 83: Estimated relative index of abundance for English sole from the NWFSC WCGBTS.

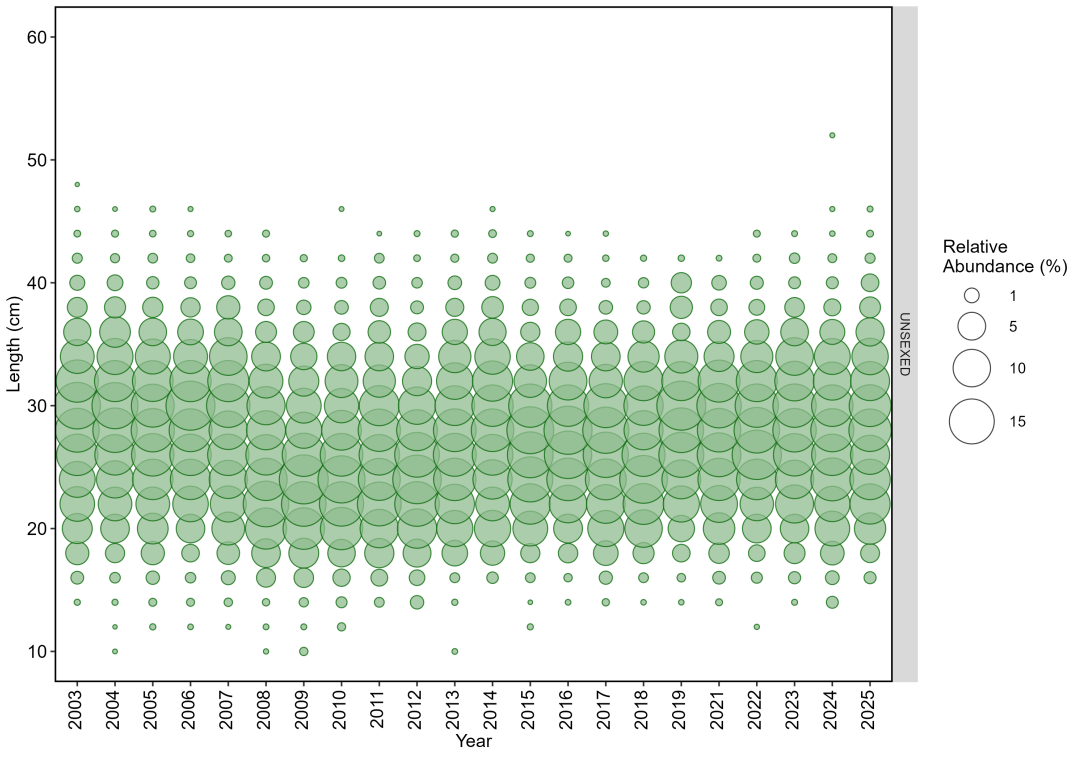

Figure 84: Length (cm) compostion data from the NWFSC WCGBTS for English sole. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.13 Flathead sole

To date, no assessment or analysis has been conducted on flathead sole. Across available data, flathead sole have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed flathead sole on an average of 52 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 24: Total number of available lengths, read ages, and unread age structures by data source and state for flathead sole.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	77	0	39
Oregon	NWFSC WCGBTS	4,985	0	2,154
Washington	NWFSC WCGBTS	7,345	0	1,732

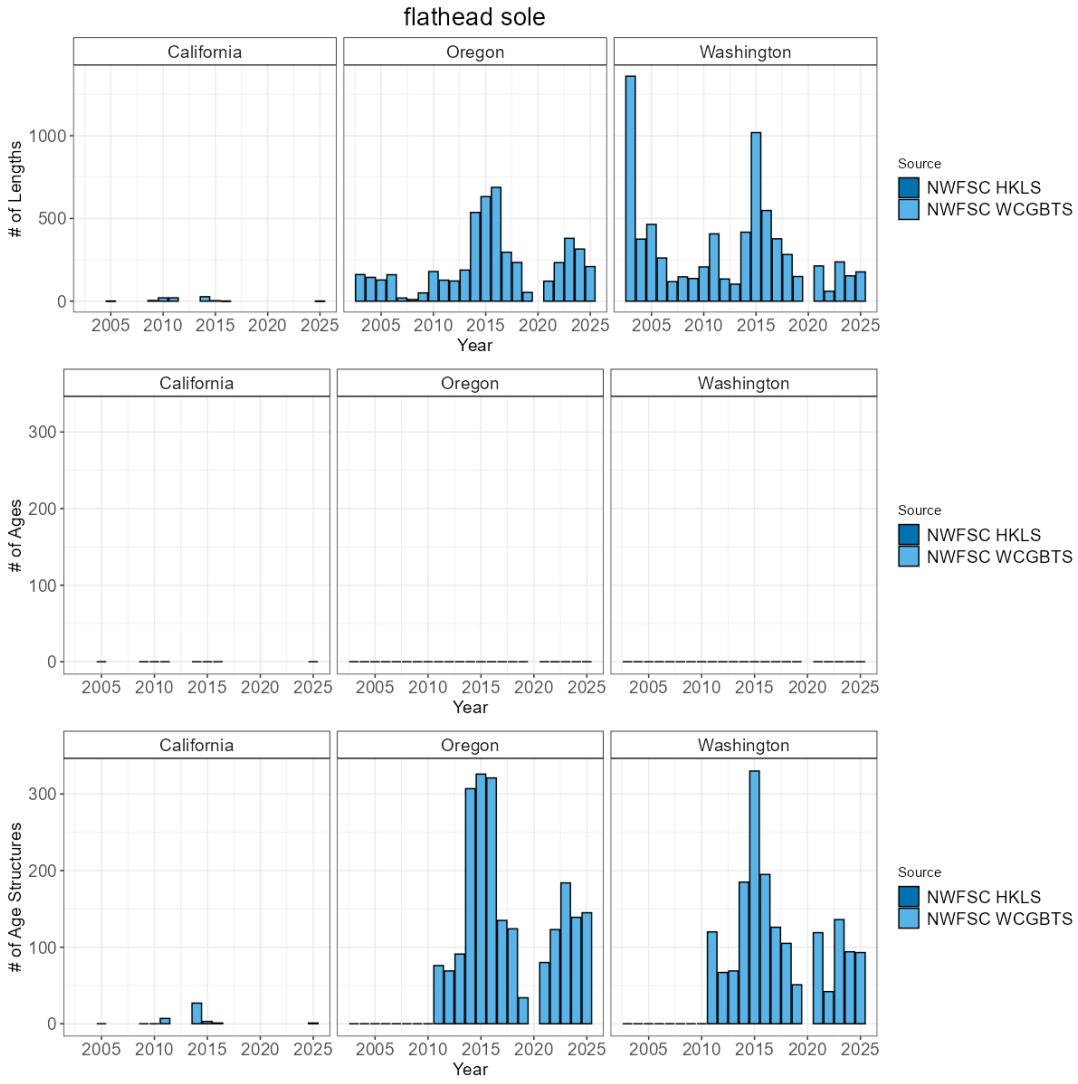

Figure 85: Total number of available lengths, read ages, and unread age structures by data source by year for flathead sole. Note the y-axis maximum may differ by data type.

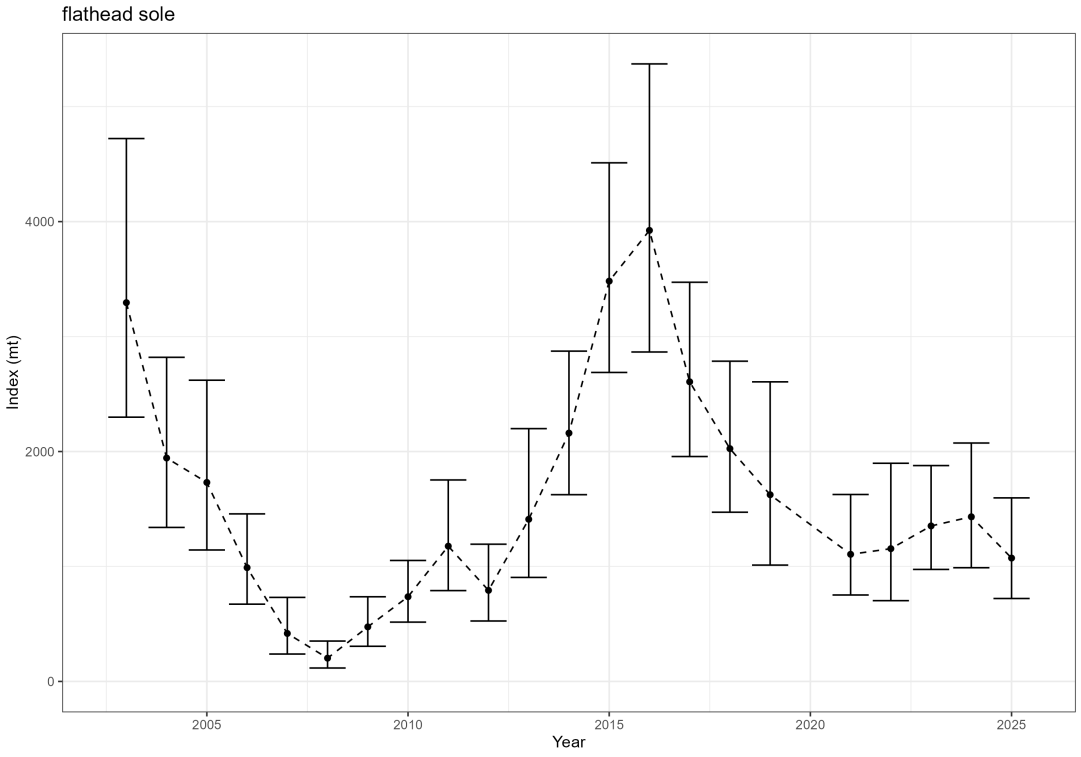

Figure 86: Estimated relative index of abundance for flathead sole from the NWFSC WCGBTS.

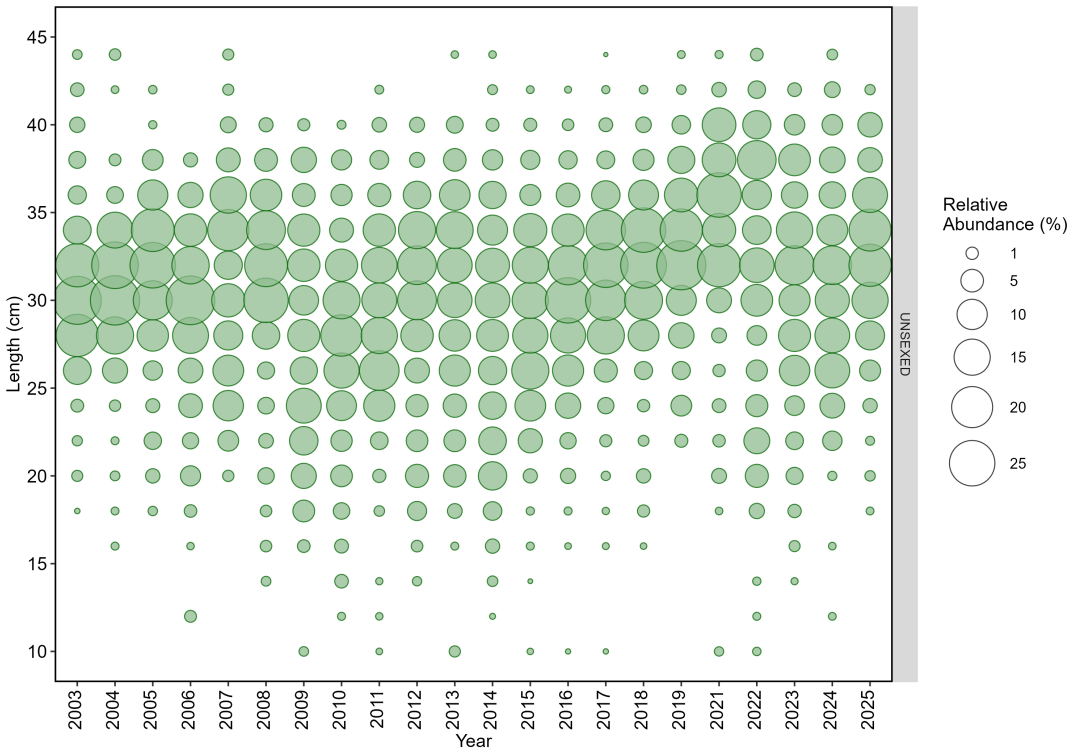

Figure 87: Length (cm) compostion data from the NWFSC WCGBTS for flathead sole. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.14 Greenspotted rockfish

The most recent assessment of greenspotted rockfish was a benchmark assessment conducted in 2011. Across available data, greenspotted rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed greenspotted rockfish on an average of 1 set per year. The NWFSC WCGBTS observed greenspotted rockfish on an average of 35 tows per year. For this species, a total of 338 maturity samples have been collected coastwide (regardless of stock area), with 175 read maturities.

Table 25: Total number of available lengths, read ages, and unread age structures by data source and state for greenspotted rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	6,446	843	5,408
California	NWFSC WCGBTS	8,034	701	4,008
Oregon	NWFSC WCGBTS	1,366	0	1,074
Washington	NWFSC WCGBTS	45	0	42

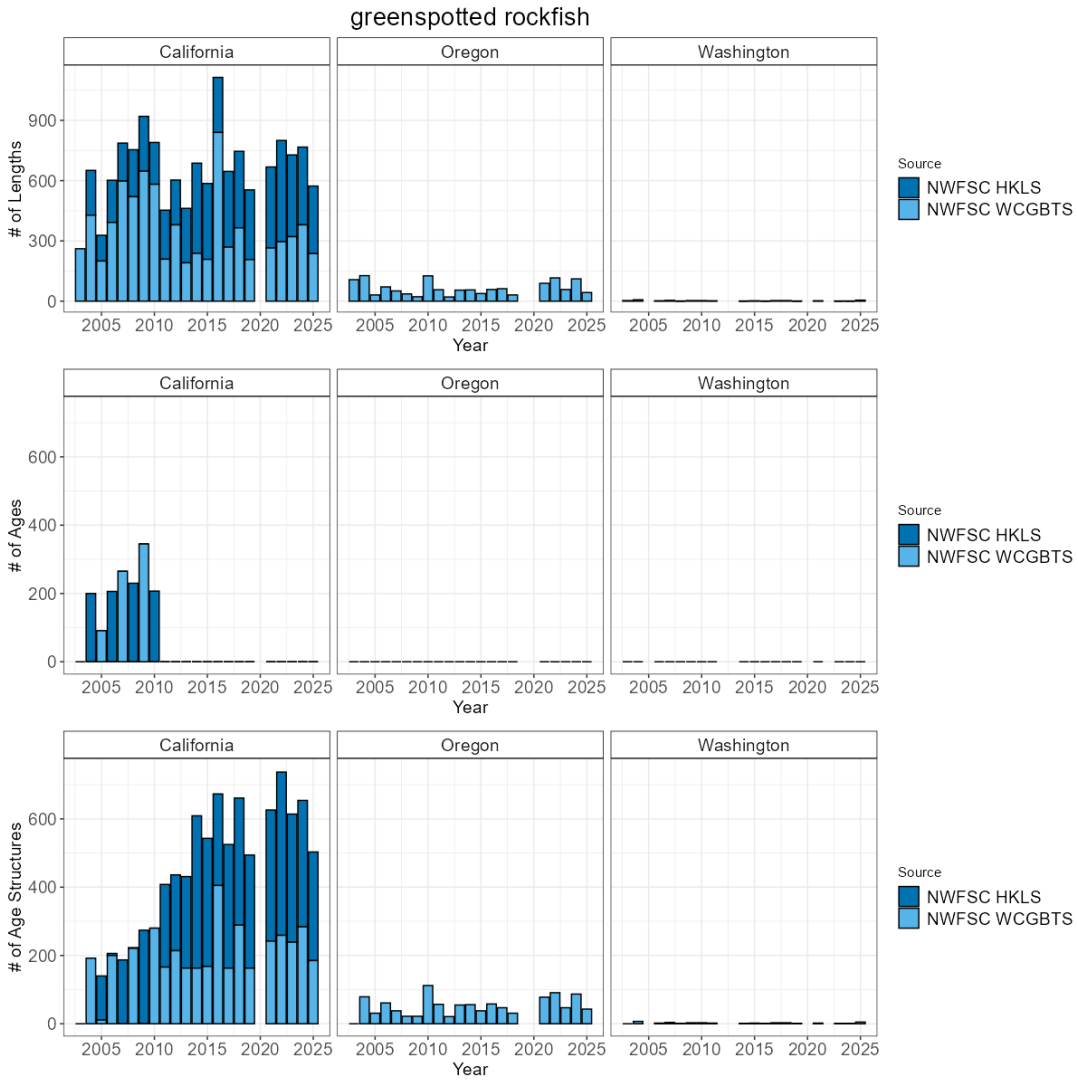

Figure 88: Total number of available lengths, read ages, and unread age structures by data source by year for greenspotted rockfish. Note the y-axis maximum may differ by data type.

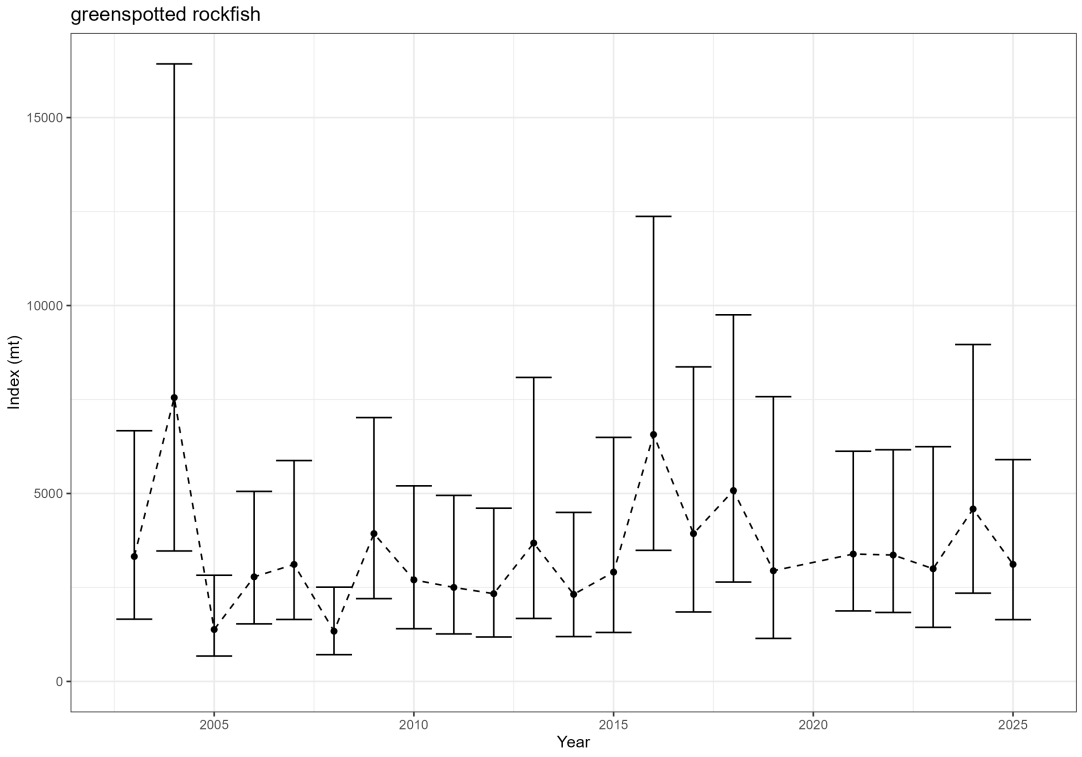

Figure 89: Estimated relative index of abundance for greenspotted rockfish from the NWFSC WCGBTS.

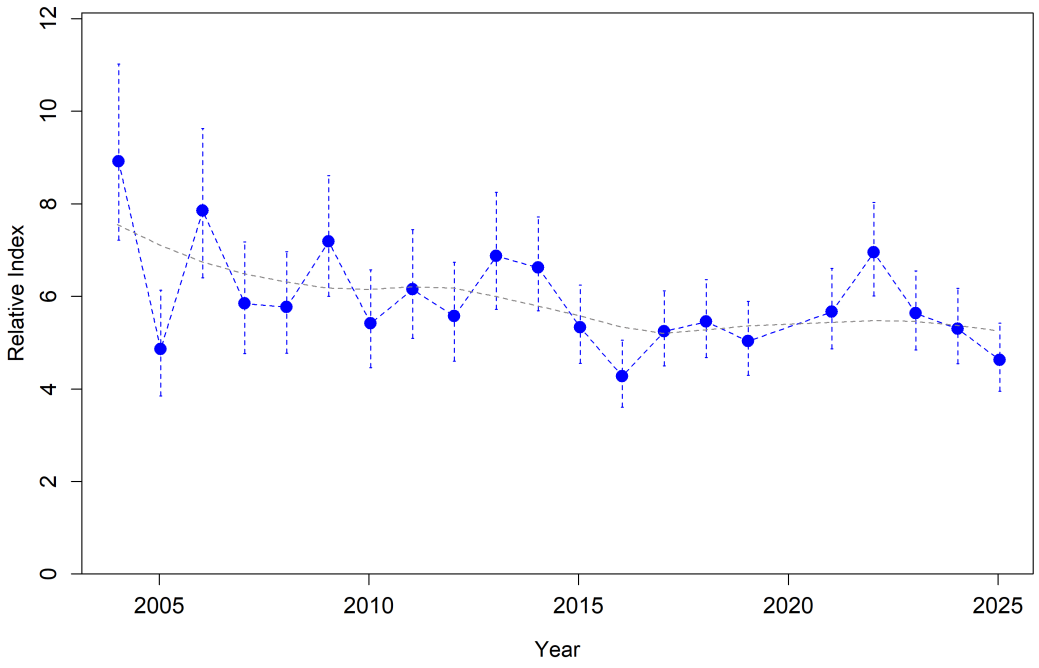

Figure 90: Estimated relative index of abundance for greenspotted rockfish from the NWFSC HKLS.

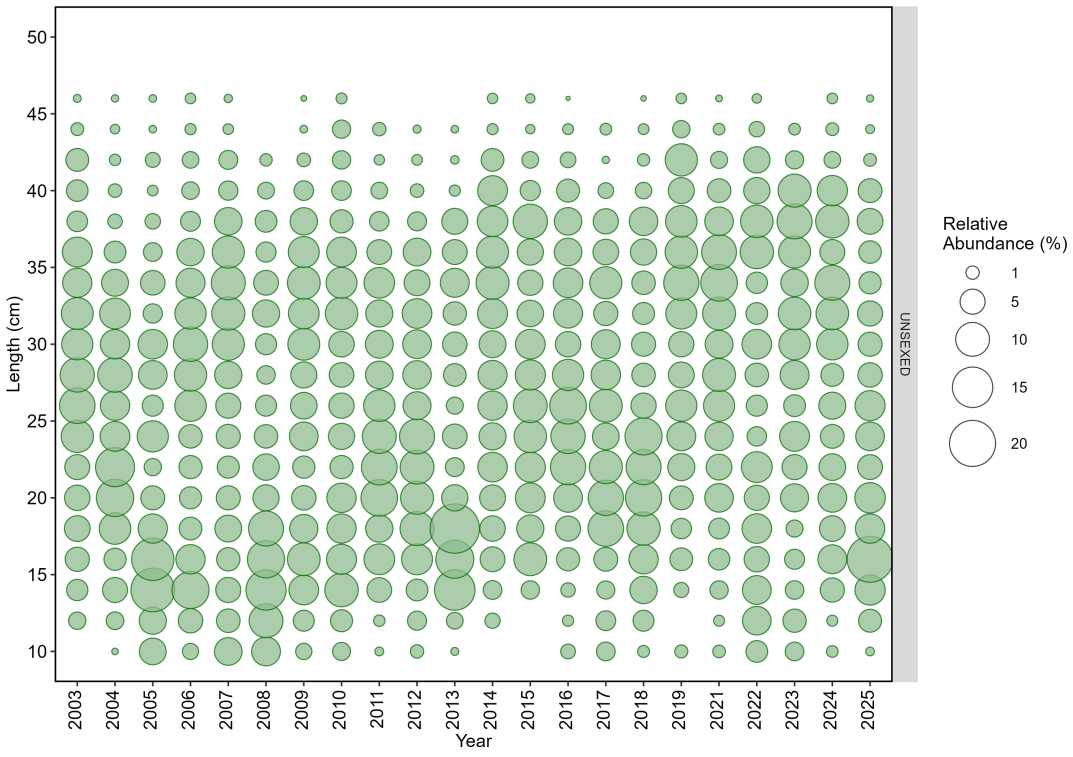

Figure 91: Length (cm) compostion data from the NWFSC WCGBTS for greenspotted rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

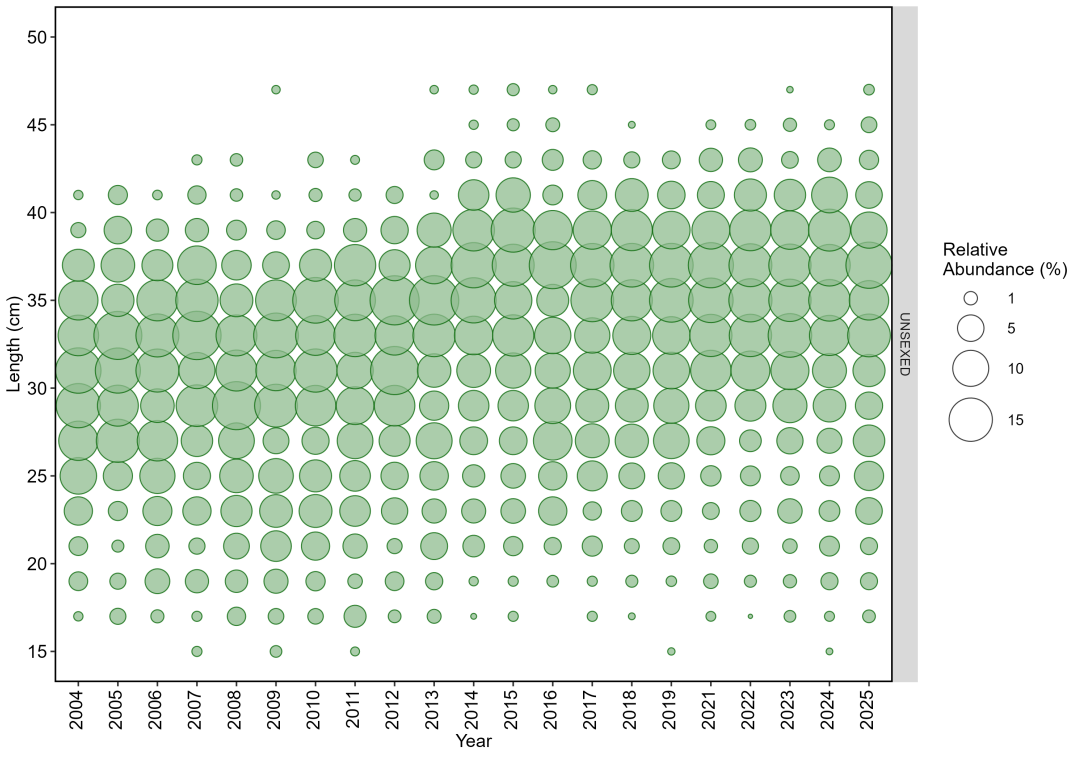

Figure 92: Length (cm) compostion data from the NWFSC HKLS for greenspotted rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.15 Greenstriped rockfish

The most recent assessment of greenstriped rockfish was a benchmark assessment conducted in 2009. Across available data, greenstriped rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed greenstriped rockfish on an average of 1 set per year. The NWFSC WCGBTS observed greenstriped rockfish on an average of 161 tows per year. For this species, a total of 73 maturity samples have been collected coastwide (regardless of stock area), with 73 read maturities.

Table 26: Total number of available lengths, read ages, and unread age structures by data source and state for greenstriped rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	1,315	0	1,302
California	NWFSC WCGBTS	17,531	1,359	4,458
Oregon	NWFSC WCGBTS	20,348	1,346	4,169
Washington	NWFSC WCGBTS	10,619	709	2,012

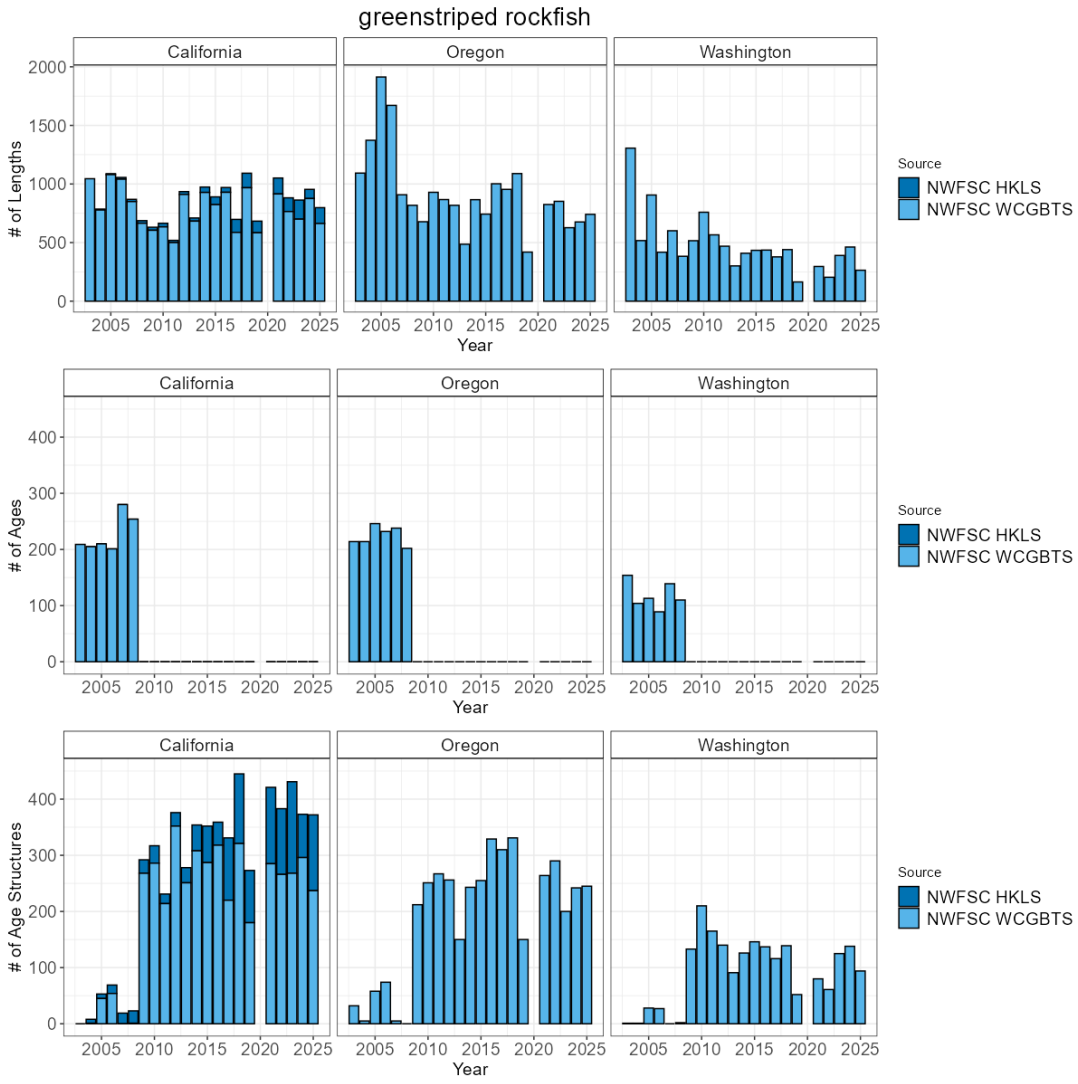

Figure 93: Total number of available lengths, read ages, and unread age structures by data source by year for greenstriped rockfish. Note the y-axis maximum may differ by data type.

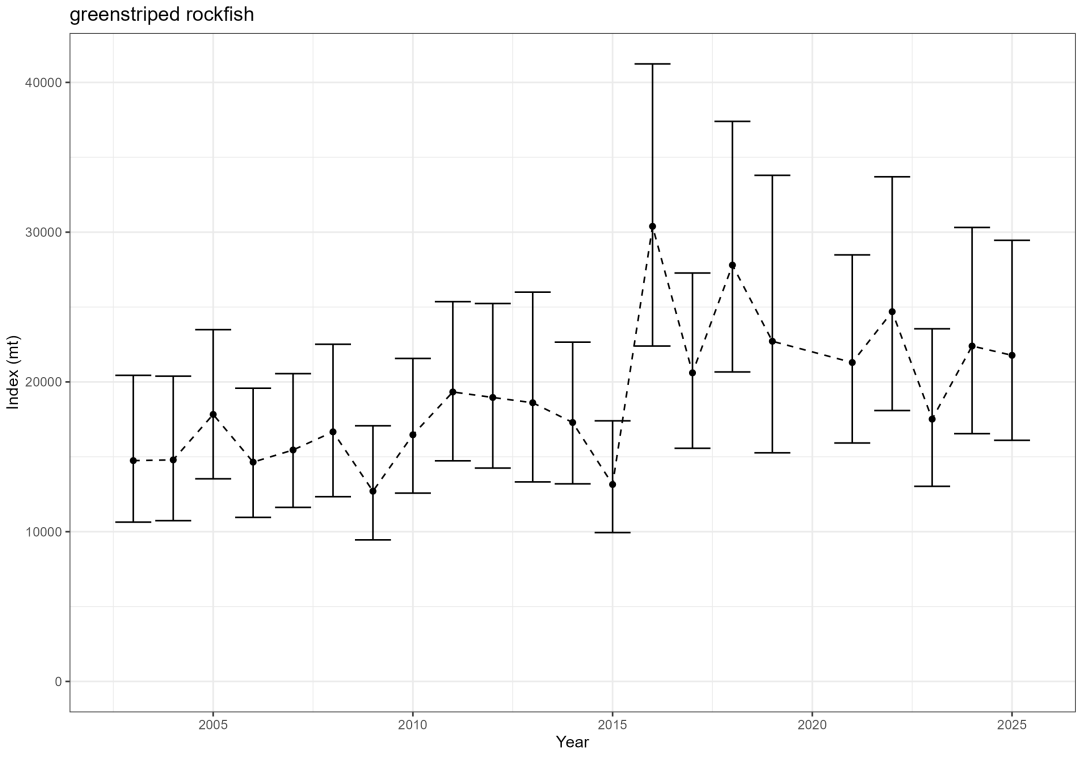

Figure 94: Estimated relative index of abundance for greenstriped rockfish from the NWFSC WCGBTS.

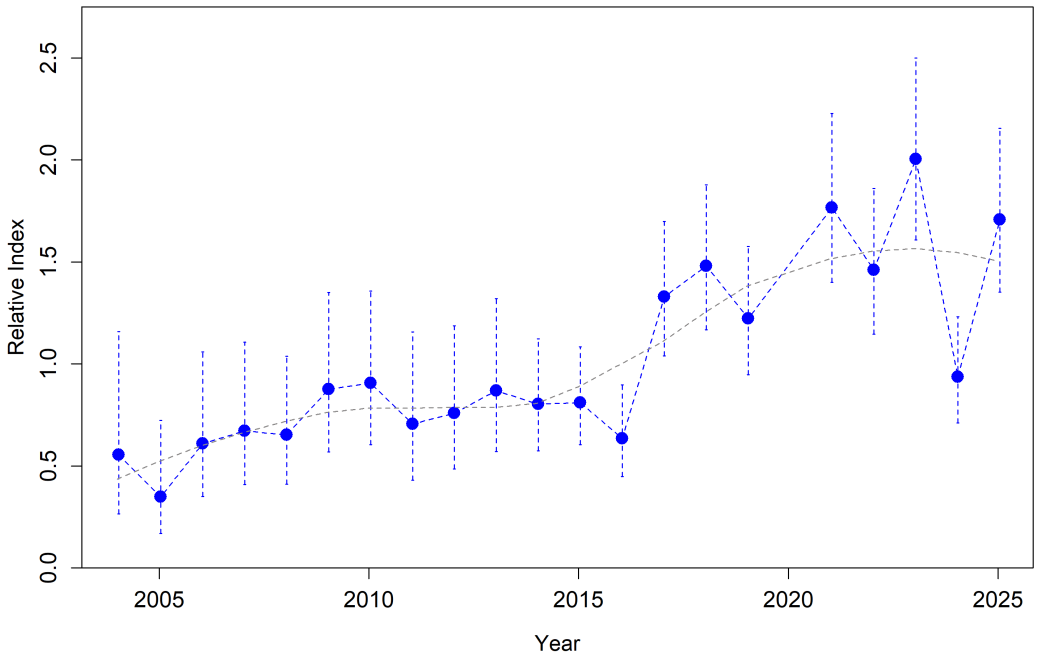

Figure 95: Estimated relative index of abundance for greenstriped rockfish from the NWFSC HKLS.

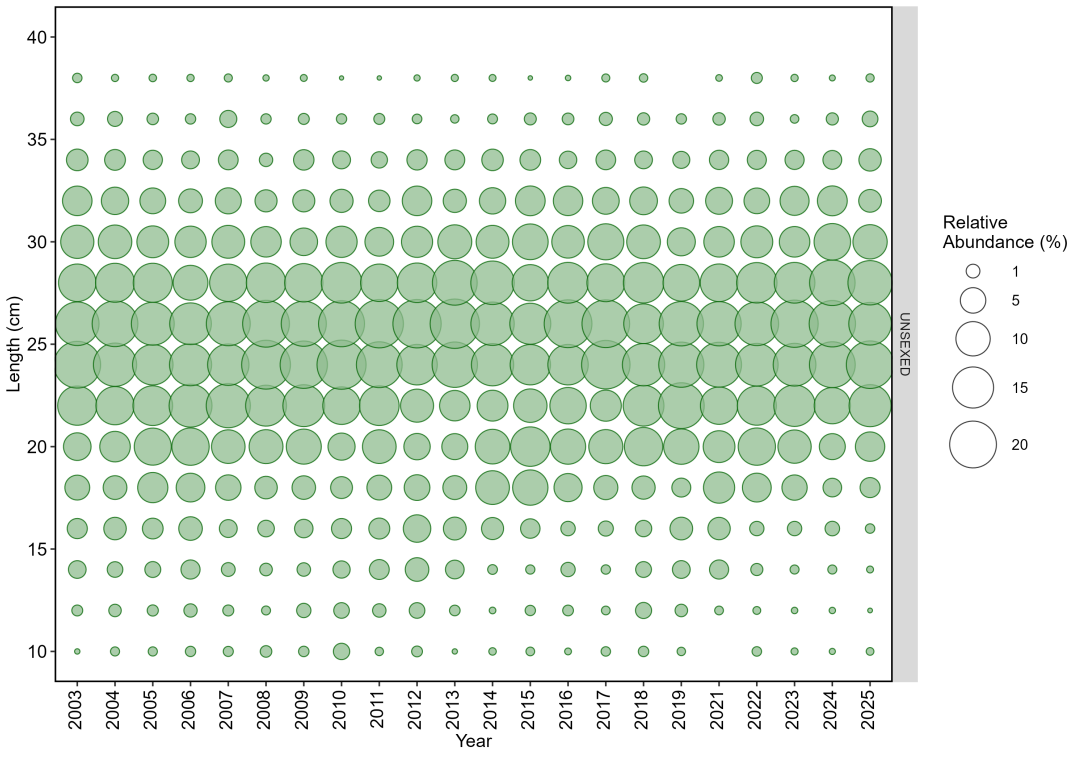

Figure 96: Length (cm) compostion data from the NWFSC WCGBTS for greenstriped rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

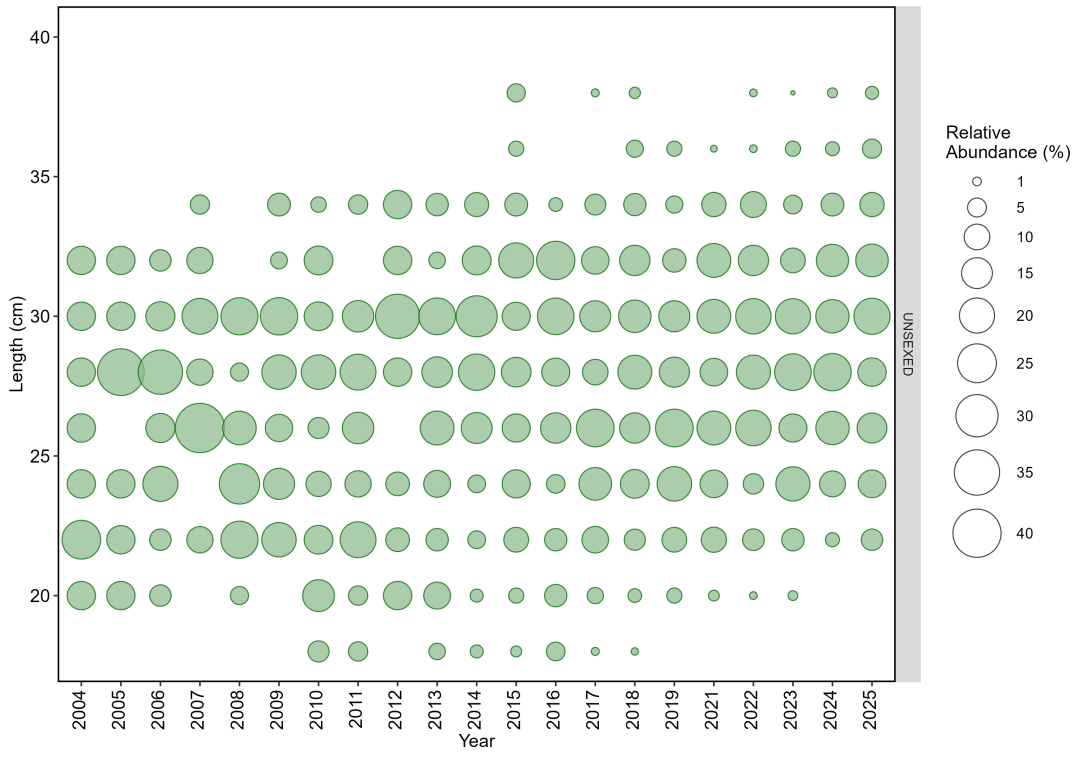

Figure 97: Length (cm) compostion data from the NWFSC HKLS for greenstriped rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.16 Kelp greenling

To date, no assessment or analysis has been conducted on kelp greenling. Across available data, kelp greenling have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed kelp greenling on an average of 3 tows per year. For this species, a total of 8 maturity samples have been collected coastwide (regardless of stock area), with 8 read maturities.

ODFW scientists have conducted research looking at the influences of hypoxia on the catch per unit effort for kelp greenling.

Table 27: Total number of available lengths, read ages, and unread age structures by data source and state for kelp greenling.

State	Source	Lengths	Ages	Age Structures
Washington	NWFSC WCGBTS	217	0	197

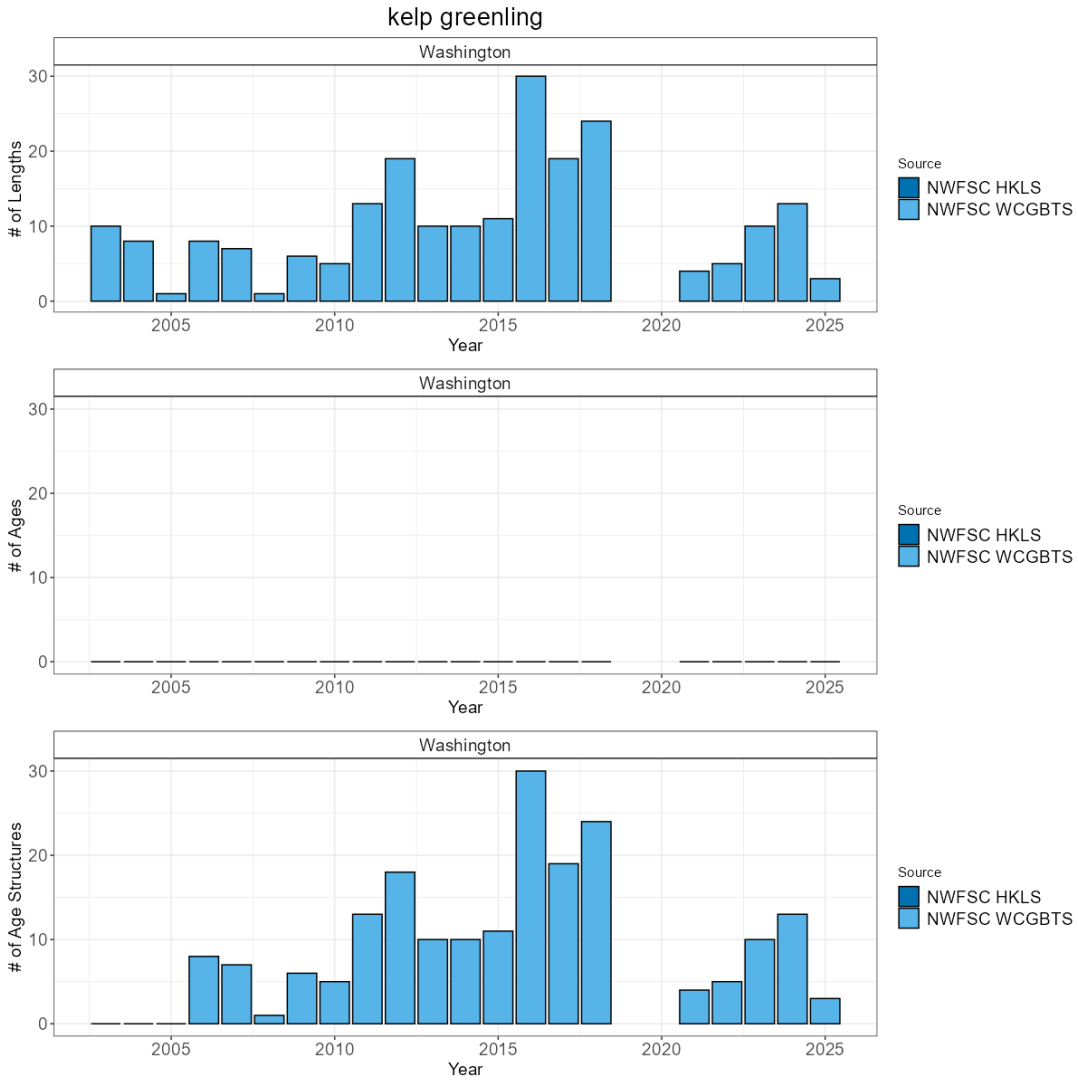

Figure 98: Total number of available lengths, read ages, and unread age structures by data source by year for kelp greenling. Note the y-axis maximum may differ by data type.

4.17 Longnose skate

The most recent assessment of longnose skate was a benchmark assessment conducted in 2019. Across available data, longnose skate have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed longnose skate on an average of 384 tows per year. For this species, a total of 508 maturity samples have been collected coastwide (regardless of stock area), with 508 read maturities.

Table 28: Total number of available lengths, read ages, and unread age structures by data source and state for longnose skate.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	36,040	337	1,443
Oregon	NWFSC WCGBTS	19,097	227	993
Washington	NWFSC WCGBTS	9,346	84	414

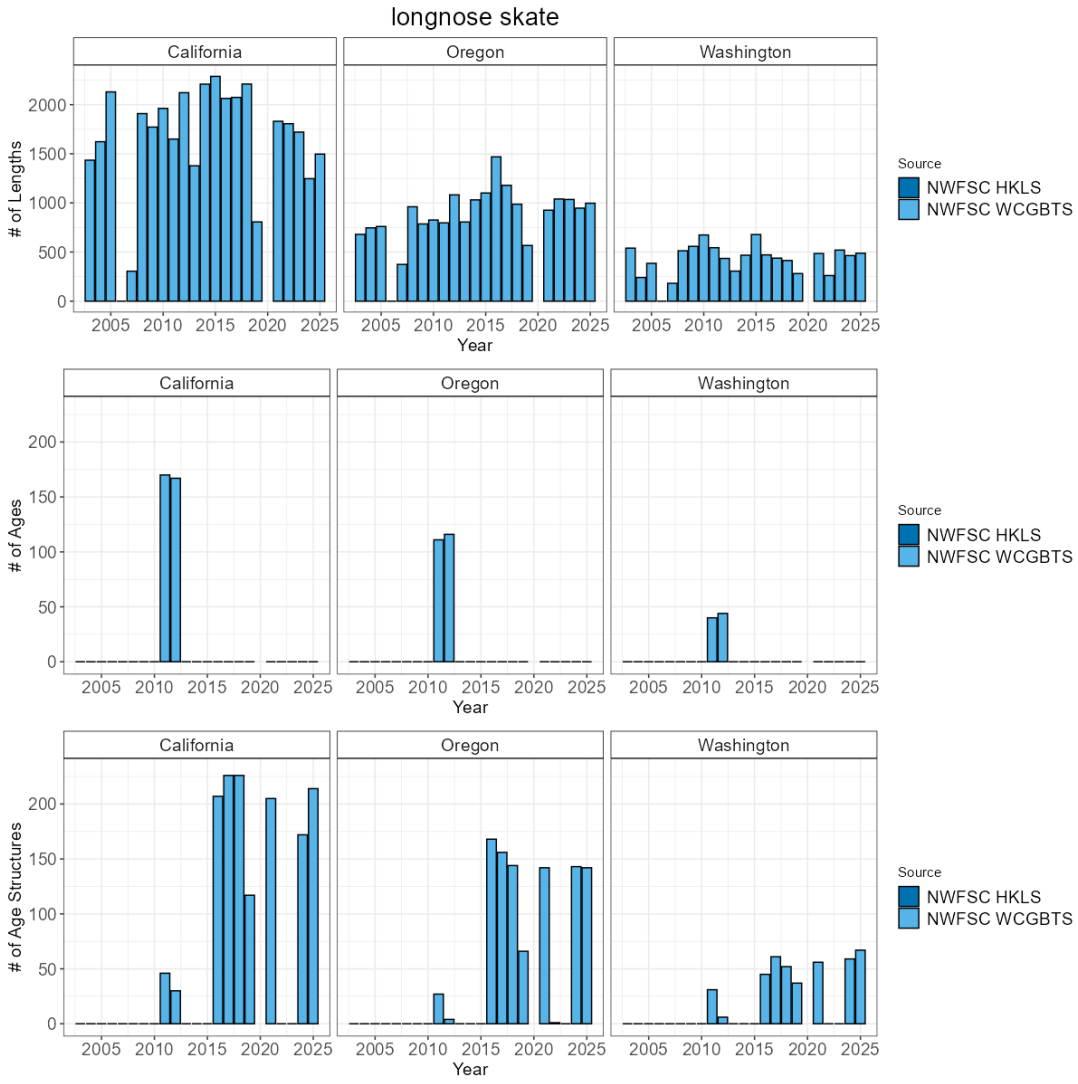

Figure 99: Total number of available lengths, read ages, and unread age structures by data source by year for longnose skate. Note the y-axis maximum may differ by data type.

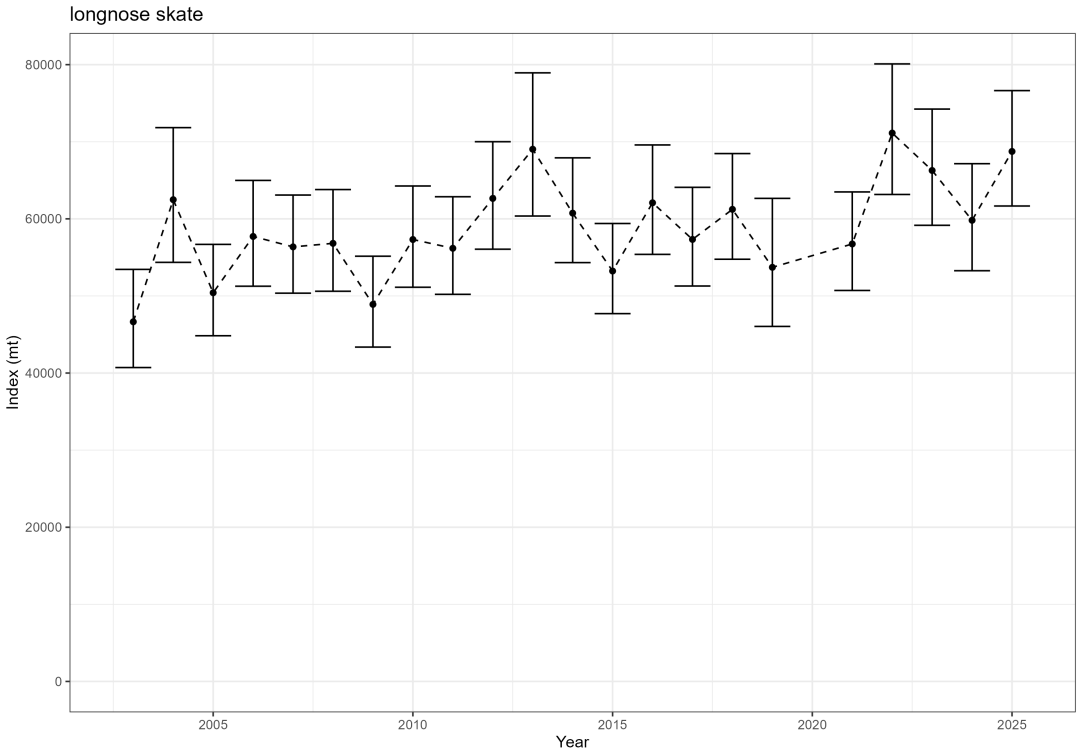

Figure 100: Estimated relative index of abundance for longnose skate from the NWFSC WCGBTS.

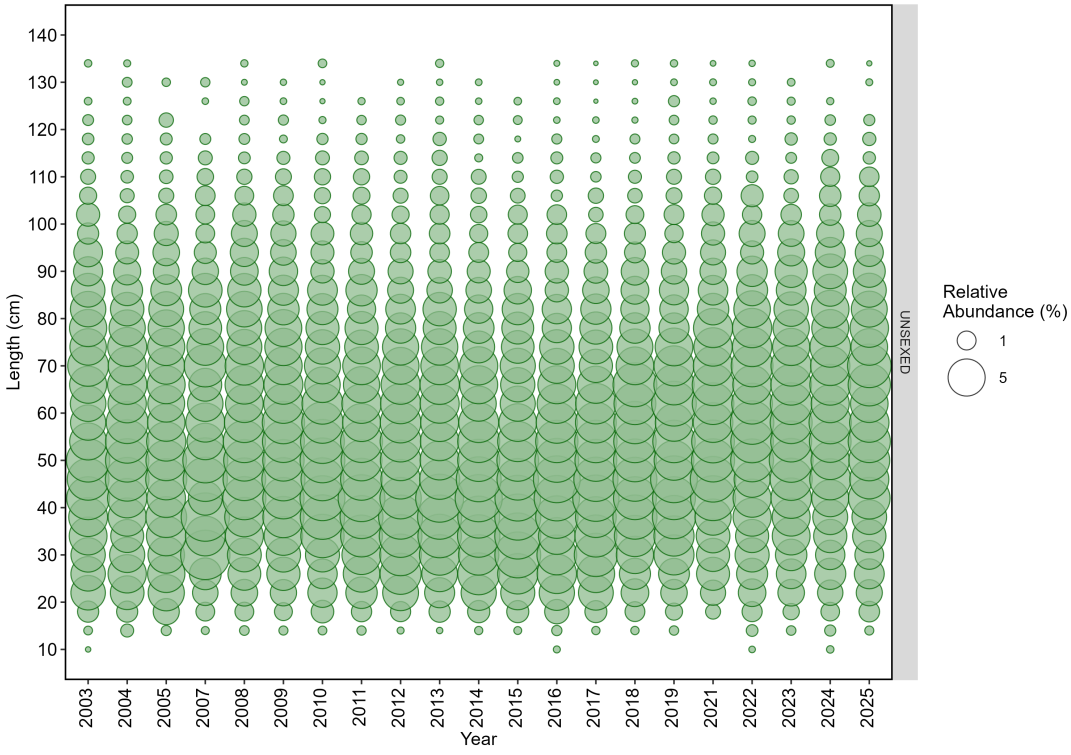

Figure 101: Length (cm) compostion data from the NWFSC WCGBTS for longnose skate. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.18 Pacific cod

To date, no assessment or analysis has been conducted on Pacific cod. Across available data, Pacific cod have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed Pacific cod on an average of 28 tows per year. For this species, a total of 125 maturity samples have been collected coastwide (regardless of stock area), with 0 read maturities.

Table 29: Total number of available lengths, read ages, and unread age structures by data source and state for Pacific cod.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	14	0	0
Oregon	NWFSC WCGBTS	515	0	219
Washington	NWFSC WCGBTS	3,852	0	1,413

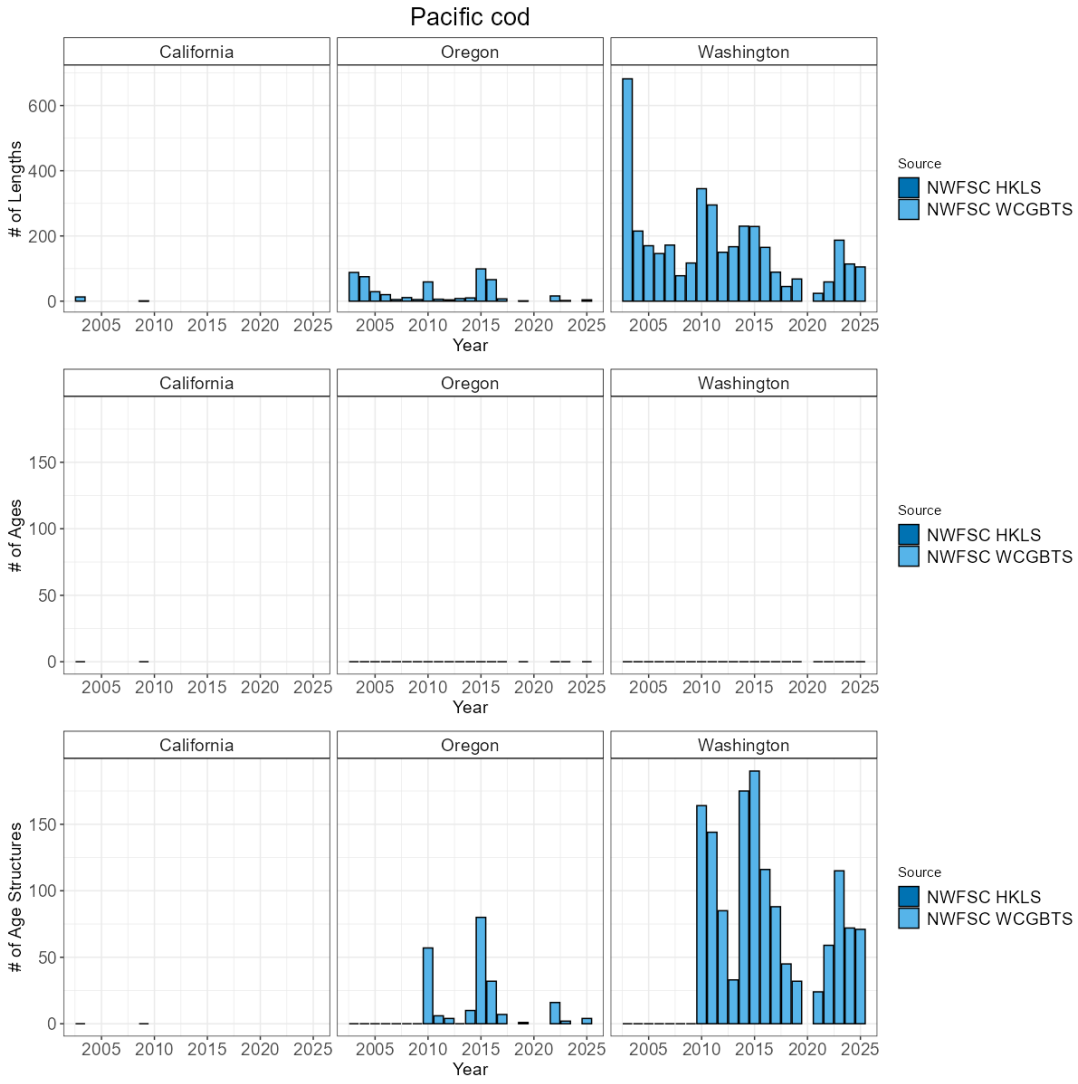

Figure 102: Total number of available lengths, read ages, and unread age structures by data source by year for Pacific cod. Note the y-axis maximum may differ by data type.

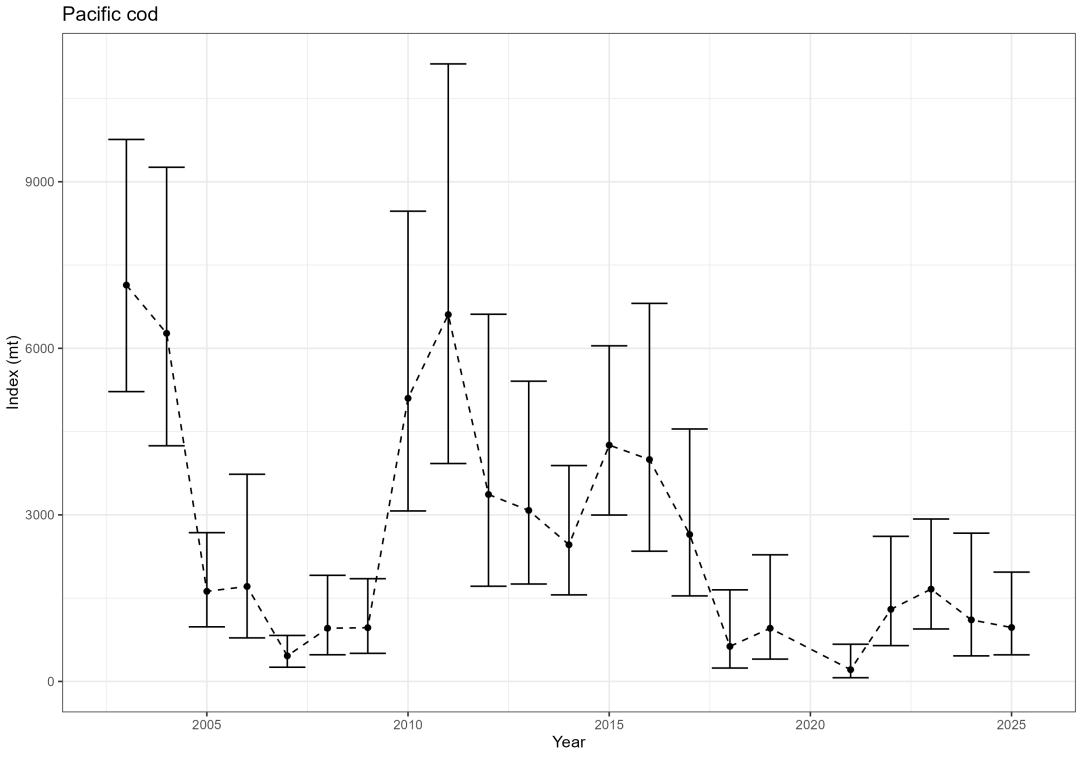

Figure 103: Estimated relative index of abundance for Pacific cod from the NWFSC WCGBTS.

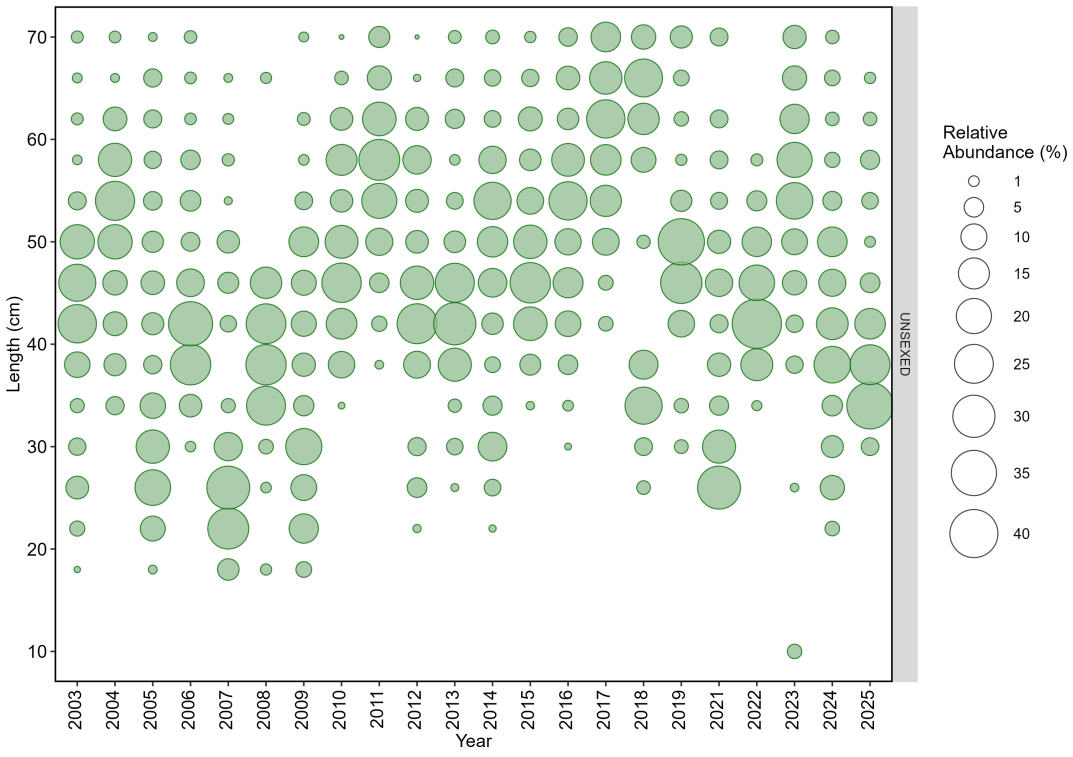

Figure 104: Length (cm) compostion data from the NWFSC WCGBTS for Pacific cod. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.19 Pacific ocean perch

The most recent assessment of Pacific ocean perch was a benchmark assessment conducted in 2017. Across available data, Pacific ocean perch have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed Pacific ocean perch on an average of 48 tows per year. For this species, a total of 583 maturity samples have been collected coastwide (regardless of stock area), with 583 read maturities.

Table 30: Total number of available lengths, read ages, and unread age structures by data source and state for Pacific ocean perch.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	254	78	175
Oregon	NWFSC WCGBTS	10,249	3,061	4,198
Washington	NWFSC WCGBTS	8,268	2,743	2,089

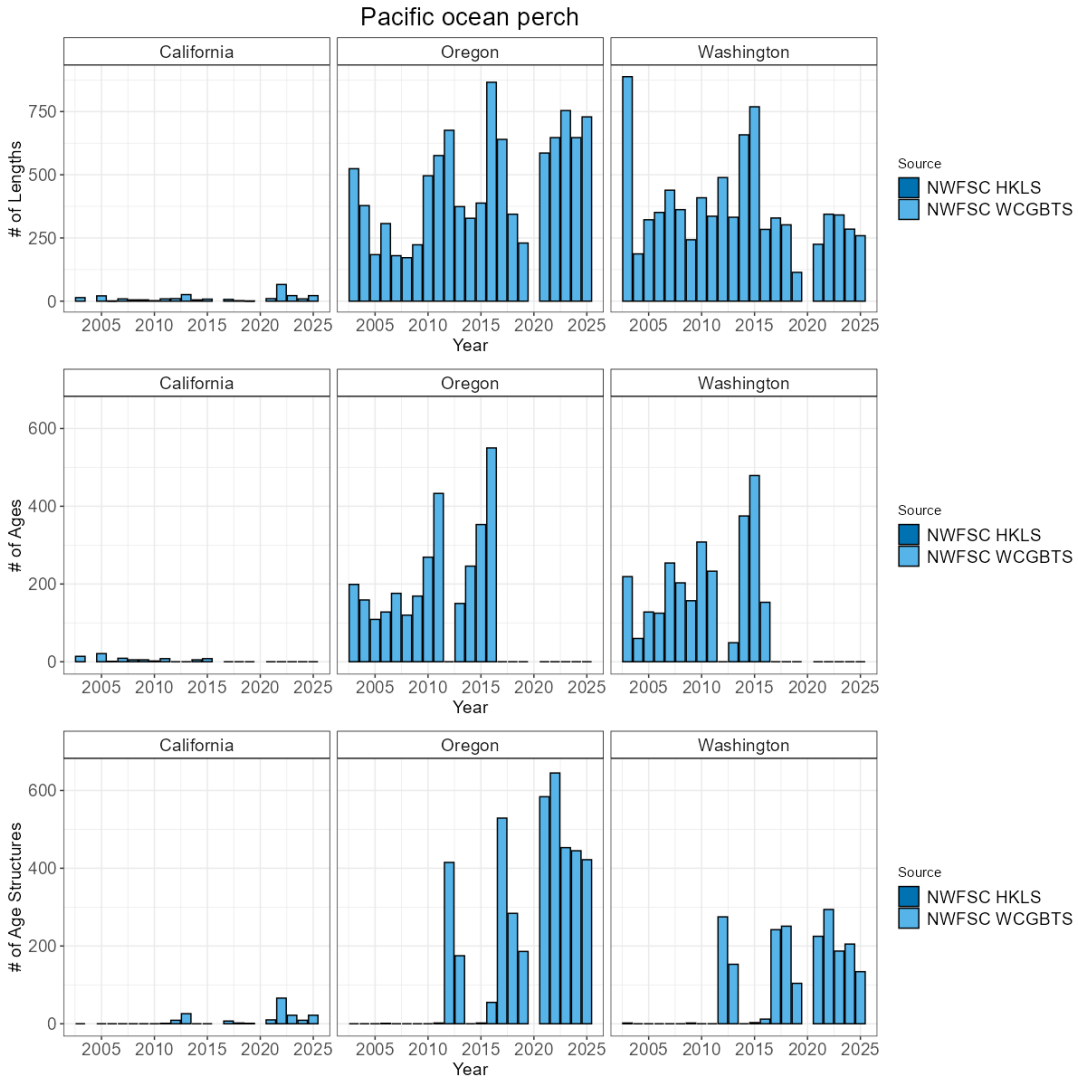

Figure 105: Total number of available lengths, read ages, and unread age structures by data source by year for Pacific ocean perch. Note the y-axis maximum may differ by data type.

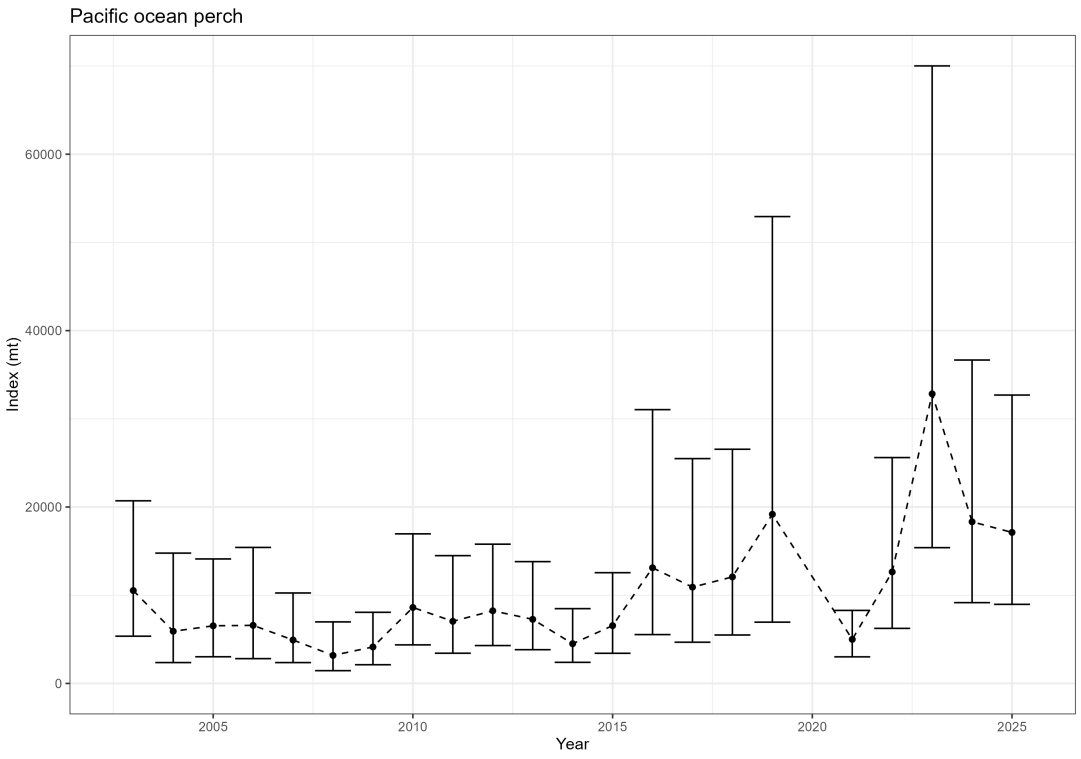

Figure 106: Estimated relative index of abundance for Pacific ocean perch from the NWFSC WCGBTS.

Figure 107: Length (cm) compostion data from the NWFSC WCGBTS for Pacific ocean perch. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.20 Pacific sanddab

To date, no assessment or analysis has been conducted on Pacific sanddab. Across available data, Pacific sanddab have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed Pacific sanddab on an average of 209 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 31: Total number of available lengths, read ages, and unread age structures by data source and state for Pacific sanddab.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	55,101	4,722	4,199
Oregon	NWFSC WCGBTS	28,359	2,374	2,311
Washington	NWFSC WCGBTS	10,908	874	973

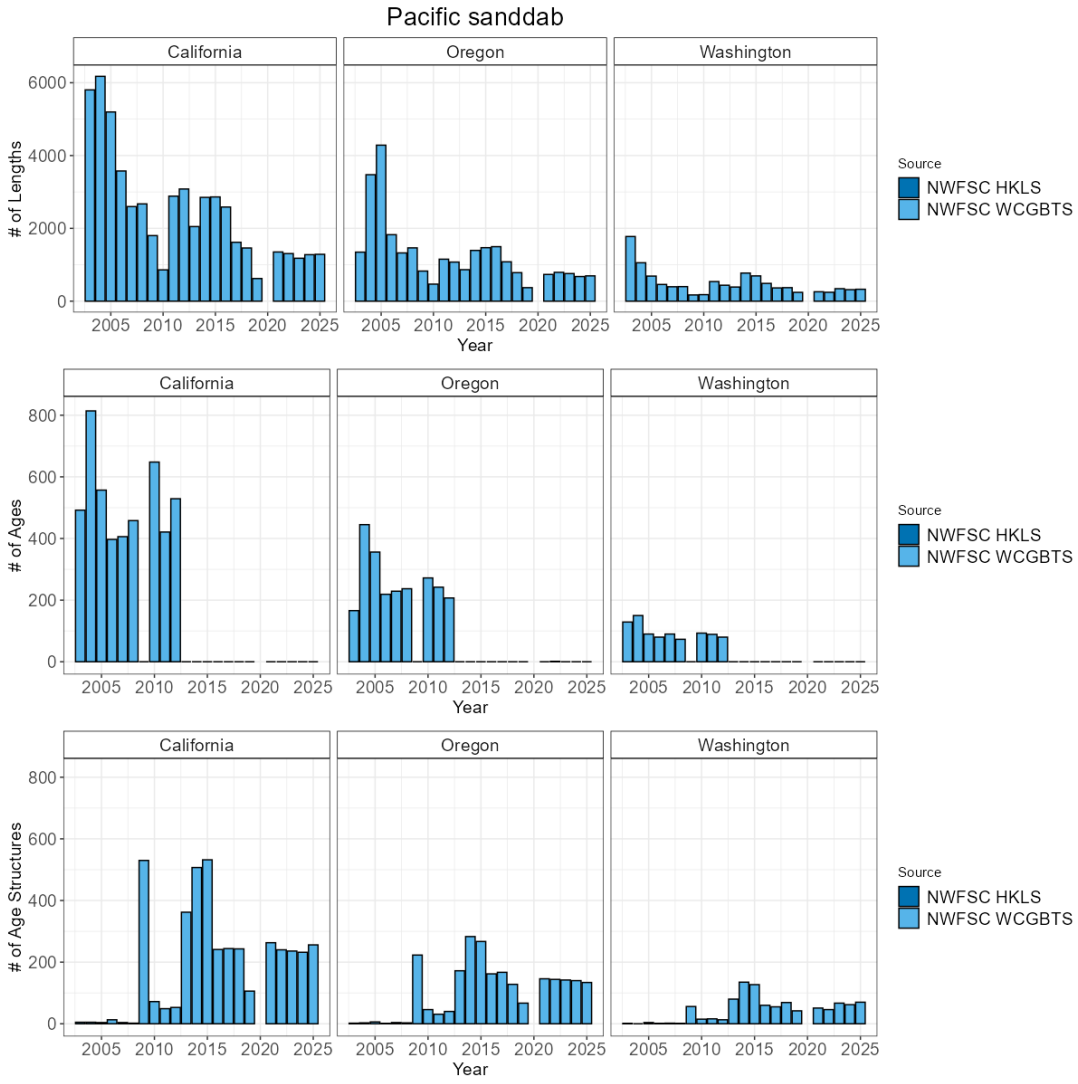

Figure 108: Total number of available lengths, read ages, and unread age structures by data source by year for Pacific sanddab. Note the y-axis maximum may differ by data type.

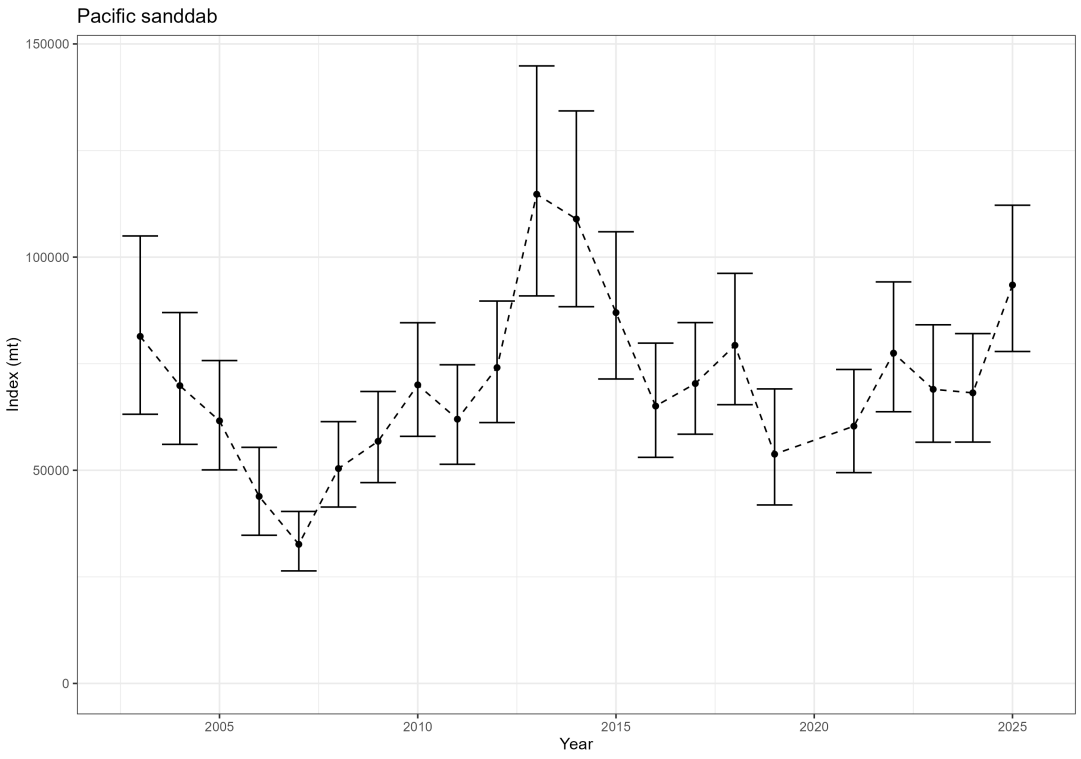

Figure 109: Estimated relative index of abundance for Pacific sanddab from the NWFSC WCGBTS.

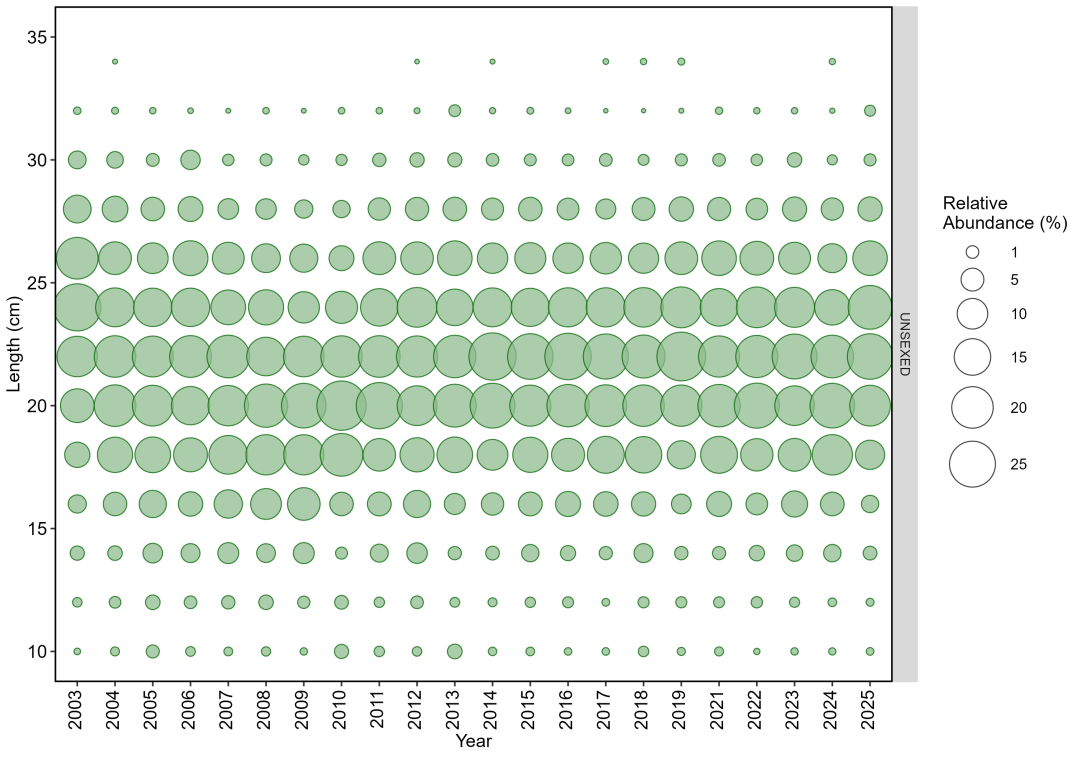

Figure 110: Length (cm) compostion data from the NWFSC WCGBTS for Pacific sanddab. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.21 Quillback rockfish

The most recent assessment of quillback rockfish was a data-moderate assessment conducted in 2021. Across available data, quillback rockfish have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed quillback rockfish on an average of 4 tows per year. For this species, a total of 167 maturity samples have been collected coastwide (regardless of stock area), with 162 read maturities.

ODFW scientists have conducted research looking at the influences of hypoxia on the catch per unit effort for quillback rockfish.

Table 32: Total number of available lengths, read ages, and unread age structures by data source and state for quillback rockfish.

State	Source	Lengths	Ages	Age Structures
Oregon	NWFSC WCGBTS	133	89	27
Washington	NWFSC WCGBTS	107	75	11

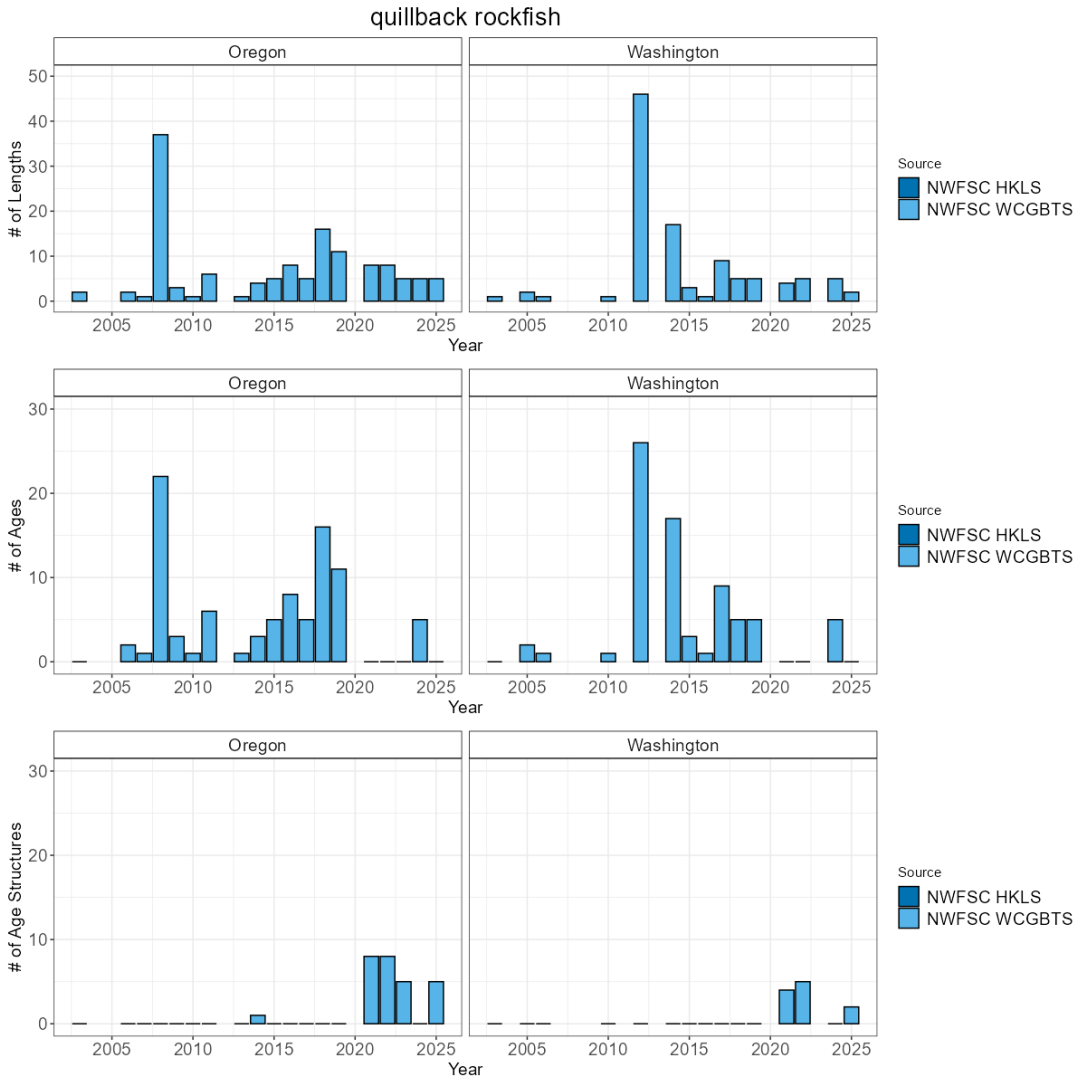

Figure 111: Total number of available lengths, read ages, and unread age structures by data source by year for quillback rockfish. Note the y-axis maximum may differ by data type.

4.22 Redstripe rockfish

To date, no assessment or analysis has been conducted on redstripe rockfish. Across available data, redstripe rockfish have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed redstripe rockfish on an average of 12 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 33: Total number of available lengths, read ages, and unread age structures by data source and state for redstripe rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	348	0	199
Oregon	NWFSC WCGBTS	4,204	0	1,901
Washington	NWFSC WCGBTS	3,331	0	1,701

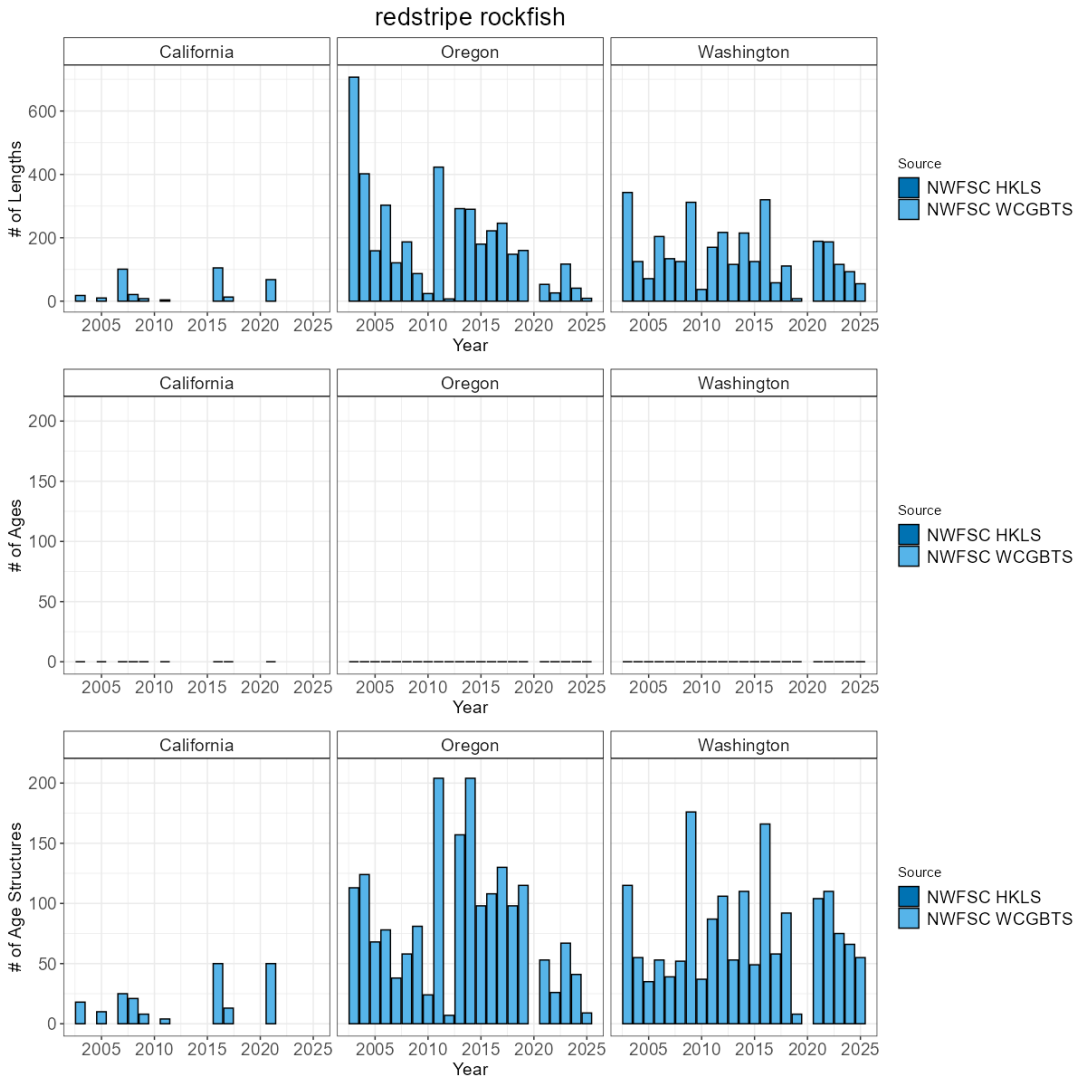

Figure 112: Total number of available lengths, read ages, and unread age structures by data source by year for redstripe rockfish. Note the y-axis maximum may differ by data type.

4.23 Rex sole

The most recent assessment of rex sole was a data-moderate assessment conducted in 2023. Across available data, rex sole have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed rex sole on an average of 387 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 34: Total number of available lengths, read ages, and unread age structures by data source and state for rex sole.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	59,213	273	5,082
Oregon	NWFSC WCGBTS	69,896	208	4,874
Washington	NWFSC WCGBTS	25,890	140	1,992

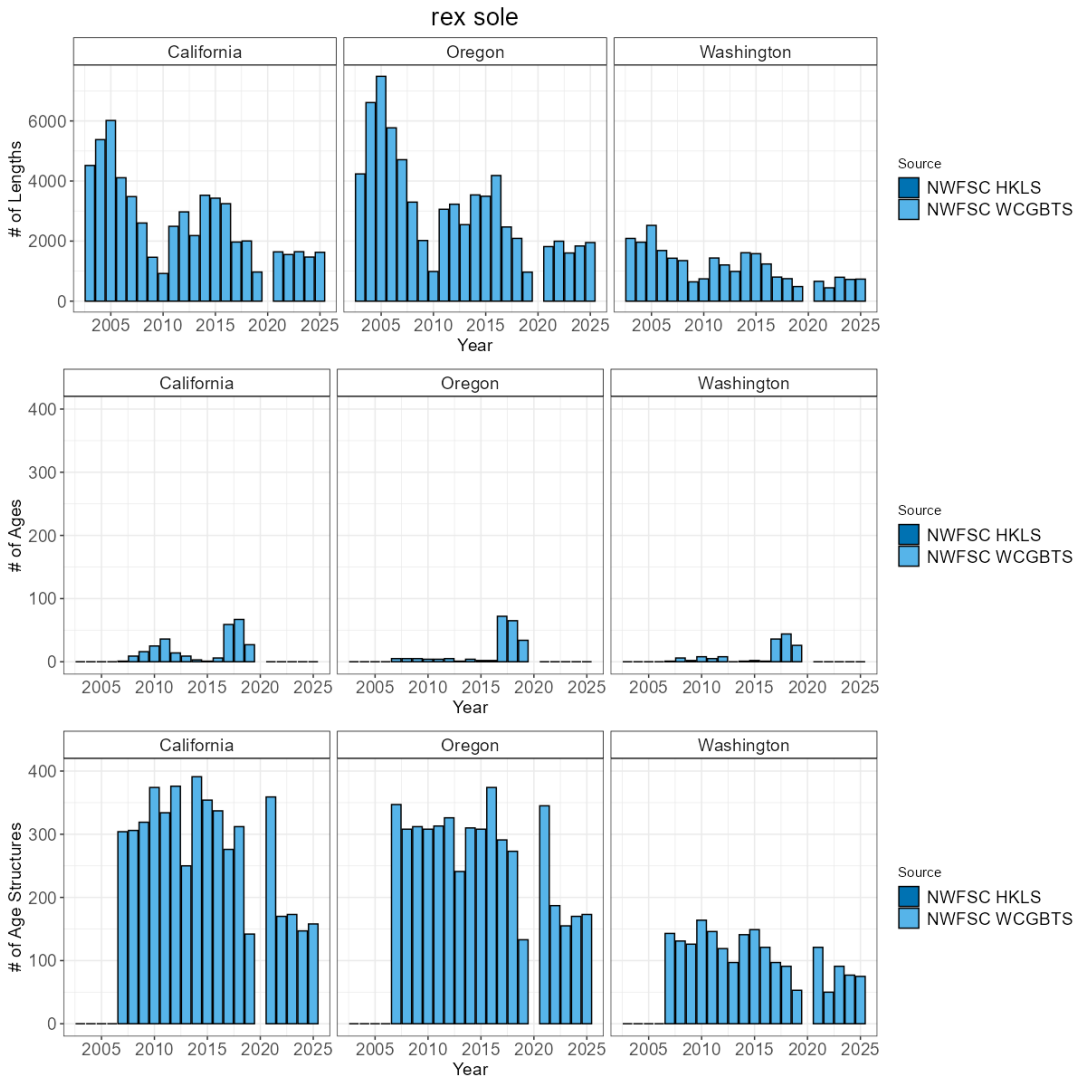

Figure 113: Total number of available lengths, read ages, and unread age structures by data source by year for rex sole. Note the y-axis maximum may differ by data type.

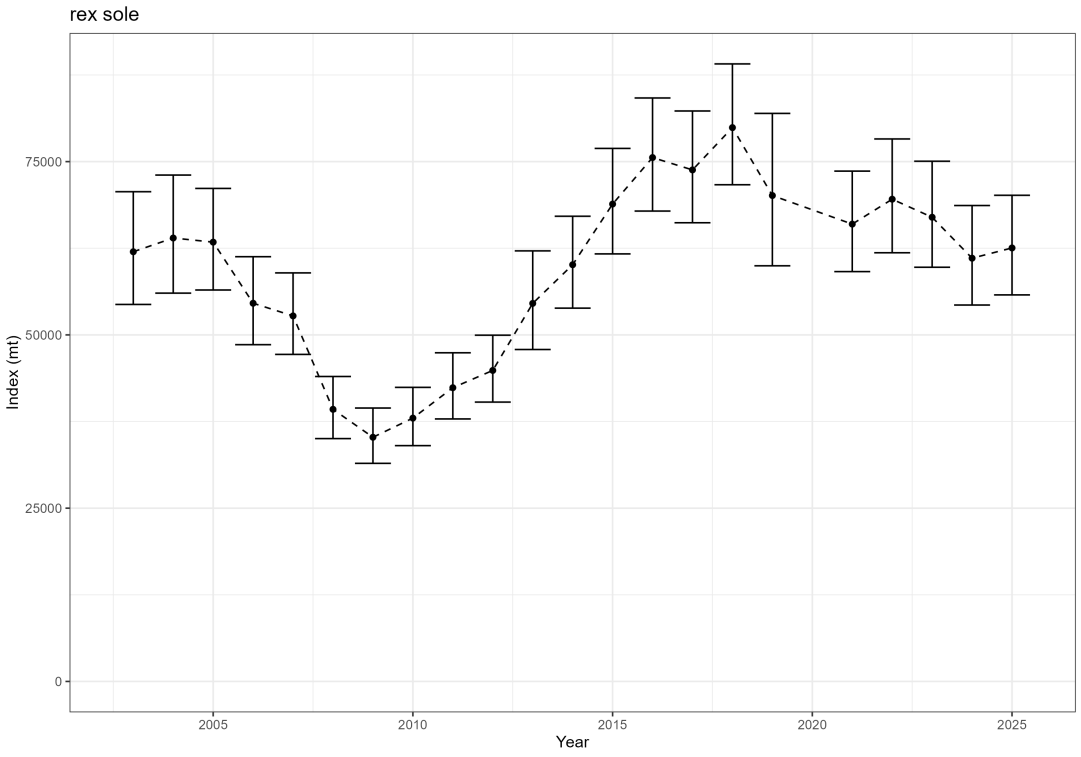

Figure 114: Estimated relative index of abundance for rex sole from the NWFSC WCGBTS.

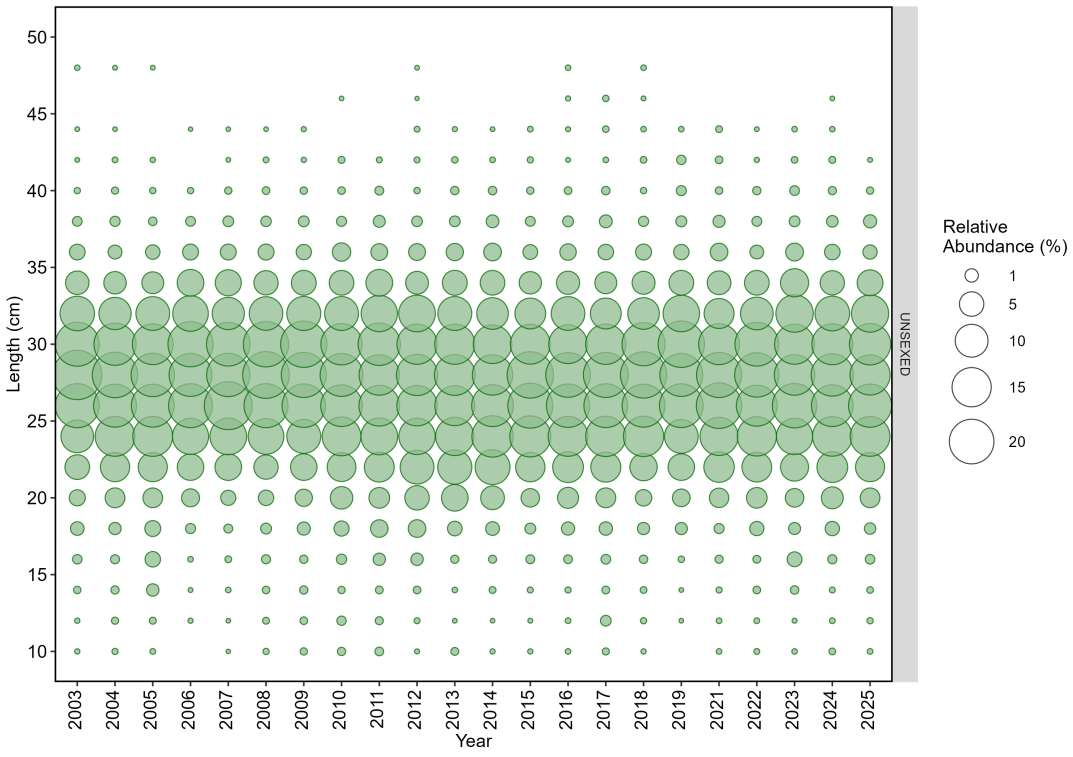

Figure 115: Length (cm) compostion data from the NWFSC WCGBTS for rex sole. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.24 Rosethorn rockfish

To date, no assessment or analysis has been conducted on rosethorn rockfish. Across available data, rosethorn rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed rosethorn rockfish on an average of 0 set per year. The NWFSC WCGBTS observed rosethorn rockfish on an average of 48 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 35: Total number of available lengths, read ages, and unread age structures by data source and state for rosethorn rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	36	0	27
California	NWFSC WCGBTS	3,103	0	1,561
Oregon	NWFSC WCGBTS	10,552	0	4,359
Washington	NWFSC WCGBTS	6,906	0	2,893

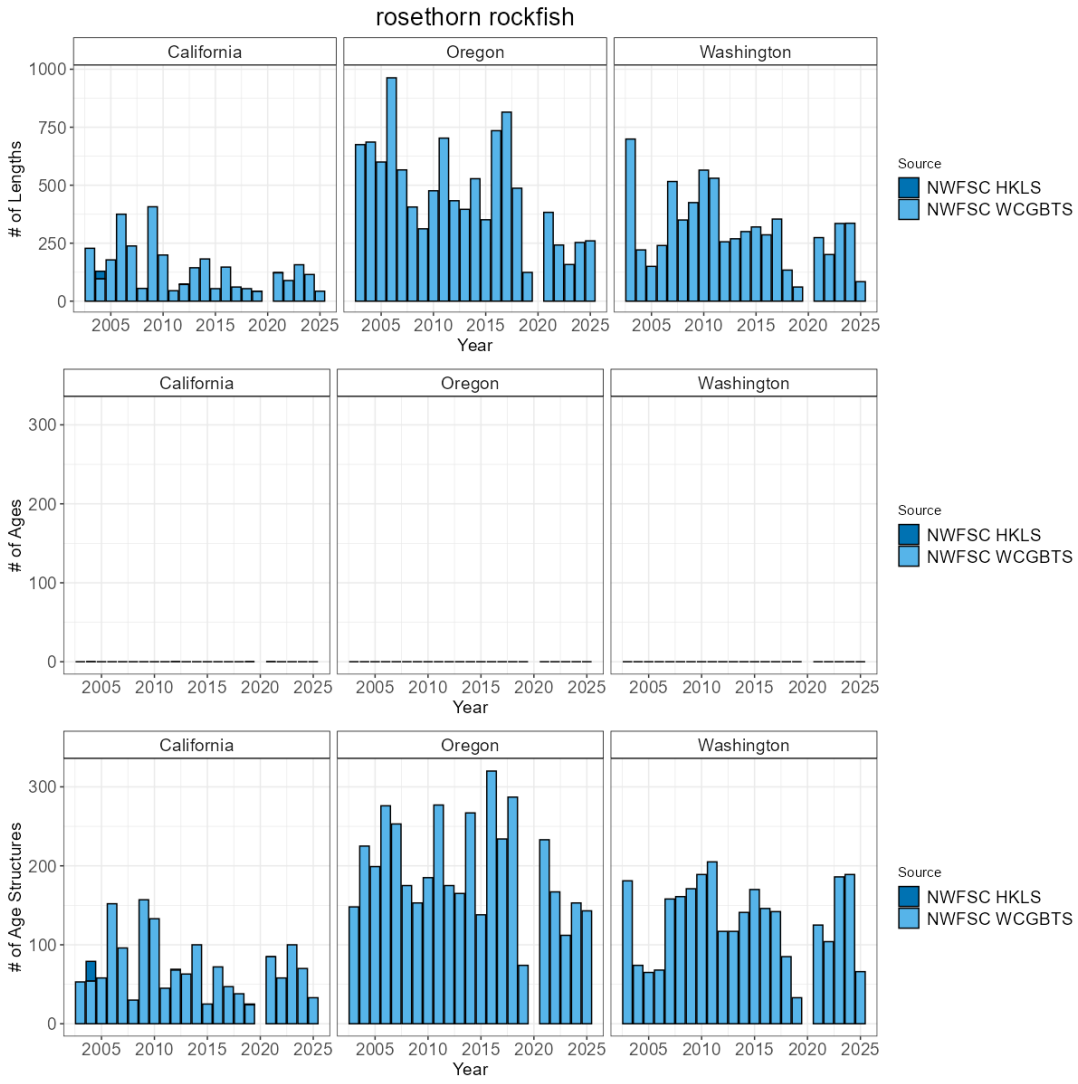

Figure 116: Total number of available lengths, read ages, and unread age structures by data source by year for rosethorn rockfish. Note the y-axis maximum may differ by data type.

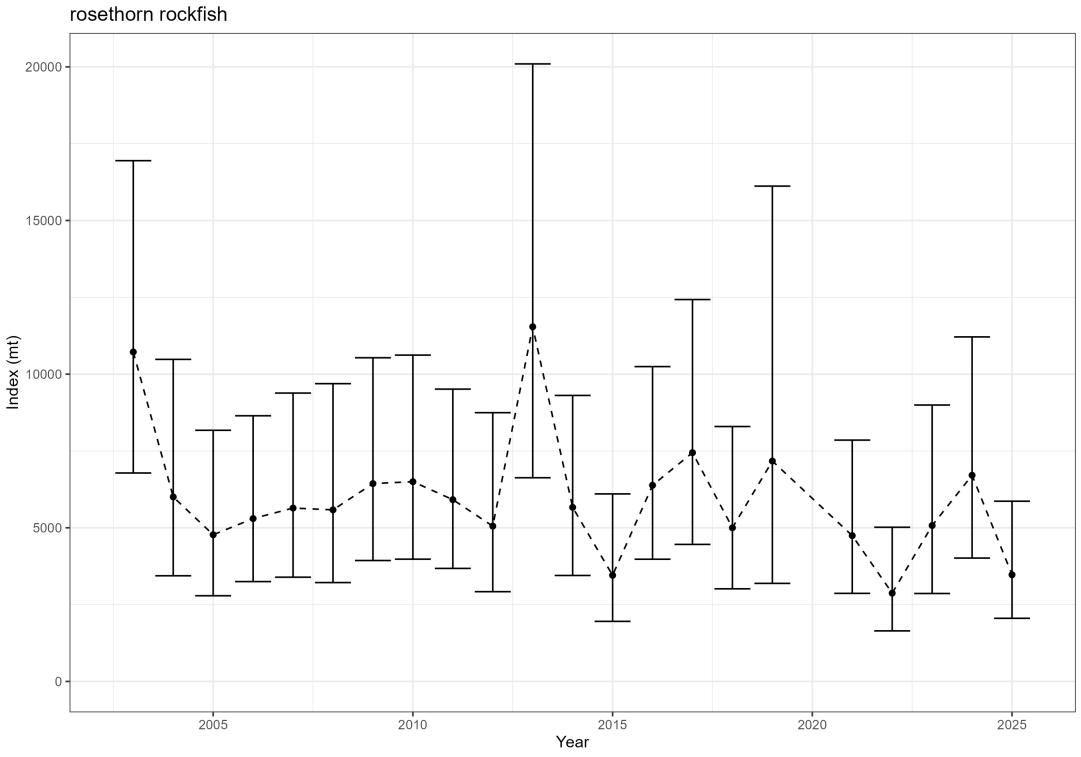

Figure 117: Estimated relative index of abundance for rosethorn rockfish from the NWFSC WCGBTS.

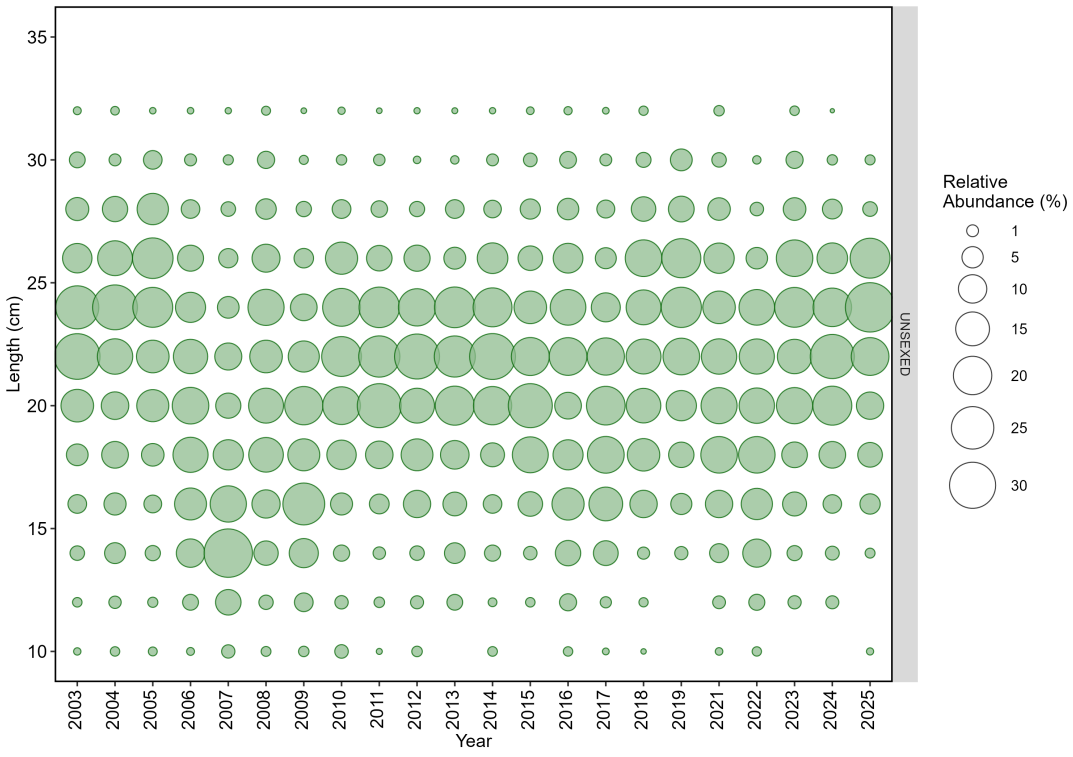

Figure 118: Length (cm) compostion data from the NWFSC WCGBTS for rosethorn rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.25 Rougheye and blackspotted rockfish

The most recent assessment of rougheye and blackspotted rockfish was a benchmark assessment conducted in 2025. Across available data, rougheye and blackspotted rockfish have been observed and sampled by the NWFSC WCGBTS. The NWFSC HKLS observed rougheye and blackspotted rockfish on an average of 0 set per year. The NWFSC WCGBTS observed rougheye and blackspotted rockfish on an average of 27 tows per year. For this species, a total of 549 maturity samples have been collected coastwide (regardless of stock area), with 549 read maturities.

Table 36: Total number of available lengths, read ages, and unread age structures by data source and state for rougheye and blackspotted rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	1	0	1
California	NWFSC WCGBTS	17	13	3
Oregon	NWFSC WCGBTS	1,075	855	55
Washington	NWFSC WCGBTS	1,197	1,003	47

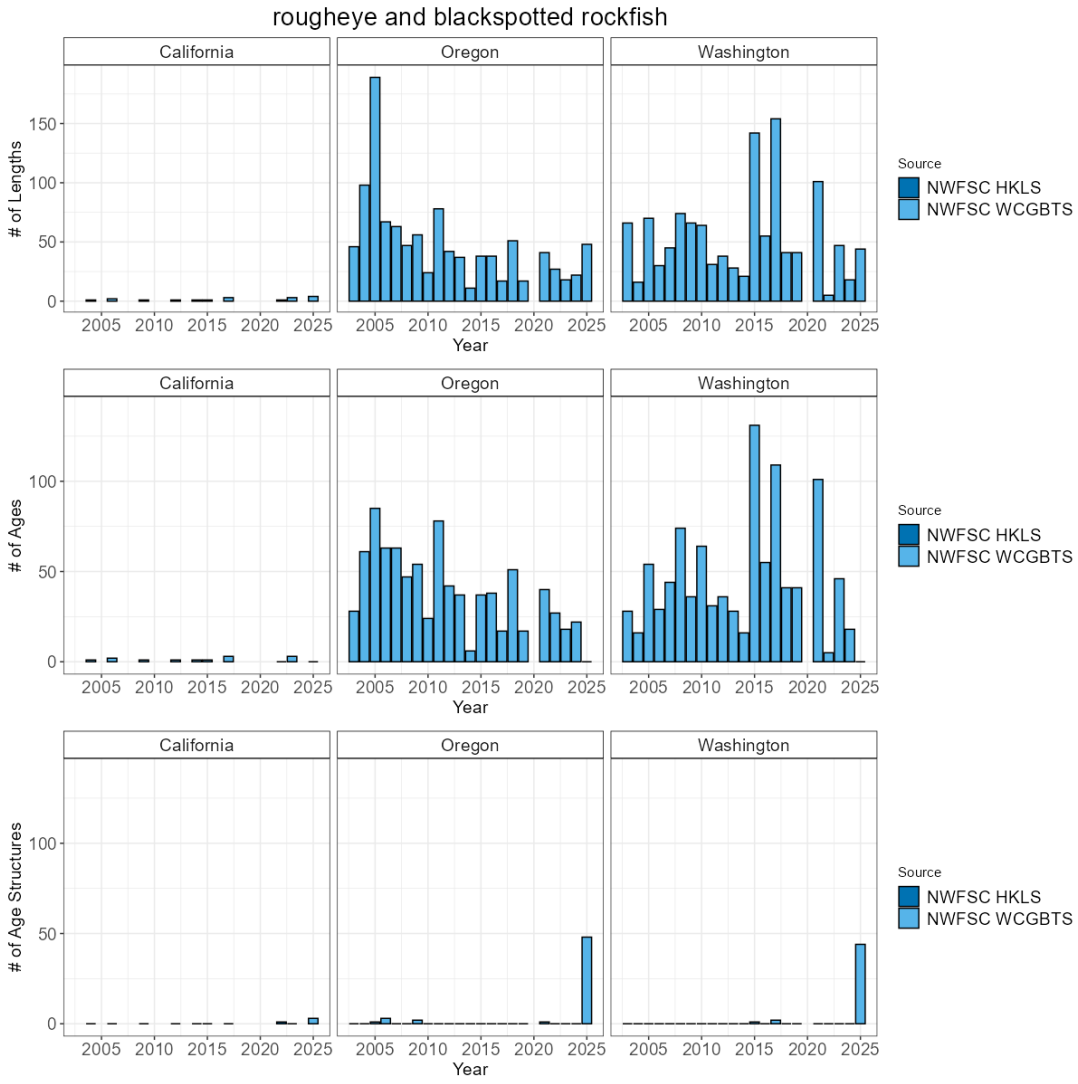

Figure 119: Total number of available lengths, read ages, and unread age structures by data source by year for rougheye and blackspotted rockfish. Note the y-axis maximum may differ by data type.

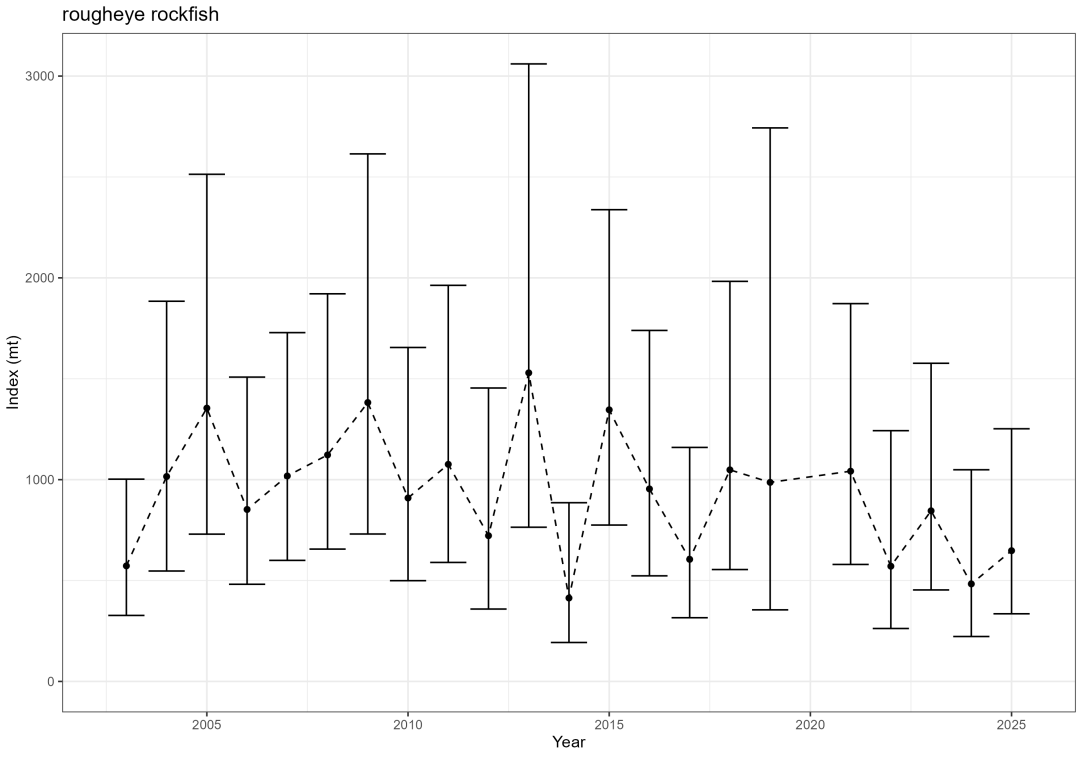

Figure 120: Estimated relative index of abundance for rougheye and blackspotted rockfish from the NWFSC WCGBTS.

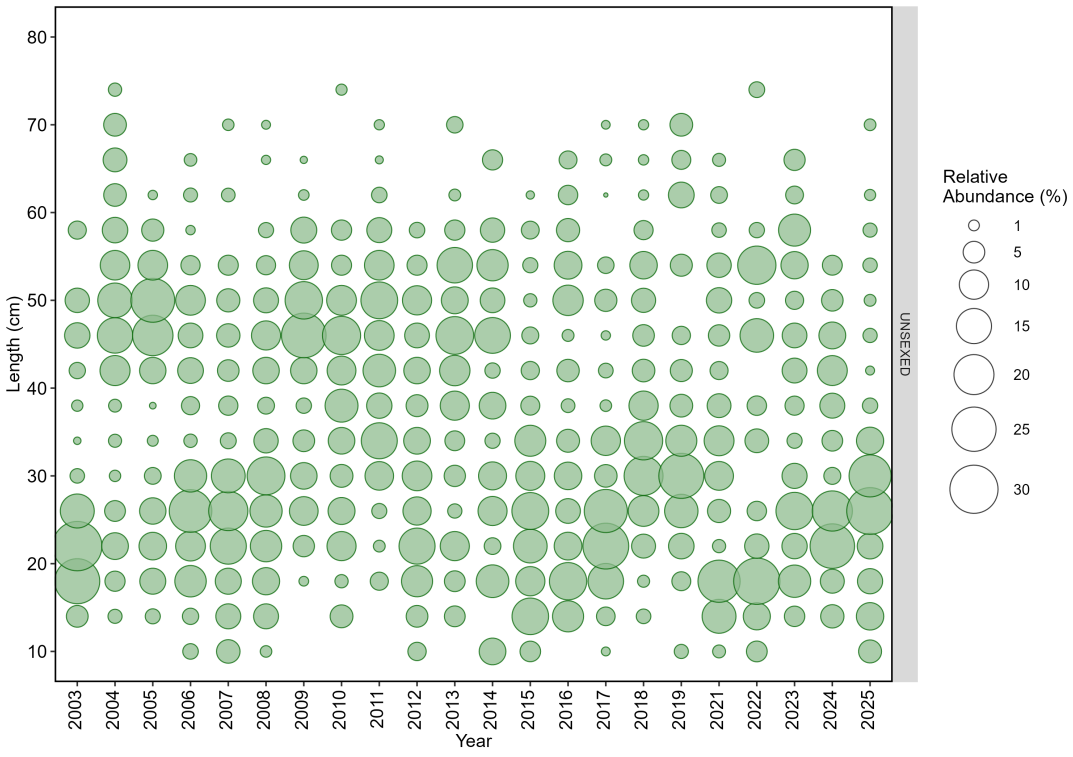

Figure 121: Length (cm) compostion data from the NWFSC WCGBTS for rougheye and blackspotted rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.26 Sablefish

The most recent assessment of sablefish was a benchmark assessment conducted in 2025. Across available data, sablefish have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed sablefish on an average of 427 tows per year. For this species, a total of 1312 maturity samples have been collected coastwide (regardless of stock area), with 1157 read maturities.

Table 37: Total number of available lengths, read ages, and unread age structures by data source and state for sablefish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	53,722	13,650	6,899
Oregon	NWFSC WCGBTS	39,178	9,952	4,880
Washington	NWFSC WCGBTS	14,048	3,931	1,774

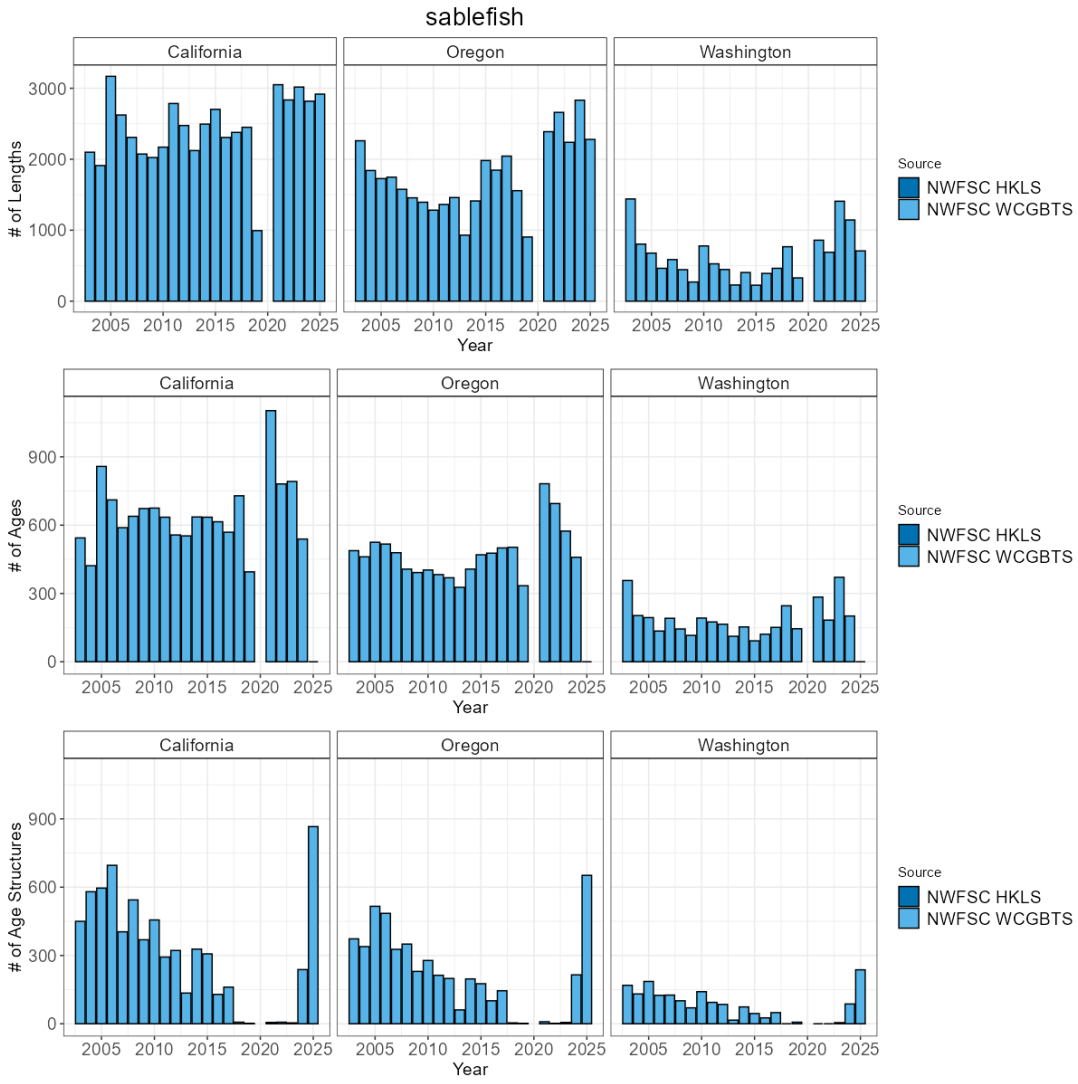

Figure 122: Total number of available lengths, read ages, and unread age structures by data source by year for sablefish. Note the y-axis maximum may differ by data type.

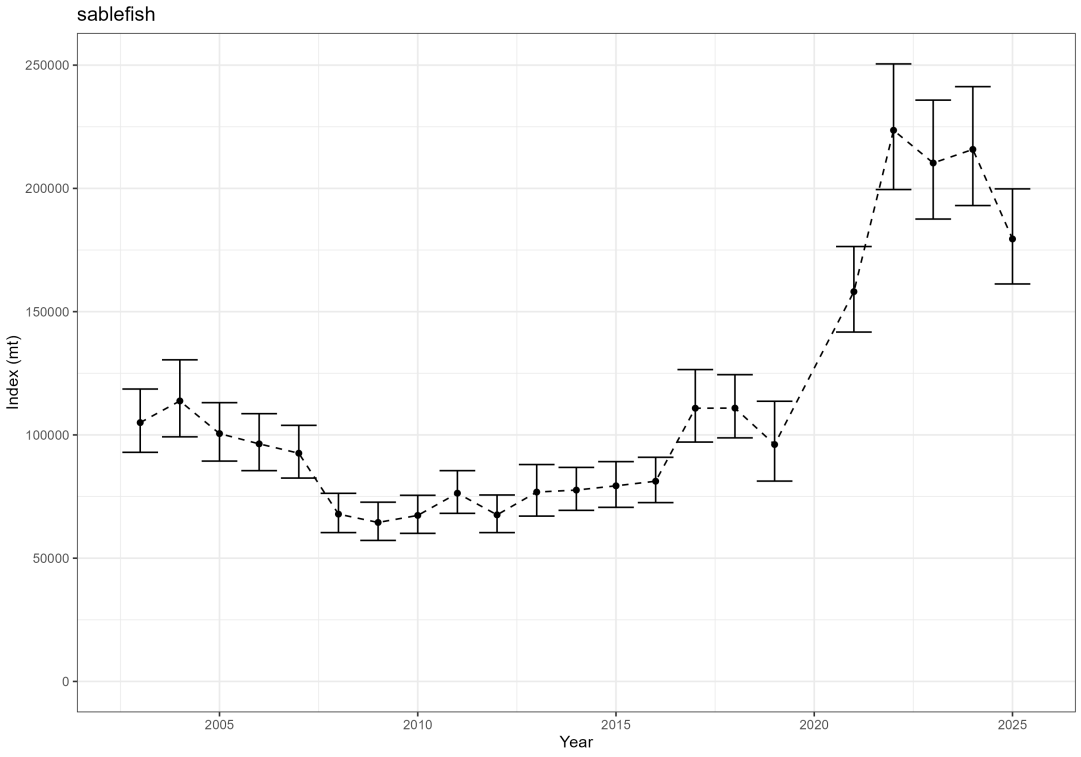

Figure 123: Estimated relative index of abundance for sablefish from the NWFSC WCGBTS.

Figure 124: Length (cm) compostion data from the NWFSC WCGBTS for sablefish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.27 Sharpchin rockfish

The most recent assessment of sharpchin rockfish was a data-moderate assessment conducted in 2013. Across available data, sharpchin rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed sharpchin rockfish on an average of 0 set per year. The NWFSC WCGBTS observed sharpchin rockfish on an average of 43 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 38: Total number of available lengths, read ages, and unread age structures by data source and state for sharpchin rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	13	0	13
California	NWFSC WCGBTS	3,842	0	1,958
Oregon	NWFSC WCGBTS	10,417	0	4,350
Washington	NWFSC WCGBTS	7,048	0	3,200

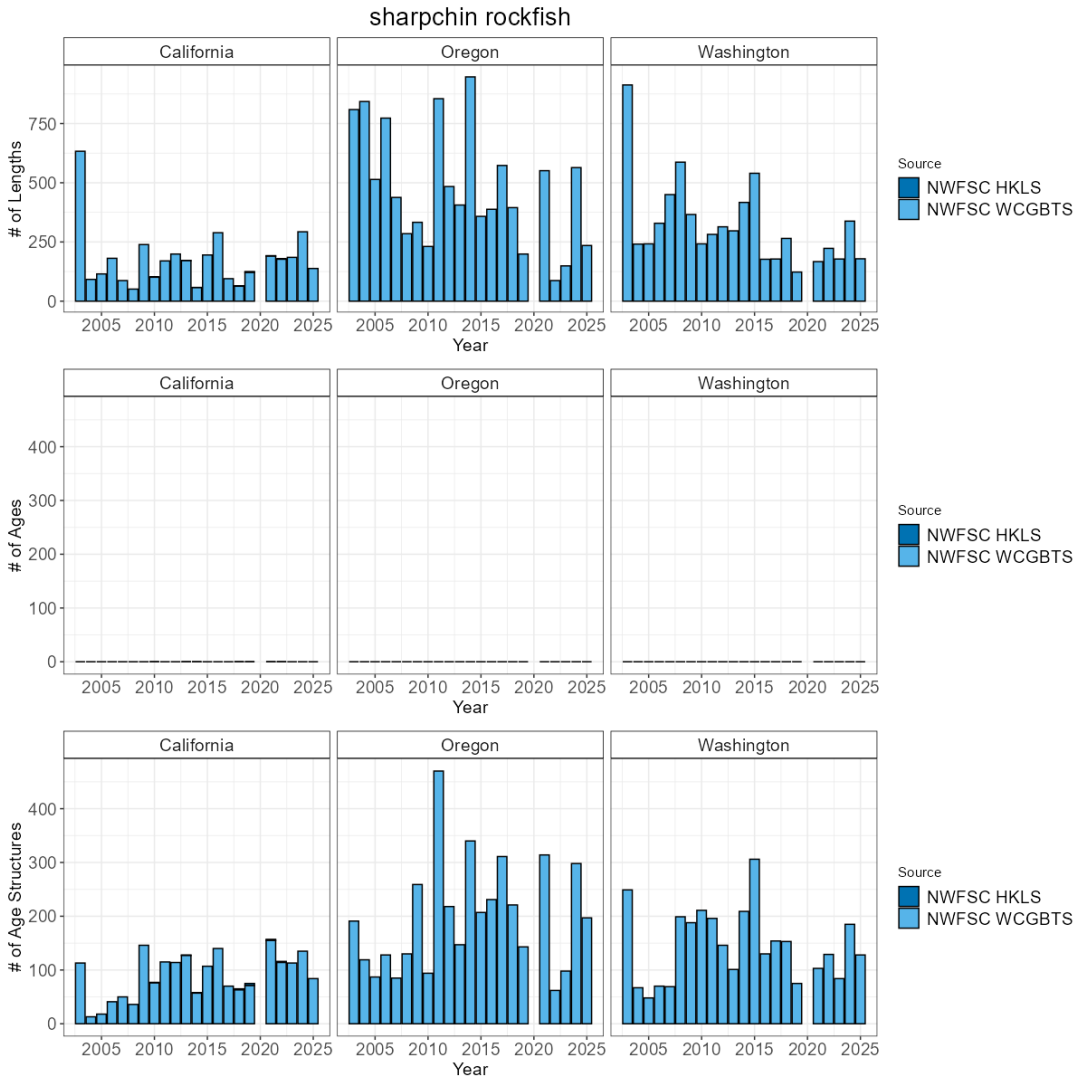

Figure 125: Total number of available lengths, read ages, and unread age structures by data source by year for sharpchin rockfish. Note the y-axis maximum may differ by data type.

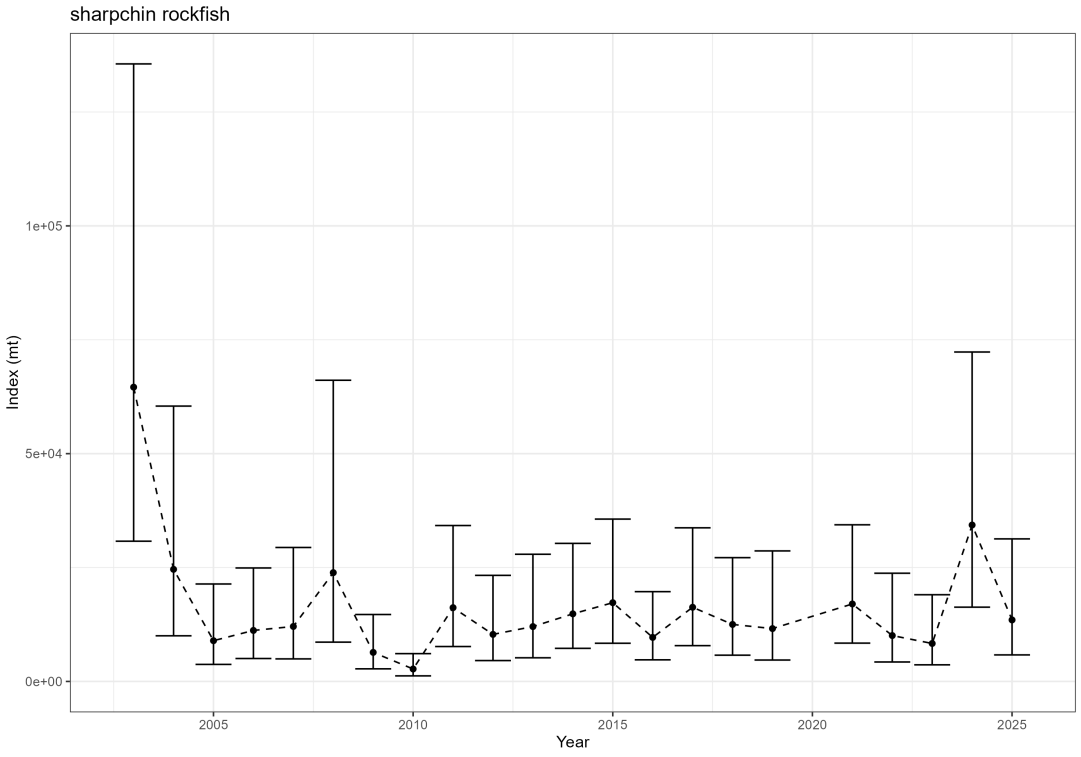

Figure 126: Estimated relative index of abundance for sharpchin rockfish from the NWFSC WCGBTS.

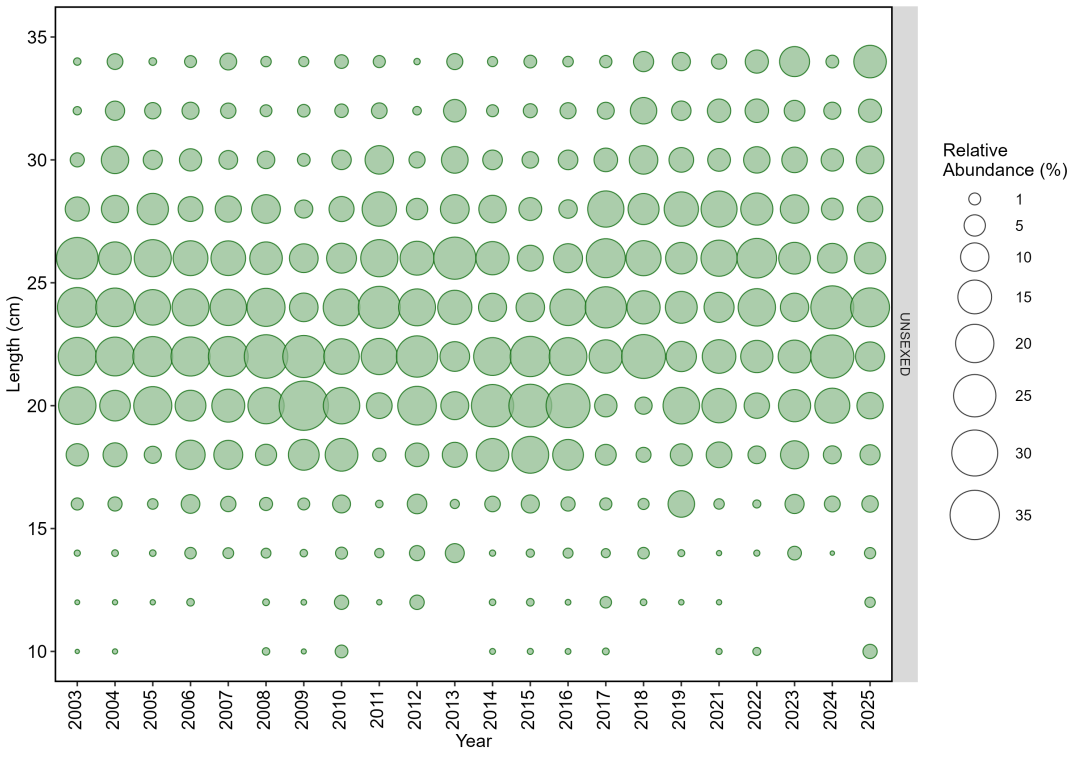

Figure 127: Length (cm) compostion data from the NWFSC WCGBTS for sharpchin rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.28 Silvergray rockfish

To date, no assessment or analysis has been conducted on silvergray rockfish. Across available data, silvergray rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed silvergray rockfish on an average of 0 set per year. The NWFSC WCGBTS observed silvergray rockfish on an average of 6 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 39: Total number of available lengths, read ages, and unread age structures by data source and state for silvergray rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	4	0	3
California	NWFSC WCGBTS	16	0	16
Oregon	NWFSC WCGBTS	492	0	404
Washington	NWFSC WCGBTS	455	0	428

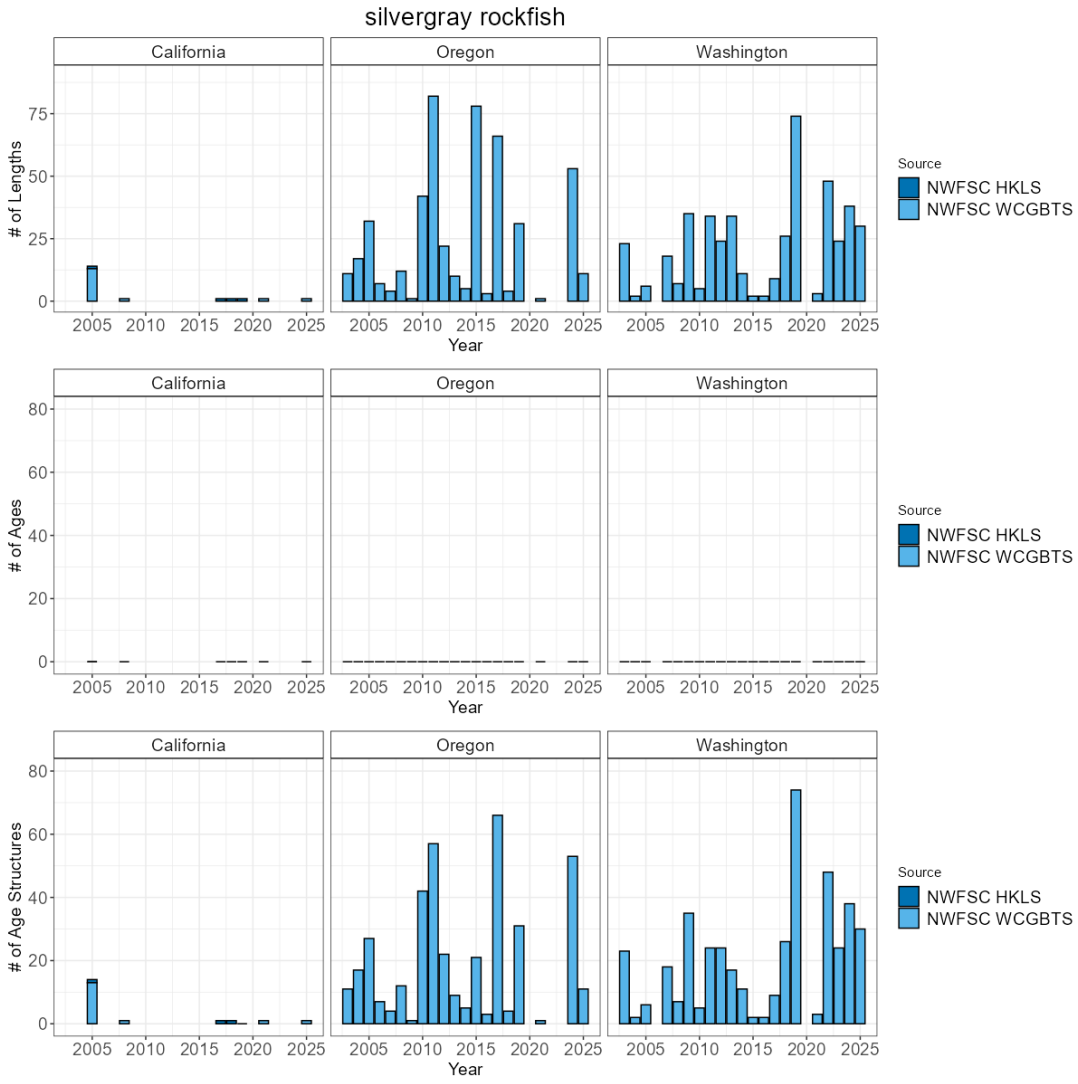

Figure 128: Total number of available lengths, read ages, and unread age structures by data source by year for silvergray rockfish. Note the y-axis maximum may differ by data type.

4.29 Splitnose rockfish

The most recent assessment of splitnose rockfish was a benchmark assessment conducted in 2009. Across available data, splitnose rockfish have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed splitnose rockfish on an average of 128 tows per year. For this species, a total of 0 maturity samples have been collected coastwide (regardless of stock area).

Table 40: Total number of available lengths, read ages, and unread age structures by data source and state for splitnose rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	34,562	1,573	6,339
Oregon	NWFSC WCGBTS	18,617	1,044	3,776
Washington	NWFSC WCGBTS	3,185	294	668

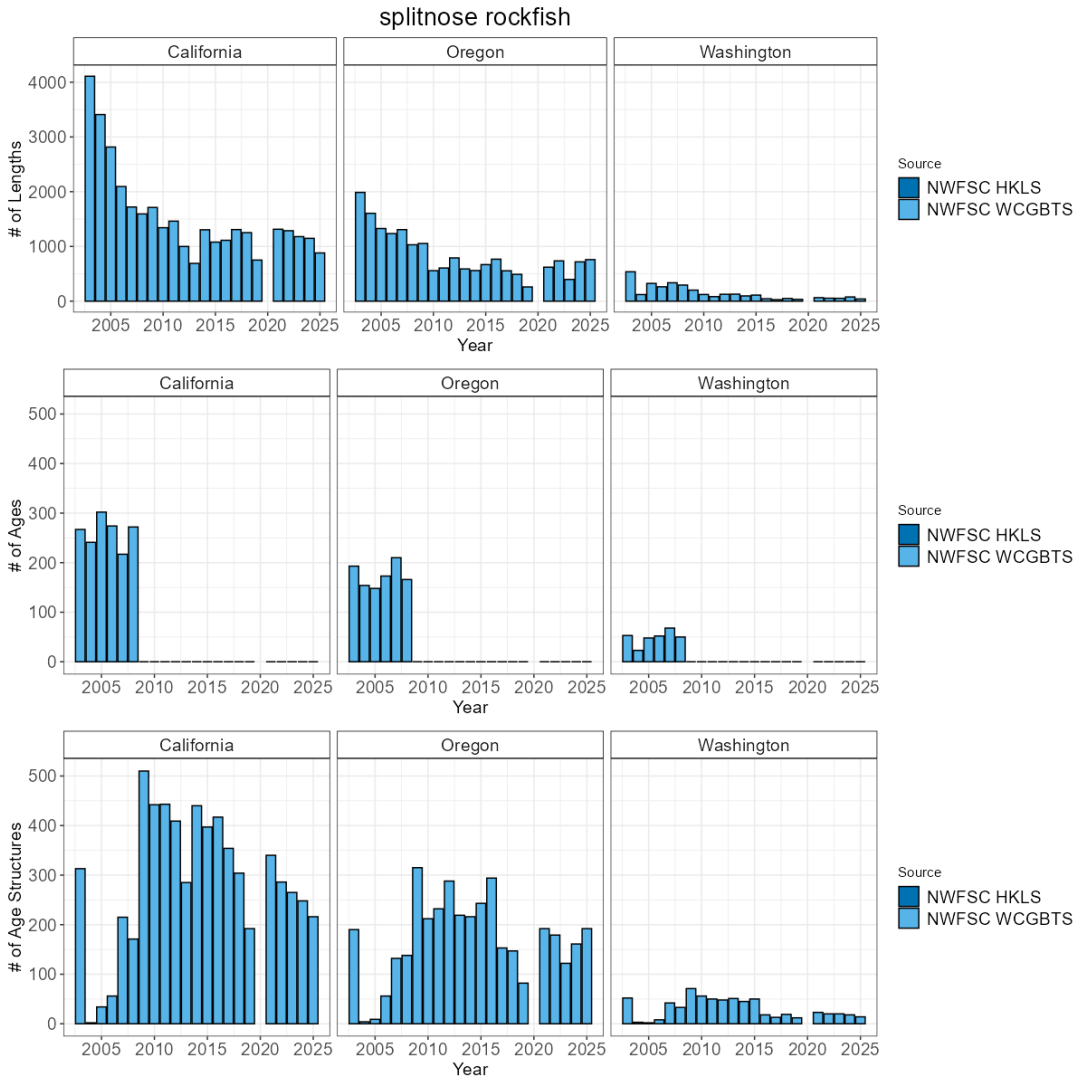

Figure 129: Total number of available lengths, read ages, and unread age structures by data source by year for splitnose rockfish. Note the y-axis maximum may differ by data type.

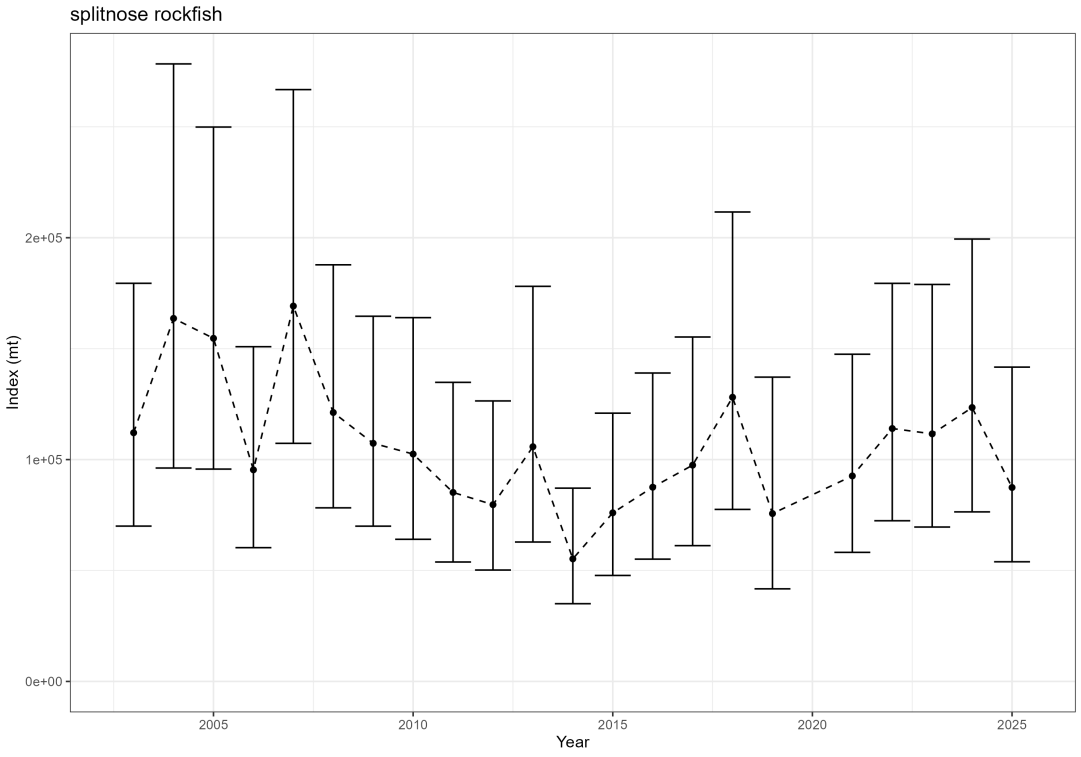

Figure 130: Estimated relative index of abundance for splitnose rockfish from the NWFSC WCGBTS.

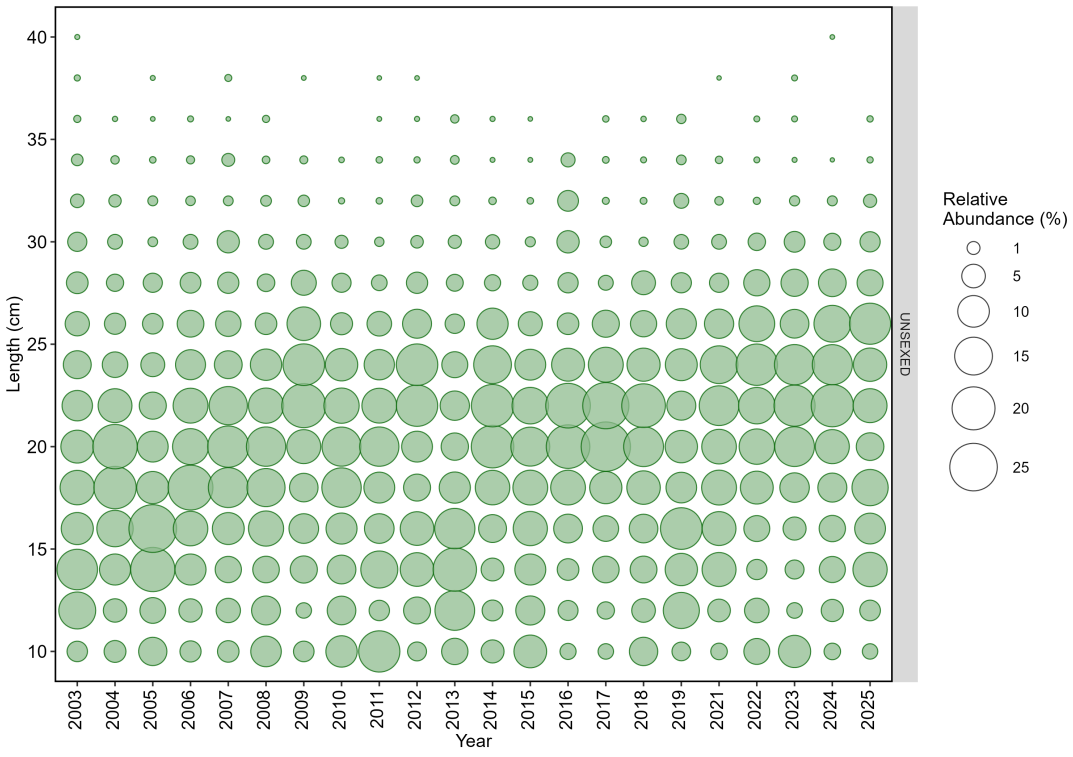

Figure 131: Length (cm) compostion data from the NWFSC WCGBTS for splitnose rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.30 Squarespot rockfish

The most recent assessment of squarespot rockfish was a data-moderate assessment conducted in 2021. Across available data, squarespot rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed squarespot rockfish on an average of 1 set per year. The NWFSC WCGBTS observed squarespot rockfish on an average of 10 tows per year. For this species, a total of 118 maturity samples have been collected coastwide (regardless of stock area), with 118 read maturities.

Table 41: Total number of available lengths, read ages, and unread age structures by data source and state for squarespot rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	2,618	344	2,170
California	NWFSC WCGBTS	5,031	402	1,302
Oregon	NWFSC WCGBTS	4	1	1

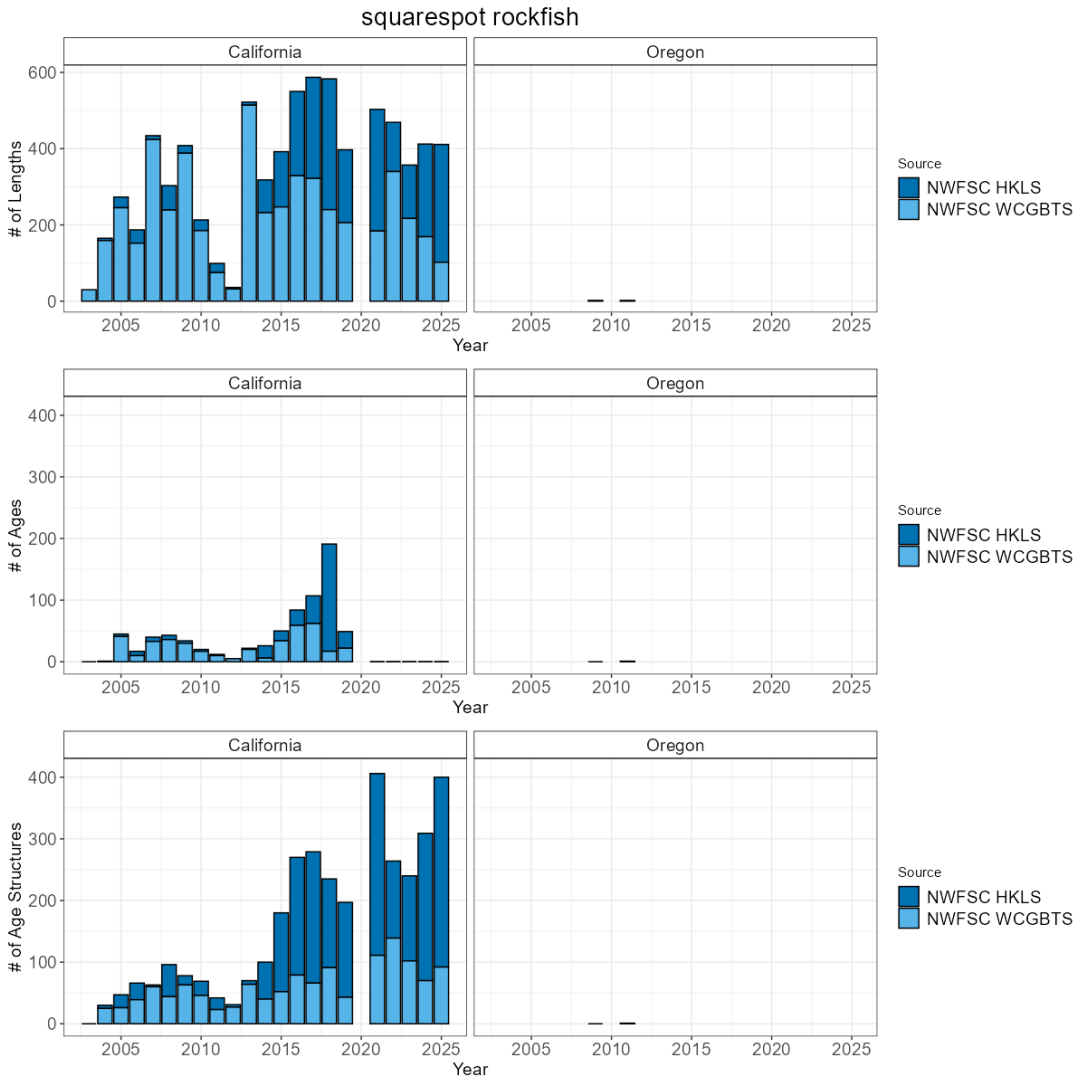

Figure 132: Total number of available lengths, read ages, and unread age structures by data source by year for squarespot rockfish. Note the y-axis maximum may differ by data type.

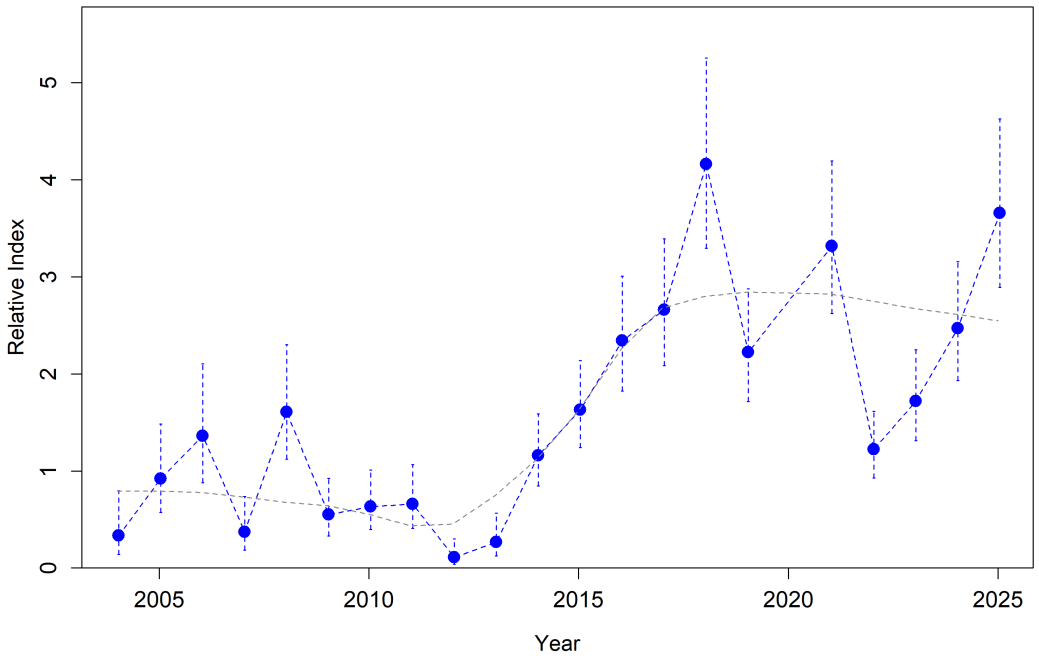

Figure 133: Estimated relative index of abundance for squarespot rockfish from the NWFSC HKLS.

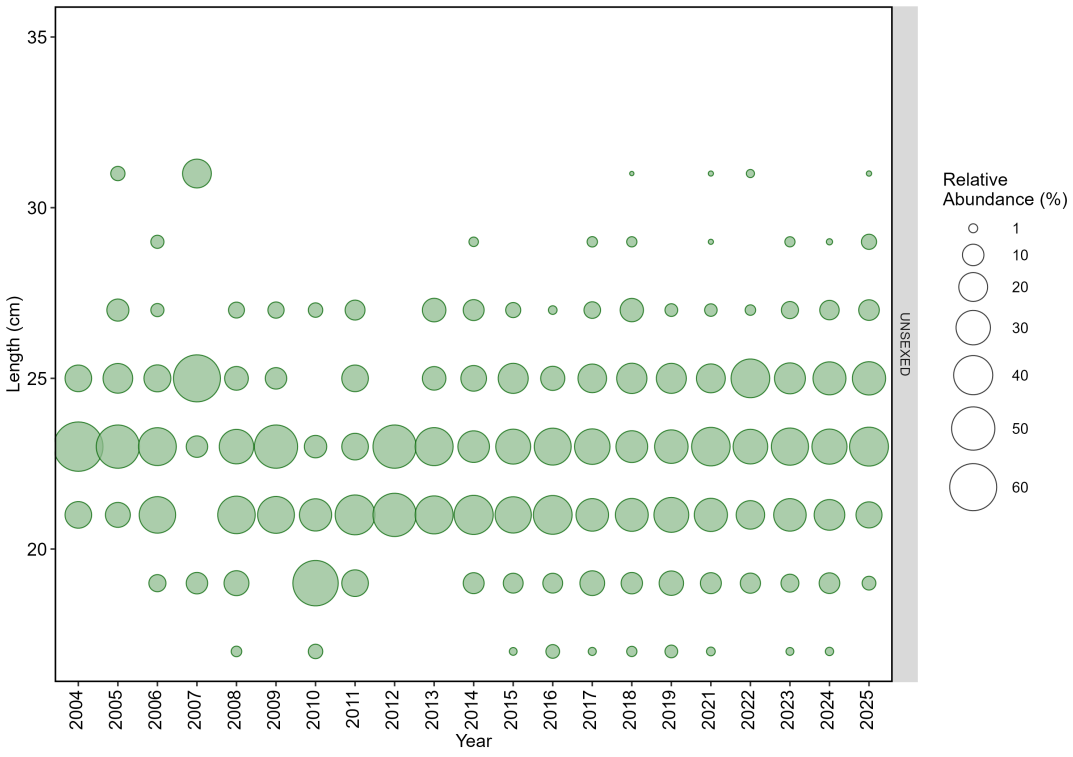

Figure 134: Length (cm) compostion data from the NWFSC HKLS for squarespot rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.31 Starry rockfish

To date, no assessment or analysis has been conducted on starry rockfish. Across available data, starry rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed starry rockfish on an average of 1 set per year. The NWFSC WCGBTS observed starry rockfish on an average of 2 tows per year. For this species, a total of 340 maturity samples have been collected coastwide (regardless of stock area), with 0 read maturities.

Table 42: Total number of available lengths, read ages, and unread age structures by data source and state for starry rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	4,306	0	4,176
California	NWFSC WCGBTS	100	0	93

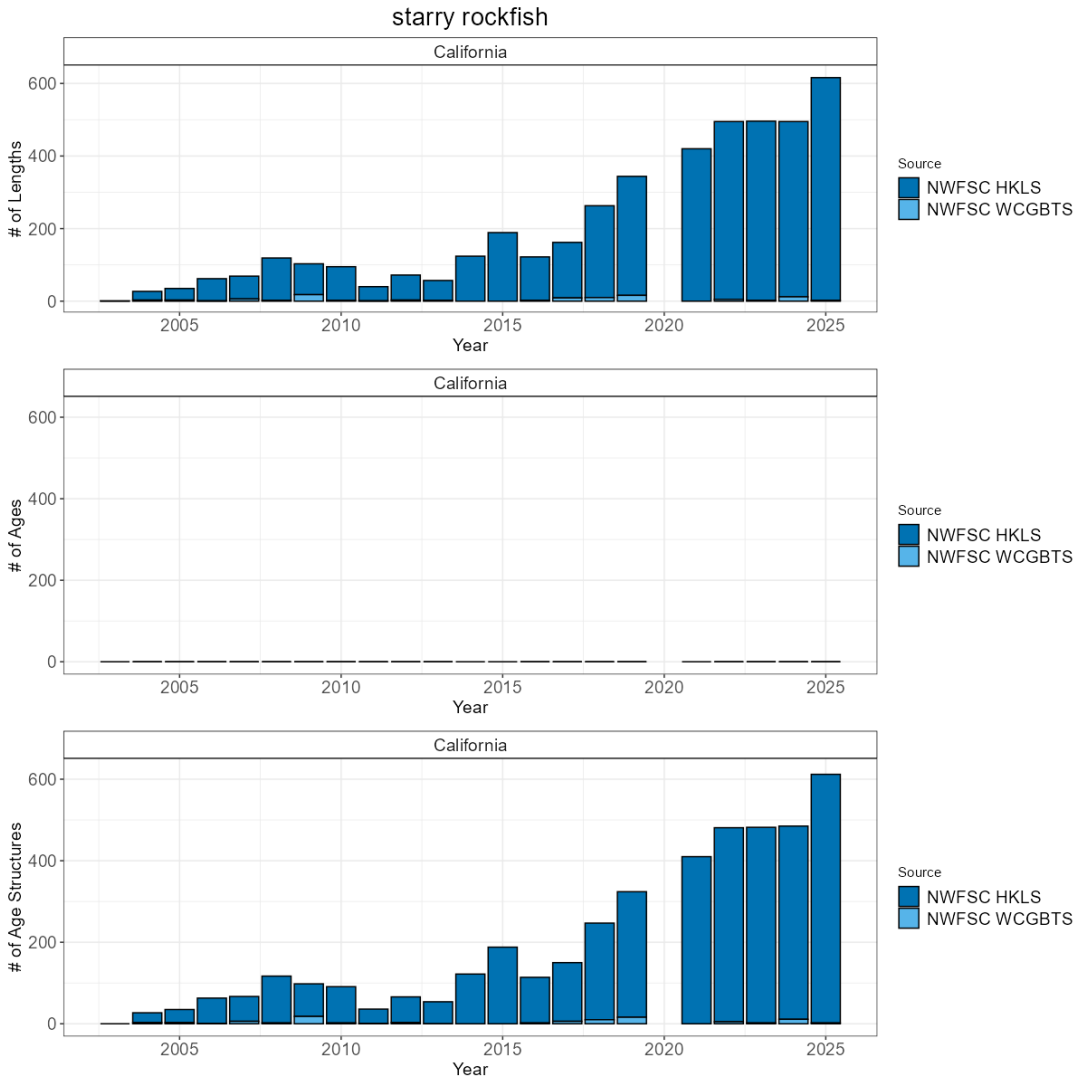

Figure 135: Total number of available lengths, read ages, and unread age structures by data source by year for starry rockfish. Note the y-axis maximum may differ by data type.

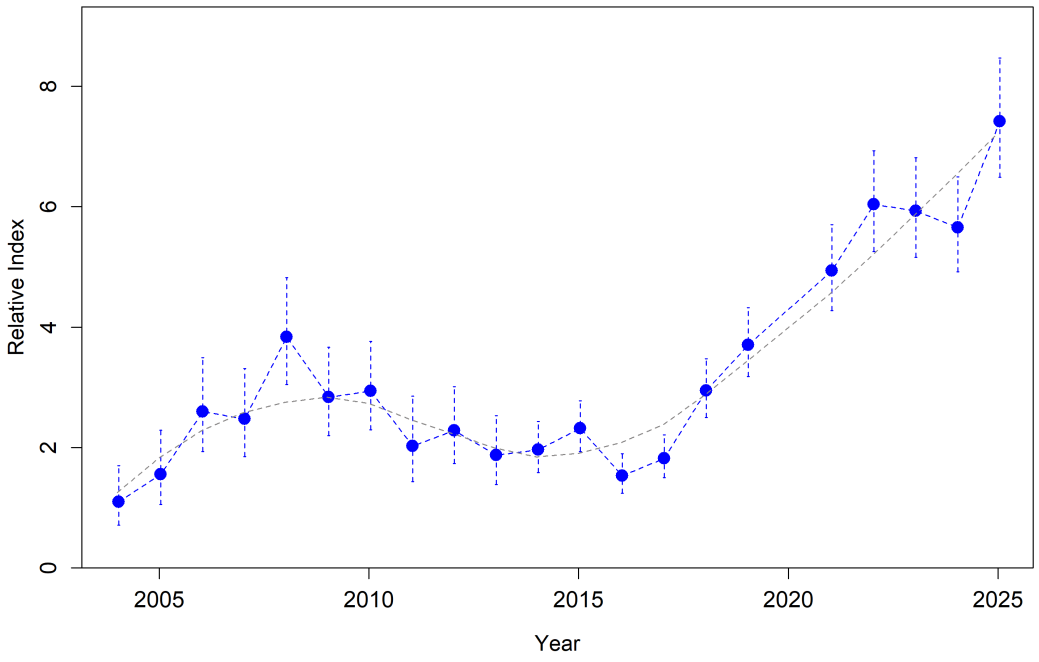

Figure 136: Estimated relative index of abundance for starry rockfish from the NWFSC HKLS.

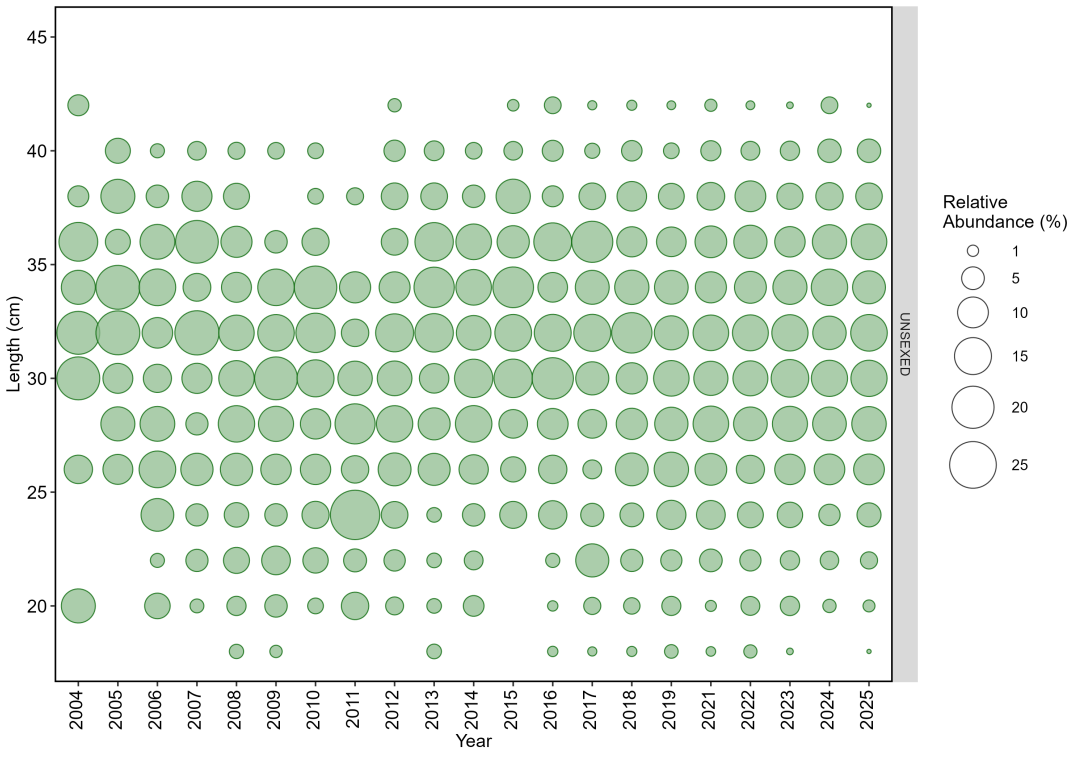

Figure 137: Length (cm) compostion data from the NWFSC HKLS for starry rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.32 Stripetail rockfish

To date, no assessment or analysis has been conducted on stripetail rockfish. Across available data, stripetail rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed stripetail rockfish on an average of 0 set per year. The NWFSC WCGBTS observed stripetail rockfish on an average of 140 tows per year. For this species, a total of 67 maturity samples have been collected coastwide (regardless of stock area), with 67 read maturities.

Table 43: Total number of available lengths, read ages, and unread age structures by data source and state for stripetail rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	3	0	3
California	NWFSC WCGBTS	44,050	0	8,911
California	Recreational	89	0	0
Oregon	Commercial	0	0	1,978
Oregon	NWFSC WCGBTS	9,488	0	2,374
Washington	Commercial	0	0	39
Washington	NWFSC WCGBTS	1,589	0	523

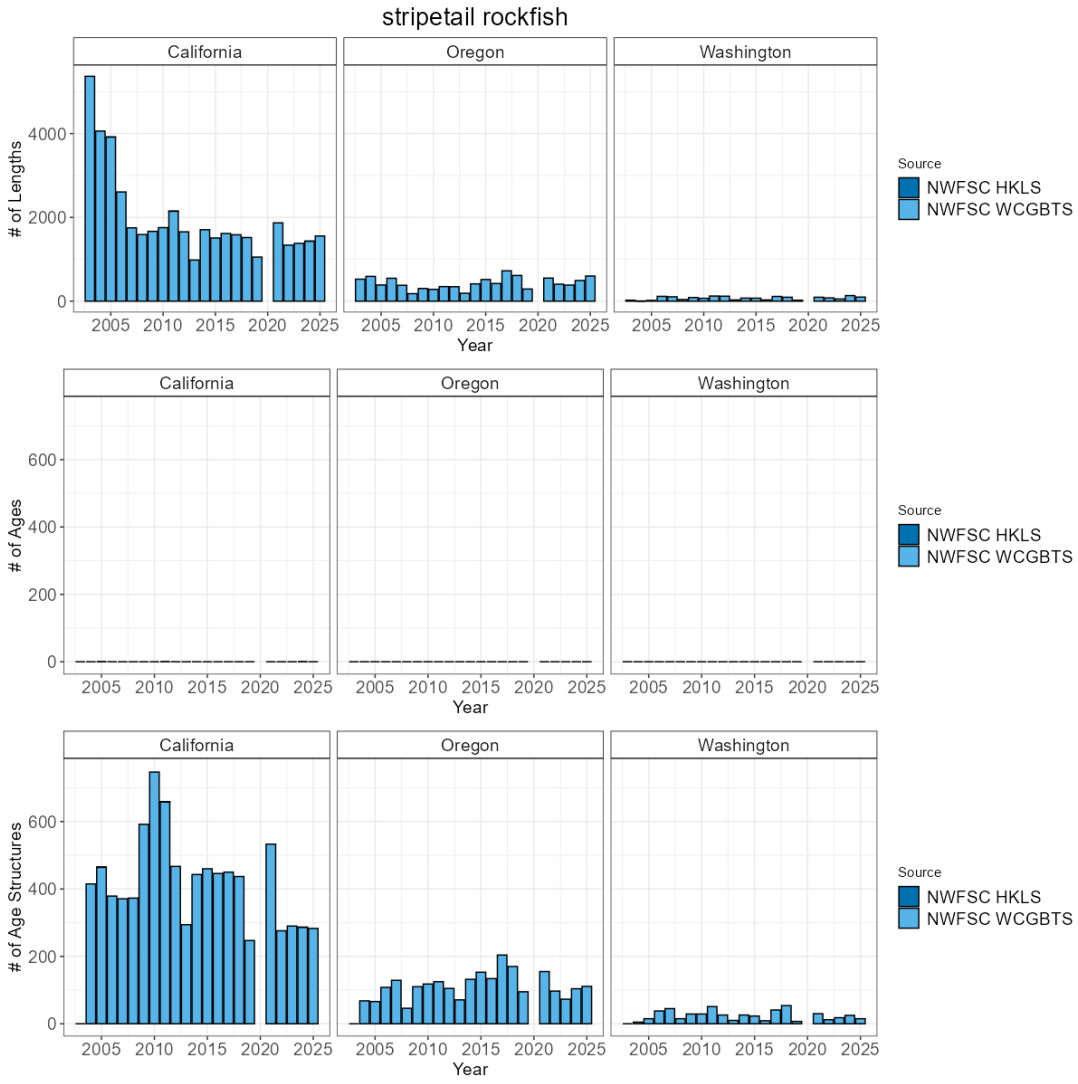

Figure 138: Total number of available lengths, read ages, and unread age structures by data source by year for stripetail rockfish. Note the y-axis maximum may differ by data type.

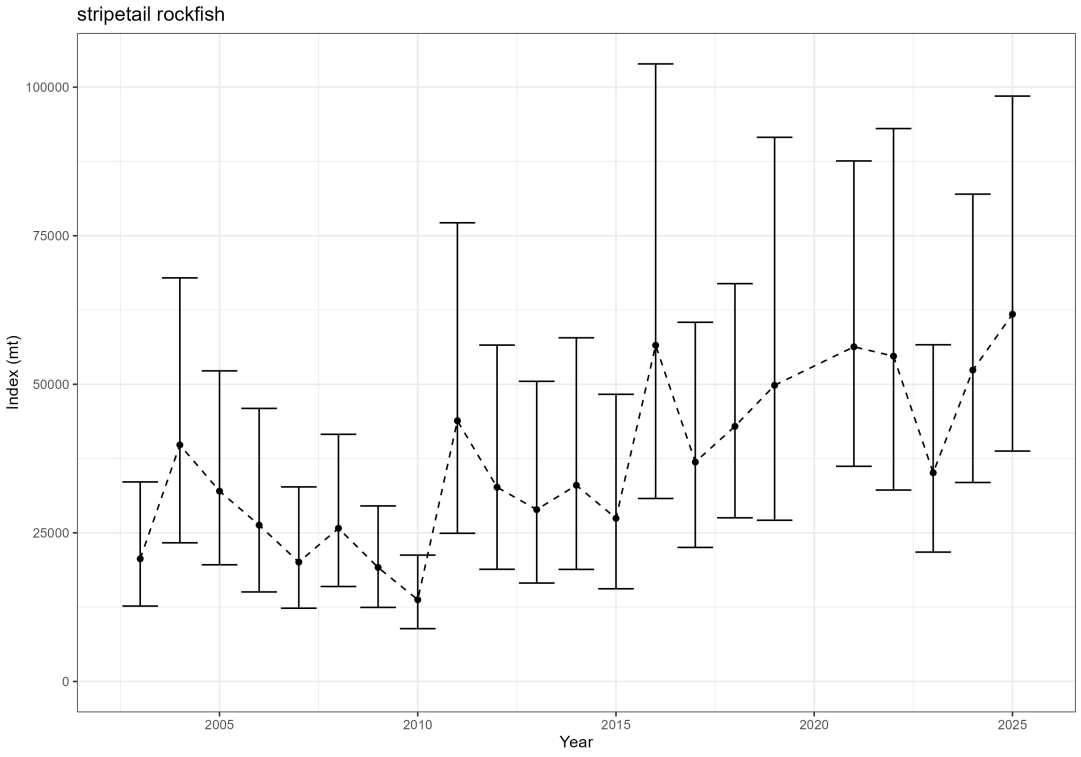

Figure 139: Estimated relative index of abundance for stripetail rockfish from the NWFSC WCGBTS.

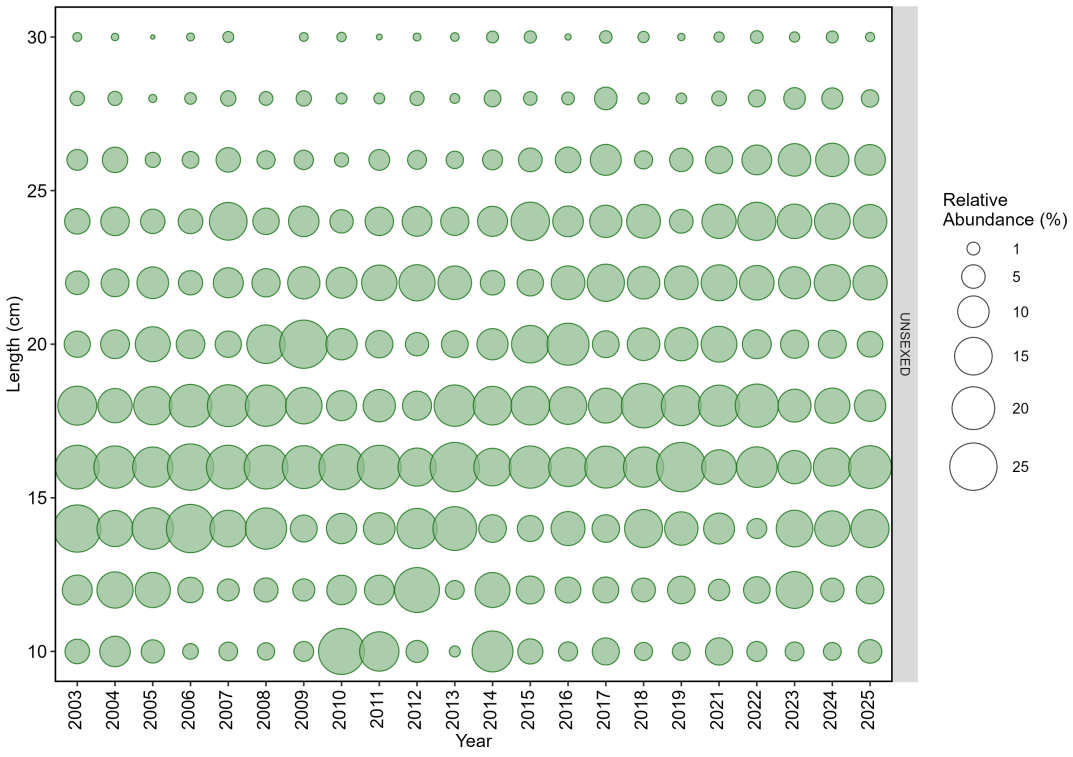

Figure 140: Length (cm) compostion data from the NWFSC WCGBTS for stripetail rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.33 Vermilion and sunset rockfish

The most recent assessment of vermilion and sunset rockfish was a benchmark assessment conducted in 2021. Across available data, vermilion and sunset rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed vermilion and sunset rockfish on an average of 1 set per year. The NWFSC WCGBTS observed vermilion and sunset rockfish on an average of 2 tows per year. For this species, a total of 1728 maturity samples have been collected coastwide (regardless of stock area), with 1405 read maturities.

Table 44: Total number of available lengths, read ages, and unread age structures by data source and state for vermilion and sunset rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	34,481	9,334	13,420
California	NWFSC WCGBTS	595	303	41

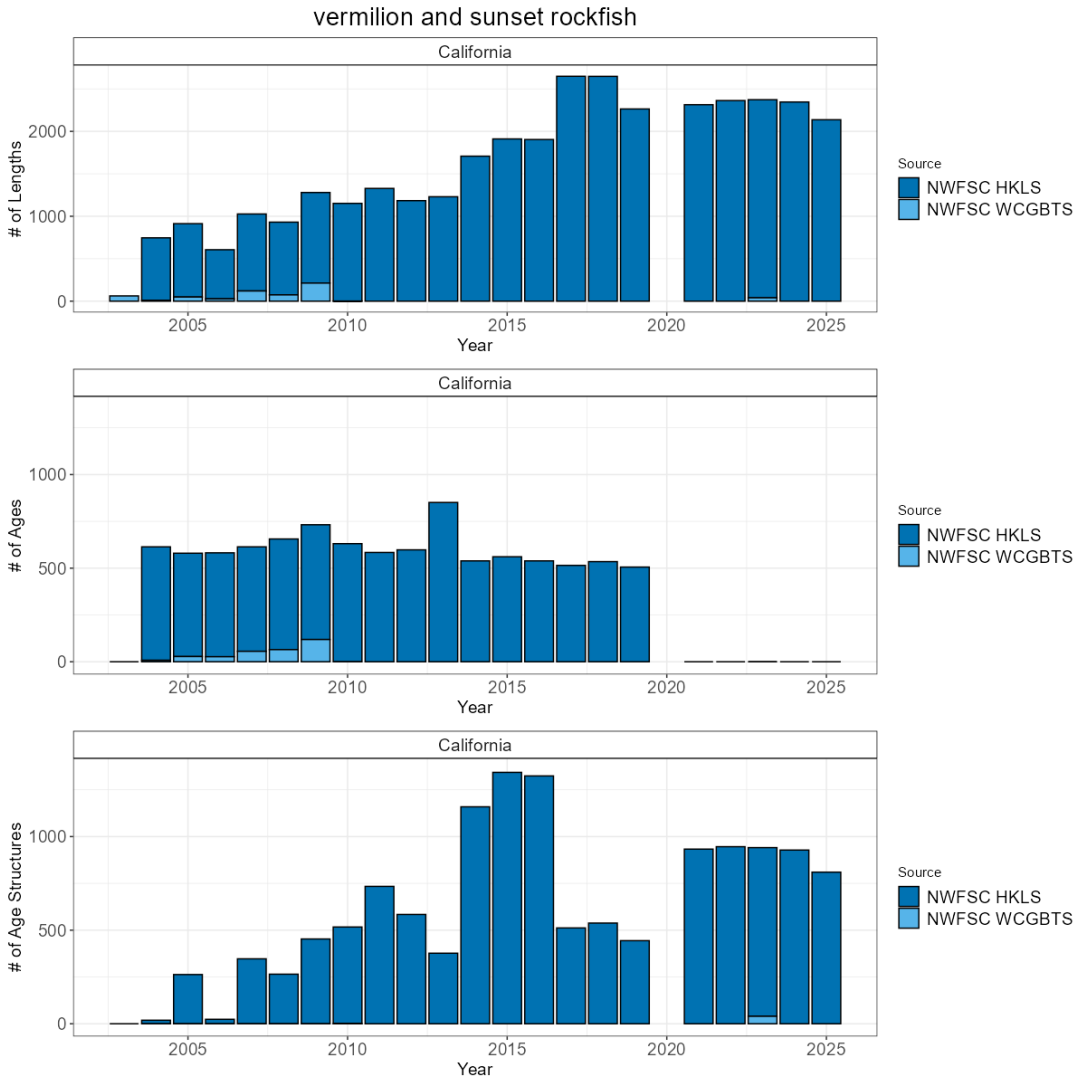

Figure 141: Total number of available lengths, read ages, and unread age structures by data source by year for vermilion and sunset rockfish. Note the y-axis maximum may differ by data type.

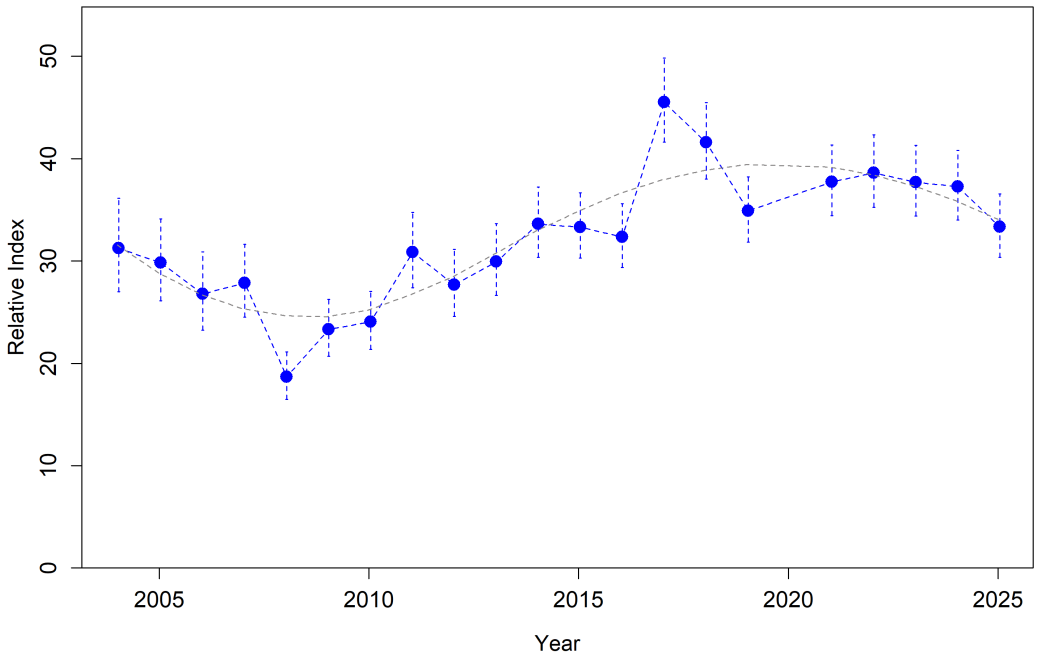

Figure 142: Estimated relative index of abundance for vermilion and sunset rockfish from the NWFSC HKLS.

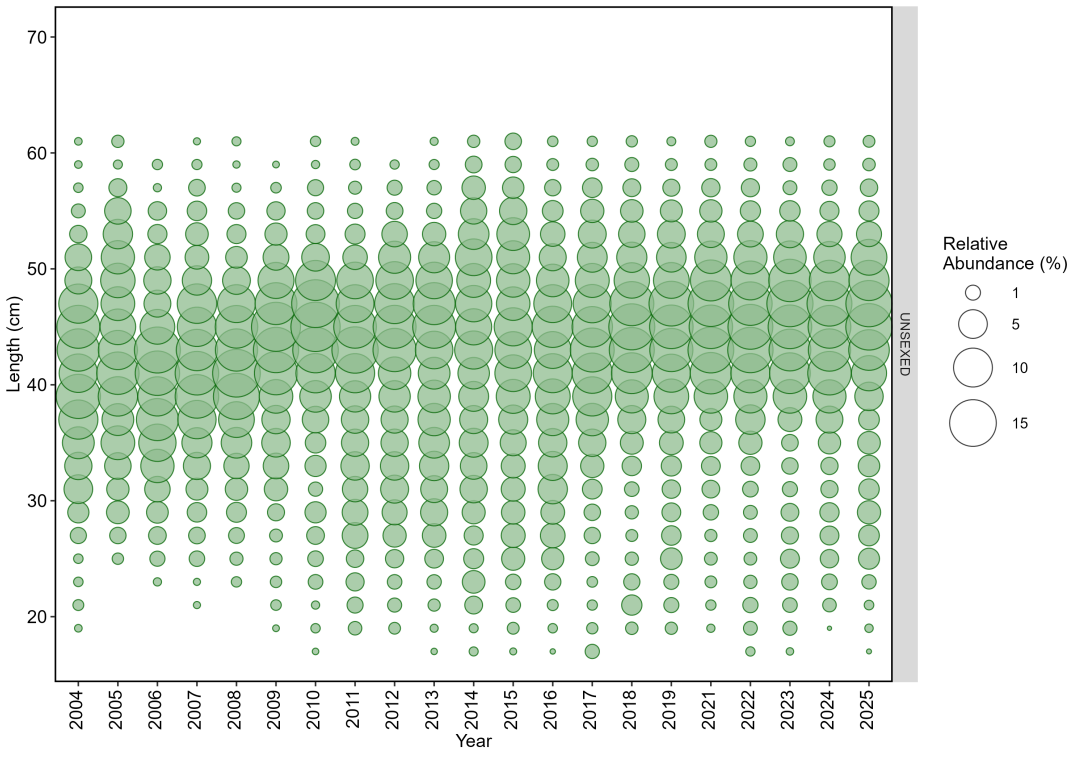

Figure 143: Length (cm) compostion data from the NWFSC HKLS for vermilion and sunset rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.34 Yelloweye rockfish

The most recent assessment of yelloweye rockfish was an update assessment conducted in 2025. Across available data, yelloweye rockfish have been observed and sampled by both the NWFSC HKLS and WCGBTS. The NWFSC HKLS observed yelloweye rockfish on an average of 1 set per year. The NWFSC WCGBTS observed yelloweye rockfish on an average of 16 tows per year. For this species, a total of 708 maturity samples have been collected coastwide (regardless of stock area), with 119 read maturities.

Table 45: Total number of available lengths, read ages, and unread age structures by data source and state for yelloweye rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC HKLS	179	0	170
California	NWFSC WCGBTS	187	167	20
Oregon	NWFSC WCGBTS	474	457	16
Washington	NWFSC WCGBTS	428	410	18

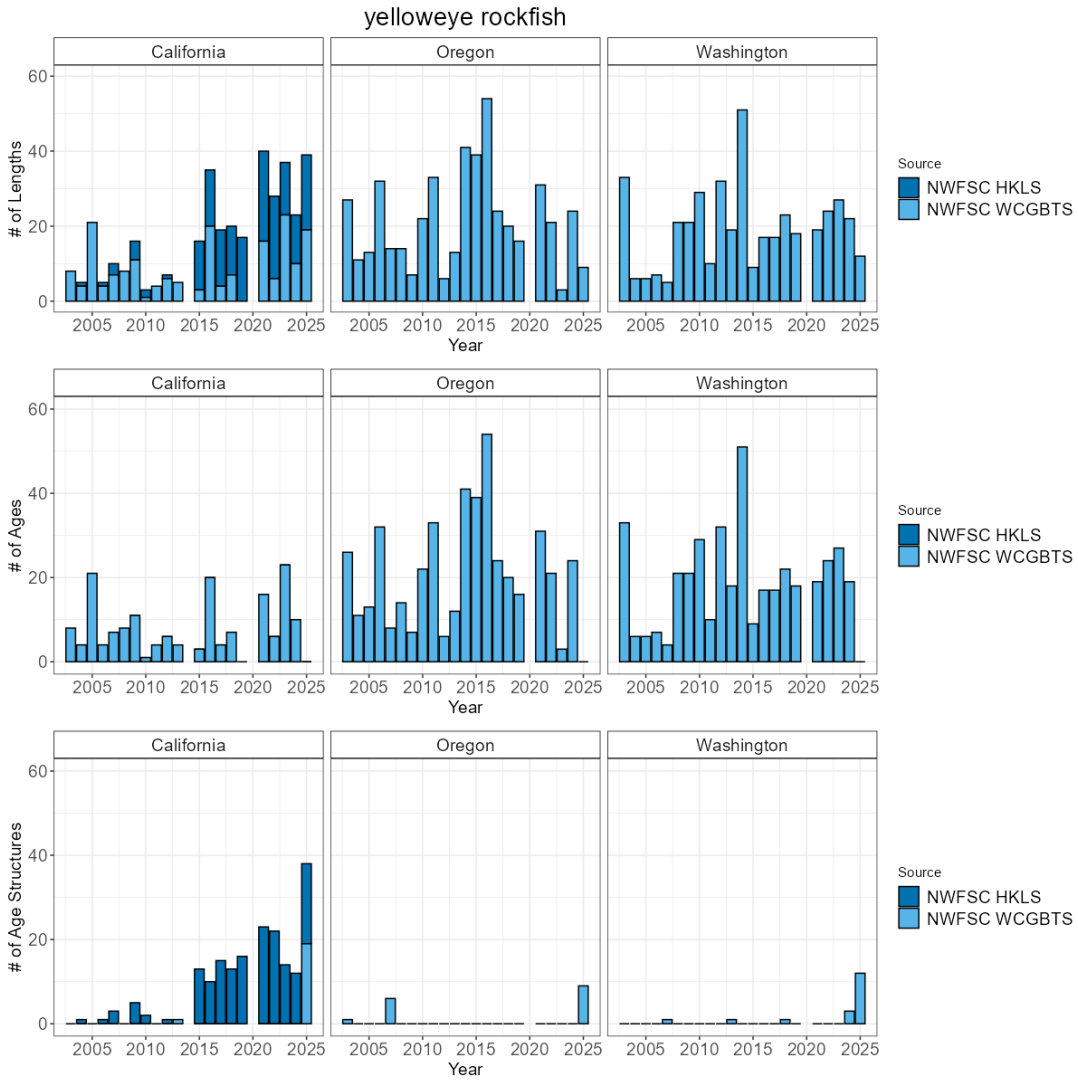

Figure 144: Total number of available lengths, read ages, and unread age structures by data source by year for yelloweye rockfish. Note the y-axis maximum may differ by data type.

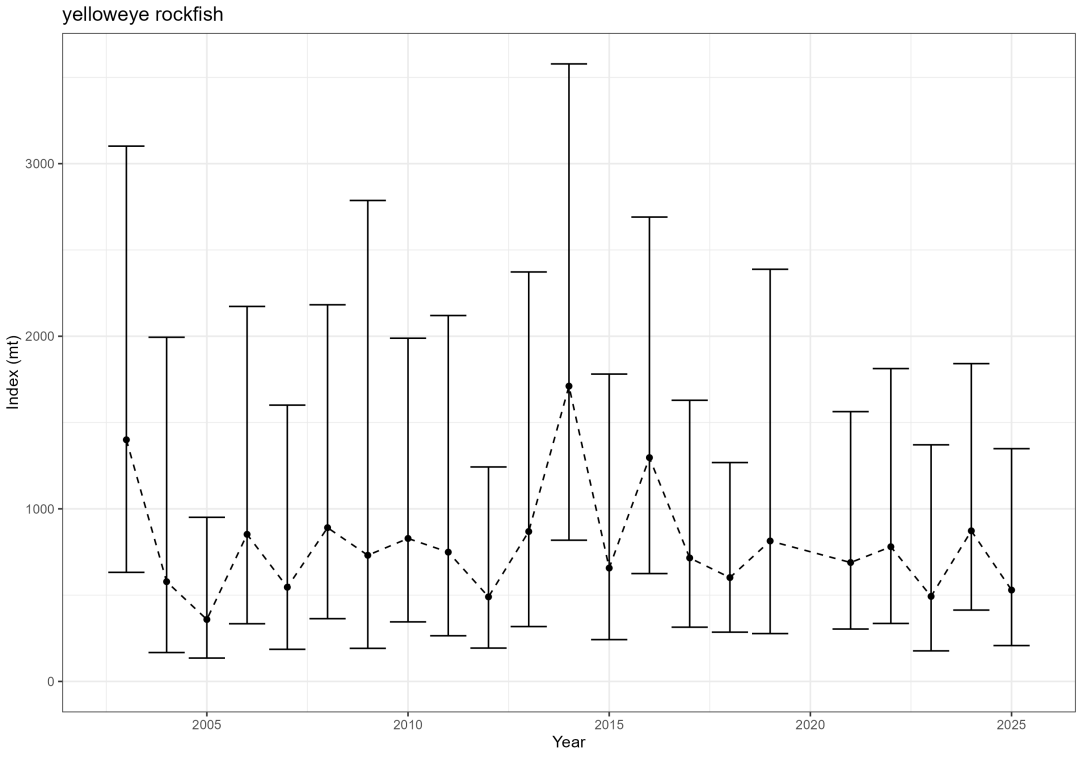

Figure 145: Estimated relative index of abundance for yelloweye rockfish from the NWFSC WCGBTS.

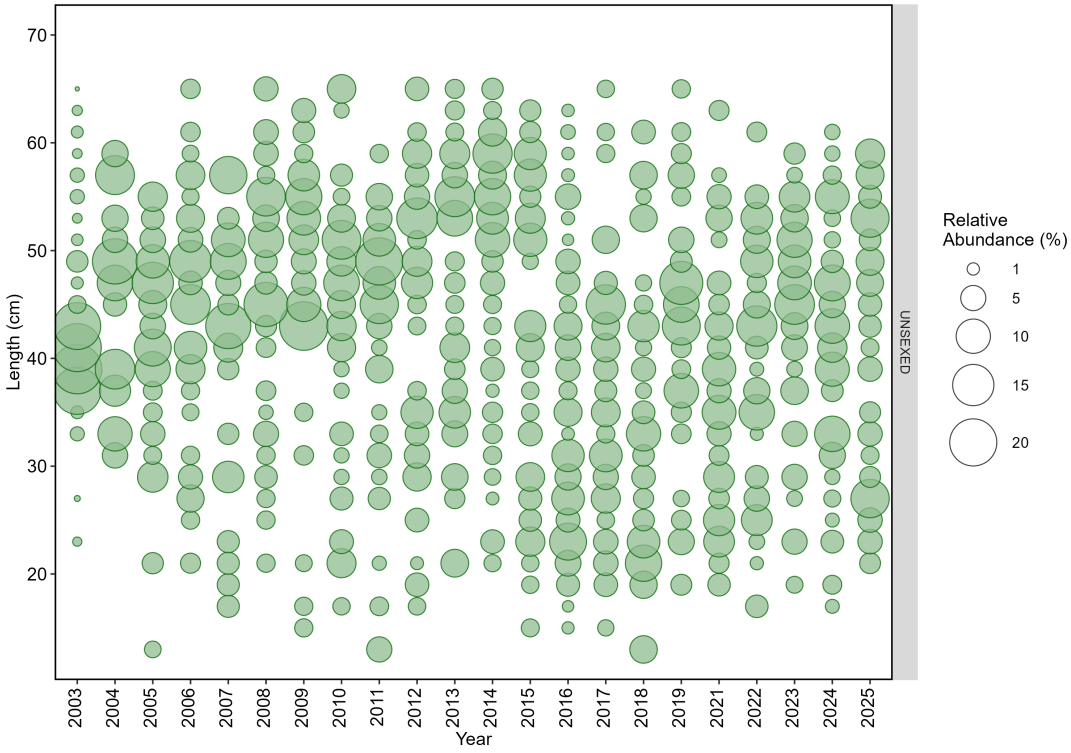

Figure 146: Length (cm) compostion data from the NWFSC WCGBTS for yelloweye rockfish. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

4.35 Yellowmouth rockfish

To date, no assessment or analysis has been conducted on yellowmouth rockfish. Across available data, yellowmouth rockfish have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed yellowmouth rockfish on an average of 2 tows per year. For this species, a total of 12 maturity samples have been collected coastwide (regardless of stock area), with 0 read maturities.

Table 46: Total number of available lengths, read ages, and unread age structures by data source and state for yellowmouth rockfish.

State	Source	Lengths	Ages	Age Structures
California	NWFSC WCGBTS	1	0	1
Oregon	NWFSC WCGBTS	578	0	309
Washington	NWFSC WCGBTS	95	0	77

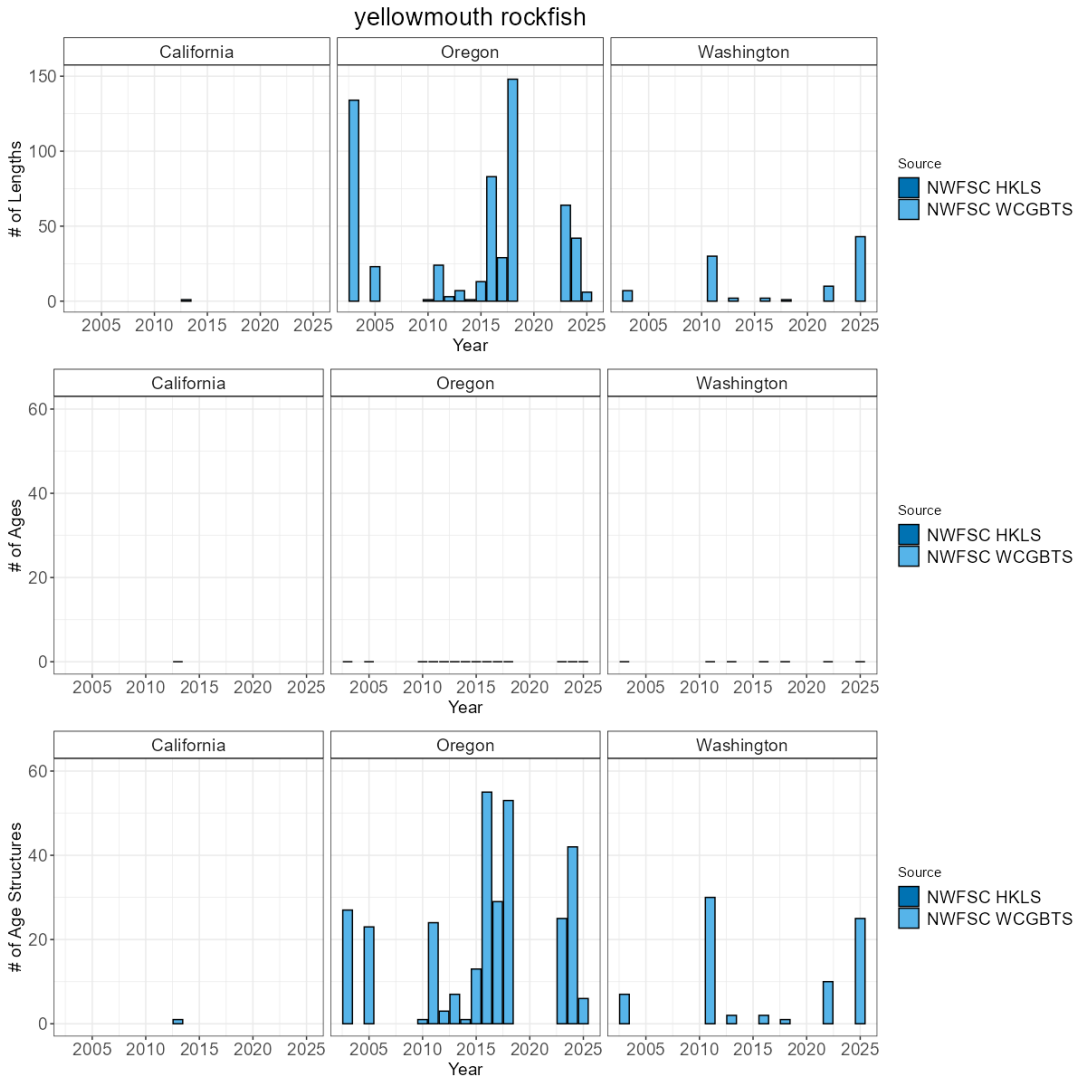

Figure 147: Total number of available lengths, read ages, and unread age structures by data source by year for yellowmouth rockfish. Note the y-axis maximum may differ by data type.

4.36 Yellowtail rockfish north

The most recent assessment of yellowtail rockfish north was a benchmark assessment conducted in 2025. Across available data, yellowtail rockfish north have been observed and sampled by the NWFSC WCGBTS. The NWFSC WCGBTS observed yellowtail rockfish north on an average of 43 tows per year. For this species, a total of 739 maturity samples have been collected coastwide (regardless of stock area), with 672 read maturities.

ODFW scientists are planning a research cruise to Cobb Sea Mount in the summer of 2026 to sample age and sex distributions of this rockfish species and others.

Table 47: Total number of available lengths, read ages, and unread age structures by data source and state for yellowtail rockfish north.

State	Source	Lengths	Ages	Age Structures
California	CCFRP	125	0	0
California	Commercial	4,894	695	0
California	NWFSC WCGBTS	867	292	76
California	Recreational	3,911	0	13
Oregon	Commercial	49,279	37,328	0
Oregon	NWFSC WCGBTS	3,979	1,947	446
Oregon	Recreational	44,826	0	204
Washington	Commercial	41,836	28,809	1,561
Washington	NWFSC WCGBTS	12,964	5,633	1,089
Washington	Recreational	17,890	9,428	901

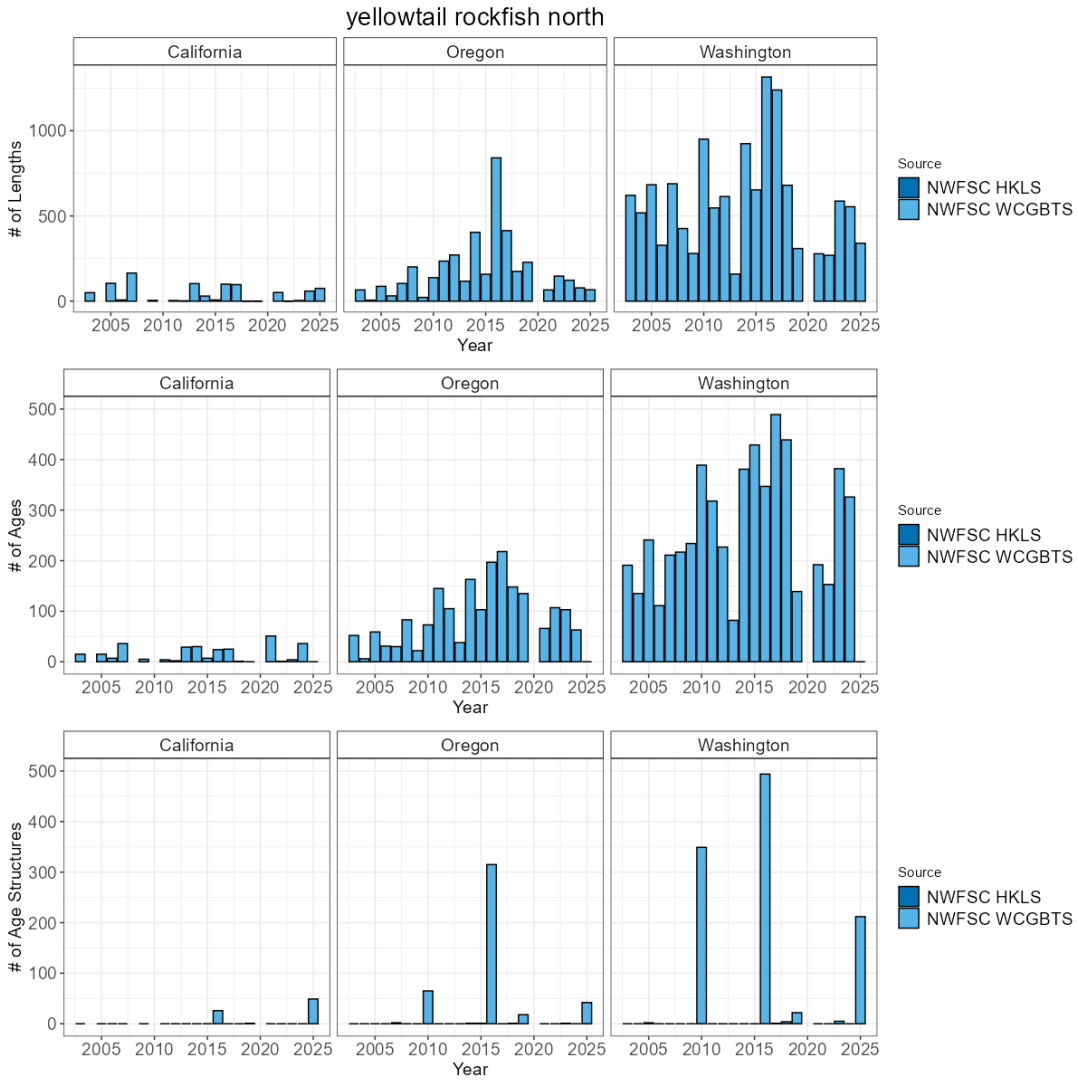

Figure 148: Total number of available lengths, read ages, and unread age structures by data source by year for yellowtail rockfish north. Note the y-axis maximum may differ by data type.

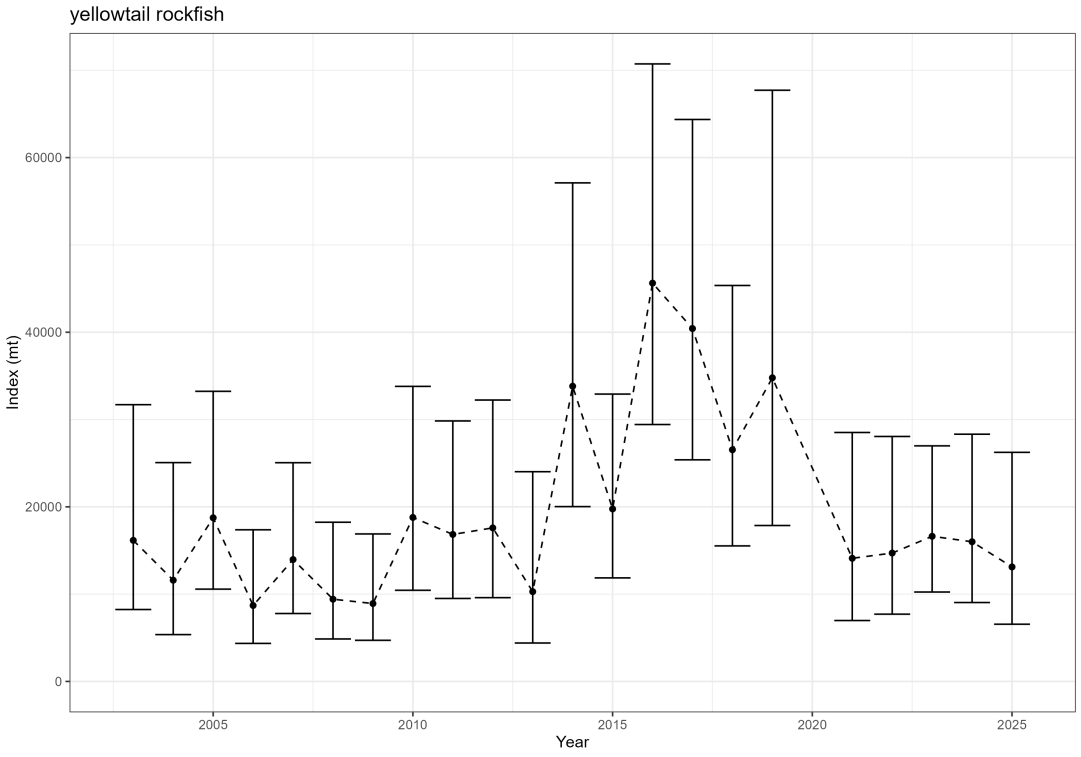

Figure 149: Estimated relative index of abundance for yellowtail rockfish north from the NWFSC WCGBTS.

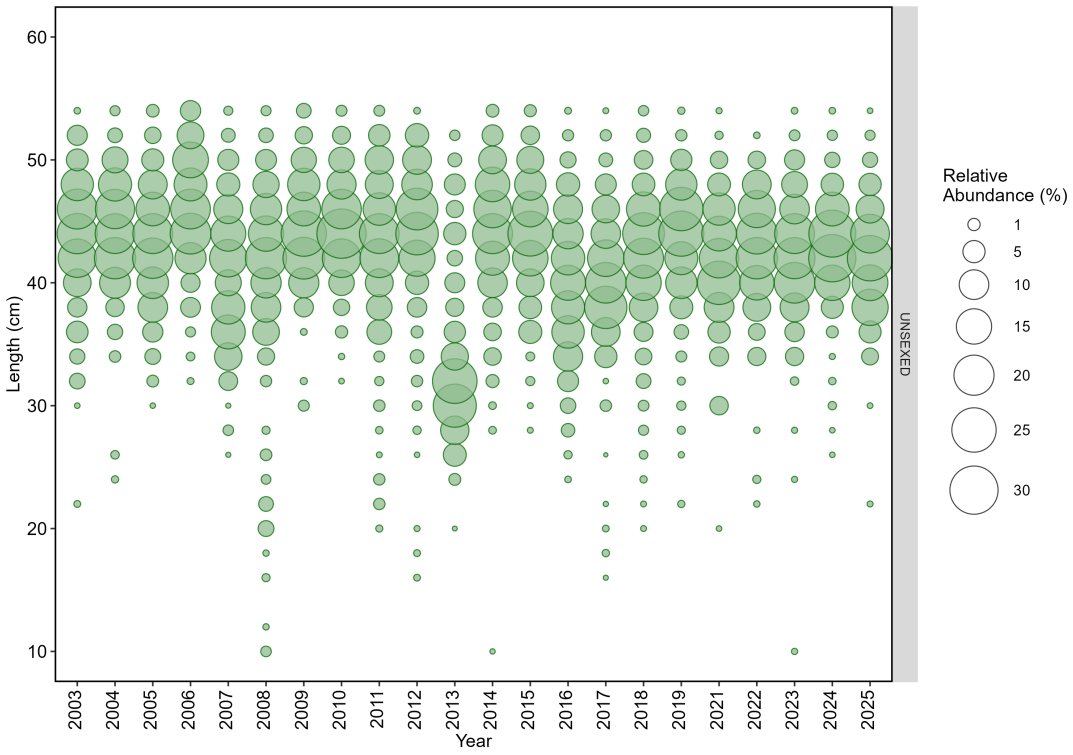

Figure 150: Length (cm) compostion data from the NWFSC WCGBTS for yellowtail rockfish north. Size of the circles within a year indicate higher (larger circles) and lower (smaller circles) proportion observed by length bin.

5 Index estimation for the NWFSC WCGBT Survey

Table 48: Setting used for estimating indices of abundance for the NWFSC WCGBTS by species.

species	family	formula	min latitude	max latitude	spatiotemporal1	spatiotemporal2
arrowtooth flounder	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	34.0	49.0	iid	iid
aurora rockfish	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	off	iid
big skate	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
blackgill rockfish	delta_gamma()	catch_weight ~ 0 + fyear	35.0	49.0	off	off
bocaccio	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
canary rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	off
chilipepper	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled + depth_scaled + depth_scaled_squared	31.9	46.2	iid	off
curlfin sole	tweedie()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
darkblotched rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	33.5	49.0	off	iid
Dover sole	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
English sole	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
flathead sole	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	41.0	49.0	iid	iid
greenspotted rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear	31.9	49.0	iid	iid
greenstriped rockfish	delta_gamma()	catch_weight ~ 0 + fyear	31.9	49.0	iid	iid
lingcod north	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	40.2	49.0	iid	iid
lingcod south	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	40.2	iid	iid
longnose skate	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
longspine thornyhead	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled + depth_scaled + depth_scaled_squared	31.9	49.0	off	off
Pacific cod	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	39.0	49.0	iid	iid
Pacific ocean perch	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	35.0	49.0	iid	iid
Pacific sanddab	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid

Table 48: Setting used for estimating indices of abundance for the NWFSC WCGBTS by species. (*continued)*

species	family	formula	min latitude	max latitude	spatiotemporal1	spatiotemporal2
Pacific spiny dogfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
petrale sole	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
redbanded rockfish	delta_gamma()	catch_weight ~ 0 + fyear	33.5	49.0	off	iid
rex sole	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
rosethorn rockfish	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	off	off
rougheye and blackspotted rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	42.0	49.0	off	off
sablefish	delta_gamma()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
sharpchin rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	33.0	49.0	iid	off
shortspine thornyhead	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled + depth_scaled + depth_scaled_squared	31.9	49.0	iid	iid
splitnose rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	31.9	49.0	iid	iid
stripetail rockfish	delta_gamma()	catch_weight ~ 0 + fyear	31.9	49.0	off	iid
widow rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	33.5	49.0	iid	off
yelloweye rockfish	delta_-lognormal()	catch_weight ~ 0 + fyear + pass_scaled	42.0	49.0	off	off
yellowtail rockfish north	delta_-lognormal()	catch_weight ~ 0 + fyear*split_mendocino + pass_scaled	33.5	49.0	iid	off

6 Index estimation for the NWFSC Hook and Line Survey

Relative indices of abundance by species were estimated using `sdmTMB` with a negative-binomial error structure and no spatial or spatiotemporal effects. The included covariates accounted for year, site, and drop (`n ~ 0 + year + site_number + drop`). Effort was defined as the product of the number of lines in the water (e.g., fishing off the bow, stern, or mid-ship) and the number of hooks by year, site, and drop number.

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