

A data synopsis for British Columbia groundfish: 2023 data update

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ABSTRACT

Anderson, S.C., Dunic, J.C., Keppel, E.A., and Edwards, A.M. 2024. A data synopsis for British Columbia groundfish: 2023 data update. *Can. Tech. Rep. Fish. Aquat. Sci.* 3641: viii + 262 p. <https://doi.org/10.60825/aevx-nb49>

The combination of fishery-dependent data, such as catch and effort, and fishery-independent survey data, such as biomass indices and age compositions, forms the backbone of most fisheries stock assessments. For British Columbia groundfish, vast quantities of such data are collected. However, the Fisheries and Oceans Canada Pacific groundfish section lacks the capacity to conduct formal stock assessments for most stocks annually, and therefore, much of these data are not summarized to represent the nature of the data holdings. Here, we update a reproducible report that gives a snapshot of population and fishing trends, growth and maturity patterns, as well as data availability, for 116 groundfish species in British Columbia. This update includes data up to 2023.

RÉSUMÉ

Anderson, S.C., Dunic, J.C., Keppel, E.A., and Edwards, A.M. 2024. A data synopsis for British Columbia groundfish: 2023 data update. Can. Tech. Rep. Fish. Aquat. Sci. 3641: viii + 262 p. <https://doi.org/10.60825/aevx-nb49>

La combinaison de données dépendantes de la pêche, telles que les captures et l'effort de pêche, et de données d'enquête indépendantes de la pêche, telles que les indices de biomasse et la composition par âge, constitue l'épine dorsale de la plupart des évaluations des stocks halieutiques. Pour les poissons de fond de la Colombie-Britannique, de grandes quantités de données de ce type sont collectées. Cependant, la section des poissons de fond du Pacifique de Pêches et Océans Canada n'a pas la capacité d'effectuer des évaluations formelles de la plupart des stocks chaque année, et par conséquent, la plupart de ces données ne sont pas résumées pour représenter la nature des fonds de données. Ici, nous mettons à jour un rapport reproductible qui donne un aperçu des tendances de la population et de la pêche, des modèles de croissance et de maturité, ainsi que de la disponibilité des données, pour 116 espèces de poissons de fond en Colombie-Britannique. Cette mise à jour inclut les données jusqu'en 2023.

1 Introduction

The combination of fishery-dependent data, such as catch and effort, and fishery-independent survey data, such as biomass indices and age compositions, form the backbone of most fisheries stock assessments. Fisheries and Oceans Canada (DFO) manages vast quantities of such data on groundfish species in British Columbia (BC). However, formal stock assessments are not conducted on an annual basis for most stocks, and so much of these data are not summarized to represent the nature of the data holdings.

The original groundfish data synopsis report was developed to provide a snapshot of long-term and recent population and fishing trends, as well as data availability, for all major BC groundfish species of commercial and conservation interest (Anderson et al. 2019; Anderson et al. 2020). The report was published as a Canadian Science Advisory Secretariat (CSAS) Research Document (Anderson et al. 2019) to facilitate review of the methods, with the intent to update the report on a regular schedule. In 2022, the first update was published as a Science Response including data up to 2021 (DFO 2022a). A version with data up to 2022 is currently in press as a Technical Report. In this version, we update the report to include 2023 data. We also update referenced stock assessment Research Documents, Science Advisory Reports, and Science Responses.

The groundfish data synopsis report generation is automated—pulling data from databases, fitting models, generating visualizations, and stitching the document together to facilitate rapid publication, reproducibility, and transparency. The goals of the report are to (1) facilitate regular review by groundfish scientists and managers of trends in survey indices and stock composition across all species to provide information for discussion on assessment priorities; (2) generate standardized datasets, biological model fits, and visualizations that will help assessment scientists develop operating models and select candidate management procedures for groundfish stocks; and (3) increase data transparency between DFO, the fishing industry, First Nations, non-governmental organizations, and the general public.

The main figures of the synopsis report are presented in two-page species-by-species subsections that visually synthesize most available data for each species. The report covers 116 groundfish species that are either of commercial, recreational, conservation, or First Nations interest, or are regularly caught in our research surveys. The report focuses on the surveys and data types applicable to the widest array of these species.

Each set of pages for a single species is laid out in the same format. The page layout begins with the species common name, the species scientific name, and the DFO species code, which usually corresponds to the page number referencing the species in Hart et al. (1988). The figures are laid out such that the first page has survey (Figure 1) time series trends and spatial patterns on the left and commercial time series by Pacific Marine Fisheries Commission areas (Figure 2) and spatial patterns on the right. The second page focuses on biological samples from both fishery dependent and independent sources. This page presents length and age data, maturity data, and an overview of available numbers of sampled fish per year across all survey and commercial samples.

For surveys, the report has focused on the Synoptic Bottom Trawl surveys (Figure 1), the Outside Hard Bottom Longline (HBLL OUT) surveys, the Inside Hard Bottom Longline surveys (HBLL

INS) (Figure 1), and the International Pacific Halibut Commission (IPHC) Fishery Independent Setline surveys. In this version, we have added data from the Multispecies Small-mesh Bottom Trawl Survey on West Coast Vancouver Island (MSSM WCVI) (formerly known as the “Shrimp Survey”) as well as including length and age composition data for the Inside HBLL survey. We show survey biomass index trends for the Hecate Strait Multispecies Assemblage (MSA HS) survey. The report includes counts of available fish specimens from biological samples on all surveys. A brief description of the included surveys is provided in Appendix F of Anderson et al. (2019) along with associated references for details on design and implementation.

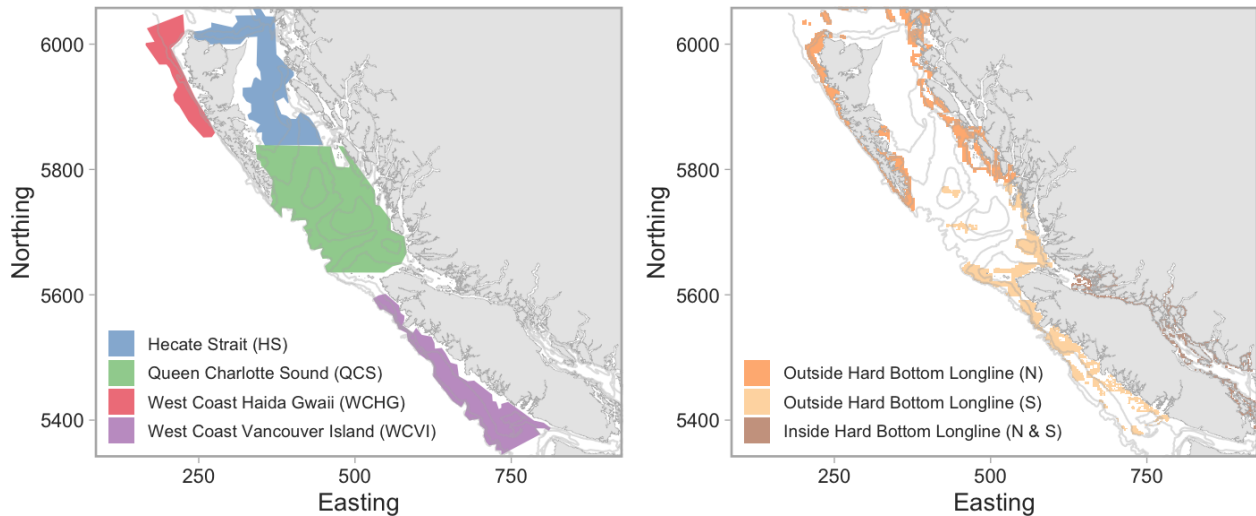


Figure 1. Synoptic bottom trawl survey boundaries (left) and Hard Bottom Longline (HBLL) survey boundaries (right). Inside HBLL north and south are not differentiated because the delineation is not consistent from year to year. The International Pacific Halibut Commission (IPHC) Fishery Independent Setline survey (FISS) locations are not shown here because they are coast-wide and are illustrated in the right panel of Figure 4. Colours match the colour coding throughout the report.

2 Updates

In this report, all figure pages were rebuilt with updated data using the methods described in Anderson et al. (2019), Anderson et al. (2020), DFO (2022a), and Anderson et al. (2024).

Additionally:

- We updated the recent references at the top of each species page.
- The data for the IPHC spatiotemporal model index is now derived directly from the [IPHC website](#). We provide details on this new data processing in Appendix A.
- We removed recreational and unknown sectors from the commercial biological samples.
- We updated the species name “North Pacific Spiny Dogfish” to “Pacific Spiny Dogfish” in accordance with the latest American Fisheries Society recommendation.

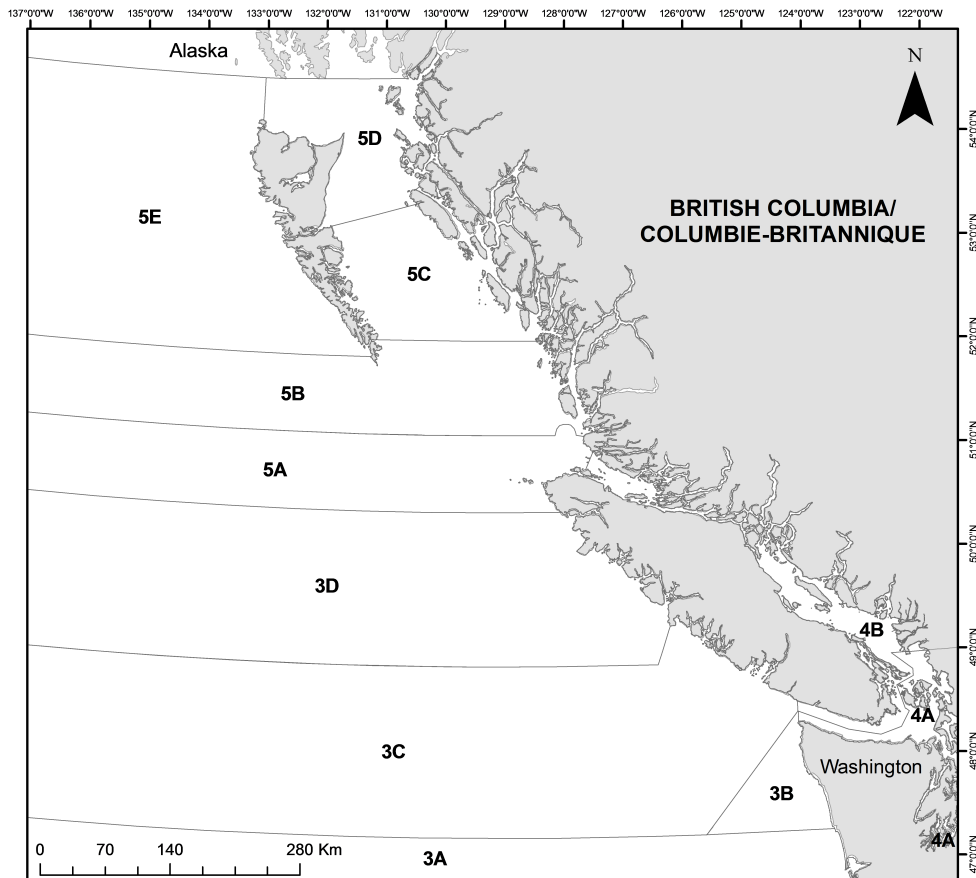


Figure 2. Map of Pacific Marine Fisheries Commission (PMFC) areas 5AB (Queen Charlotte Sound), 5CD (Hecate Strait), 5E (West Coast Haida Gwaii), 3CD (West Coast Vancouver Island), and 4B (Strait of Georgia). These are close, but not identical, to similarly named Groundfish Management Unit areas. Areas 3AB and 4A are outside of Canadian waters.

3 Plot Descriptions

This section provides captions for each of the visualizations that form the species-by-species pages. Petrale Sole is used as an example species for all plots except for commercial catch per unit effort maps where Pacific Cod is used.

3.1 Relative biomass index trends from surveys

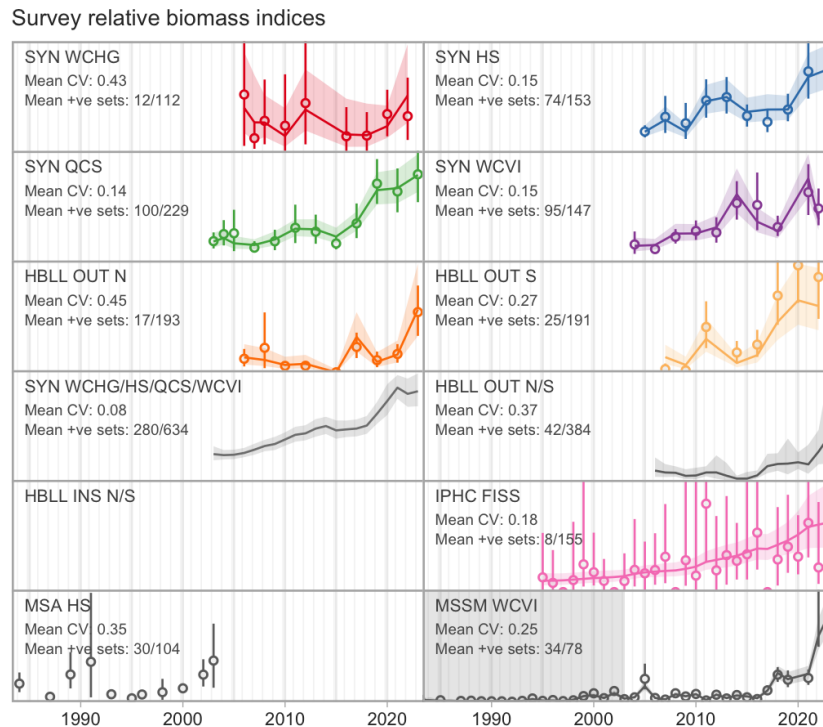


Figure 3. Example relative biomass index trends from trawl and longline surveys for Petrale Sole. Dots represent design-based mean estimates of relative biomass and vertical lines around the dots represent 95% bootstrap confidence intervals. Time series with a solid trend line and shaded ribbon for 95% confidence intervals represent an index that has been standardized with a spatiotemporal model (see Appendix A in DFO 2022a). ‘Mean CV’ is the mean of the annual coefficients of variation (CVs), and ‘Mean +ve sets’ indicates the ratio of the mean number (across the years) of sets that captured the species of interest to the mean number of sets. All vertical axes are scaled between zero and the maximum upper confidence interval value for that survey. When both types of indices are shown, they are scaled to have the same geometric mean and the axes are set to encompass the model-based confidence intervals. For the MSSM WCVI, years before 2003 are shaded grey to indicate that catches are considered less reliable than modern data. For the HBLL OUT, HBLL INS, and IPHC FISS the values are abundance rather than biomass. SYN WCHG = West Coast Haida Gwaii Synoptic Bottom Trawl, SYN HS = Hecate Strait Synoptic Bottom Trawl, SYN QCS = Queen Charlotte Sound Synoptic Bottom Trawl, SYN WCVI = West Coast Vancouver Island Synoptic Bottom Trawl, HBLL OUT N = Hard Bottom Longline Outside North, HBLL OUT S = Hard Bottom Longline Outside South, HBLL INS N = Hard Bottom Longline Inside North, HBLL INS S = Hard Bottom Longline Inside South, IPHC FISS = International Pacific Halibut Commission Fishery-Independent Setline Survey, MSA HS = Hecate Strait Multispecies Assemblage Bottom Trawl, MSSM WCVI = West Coast Vancouver Island Multispecies Small-mesh Bottom Trawl. Also included are coastwide or survey-wide indices for SYN WCHG/HS/QCS/WCVI, HBLL OUT N/S, and HBLL INS N/S.

3.2 Maps of relative biomass from surveys

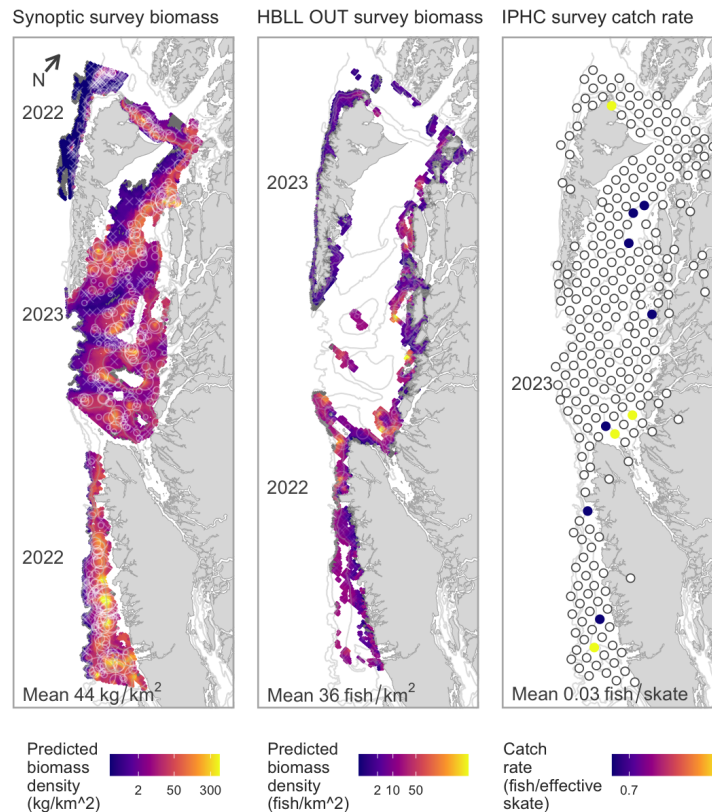


Figure 4. Example maps of relative biomass (or catch rate) from trawl and longline surveys from the latest available years of each survey for Petrale Sole. Shown are the synoptic trawl surveys (left), the outside hard bottom longline (HBLL OUT) surveys (middle), and the IPHC FISS (right). Individual sets are shown in the two left panels as faint crosses (if the species was not caught in that set), or circles with the area of the circle proportional to the species density from the set. Colour shading (except for the IPHC survey) indicates predictions from a spatial model that includes depth and depth squared as predictors as well as spatial random effects (Appendix E in Anderson et al. 2019). The colour scale is fourth-root transformed to render a visual pattern similar to a log transformation without overemphasizing differences close to zero. The colour scale ranges from zero to the highest value within each map, and dark grey indicates regions where models could not be fit. The synoptic and HBLL maps show predicted biomass density throughout the survey domain. The IPHC map shows the raw unmodelled data for fixed station locations—stations without any observations for a given species are shown as empty circles. Years on the left side of each plot indicate the year of the respective survey. Surveys (except IPHC) in which less than 2% of the sets contained the species are not modeled and are shown with raw data only. Mean values shown at the bottom are the mean fish density values from the raw data for the entire coast for the indicated years; for the IPHC data the units are fish per effective skate, where an effective skate represents 100 circle hooks with 18-foot spacing (Appendix G in Anderson et al. 2019). Note that the coast has been rotated 40° to fit all the maps in the available space. Depth contours are shown at 100 m, 200 m, and 500 m.

3.3 Commercial fishery catches

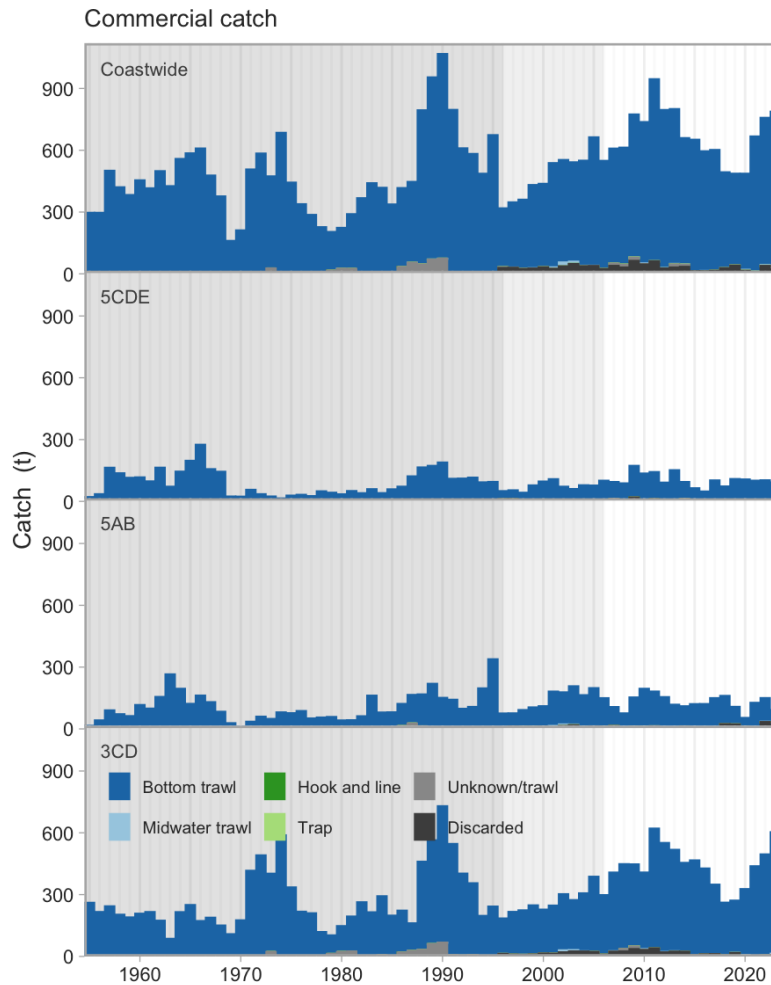


Figure 5. Example commercial fishery catch plots for Petrale Sole. Catch from various gear types is indicated by colour shading. Catch is calculated as the summed weight of landings aggregated by year. Discards include reported discard weights from all fisheries combined; however, bottom trawl discards are considered less reliable prior to 100% observer coverage in 1996 and trap, hook and line, midwater trawl, and Strait of Georgia bottom trawl discards are less reliable prior to fisheries integration in 2006 and are therefore not included. Years before 1996 and 2006 are shaded grey to indicate that catches are considered less reliable than modern data: an at-sea observer program was implemented for bottom and midwater trawl fleets in outside waters in 1996 and an at-sea observer program was implemented for non-trawl sectors in 2006. Management areas, as indicated in the top left corner of each panel, are shown in Figure 2. The at-sea observer program stopped in early 2020 due to COVID-19 and an electronic monitoring system was later developed in its place.

3.4 Commercial bottom trawl catch per unit effort indices

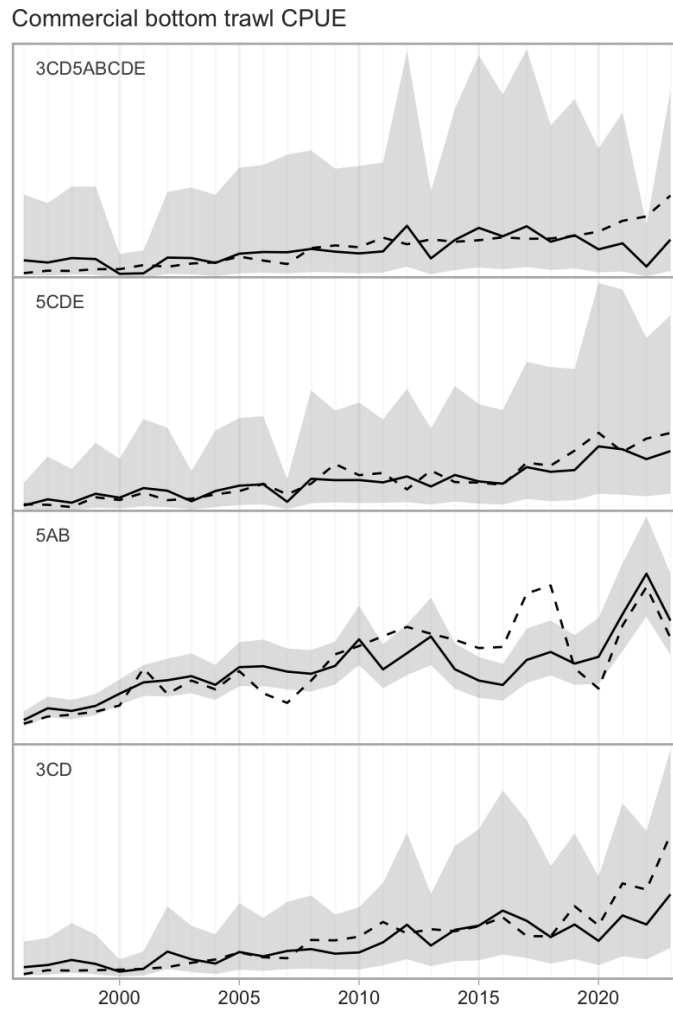


Figure 6. Example commercial bottom trawl catch per unit effort (CPUE) trends, with effort as hours trawled, for Petrale Sole. Solid lines represent CPUE trends standardized with a Tweedie GLMM (generalized linear mixed effects model) for depth, latitude, DFO locality region, vessel, and month of year (Appendix D in Anderson et al. 2019). The line itself represents the estimate and the shaded ribbon represents a 95% confidence interval. The dashed line represents an unstandardized commercial CPUE index calculated as the sum of catch divided by the sum of effort each year. Standardized time series are scaled to have the same maximum 95% confidence interval. Unstandardized time series are scaled to have the same geometric mean as the standardized time series. These are relative index values—the absolute value of the time series is not useful because it depends on arbitrary levels that the standardization variables are set to. Management areas, as indicated in the top left corner of each panel, are shown in Figure 2.

3.5 Maps of commercial catch per unit effort

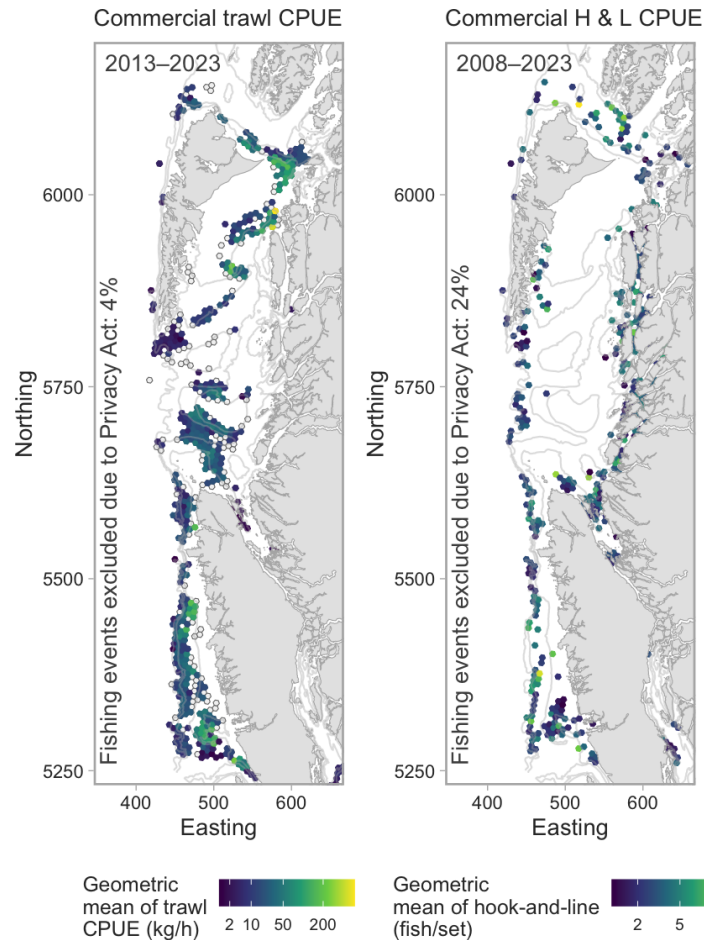


Figure 7. Example commercial trawl and commercial hook-and-line catch-per-unit-effort maps for Pacific Cod (note this figure is **not** Petrale Sole). Lighter shading indicates higher levels of a geometric mean of catch per unit effort in a given hexagonal cell. The colour scale is fourth-root transformed to render a visual pattern similar to a log transformation without overemphasizing differences close to zero. Cells are 7 km wide and are only shown in cases where there are at least 3 unique vessels in a given cell to meet privacy requirements. For bottom trawl, catch per unit effort is calculated as the weight of catch (landings plus discards) divided by hours fished for all positive tows from the groundfish trawl sector. Trawl data are shown from 2013 onwards after the trawl footprint was frozen (Wallace et al. 2015). Trawl data from 2007–2012 are indicated as outlined light grey hexagons to illustrate fishing prior to the frozen footprint. For hook and line, catch per unit effort is shown as the number of fish recorded as landed or discarded per set. Hook-and-line data are shown from 2008 onwards. Including as many years of data as possible reduces the number of discarded fishing events when implementing the 3-vessel privacy requirement. Note that the coast has been rotated 40° to fit all the maps in the available space. Depth contours are shown at 100 m, 200 m, and 500 m.

3.6 Available biological samples

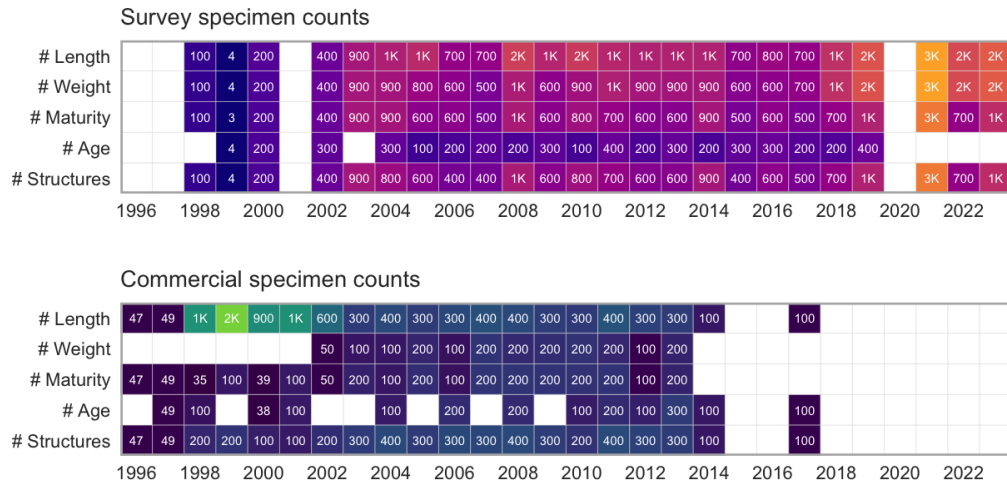


Figure 8. Example specimen-availability plot for Petrale Sole. Shown are the number of available fish specimens that have had their length measured, have been weighed, had their maturity assessed, had their age assessed, and for which ageing structures are available for ageing. Data are shown across all surveys (not just surveys shown elsewhere in the synopsis; top panel) and across all commercial fleets (bottom panel). Blank panels indicate year-measurement combinations without any data. Shading of these cells reflects the relative number of specimens available with the actual number of specimens indicated in the cells to the nearest round number.

3.7 Length composition data



Figure 9. Example length-frequency plot for Petrale Sole. Female fish are shown as coloured (or black) bars and male fish are shown behind as light grey bars. The total number of fish measured for a given survey and year are indicated in the top left corner of each panel. Histograms are only shown if there are more than 20 fish measured for a given survey-year combination. The commercial male and female fish are combined since many are unsexed. See Figure 3 for survey abbreviations.

3.8 Age composition data

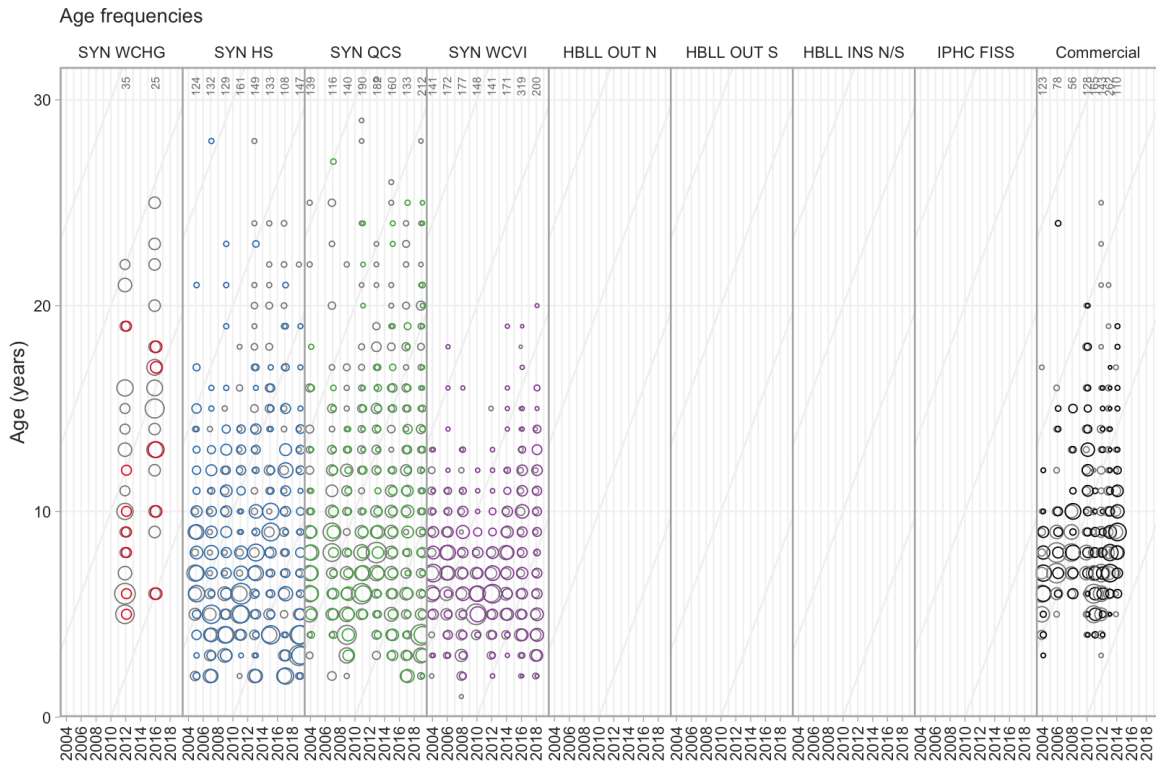


Figure 10. Example age-frequency plot for Petrale Sole. Female fish are shown as coloured (or black) circles and male fish are shown behind as light grey circles. The total number of fish aged for a given survey and year are indicated along the top of the panels. Diagonal lines are shown at five-year intervals to facilitate tracing cohorts through time. We plot the most recent 15 year window for which ageing data exist. See Figure 3 for survey abbreviations. Ageing precision plots comparing precision of readings by two individuals ageing the fish are provided for all species for which age data exist in Appendix A in Anderson et al. (2019).

3.9 Length-age and length-weight model fits

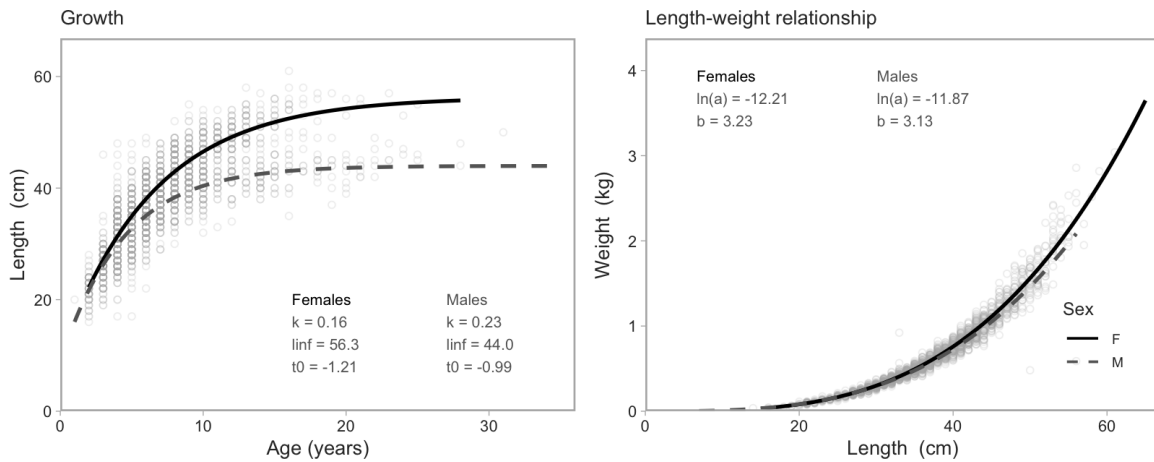


Figure 11. Example length-age and length-weight model fits and plots for Petrale Sole. The length-age growth curve is a von Bertalanffy model of the form $L_i \sim \text{Log-normal}(\log(l_{\text{inf}}(1 - \exp(-k(A_i - t_0))))), \sigma)$ where L_i and A_i represent the length and age of fish i , l_{inf} , k , and t_0 represent the von Bertalanffy growth parameters, and σ represents the scale parameter. The length-weight curve is of the form $\log(W_i) \sim \text{Student-t}(df = 3, \log(a) + b \log(L_i), \sigma)$, with W_i and L_i representing the weight and length for fish i and σ representing the observation error scale. The degrees of freedom of the Student-t distribution is set to 3 to be robust to outliers. The variables a and b represent the estimated length-weight parameters. Female model fits are indicated as solid black lines and male model fits are indicated as dashed grey lines. Text on the panels shows the parameter estimates and open grey circles represent individual fish that the models are fit to. These figures include all survey samples. See Appendix H in Anderson et al. (2019) for details on the models.

3.10 Maturity frequency by month

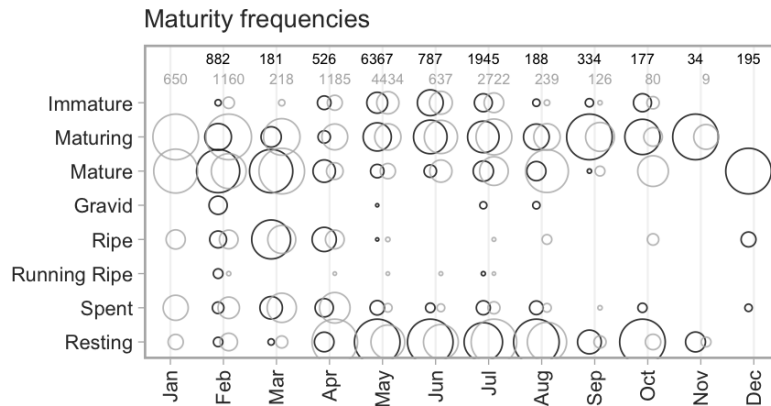


Figure 12. Example maturity-frequency-by-month plot for Petrale Sole. Categories of maturity are listed from most immature (top) to most mature (bottom); individual fish, once mature, cycle through the mature stages. The area of each circle corresponds to the number of fish specimens in a given maturity category for the given month. Female fish are indicated by black circles and male fish are indicated by light grey circles behind. The total number of fish specimens for each month are indicated by the numbers at the top of the plot. This plot includes data from both the commercial and survey samples.

3.11 Maturity ogives

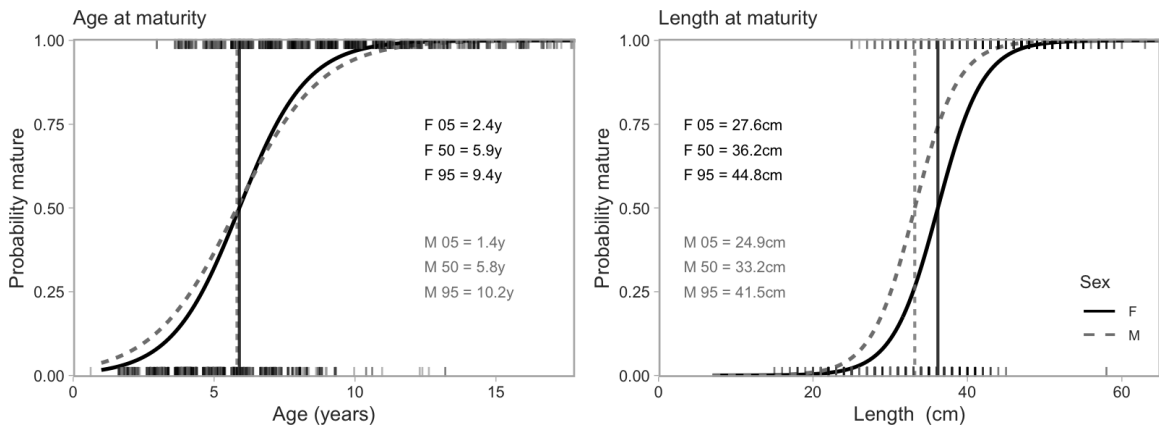


Figure 13. Example age- and length-at-maturity ogive plots for Petrale Sole. Maturity ogives are fit as logistic regressions to individual fish specimens, which are categorized as mature vs. not mature. The solid black lines represent fits to the female fish and the dashed grey lines represent fits to the male fish. The vertical lines indicate the estimated age or length at 50% maturity. Text on the panels indicates the estimated age and length at 5, 50 and 95% maturity for females (F) and males (M). Model fits are only shown for cases where there are at least 20 mature and 20 immature males and females. Short rug lines along the top and bottom of each panel represent up to 1500 randomly chosen individual fish with a small amount of random jittering in the case of ages to help differentiate individual fish. Models are fit to all available survey samples regardless of time of year. See Appendix H in Anderson et al. (2019) for details.

4 Species Index by Common Name

Common name	Scientific name	Page
Abyssal Skate	<i>Bathyraja abyssicola</i>	41
Alaska Skate	<i>Bathyraja parmifera</i>	53
Aleutian Skate	<i>Bathyraja aleutica</i>	39
Arrowtooth Flounder	<i>Atheresthes stomias</i>	225
Aurora Rockfish	<i>Sebastes aurora</i>	117
Basking Shark	<i>Cetorhinus maximus</i>	25
Big Skate	<i>Beringrja binoculata</i>	45
Bigfin Eelpout	<i>Lycodes cortezianus</i>	71
Bigmouth Sculpin	<i>Hemitripterus bolini</i>	197
Black Eelpout	<i>Lycodes diapterus</i>	77
Black Rockfish	<i>Sebastes melanops</i>	149
Blackbelly Eelpout	<i>Lycodes pacificus</i>	81
Blackfin Sculpin	<i>Malacocottus kincaidi</i>	205
Blackgill Rockfish	<i>Sebastes melanostomus</i>	151
Blacktail Snailfish	<i>Careproctus melanurus</i>	221
Blue Shark	<i>Prionace glauca</i>	33
Bluntnose Sixgill Shark	<i>Hexanchus griseus</i>	23
Bocaccio	<i>Sebastes paucispinis</i>	161
Broad Skate	<i>Amblyrja badia</i>	43
Brown Cat Shark	<i>Apristurus brunneus</i>	29
Buffalo Sculpin	<i>Enophrys bison</i>	193
Butter Sole	<i>Isopsetta isolepis</i>	237
C-O Sole	<i>Pleuronichthys coenosus</i>	249
Cabezon	<i>Scorpaenichthys marmoratus</i>	215
California Grenadier	<i>Nezumia stelgidolepis</i>	91
Canary Rockfish	<i>Sebastes pinniger</i>	163
Chilipepper	<i>Sebastes goodei</i>	141
China Rockfish	<i>Sebastes nebulosus</i>	157
Copper Rockfish	<i>Sebastes caurinus</i>	125
Curlfin Sole	<i>Pleuronichthys decurrens</i>	251
Darkblotched Rockfish	<i>Sebastes crameri</i>	129
Deacon Rockfish	<i>Sebastes diaconus</i>	155
Deepsea Sole	<i>Embassichthys bathybius</i>	227
Dover Sole	<i>Microstomus pacificus</i>	243
Dusky Rockfish	<i>Sebastes variabilis</i>	127
Dwarf Wrymouth	<i>Cryptacanthodes aleutensis</i>	105
English Sole	<i>Parophrys vetulus</i>	245
Eulachon	<i>Thaleichthys pacificus</i>	59
Flathead Sole	<i>Hippoglossoides elassodon</i>	233
Giant Blobsculpin	<i>Psychrolutes phrictus</i>	211
Giant Grenadier	<i>Albatrossia pectoralis</i>	89
Giant Wrymouth	<i>Cryptacanthodes giganteus</i>	103
Great Sculpin	<i>Myoxocephalus polyacanthocephalus</i>	207

Common name	Scientific name	Page
Greenstriped Rockfish	<i>Sebastes elongatus</i>	133
Harlequin Rockfish	<i>Sebastes variegatus</i>	173
Kelp Greenling	<i>Hexagrammos decagrammus</i>	185
Lingcod	<i>Ophiodon elongatus</i>	189
Longnose Skate	<i>Raja rhina</i>	51
Longspine Thornyhead	<i>Sebastolobus altivelis</i>	181
Pacific Cod	<i>Gadus macrocephalus</i>	63
Pacific Flatnose	<i>Antimora microlepis</i>	61
Pacific Grenadier	<i>Coryphaenoides acrolepis</i>	85
Pacific Hake	<i>Merluccius productus</i>	65
Pacific Halibut	<i>Hippoglossus stenolepis</i>	235
Pacific Ocean Perch	<i>Sebastes alutus</i>	115
Pacific Sand Lance	<i>Ammodytes personatus</i>	109
Pacific Sanddab	<i>Citharichthys sordidus</i>	223
Pacific Sleeper Shark	<i>Somniosus pacificus</i>	35
Pacific Spiny Dogfish	<i>Squalus suckleyi</i>	37
Pacific Staghorn Sculpin	<i>Leptocottus armatus</i>	203
Pacific Tomcod	<i>Microgadus proximus</i>	67
Pearly Prickleback	<i>Bryozoichthys marjorius</i>	95
Petrale Sole	<i>Eopsetta jordani</i>	229
Popeye	<i>Coryphaenoides cinereus</i>	83
Prowfish	<i>Zaprora silenus</i>	107
Puget Sound Rockfish	<i>Sebastes emphaeus</i>	135
Pygmy Rockfish	<i>Sebastes wilsoni</i>	175
Quillback Rockfish	<i>Sebastes maliger</i>	147
Ragfish	<i>Icosteus aenigmaticus</i>	111
Red Irish Lord	<i>Hemilepidotus hemilepidotus</i>	195
Redbanded Rockfish	<i>Sebastes babcocki</i>	119
Redstripe Rockfish	<i>Sebastes proriger</i>	165
Rex Sole	<i>Glyptocephalus zachirus</i>	231
Rosethorn Rockfish	<i>Sebastes helvomaculatus</i>	143
Rougheye/Blackspotted Rockfish	<i>S. aleutianus/melanostictus complex</i>	113
Roughtail Skate	<i>Bathyraja trachura</i>	47
Sablefish	<i>Anoplopoma fimbria</i>	183
Salmon Shark	<i>Lamna ditropis</i>	27
Sand Sole	<i>Psettichthys melanostictus</i>	253
Sandpaper Skate	<i>Bathyraja interrupta</i>	49
Sharpchin Rockfish	<i>Sebastes zacentrus</i>	177
Shiner Perch	<i>Cymatogaster aggregata</i>	93
Shortbelly Rockfish	<i>Sebastes jordani</i>	145
Shortfin Eelpout	<i>Lycodes brevipes</i>	75
Shortraker Rockfish	<i>Sebastes borealis</i>	121
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>	179
Silvergray Rockfish	<i>Sebastes brevispinis</i>	123
Slender Sole	<i>Lyopsetta exilis</i>	241
Slim Sculpin	<i>Radulinus asprellus</i>	213

Common name	Scientific name	Page
Smootheye Poacher	<i>Xeneretmus leiops</i>	219
Snake Prickleback	<i>Lumpenus sagitta</i>	97
Southern Rock Sole	<i>Lepidopsetta bilineata</i>	239
Spinyhead Sculpin	<i>Dasycottus setiger</i>	191
Splitnose Rockfish	<i>Sebastes diploproa</i>	131
Spotfin Sculpin	<i>Icelinus tenuis</i>	201
Spotted Ratfish	<i>Hydrolagus colliei</i>	55
Starry Flounder	<i>Platichthys stellatus</i>	247
Stripetail Rockfish	<i>Sebastes saxicola</i>	171
Sturgeon Poacher	<i>Podothecus accipenserinus</i>	217
Thornback Sculpin	<i>Paricelinus hopliticus</i>	209
Threadfin Grenadier	<i>Coryphaenoides filifer</i>	87
Threadfin Sculpin	<i>Icelinus filamentosus</i>	199
Tiger Rockfish	<i>Sebastes nigrocinctus</i>	159
Tope Shark	<i>Galeorhinus galeus</i>	31
Twoline Eelpout	<i>Bothrocara brunneum</i>	73
Vermilion Rockfish	<i>Sebastes miniatus</i>	153
Walleye Pollock	<i>Gadus chalcogrammus</i>	69
Wattled Eelpout	<i>Lycodes palearis</i>	79
Whitebait Smelt	<i>Allosmerus elongatus</i>	57
Whitebarred Prickleback	<i>Poroclinus rothrocki</i>	99
Whitespotted Greenling	<i>Hexagrammos stelleri</i>	187
Widow Rockfish	<i>Sebastes entomelas</i>	137
Wolf Eel	<i>Anarrhichthys ocellatus</i>	101
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	169
Yellowmouth Rockfish	<i>Sebastes reedi</i>	167
Yellowtail Rockfish	<i>Sebastes flavidus</i>	139

5 Species Index by Scientific Name

Common name	Scientific name	Page
Giant Grenadier	<i>Albatrossia pectoralis</i>	89
Whitebait Smelt	<i>Allosmerus elongatus</i>	57
Broad Skate	<i>Amblyraja badia</i>	43
Pacific Sand Lance	<i>Ammodytes personatus</i>	109
Wolf Eel	<i>Anarrhichthys ocellatus</i>	101
Sablefish	<i>Anoplopoma fimbria</i>	183
Pacific Flatnose	<i>Antimora microlepis</i>	61
Brown Cat Shark	<i>Apristurus brunneus</i>	29
Arrowtooth Flounder	<i>Atheresthes stomias</i>	225
Abyssal Skate	<i>Bathyraja abyssicola</i>	41
Aleutian Skate	<i>Bathyraja aleutica</i>	39
Sandpaper Skate	<i>Bathyraja interrupta</i>	49
Alaska Skate	<i>Bathyraja parmifera</i>	53
Roughtail Skate	<i>Bathyraja trachura</i>	47
Big Skate	<i>Beringraja binoculata</i>	45
Twoline Eelpout	<i>Bothrocara brunneum</i>	73
Pearly Prickleback	<i>Bryozoichthys marjorius</i>	95
Blacktail Snailfish	<i>Careproctus melanurus</i>	221
Basking Shark	<i>Cetorhinus maximus</i>	25
Pacific Sanddab	<i>Citharichthys sordidus</i>	223
Pacific Grenadier	<i>Coryphaenoides acrolepis</i>	85
Popeye	<i>Coryphaenoides cinereus</i>	83
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Giant Wrymouth	<i>Cryptacanthodes giganteus</i>	103
Shiner Perch	<i>Cymatogaster aggregata</i>	93
Spinyhead Sculpin	<i>Dasycottus setiger</i>	191
Deepsea Sole	<i>Embassichthys bathybius</i>	227
Buffalo Sculpin	<i>Enophrys bison</i>	193
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Bigmouth Sculpin	<i>Hemitripterus bolini</i>	197
Kelp Greenling	<i>Hexagrammos decagrammus</i>	185
Whitespotted Greenling	<i>Hexagrammos stelleri</i>	187
Bluntnose Sixgill Shark	<i>Hexanchus griseus</i>	23
Flathead Sole	<i>Hippoglossoides elassodon</i>	233
Pacific Halibut	<i>Hippoglossus stenolepis</i>	235
Spotted Ratfish	<i>Hydrolagus colliei</i>	55
Threadfin Sculpin	<i>Icelinus filamentosus</i>	199

Common name	Scientific name	Page
Spotfin Sculpin	<i>Icelinus tenuis</i>	201
Ragfish	<i>Icosteus aenigmaticus</i>	111
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Southern Rock Sole	<i>Lepidopsetta bilineata</i>	239
Pacific Staghorn Sculpin	<i>Leptocottus armatus</i>	203
Snake Prickleback	<i>Lumpenus sagitta</i>	97
Shortfin Eelpout	<i>Lycodes brevipes</i>	75
Bigfin Eelpout	<i>Lycodes cortezianus</i>	71
Black Eelpout	<i>Lycodes diapterus</i>	77
Blackbelly Eelpout	<i>Lycodes pacificus</i>	81
Wattled Eelpout	<i>Lycodes palearis</i>	79
Slender Sole	<i>Lyopsetta exilis</i>	241
Blackfin Sculpin	<i>Malacocottus kincaidi</i>	205
Pacific Hake	<i>Merluccius productus</i>	65
Pacific Tomcod	<i>Microgadus proximus</i>	67
Dover Sole	<i>Microstomus pacificus</i>	243
Great Sculpin	<i>Myoxocephalus polyacanthocephalus</i>	207
California Grenadier	<i>Nezumia stelgidolepis</i>	91
Lingcod	<i>Ophiodon elongatus</i>	189
Thornback Sculpin	<i>Paricelinus hopliticus</i>	209
English Sole	<i>Parophrys vetulus</i>	245
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C-O Sole	<i>Pleuronichthys coenosus</i>	249
Curlfin Sole	<i>Pleuronichthys decurrens</i>	251
Sturgeon Poacher	<i>Podothecus accipenserinus</i>	217
Whitebarred Prickleback	<i>Poroclinus rothrocki</i>	99
Blue Shark	<i>Prionace glauca</i>	33
Sand Sole	<i>Psettichthys melanostictus</i>	253
Giant Blobsculpin	<i>Psychrolutes phrictus</i>	211
Slim Sculpin	<i>Radulinus asprellus</i>	213
Longnose Skate	<i>Raja rhina</i>	51
Rougheye/Blackspotted Rockfish	<i>S. aleutianus/melanostictus complex</i>	113
Cabezon	<i>Scorpaenichthys marmoratus</i>	215
Pacific Ocean Perch	<i>Sebastes alutus</i>	115
Aurora Rockfish	<i>Sebastes aurora</i>	117
Redbanded Rockfish	<i>Sebastes babcocki</i>	119
Shorthead Rockfish	<i>Sebastes borealis</i>	121
Silvergray Rockfish	<i>Sebastes brevispinis</i>	123
Copper Rockfish	<i>Sebastes caurinus</i>	125
Darkblotched Rockfish	<i>Sebastes crameri</i>	129
Deacon Rockfish	<i>Sebastes diaconus</i>	155
Splitnose Rockfish	<i>Sebastes diploproa</i>	131
Greenstriped Rockfish	<i>Sebastes elongatus</i>	133
Puget Sound Rockfish	<i>Sebastes emphaeus</i>	135
Widow Rockfish	<i>Sebastes entomelas</i>	137

Common name	Scientific name	Page
Yellowtail Rockfish	<i>Sebastes flavidus</i>	139
Chilipepper	<i>Sebastes goodei</i>	141
Rosethorn Rockfish	<i>Sebastes helvomaculatus</i>	143
Shortbelly Rockfish	<i>Sebastes jordani</i>	145
Quillback Rockfish	<i>Sebastes maliger</i>	147
Black Rockfish	<i>Sebastes melanops</i>	149
Blackgill Rockfish	<i>Sebastes melanostomus</i>	151
Vermilion Rockfish	<i>Sebastes miniatus</i>	153
China Rockfish	<i>Sebastes nebulosus</i>	157
Tiger Rockfish	<i>Sebastes nigrocinctus</i>	159
Bocaccio	<i>Sebastes paucispinis</i>	161
Canary Rockfish	<i>Sebastes pinniger</i>	163
Redstripe Rockfish	<i>Sebastes proriger</i>	165
Yellowmouth Rockfish	<i>Sebastes reedi</i>	167
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	169
Stripetail Rockfish	<i>Sebastes saxicola</i>	171
Dusky Rockfish	<i>Sebastes variabilis</i>	127
Harlequin Rockfish	<i>Sebastes variegatus</i>	173
Pygmy Rockfish	<i>Sebastes wilsoni</i>	175
Sharpchin Rockfish	<i>Sebastes zacentrus</i>	177
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>	179
Longspine Thornyhead	<i>Sebastolobus altivelis</i>	181
Pacific Sleeper Shark	<i>Somniosus pacificus</i>	35
Pacific Spiny Dogfish	<i>Squalus suckleyi</i>	37
Eulachon	<i>Thaleichthys pacificus</i>	59
Smootheye Poacher	<i>Xeneretmus leiops</i>	219
Prowfish	<i>Zaprora silenus</i>	107

6 Figures

This section contains the main species-by-species data visualizations. Each species is shown on two pages with the same layout used throughout. See the previous 'Plot descriptions' section (Section 3) for detailed figure captions. In addition to the figures, we also provide the scientific name, taxonomic details, DFO species code (page in Hart et al. 1988), a link to the FishBase and WoRMS (World Register of Marine Species) web pages, details of the most recent DFO Research Documents and Science Advisory Reports, and any information related to designations by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and to listings under the *Species at Risk Act* (SARA). The species are ordered according to DFO species codes. The previous section provides links to the pages sorted alphabetically by common and scientific names.

6.1 Bluntnose Sixgill Shark

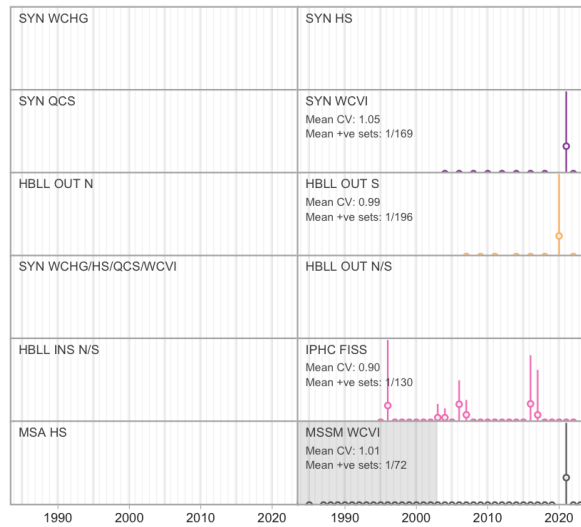
Hexanchus griseus (027)

Order: Hexanchiformes, Family: Hexanchidae, [FishBase](#), [WoRMS](#)

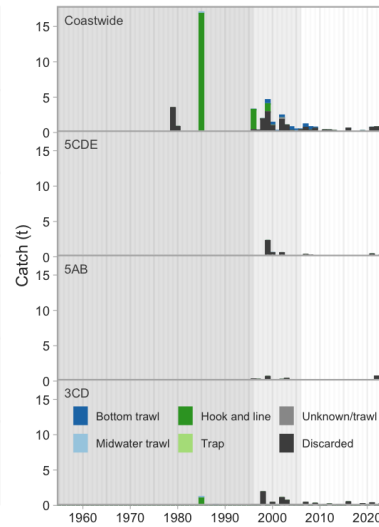
COSEWIC Status Report: COSEWIC (2007a)

COSEWIC Status: Special Concern, SARA Status: Special Concern

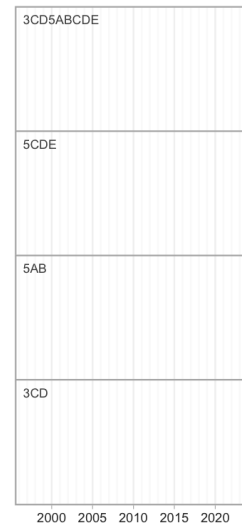
Survey relative biomass indices



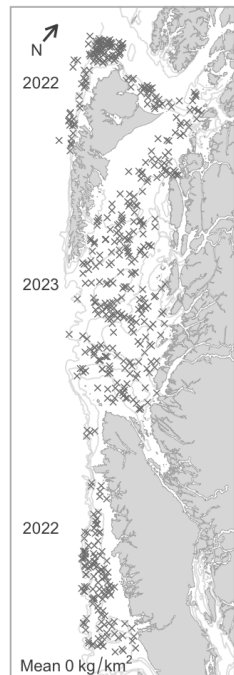
Commercial catch



Commercial bottom trawl CPUE



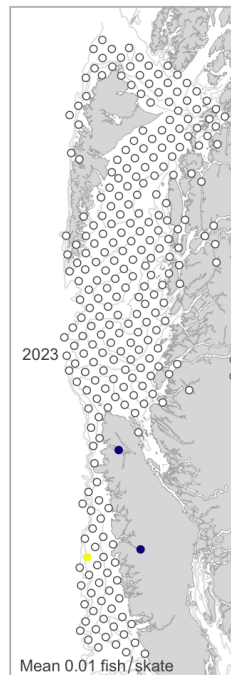
Synoptic survey biomass



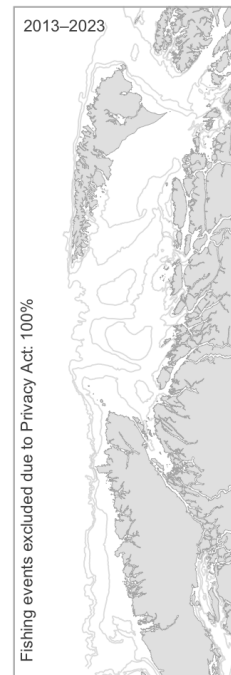
HBLL OUT survey biomass



IPHC survey catch rate

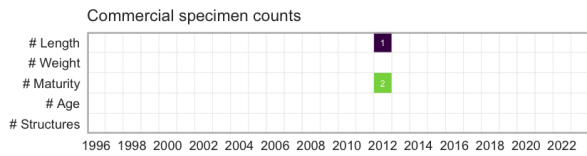
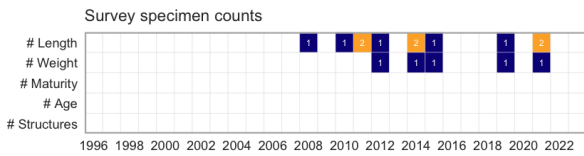
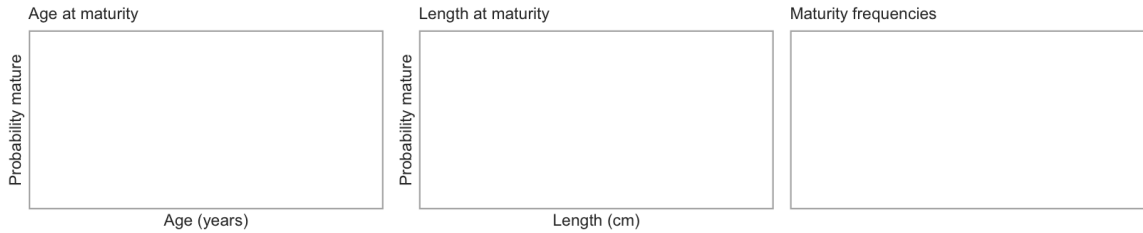
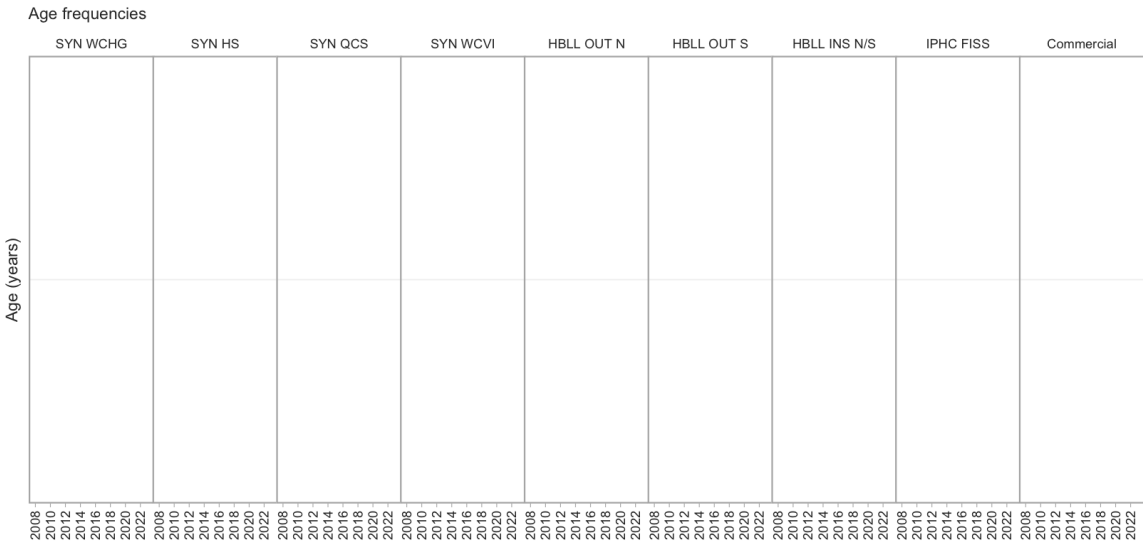
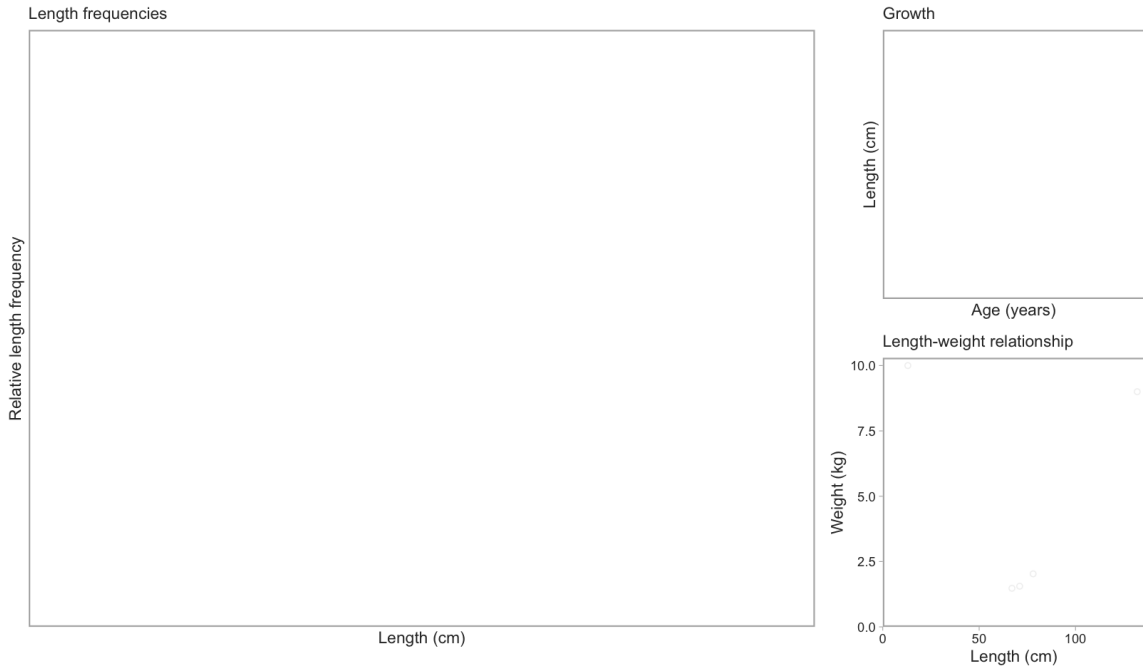


Commercial trawl CPUE



Commercial H & L CPUE





6.2 Basking Shark

Cetorhinus maximus (034)

Order: Lamniformes, Family: Cetorhinidae, [FishBase](#), [WoRMS](#)

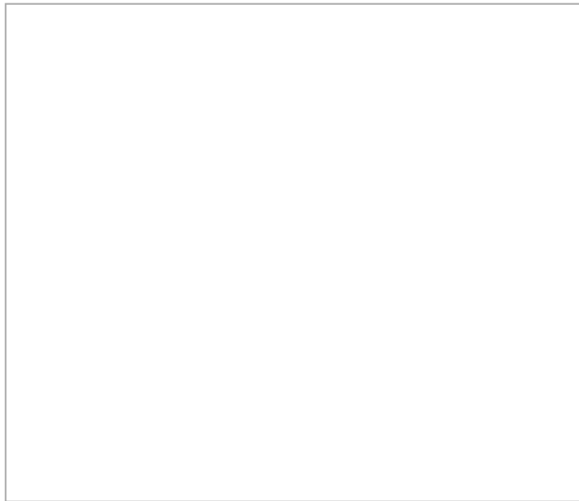
Last Research Document: McFarlane et al. (2008)

Species at Risk Act Recovery Strategy and Action Plan: DFO (2011a), DFO (2020a)

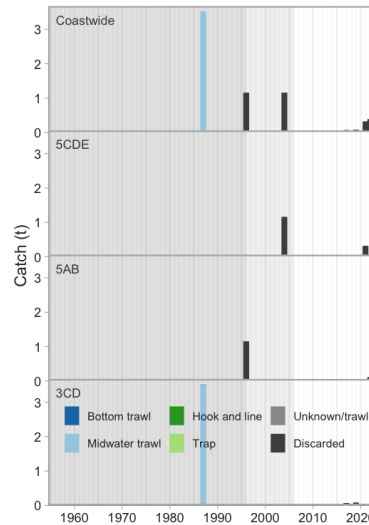
COSEWIC Status Report: COSEWIC (2018)

COSEWIC Status: Endangered, SARA Status: Endangered

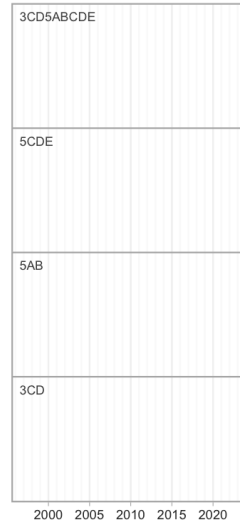
Survey relative biomass indices



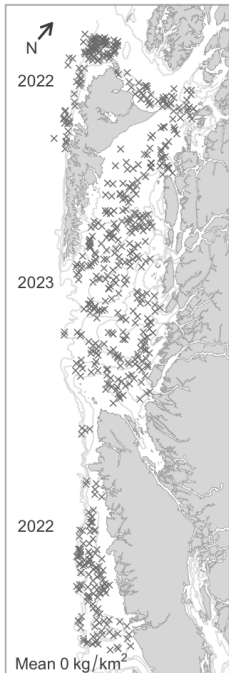
Commercial catch



Commercial bottom trawl CPUE



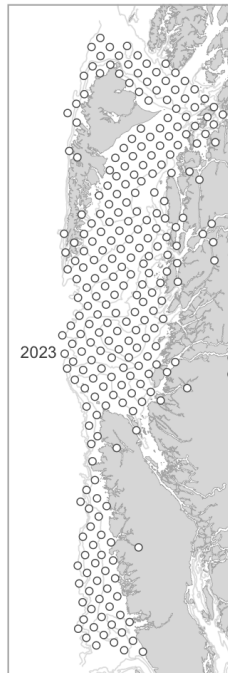
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

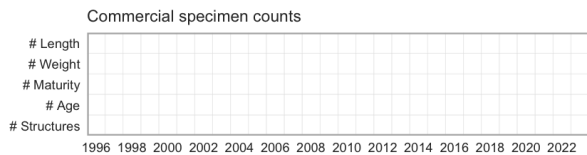
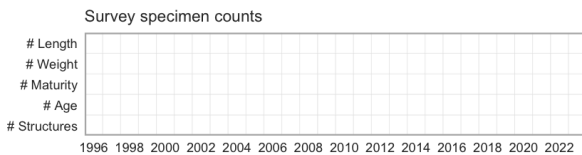
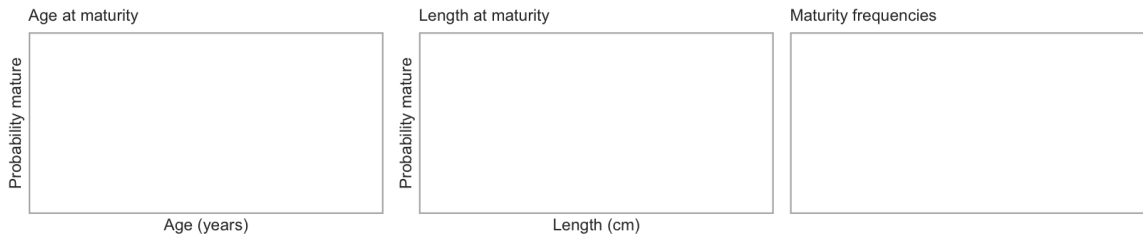
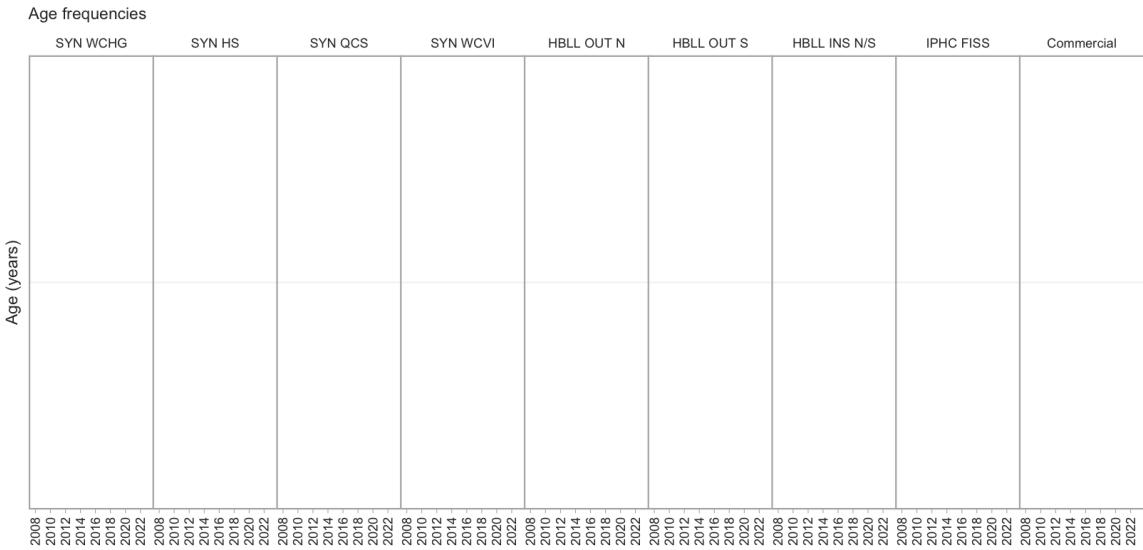
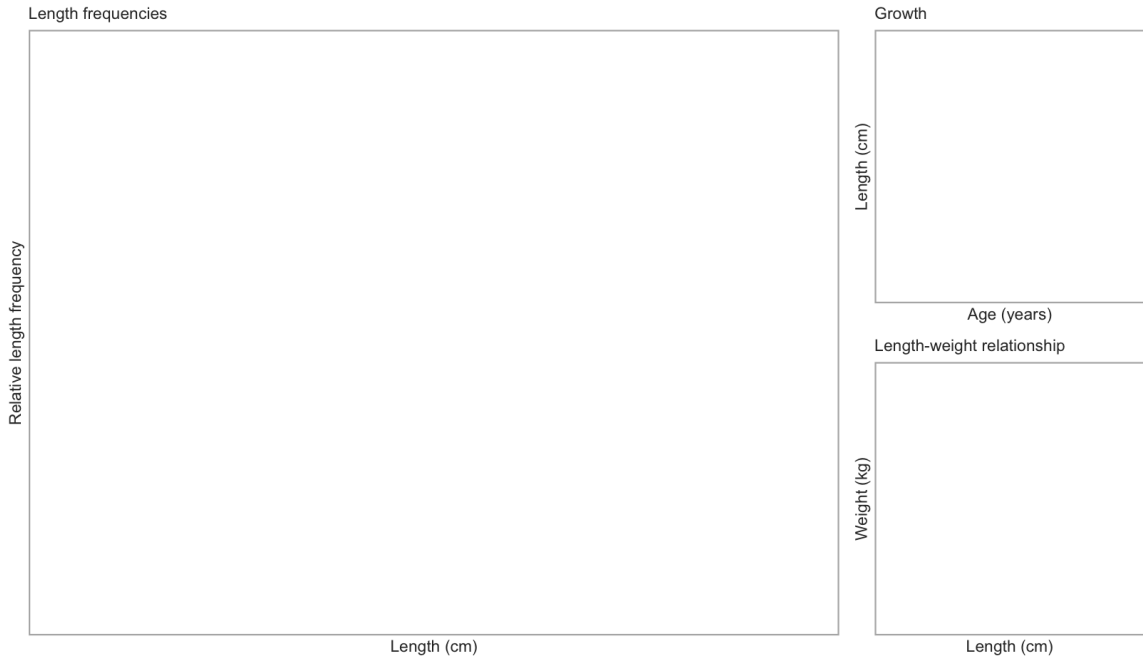


Commercial trawl CPUE



Commercial H & L CPUE



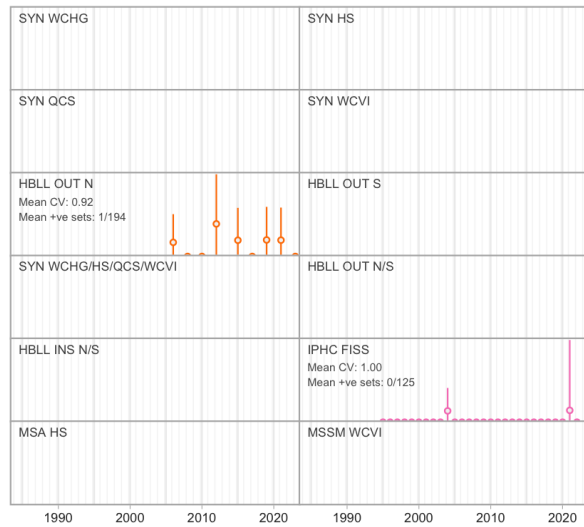


6.3 Salmon Shark

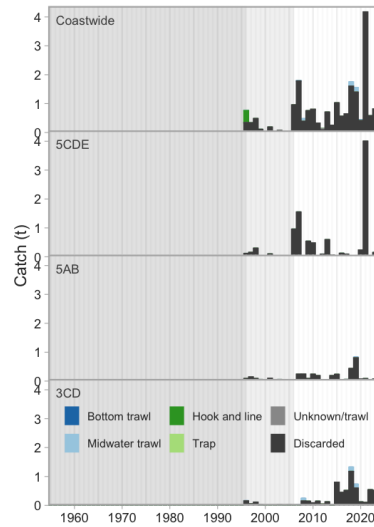
Lamna ditropis (036)

Order: Lamniformes, Family: Lamnidae, [FishBase](#), [WoRMS](#)

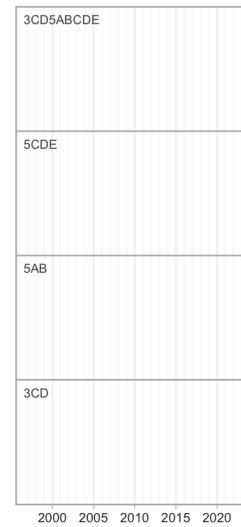
Survey relative biomass indices



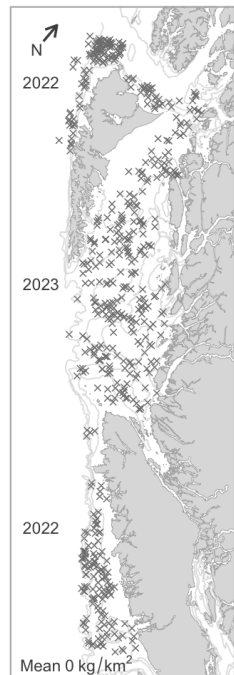
Commercial catch



Commercial bottom trawl CPUE



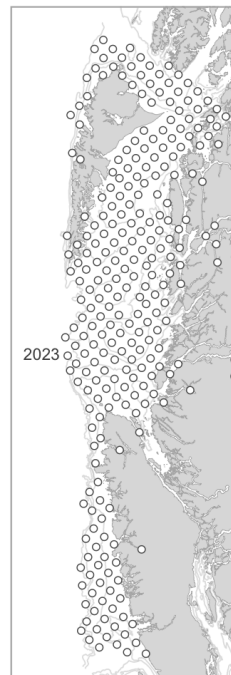
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

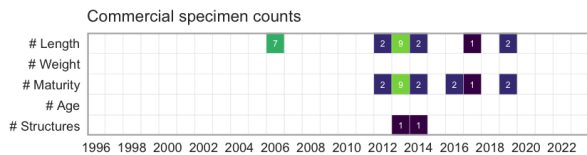
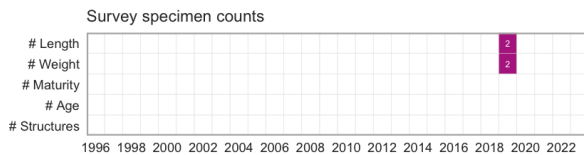
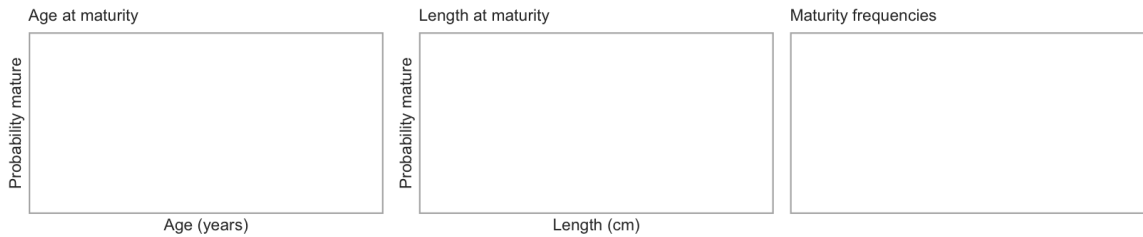
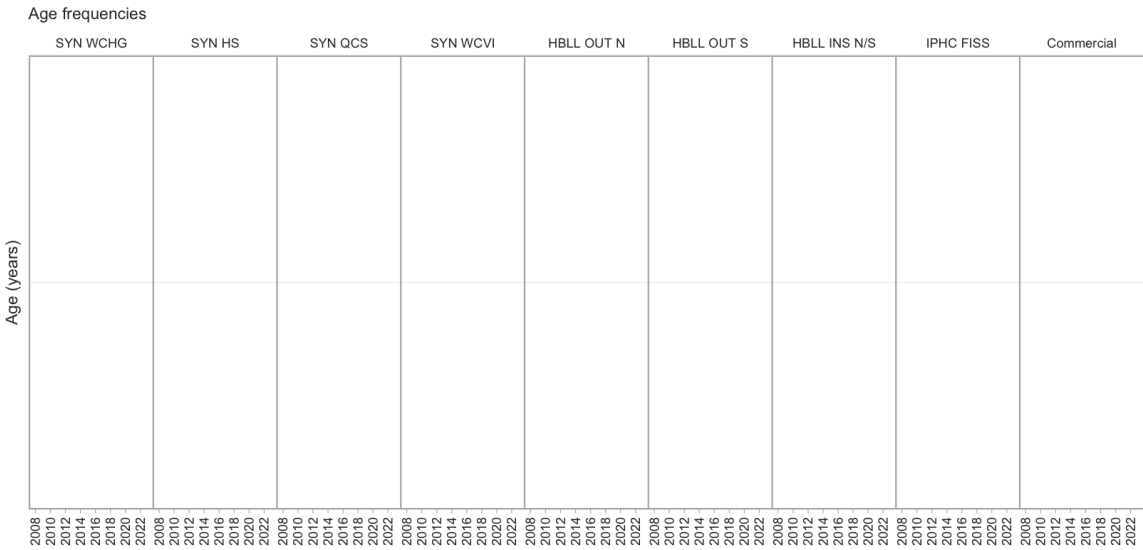
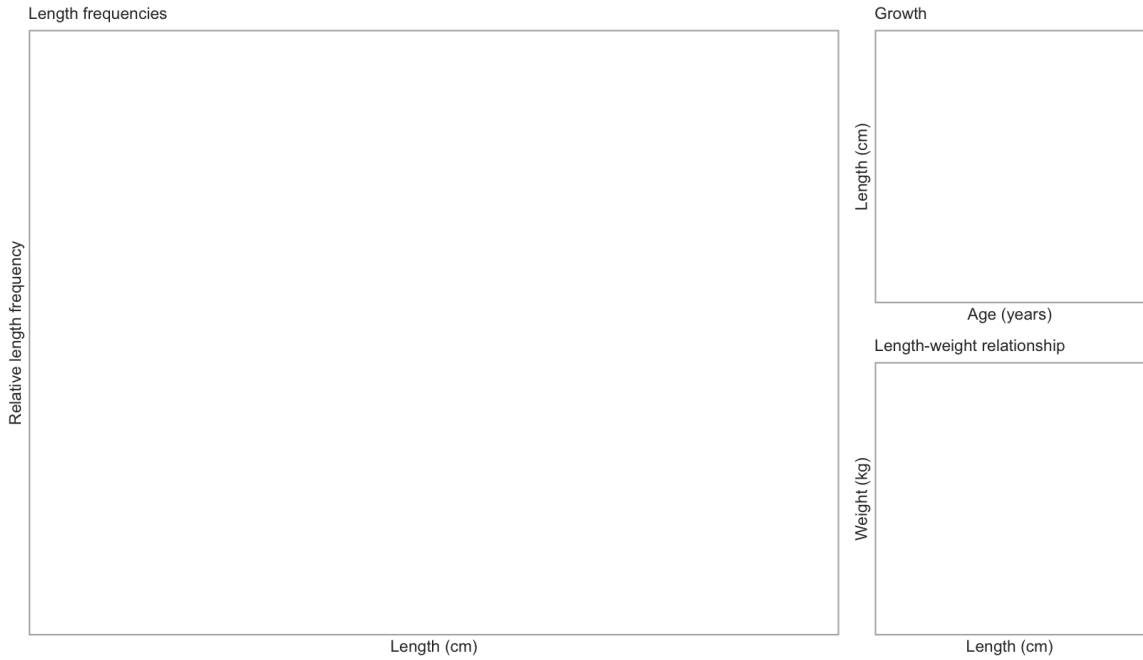


Commercial trawl CPUE



Commercial H & L CPUE





6.4 Brown Cat Shark

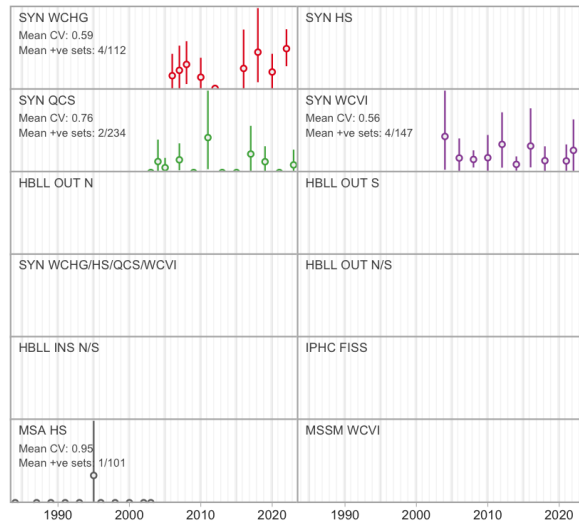
Apristurus brunneus (038)

Order: Carcharhiniformes, Family: Scyliorhinidae, [FishBase](#), [WoRMS](#)

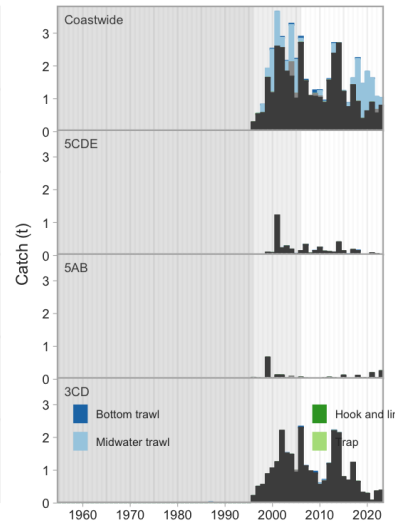
COSEWIC Annual Report: COSEWIC (2007b)

COSEWIC Status: Data Deficient, SARA Status: No Status

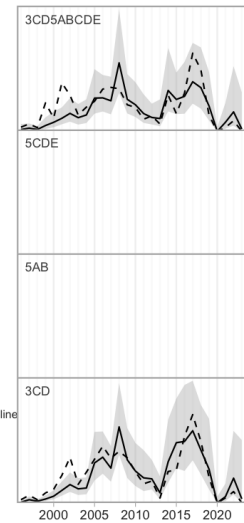
Survey relative biomass indices



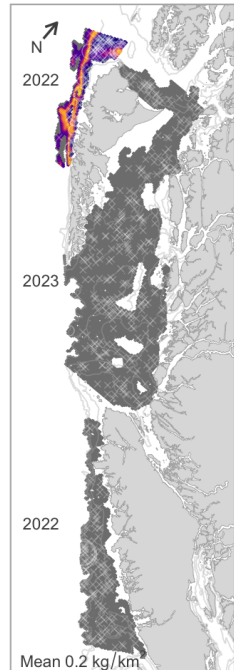
Commercial catch



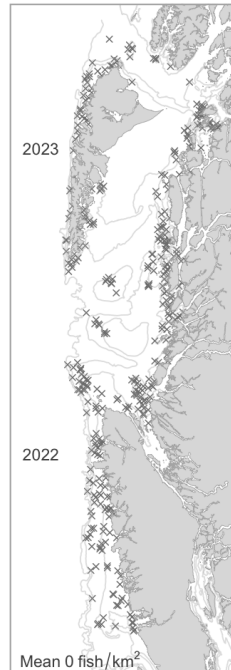
Commercial bottom trawl CPUE



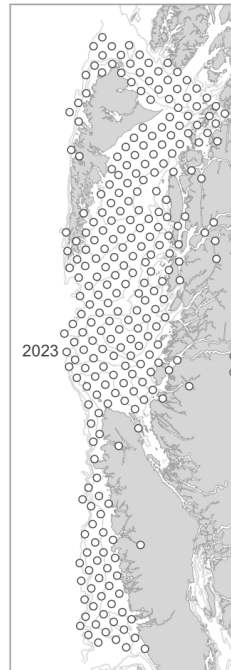
Synoptic survey biomass



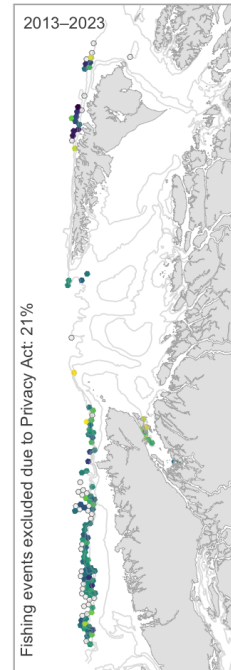
HBL OUT survey biomass



IPHC survey catch rate

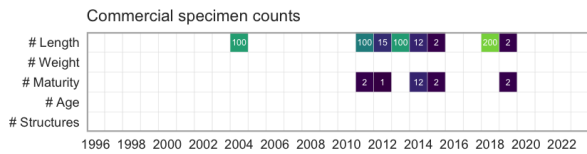
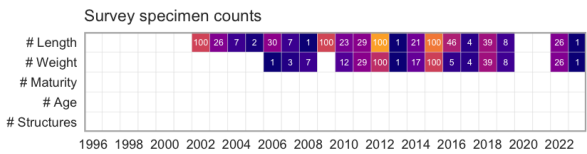
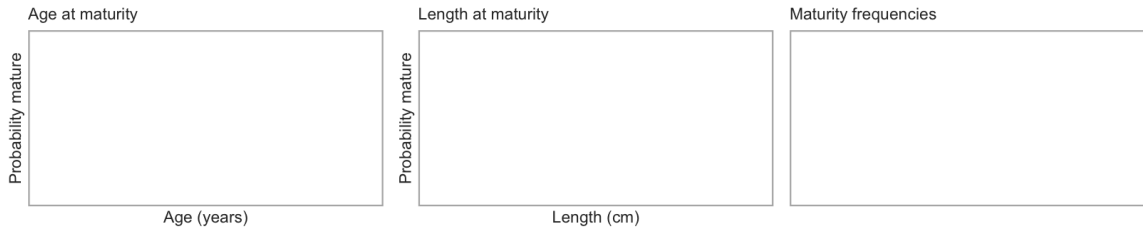
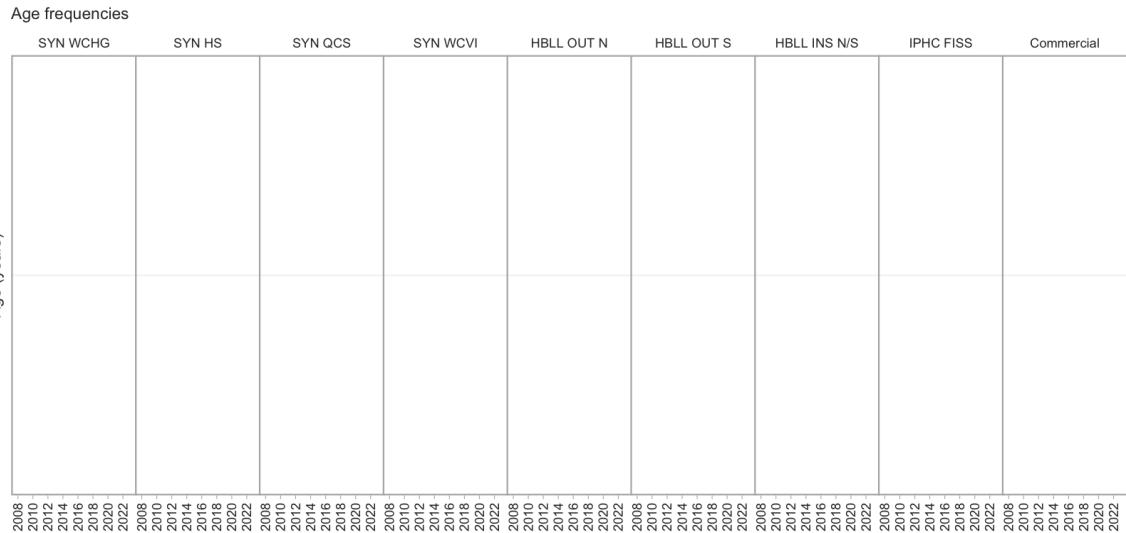
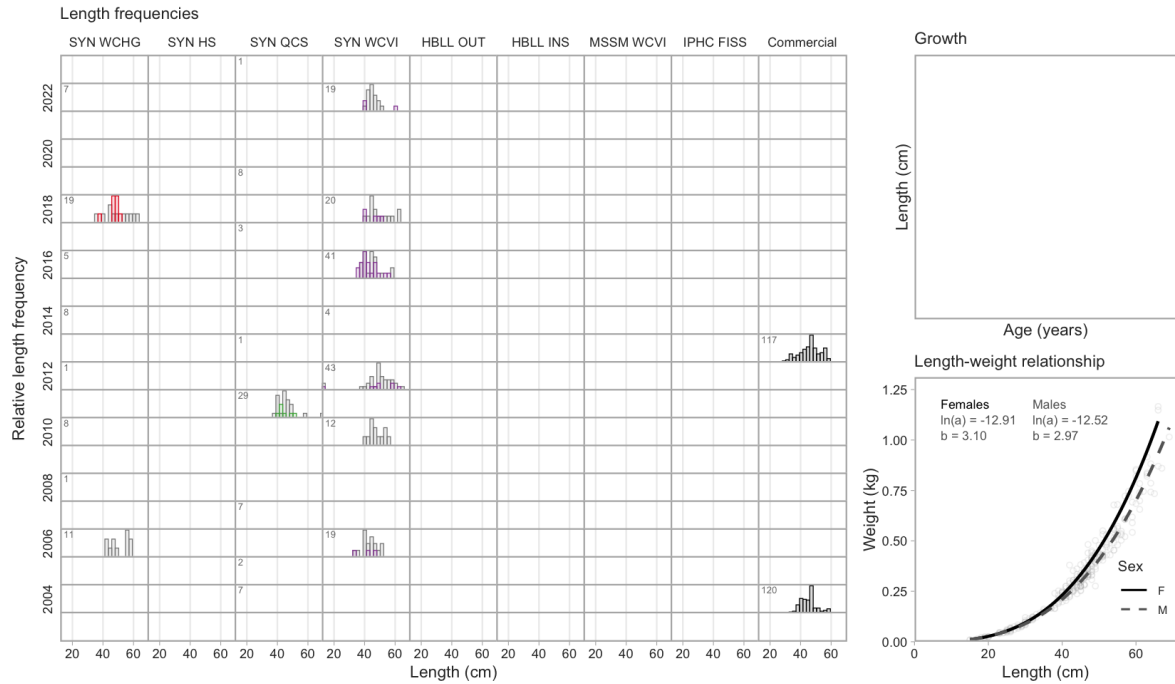


Commercial trawl CPUE



Commercial H & L CPUE





6.5 Tope Shark

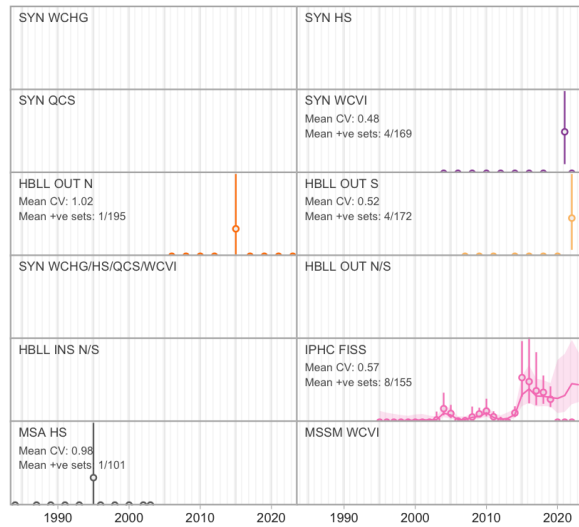
Galeorhinus galeus (040)

Order: Carcharhiniformes, Family: Triakidae, [FishBase](#), [WoRMS](#)

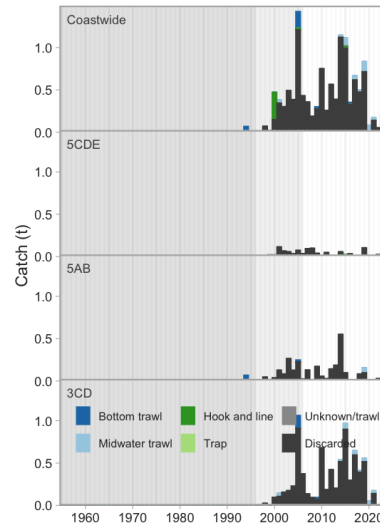
COSEWIC Status Report: COSEWIC (2021)

COSEWIC Status: Special Concern, SARA Status: Special Concern

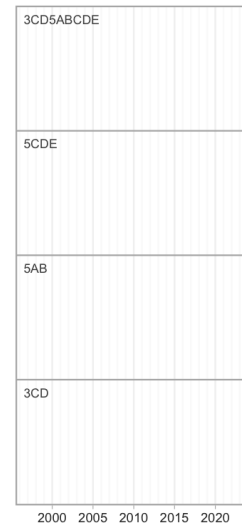
Survey relative biomass indices



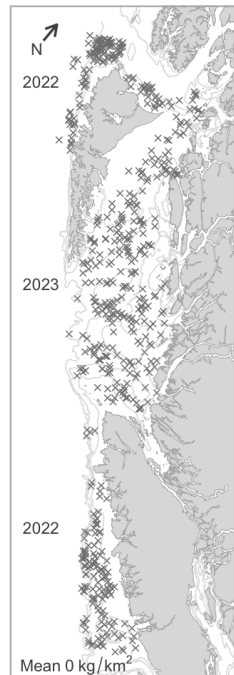
Commercial catch



Commercial bottom trawl CPUE



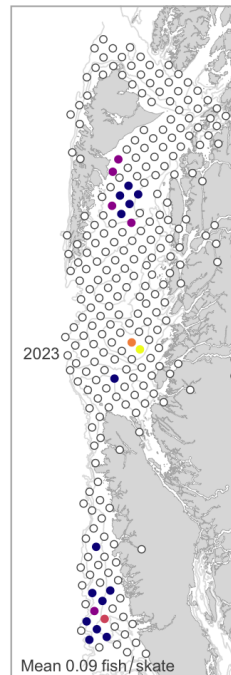
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

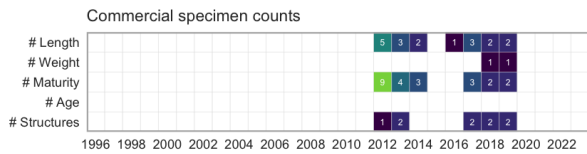
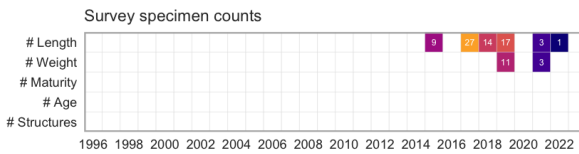
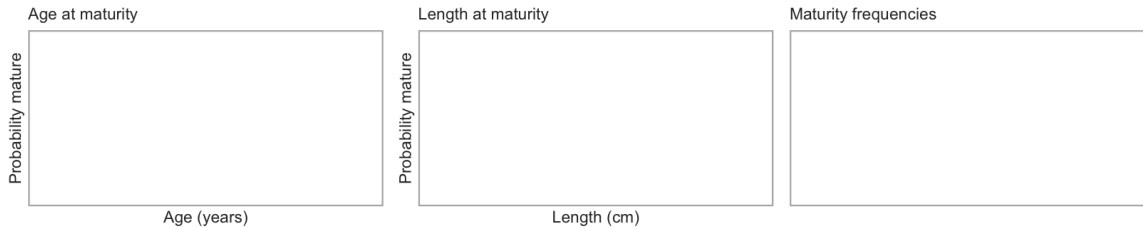
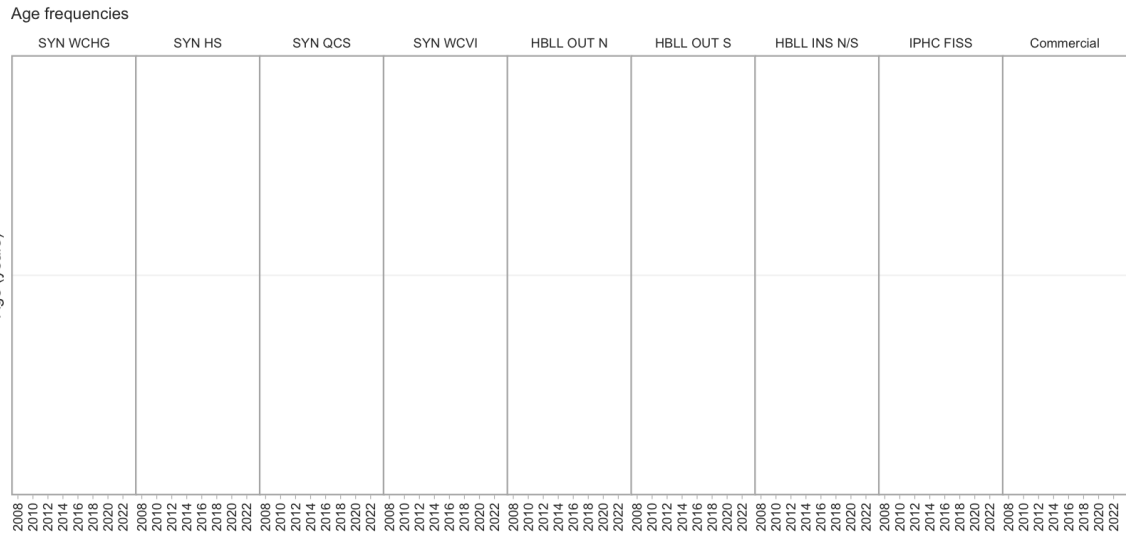
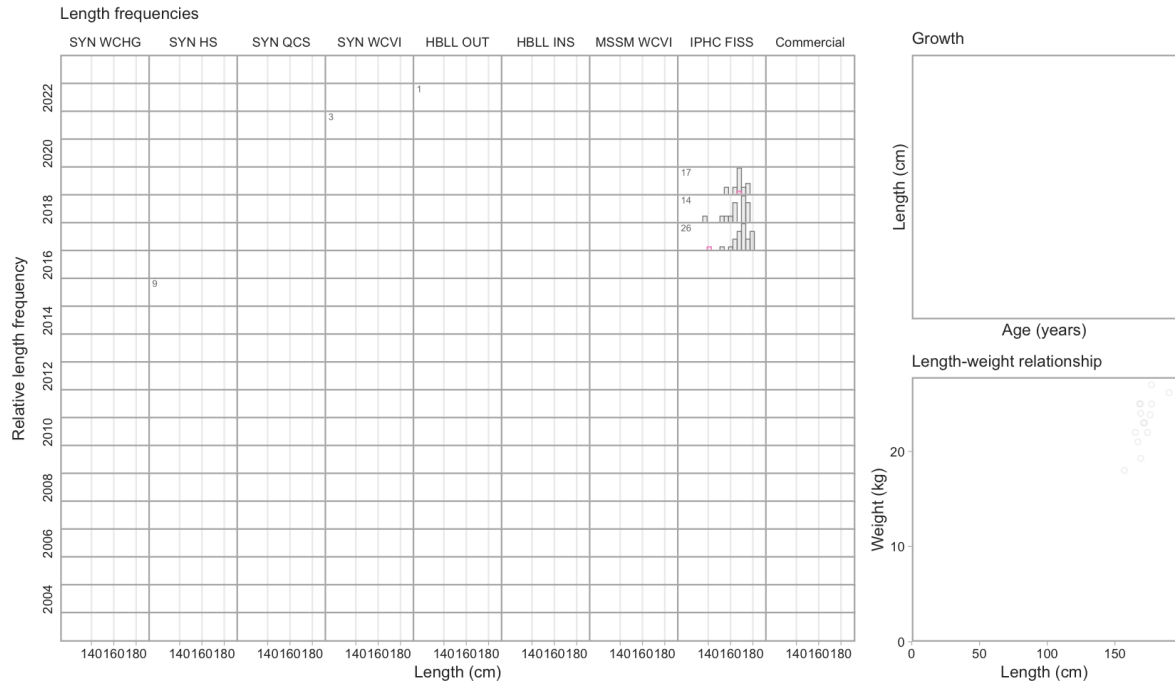


Commercial trawl CPUE



Commercial H & L CPUE





6.6 Blue Shark

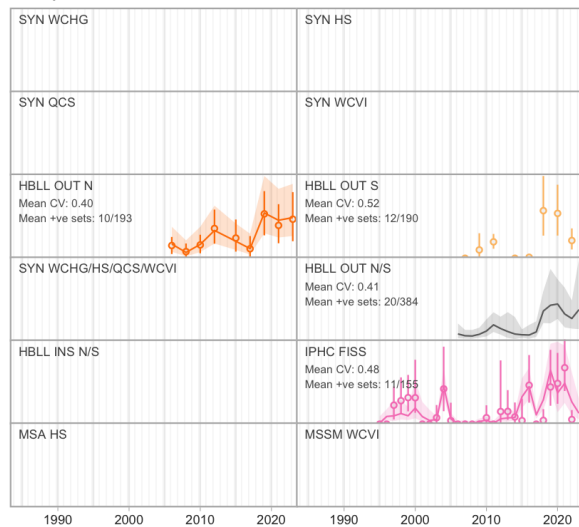
Prionace glauca (041)

Order: Carcharhiniformes, Family: Carcharhinidae, [FishBase](#), [WoRMS](#)

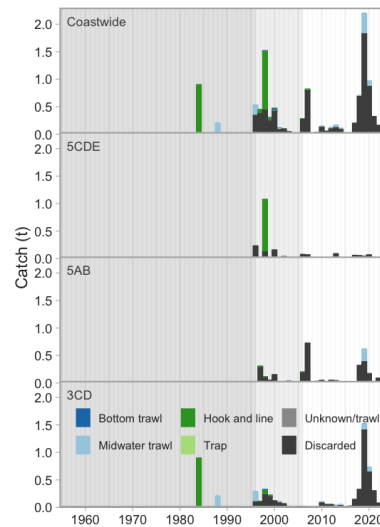
COSEWIC Status Report: COSEWIC (2016)

COSEWIC Status: Not at Risk, SARA Status: No Status

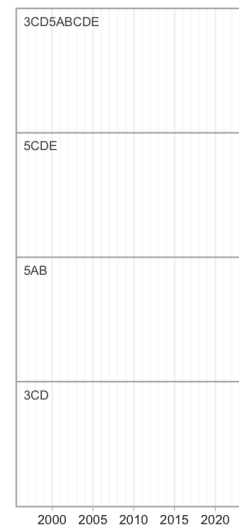
Survey relative biomass indices



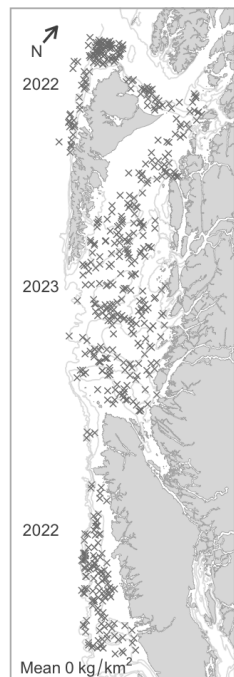
Commercial catch



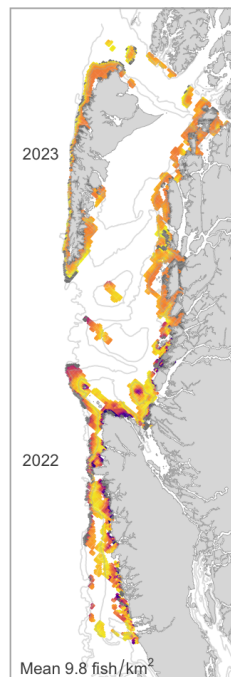
Commercial bottom trawl CPUE



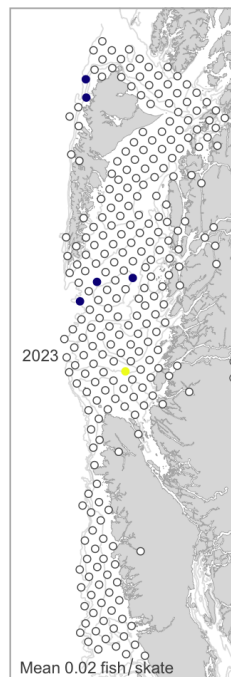
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

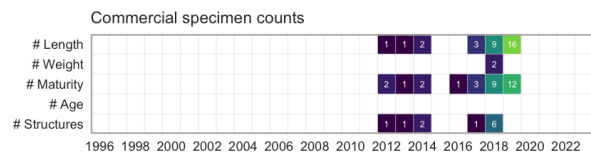
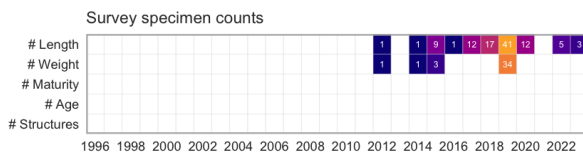
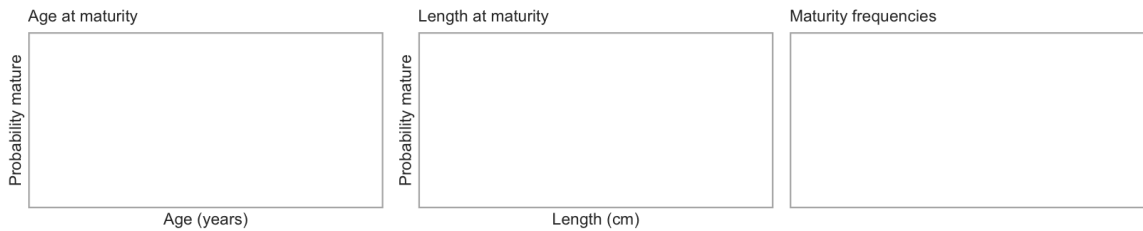
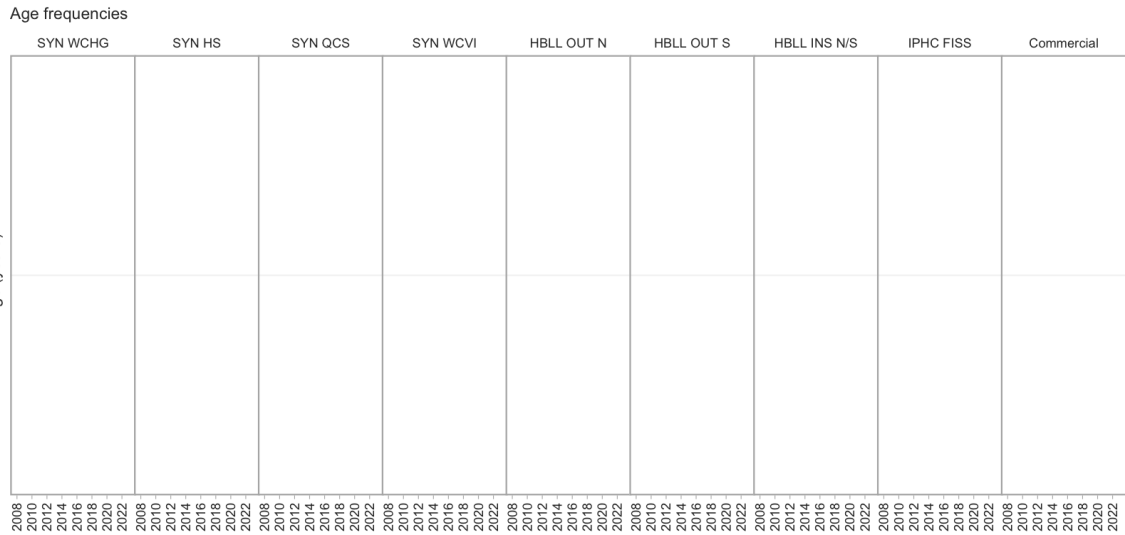
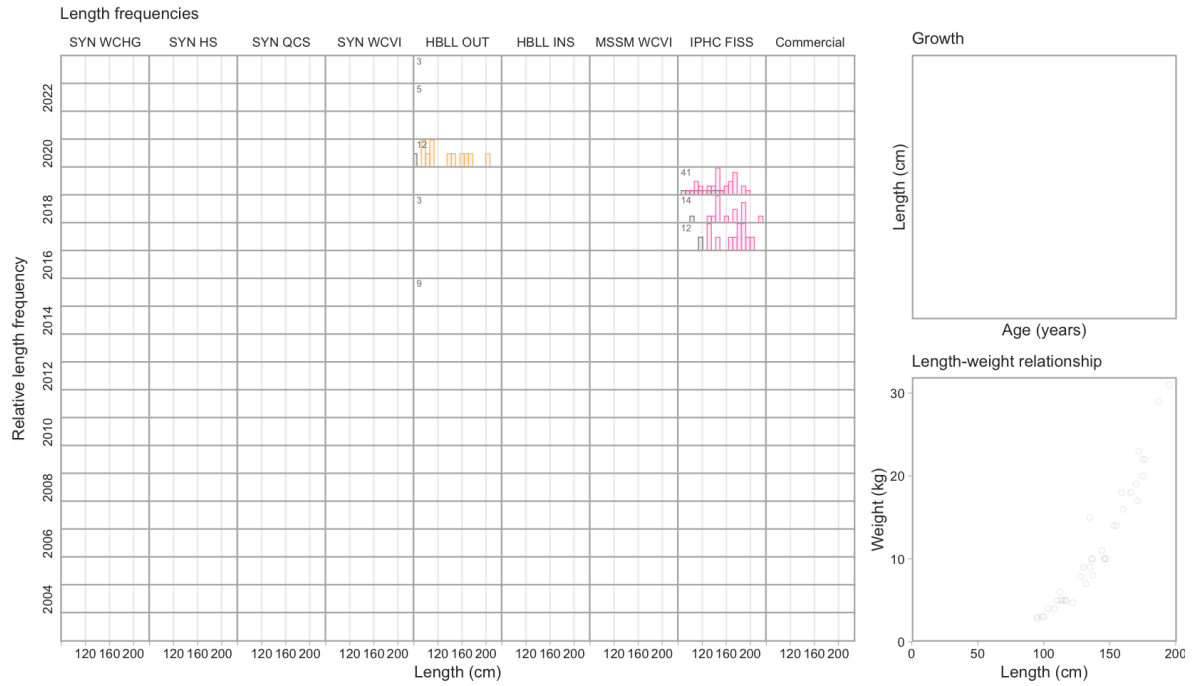


Commercial trawl CPUE



Commercial H & L CPUE



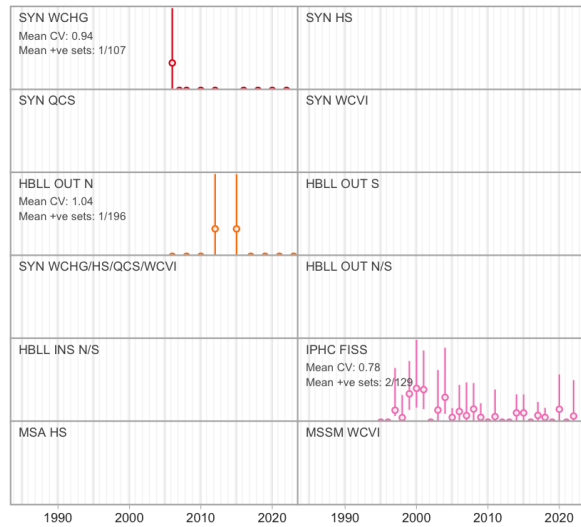


6.7 Pacific Sleeper Shark

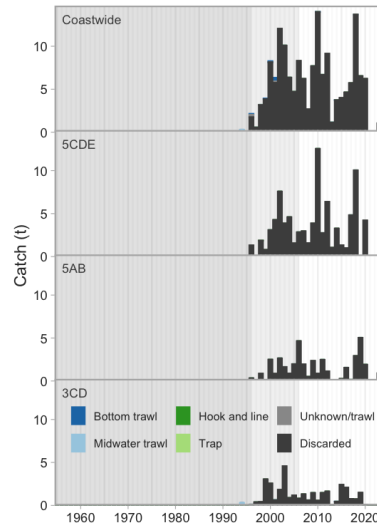
Somniosus pacificus (043)

Order: Squaliformes, Family: Somniosidae, [FishBase](#), [WoRMS](#)

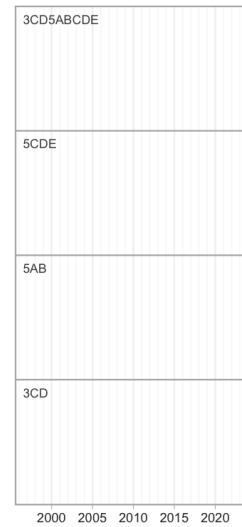
Survey relative biomass indices



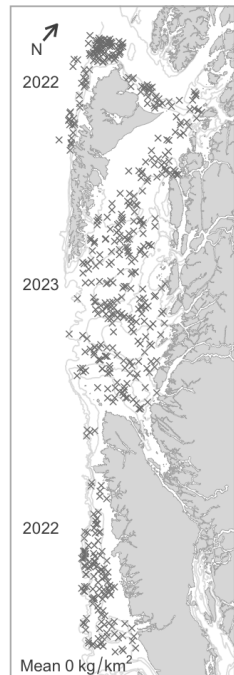
Commercial catch



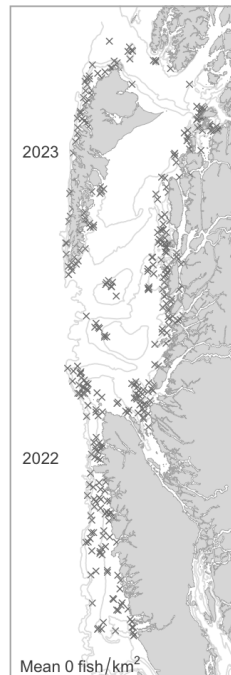
Commercial bottom trawl CPUE



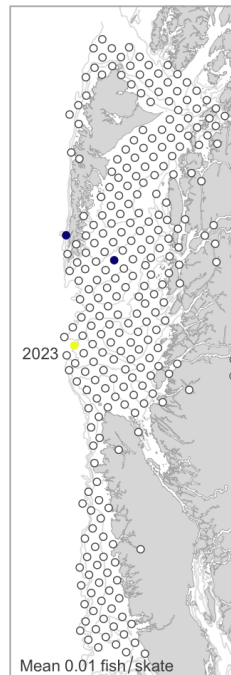
Synoptic survey biomass



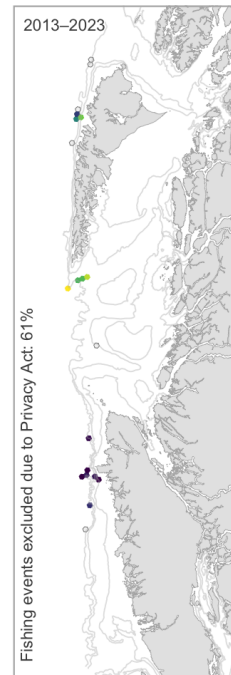
HBL OUT survey biomass



IPHC survey catch rate

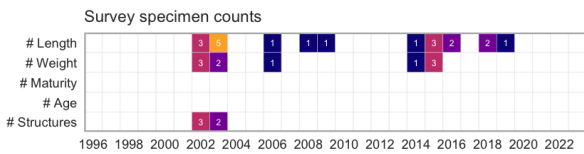
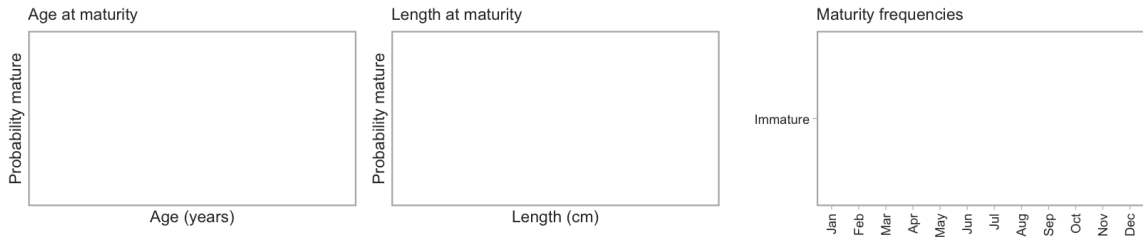
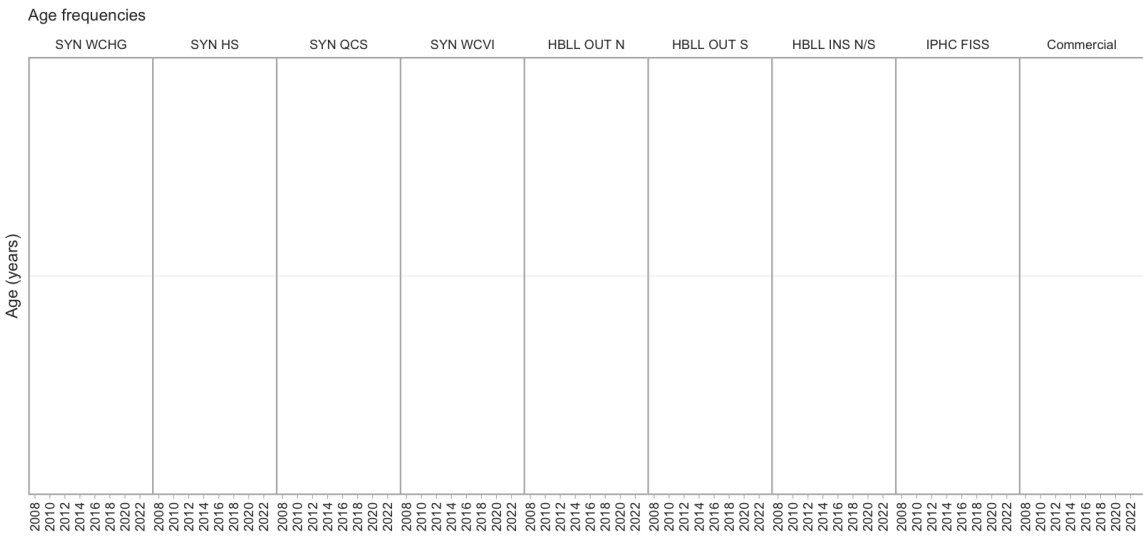
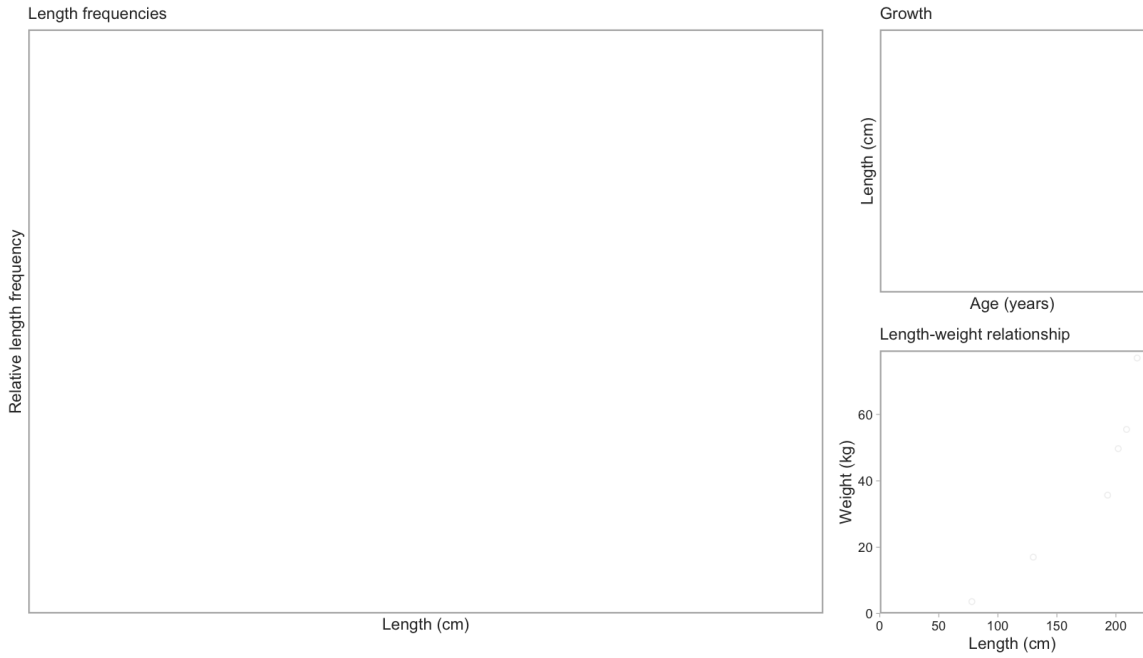


Commercial trawl CPUE



Commercial H & L CPUE





6.8 Pacific Spiny Dogfish

Squalus suckleyi (044)

Order: Squaliformes, Family: Squalidae, [FishBase](#), [WoRMS](#)

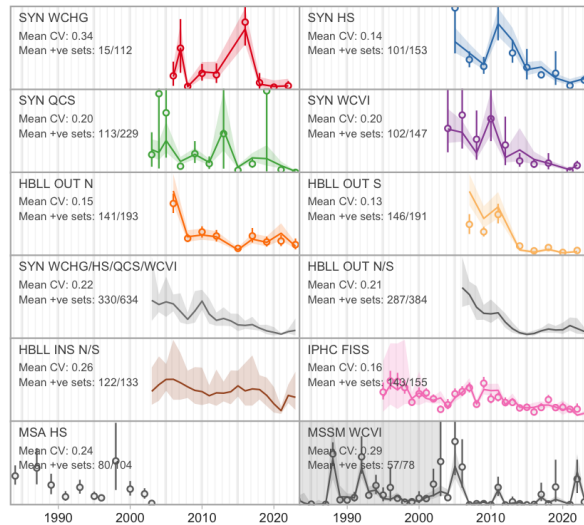
Last Research Document: Galluci et al. (2011)

Last Science Advisory Report: DFO (2010)

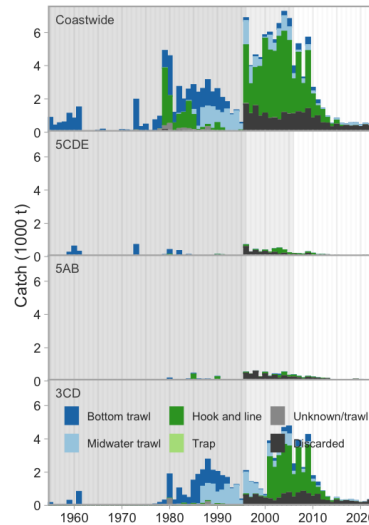
COSEWIC Status Report: COSEWIC (2011)

COSEWIC Status: Special Concern, SARA Status: No Status

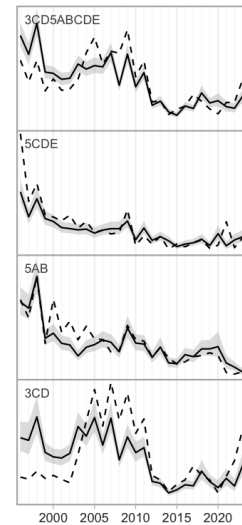
Survey relative biomass indices



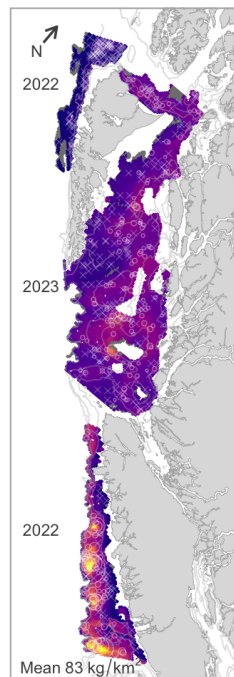
Commercial catch



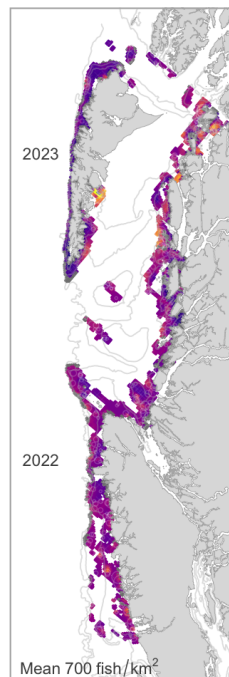
Commercial bottom trawl CPUE



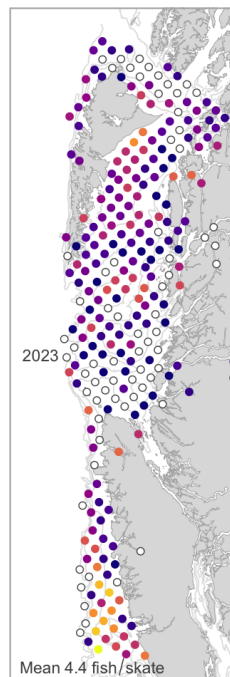
Synoptic survey biomass



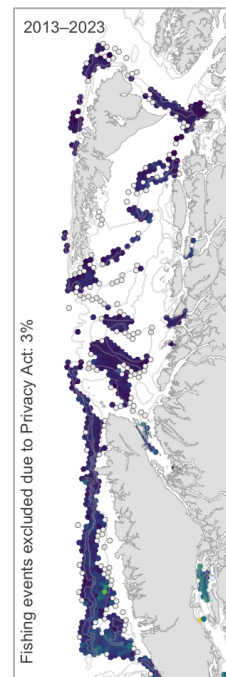
HBL OUT survey biomass



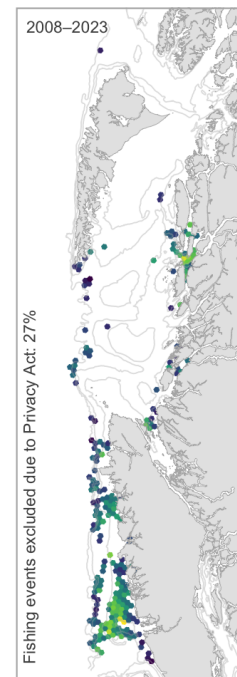
IPHC survey catch rate

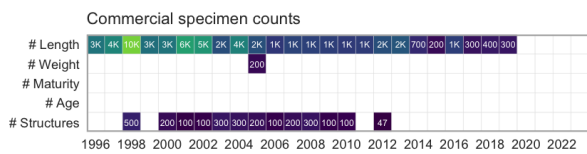
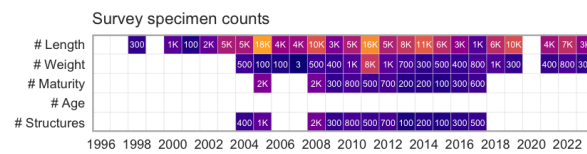
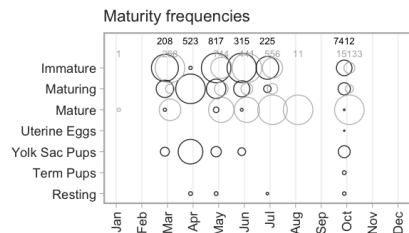
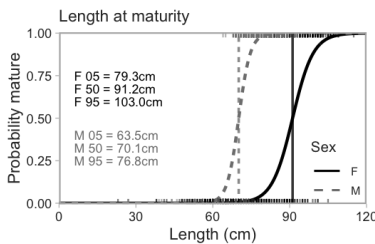
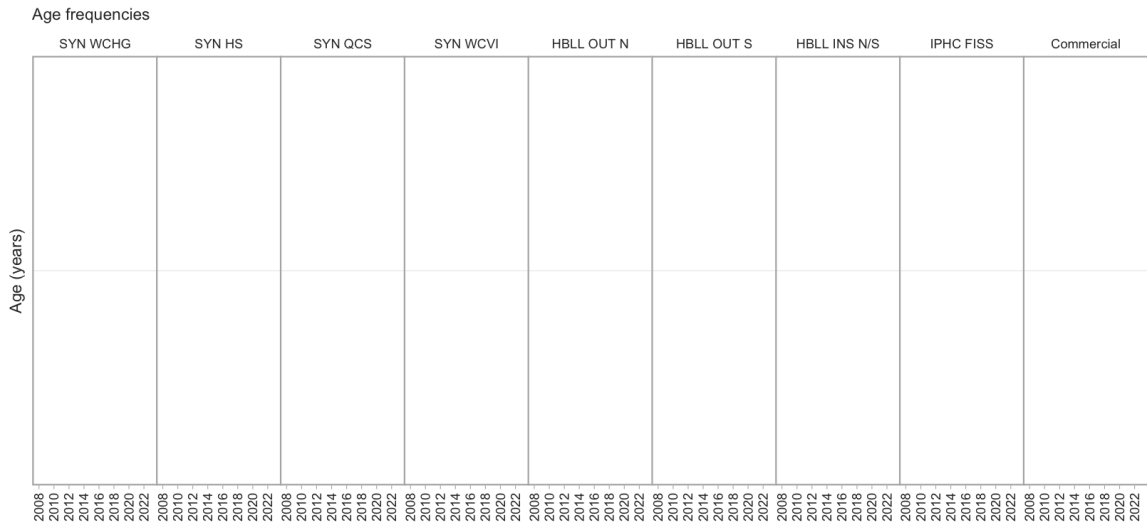
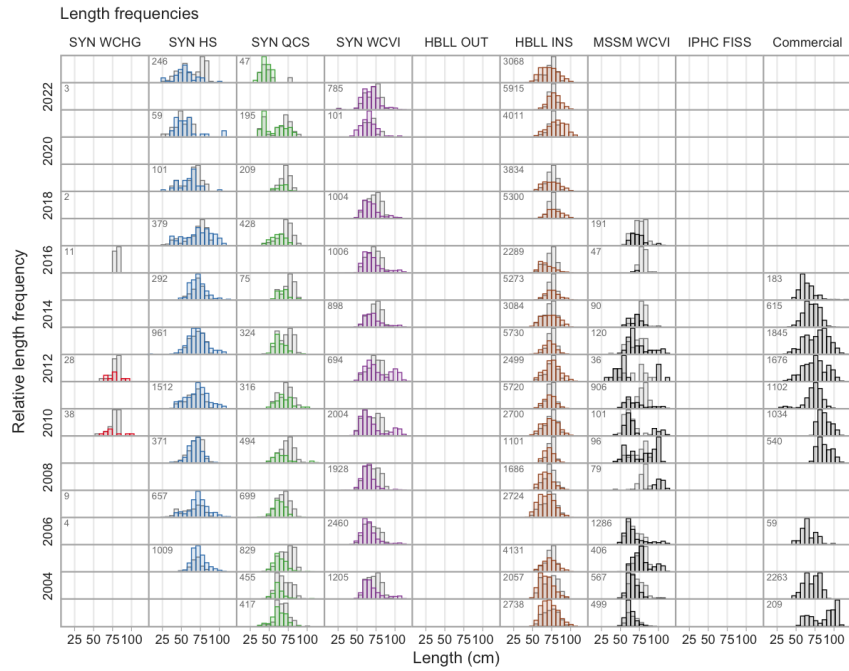


Commercial trawl CPUE



Commercial H & L CPUE



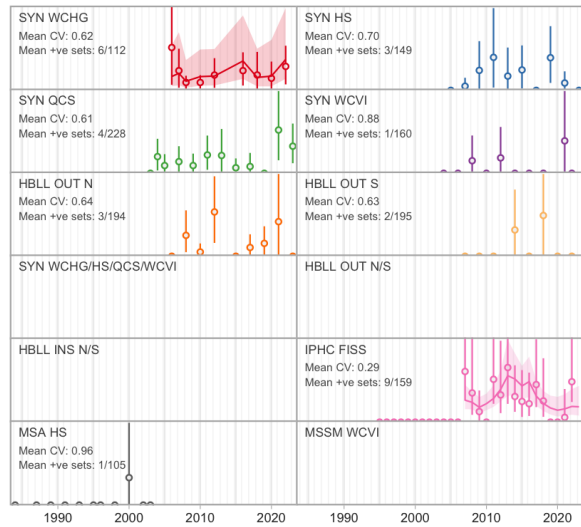


6.9 Aleutian Skate

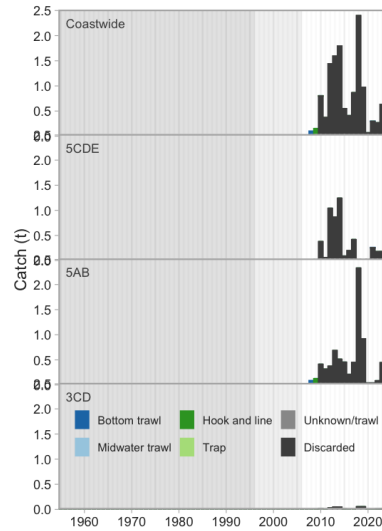
Bathyraja aleutica (052)

Order: Rajiformes, Family: Arhynchobatidae, [FishBase](#), [WoRMS](#)

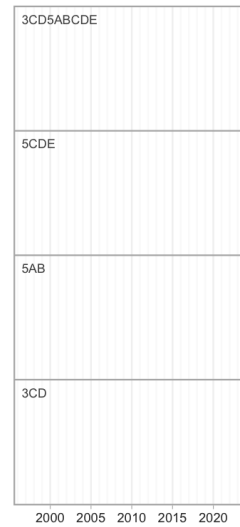
Survey relative biomass indices



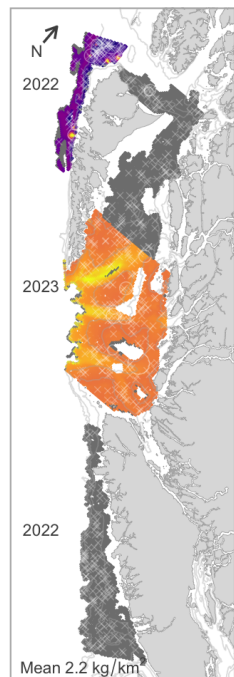
Commercial catch



Commercial bottom trawl CPUE



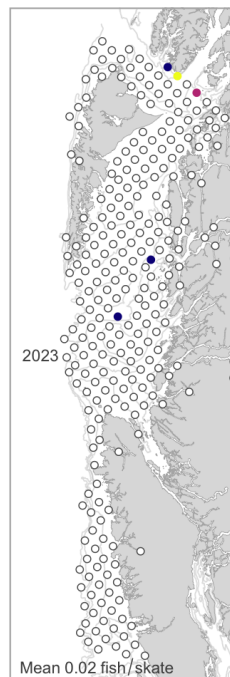
Synoptic survey biomass



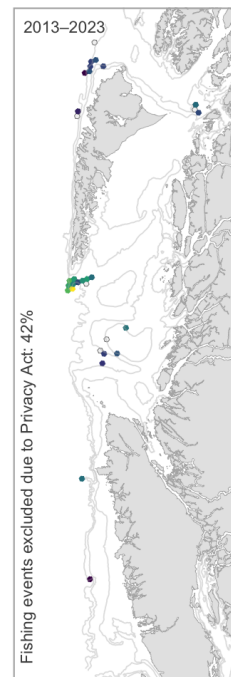
HBL OUT survey biomass



IPHC survey catch rate

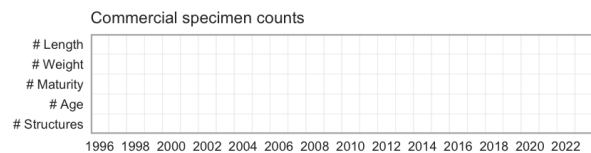
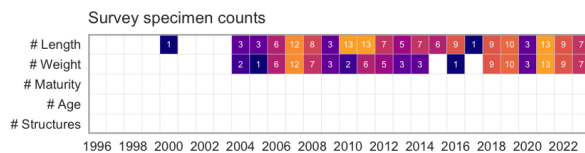
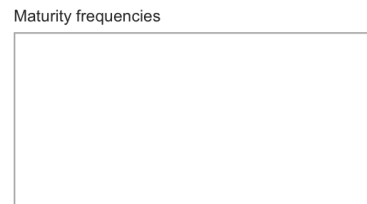
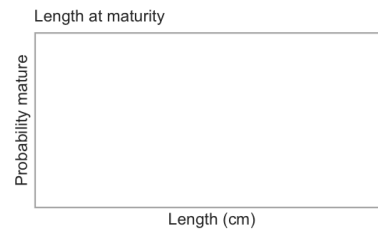
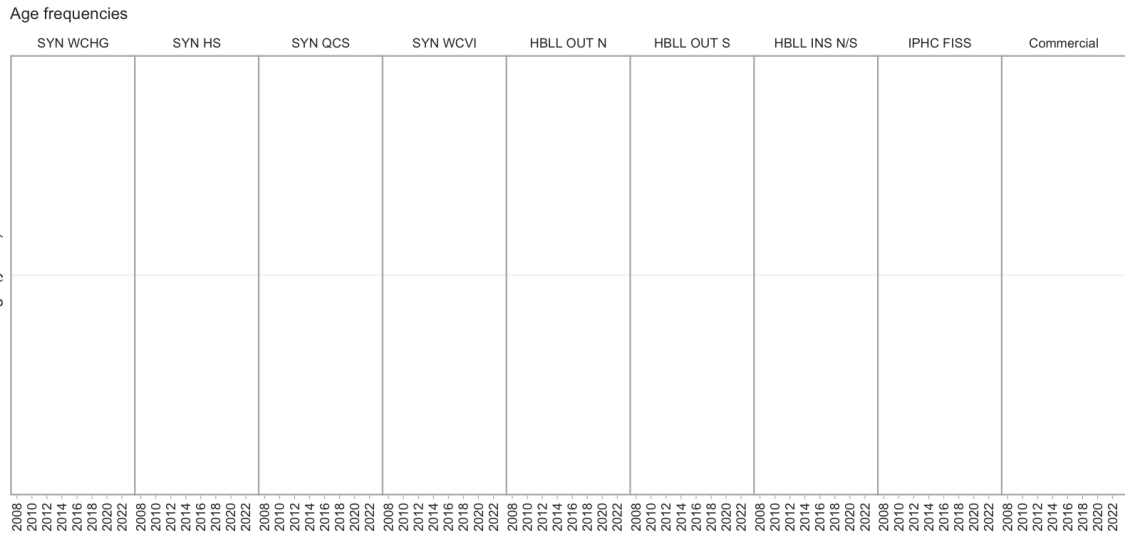
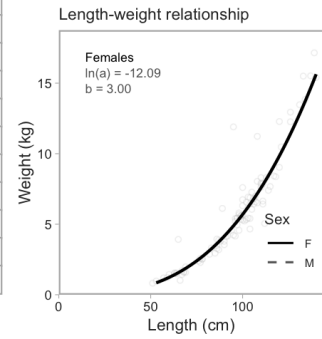
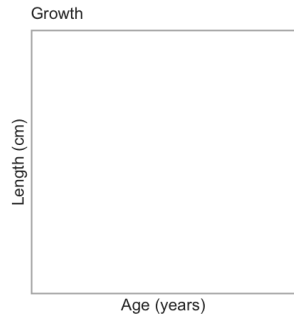
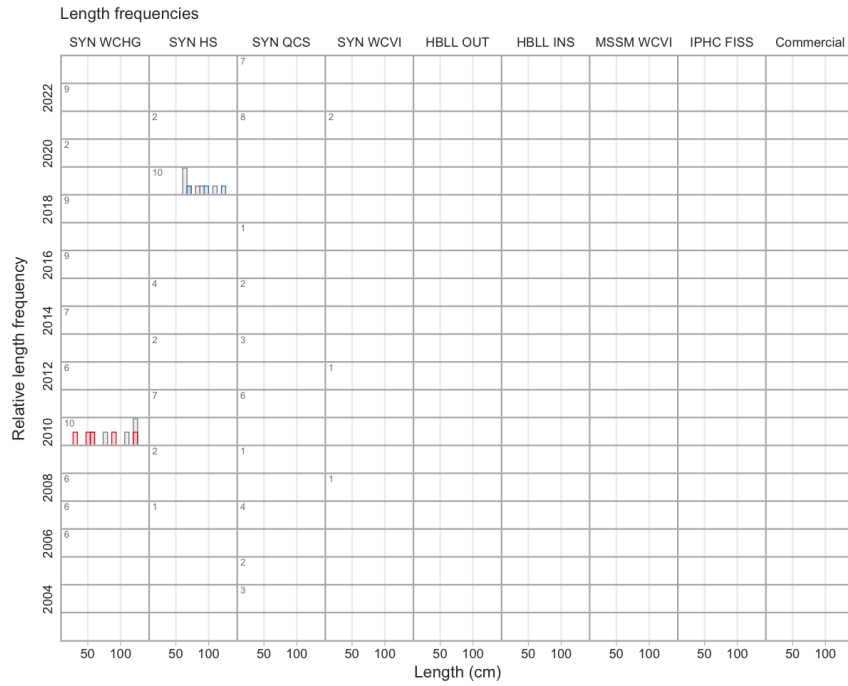


Commercial trawl CPUE



Commercial H & L CPUE



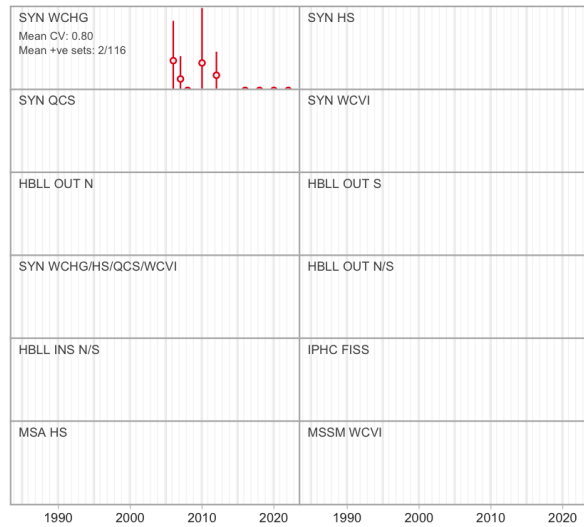


6.10 Abyssal Skate

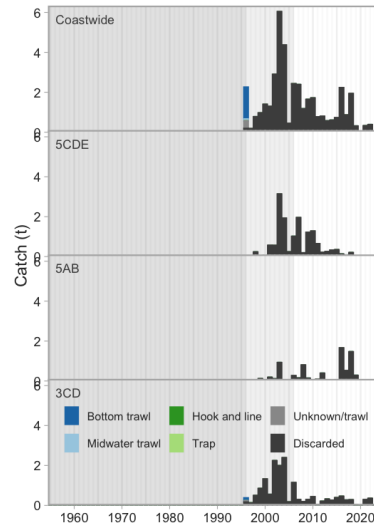
Bathyraja abyssicola (054)

Order: Rajiformes, Family: Arhynchobatidae, [FishBase](#), [WoRMS](#)

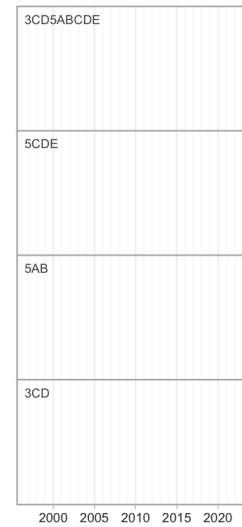
Survey relative biomass indices



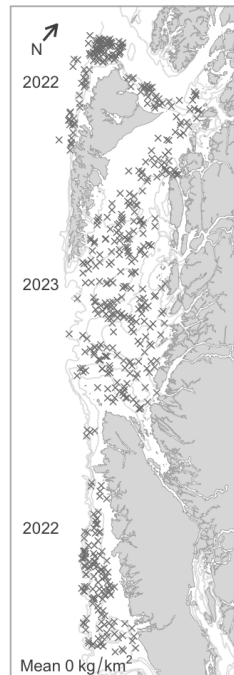
Commercial catch



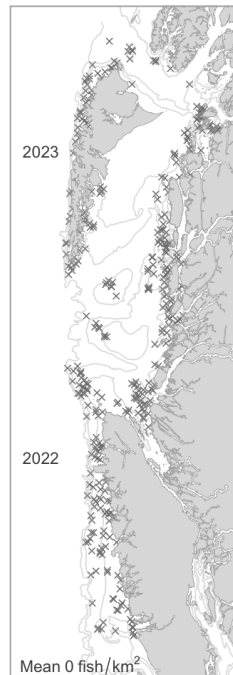
Commercial bottom trawl CPUE



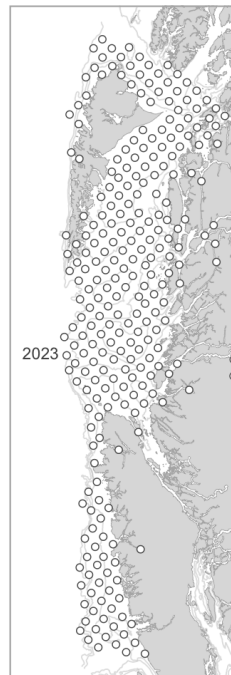
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate



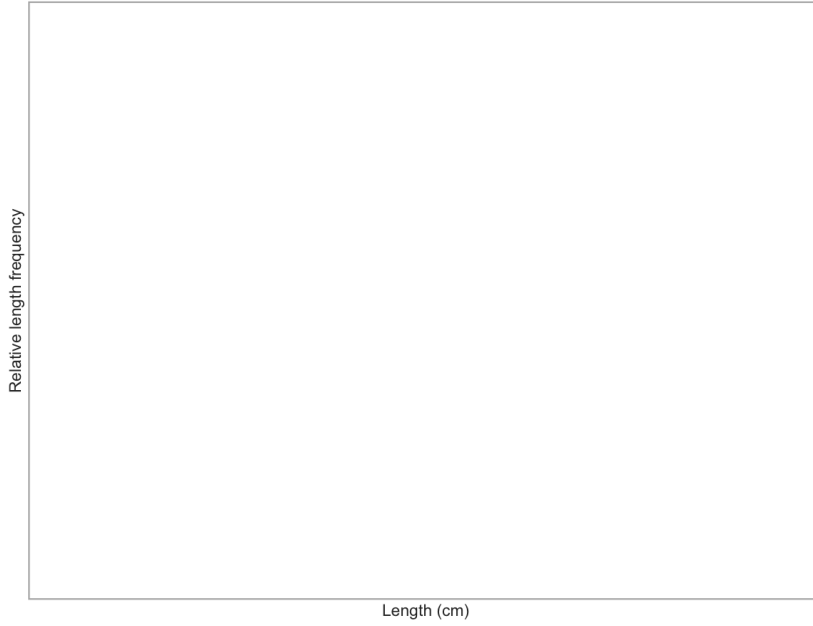
Commercial trawl CPUE



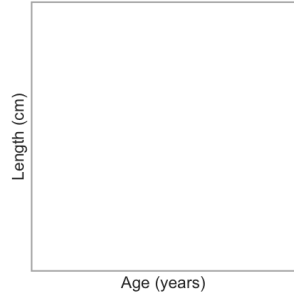
Commercial H & L CPUE



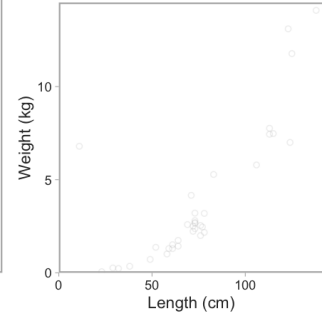
Length frequencies



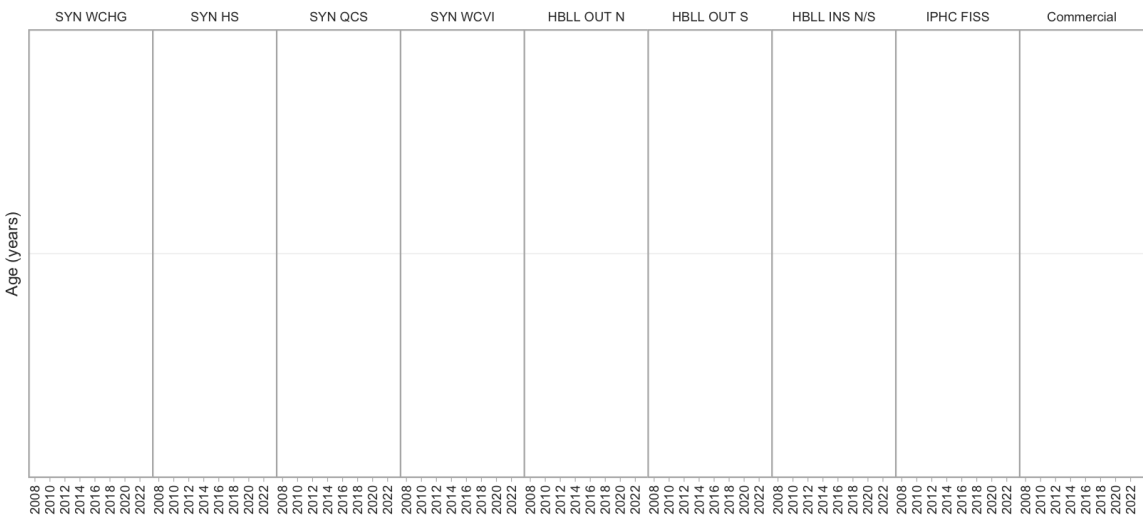
Growth



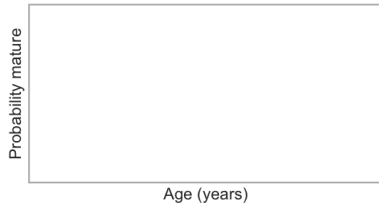
Length-weight relationship



Age frequencies



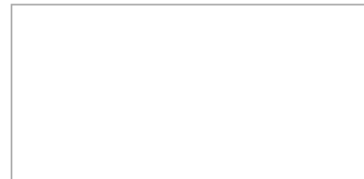
Age at maturity



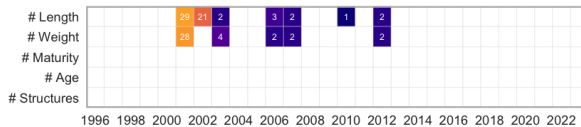
Length at maturity



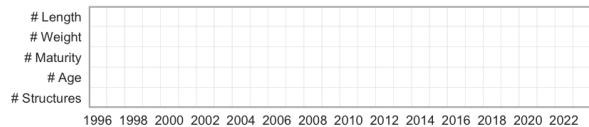
Maturity frequencies



Survey specimen counts



Commercial specimen counts



6.11 Broad Skate

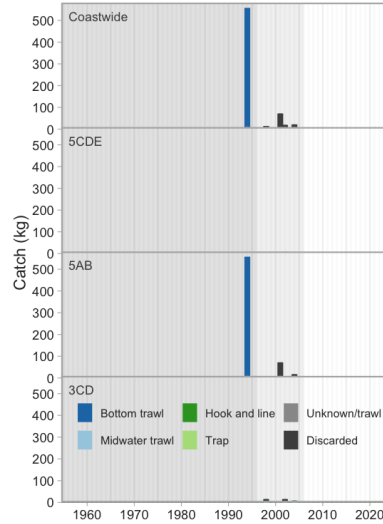
Amblyraja badia (055)

Order: Rajiformes, Family: Rajidae, [FishBase](#), [WoRMS](#)

Survey relative biomass indices



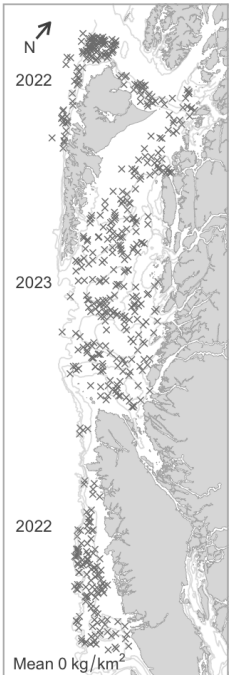
Commercial catch



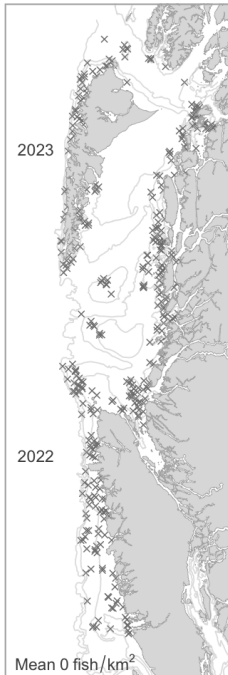
Commercial bottom trawl CPUE



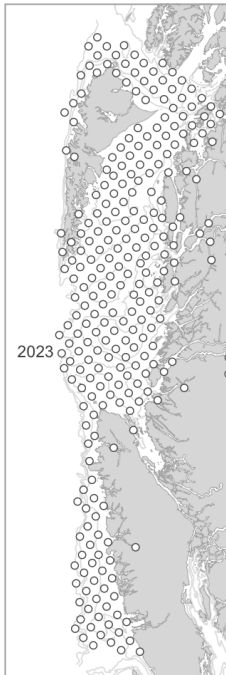
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate

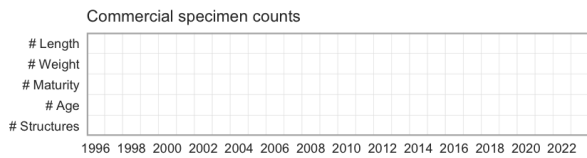
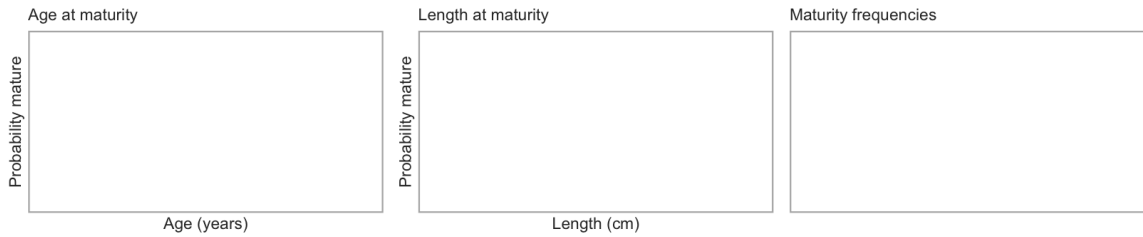
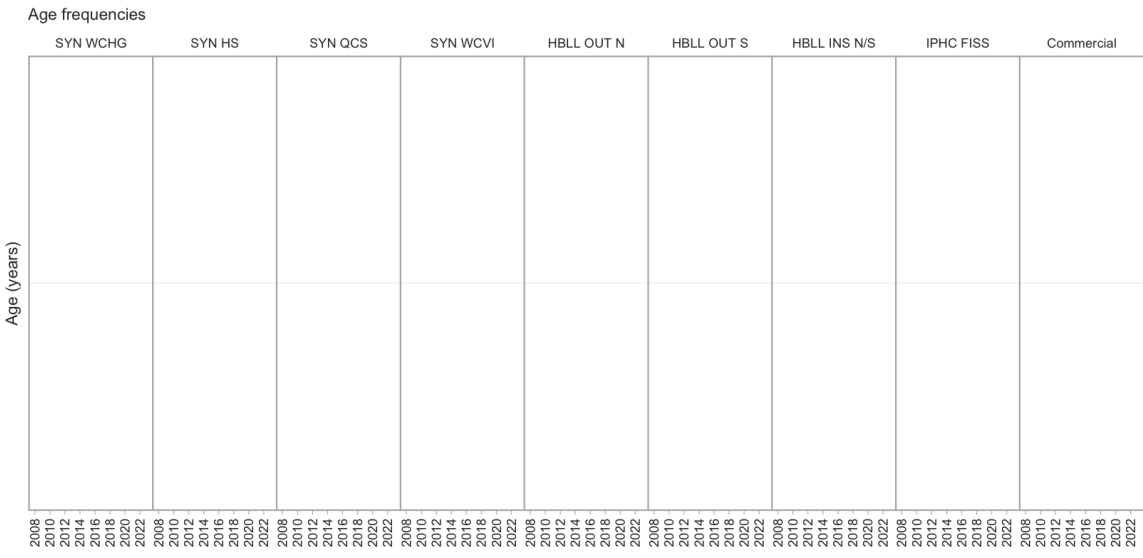
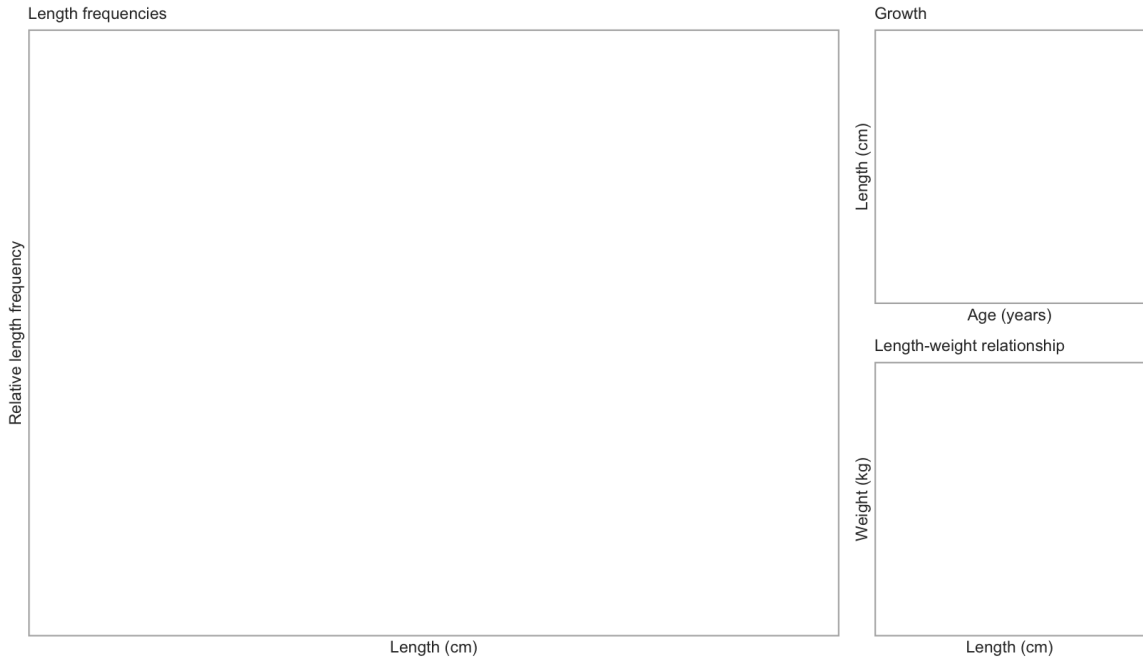


Commercial trawl CPUE



Commercial H & L CPUE





6.12 Big Skate

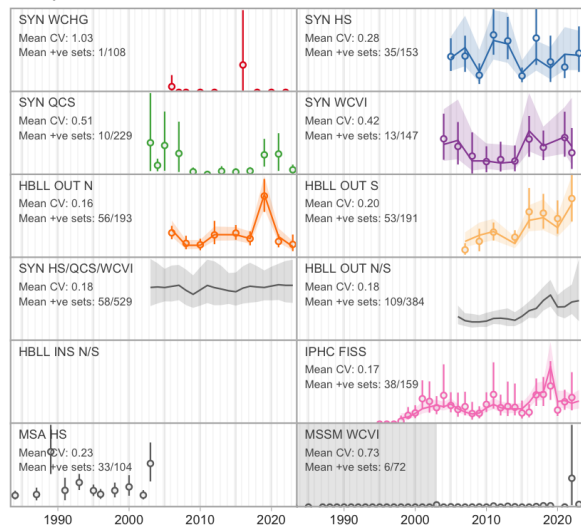
Beringraja binoculata (056)

Order: Rajiformes, Family: Rajidae, [FishBase](#), [WoRMS](#)

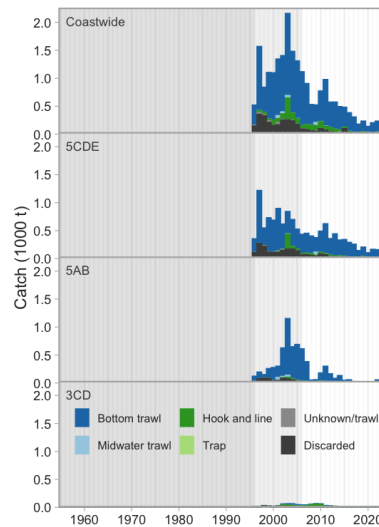
Last Research Document: King et al. (2015)

Last Science Advisory Report: DFO (2014a)

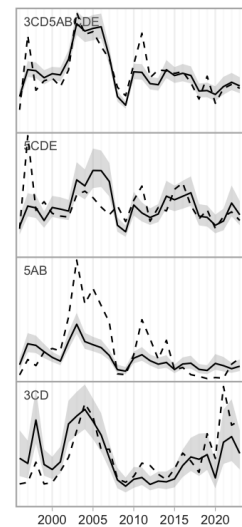
Survey relative biomass indices



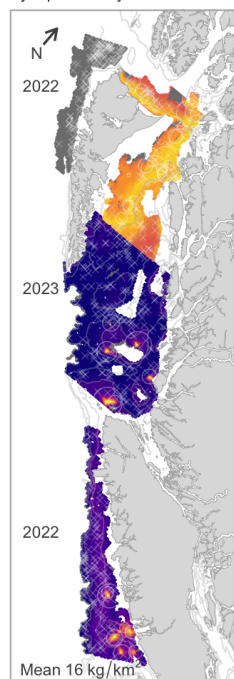
Commercial catch



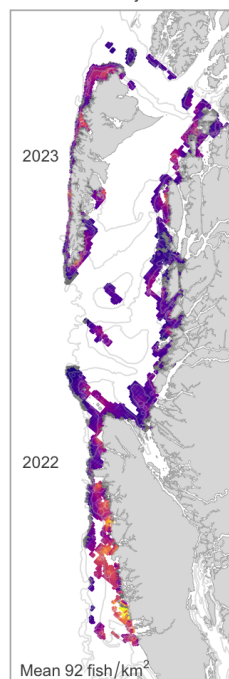
Commercial bottom trawl CPUE



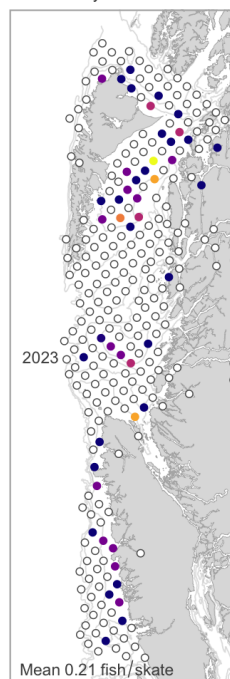
Synoptic survey biomass



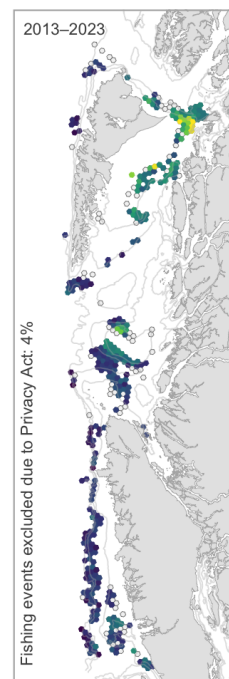
HBL OUT survey biomass



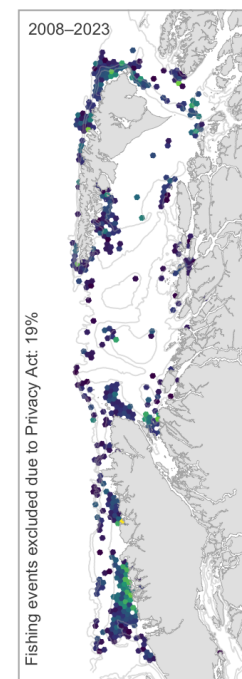
IPHC survey catch rate

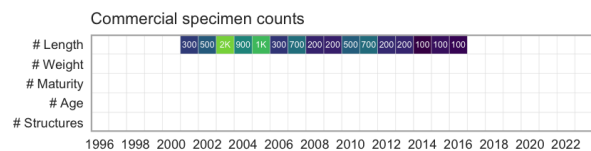
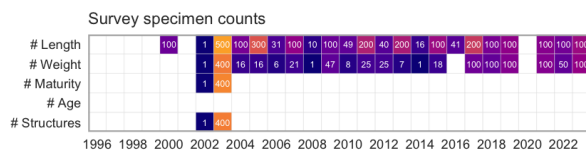
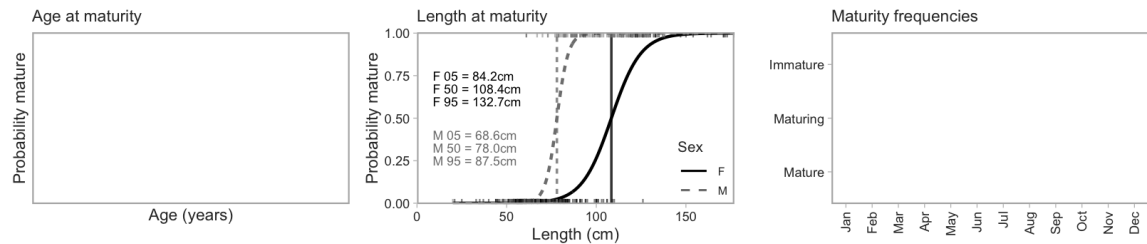
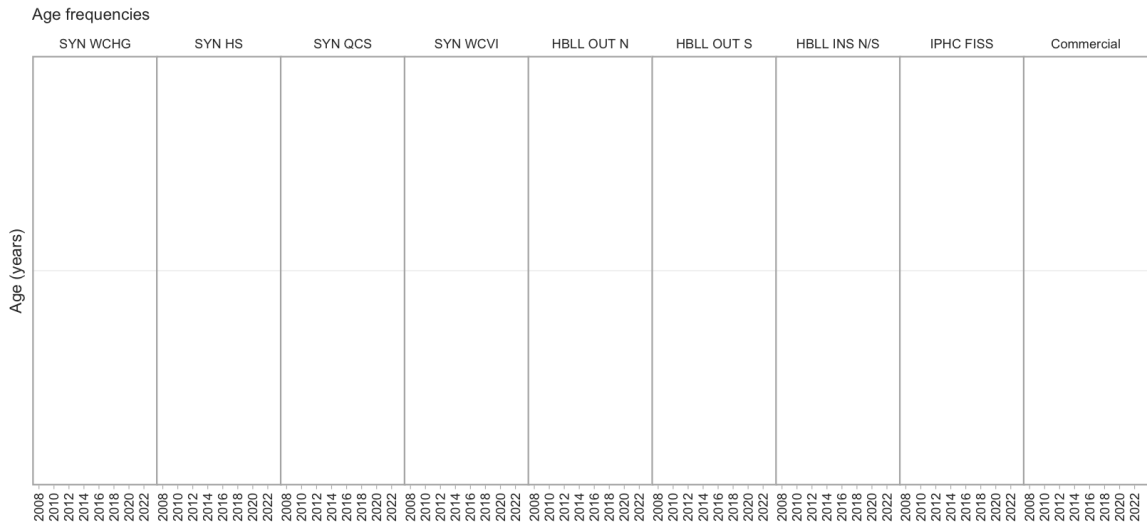
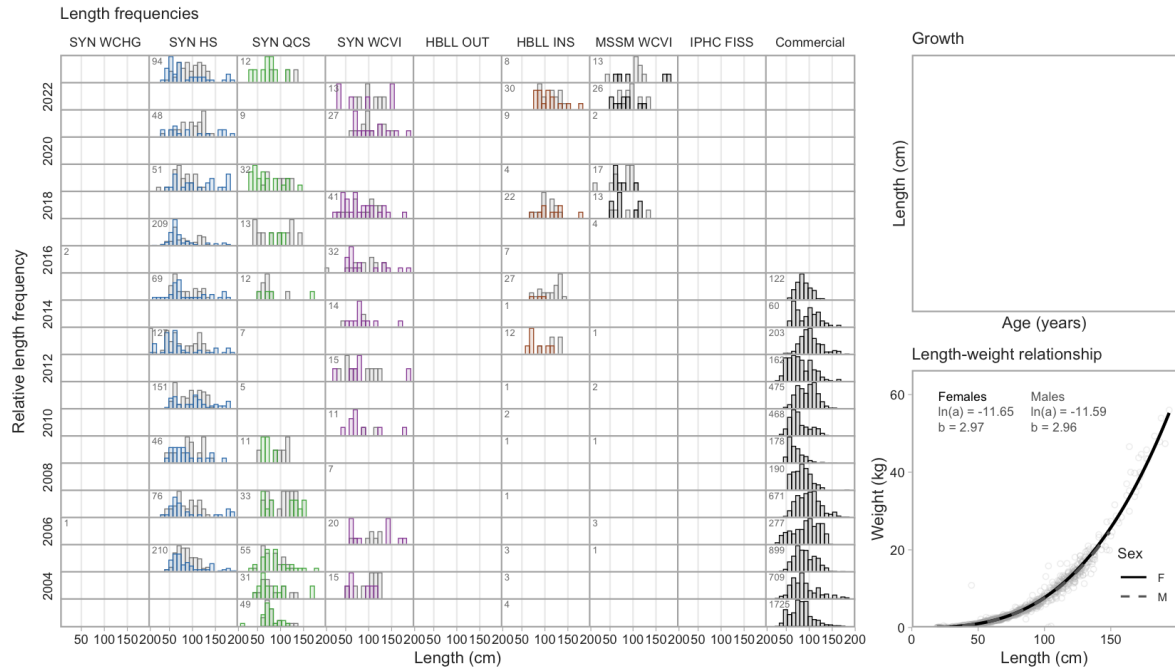


Commercial trawl CPUE



Commercial H & L CPUE



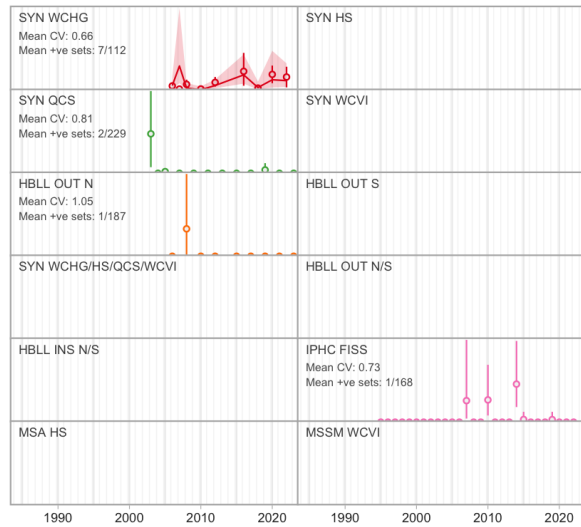


6.13 Roughtail Skate

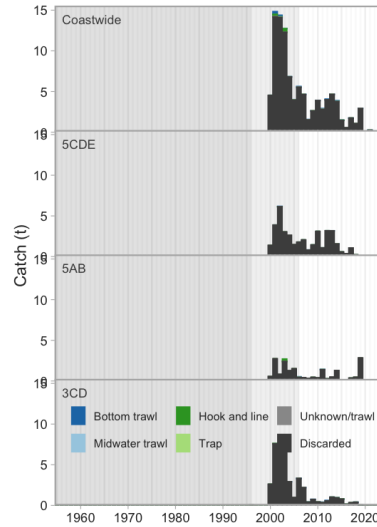
Bathyraja trachura (057)

Order: Rajiformes, Family: Arhynchobatidae, [FishBase](#), [WoRMS](#)

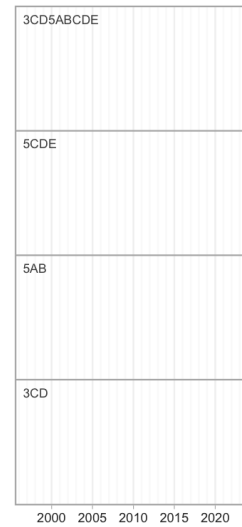
Survey relative biomass indices



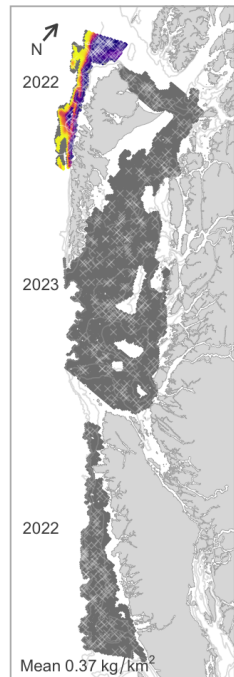
Commercial catch



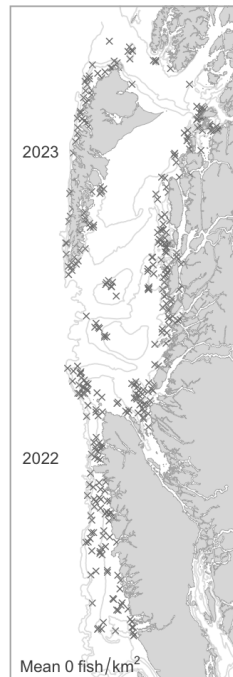
Commercial bottom trawl CPUE



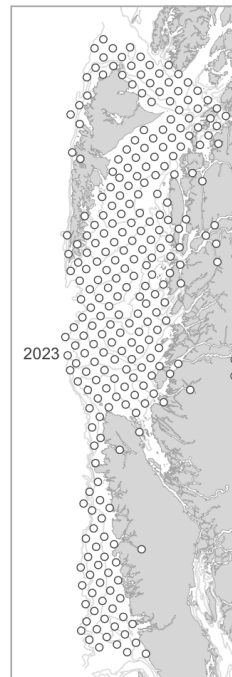
Synoptic survey biomass



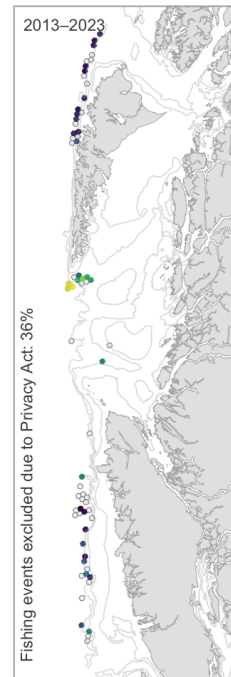
HBL OUT survey biomass



IPHC survey catch rate

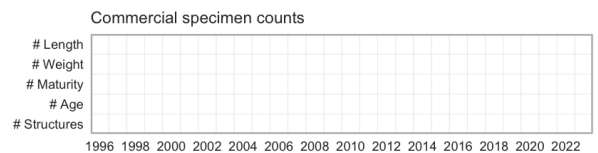
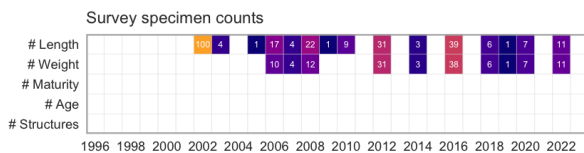
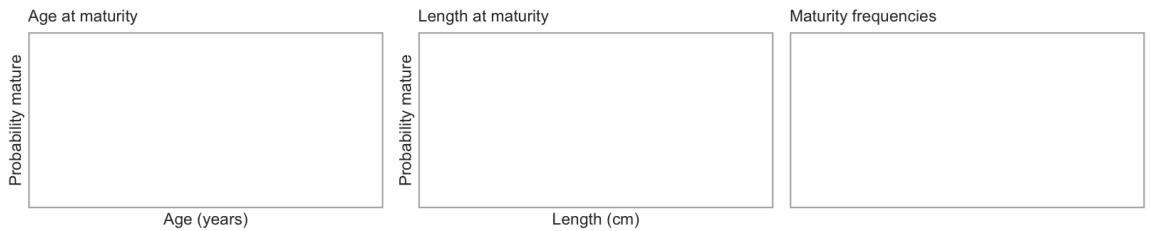
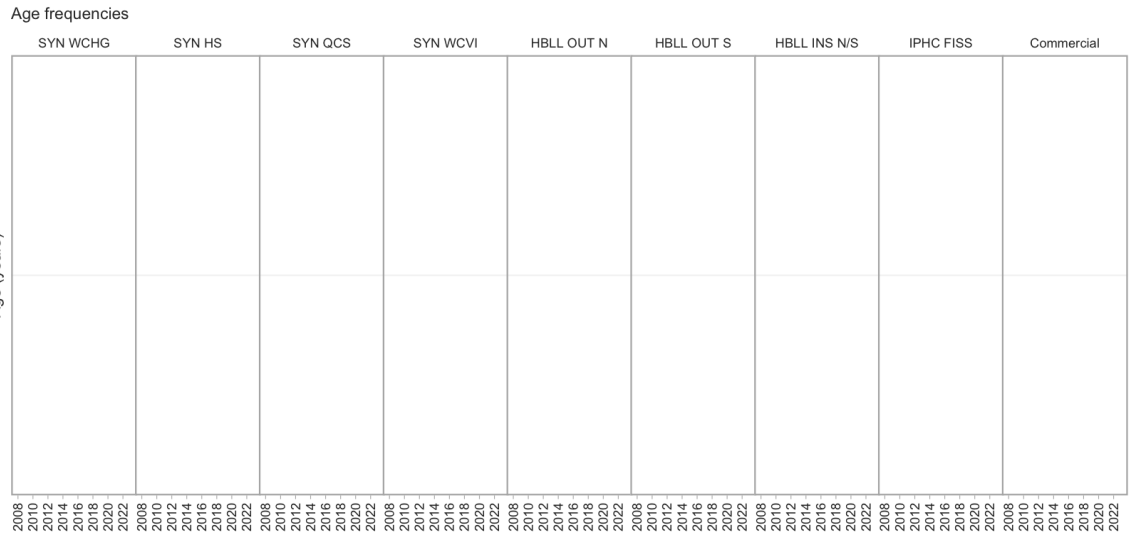
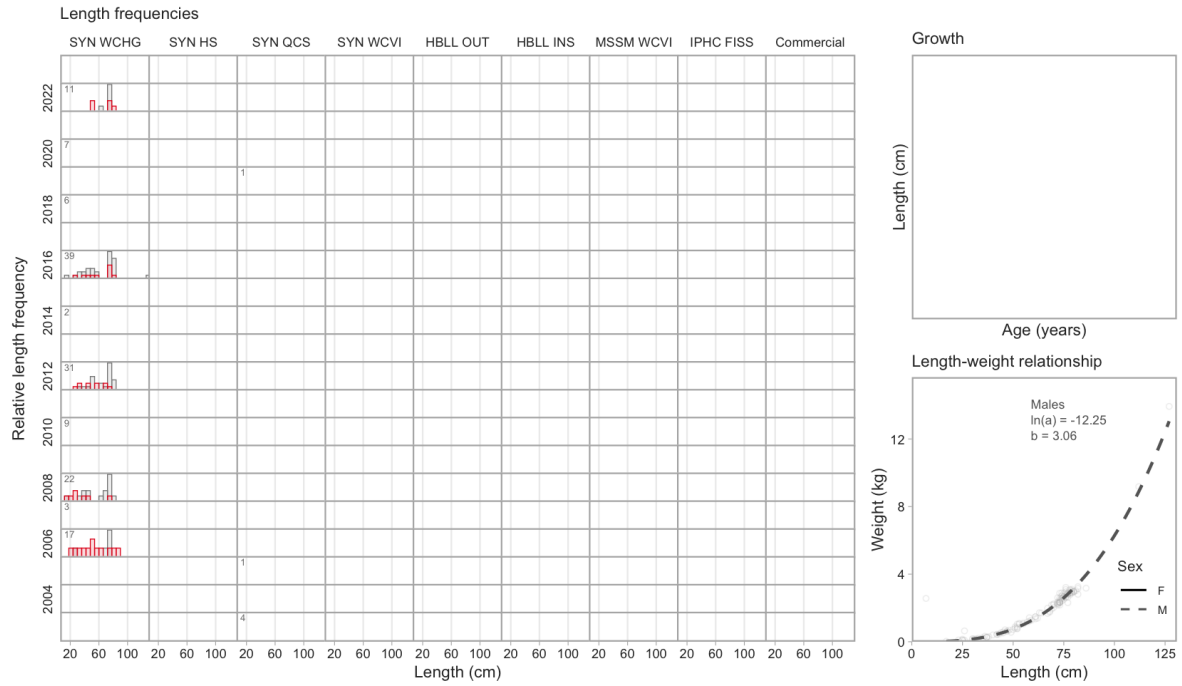


Commercial trawl CPUE



Commercial H & L CPUE





6.14 Sandpaper Skate

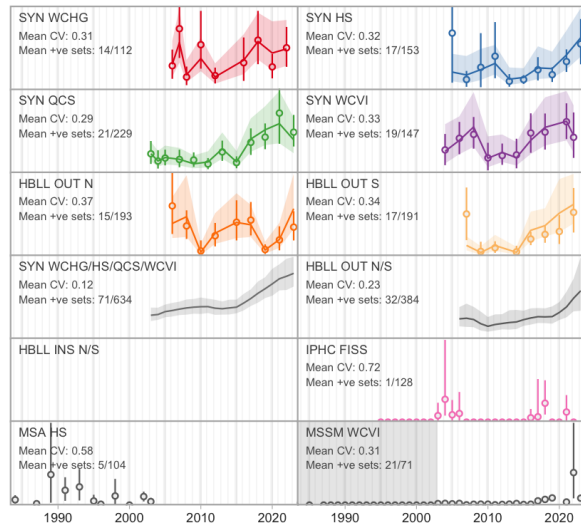
Bathyraja interrupta (058)

Order: Rajiformes, Family: Arhynchobatidae, [FishBase](#), [WoRMS](#)

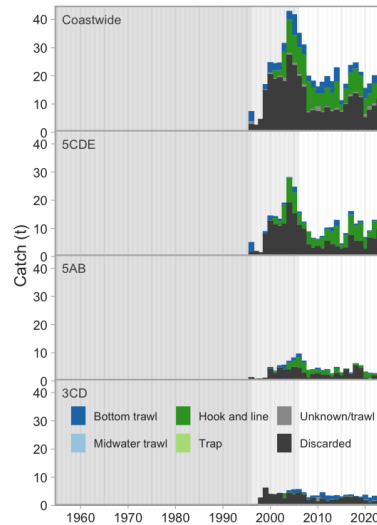
COSEWIC Annual Report: COSEWIC (2007b)

COSEWIC Status: Not at Risk, SARA Status: No Status

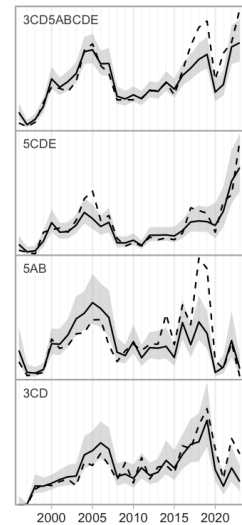
Survey relative biomass indices



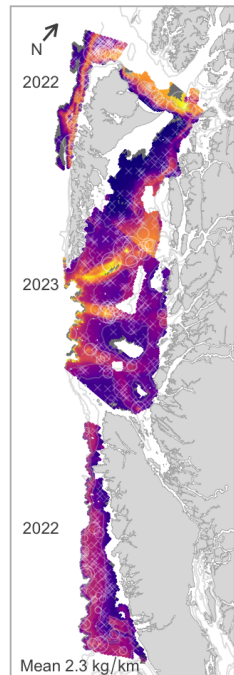
Commercial catch



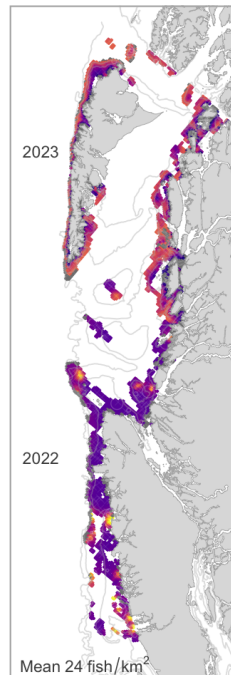
Commercial bottom trawl CPUE



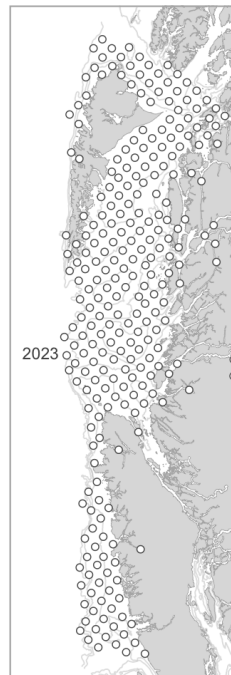
Synoptic survey biomass



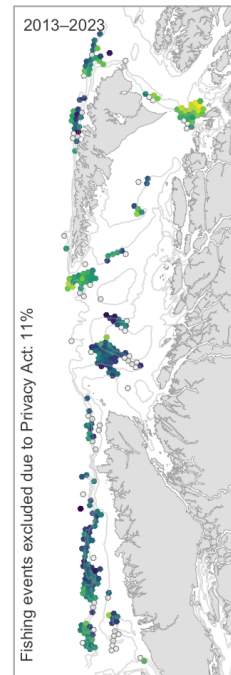
HBL OUT survey biomass



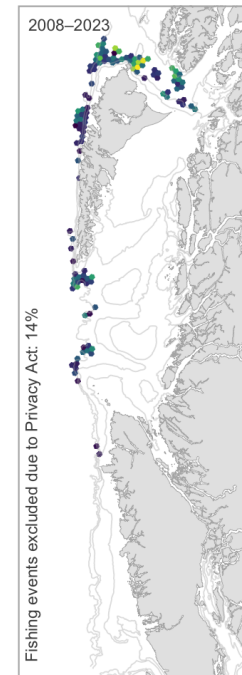
IPHC survey catch rate

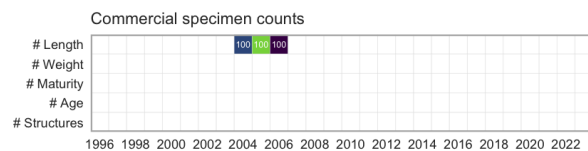
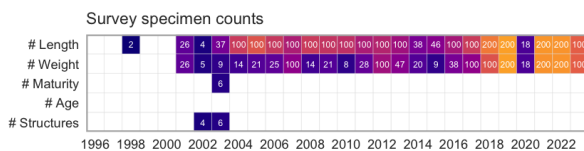
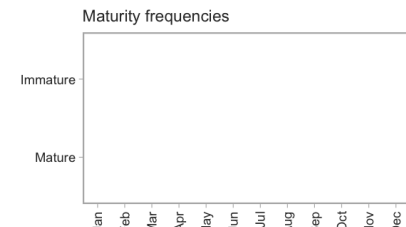
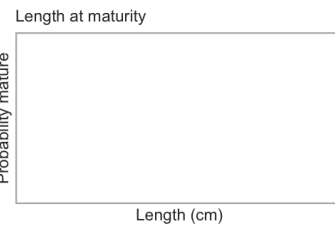
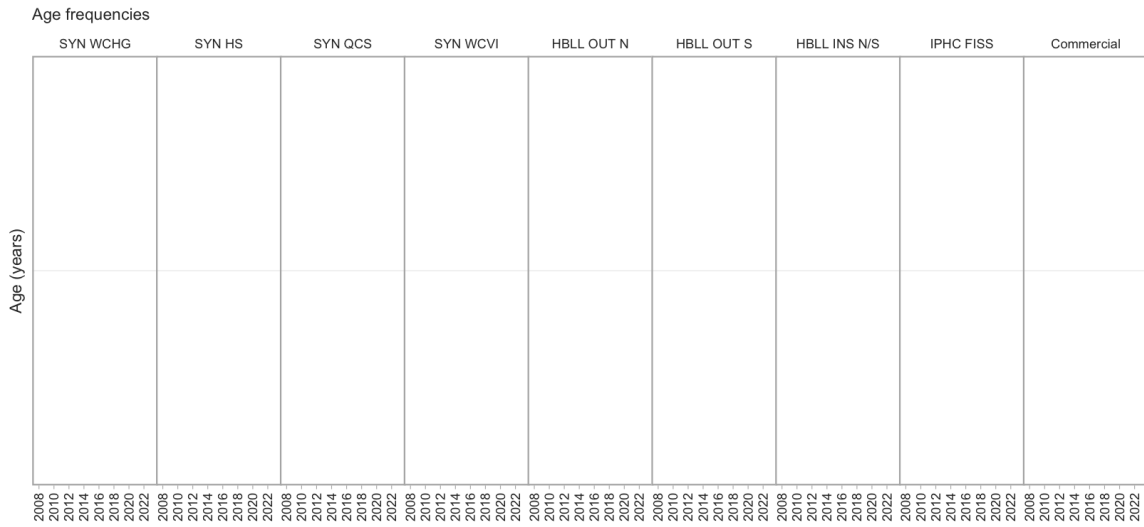
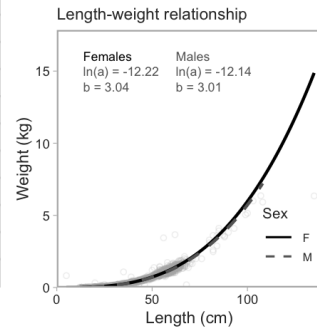
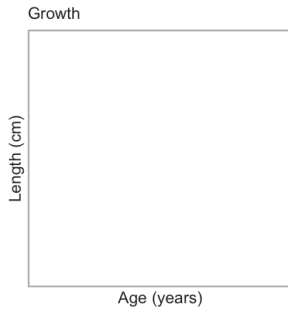
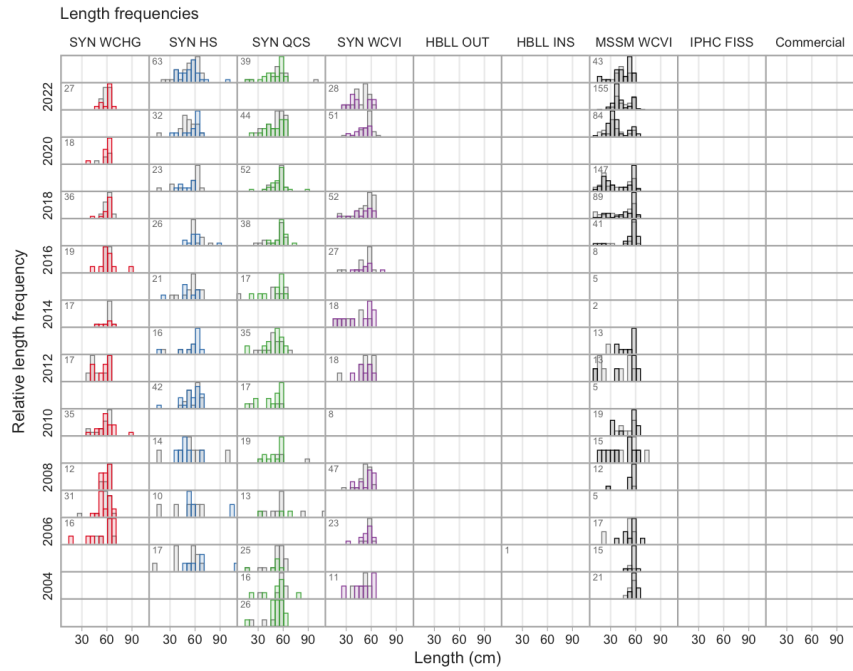


Commercial trawl CPUE



Commercial H & L CPUE





6.15 Longnose Skate

Raja rhina (059)

Order: Rajiformes, Family: Rajidae, [FishBase](#), [WoRMS](#)

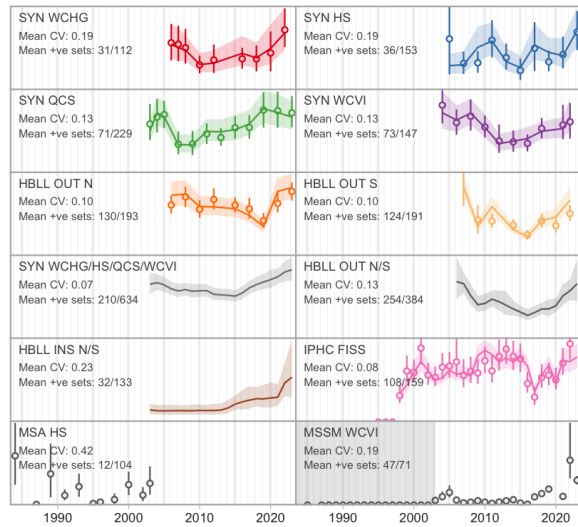
Last Research Document: King et al. (2015)

Last Science Advisory Report: DFO (2014a)

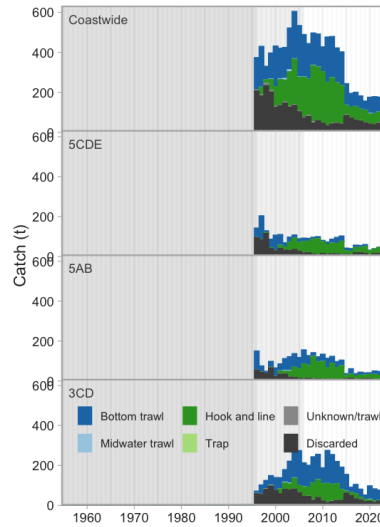
COSEWIC Annual Report: COSEWIC (2007b)

COSEWIC Status: Not at Risk, SARA Status: No Status

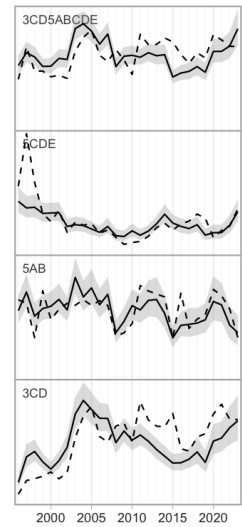
Survey relative biomass indices



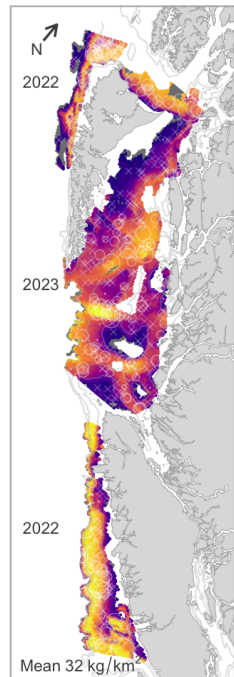
Commercial catch



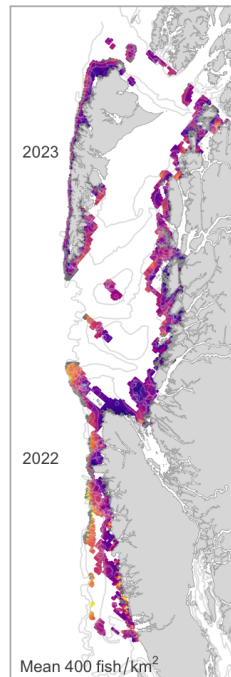
Commercial bottom trawl CPUE



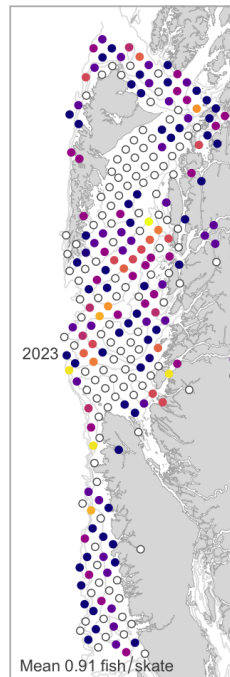
Synoptic survey biomass



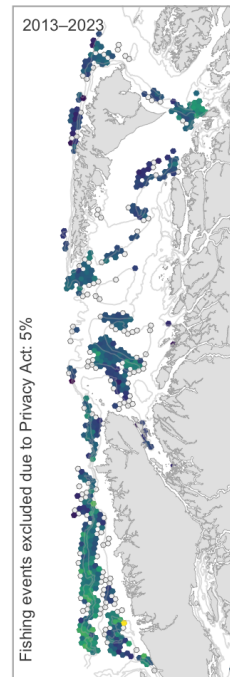
HBLL OUT survey biomass



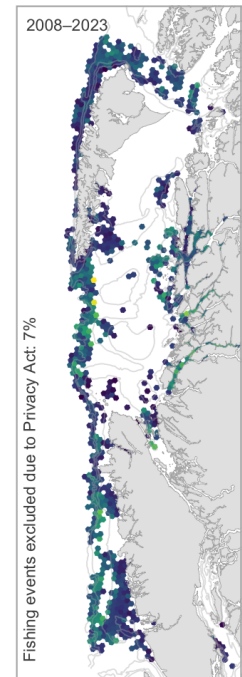
IPHC survey catch rate

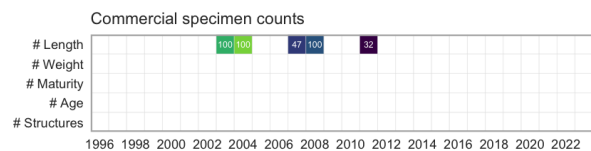
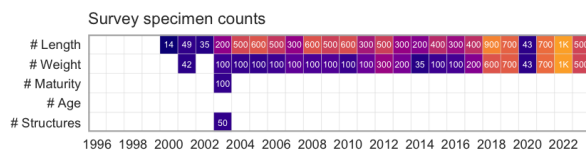
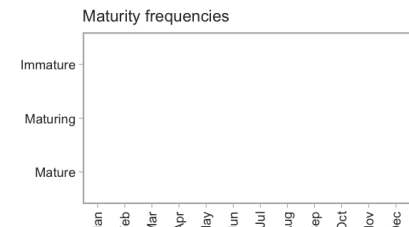
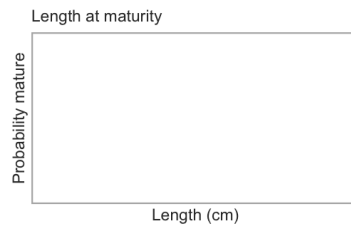
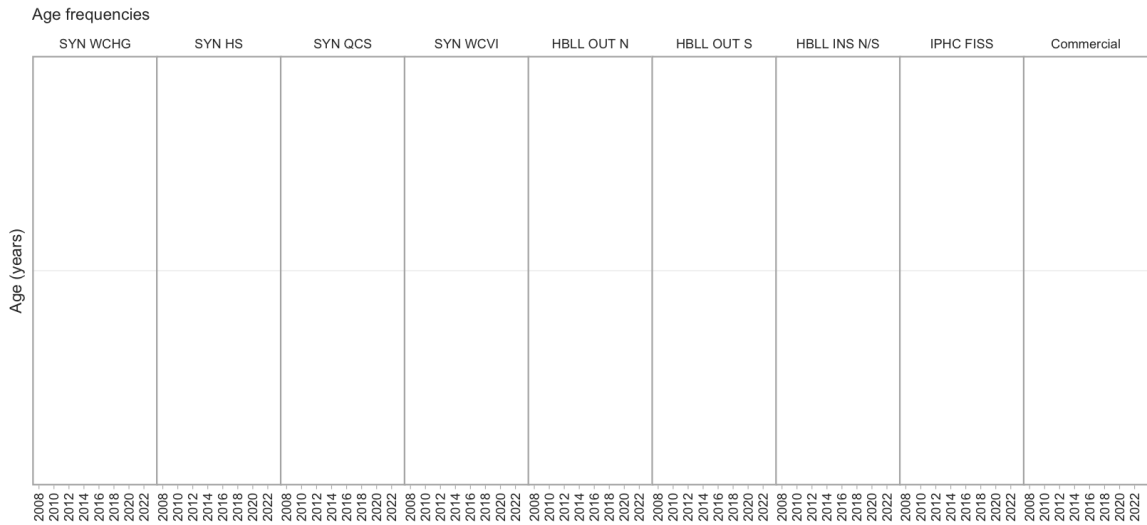
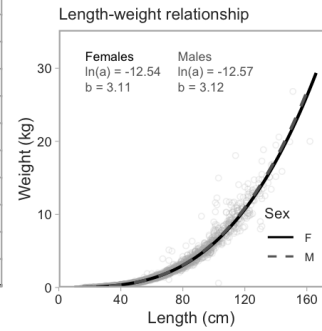
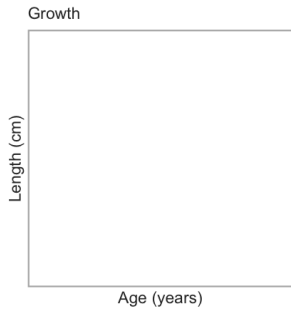
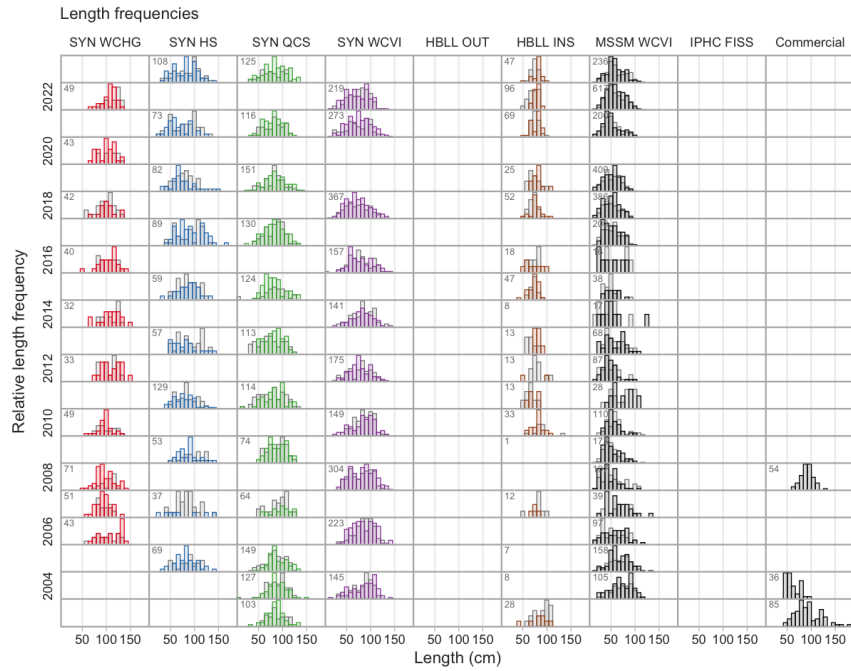


Commercial trawl CPUE



Commercial H & L CPUE



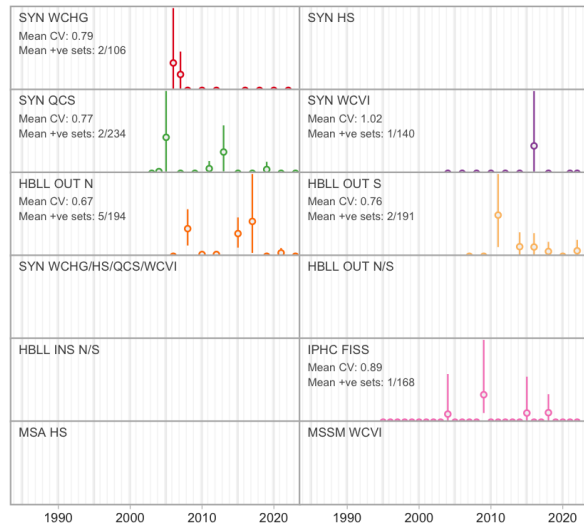


6.16 Alaska Skate

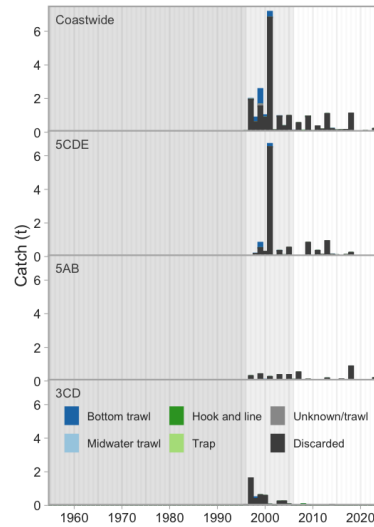
Bathyraja parmifera (061)

Order: Rajiformes, Family: Arhynchobatidae, [FishBase](#), [WoRMS](#)

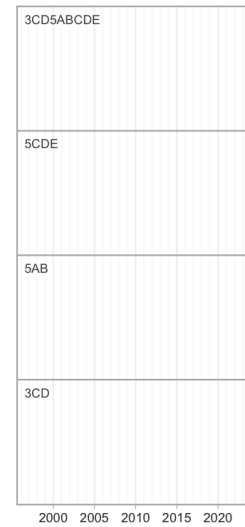
Survey relative biomass indices



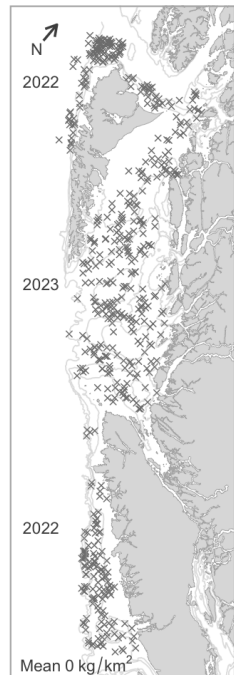
Commercial catch



Commercial bottom trawl CPUE



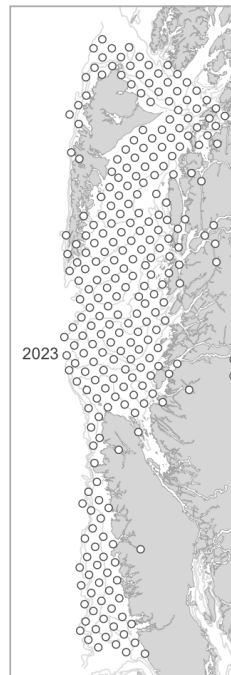
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

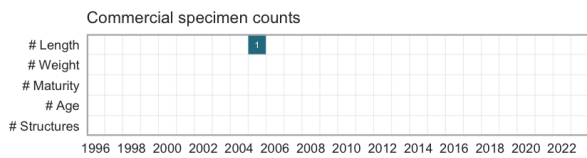
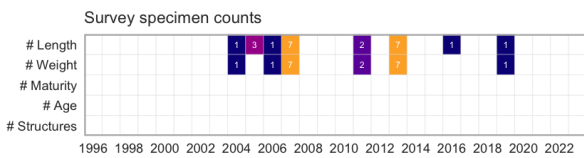
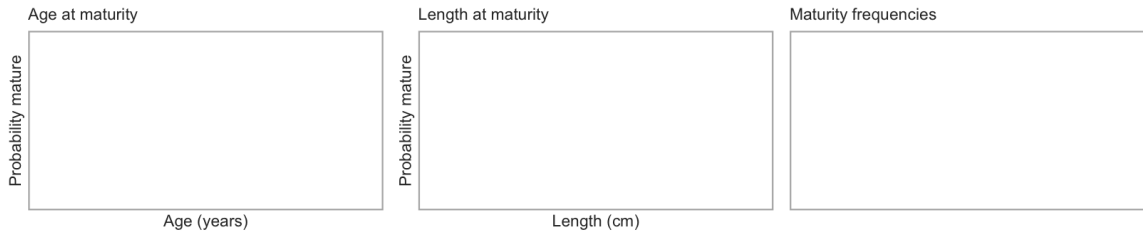
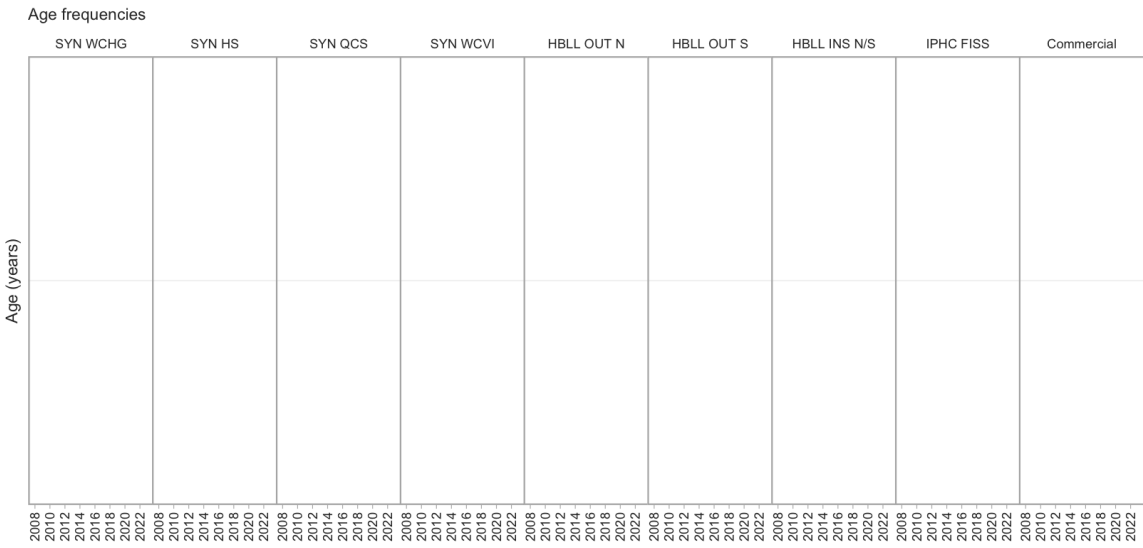
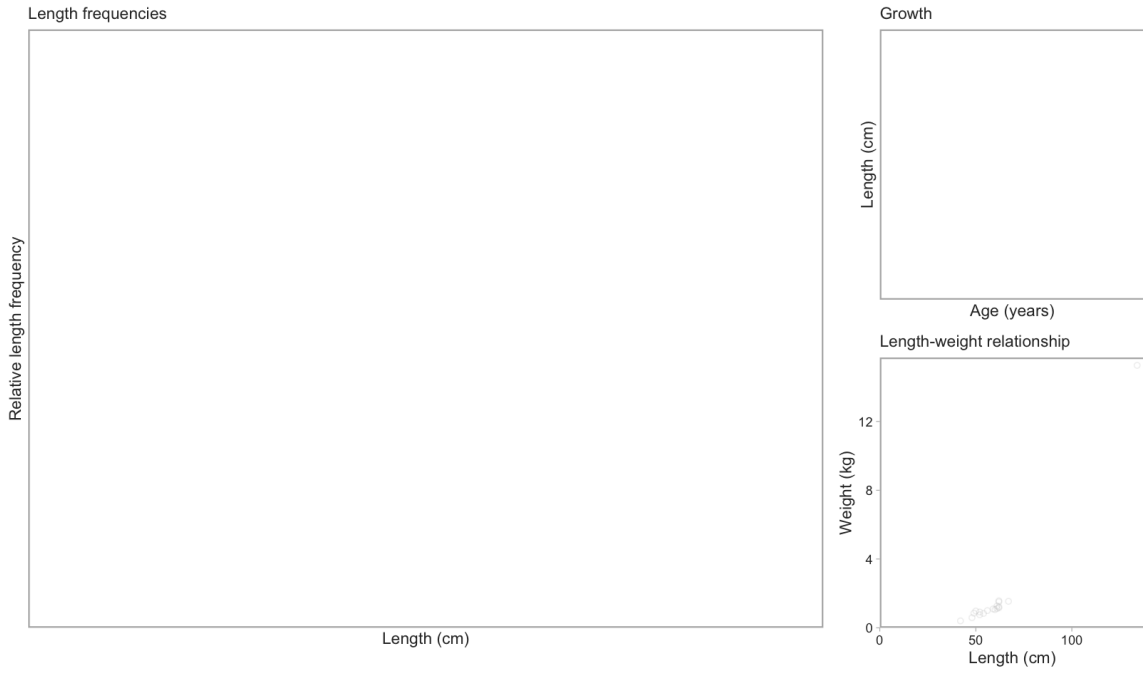


Commercial trawl CPUE



Commercial H & L CPUE



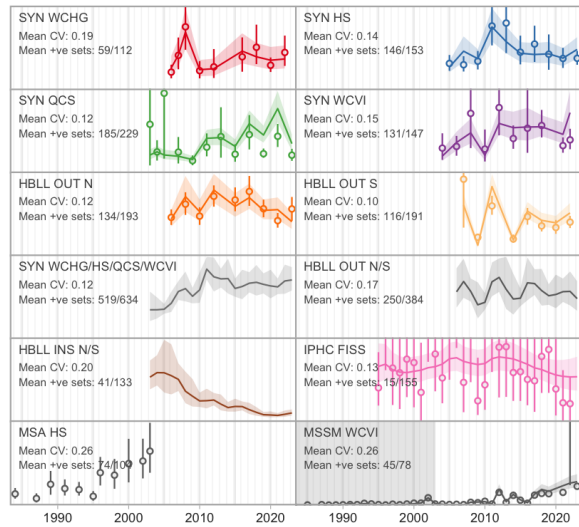


6.17 Spotted Ratfish

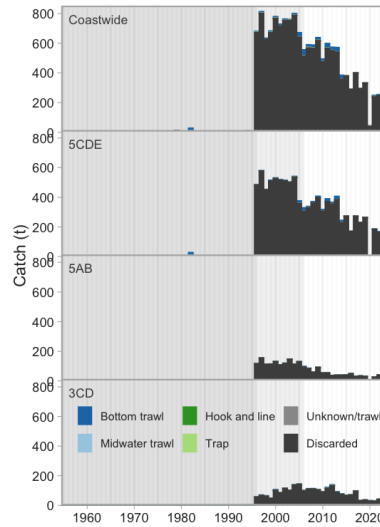
Hydrolagus colliei (066)

Order: Chimaeriformes, Family: Chimaeridae, [FishBase](#), [WoRMS](#)

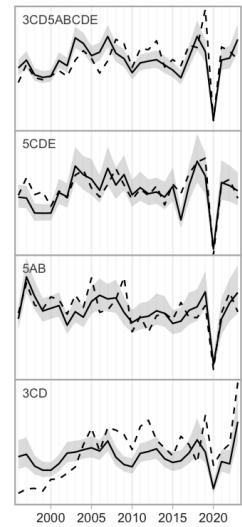
Survey relative biomass indices



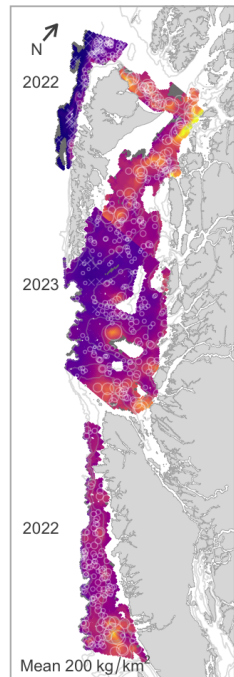
Commercial catch



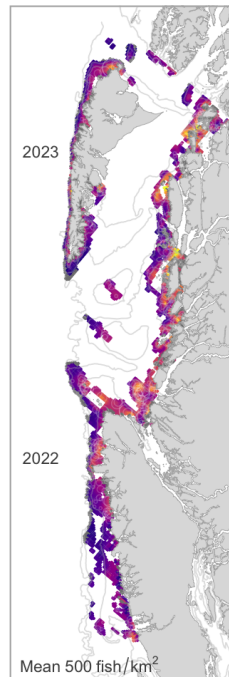
Commercial bottom trawl CPUE



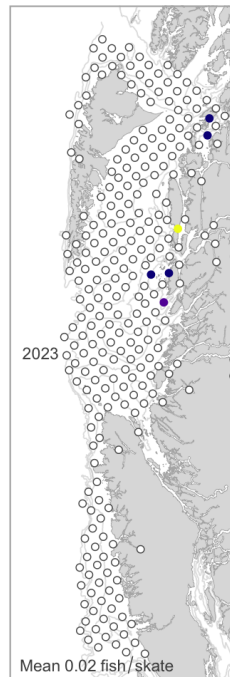
Synoptic survey biomass



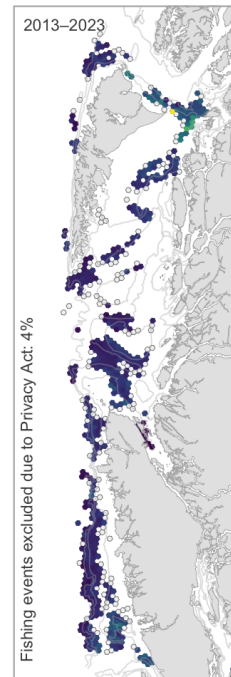
HBLL OUT survey biomass



IPHC survey catch rate

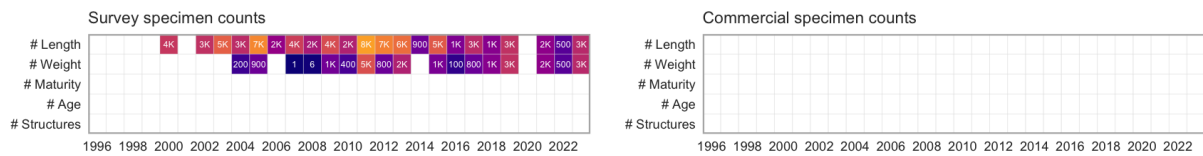
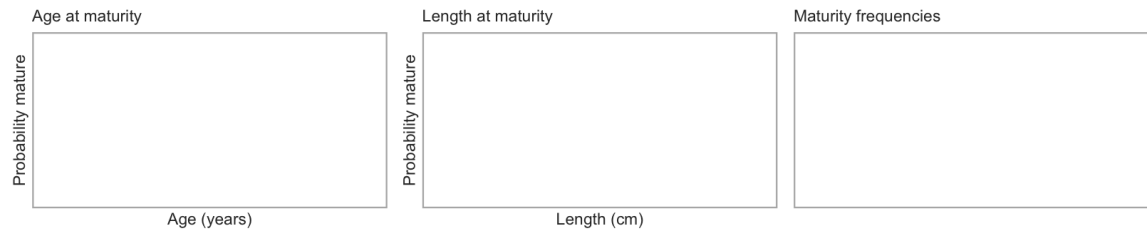
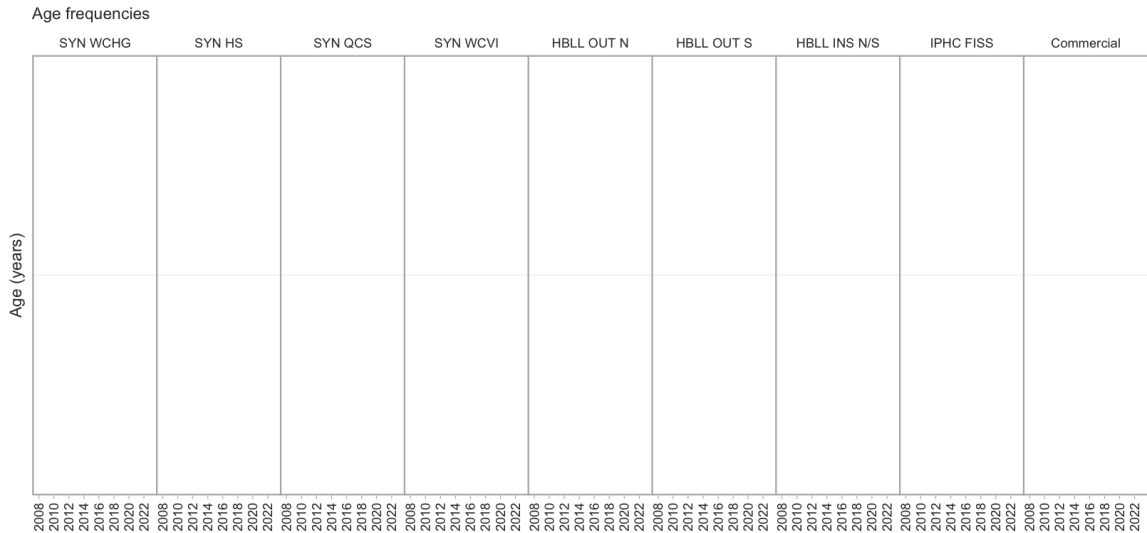
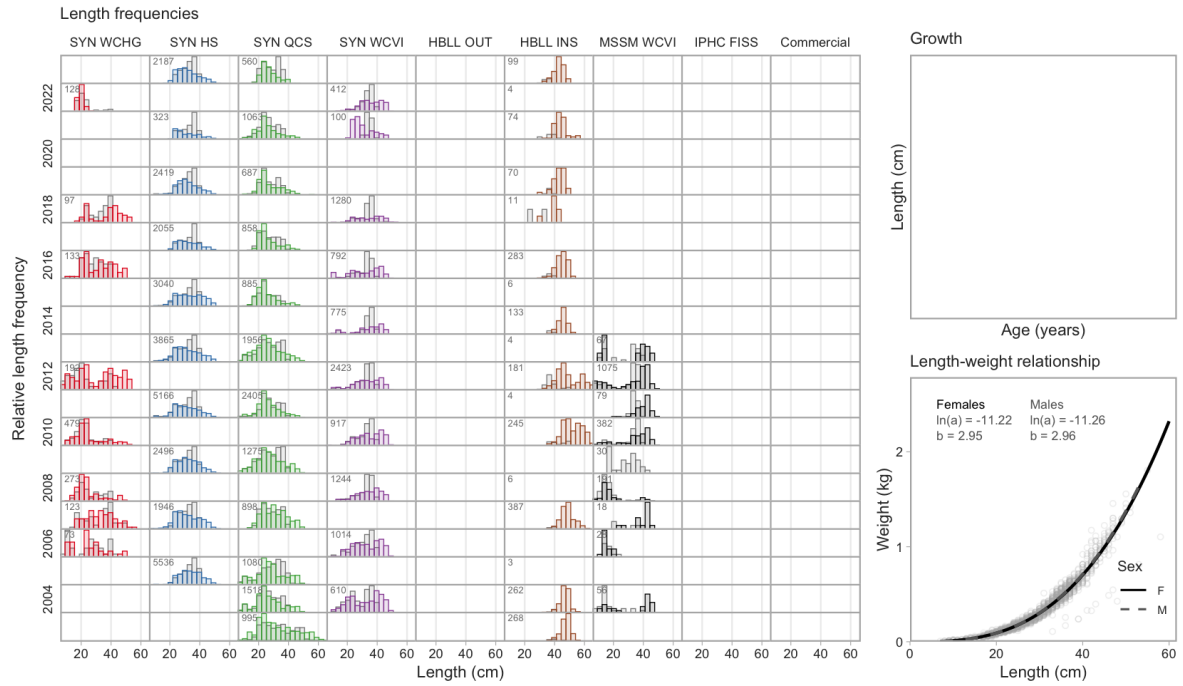


Commercial trawl CPUE



Commercial H & L CPUE



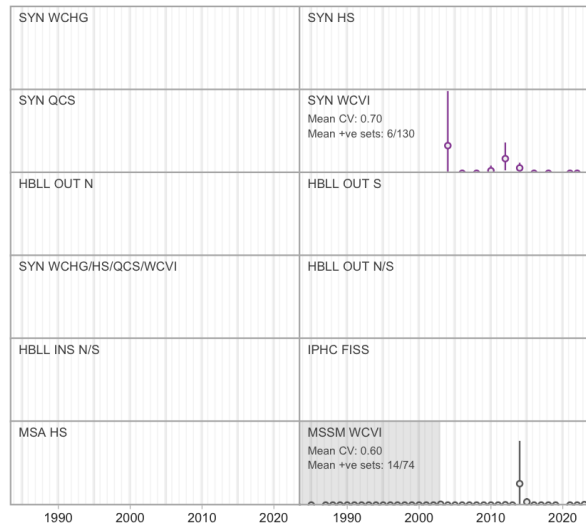


6.18 Whitebait Smelt

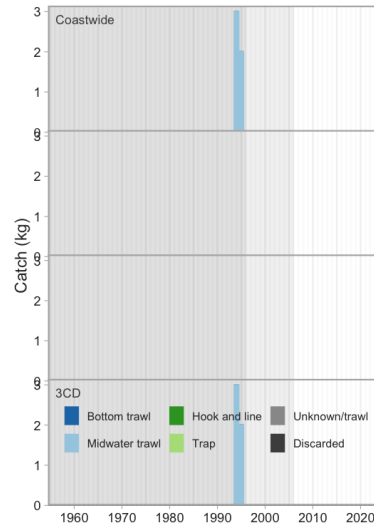
Allosmerus elongatus (138)

Order: Osmeriformes, Family: Osmeridae, [FishBase](#), [WoRMS](#)

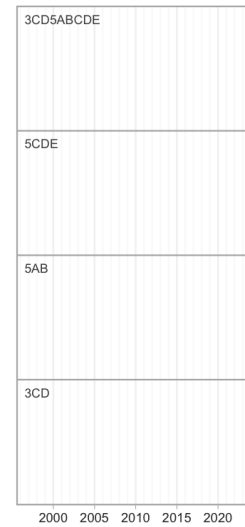
Survey relative biomass indices



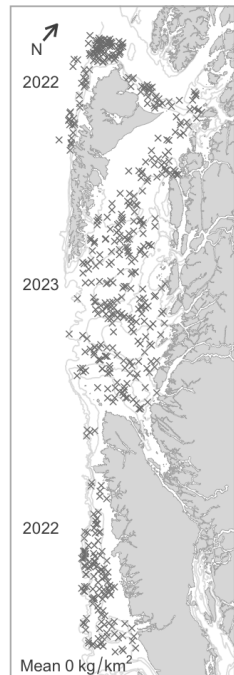
Commercial catch



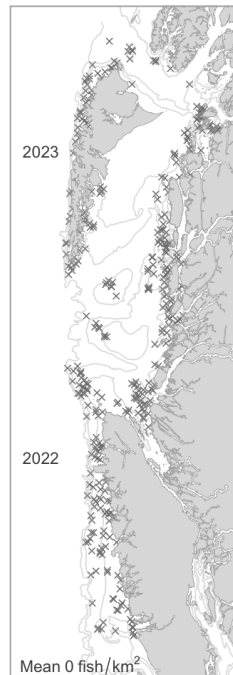
Commercial bottom trawl CPUE



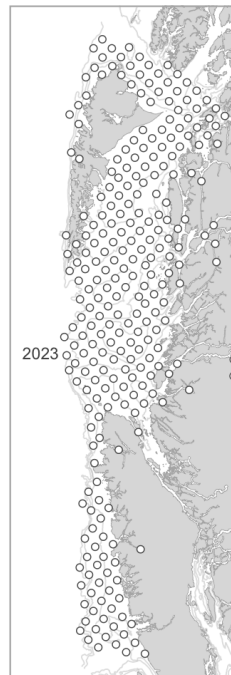
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

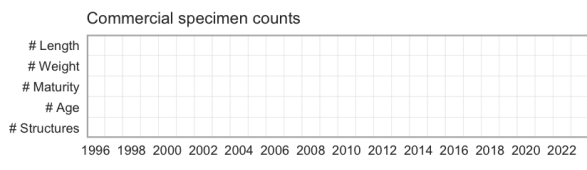
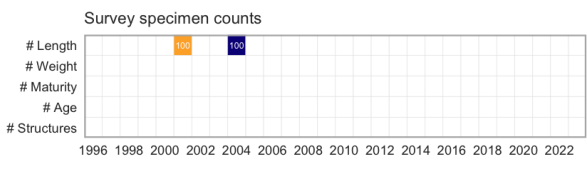
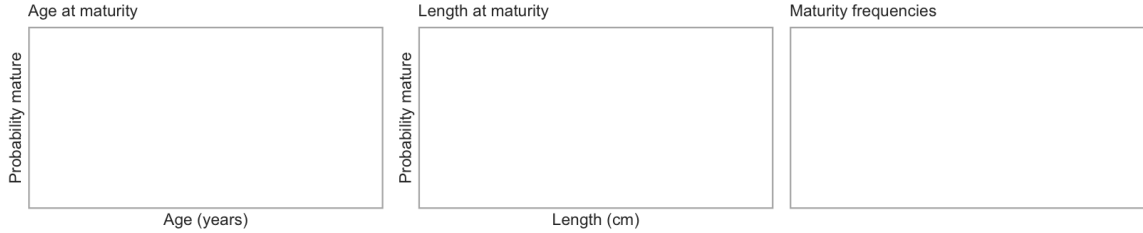
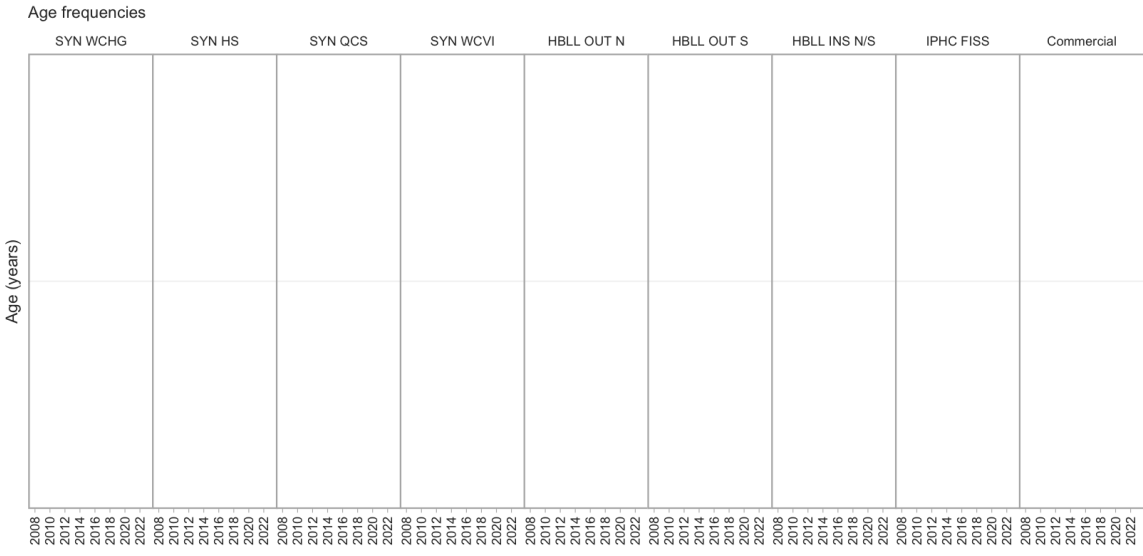
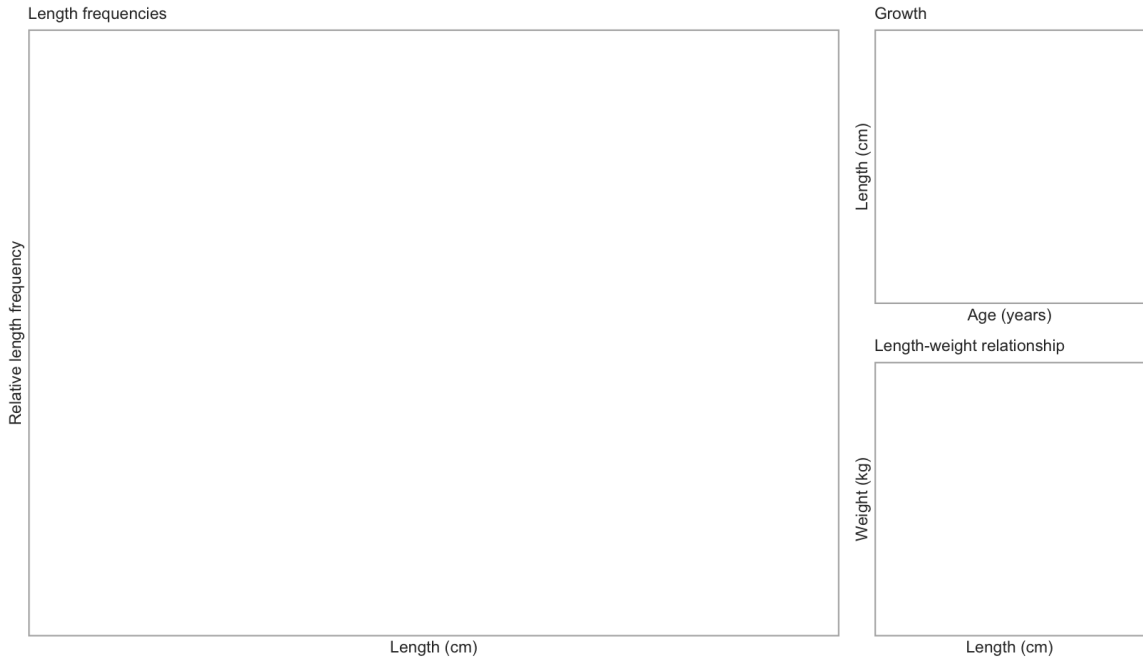


Commercial trawl CPUE



Commercial H & L CPUE





6.19 Eulachon

Thaleichthys pacificus (148)

Order: Osmeriformes, Family: Osmeridae, [FishBase](#), [WoRMS](#)

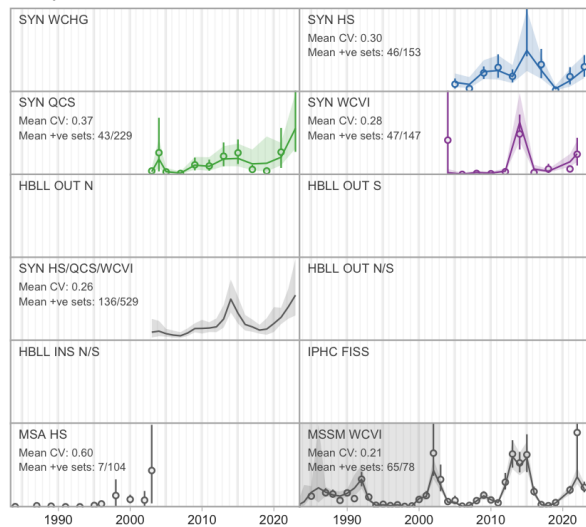
Last Research Document: Schweigert et al. (2012)

Last Science Advisory Report: DFO (2015a)

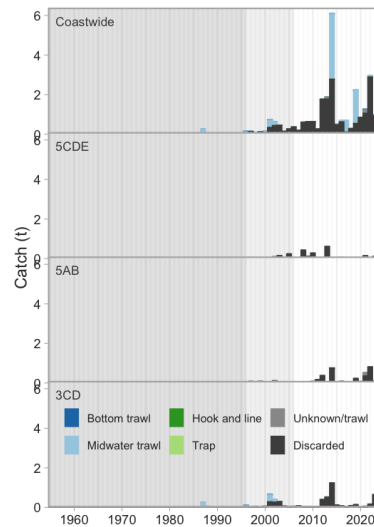
COSEWIC Status Report: COSEWIC (2013a)

COSEWIC Status: Endangered (Central Pacific Coast population, Fraser River population),
Special Concern (Nass / Skeena Rivers population), SARA Status: No Status

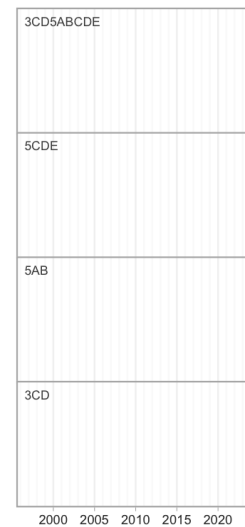
Survey relative biomass indices



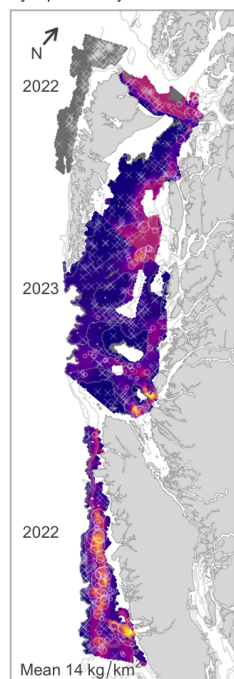
Commercial catch



Commercial bottom trawl CPUE



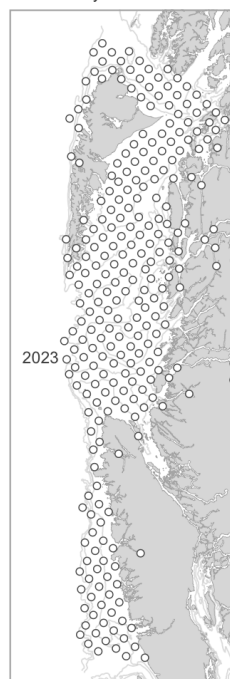
Synoptic survey biomass



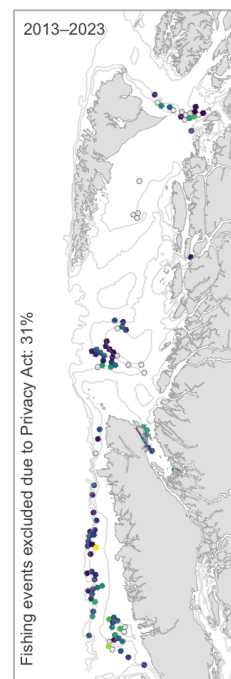
HBL OUT survey biomass



IPHC survey catch rate

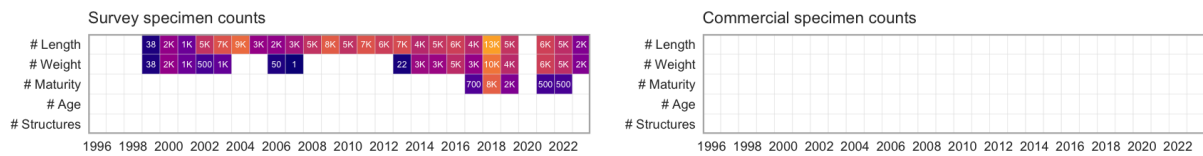
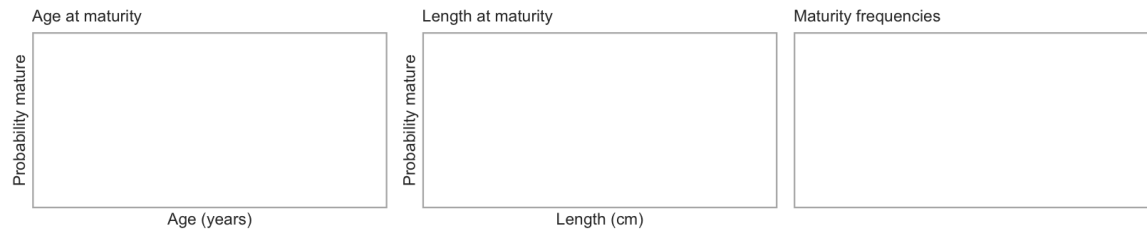
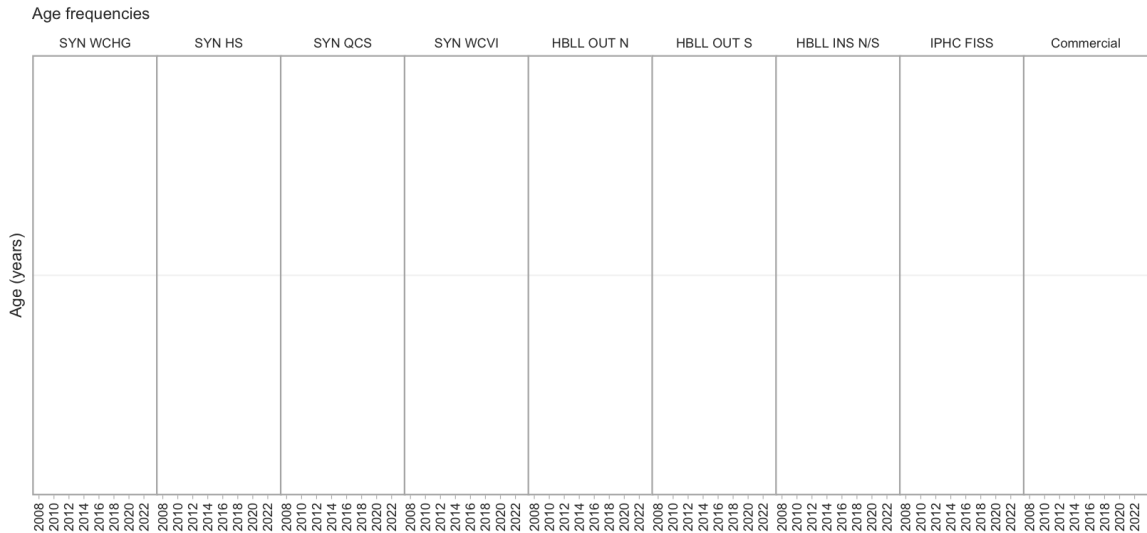
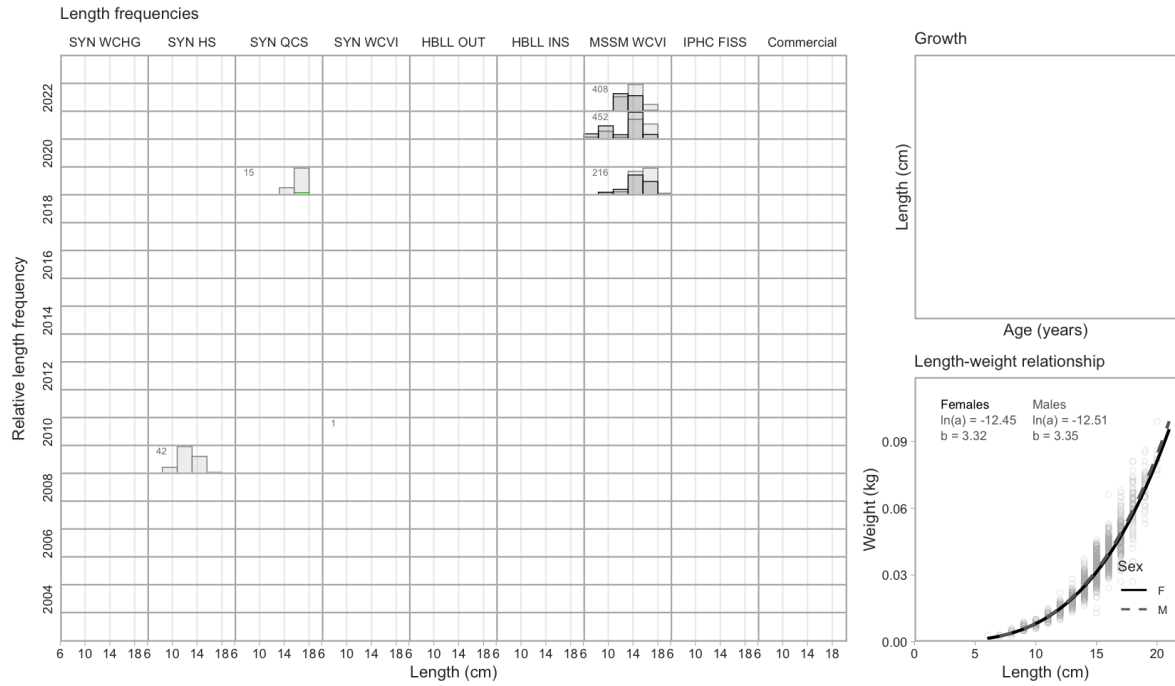


Commercial trawl CPUE



Commercial H & L CPUE



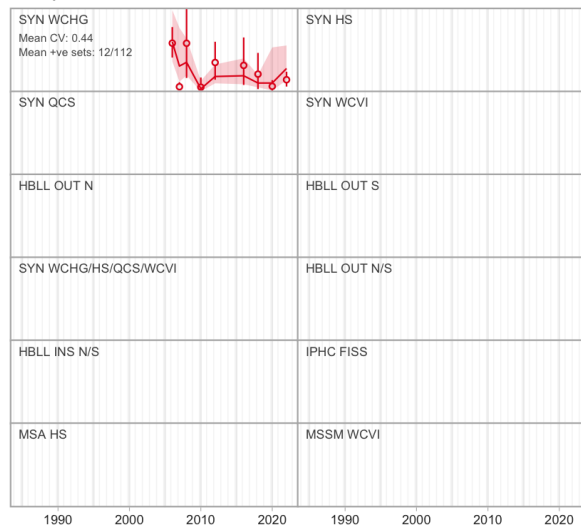


6.20 Pacific Flatnose

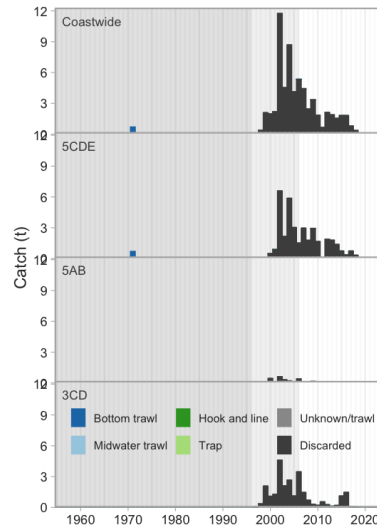
Antimora microlepis (220)

Order: Gadiformes, Family: Moridae, [FishBase](#), [WoRMS](#)

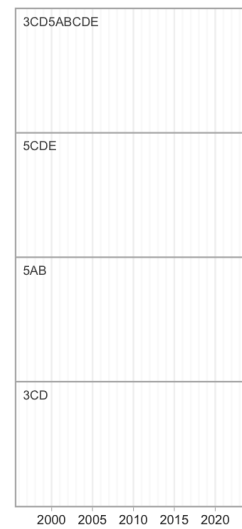
Survey relative biomass indices



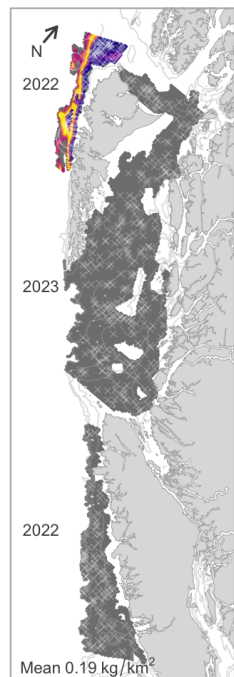
Commercial catch



Commercial bottom trawl CPUE



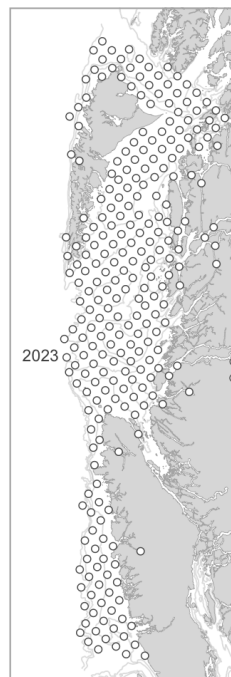
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

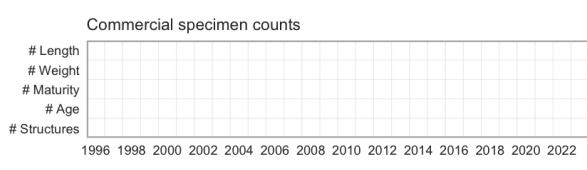
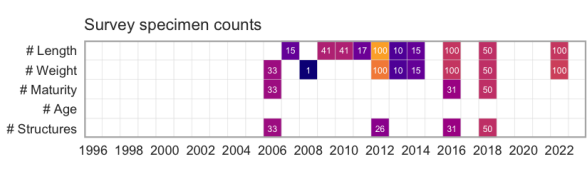
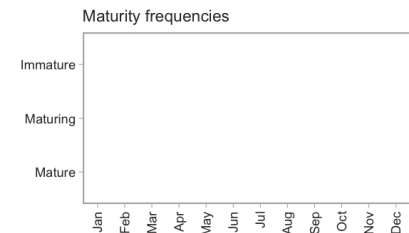
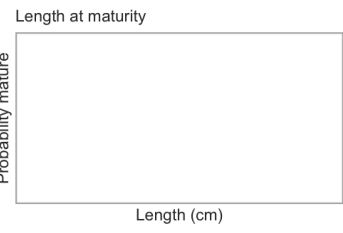
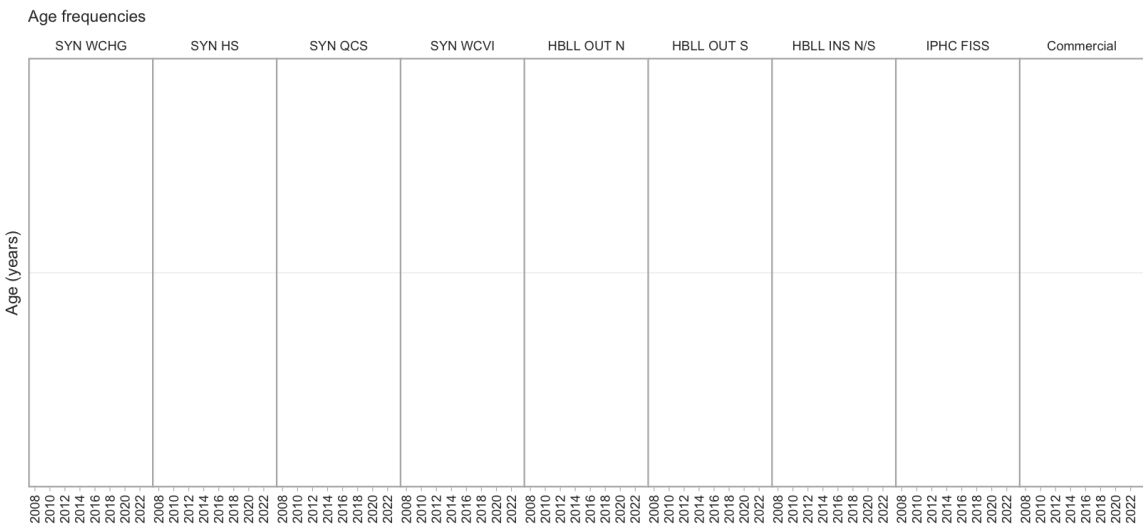
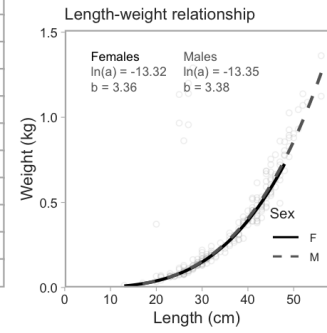
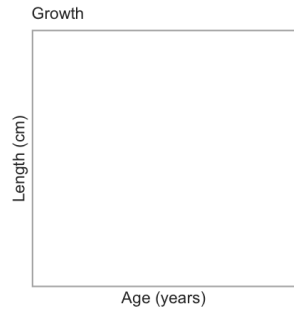
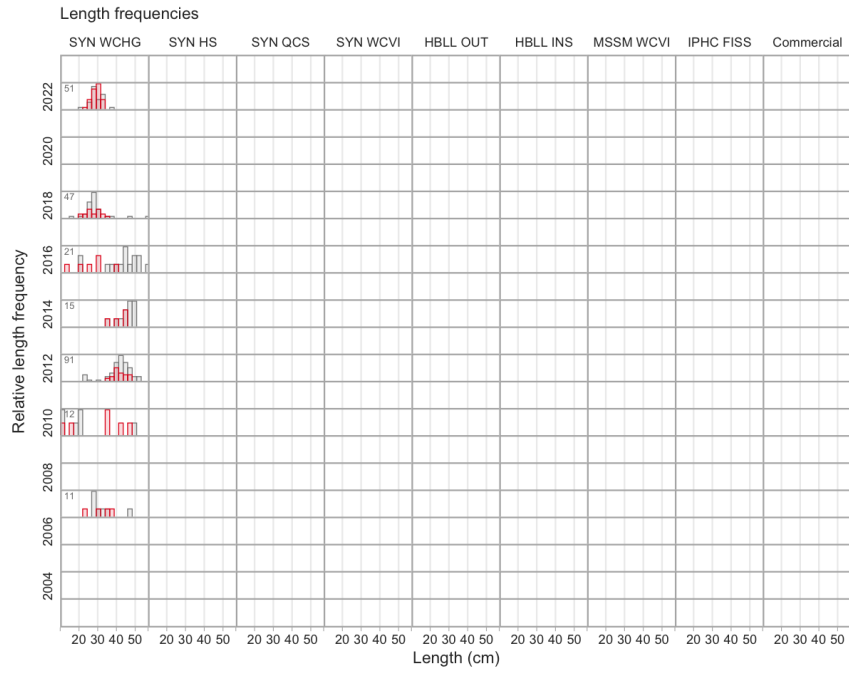


Commercial trawl CPUE



Commercial H & L CPUE





6.21 Pacific Cod

Gadus macrocephalus (222)

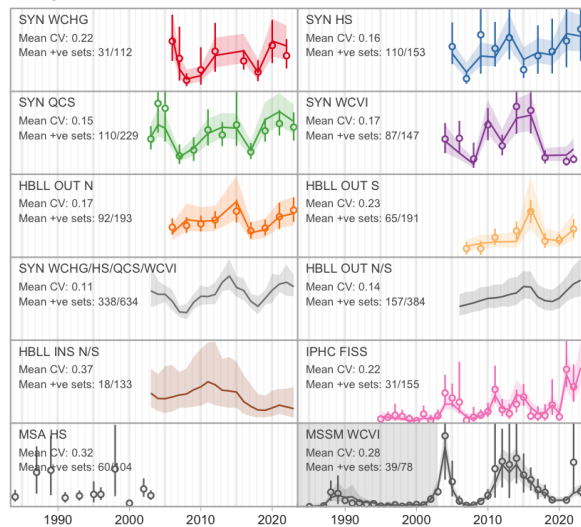
Order: Gadiformes, Family: Gadidae, [FishBase](#), [WoRMS](#)

Last Research Document: Forrest et al. (2020)

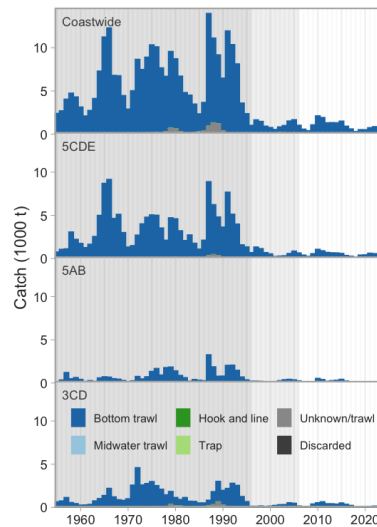
Last Science Advisory Report: DFO (2019a)

Last Science Response: DFO (2021a), DFO (2024a)

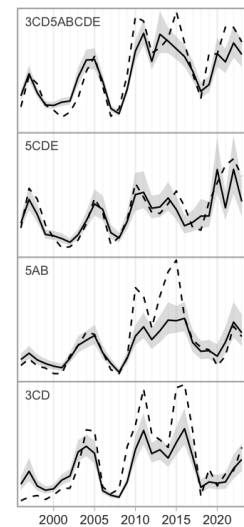
Survey relative biomass indices



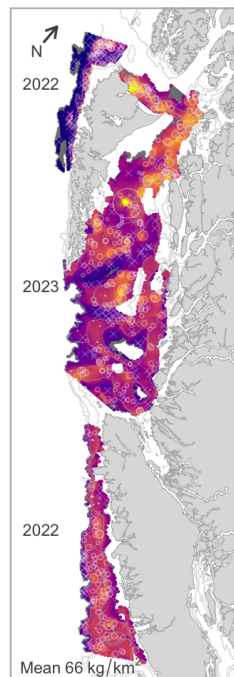
Commercial catch



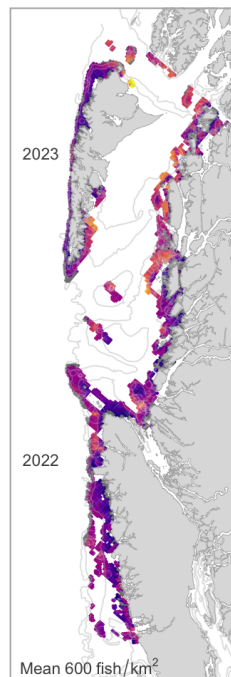
Commercial bottom trawl CPUE



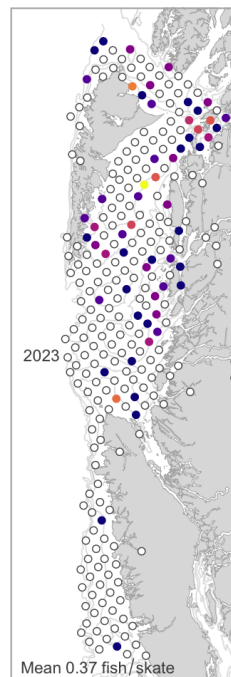
Synoptic survey biomass



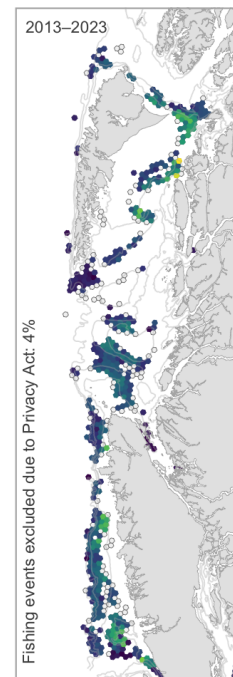
HBLL OUT survey biomass



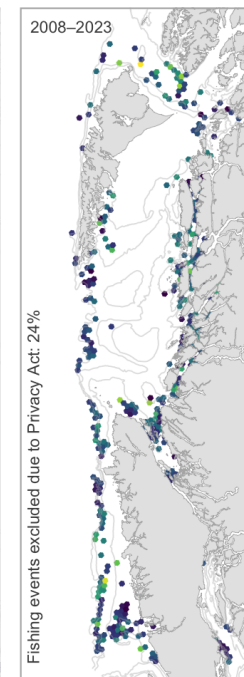
IPHC survey catch rate

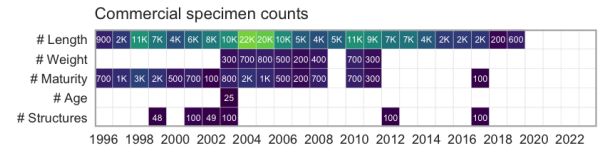
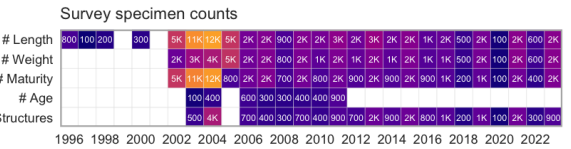
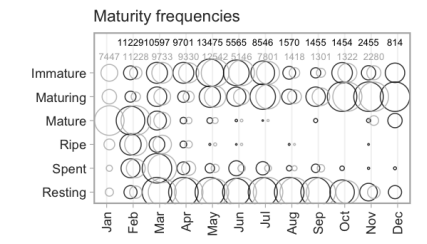
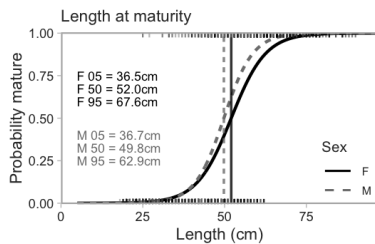
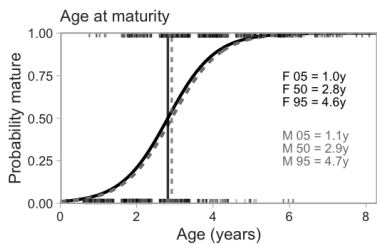
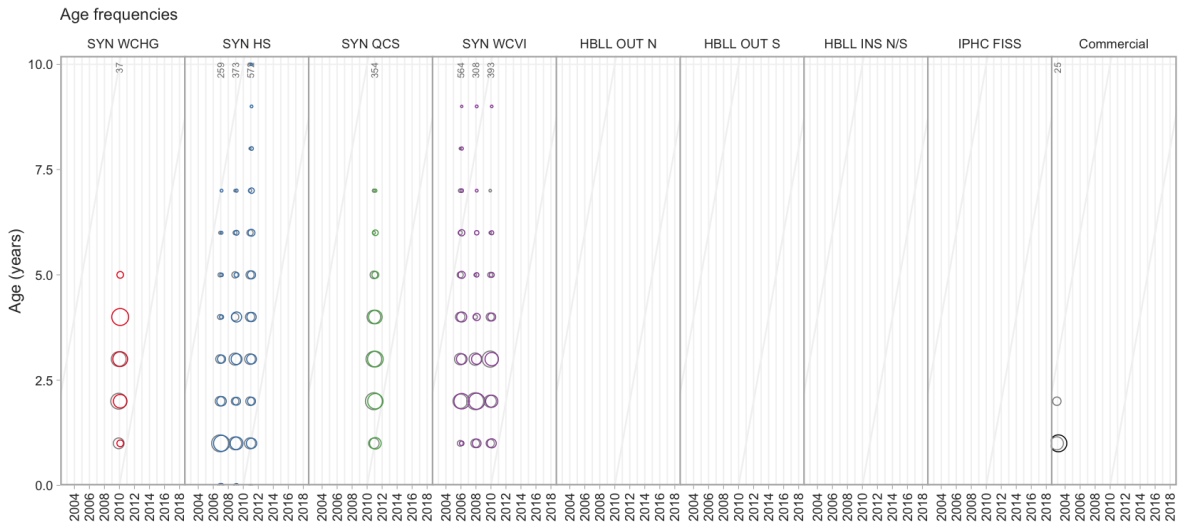
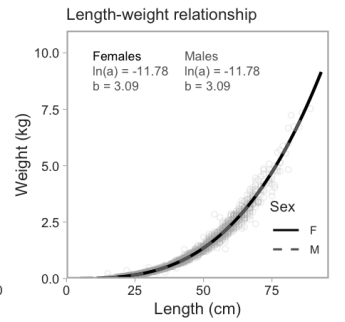
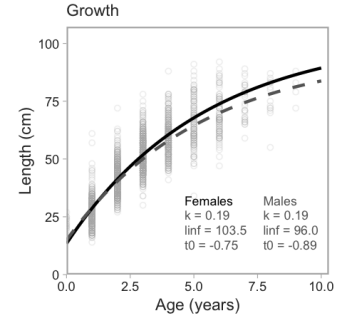
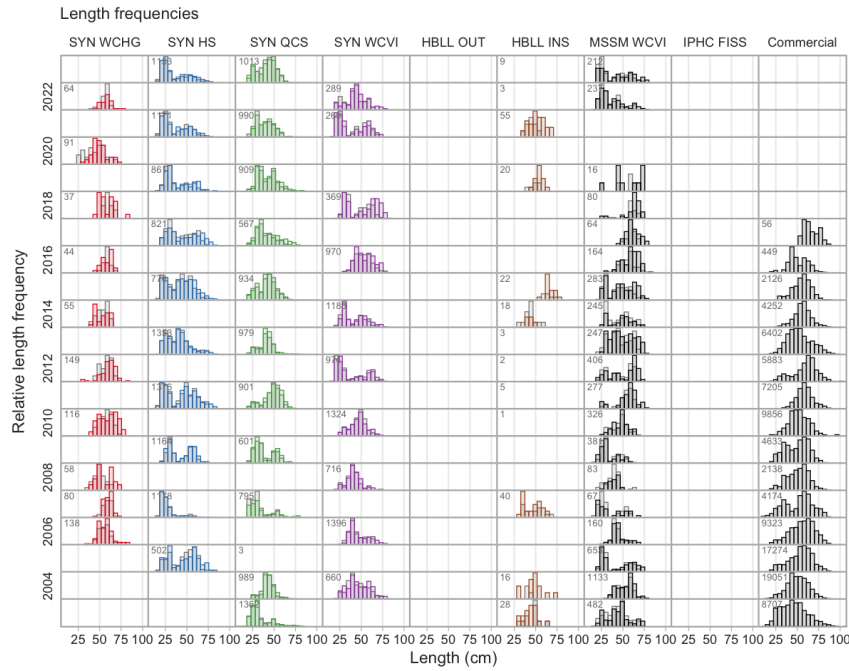


Commercial trawl CPUE



Commercial H & L CPUE





6.22 Pacific Hake

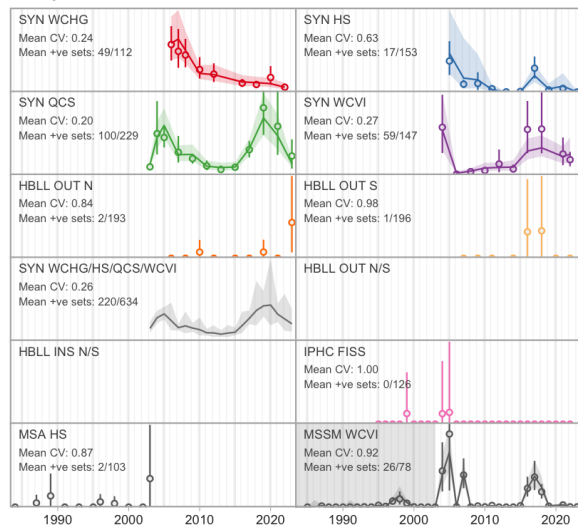
Merluccius productus (225)

Order: Gadiformes, Family: Merlucciidae, [FishBase](#), [WoRMS](#)

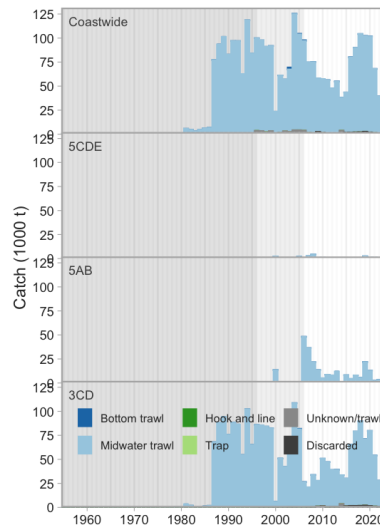
Last joint Canada-US stock assessment: Grandin et al. (2024)

Note that Pacific Hake undergoes a directed joint Canada-US coastwide survey and annual assessment, which are not included in this report. The most recent stock assessment should be consulted for details on stock status.

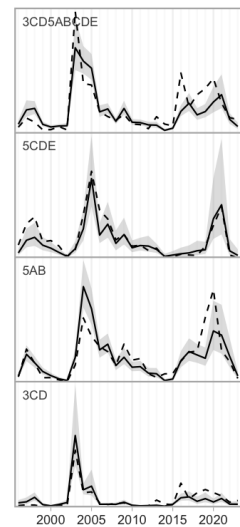
Survey relative biomass indices



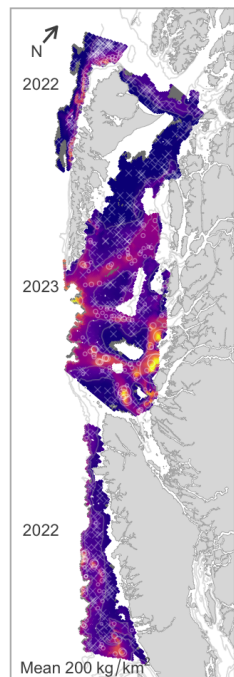
Commercial catch



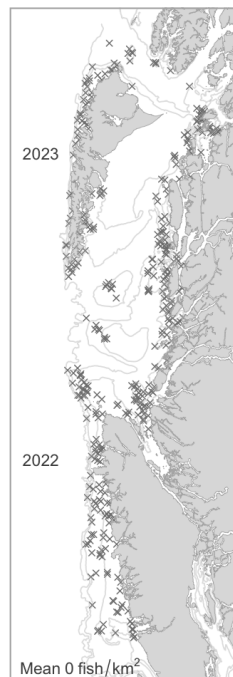
Commercial bottom trawl CPUE



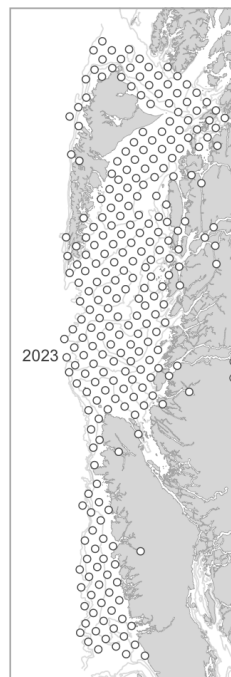
Synoptic survey biomass



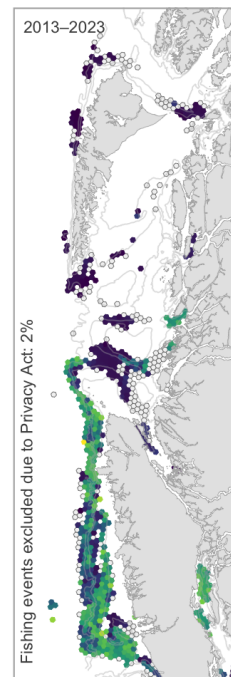
HBLL OUT survey biomass



IPHC survey catch rate

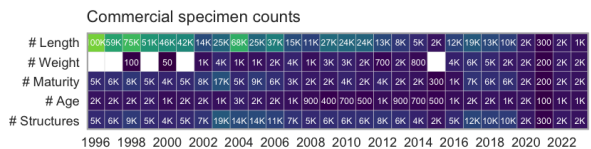
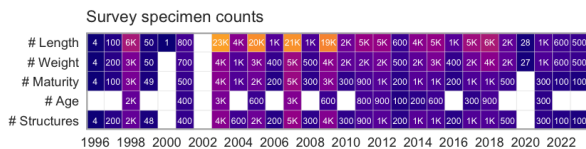
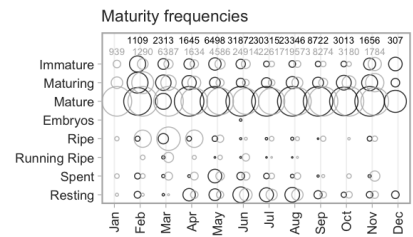
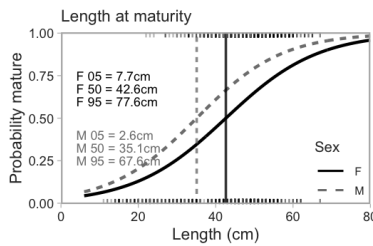
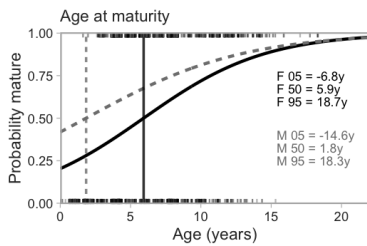
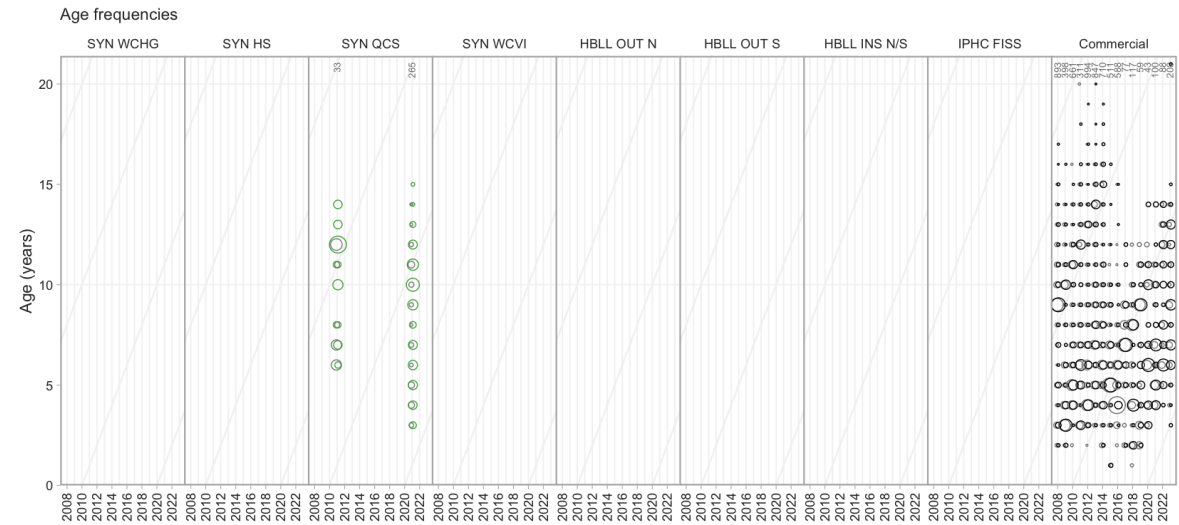
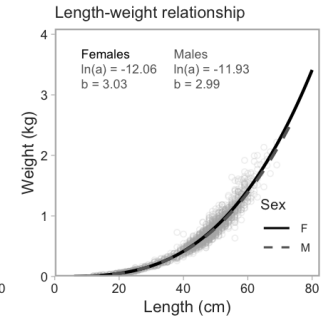
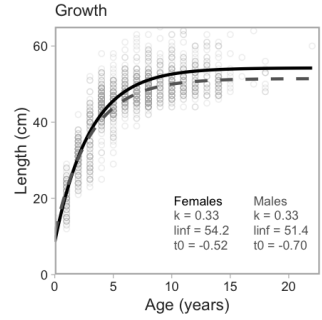
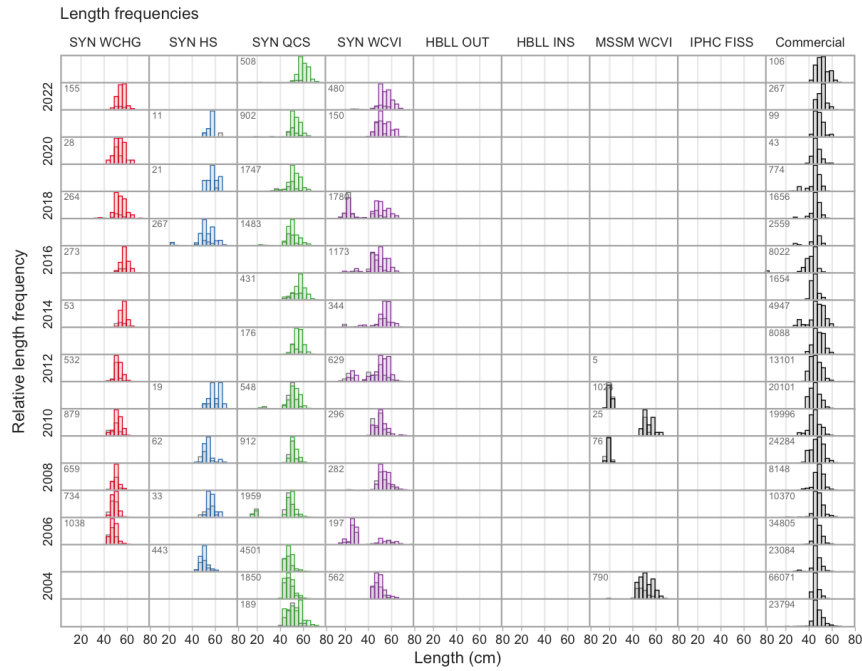


Commercial trawl CPUE



Commercial H & L CPUE



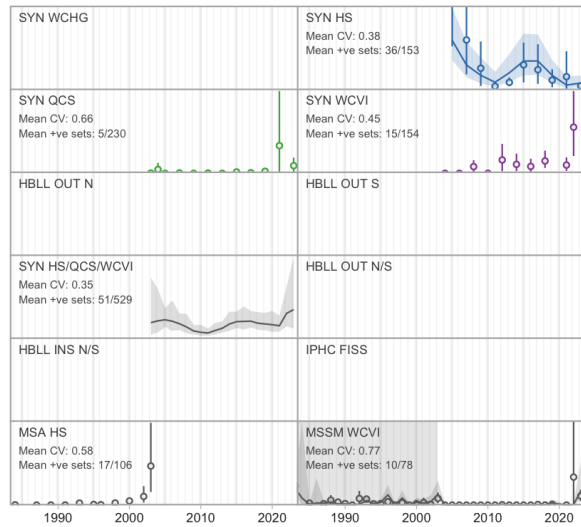


6.23 Pacific Tomcod

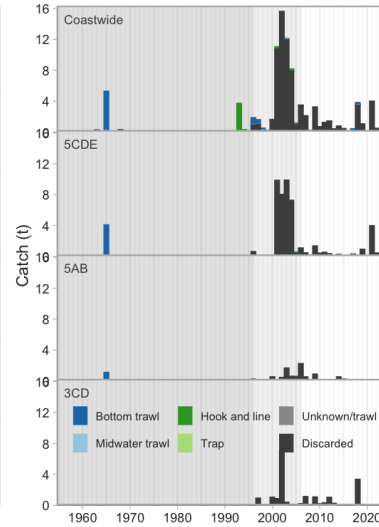
Microgadus proximus (226)

Order: Gadiformes, Family: Gadidae, [FishBase](#), [WoRMS](#)

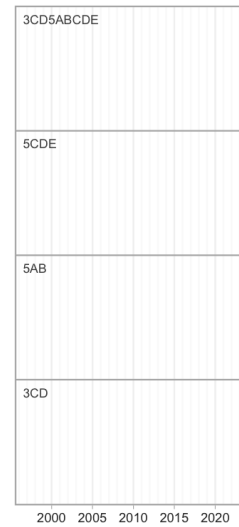
Survey relative biomass indices



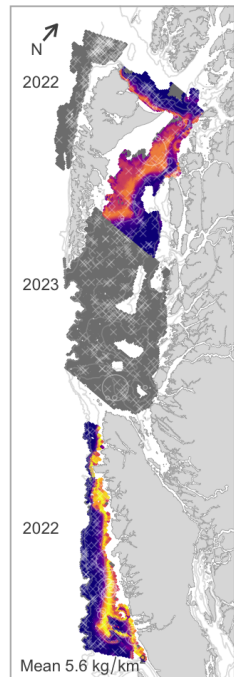
Commercial catch



Commercial bottom trawl CPUE



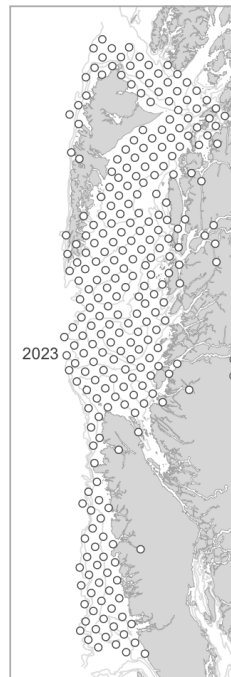
Synoptic survey biomass



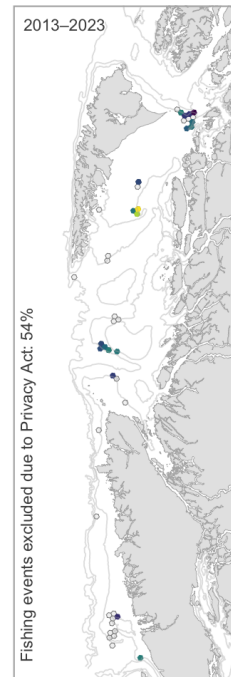
H BLL OUT survey biomass



IPHC survey catch rate

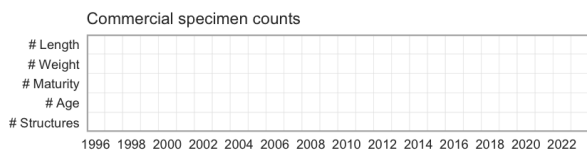
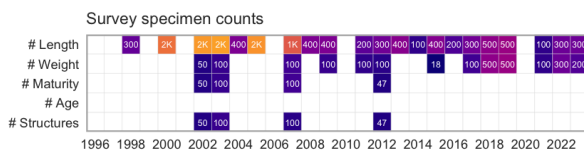
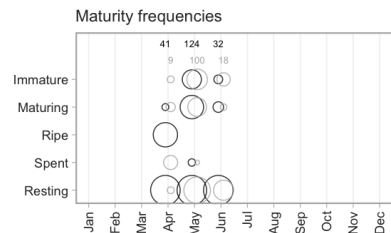
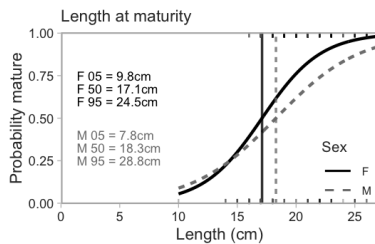
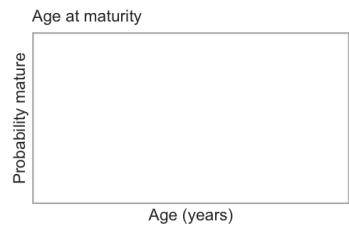
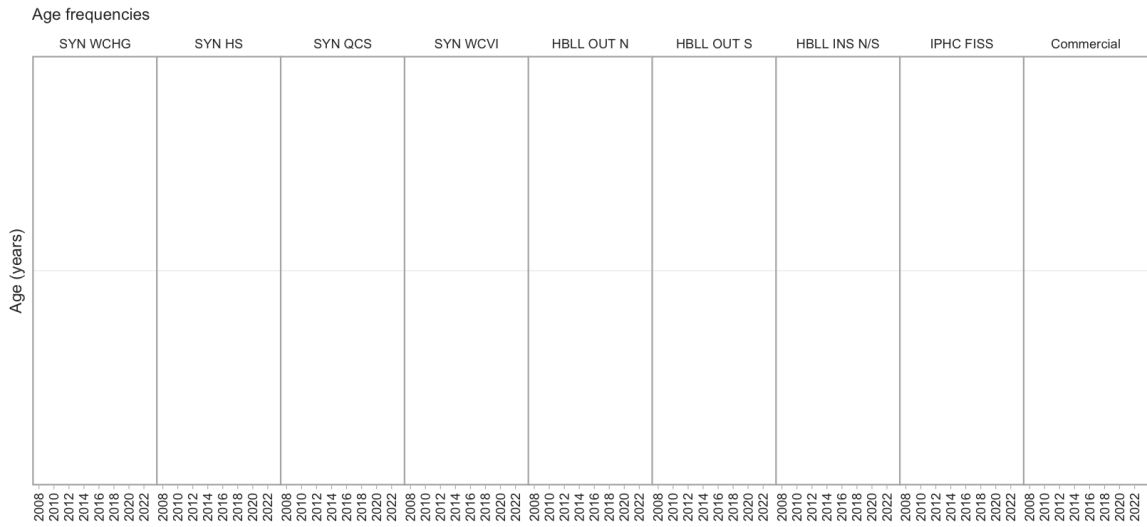
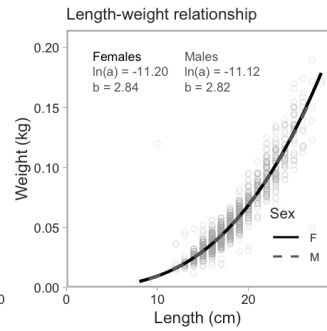
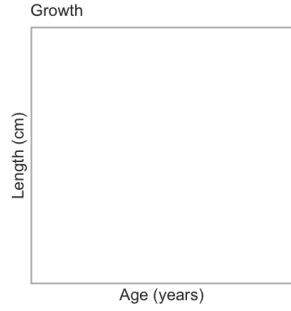
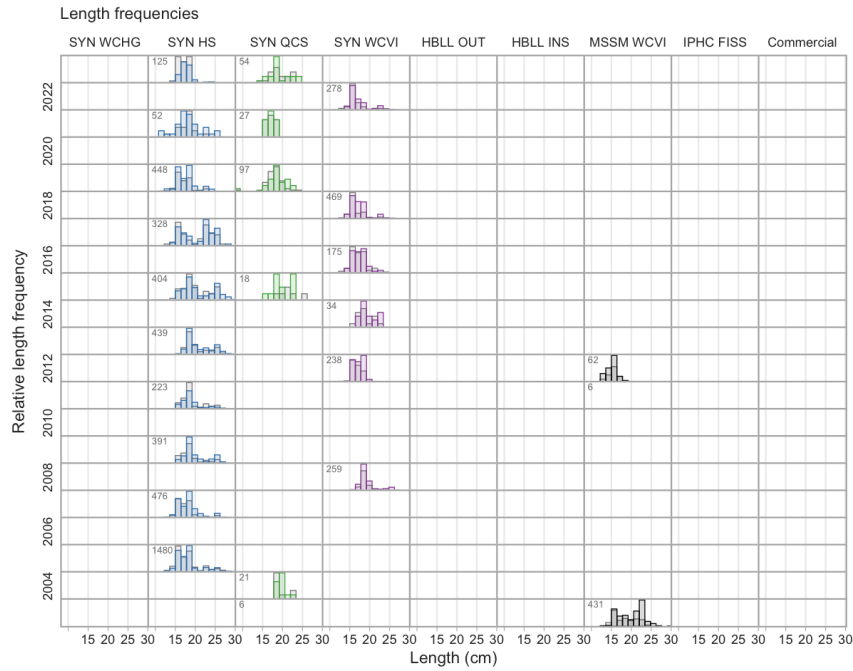


Commercial trawl CPUE



Commercial H & L CPUE





6.24 Walleye Pollock

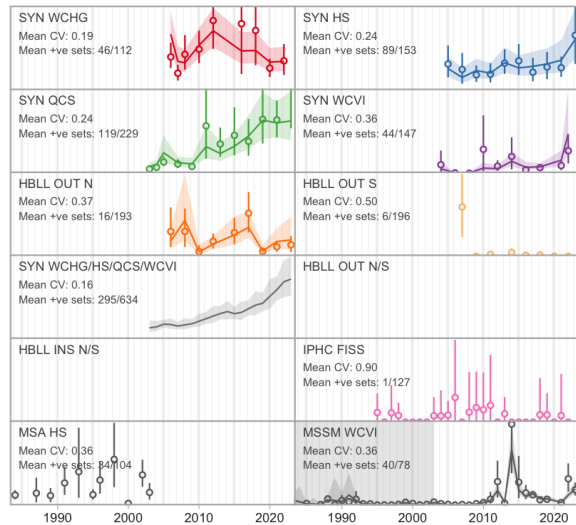
Gadus chalcogrammus (228)

Order: Gadiformes, Family: Gadidae, [FishBase](#), [WoRMS](#)

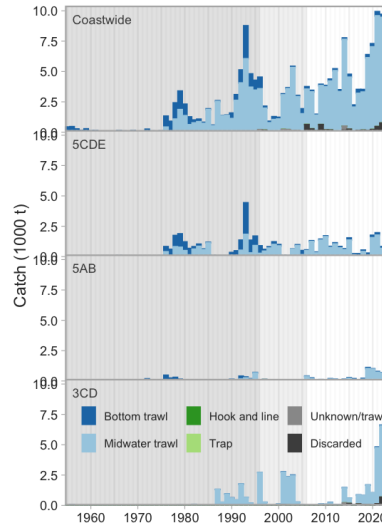
Last Research Document: Starr and Haigh (2021a)

Last Science Advisory Report: DFO (2018a)

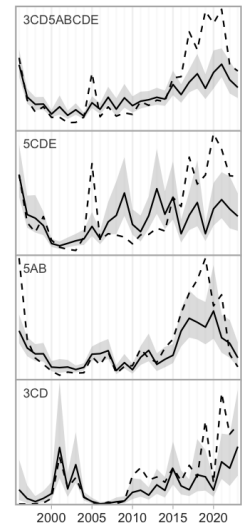
Survey relative biomass indices



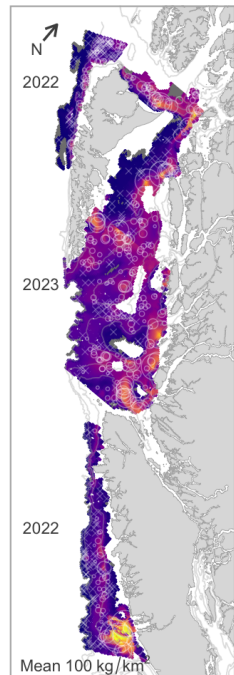
Commercial catch



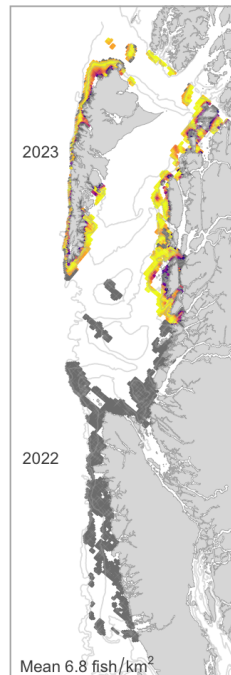
Commercial bottom trawl CPUE



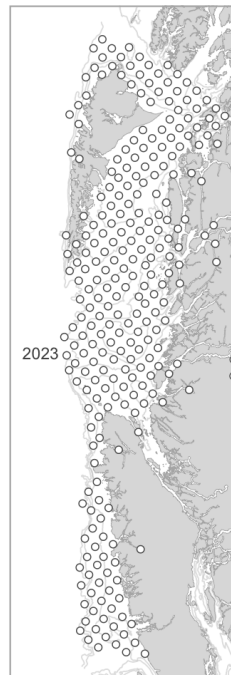
Synoptic survey biomass



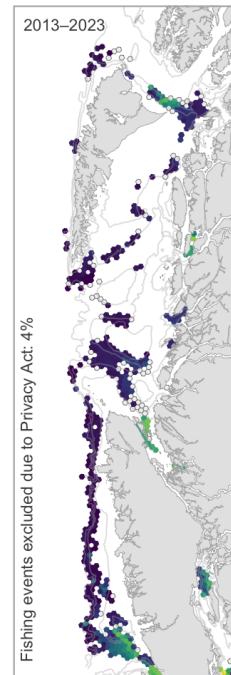
HBLL OUT survey biomass



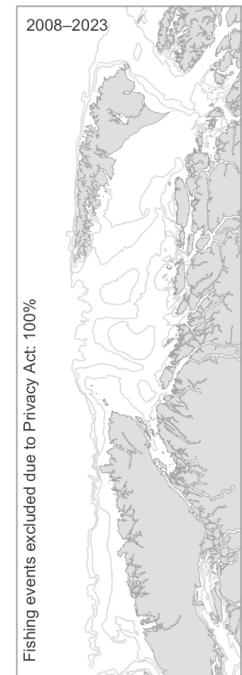
IPHC survey catch rate

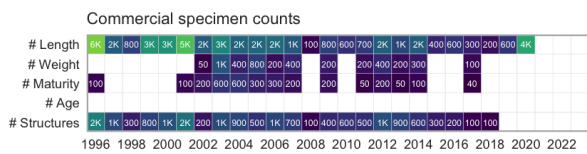
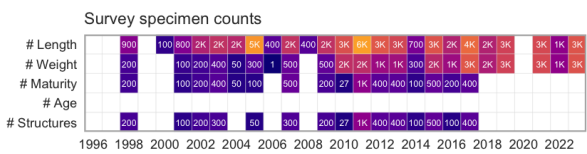
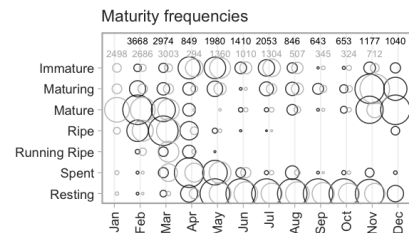
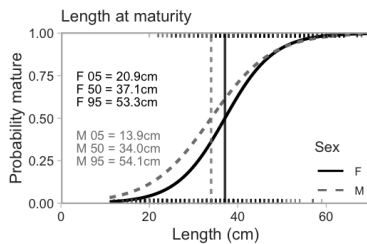
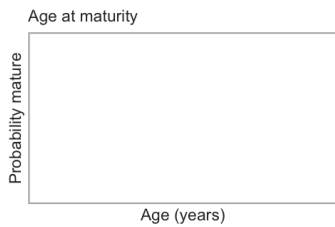
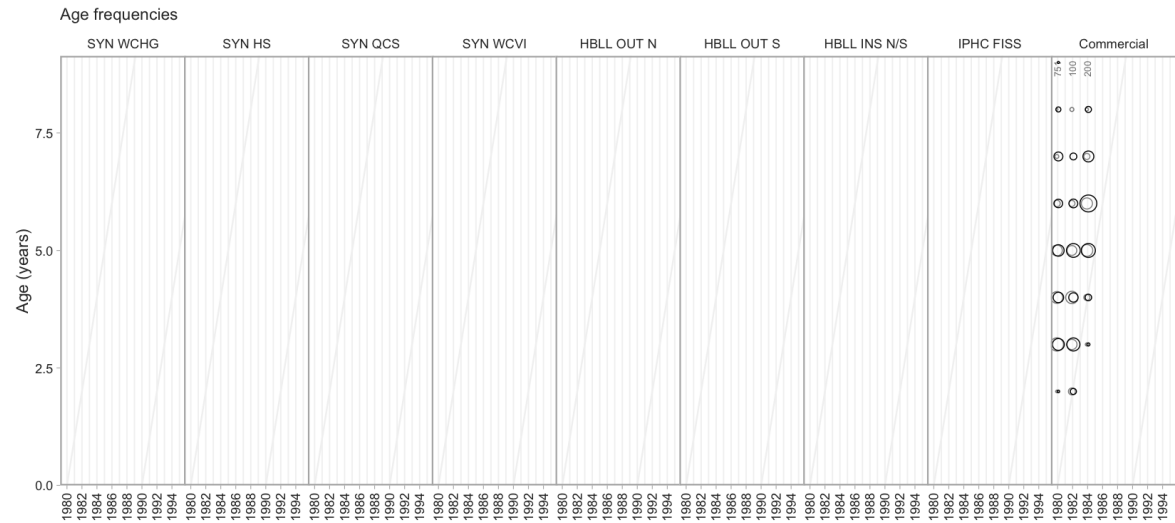
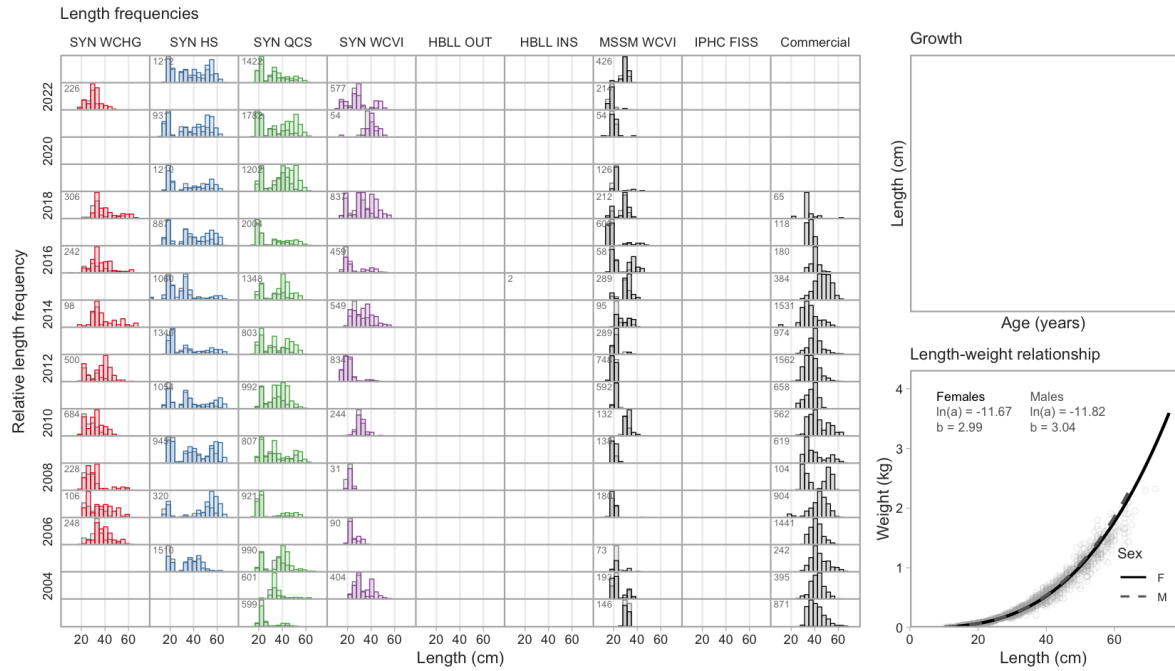


Commercial trawl CPUE



Commercial H & L CPUE



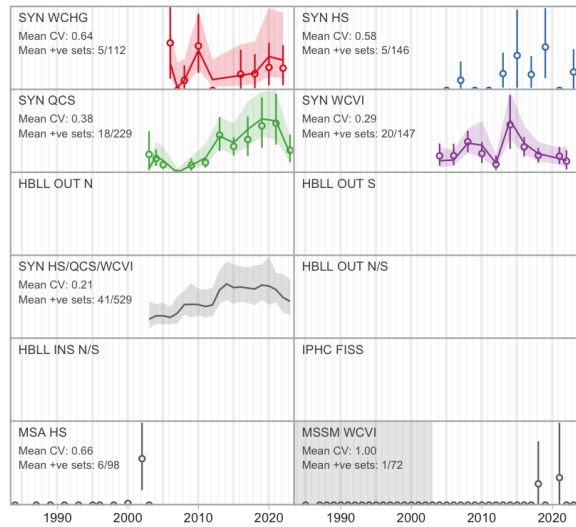


6.25 Bigfin Eelpout

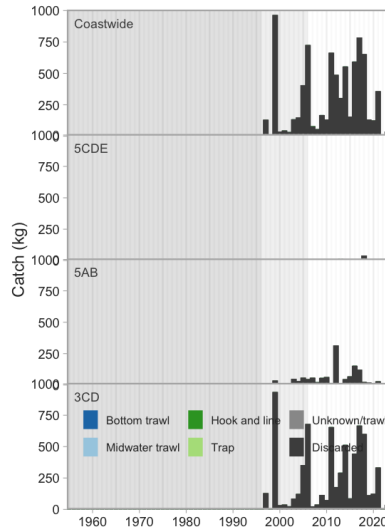
Lycodes cortezianus (233)

Order: Perciformes, Family: Zoarcidae, [FishBase](#), [WoRMS](#)

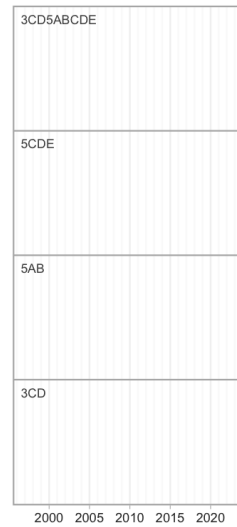
Survey relative biomass indices



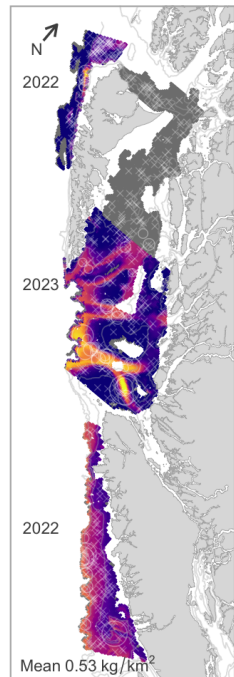
Commercial catch



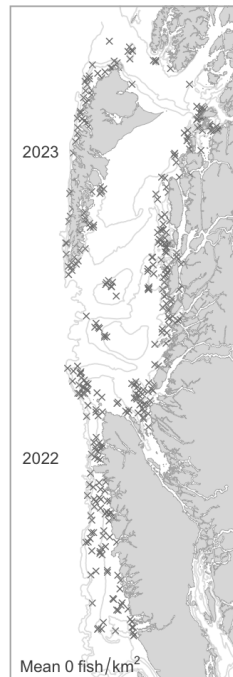
Commercial bottom trawl CPUE



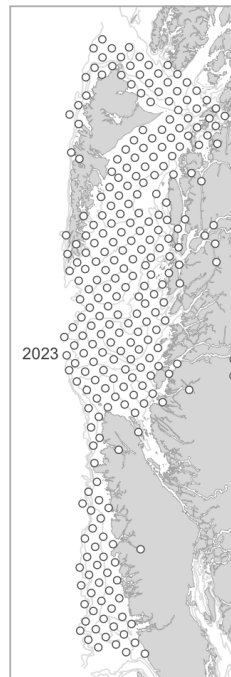
Synoptic survey biomass



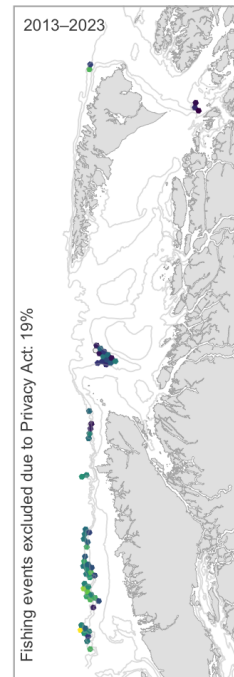
HBL OUT survey biomass



IPHC survey catch rate

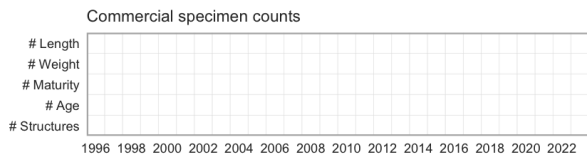
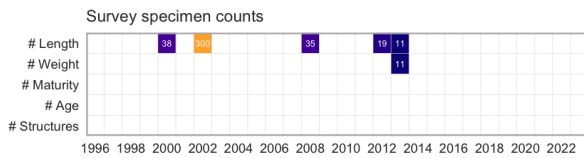
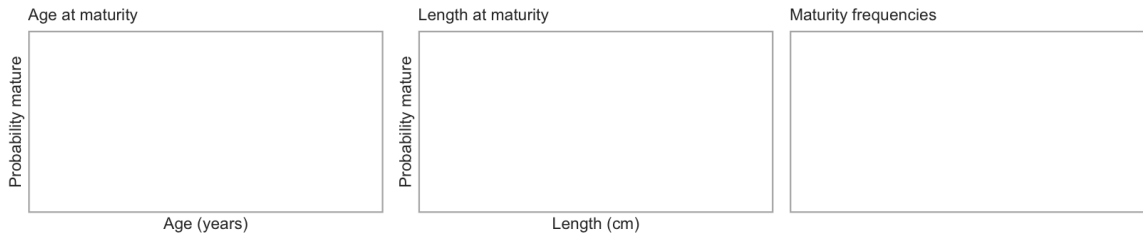
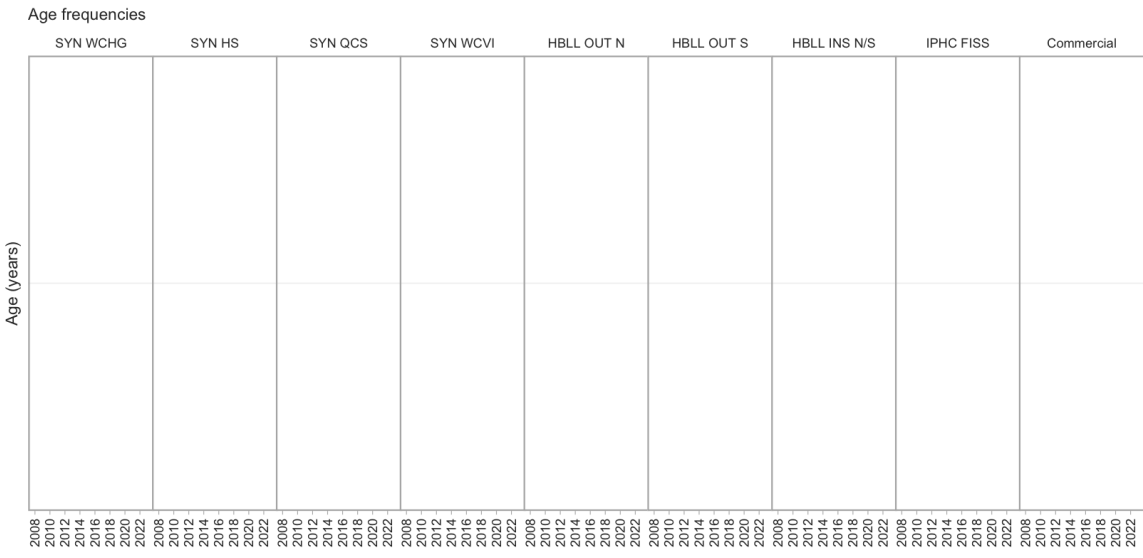
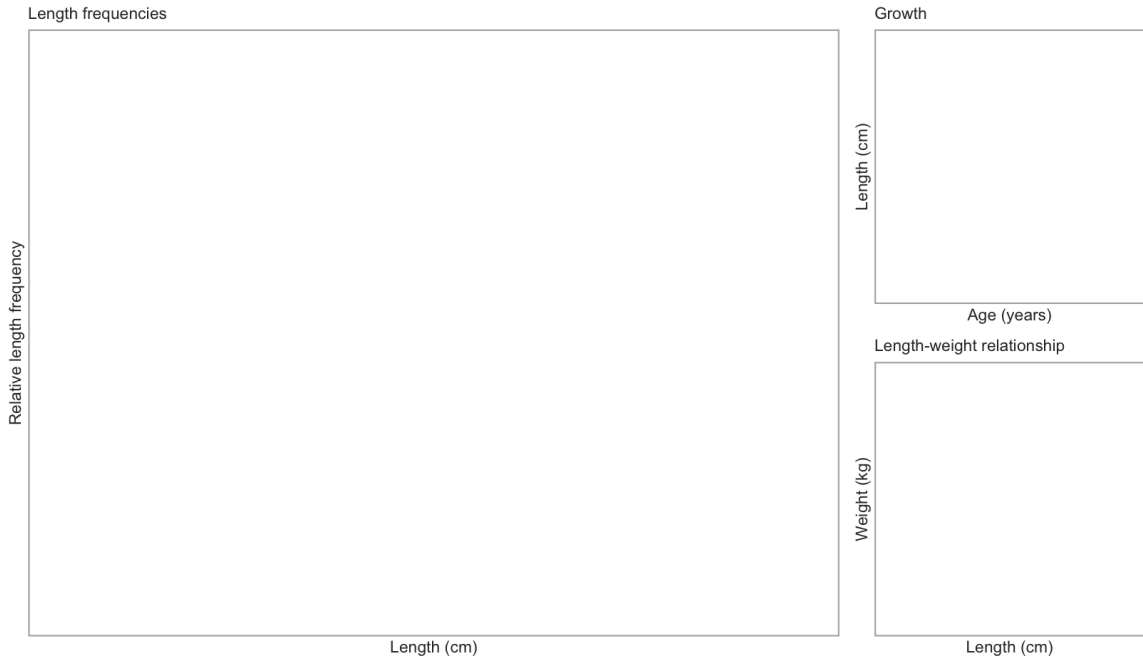


Commercial trawl CPUE



Commercial H & L CPUE



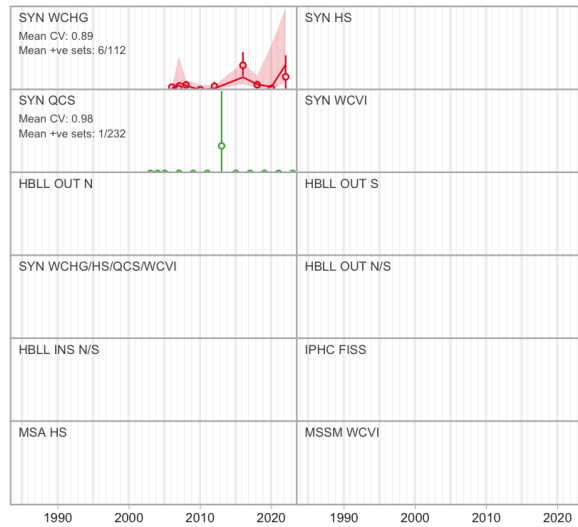


6.26 Twoline Eelpout

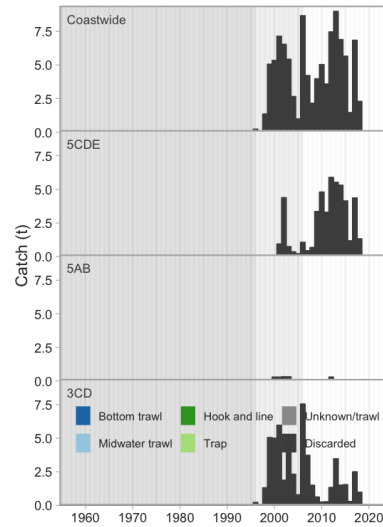
Bothrocara brunneum (235)

Order: Perciformes, Family: Zoarcidae, [FishBase](#), [WoRMS](#)

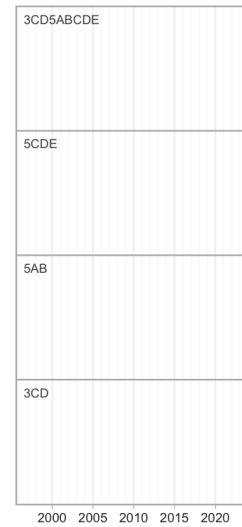
Survey relative biomass indices



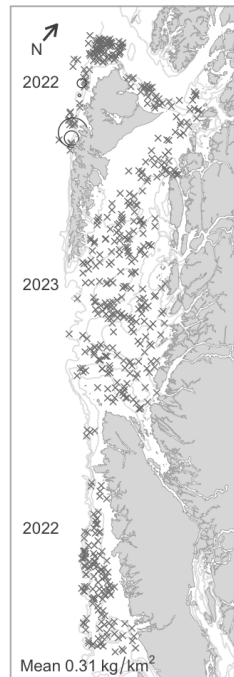
Commercial catch



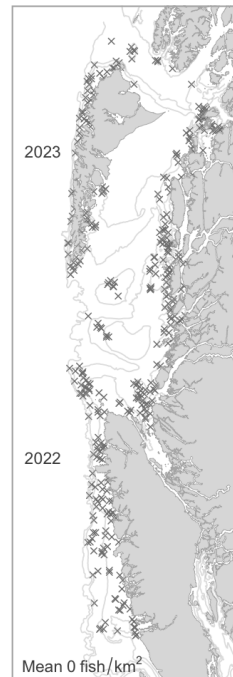
Commercial bottom trawl CPUE



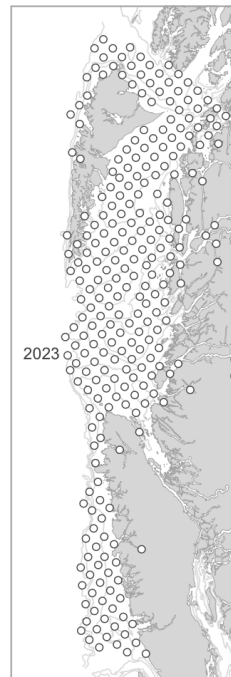
Synoptic survey biomass



H BLL OUT survey biomass



IPHC survey catch rate

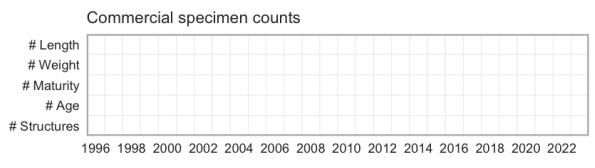
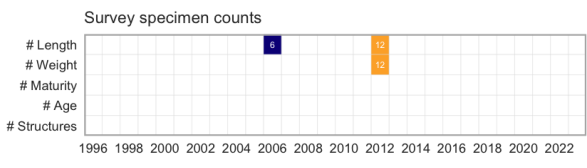
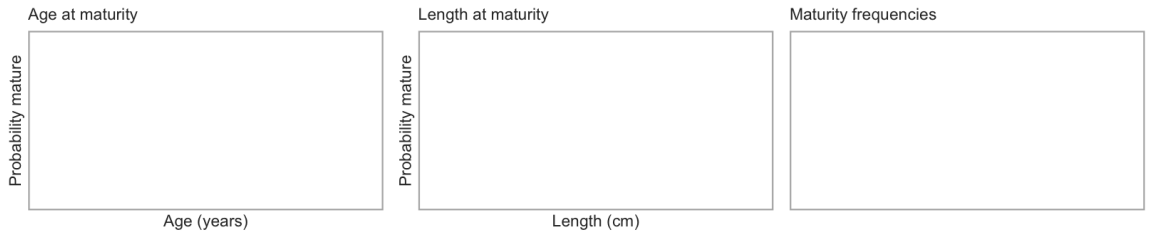
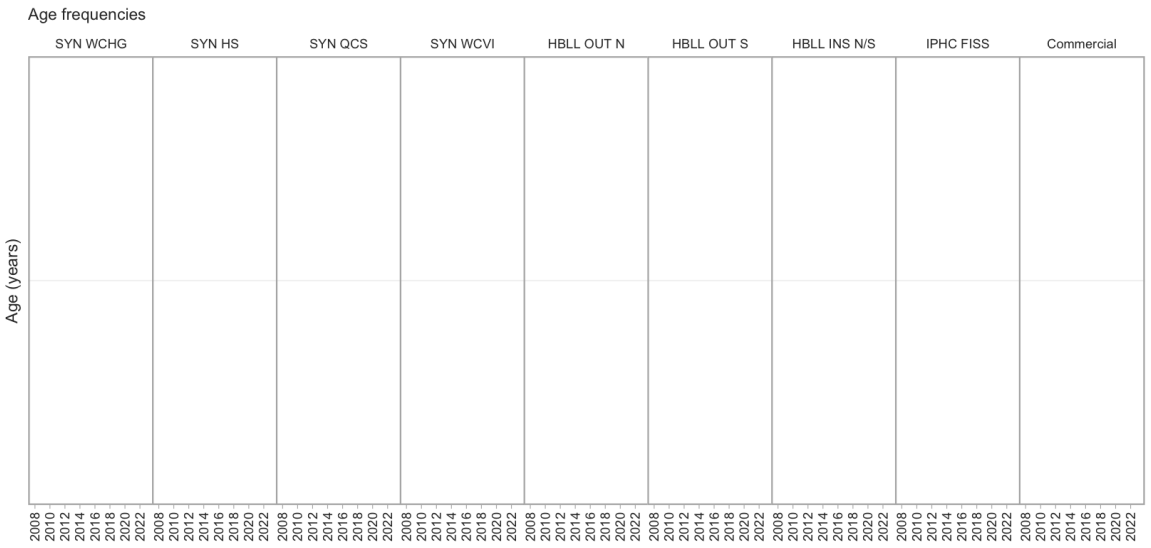
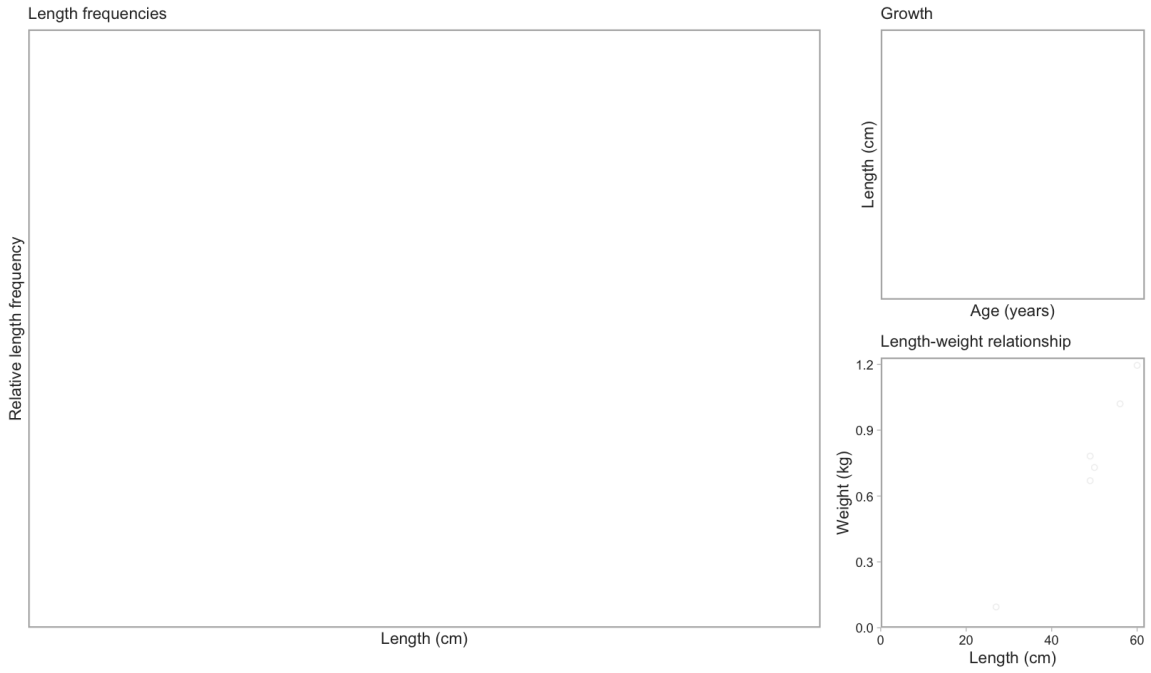


Commercial trawl CPUE



Commercial H & L CPUE



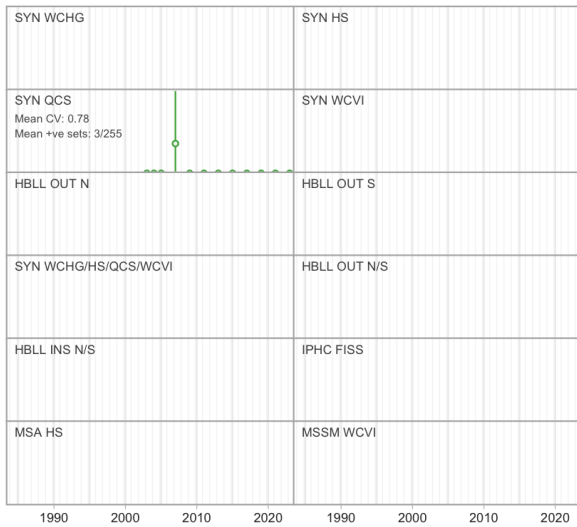


6.27 Shortfin Eelpout

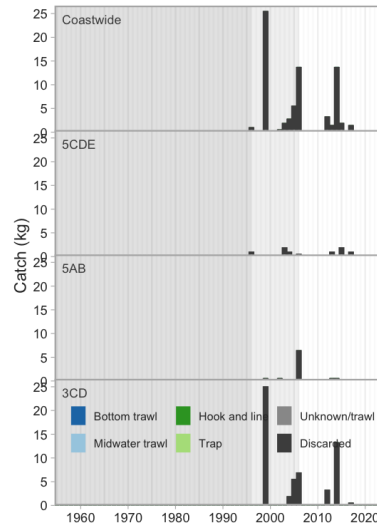
Lycodes brevipes (242)

Order: Perciformes, Family: Zoarcidae, [FishBase](#), [WoRMS](#)

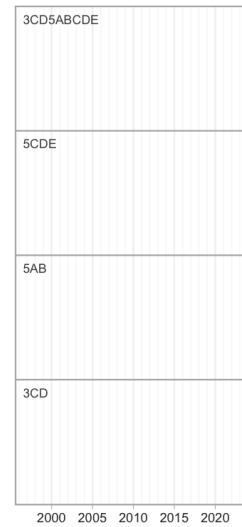
Survey relative biomass indices



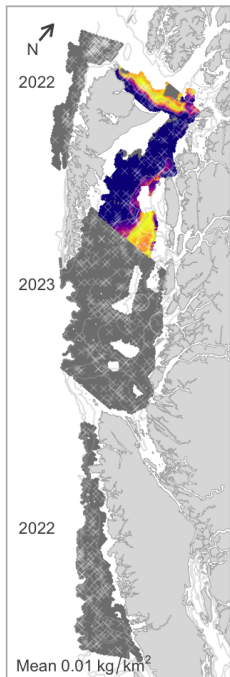
Commercial catch



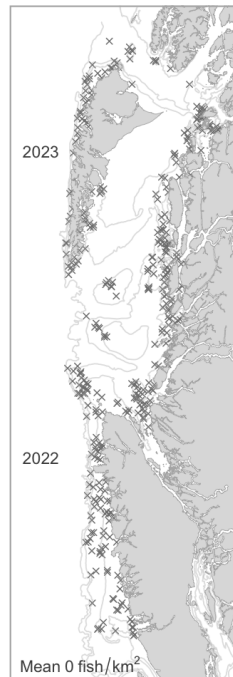
Commercial bottom trawl CPUE



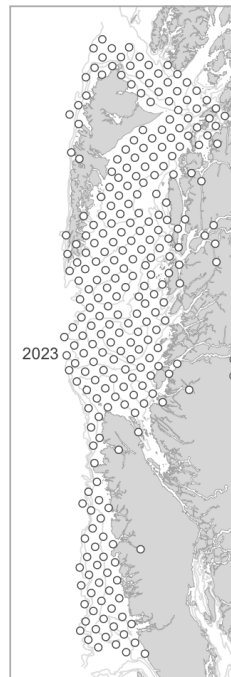
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate



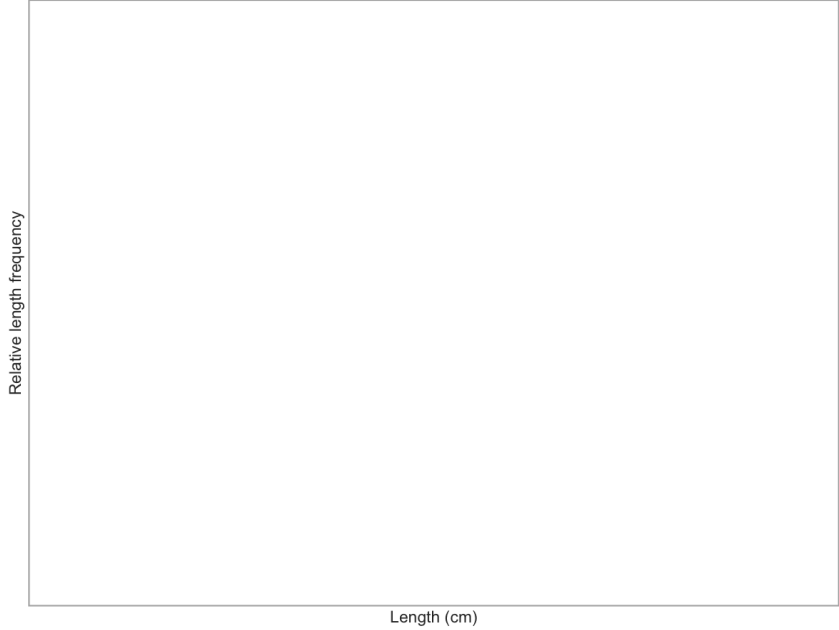
Commercial trawl CPUE



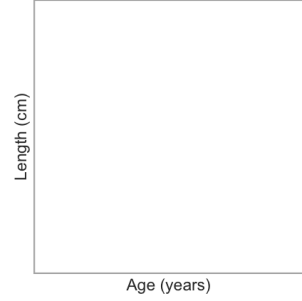
Commercial H & L CPUE



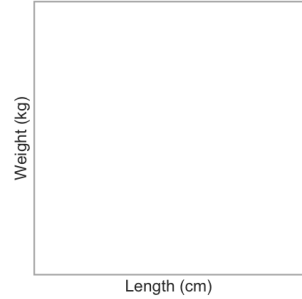
Length frequencies



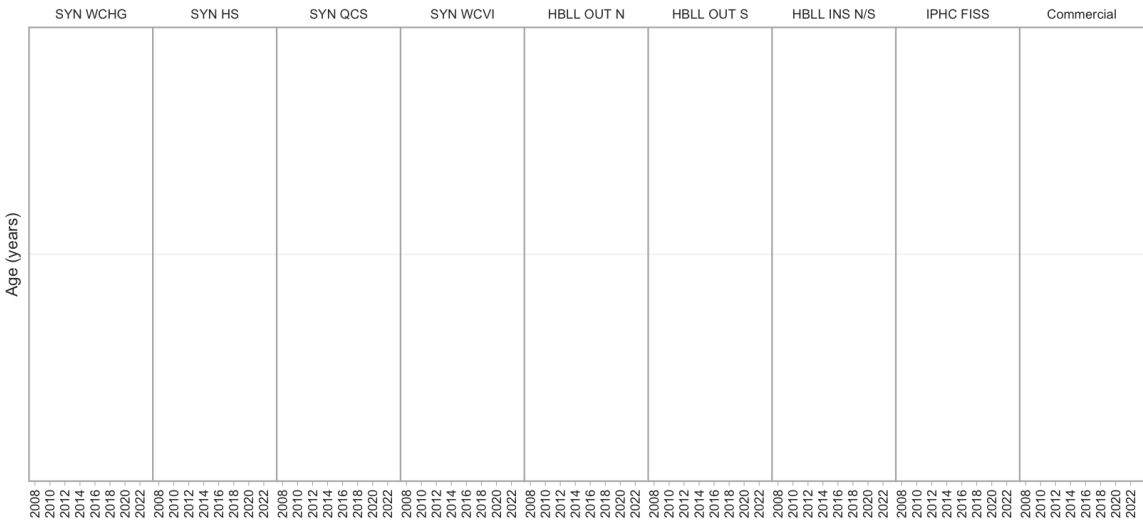
Growth



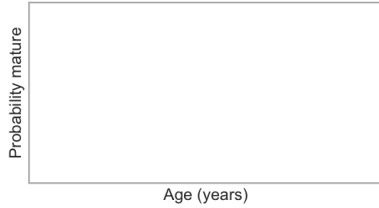
Length-weight relationship



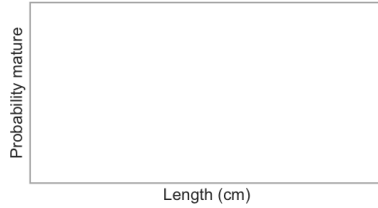
Age frequencies



Age at maturity



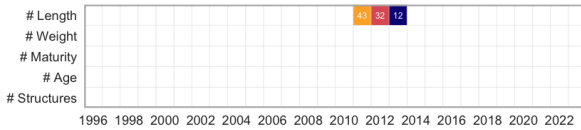
Length at maturity



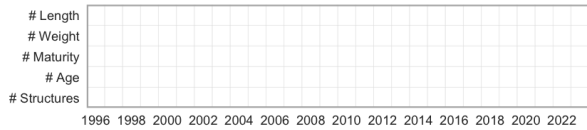
Maturity frequencies



Survey specimen counts



Commercial specimen counts

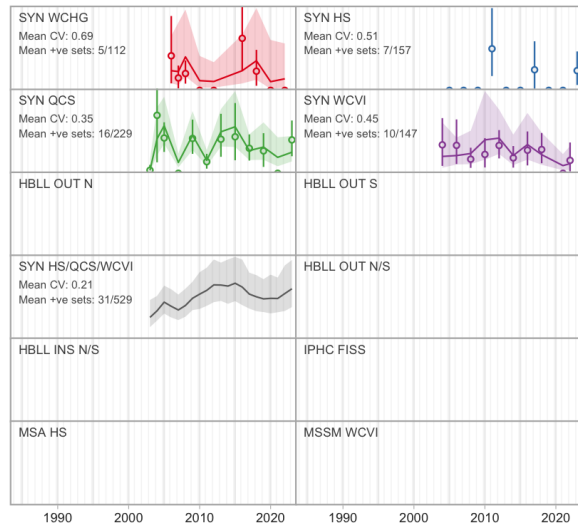


6.28 Black Eelpout

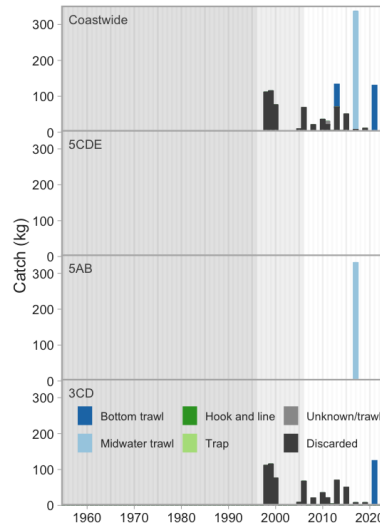
Lycodes diapterus (243)

Order: Perciformes, Family: Zoarcidae, [FishBase](#), [WoRMS](#)

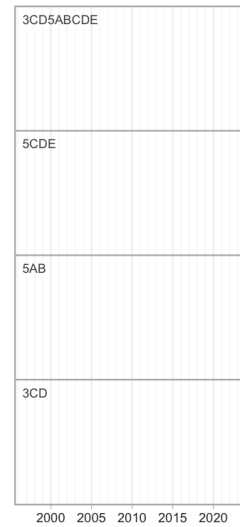
Survey relative biomass indices



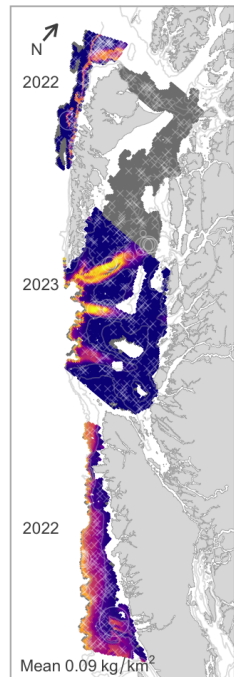
Commercial catch



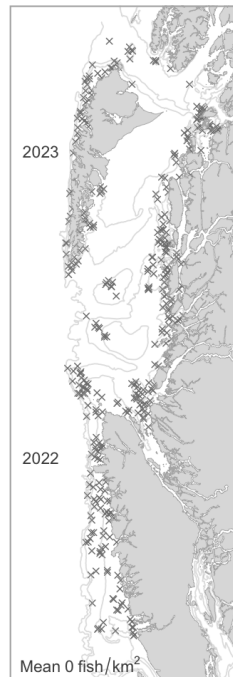
Commercial bottom trawl CPUE



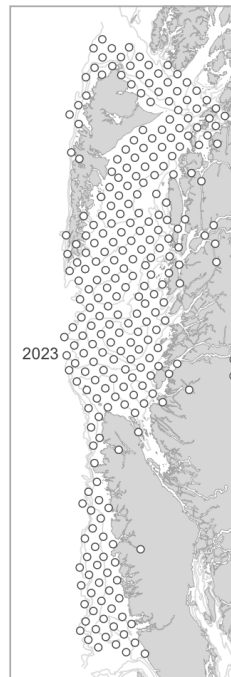
Synoptic survey biomass



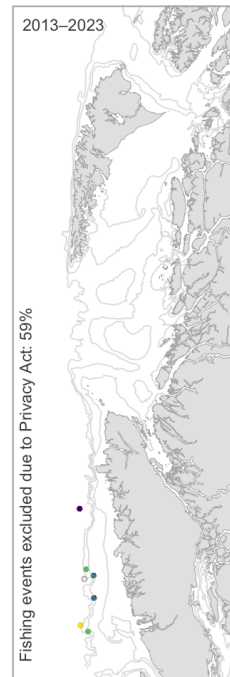
HBL OUT survey biomass



IPHC survey catch rate

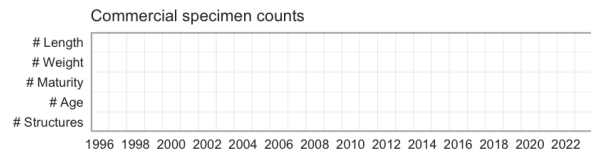
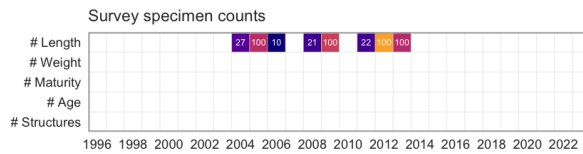
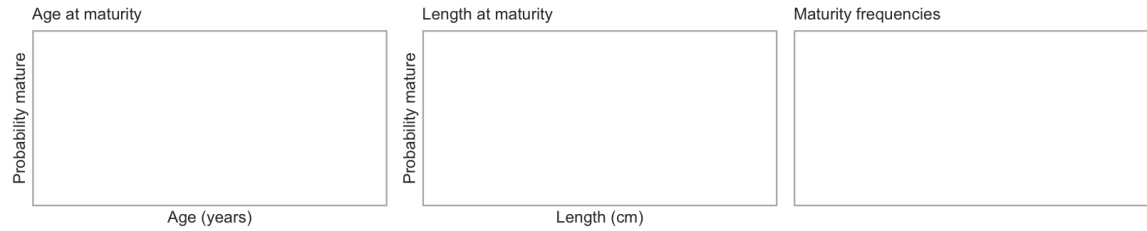
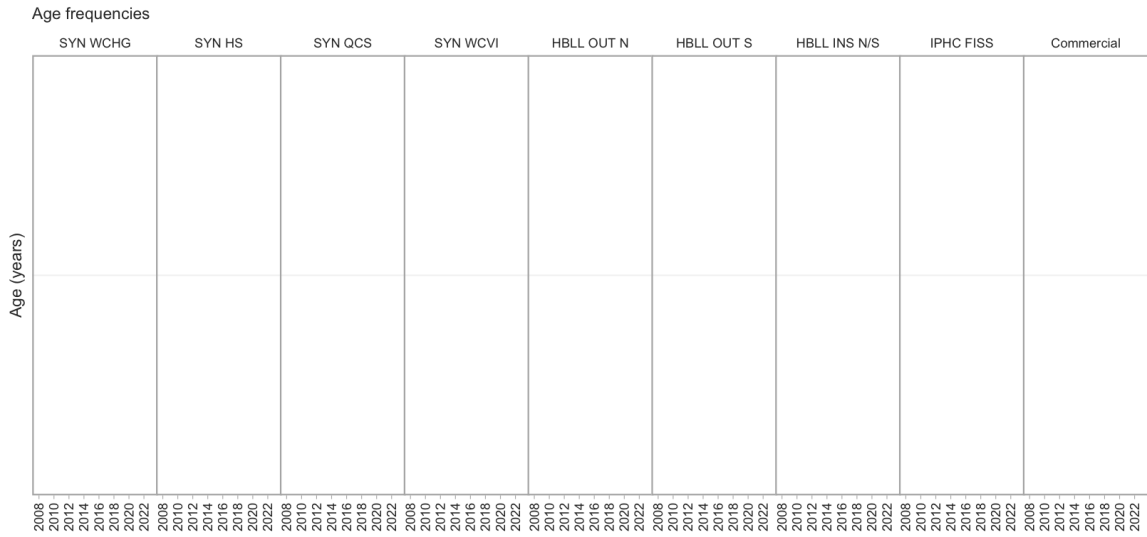
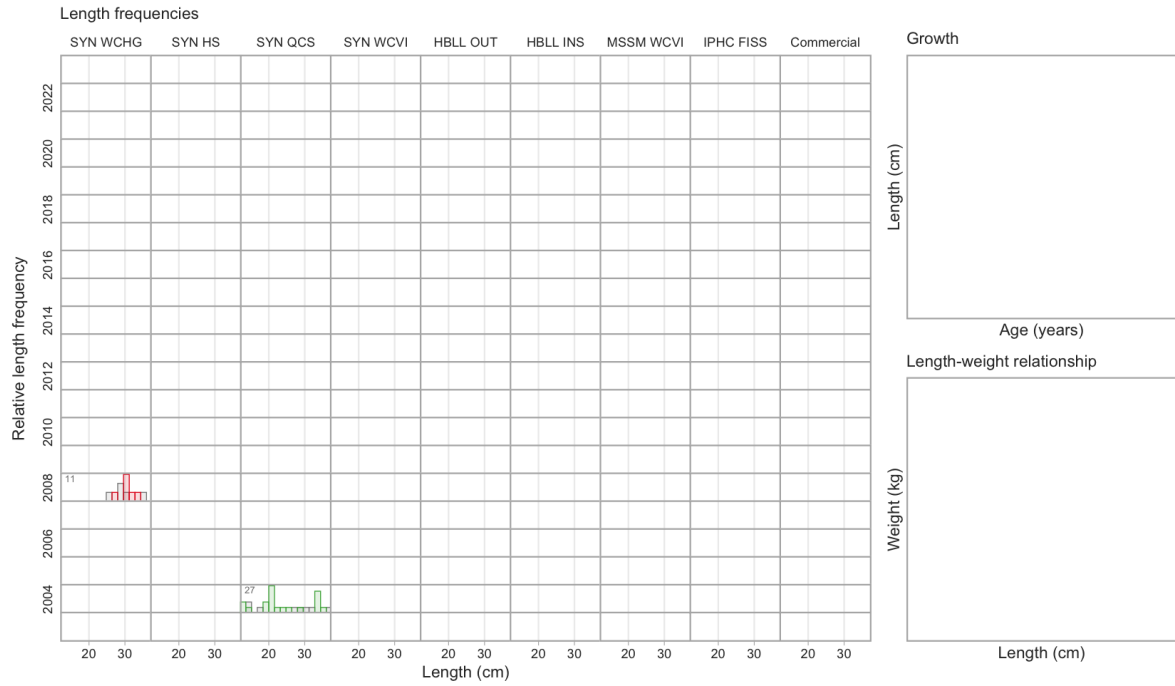


Commercial trawl CPUE



Commercial H & L CPUE



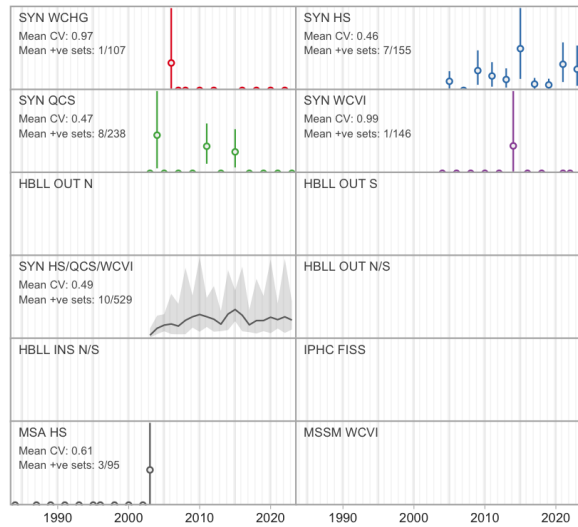


6.29 Wattled Eelpout

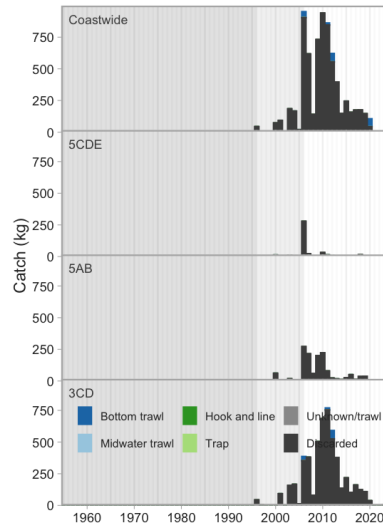
Lycodes palearis (244)

Order: Perciformes, Family: Zoarcidae, [FishBase](#), [WoRMS](#)

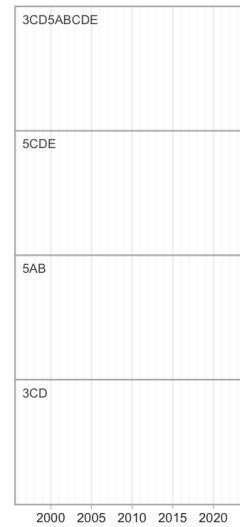
Survey relative biomass indices



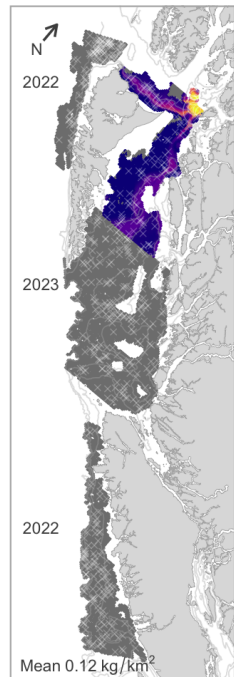
Commercial catch



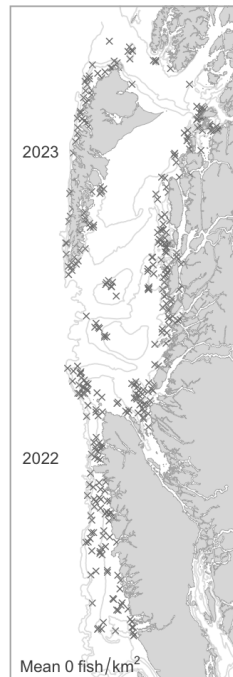
Commercial bottom trawl CPUE



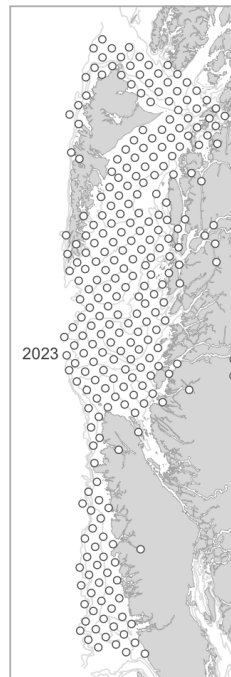
Synoptic survey biomass



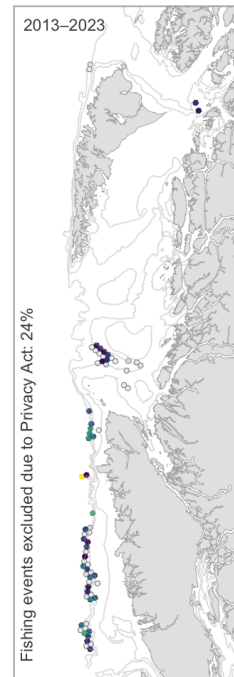
HBL OUT survey biomass



IPHC survey catch rate

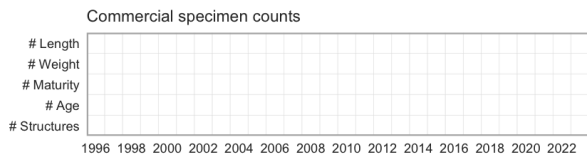
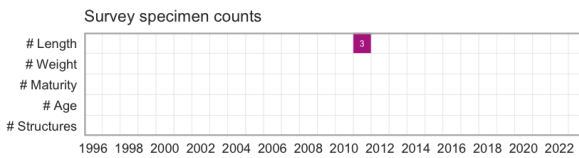
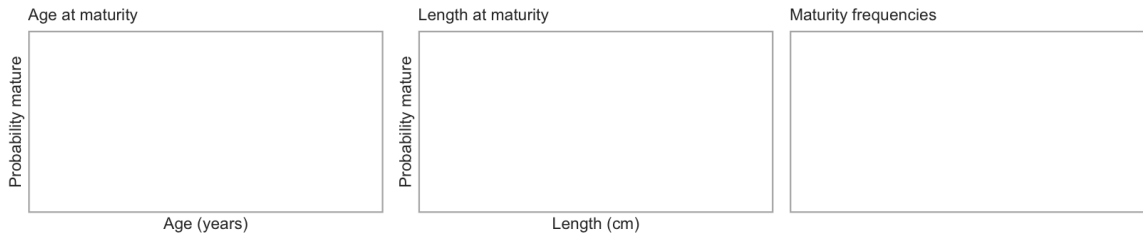
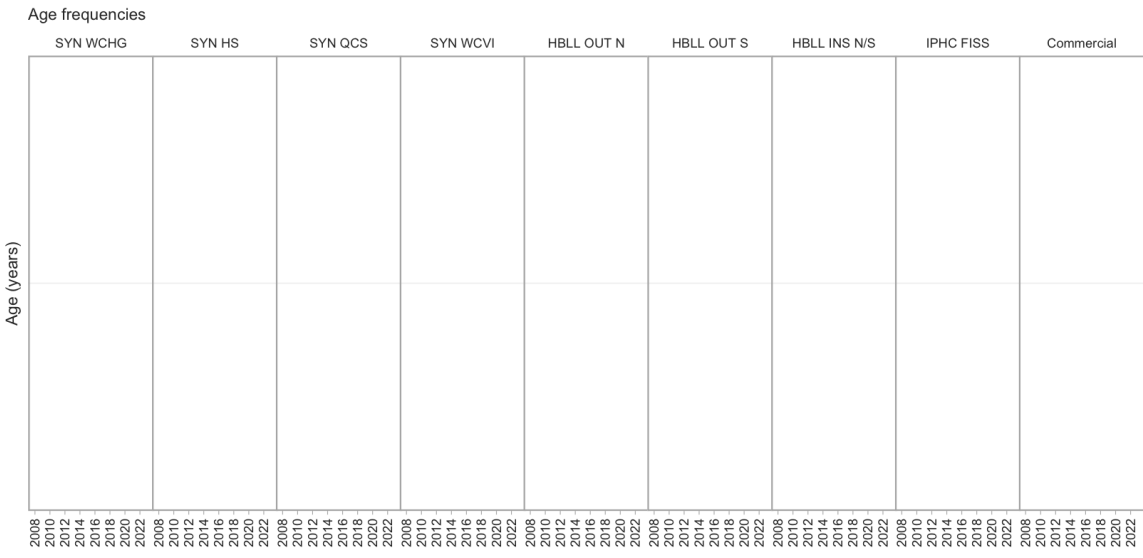
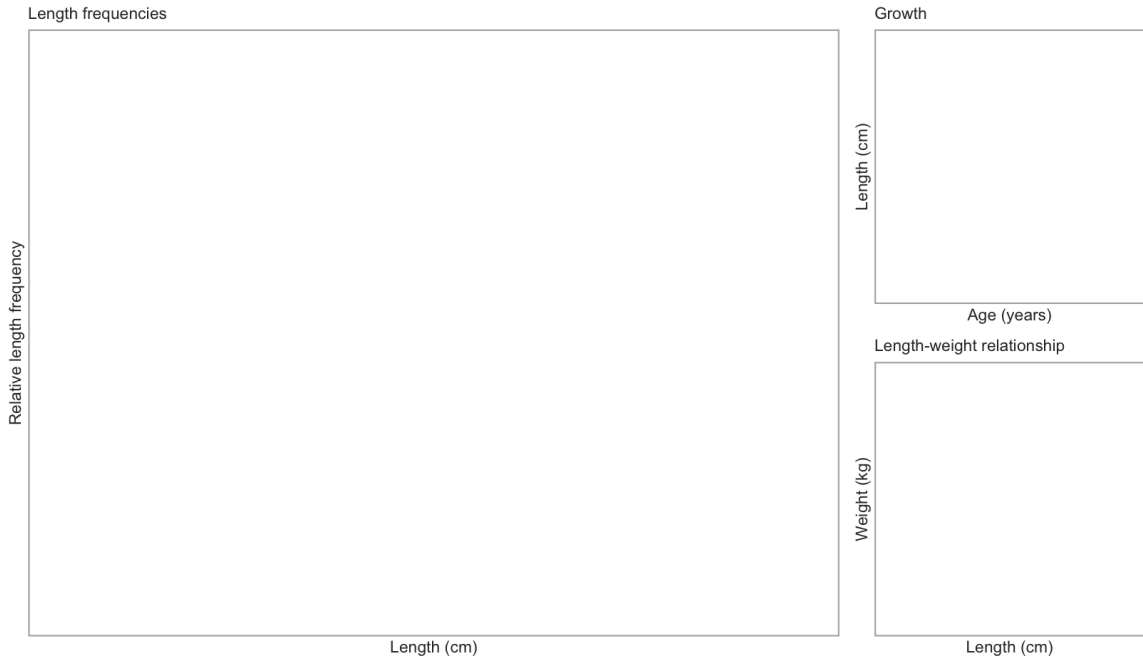


Commercial trawl CPUE



Commercial H & L CPUE



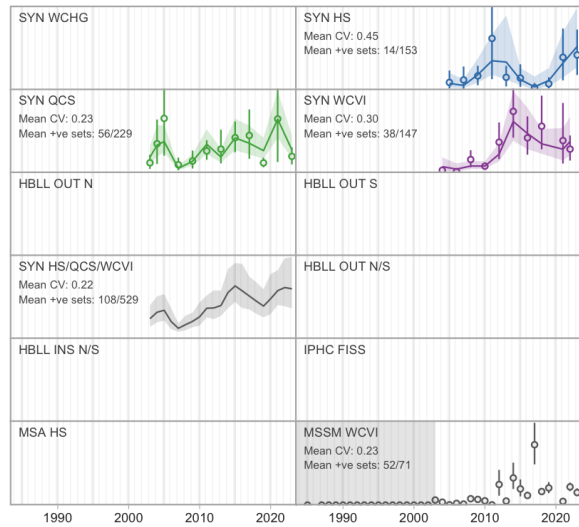


6.30 Blackbelly Eelpout

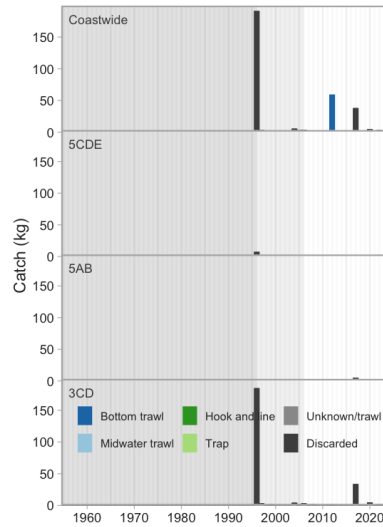
Lycodes pacificus (245)

Order: Perciformes, Family: Zoarcidae, [FishBase](#), [WoRMS](#)

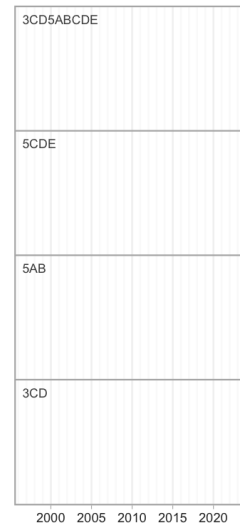
Survey relative biomass indices



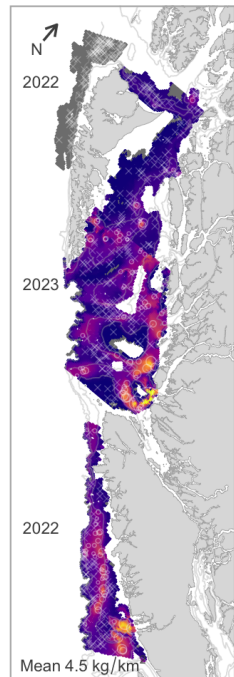
Commercial catch



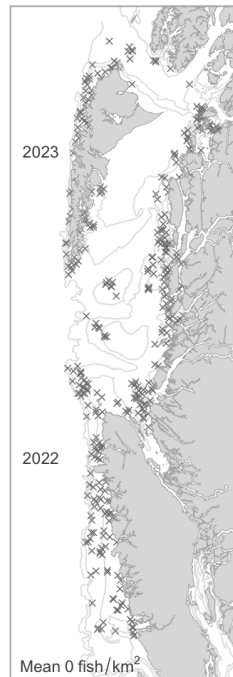
Commercial bottom trawl CPUE



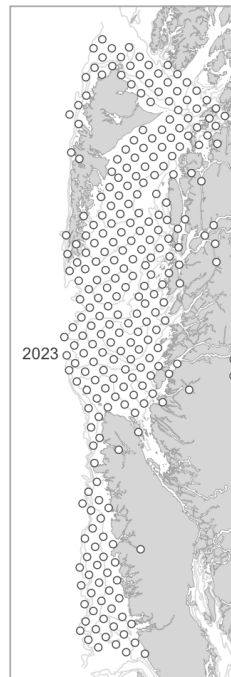
Synoptic survey biomass



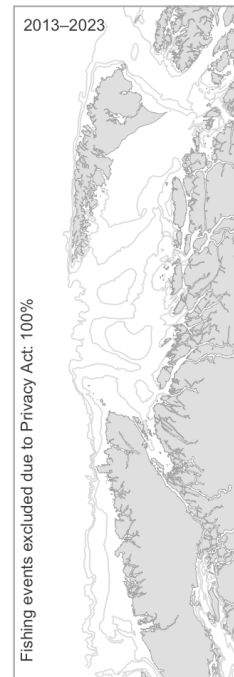
HBL OUT survey biomass



IPHC survey catch rate

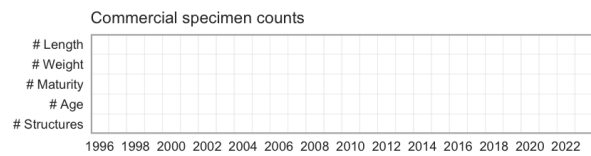
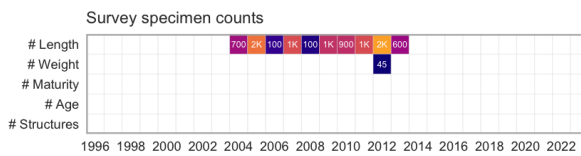
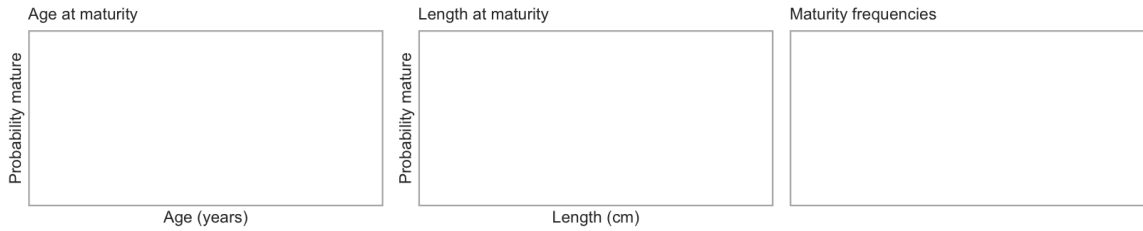
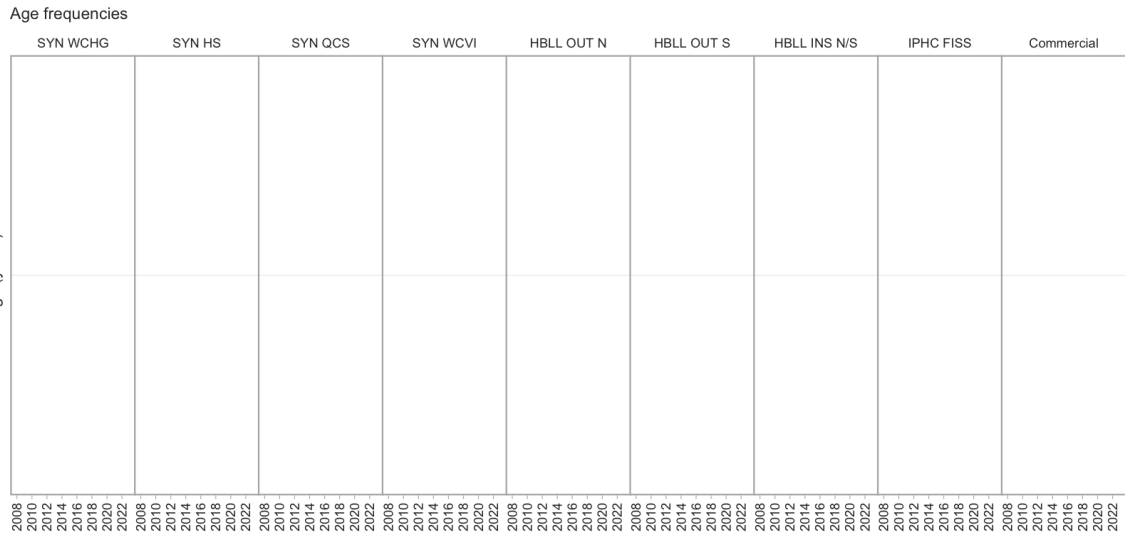
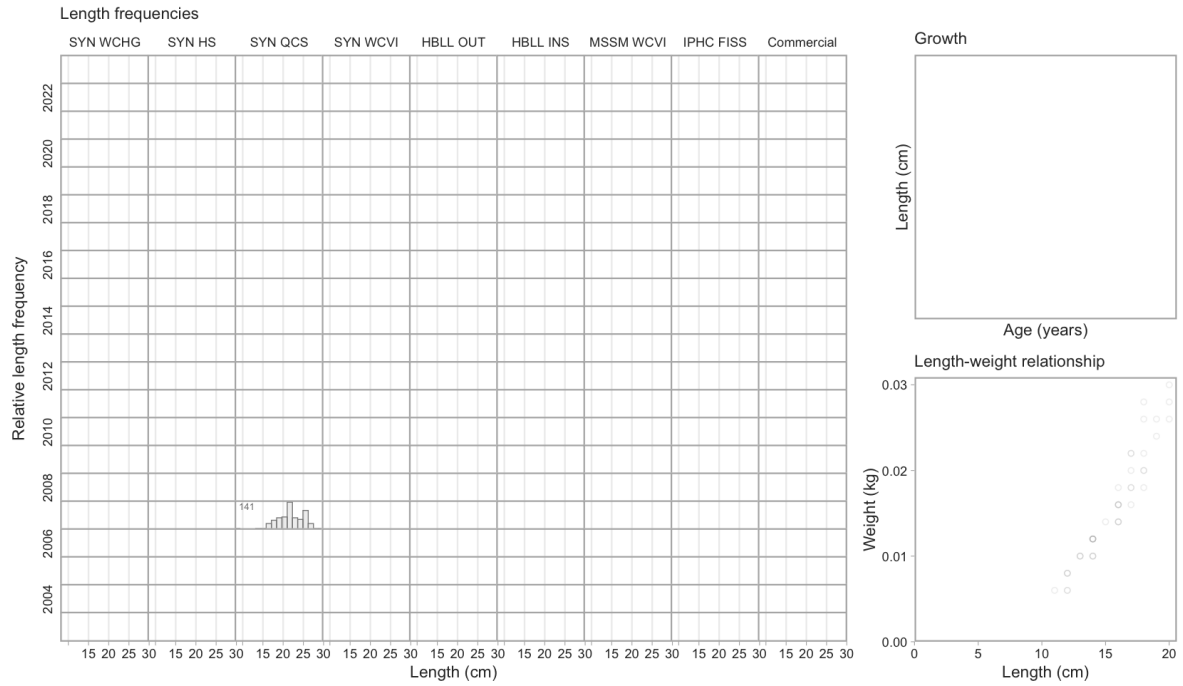


Commercial trawl CPUE



Commercial H & L CPUE



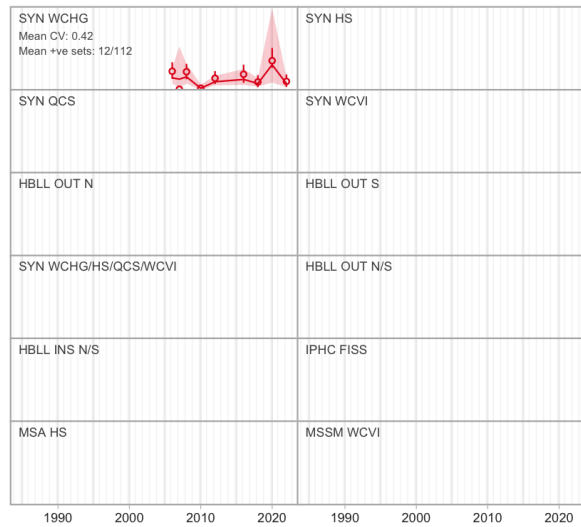


6.31 Popeye

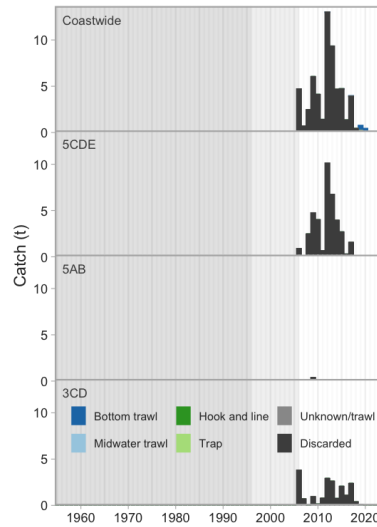
Coryphaenoides cinereus (250)

Order: Gadiformes, Family: Macrouridae, [FishBase](#), [WoRMS](#)

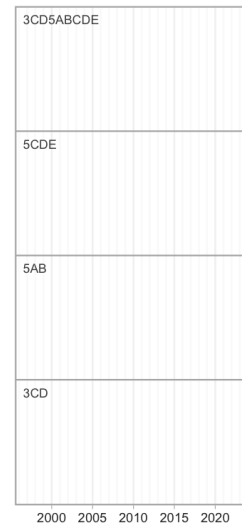
Survey relative biomass indices



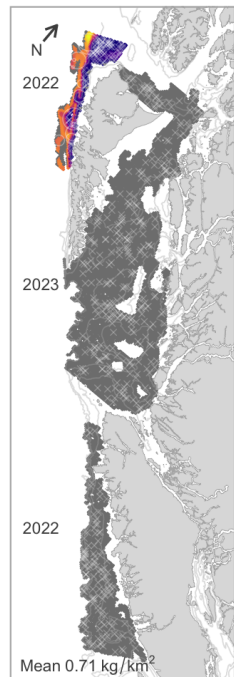
Commercial catch



Commercial bottom trawl CPUE



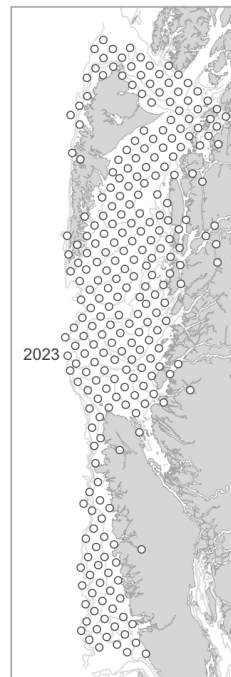
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

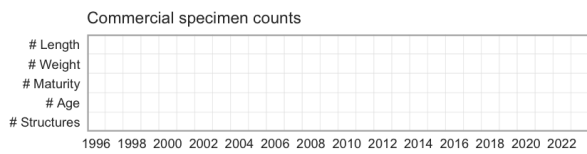
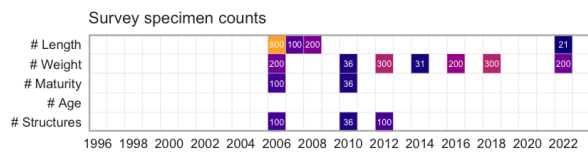
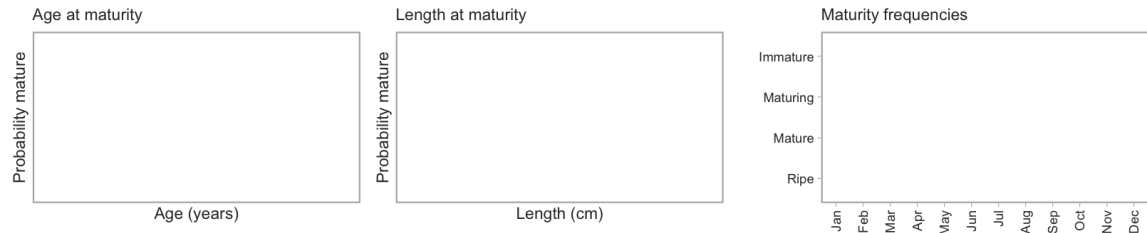
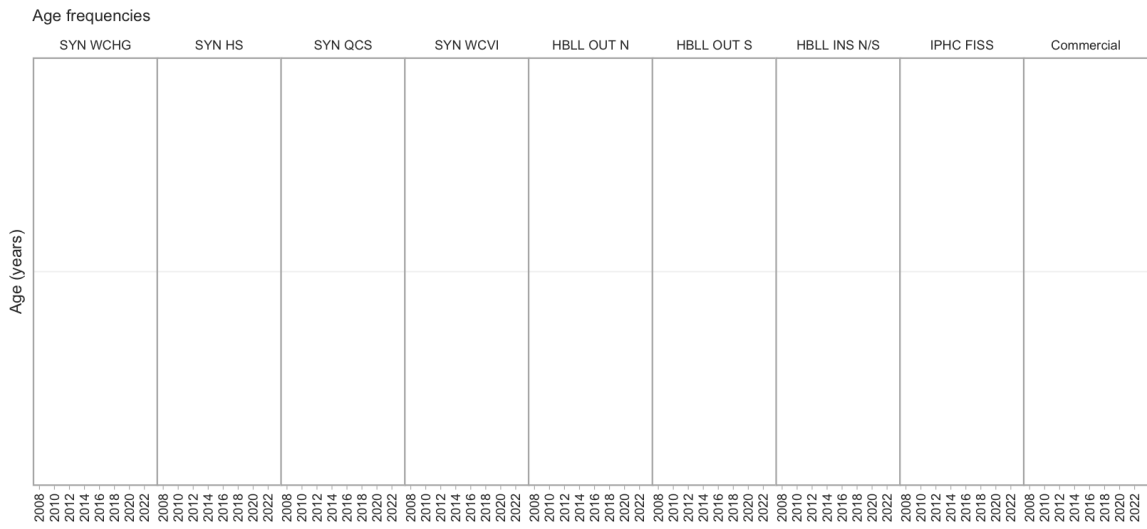
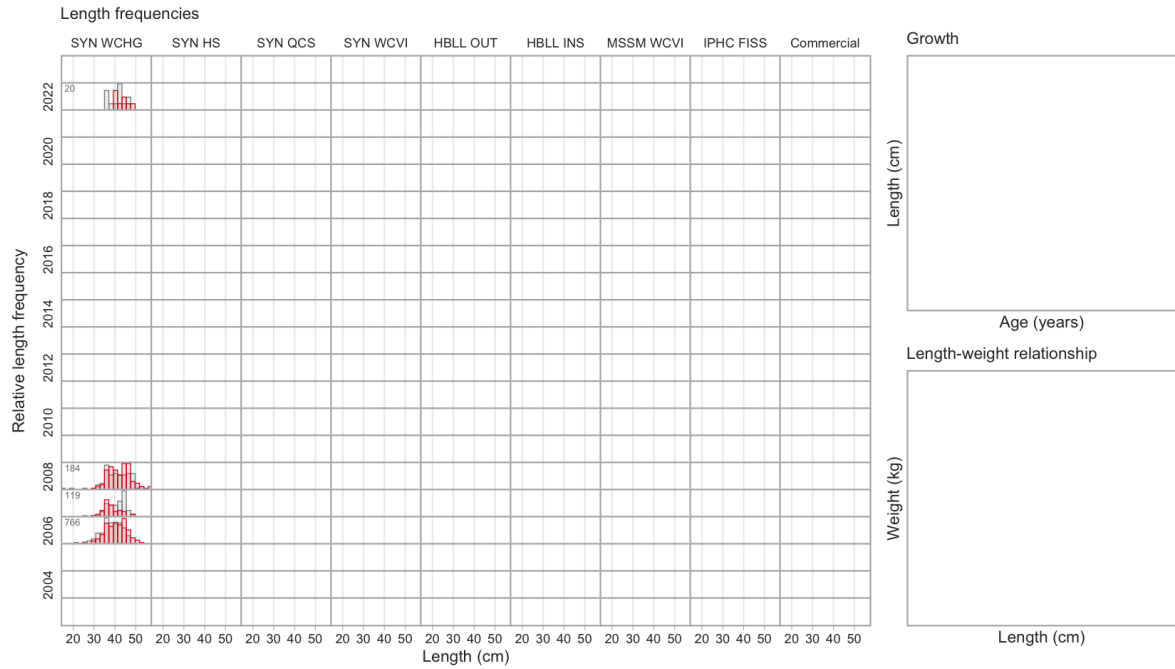


Commercial trawl CPUE



Commercial H & L CPUE



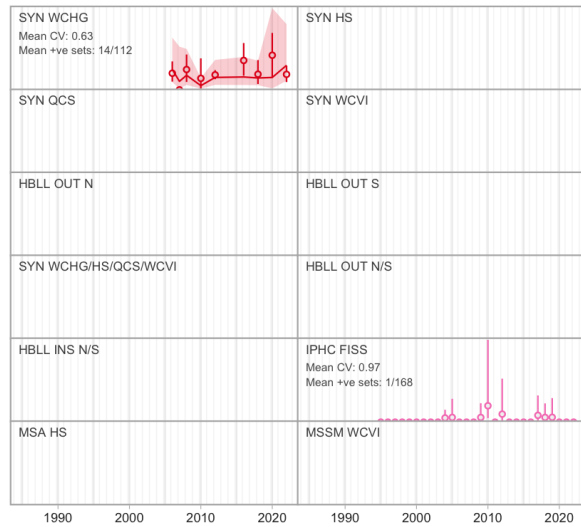


6.32 Pacific Grenadier

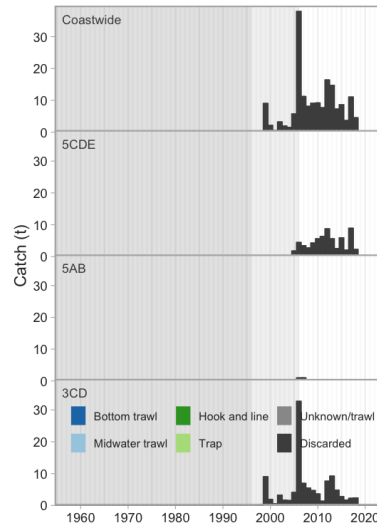
Coryphaenoides acrolepis (251)

Order: Gadiformes, Family: Macrouridae, [FishBase](#), [WoRMS](#)

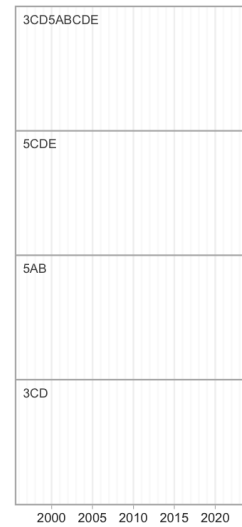
Survey relative biomass indices



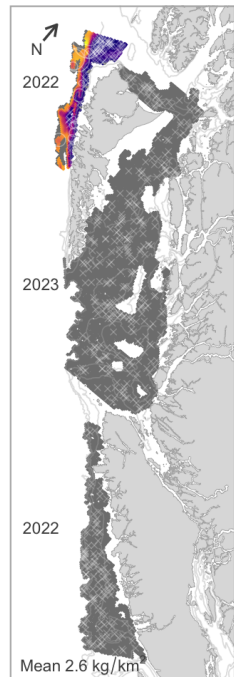
Commercial catch



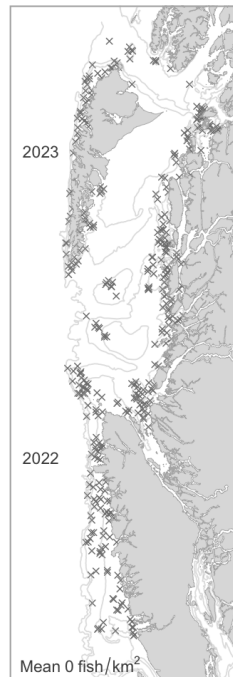
Commercial bottom trawl CPUE



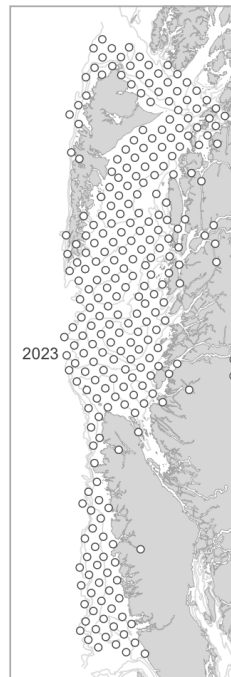
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

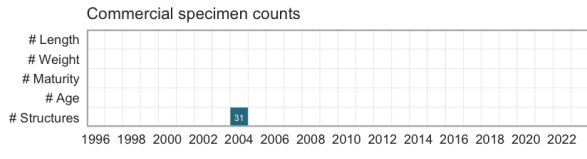
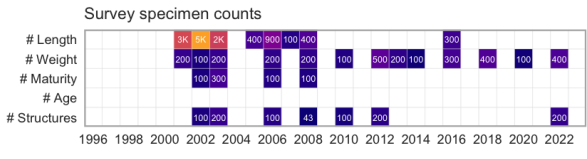
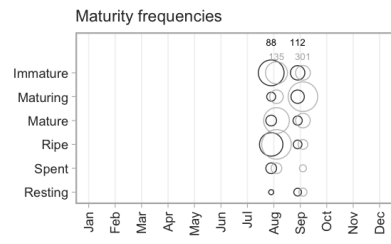
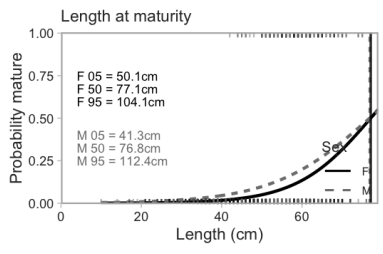
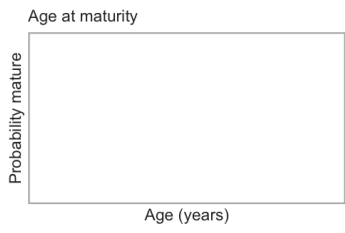
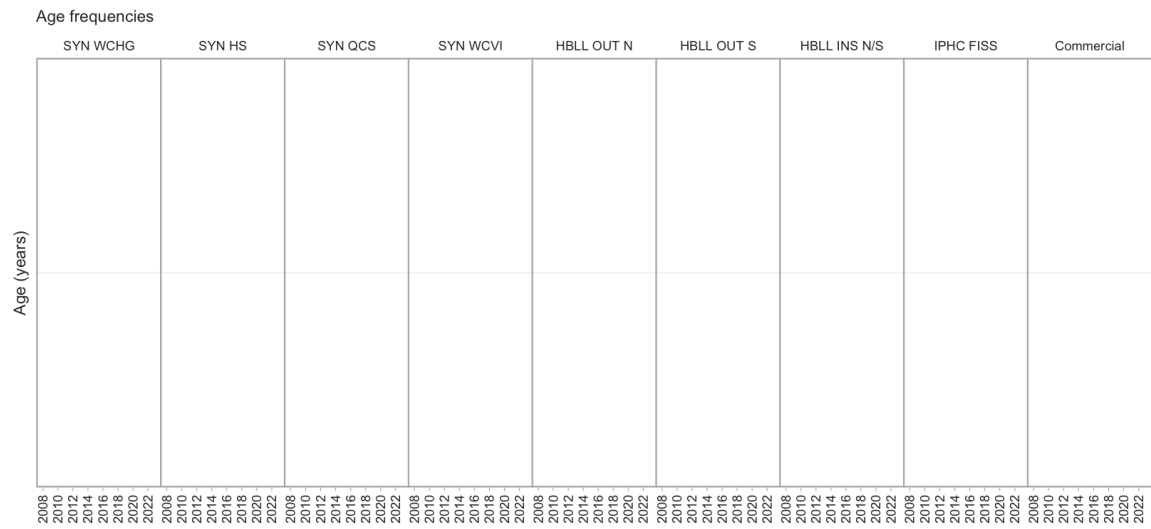
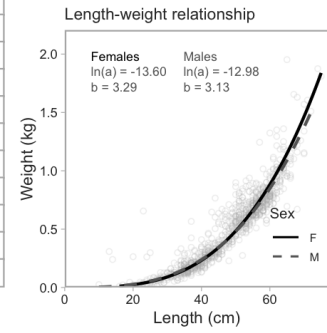
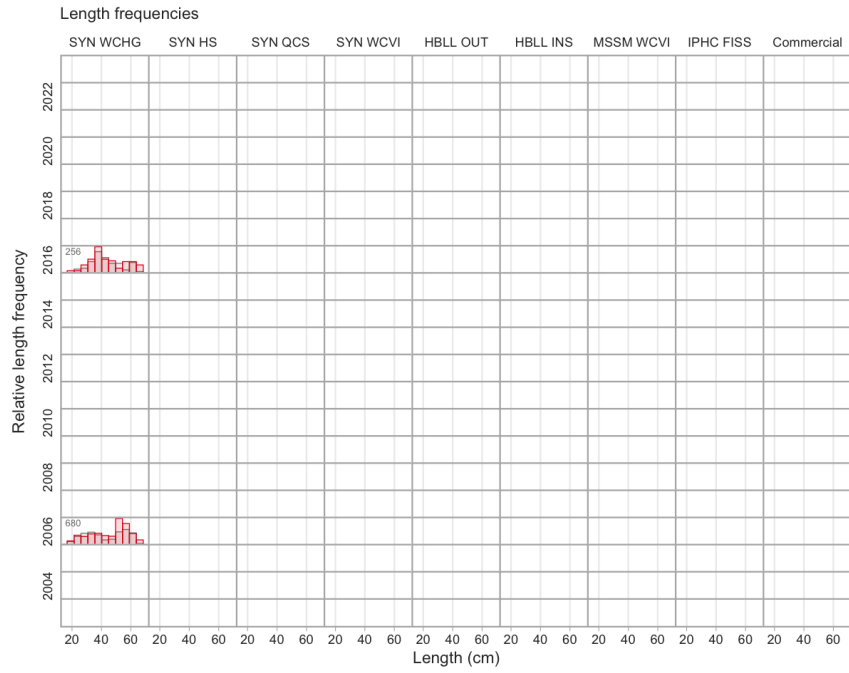


Commercial trawl CPUE



Commercial H & L CPUE

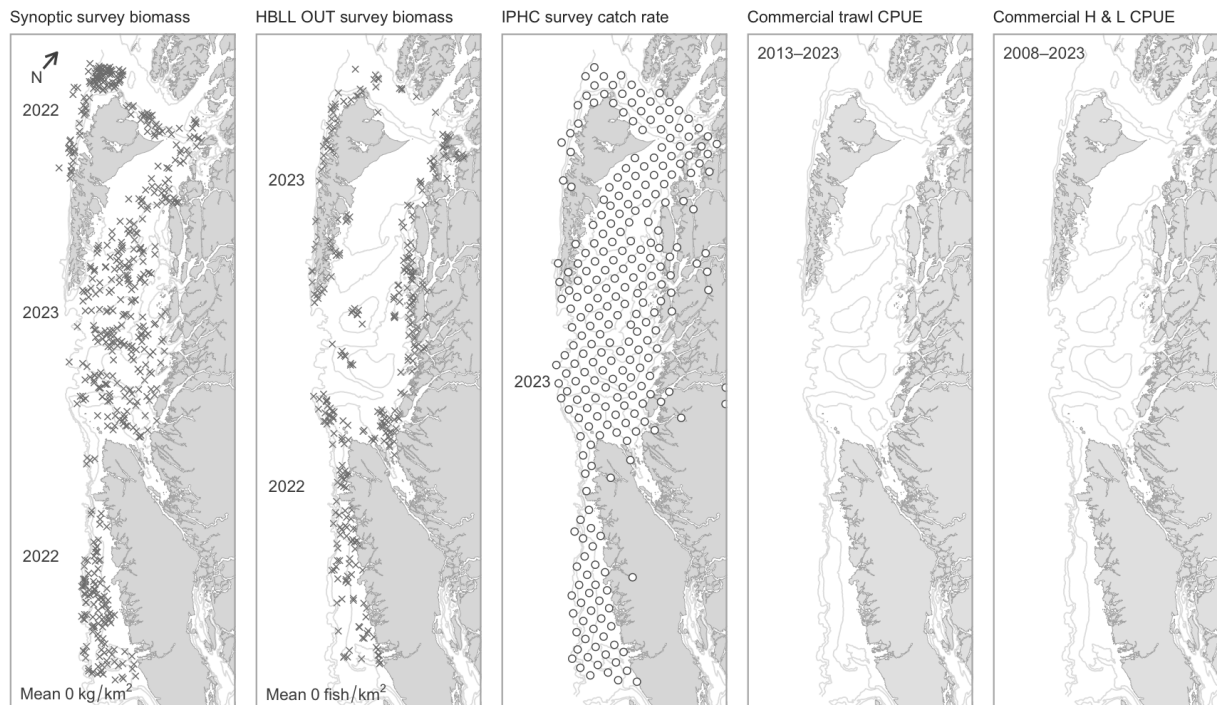
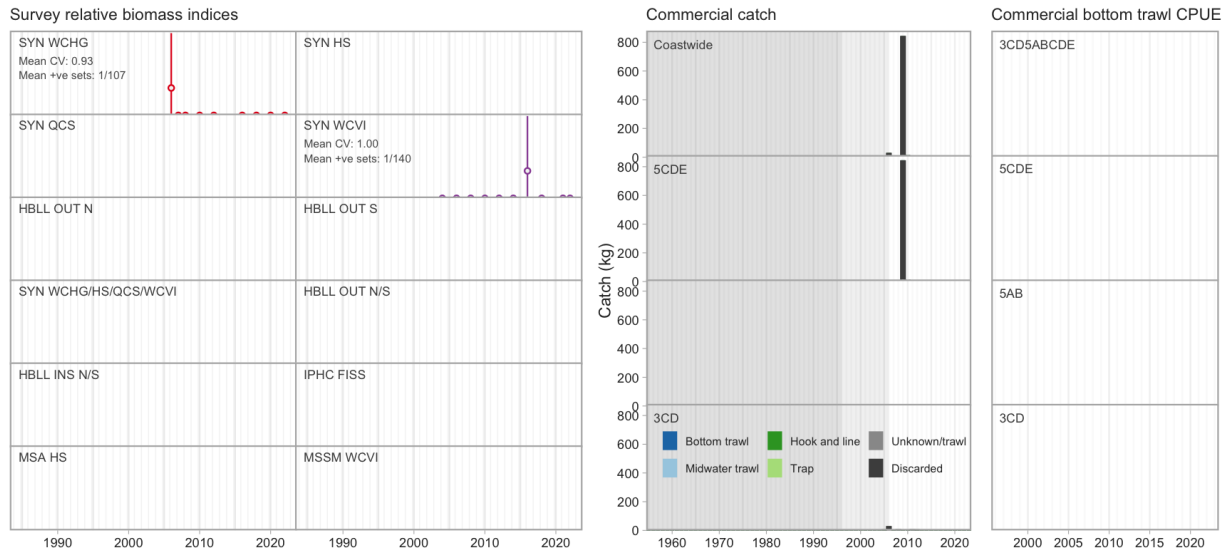


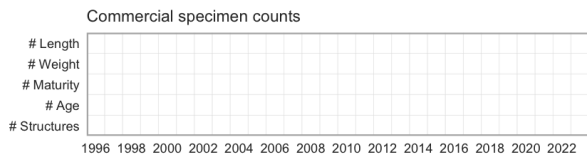
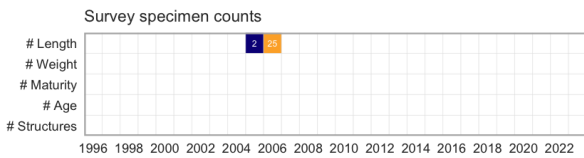
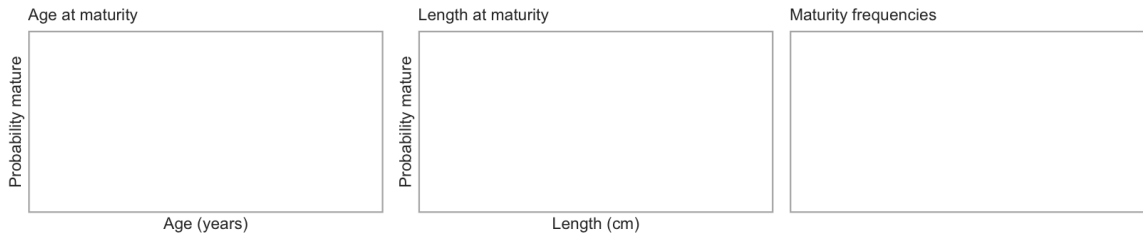
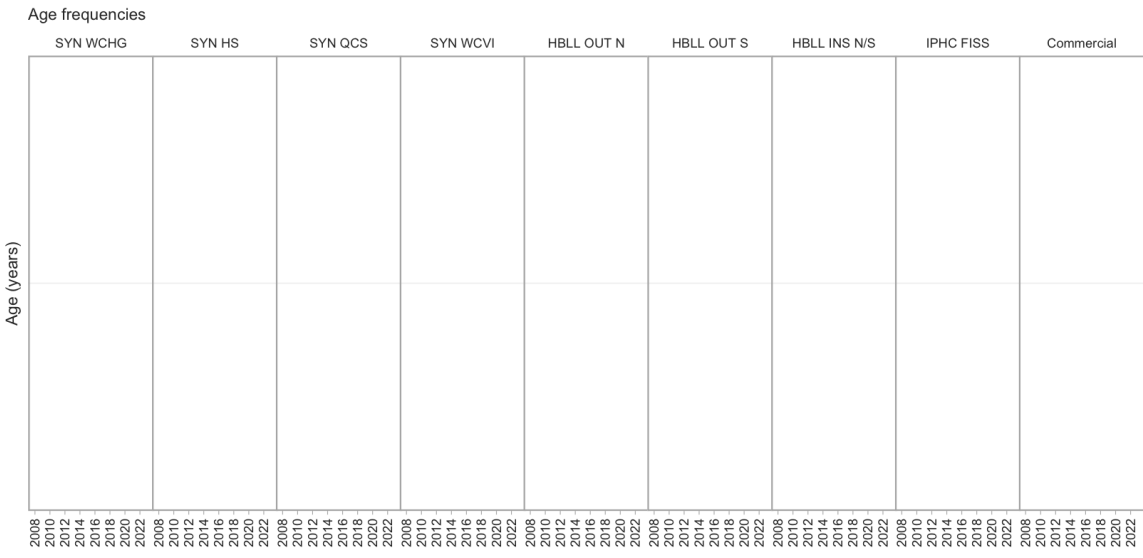
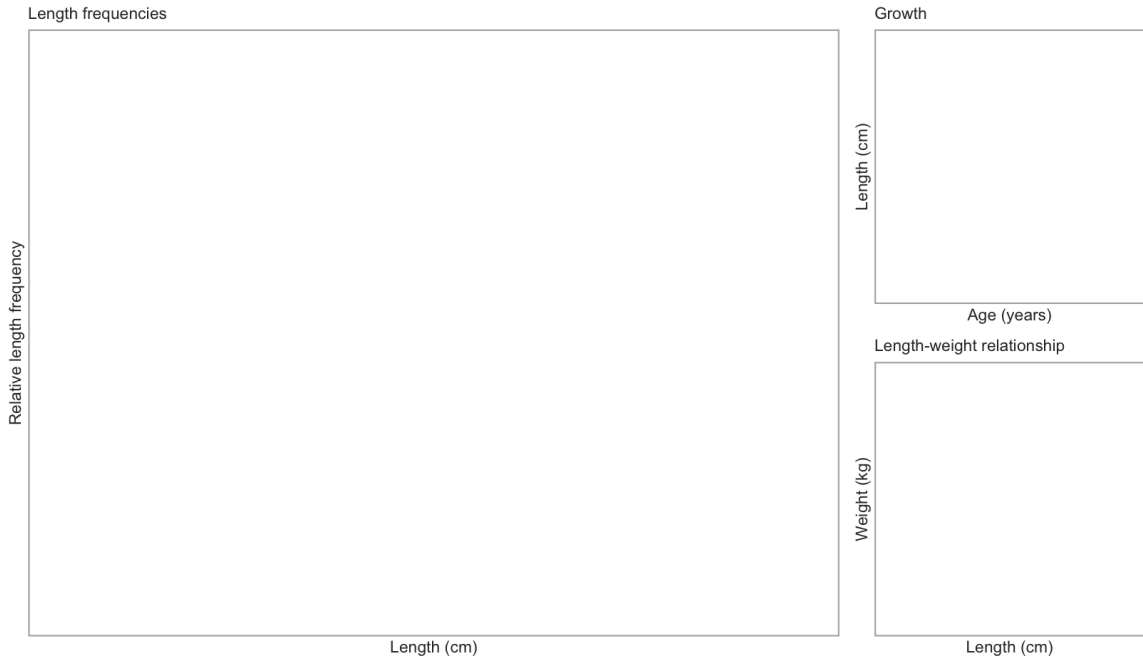


6.33 Threadfin Grenadier

Coryphaenoides filifer (254)

Order: Gadiformes, Family: Macrouridae, [FishBase](#), [WoRMS](#)



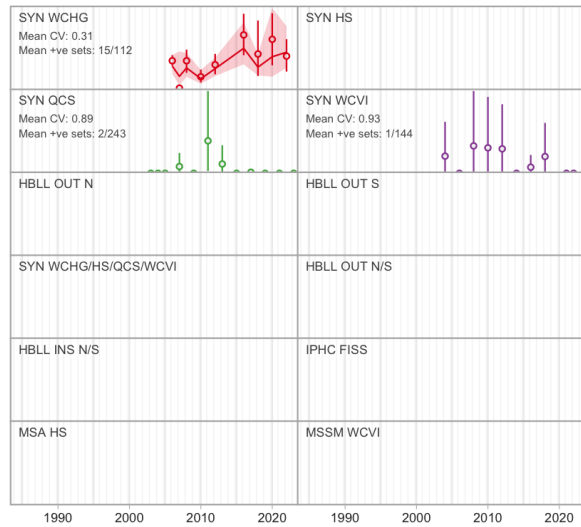


6.34 Giant Grenadier

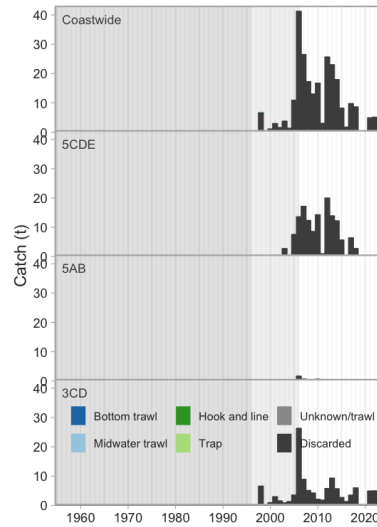
Albatrossia pectoralis (256)

Order: Gadiformes, Family: Macrouridae, [FishBase](#), [WoRMS](#)

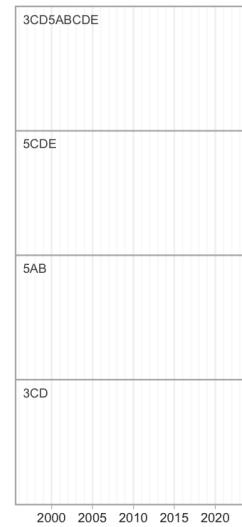
Survey relative biomass indices



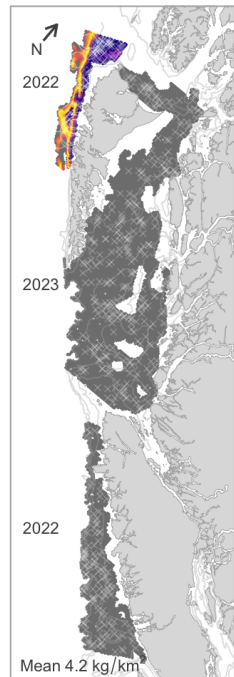
Commercial catch



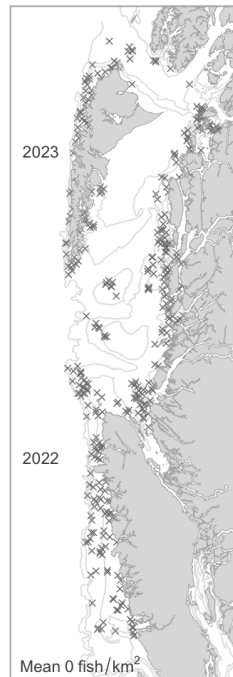
Commercial bottom trawl CPUE



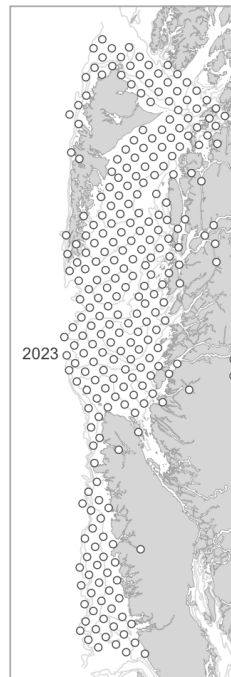
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

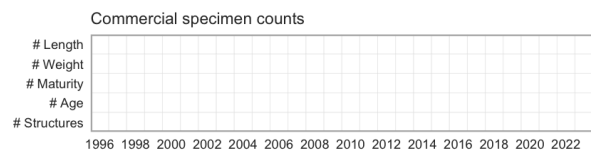
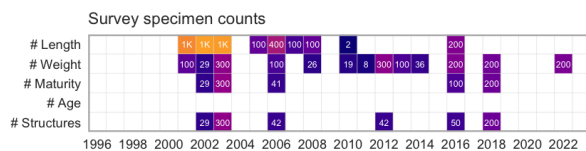
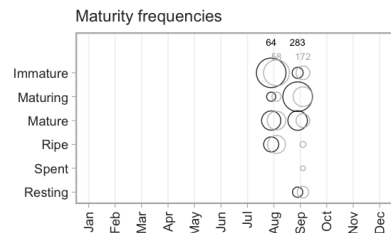
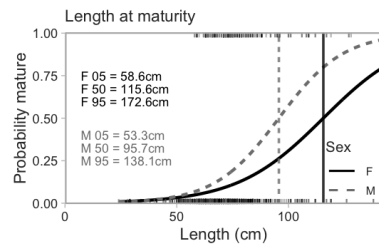
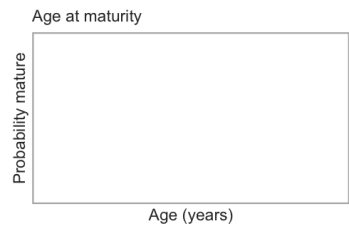
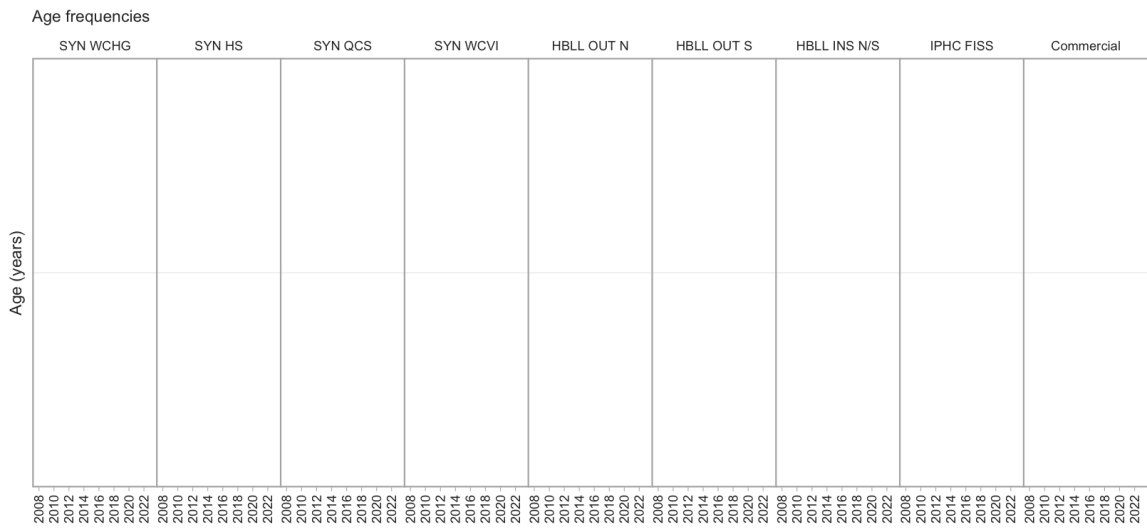
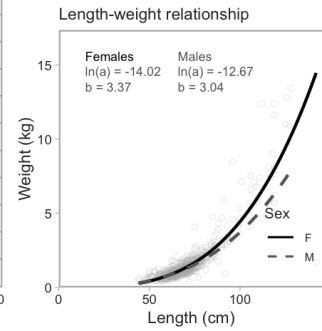
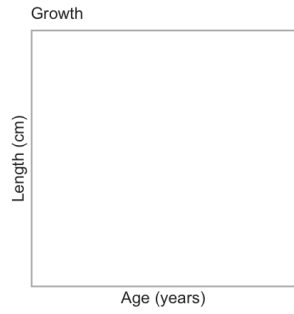
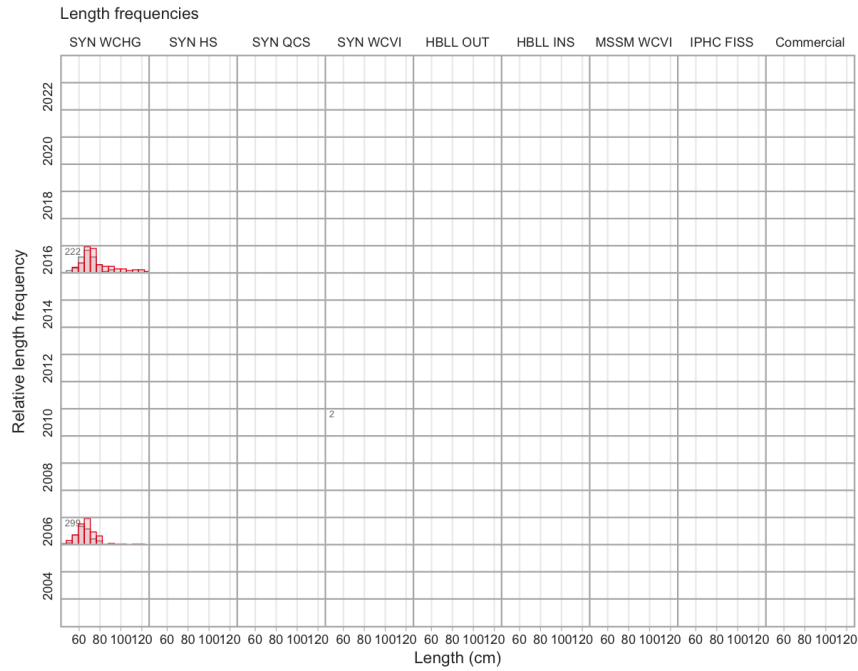


Commercial trawl CPUE



Commercial H & L CPUE



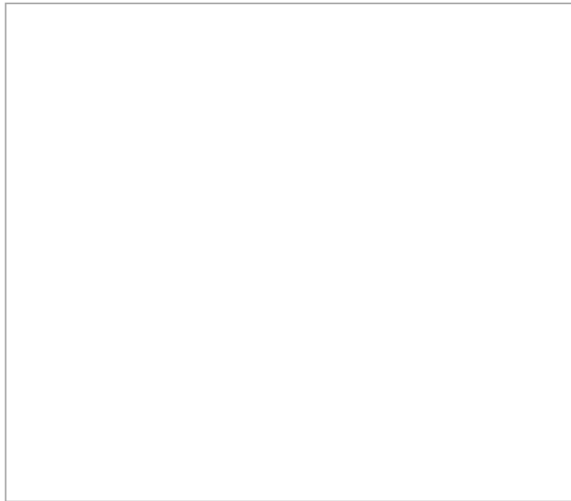


6.35 California Grenadier

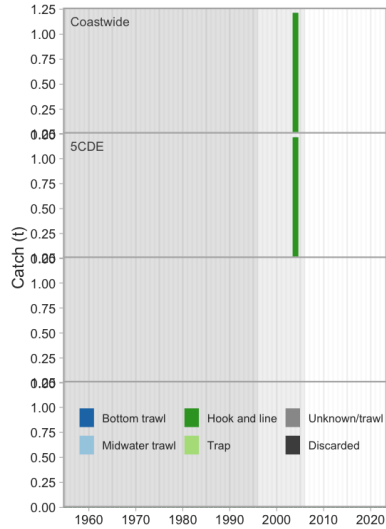
Nezumia stelgidolepis (257)

Order: Gadiformes, Family: Macrouridae, [FishBase](#), [WoRMS](#)

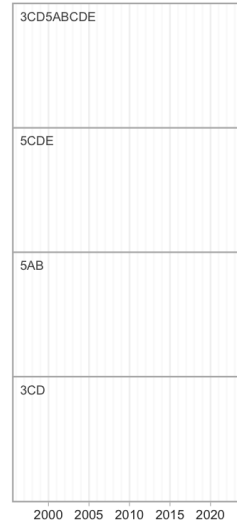
Survey relative biomass indices



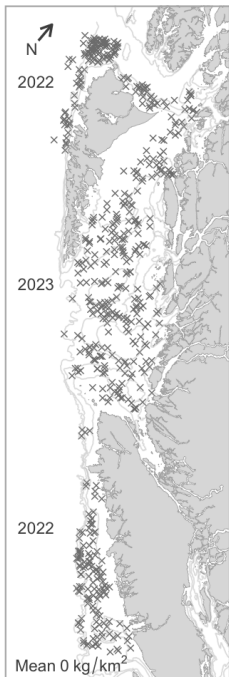
Commercial catch



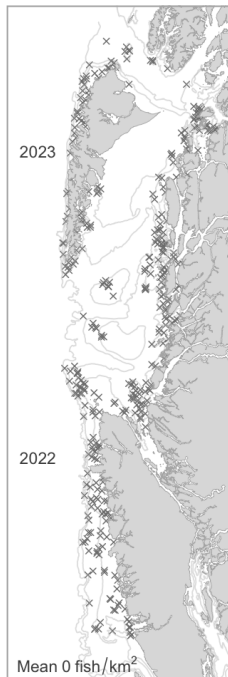
Commercial bottom trawl CPUE



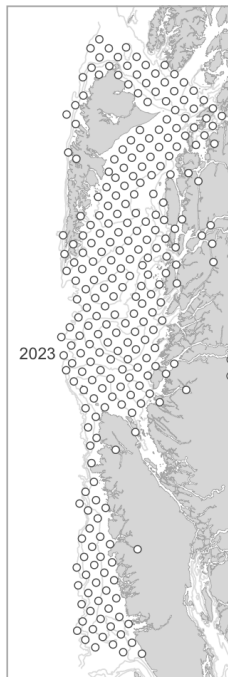
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate

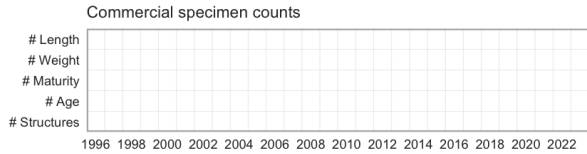
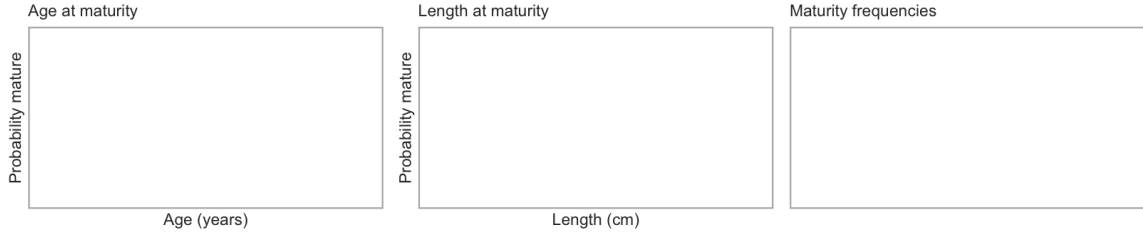
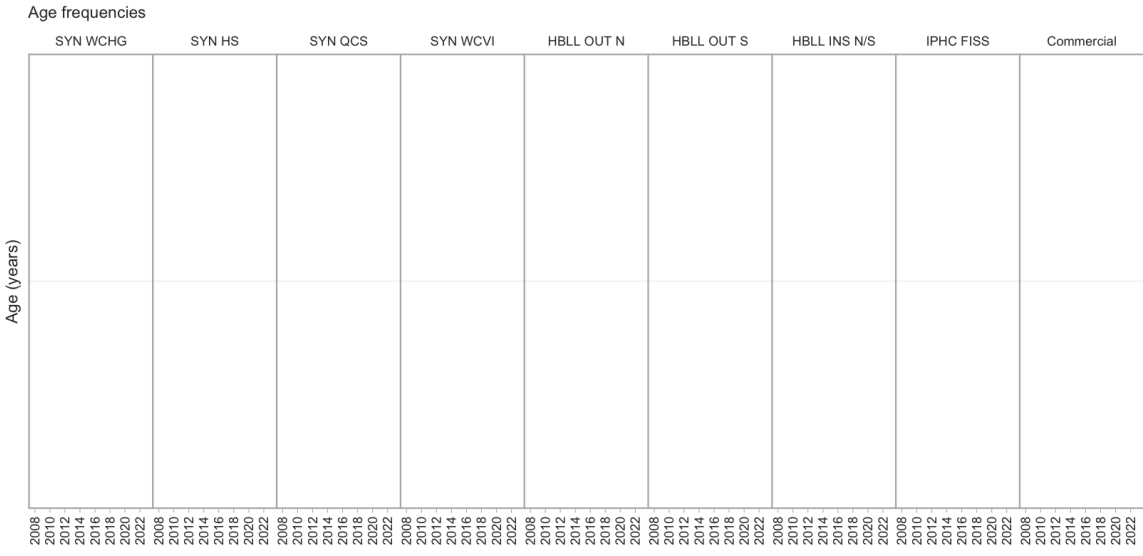
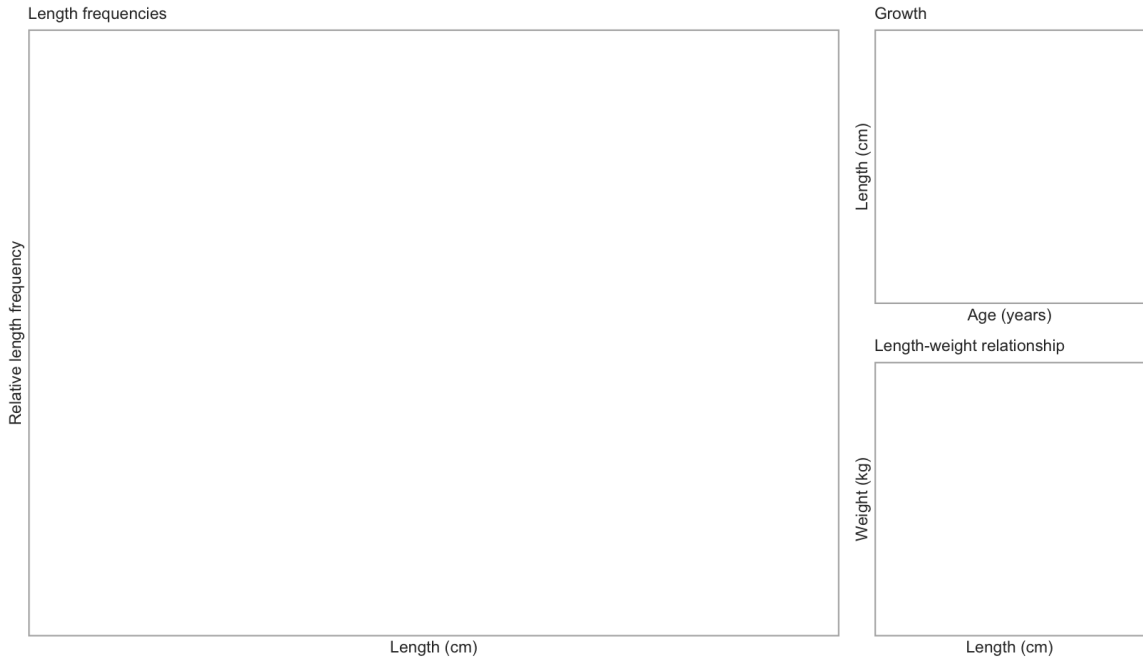


Commercial trawl CPUE



Commercial H & L CPUE



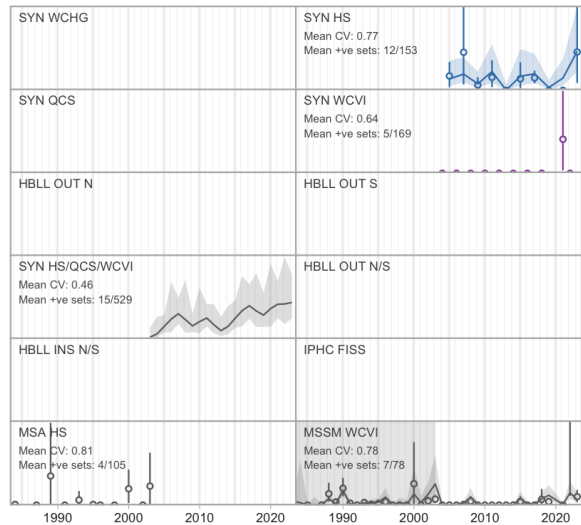


6.36 Shiner Perch

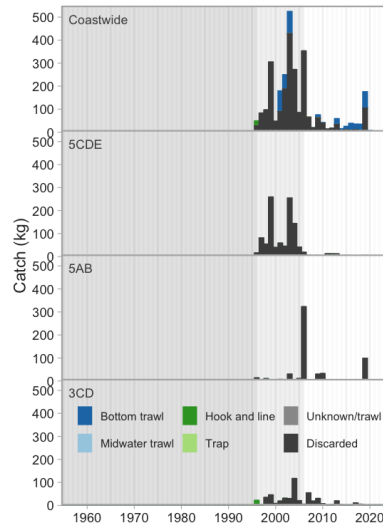
Cymatogaster aggregata (304)

Order: Perciformes, Family: Embiotocidae, [FishBase](#), [WoRMS](#)

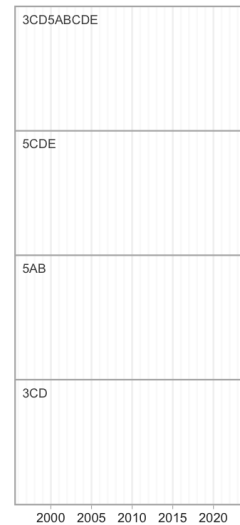
Survey relative biomass indices



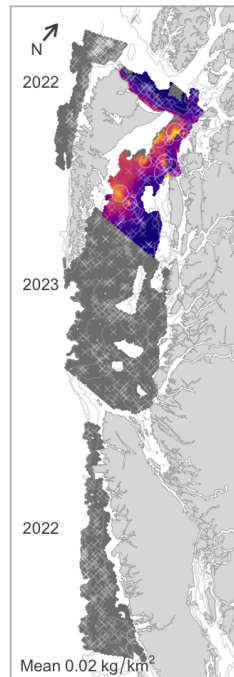
Commercial catch



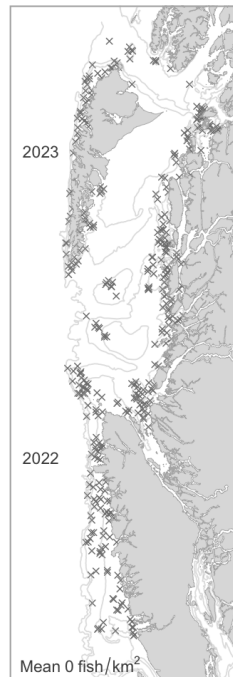
Commercial bottom trawl CPUE



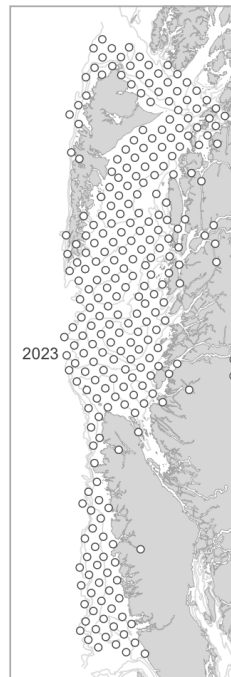
Synoptic survey biomass



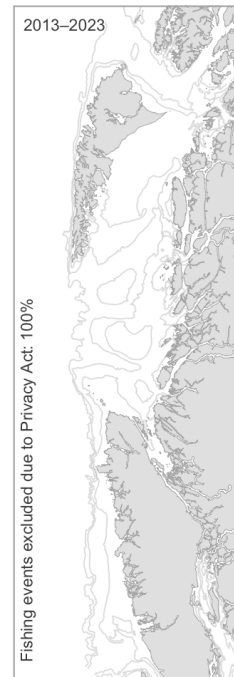
HBLL OUT survey biomass



IPHC survey catch rate



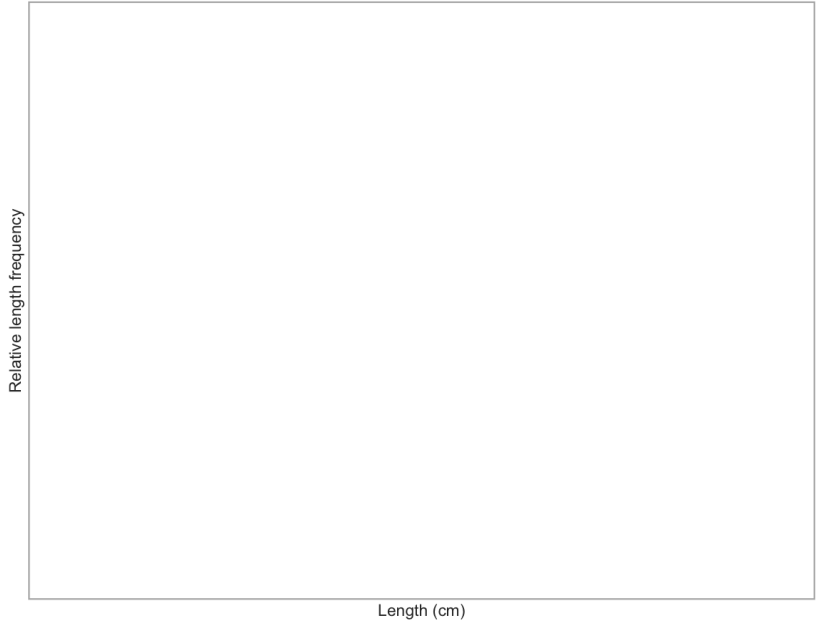
Commercial trawl CPUE



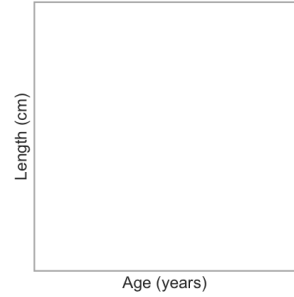
Commercial H & L CPUE



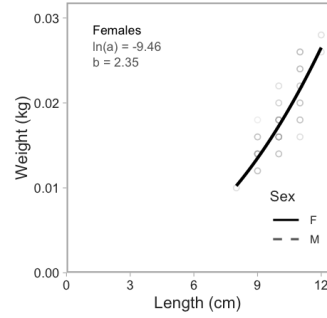
Length frequencies



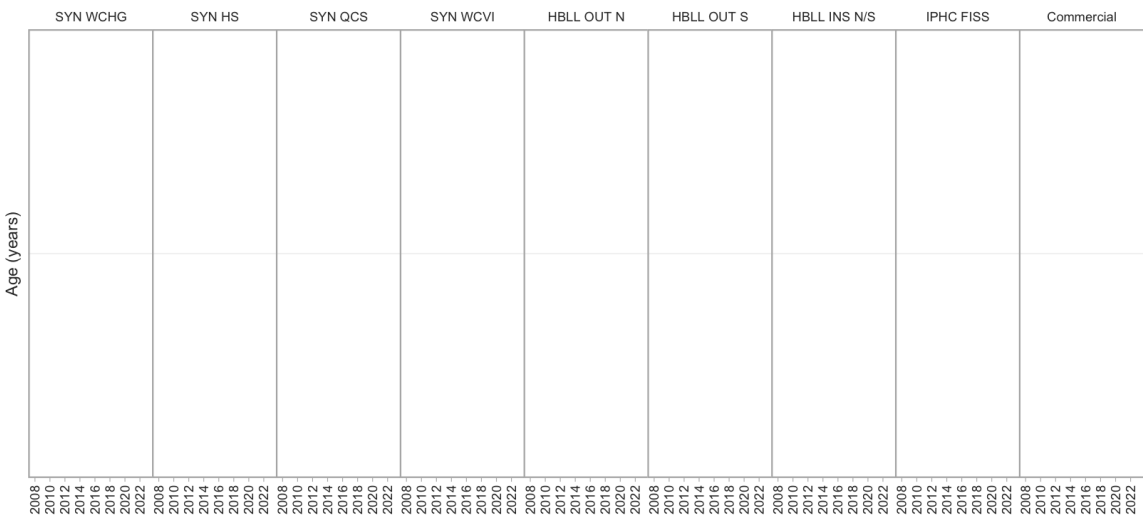
Growth



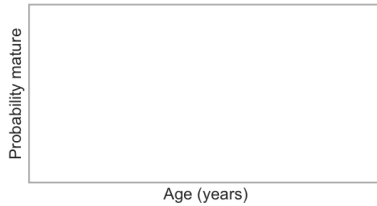
Length-weight relationship



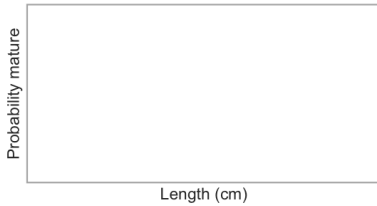
Age frequencies



Age at maturity



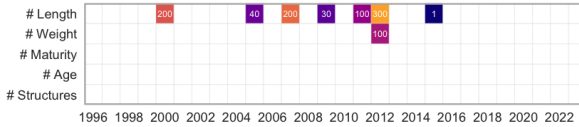
Length at maturity



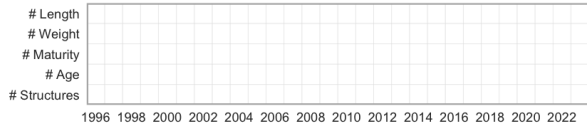
Maturity frequencies



Survey specimen counts



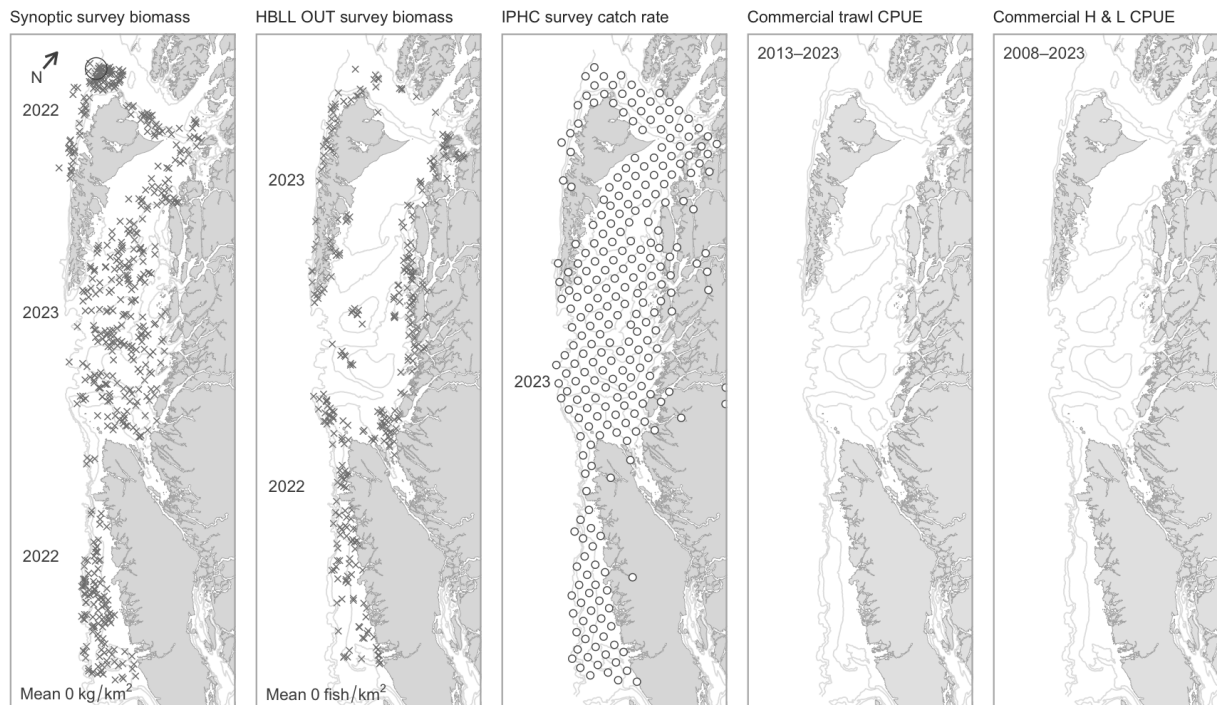
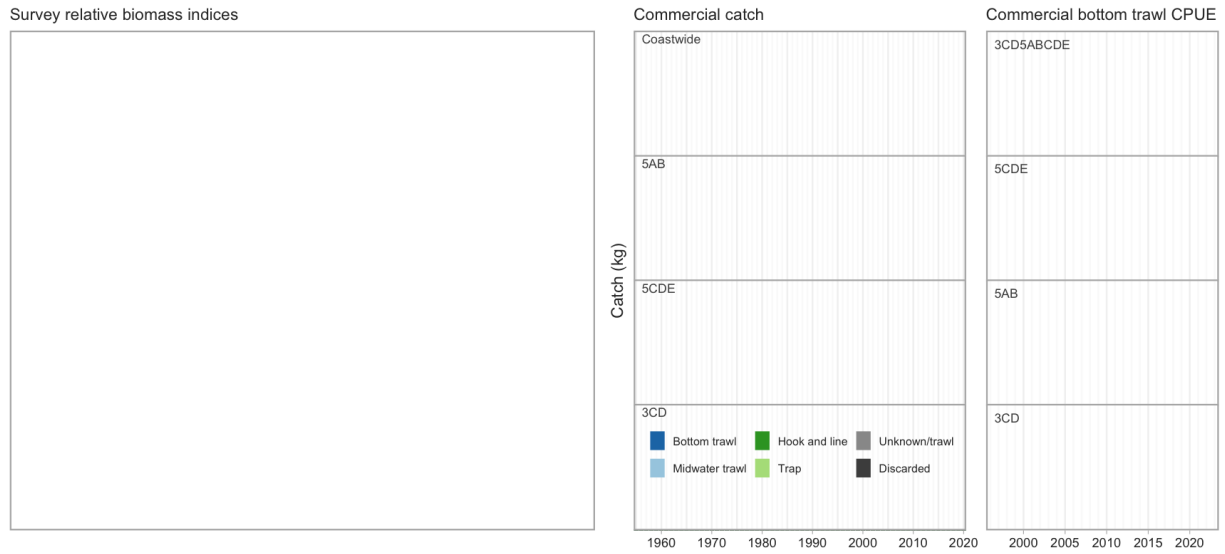
Commercial specimen counts

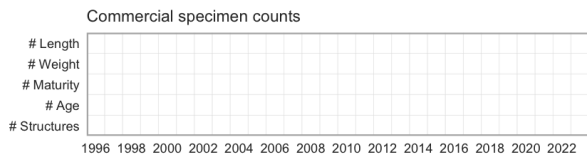
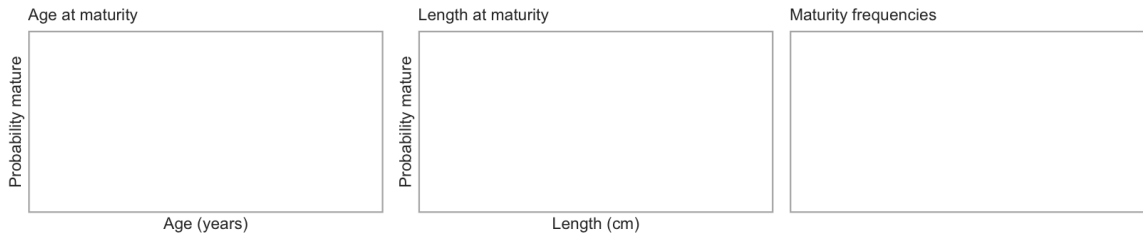
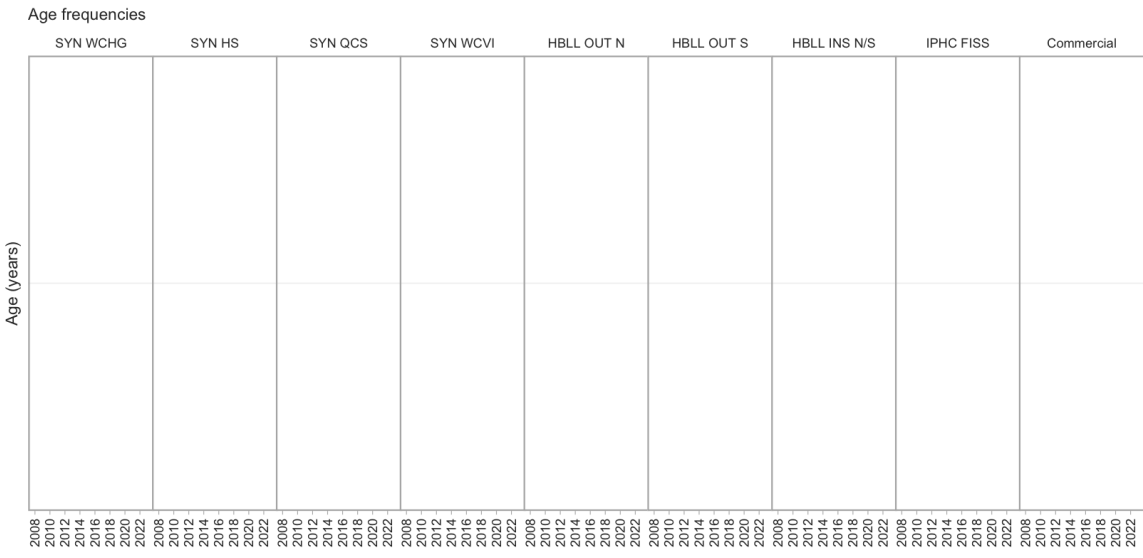
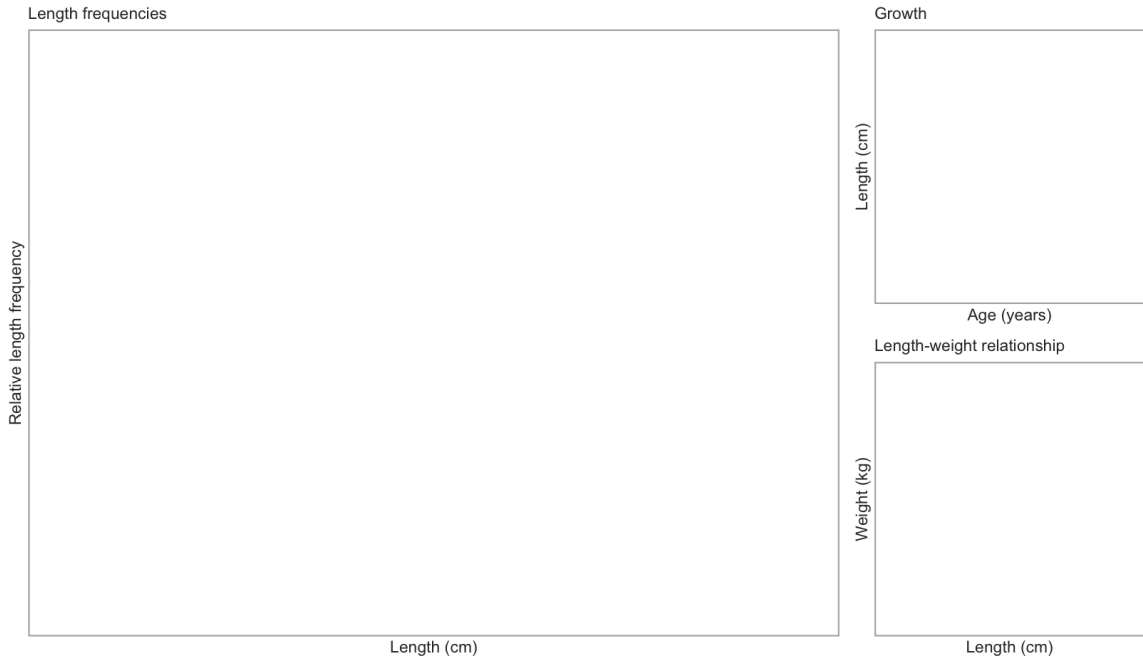


6.37 Pearly Prickleback

Bryozoichthys marjorius (331)

Order: Perciformes, Family: Stichaeidae, [FishBase](#), [WoRMS](#)



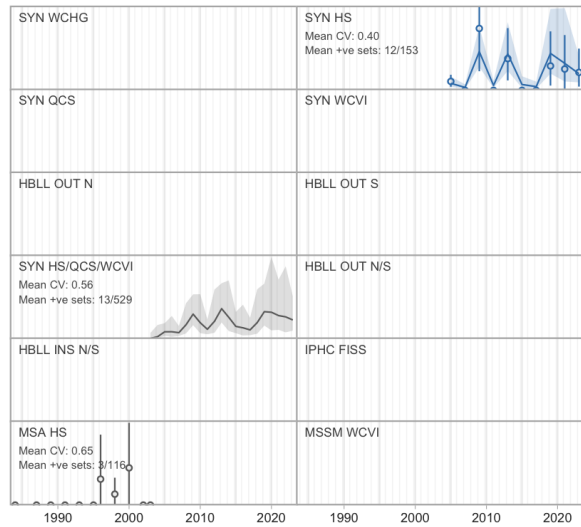


6.38 Snake Prickleback

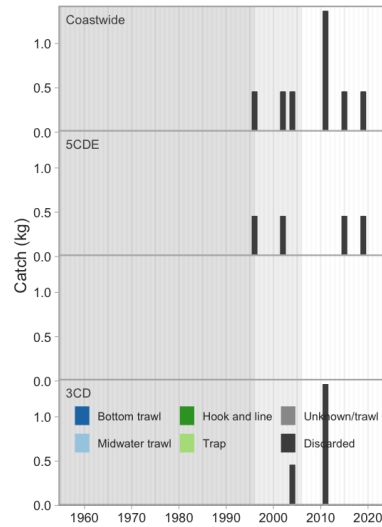
Lumpenus sagitta (337)

Order: Perciformes, Family: Stichaeidae, [FishBase](#), [WoRMS](#)

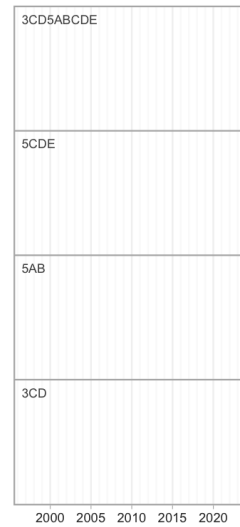
Survey relative biomass indices



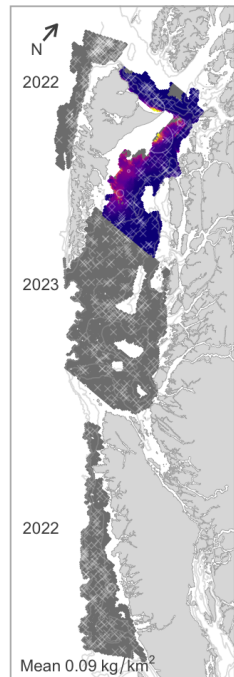
Commercial catch



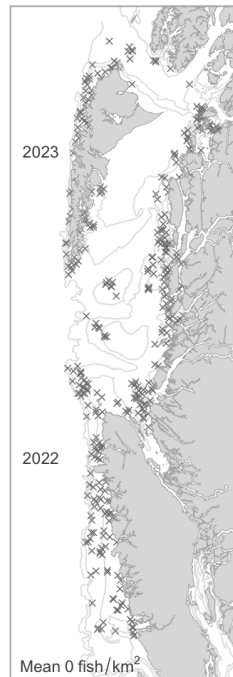
Commercial bottom trawl CPUE



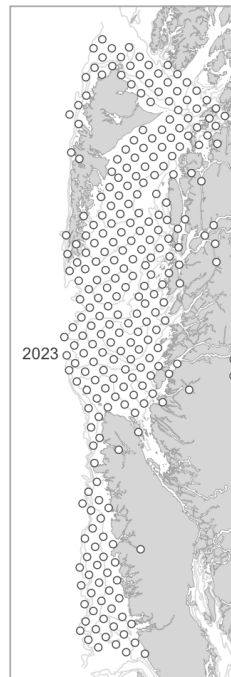
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

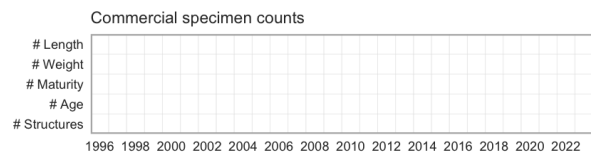
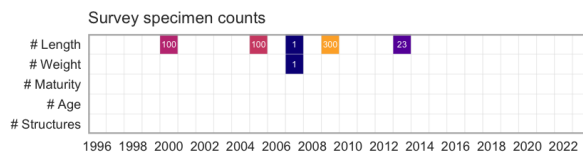
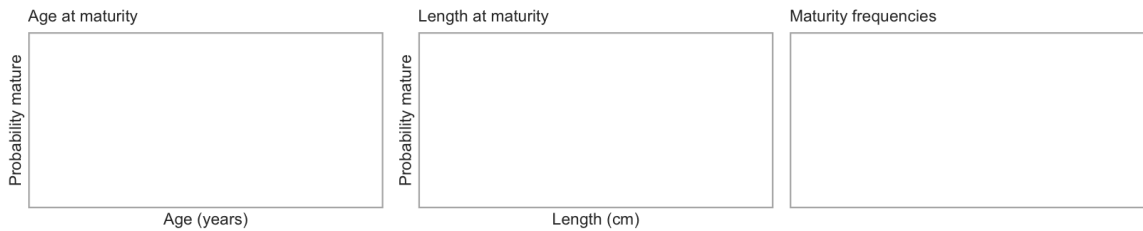
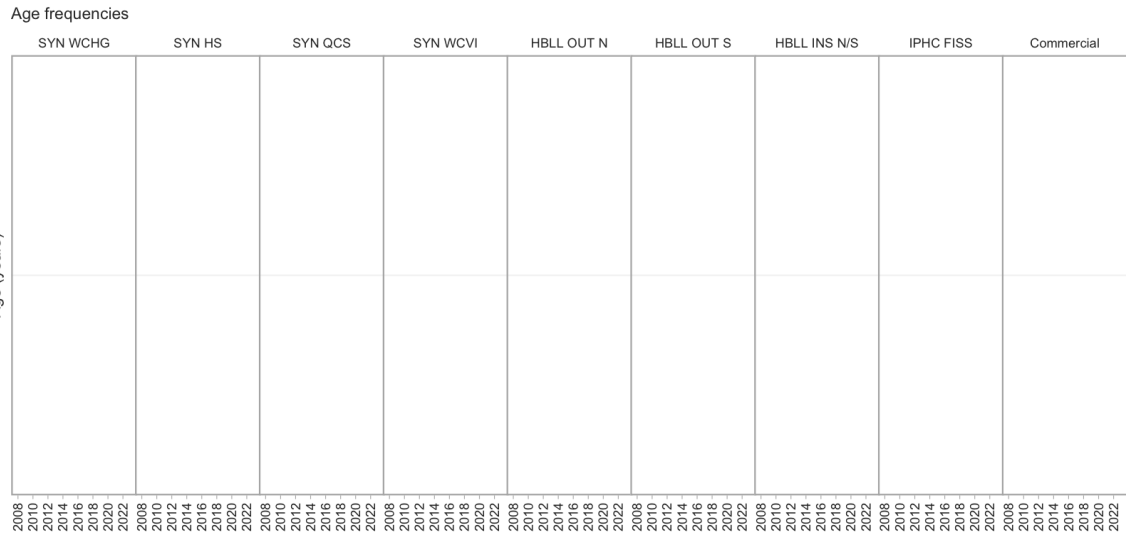
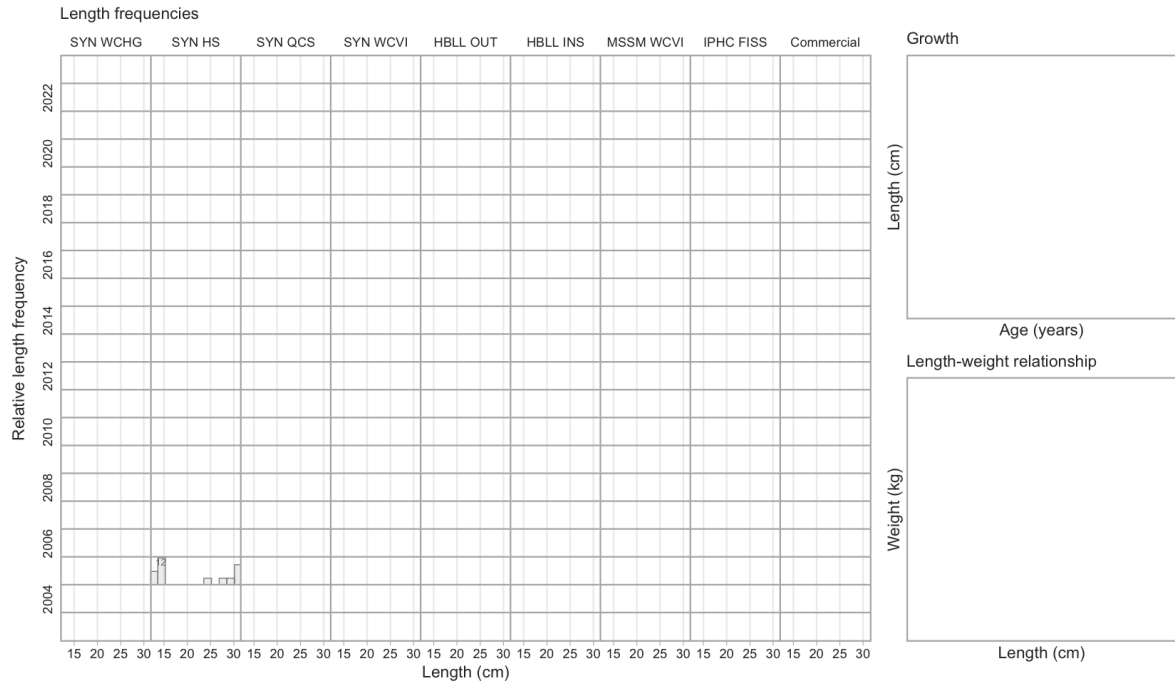


Commercial trawl CPUE



Commercial H & L CPUE



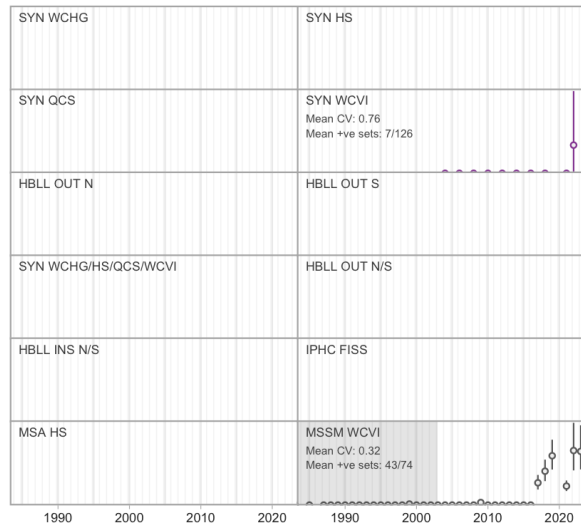


6.39 Whitebarred Prickleback

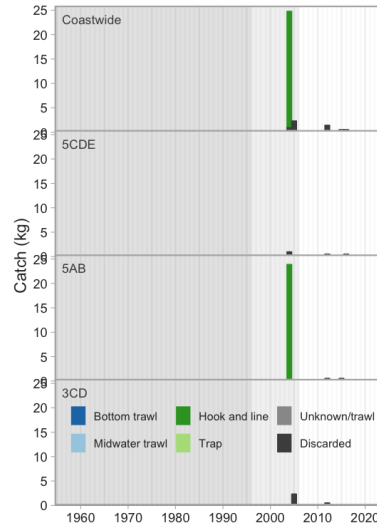
Poroclinus rothrocki (340)

Order: Perciformes, Family: Stichaeidae, [FishBase](#), [WoRMS](#)

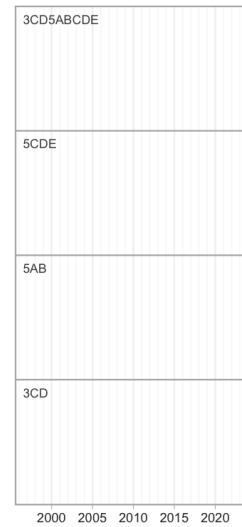
Survey relative biomass indices



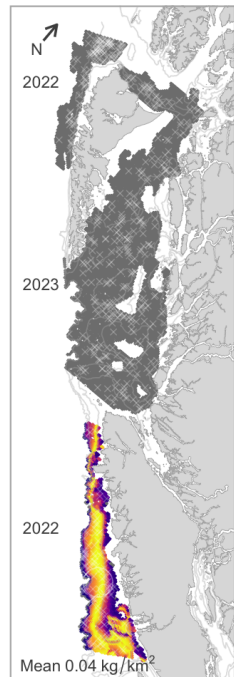
Commercial catch



Commercial bottom trawl CPUE



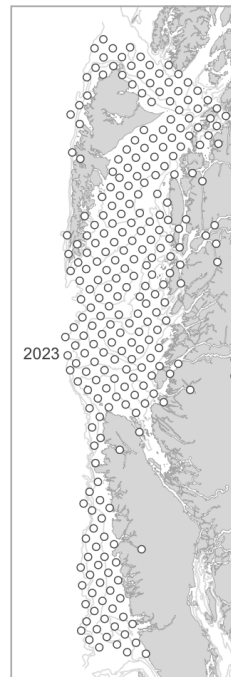
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

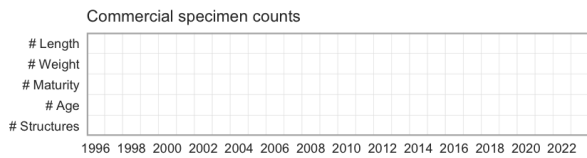
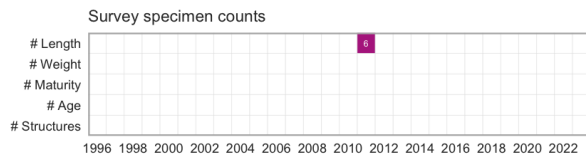
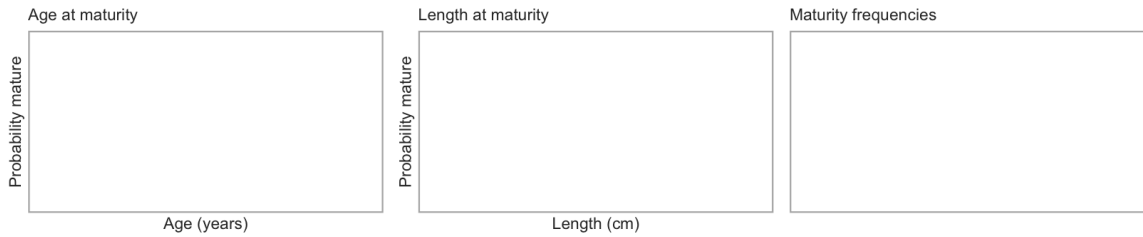
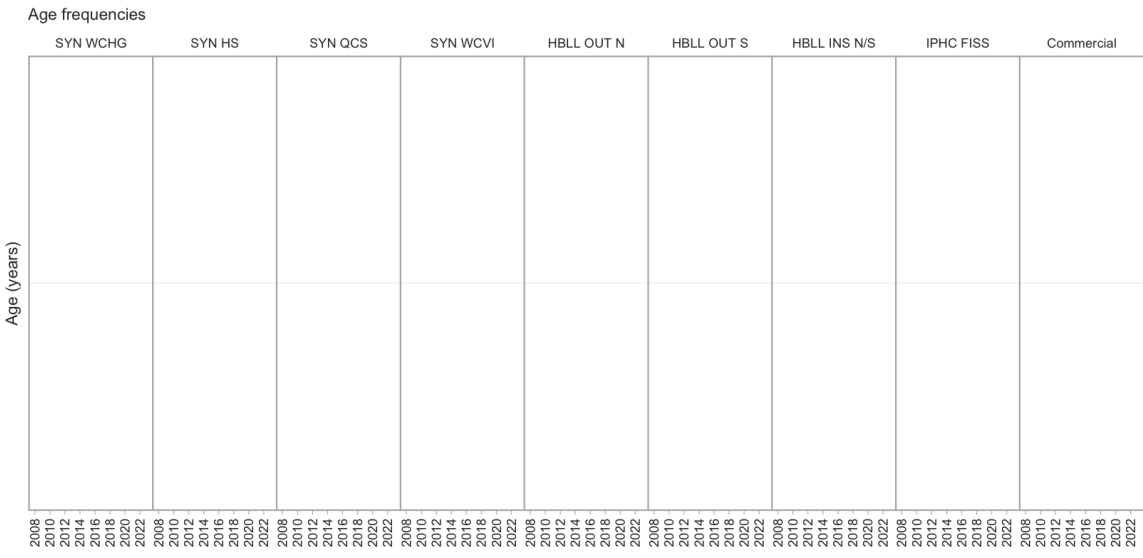
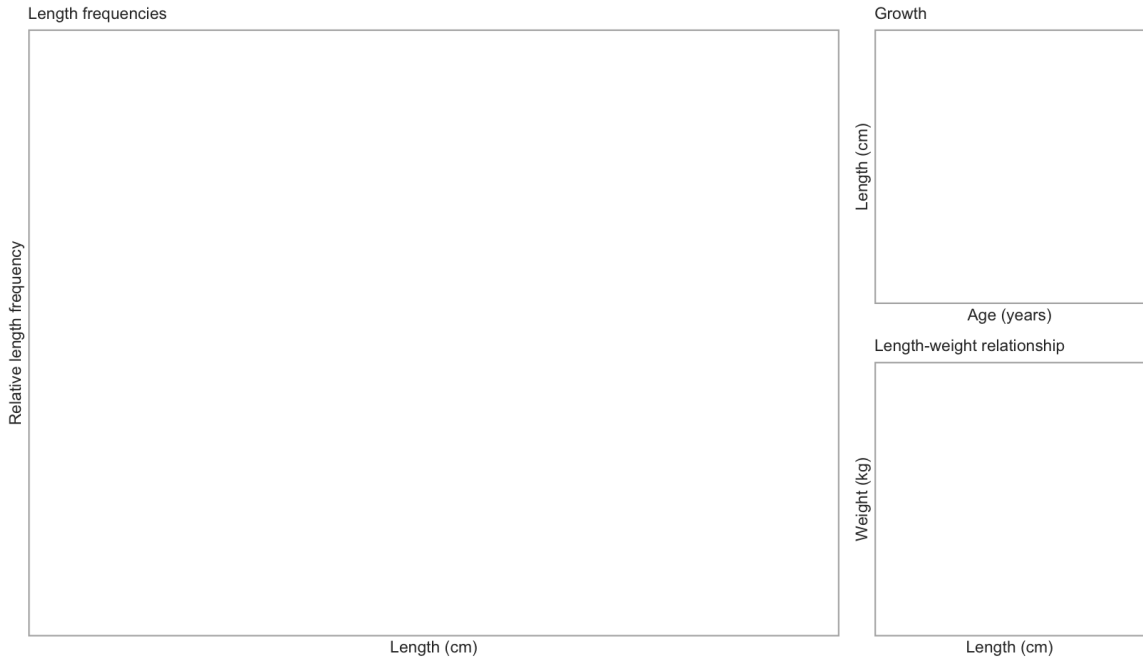


Commercial trawl CPUE



Commercial H & L CPUE





6.40 Wolf Eel

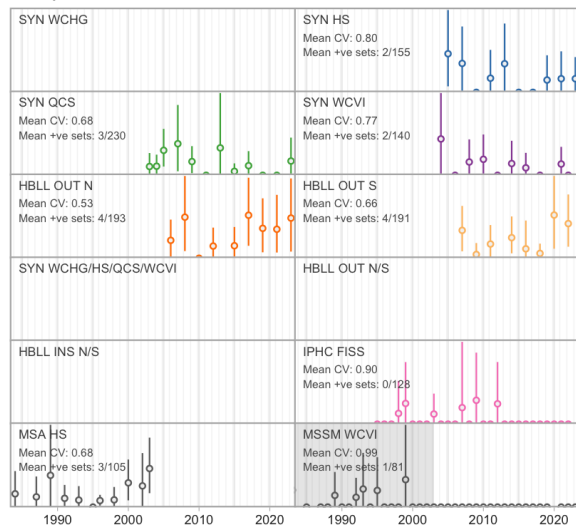
Anarrhichthys ocellatus (351)

Order: Perciformes, Family: Anarrhichadidae, [FishBase](#), [WoRMS](#)

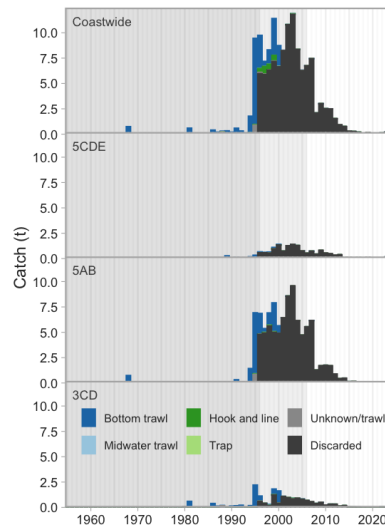
COSEWIC Annual Report: COSEWIC (2003)

COSEWIC Status: Not at Risk, SARA Status: No Status

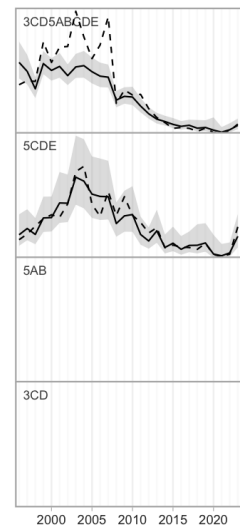
Survey relative biomass indices



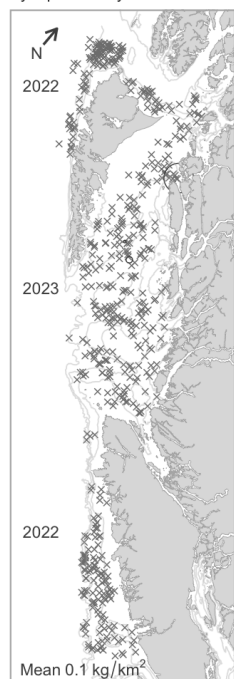
Commercial catch



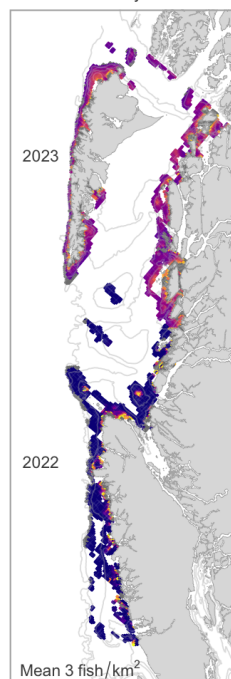
Commercial bottom trawl CPUE



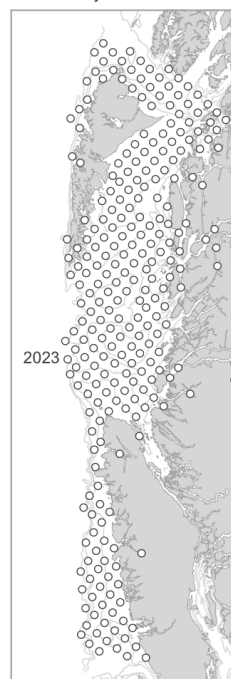
Synoptic survey biomass



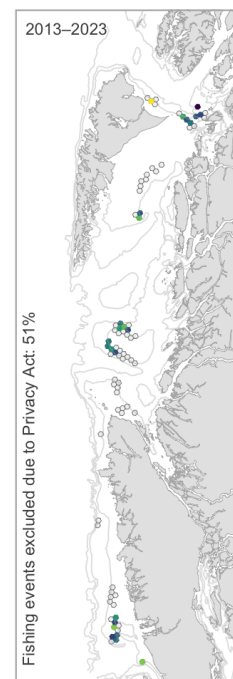
HBLL OUT survey biomass



IPHC survey catch rate

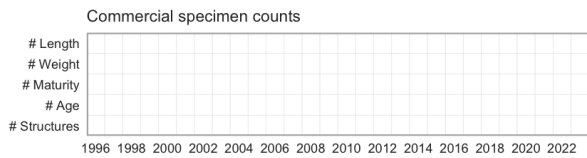
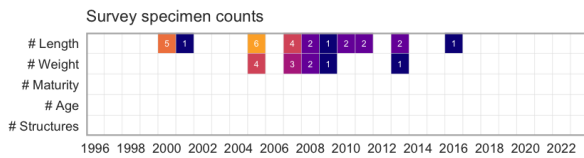
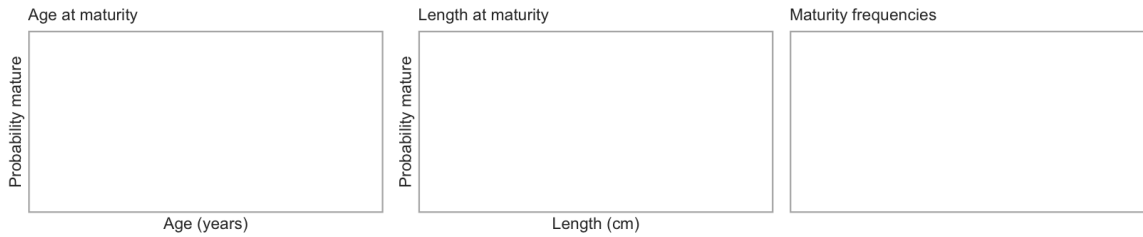
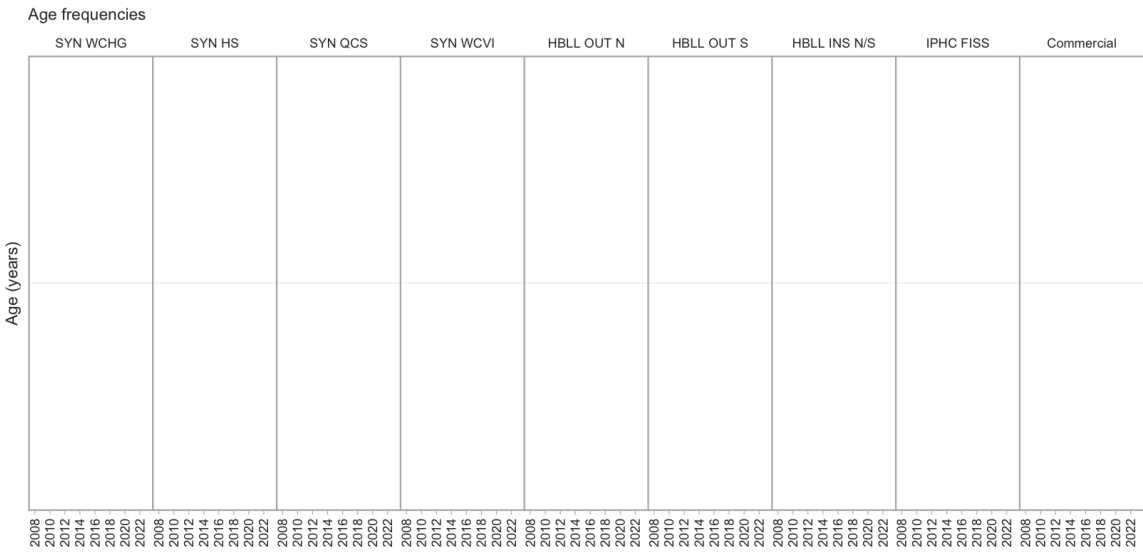
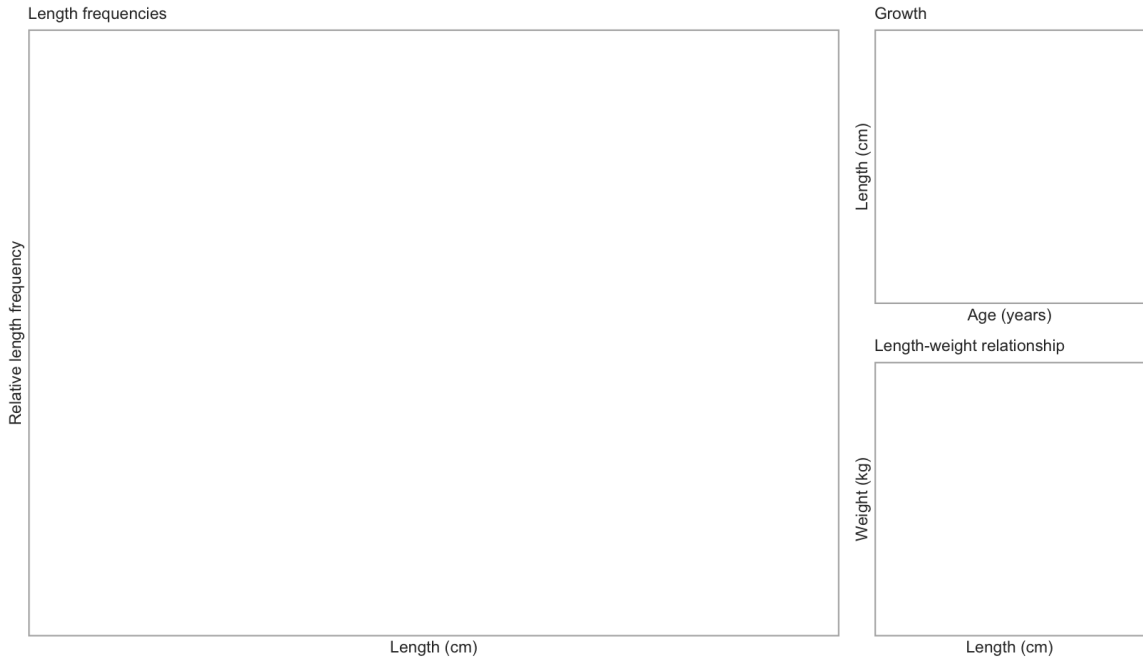


Commercial trawl CPUE



Commercial H & L CPUE



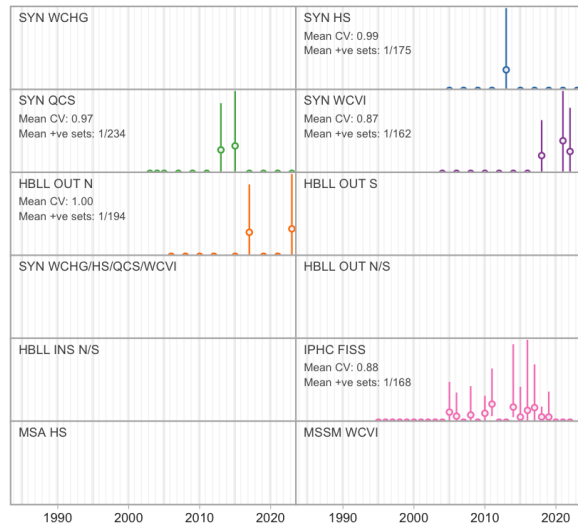


6.41 Giant Wrymouth

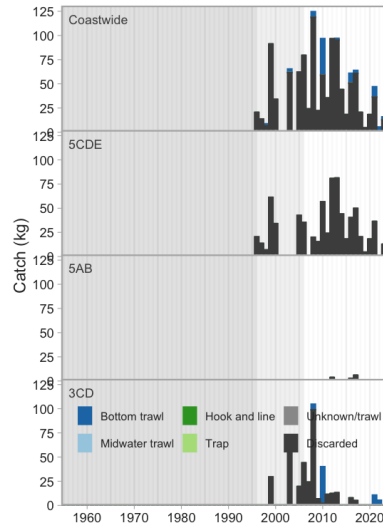
Cryptacanthodes giganteus (355)

Order: Perciformes, Family: Cryptacanthodidae, [FishBase](#), [WoRMS](#)

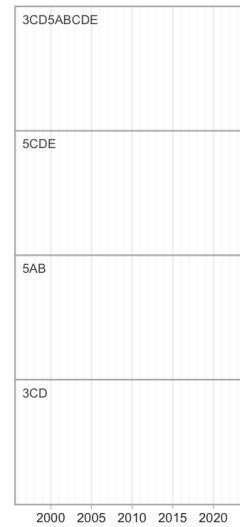
Survey relative biomass indices



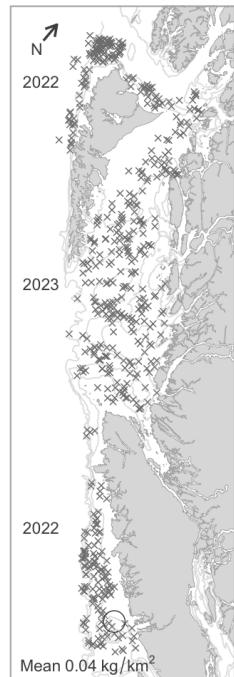
Commercial catch



Commercial bottom trawl CPUE



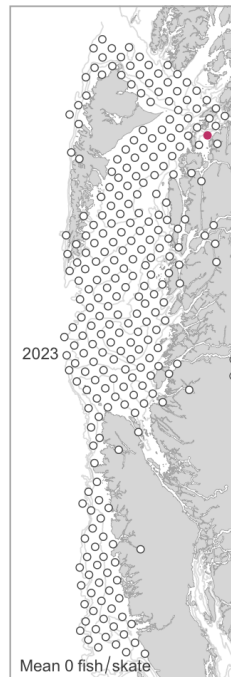
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

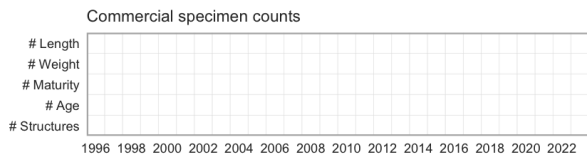
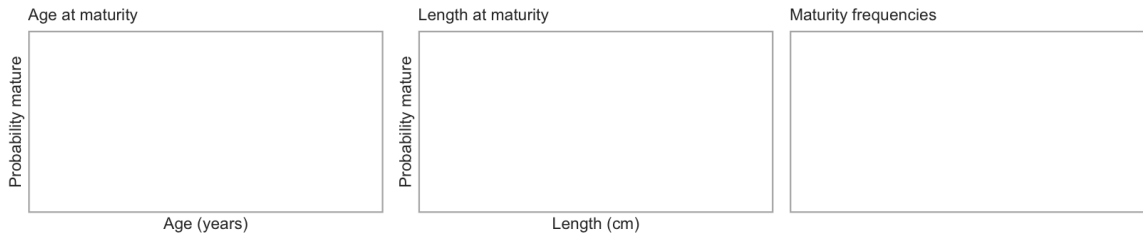
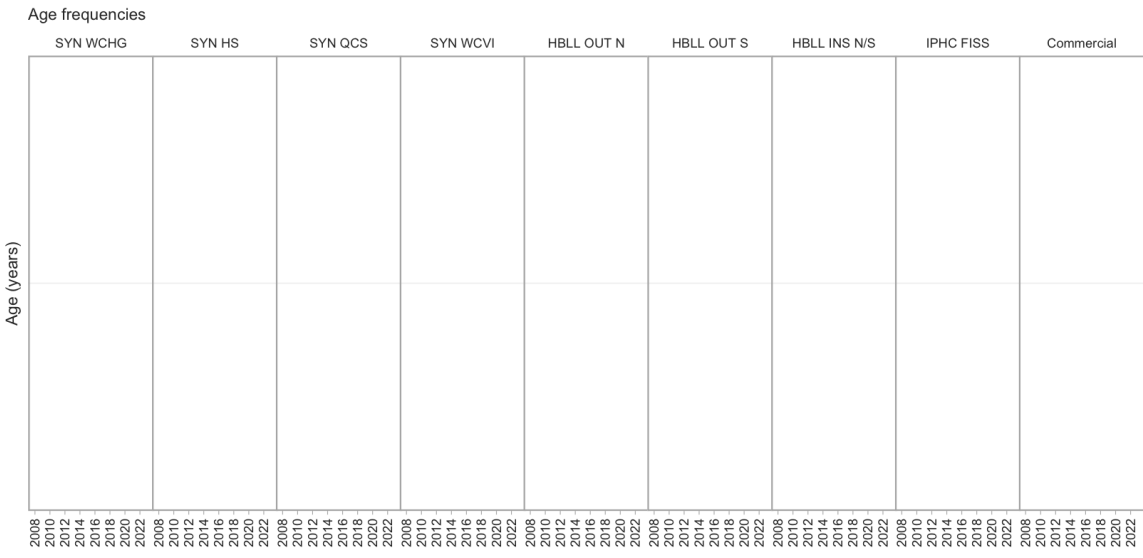
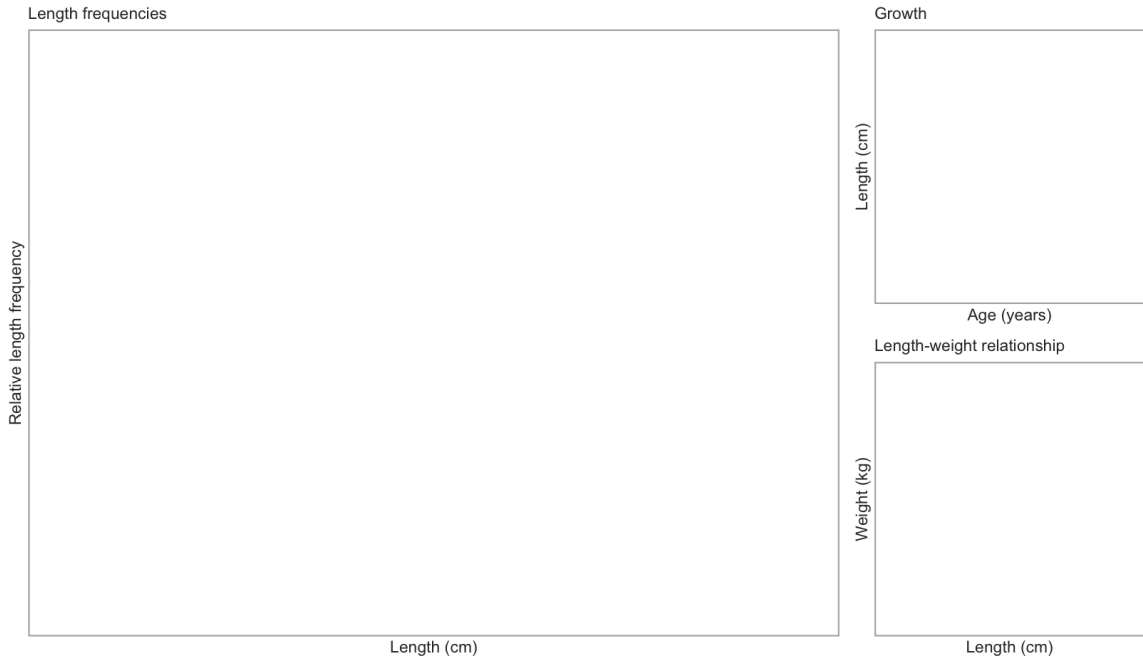


Commercial trawl CPUE



Commercial H & L CPUE



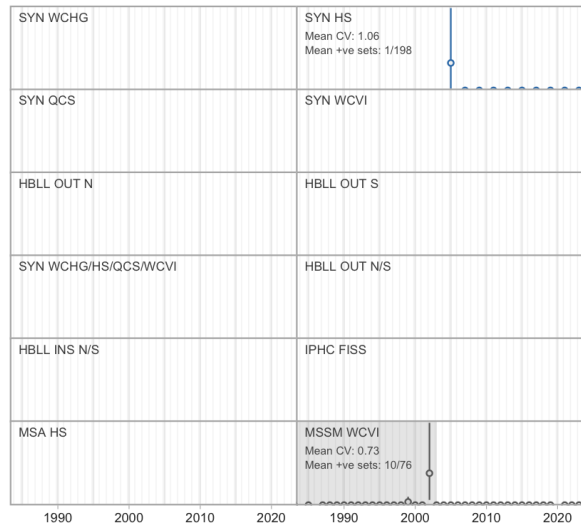


6.42 Dwarf Wrymouth

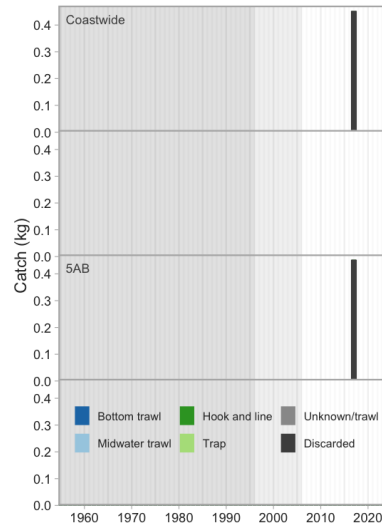
Cryptacanthodes aleutensis (356)

Order: Perciformes, Family: Cryptacanthodidae, [FishBase](#), [WoRMS](#)

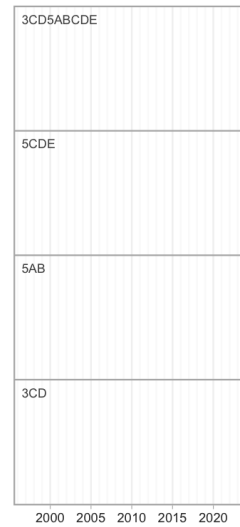
Survey relative biomass indices



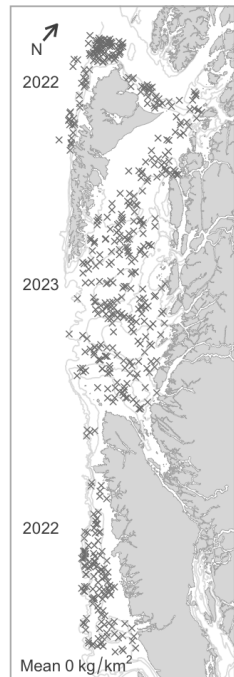
Commercial catch



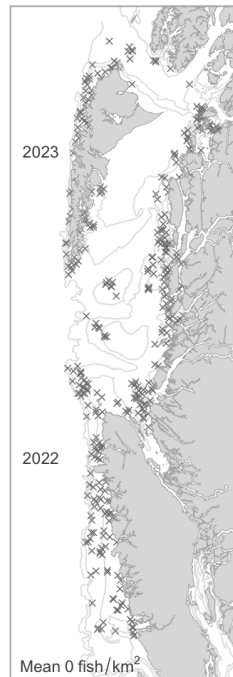
Commercial bottom trawl CPUE



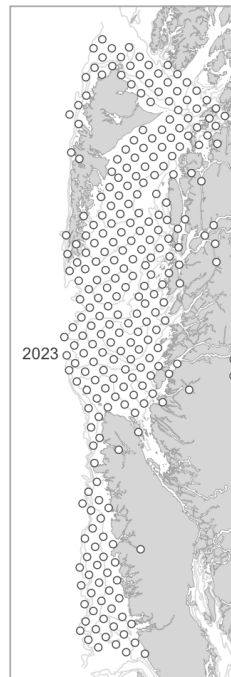
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

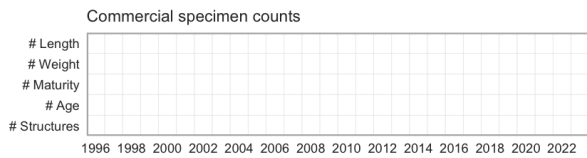
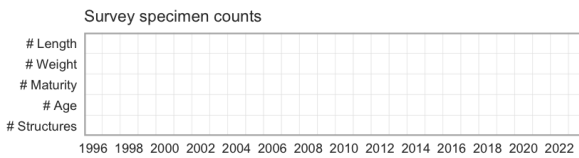
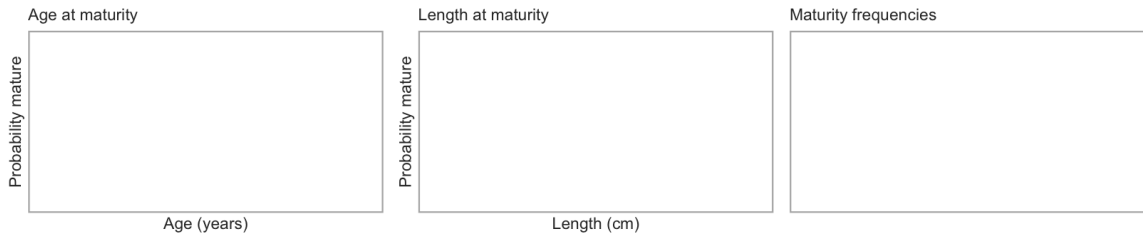
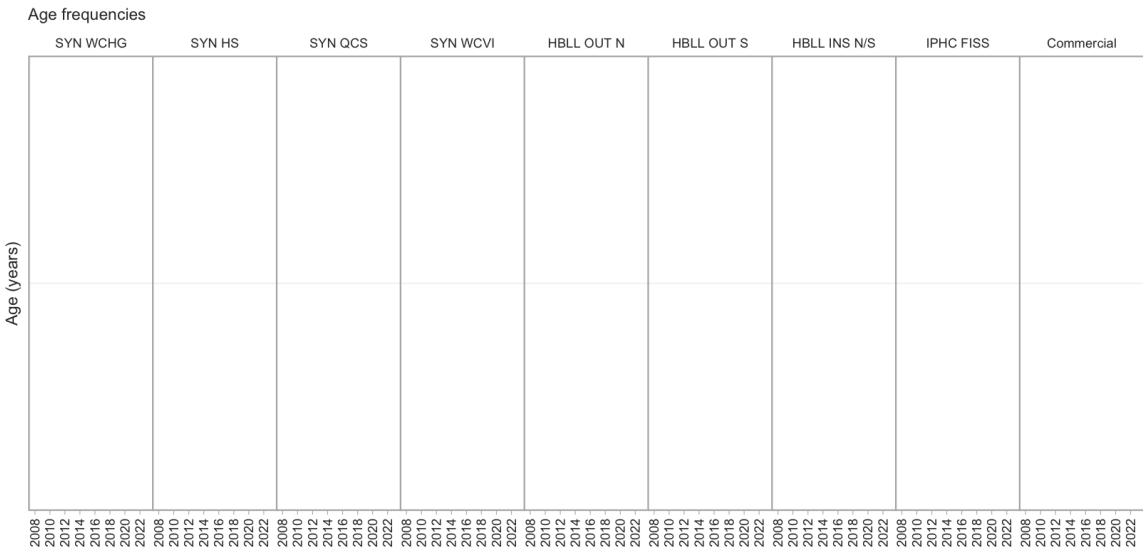
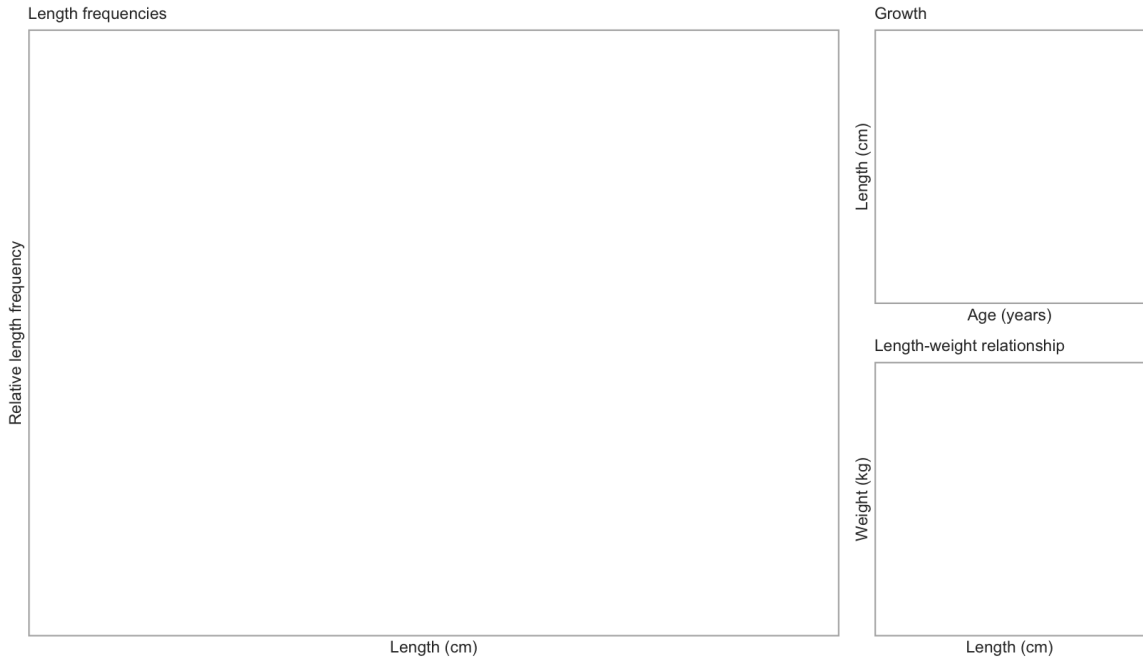


Commercial trawl CPUE



Commercial H & L CPUE



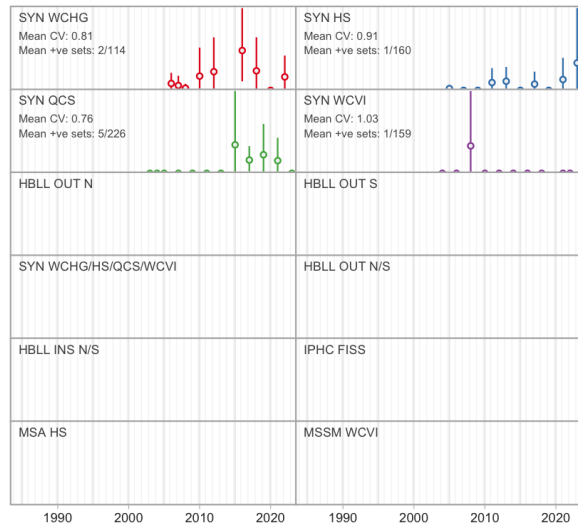


6.43 Prowfish

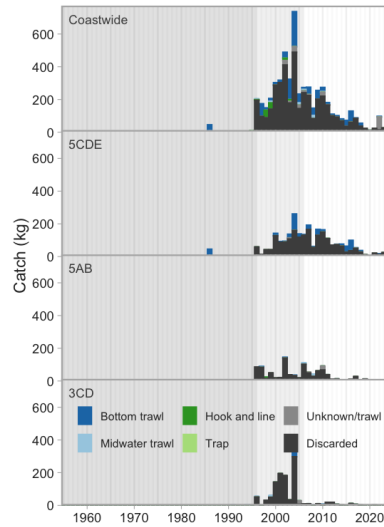
Zaprora silenus (359)

Order: Perciformes, Family: Zaproridae, [FishBase](#), [WoRMS](#)

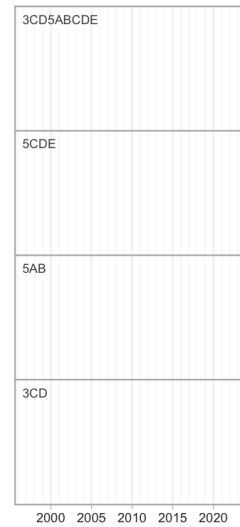
Survey relative biomass indices



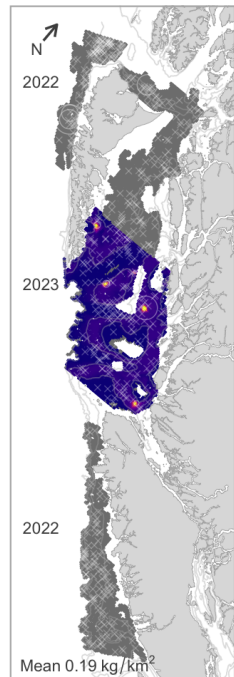
Commercial catch



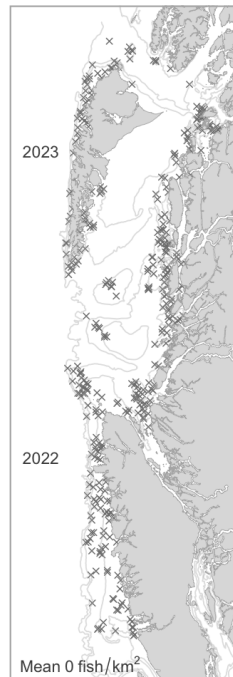
Commercial bottom trawl CPUE



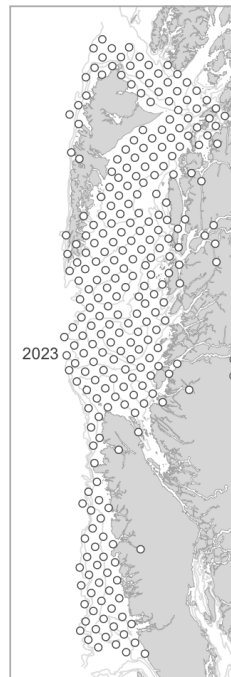
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

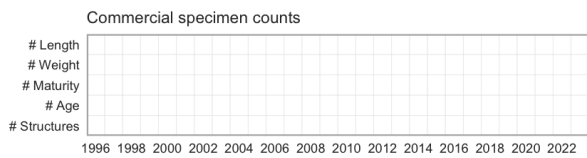
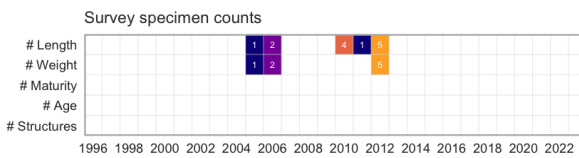
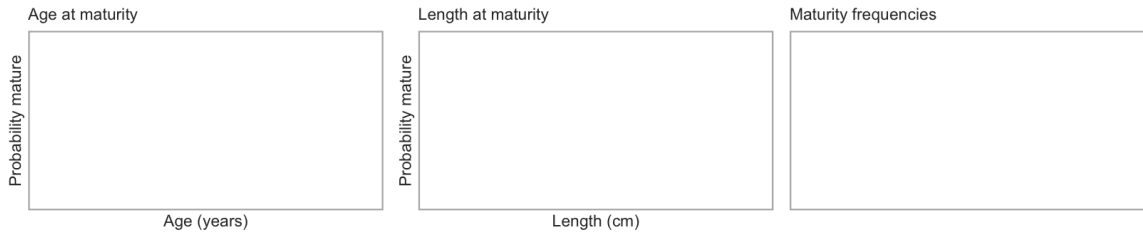
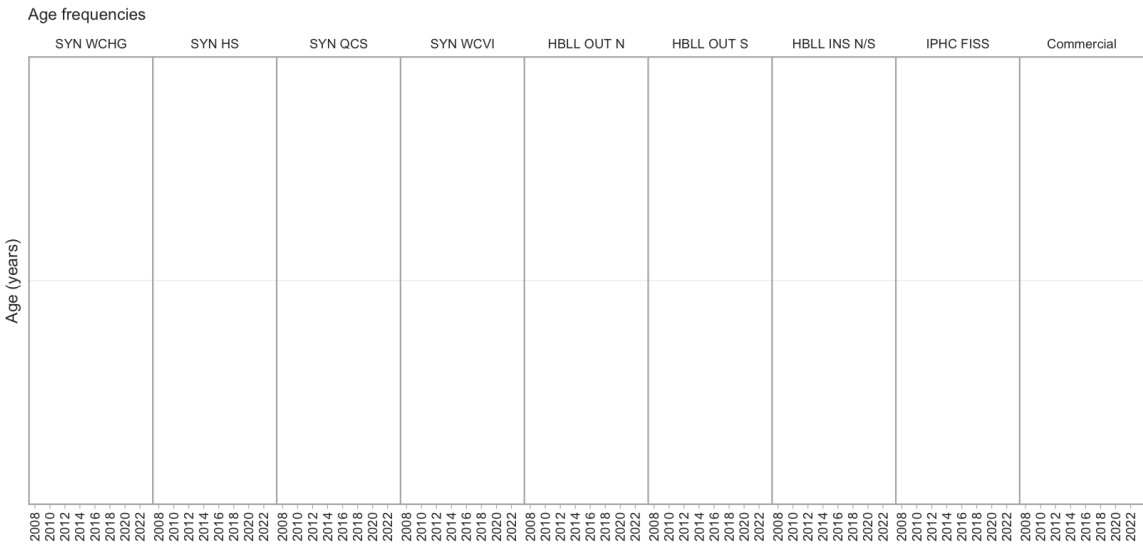
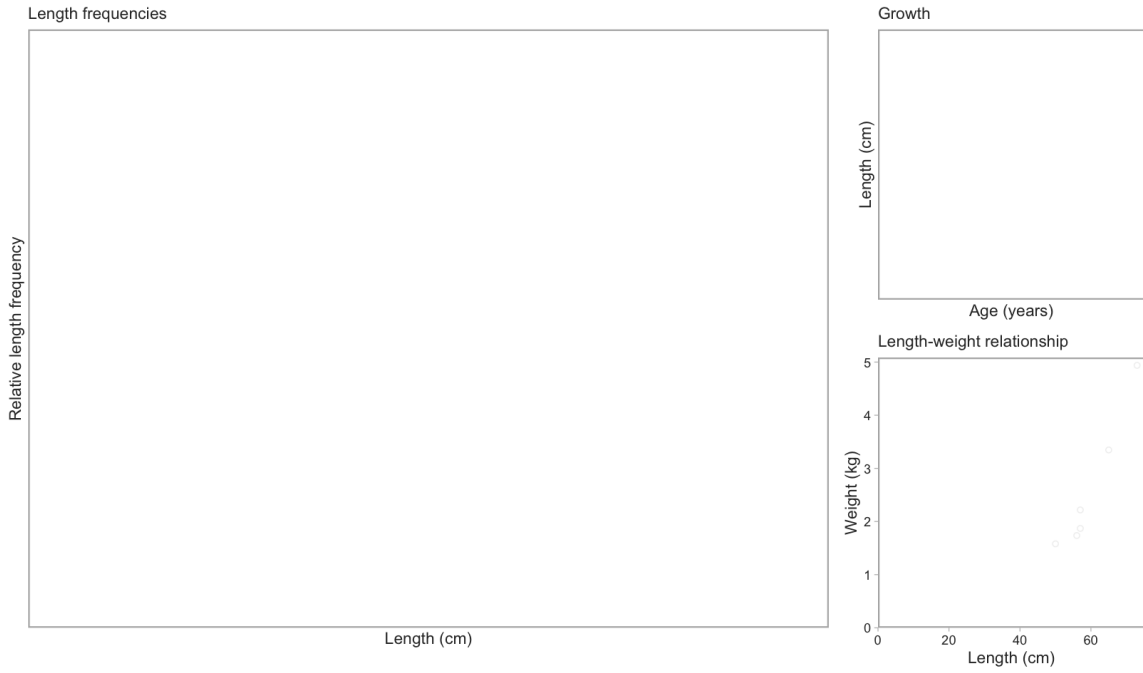


Commercial trawl CPUE



Commercial H & L CPUE



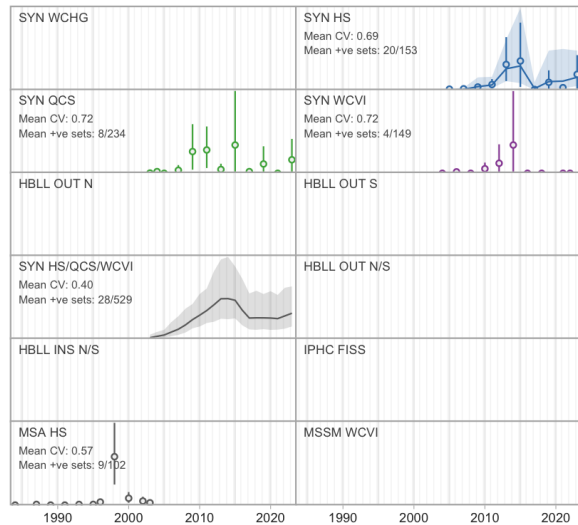


6.44 Pacific Sand Lance

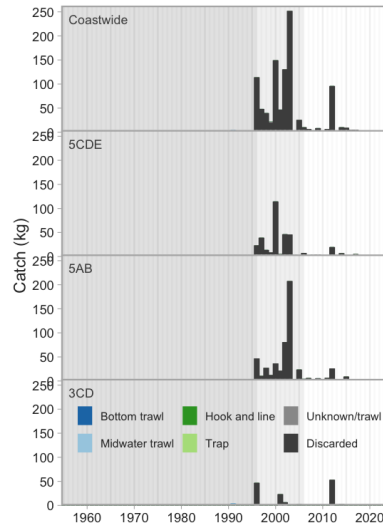
Ammodytes personatus (361)

Order: Perciformes, Family: Ammodytidae, [FishBase](#), [WoRMS](#)

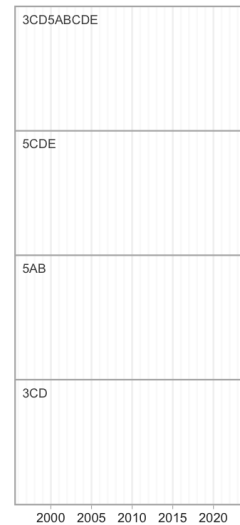
Survey relative biomass indices



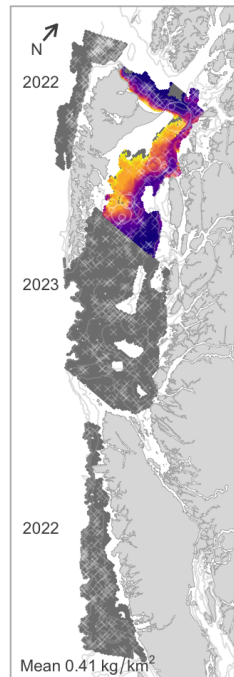
Commercial catch



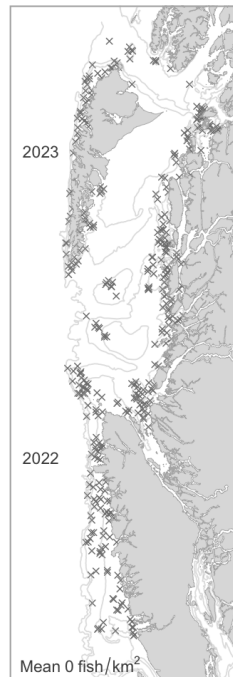
Commercial bottom trawl CPUE



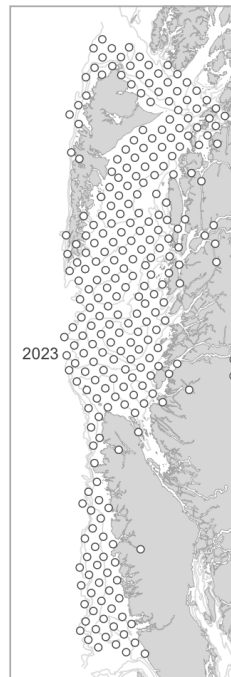
Synoptic survey biomass



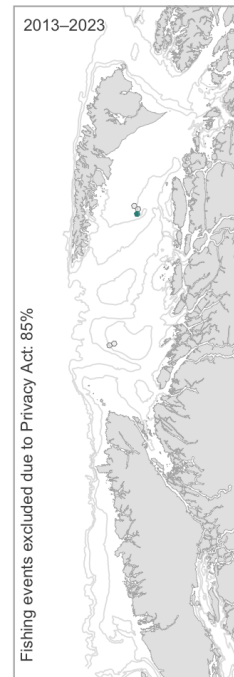
HBL OUT survey biomass



IPHC survey catch rate

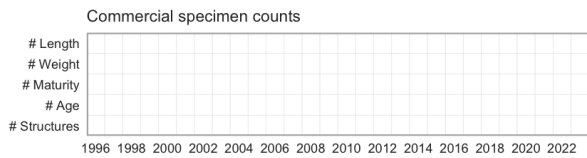
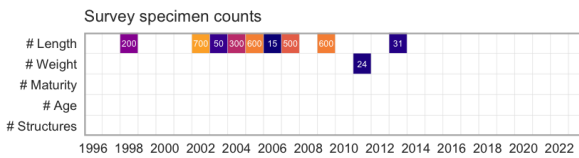
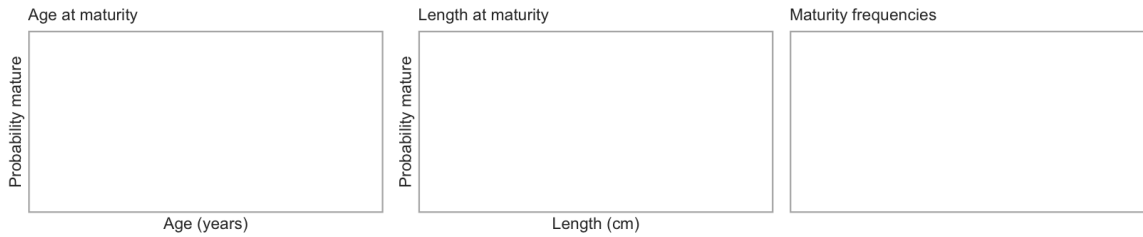
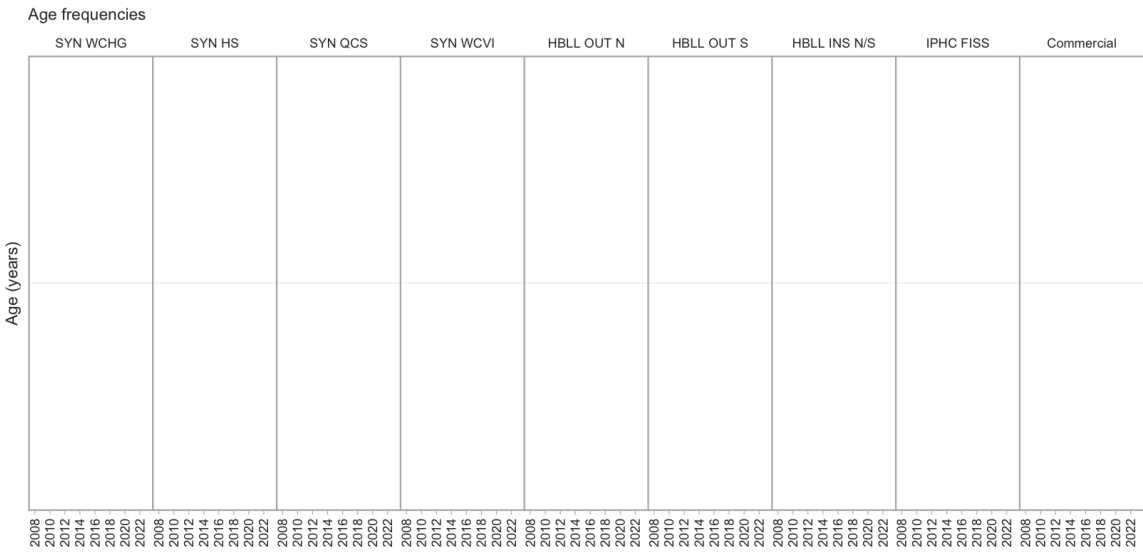
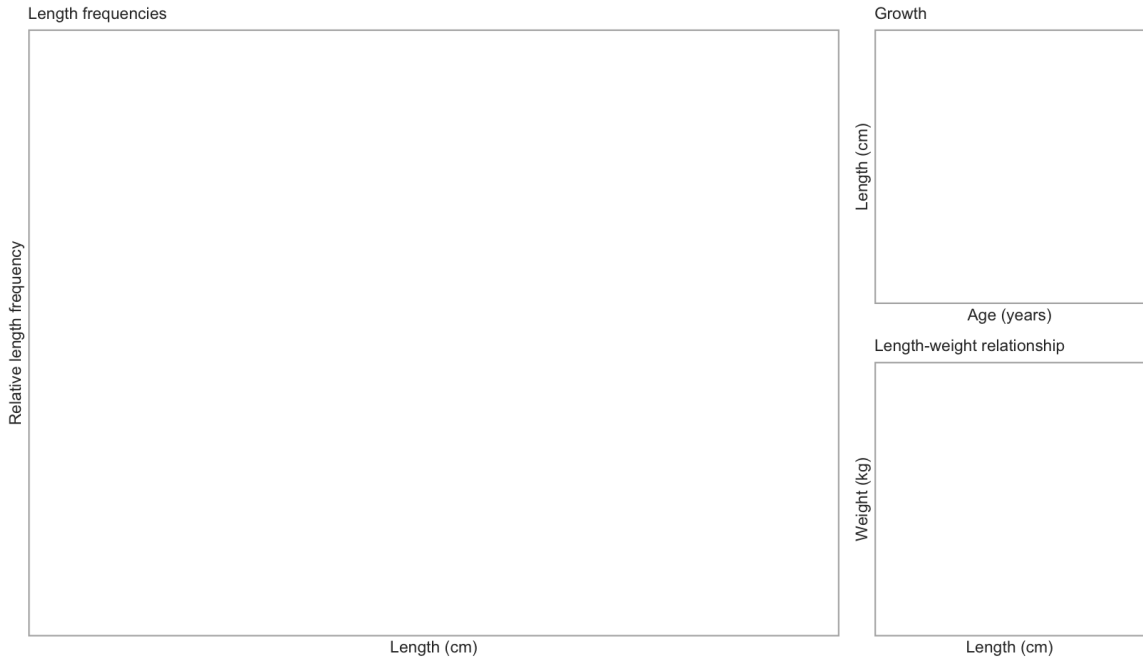


Commercial trawl CPUE



Commercial H & L CPUE



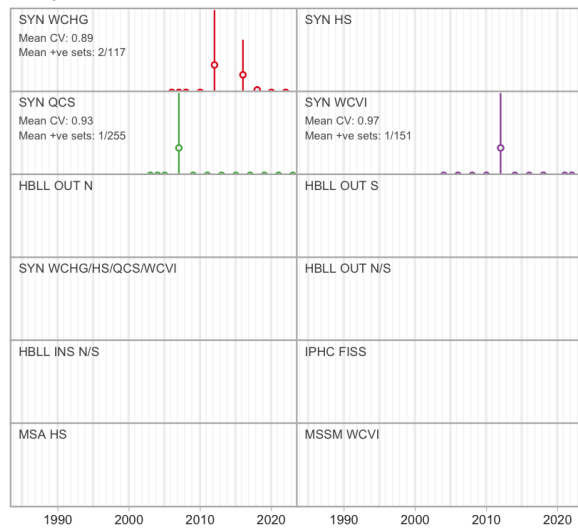


6.45 Ragfish

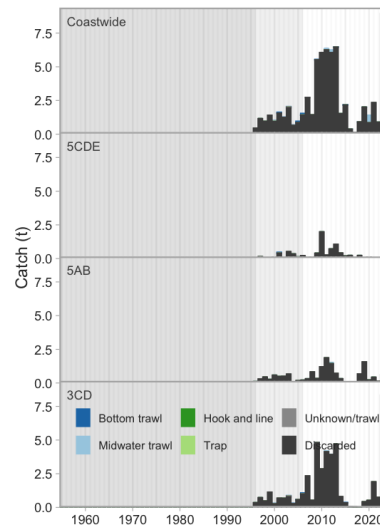
Icosteus aenigmaticus (386)

Order: Perciformes, Family: Icosteidae, [FishBase](#), [WoRMS](#)

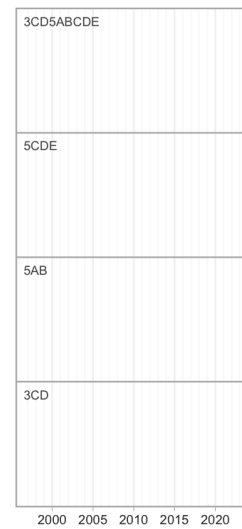
Survey relative biomass indices



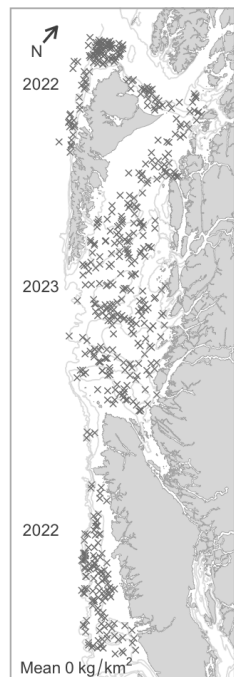
Commercial catch



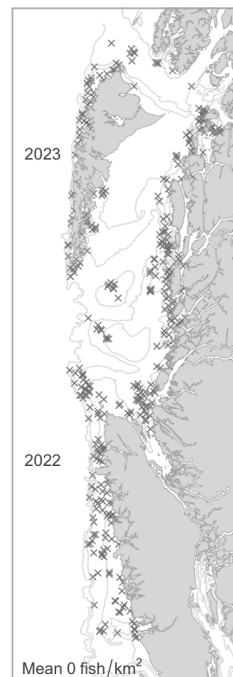
Commercial bottom trawl CPUE



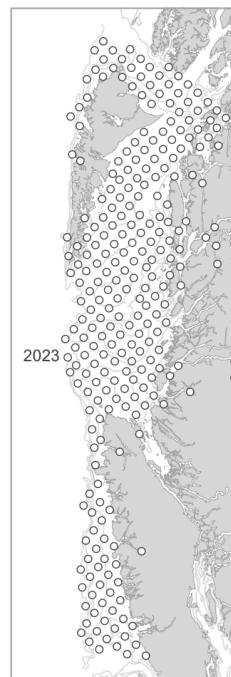
Synoptic survey biomass



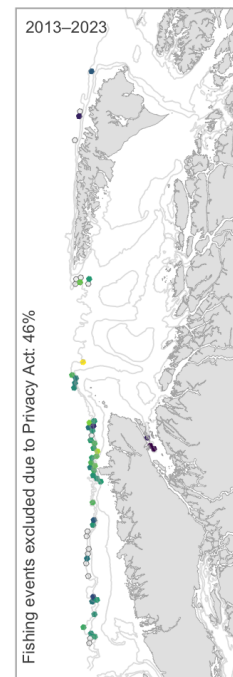
H BLL OUT survey biomass



IPHC survey catch rate

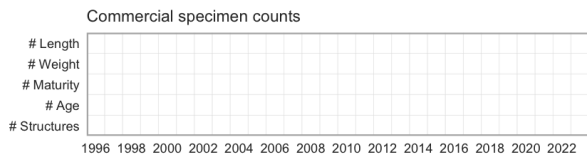
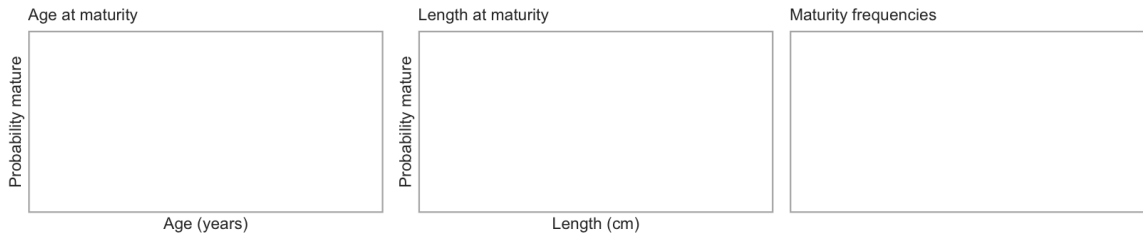
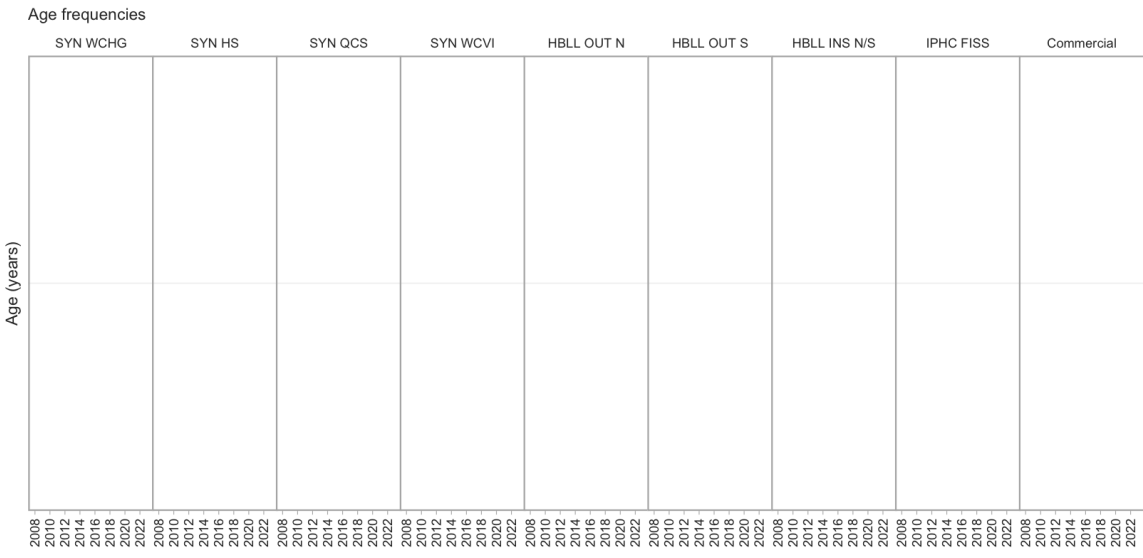
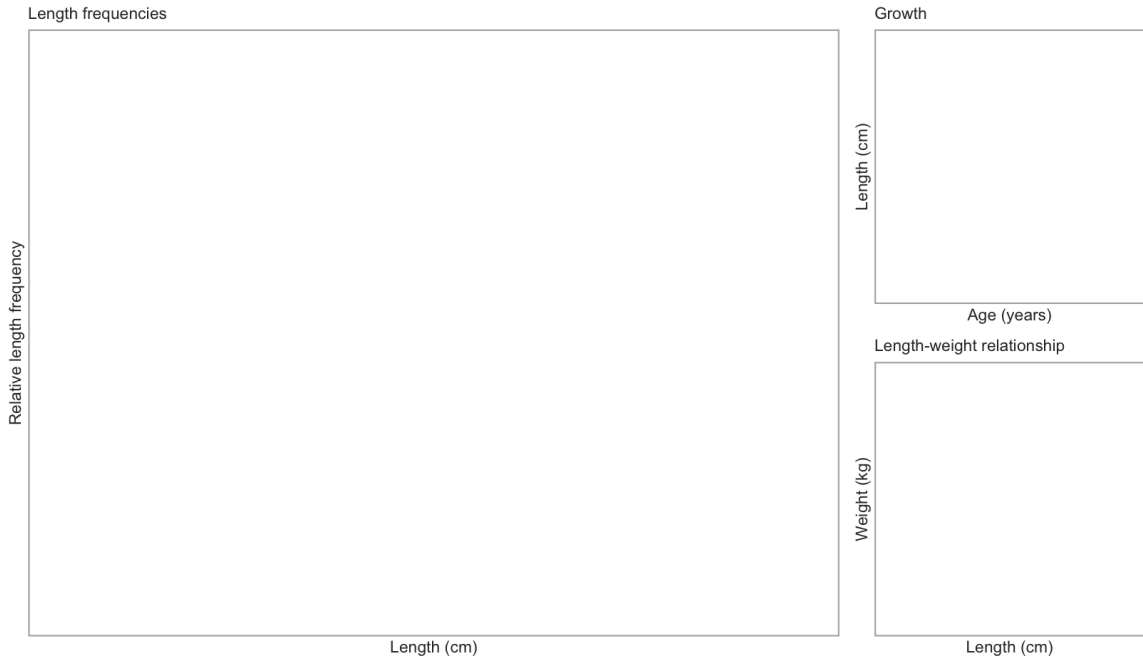


Commercial trawl CPUE



Commercial H & L CPUE





6.46 Roughey/Blackspotted Rockfish Complex

Sebastes aleutianus/melanostictus (394)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase 1](#), [FishBase 2](#)

Last Research Document: Starr and Haigh (2020)

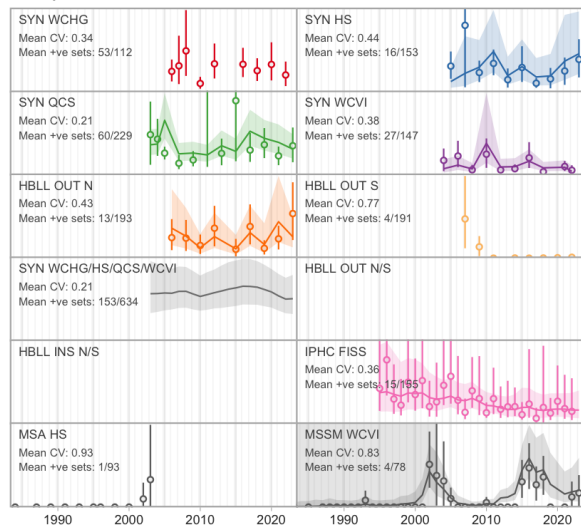
Last Science Advisory Report: DFO (2020b)

Species at Risk Act Management Plan Series: DFO (2012)

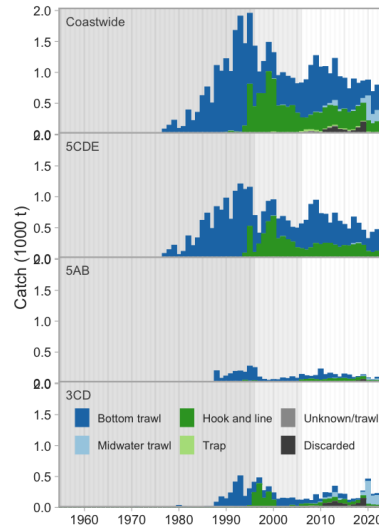
COSEWIC Status Report: COSEWIC (2007c)

COSEWIC Status: Special Concern, SARA Status: Special Concern

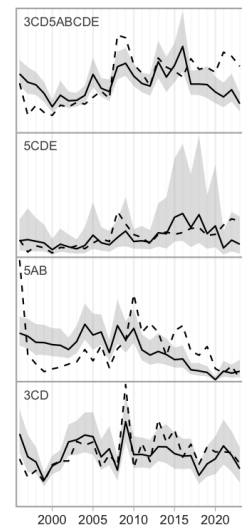
Survey relative biomass indices



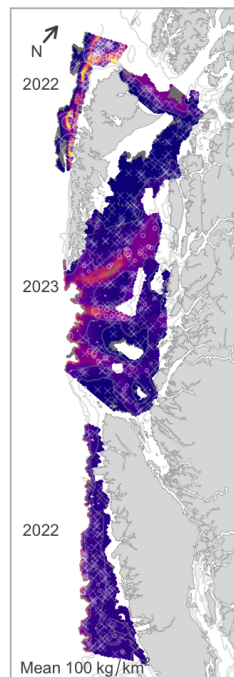
Commercial catch



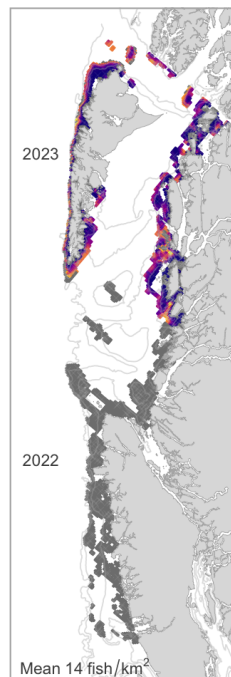
Commercial bottom trawl CPUE



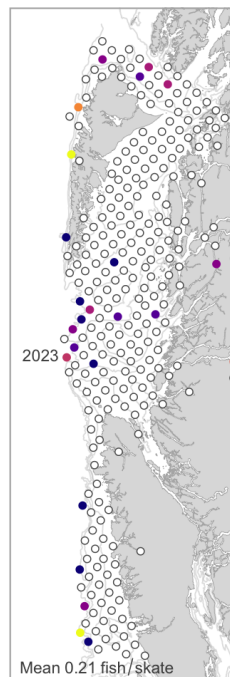
Synoptic survey biomass



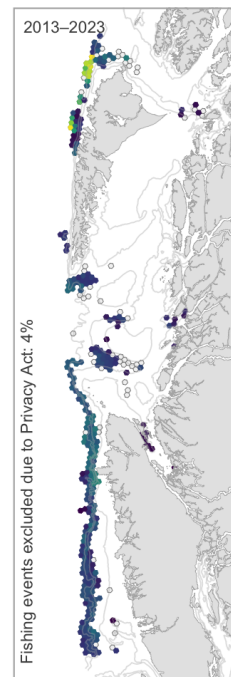
HBL OUT survey biomass



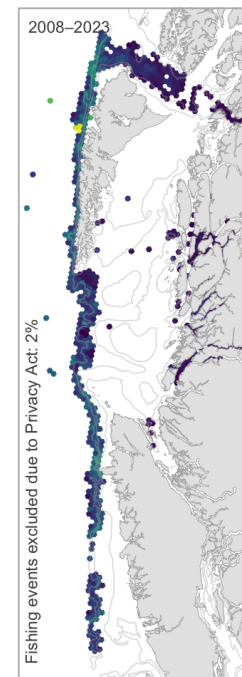
IPHC survey catch rate

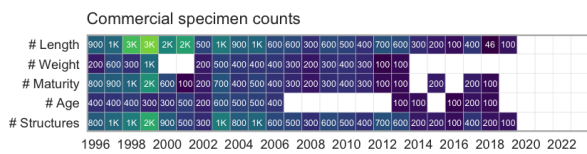
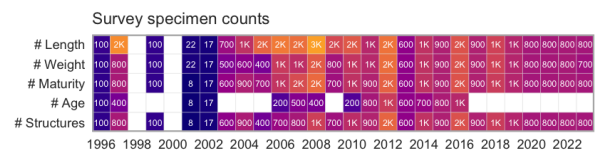
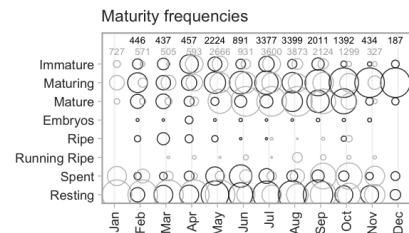
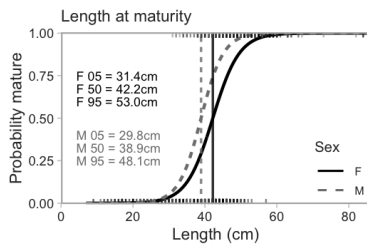
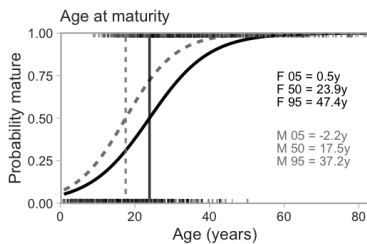
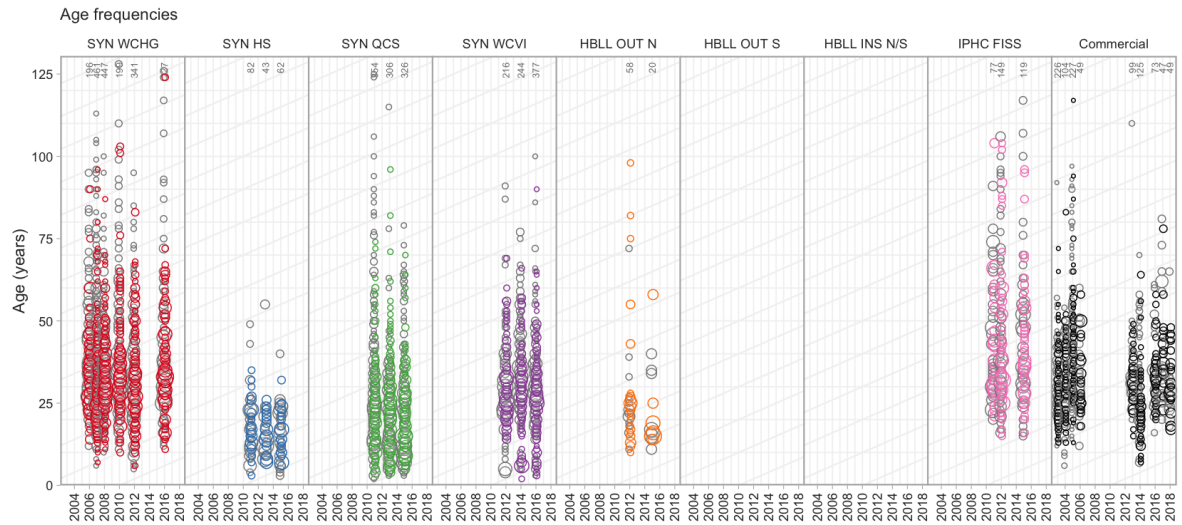
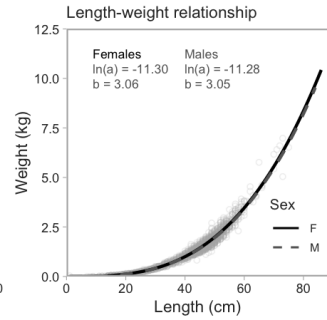
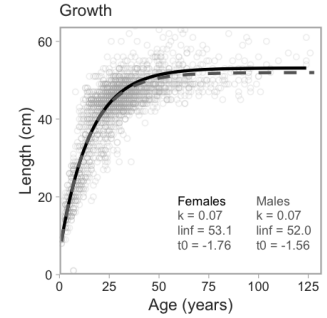
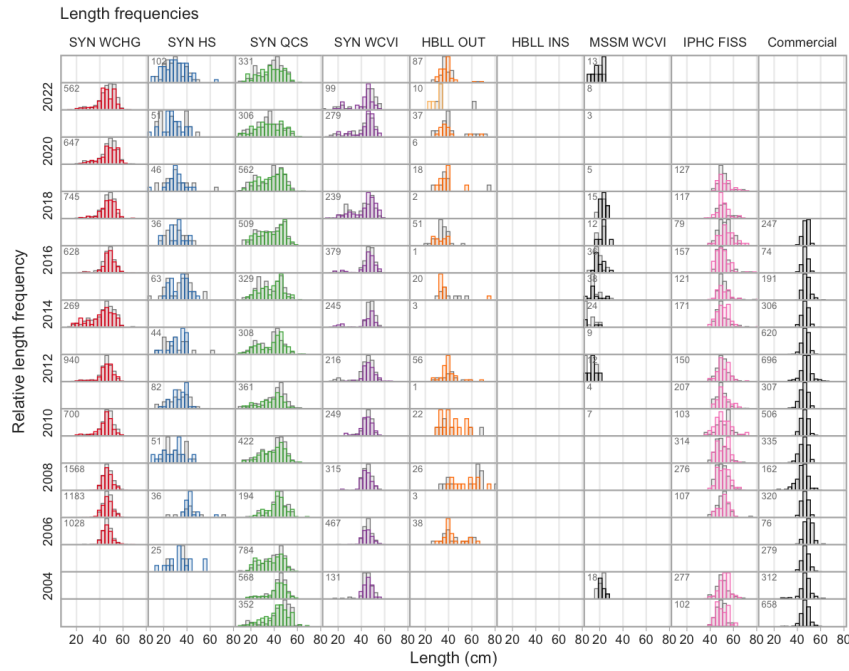


Commercial trawl CPUE



Commercial H & L CPUE





6.47 Pacific Ocean Perch

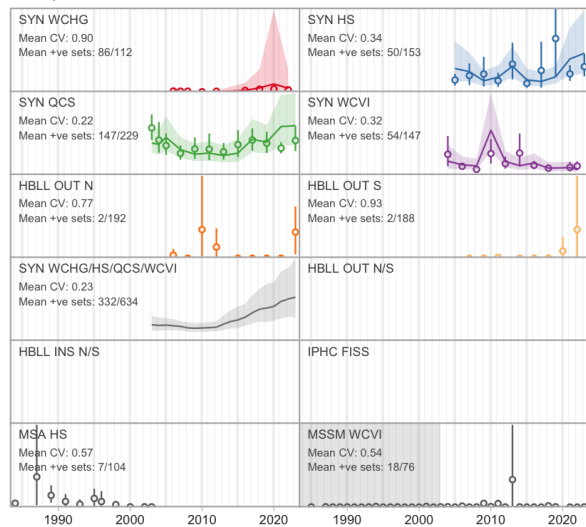
Sebastes alutus (396)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

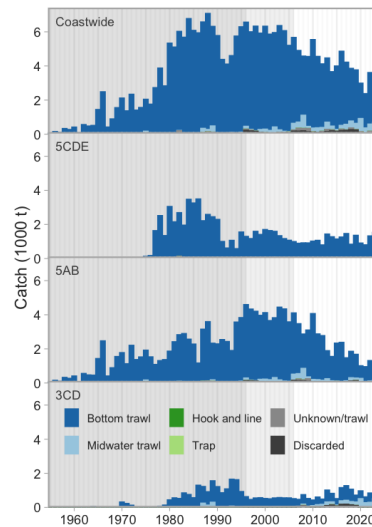
Last Research Documents: Edwards et al. (2013), Edwards et al. (2014), Haigh et al. (2018)

Last Science Advisory Report: DFO (2024b)

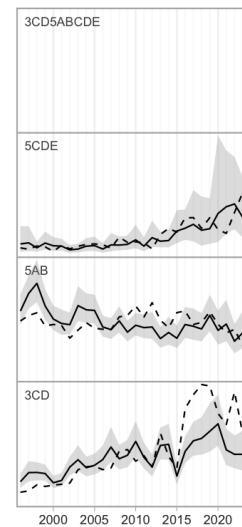
Survey relative biomass indices



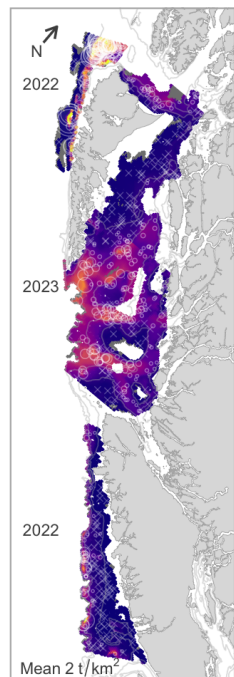
Commercial catch



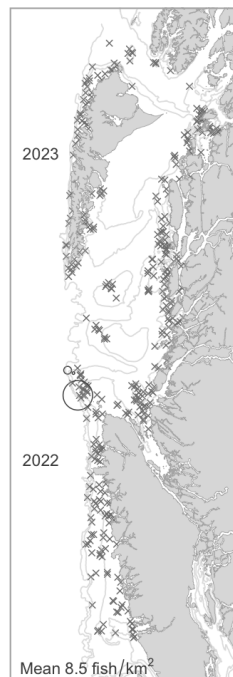
Commercial bottom trawl CPUE



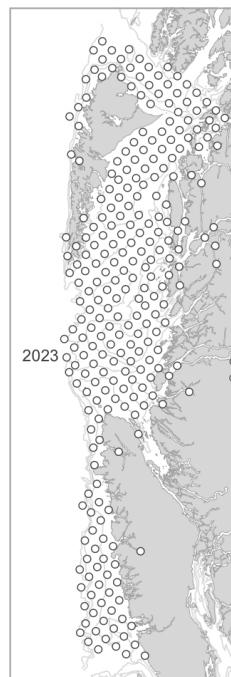
Synoptic survey biomass



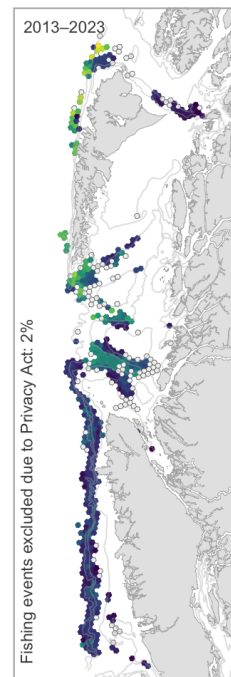
HBLL OUT survey biomass



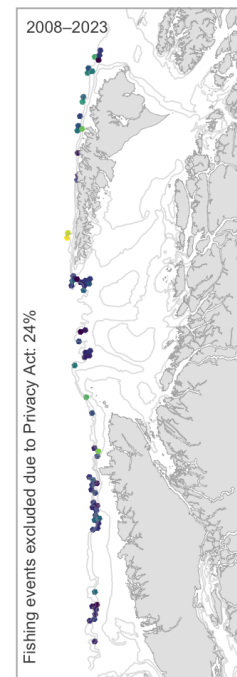
IPHC survey catch rate

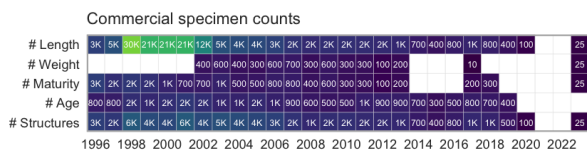
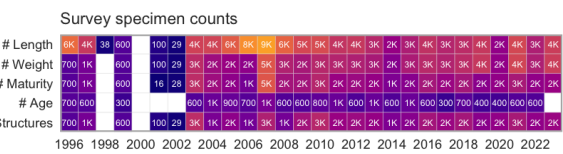
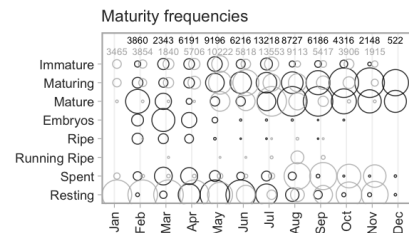
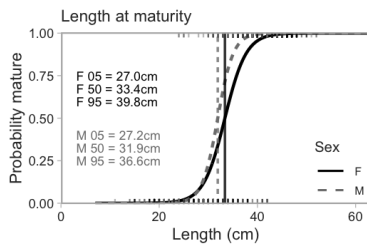
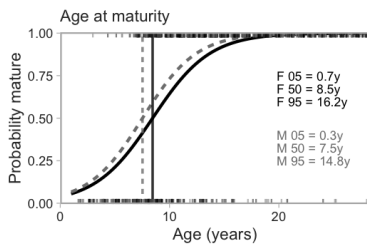
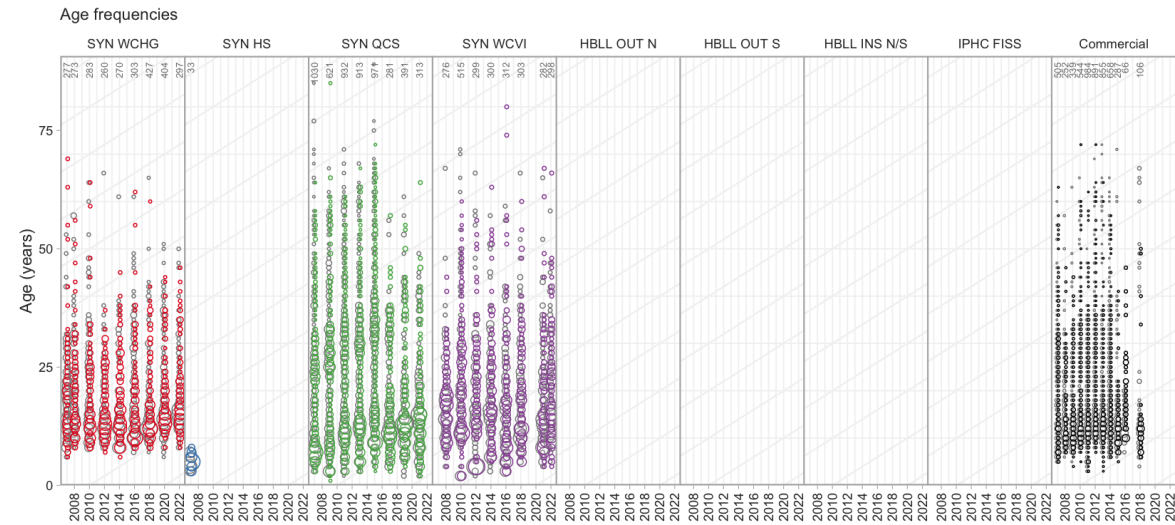
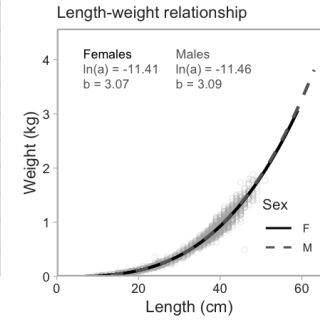
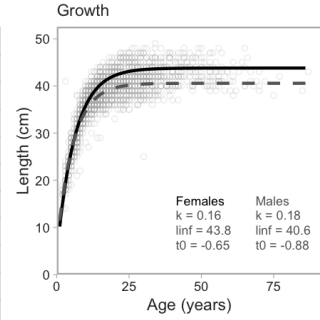
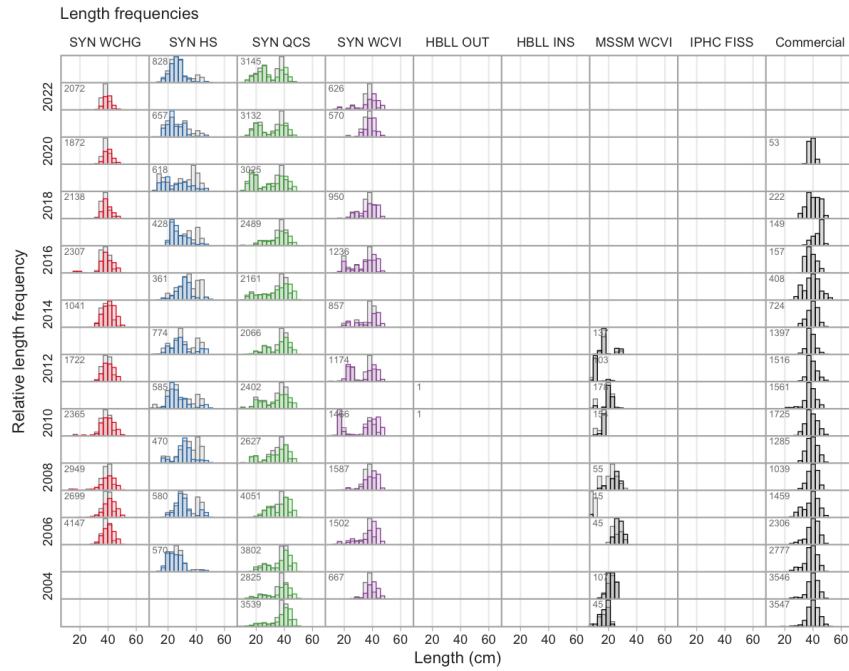


Commercial trawl CPUE



Commercial H & L CPUE



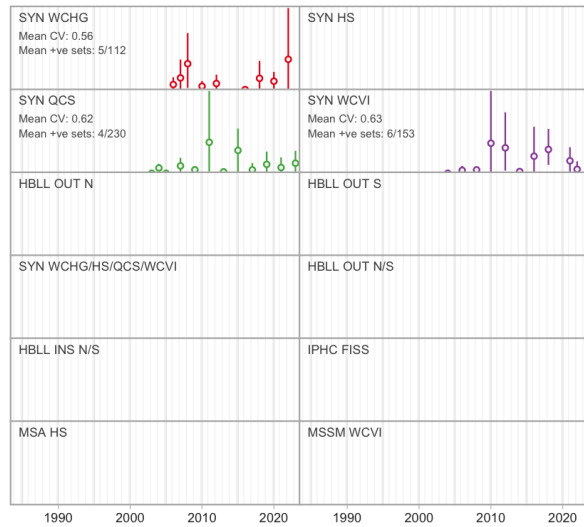


6.48 Aurora Rockfish

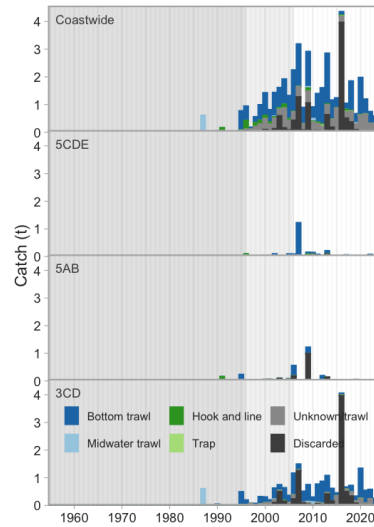
Sebastes aurora (400)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

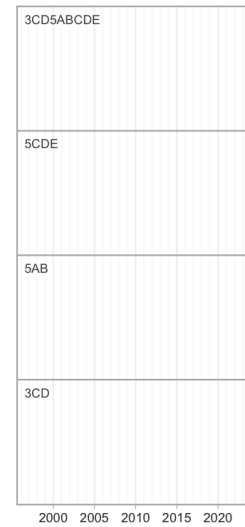
Survey relative biomass indices



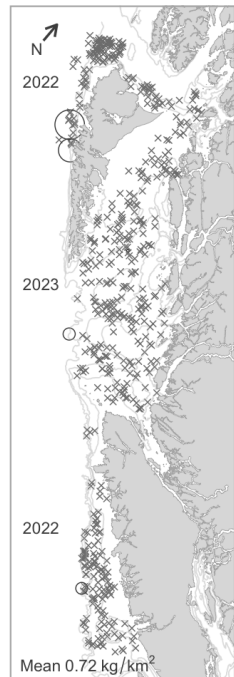
Commercial catch



Commercial bottom trawl CPUE



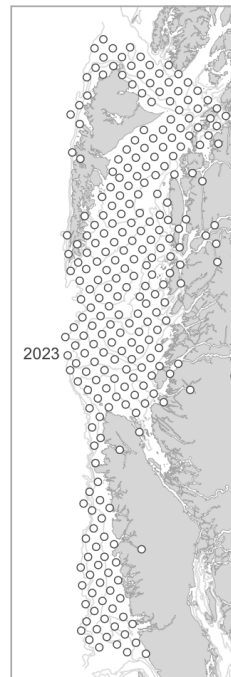
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

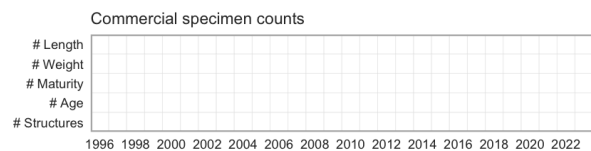
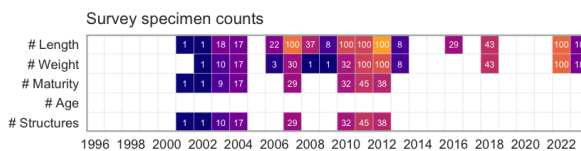
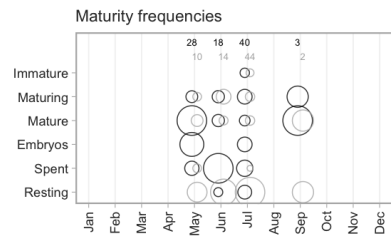
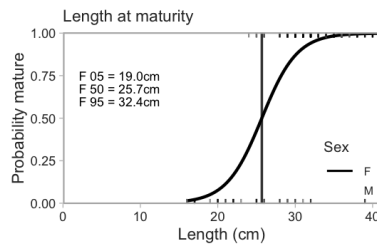
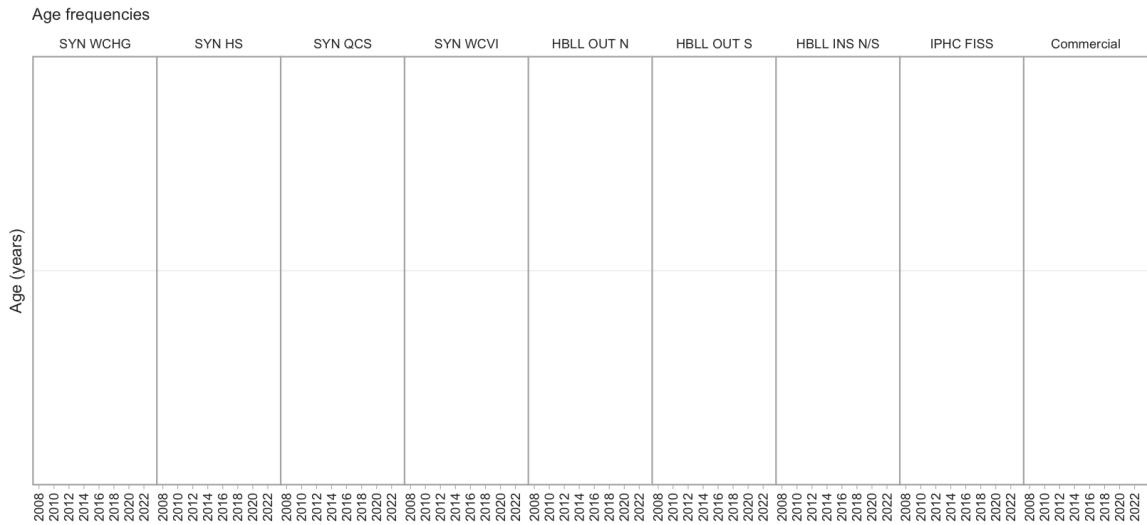
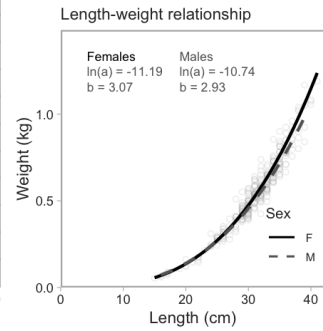
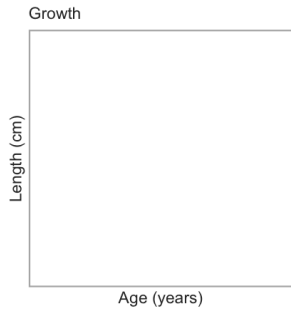
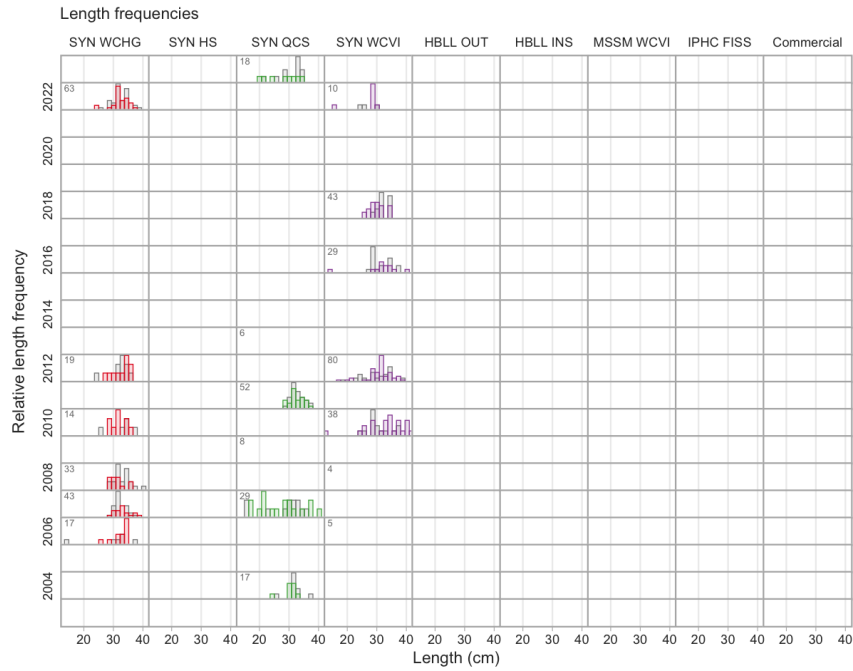


Commercial trawl CPUE



Commercial H & L CPUE





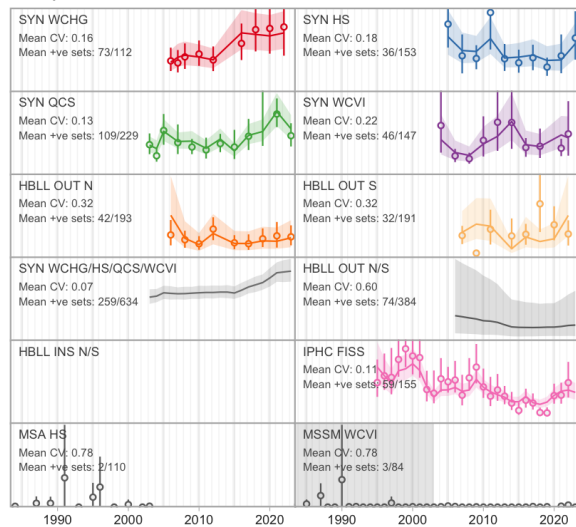
6.49 Redbanded Rockfish

Sebastes babcocki (401)

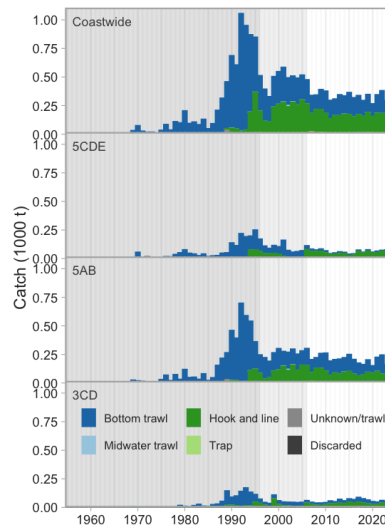
Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Research Document: Edwards et al. (2017)

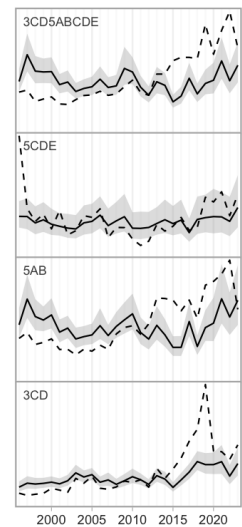
Survey relative biomass indices



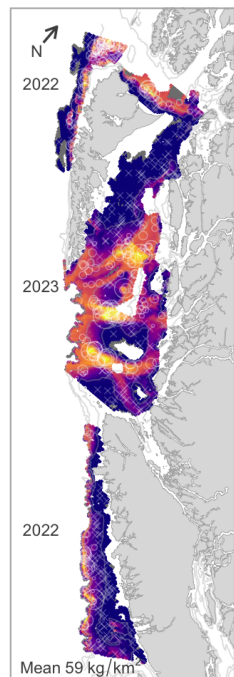
Commercial catch



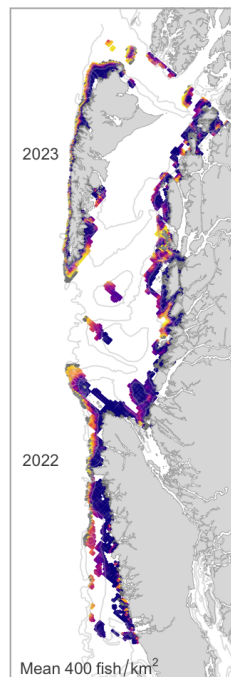
Commercial bottom trawl CPUE



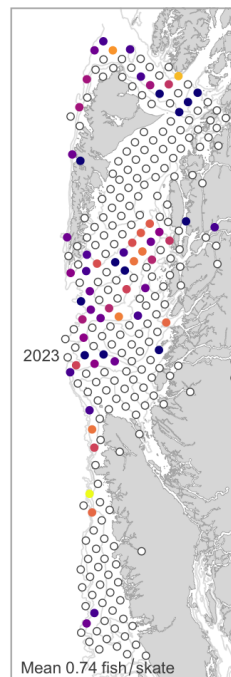
Synoptic survey biomass



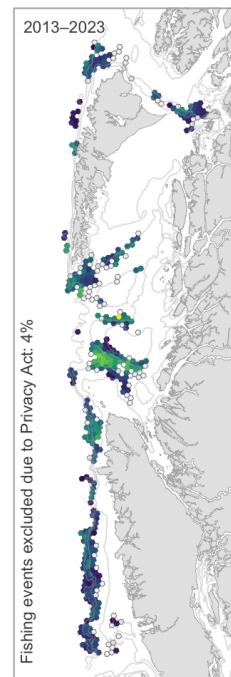
HBLL OUT survey biomass



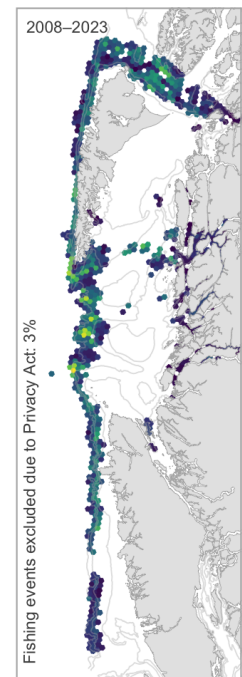
IPHC survey catch rate

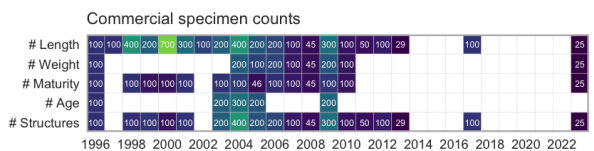
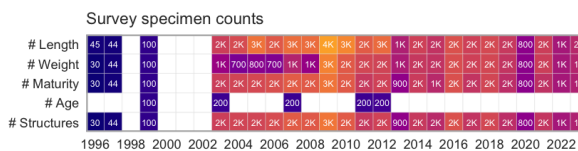
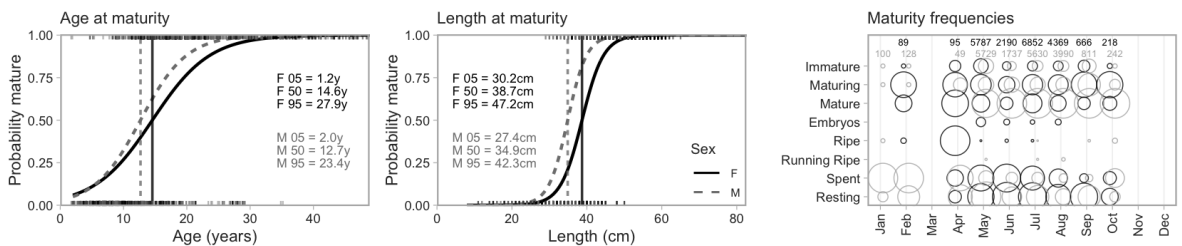
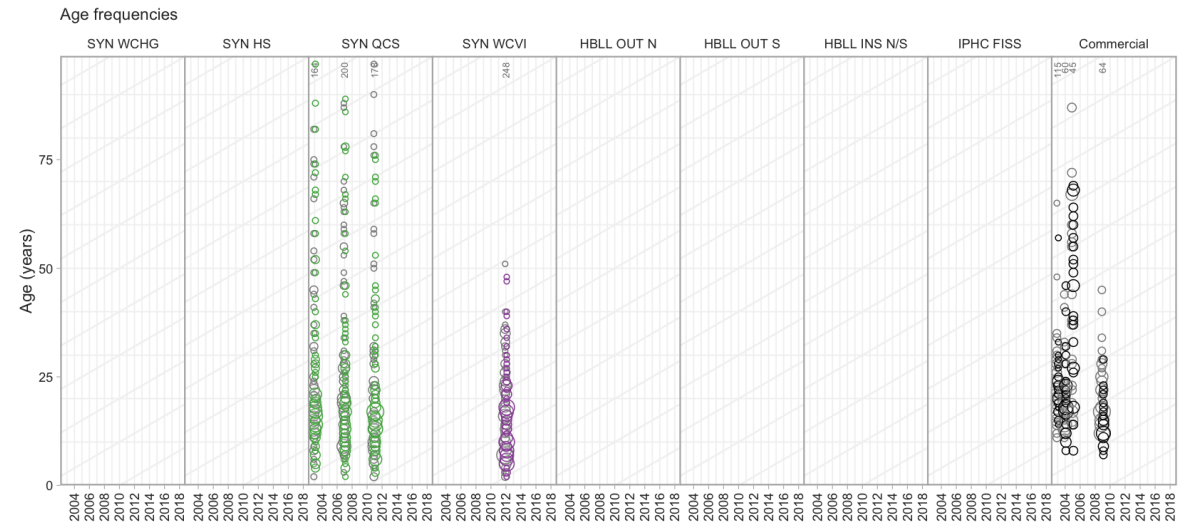
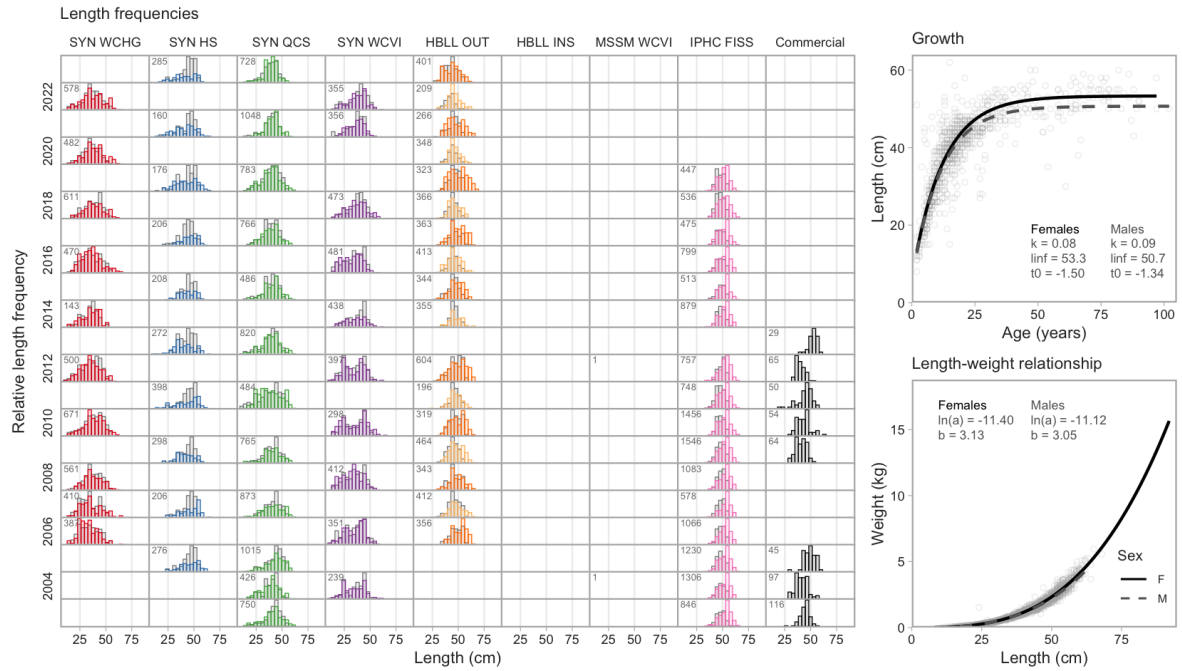


Commercial trawl CPUE



Commercial H & L CPUE





6.50 Shortraker Rockfish

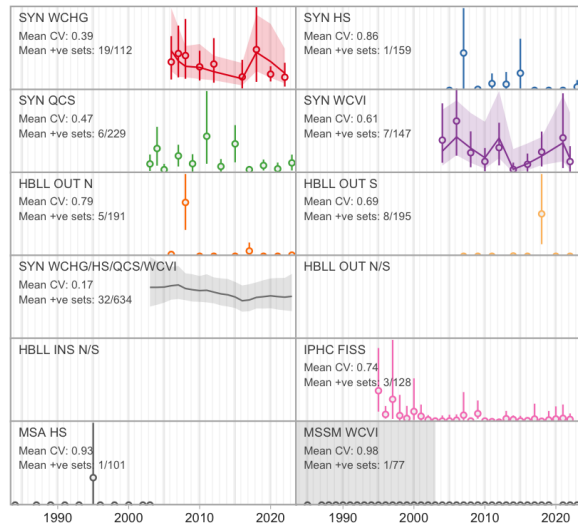
Sebastes borealis (403)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

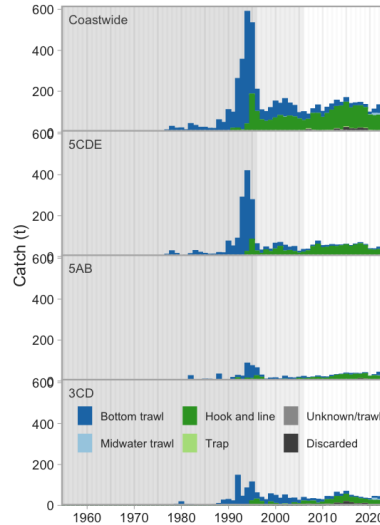
Last Research Document: Schnute et al. (1999)

Last Science Advisory Report: DFO (1999a)

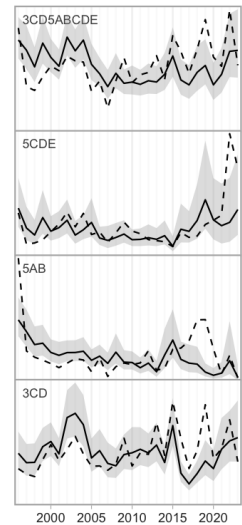
Survey relative biomass indices



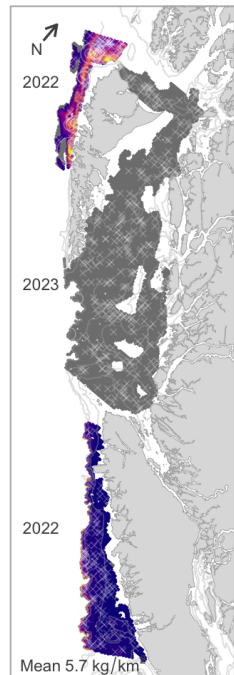
Commercial catch



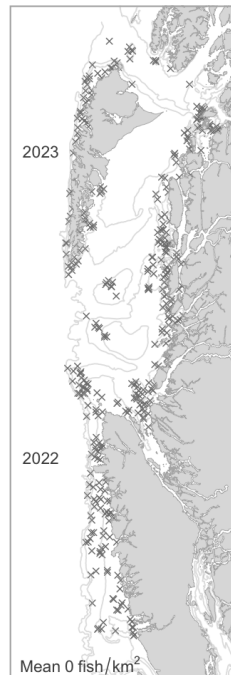
Commercial bottom trawl CPUE



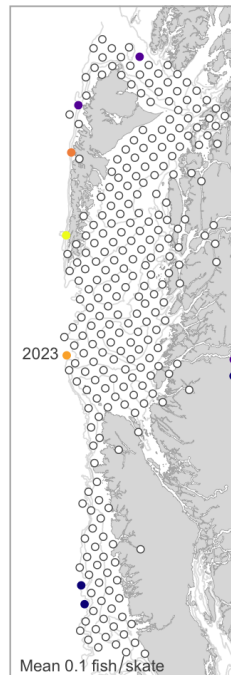
Synoptic survey biomass



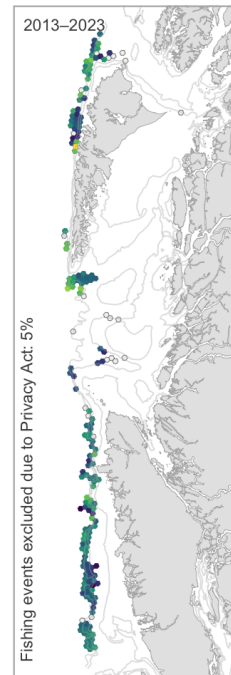
HBLL OUT survey biomass



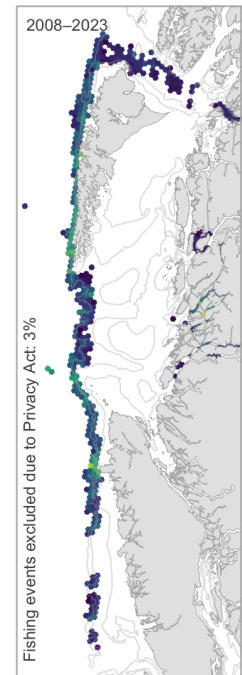
IPHC survey catch rate

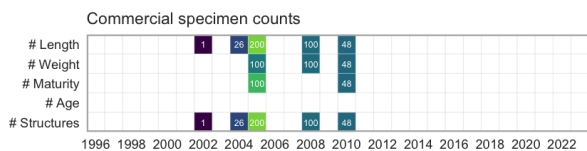
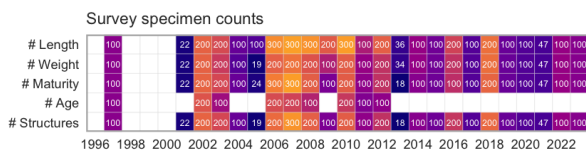
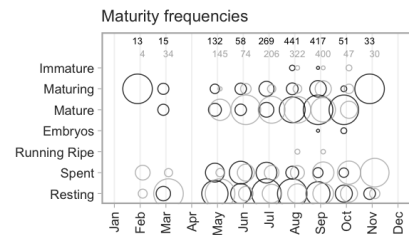
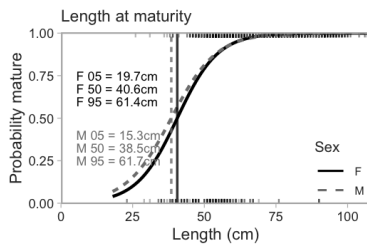
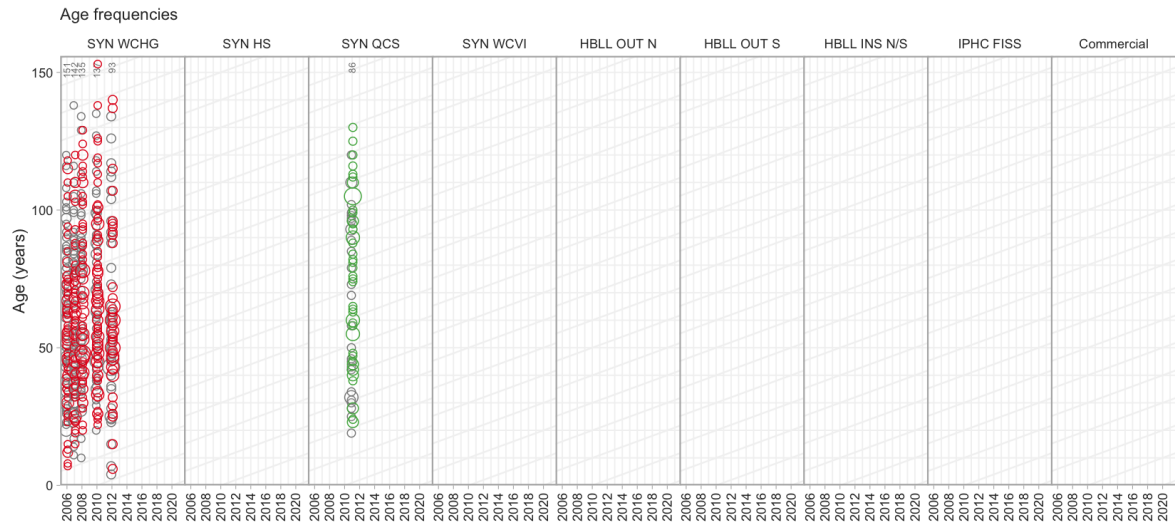
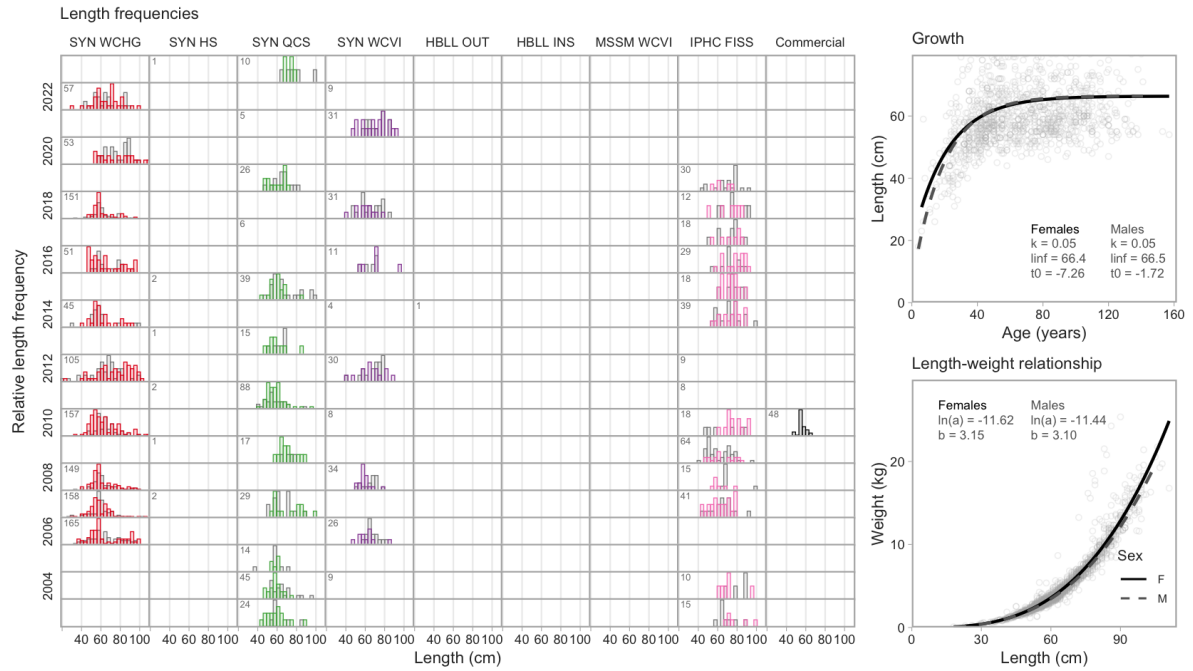


Commercial trawl CPUE



Commercial H & L CPUE





6.51 Silvergray Rockfish

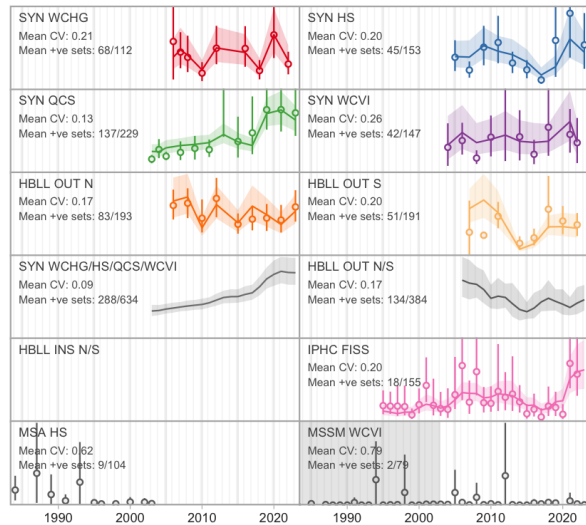
Sebastes brevispinis (405)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

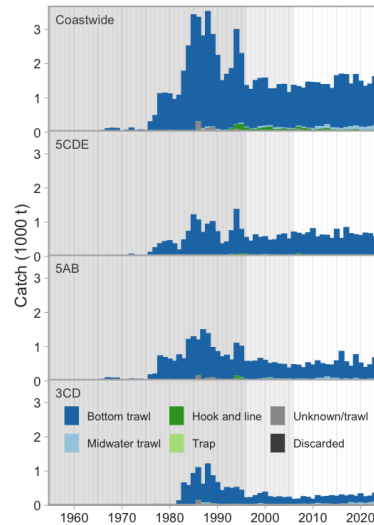
Last Research Document: Starr et al. (2016)

Last Science Advisory Report: DFO (2014b)

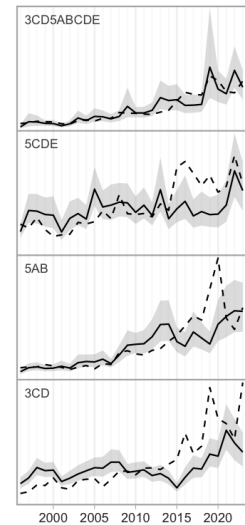
Survey relative biomass indices



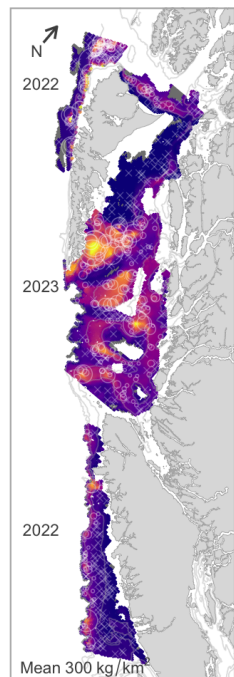
Commercial catch



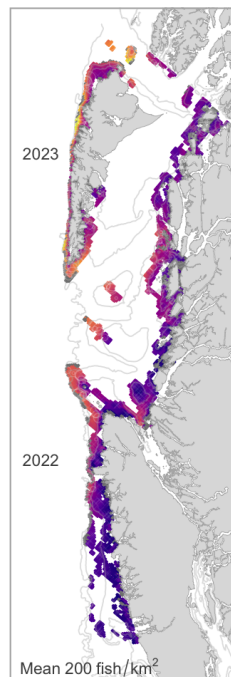
Commercial bottom trawl CPUE



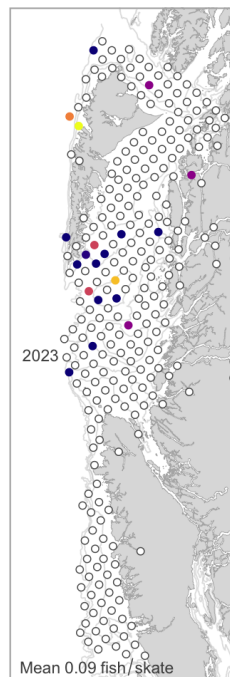
Synoptic survey biomass



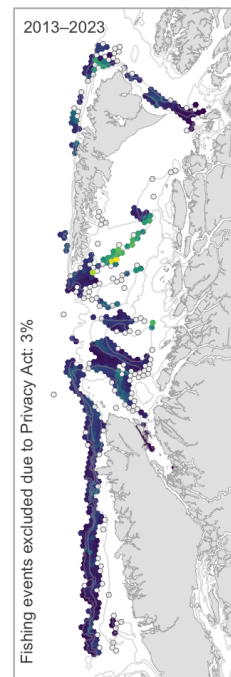
HBL OUT survey biomass



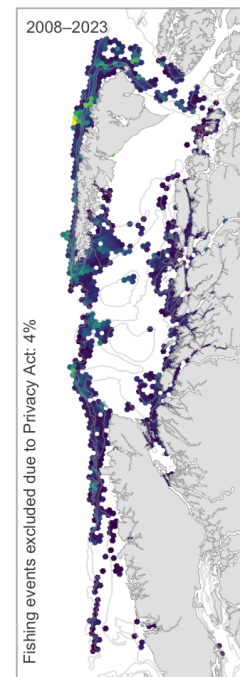
IPHC survey catch rate

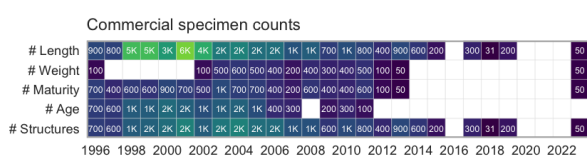
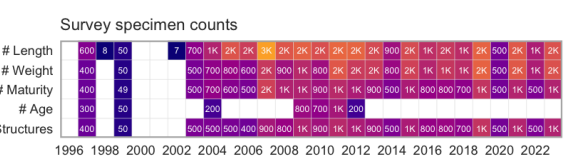
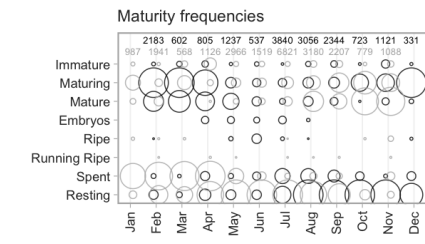
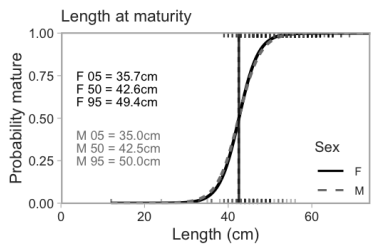
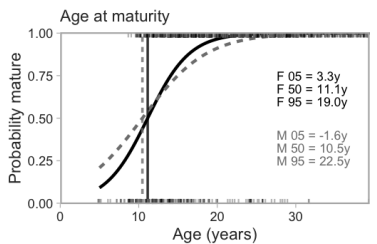
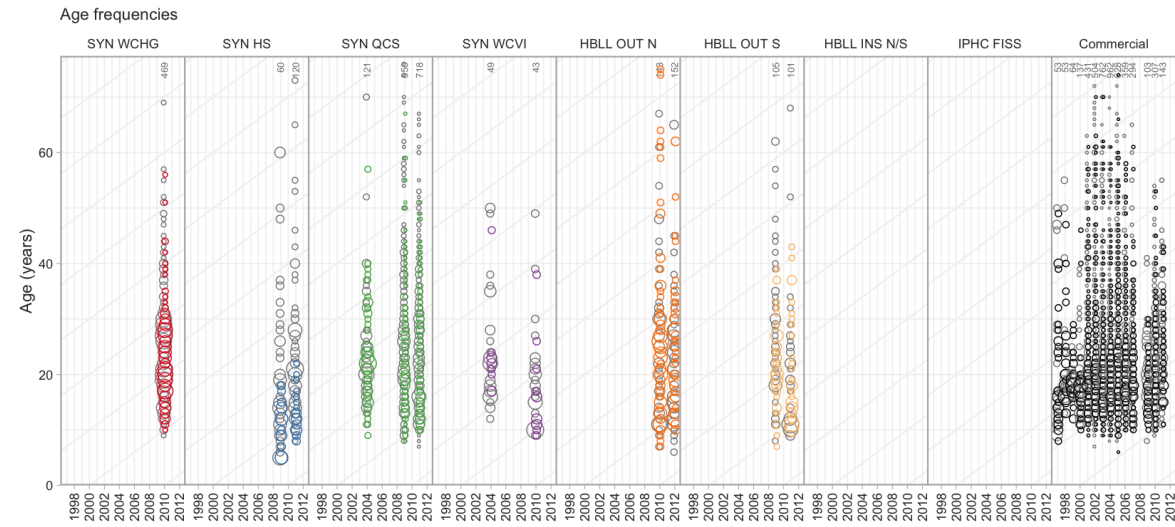
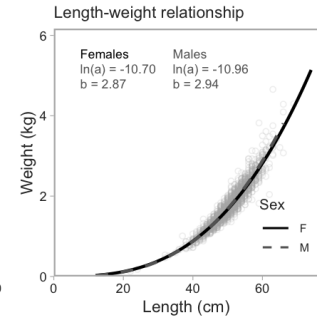
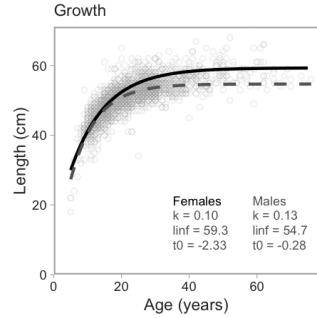
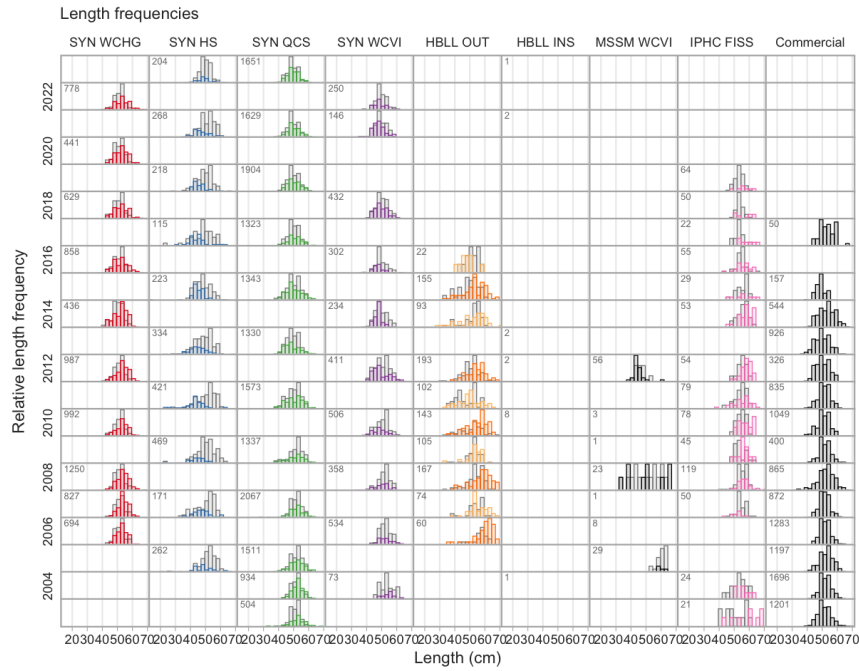


Commercial trawl CPUE



Commercial H & L CPUE





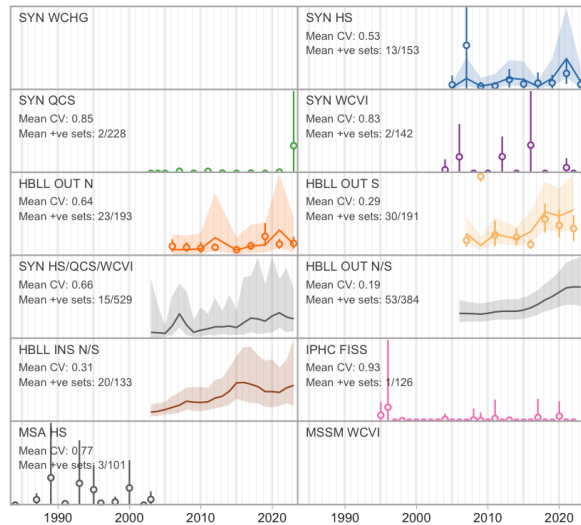
6.52 Copper Rockfish

Sebastes caurinus (407)

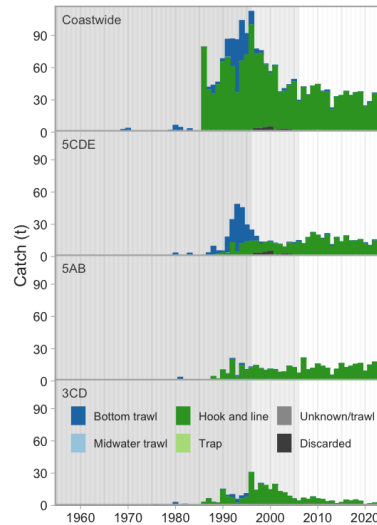
Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Technical Report: Yamanaka and Lacko (2001)

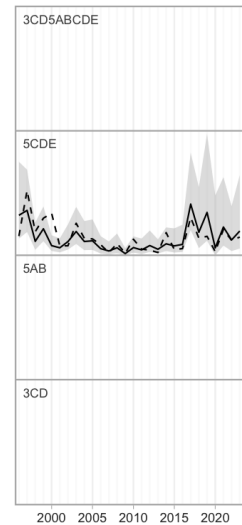
Survey relative biomass indices



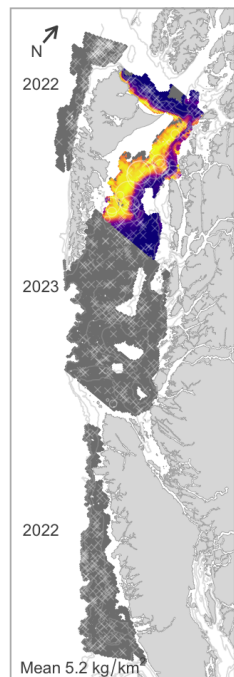
Commercial catch



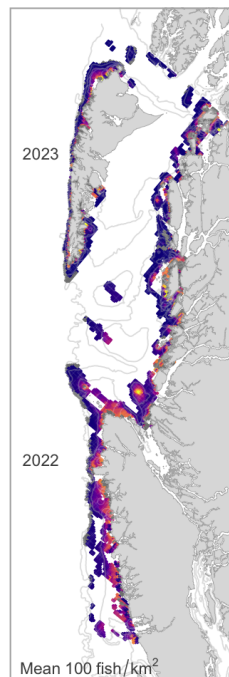
Commercial bottom trawl CPUE



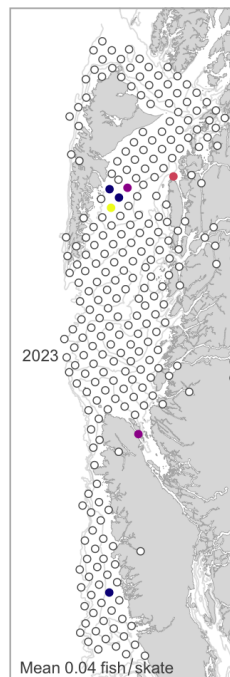
Synoptic survey biomass



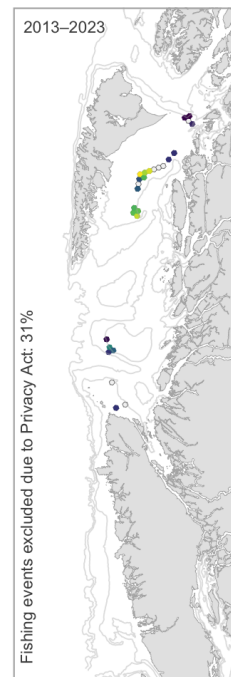
HBLL OUT survey biomass



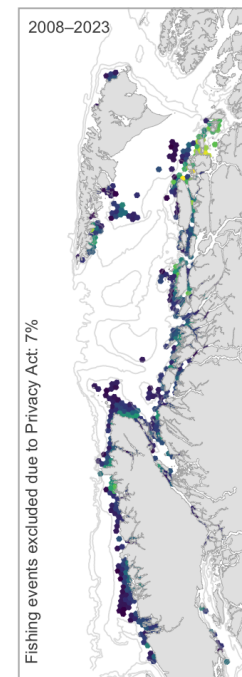
IPHC survey catch rate

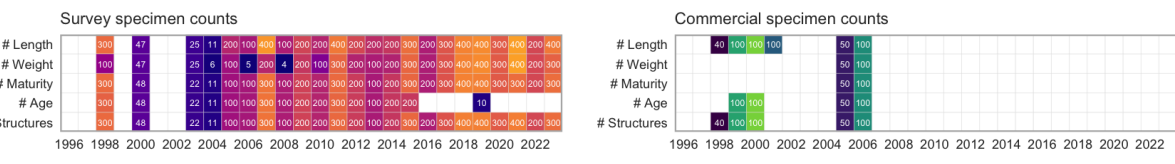
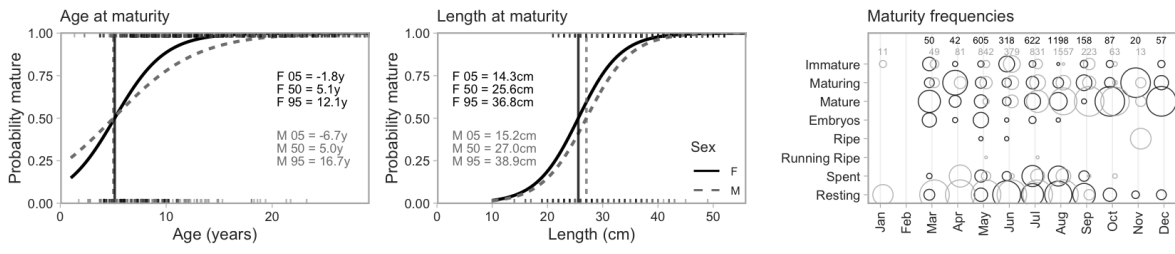
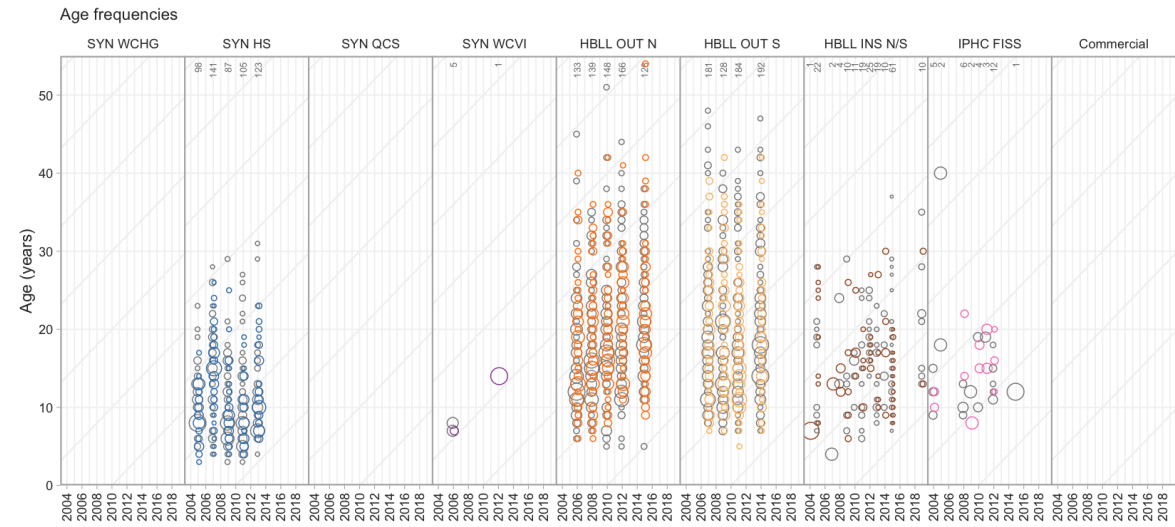
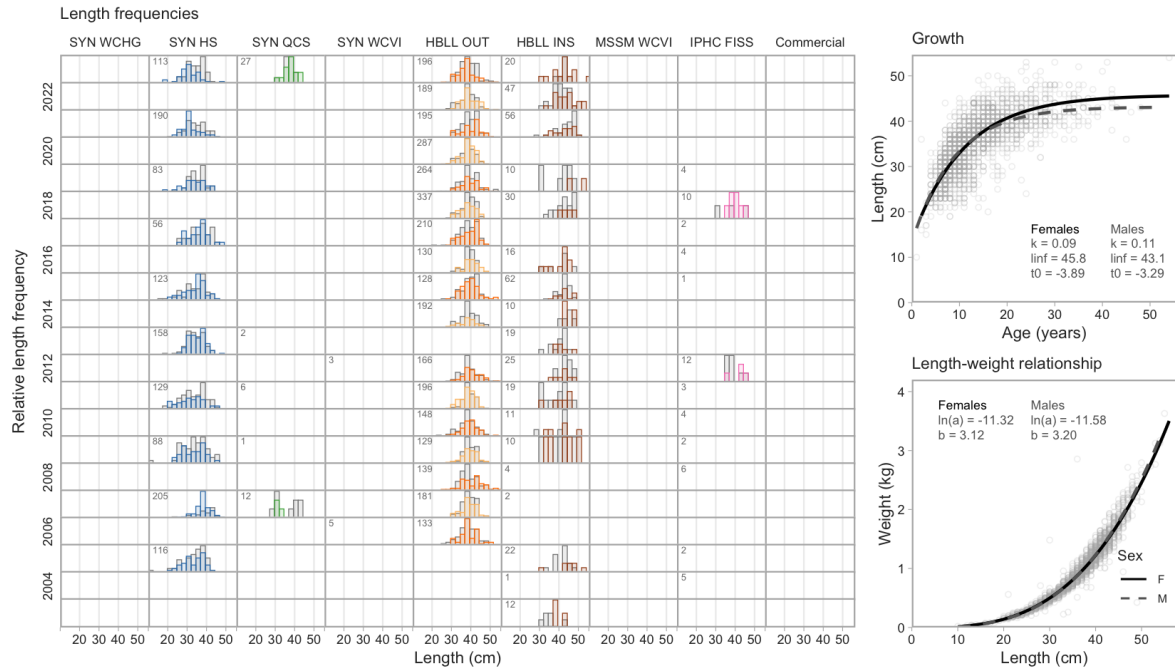


Commercial trawl CPUE



Commercial H & L CPUE



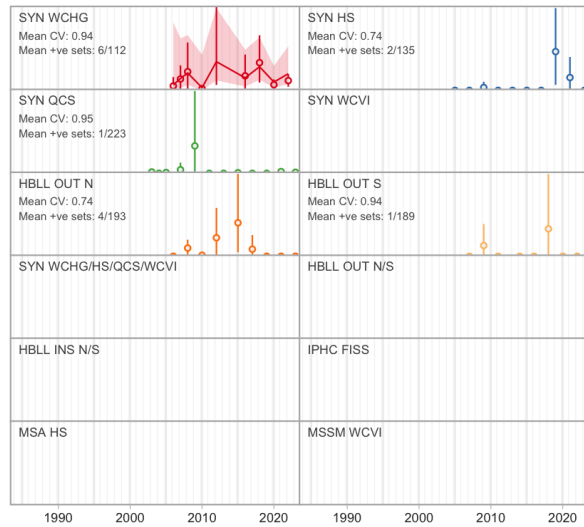


6.53 Dusky Rockfish

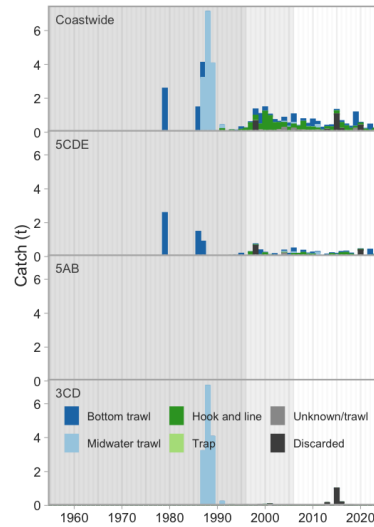
Sebastes variabilis (409)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

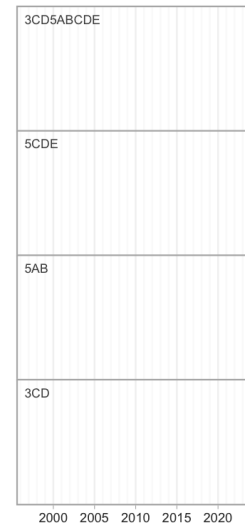
Survey relative biomass indices



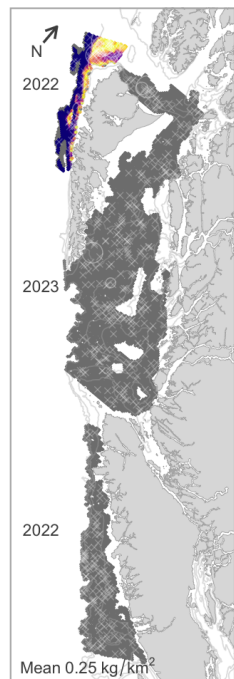
Commercial catch



Commercial bottom trawl CPUE



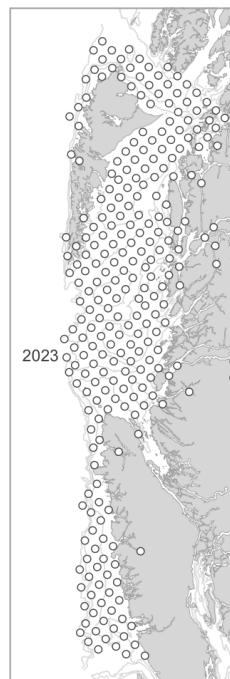
Synoptic survey biomass



HBL OUT survey biomass



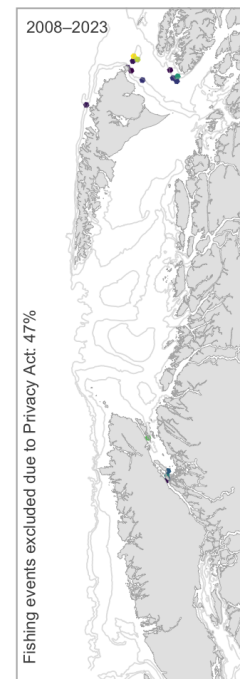
IPHC survey catch rate

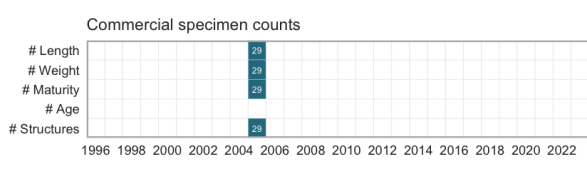
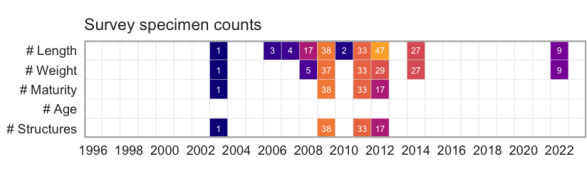
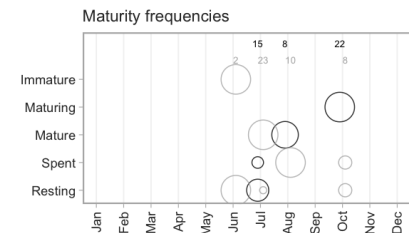
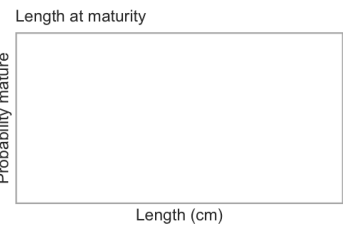
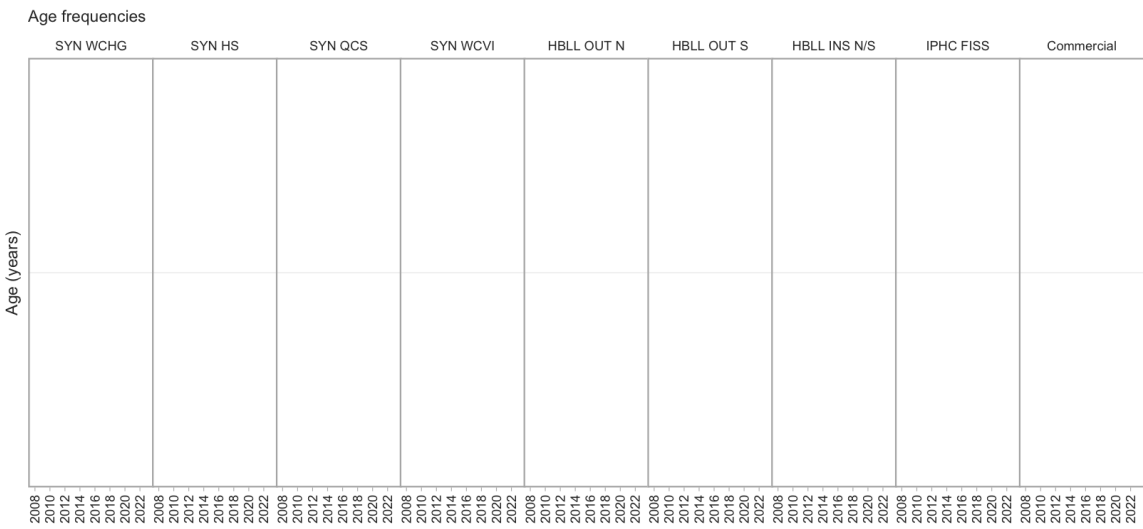
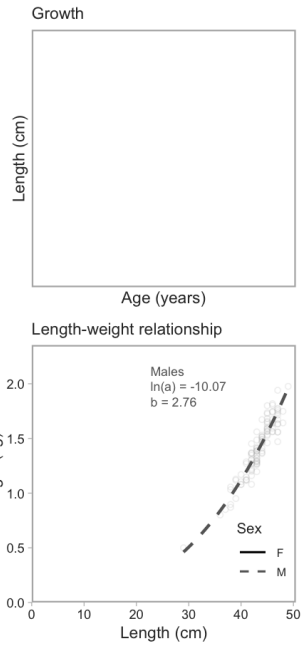
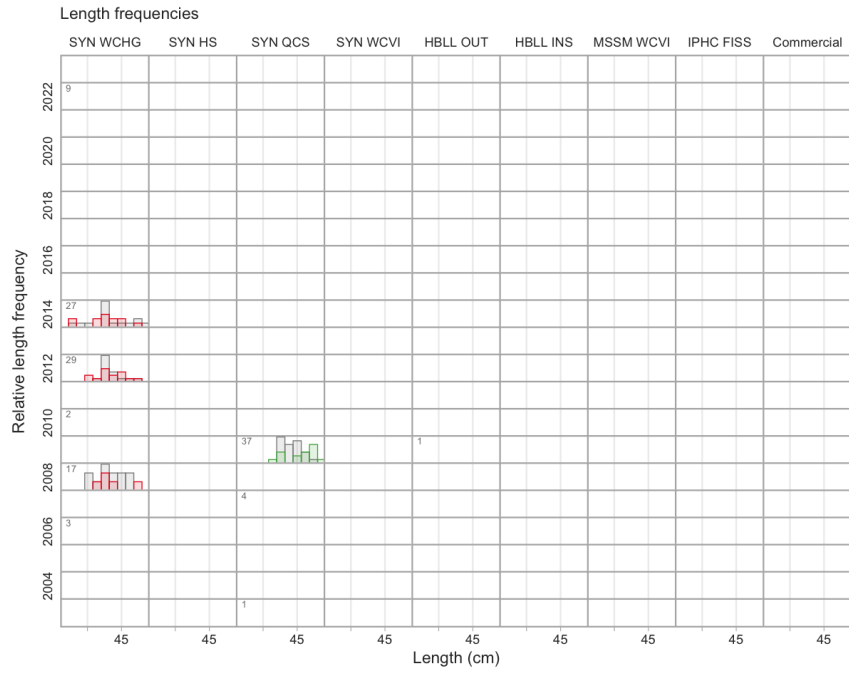


Commercial trawl CPUE



Commercial H & L CPUE





6.54 Darkblotched Rockfish

Sebastes crameri (410)

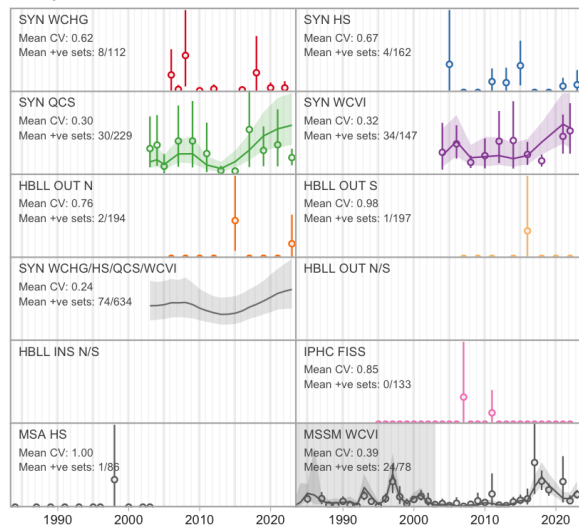
Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Research Document: Haigh and Starr (2008)

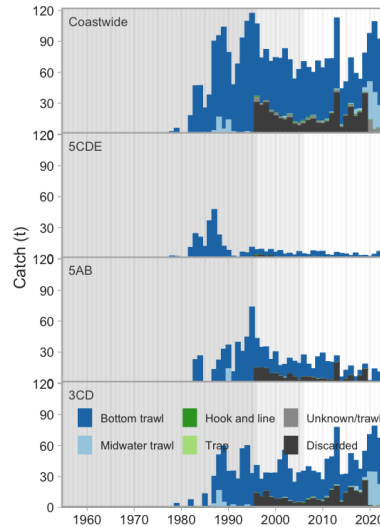
COSEWIC Status Report: COSEWIC (2010a)

COSEWIC Status: Special Concern, SARA Status: No Status

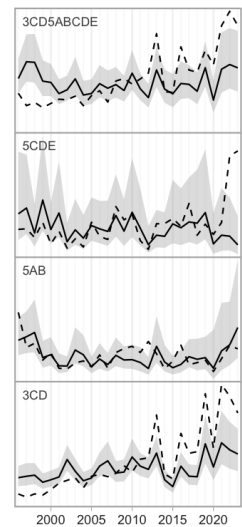
Survey relative biomass indices



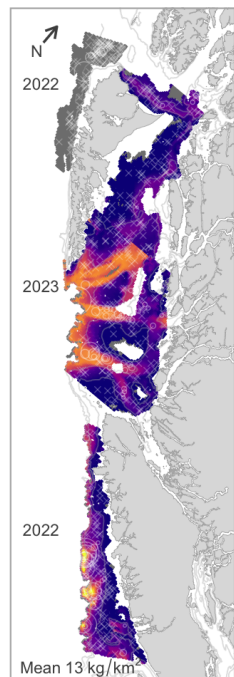
Commercial catch



Commercial bottom trawl CPUE



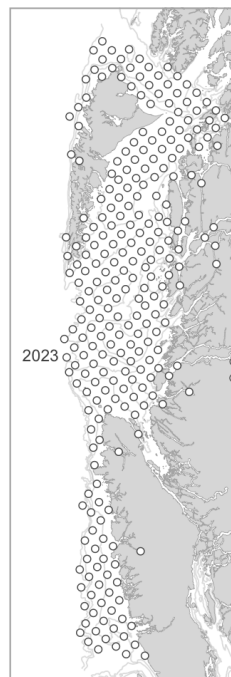
Synoptic survey biomass



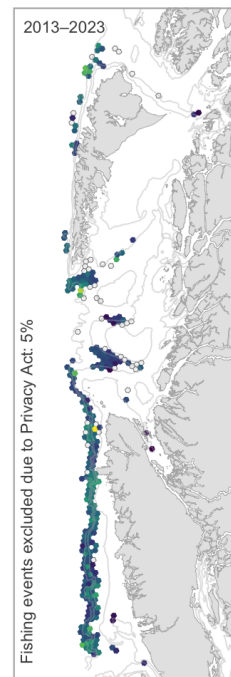
H BLL OUT survey biomass



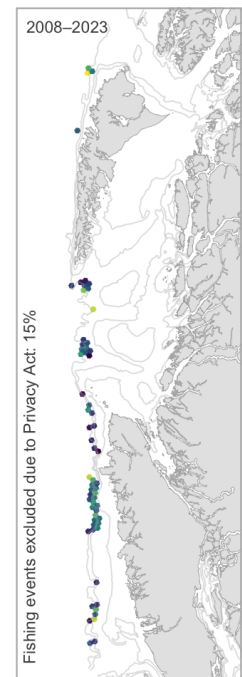
IPHC survey catch rate

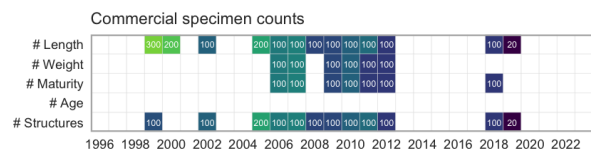
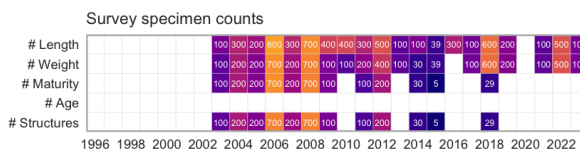
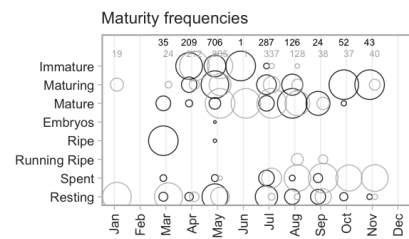
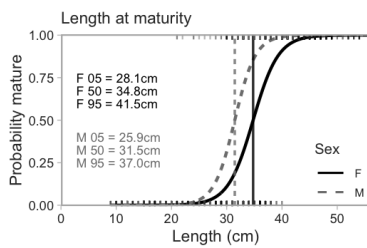
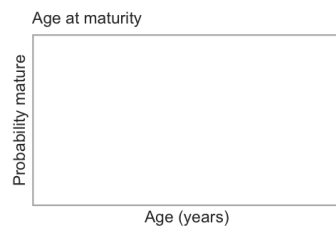
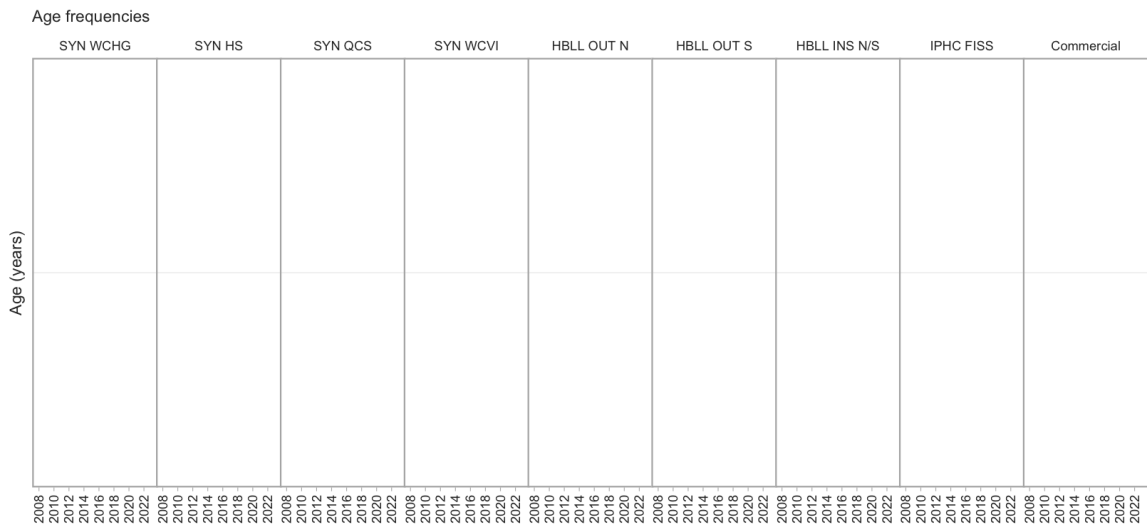
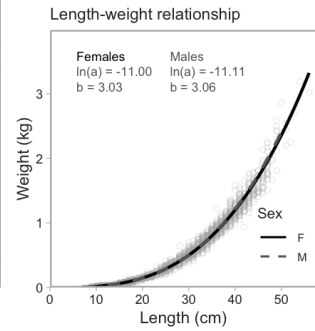
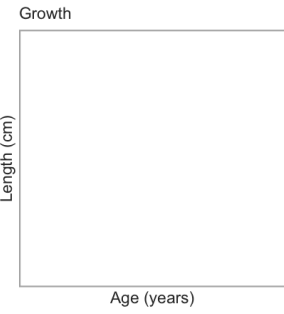
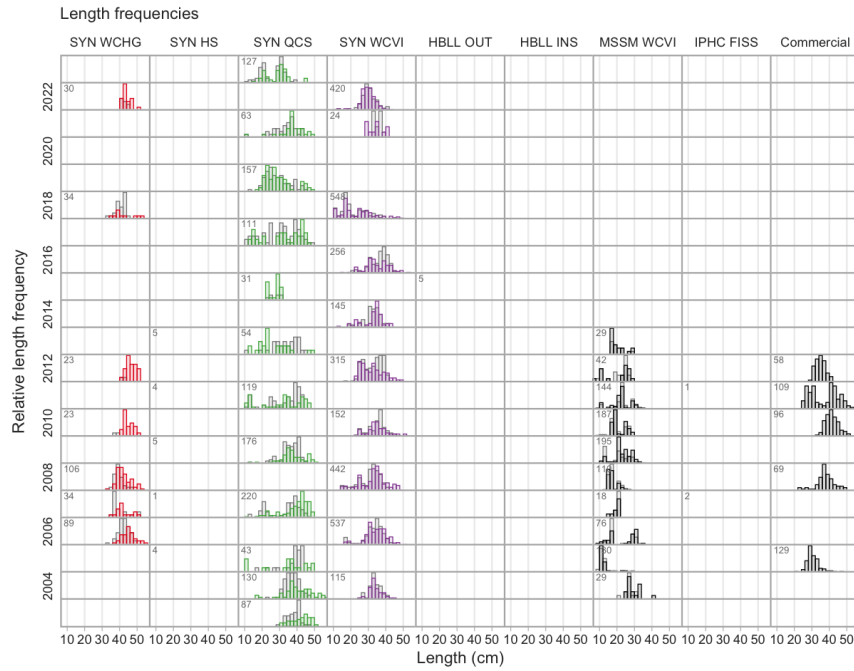


Commercial trawl CPUE



Commercial H & L CPUE



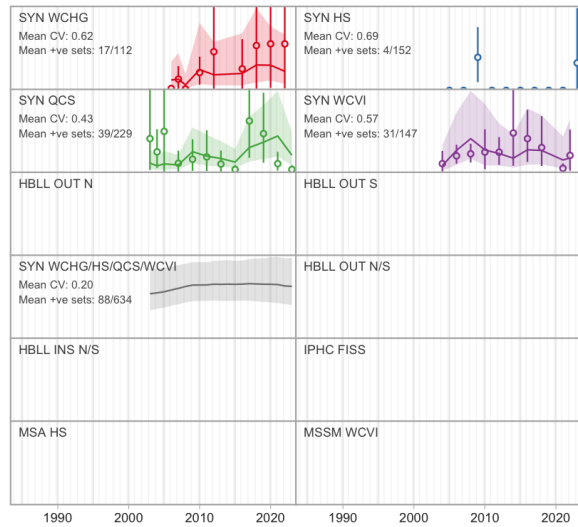


6.55 Splitnose Rockfish

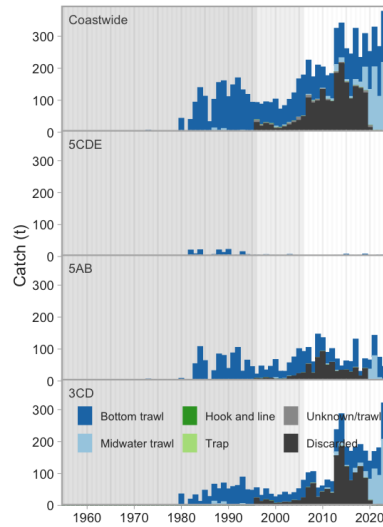
Sebastes diploproa (412)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

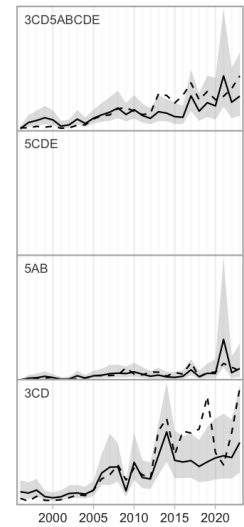
Survey relative biomass indices



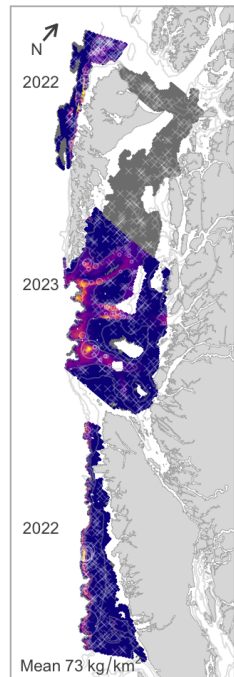
Commercial catch



Commercial bottom trawl CPUE



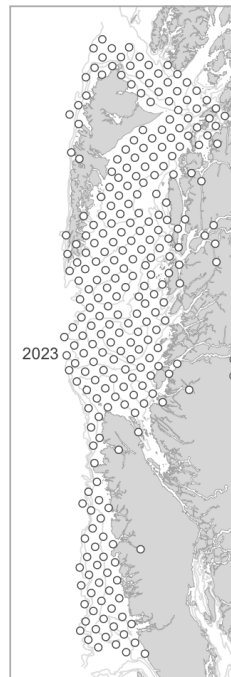
Synoptic survey biomass



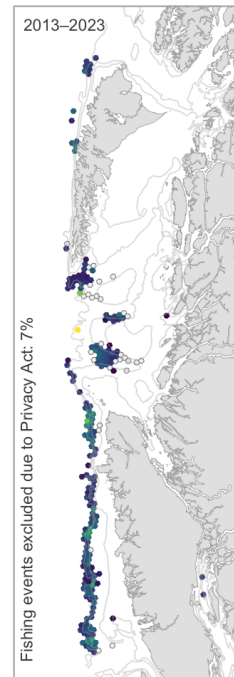
HBL OUT survey biomass



IPHC survey catch rate

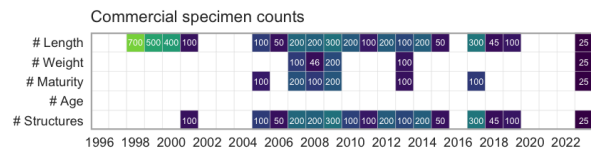
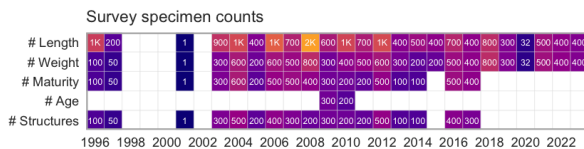
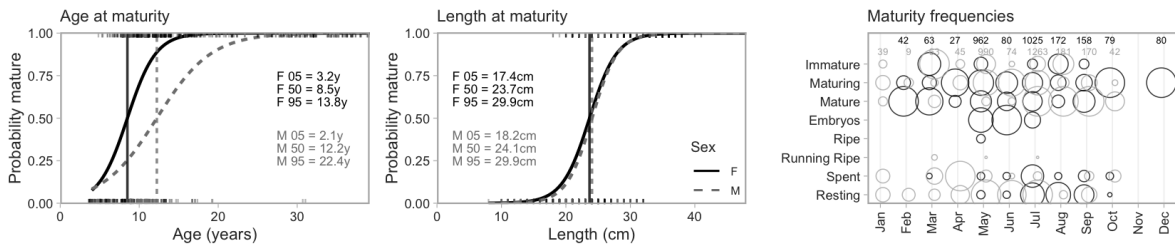
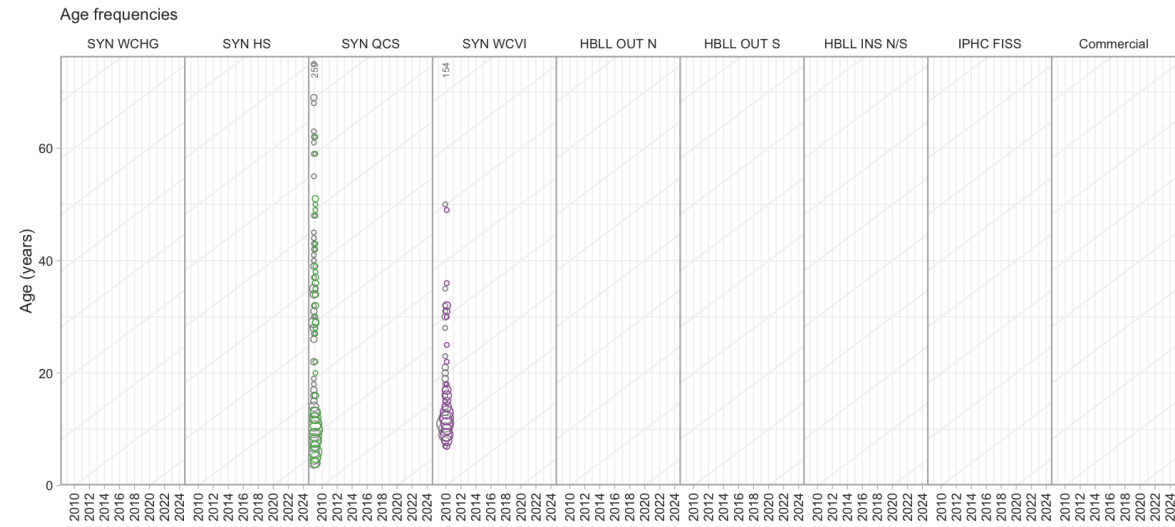
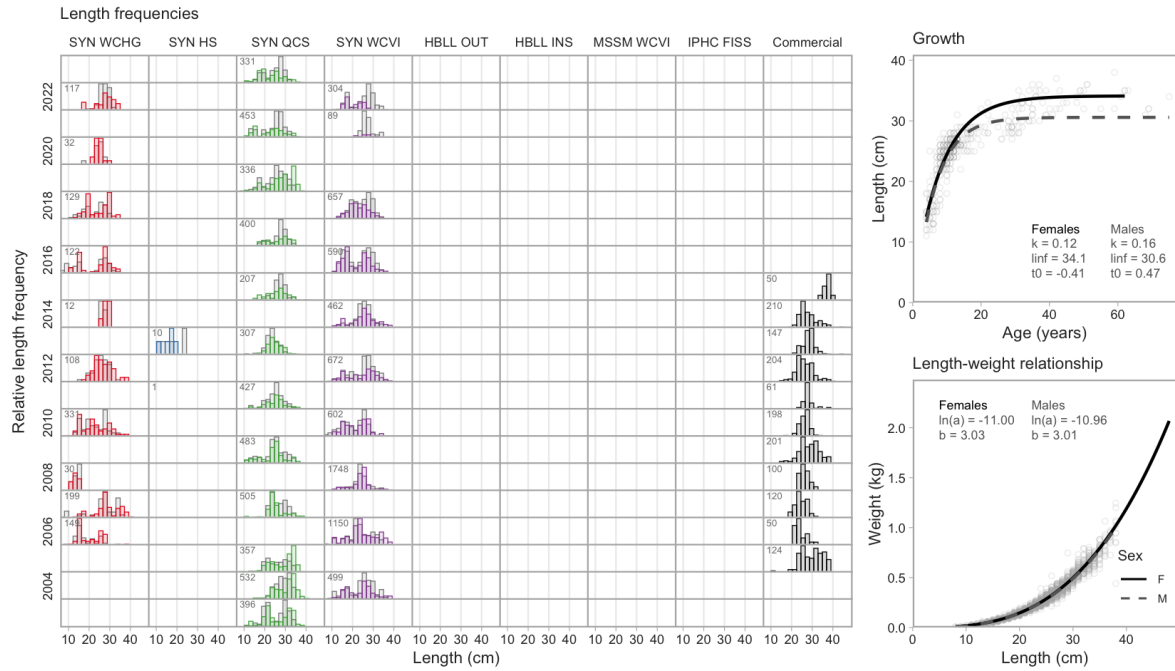


Commercial trawl CPUE



Commercial H & L CPUE



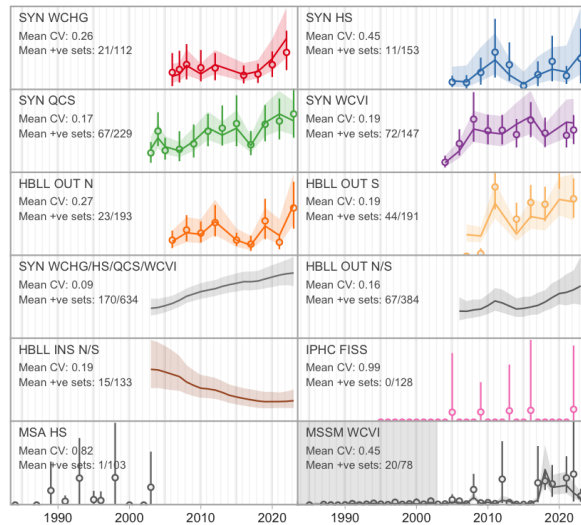


6.56 Greenstriped Rockfish

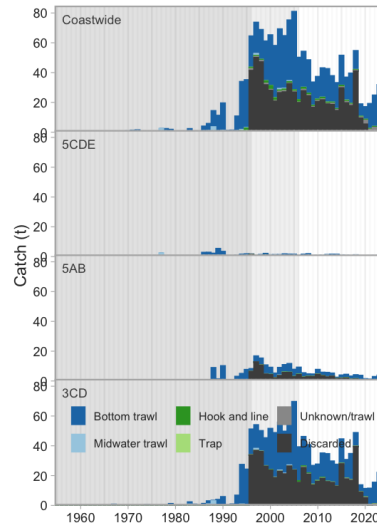
Sebastes elongatus (414)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

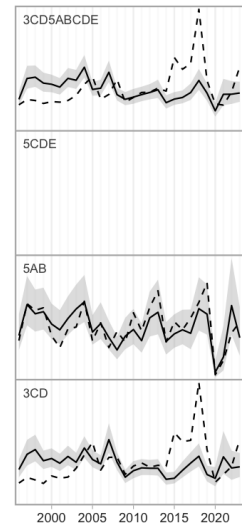
Survey relative biomass indices



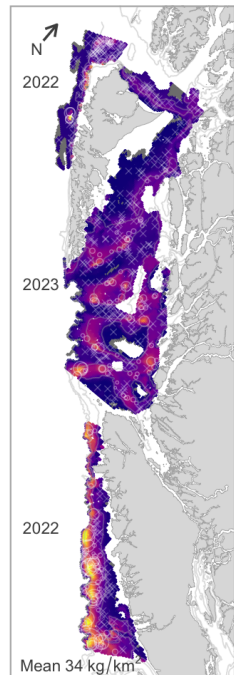
Commercial catch



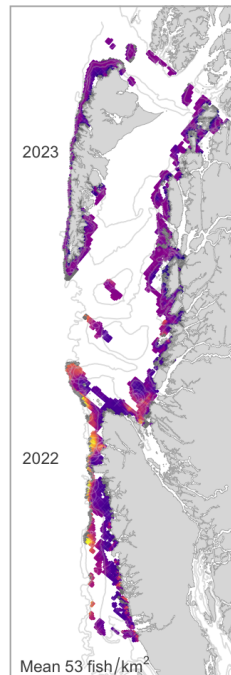
Commercial bottom trawl CPUE



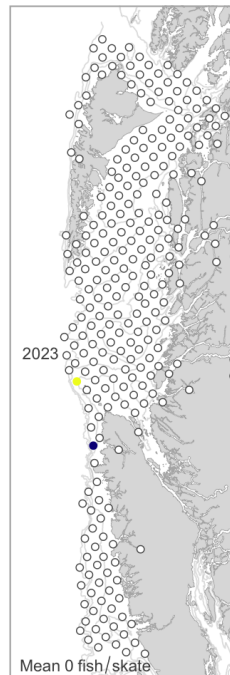
Synoptic survey biomass



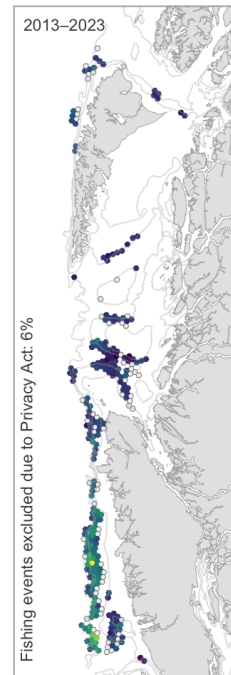
HBLL OUT survey biomass



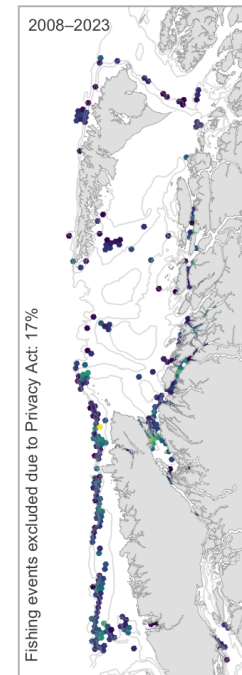
IPHC survey catch rate

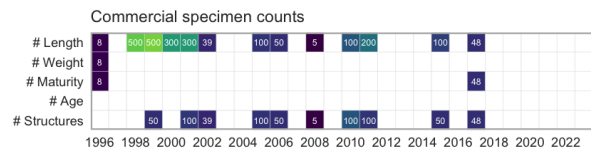
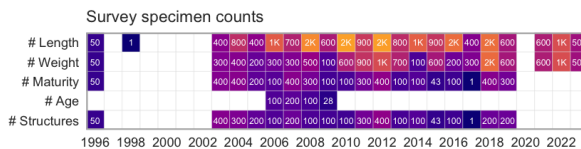
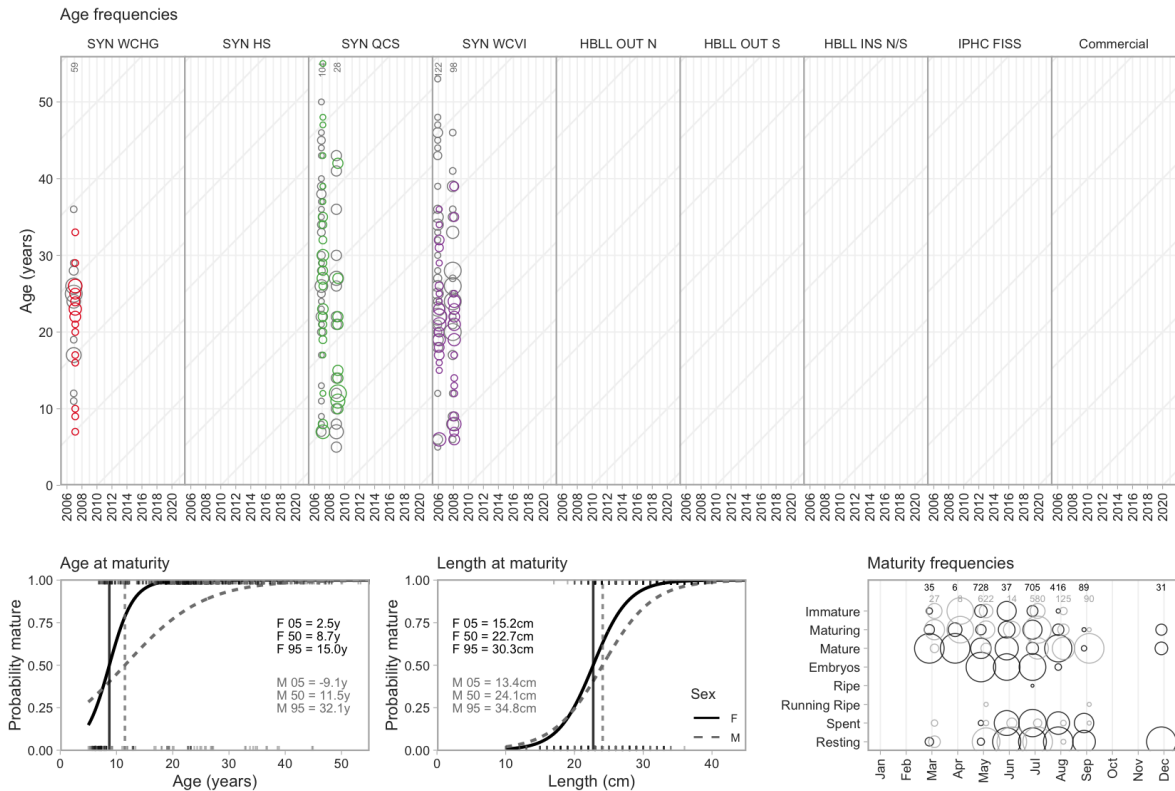
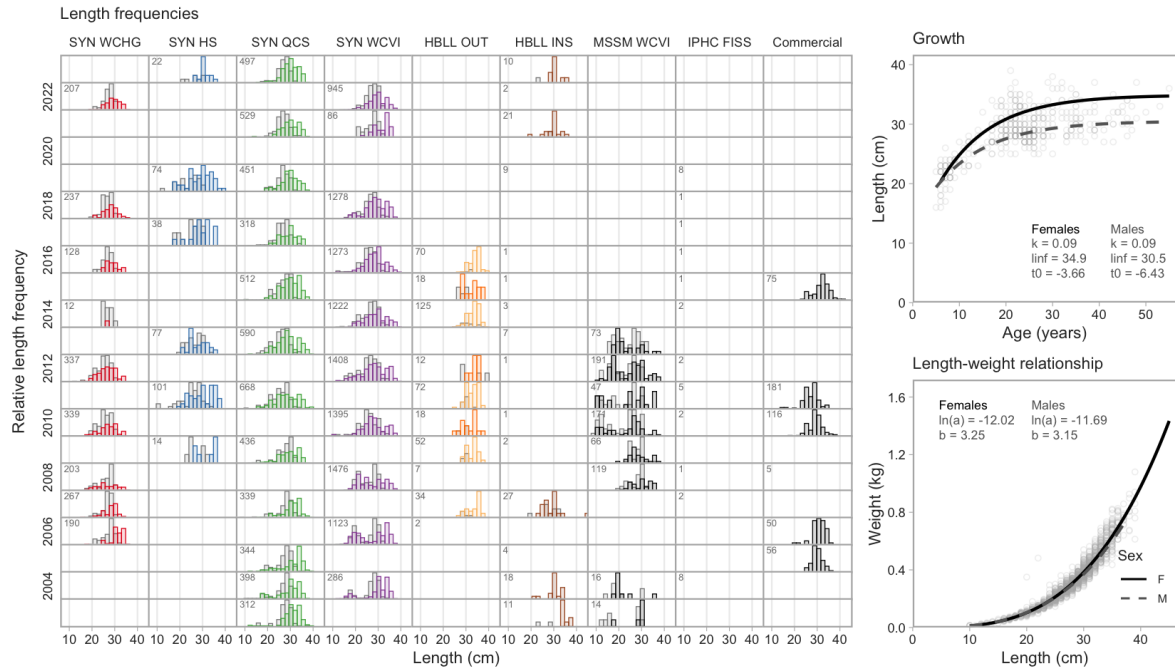


Commercial trawl CPUE



Commercial H & L CPUE



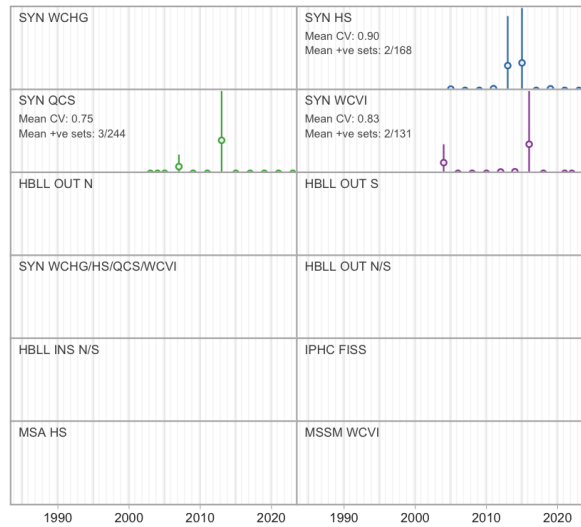


6.57 Puget Sound Rockfish

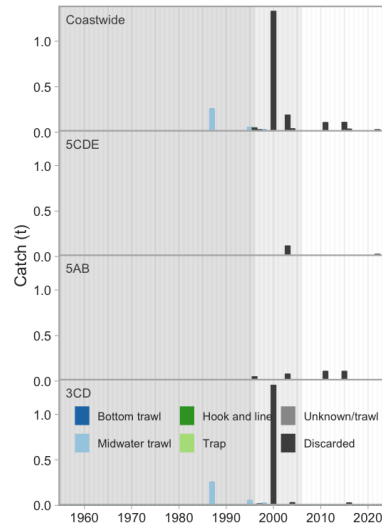
Sebastes emphaeus (415)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

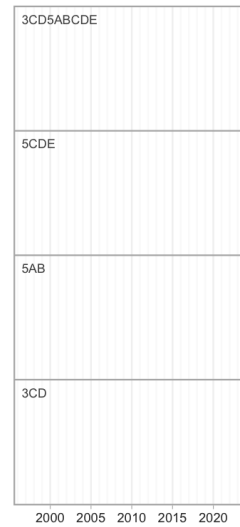
Survey relative biomass indices



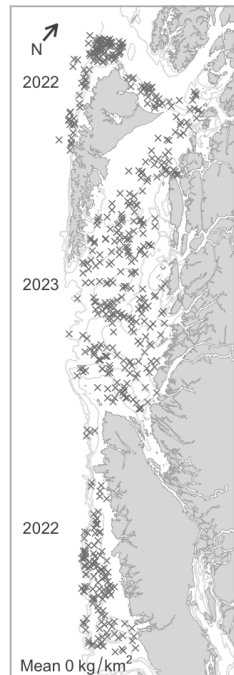
Commercial catch



Commercial bottom trawl CPUE



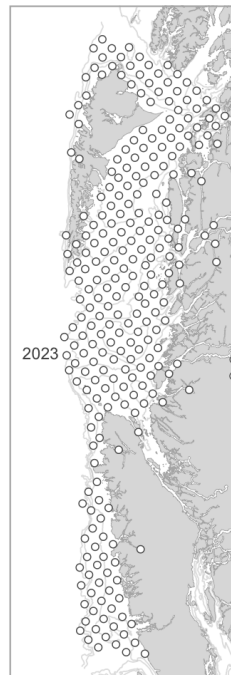
Synoptic survey biomass



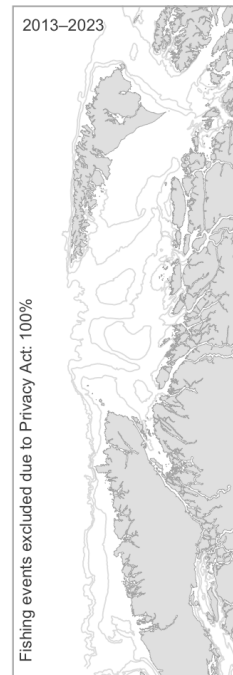
HBL OUT survey biomass



IPHC survey catch rate

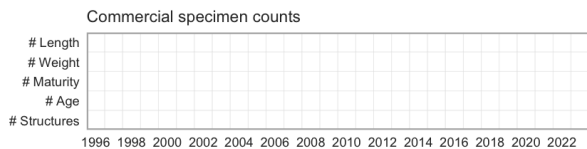
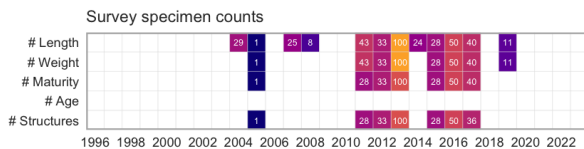
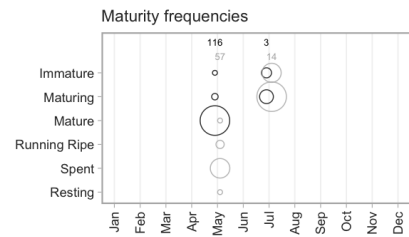
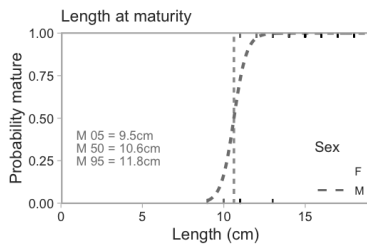
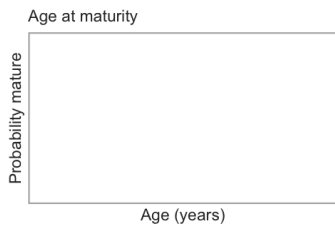
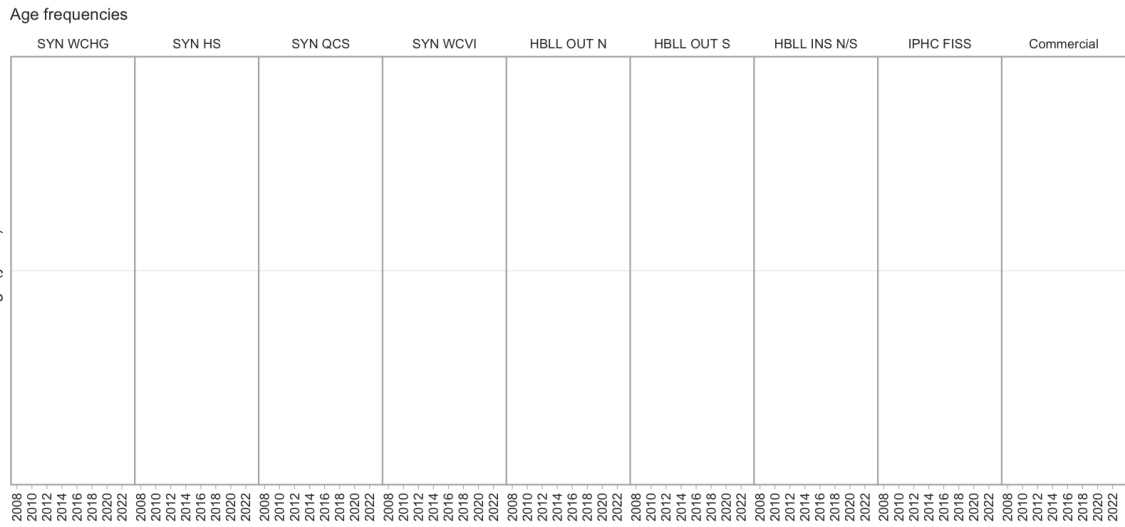
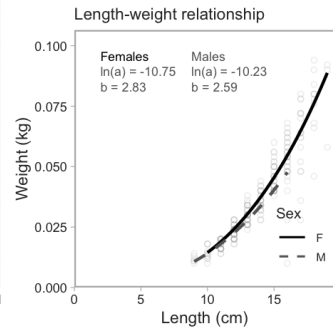
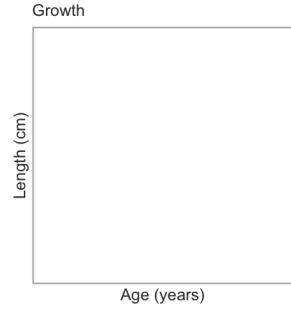
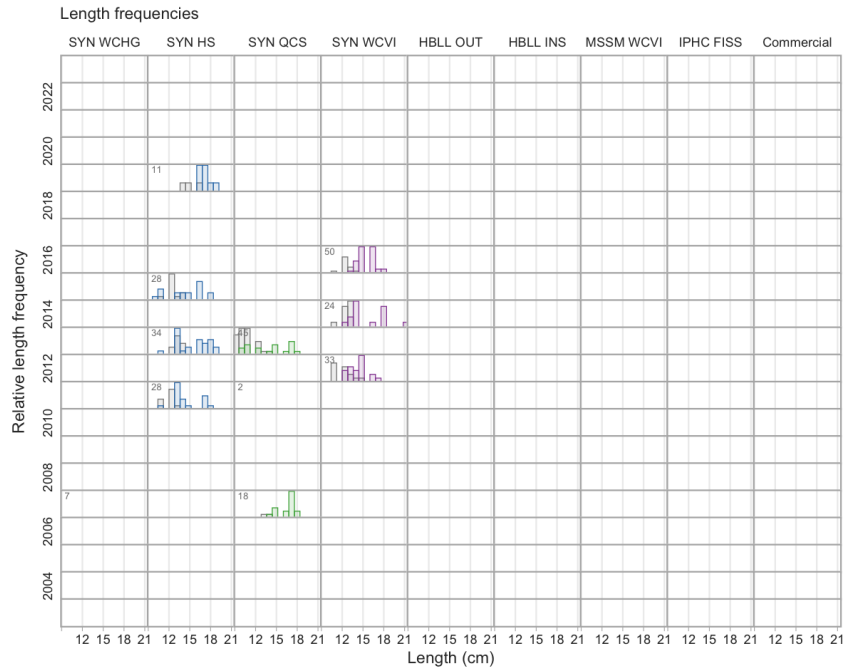


Commercial trawl CPUE



Commercial H & L CPUE





6.58 Widow Rockfish

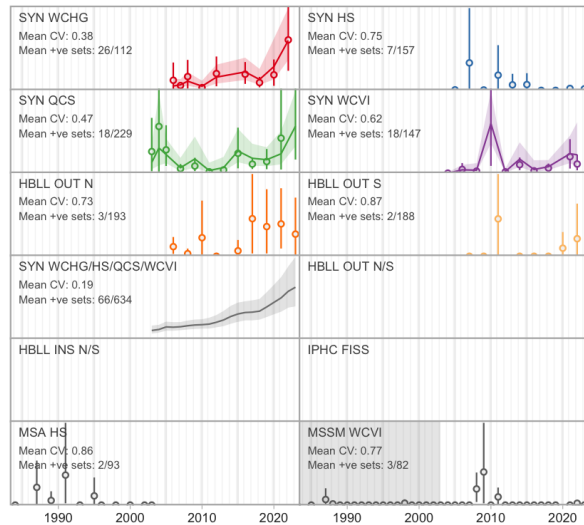
Sebastes entomelas (417)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

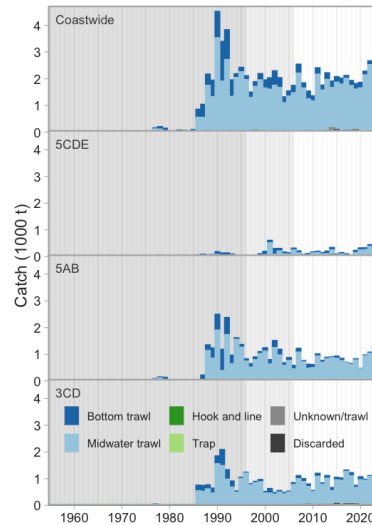
Last Research Document: Starr and Haigh (2021b)

Last Science Advisory Report: DFO (2019b)

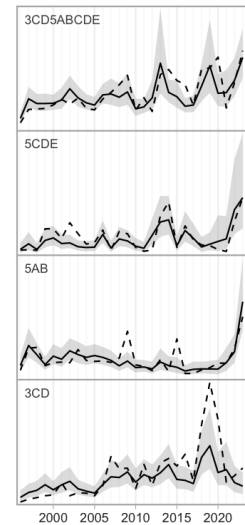
Survey relative biomass indices



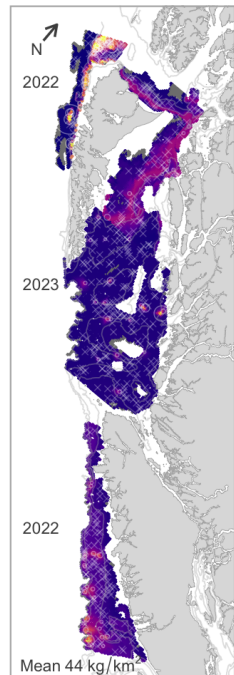
Commercial catch



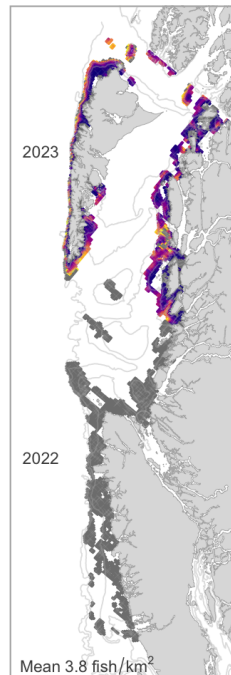
Commercial bottom trawl CPUE



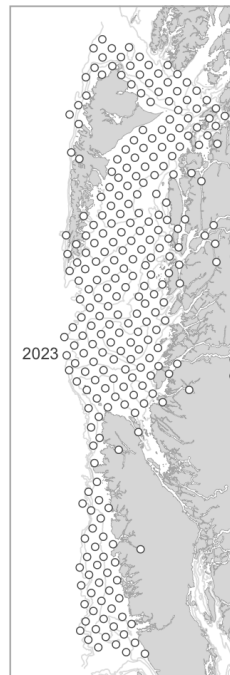
Synoptic survey biomass



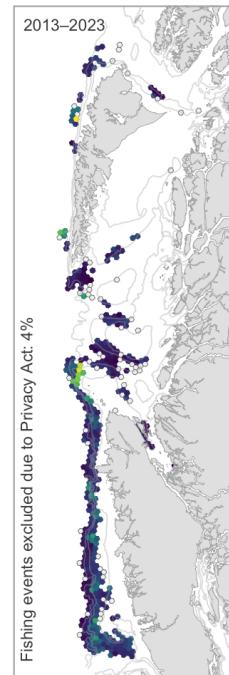
HBL OUT survey biomass



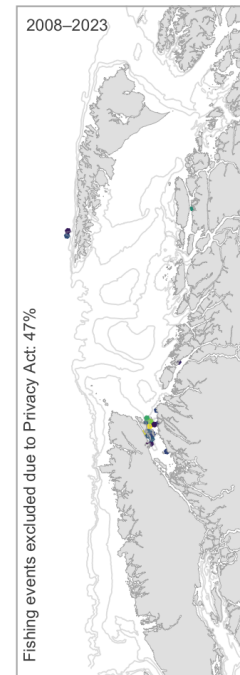
IPHC survey catch rate

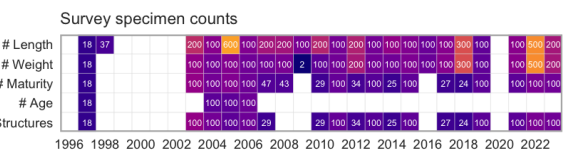
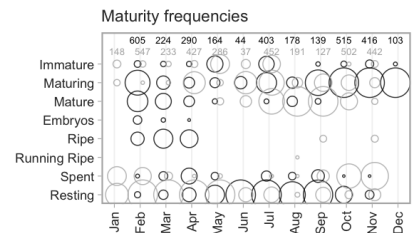
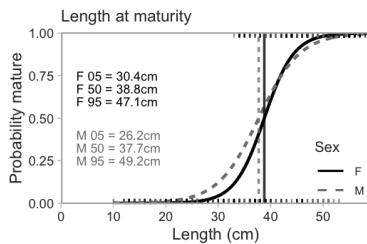
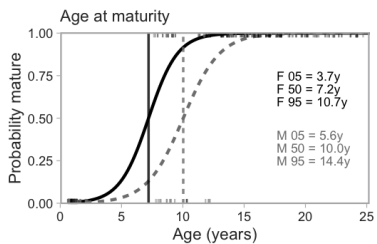
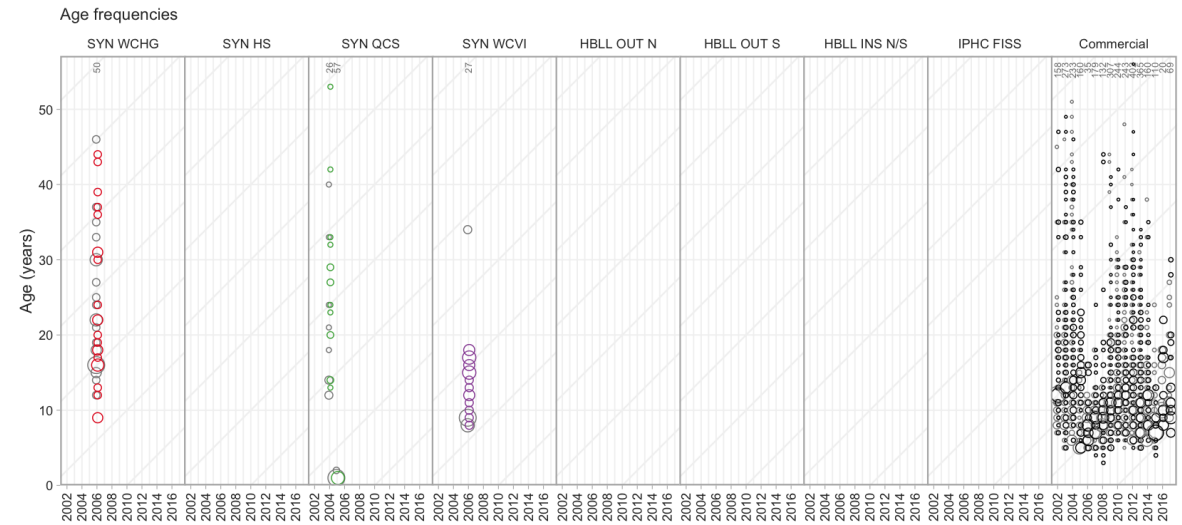
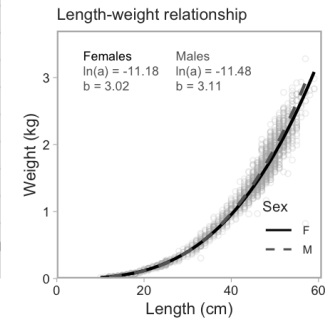
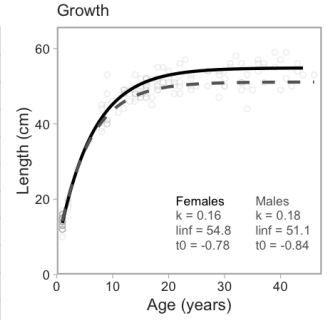
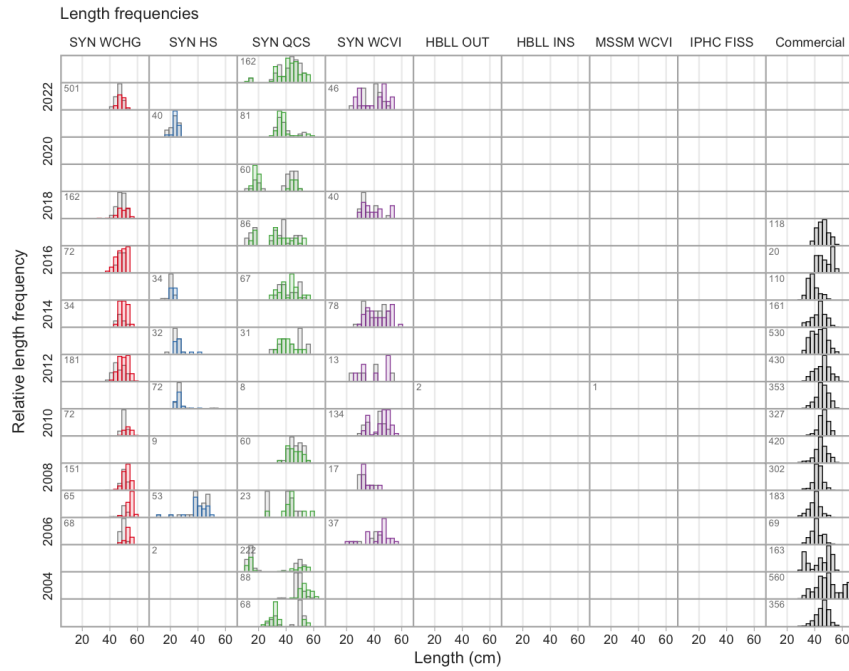


Commercial trawl CPUE



Commercial H & L CPUE





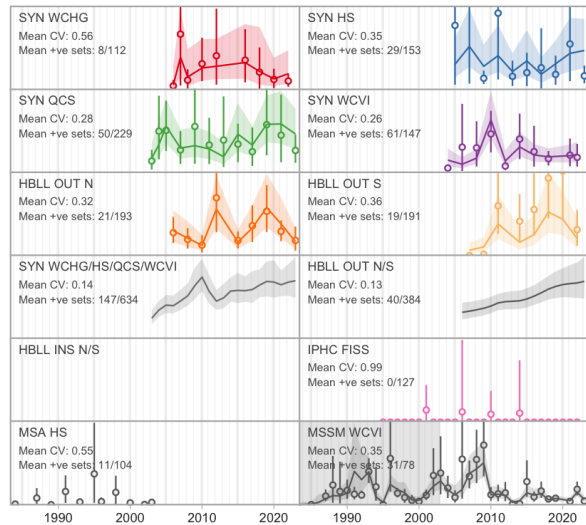
6.59 Yellowtail Rockfish

Sebastes flavidus (418)

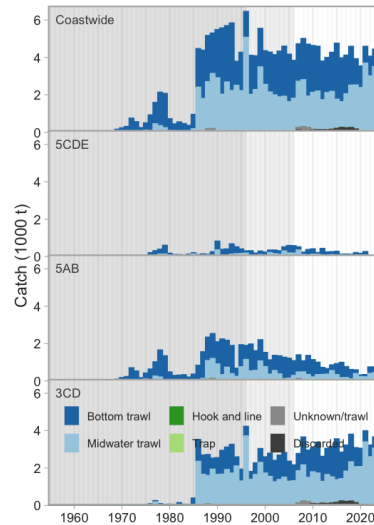
Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Science Advisory Report: DFO (2015b)

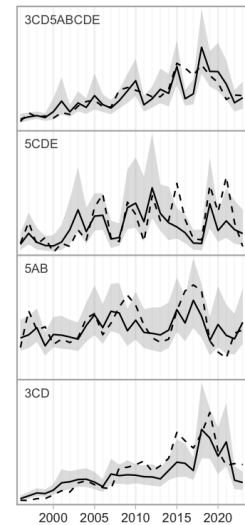
Survey relative biomass indices



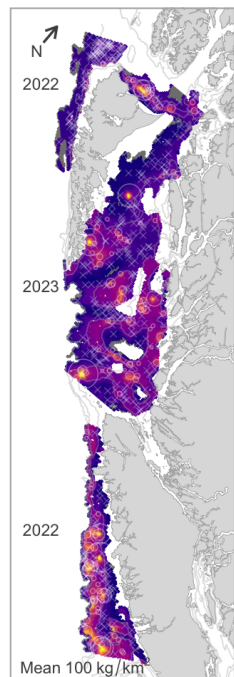
Commercial catch



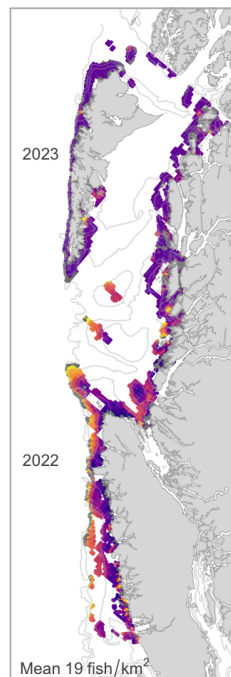
Commercial bottom trawl CPUE



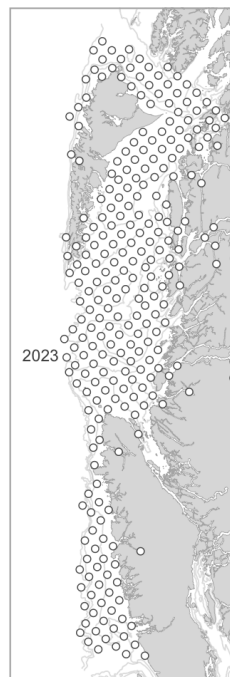
Synoptic survey biomass



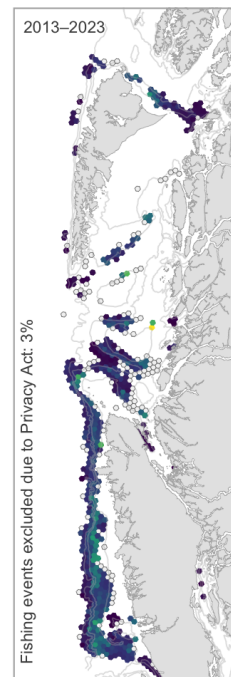
HBL OUT survey biomass



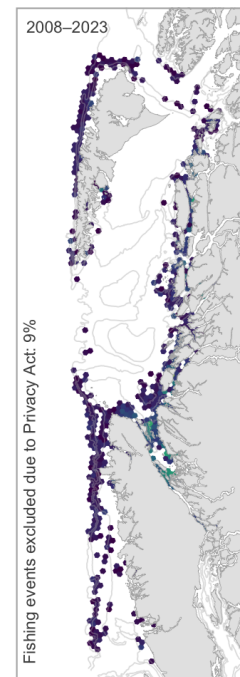
IPHC survey catch rate

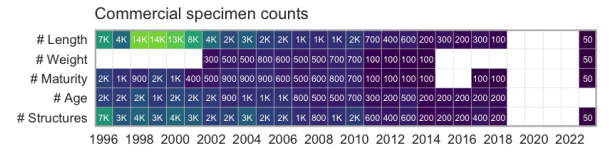
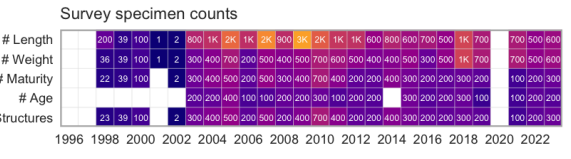
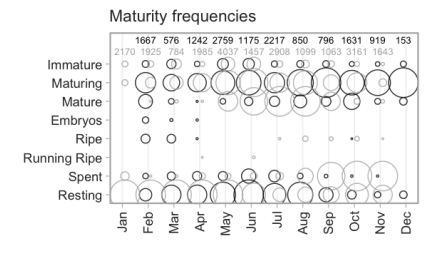
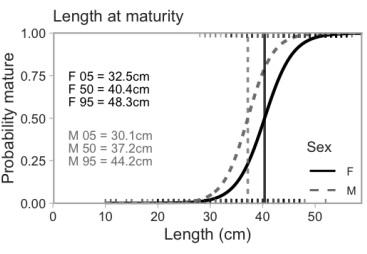
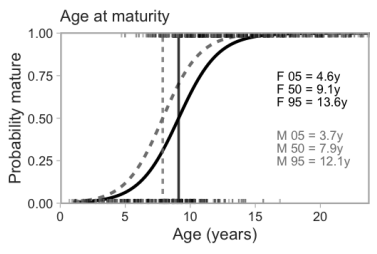
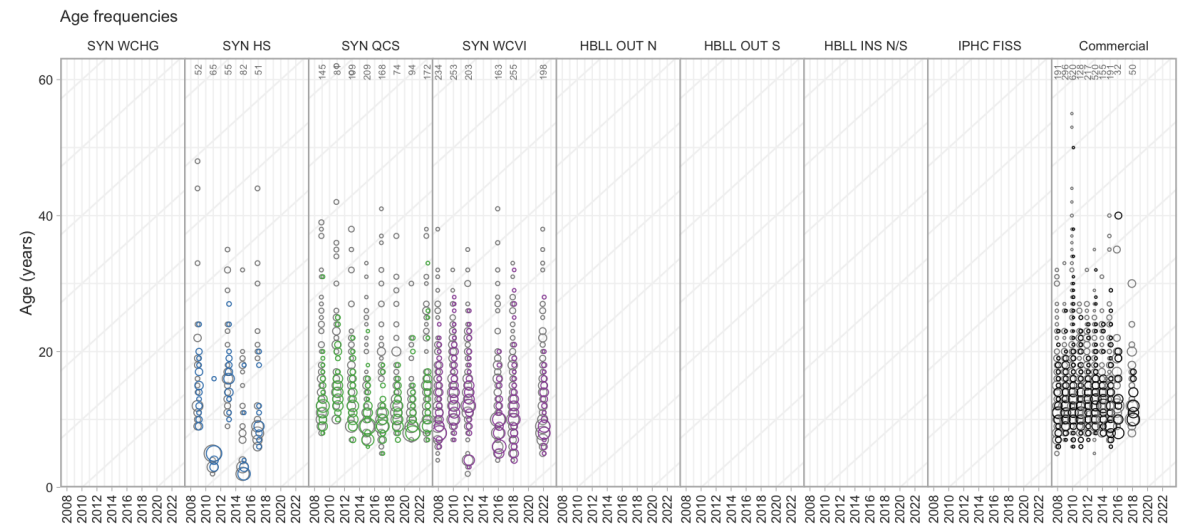
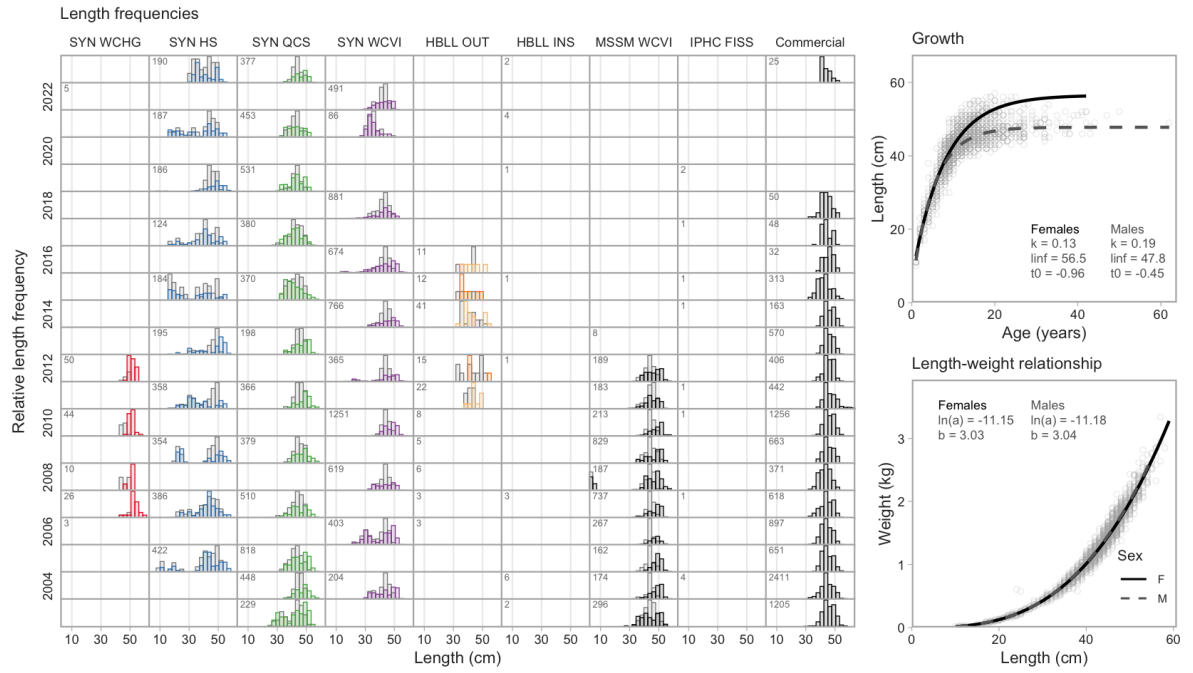


Commercial trawl CPUE



Commercial H & L CPUE



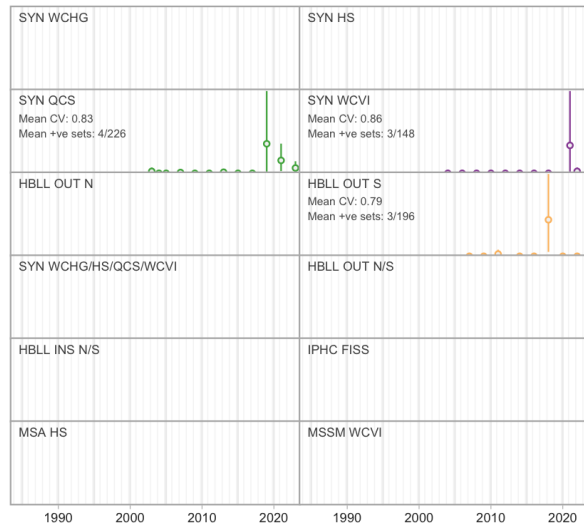


6.60 Chilipepper

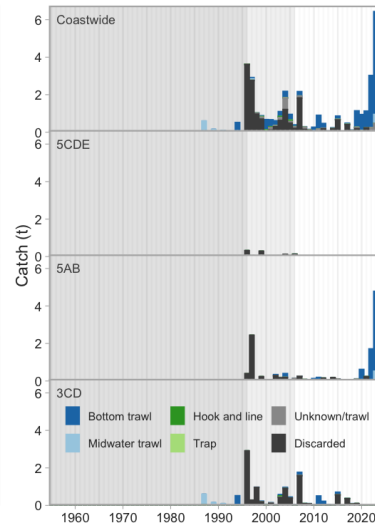
Sebastes goodei (420)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

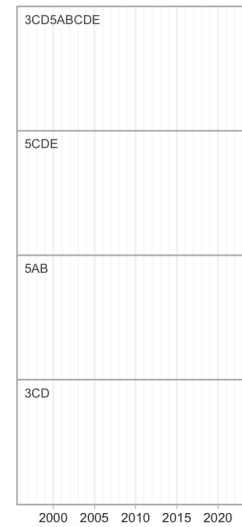
Survey relative biomass indices



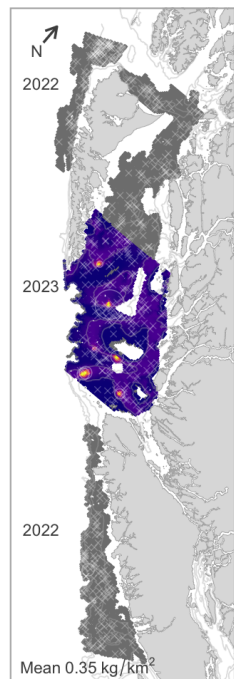
Commercial catch



Commercial bottom trawl CPUE



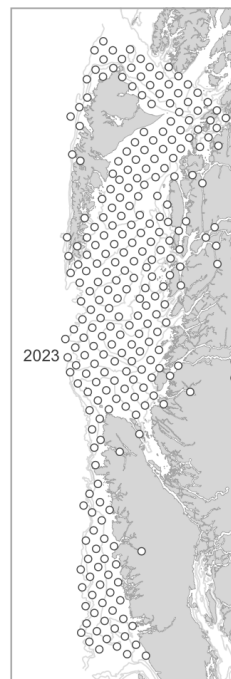
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate

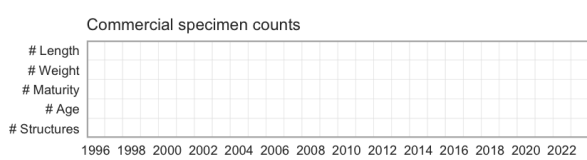
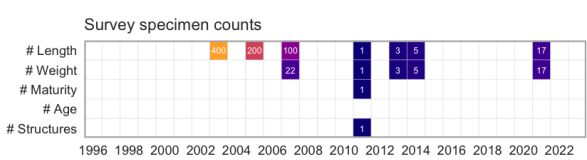
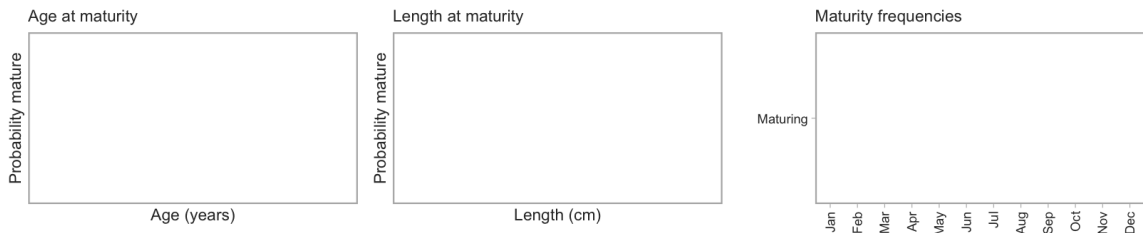
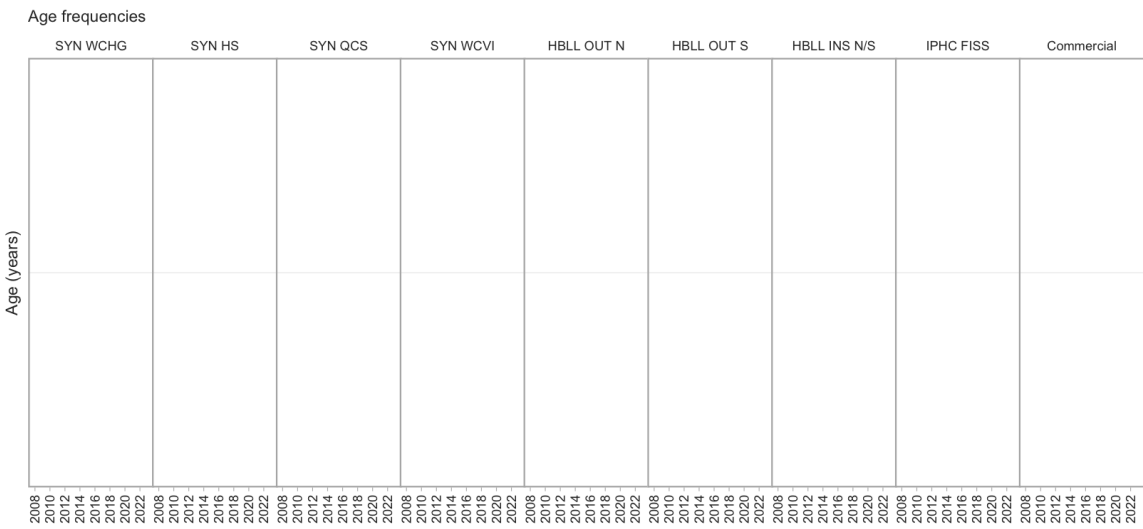
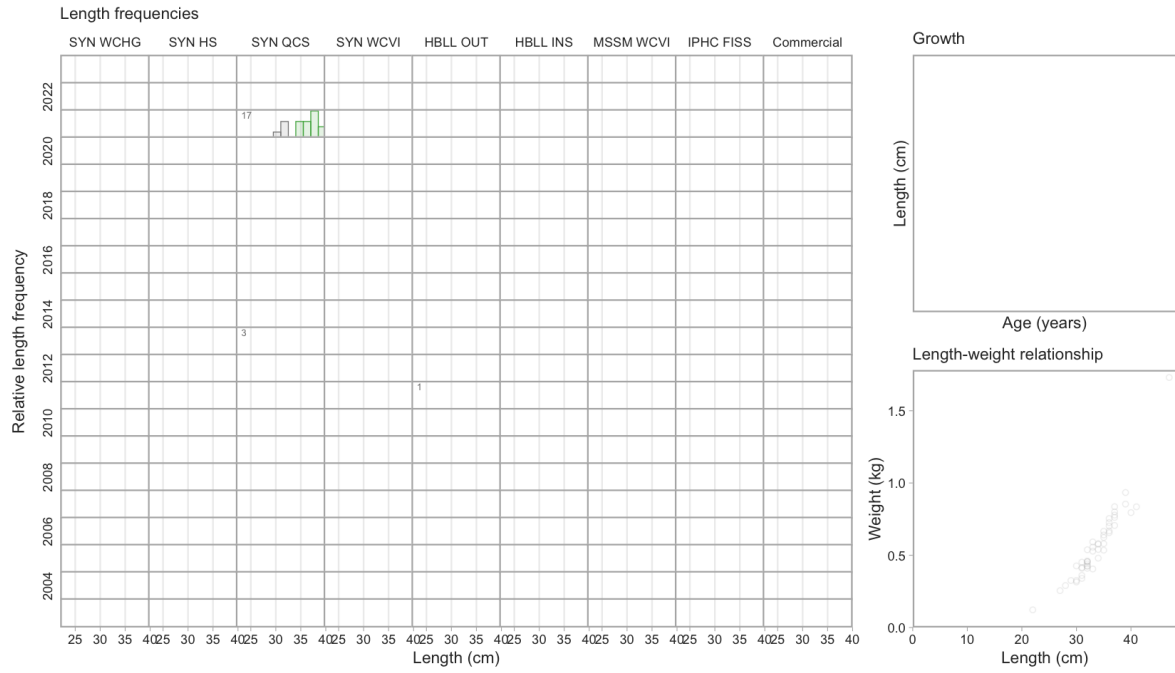


Commercial trawl CPUE



Commercial H & L CPUE



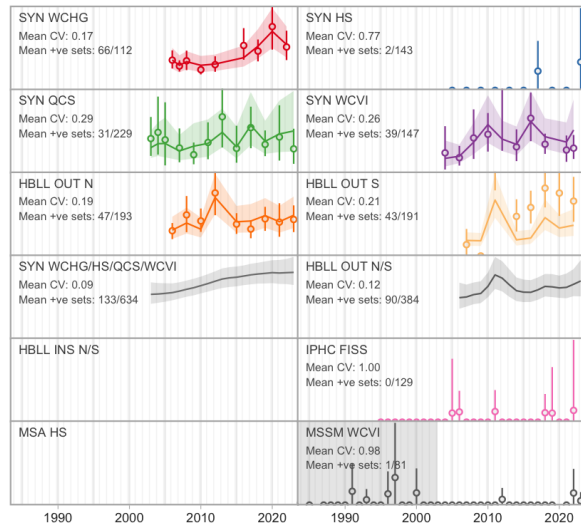


6.61 Rosethorn Rockfish

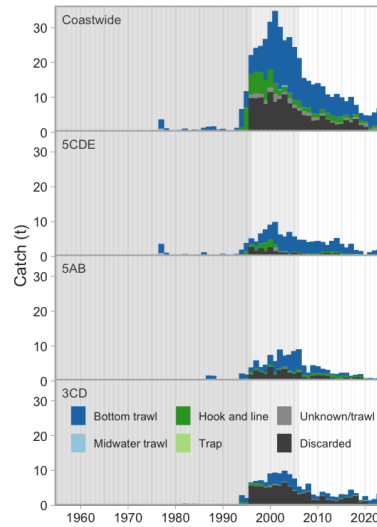
Sebastes helvomaculatus (421)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

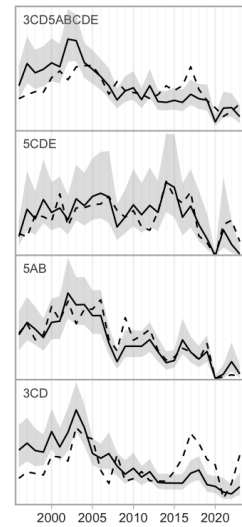
Survey relative biomass indices



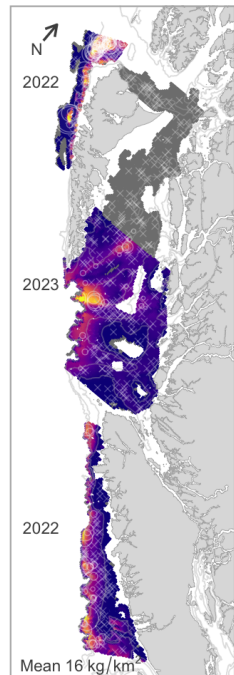
Commercial catch



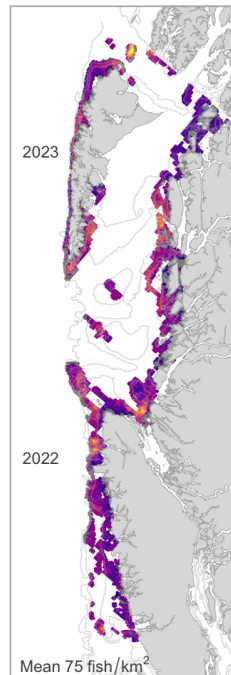
Commercial bottom trawl CPUE



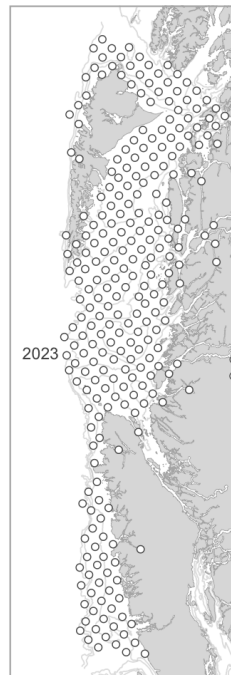
Synoptic survey biomass



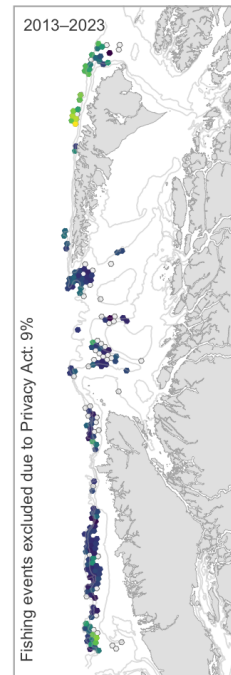
HBL OUT survey biomass



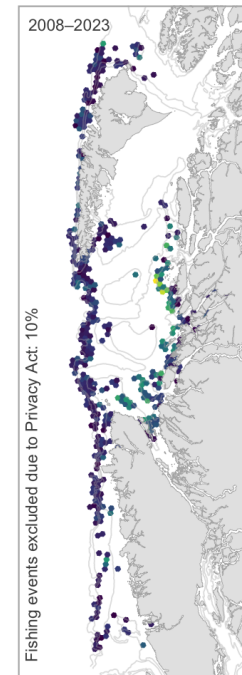
IPHC survey catch rate

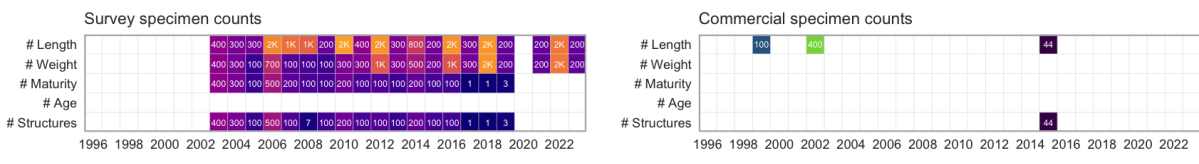
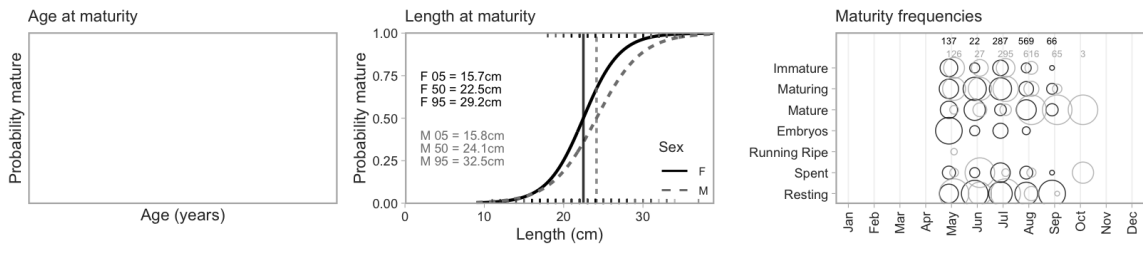
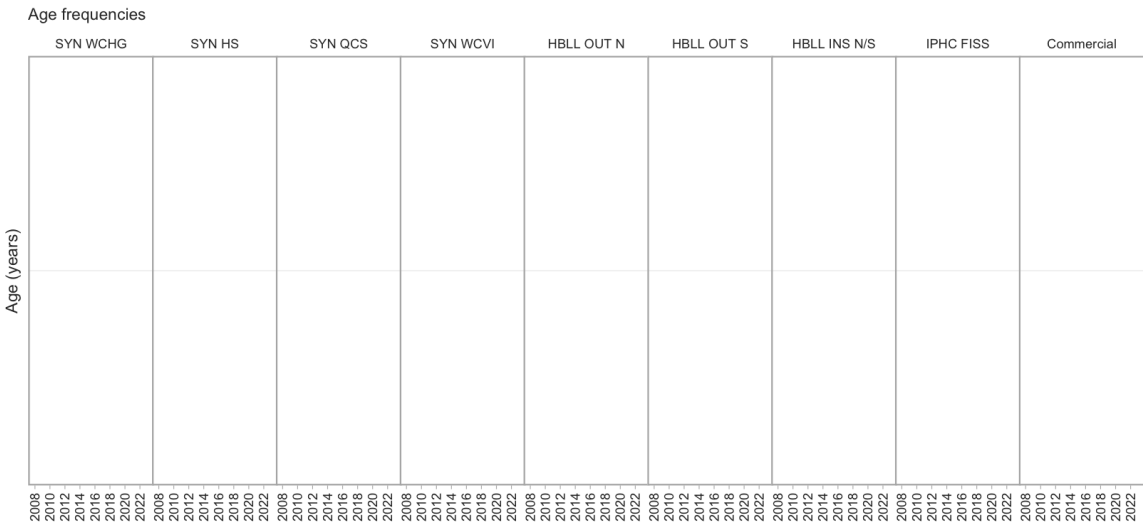
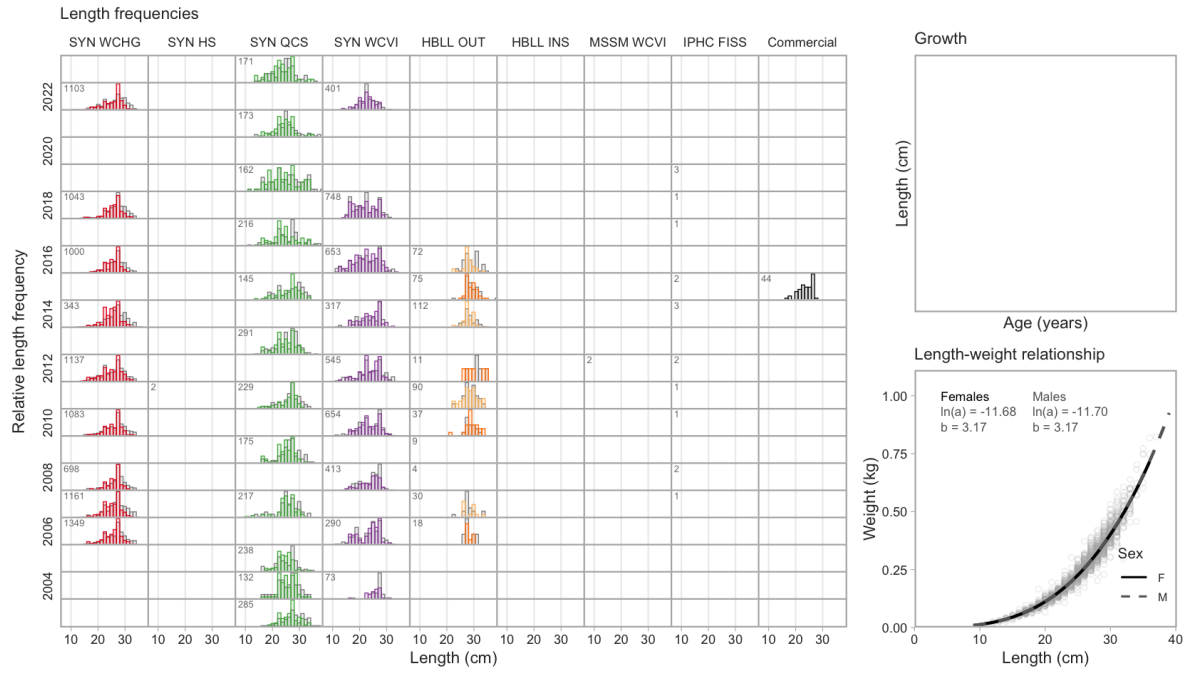


Commercial trawl CPUE



Commercial H & L CPUE



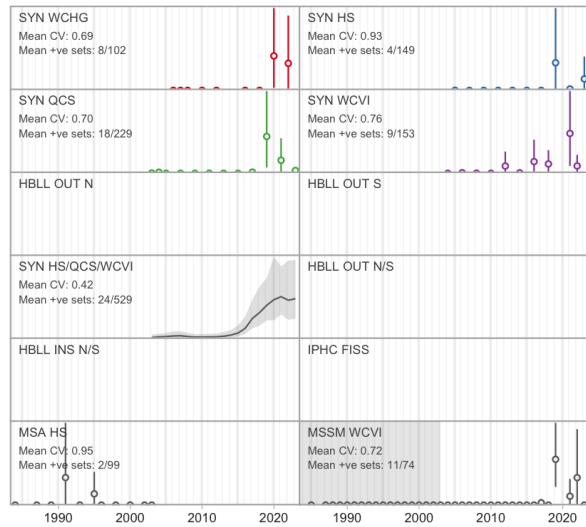


6.62 Shortbelly Rockfish

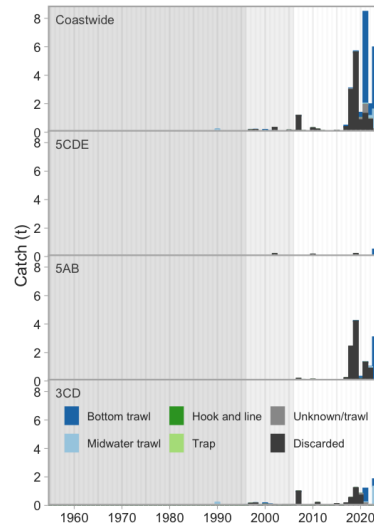
Sebastes jordani (423)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

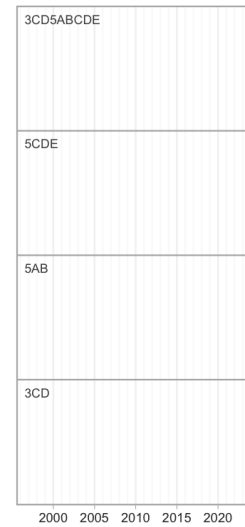
Survey relative biomass indices



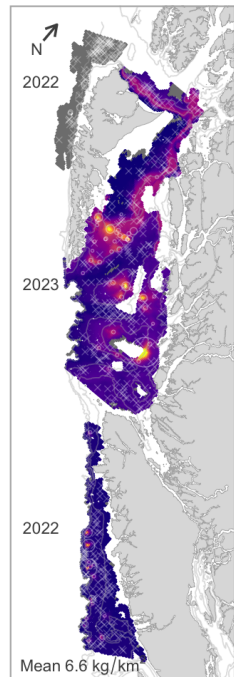
Commercial catch



Commercial bottom trawl CPUE



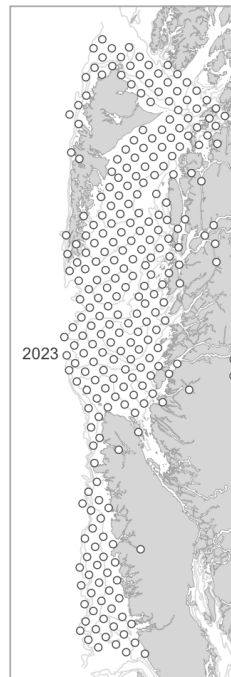
Synoptic survey biomass



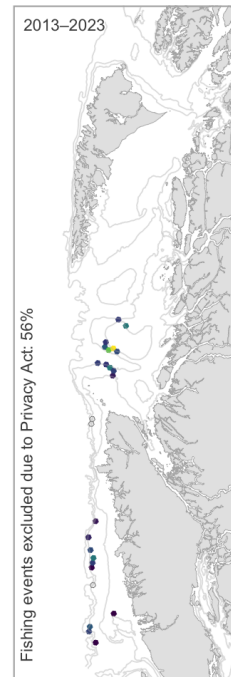
HBL OUT survey biomass



IPHC survey catch rate

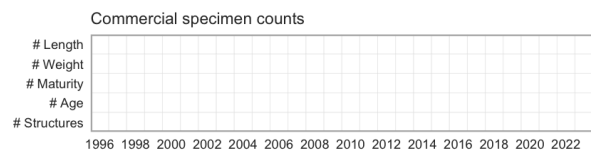
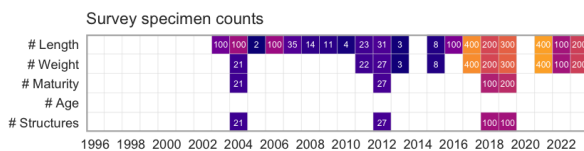
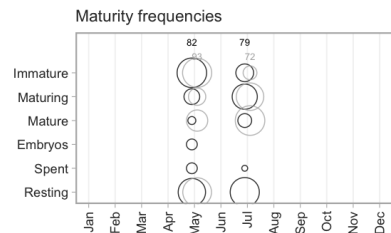
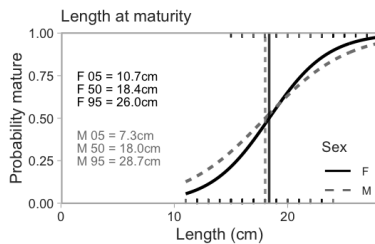
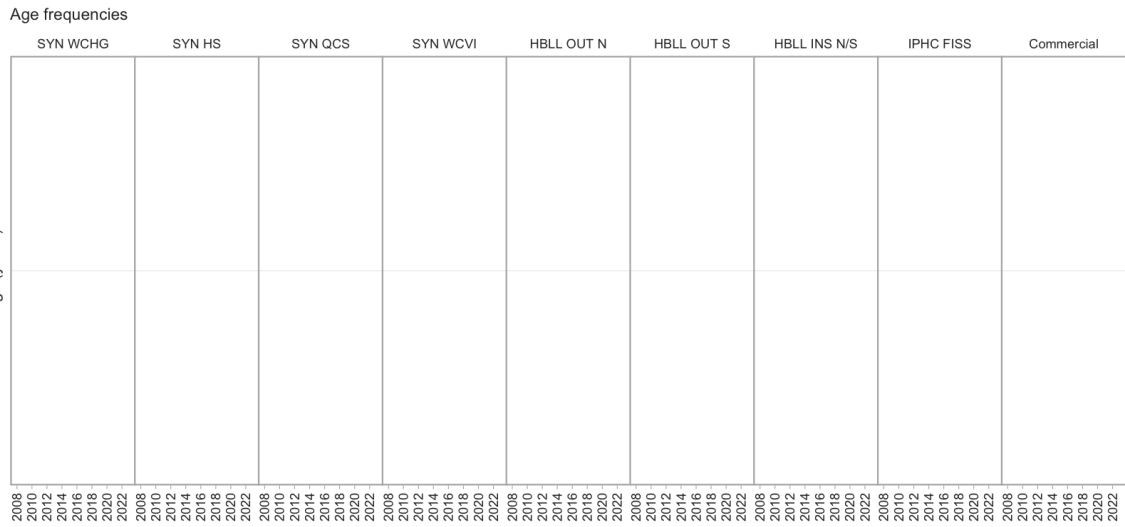
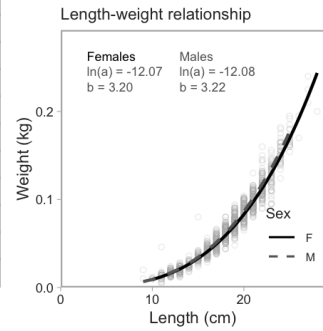
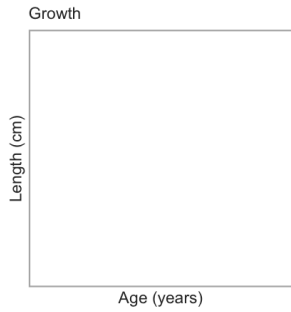


Commercial trawl CPUE



Commercial H & L CPUE





6.63 Quillback Rockfish

Sebastes maliger (424)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

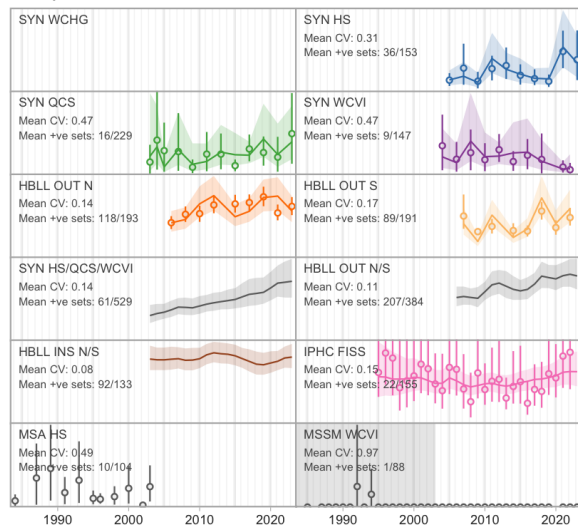
Last Research Documents: Yamanaka et al. (2011), Huynh et al. (2024)

Last Science Advisory Reports: DFO (2023a), DFO (2023b)

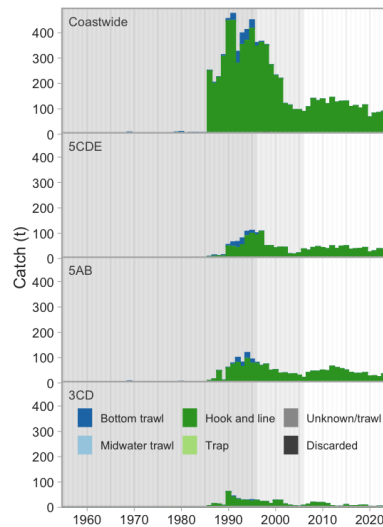
COSEWIC Status Report: COSEWIC (2009)

COSEWIC Status: Threatened, SARA Status: No Status

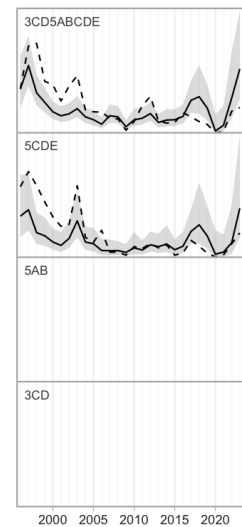
Survey relative biomass indices



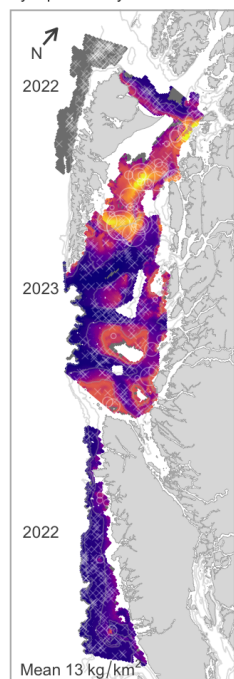
Commercial catch



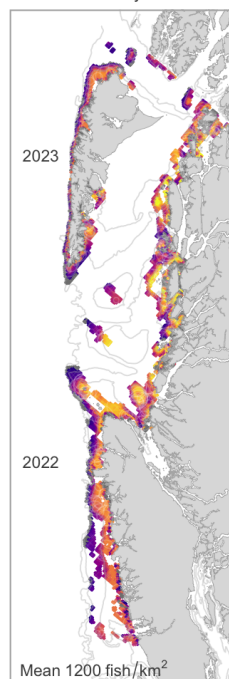
Commercial bottom trawl CPUE



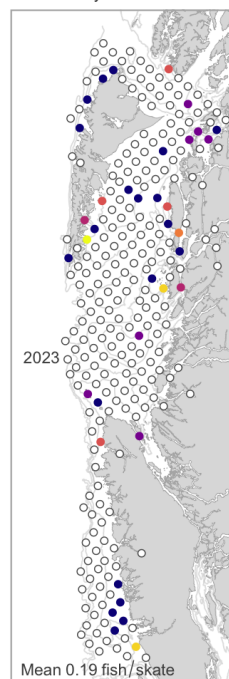
Synoptic survey biomass



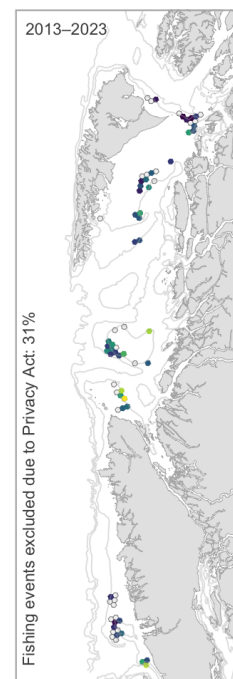
HBLL OUT survey biomass



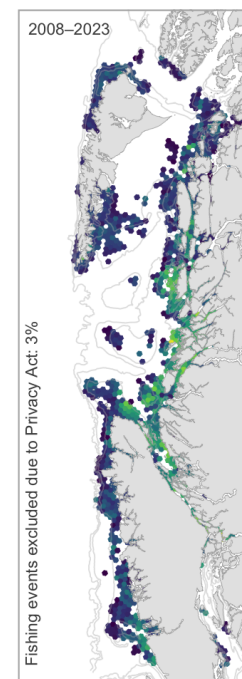
IPHC survey catch rate

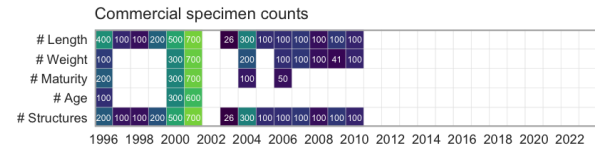
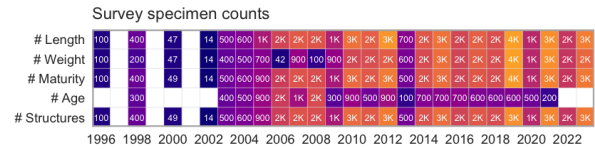
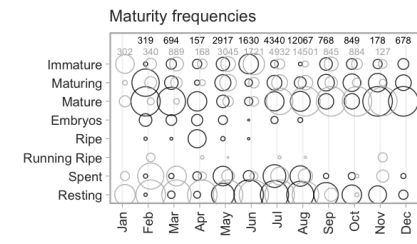
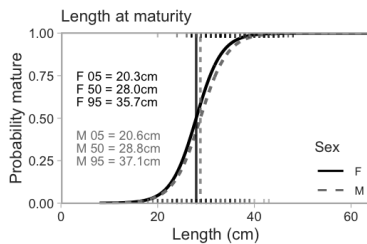
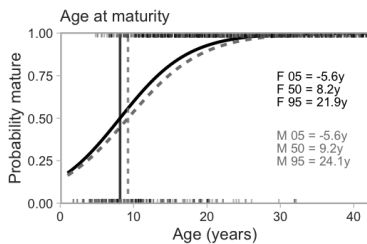
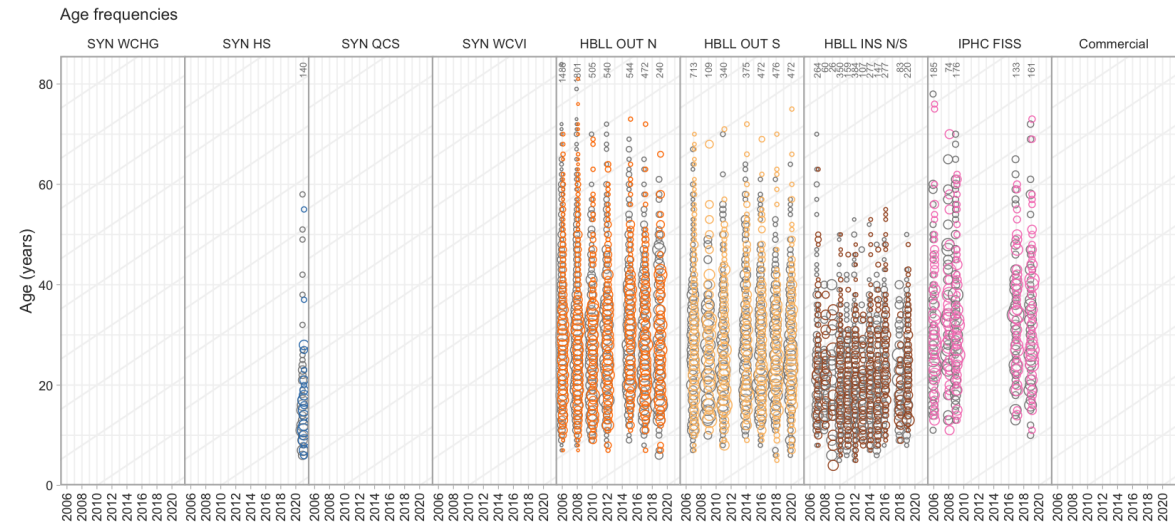
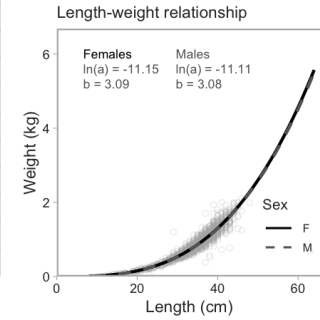
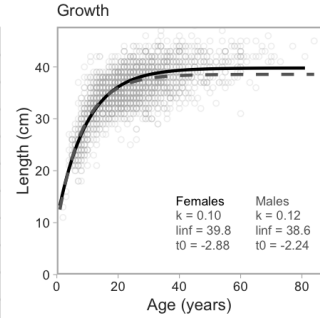


Commercial trawl CPUE



Commercial H & L CPUE





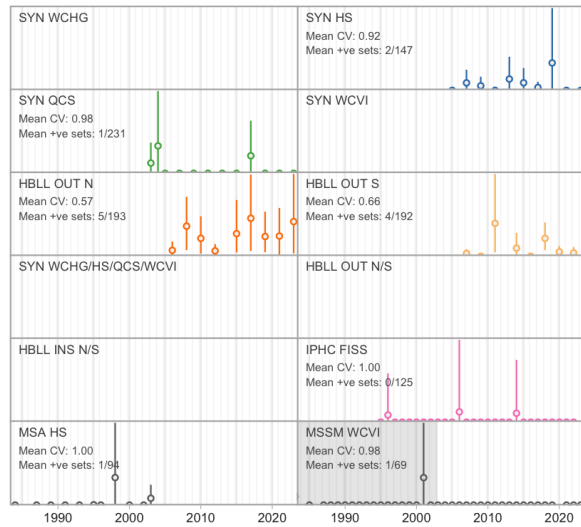
6.64 Black Rockfish

Sebastes melanops (426)

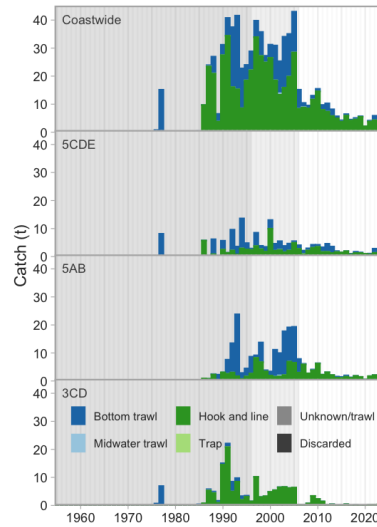
Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Research Document: Yamanaka and Lacko (2001)

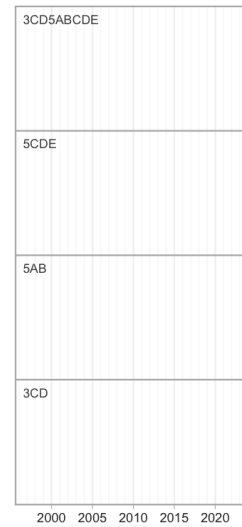
Survey relative biomass indices



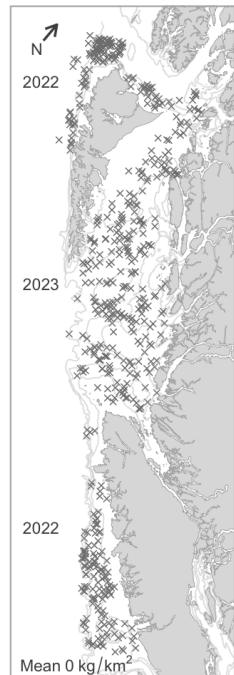
Commercial catch



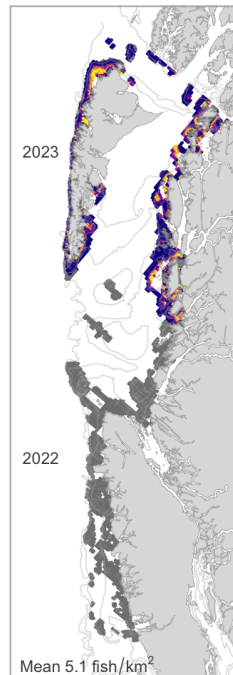
Commercial bottom trawl CPUE



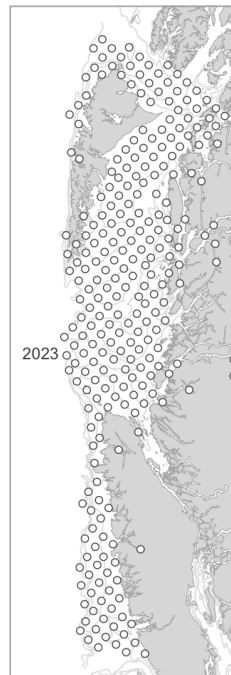
Synoptic survey biomass



HBL OUT survey biomass



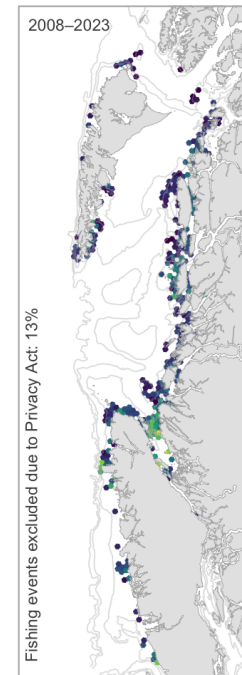
IPHC survey catch rate

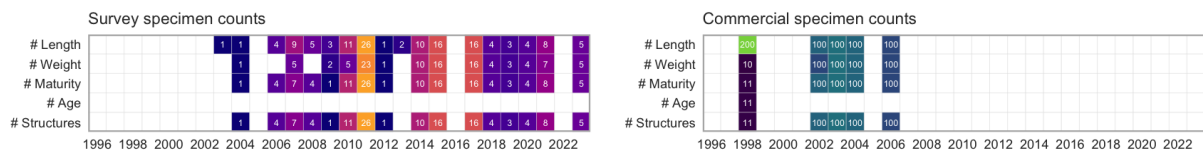
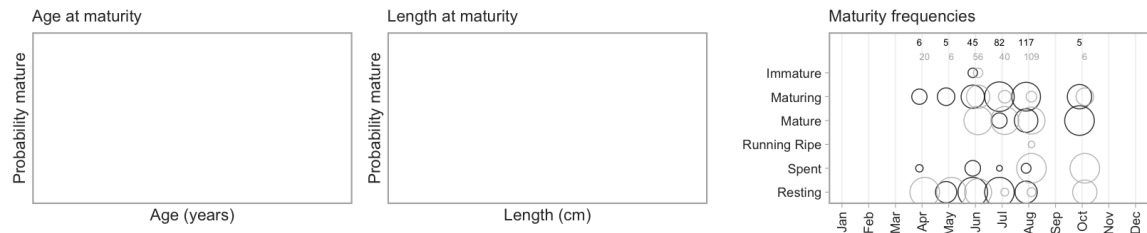
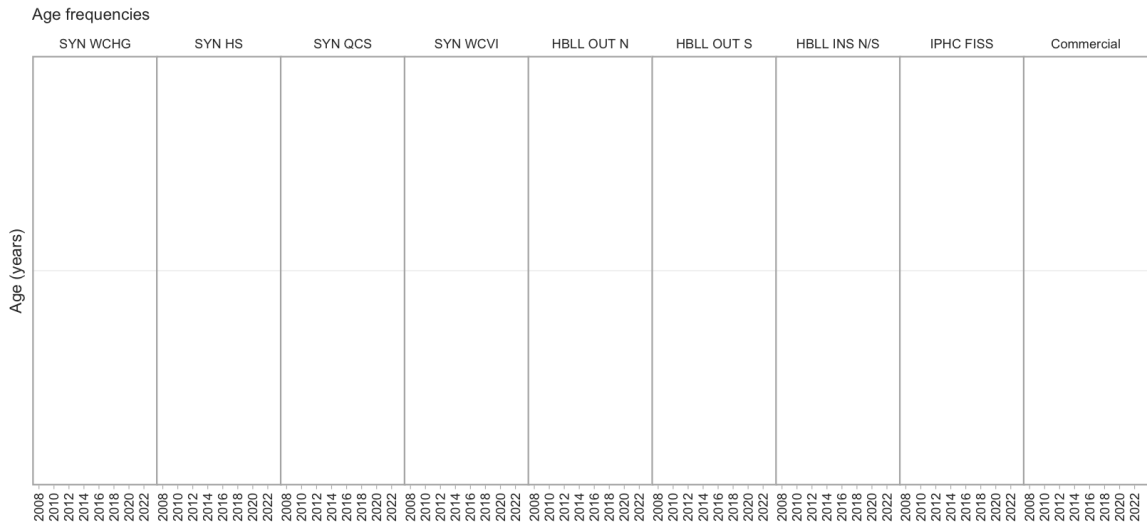
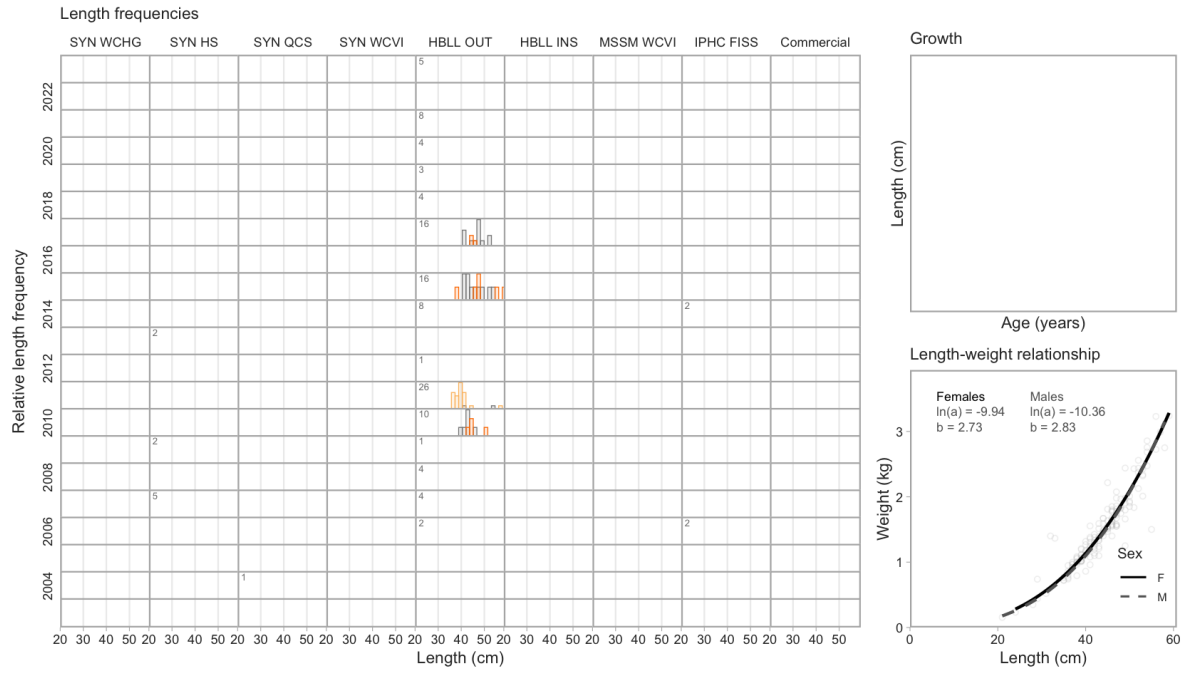


Commercial trawl CPUE



Commercial H & L CPUE





6.65 Blackgill Rockfish

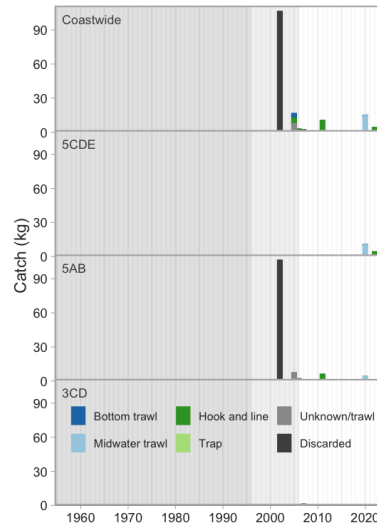
Sebastes melanostomus (427)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

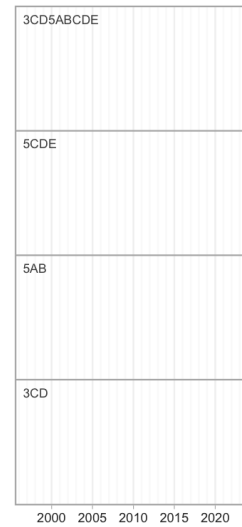
Survey relative biomass indices



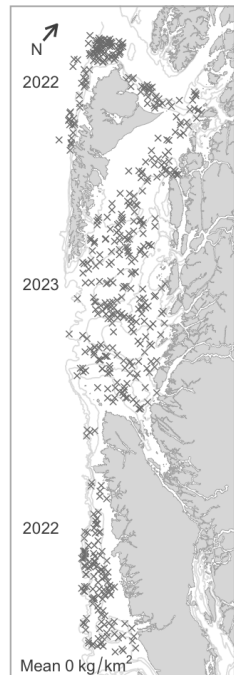
Commercial catch



Commercial bottom trawl CPUE



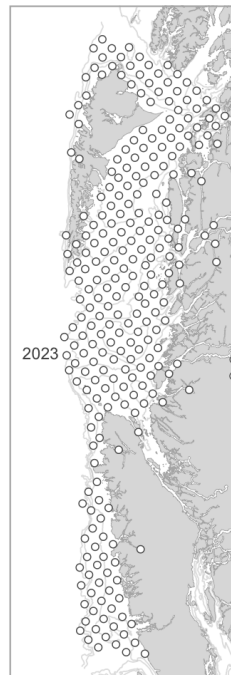
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

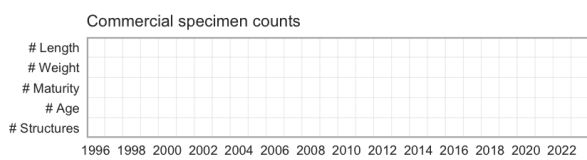
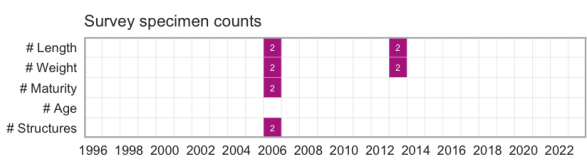
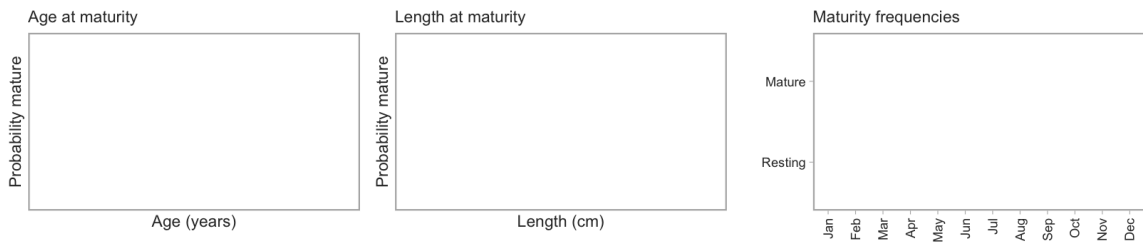
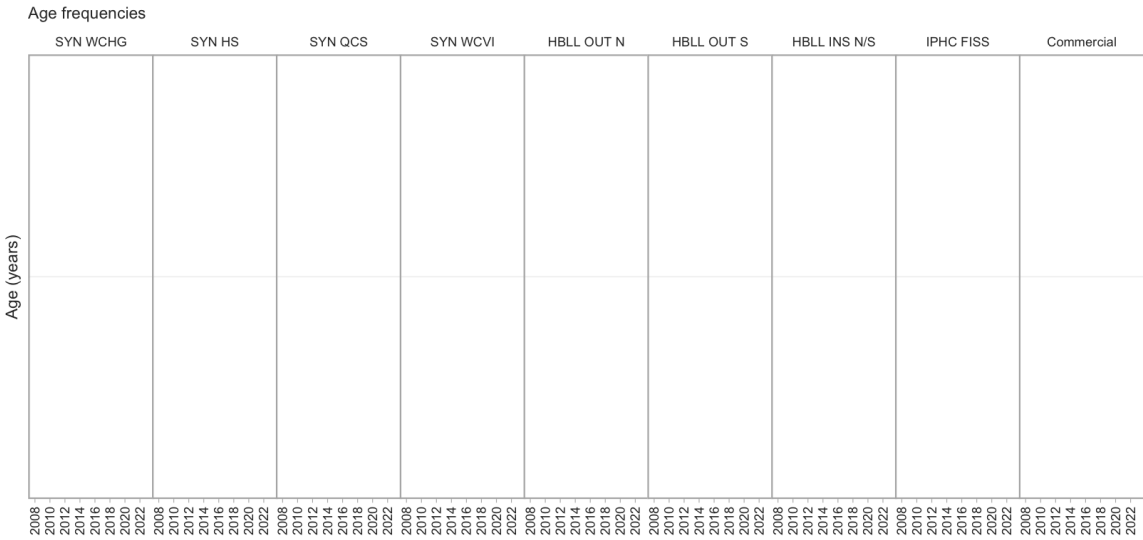
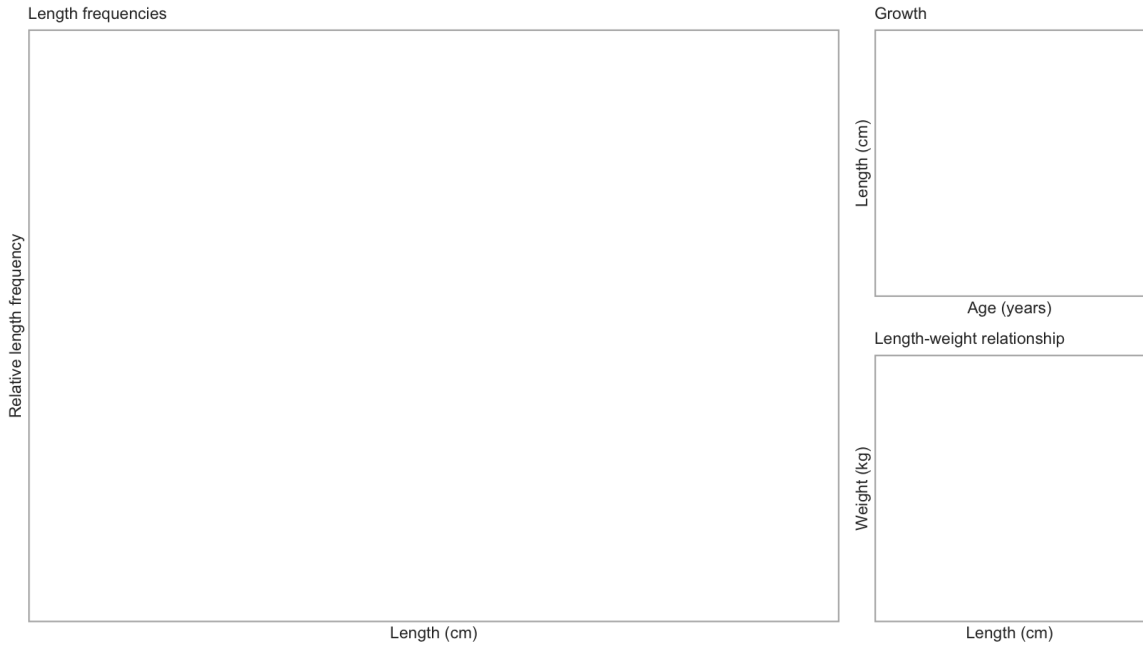


Commercial trawl CPUE



Commercial H & L CPUE



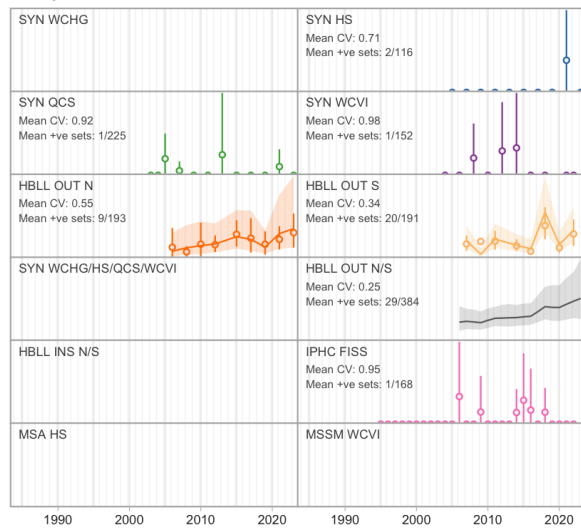


6.66 Vermilion Rockfish

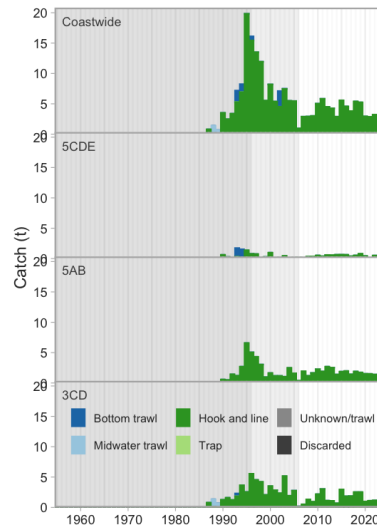
Sebastes miniatus (428)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

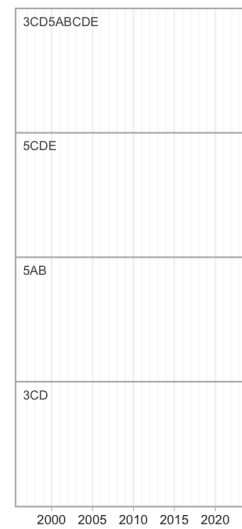
Survey relative biomass indices



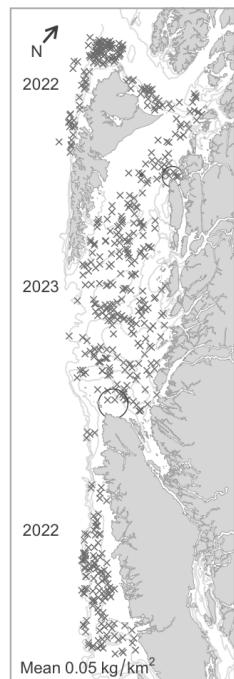
Commercial catch



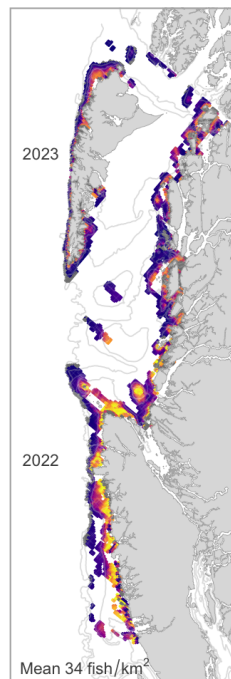
Commercial bottom trawl CPUE



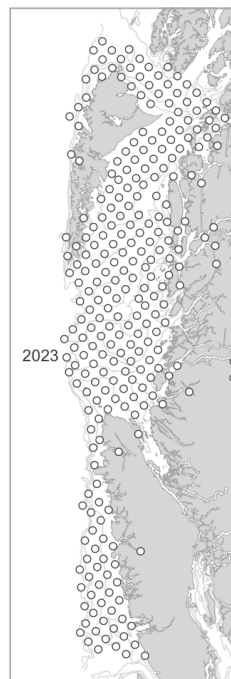
Synoptic survey biomass



HBLL OUT survey biomass



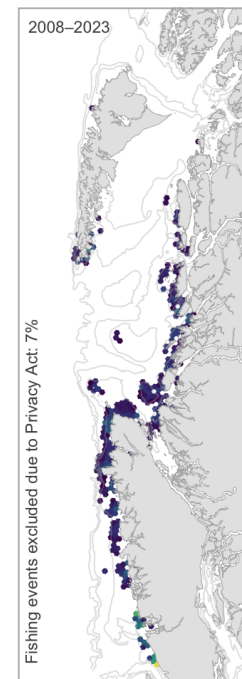
IPHC survey catch rate

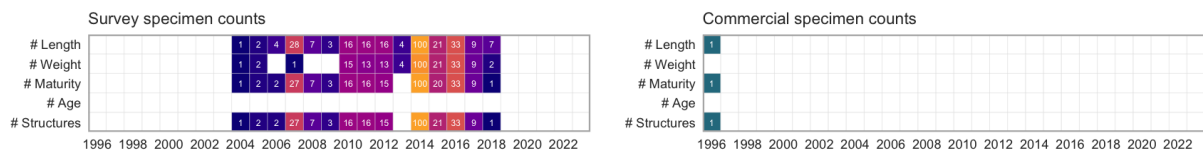
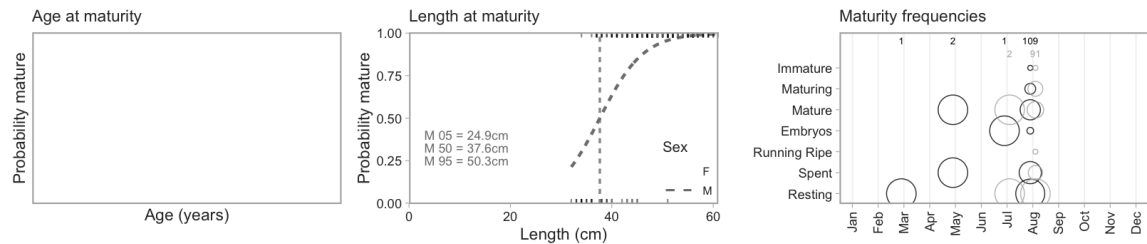
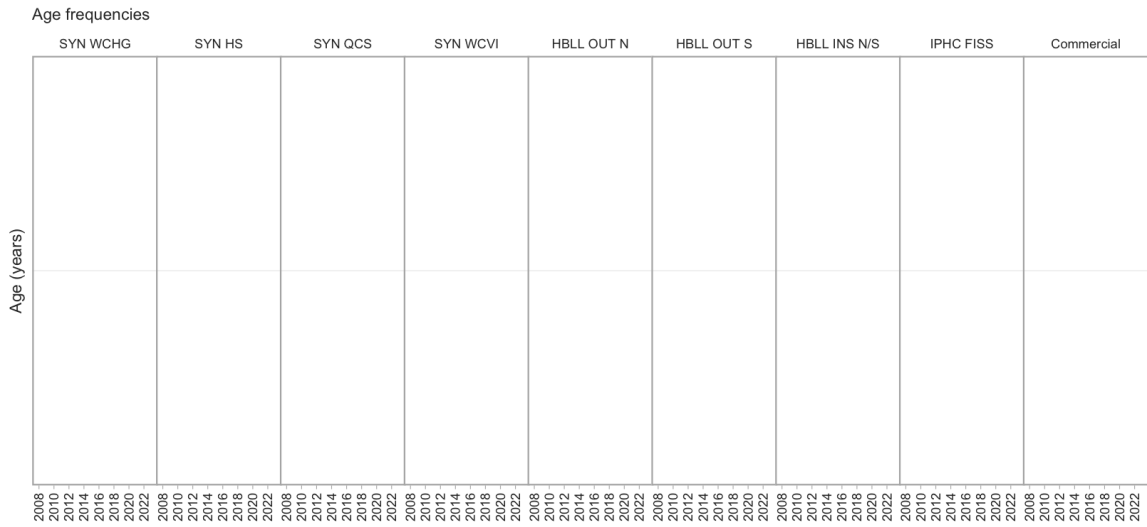
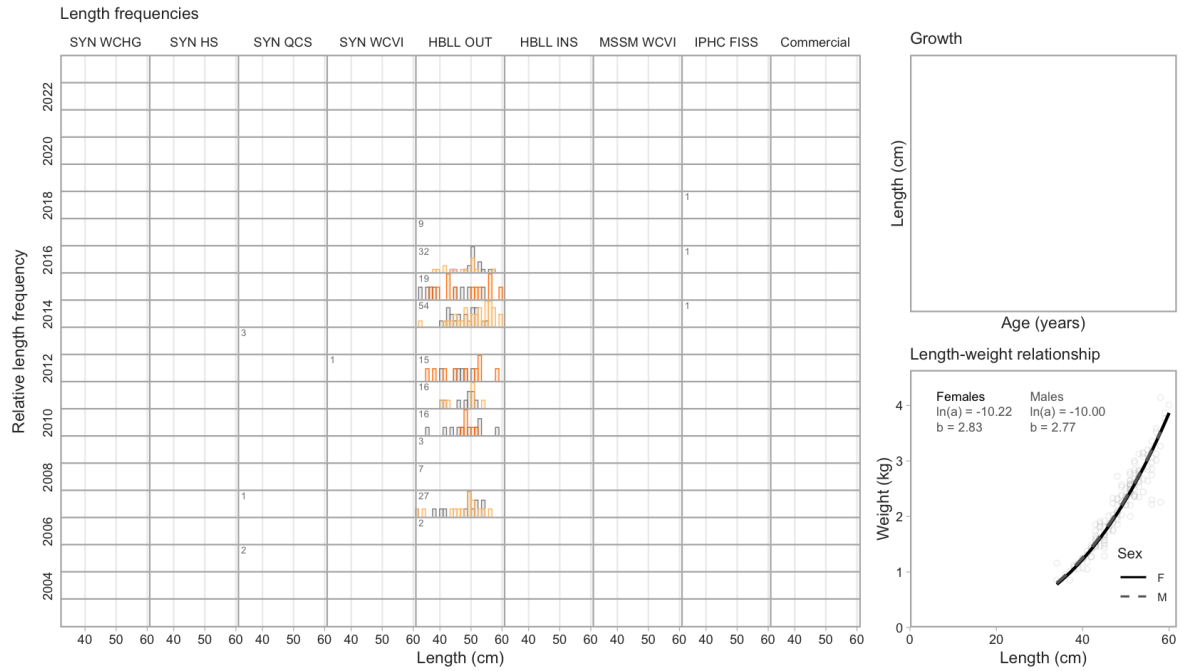


Commercial trawl CPUE



Commercial H & L CPUE

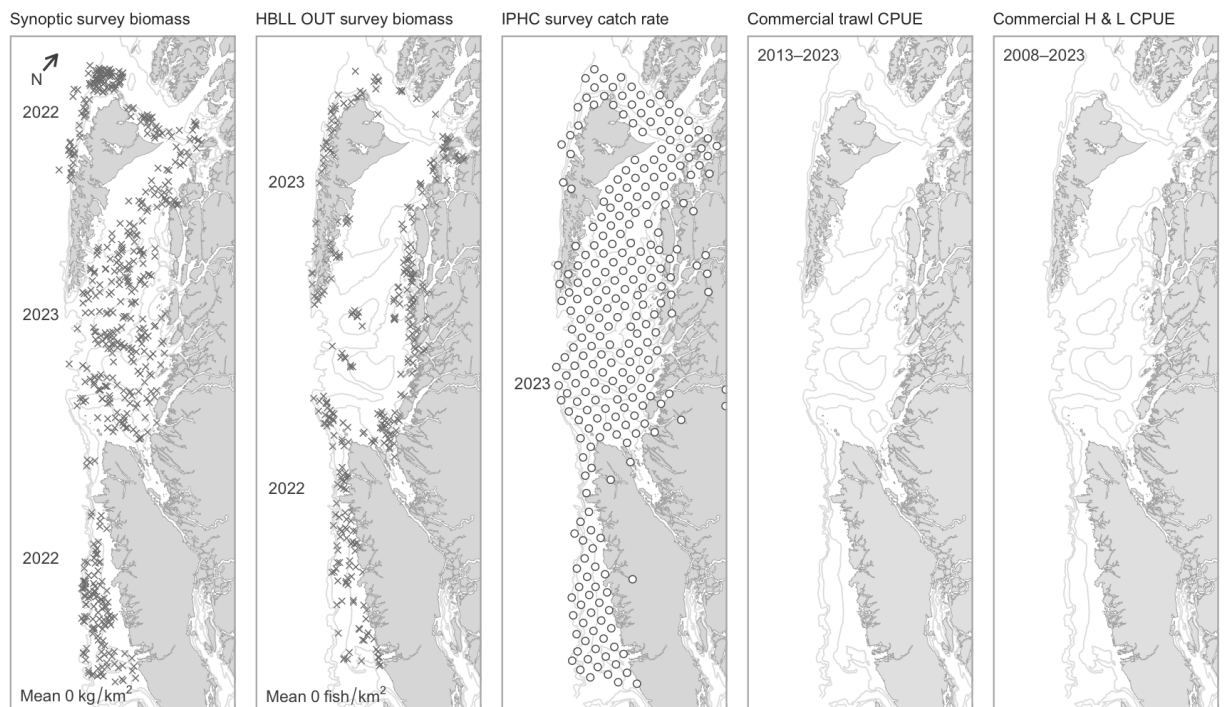
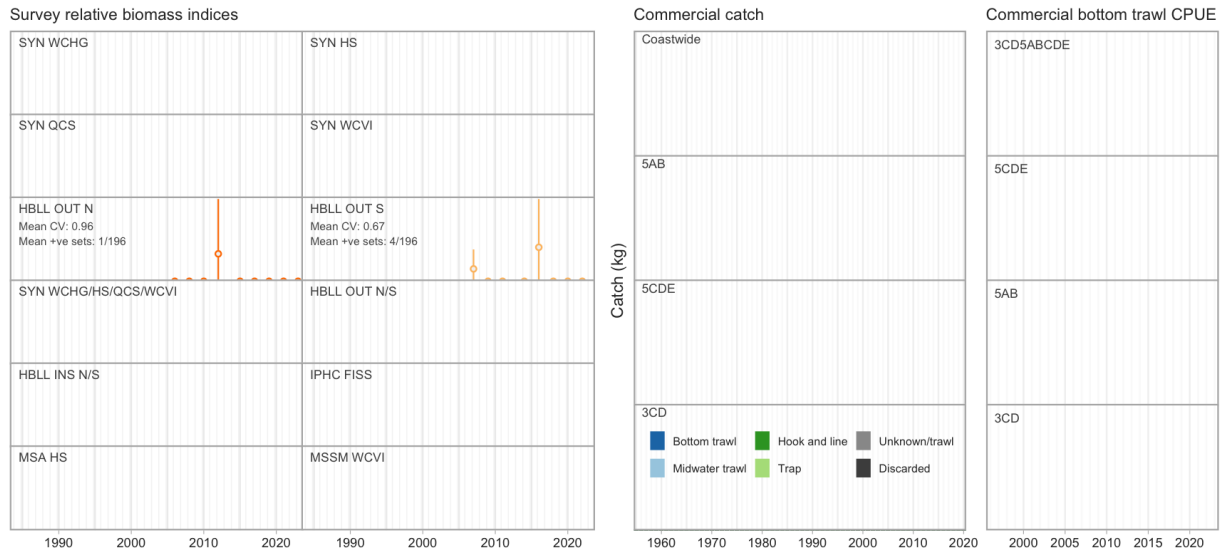


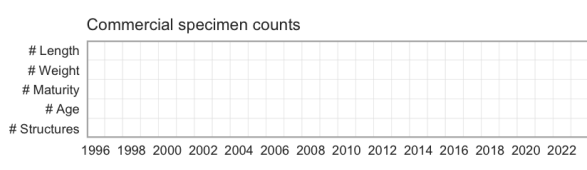
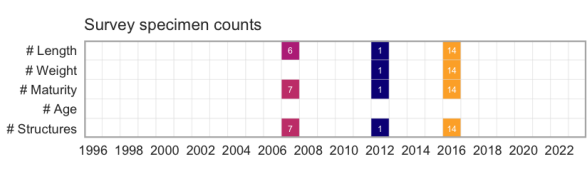
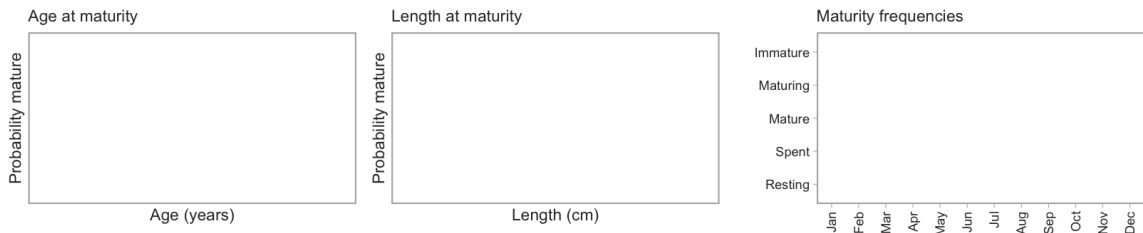
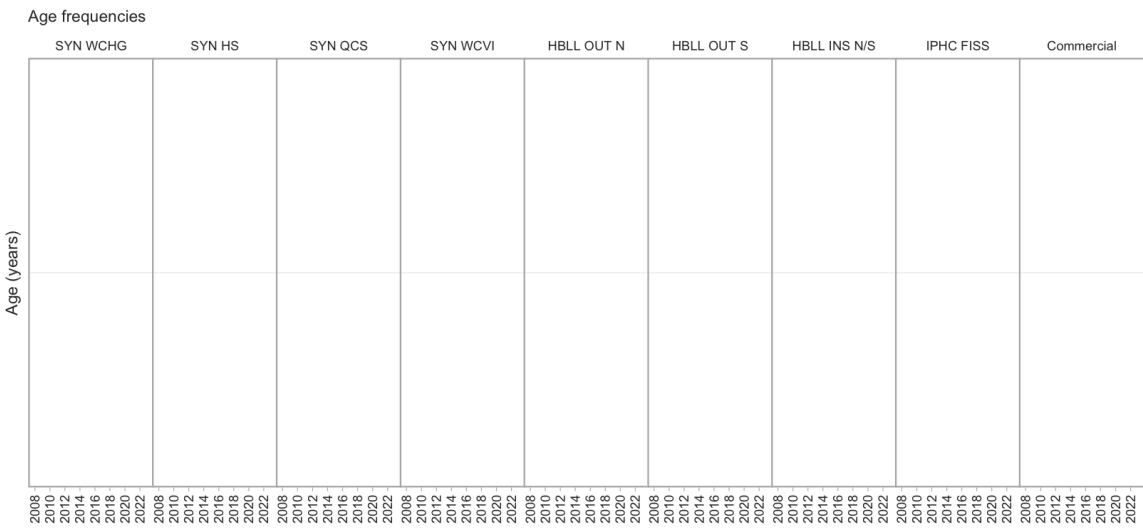
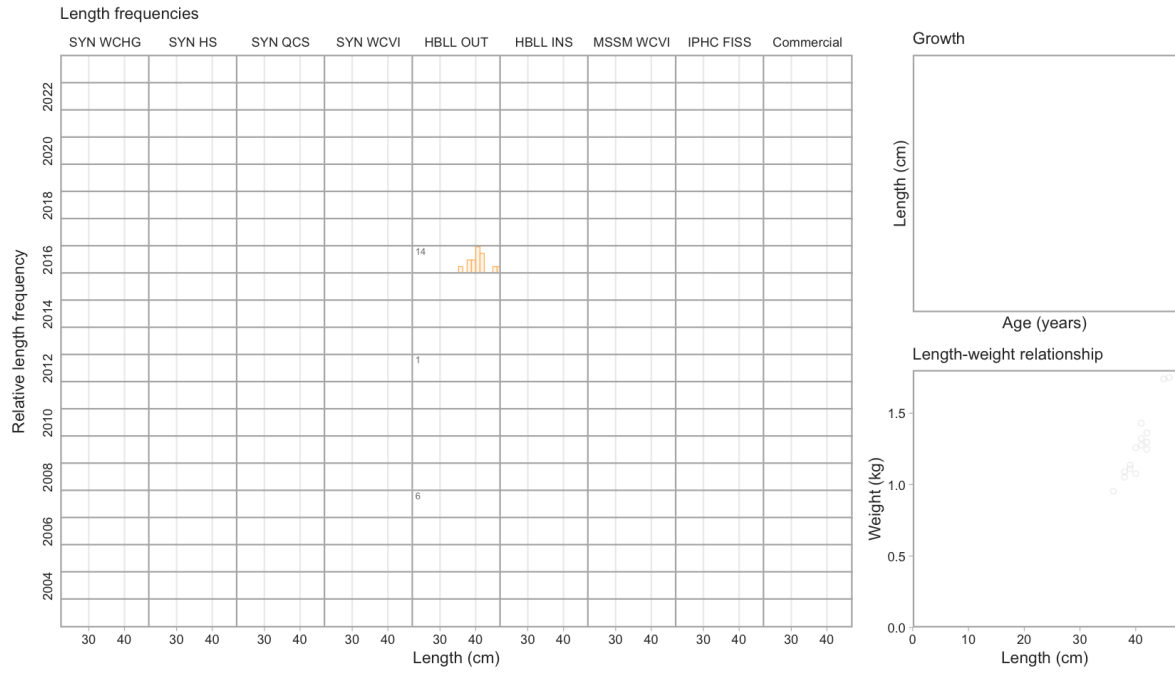


6.67 Deacon Rockfish

Sebastes diaconus (429)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)





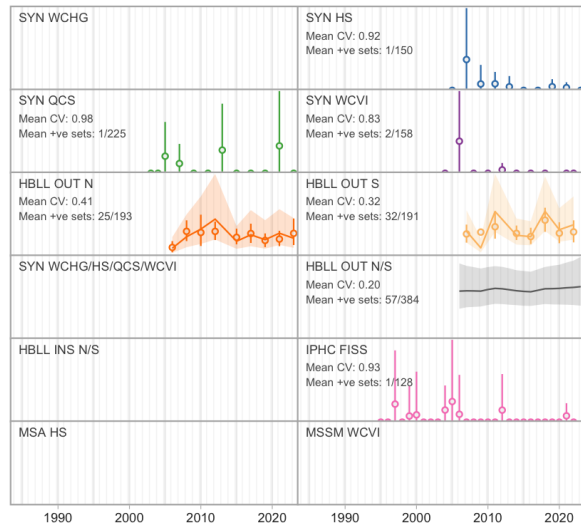
6.68 China Rockfish

Sebastes nebulosus (431)

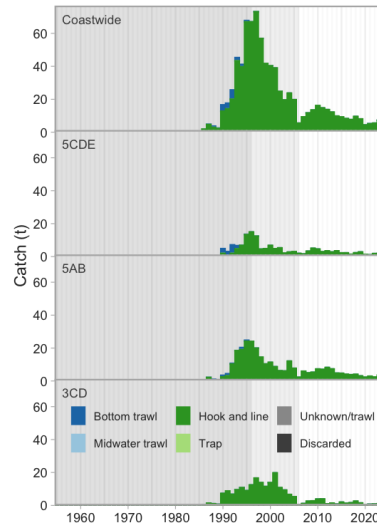
Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Research Document: Yamanaka and Lacko (2001)

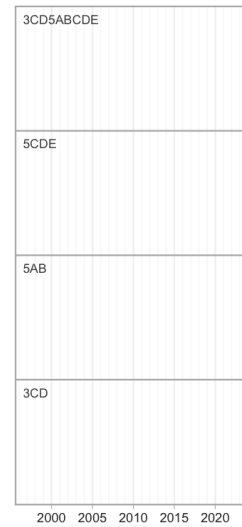
Survey relative biomass indices



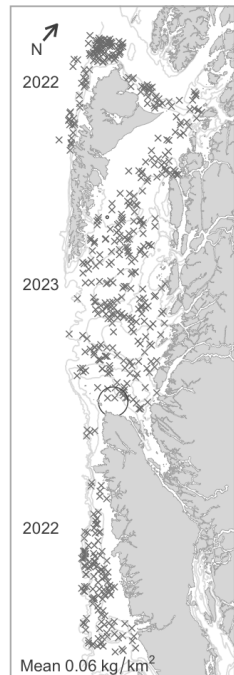
Commercial catch



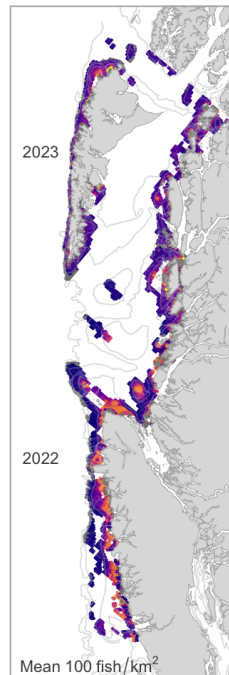
Commercial bottom trawl CPUE



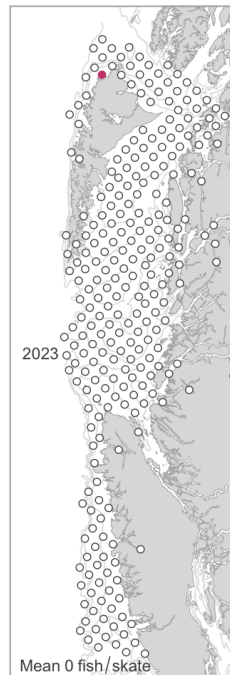
Synoptic survey biomass



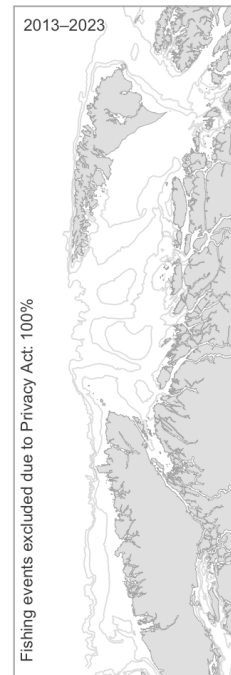
HBILL OUT survey biomass



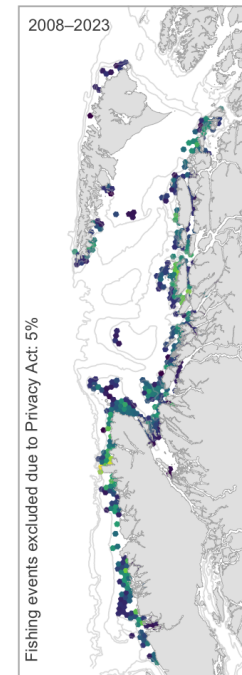
IPHC survey catch rate

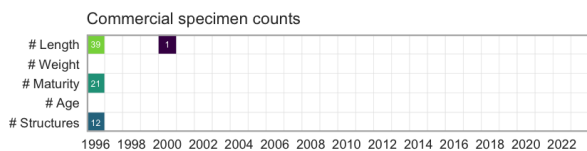
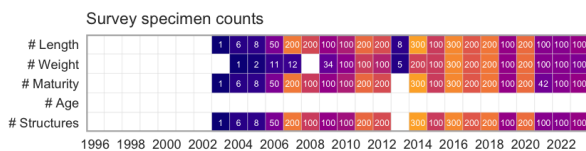
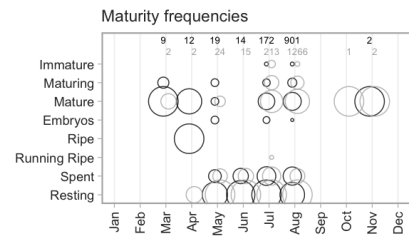
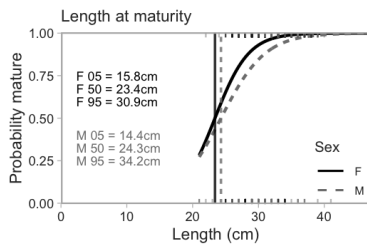
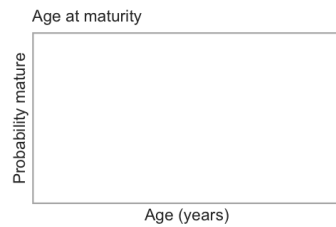
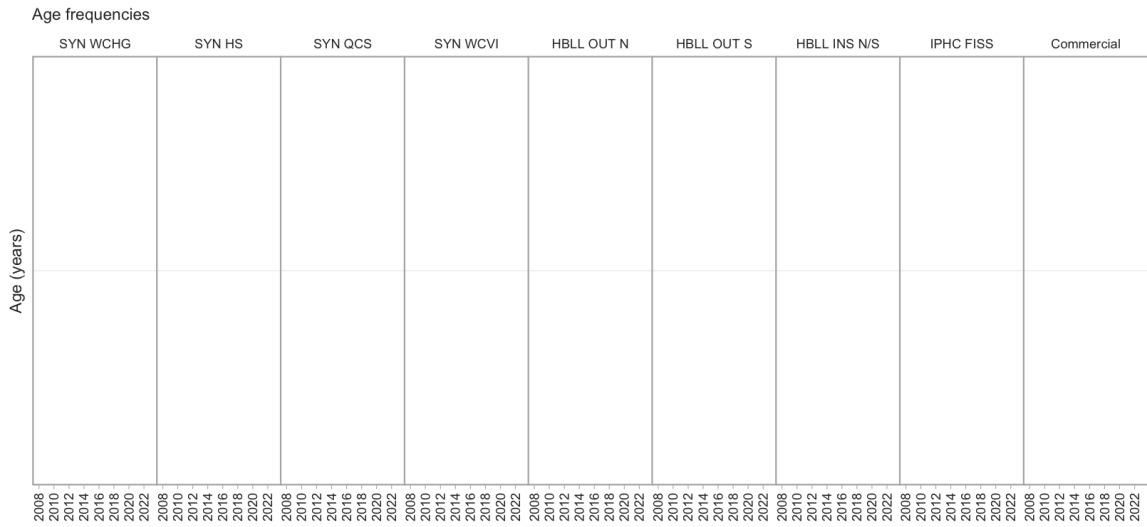
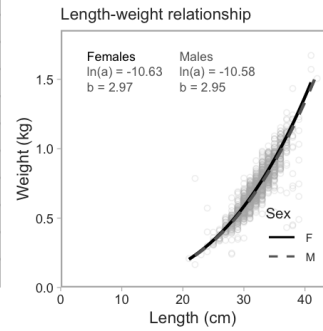
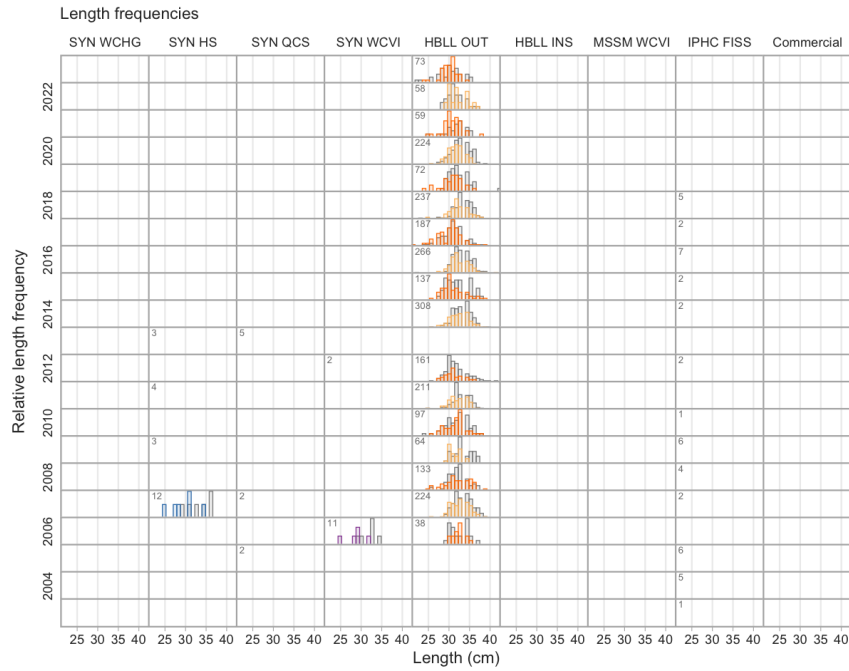


Commercial trawl CPUE



Commercial H & L CPUE





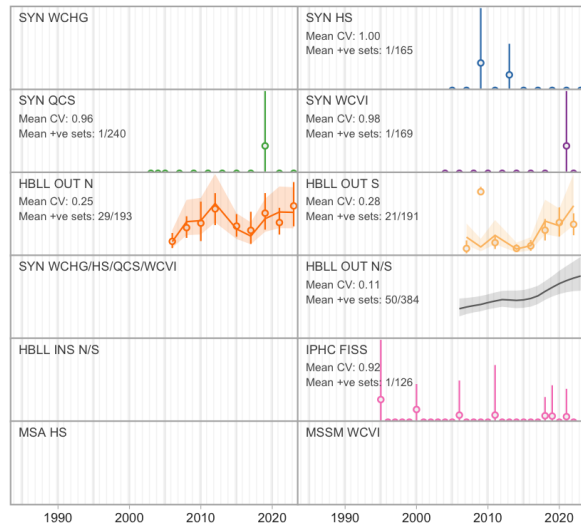
6.69 Tiger Rockfish

Sebastes nigrocinctus (433)

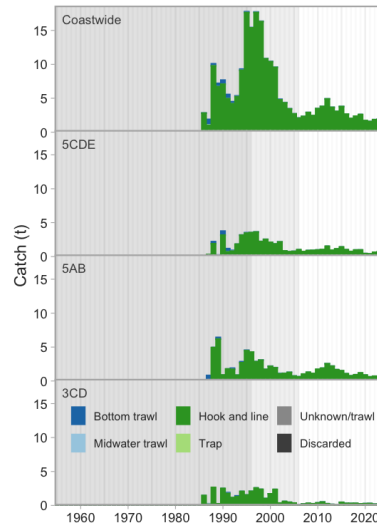
Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Research Document: Yamanaka and Lacko (2001)

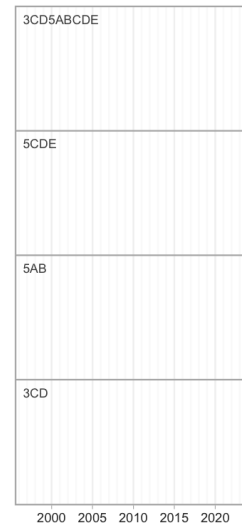
Survey relative biomass indices



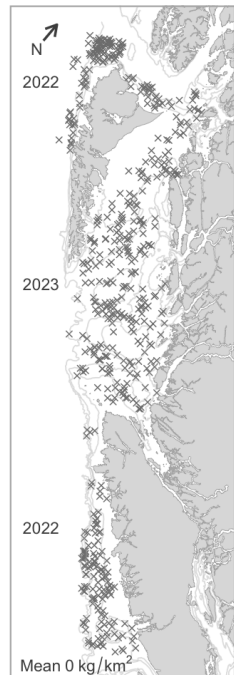
Commercial catch



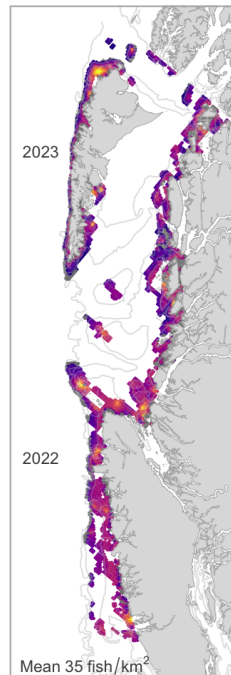
Commercial bottom trawl CPUE



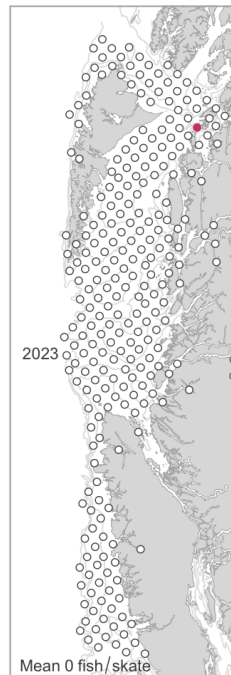
Synoptic survey biomass



HBL OUT survey biomass



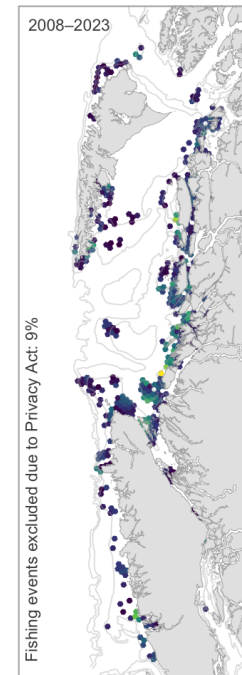
IPHC survey catch rate

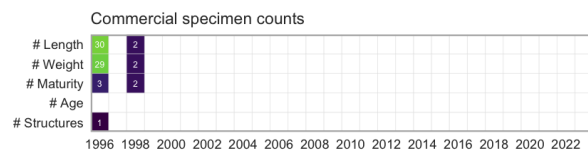
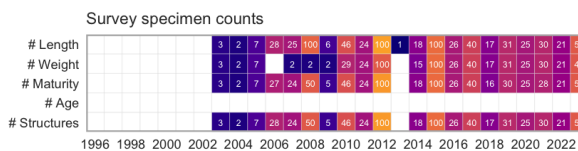
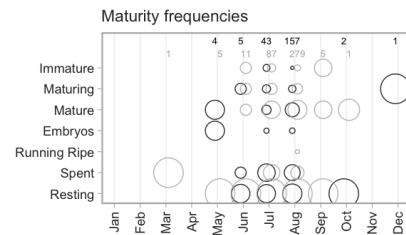
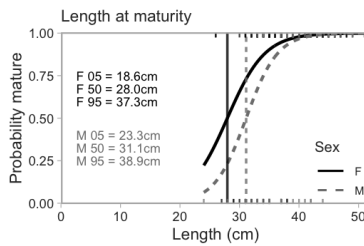
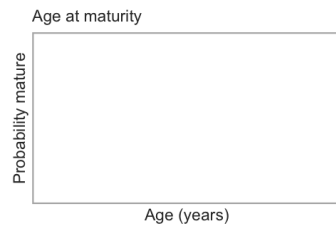
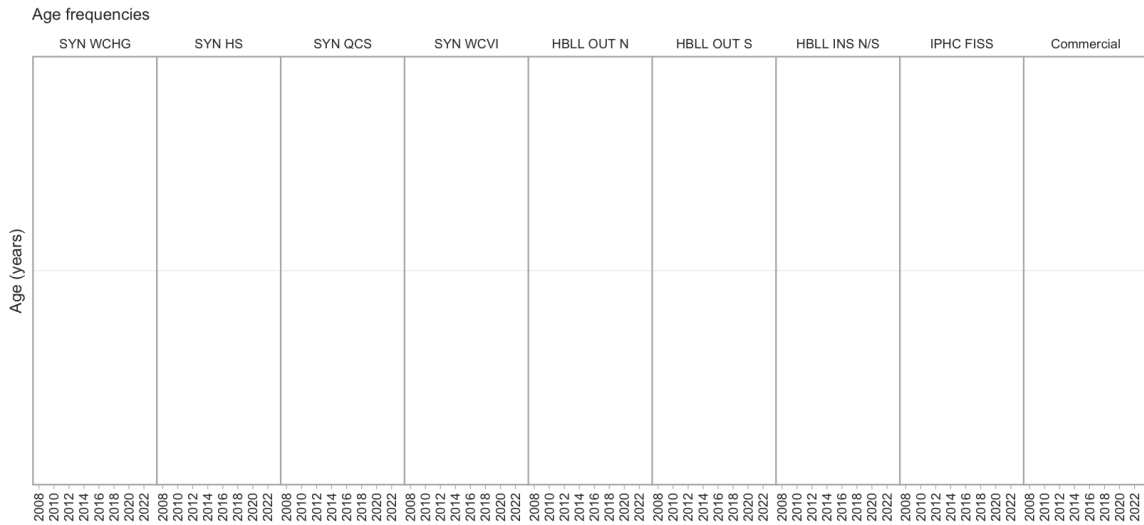
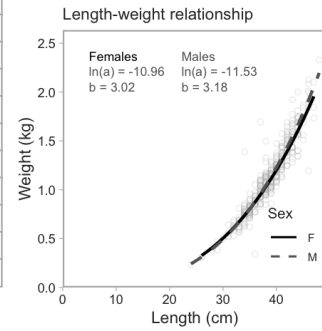
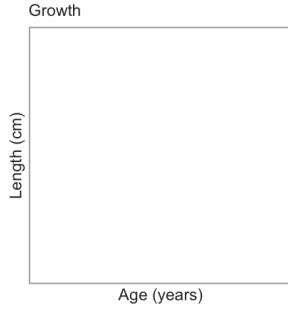
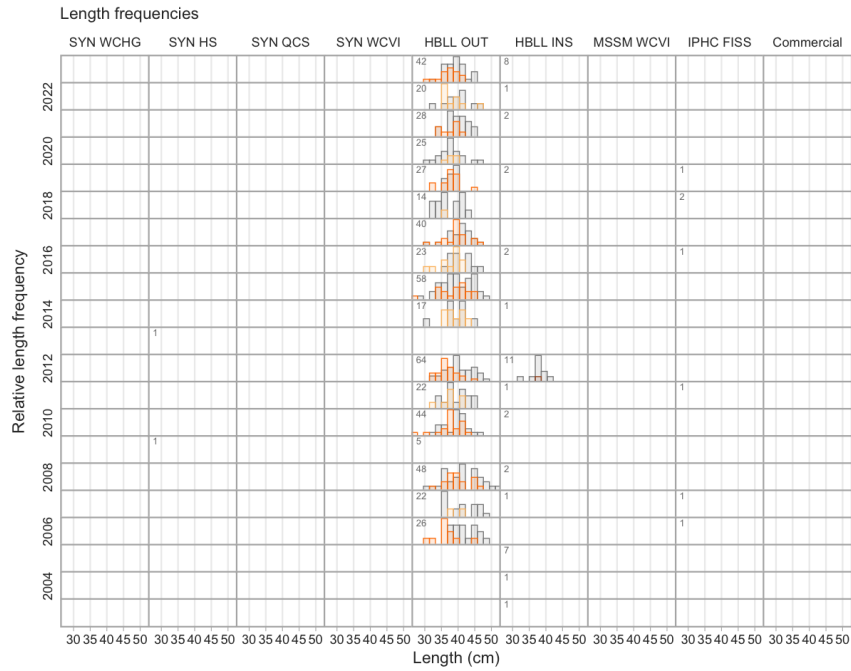


Commercial trawl CPUE



Commercial H & L CPUE





6.70 Bocaccio

Sebastes paucispinis (435)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Research Document: Starr and Haigh (2022a)

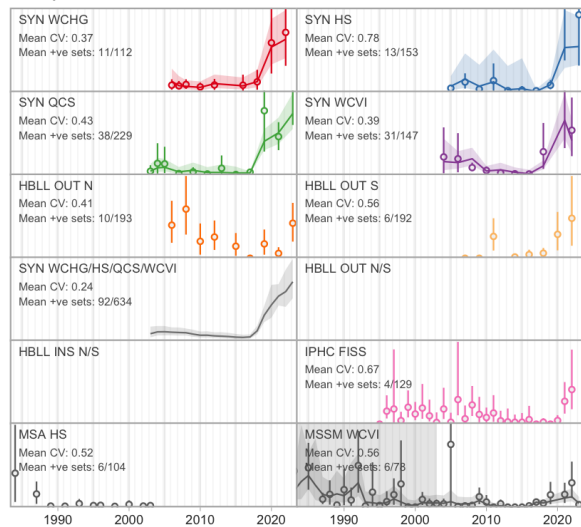
Last Science Advisory Report: DFO (2020c)

Last Science Response: DFO (2022b)

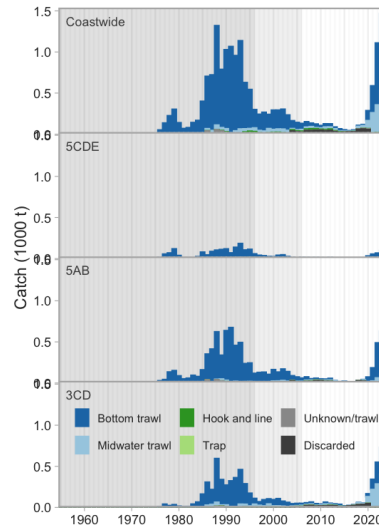
COSEWIC Status Report: COSEWIC (2013b)

COSEWIC Status: Endangered, SARA Status: No Status

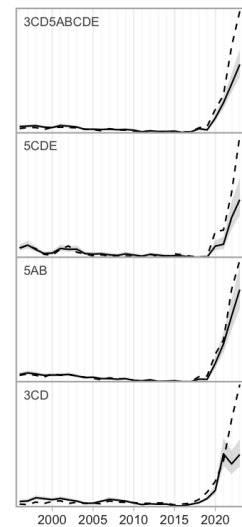
Survey relative biomass indices



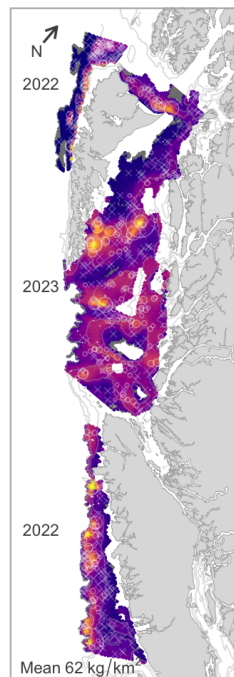
Commercial catch



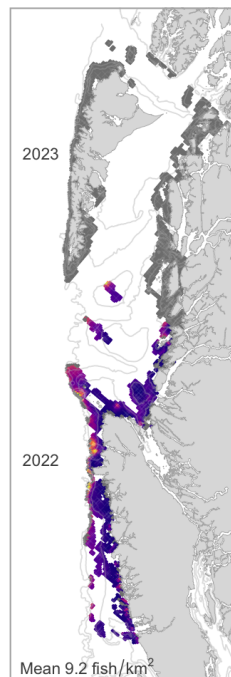
Commercial bottom trawl CPUE



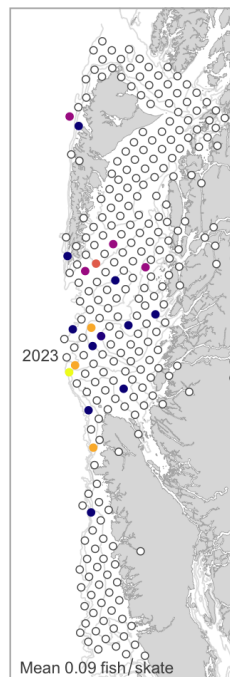
Synoptic survey biomass



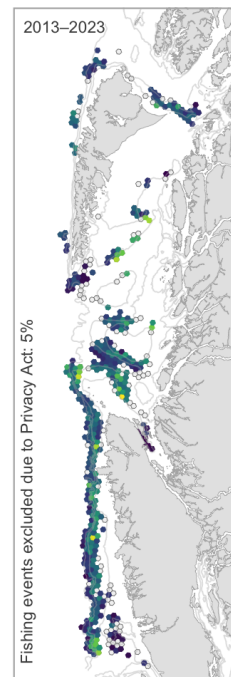
HBL OUT survey biomass



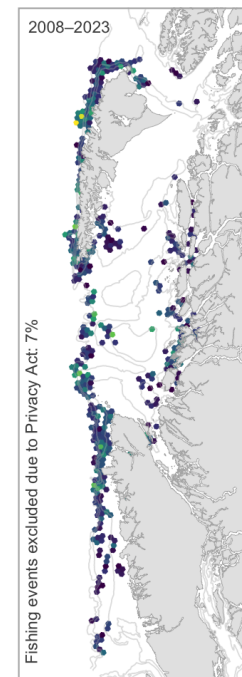
IPHC survey catch rate

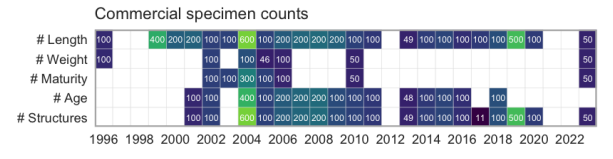
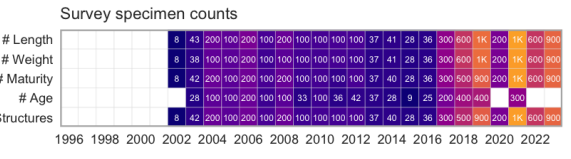
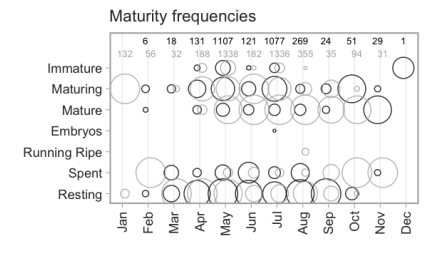
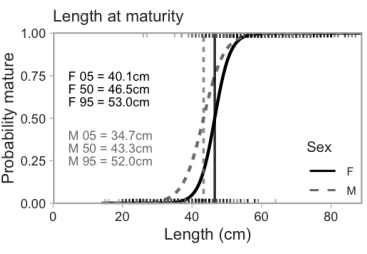
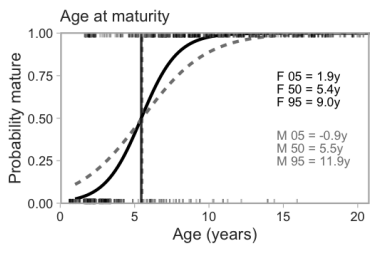
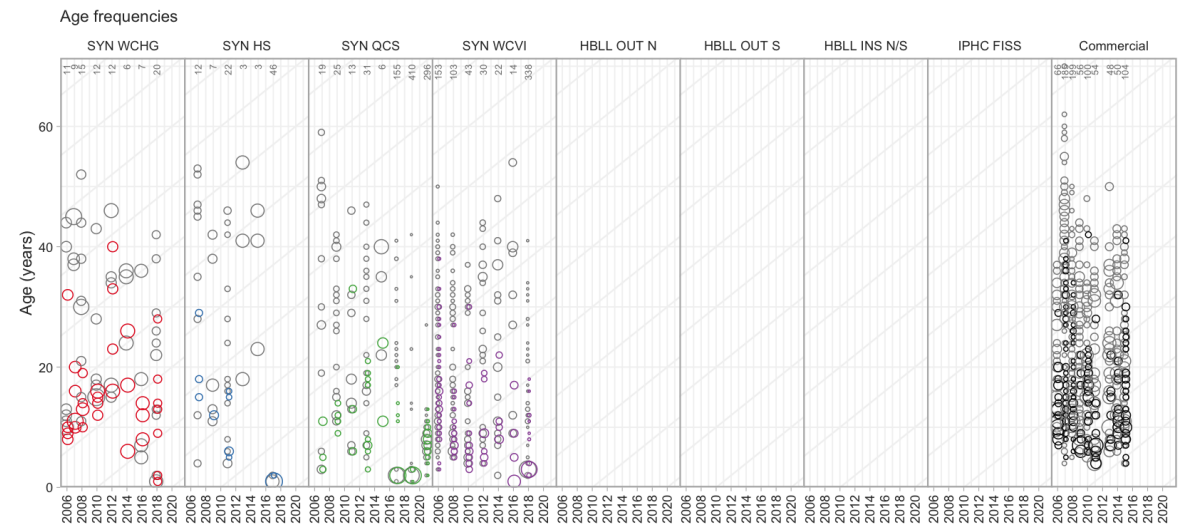
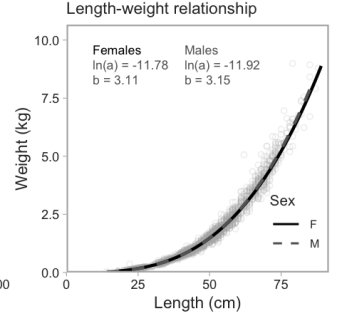
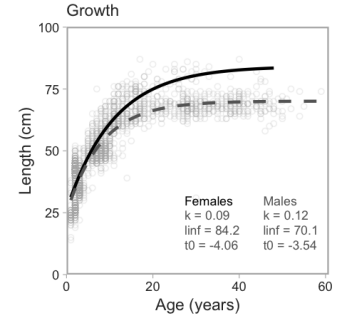
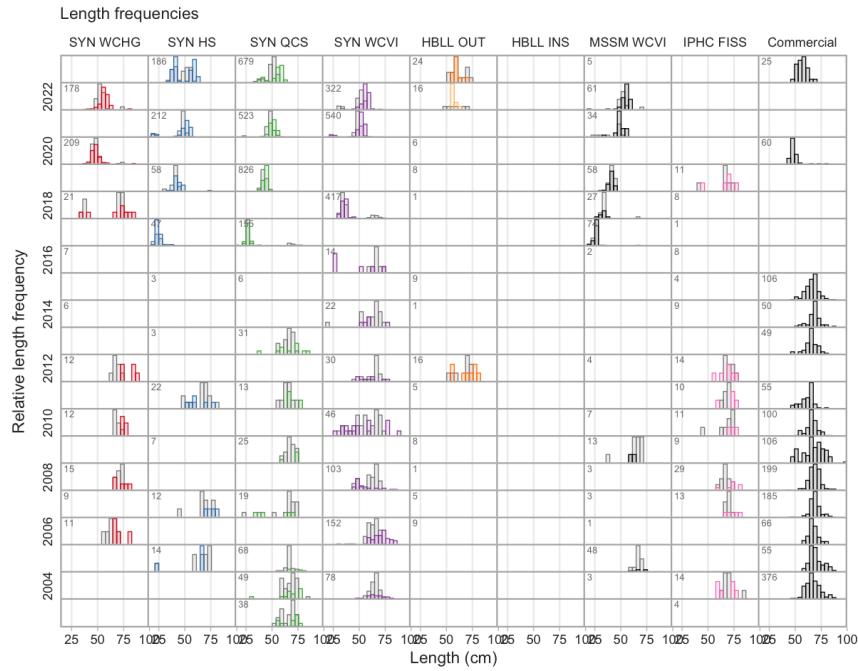


Commercial trawl CPUE



Commercial H & L CPUE





6.71 Canary Rockfish

Sebastes pinniger (437)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

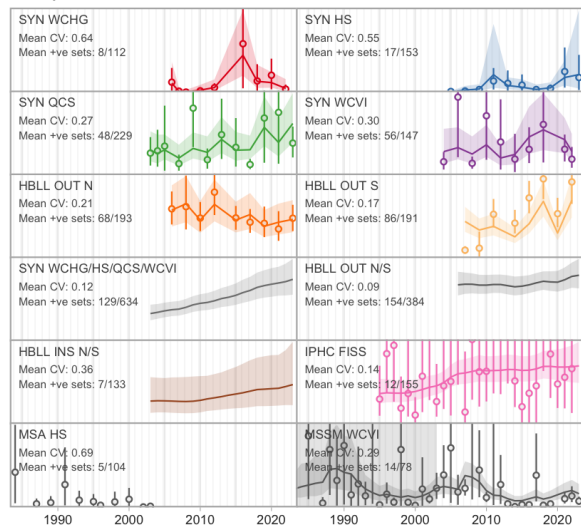
Last Research Document: Starr and Haigh (2023)

Last Science Advisory Report: DFO (2023c)

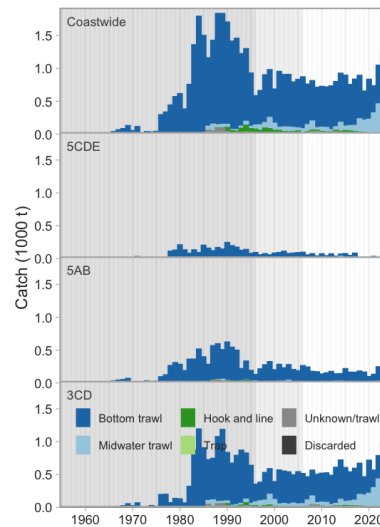
COSEWIC Status Report: COSEWIC (2007d)

COSEWIC Status: Threatened, SARA Status: No Status

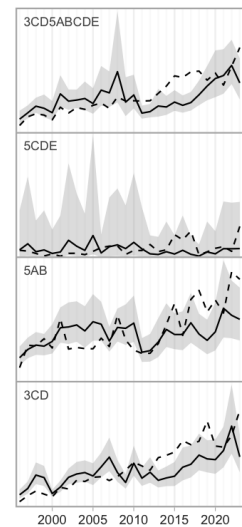
Survey relative biomass indices



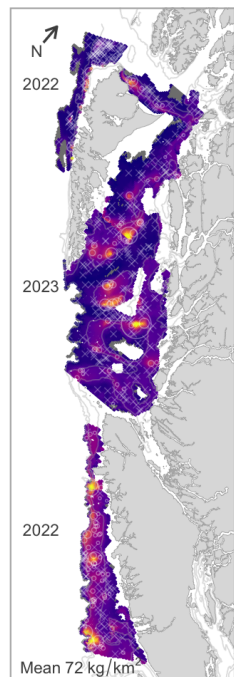
Commercial catch



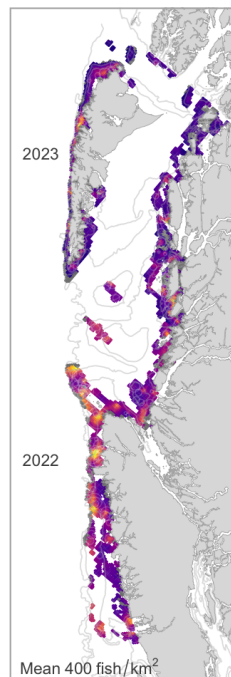
Commercial bottom trawl CPUE



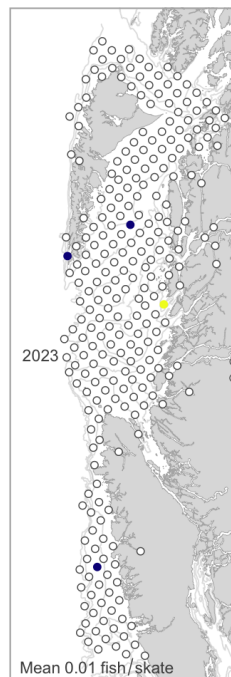
Synoptic survey biomass



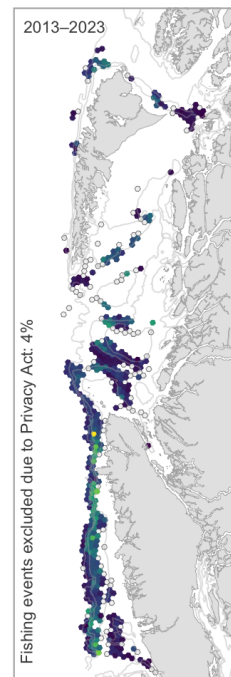
HBL OUT survey biomass



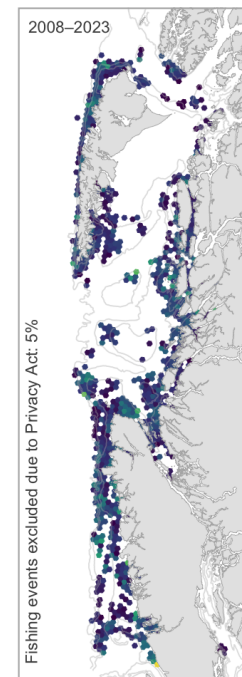
IPHC survey catch rate

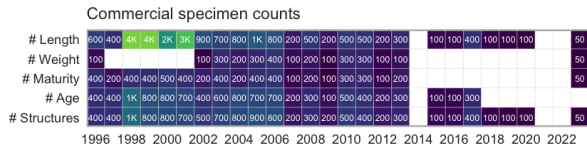
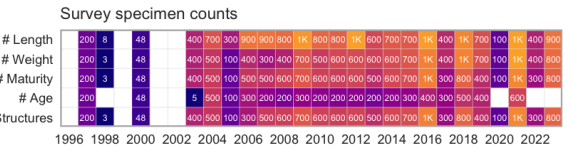
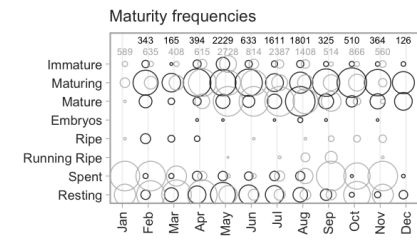
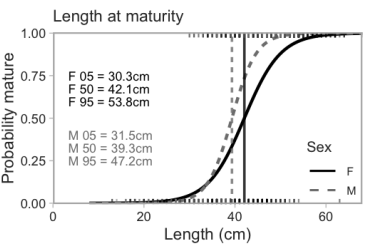
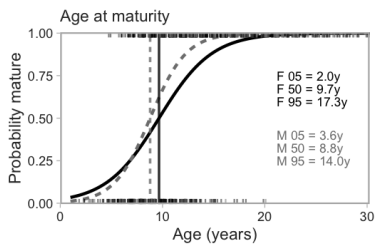
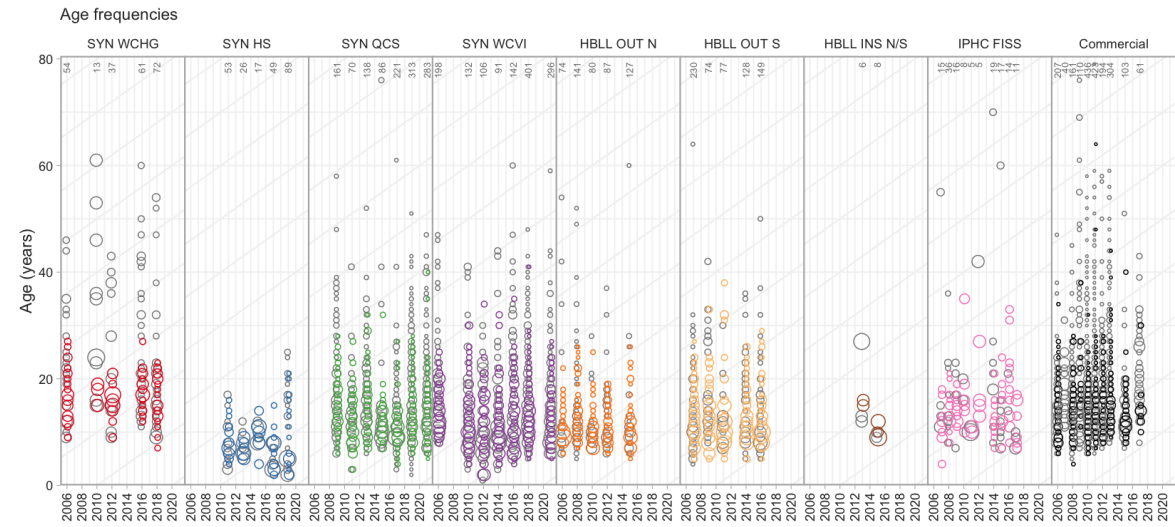
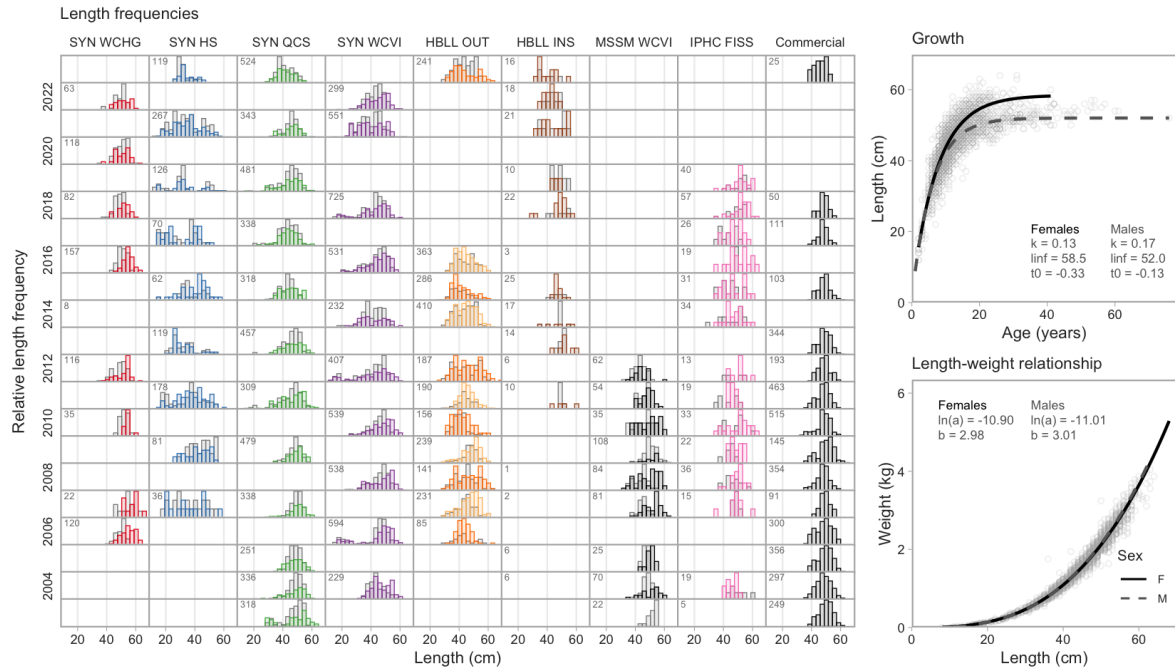


Commercial trawl CPUE



Commercial H & L CPUE





6.72 Redstripe Rockfish

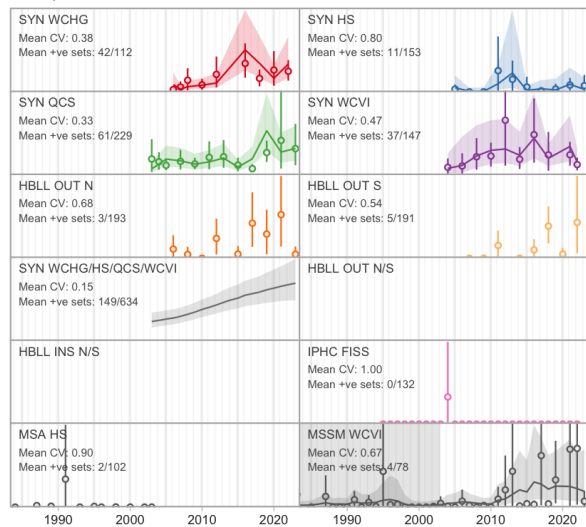
Sebastes proriger (439)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

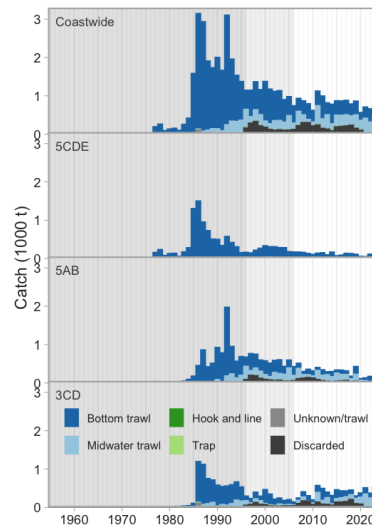
Last Research Document: Starr and Haigh (2021c)

Last Science Advisory Report: DFO (2018b)

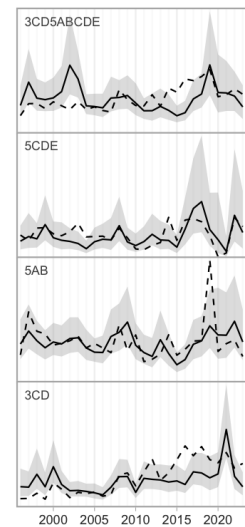
Survey relative biomass indices



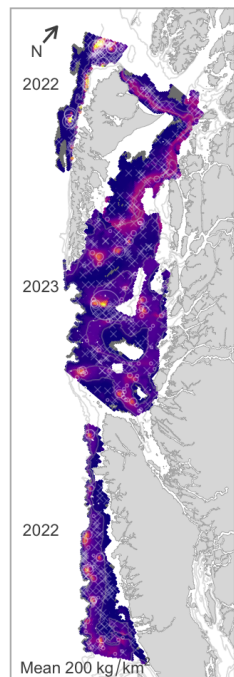
Commercial catch



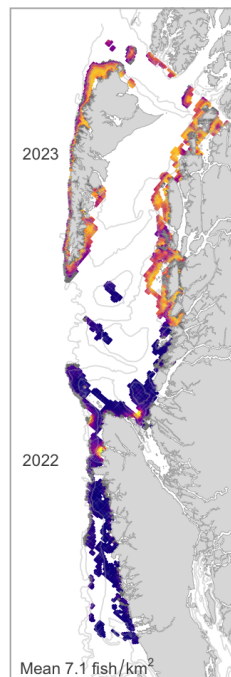
Commercial bottom trawl CPUE



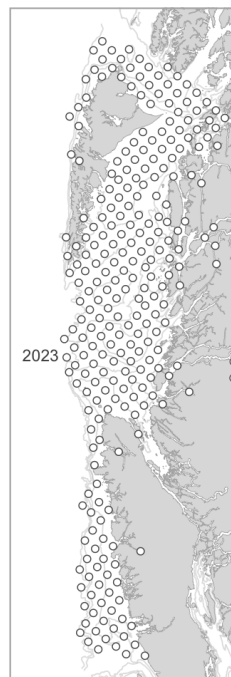
Synoptic survey biomass



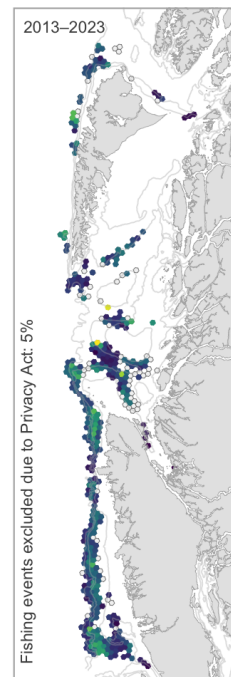
HBLL OUT survey biomass



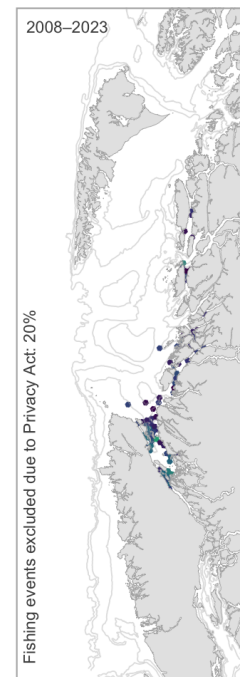
IPHC survey catch rate

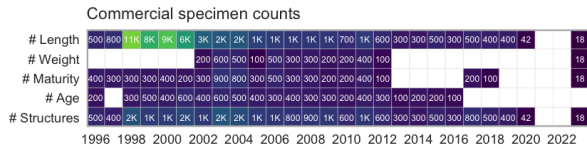
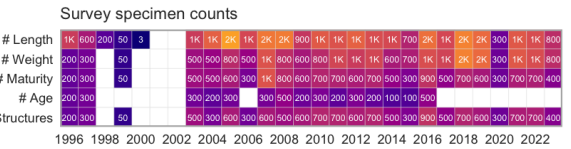
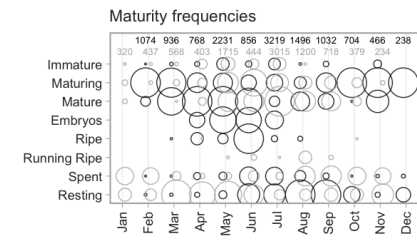
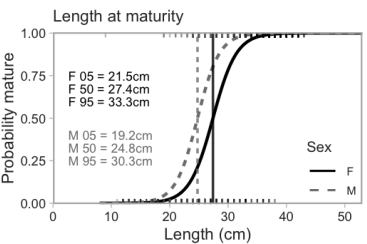
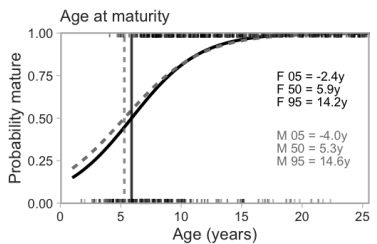
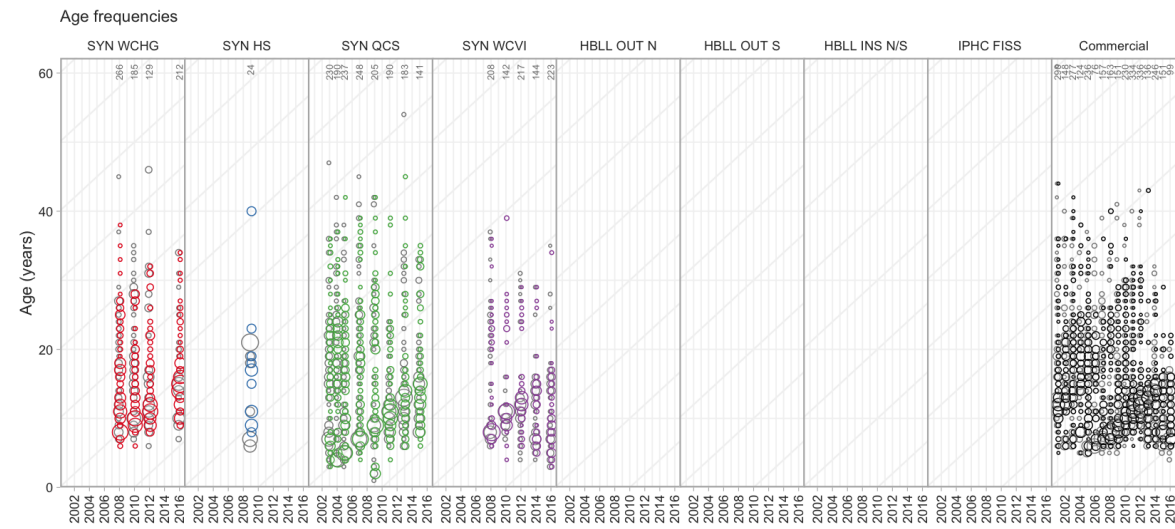
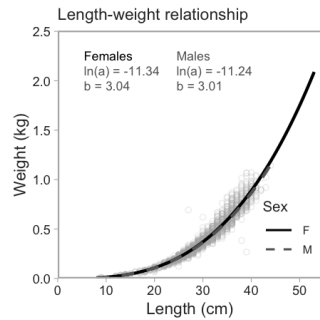
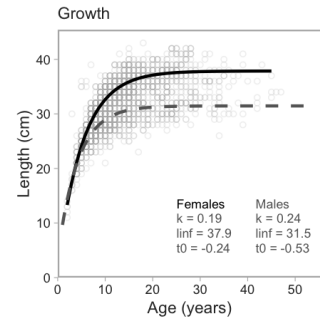
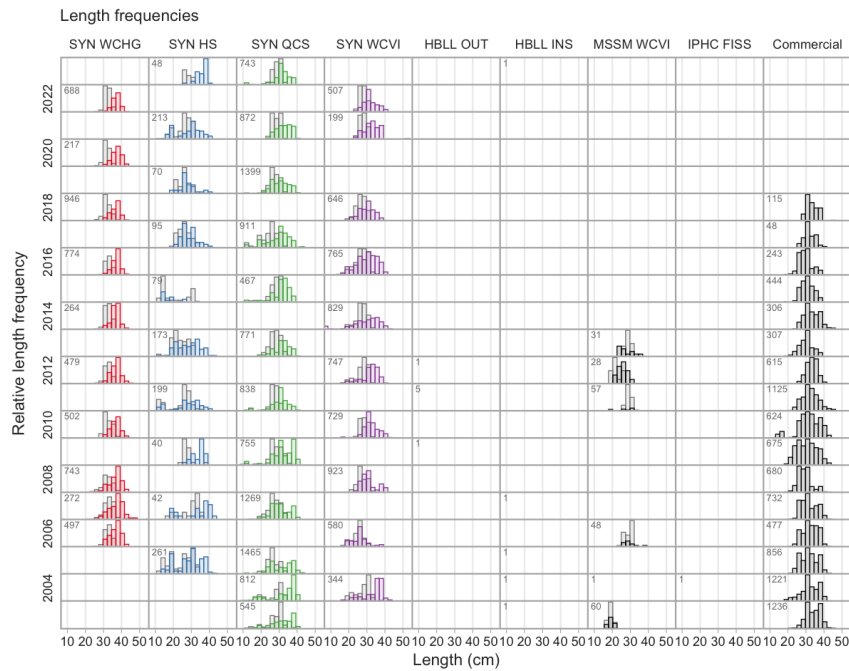


Commercial trawl CPUE



Commercial H & L CPUE





6.73 Yellowmouth Rockfish

Sebastes reedi (440)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

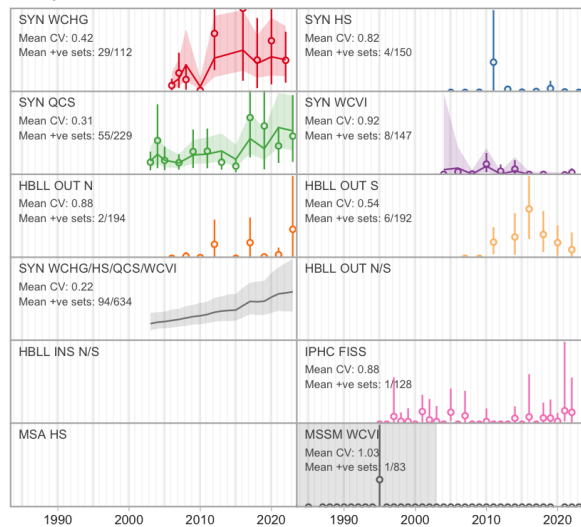
Last Research Document: Starr and Haigh (2022b)

Last Science Advisory Report: DFO (2022c)

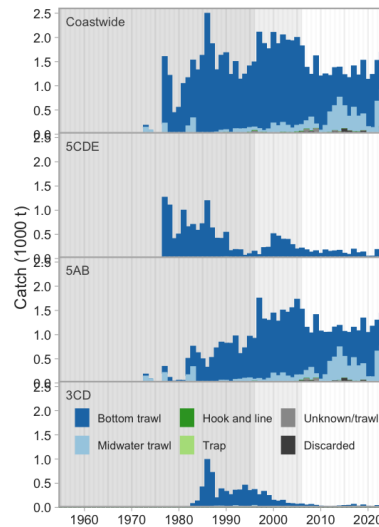
COSEWIC Status Report: COSEWIC (2010b)

COSEWIC Status: Threatened, SARA Status: No Status

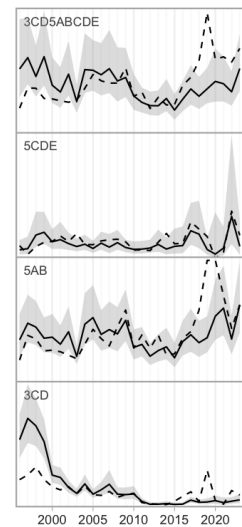
Survey relative biomass indices



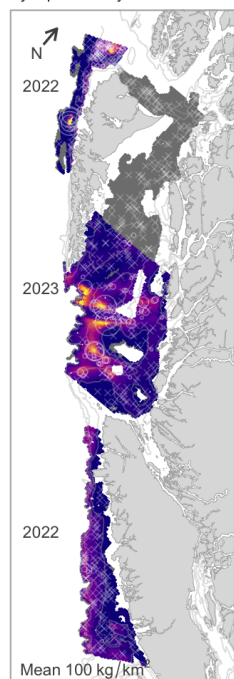
Commercial catch



Commercial bottom trawl CPUE



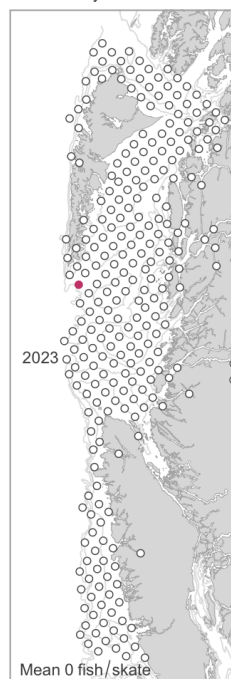
Synoptic survey biomass



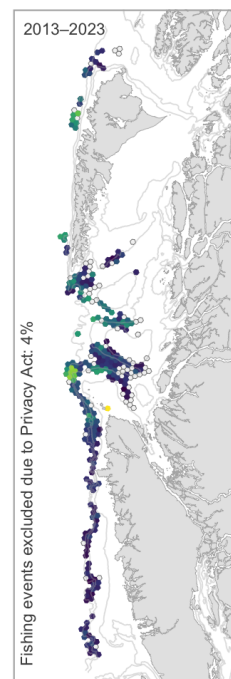
HBL OUT survey biomass



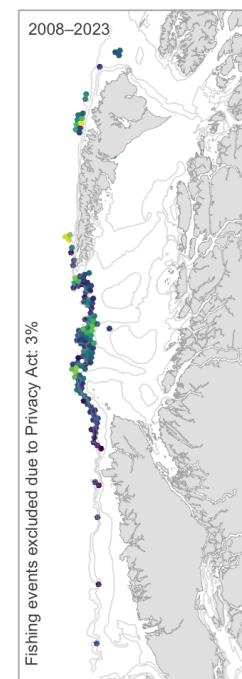
IPHC survey catch rate

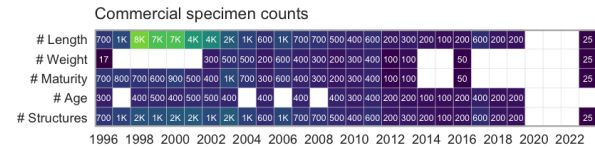
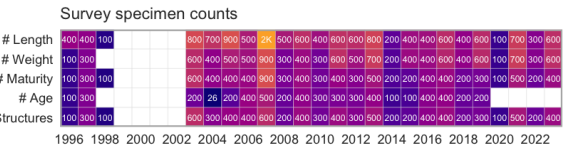
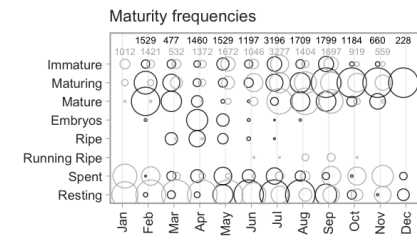
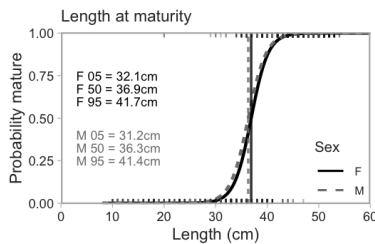
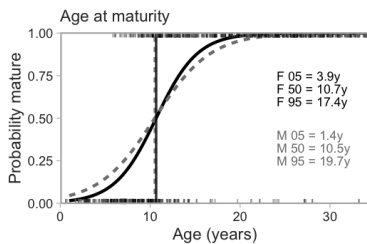
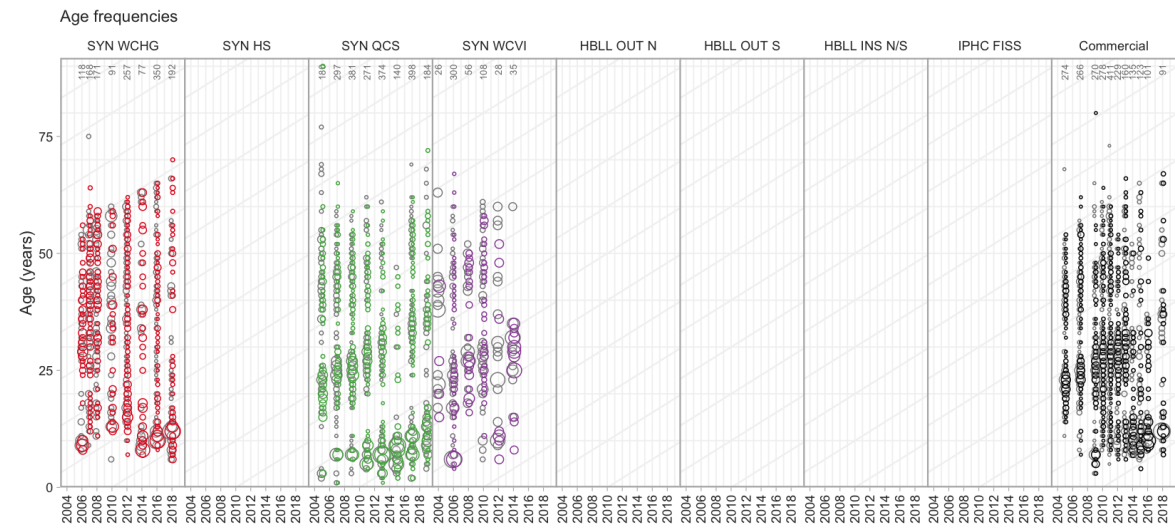
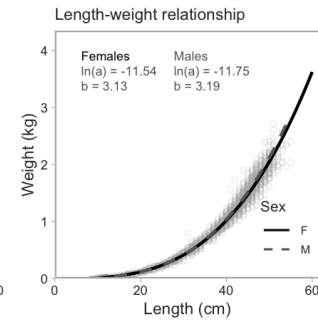
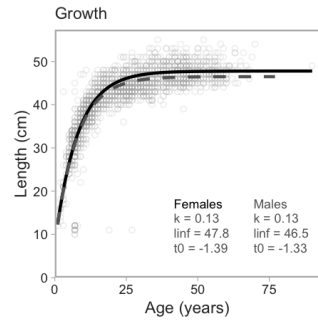
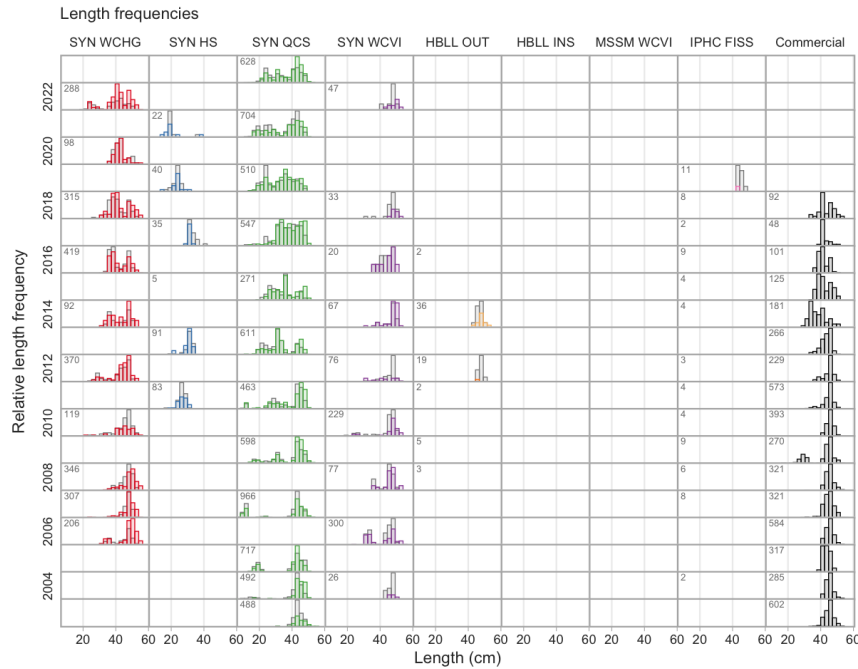


Commercial trawl CPUE



Commercial H & L CPUE





6.74 Yelloweye Rockfish

Sebastes ruberrimus (442)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

Last Research Documents: Cox et al. (2020), Haggarty et al. (2022)

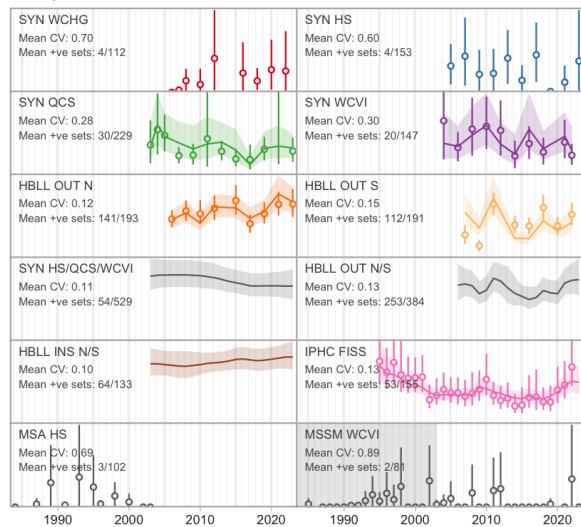
Last Science Advisory Reports: DFO (2020d), DFO (2020e)

Species at Risk Act Management Plan Series and Last Science Responses: DFO (2021b), DFO (2023d), DFO (2023e)

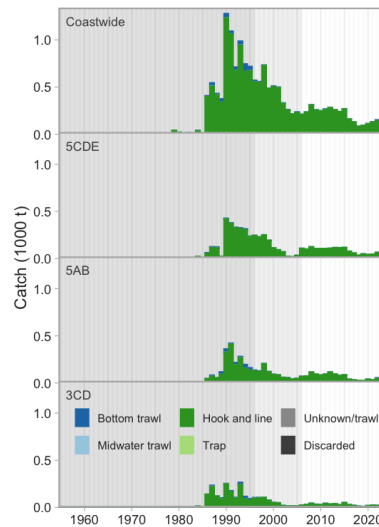
COSEWIC Status Report: COSEWIC (2020)

COSEWIC Status: Threatened, SARA Status: Special Concern

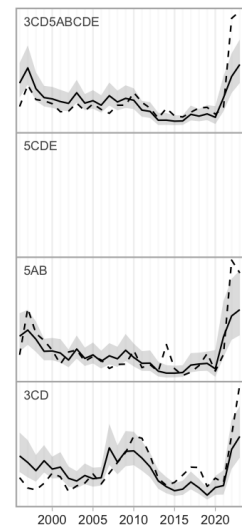
Survey relative biomass indices



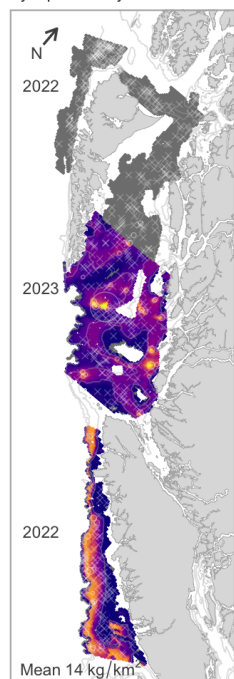
Commercial catch



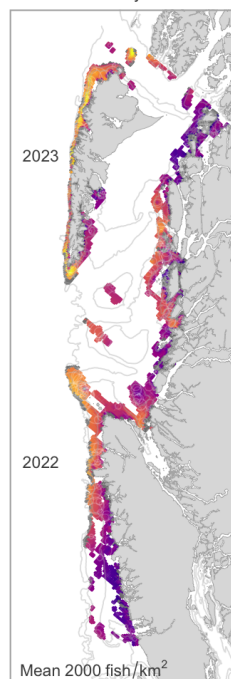
Commercial bottom trawl CPUE



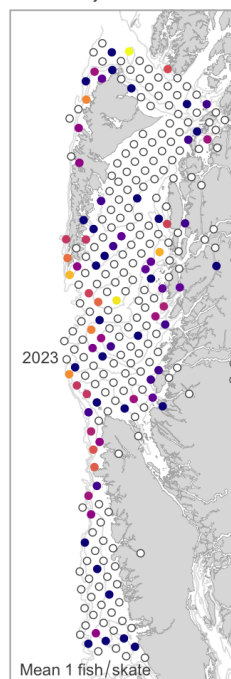
Synoptic survey biomass



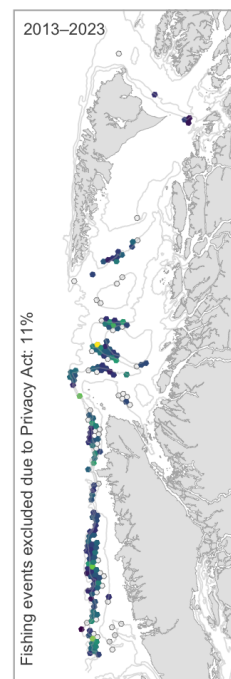
HBL OUT survey biomass



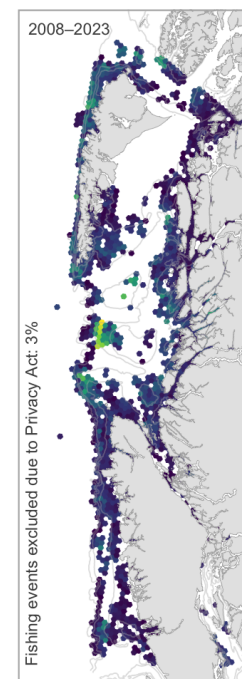
IPHC survey catch rate

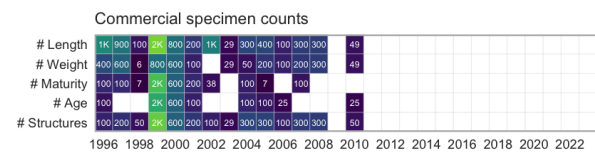
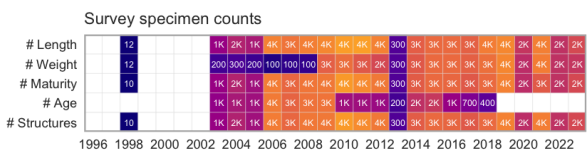
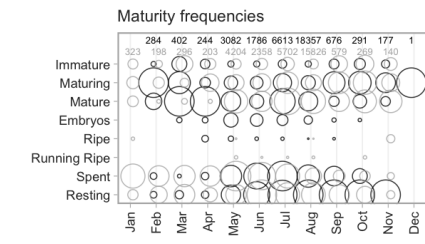
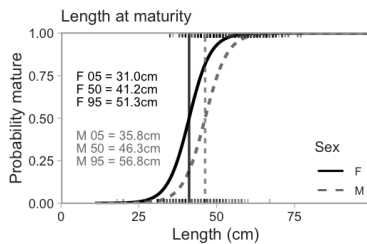
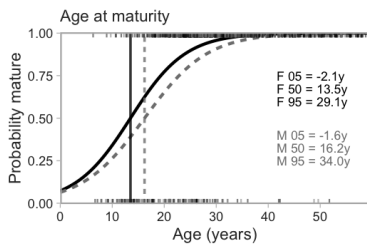
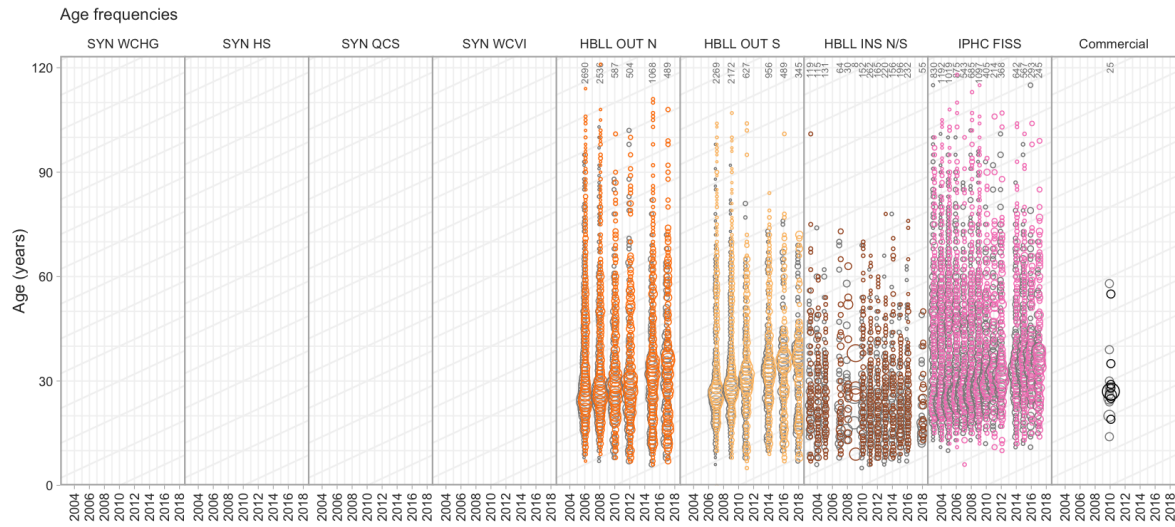
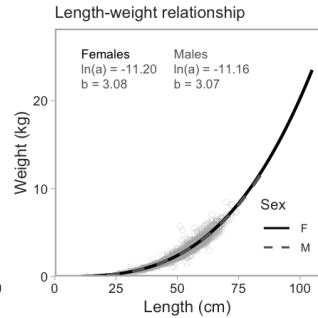
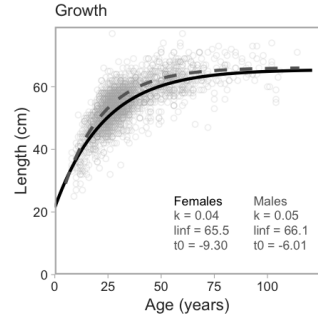


Commercial trawl CPUE



Commercial H & L CPUE



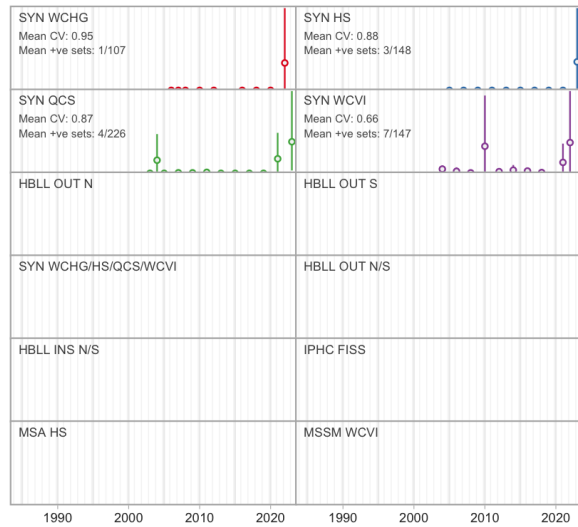


6.75 Stripetail Rockfish

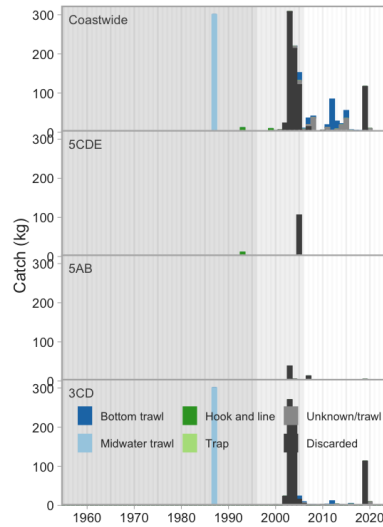
Sebastes saxicola (444)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

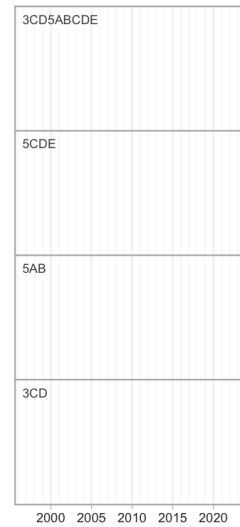
Survey relative biomass indices



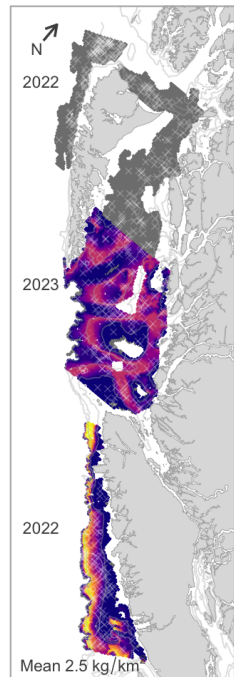
Commercial catch



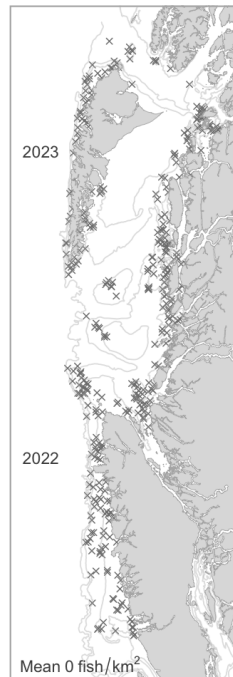
Commercial bottom trawl CPUE



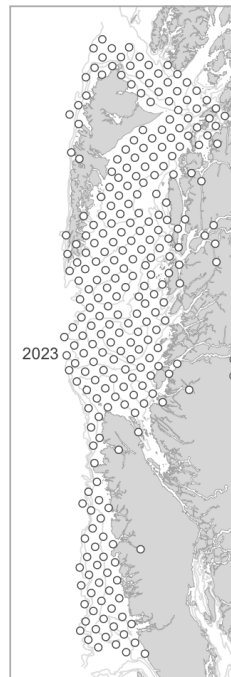
Synoptic survey biomass



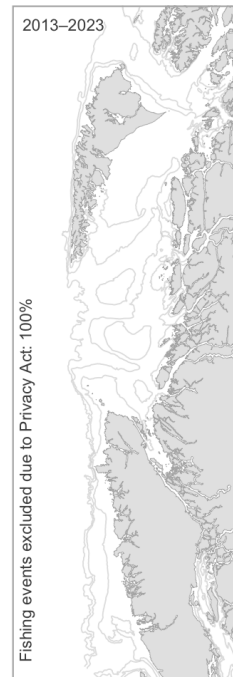
HBL OUT survey biomass



IPHC survey catch rate

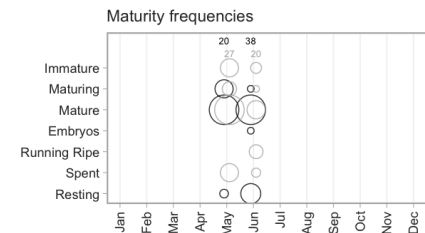
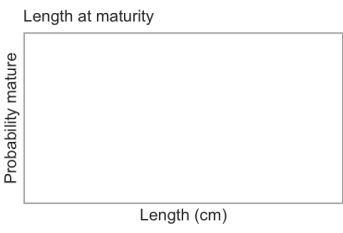
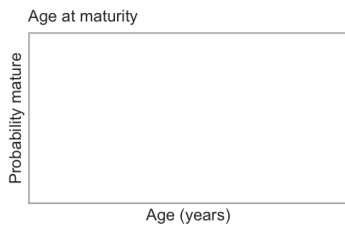
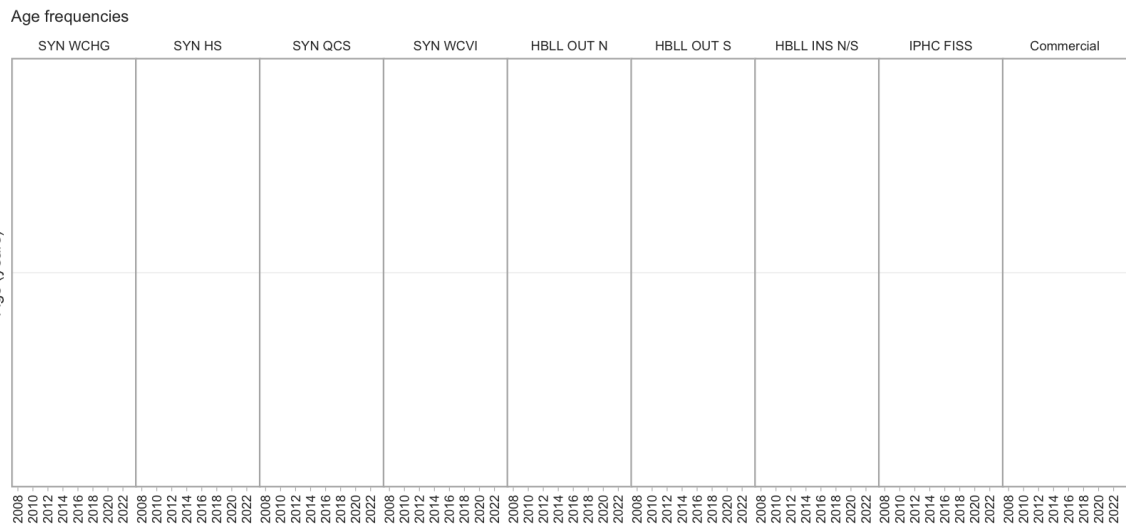
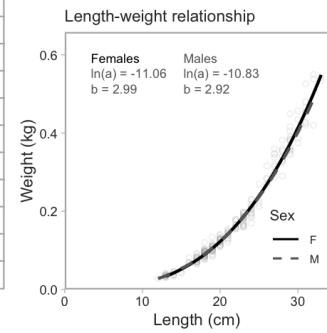
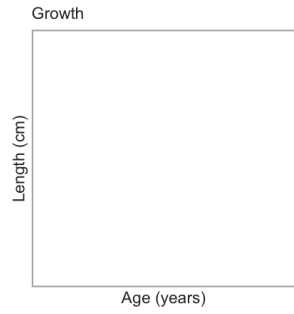
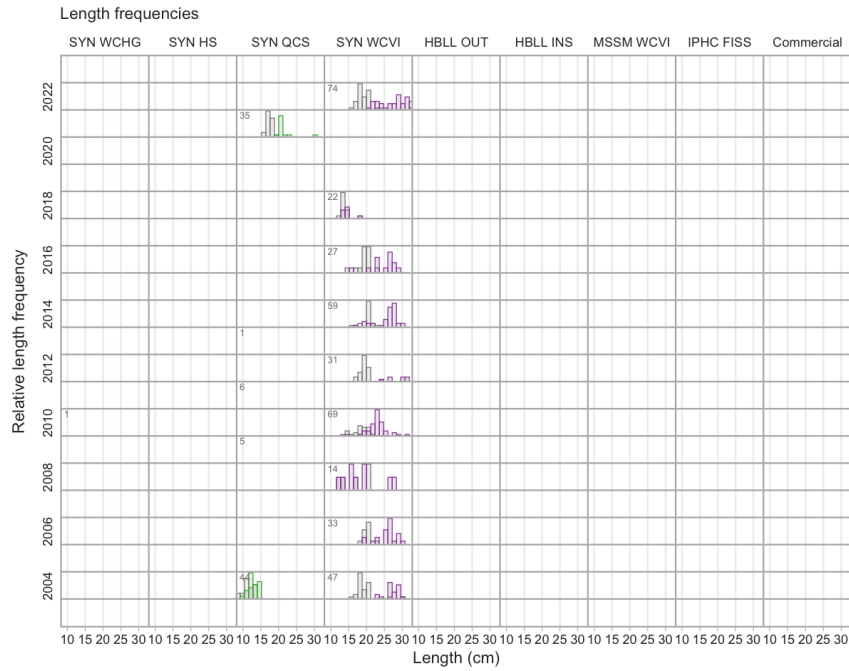


Commercial trawl CPUE



Commercial H & L CPUE





Survey specimen counts

	2004	2006	2008	2010	2012	2014	2016	2018	2020	2022
# Length	230	100	33	100	5	100	6	31	1	100
# Weight	47		37	100	6	22	1			35
# Maturity	47		37	100						35
# Age										
# Structures	47		37	100						

Commercial specimen counts

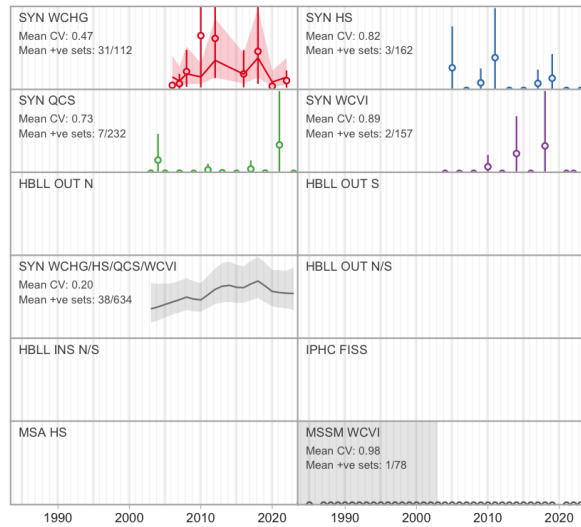
	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020	2022
# Length														
# Weight														
# Maturity														
# Age														
# Structures														

6.76 Harlequin Rockfish

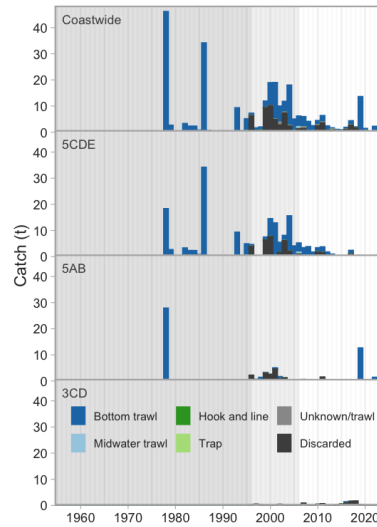
Sebastes variegatus (446)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

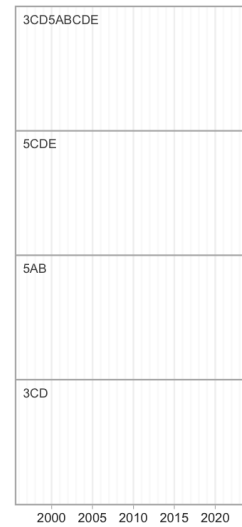
Survey relative biomass indices



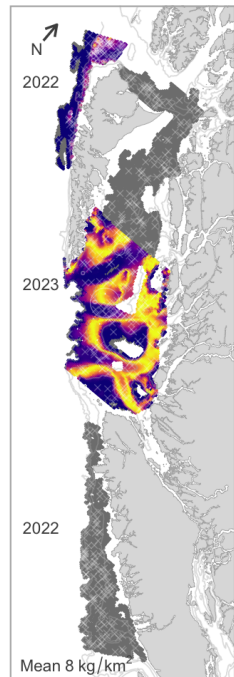
Commercial catch



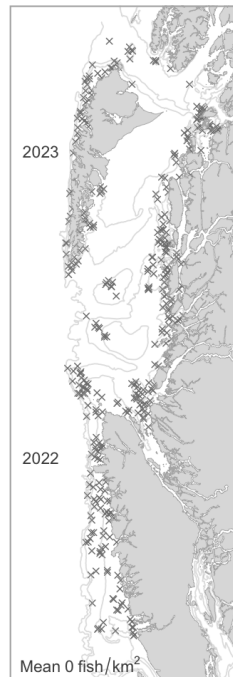
Commercial bottom trawl CPUE



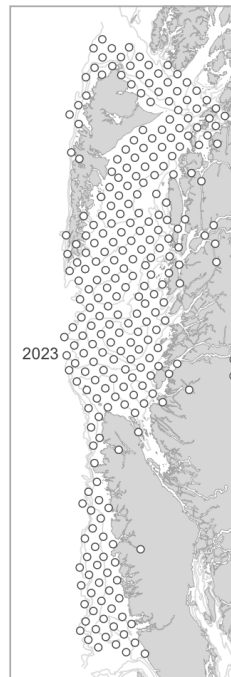
Synoptic survey biomass



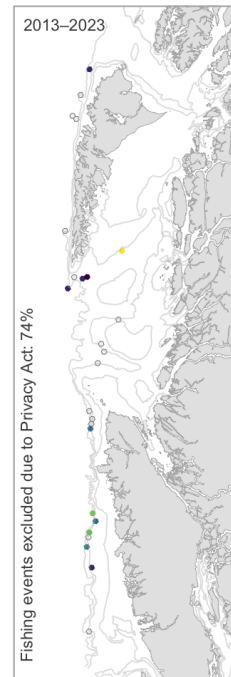
HBL OUT survey biomass



IPHC survey catch rate

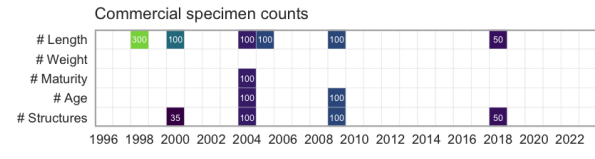
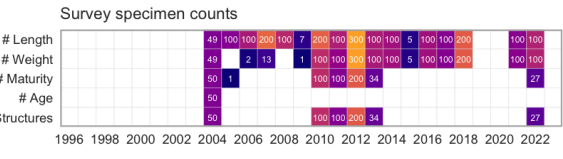
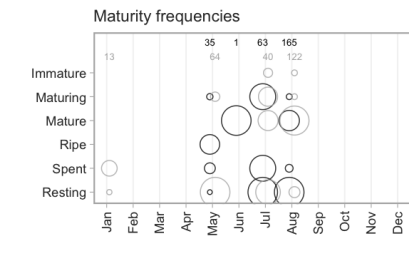
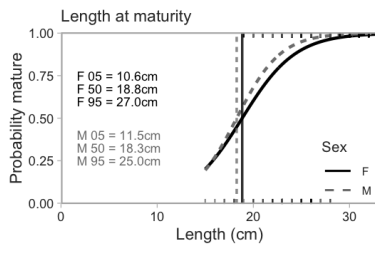
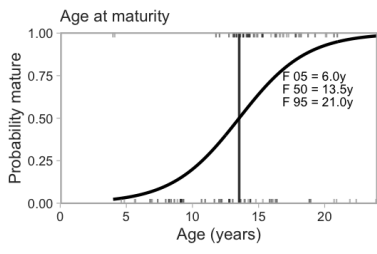
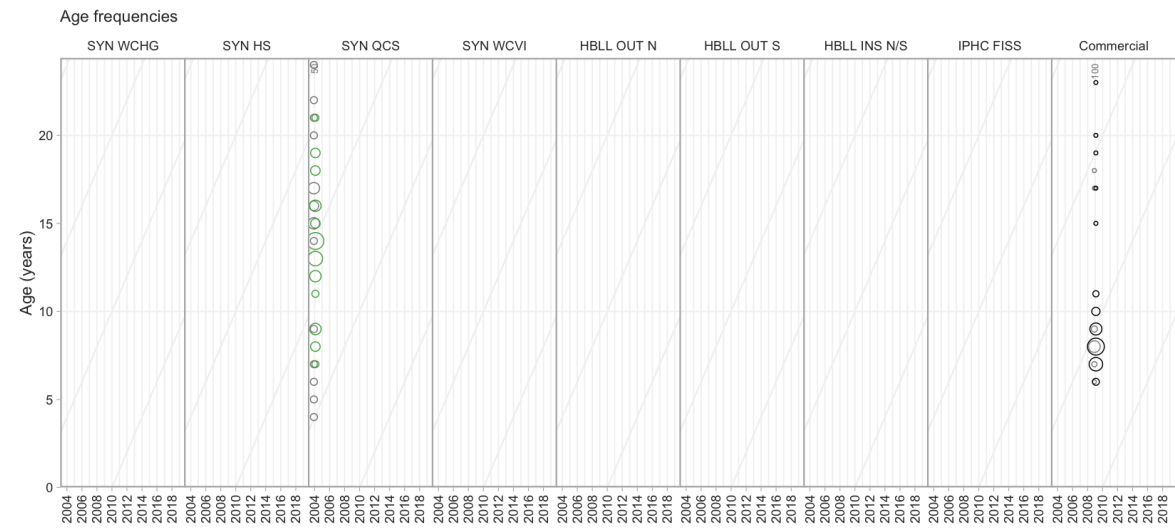
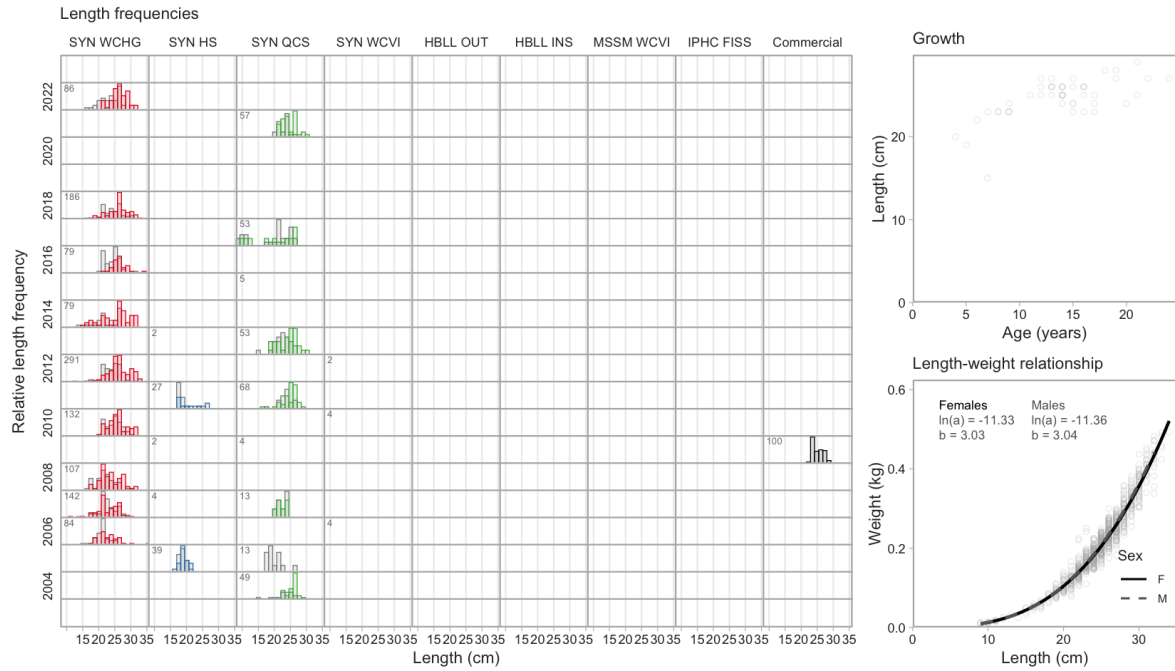


Commercial trawl CPUE



Commercial H & L CPUE



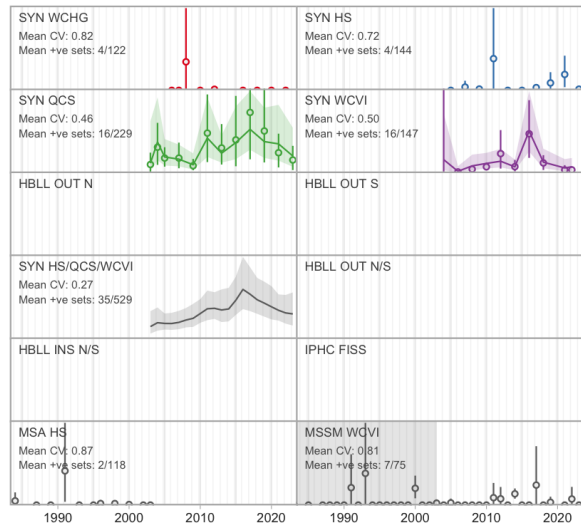


6.77 Pygmy Rockfish

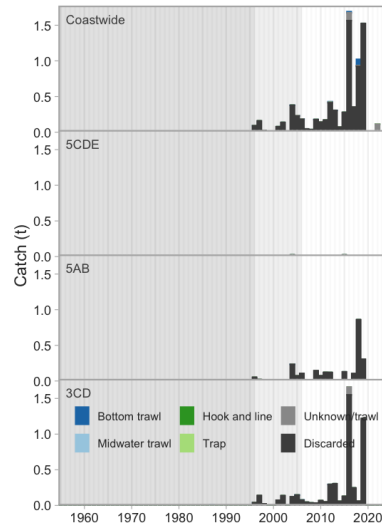
Sebastes wilsoni (448)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

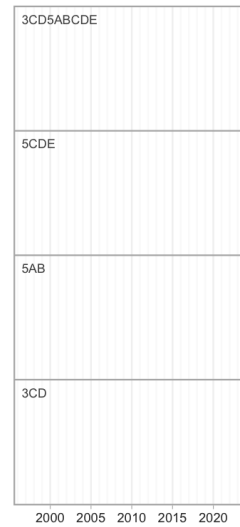
Survey relative biomass indices



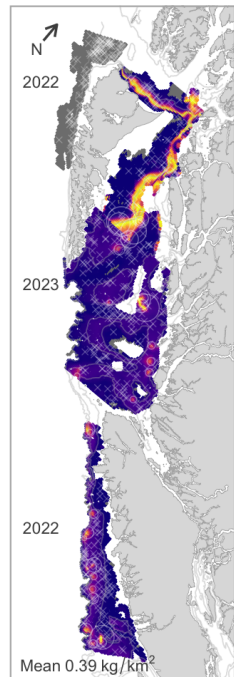
Commercial catch



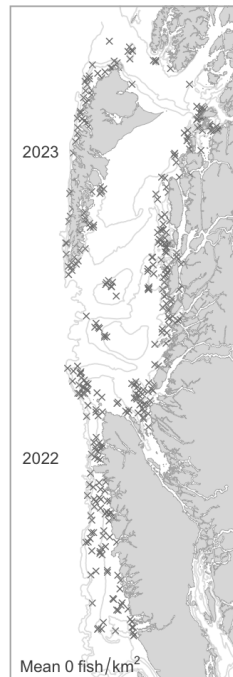
Commercial bottom trawl CPUE



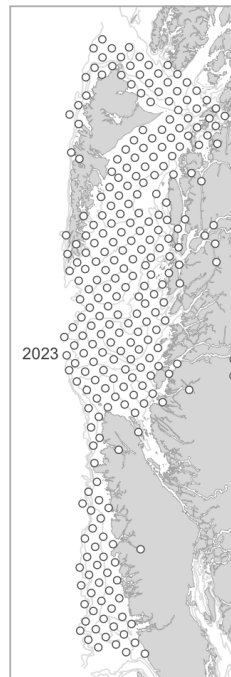
Synoptic survey biomass



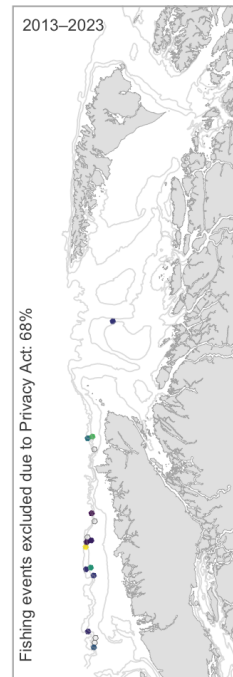
HBL OUT survey biomass



IPHC survey catch rate

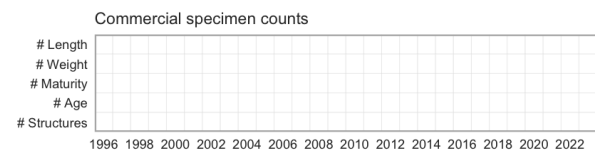
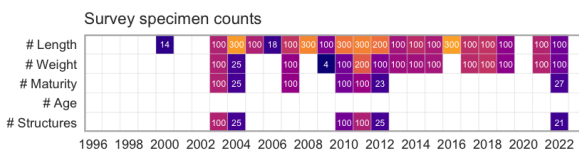
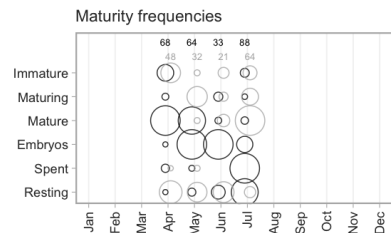
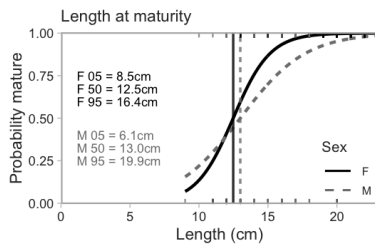
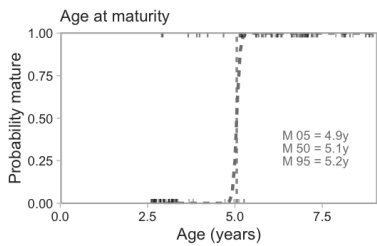
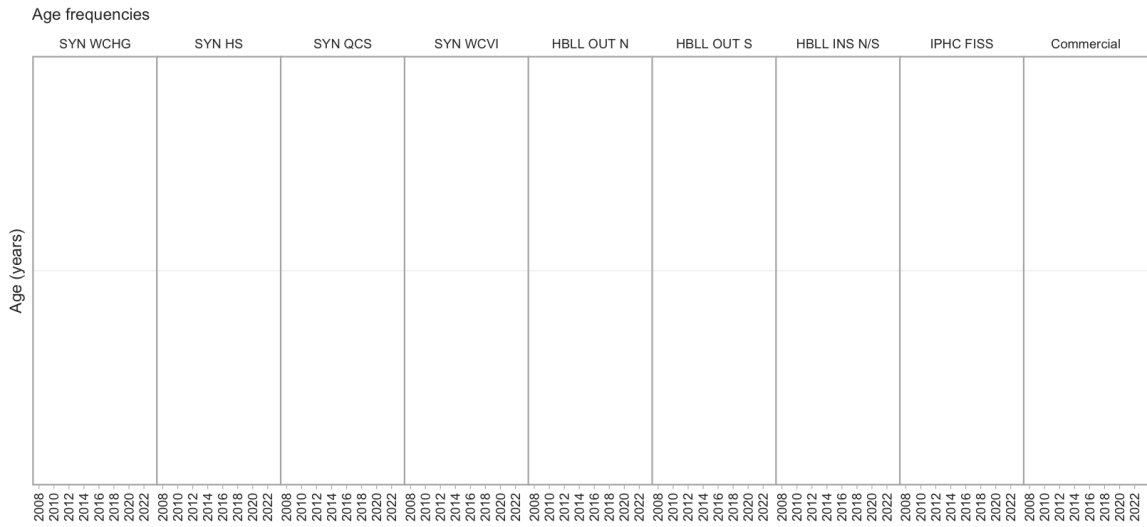
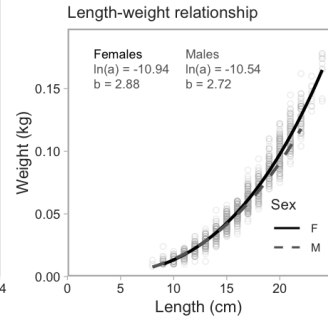
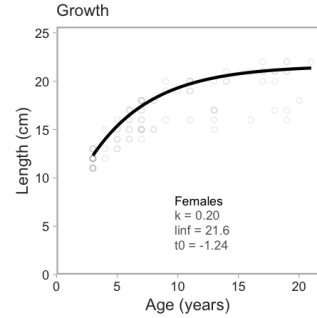


Commercial trawl CPUE



Commercial H & L CPUE



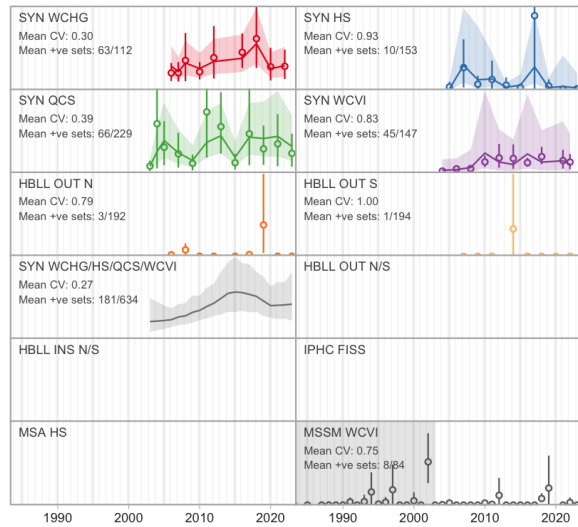


6.78 Sharpchin Rockfish

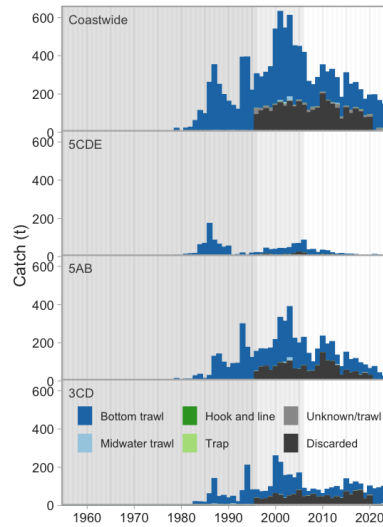
Sebastes zacentrus (450)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

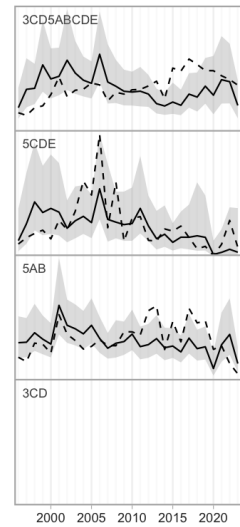
Survey relative biomass indices



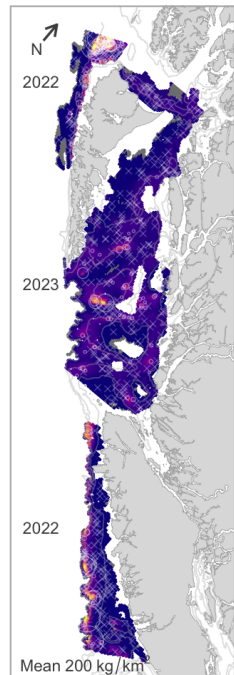
Commercial catch



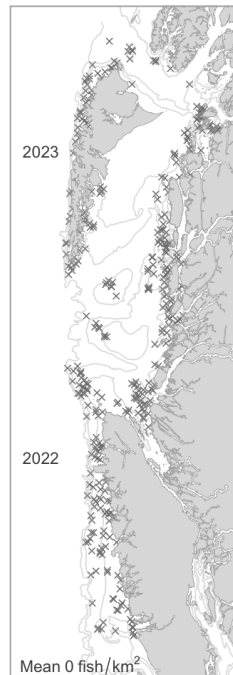
Commercial bottom trawl CPUE



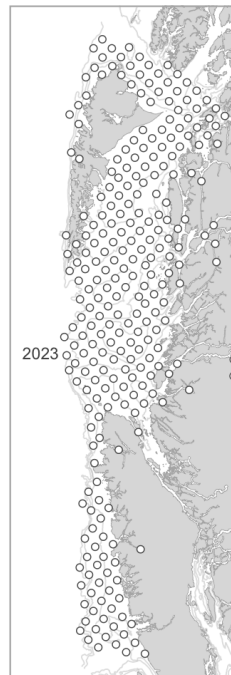
Synoptic survey biomass



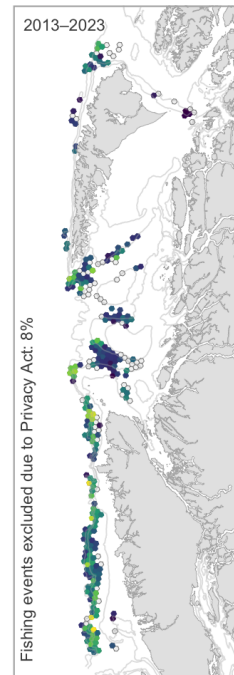
HBL OUT survey biomass



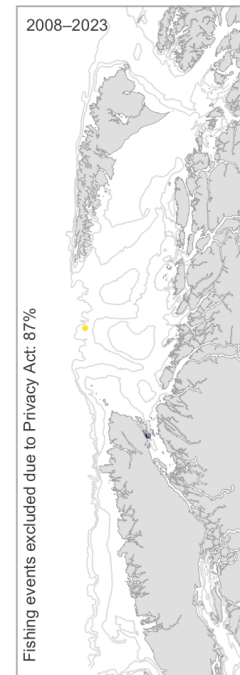
IPHC survey catch rate

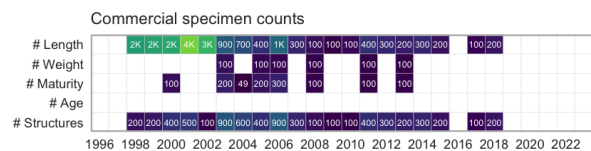
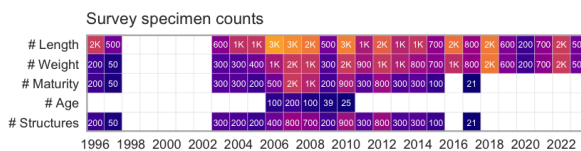
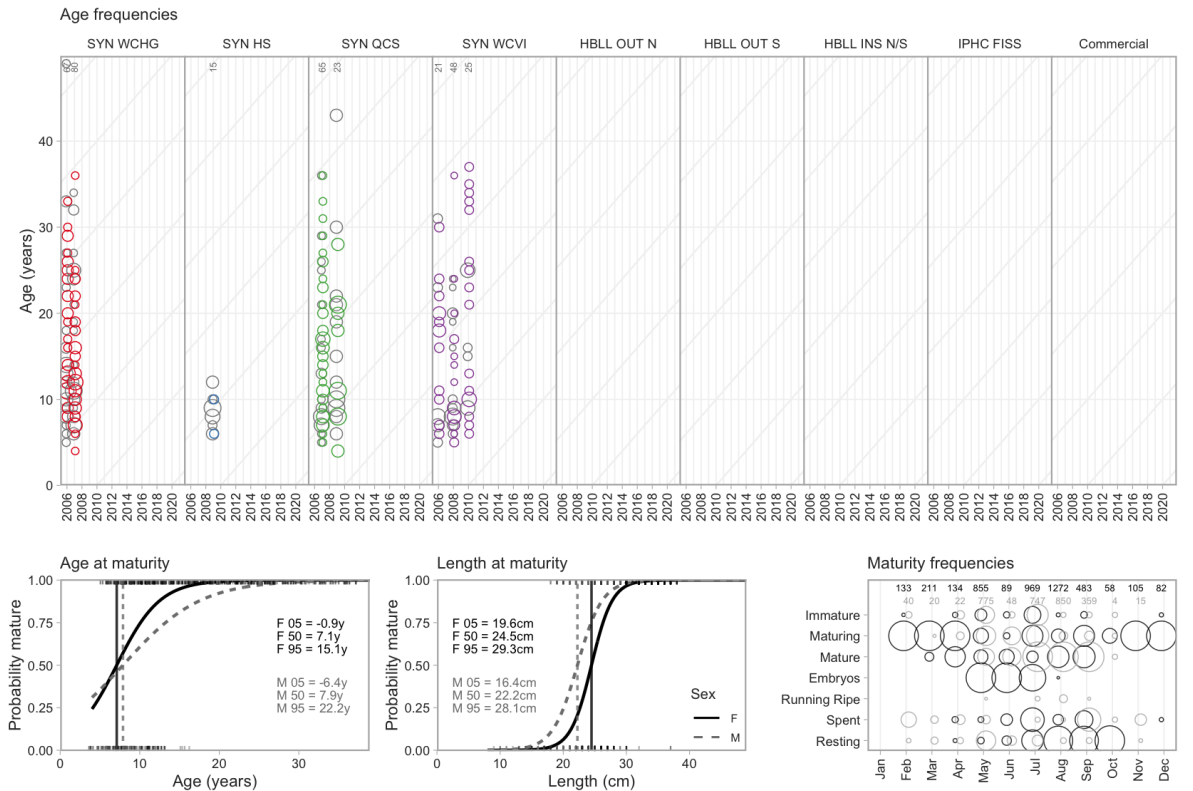
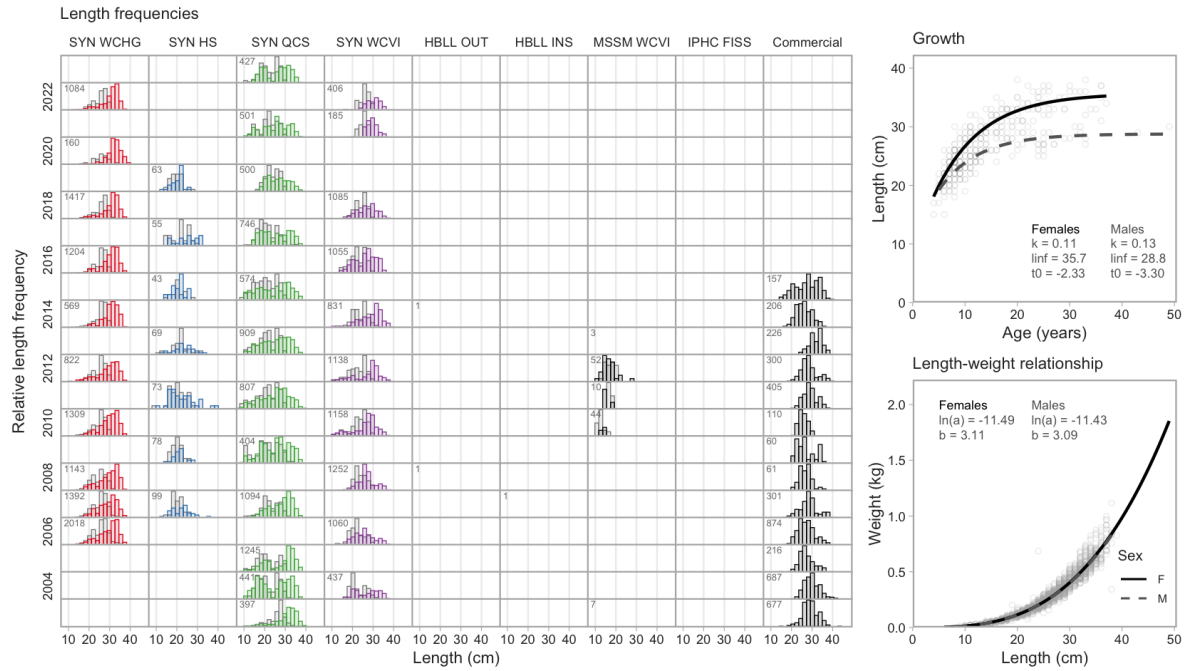


Commercial trawl CPUE



Commercial H & L CPUE





6.79 Shortspine Thornyhead

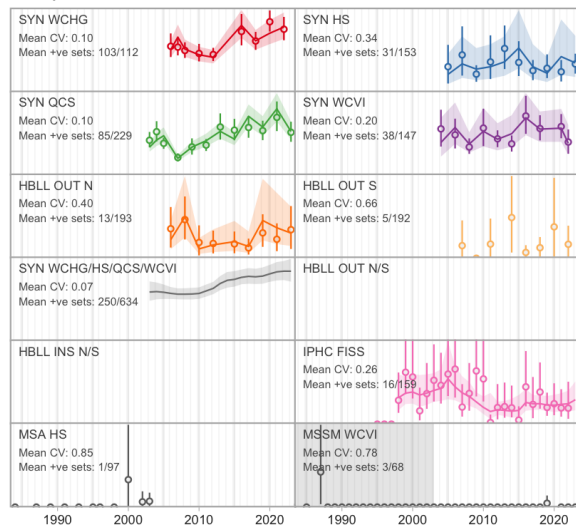
Sebastolobus alascanus (451)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

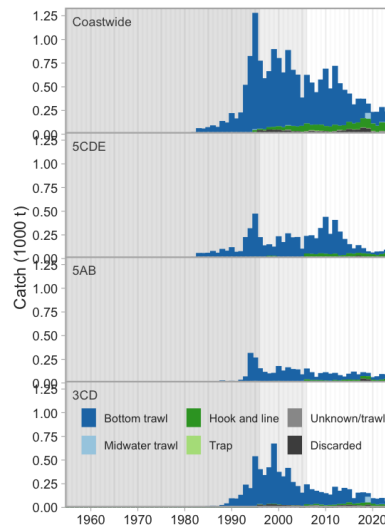
Last Research Document: Starr and Haigh (2017)

Last Science Advisory Report: DFO (2016)

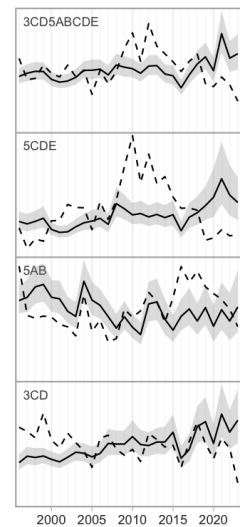
Survey relative biomass indices



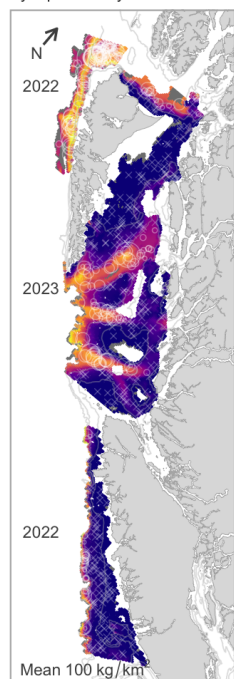
Commercial catch



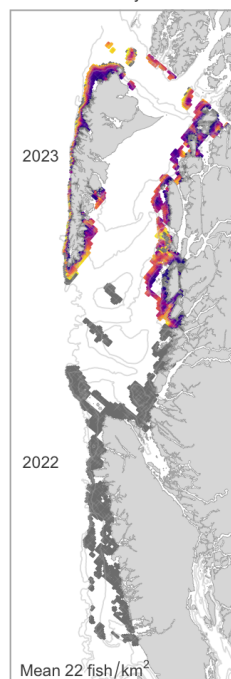
Commercial bottom trawl CPUE



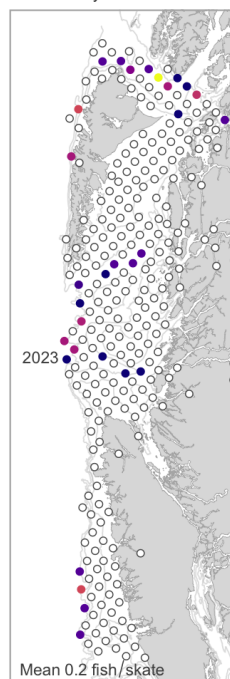
Synoptic survey biomass



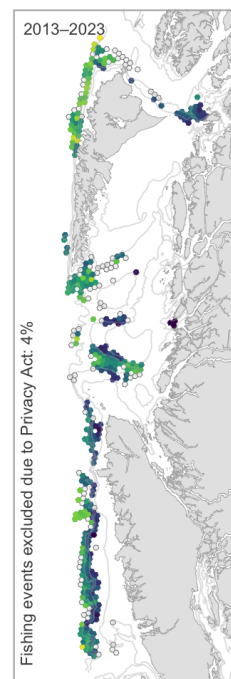
HBLL OUT survey biomass



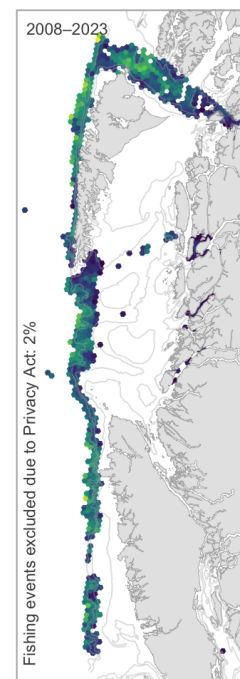
IPHC survey catch rate

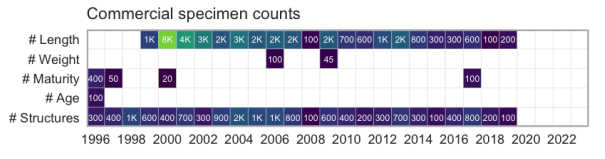
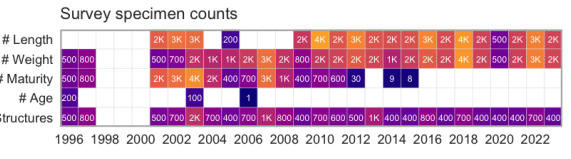
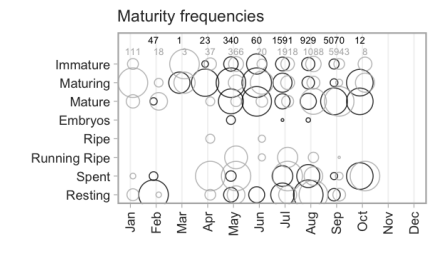
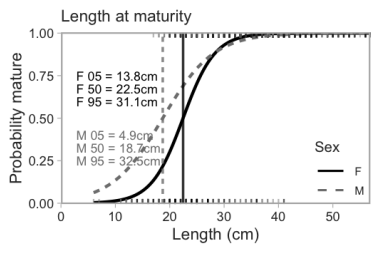
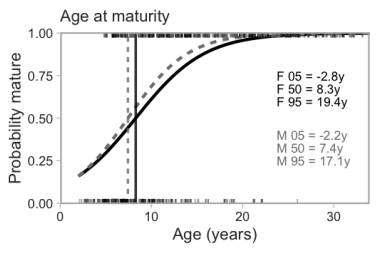
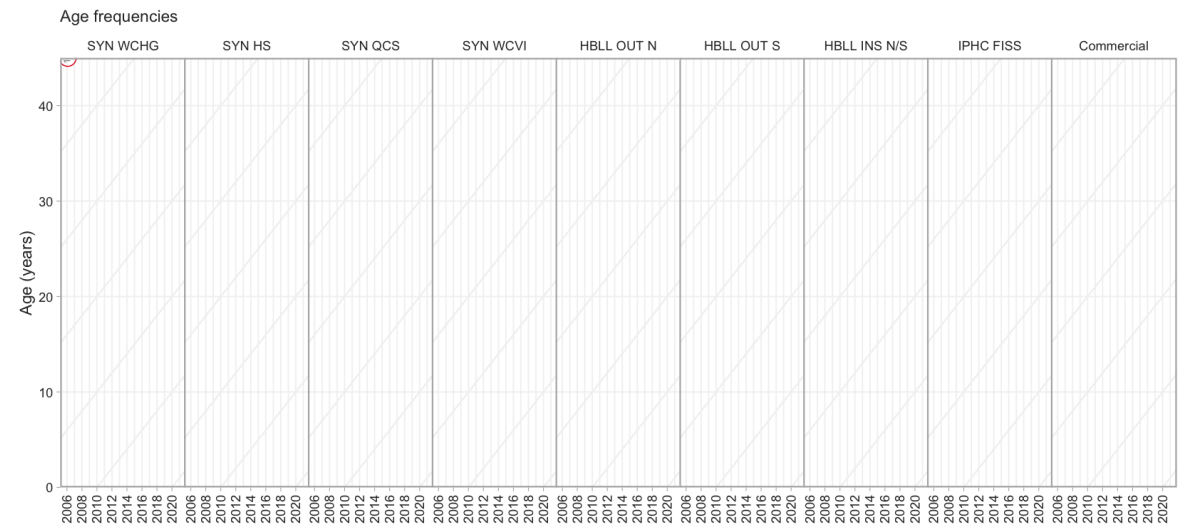
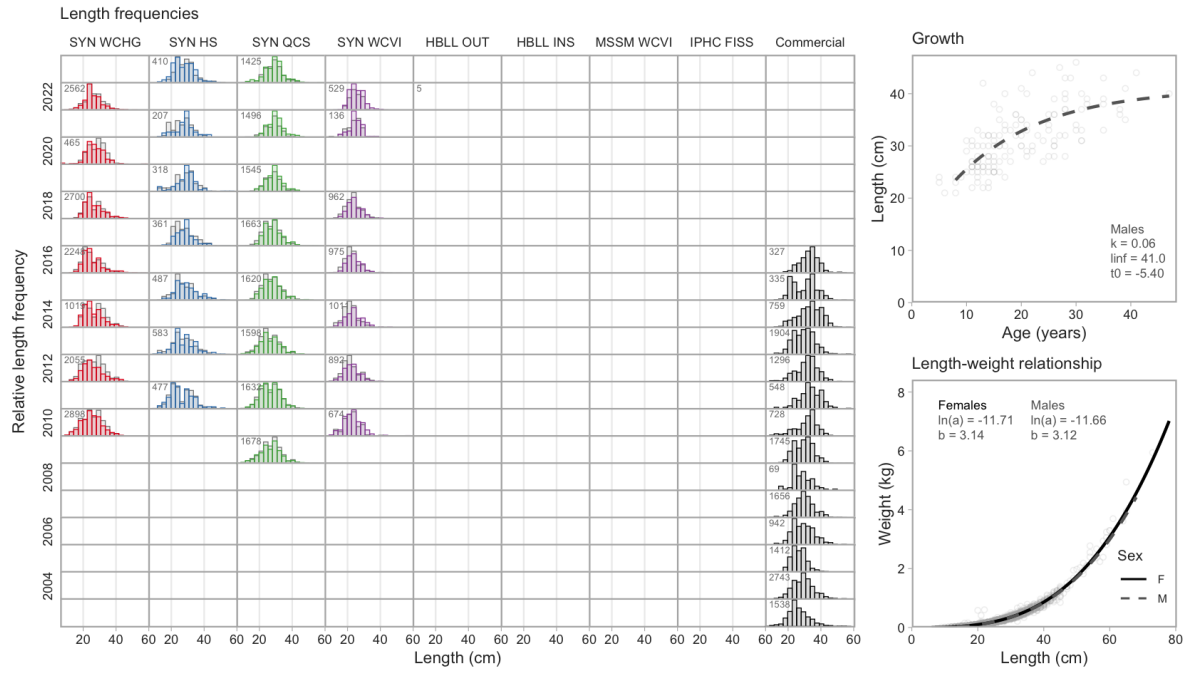


Commercial trawl CPUE



Commercial H & L CPUE





6.80 Longspine Thornyhead

Sebastolobus altivelis (453)

Order: Scorpaeniformes, Family: Scorpaenidae, [FishBase](#), [WoRMS](#)

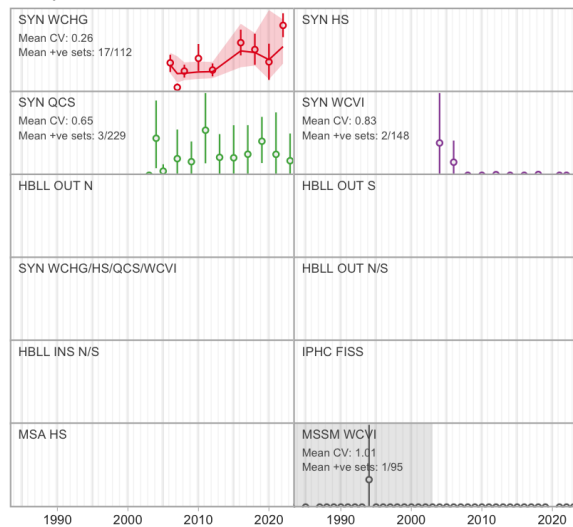
Last Research Document: Haigh et al. (2005)

Species at Risk Act Management Plan Series: DFO (2012)

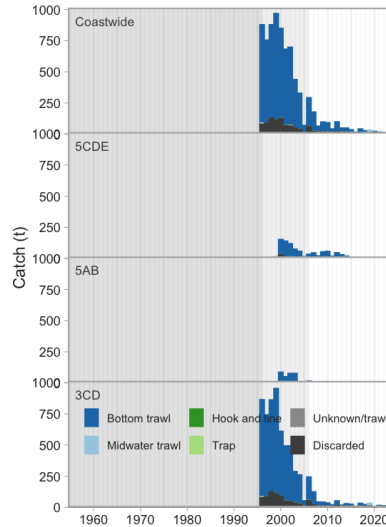
COSEWIC Status Report: COSEWIC (2007e)

COSEWIC Status: Special Concern, SARA Status: Special Concern

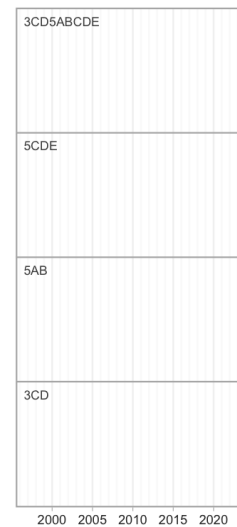
Survey relative biomass indices



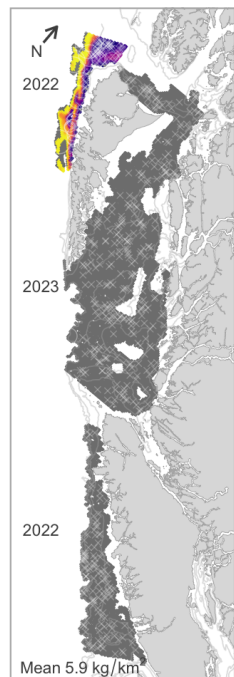
Commercial catch



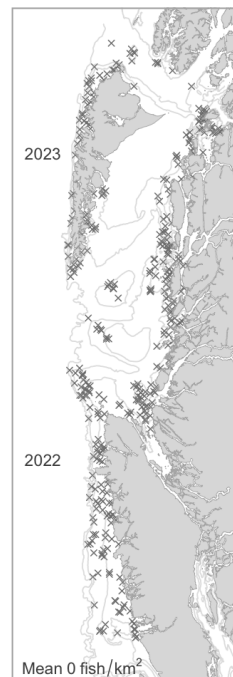
Commercial bottom trawl CPUE



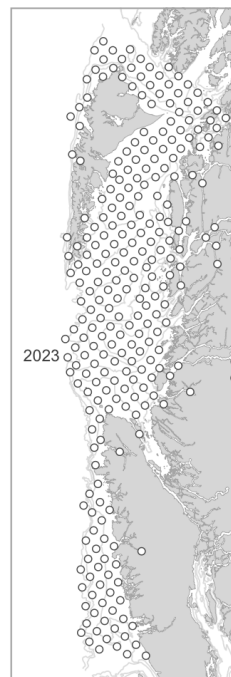
Synoptic survey biomass



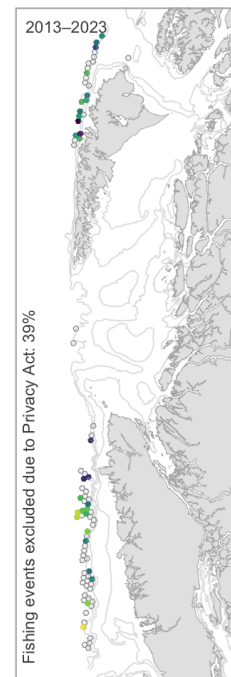
HBLL OUT survey biomass



IPHC survey catch rate

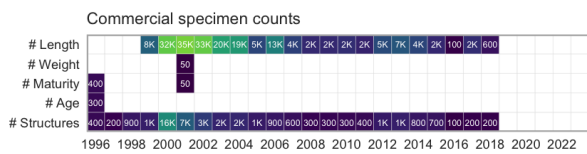
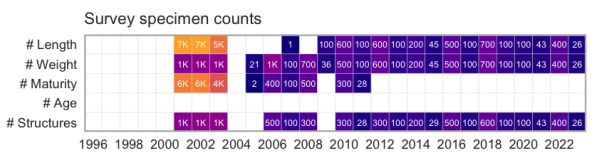
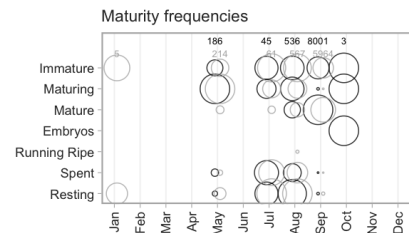
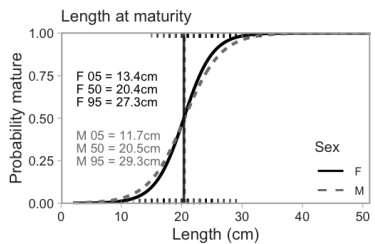
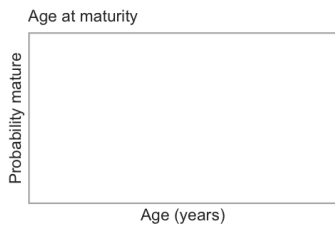
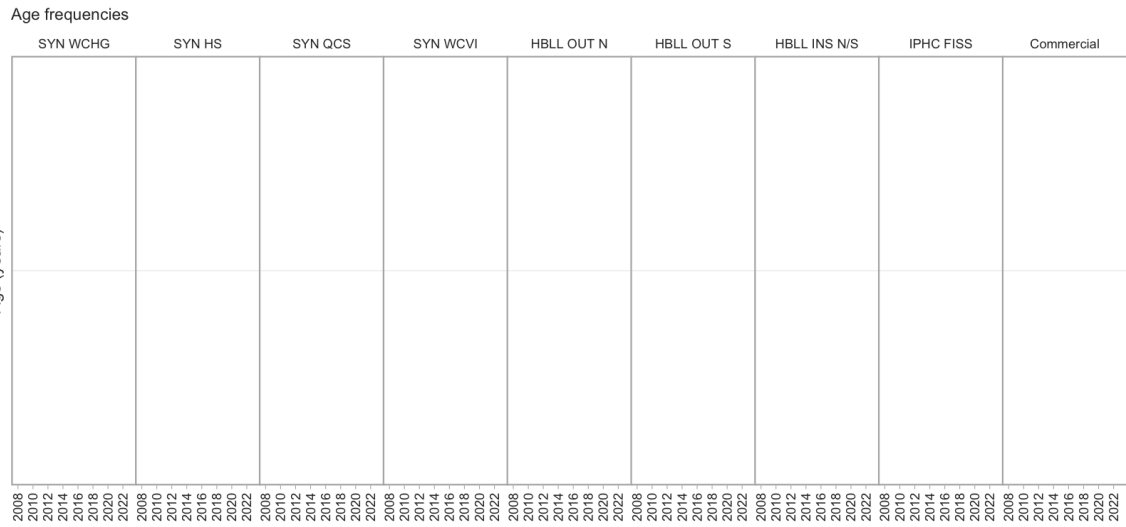


Commercial trawl CPUE



Commercial H & L CPUE





6.81 Sablefish

Anoplopoma fimbria (455)

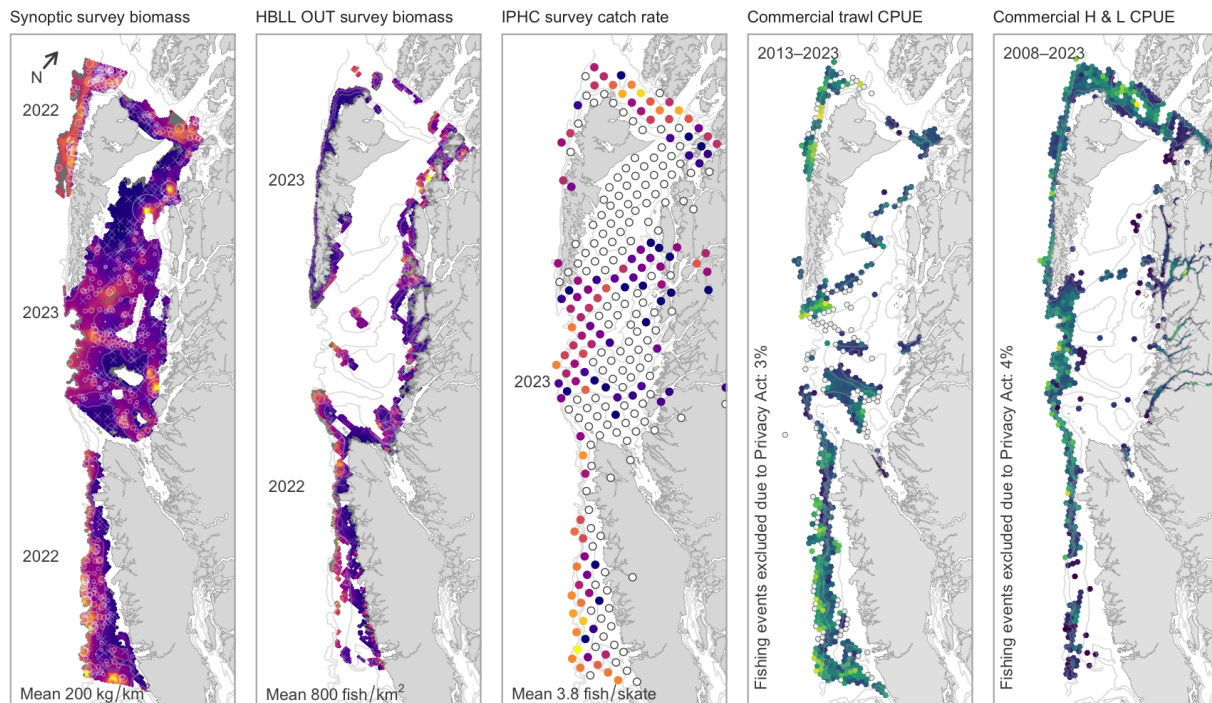
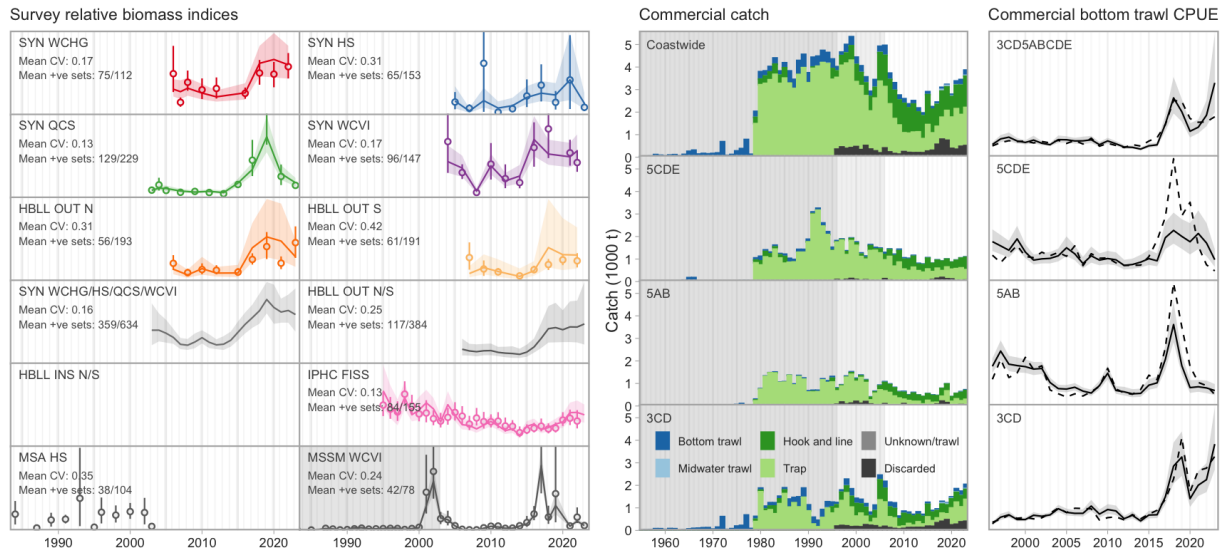
Order: Scorpaeniformes, Family: Anoplopomatidae, [FishBase](#), [WoRMS](#)

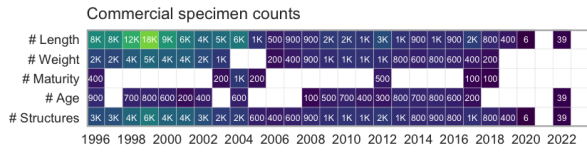
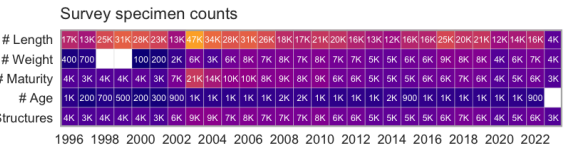
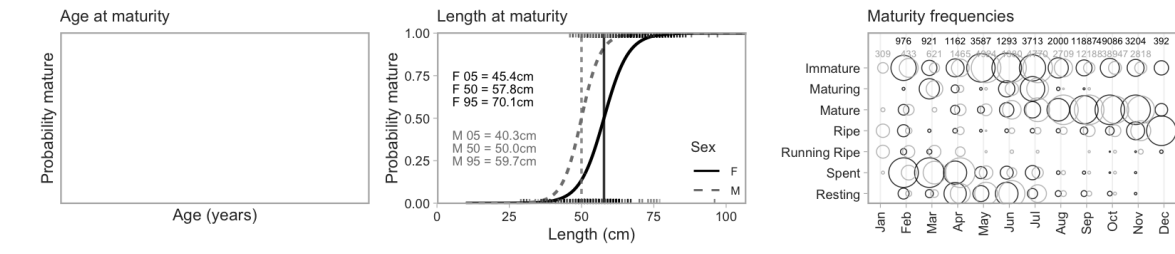
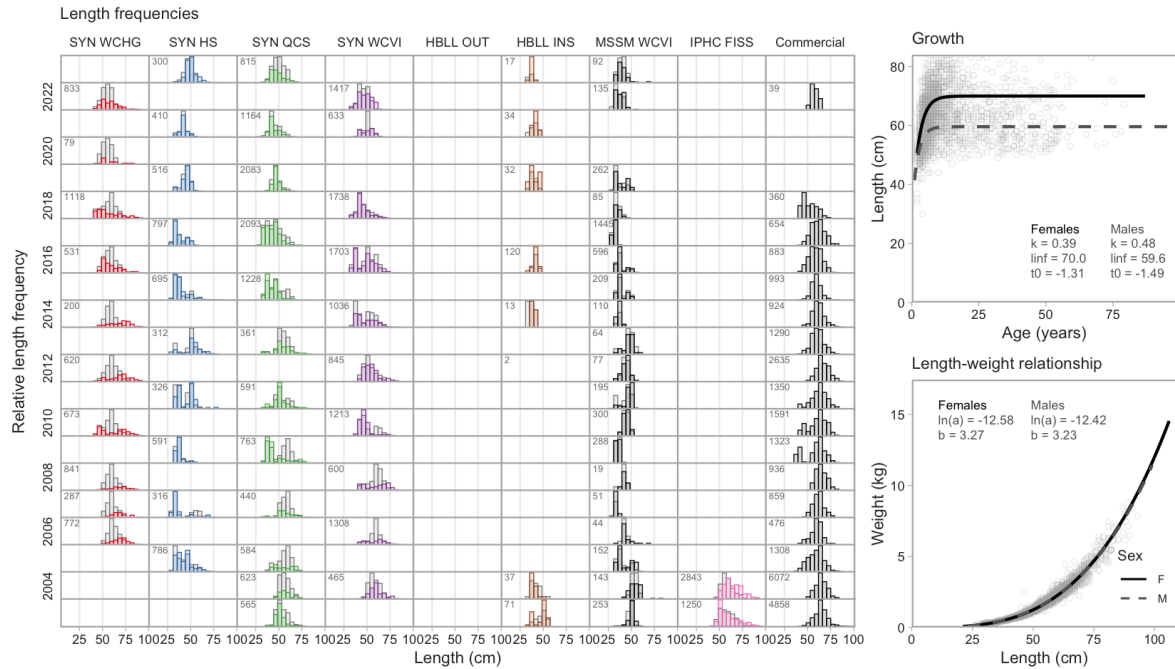
Last Research Documents: Cox et al. (2019), Cox et al. (2023)

Last Science Advisory Reports: DFO (2017), DFO (2023f)

Last Science Response: DFO (2024c)

The annual sablefish trap survey is not included in this report. Commercial biological samples from a head-only sampling program that began in 2018 (Lacko et al. 2023) are not shown.



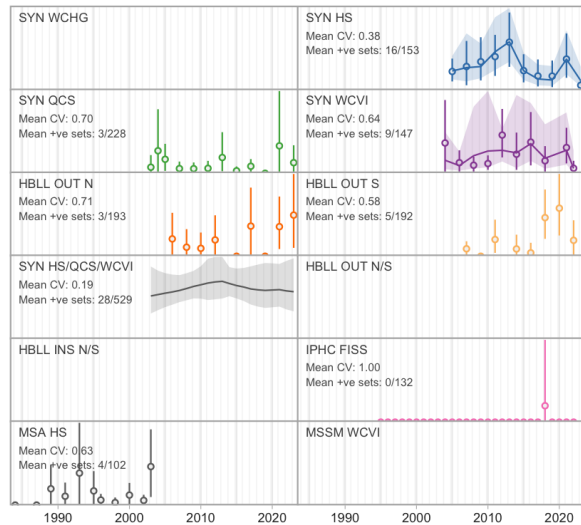


6.82 Kelp Greenling

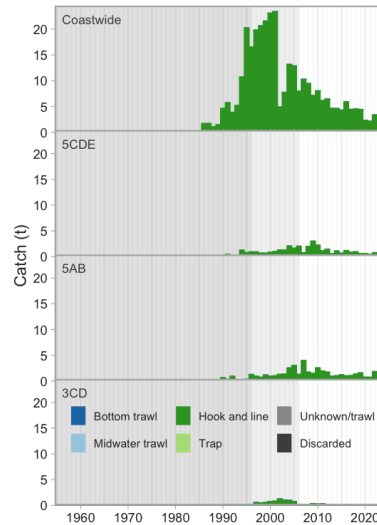
Hexagrammos decagrammus (461)

Order: Scorpaeniformes, Family: Hexagrammidae, [FishBase](#), [WoRMS](#)

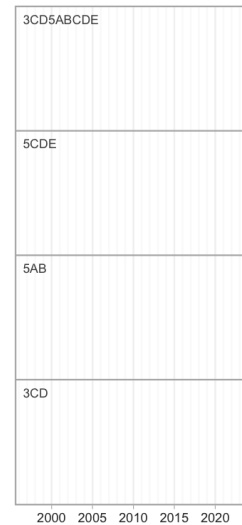
Survey relative biomass indices



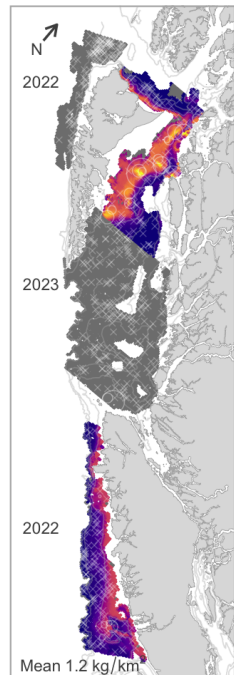
Commercial catch



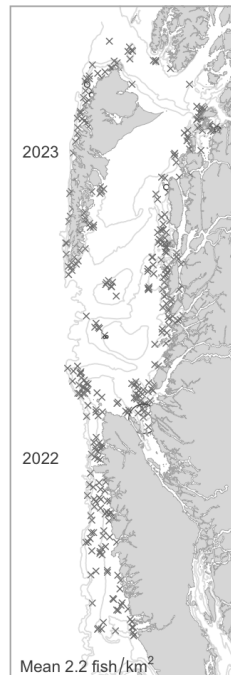
Commercial bottom trawl CPUE



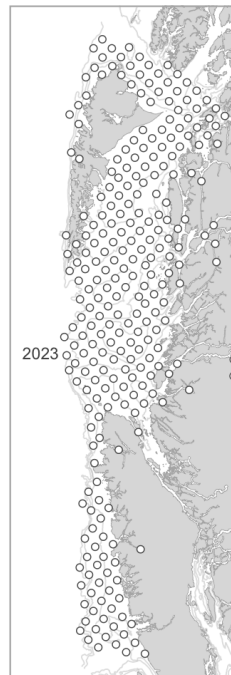
Synoptic survey biomass



HBLL OUT survey biomass



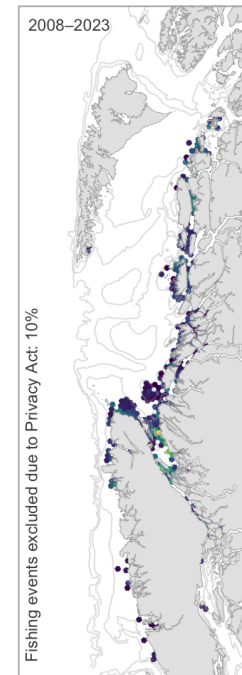
IPHC survey catch rate

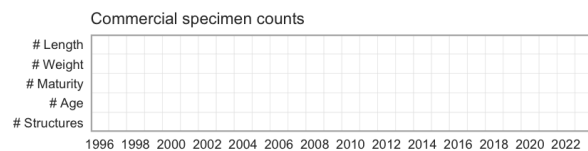
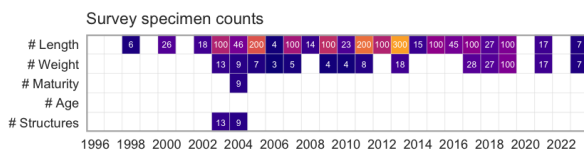
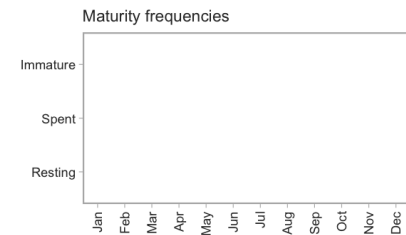
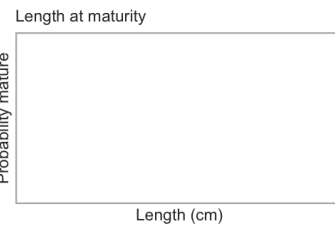
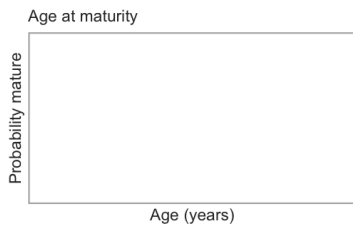
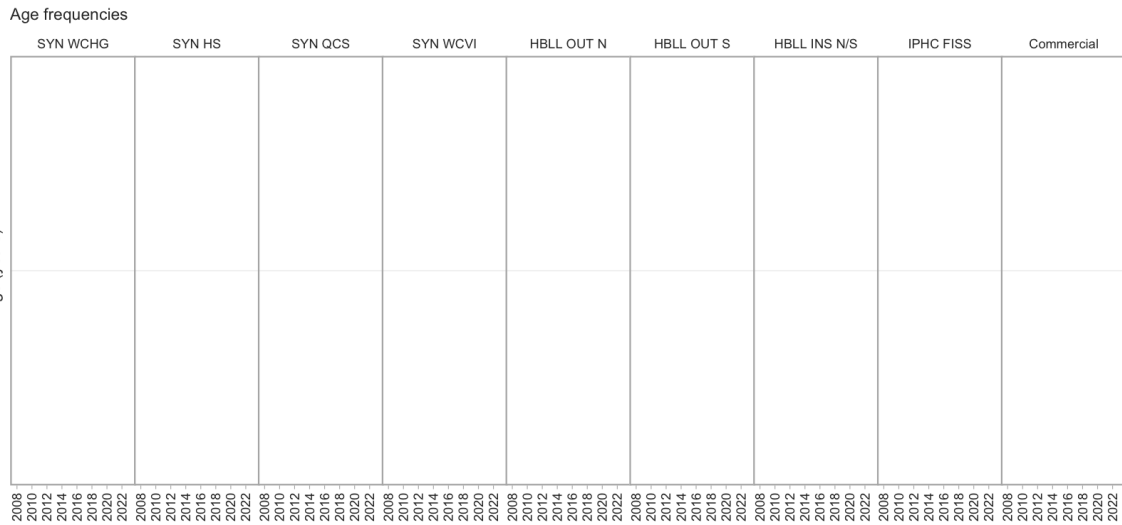
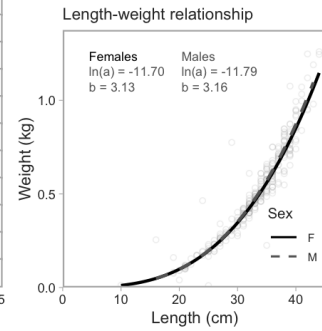
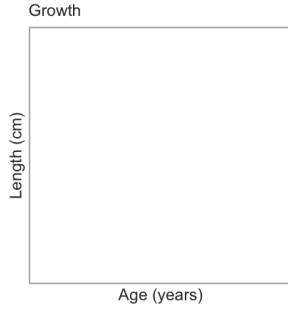
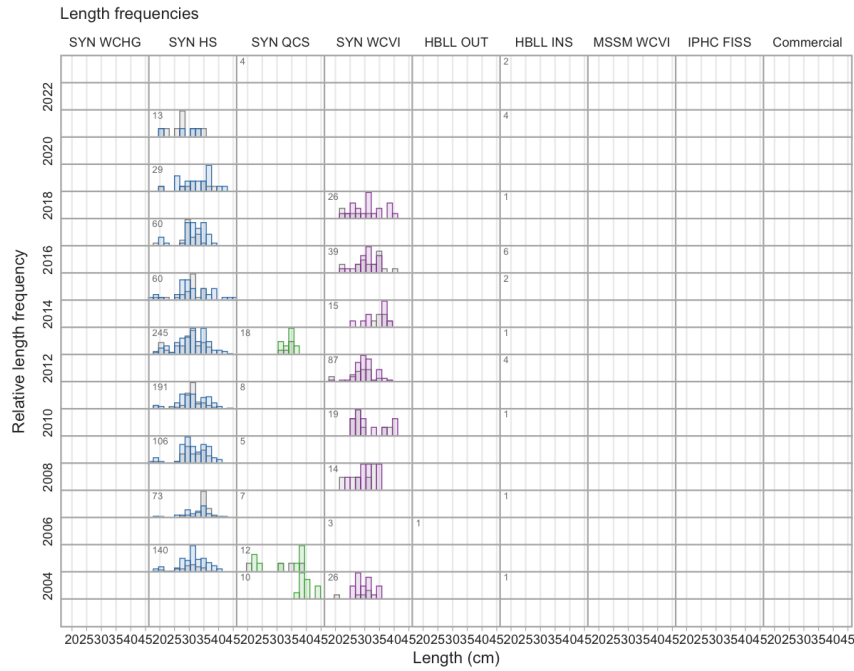


Commercial trawl CPUE



Commercial H & L CPUE





6.83 Whitespotted Greenling

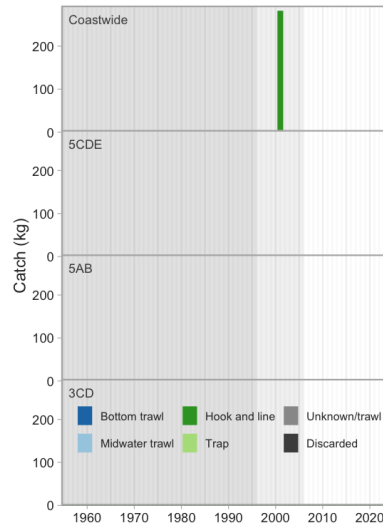
Hexagrammos stelleri (466)

Order: Scorpaeniformes, Family: Hexagrammidae, [FishBase](#), [WoRMS](#)

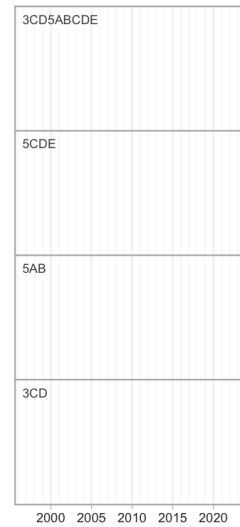
Survey relative biomass indices



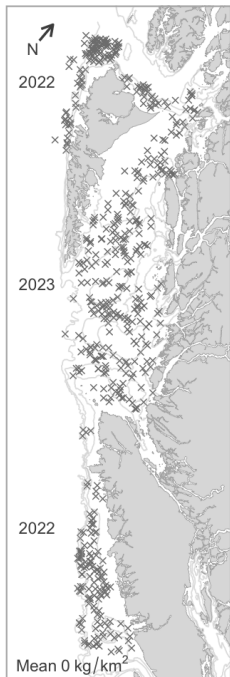
Commercial catch



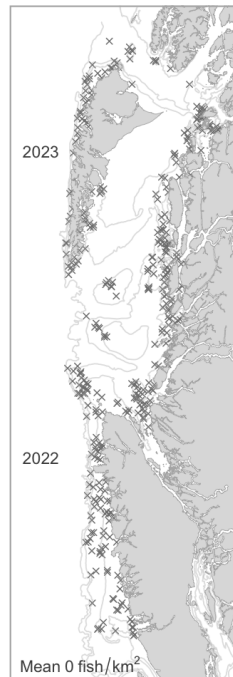
Commercial bottom trawl CPUE



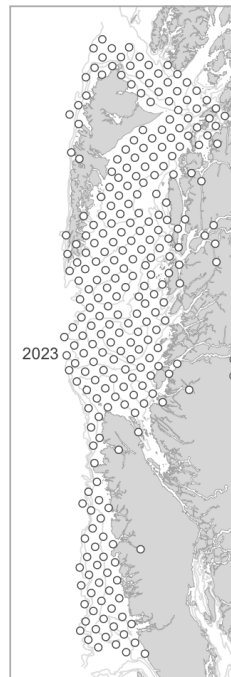
Synoptic survey biomass



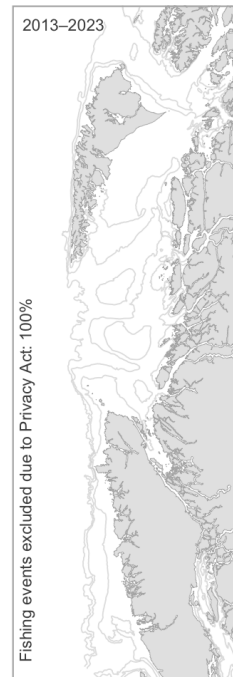
HBLL OUT survey biomass



IPHC survey catch rate

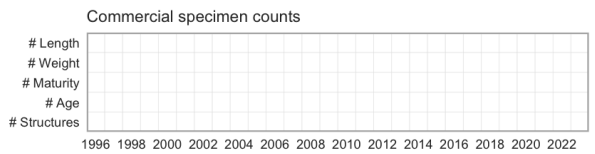
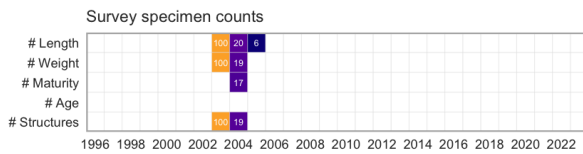
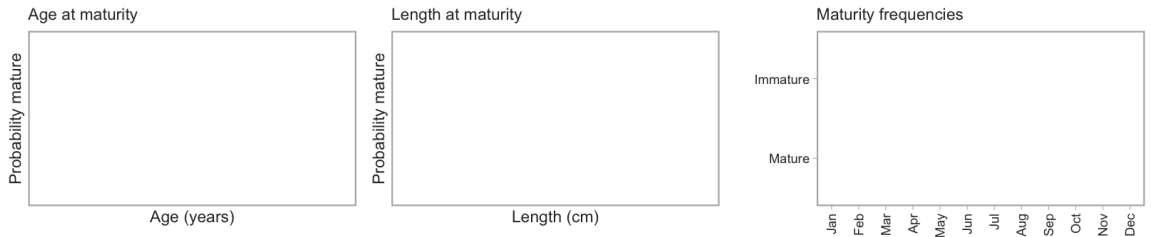
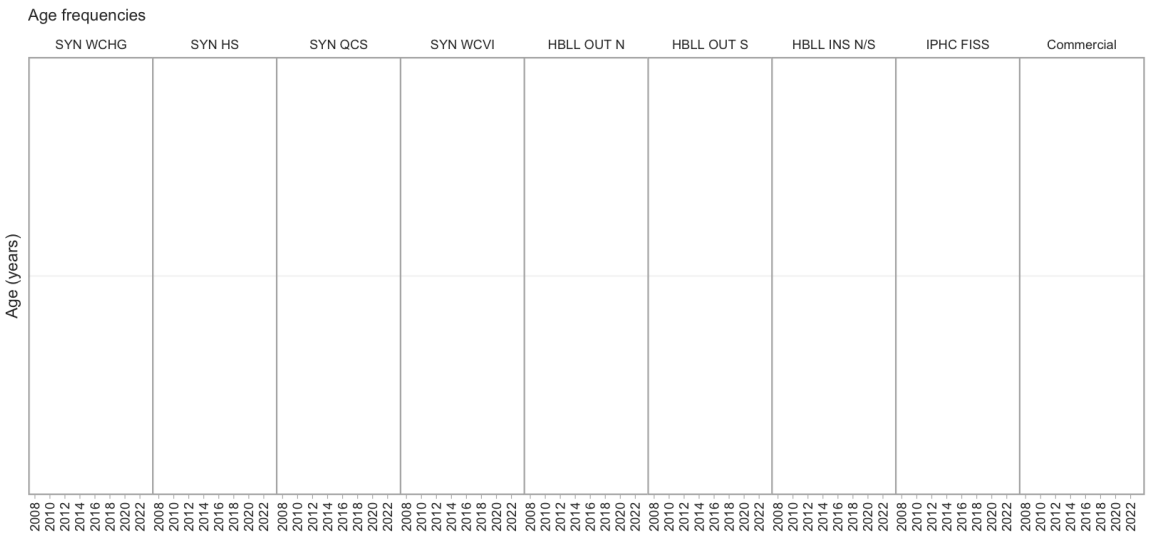
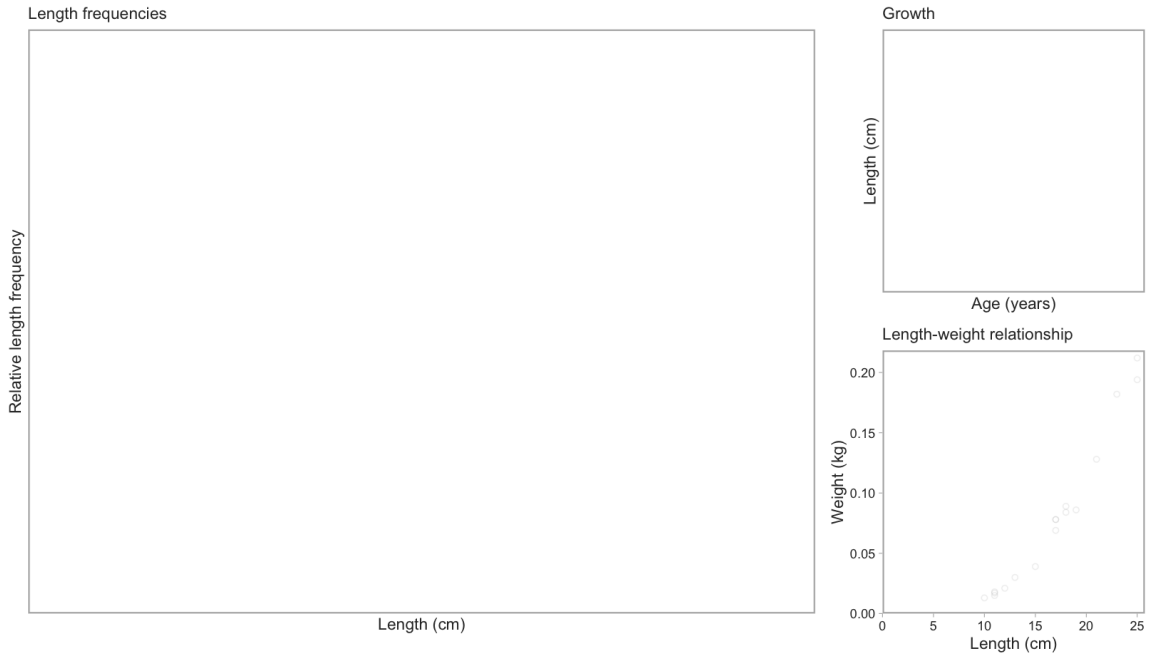


Commercial trawl CPUE



Commercial H & L CPUE





6.84 Lingcod

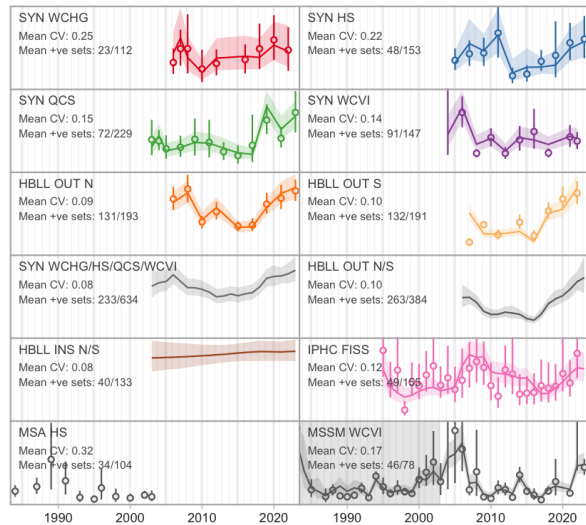
Ophiodon elongatus (467)

Order: Scorpaeniformes, Family: Hexagrammidae, [FishBase](#), [WoRMS](#)

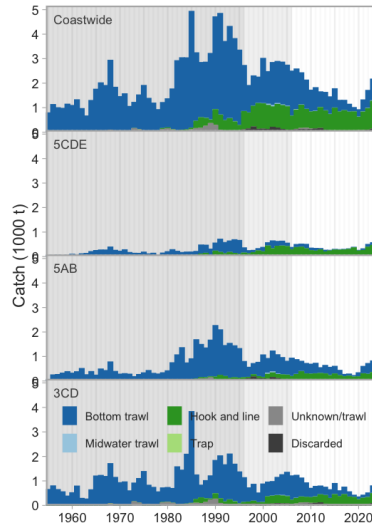
Last Research Documents: King et al. (2011), Holt et al. (2016a)

Last Science Advisory Reports: DFO (2011b), DFO (2015c)

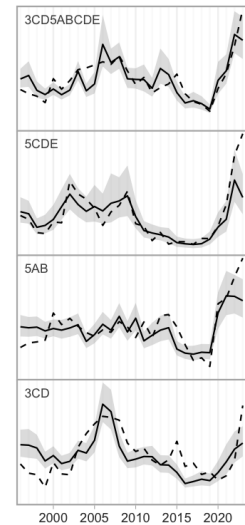
Survey relative biomass indices



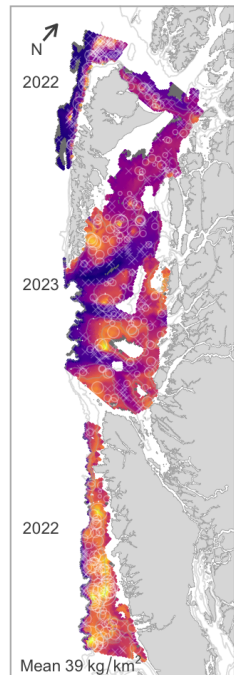
Commercial catch



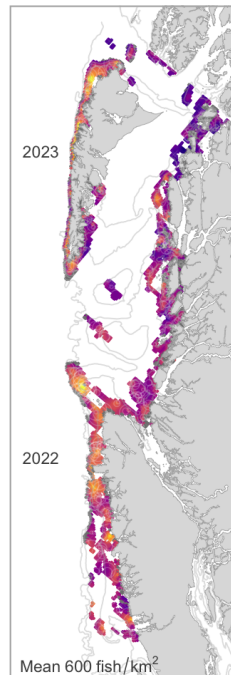
Commercial bottom trawl CPUE



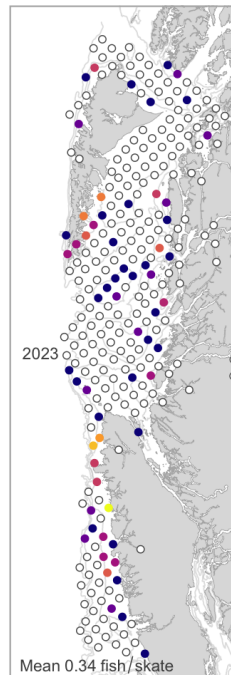
Synoptic survey biomass



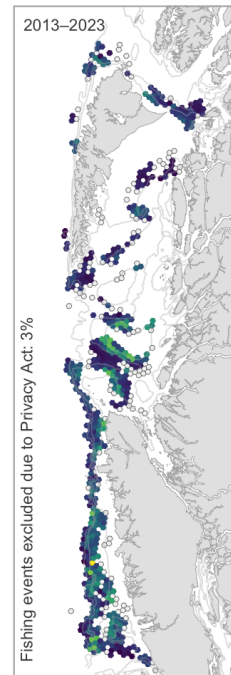
HBL OUT survey biomass



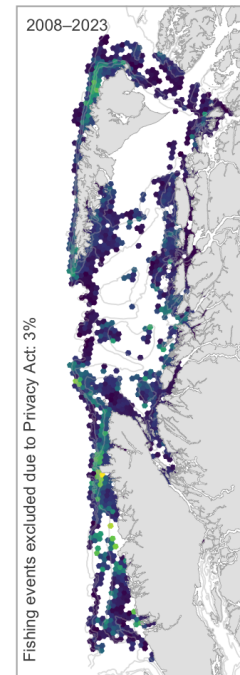
IPHC survey catch rate

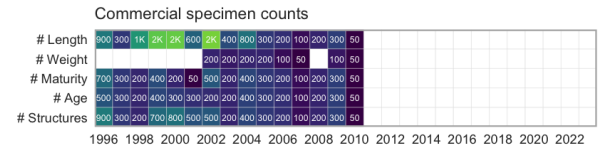
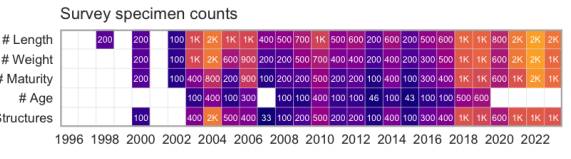
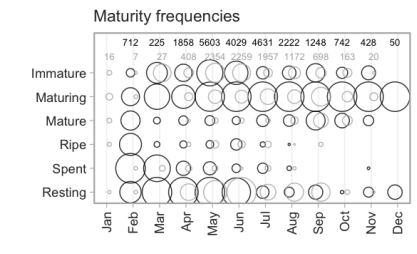
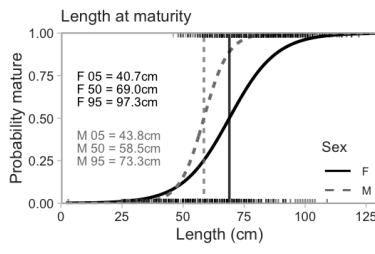
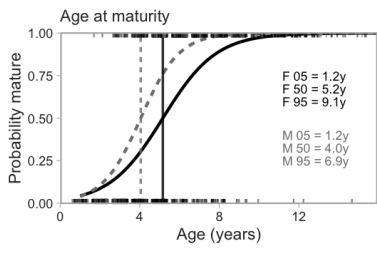
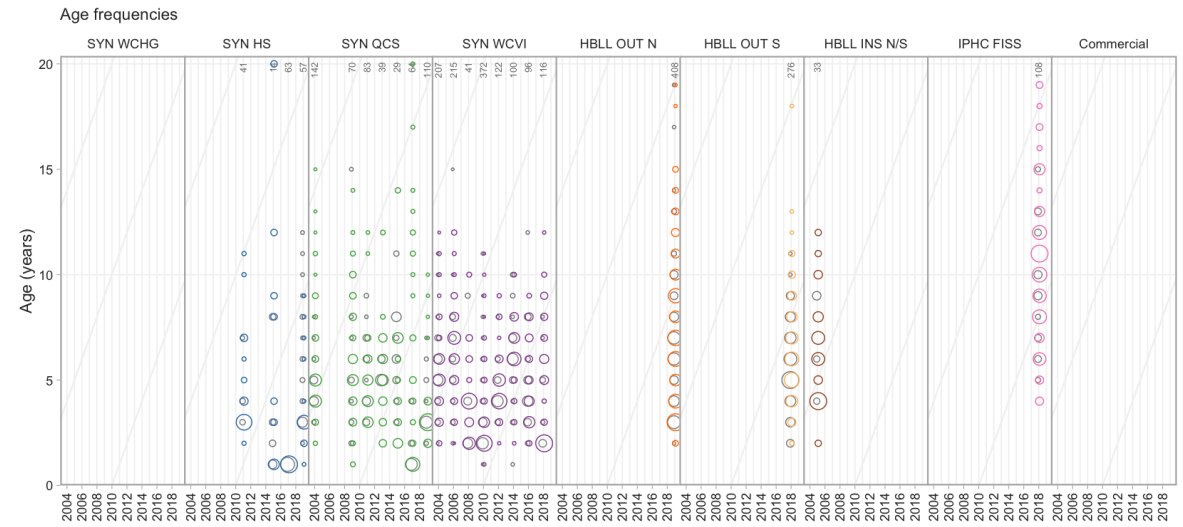
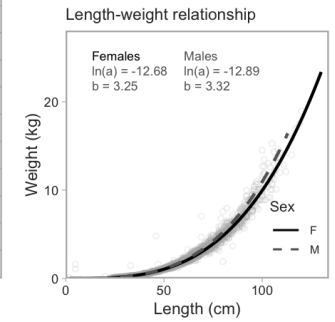
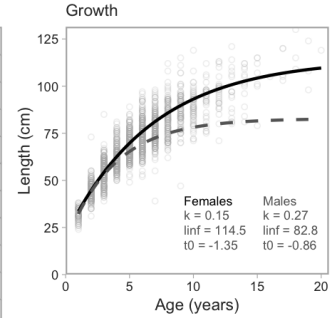
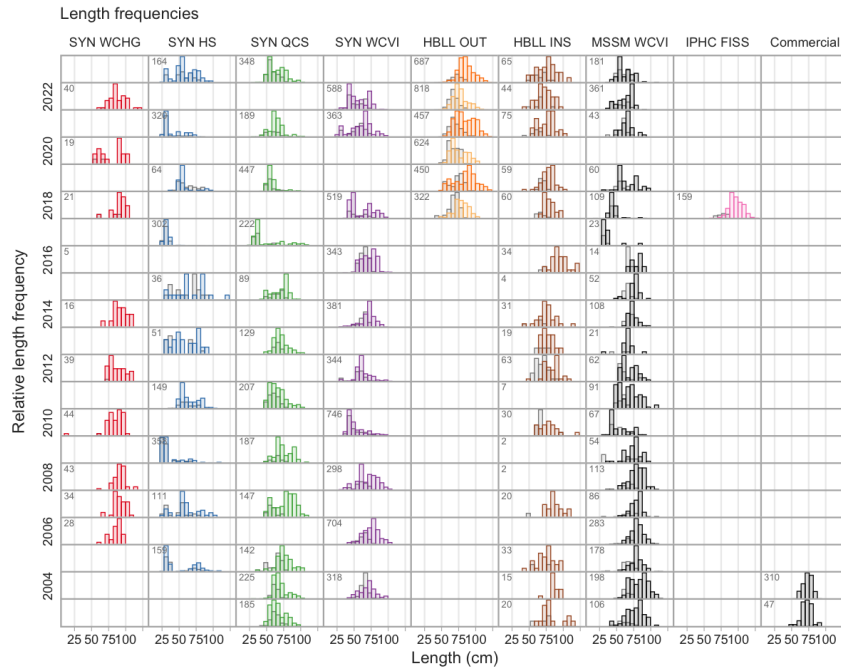


Commercial trawl CPUE



Commercial H & L CPUE



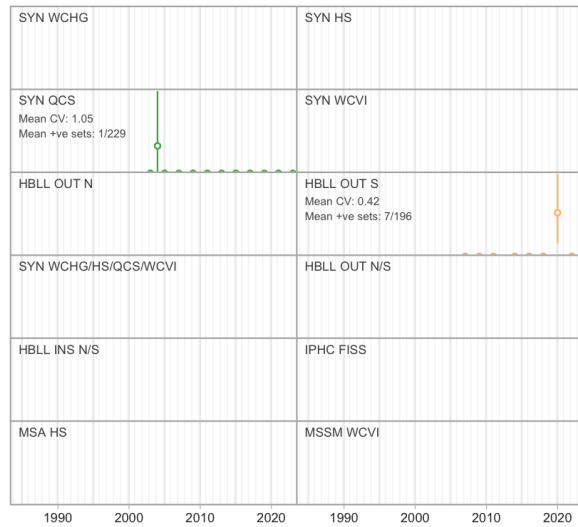


6.85 Spinyhead Sculpin

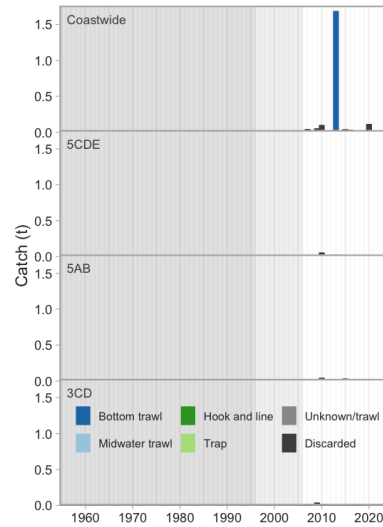
Dasycottus setiger (497)

Order: Scorpaeniformes, Family: Psychrolutidae, [FishBase](#), [WoRMS](#)

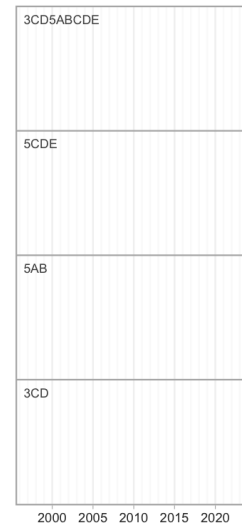
Survey relative biomass indices



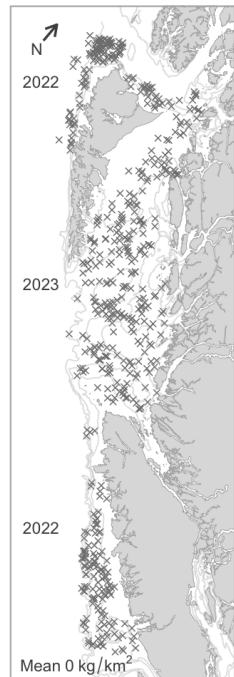
Commercial catch



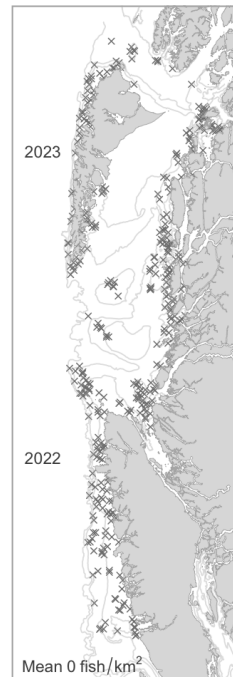
Commercial bottom trawl CPUE



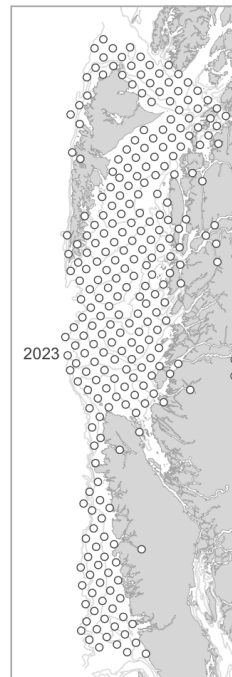
Synoptic survey biomass



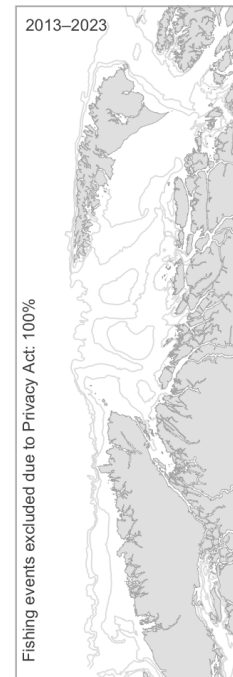
HBL OUT survey biomass



IPHC survey catch rate

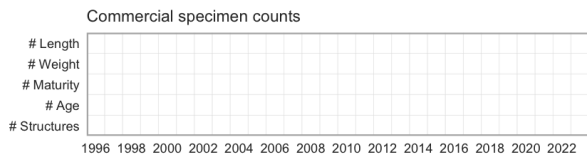
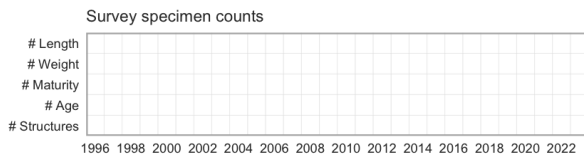
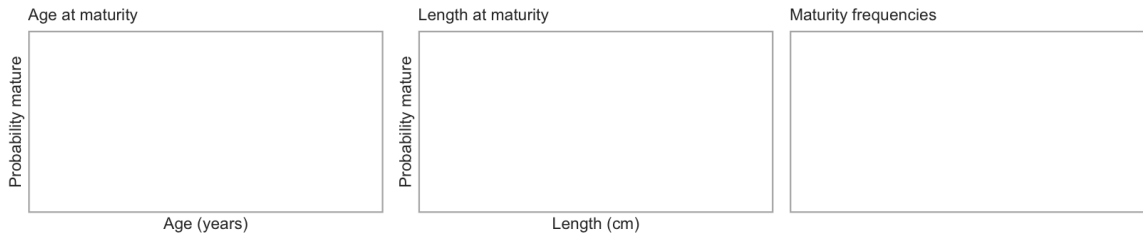
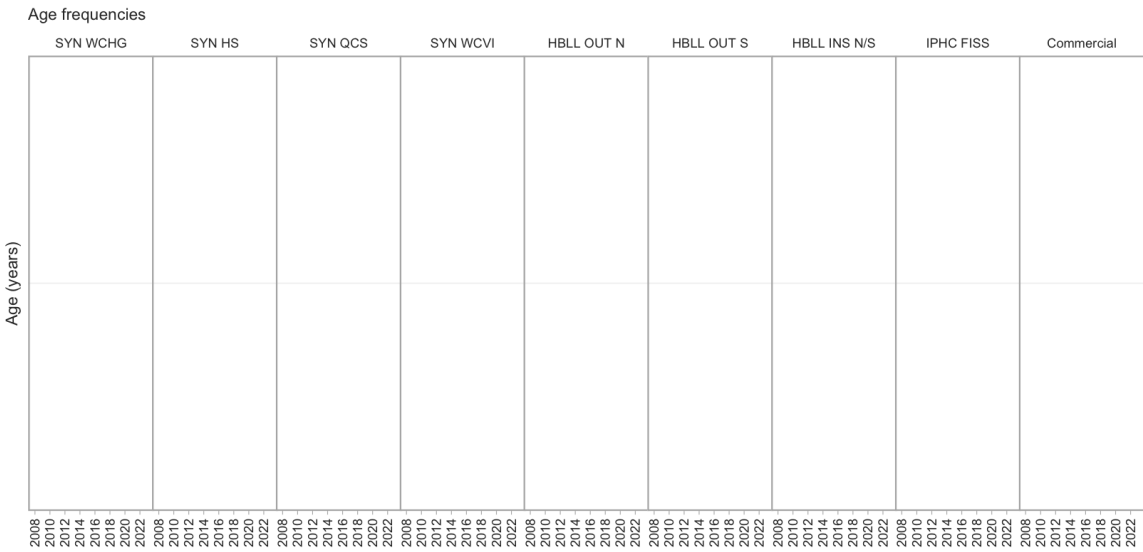
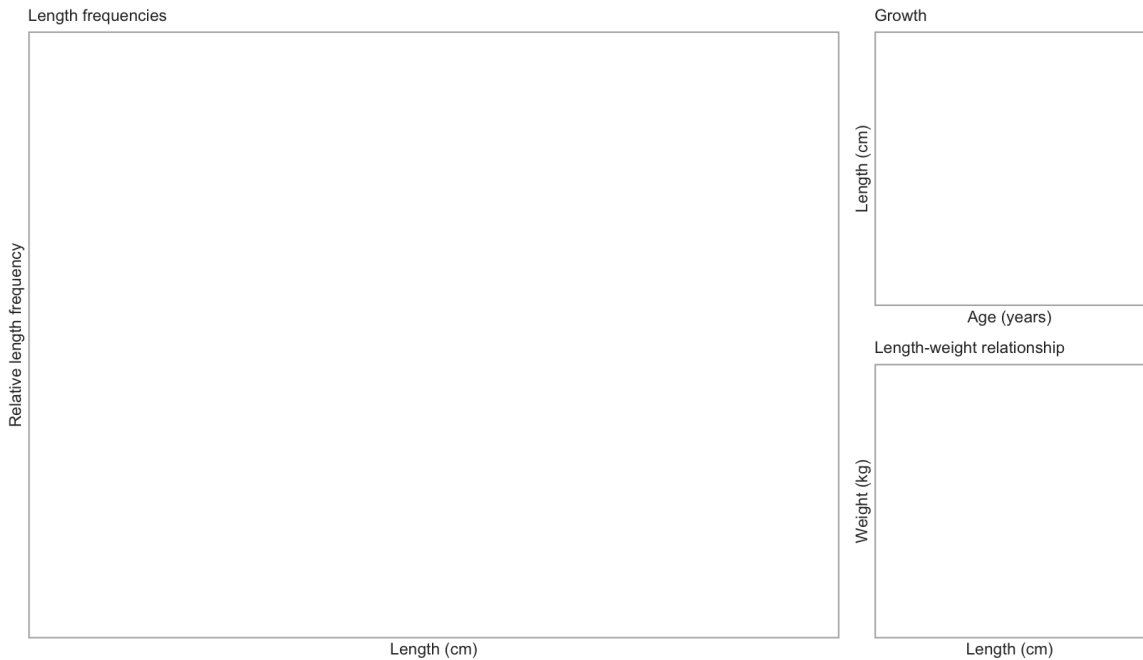


Commercial trawl CPUE



Commercial H & L CPUE



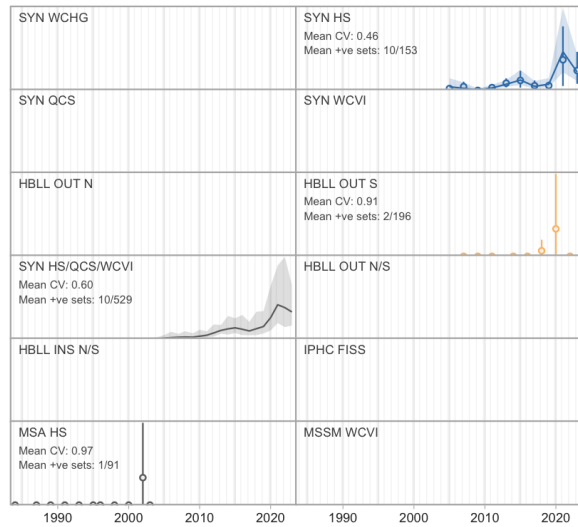


6.86 Buffalo Sculpin

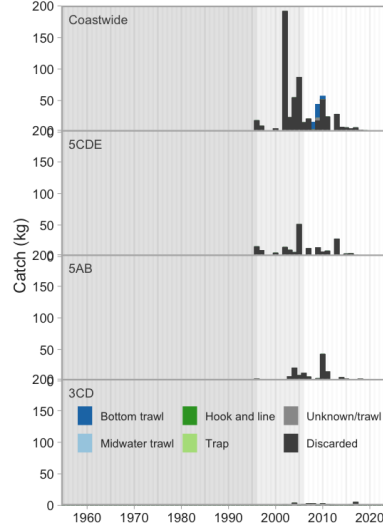
Enophrys bison (499)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

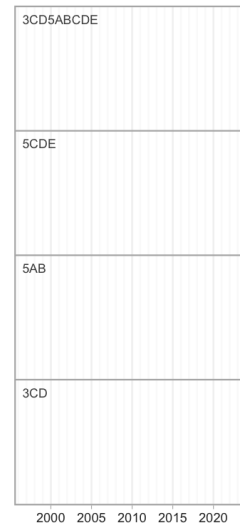
Survey relative biomass indices



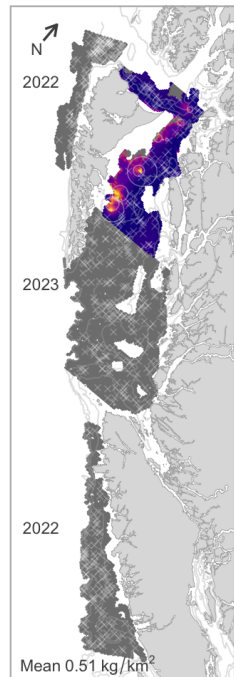
Commercial catch



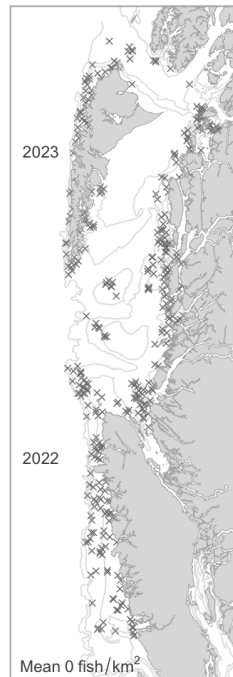
Commercial bottom trawl CPUE



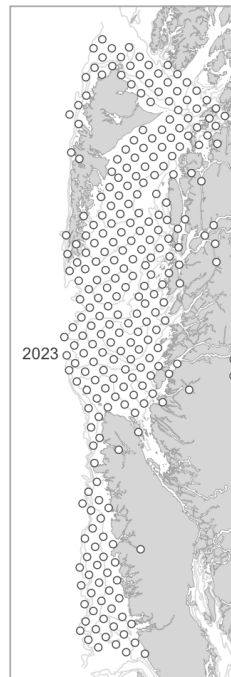
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

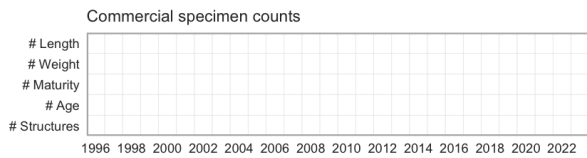
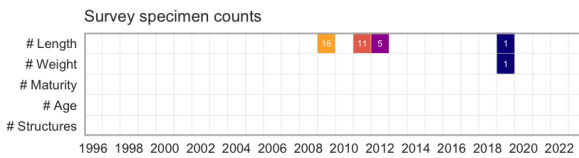
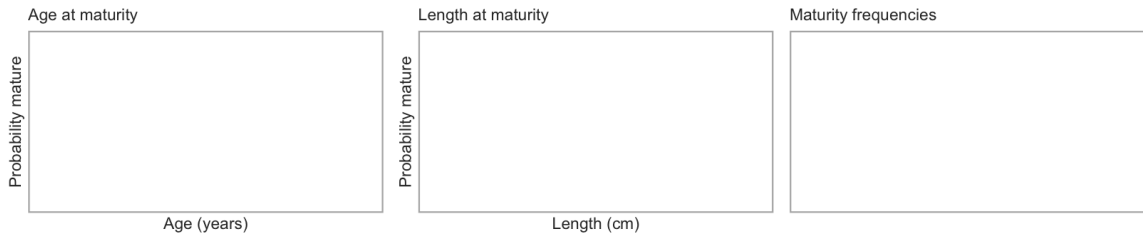
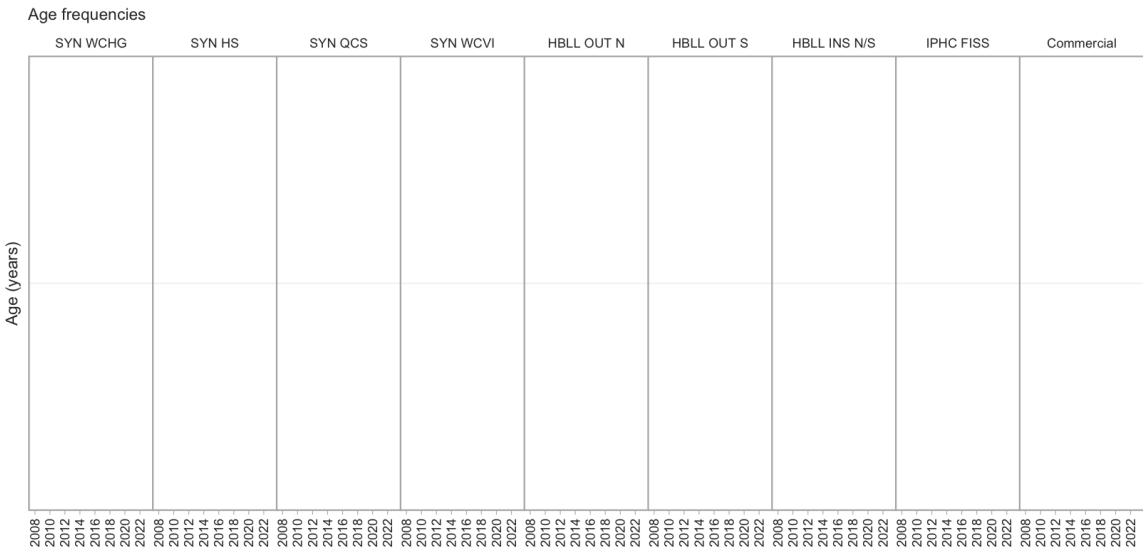
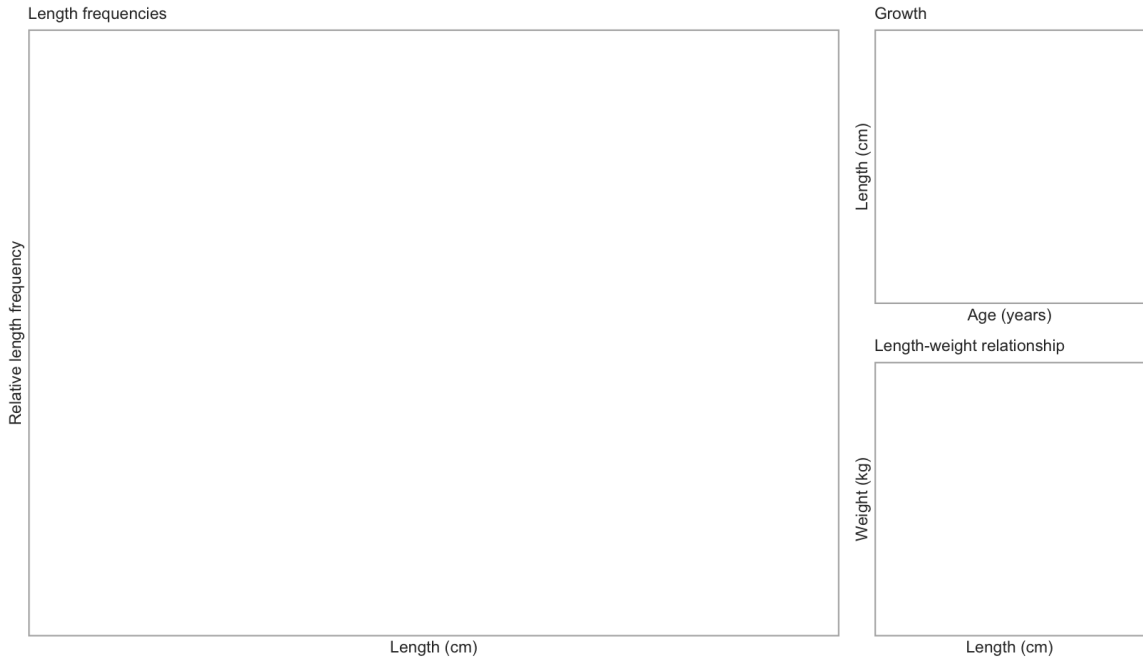


Commercial trawl CPUE



Commercial H & L CPUE



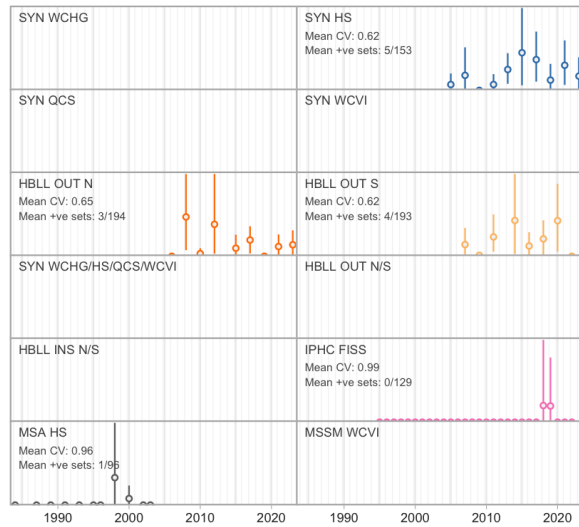


6.87 Red Irish Lord

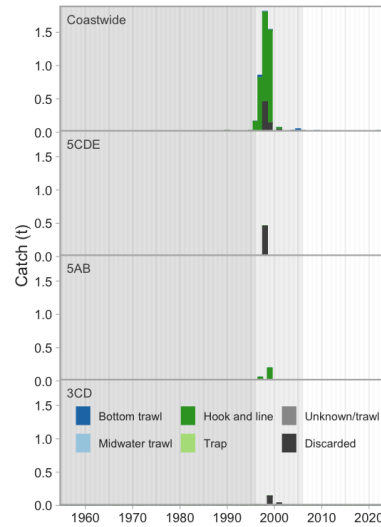
Hemilepidotus hemilepidotus (502)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

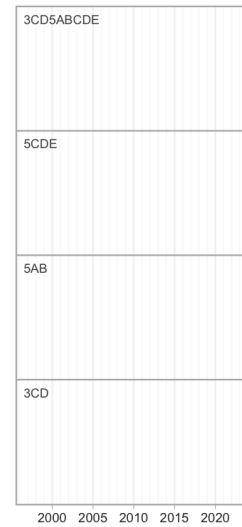
Survey relative biomass indices



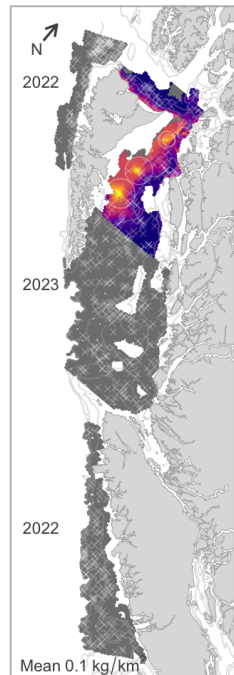
Commercial catch



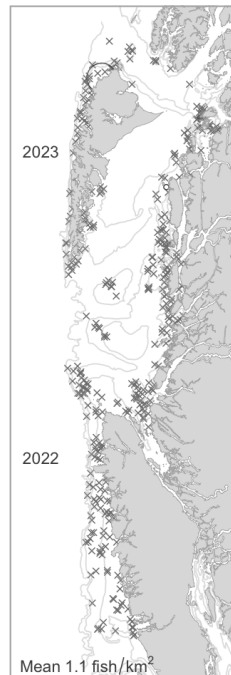
Commercial bottom trawl CPUE



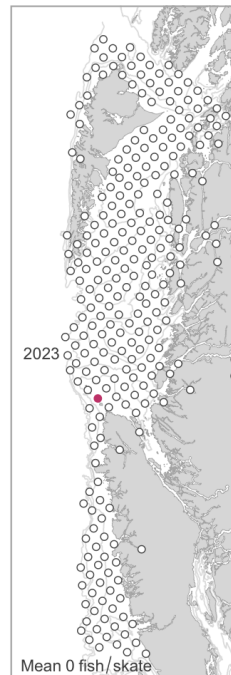
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

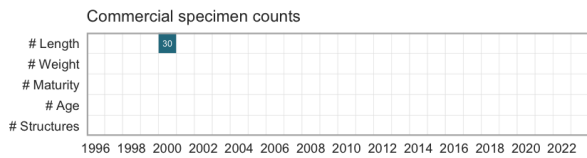
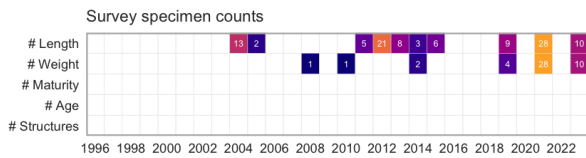
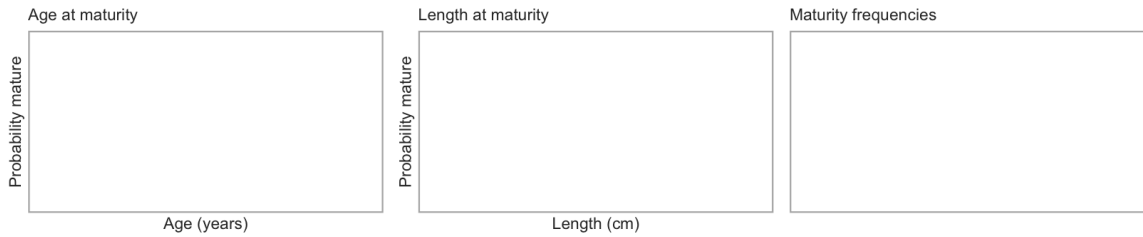
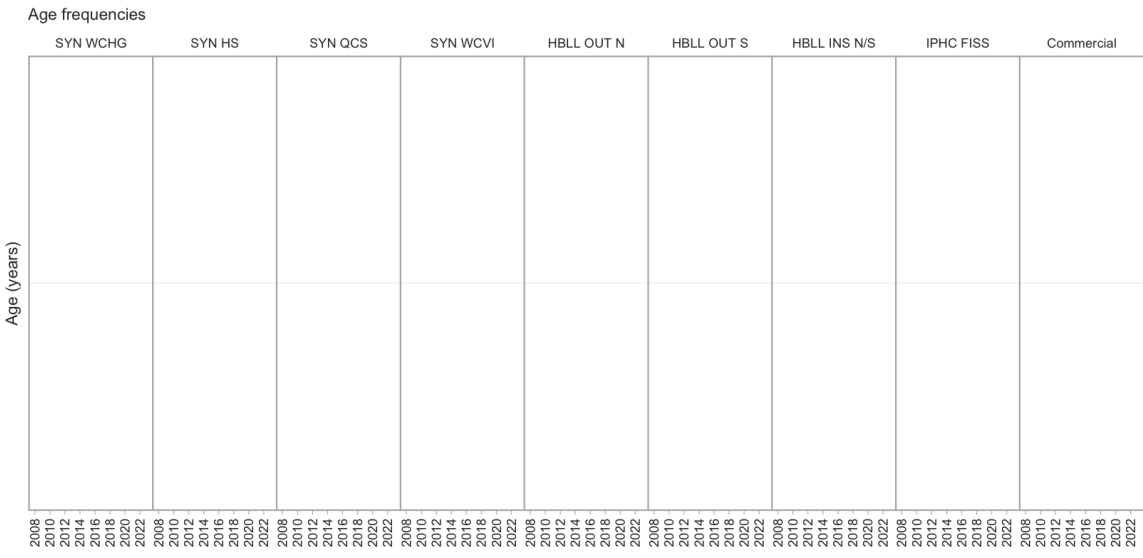
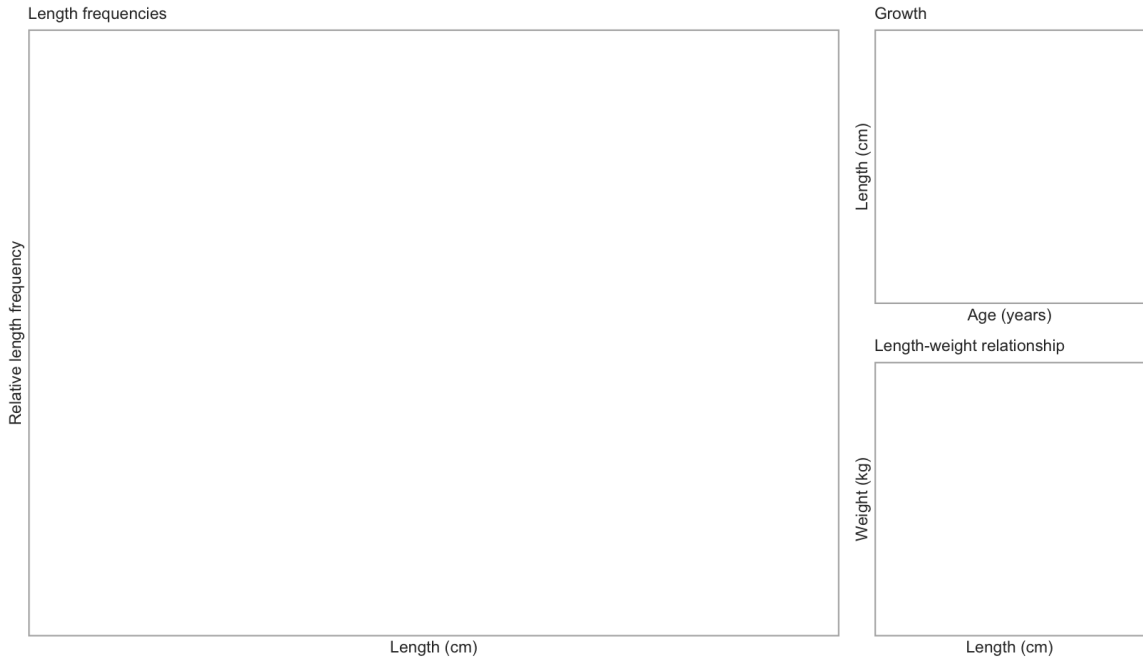


Commercial trawl CPUE



Commercial H & L CPUE



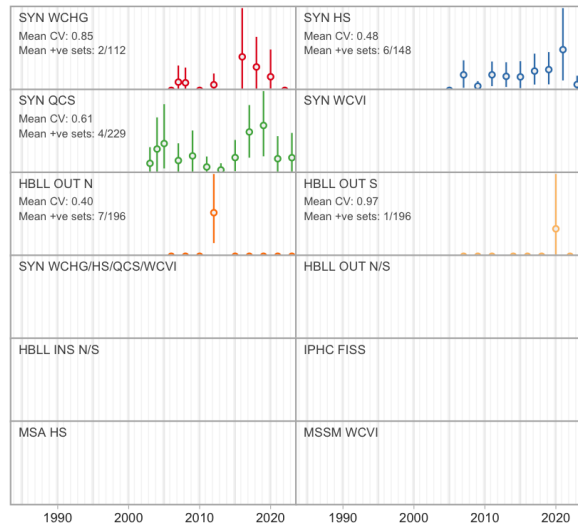


6.88 Bigmouth Sculpin

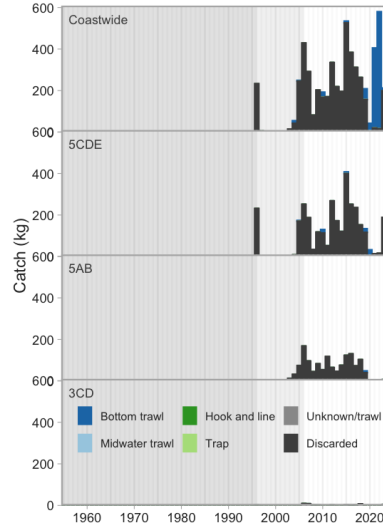
Hemitripterus bolini (505)

Order: Scorpaeniformes, Family: Hemitripteridae, [FishBase](#), [WoRMS](#)

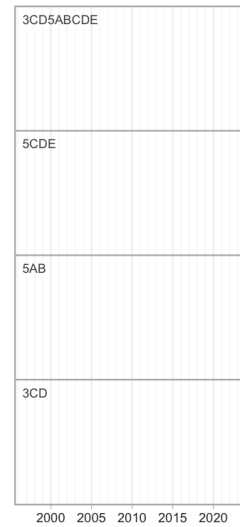
Survey relative biomass indices



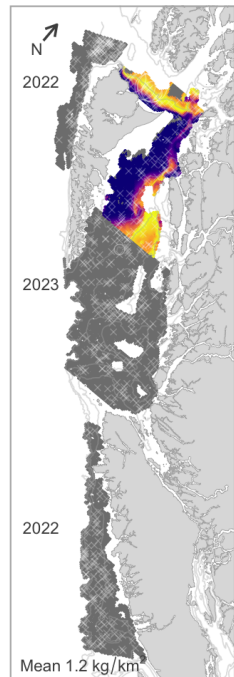
Commercial catch



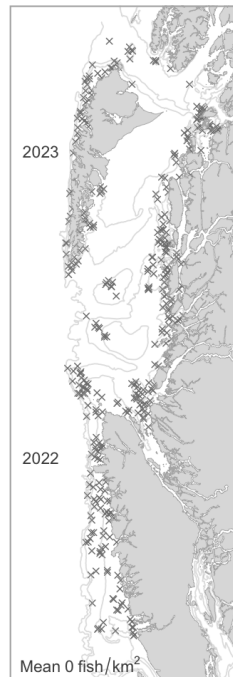
Commercial bottom trawl CPUE



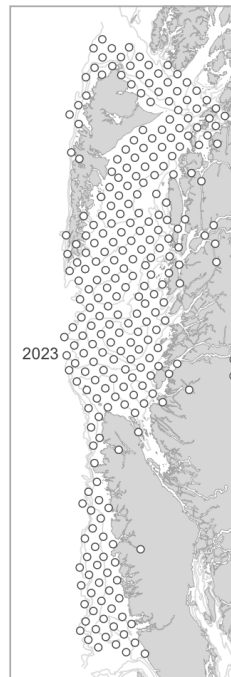
Synoptic survey biomass



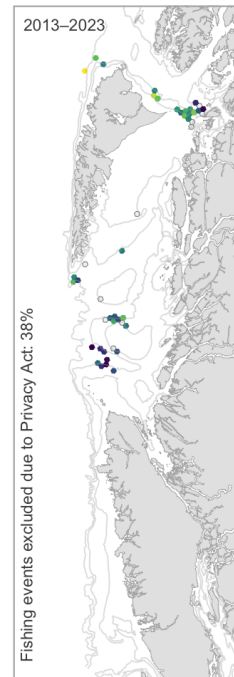
HBL OUT survey biomass



IPHC survey catch rate

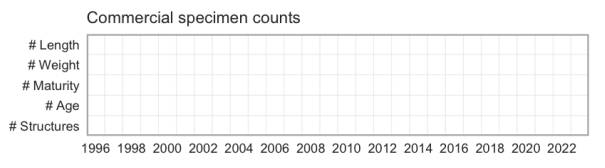
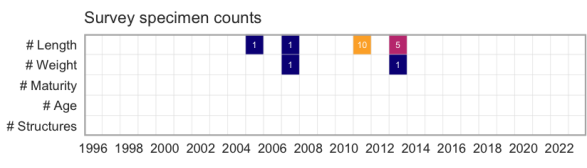
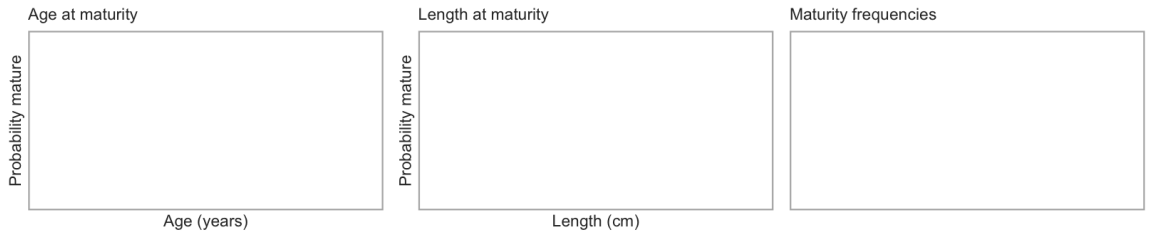
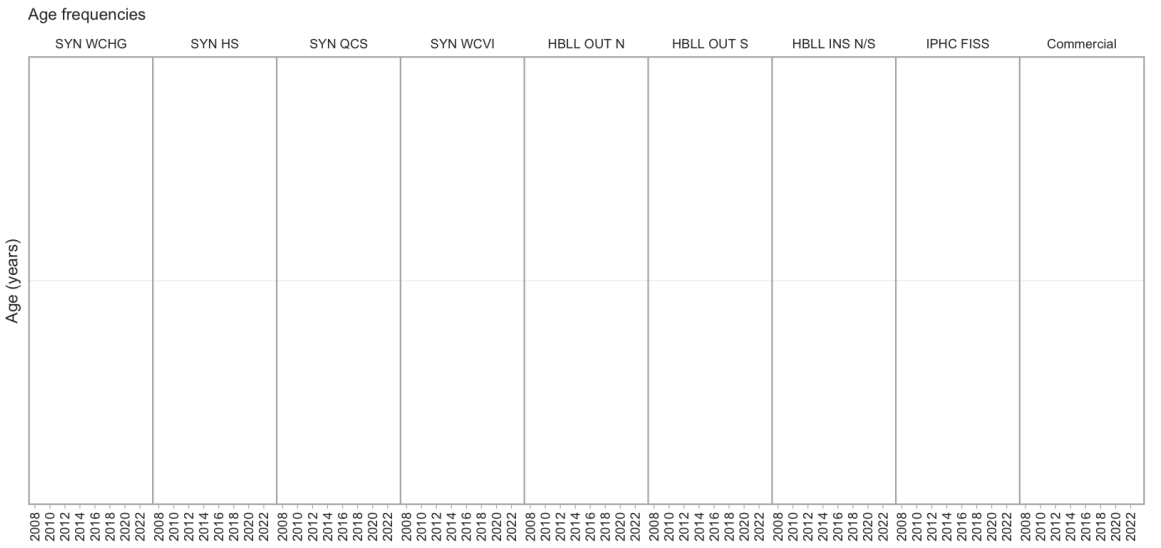
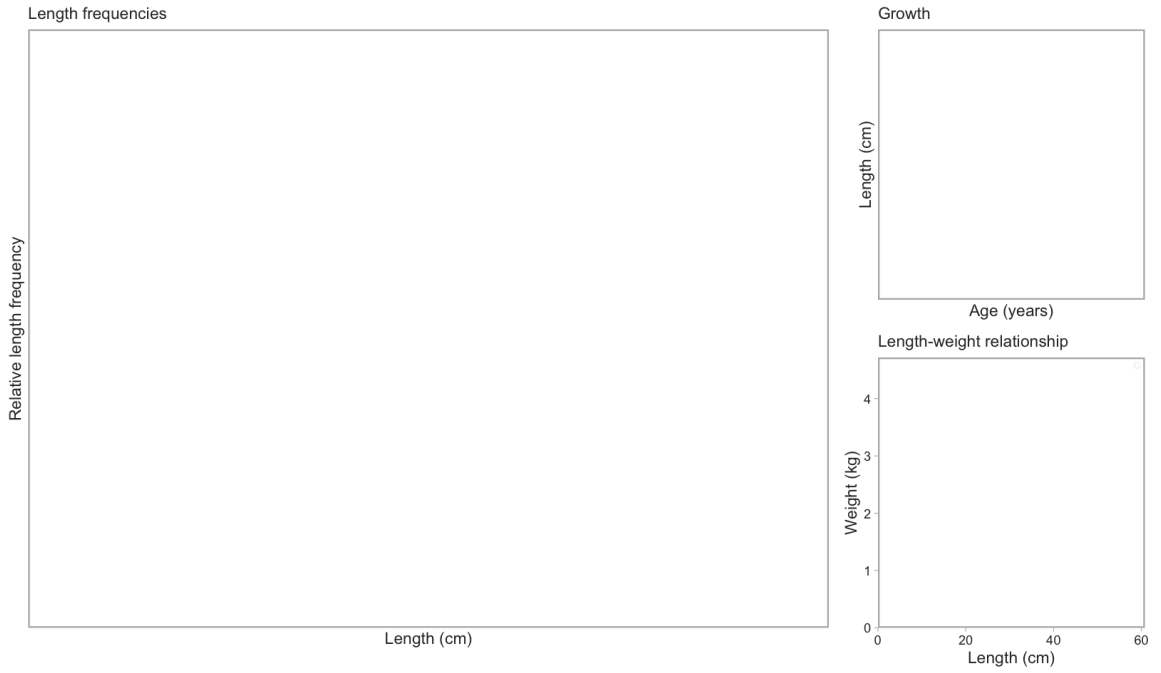


Commercial trawl CPUE



Commercial H & L CPUE



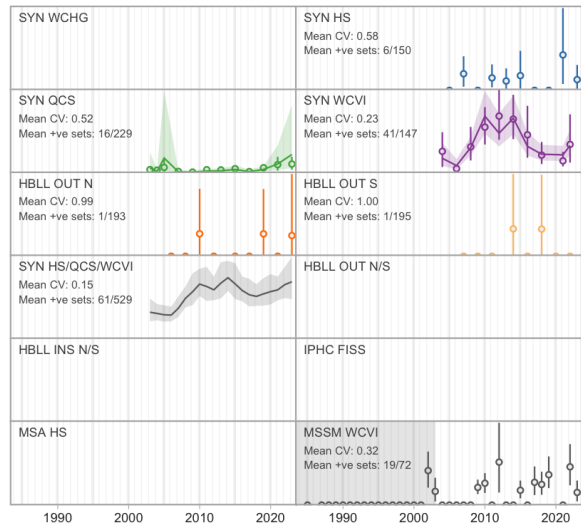


6.89 Threadfin Sculpin

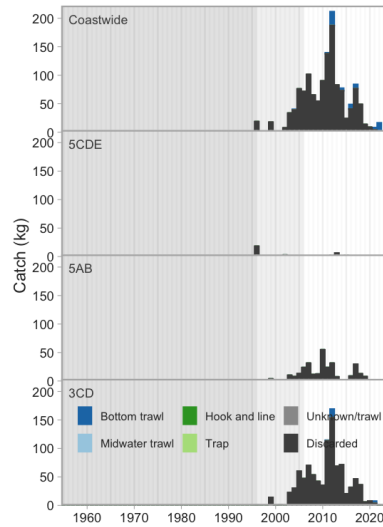
Icelinus filamentosus (510)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

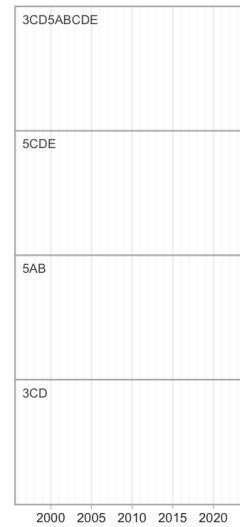
Survey relative biomass indices



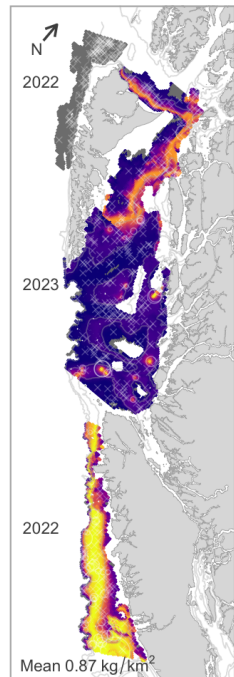
Commercial catch



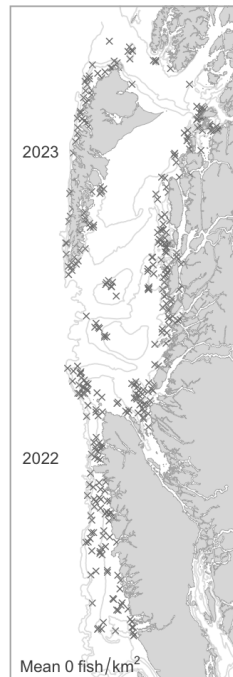
Commercial bottom trawl CPUE



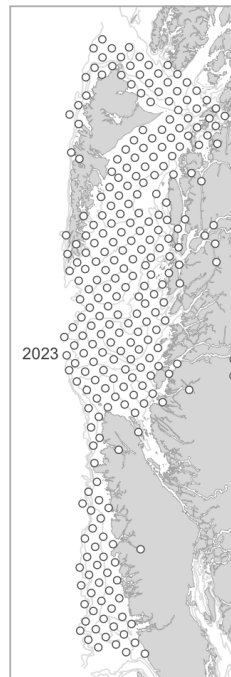
Synoptic survey biomass



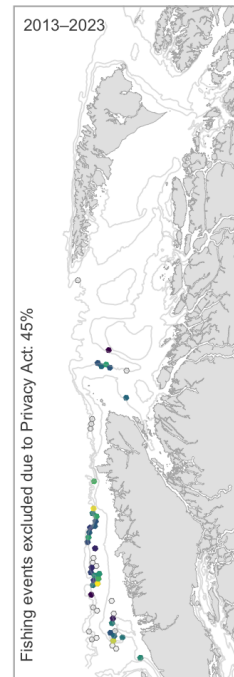
HBLL OUT survey biomass



IPHC survey catch rate

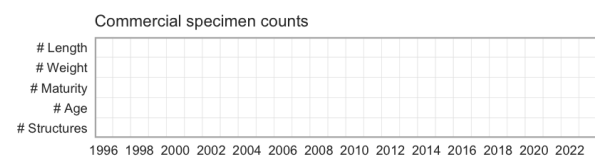
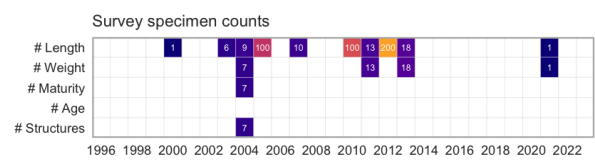
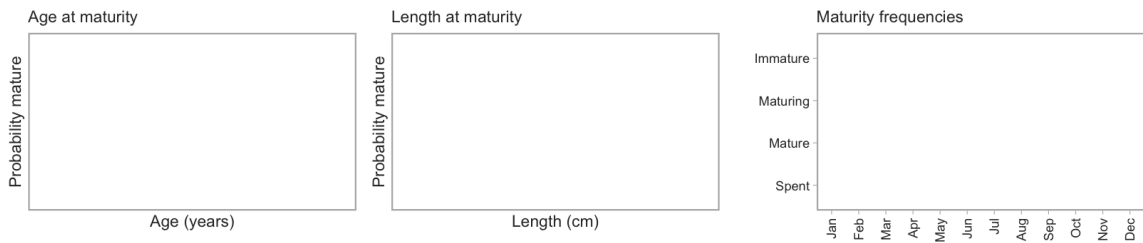
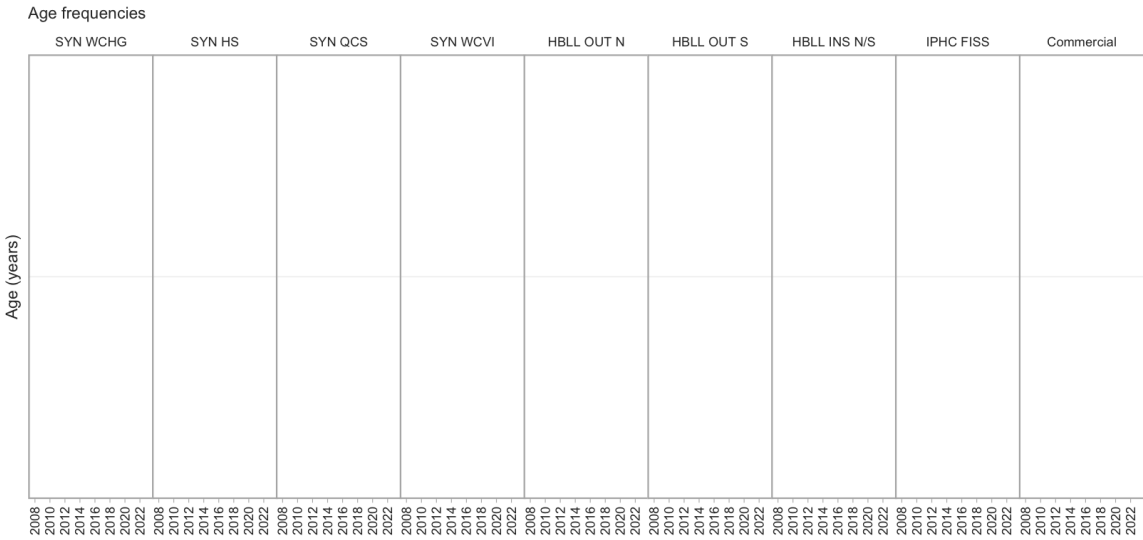
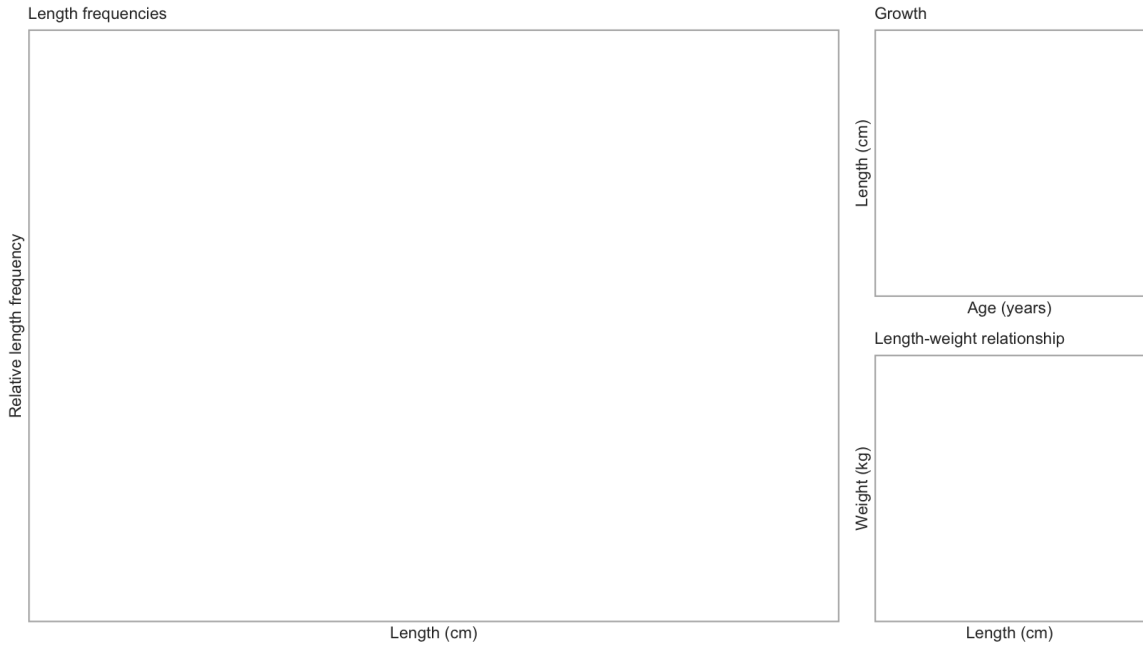


Commercial trawl CPUE



Commercial H & L CPUE





6.90 Spotfin Sculpin

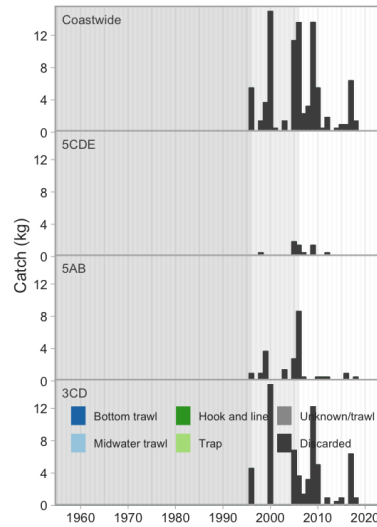
Icelinus tenuis (513)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

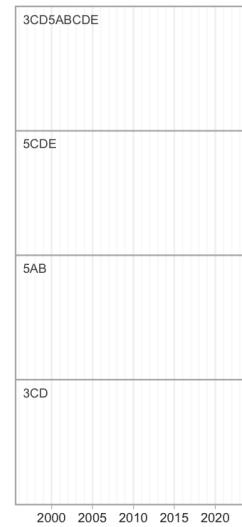
Survey relative biomass indices



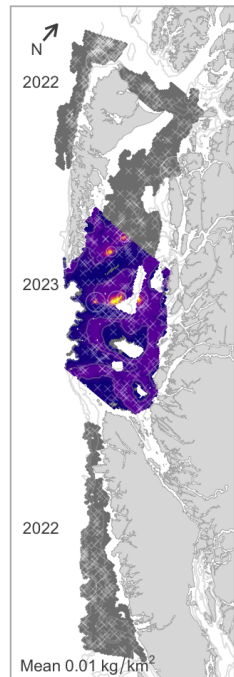
Commercial catch



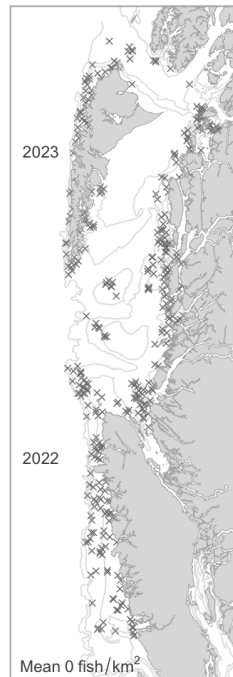
Commercial bottom trawl CPUE



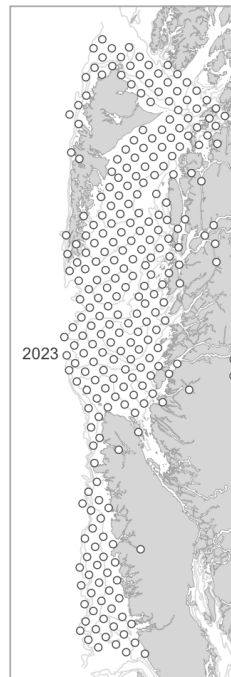
Synoptic survey biomass



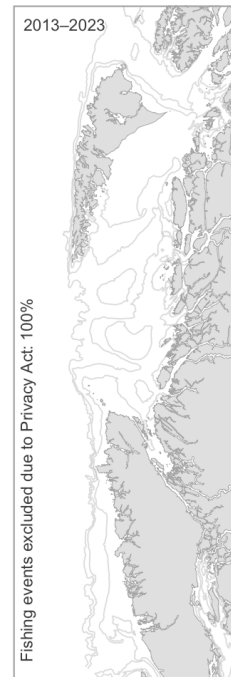
HBL OUT survey biomass



IPHC survey catch rate

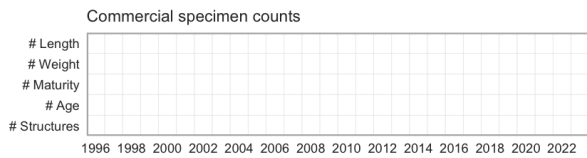
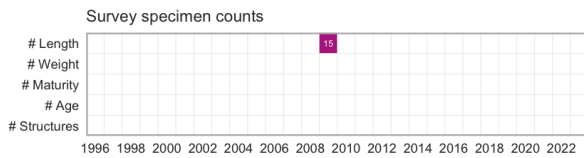
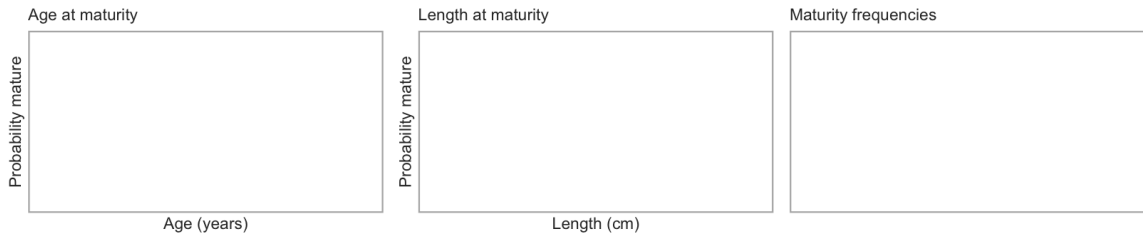
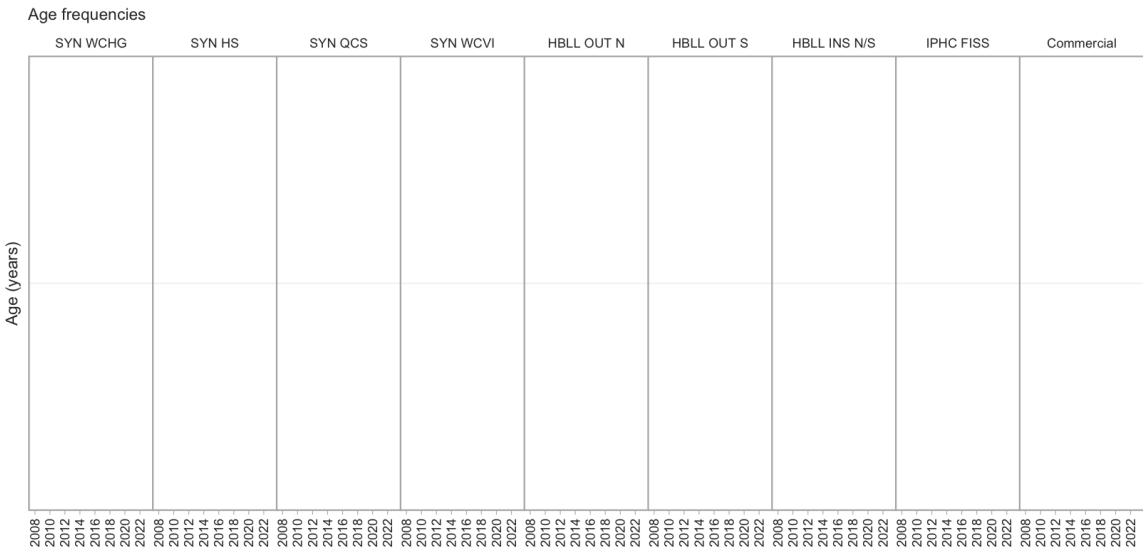
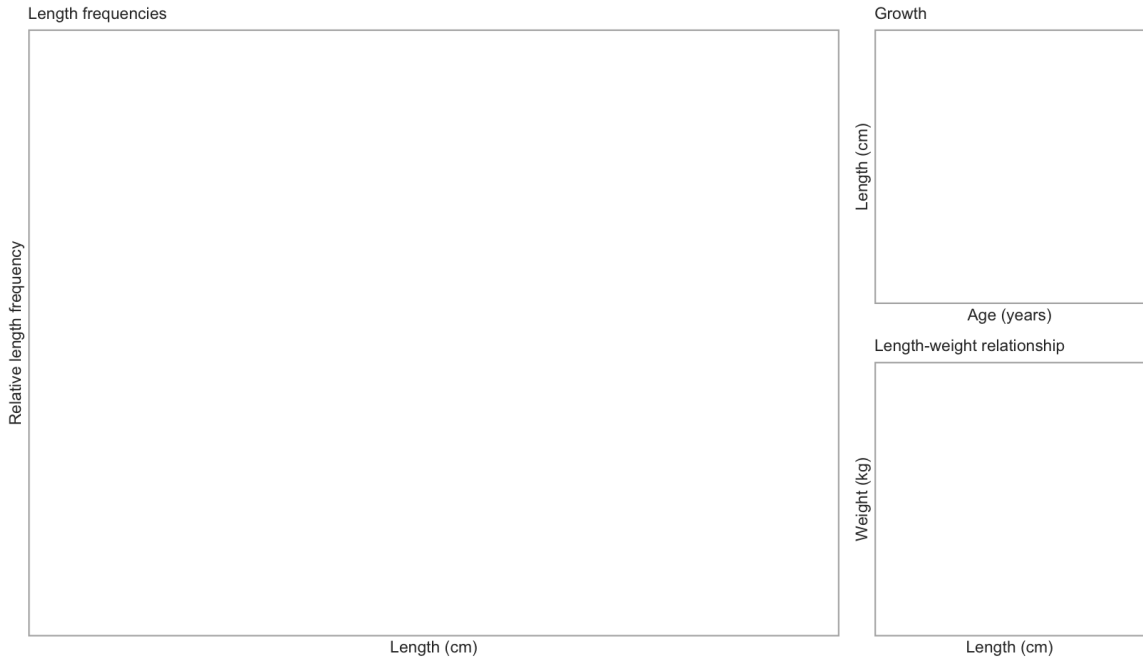


Commercial trawl CPUE



Commercial H & L CPUE



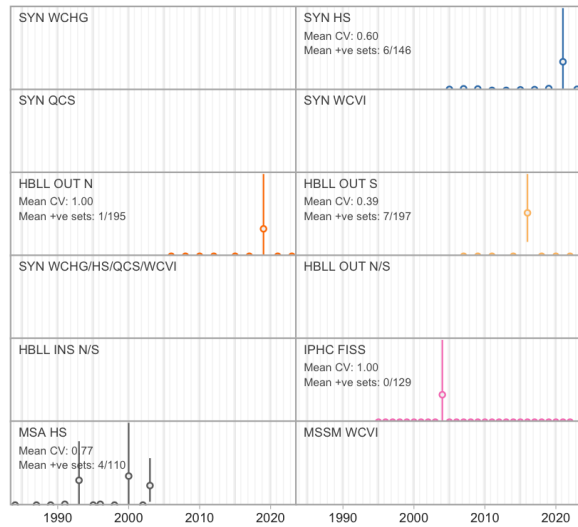


6.91 Pacific Staghorn Sculpin

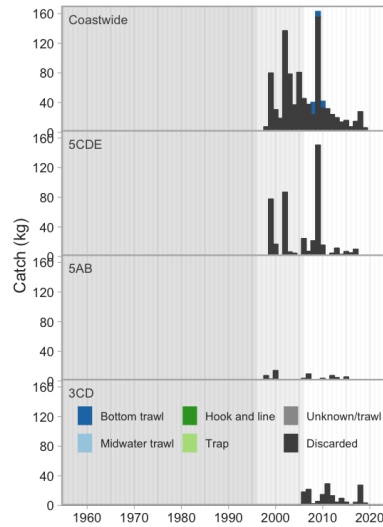
Leptocottus armatus (518)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

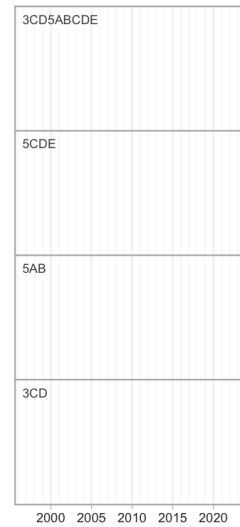
Survey relative biomass indices



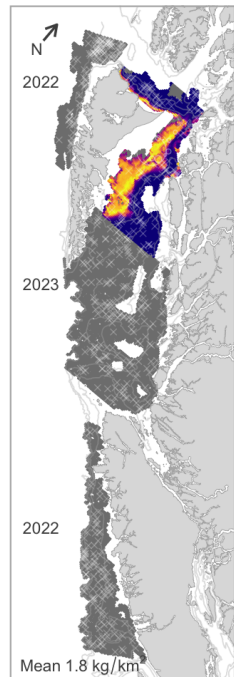
Commercial catch



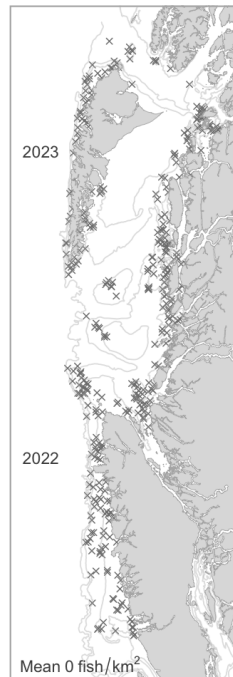
Commercial bottom trawl CPUE



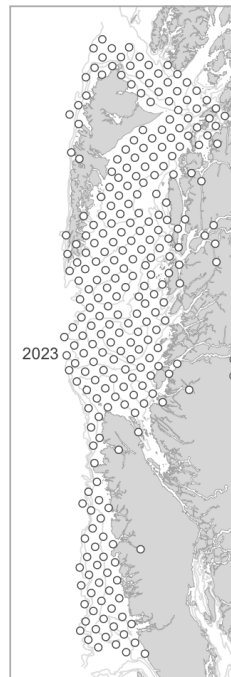
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

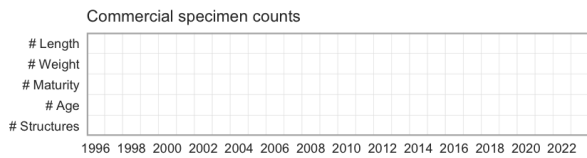
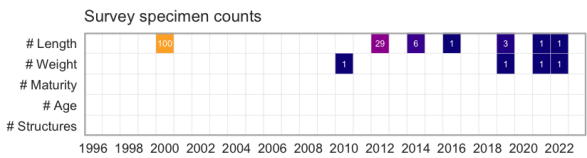
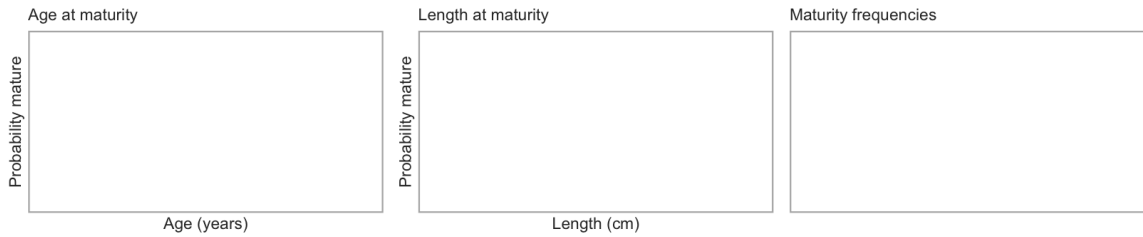
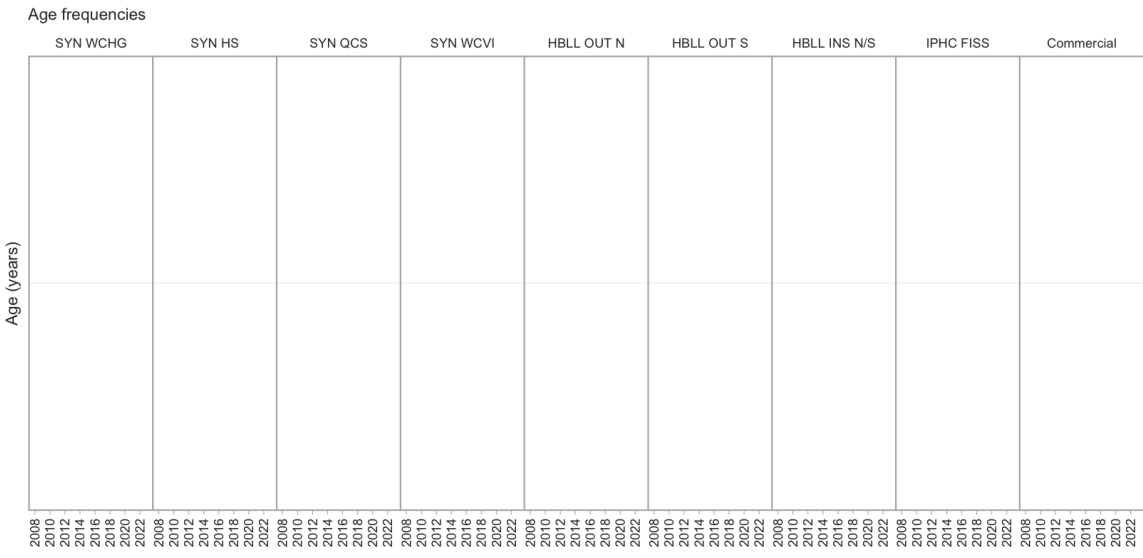
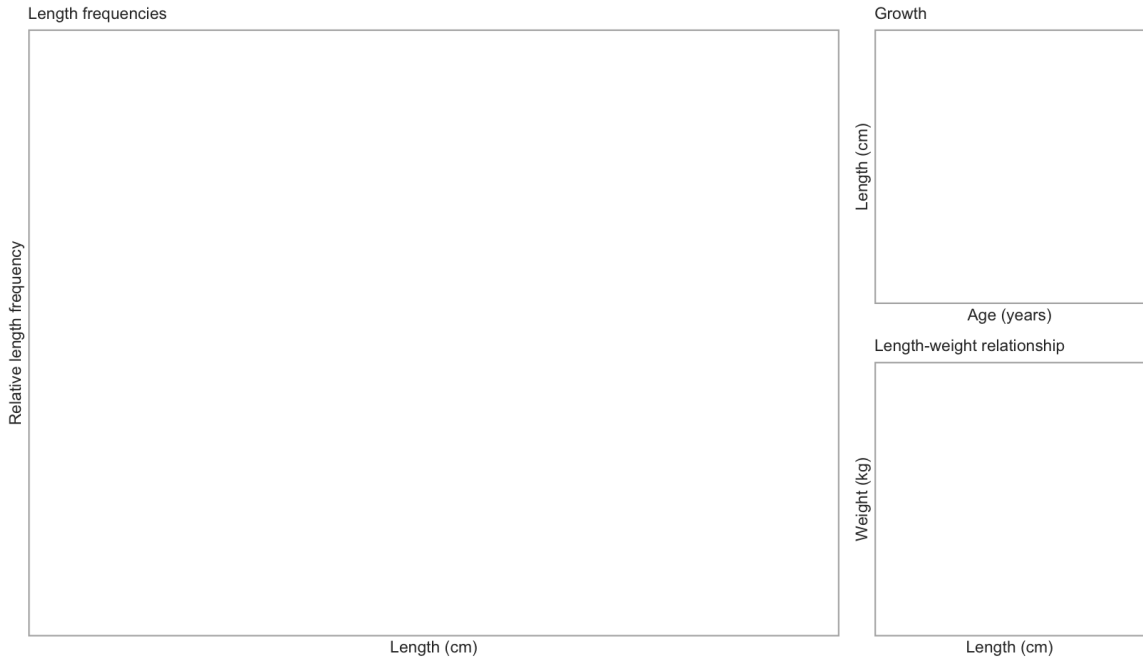


Commercial trawl CPUE



Commercial H & L CPUE



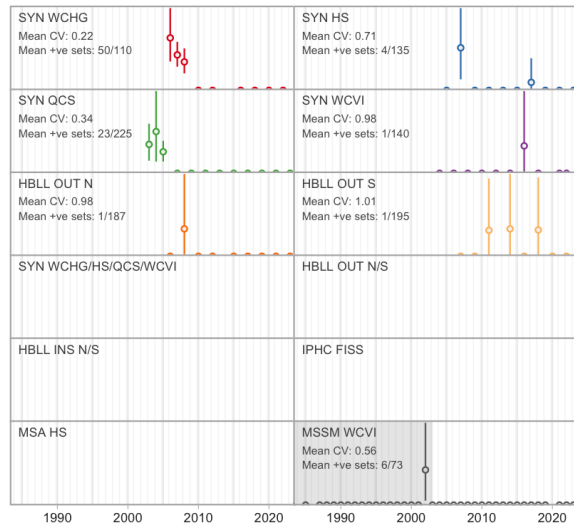


6.92 Blackfin Sculpin

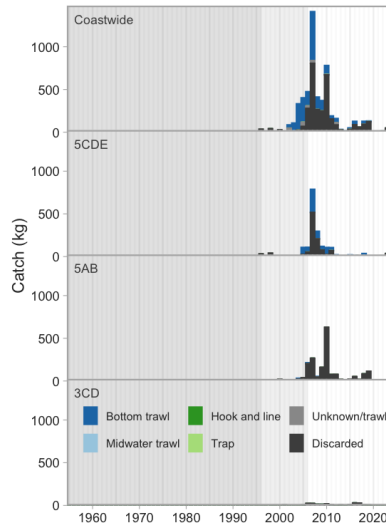
Malacocottus kincaidi (519)

Order: Scorpaeniformes, Family: Psychrolutidae, [FishBase](#), [WoRMS](#)

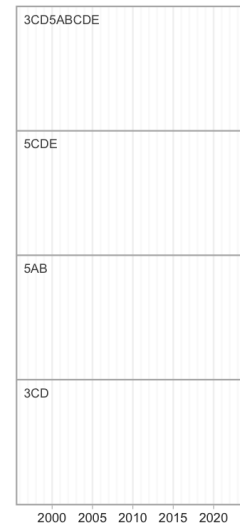
Survey relative biomass indices



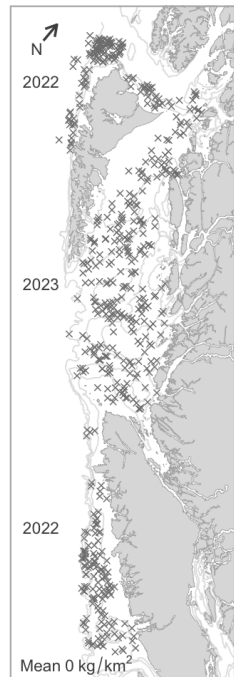
Commercial catch



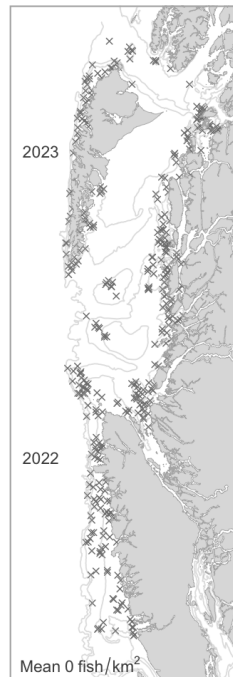
Commercial bottom trawl CPUE



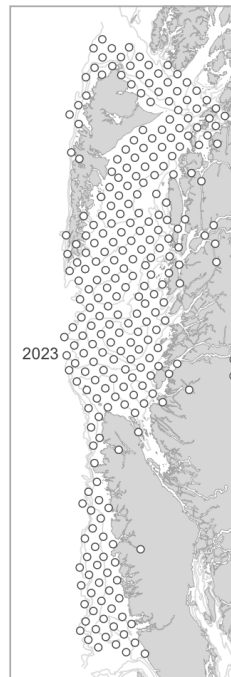
Synoptic survey biomass



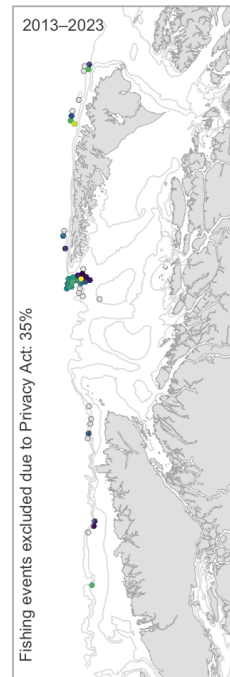
H BLL OUT survey biomass



IPHC survey catch rate

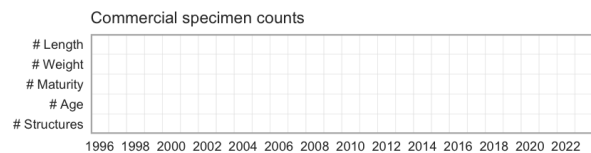
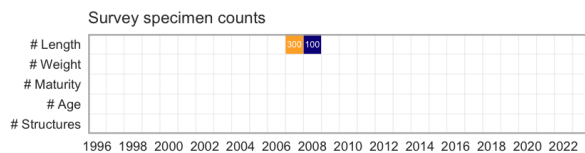
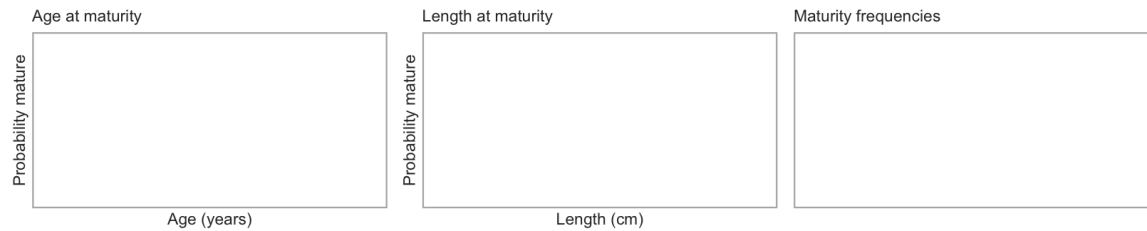
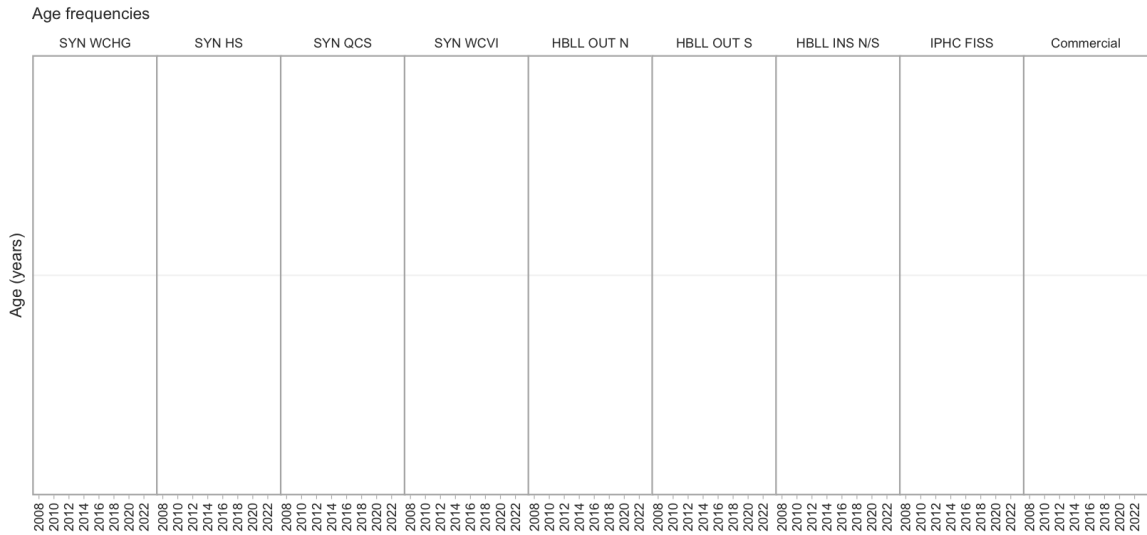
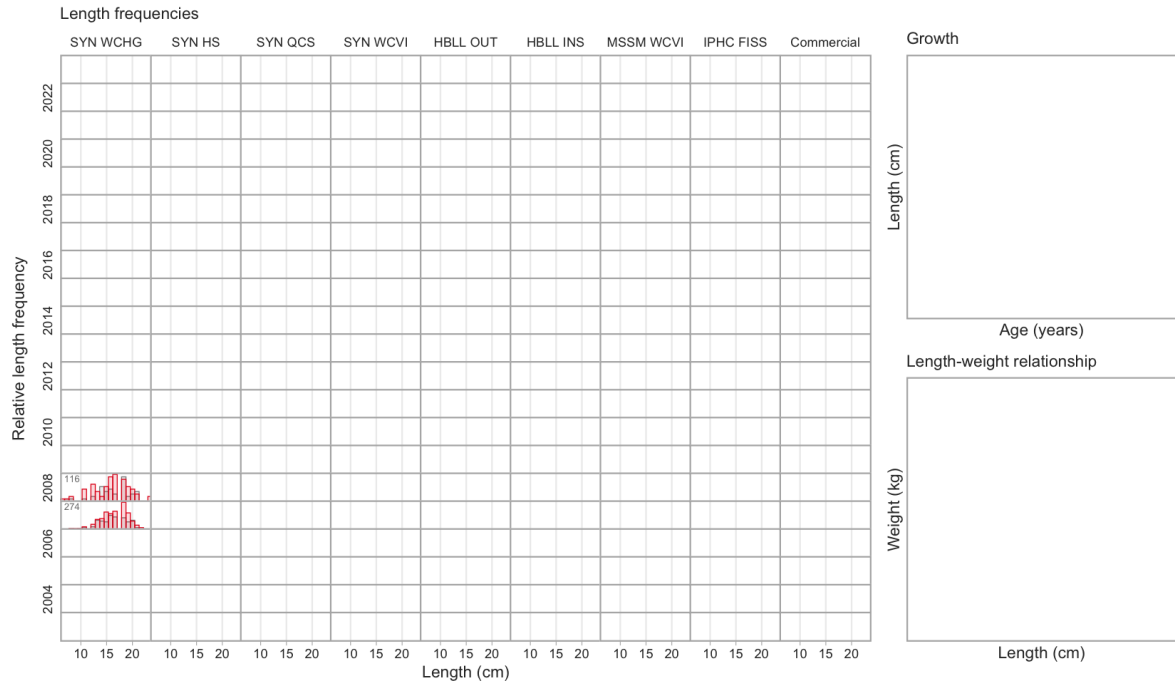


Commercial trawl CPUE



Commercial H & L CPUE



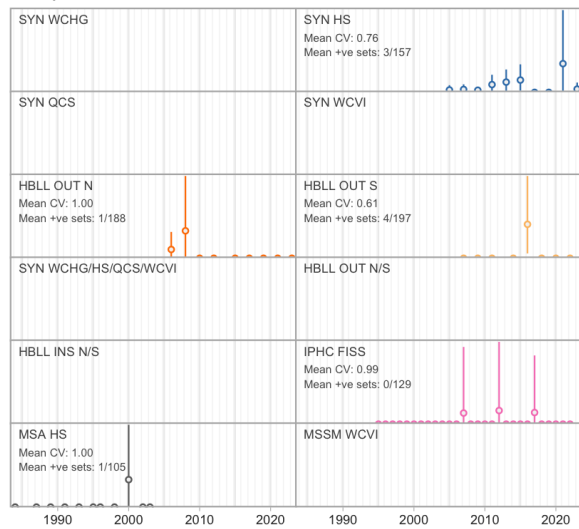


6.93 Great Sculpin

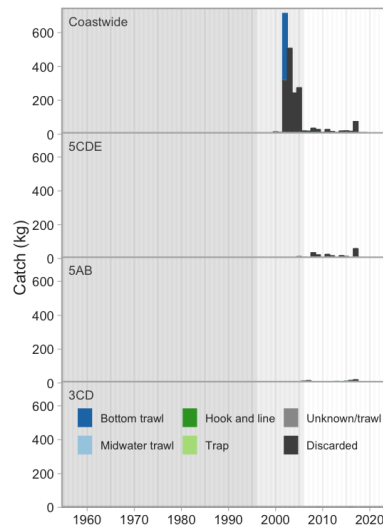
Myoxocephalus polyacanthocephalus (521)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

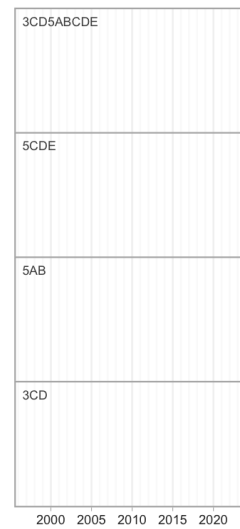
Survey relative biomass indices



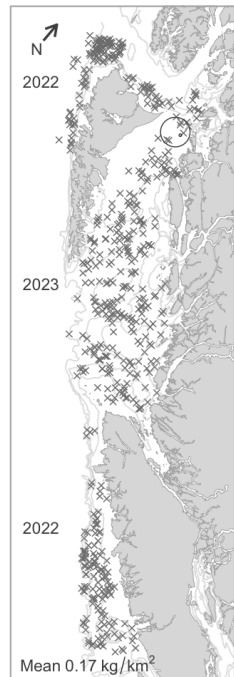
Commercial catch



Commercial bottom trawl CPUE



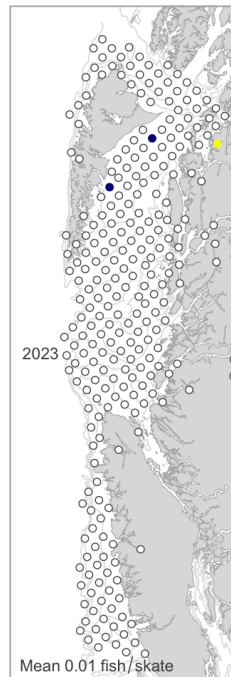
Synoptic survey biomass



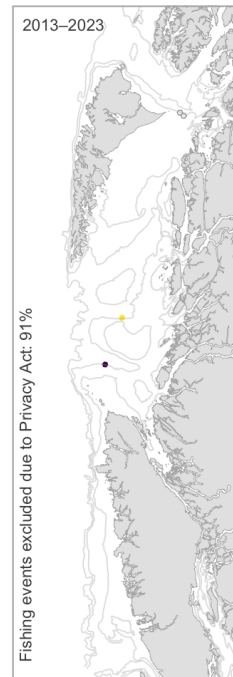
HBL OUT survey biomass



IPHC survey catch rate

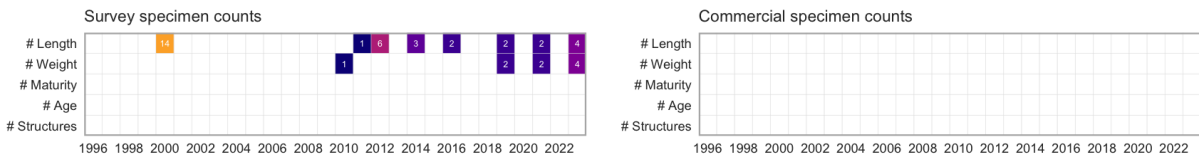
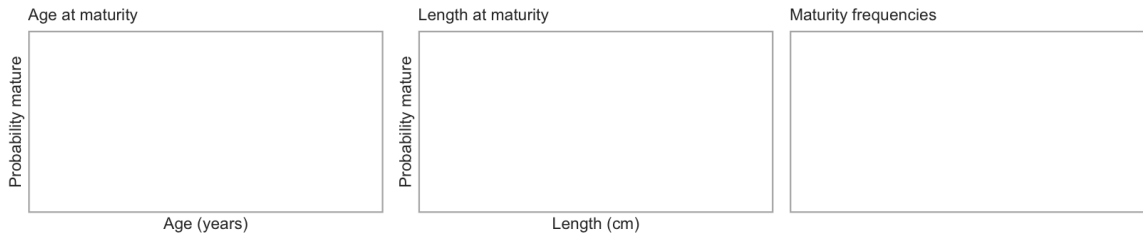
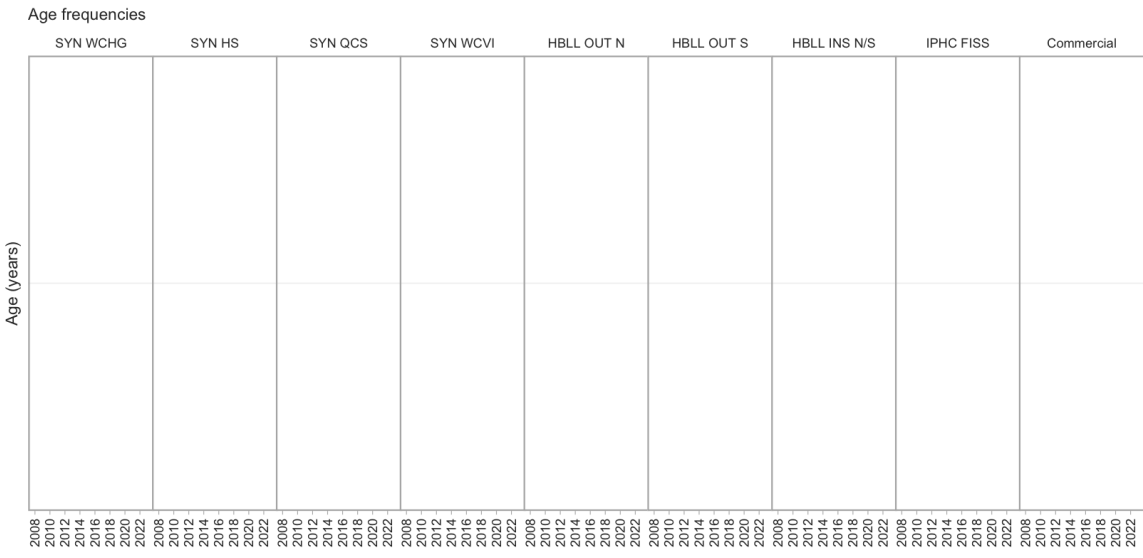
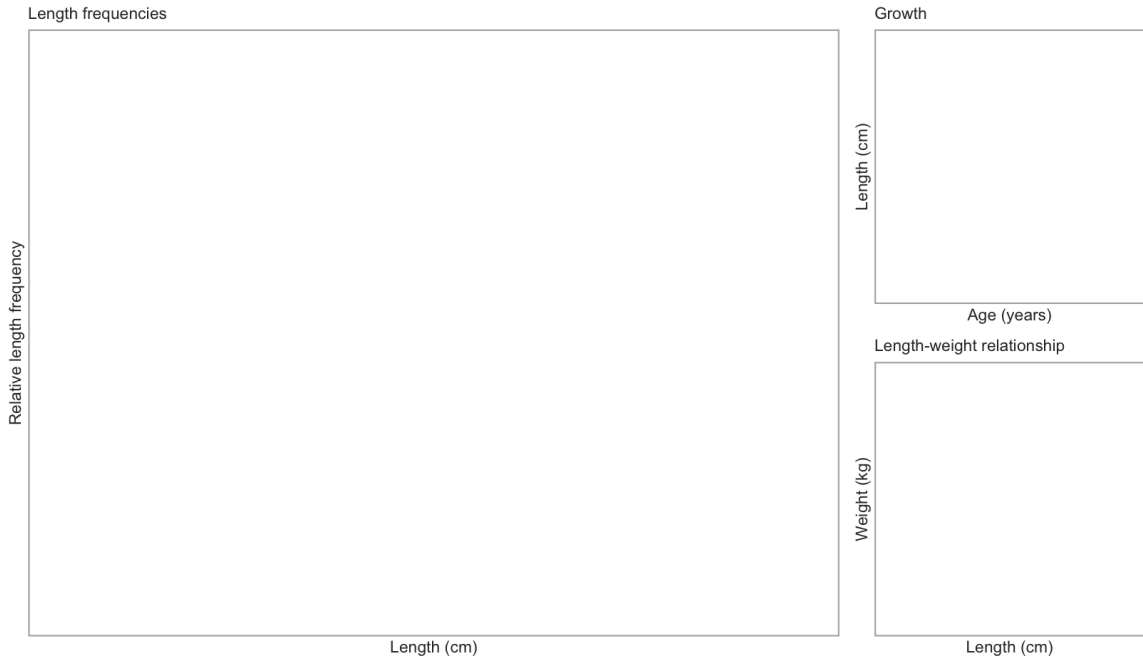


Commercial trawl CPUE



Commercial H & L CPUE





6.94 Thornback Sculpin

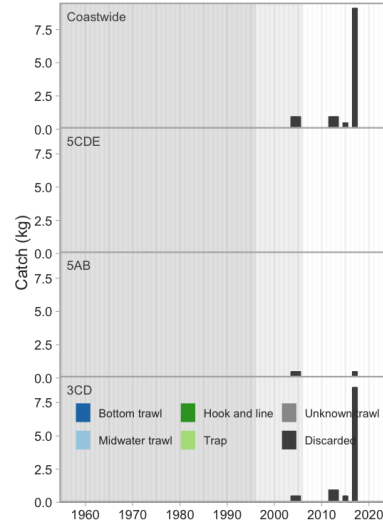
Paricelinus hopliticus (532)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

Survey relative biomass indices



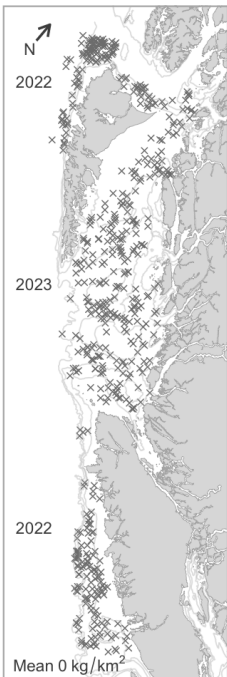
Commercial catch



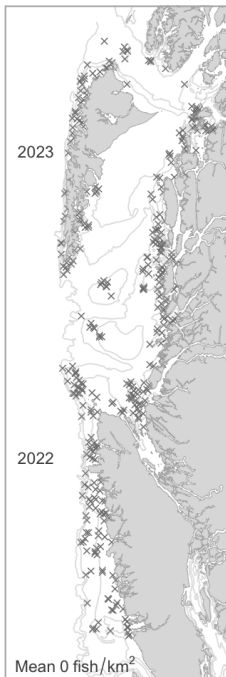
Commercial bottom trawl CPUE



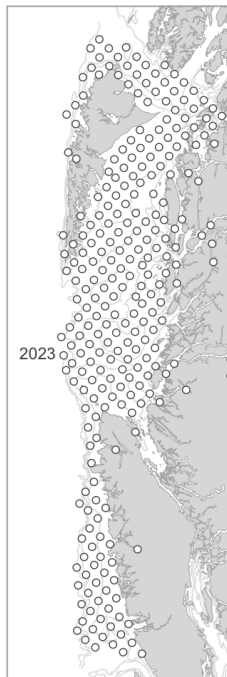
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate

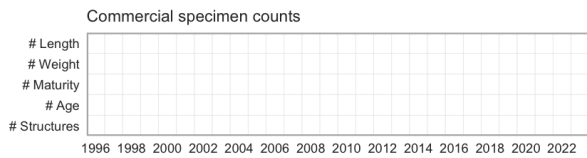
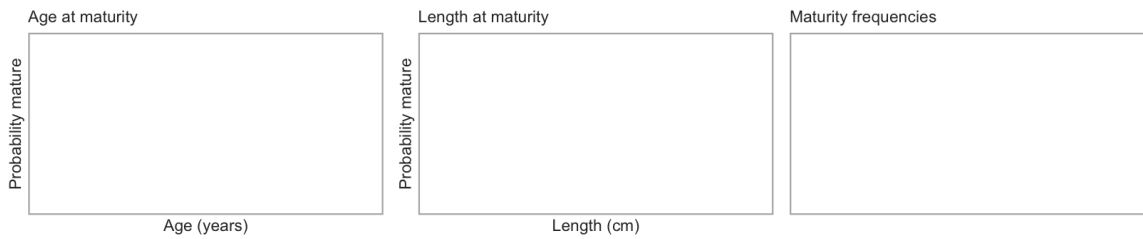
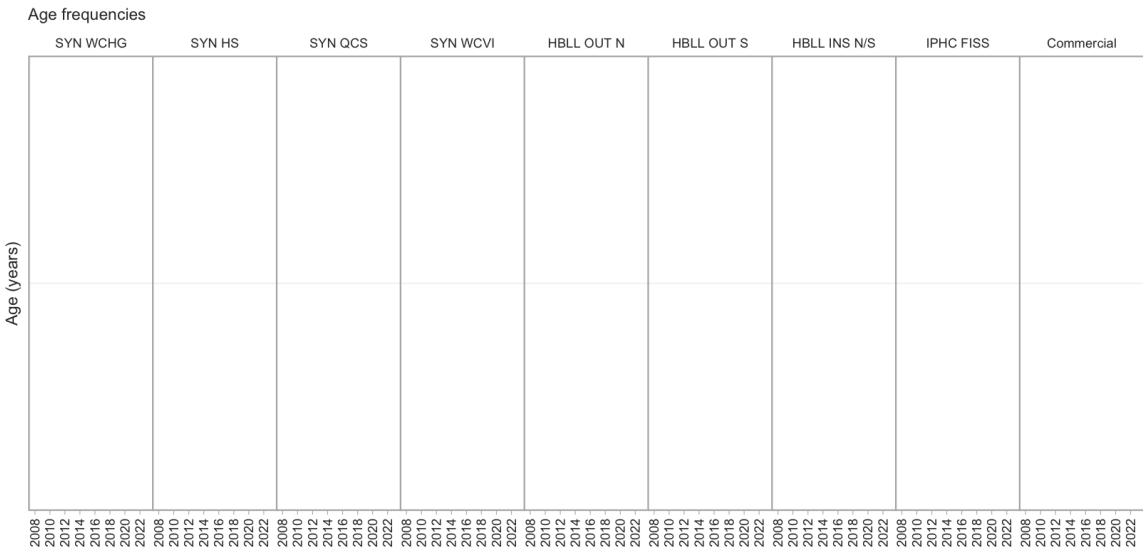
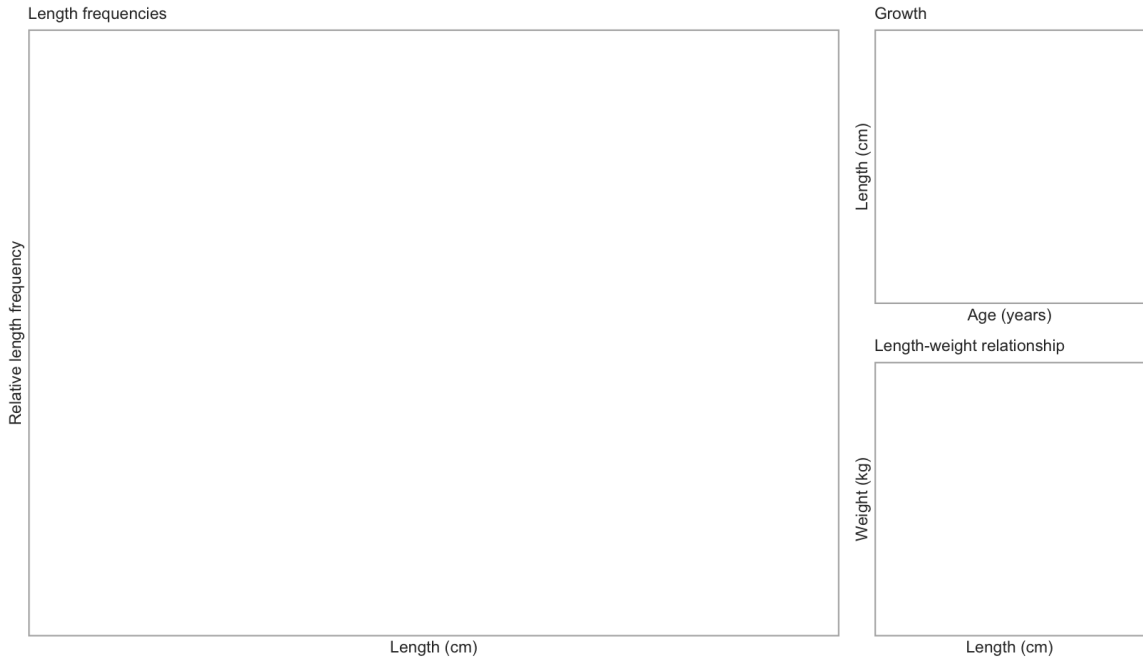


Commercial trawl CPUE



Commercial H & L CPUE



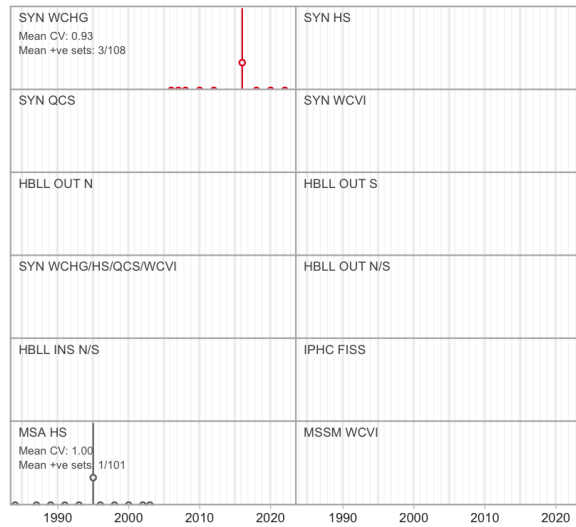


6.95 Giant Blobsculpin

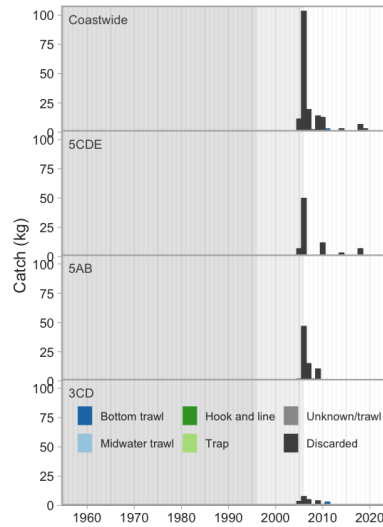
Psychrolutes phricus (534)

Order: Scorpaeniformes, Family: Psychrolutidae, [FishBase](#), [WoRMS](#)

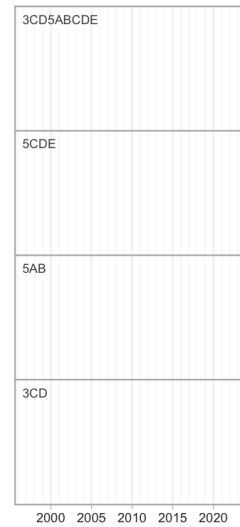
Survey relative biomass indices



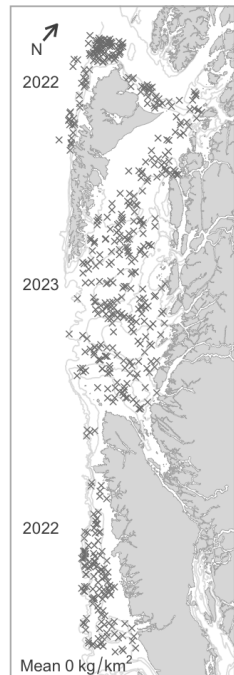
Commercial catch



Commercial bottom trawl CPUE



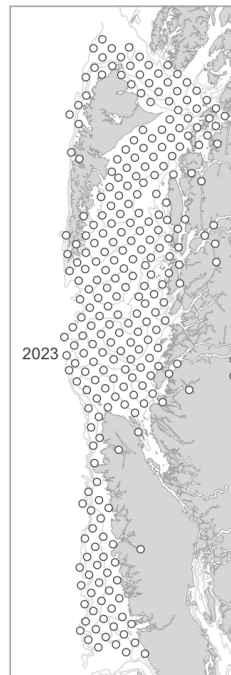
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

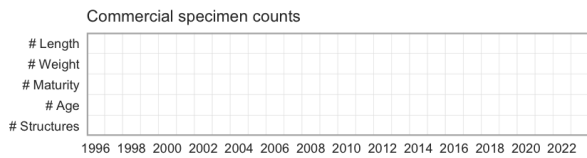
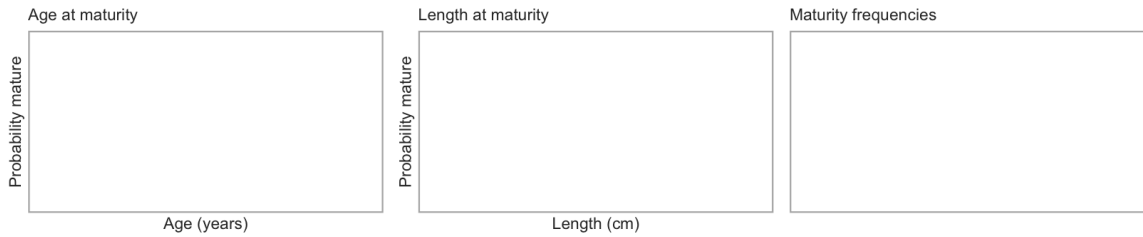
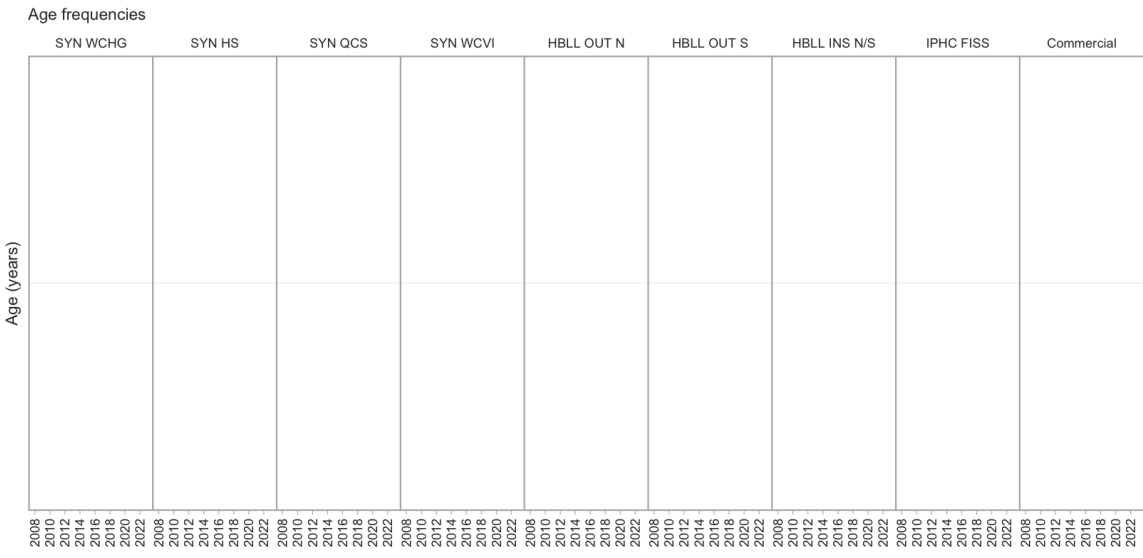
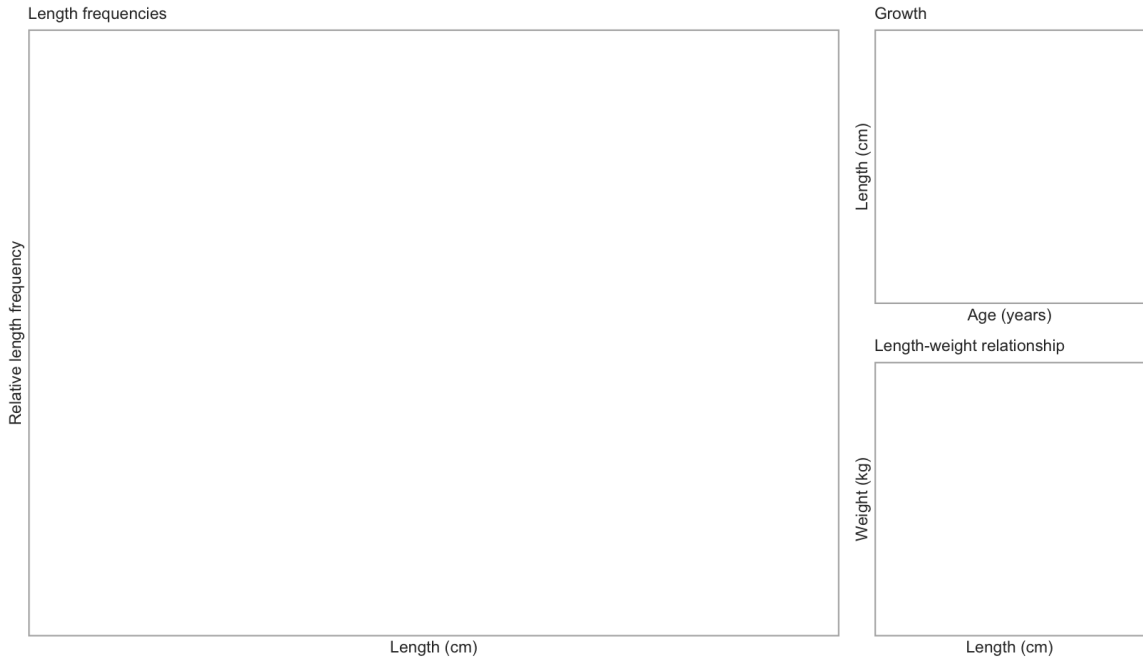


Commercial trawl CPUE



Commercial H & L CPUE



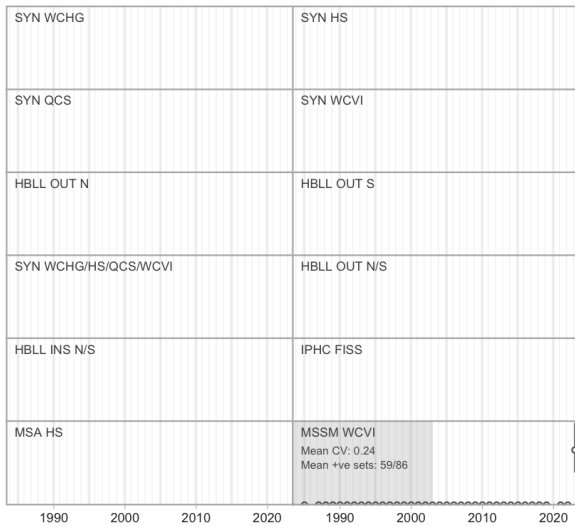


6.96 Slim Sculpin

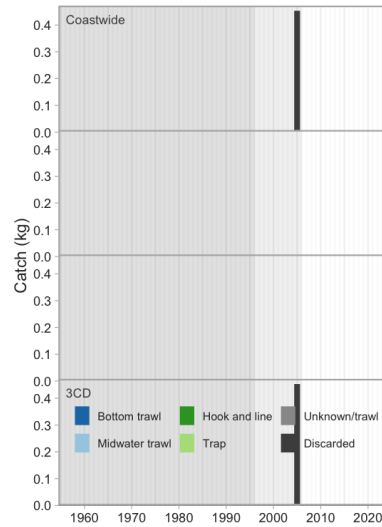
Radulinus asprellus (535)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

Survey relative biomass indices



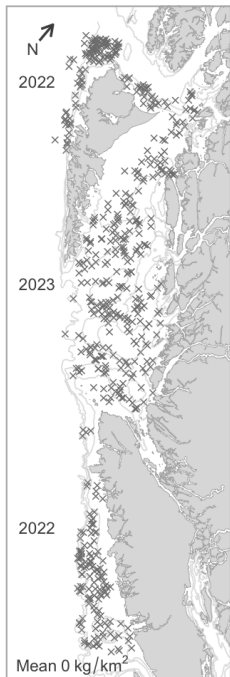
Commercial catch



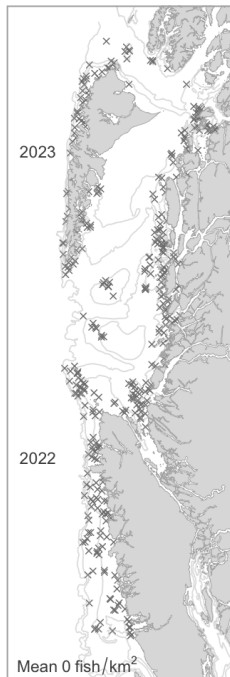
Commercial bottom trawl CPUE



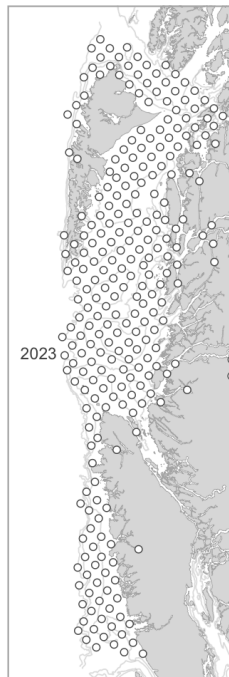
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate

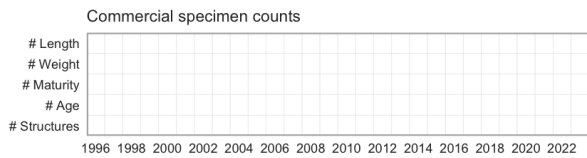
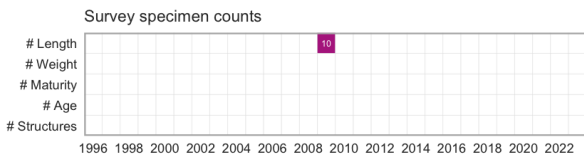
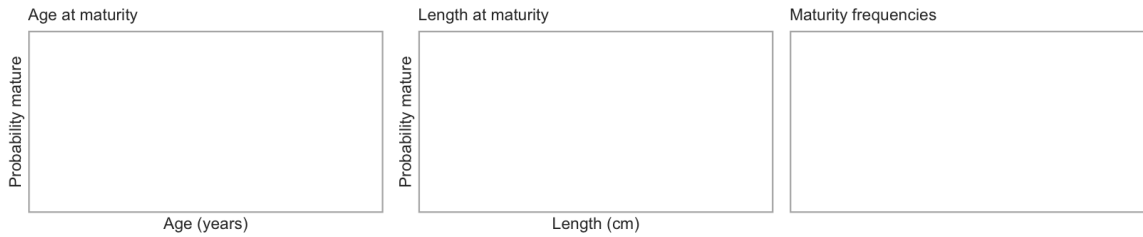
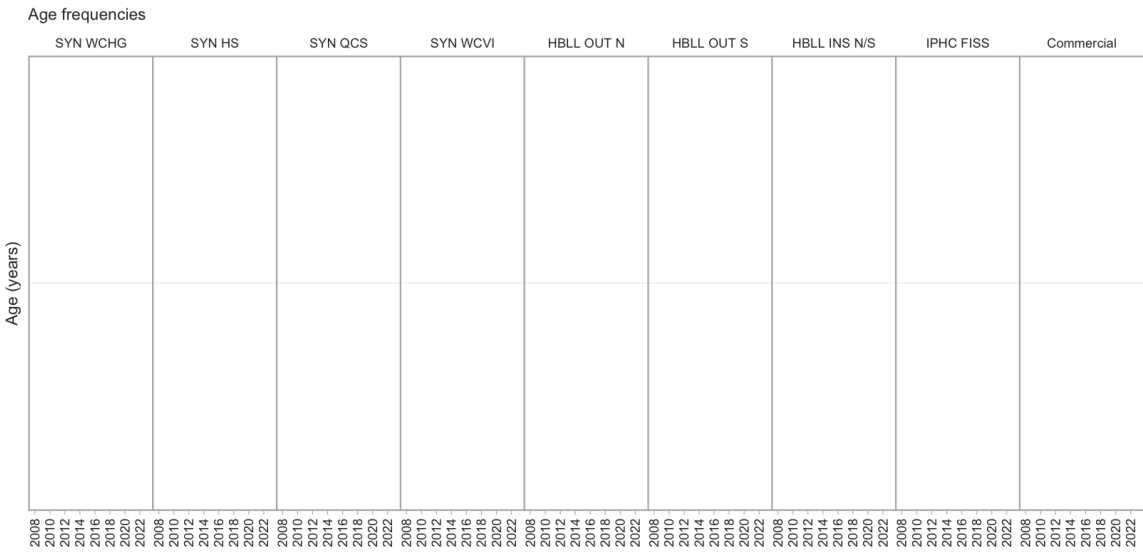
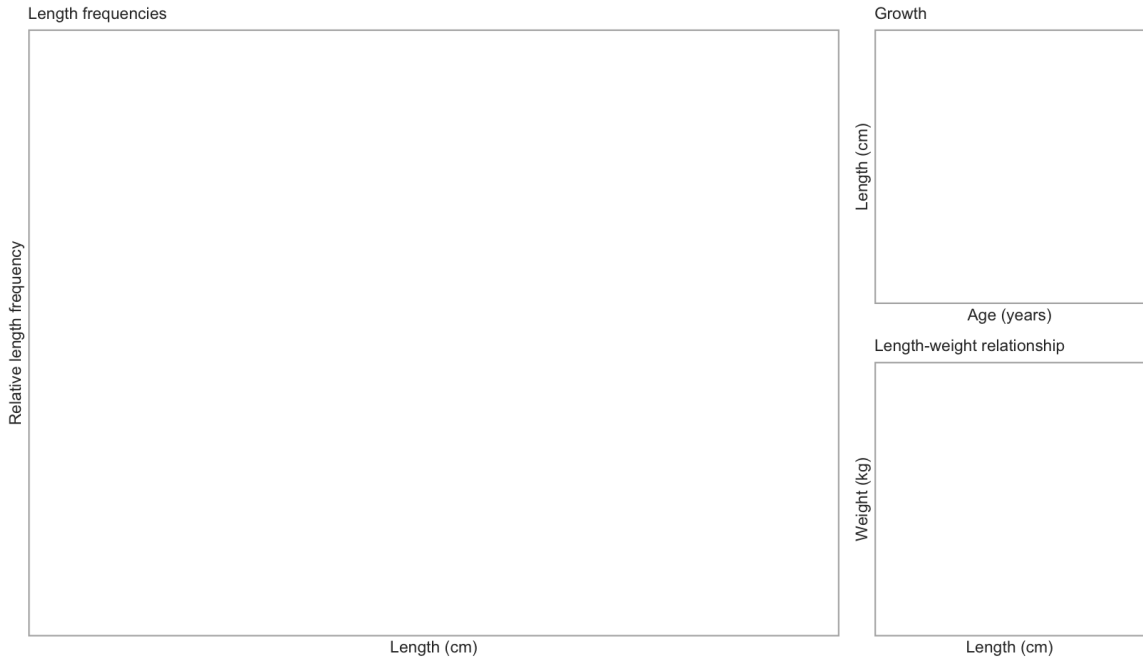


Commercial trawl CPUE



Commercial H & L CPUE



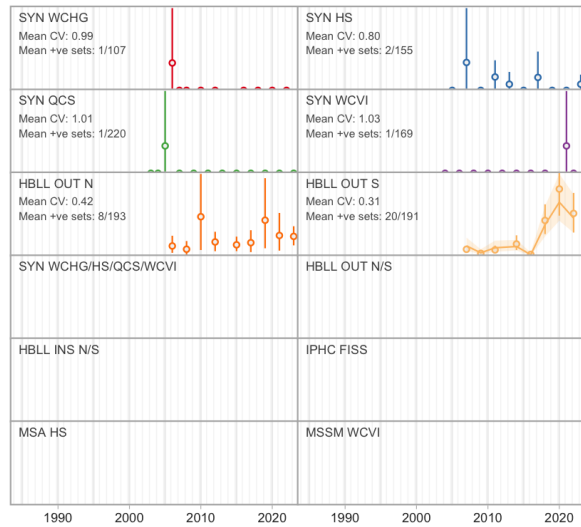


6.97 Cabezon

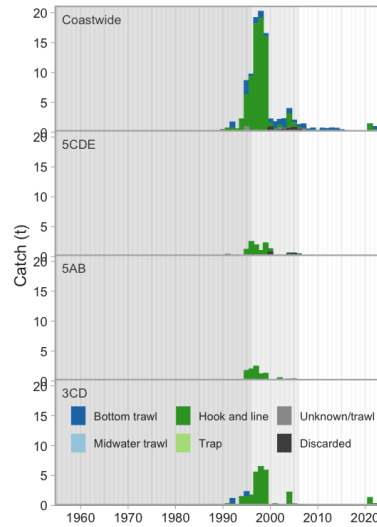
Scorpaenichthys marmoratus (540)

Order: Scorpaeniformes, Family: Cottidae, [FishBase](#), [WoRMS](#)

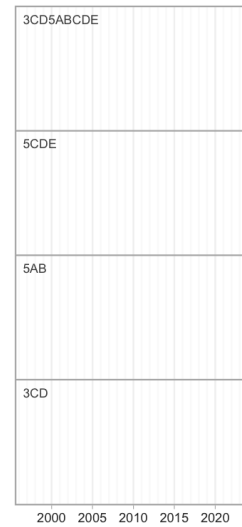
Survey relative biomass indices



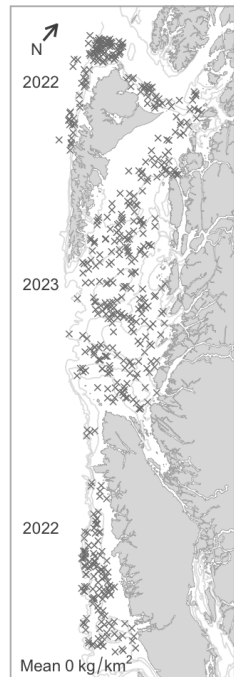
Commercial catch



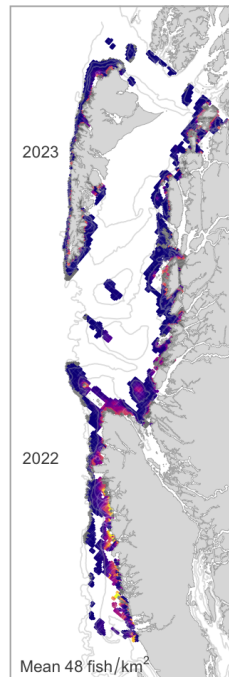
Commercial bottom trawl CPUE



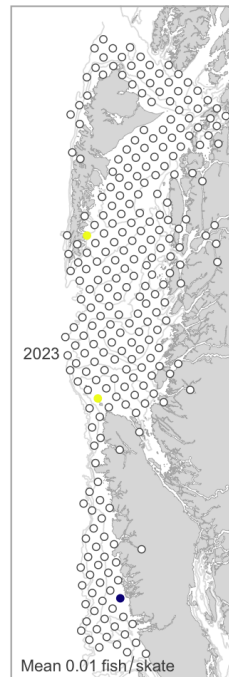
Synoptic survey biomass



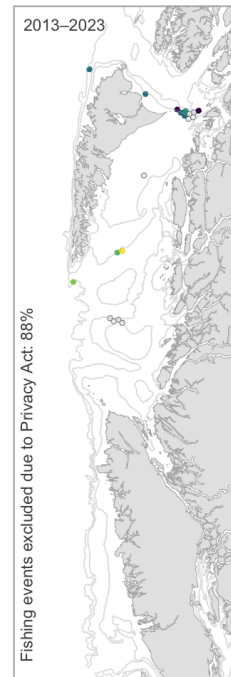
HBL OUT survey biomass



IPHC survey catch rate

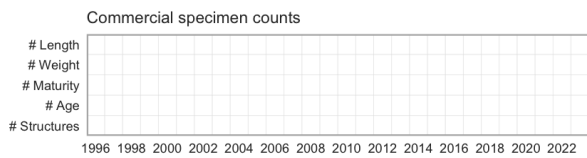
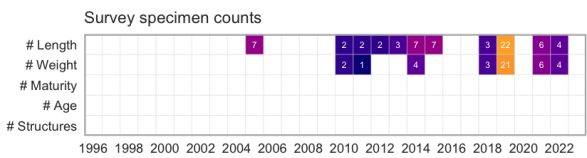
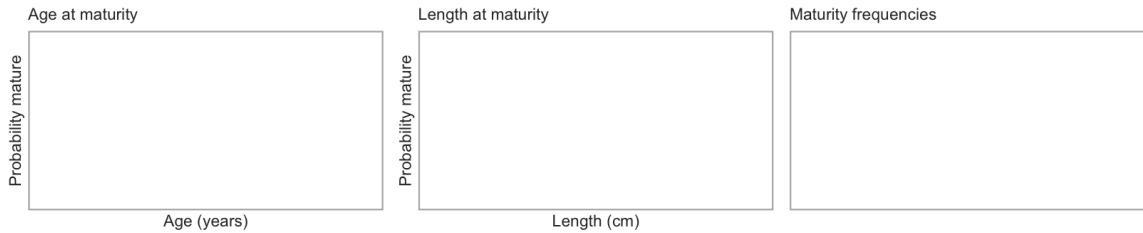
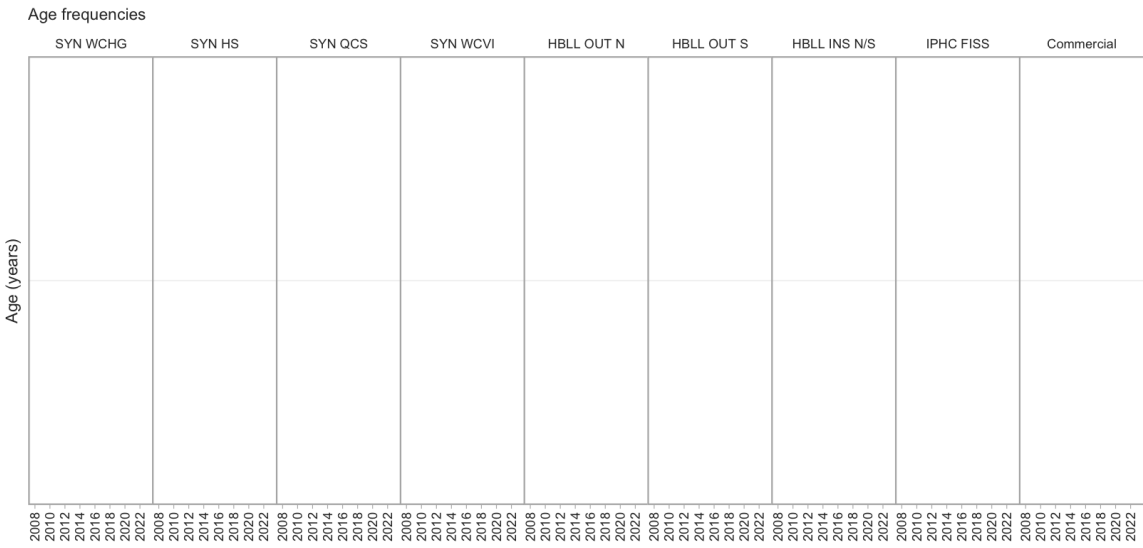
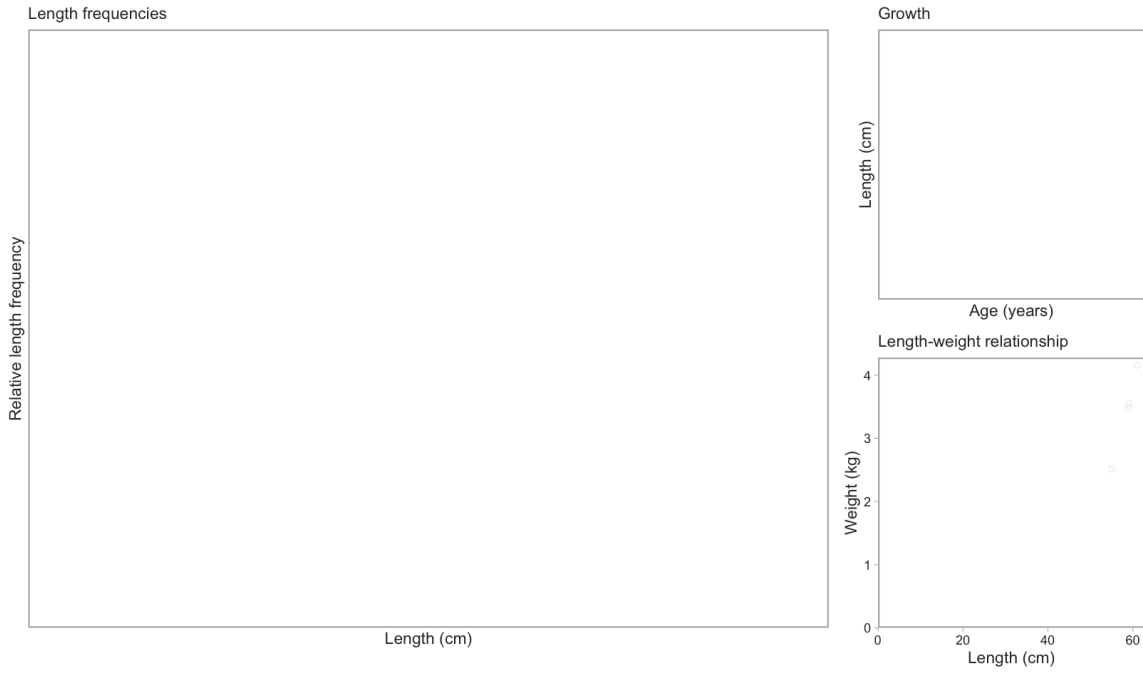


Commercial trawl CPUE



Commercial H & L CPUE



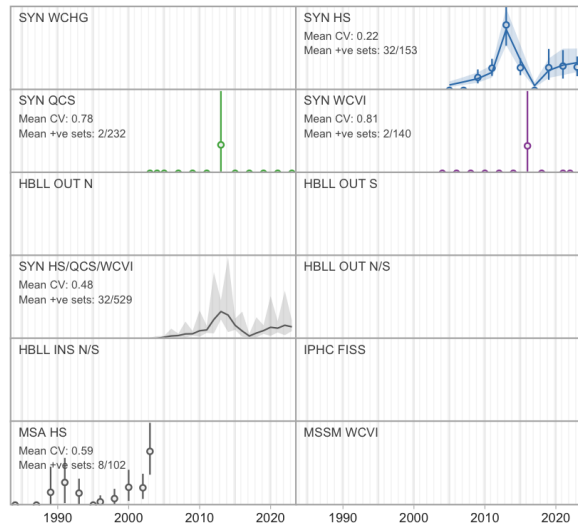


6.98 Sturgeon Poacher

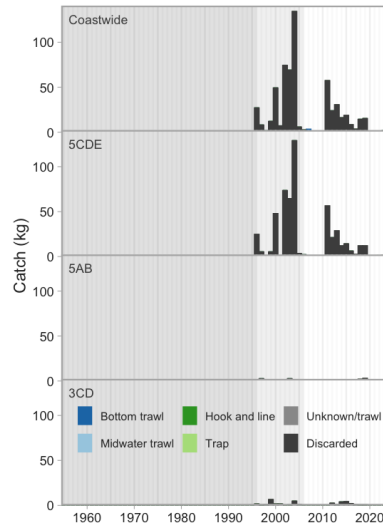
Podothecus accipenserinus (550)

Order: Scorpaeniformes, Family: Agonidae, [FishBase](#), [WoRMS](#)

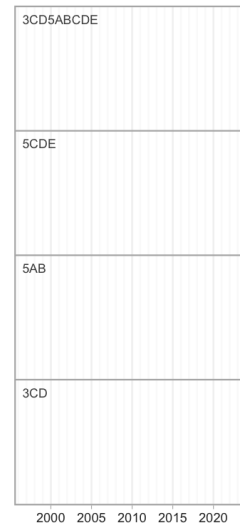
Survey relative biomass indices



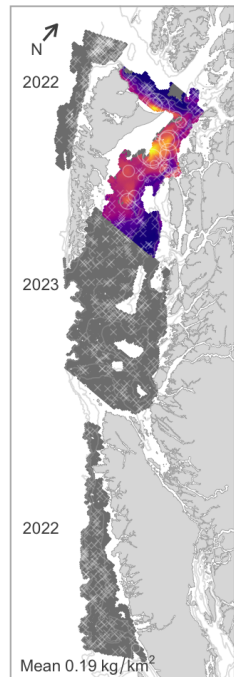
Commercial catch



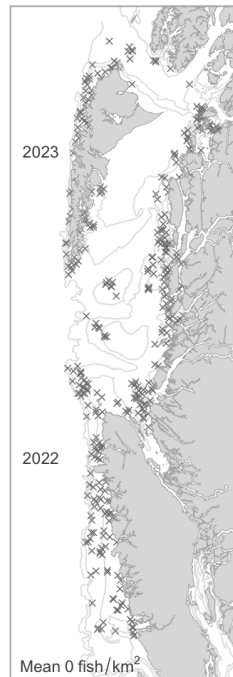
Commercial bottom trawl CPUE



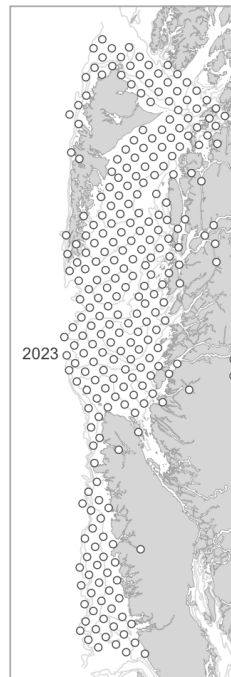
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

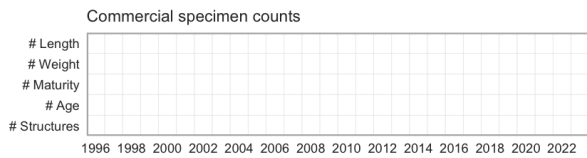
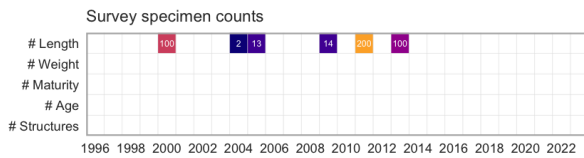
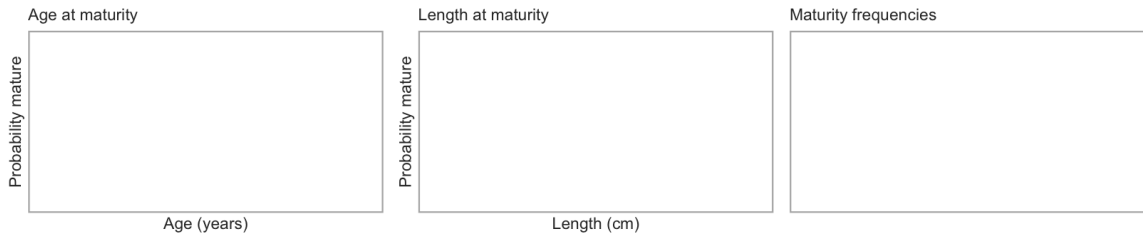
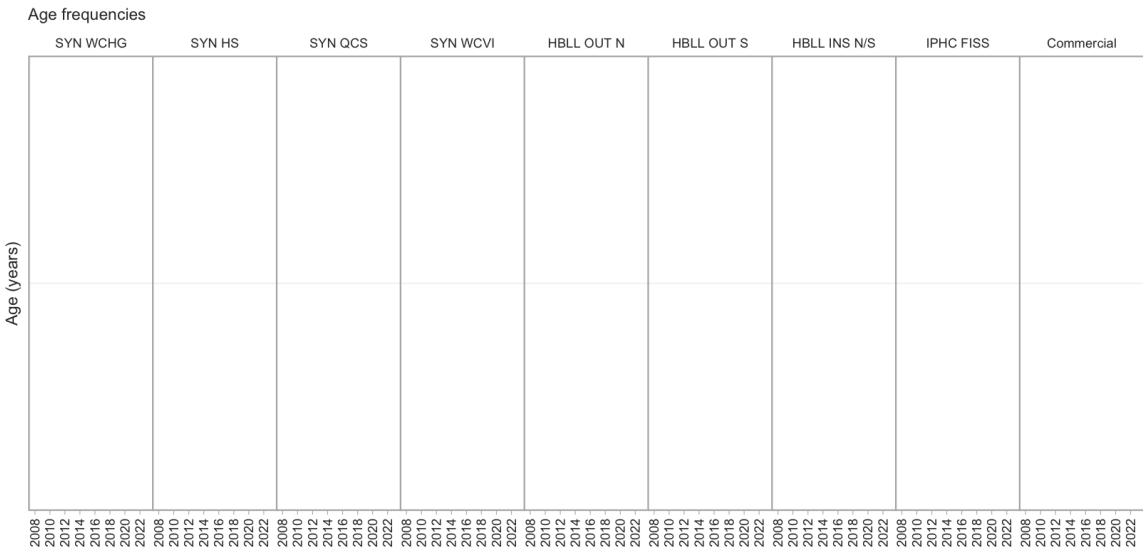
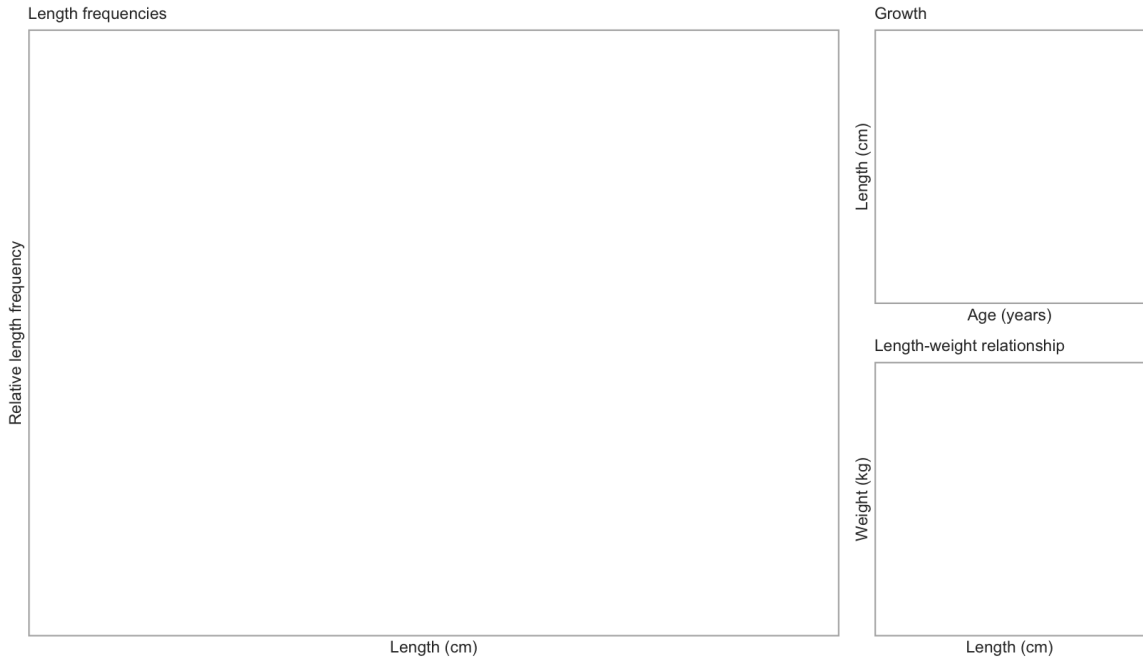


Commercial trawl CPUE



Commercial H & L CPUE



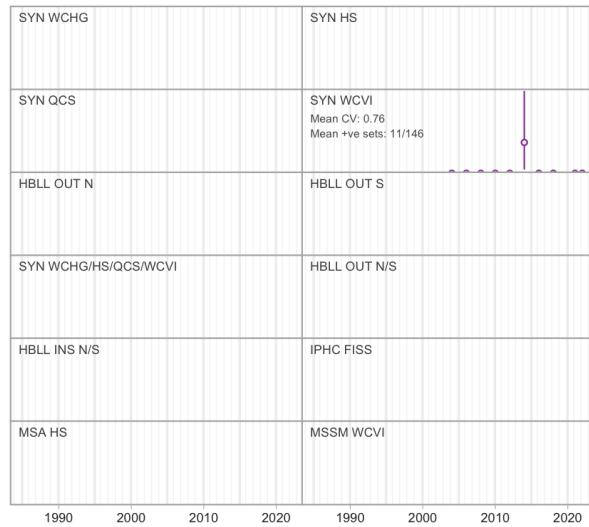


6.99 Smootheye Poacher

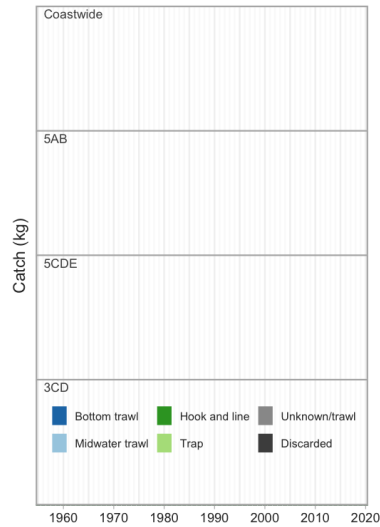
Xeneretmus leiops (555)

Order: Scorpaeniformes, Family: Agonidae, [FishBase](#), [WoRMS](#)

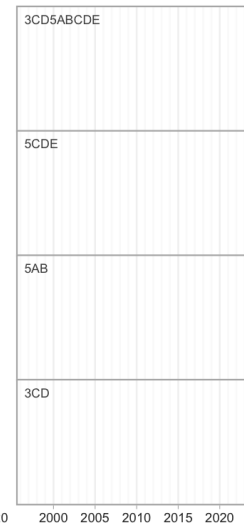
Survey relative biomass indices



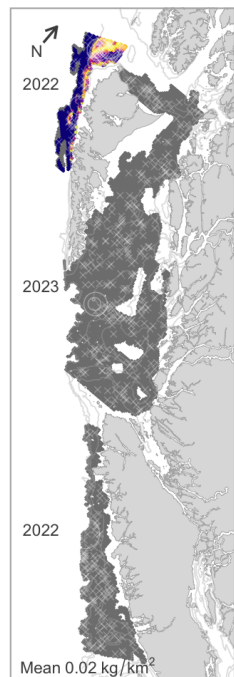
Commercial catch



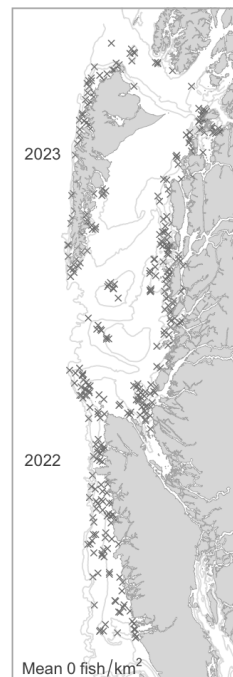
Commercial bottom trawl CPUE



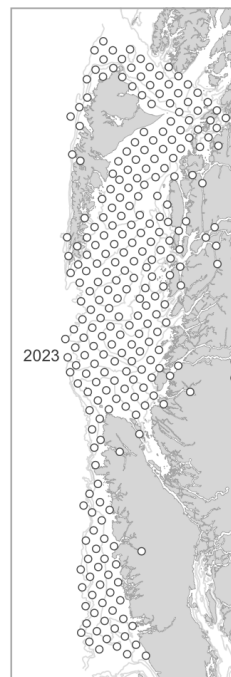
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate



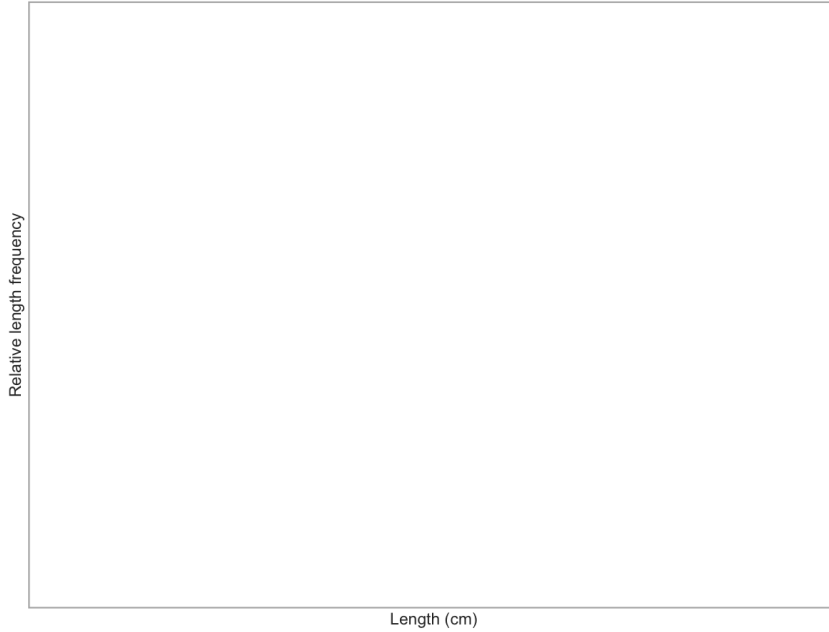
Commercial trawl CPUE



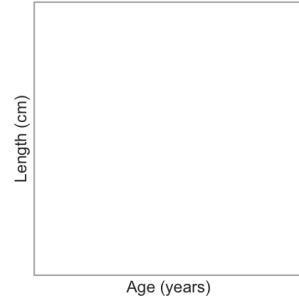
Commercial H & L CPUE



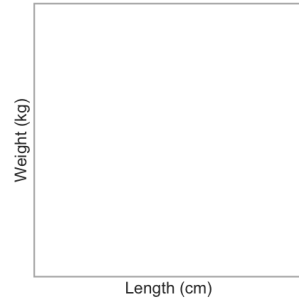
Length frequencies



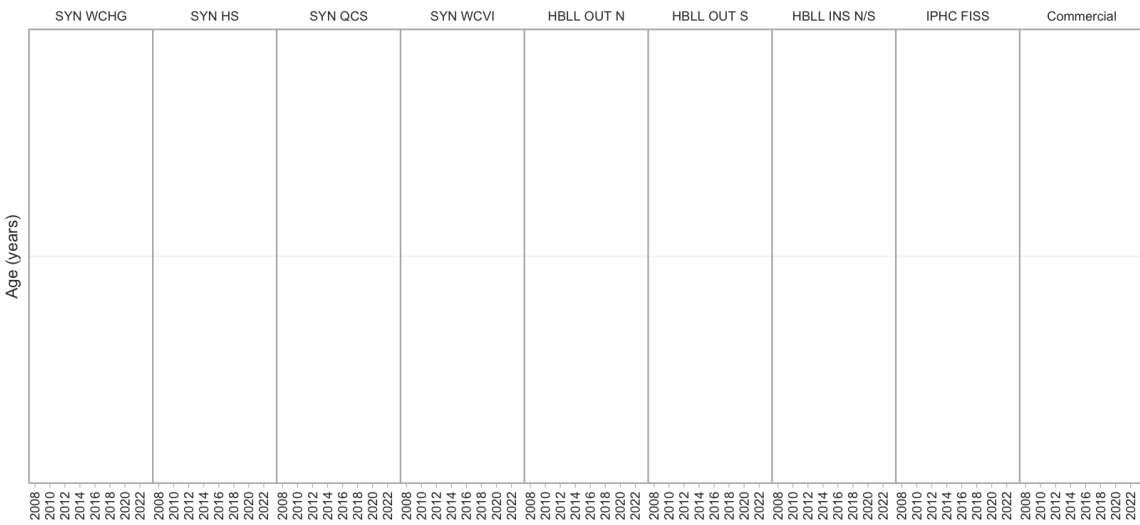
Growth



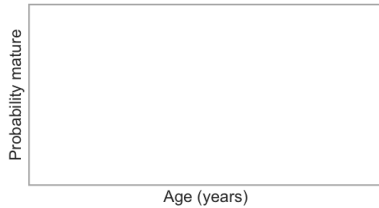
Length-weight relationship



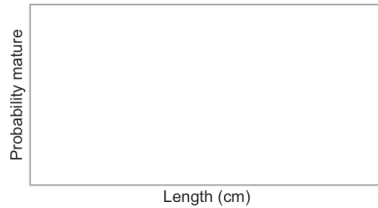
Age frequencies



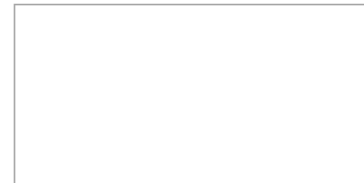
Age at maturity



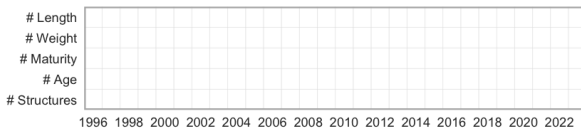
Length at maturity



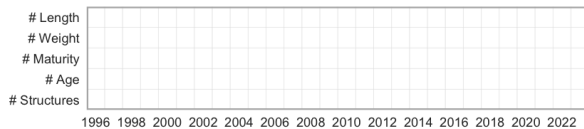
Maturity frequencies



Survey specimen counts



Commercial specimen counts

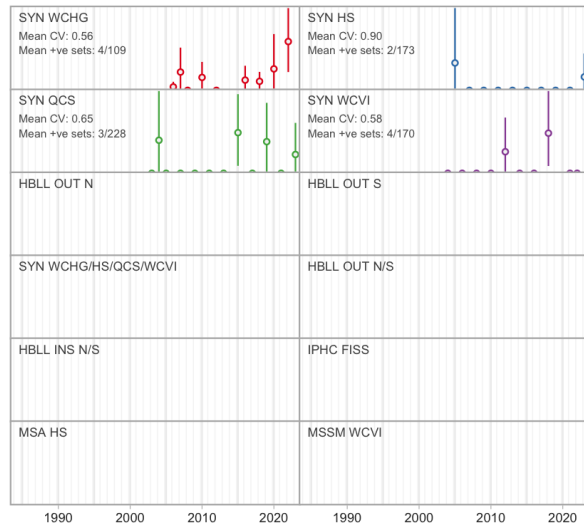


6.100 Blacktail Snailfish

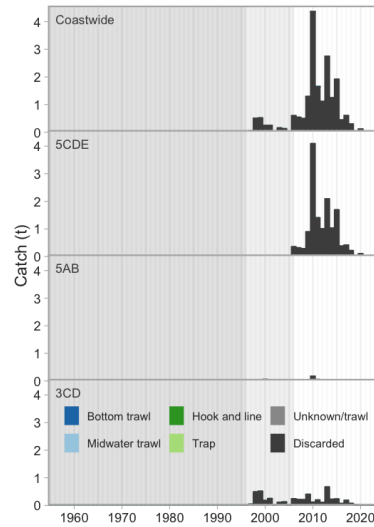
Careproctus melanurus (574)

Order: Scorpaeniformes, Family: Liparidae, [FishBase](#), [WoRMS](#)

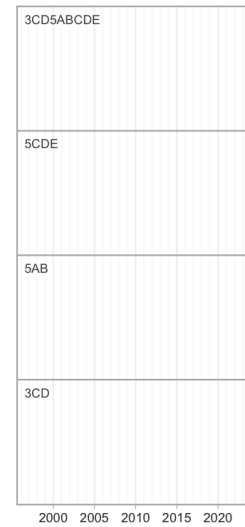
Survey relative biomass indices



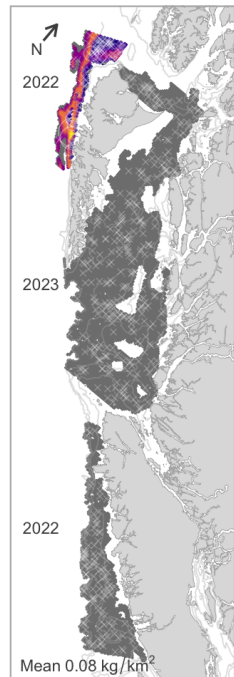
Commercial catch



Commercial bottom trawl CPUE



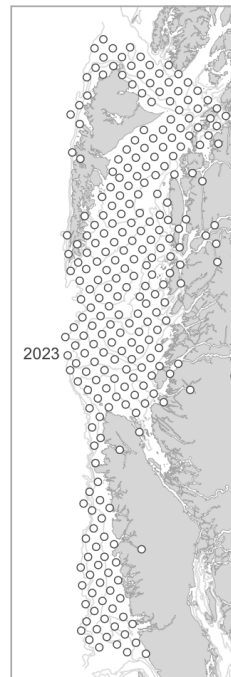
Synoptic survey biomass



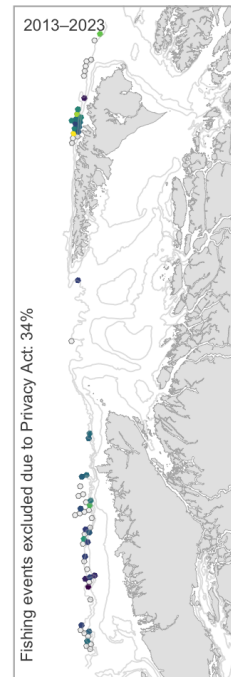
HBL OUT survey biomass



IPHC survey catch rate

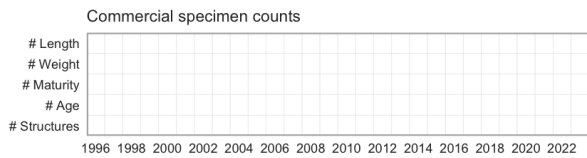
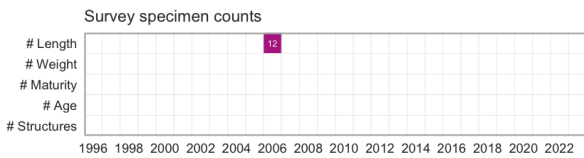
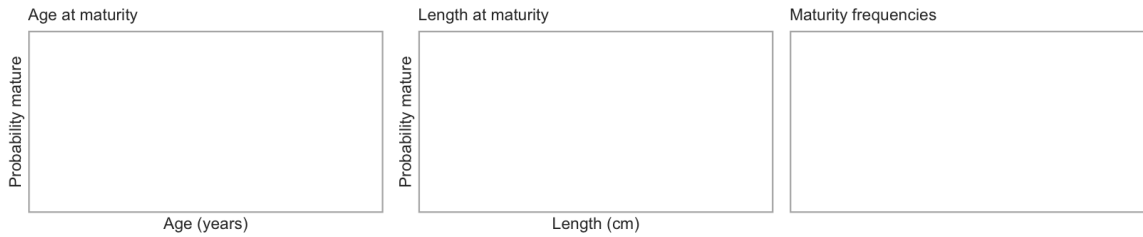
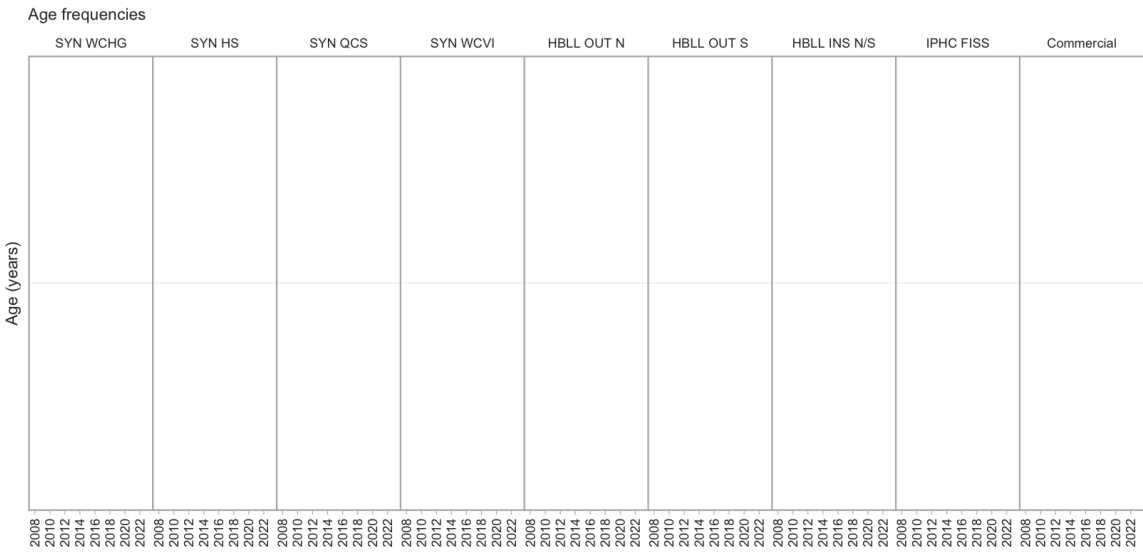
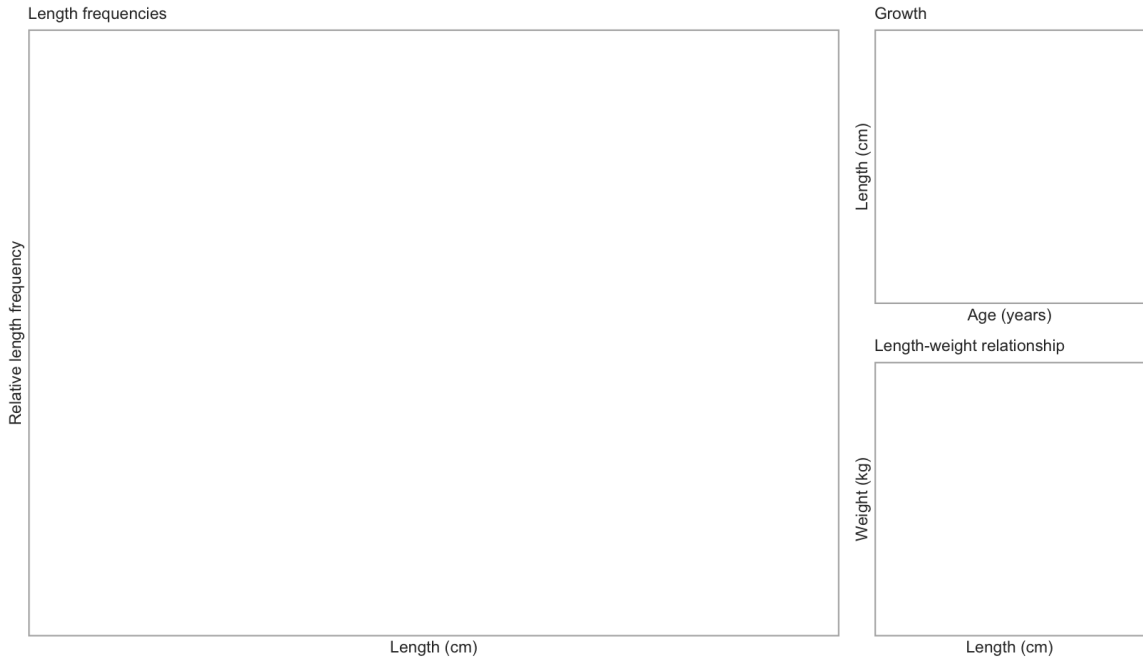


Commercial trawl CPUE



Commercial H & L CPUE



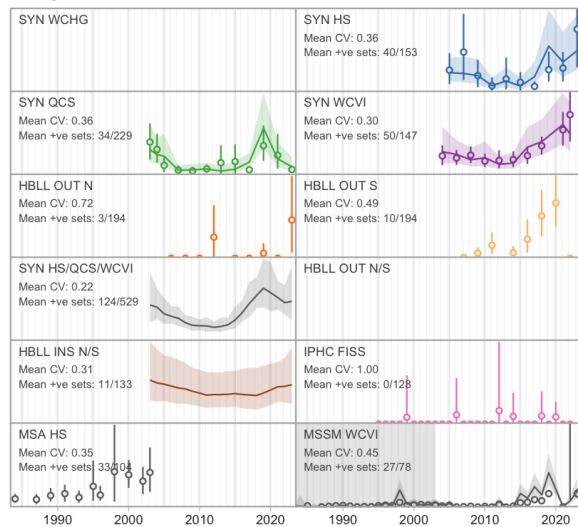


6.101 Pacific Sanddab

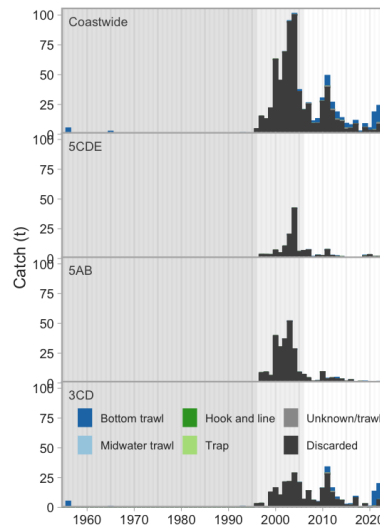
Citharichthys sordidus (596)

Order: Pleuronectiformes, Family: Paralichthyidae, [FishBase](#), [WoRMS](#)

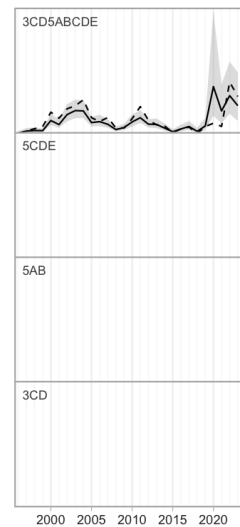
Survey relative biomass indices



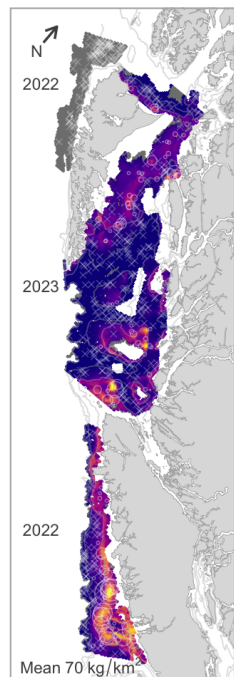
Commercial catch



Commercial bottom trawl CPUE



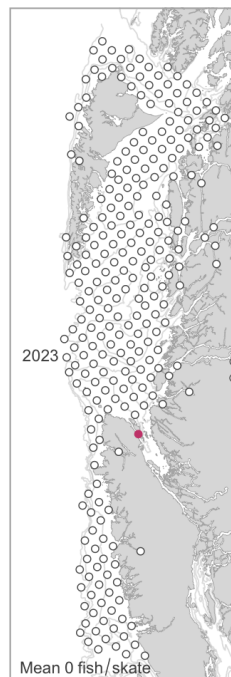
Synoptic survey biomass



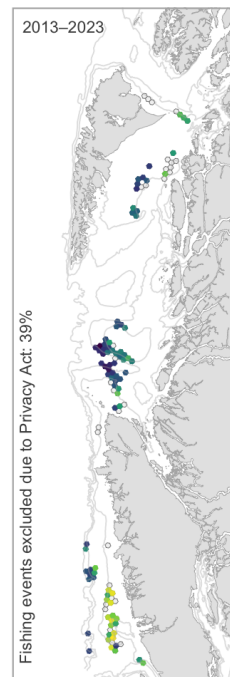
HBLL OUT survey biomass



IPHC survey catch rate

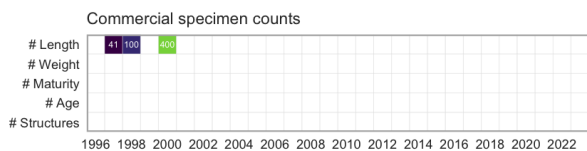
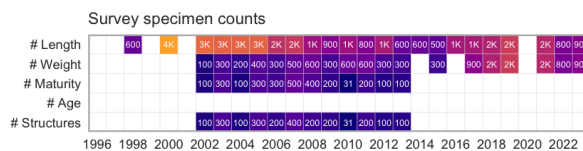
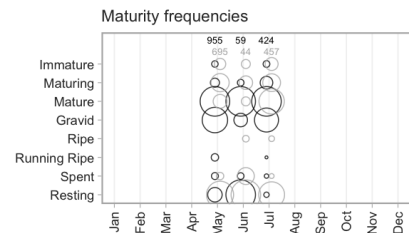
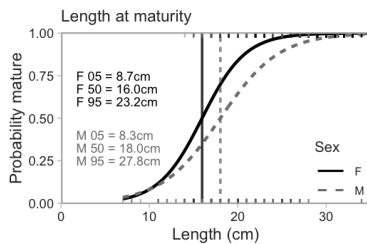
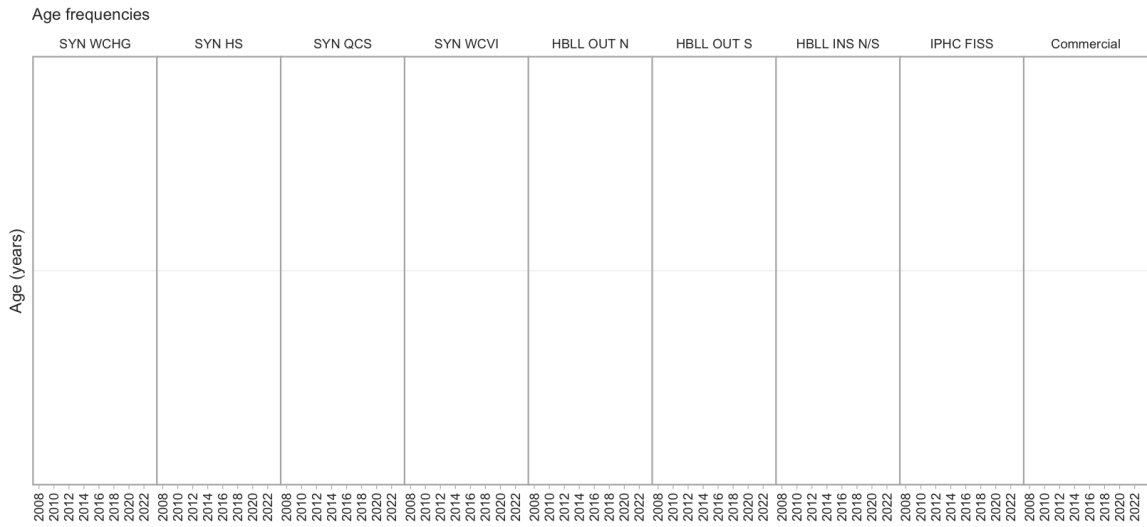
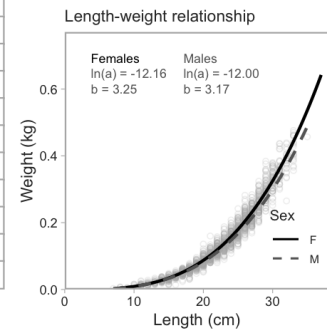
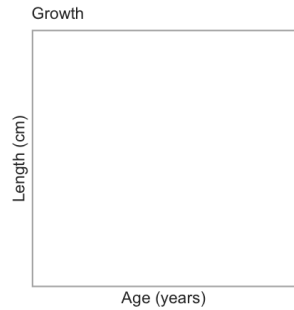
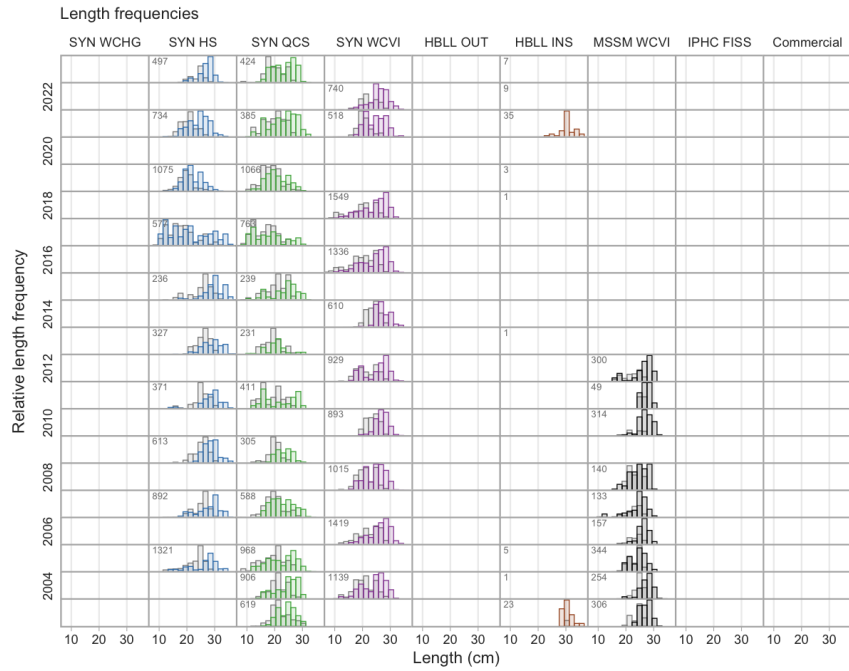


Commercial trawl CPUE



Commercial H & L CPUE





6.102 Arrowtooth Flounder

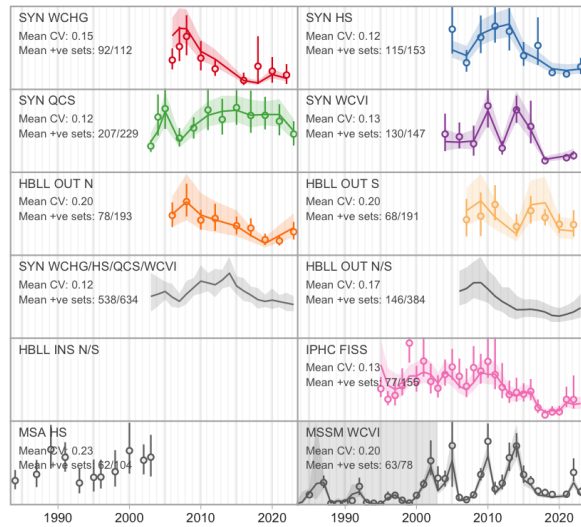
Atheresthes stomias (602)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

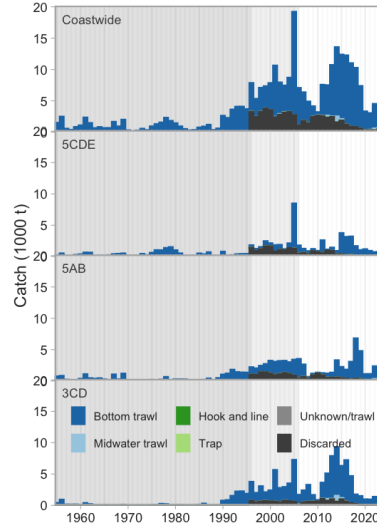
Last Research Document: Grandin and Forrest (2017)

Last Science Advisory Report: DFO (2023g)

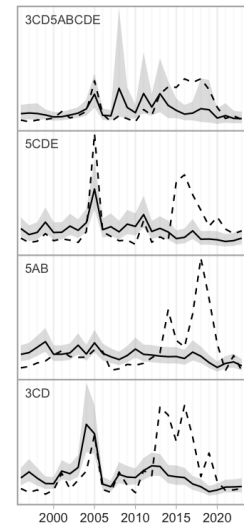
Survey relative biomass indices



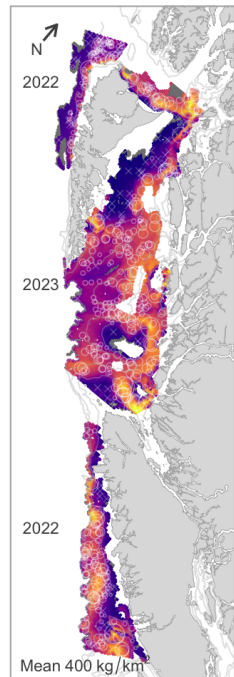
Commercial catch



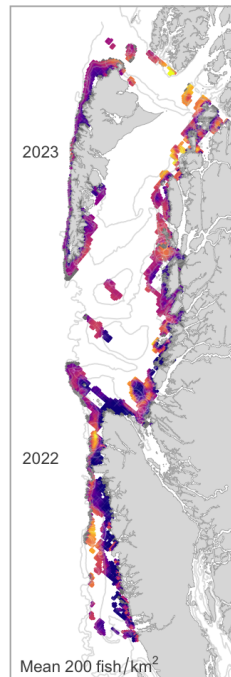
Commercial bottom trawl CPUE



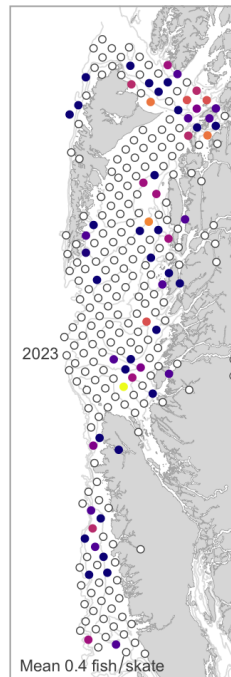
Synoptic survey biomass



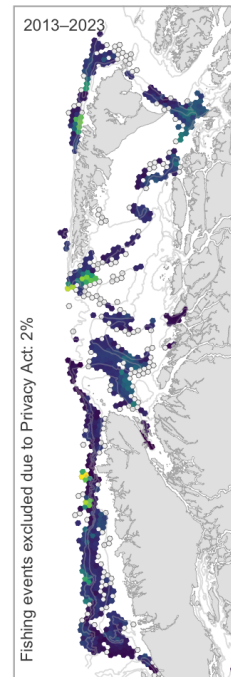
HBL OUT survey biomass



IPHC survey catch rate

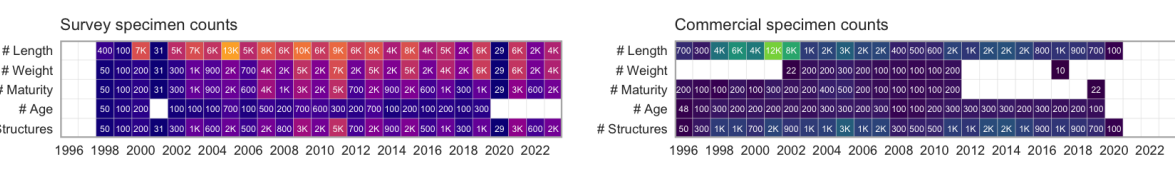
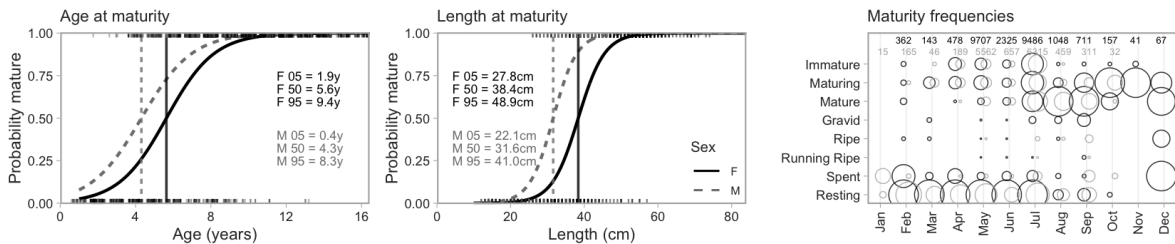
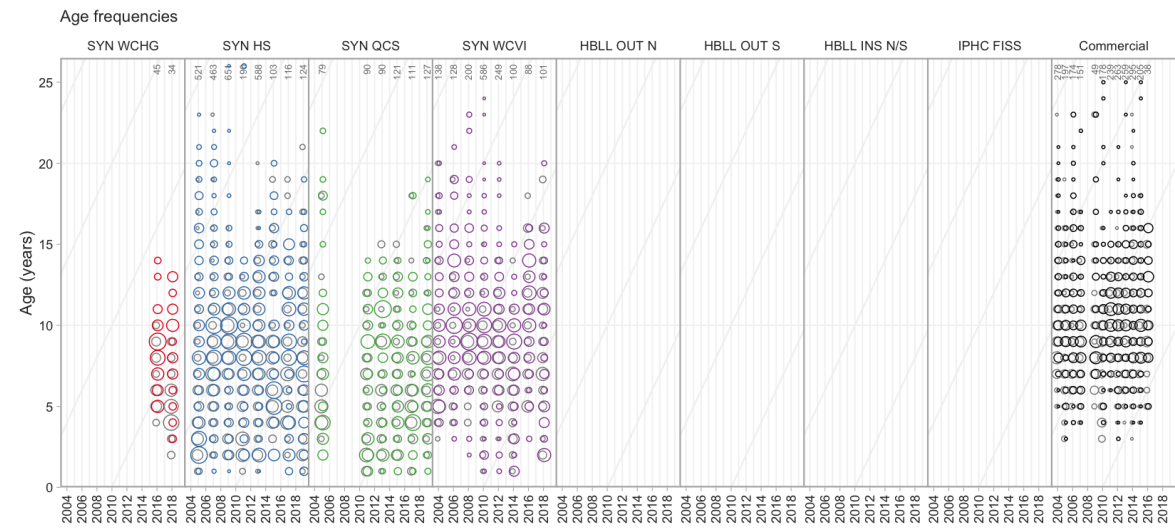
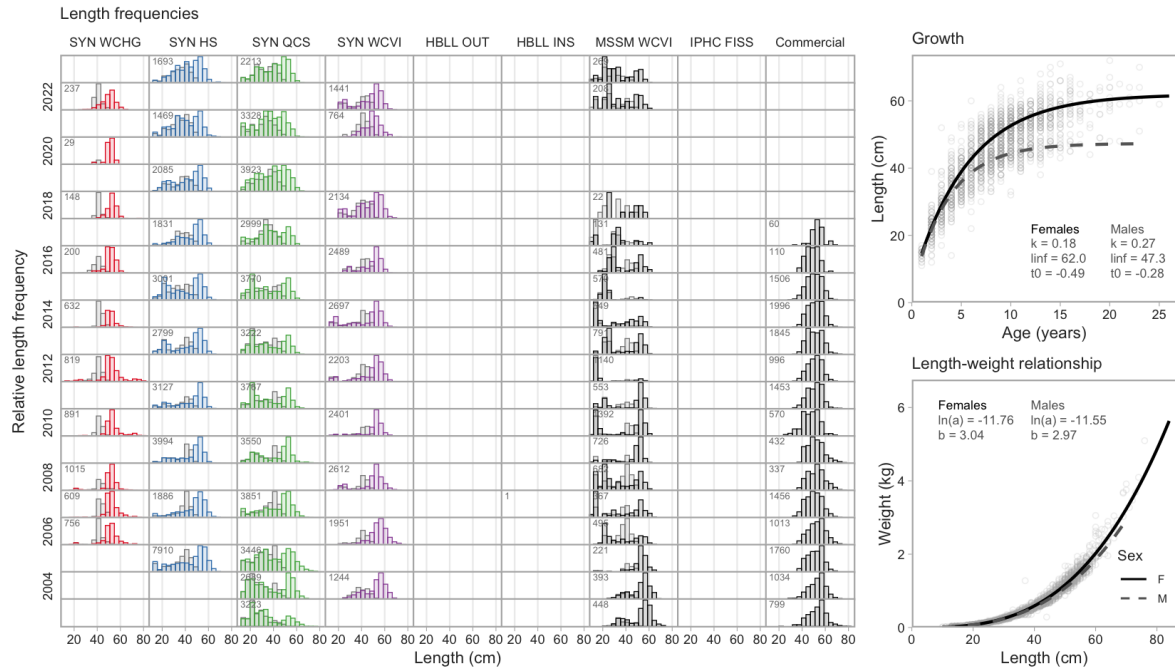


Commercial trawl CPUE



Commercial H & L CPUE



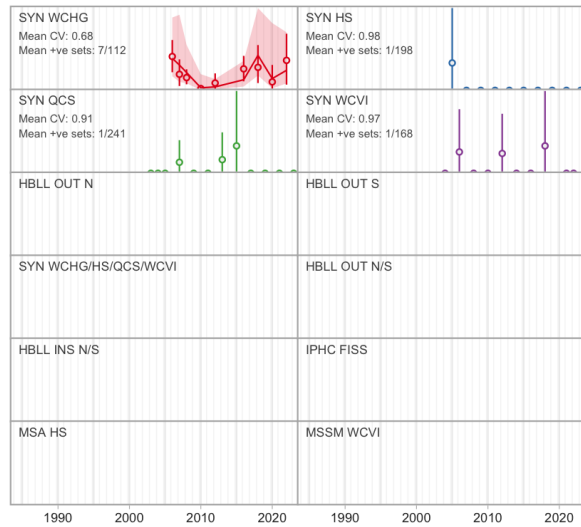


6.103 Deepsea Sole

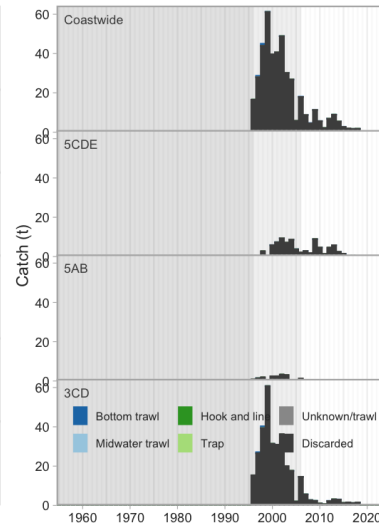
Embassichthys bathybius (605)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

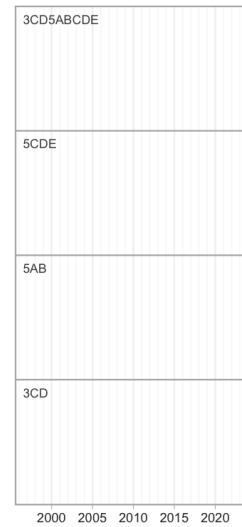
Survey relative biomass indices



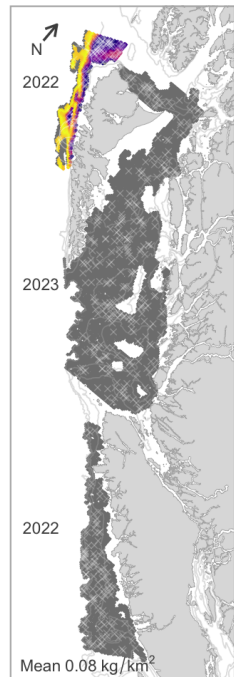
Commercial catch



Commercial bottom trawl CPUE



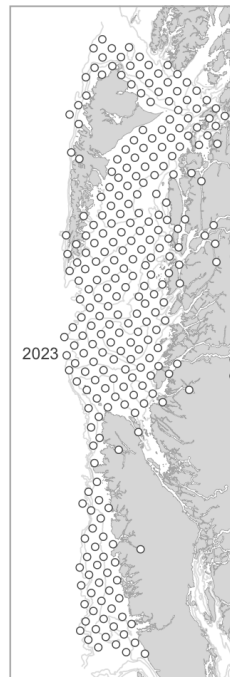
Synoptic survey biomass



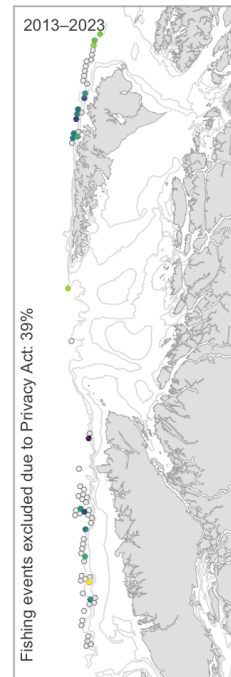
HBL OUT survey biomass



IPHC survey catch rate

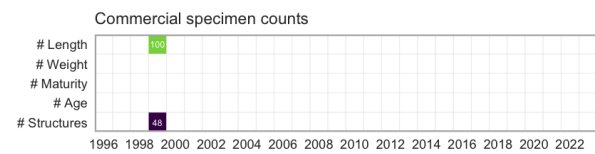
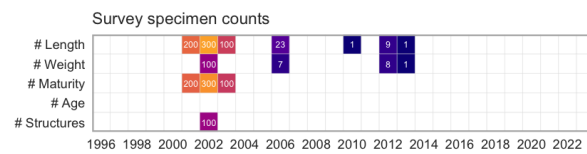
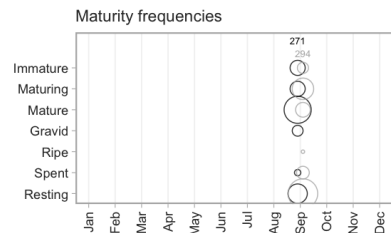
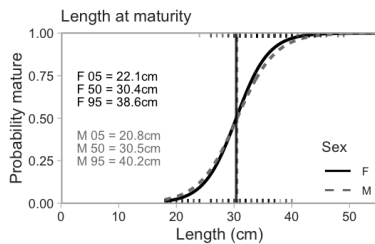
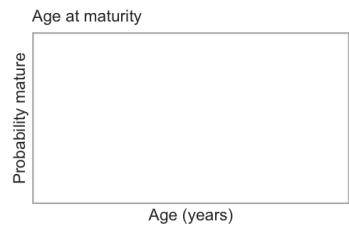
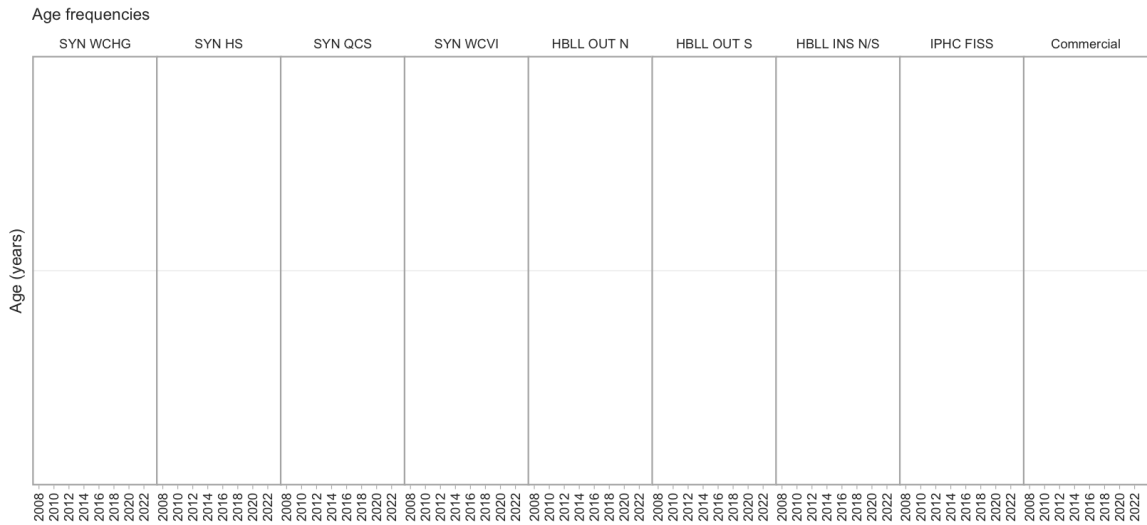
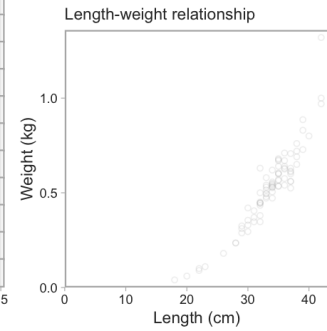
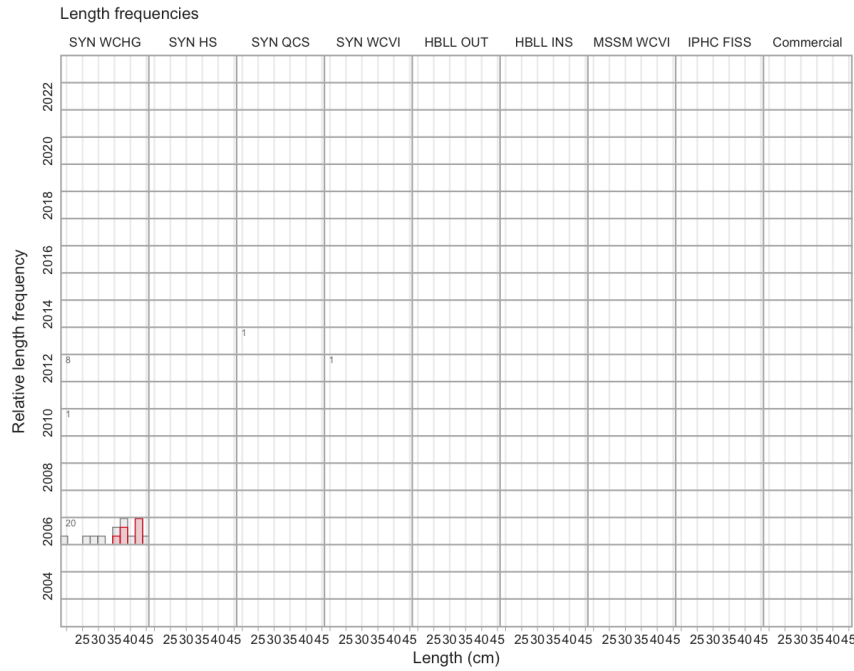


Commercial trawl CPUE



Commercial H & L CPUE





6.104 Petrale Sole

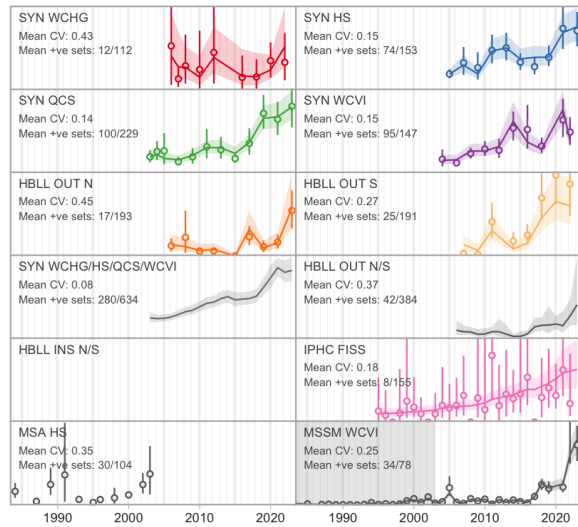
Eopsetta jordani (607)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

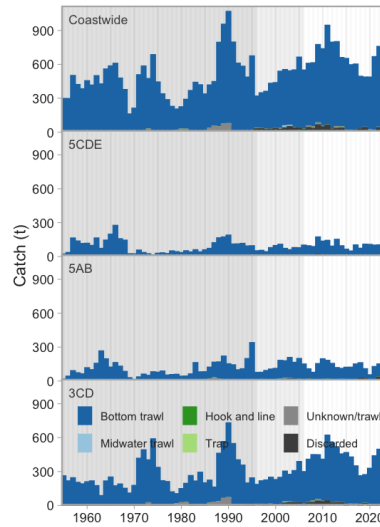
Last Research Document: Starr (2009a)

Last Science Advisory Report: DFO (1999b)

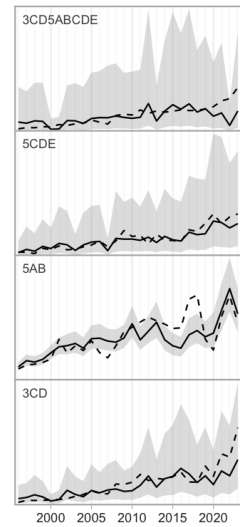
Survey relative biomass indices



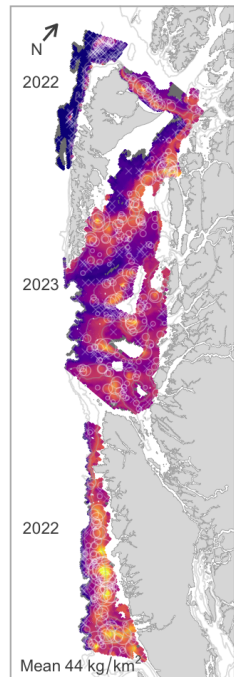
Commercial catch



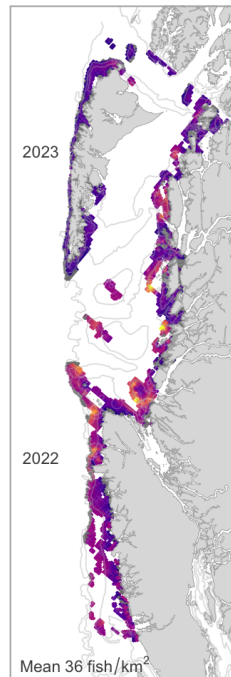
Commercial bottom trawl CPUE



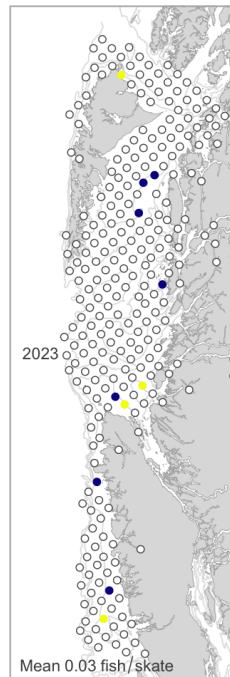
Synoptic survey biomass



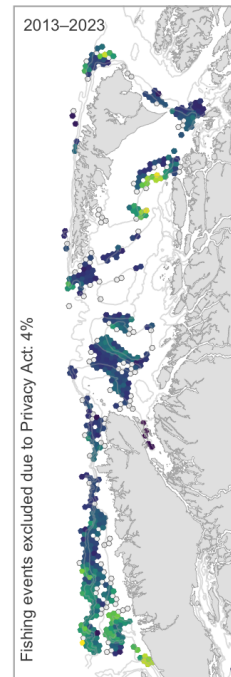
HBLL OUT survey biomass



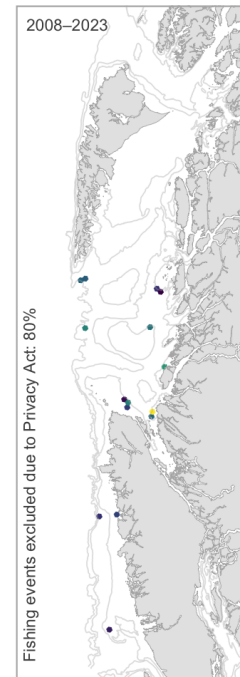
IPHC survey catch rate

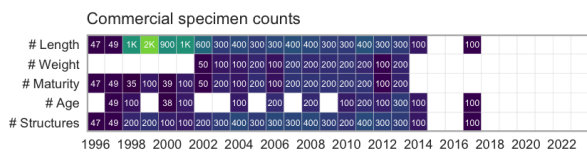
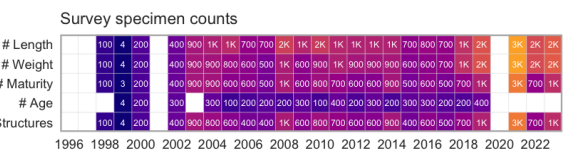
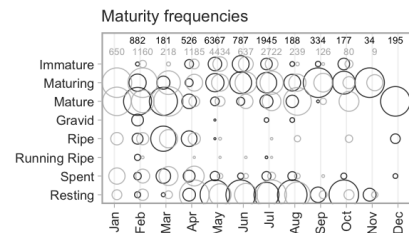
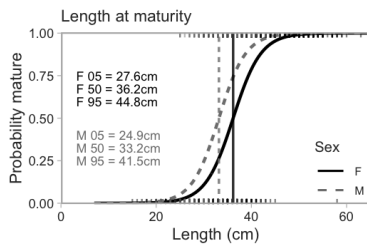
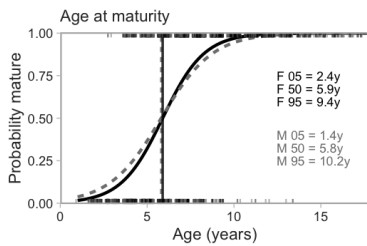
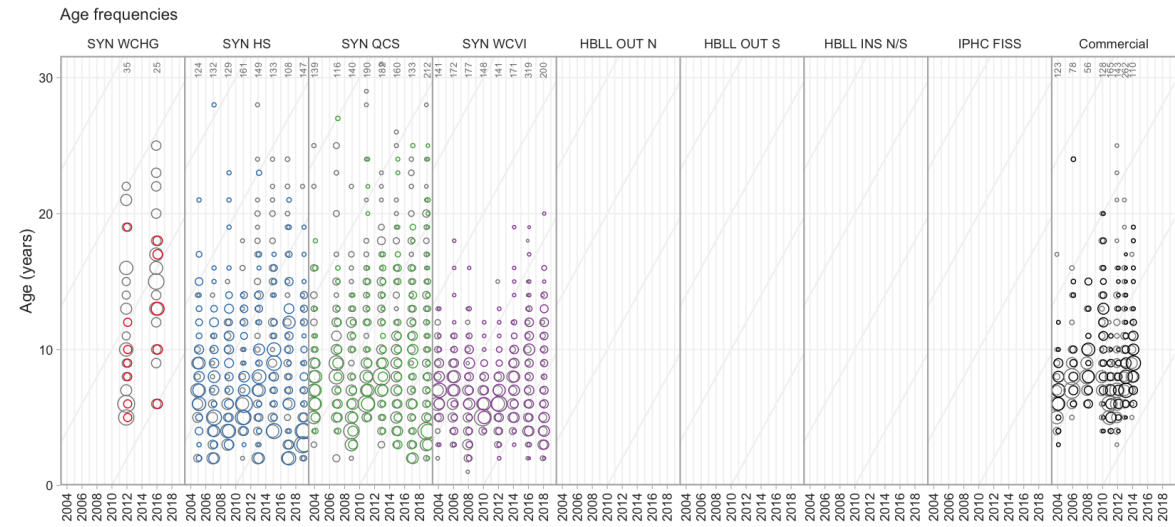
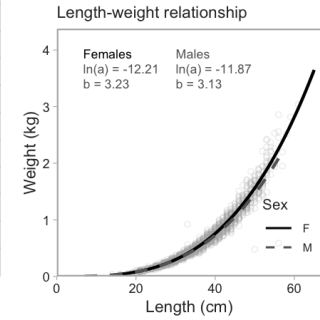
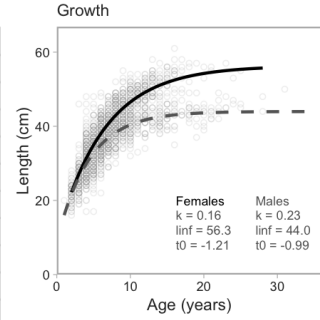
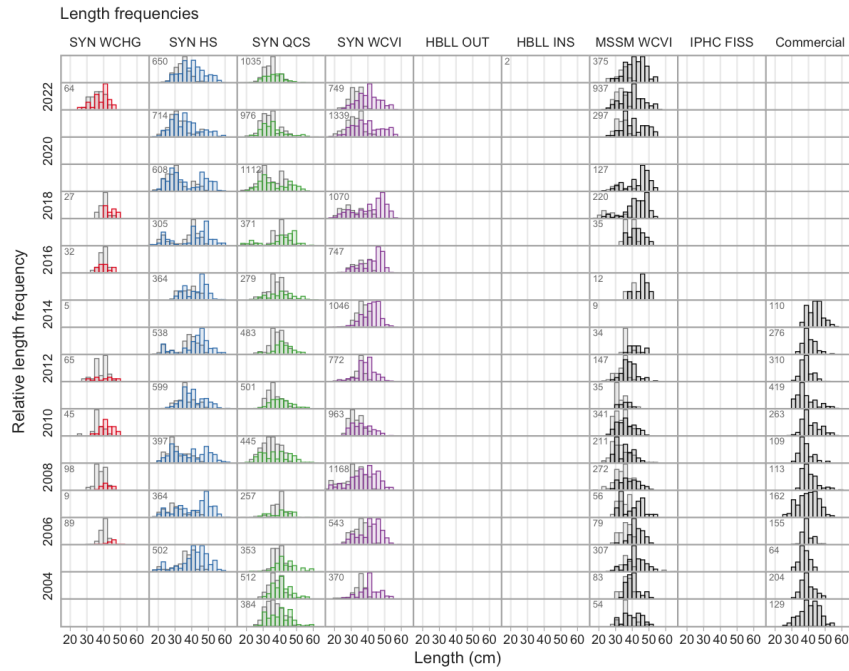


Commercial trawl CPUE



Commercial H & L CPUE





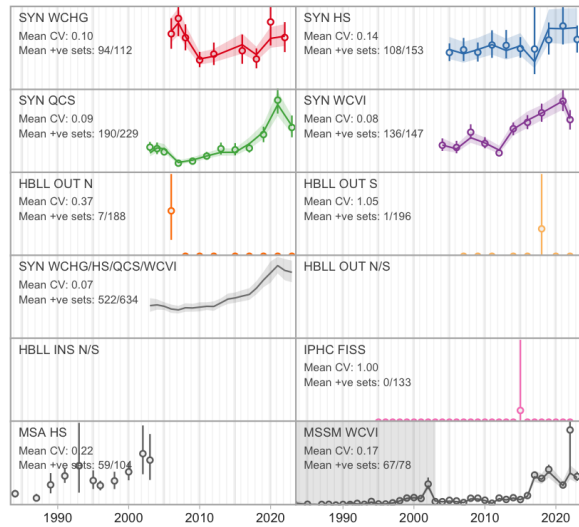
6.105 Rex Sole

Glyptocephalus zachirus (610)

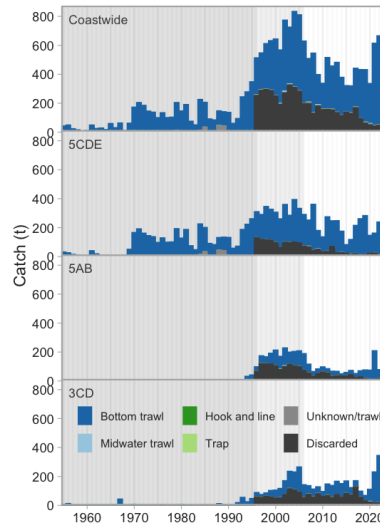
Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

Research Document featuring a case study of 3CD Rex Sole: Anderson et al. (2021)

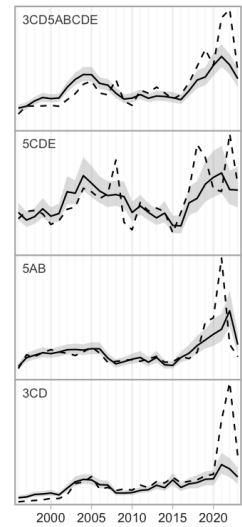
Survey relative biomass indices



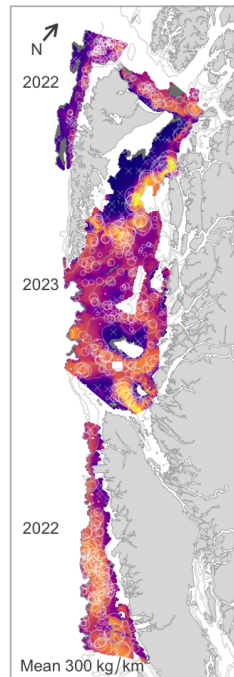
Commercial catch



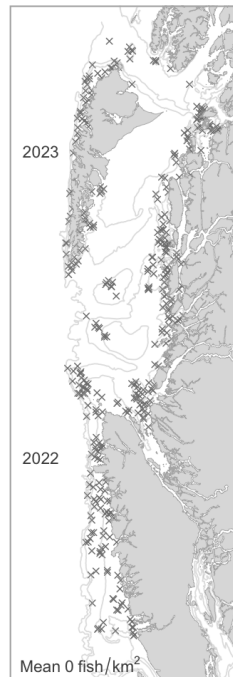
Commercial bottom trawl CPUE



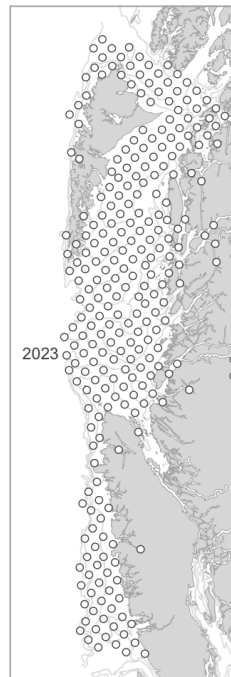
Synoptic survey biomass



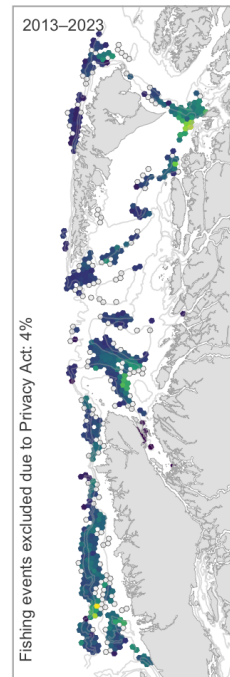
HBL OUT survey biomass



IPHC survey catch rate

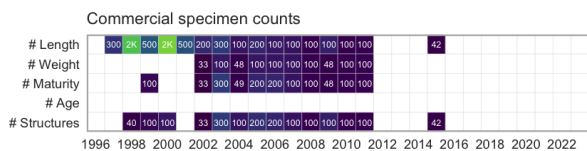
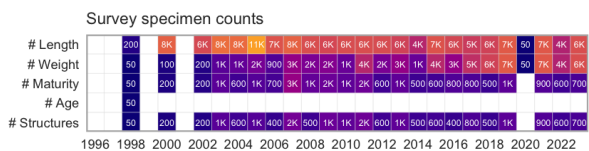
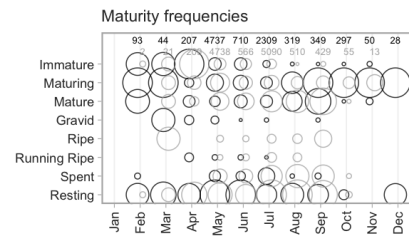
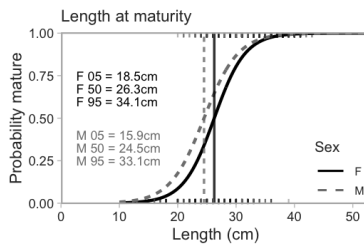
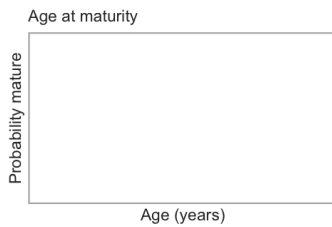
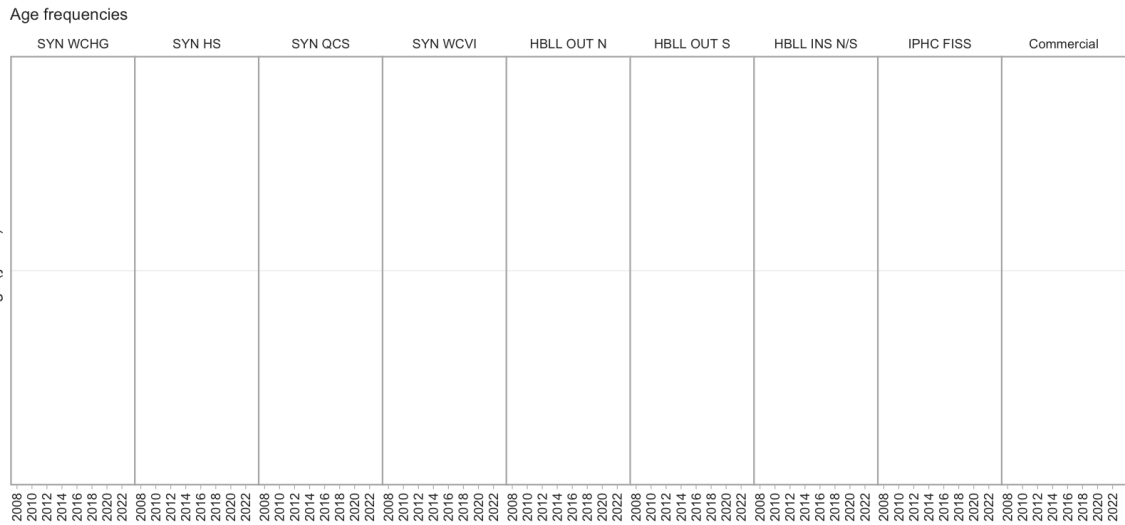
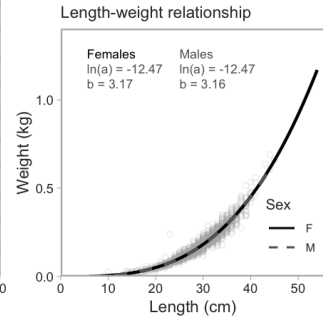
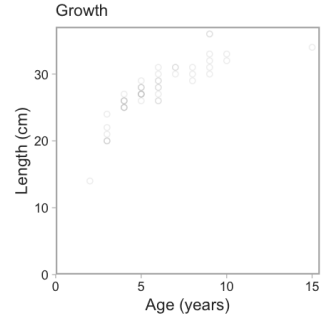
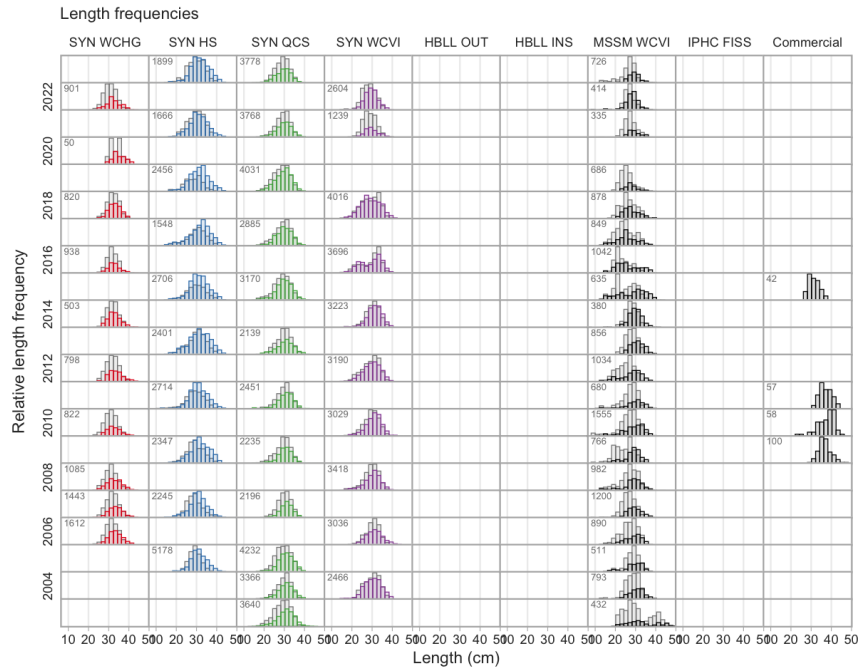


Commercial trawl CPUE



Commercial H & L CPUE



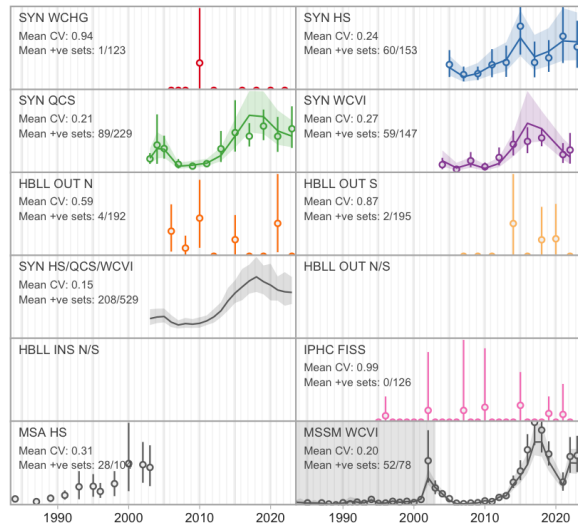


6.106 Flathead Sole

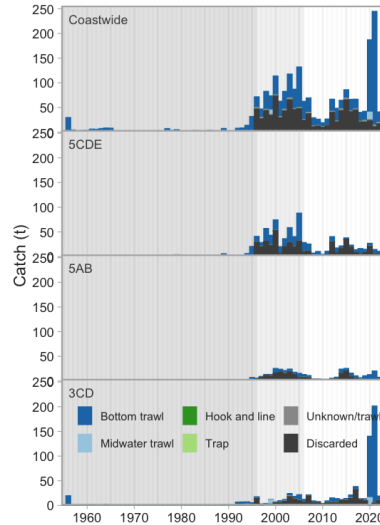
Hippoglossoides elassodon (612)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

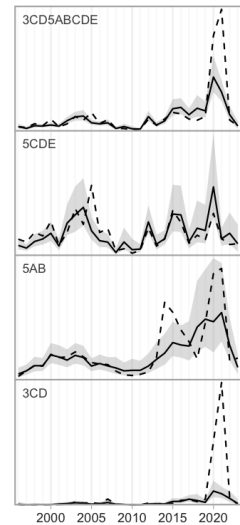
Survey relative biomass indices



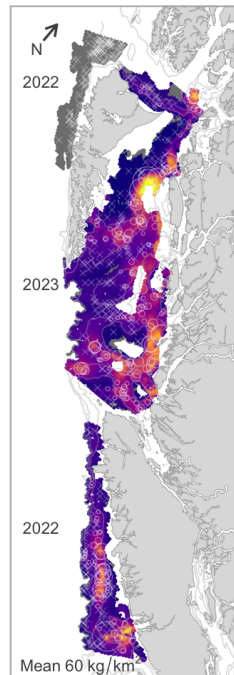
Commercial catch



Commercial bottom trawl CPUE



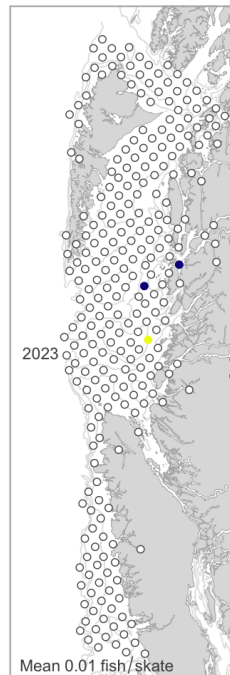
Synoptic survey biomass



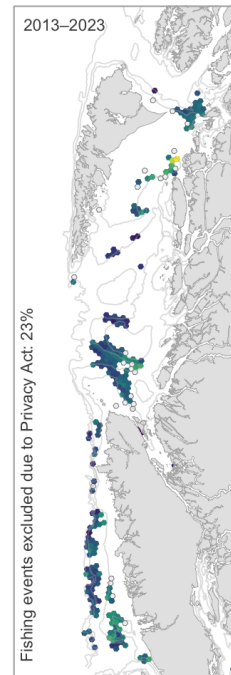
HBL OUT survey biomass



IPHC survey catch rate

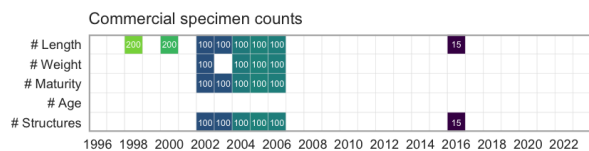
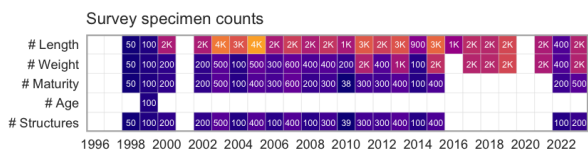
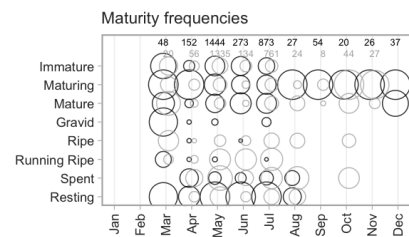
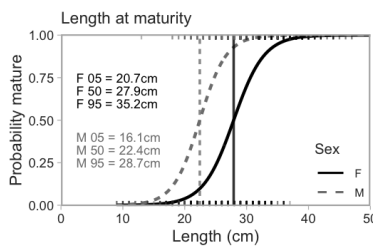
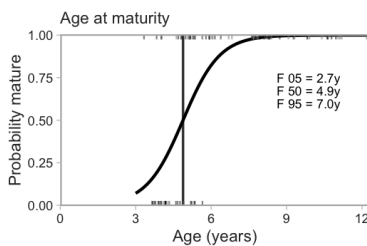
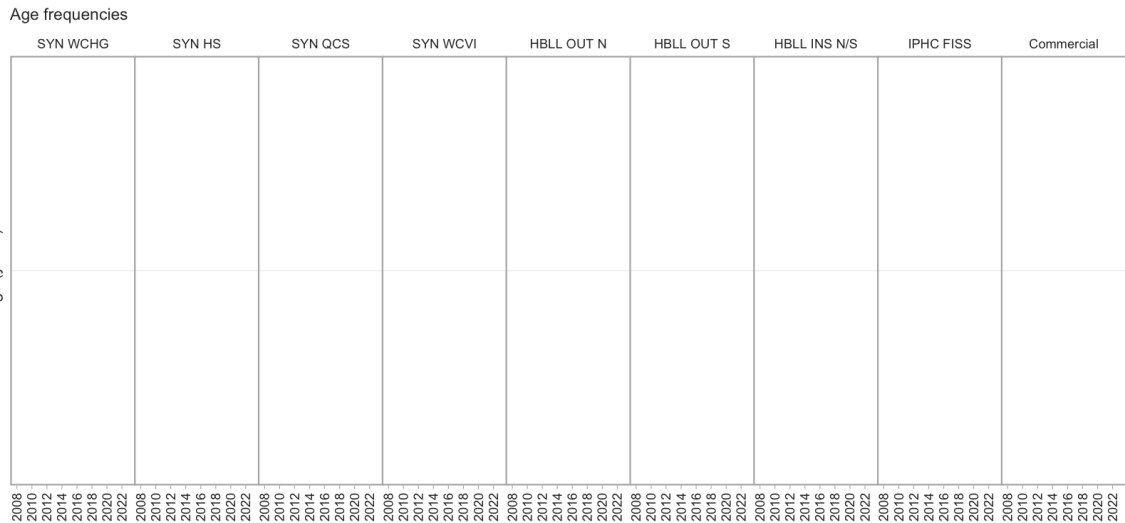
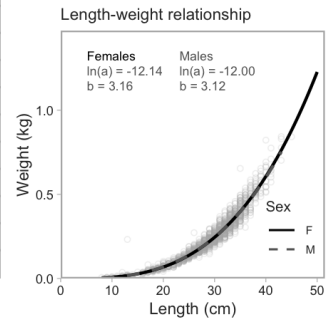
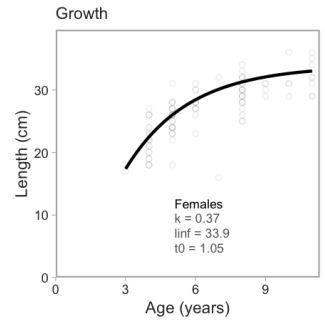
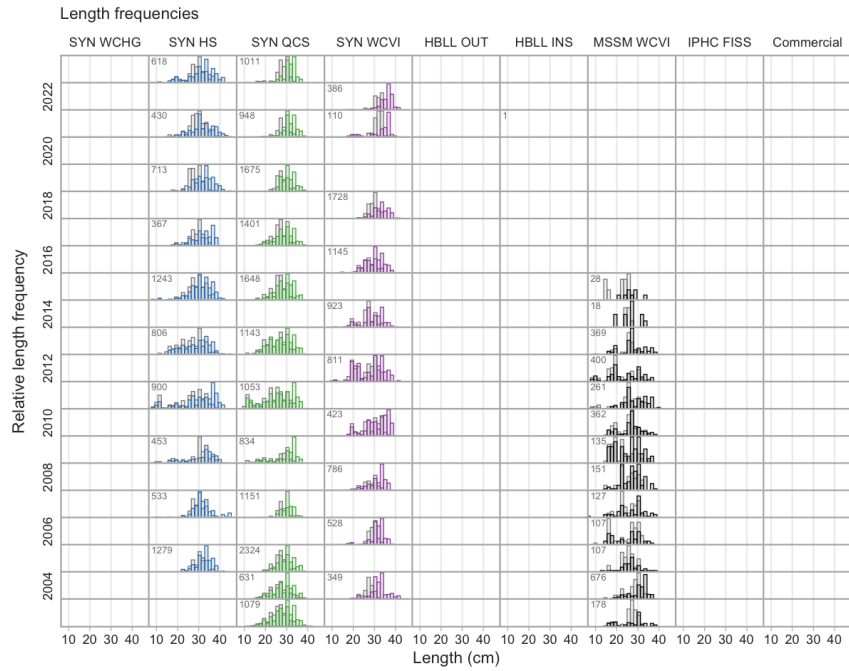


Commercial trawl CPUE



Commercial H & L CPUE





6.107 Pacific Halibut

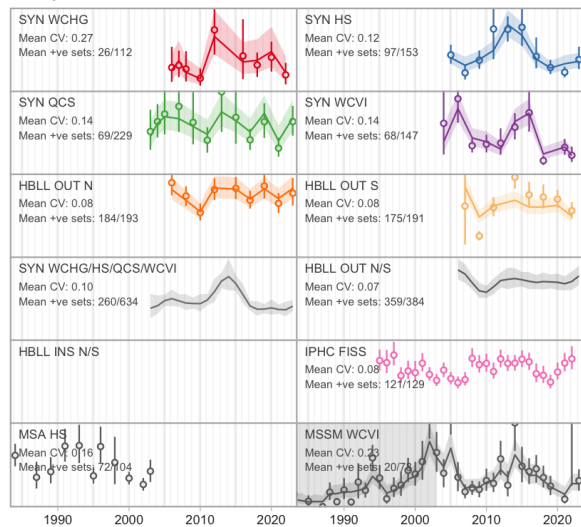
Hippoglossus stenolepis (614)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

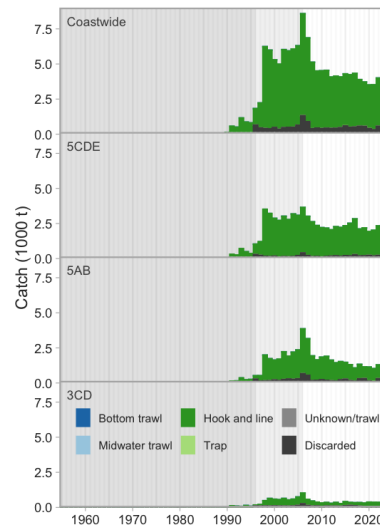
Most Recent Stock Assessment: Stewart and Hicks (2024)

Note that Pacific Halibut undergoes thorough assessment by the International Pacific Halibut Commission based on the annual standardized setline survey. The most recent stock assessment should be consulted for details on stock status.

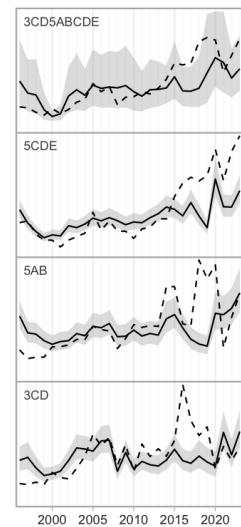
Survey relative biomass indices



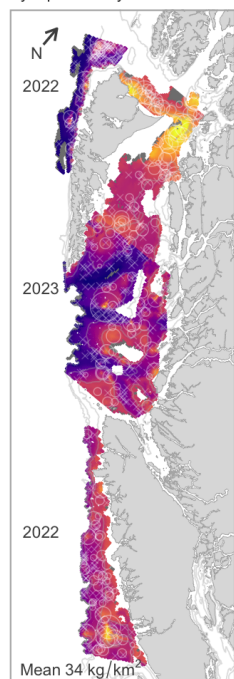
Commercial catch



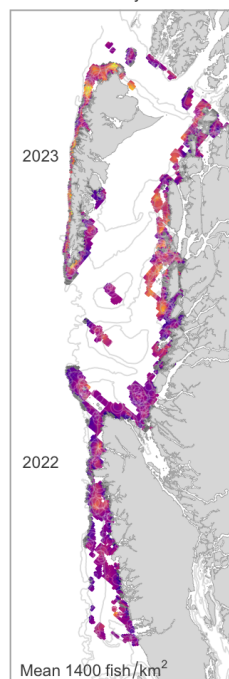
Commercial bottom trawl CPUE



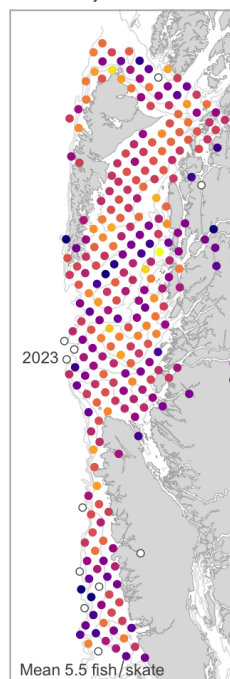
Synoptic survey biomass



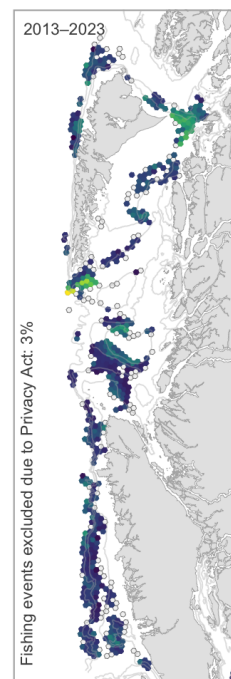
HBL OUT survey biomass



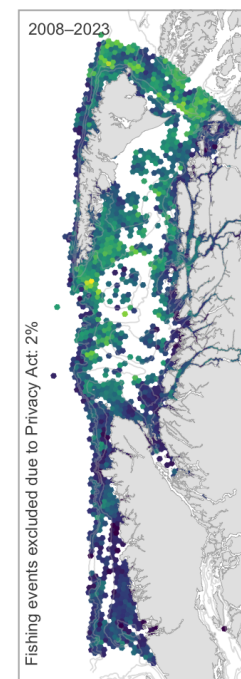
IPHC survey catch rate

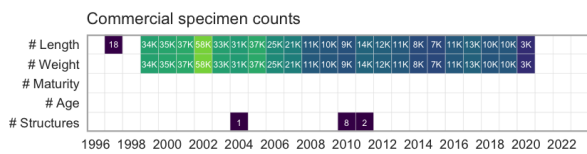
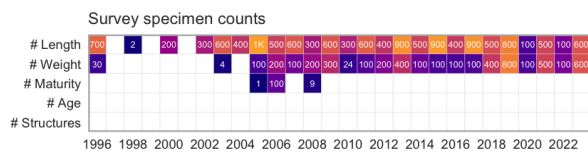
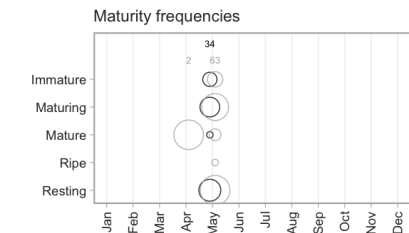
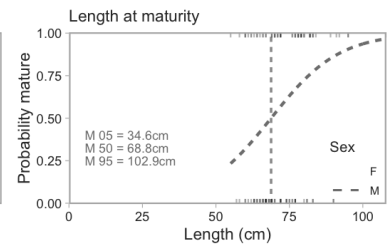
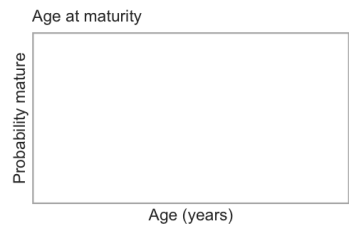
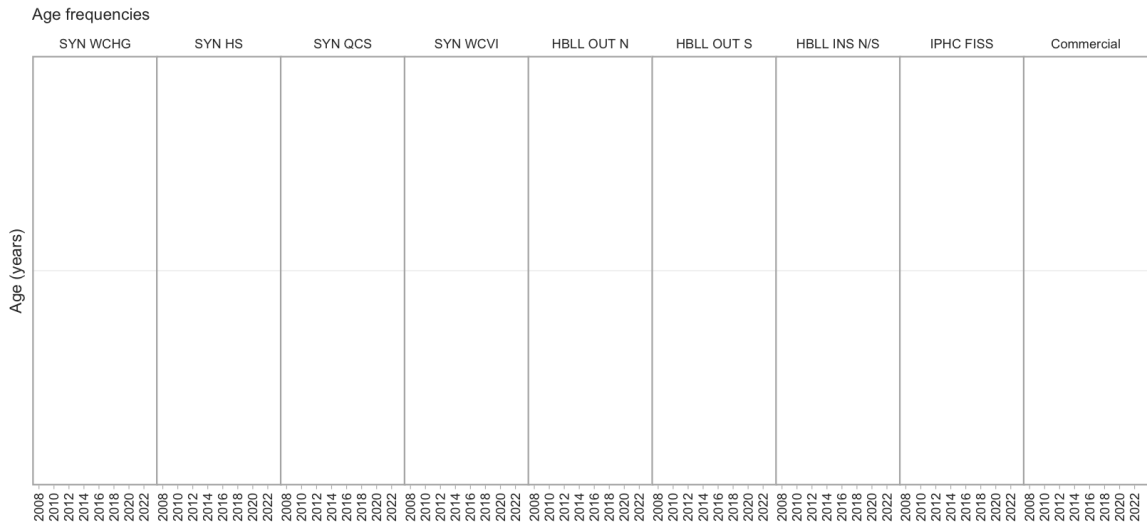
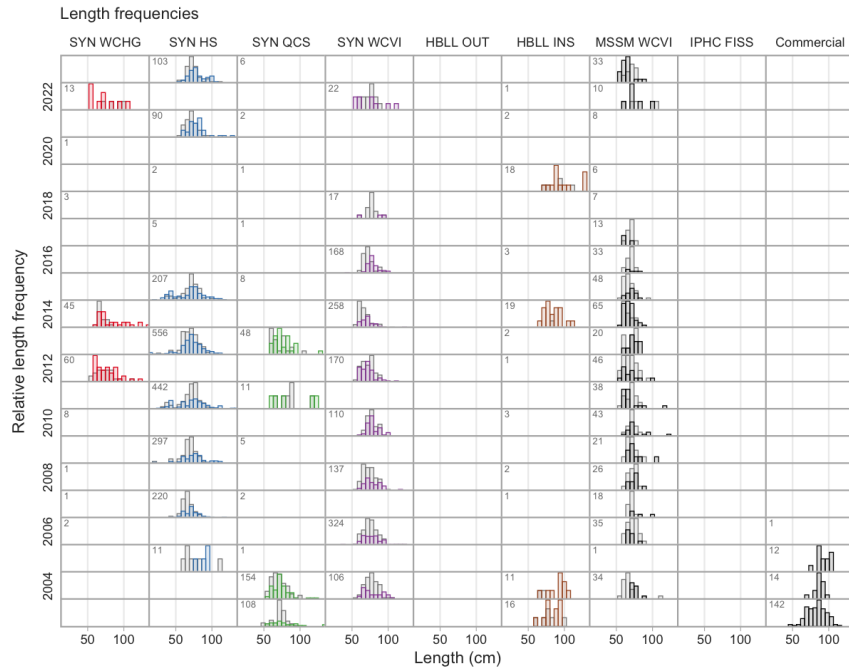


Commercial trawl CPUE



Commercial H & L CPUE



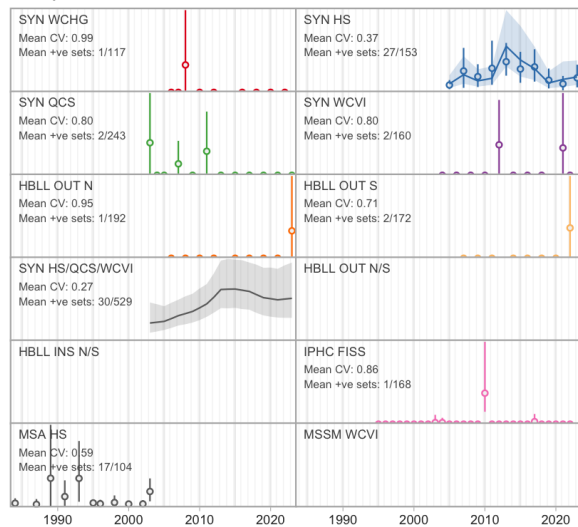


6.108 Butter Sole

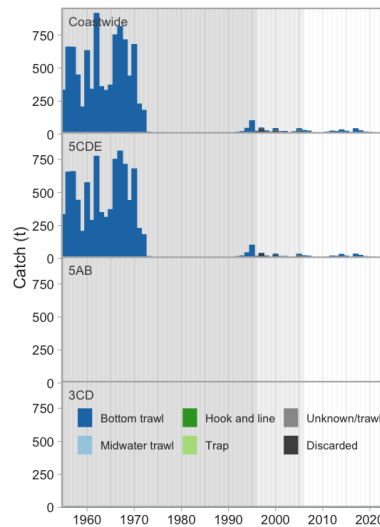
Isopsetta isolepis (619)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

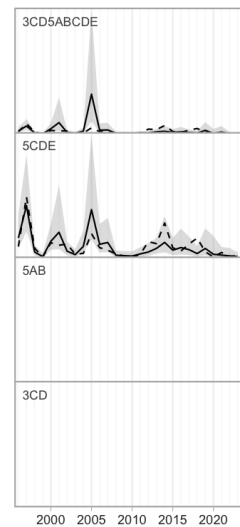
Survey relative biomass indices



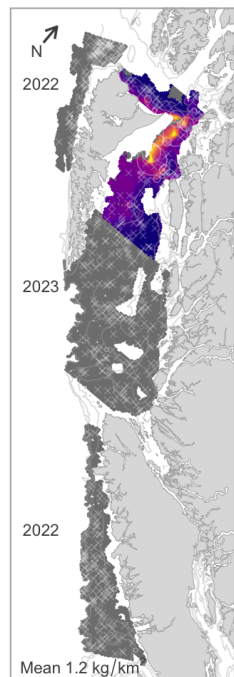
Commercial catch



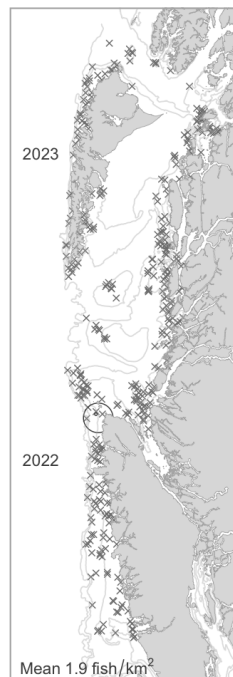
Commercial bottom trawl CPUE



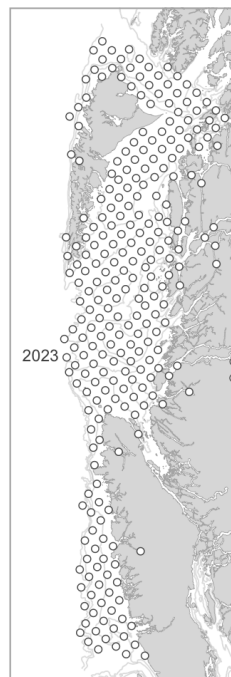
Synoptic survey biomass



HBLL OUT survey biomass



IPHC survey catch rate

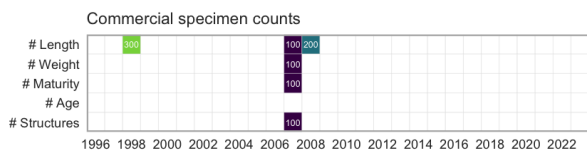
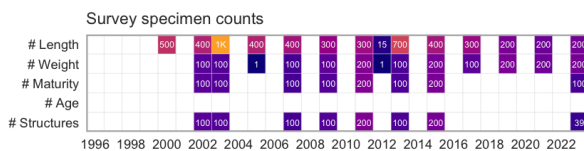
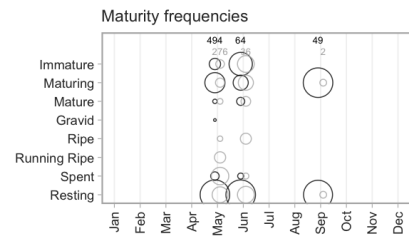
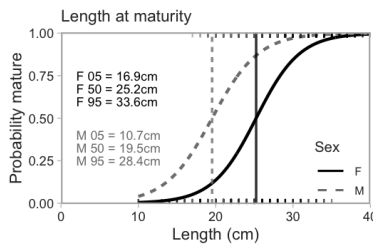
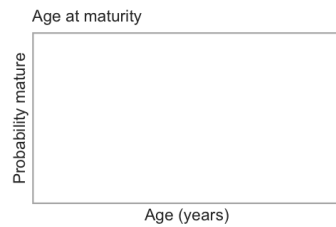
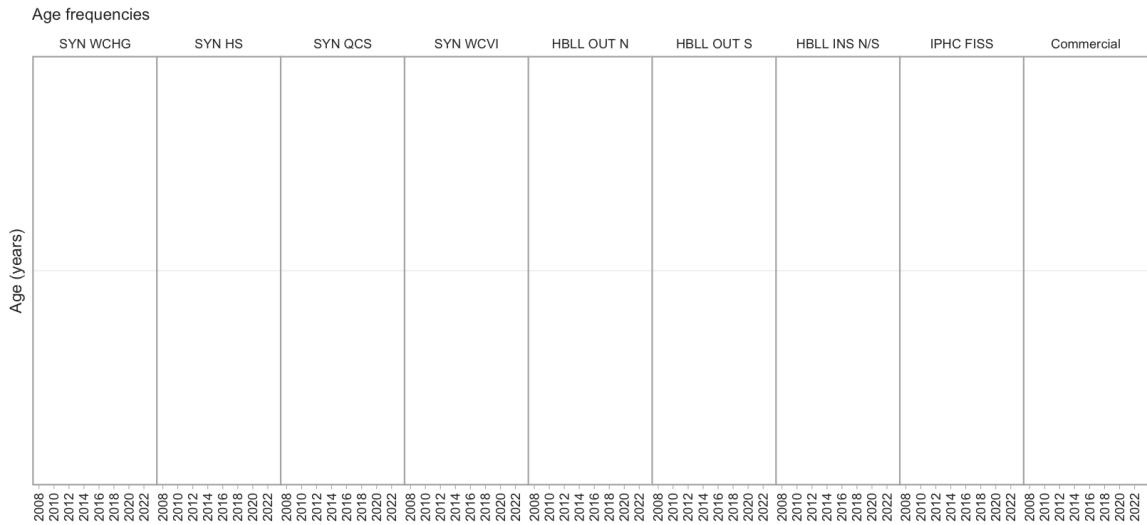
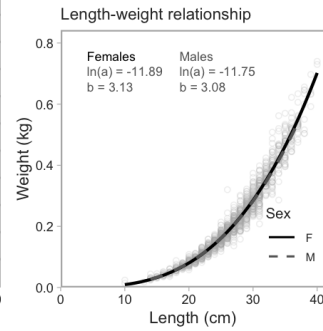
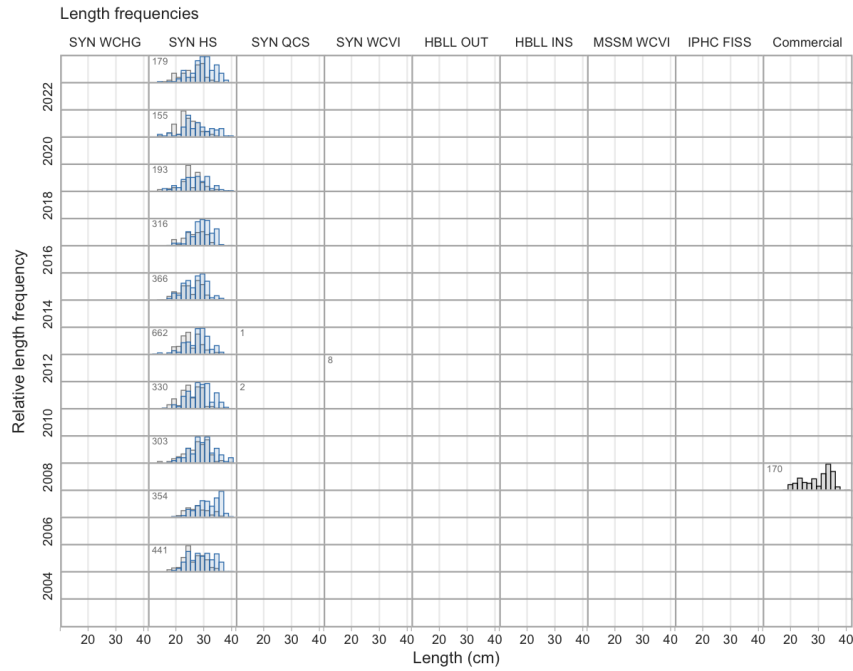


Commercial trawl CPUE



Commercial H & L CPUE





6.109 Southern Rock Sole

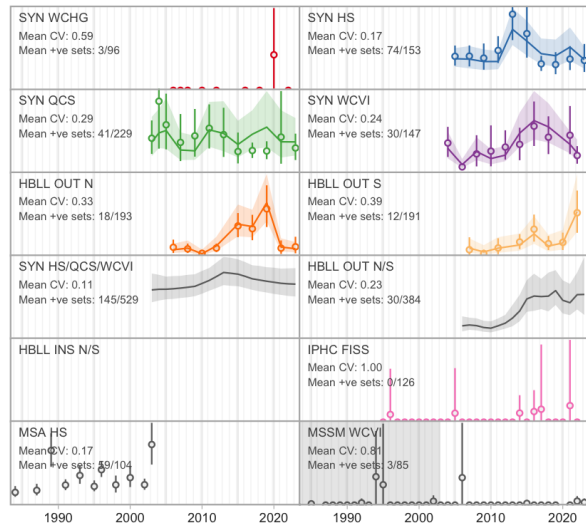
Lepidopsetta bilineata (621)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

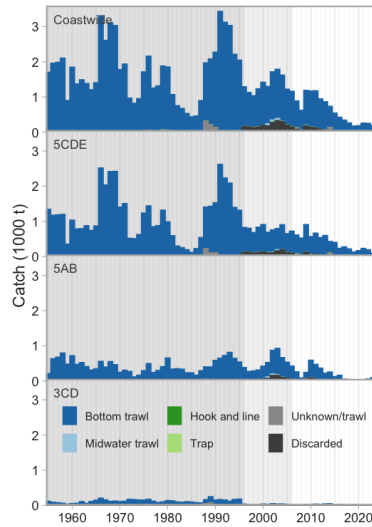
Last Research Document: Holt et al. (2016b)

Last Science Advisory Report: DFO (2014c)

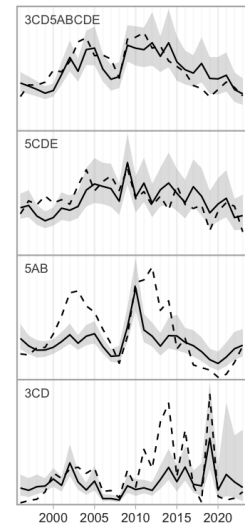
Survey relative biomass indices



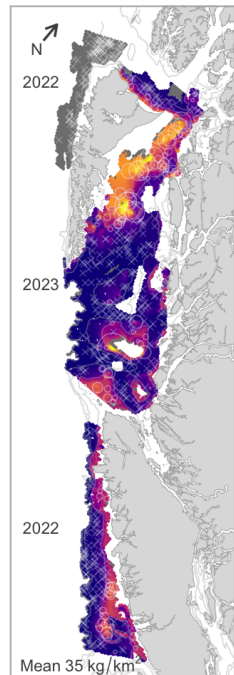
Commercial catch



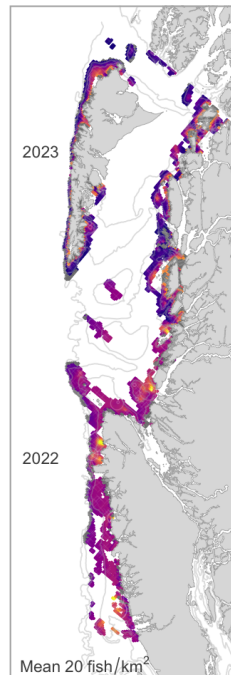
Commercial bottom trawl CPUE



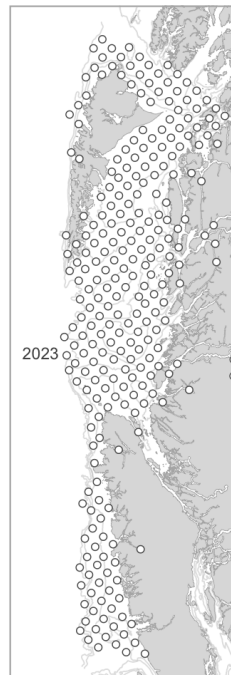
Synoptic survey biomass



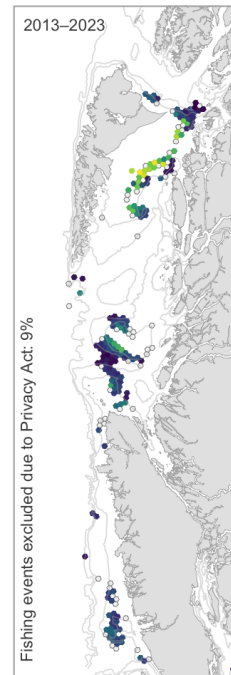
HBL OUT survey biomass



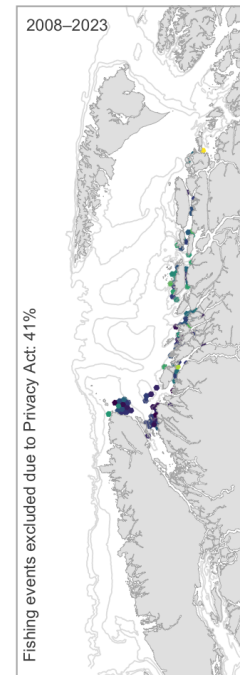
IPHC survey catch rate

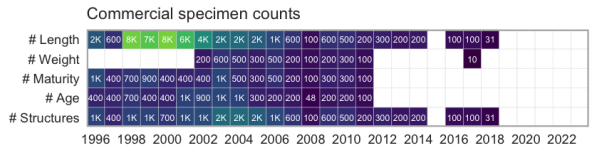
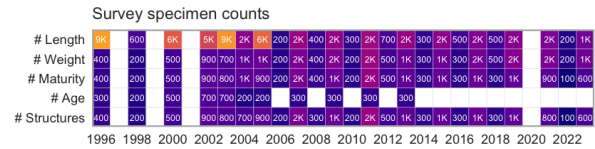
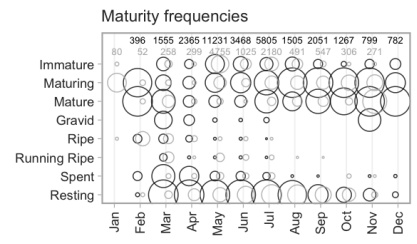
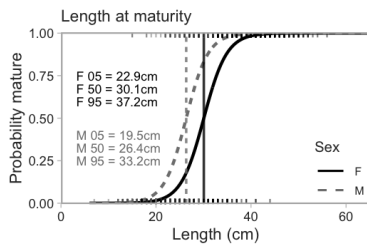
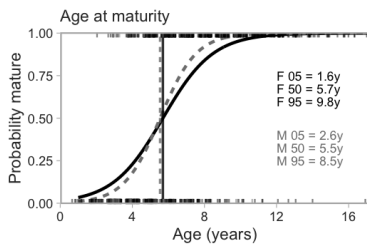
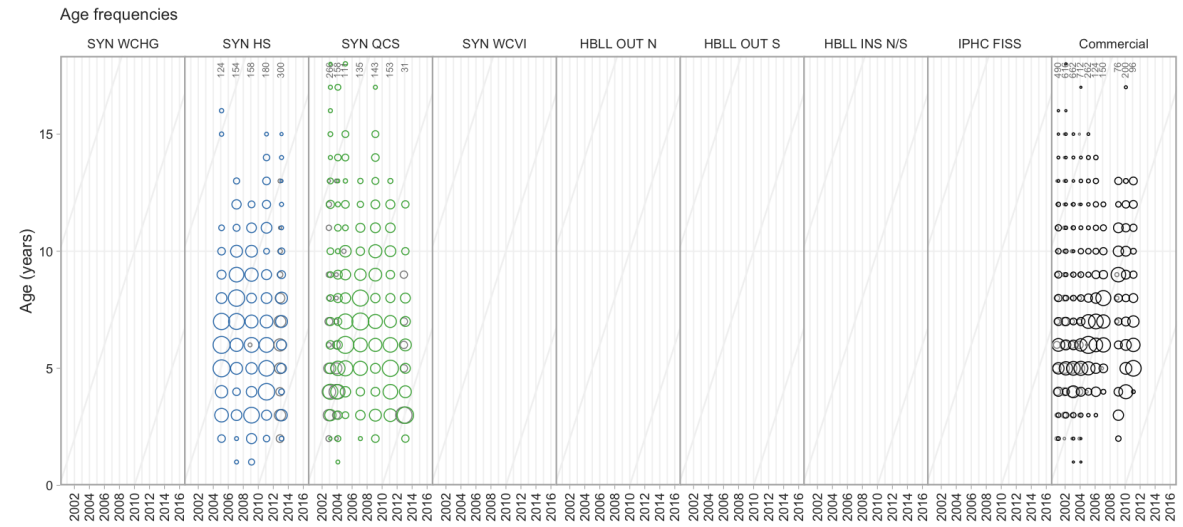
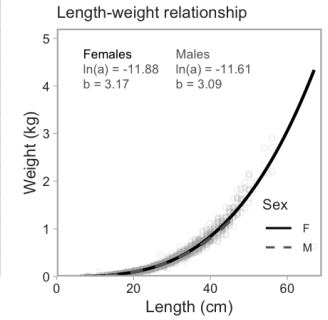
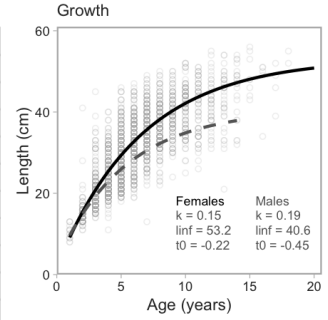
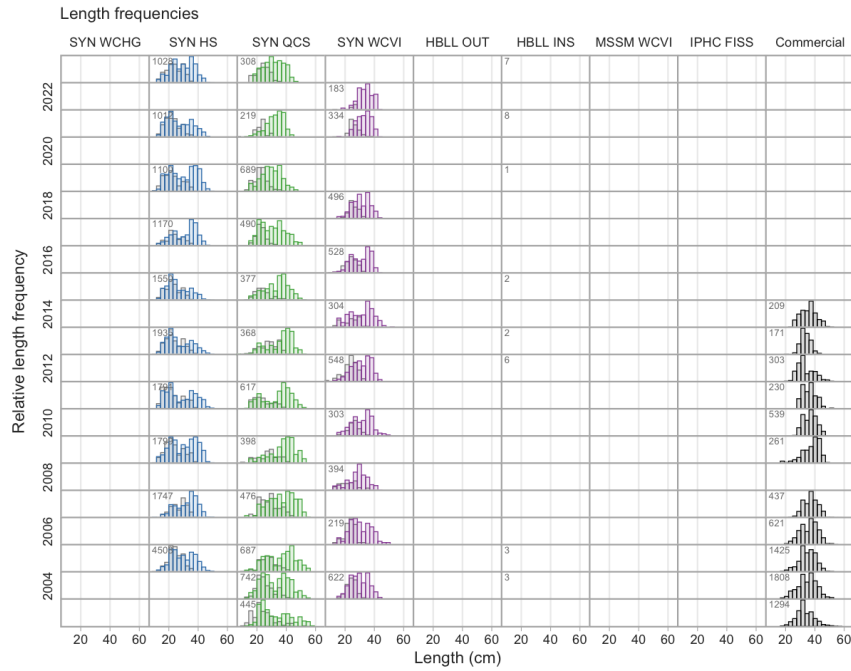


Commercial trawl CPUE



Commercial H & L CPUE



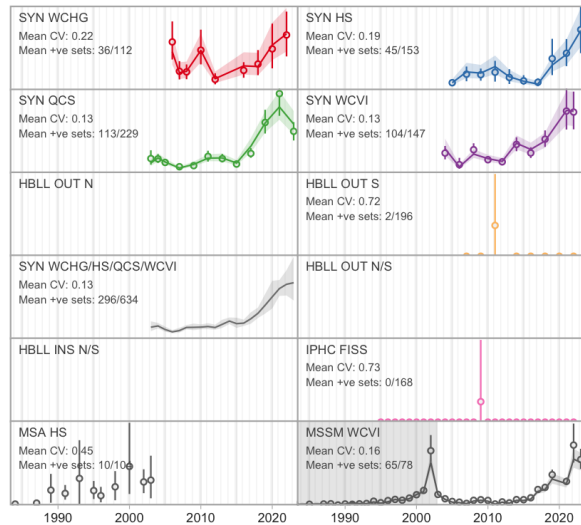


6.110 Slender Sole

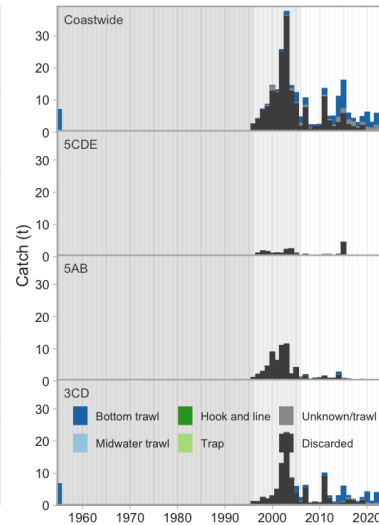
Lyopsetta exilis (625)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

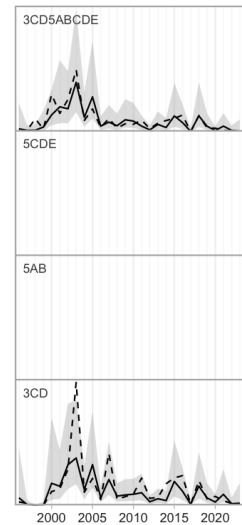
Survey relative biomass indices



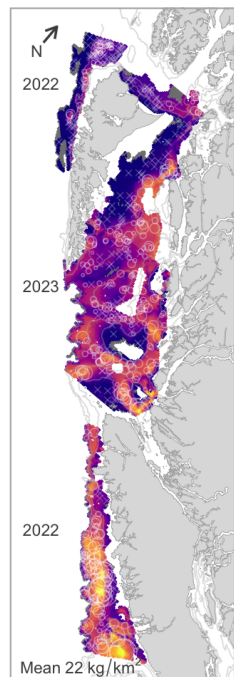
Commercial catch



Commercial bottom trawl CPUE



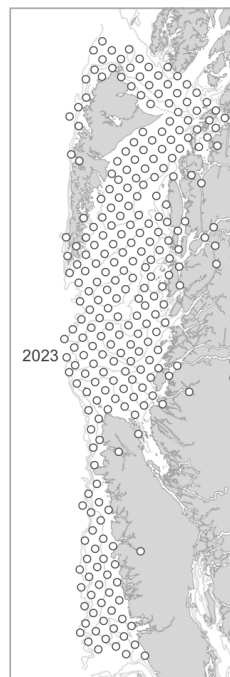
Synoptic survey biomass



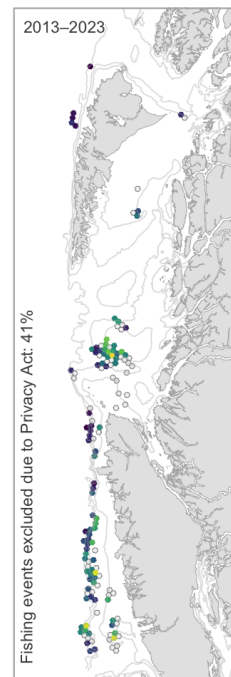
HBLL OUT survey biomass



IPHC survey catch rate

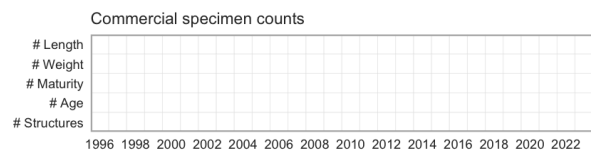
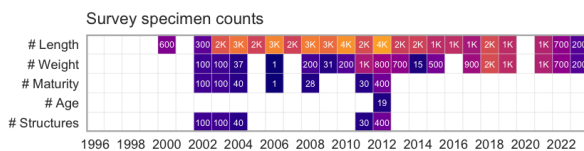
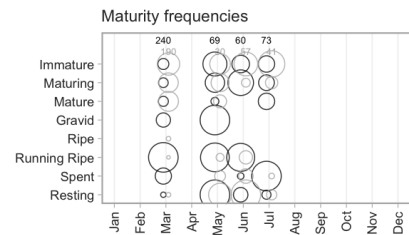
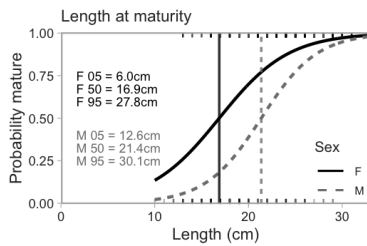
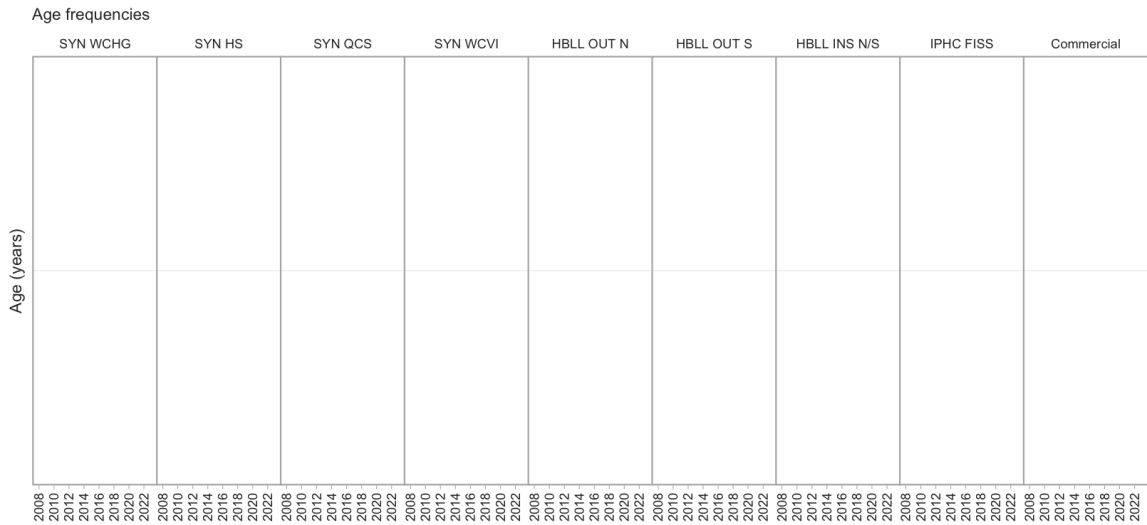
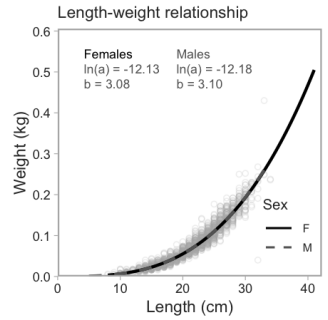
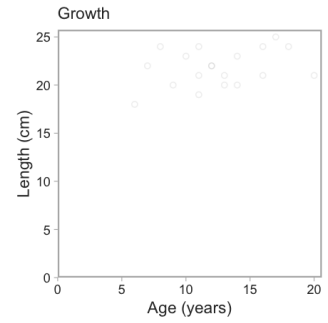
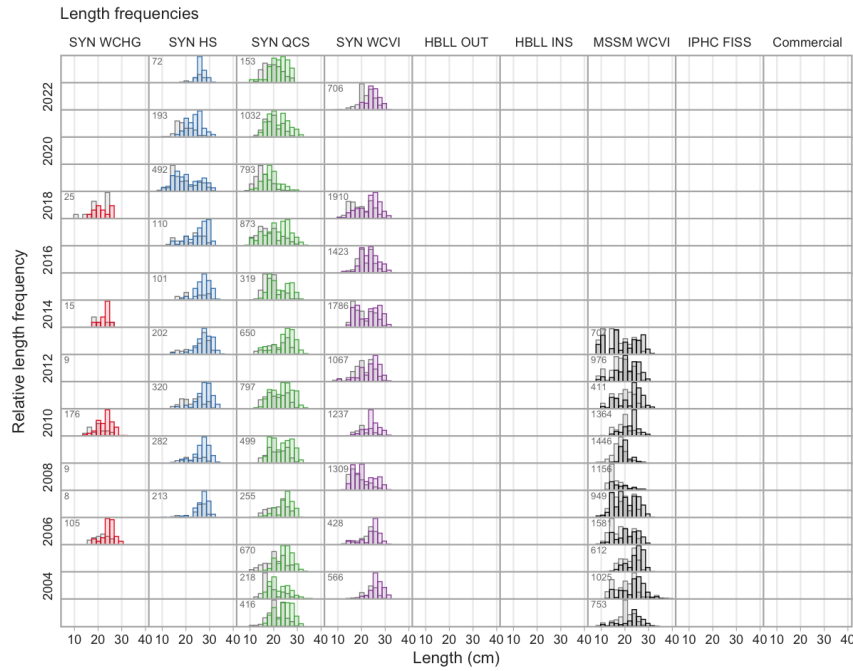


Commercial trawl CPUE



Commercial H & L CPUE





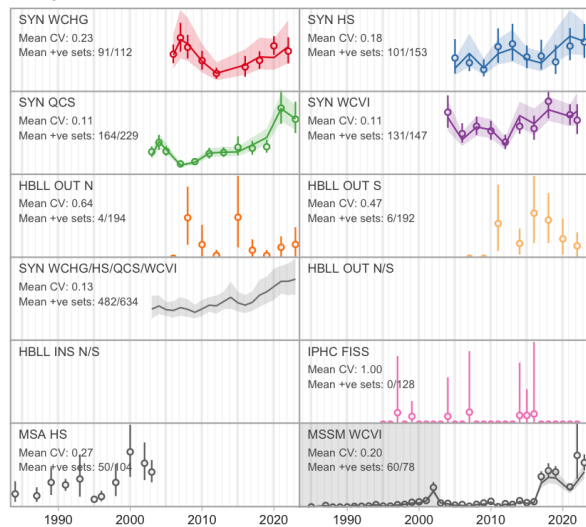
6.111 Dover Sole

Microstomus pacificus (626)

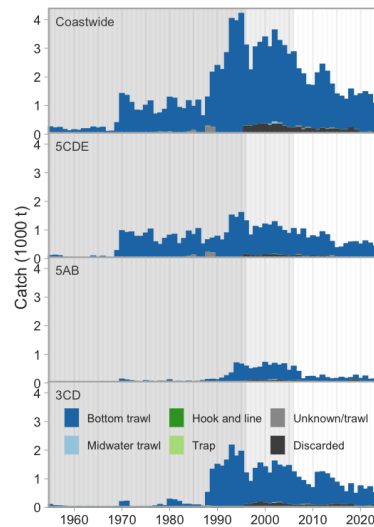
Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

Last Science Advisory Report: DFO (1999c)

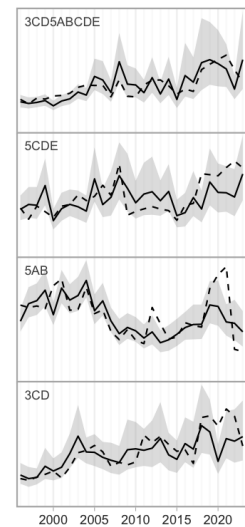
Survey relative biomass indices



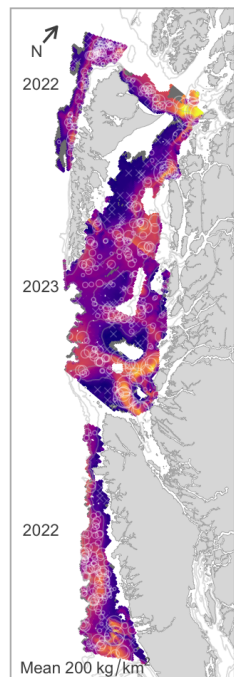
Commercial catch



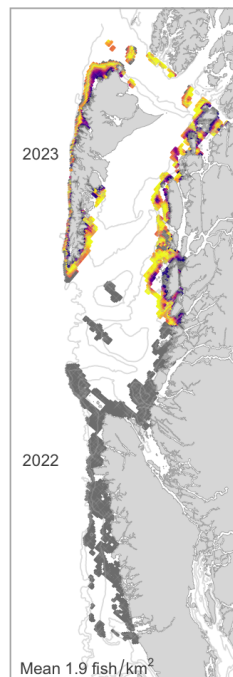
Commercial bottom trawl CPUE



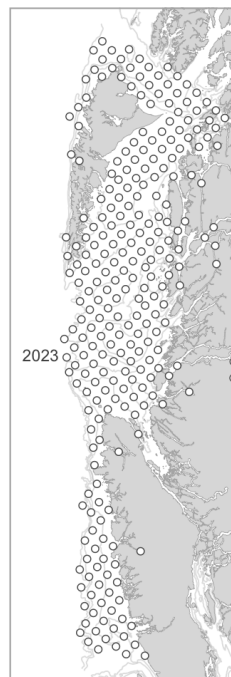
Synoptic survey biomass



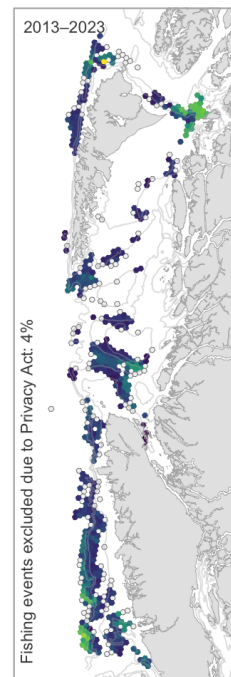
HBL OUT survey biomass



IPHC survey catch rate

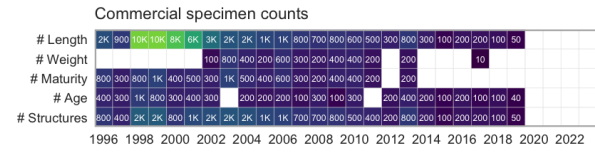
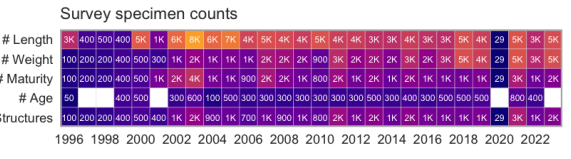
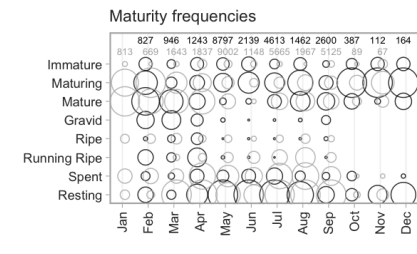
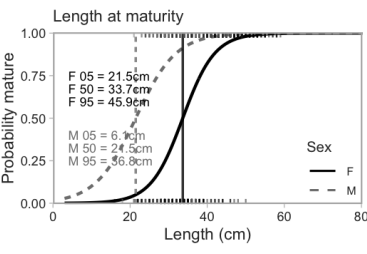
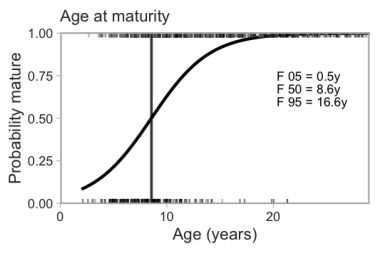
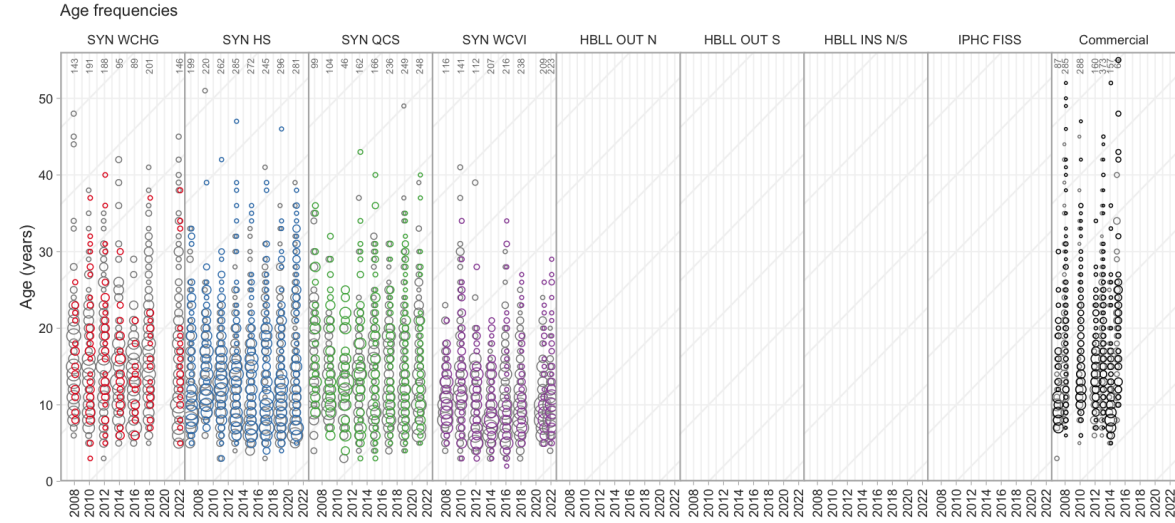
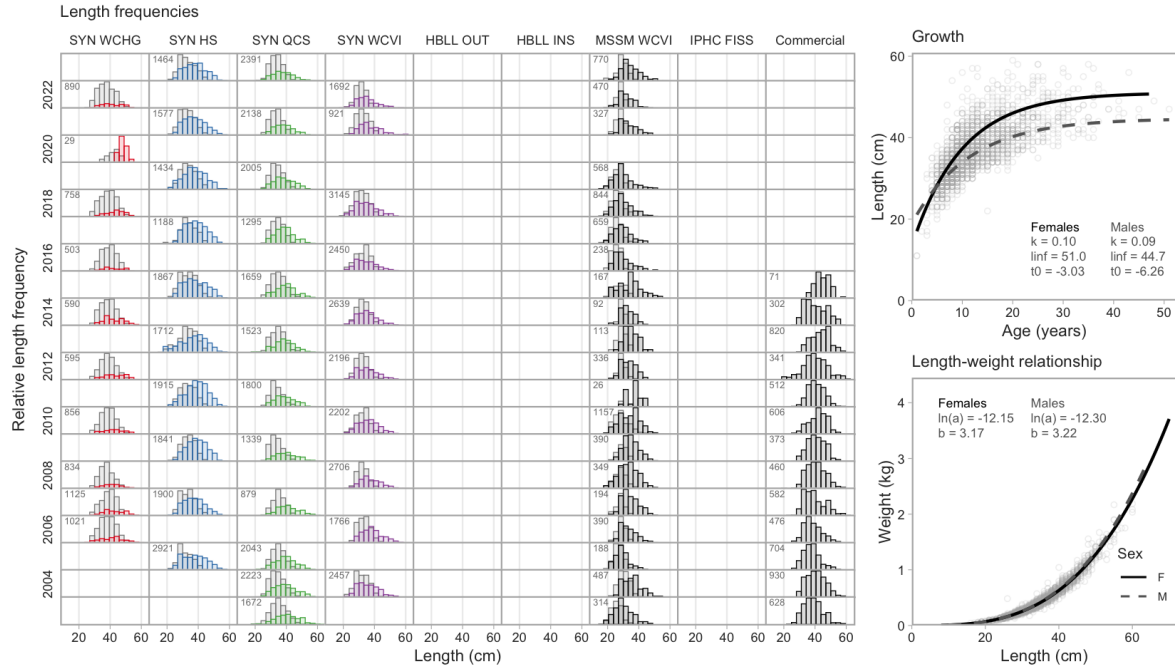


Commercial trawl CPUE



Commercial H & L CPUE





6.112 English Sole

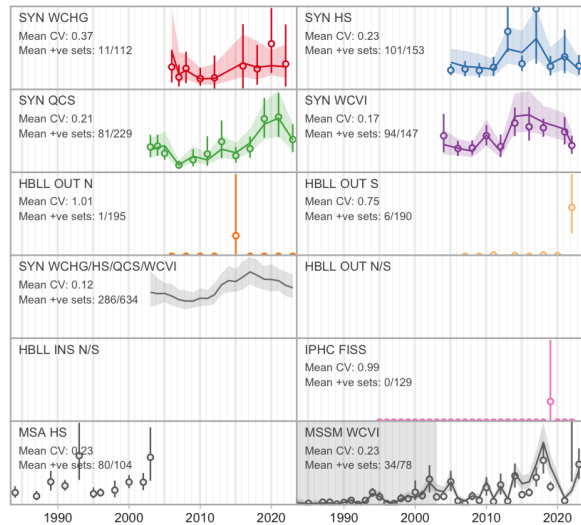
Parophrys vetulus (628)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

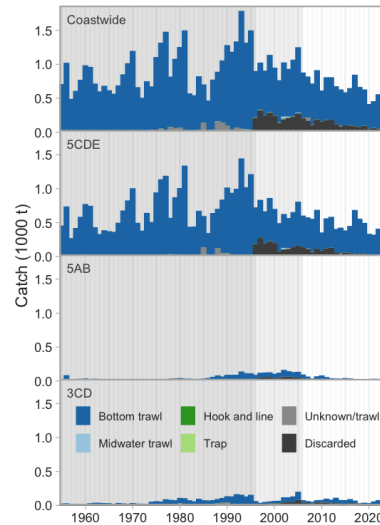
Last Research Document: Starr (2009b)

Last Science Advisory Report: DFO (1999d)

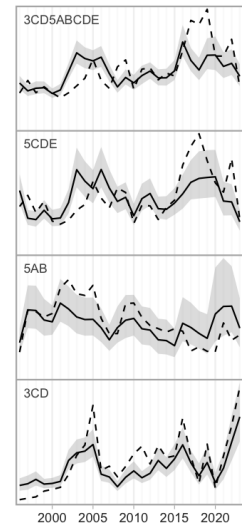
Survey relative biomass indices



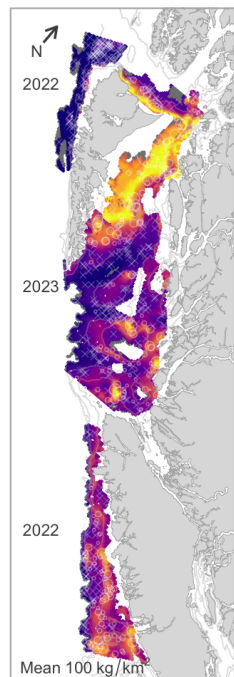
Commercial catch



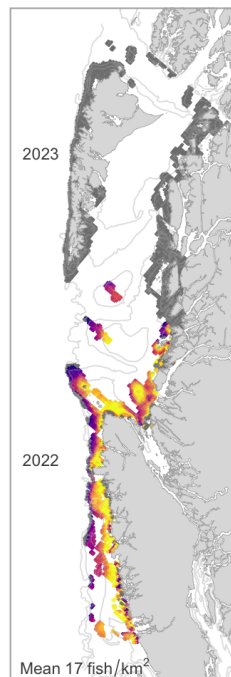
Commercial bottom trawl CPUE



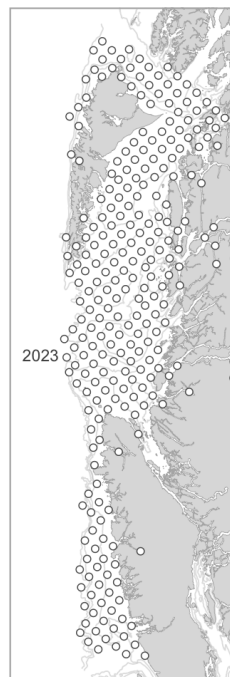
Synoptic survey biomass



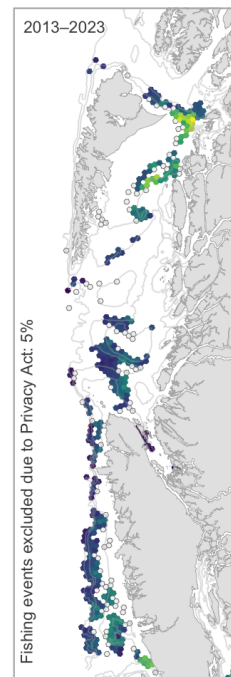
HBL OUT survey biomass



IPHC survey catch rate

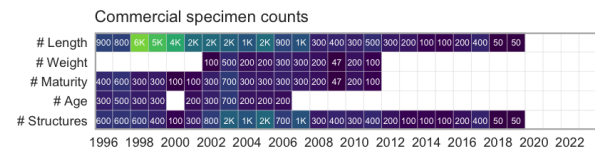
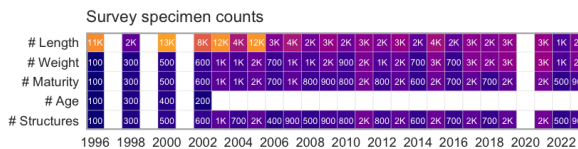
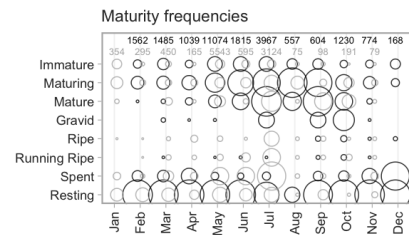
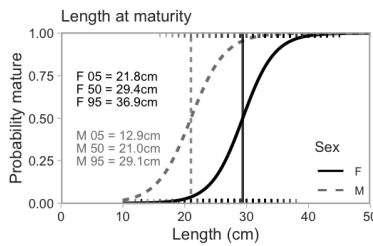
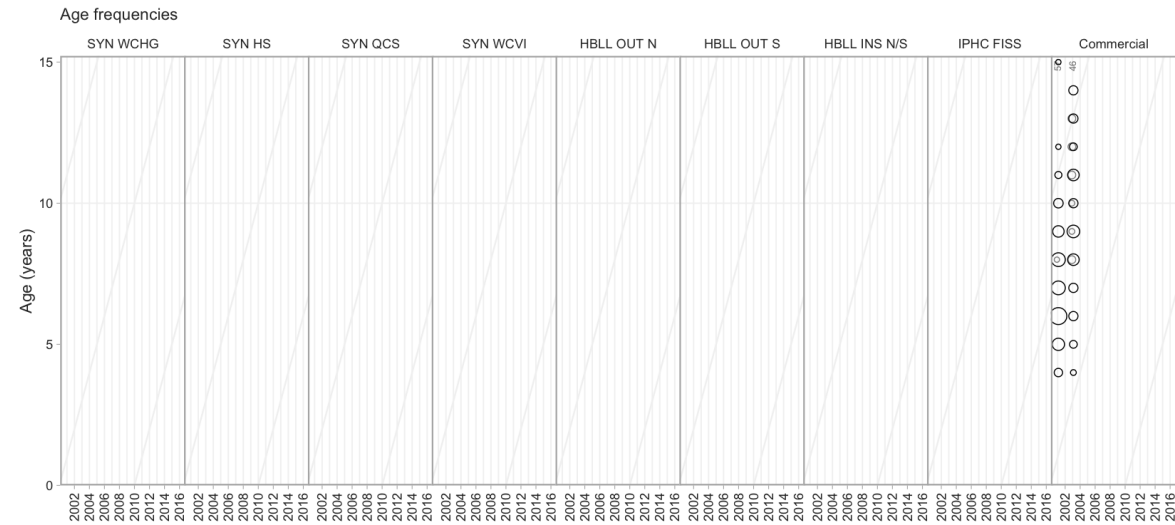
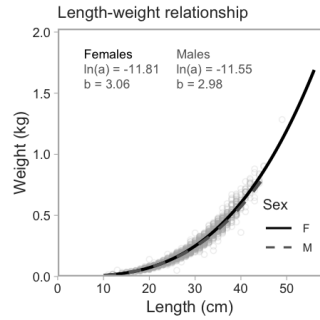
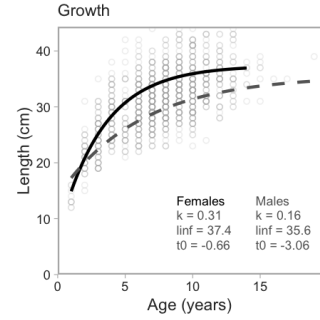
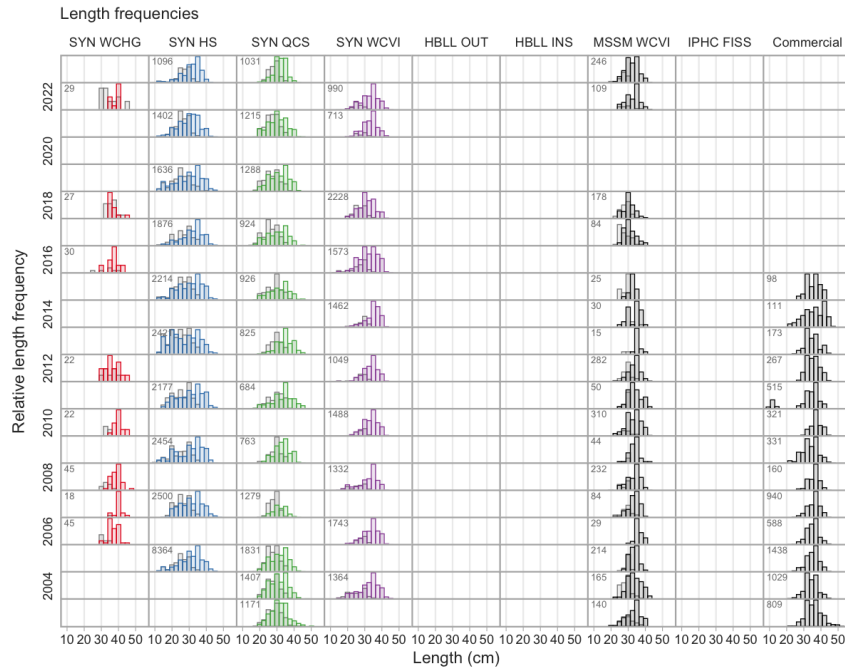


Commercial trawl CPUE



Commercial H & L CPUE



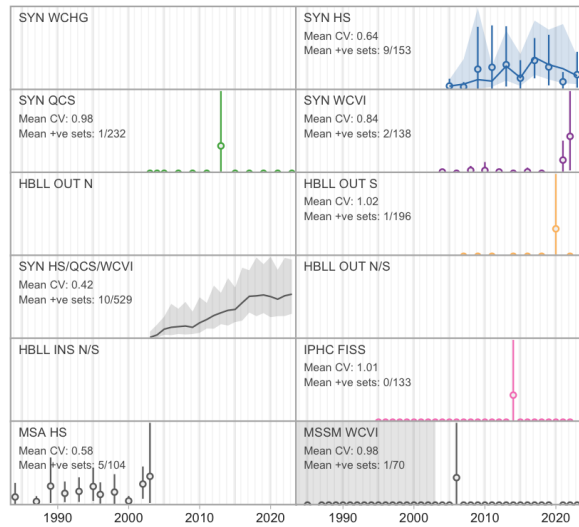


6.113 Starry Flounder

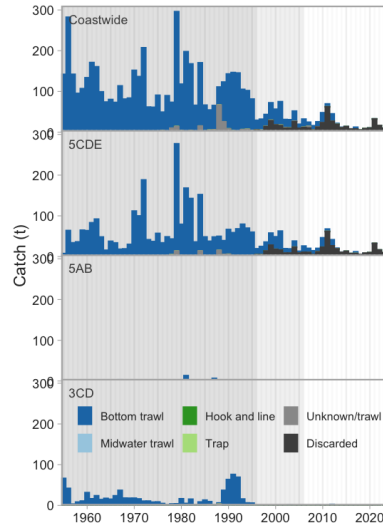
Platichthys stellatus (631)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

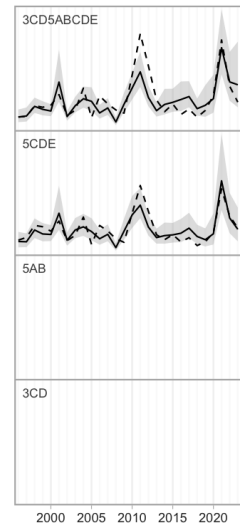
Survey relative biomass indices



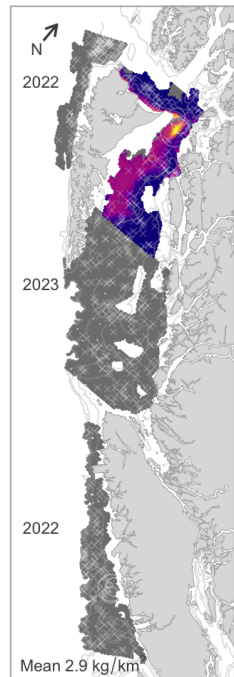
Commercial catch



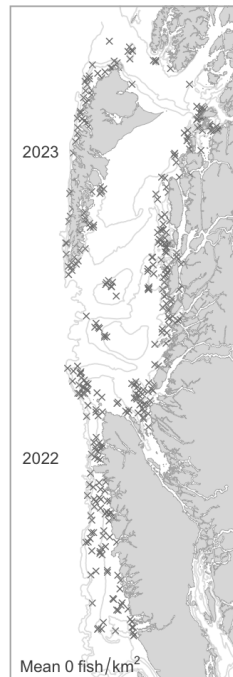
Commercial bottom trawl CPUE



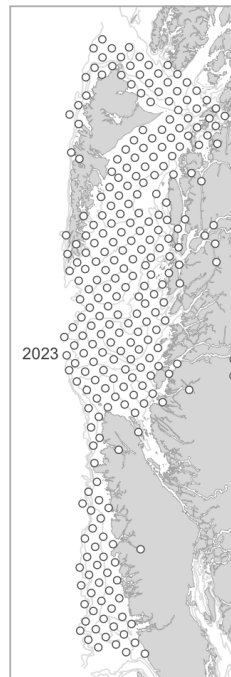
Synoptic survey biomass



HBL OUT survey biomass



IPHC survey catch rate

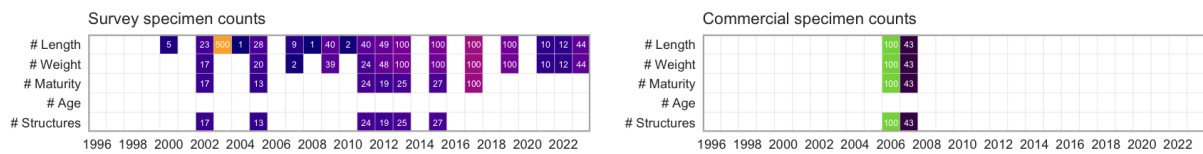
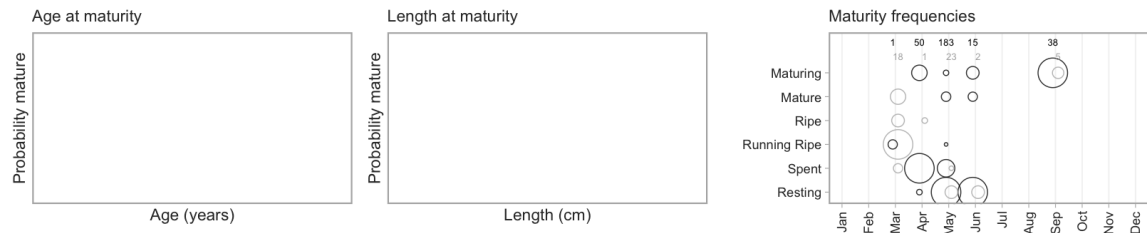
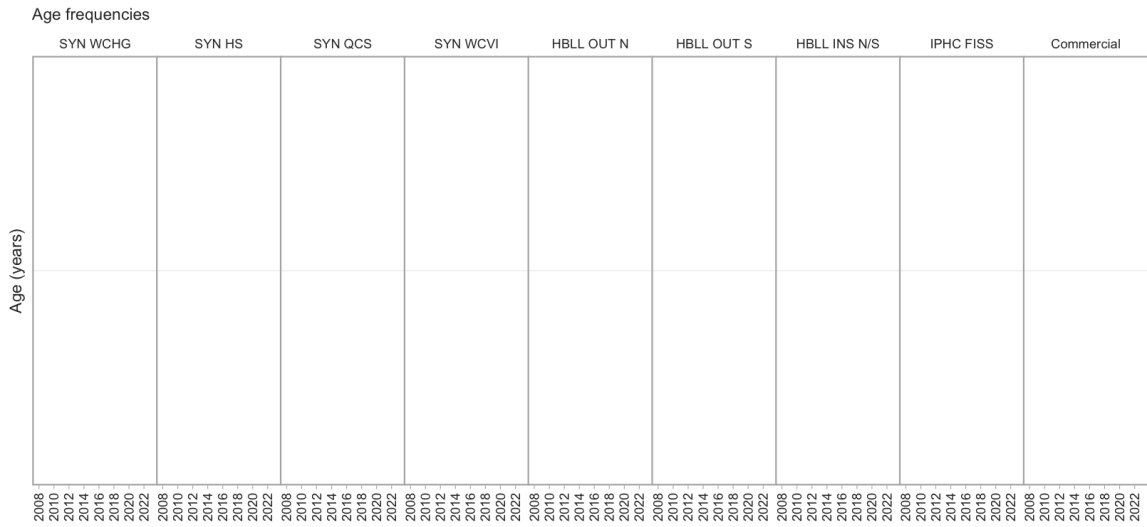
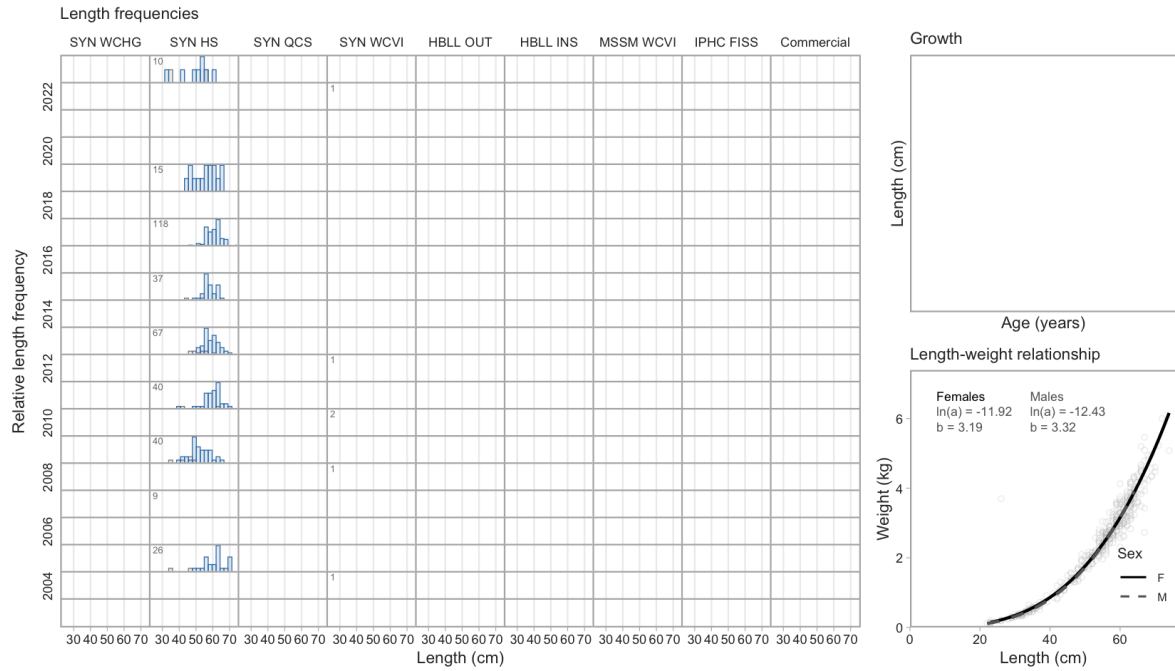


Commercial trawl CPUE



Commercial H & L CPUE



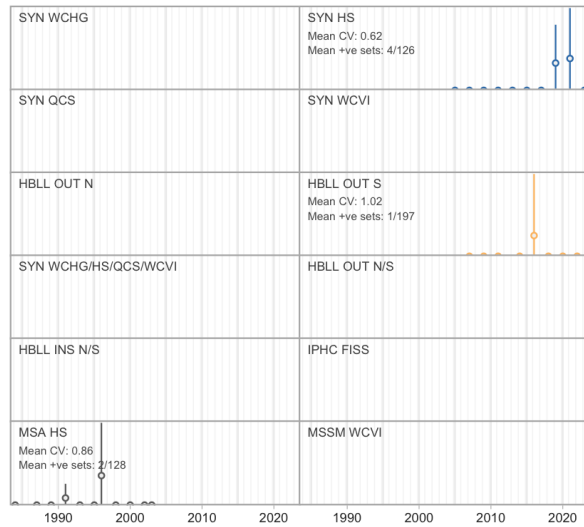


6.114 C-O Sole

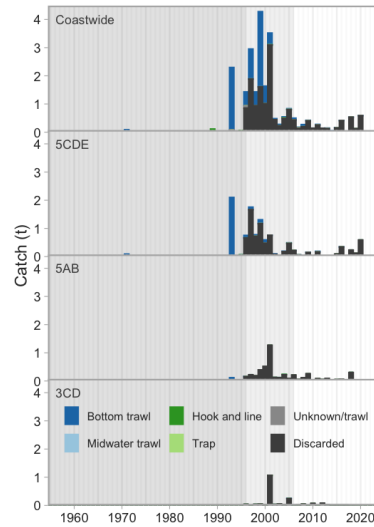
Pleuronichthys coenosus (633)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

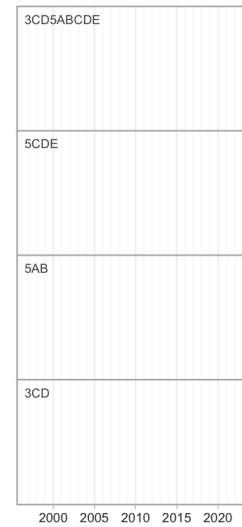
Survey relative biomass indices



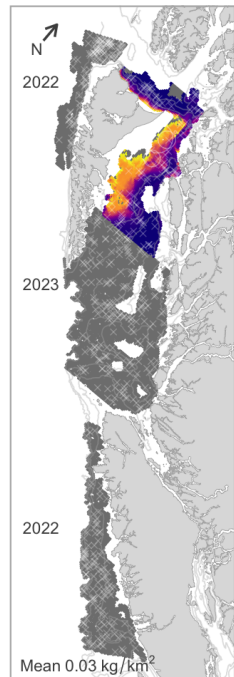
Commercial catch



Commercial bottom trawl CPUE



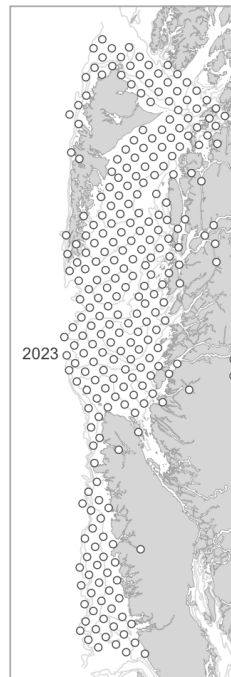
Synoptic survey biomass



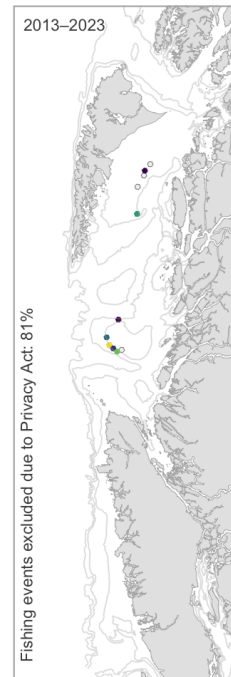
HBL OUT survey biomass



IPHC survey catch rate

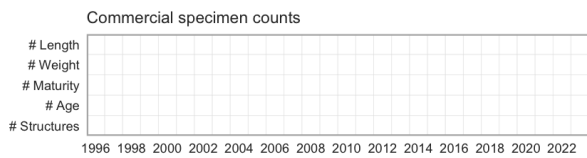
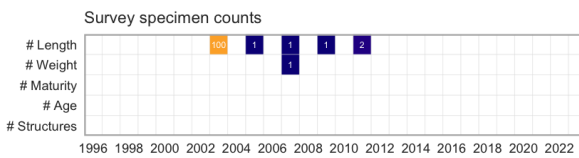
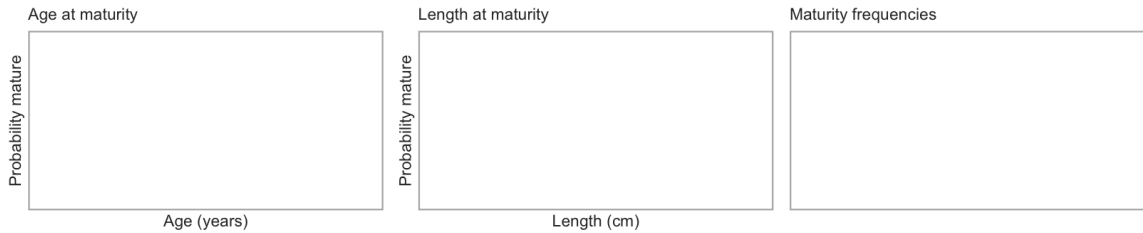
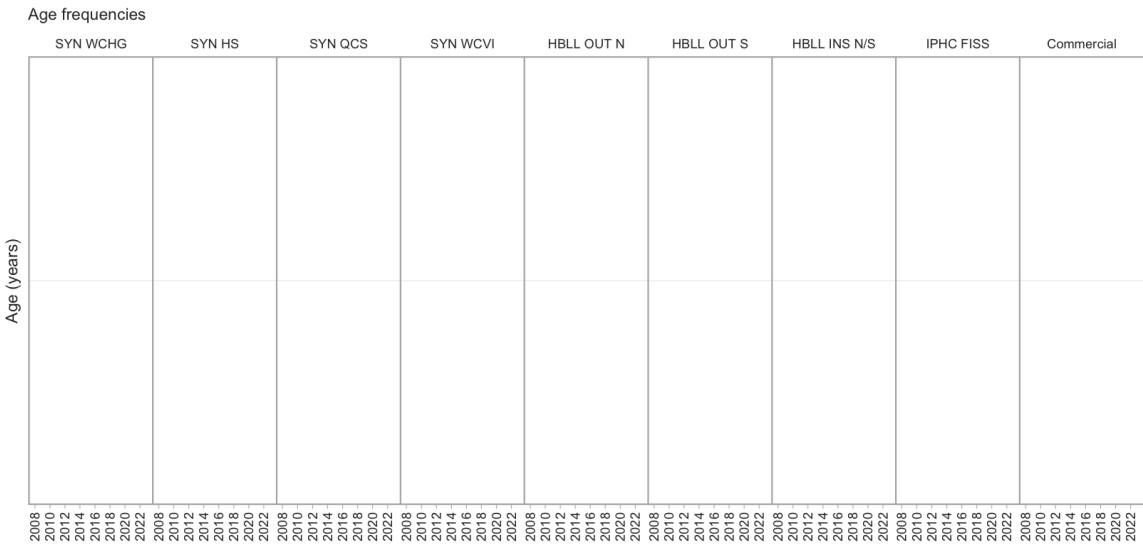
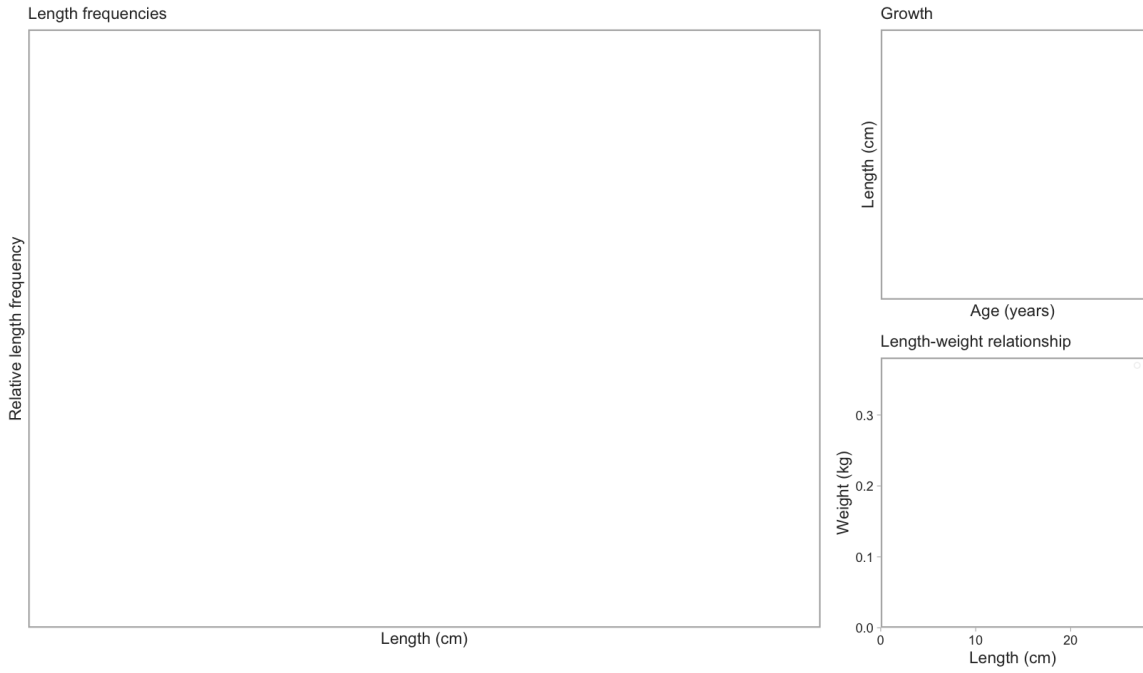


Commercial trawl CPUE



Commercial H & L CPUE



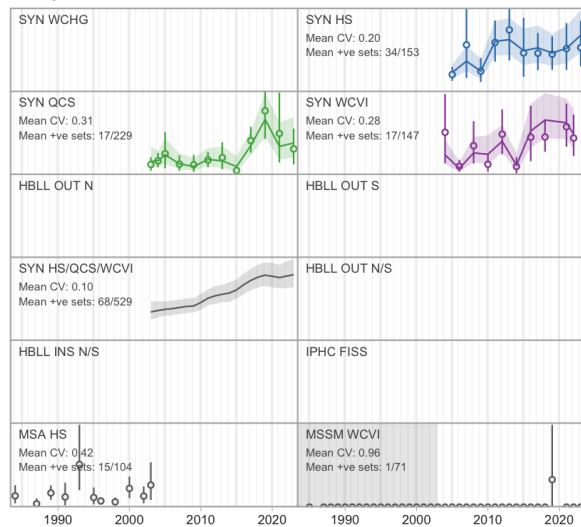


6.115 Curlfin Sole

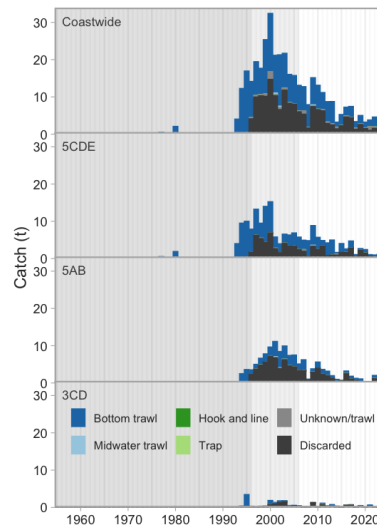
Pleuronichthys decurrens (635)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

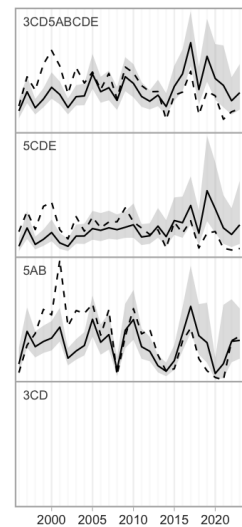
Survey relative biomass indices



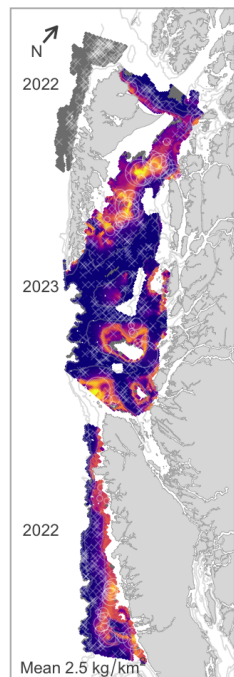
Commercial catch



Commercial bottom trawl CPUE



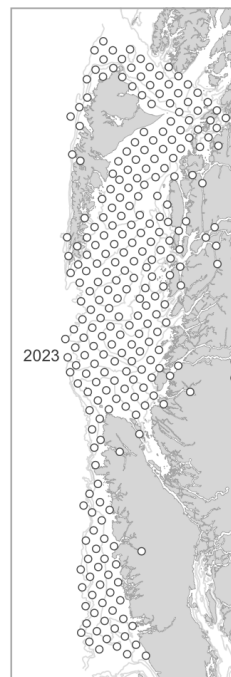
Synoptic survey biomass



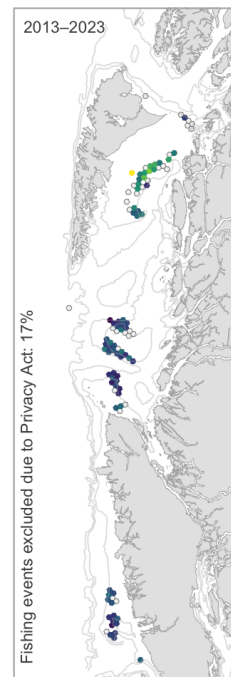
HBL OUT survey biomass



IPHC survey catch rate

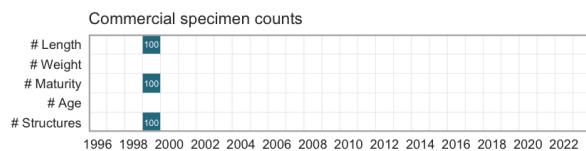
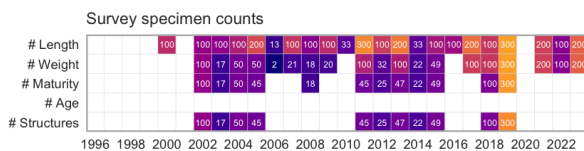
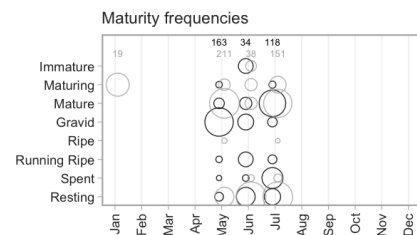
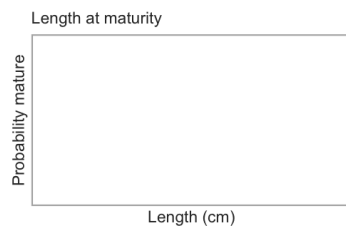
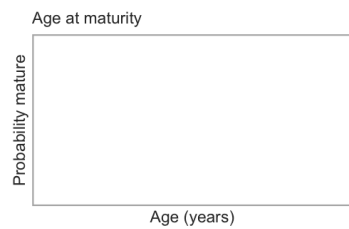
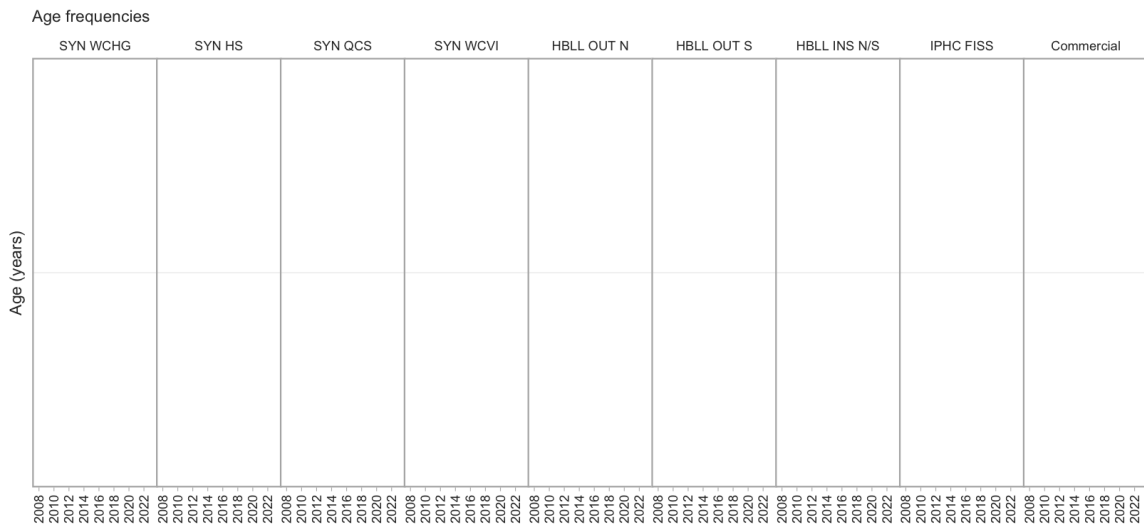
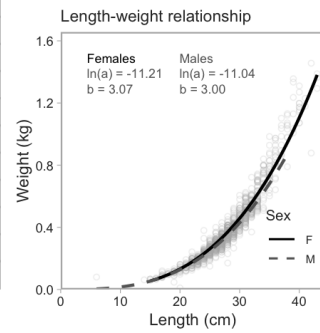
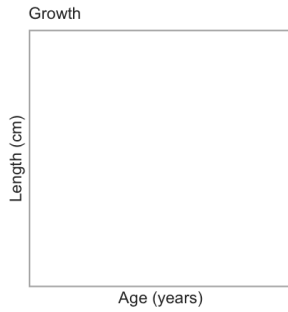
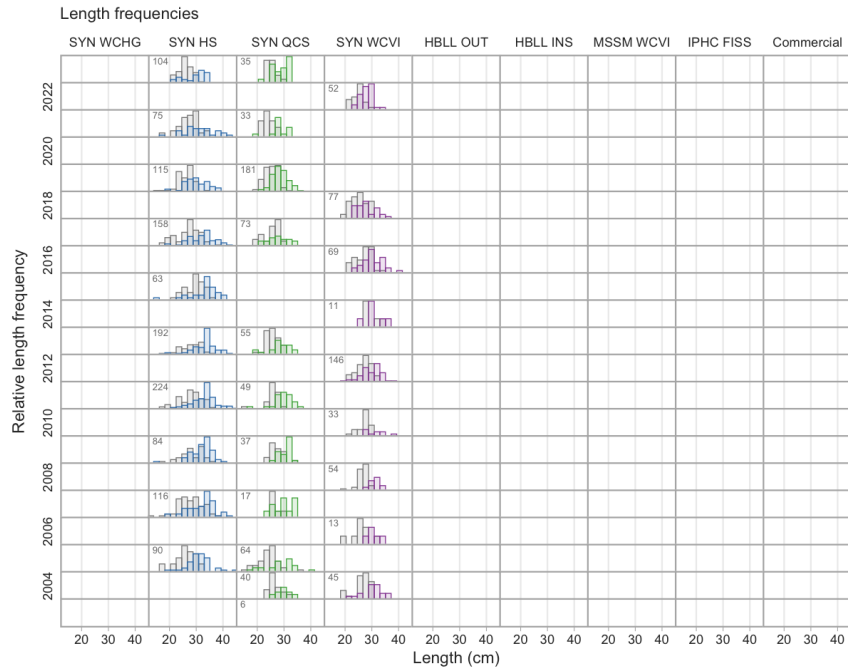


Commercial trawl CPUE



Commercial H & L CPUE



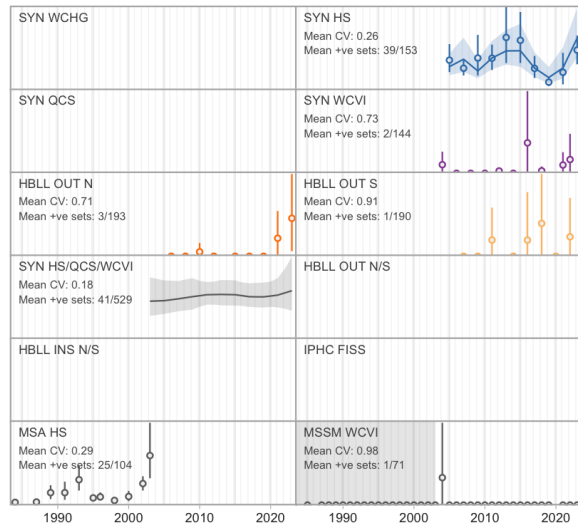


6.116 Sand Sole

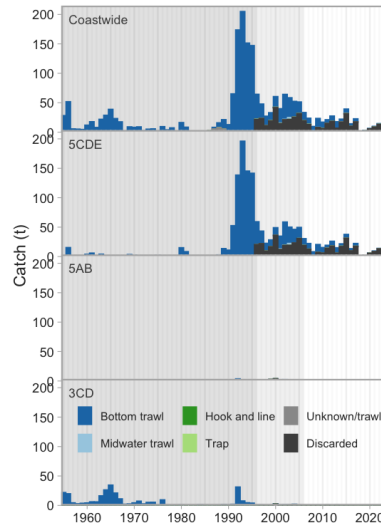
Psettichthys melanostictus (636)

Order: Pleuronectiformes, Family: Pleuronectidae, [FishBase](#), [WoRMS](#)

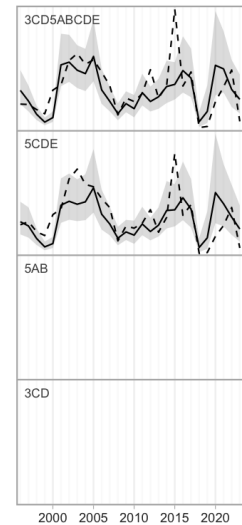
Survey relative biomass indices



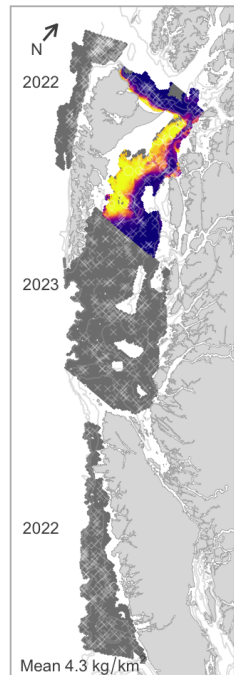
Commercial catch



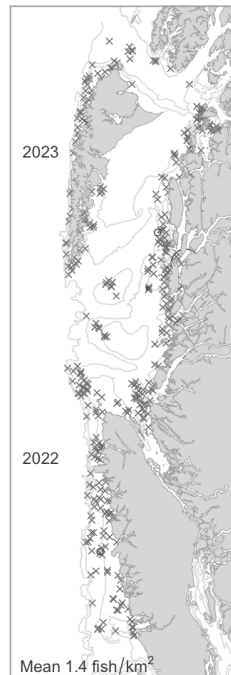
Commercial bottom trawl CPUE



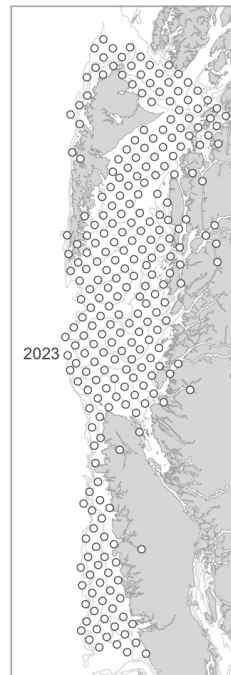
Synoptic survey biomass



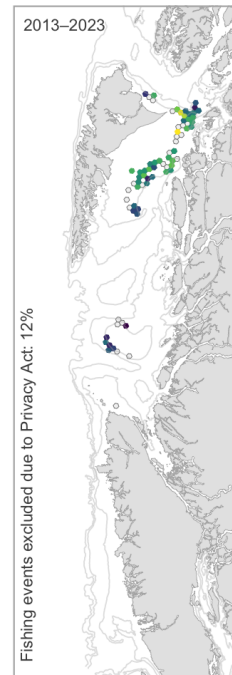
HBL OUT survey biomass



IPHC survey catch rate

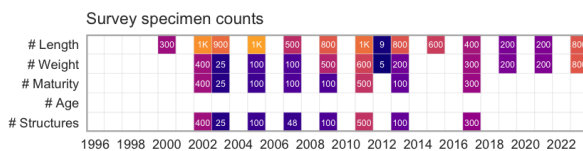
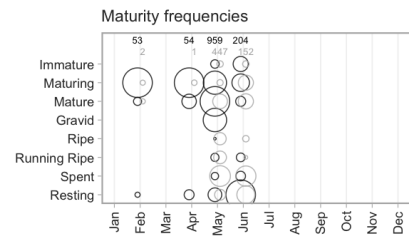
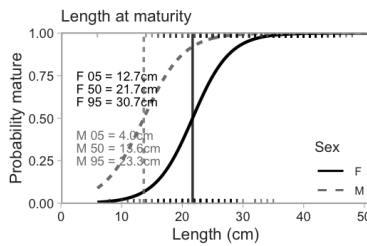
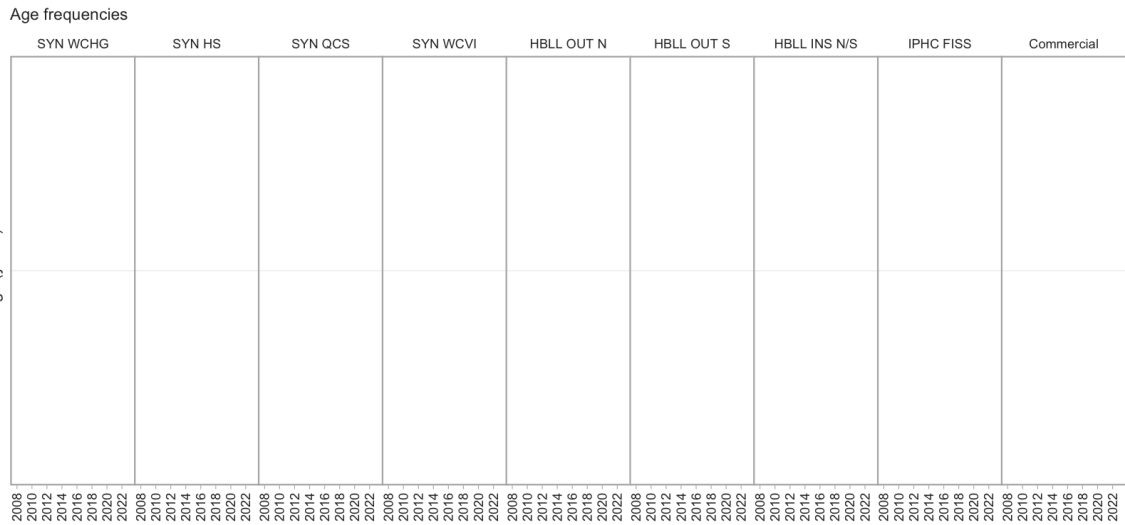
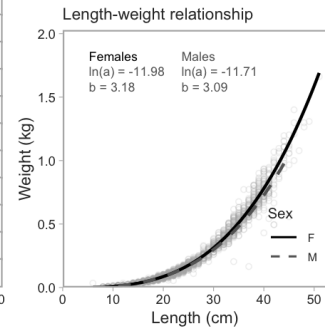
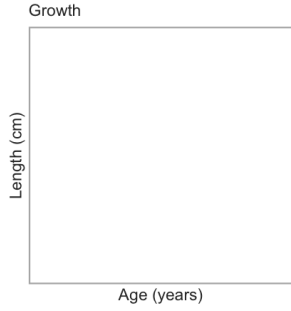
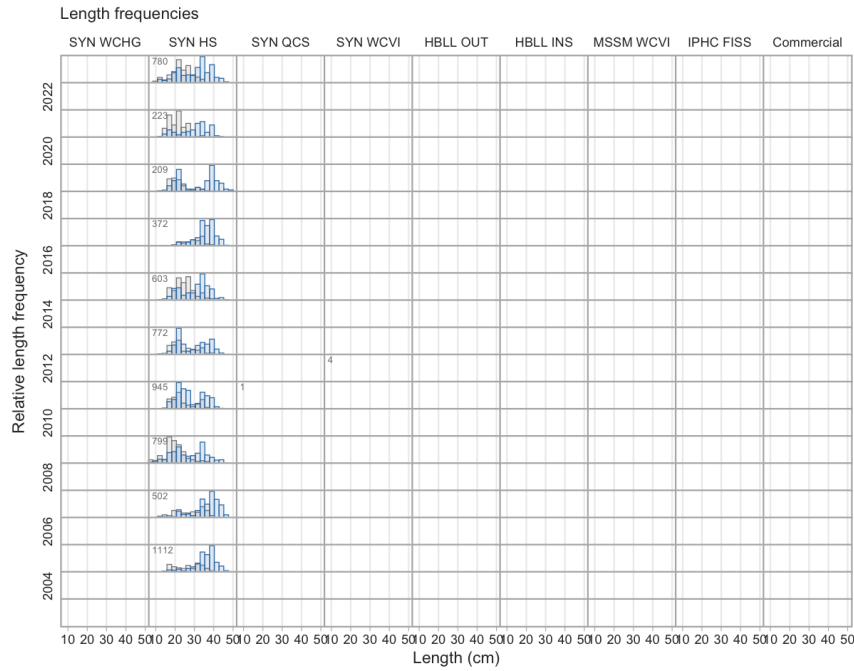


Commercial trawl CPUE



Commercial H & L CPUE





APPENDIX A International Pacific Halibut Commission survey updates

Data for the IPHC spatiotemporal model index are now derived directly from the [IPHC website](#). The code to process these data is housed in the [gfdata package](#) within the `data-raw` folder. The function `gfdata::load_iphc_dat()` joins data from the package data objects `gfdata::iphc_catch` and `gfdata::iphc_sets` into a single data frame for a given species or for all species at once.

Here we list the important steps to the process:

- We visit <https://www.iphc.int/data/fiss-survey-raw-survey-data/>, expand the year range to 1998–2023, select “2B” from “IPHC Regulatory Areas”, leave all other options at defaults, and select “Excel format” from the “Crosstab” section. We scroll down to select “Non-Pacific Halibut Data” and download it. Once done, we similarly select “Set and Pacific halibut data” and download it. Our code then proceeds through the following steps.
- We replace Rougheye and Blackspotted Rockfish data rows with the summed counts of these two species since we report the complex of these species.
- We change “citharichthys spp” to “citharichthys sordidus”. I.e., we assume Sanddabs are Pacific Sanddabs as was done in the `gfiphc` package.
- We convert Rock Sole into Southern Rock Sole as was done in the `gfiphc` package. To do that we convert “lepidopsetta sp.” into “lepidopsetta bilineata”.
- We replace common names in the IPHC dataset with common names from the GFBio database based on a join on scientific names.
- We calculate effective skates in 2012 as hooks observed divided by average number of hooks per skate since these are missing in the raw data.
- We fill in cases of zero catch for a given species at a given station in a given year.
- We identify a set of stations from a 2018 expansion into inside Vancouver island waters and omit these from spatiotemporal models since this region is not sampled in any other years. These stations are: 2207, 2204, 2203, 2201, 2212, 2211, 2215, 2216, 2219, 2220, 2222, 2223, 2224, 2225, 2227, 2228, 2229, 2230, 2231, 2234, 2235, 2236, 2238, 2239, 2243, 2244, 2249, 2259, 2245, 2246.
- We import 1995–1997 data from the `gfiphc` R package, which draws on data from spreadsheets contained within that package (Anderson et al. 2019).
- We correct hooks observed for two sets that appear to be erroneous. (1) We recalculate hooks observed at station 2092 in year 2004 as average hooks per skate \times number of skates hauled since the entered value (799) does not match 1.5 skates hauled and 100 hooks per skate. (2) In 2018 at station 2227, hooks counted is listed as 1390 but is corrected by multiplying 7 sets with an average 99 hooks per skate, resulting in 693 hooks observed.

We compared hooks observed and the number of fish observed per set between our new dataset and the dataset in `gfiphc` and see close agreement. Some minor differences arise because some sets deemed “usable” or “unusable” in GFBio now have the opposite coding in the data downloaded from the IPHC website. This affects a total of 48 sets (year-station combinations) over the full time series. At this point we do not have an explanation for these minor differences in usability columns—it appears these have been updated in the raw IPHC dataset that is now publicly shared.

We do not update the IPHC design-based index for 2023 (this requires a different data pipeline involving the `gfiphc` package), but we do plot the design-based index up to 2022 for comparison with the new version. We note that the `gfiphc` package is still the appropriate dataset and tool for calculating a design-based IPHC survey index as described in Anderson et al. (2019). The new dataset above is formed in a more streamlined process and is designed for use with geostatistical modelling.

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