A data synopsis for British Columbia groundfish: 2024 data update

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Canadian Technical Report of Fisheries and Aquatic Sciences

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Les numéros 1 à 456 de cette série ont été publiés à titre de Rapports techniques de l'Office des recherches sur les pêcheries du Canada. Les numéros 457 à 714 sont parus à titre de Rapports techniques de la Direction générale de la recherche et du développement, Service des pêches et de la mer, ministère de l'Environnement. Les numéros 715 à 924 ont été publiés à titre de Rapports techniques du Service des pêches et de la mer, ministère des Pêches et de l'Environnement. Le nom actuel de la série a été établi lors de la parution du numéro 925.

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ABSTRACT

Anderson, S.C. and Dunic, J.C. 2025. A data synopsis for British Columbia groundfish: 2024 data update. Can. Tech. Rep. Fish. Aquat. Sci. 3718: viii + 263 p. https://doi.org/10.60825/h406-v638

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 2024.

RÉSUMÉ

Anderson, S.C. et Dunic, J.C. 2025. Une synthèse des données pour les poissons de fond de la Colombie-Britannique : mise à jour des données de 2024. Rapp. tech. can. sci. halieut. aquat. 0: viii + 264 p.

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 2024.

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). Versions with 2022 (Anderson et al. 2024a) and 2023 (Anderson et al. 2024b) data were published as Technical Reports. In this version, we update the report to include 2024 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 the 2023-data version, we added data from the Small-mesh Multi-species Bottom Trawl Survey on West Coast Vancouver Island (MSSM WCVI) (formerly known as the "Shrimp Survey"). See Dunic and Anderson (2025) for an analysis of the quality of the groundfish data from this 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.

2 Updates

In this report:

- We rebuilt all figure pages with data up to 2024 using the methods described in Anderson et al. (2019), Anderson et al. (2020), DFO (2022a), Anderson et al. (2024a), and Anderson et al. (2024b).
- We updated the recent references at the top of each species page.
- We modelled the SYN QCS and SYN HS surveys together in the spatial map visualizations (e.g., Figure 4). In previous versions they were modelled separately, which could result in a discontinuity at the border of the two surveys.
- We added the delta generalized gamma distribution (Dunic et al. 2025) to the candidate observation likelihoods for the survey index standardization models with both a standard (logit) and Poisson link (Thorson 2018).
- We updated the commercial catch-per-unit-effort standardization to use a spatiotemporal model (Appendix A).
- We switched from ITIS (Integrated Taxonomic Information System) to WoRMS (World Register of Marine Species) for taxonomic information printed at the top of each page. WoRMS is generally considered more up to date for marine species taxonomy than ITIS. Notably, this updated the order for rockfish from *Scorpaeniformes* to *Perciformes* and the family from *Scorpaenidae* to *Sebastidae*.
- We removed small (mostly < 100 kg) observations of commercial catch for Basking Shark (*Cetorhinus maximus*) from 2018 onwards, which we believe were due to species misidentification. Most of these records were from after 2020 when the trawl fleet switched from on-board observers to electronic monitoring.
- We updated the common name for *Coryphaenoides cinereus* from "Popeye" to "Popeye Grenadier".
- We updated the survey grids in Figure 4 to represent the latest survey domains.

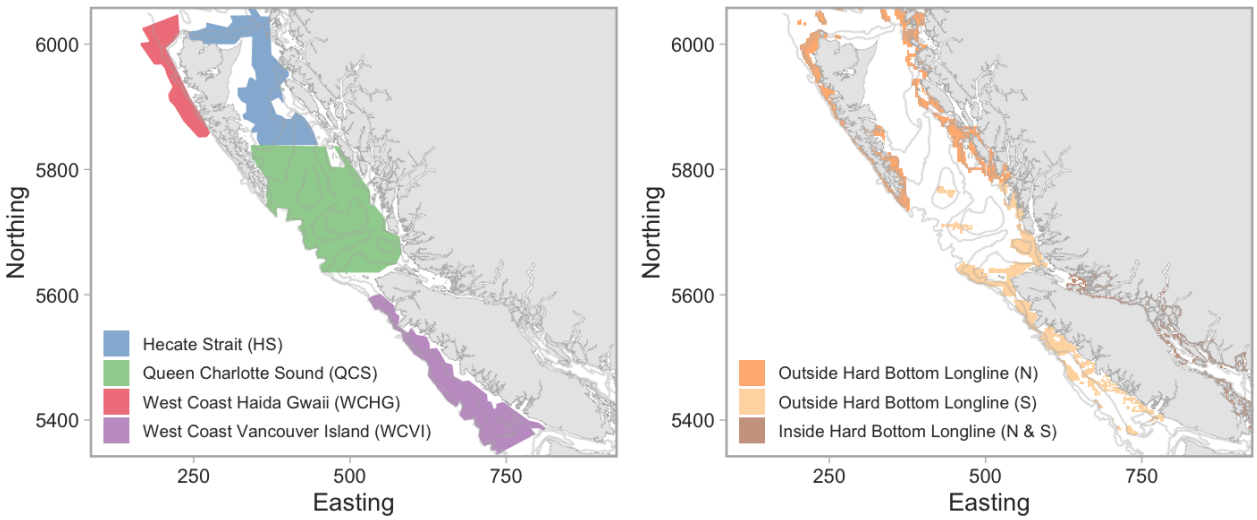


Figure 1. Synoptic bottom trawl survey boundaries (left) and Hard Bottom Longline (HBLL) survey boundaries (right). Inside HBLL north and south are not differentiated because the delineation is not consistent from year to year. The International Pacific Halibut Commission (IPHC) Fishery Independent Setline 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.

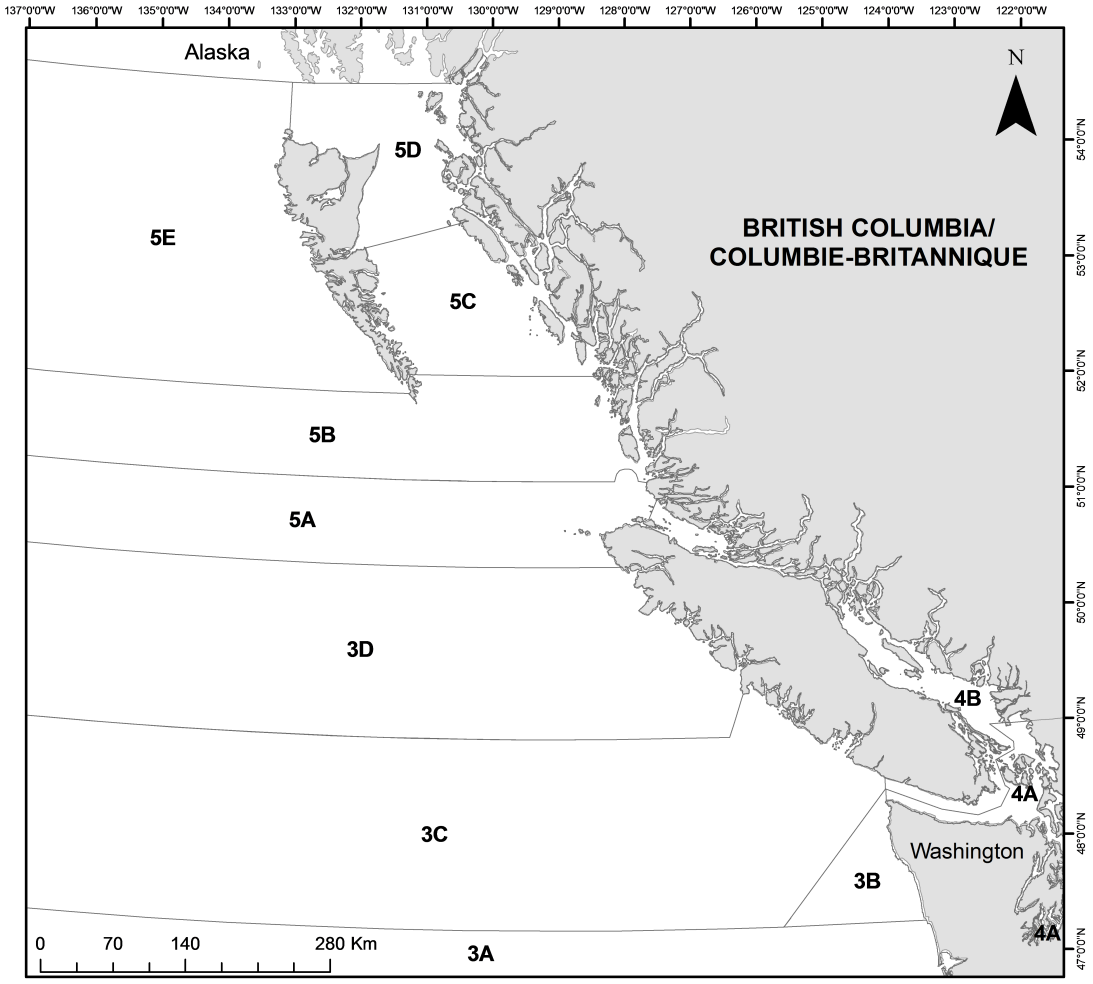


Figure 2. Map of Pacific Marine Fisheries Commission (PMFC) areas 5AB (Queen Charlotte Sound), 5CD (Hecate Strait), 5E (West Coast Haida Gwaii), 3CD (West Coast Vancouver Island), and 4B (Strait of Georgia). These are close, but not identical, to similarly named Groundfish Management Unit areas. Areas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

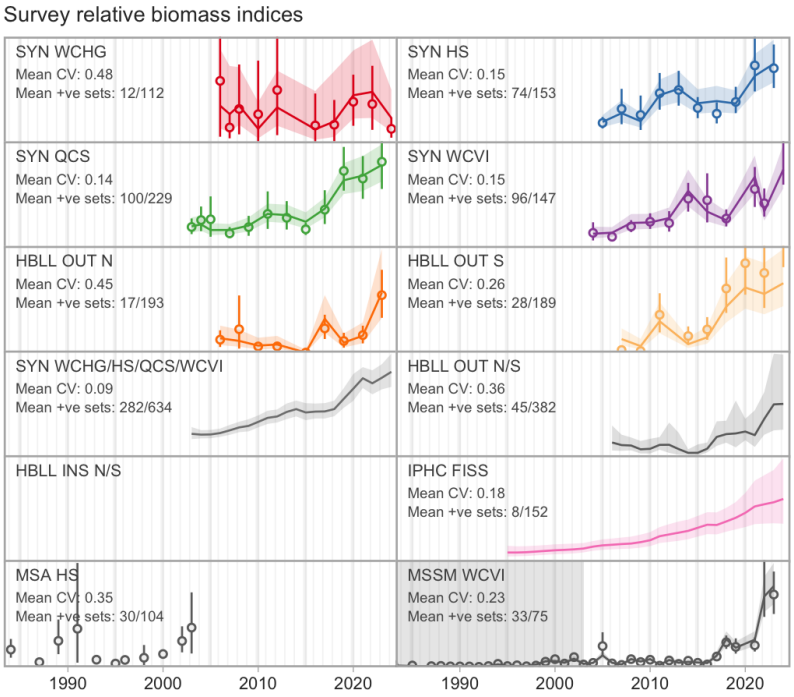


Figure 3. Example relative biomass index trends from trawl and longline surveys for Petrale Sole. Dots represent design-based mean estimates of relative biomass and vertical lines around the dots represent 95% bootstrap confidence intervals. Time series with a solid trend line and shaded ribbon for 95% confidence intervals represent an index that has been standardized with a spatiotemporal model (see Appendix A in DFO 2022a). Spatiotemporal-model-based indices are omitted for a survey-species combination if fewer than 5% of sets contained the species or if no models converged. '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

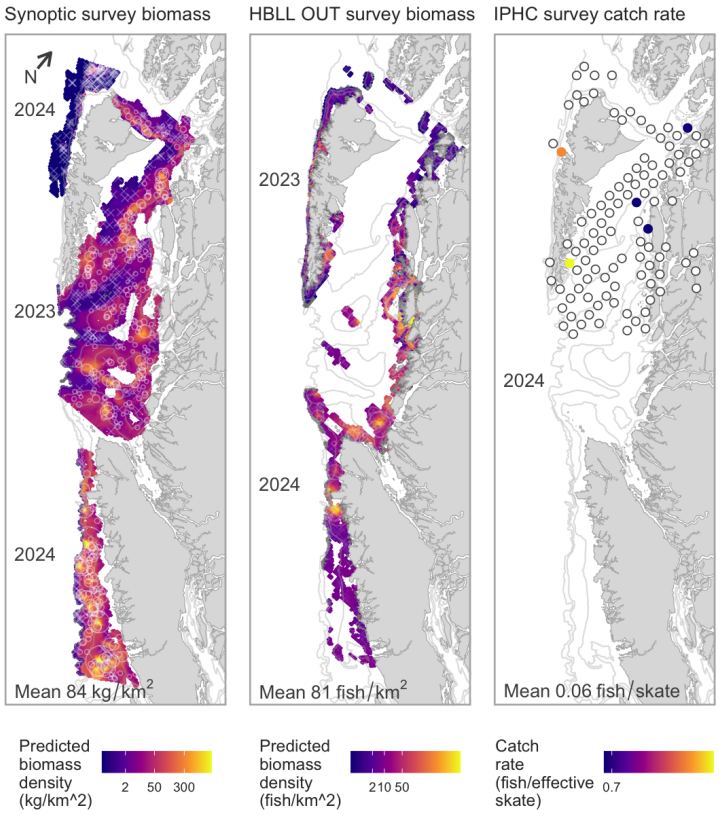


Figure 4. Example maps of relative biomass (or catch rate) from trawl and longline surveys from the latest available years of each survey for Petrale Sole. Shown are the synoptic trawl surveys (left), the outside hard bottom longline (HBLL OUT) surveys (middle), and the IPHC FISS (right). Individual 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

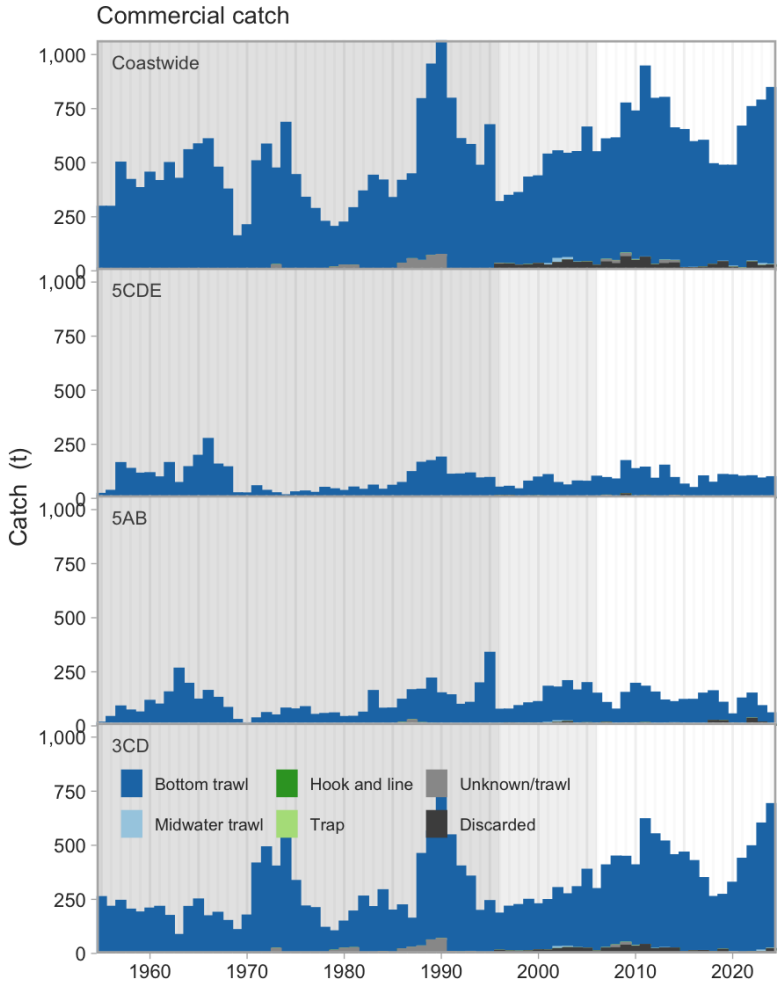


Figure 5. Example commercial fishery catch plots for Petrale Sole. Catch from various gear types is indicated by colour shading. Catch is calculated as the summed weight of landings aggregated by year. Discards include reported discard weights from all fisheries combined; however, bottom trawl discards 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. Catch data prior to 1996 and 2006 are shaded grey to indicate they are considered less reliable than more recent data. Catch estimates from the bottom and midwater trawl fleets operating in outside waters are less certain before the introduction of an at-sea observer program in 1996. Similarly, catch estimates from non-trawl sectors (longline and trap) are less certain prior to the implementation of an at-sea electronic monitoring (EM) program in 2006. The at-sea observer program for the trawl fleet was discontinued in early 2020 due to COVID-19. Since then, the trawl fleet has been monitored using EM systems. EM systems are supplemented by port-based biological sampling for some species. Management areas, as indicated in the top left corner of each panel, are shown in Figure 2.

3.4 Commercial bottom trawl catch per unit effort indices

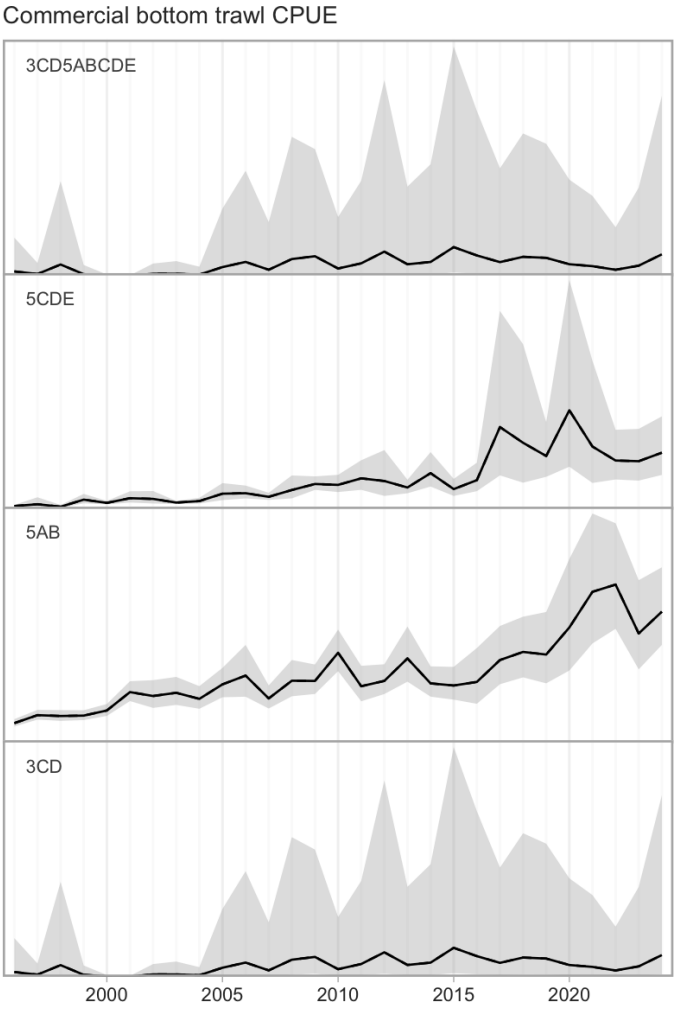


Figure 6. Example commercial bottom trawl catch per unit effort (CPUE) trends, with effort as hours trawled, for Petrale Sole. Commercial CPUE has been standardized with a spatiotemporal model (Appendix A). The line and shaded region represent the mean and 95% confidence interval. Standardized time series are scaled to have the same maximum 95% confidence interval. 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

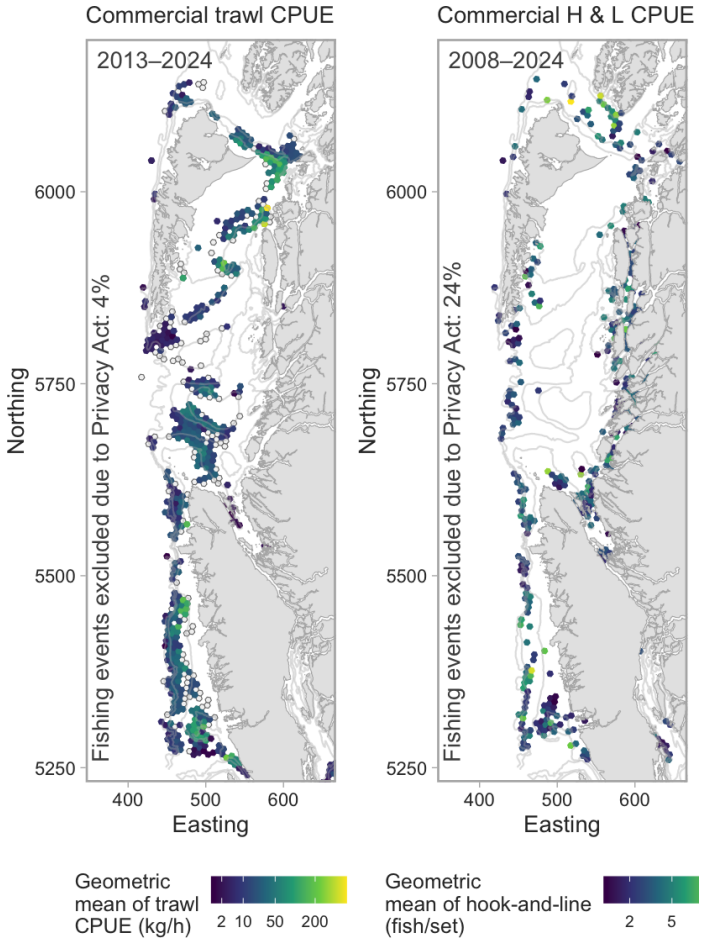


Figure 7. Example commercial trawl and commercial hook-and-line catch-per-unit-effort maps for Pacific Cod (note this figure is **not** Petrale Sole because the hook-and-line panel is mostly blank for Petrale Sole). Lighter shading indicates higher levels of a geometric mean of catch per unit effort 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 [ecosystem-based trawling boundaries were established; 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

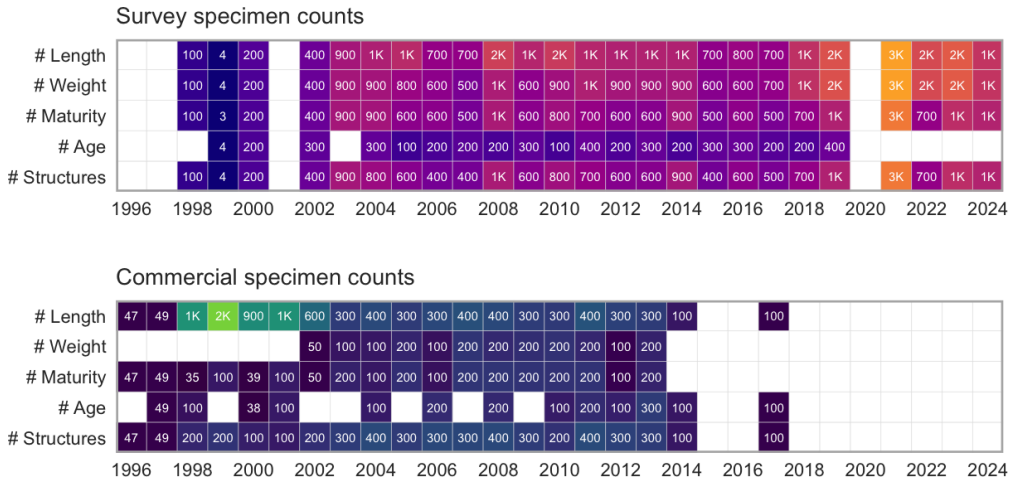


Figure 8. Example specimen-availability plot for Petrale Sole. Shown are the number of available fish specimens that have had their length measured, have been weighed, had their maturity assessed, had their age assessed, and for which ageing structures are available for ageing. Data are shown across 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

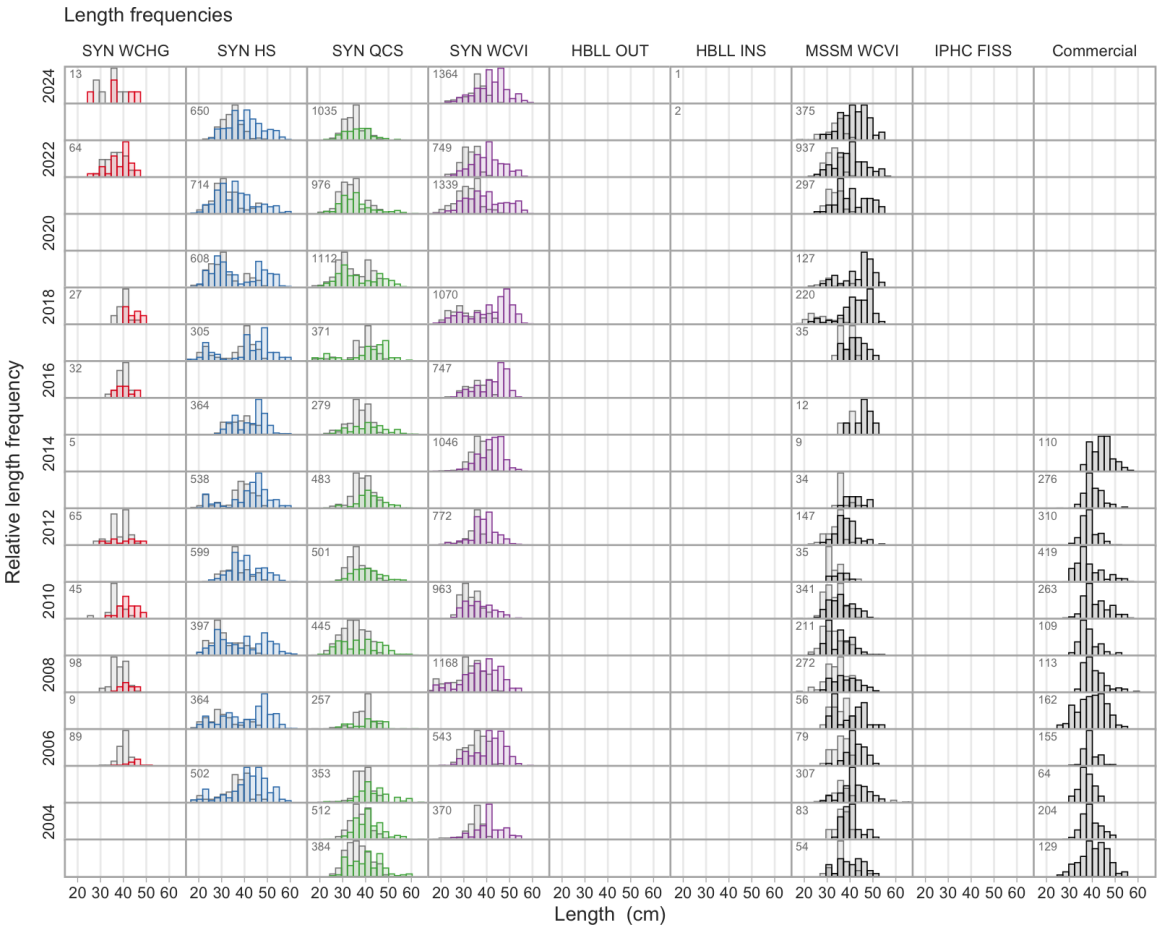


Figure 9. Example length-frequency plot for Petrale Sole. Female fish are shown as coloured (or black) bars and male fish are shown behind as light grey bars. The total number of fish measured for a given survey and year are indicated in the top left corner of each panel. Histograms are only shown if 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

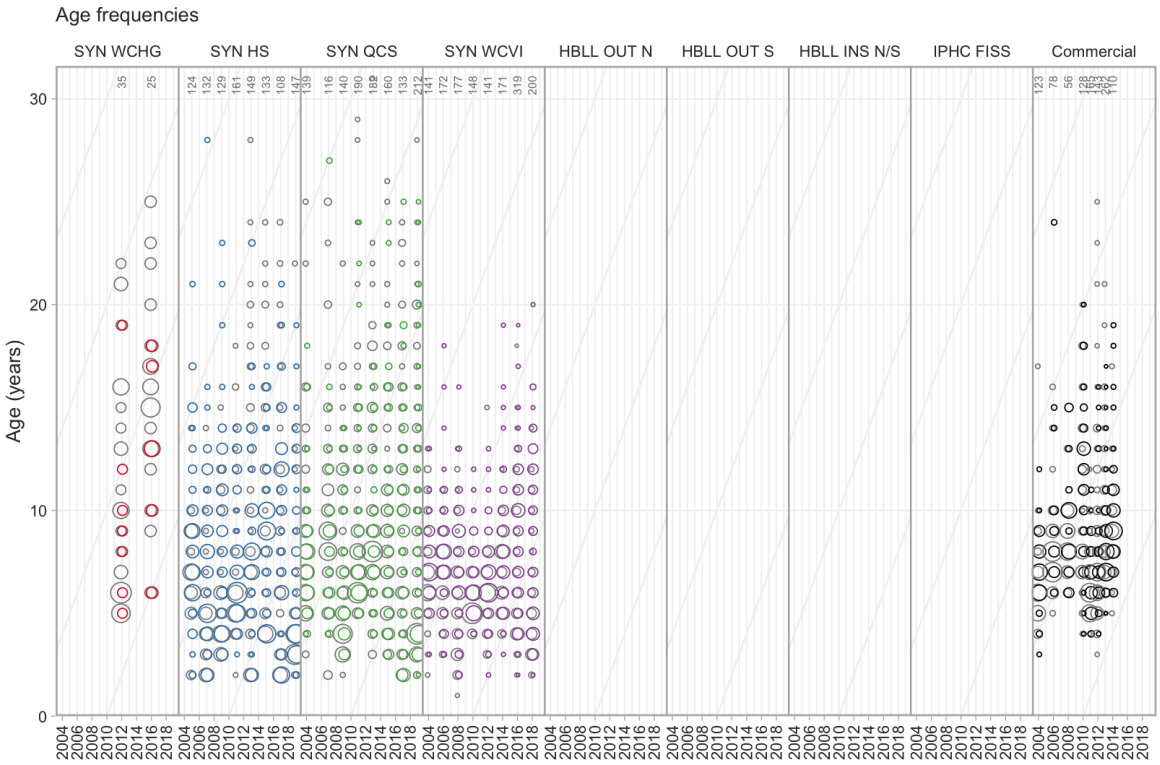


Figure 10. Example age-frequency plot for Petrale Sole. Female fish are shown as coloured (or black) circles and male fish are shown behind as light grey circles. The total number of fish aged for a given survey and year are indicated along the top of the panels. Diagonal lines are shown at five-year 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

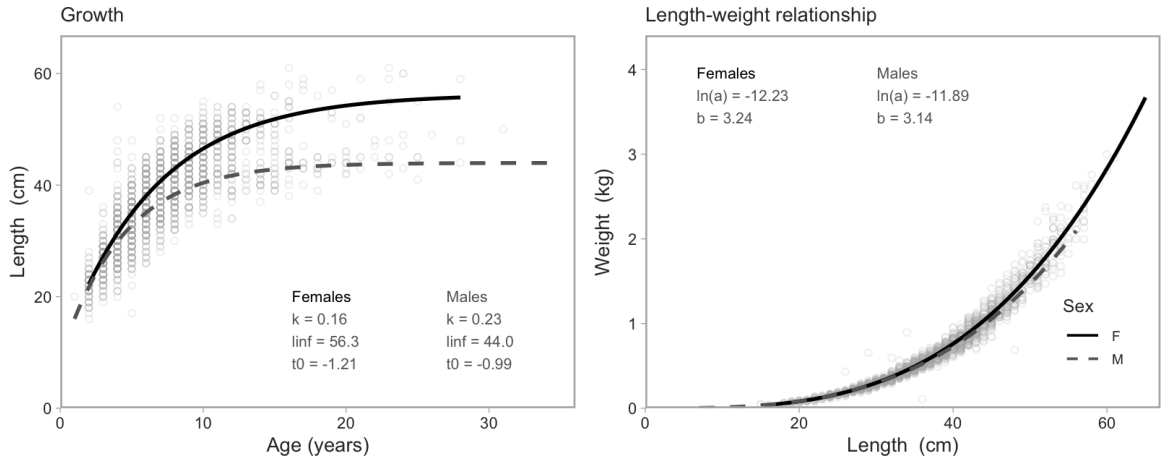


Figure 11. Example length-age and length-weight model fits and plots for Petrale Sole. The length-age growth curve is a von Bertalanffy model of the form $L_i \sim \text{Log-normal}\left(\log(l_{\text{inf}}(1-\exp(-k(A_i-t_0)))),\sigma\right)$ where L_i and A_i represent the length and age of fish i, 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 $\log(W_i) \sim$ 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

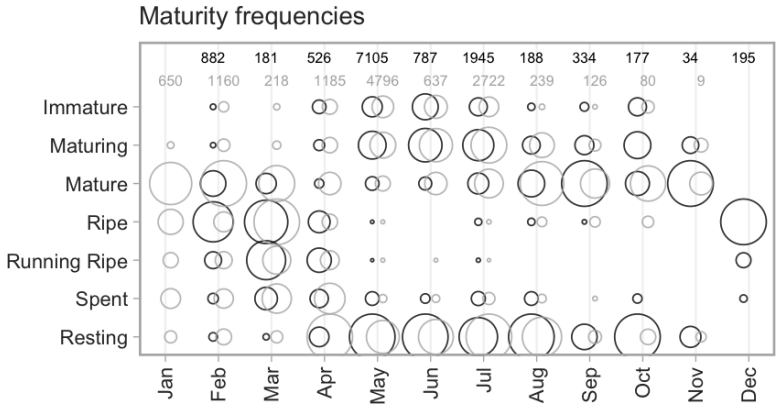


Figure 12. Example maturity-frequency-by-month plot for Petrale Sole. Categories of maturity are listed from most immature (top) to most mature (bottom); individual fish, once mature, cycle through the mature stages. The area of each circle corresponds to the number of fish specimens in a given maturity 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

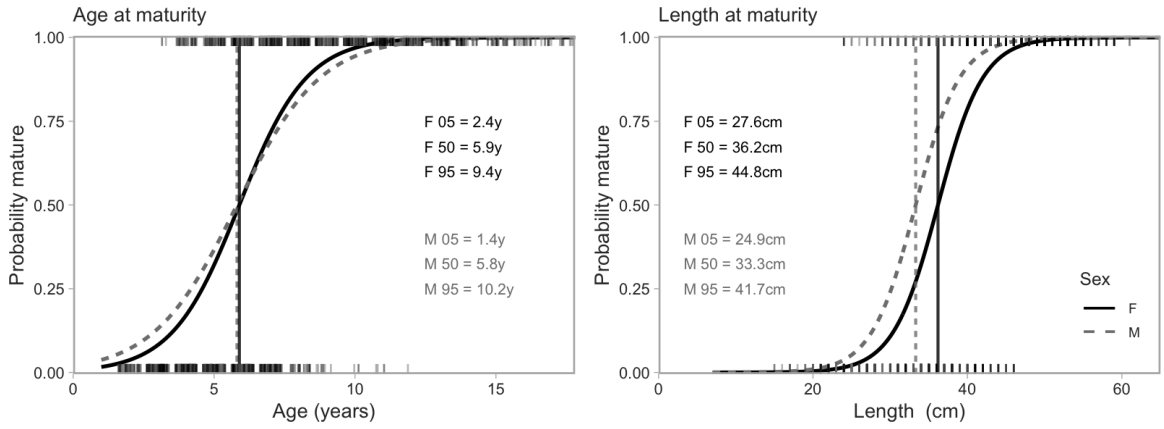


Figure 13. Example age- and length-at-maturity ogive plots for Petrale Sole. Maturity ogives are fit as logistic regressions to individual fish specimens, which are categorized as mature vs. not mature. The solid black lines represent fits to the female fish and the dashed grey lines represent fits to 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

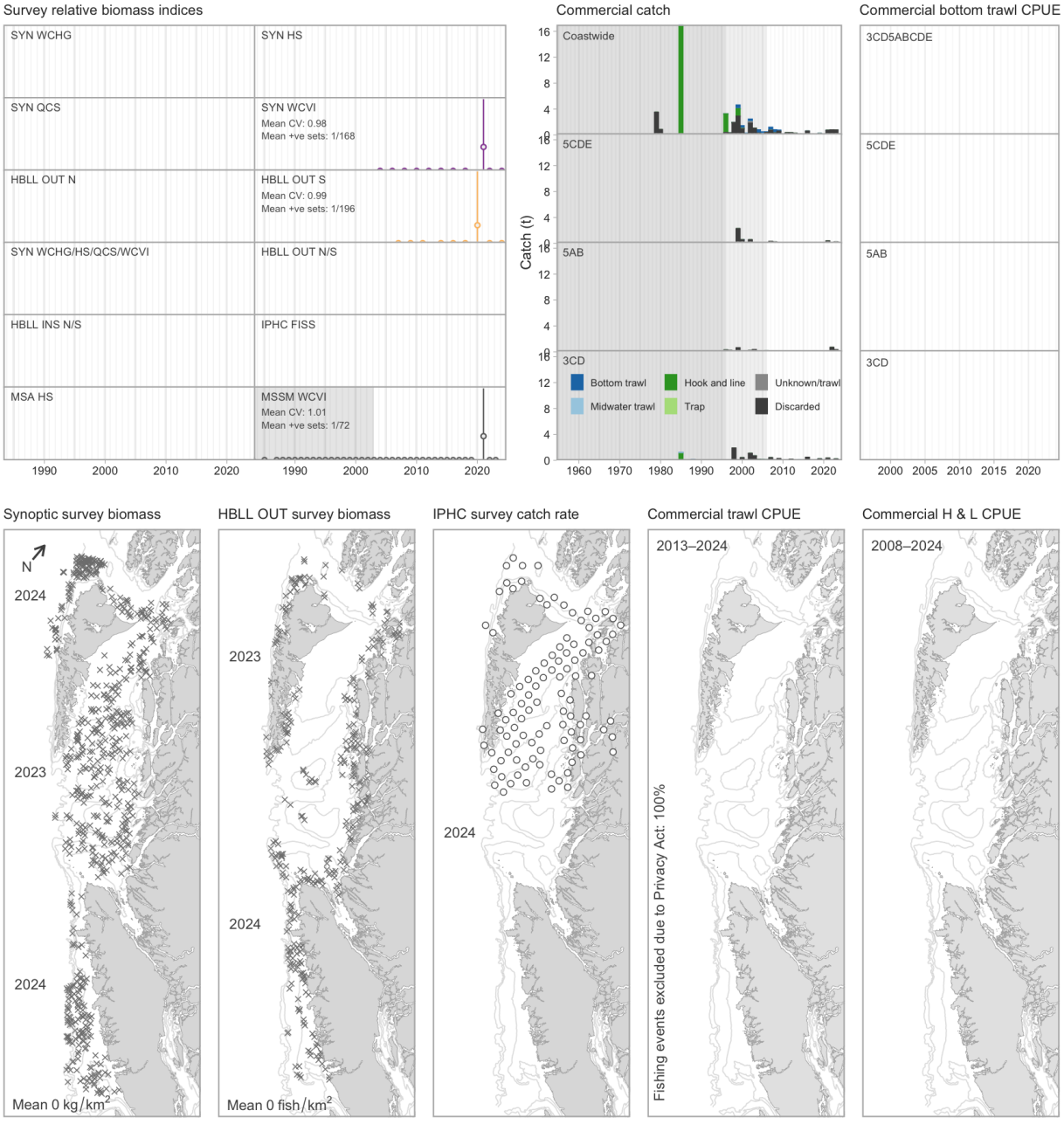
5 Species Index by Scientific Name

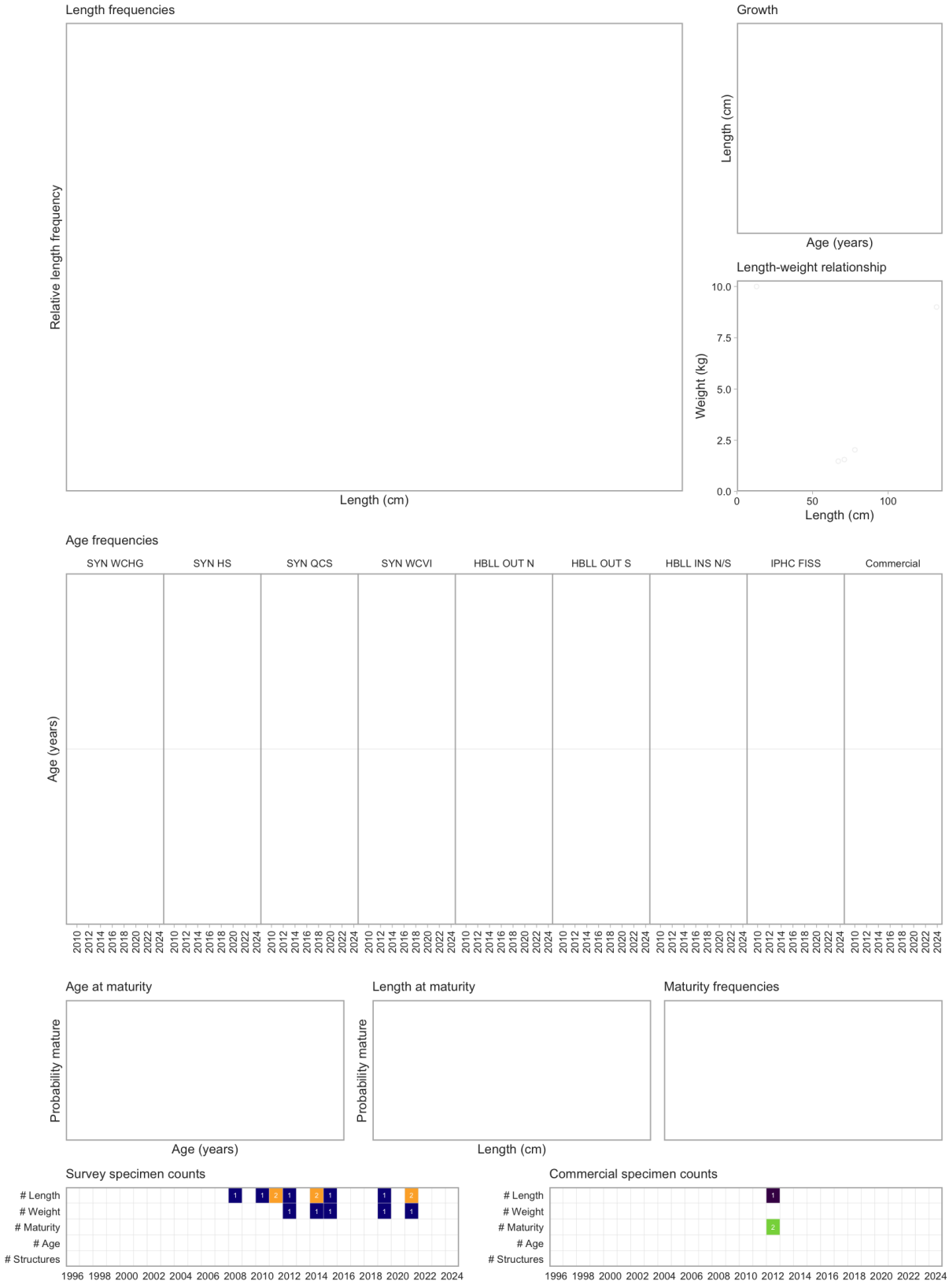
6 Figures

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

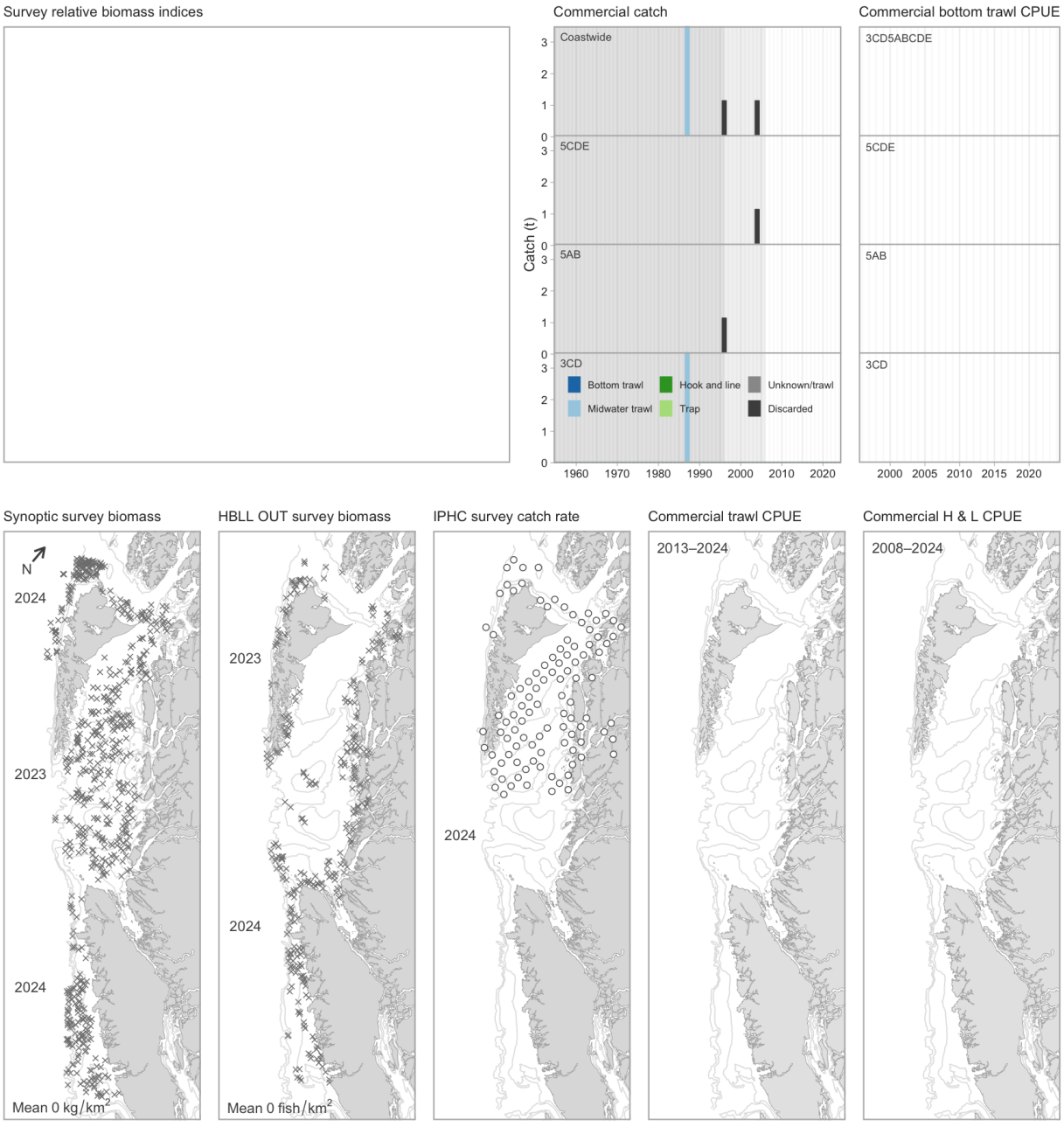
Hexanchus griseus (027)
Order: Hexanchiformes, Family: Hexanchidae, FishBase, WoRMS
COSEWIC Status Report: COSEWIC (2007a)
COSEWIC Status: Special Concern, SARA Status: Special Concern

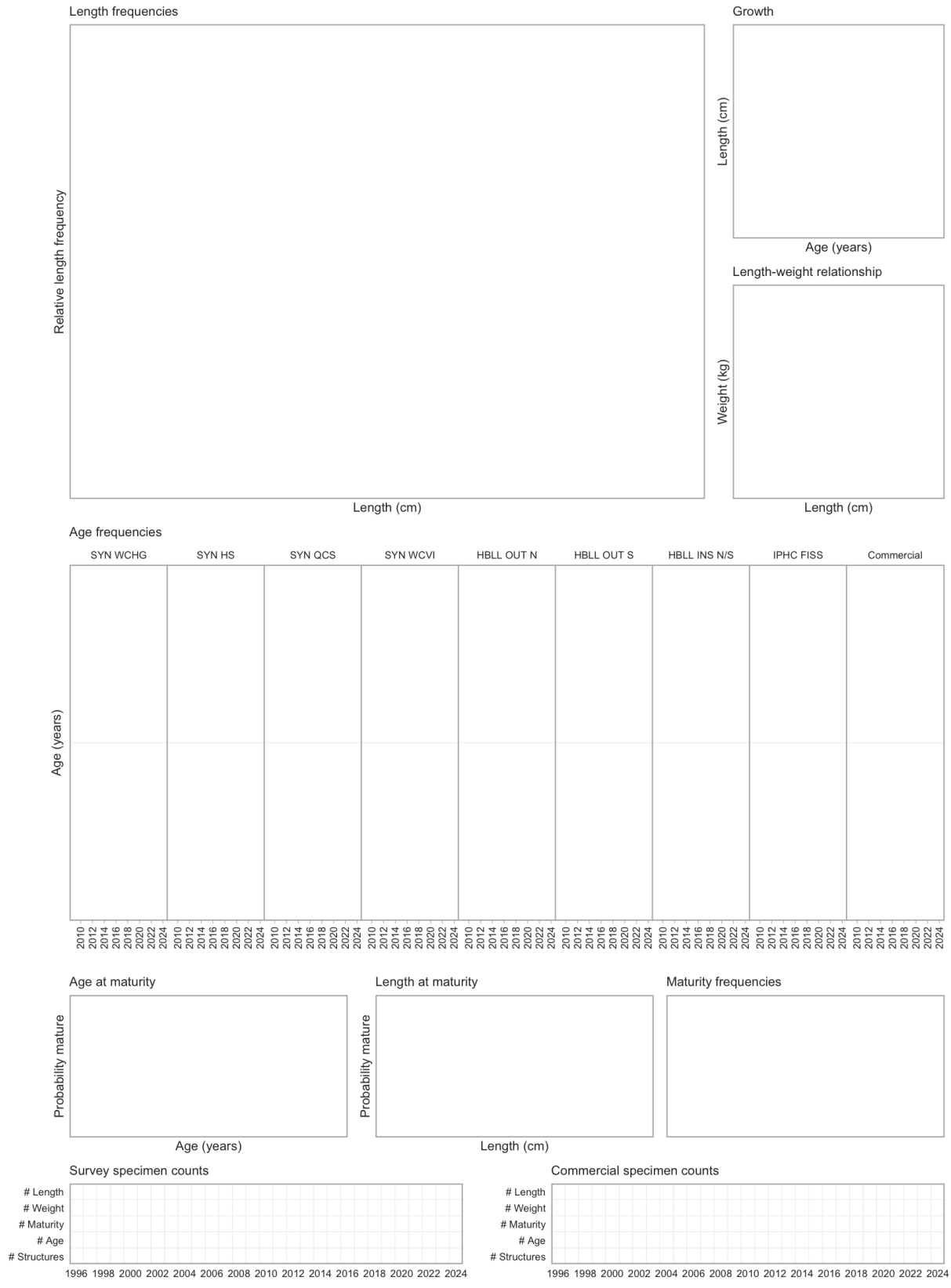



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
10.0
7.5
5.0
2.5
0.0
0
50
100
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.2 Basking Shark

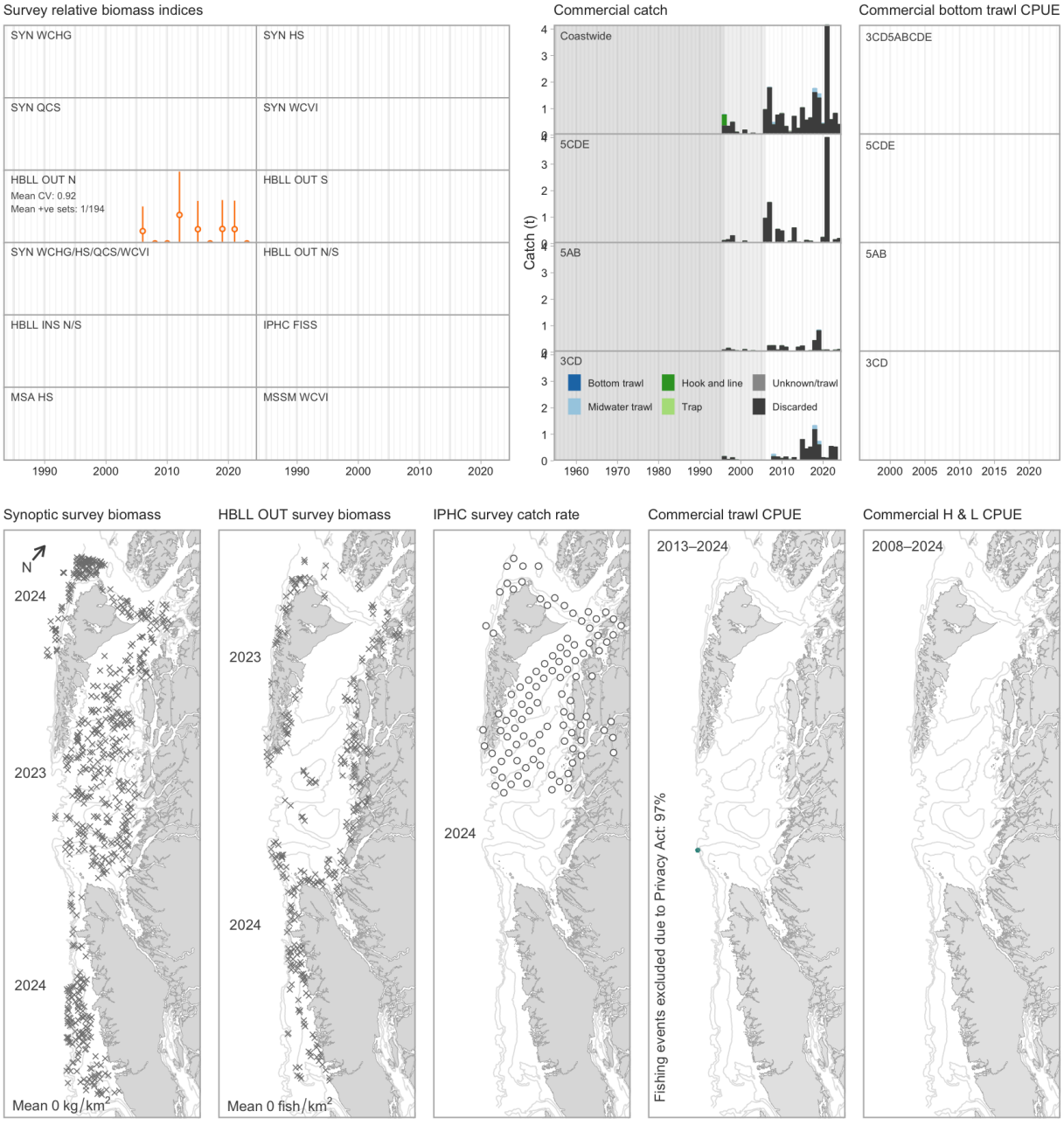
Cetorhinus maximus (034)
Order: Lamniformes, Family: Cetorhinidae, FishBase, WoRMS
Last Research Document: McFarlane et al. (2008)
Species at Risk Act Recovery Strategy and Action Plan: DFO (2011a), DFO (2020a)
COSEWIC Status Report: COSEWIC (2018)
COSEWIC Status: Endangered, SARA Status: Endangered

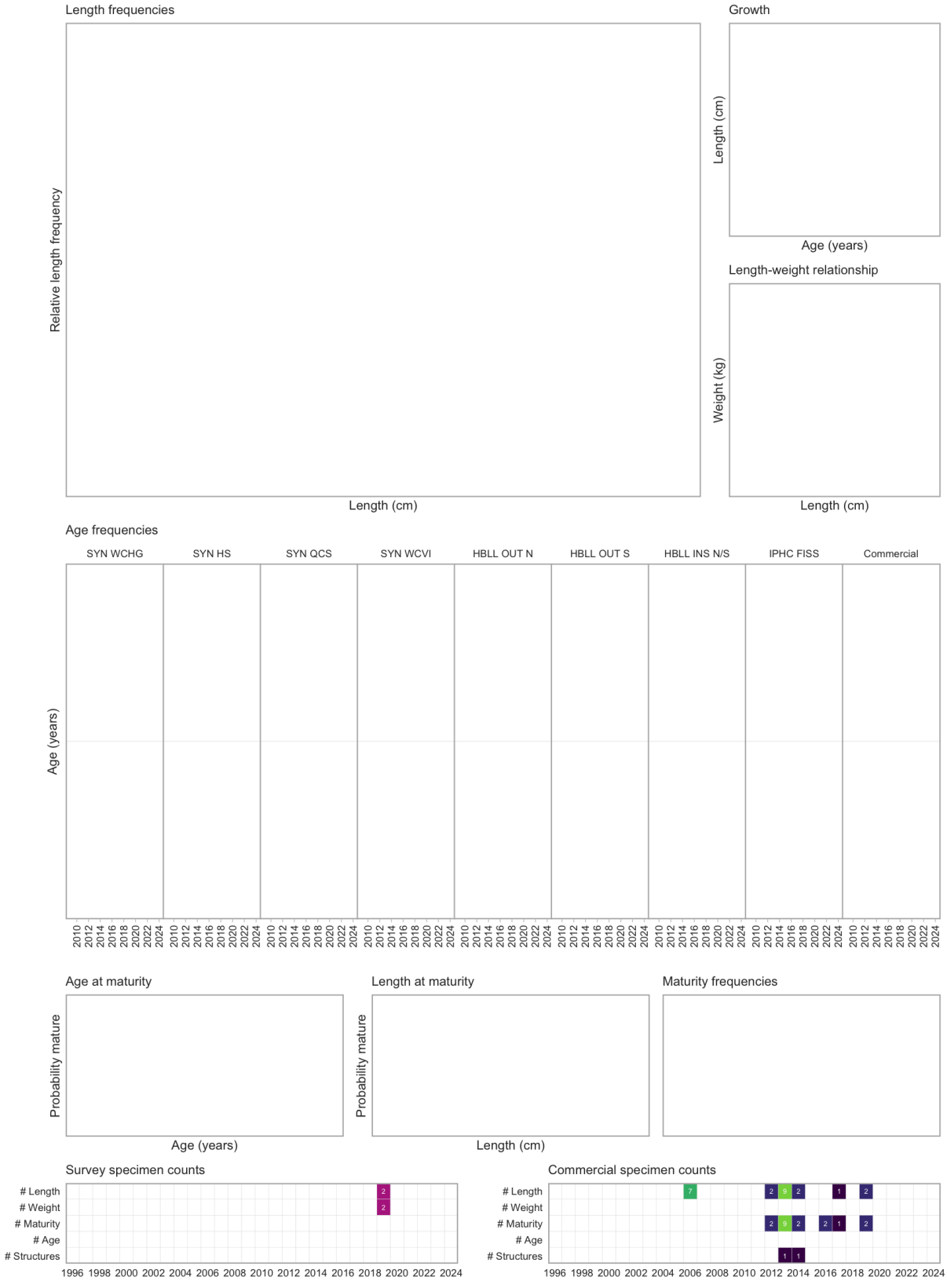



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.3 Salmon Shark

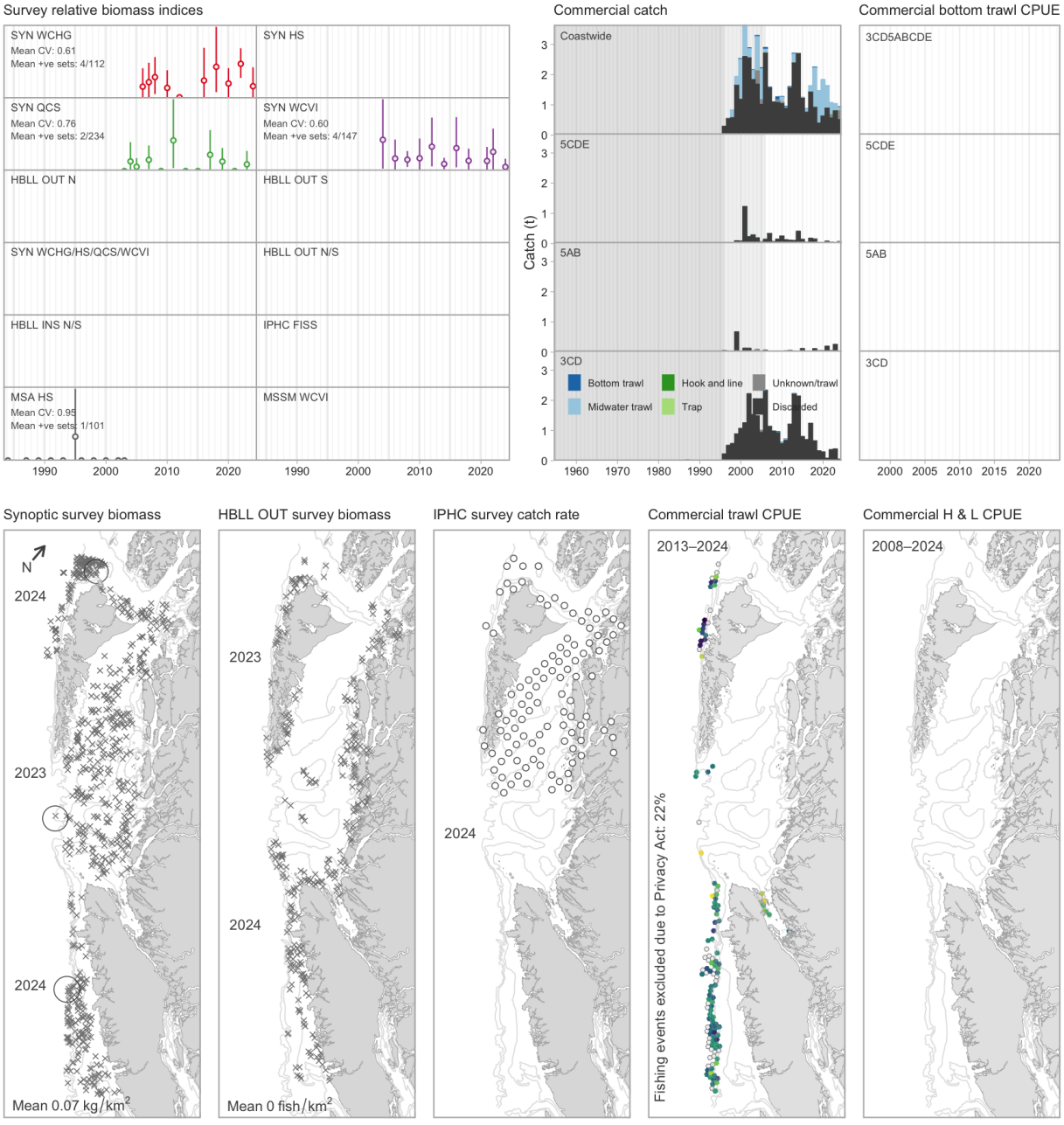
Lamna ditropis (036)
Order: Lamniformes, Family: Lamnidae, FishBase, WoRMS

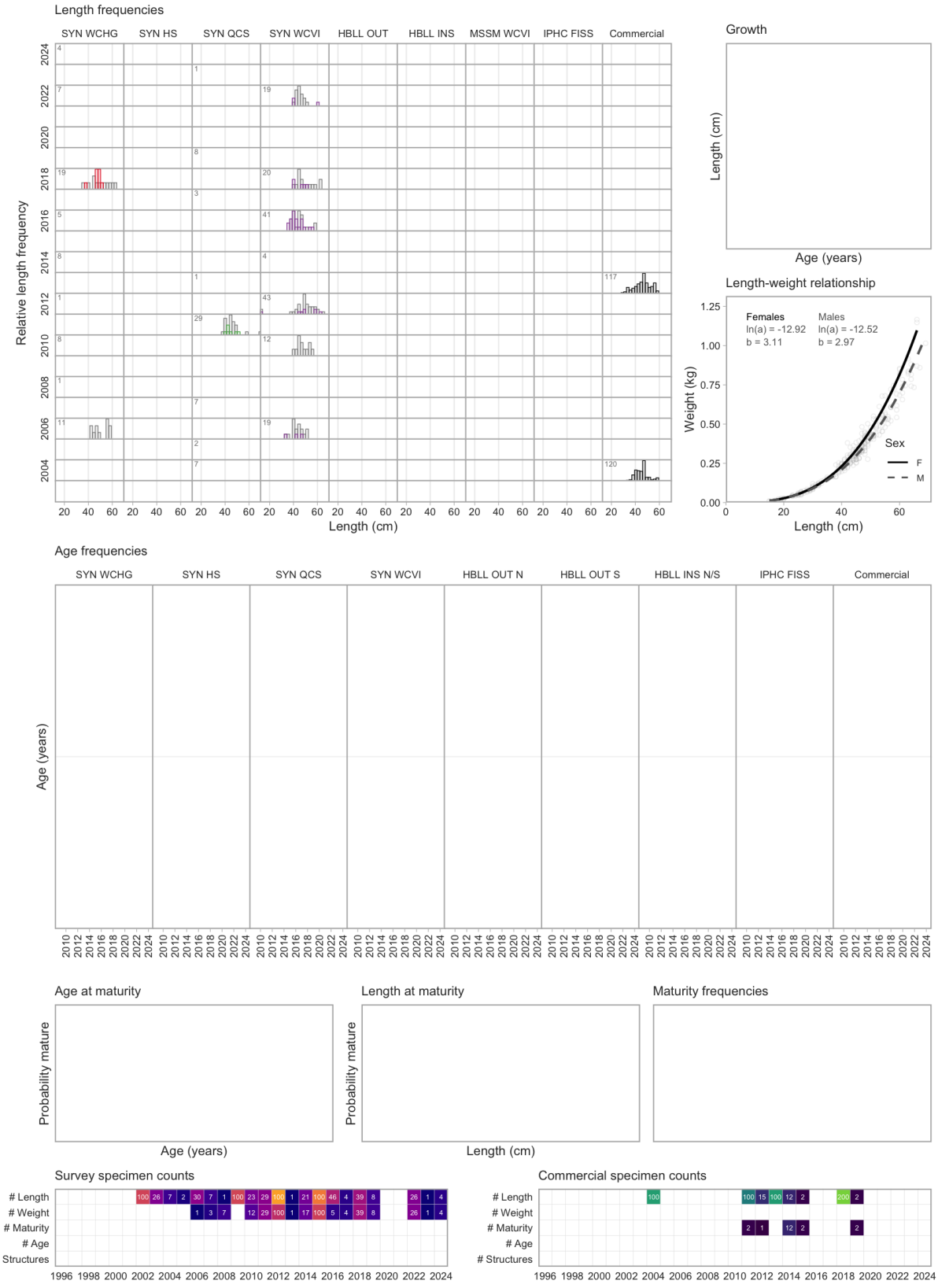



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.4 Brown Cat Shark

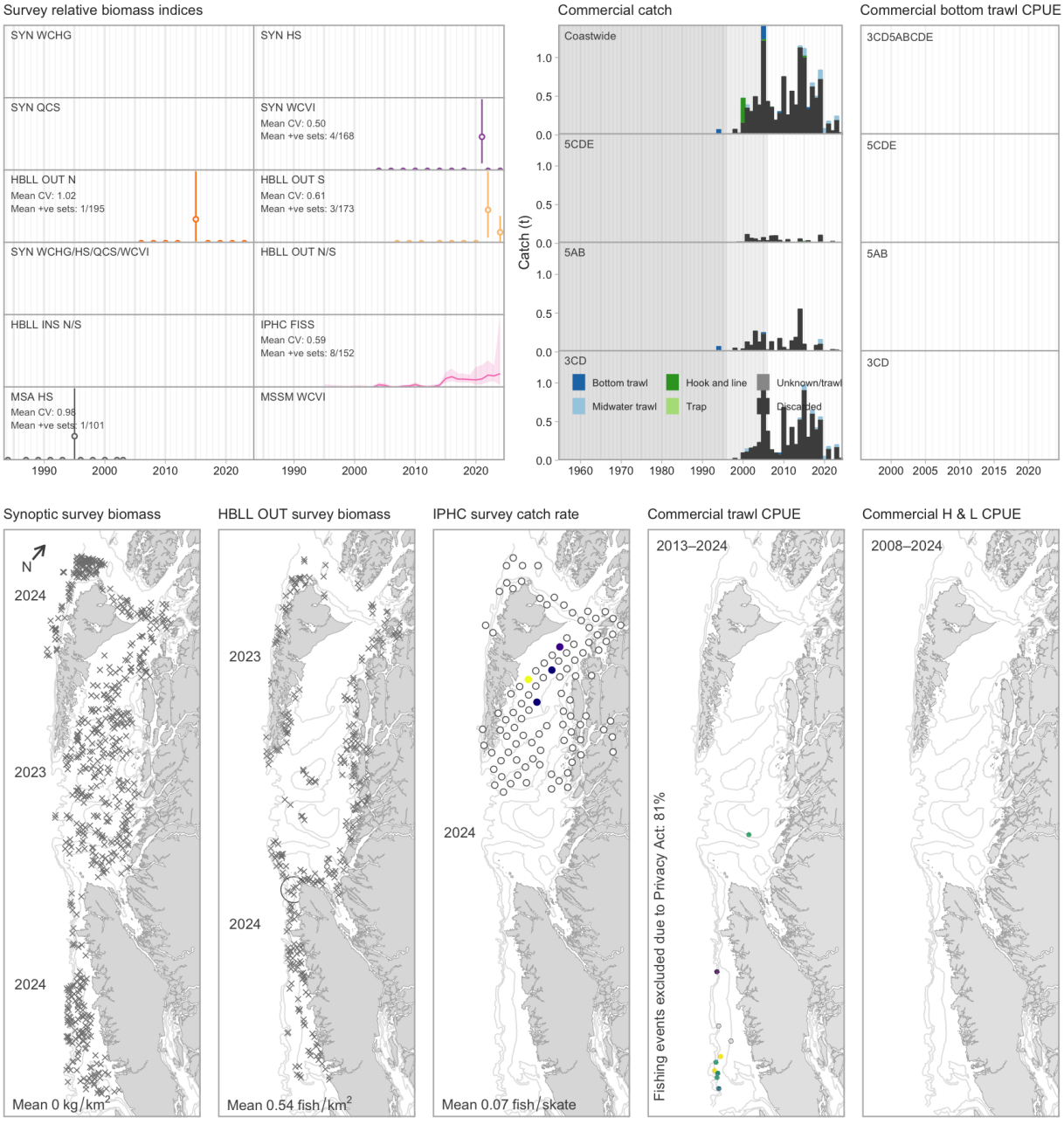
Apristurus brunneus (038)
Order: Carcharhiniformes, Family: Pentanchidae, FishBase, WoRMS
COSEWIC Annual Report: COSEWIC (2007b)
COSEWIC Status: Data Deficient, SARA Status: No Status

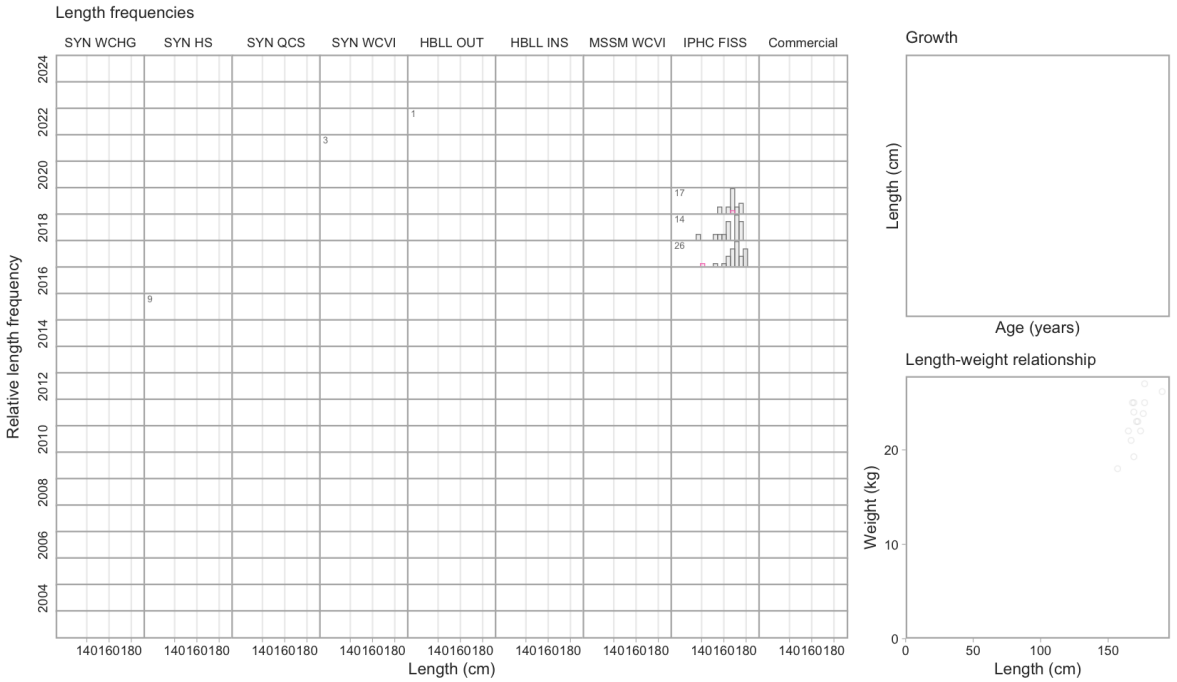


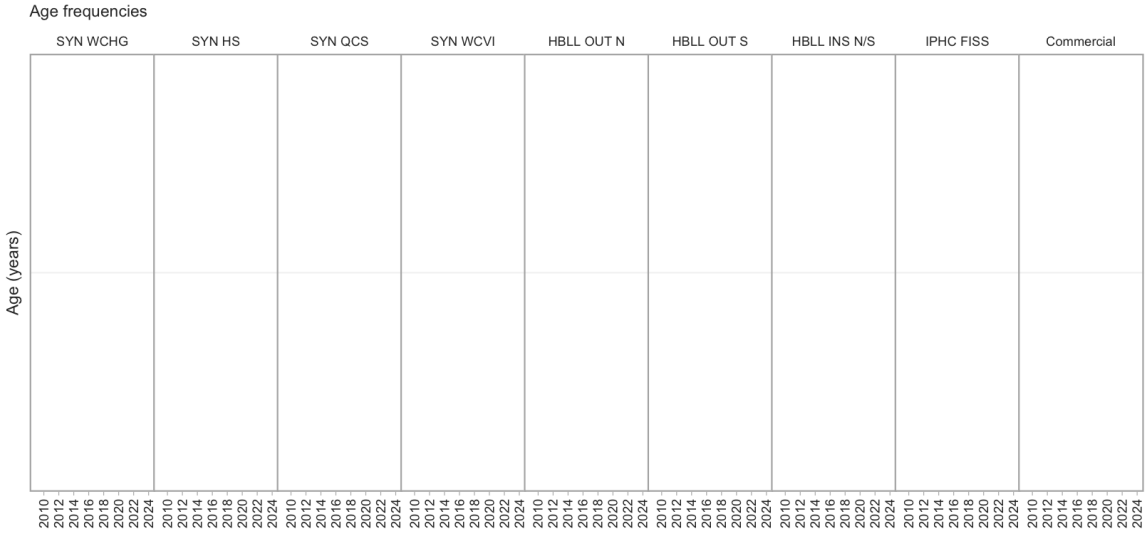

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.92
b = 3.11
Males
ln(a) = -12.52
b = 2.97
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

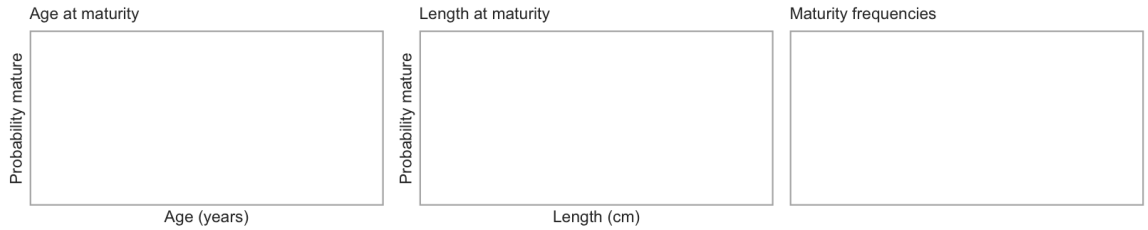
6.5 Tope Shark

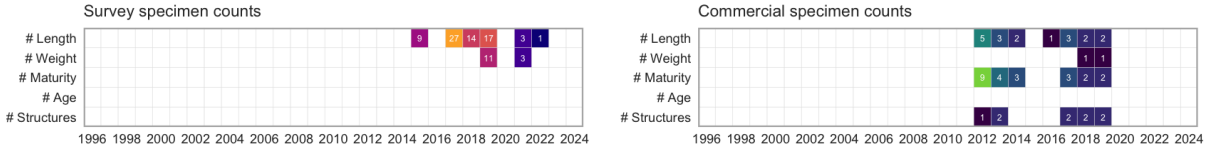
Galeorhinus galeus (040)
Order: Carcharhiniformes, Family: Triakidae, FishBase, WoRMS
COSEWIC Status Report: COSEWIC (2021)
COSEWIC Status: Special Concern, SARA Status: Special Concern




Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)

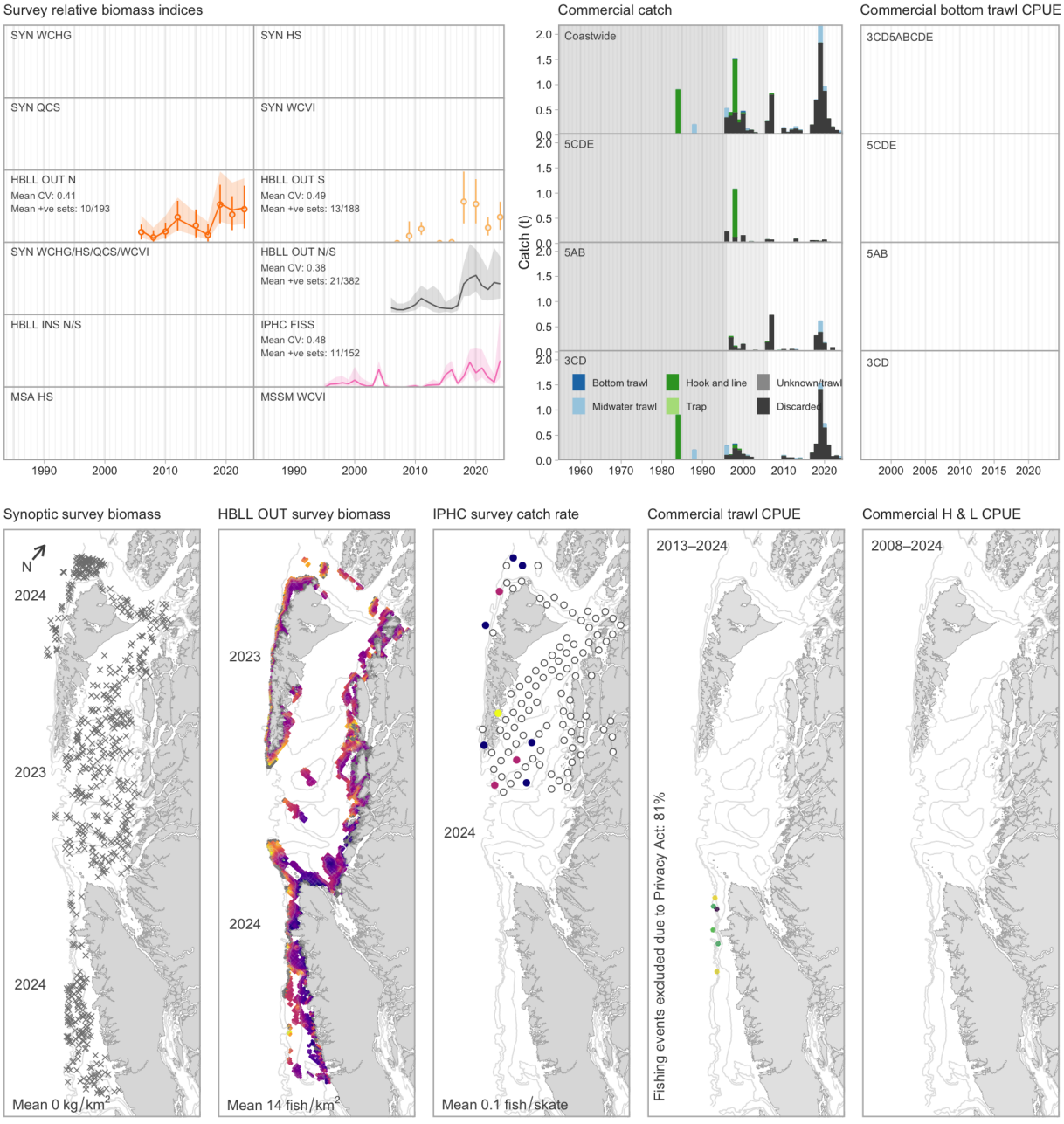

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)

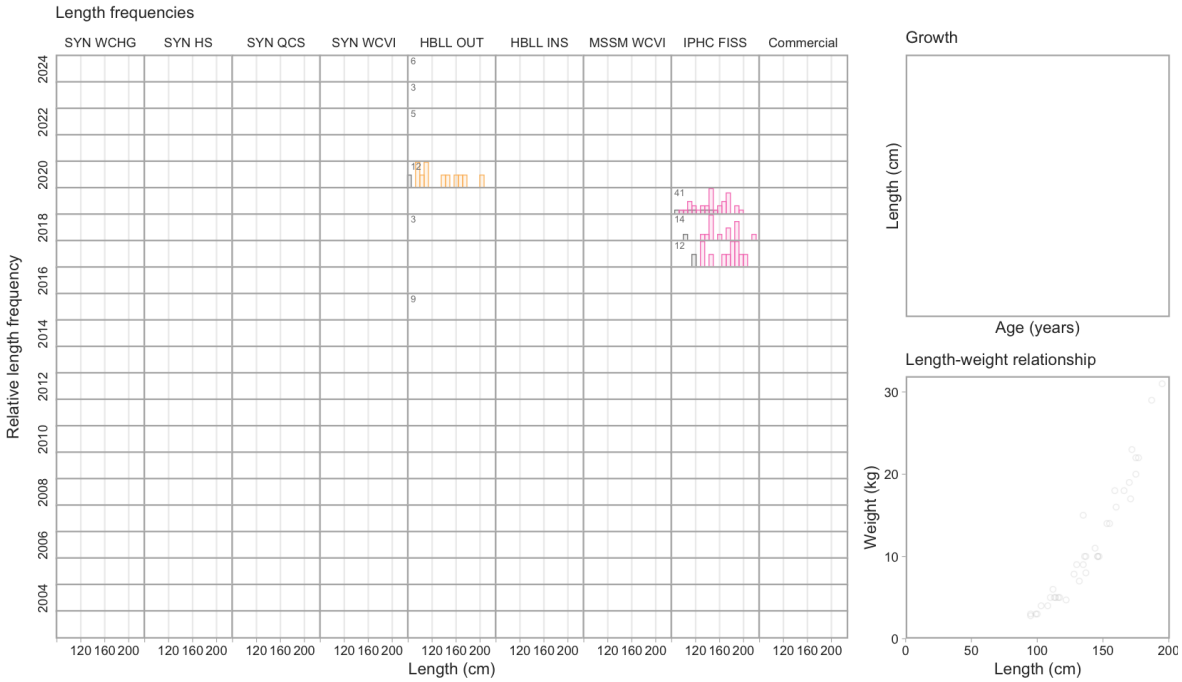

Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies

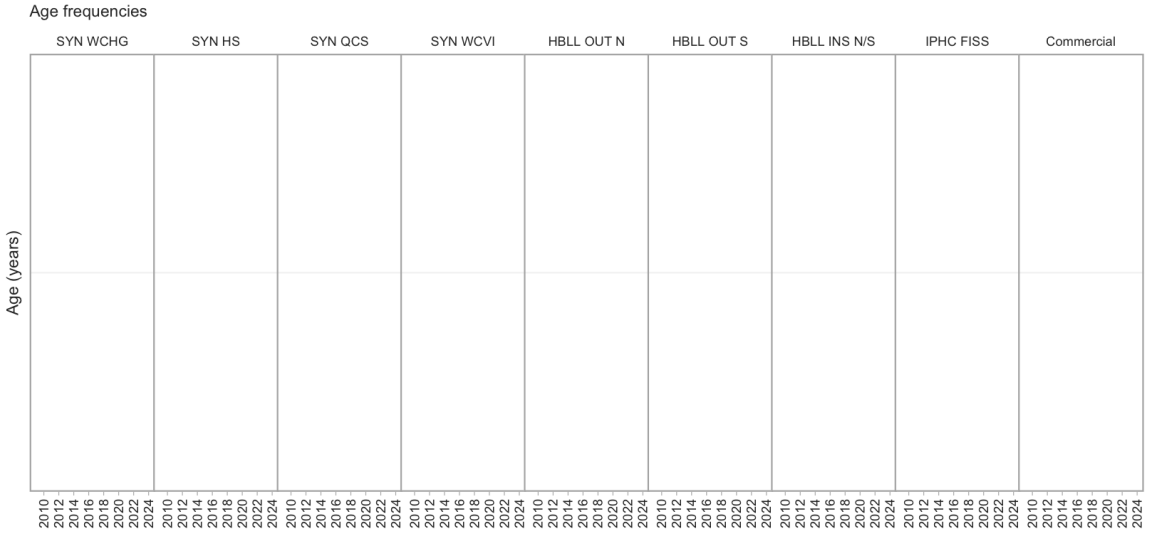

Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

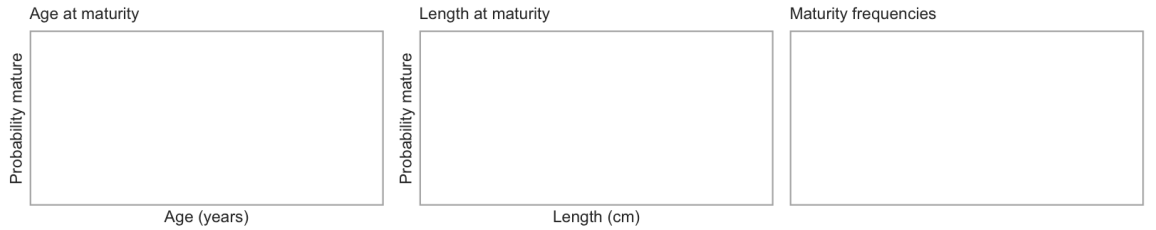
6.6 Blue Shark

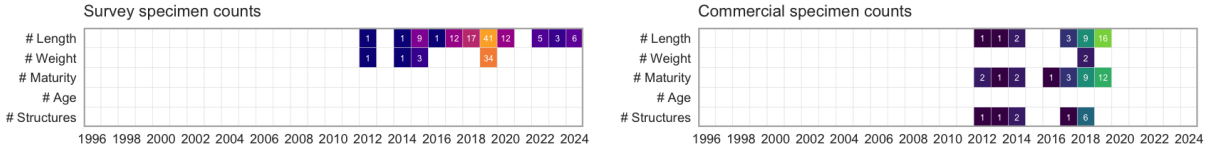
Prionace glauca (041)
Order: Carcharhiniformes, Family: Carcharhinidae, FishBase, WoRMS
COSEWIC Status Report: COSEWIC (2016)
COSEWIC Status: Not at Risk, SARA Status: No Status




Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)

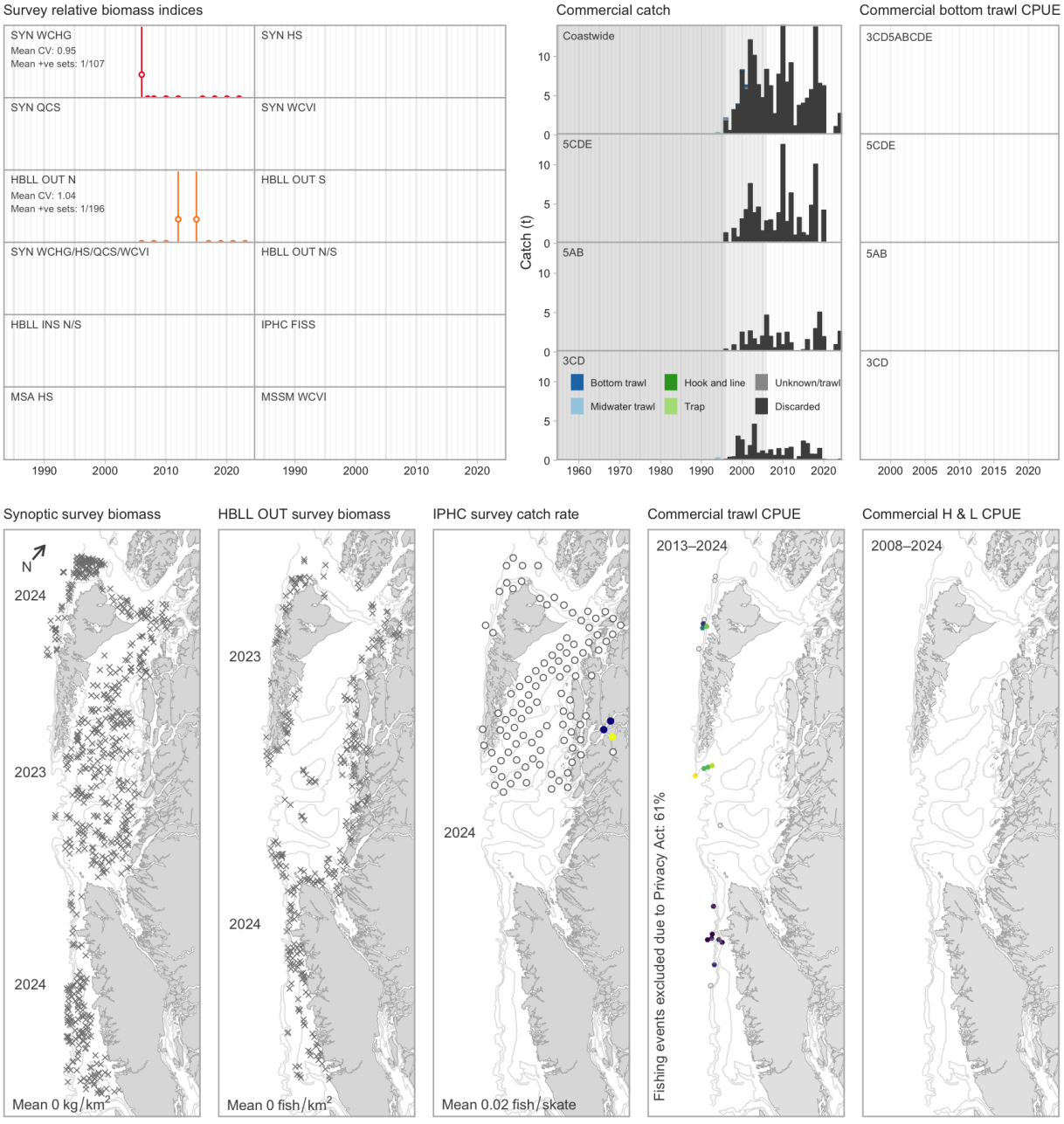

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)

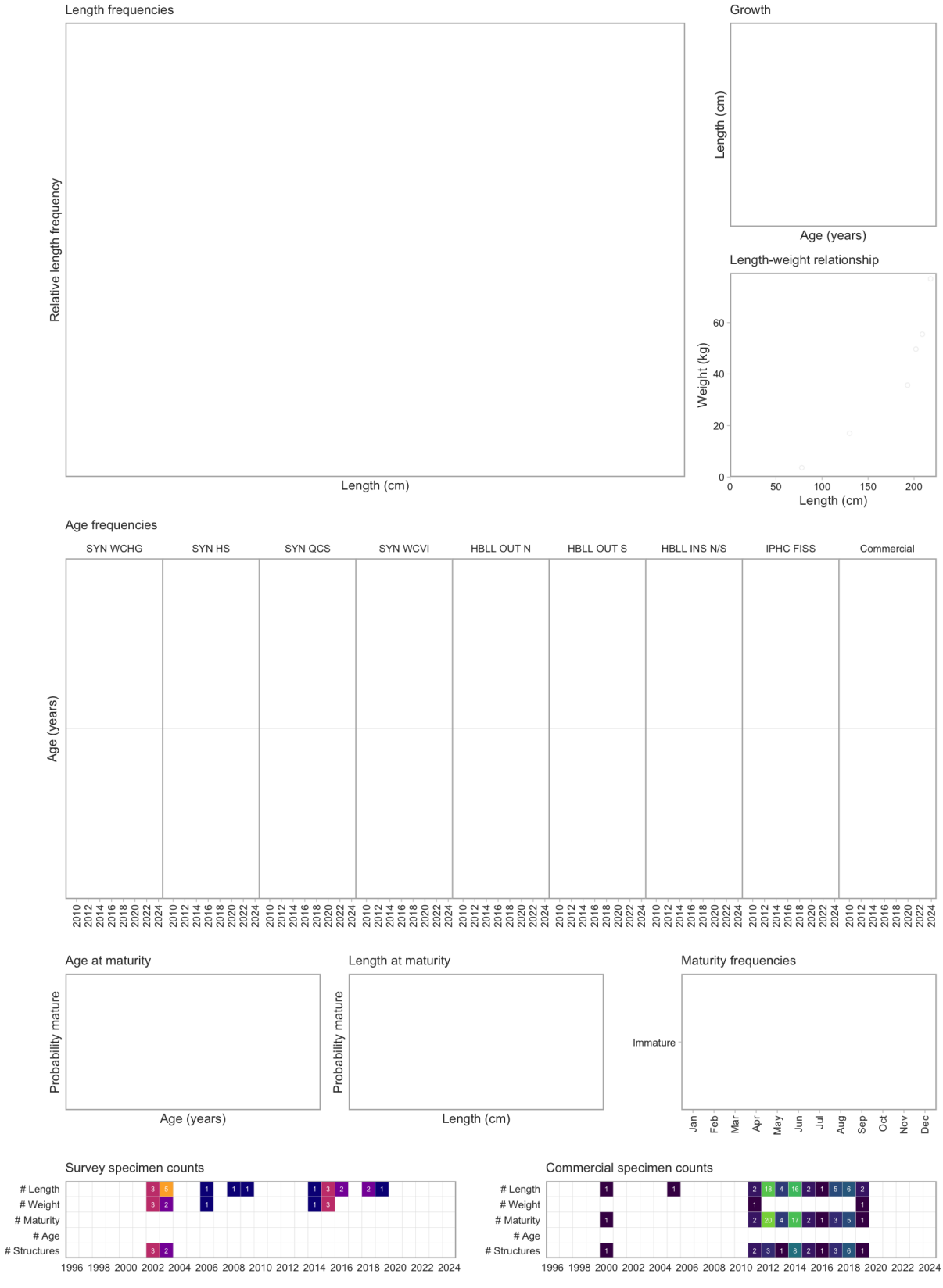

Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies


Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.7 Pacific Sleeper Shark

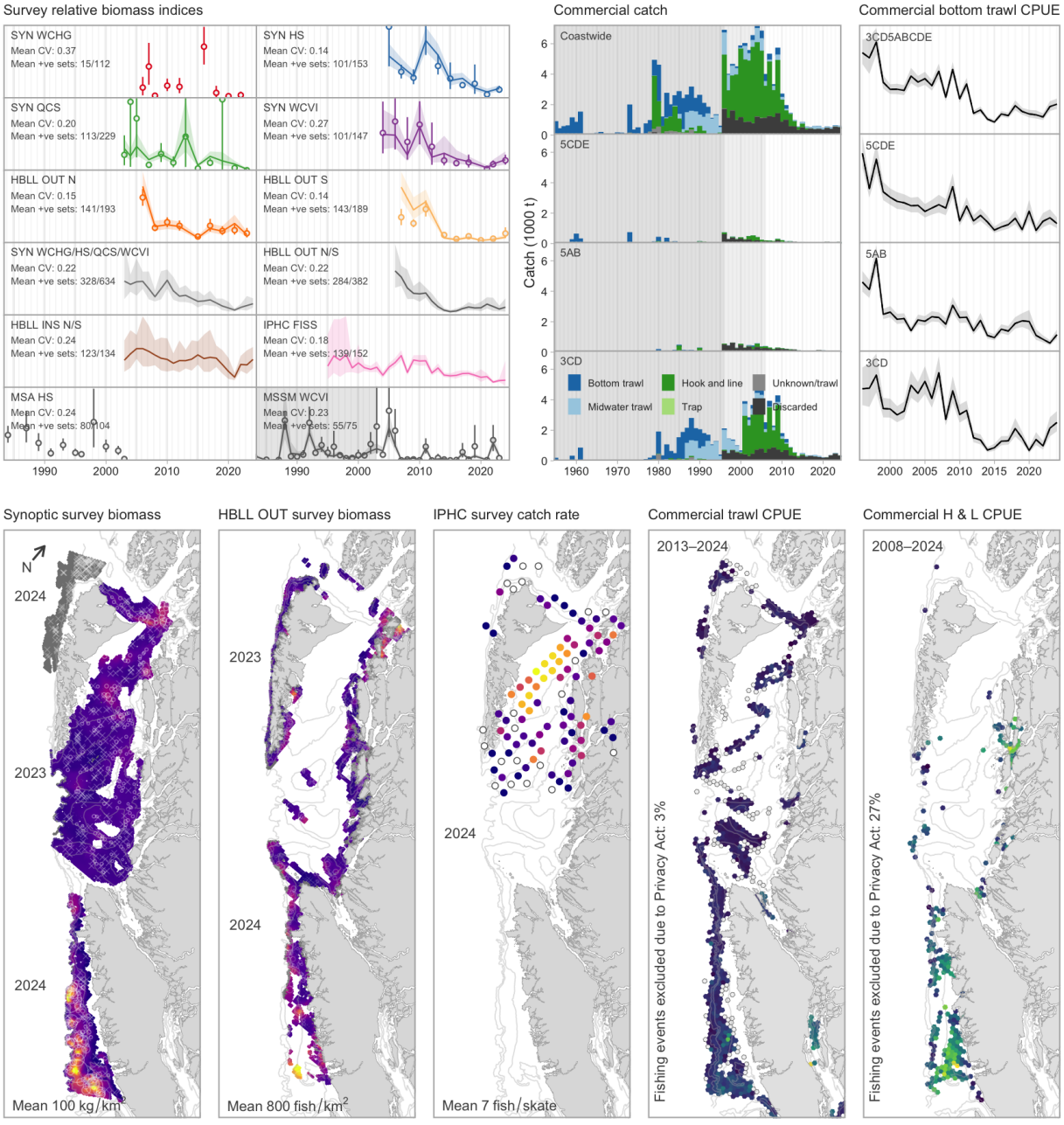
Somniosus pacificus (043)
Order: Squaliformes, Family: Somniosidae, FishBase, WoRMS

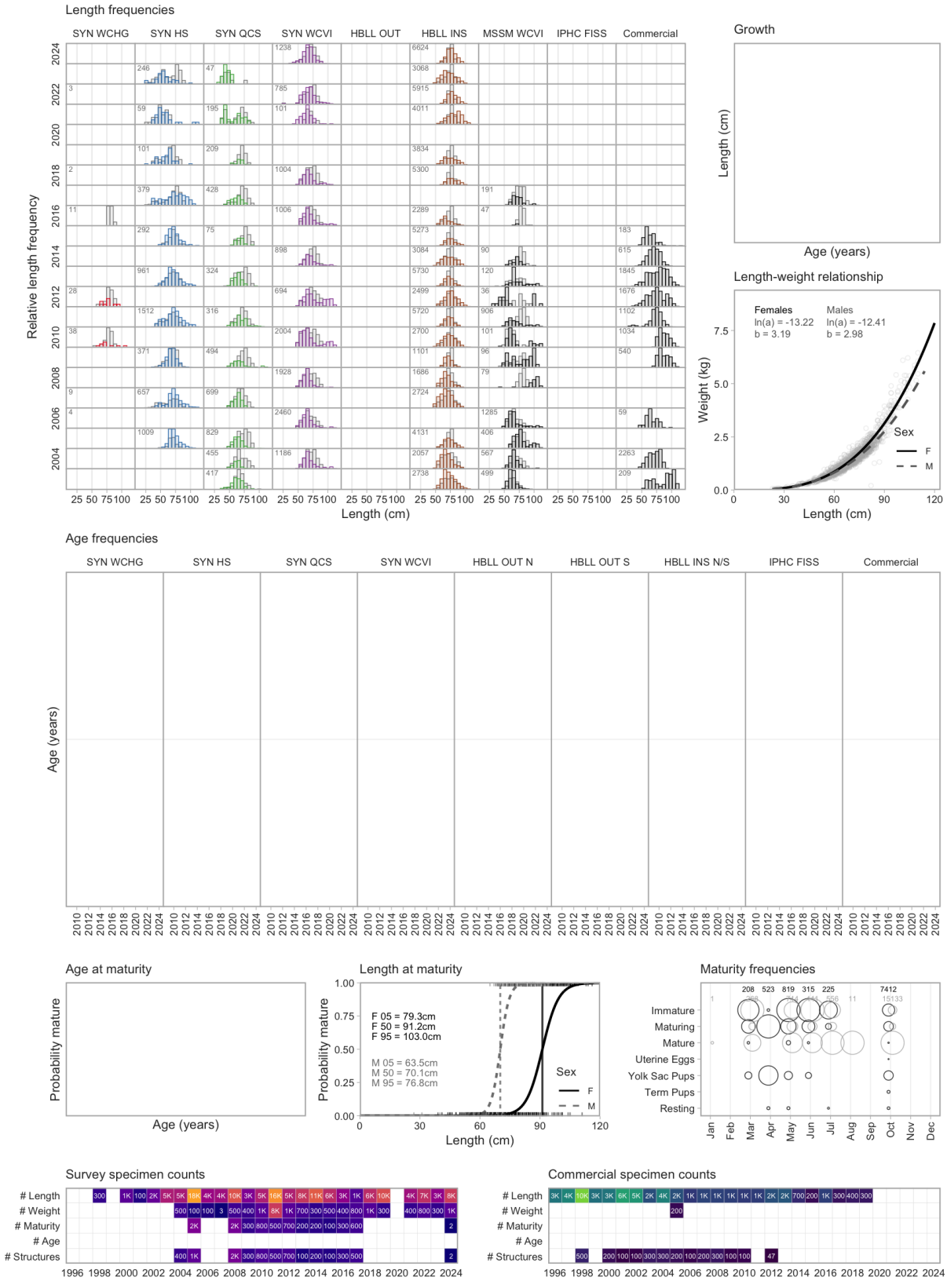



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
0
20
40
60
0
50
100
150
200
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
2010
2012
2014
2016
2018
2020
2022
2024
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Immature
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.8 Pacific Spiny Dogfish

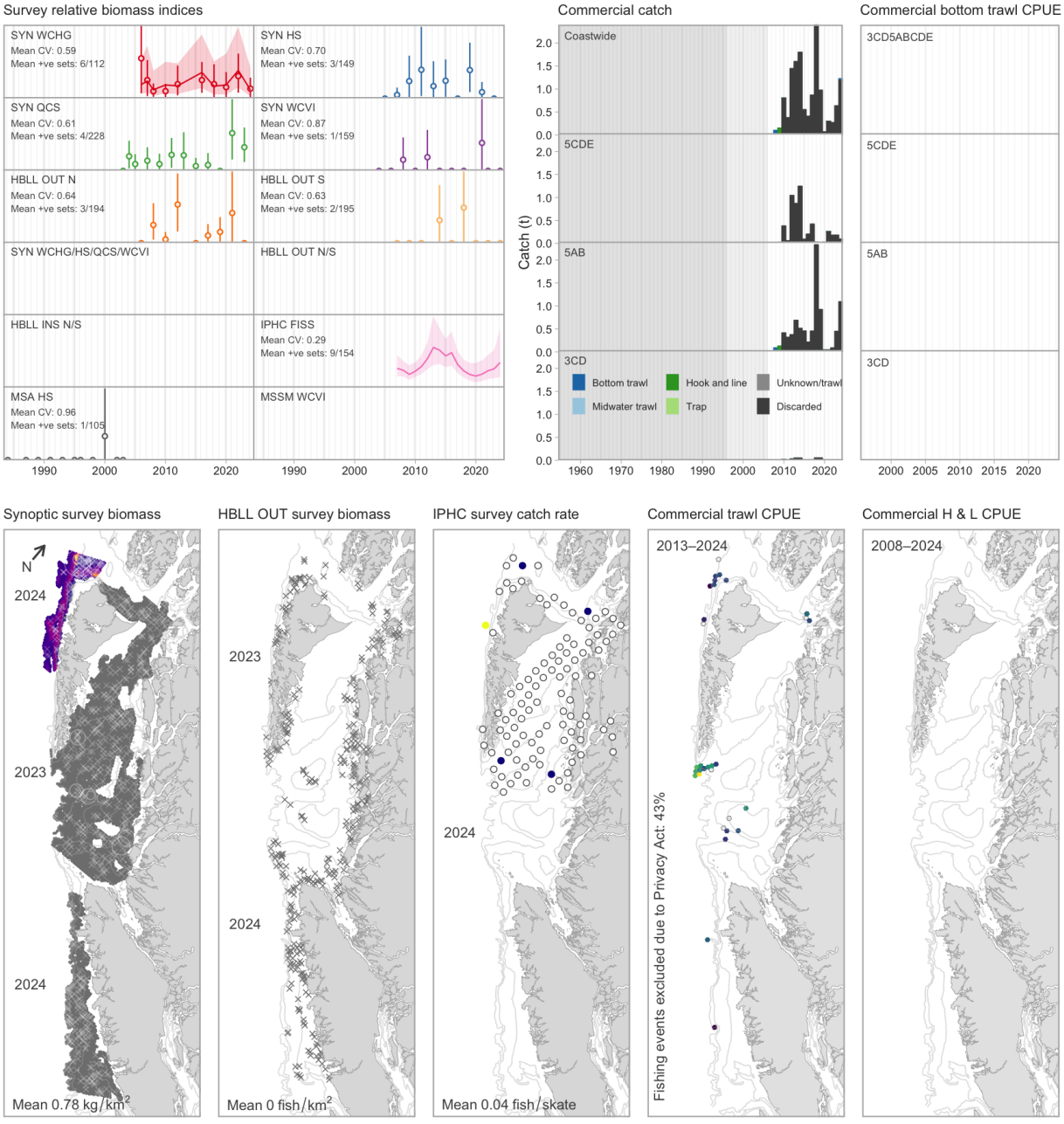
Squalus suckleyi (044)
Order: Squaliformes, Family: Squalidae, FishBase, WoRMS
Last Research Documents: Galluci et al. (2011), Anderson et al. (2025)
Last Science Advisory Report: DFO (2010)
COSEWIC Status Report: COSEWIC (2011)
COSEWIC Status: Special Concern, SARA Status: No Status

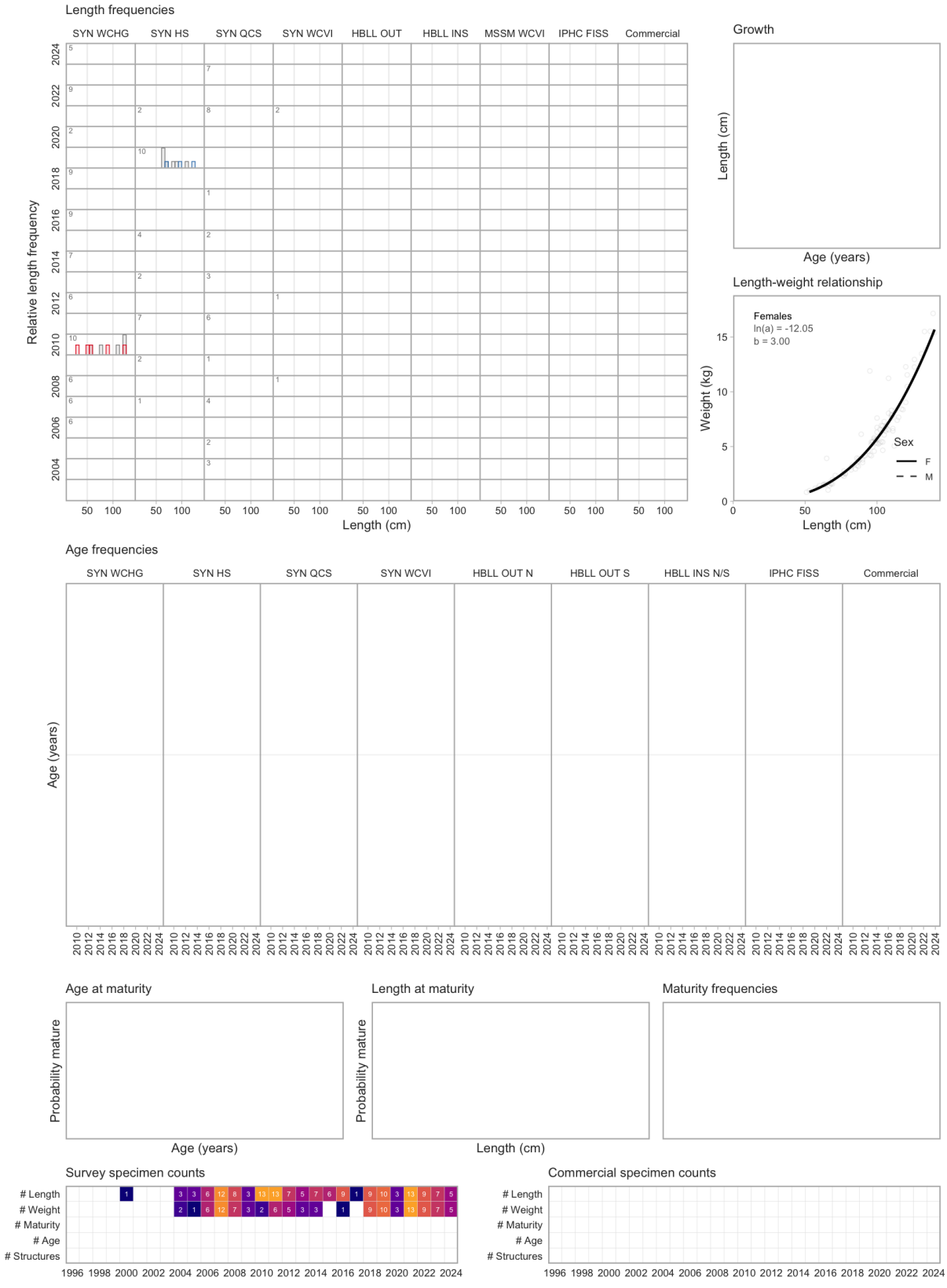



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -13.22
b = 3.19
Males
ln(a) = -12.41
b = 2.98
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
F 05 = 79.3cm
F 50 = 91.2cm
F 95 = 103.0cm
M 05 = 63.5cm
M 50 = 70.1cm
M 95 = 76.8cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Uterine Eggs
Yolk Sac Pups
Term Pups
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.9 Aleutian Skate

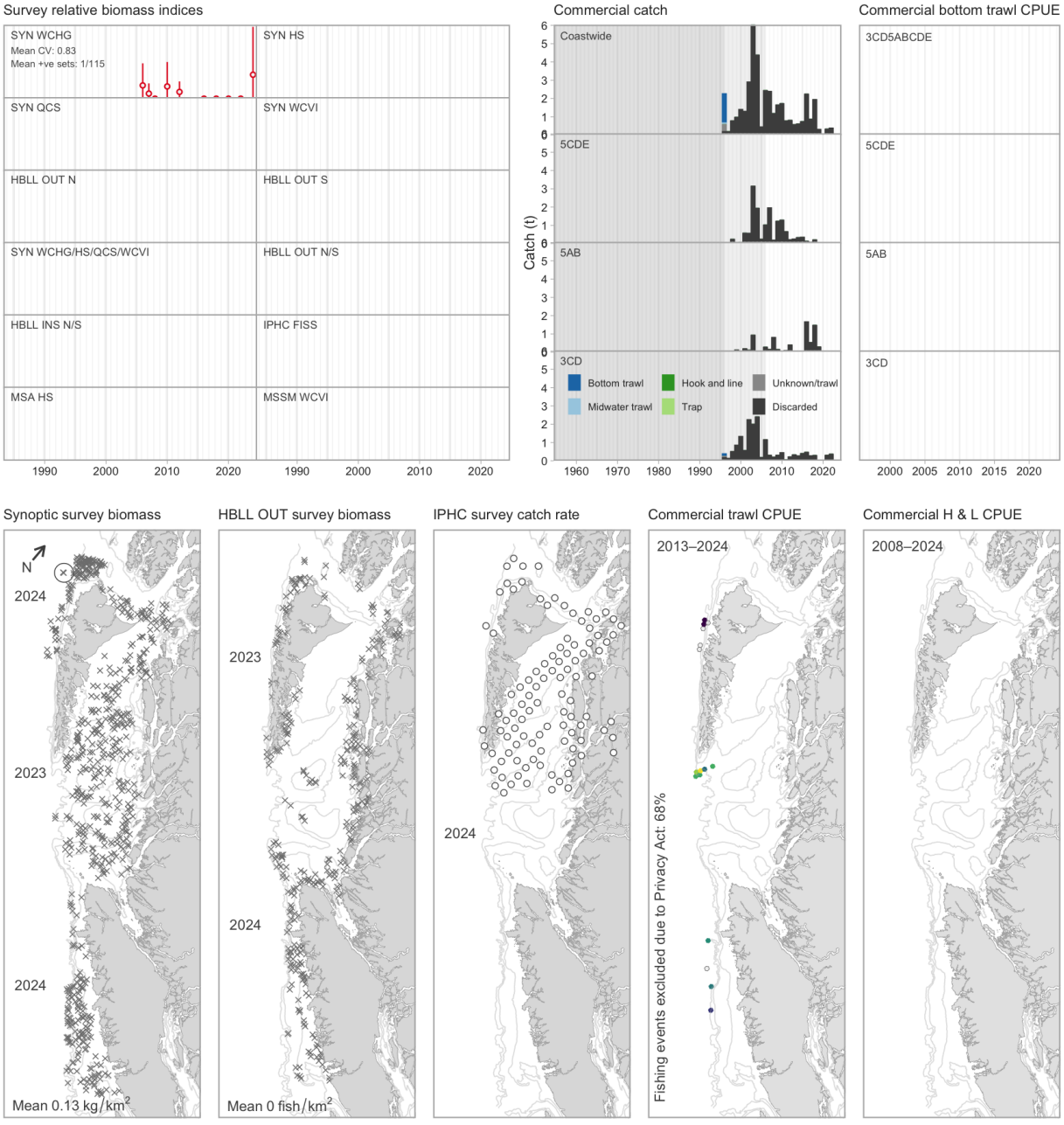
Bathyraja aleutica (052)
Order: Rajiformes, Family: Arhynchobatidae, FishBase, WoRMS

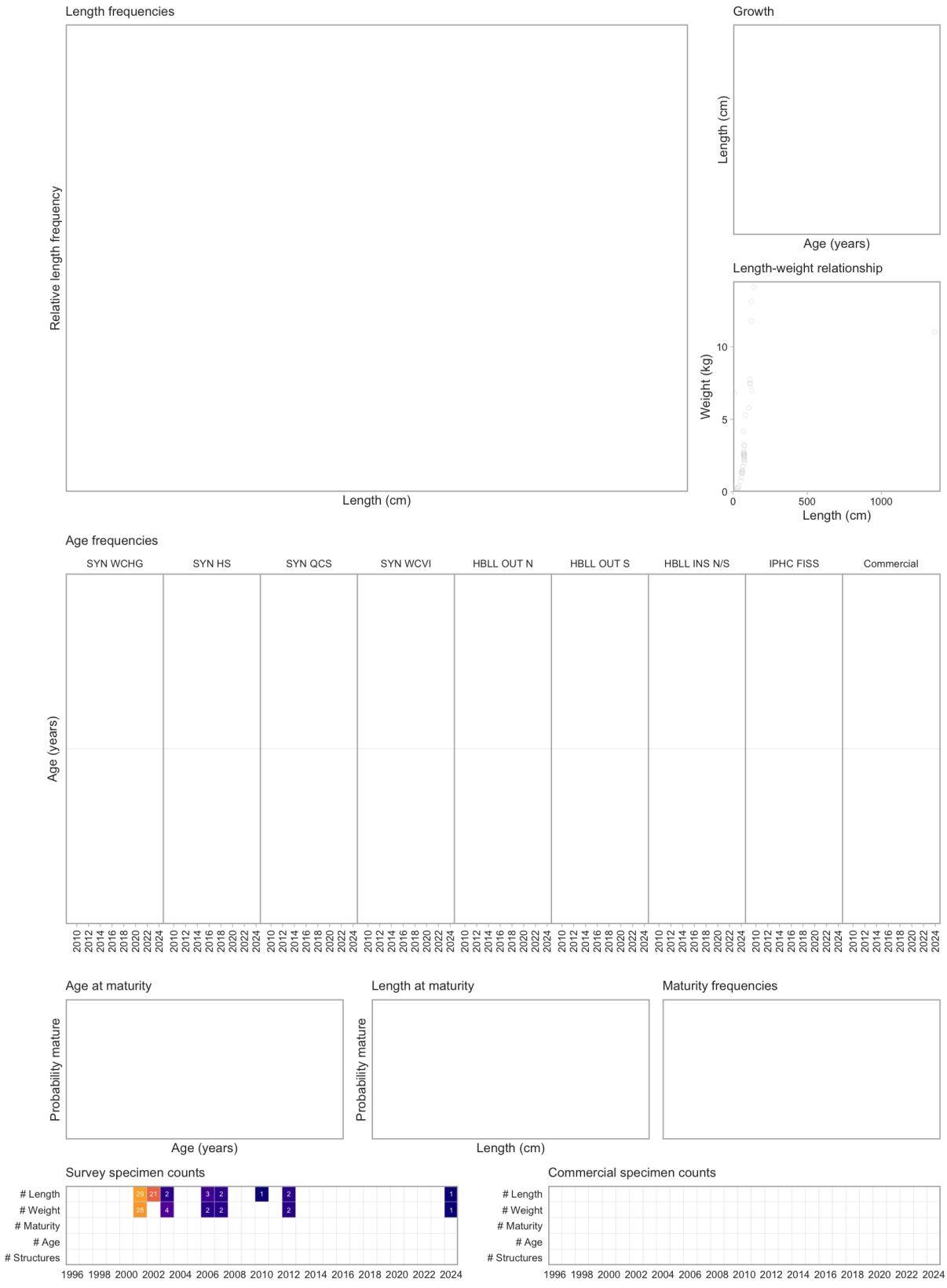



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.05
b = 3.00
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.10 Abyssal Skate

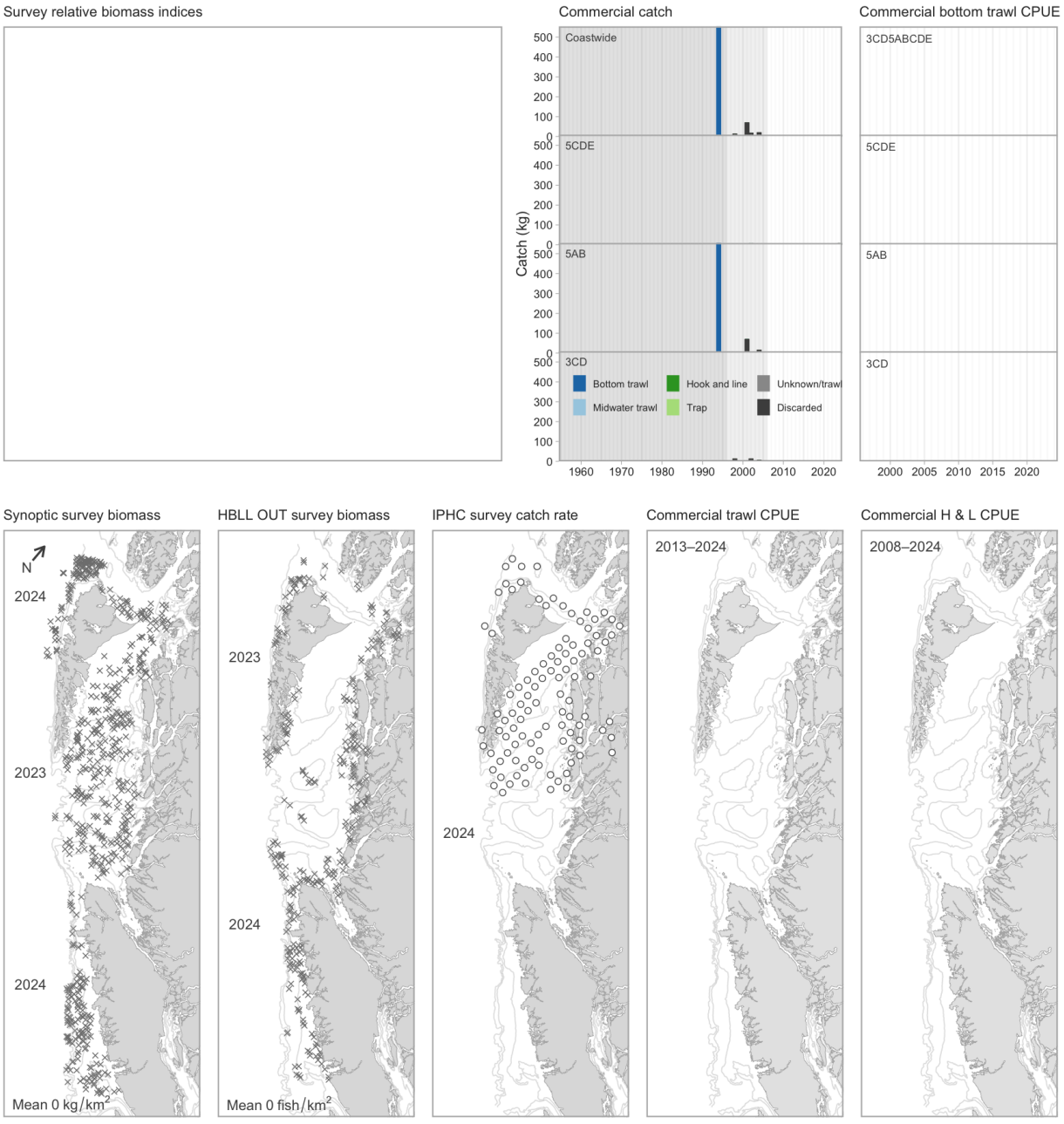
Bathyraja abyssicola (054)
Order: Rajiformes, Family: Arhynchobatidae, FishBase, WoRMS

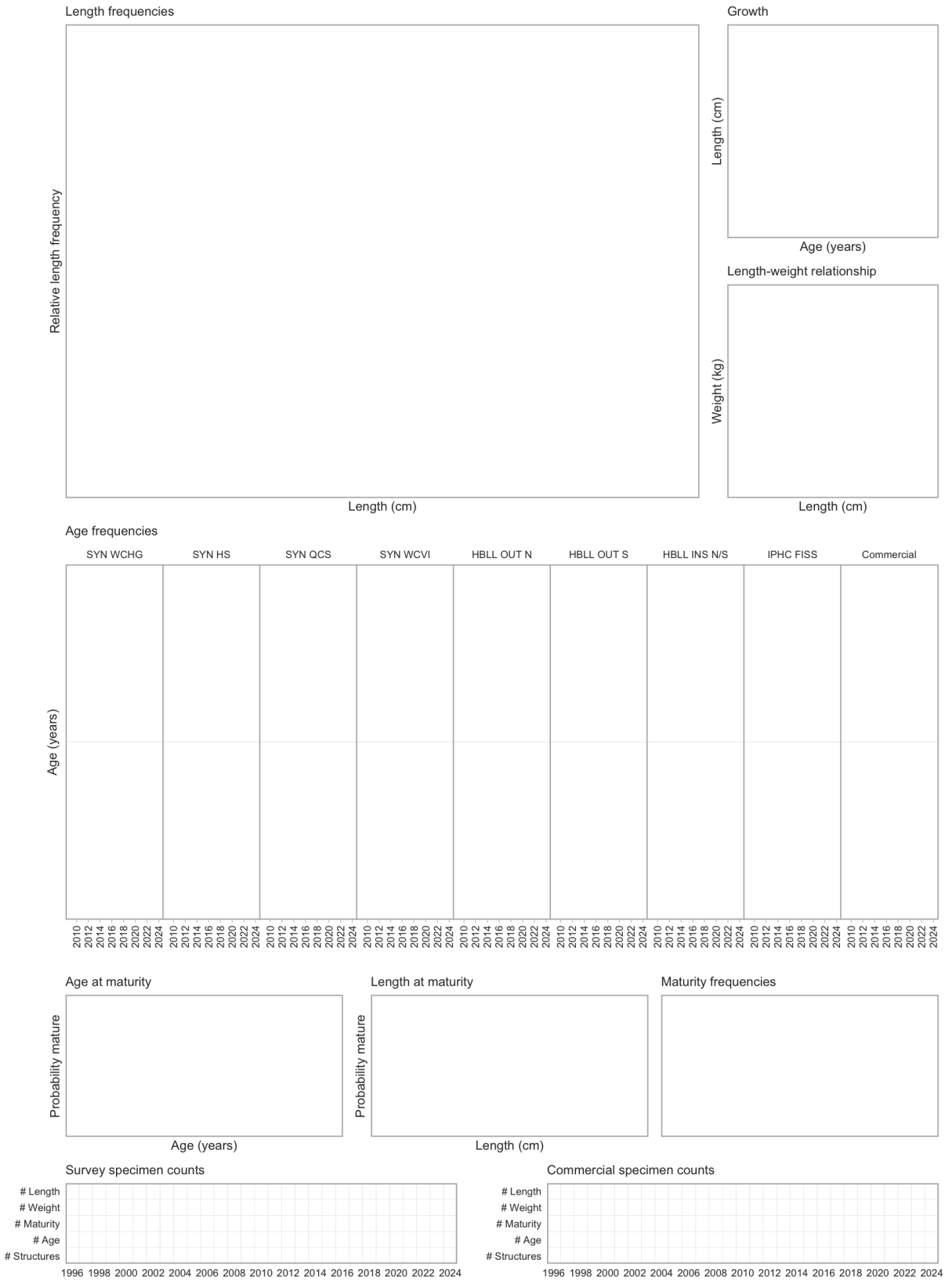



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
0
5
10
0
500
1000
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
2010
2012
2014
2016
2018
2020
2022
2024
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
29
21
2
3
2
1
2
1
28
4
2
2
2
1
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024

6.11 Broad Skate

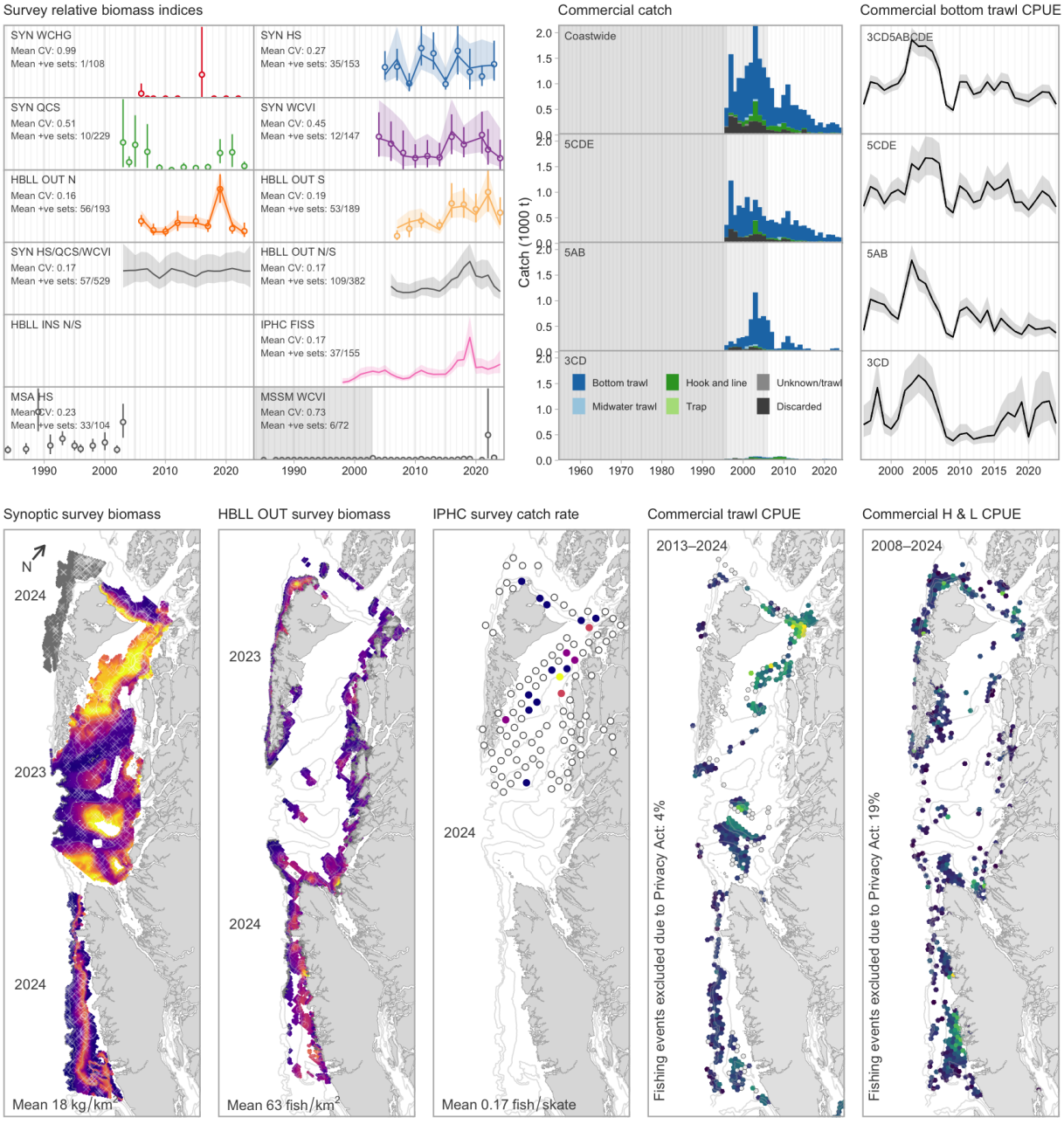
Amblyraja badia (055)
Order: Rajiformes, Family: Rajidae, FishBase, WoRMS

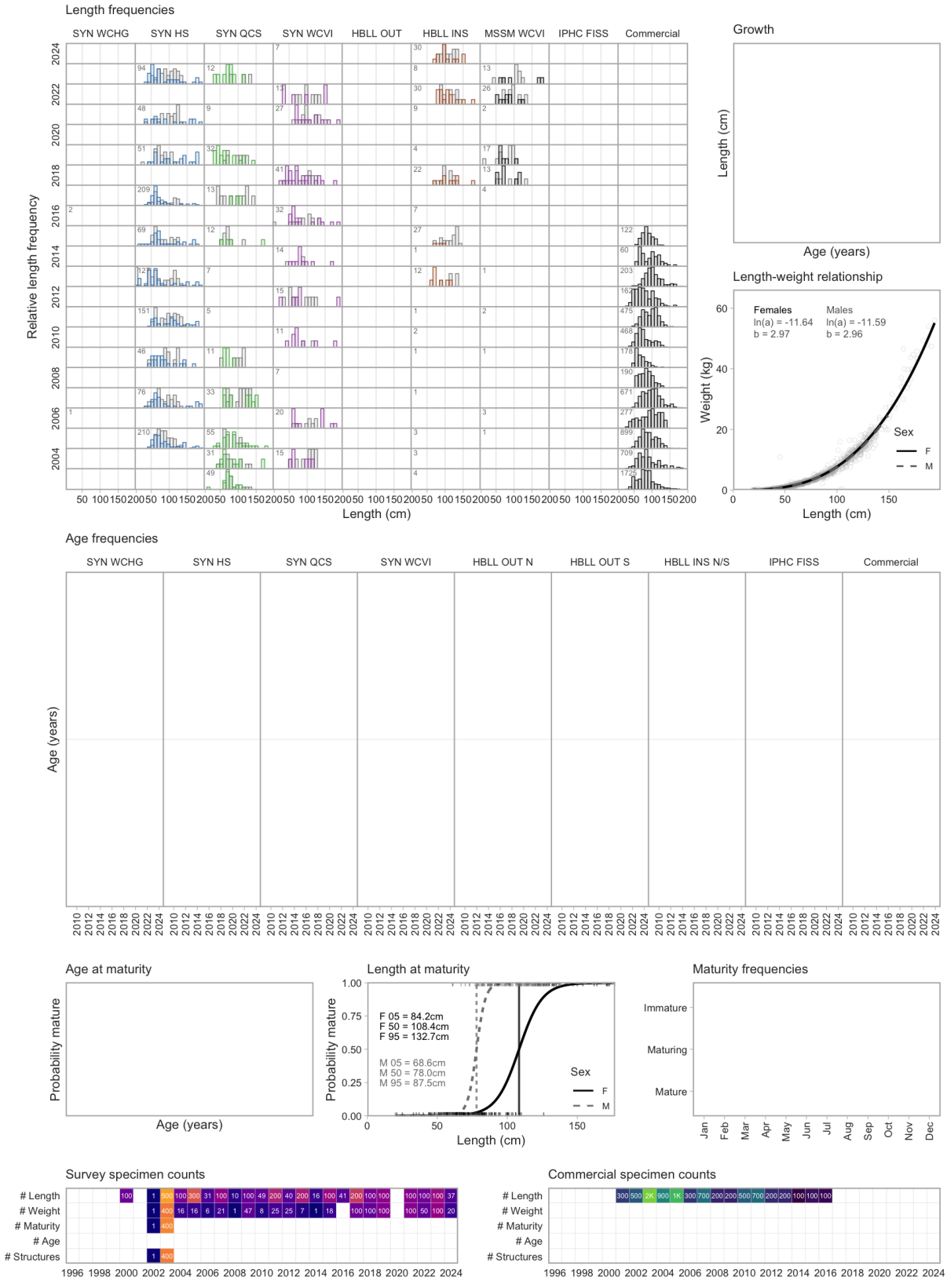



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.12 Big Skate

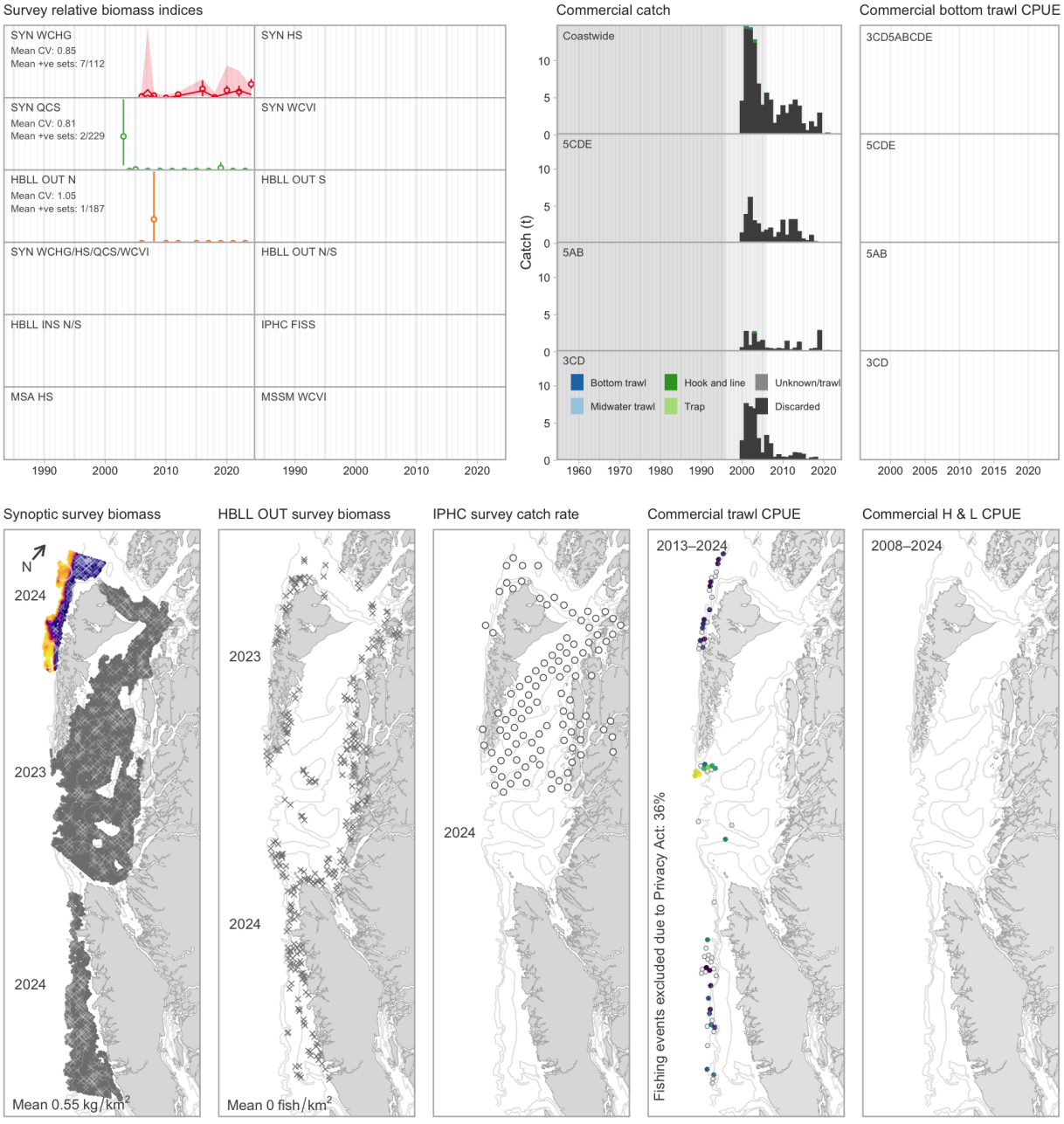
Beringraja binoculata (056)
Order: Rajiformes, Family: Rajidae, FishBase, WoRMS
Last Research Document: King et al. (2015)
Last Science Advisory Report: DFO (2014a)

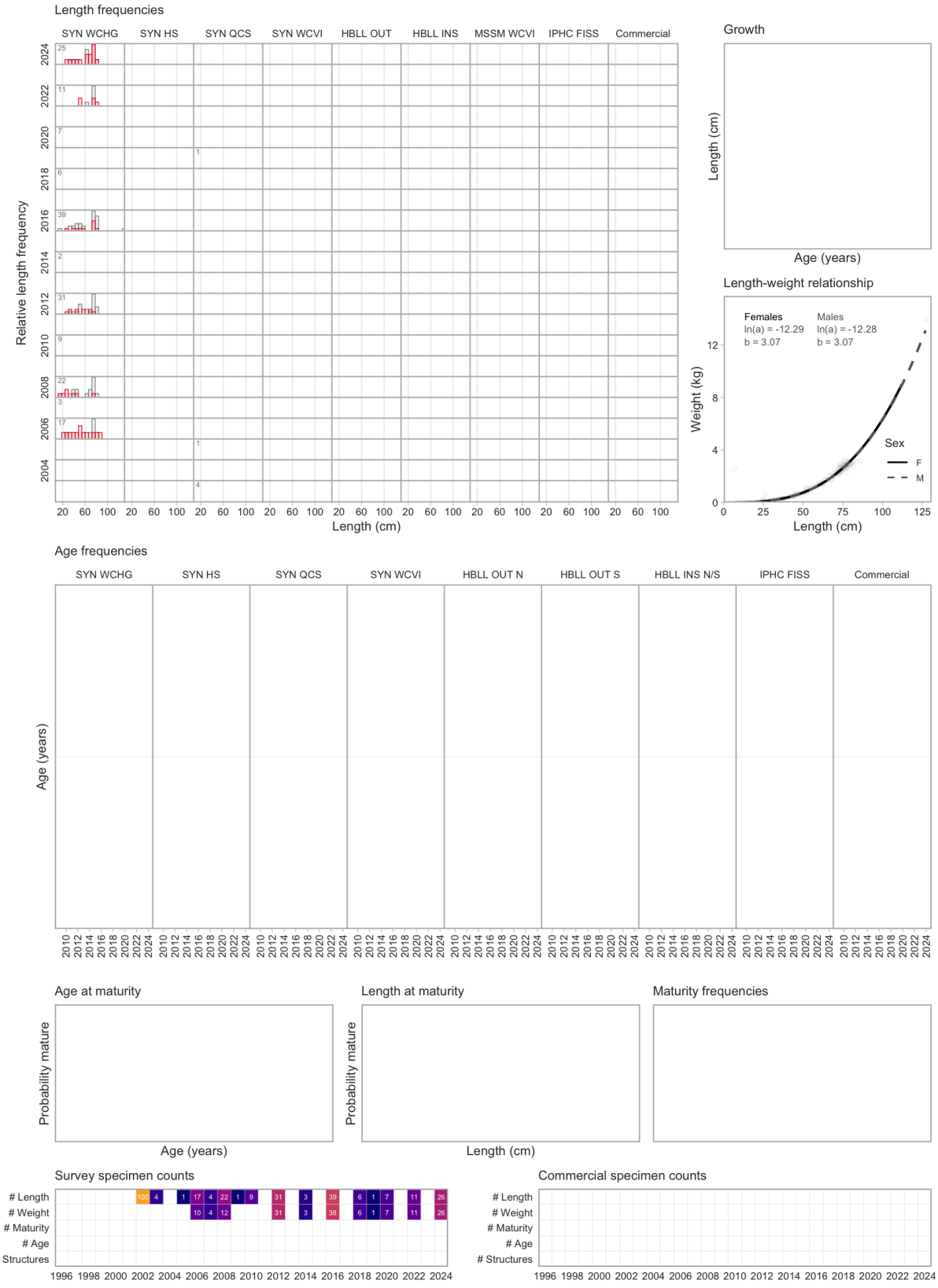



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.64
b = 2.97
Males
ln(a) = -11.59
b = 2.96
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
F 05 = 84.2cm
F 50 = 108.4cm
F 95 = 132.7cm
M 05 = 68.6cm
M 50 = 78.0cm
M 95 = 87.5cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.13 Roughtail Skate

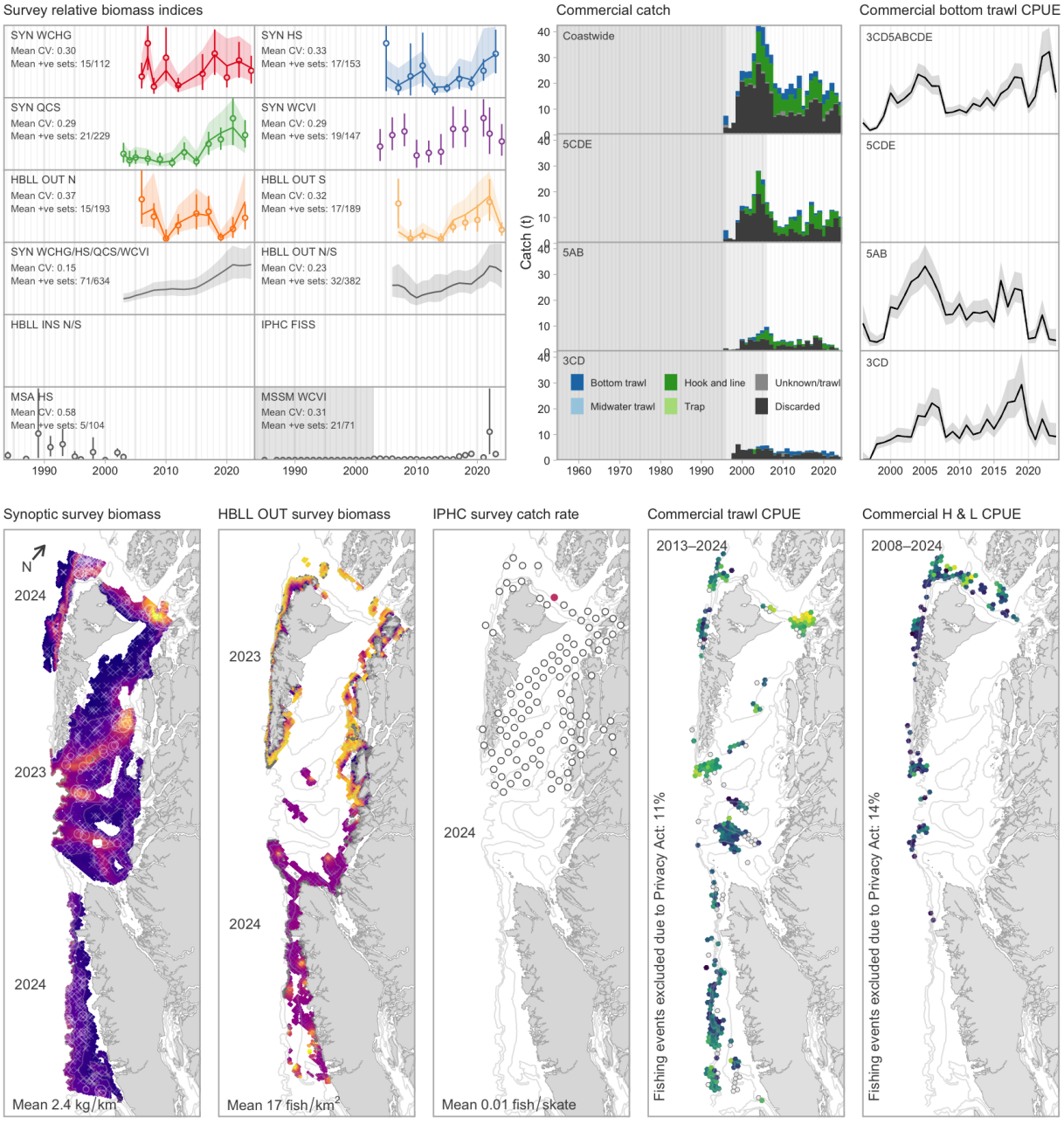
Bathyraja trachura (057)
Order: Rajiformes, Family: Arhynchobatidae, FishBase, WoRMS

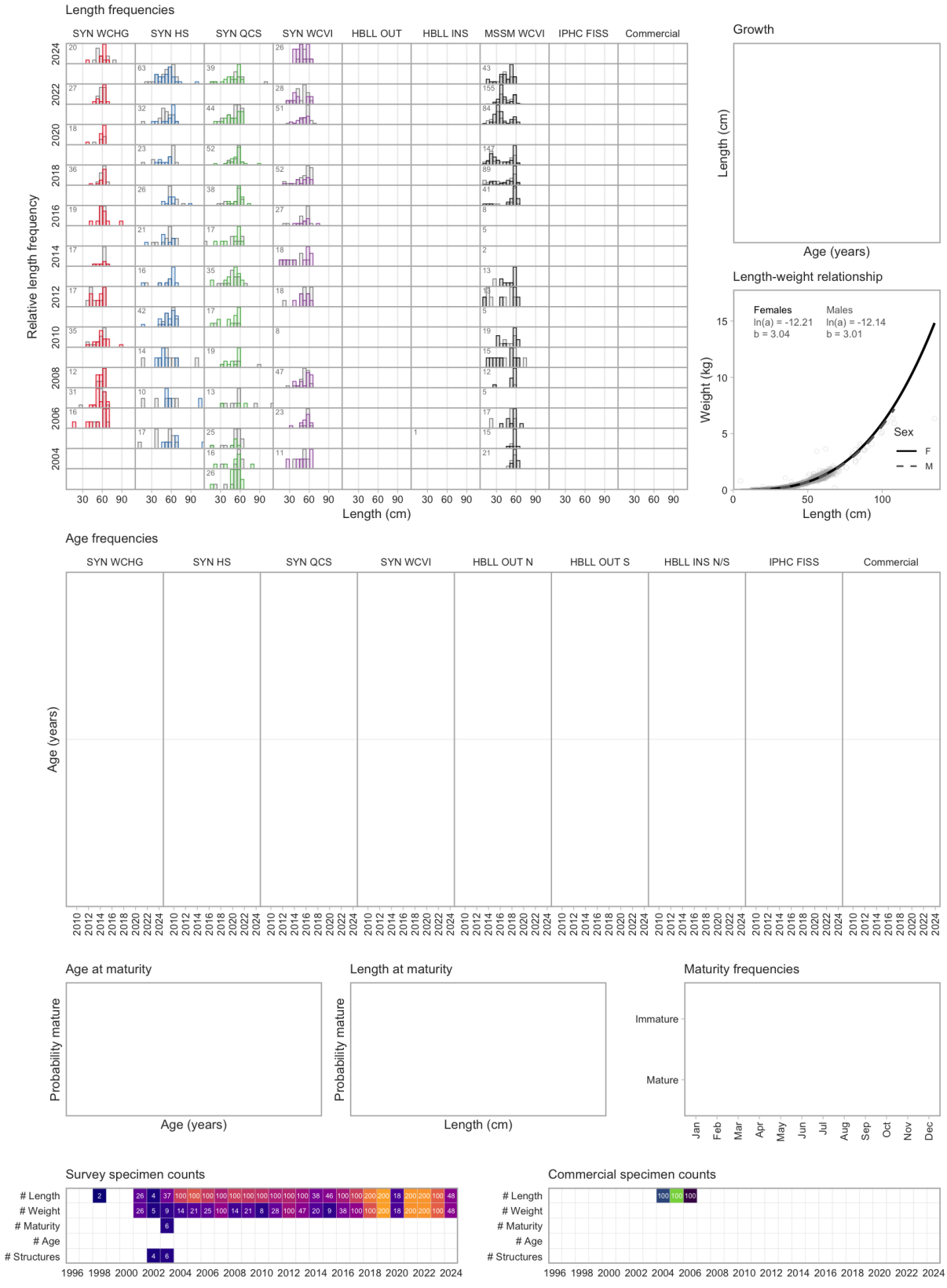



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.29
b = 3.07
Males
ln(a) = -12.28
b = 3.07
Weight (kg)
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.14 Sandpaper Skate

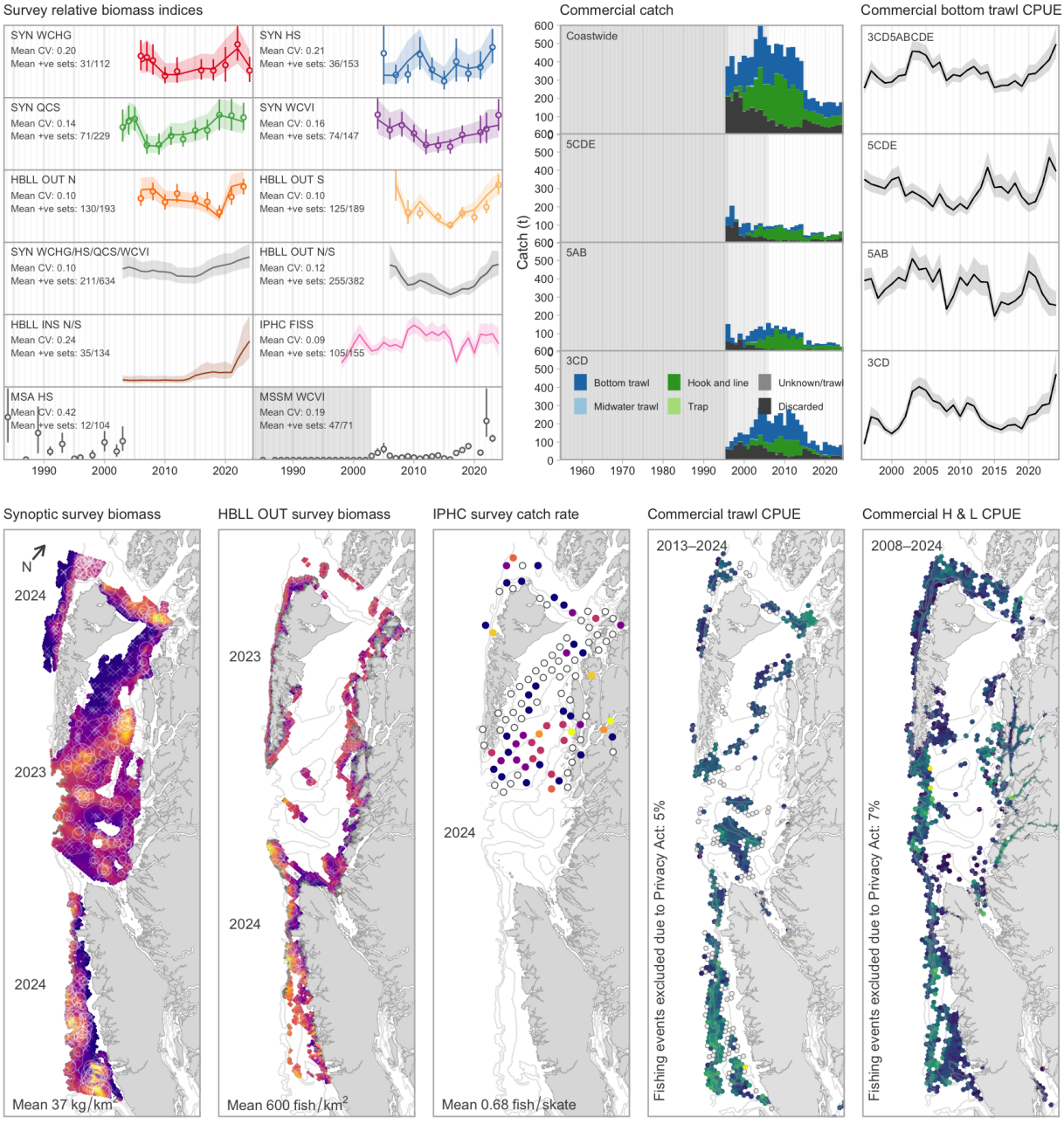
Bathyraja interrupta (058)
Order: Rajiformes, Family: Arhynchobatidae, FishBase, WoRMS
COSEWIC Annual Report: COSEWIC (2007b)
COSEWIC Status: Not at Risk, SARA Status: No Status

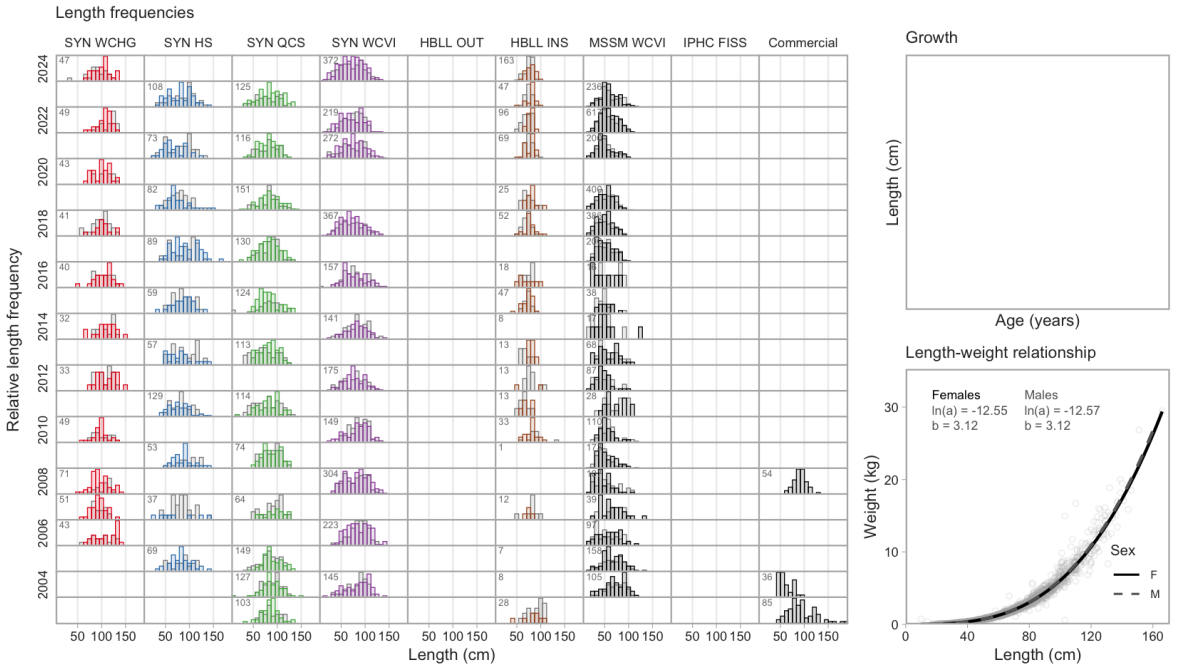



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.21
b = 3.04
Males
ln(a) = -12.14
b = 3.01
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Immature
Mature
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.15 Longnose Skate

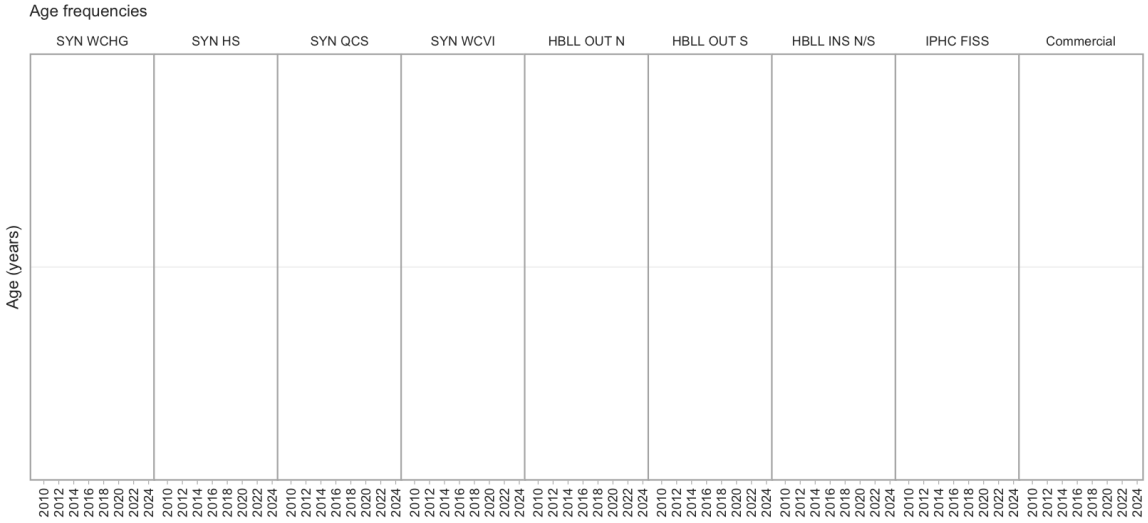
Raja rhina (059)
Order: Rajiformes, Family: Rajidae, FishBase, WoRMS
Last Research Document: King et al. (2015)
Last Science Advisory Report: DFO (2014a)
COSEWIC Annual Report: COSEWIC (2007b)
COSEWIC Status: Not at Risk, SARA Status: No Status



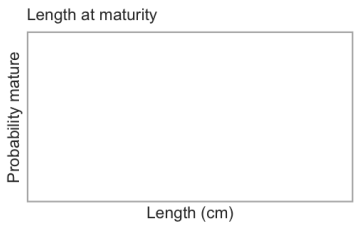

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

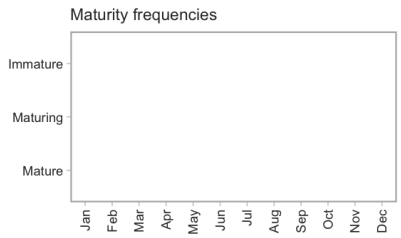
Growth
Length (cm)
Age (years)

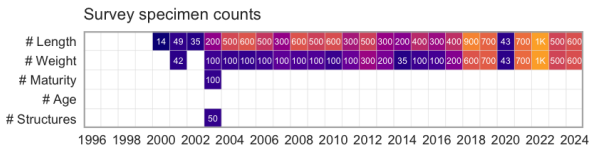
Length-weight relationship
Females
ln(a) = -12.55
b = 3.12
Males
ln(a) = -12.57
b = 3.12
Weight (kg)
Length (cm)
Sex
F
M

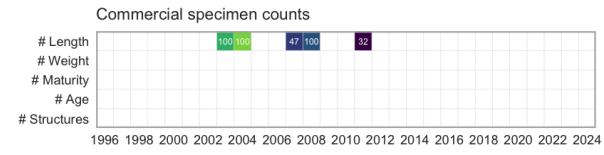

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
Length (cm)

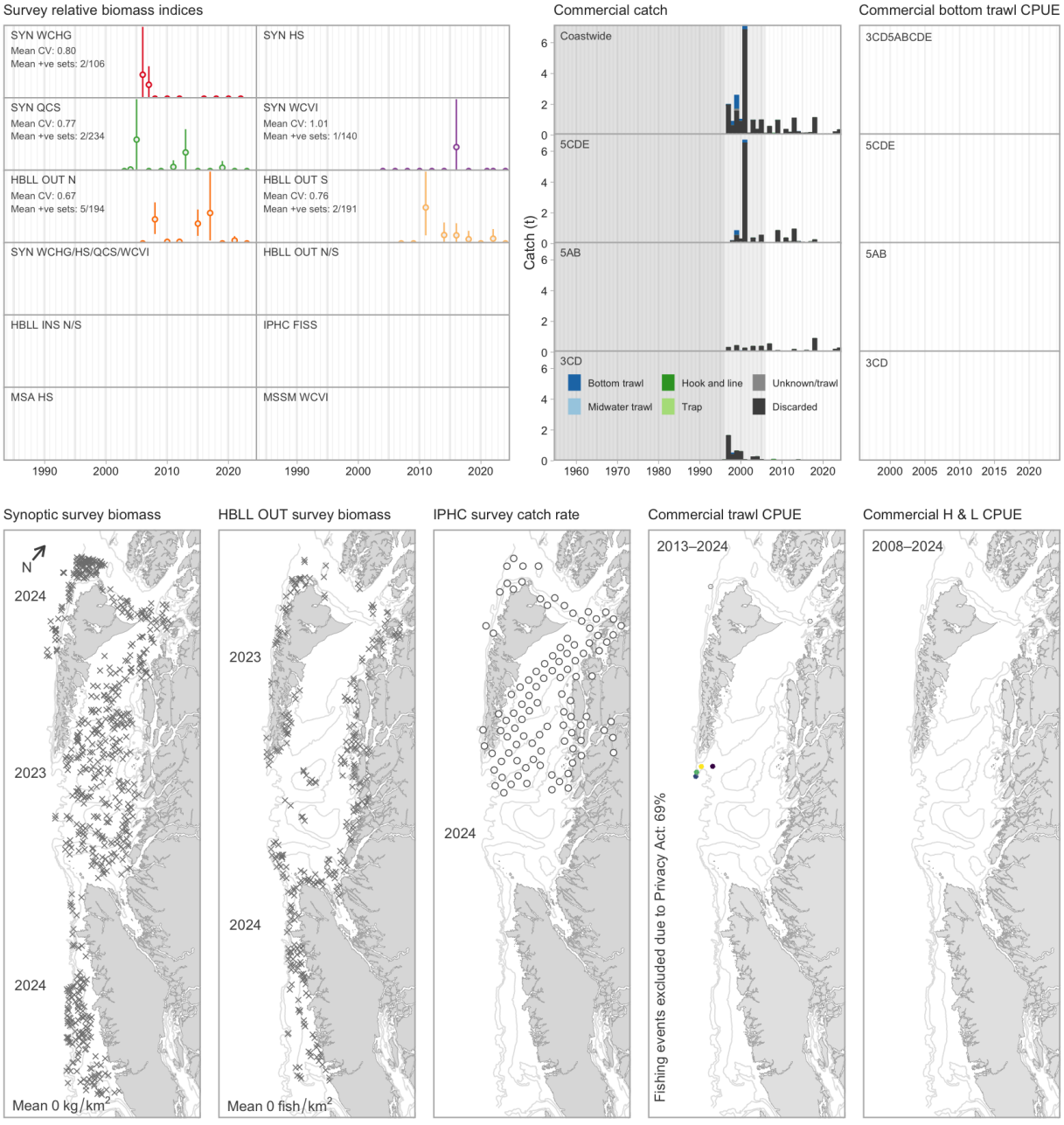

Maturity frequencies
Immature
Maturing
Mature
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

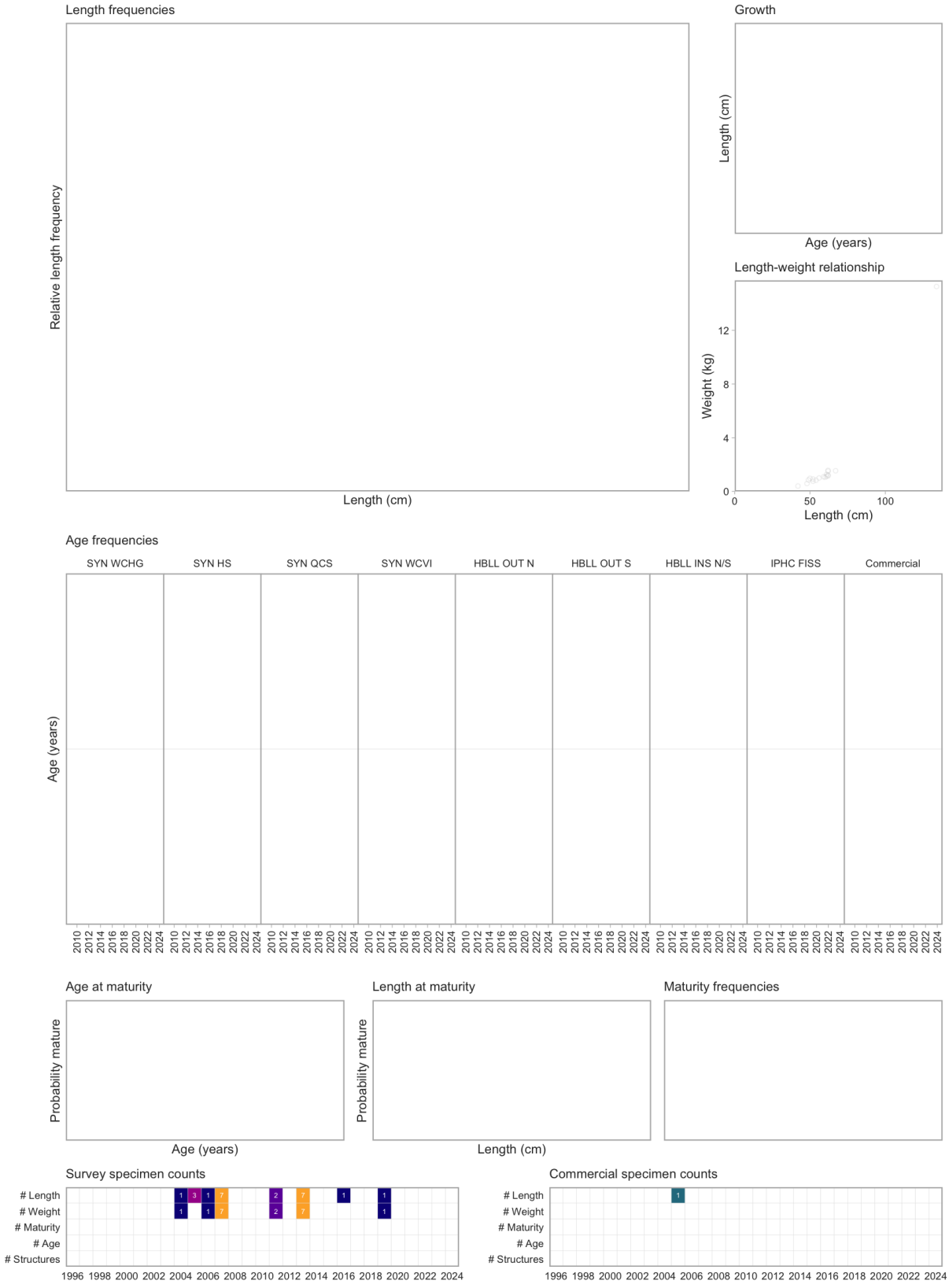

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.16 Alaska Skate

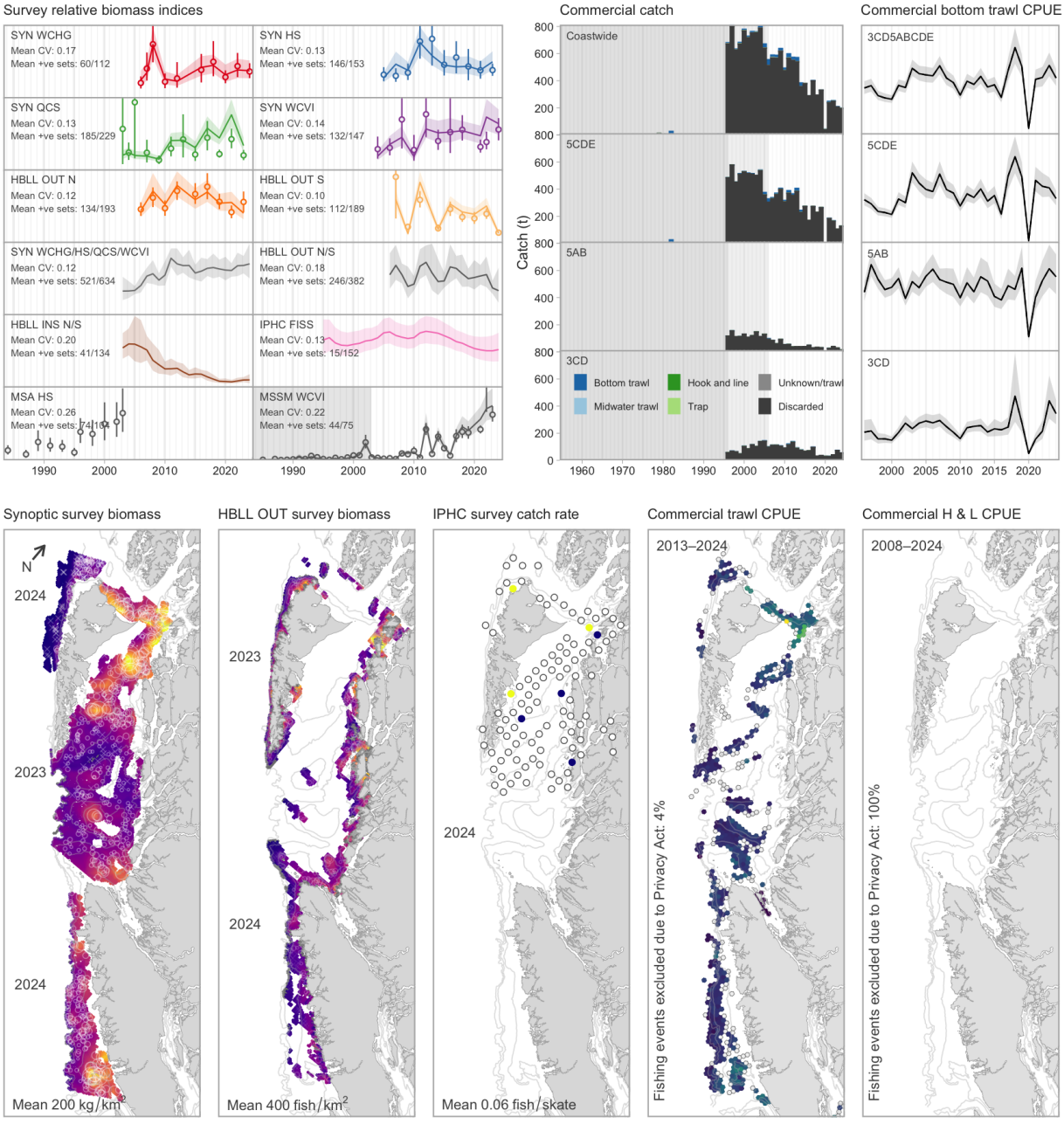
Bathyraja parmifera (061)
Order: Rajiformes, Family: Arhynchobatidae, FishBase, WoRMS

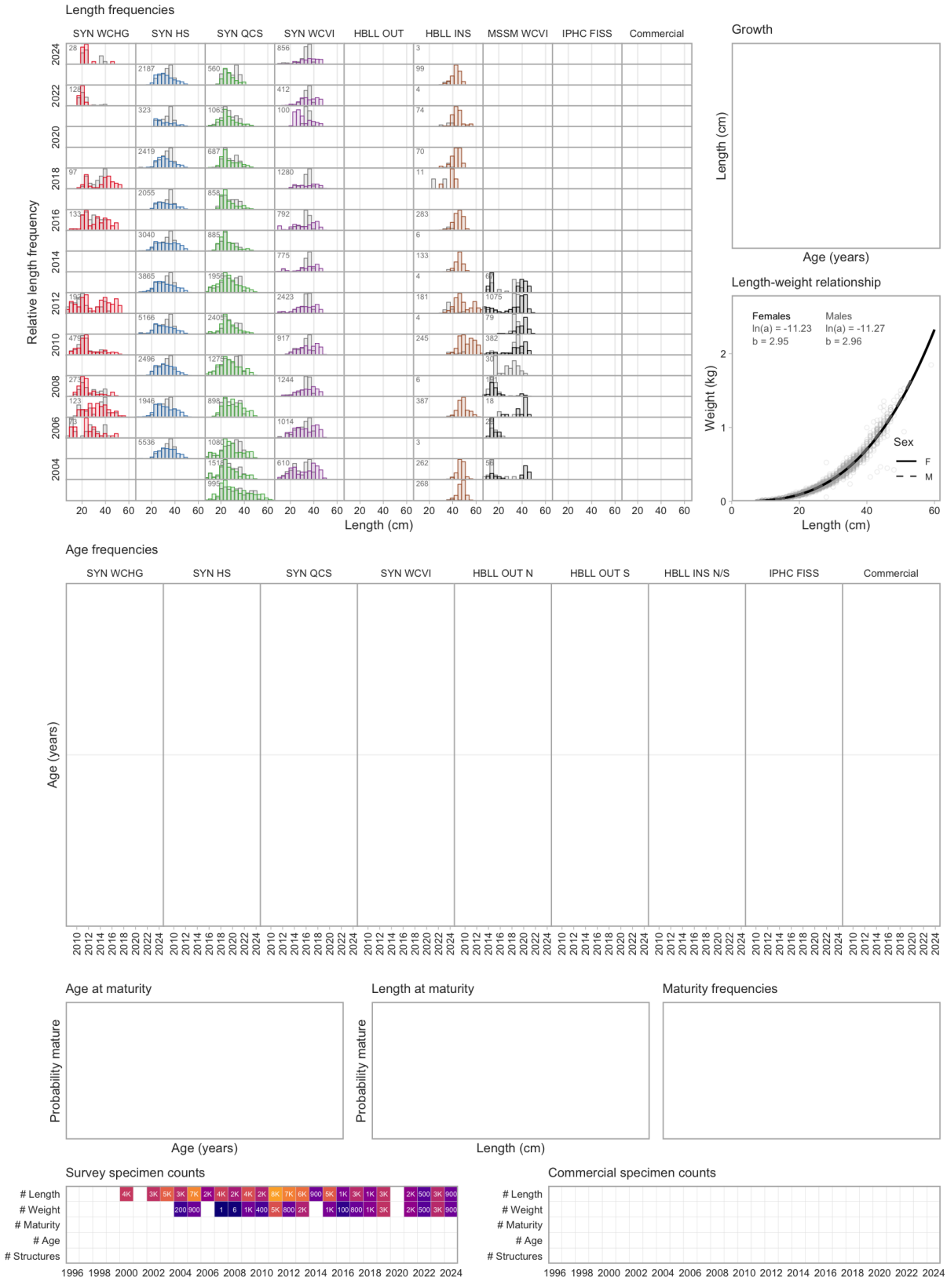



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
0
4
8
12
0
50
100
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
2010 2012 2014 2016 2018 2020 2022 2024
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.17 Spotted Ratfish

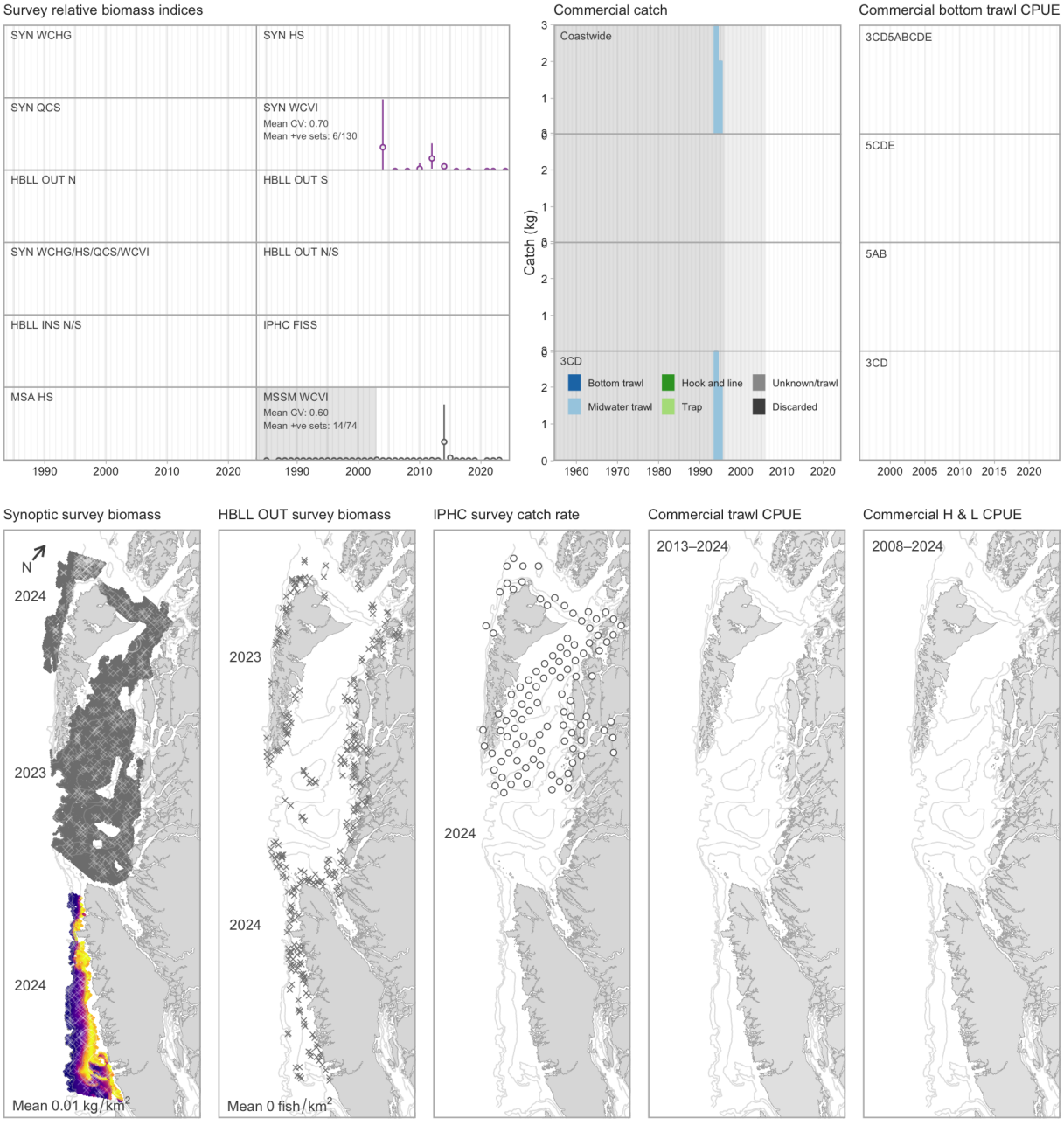
Hydrolagus colliei (066)
Order: Chimaeriformes, Family: Chimaeridae, FishBase, WoRMS

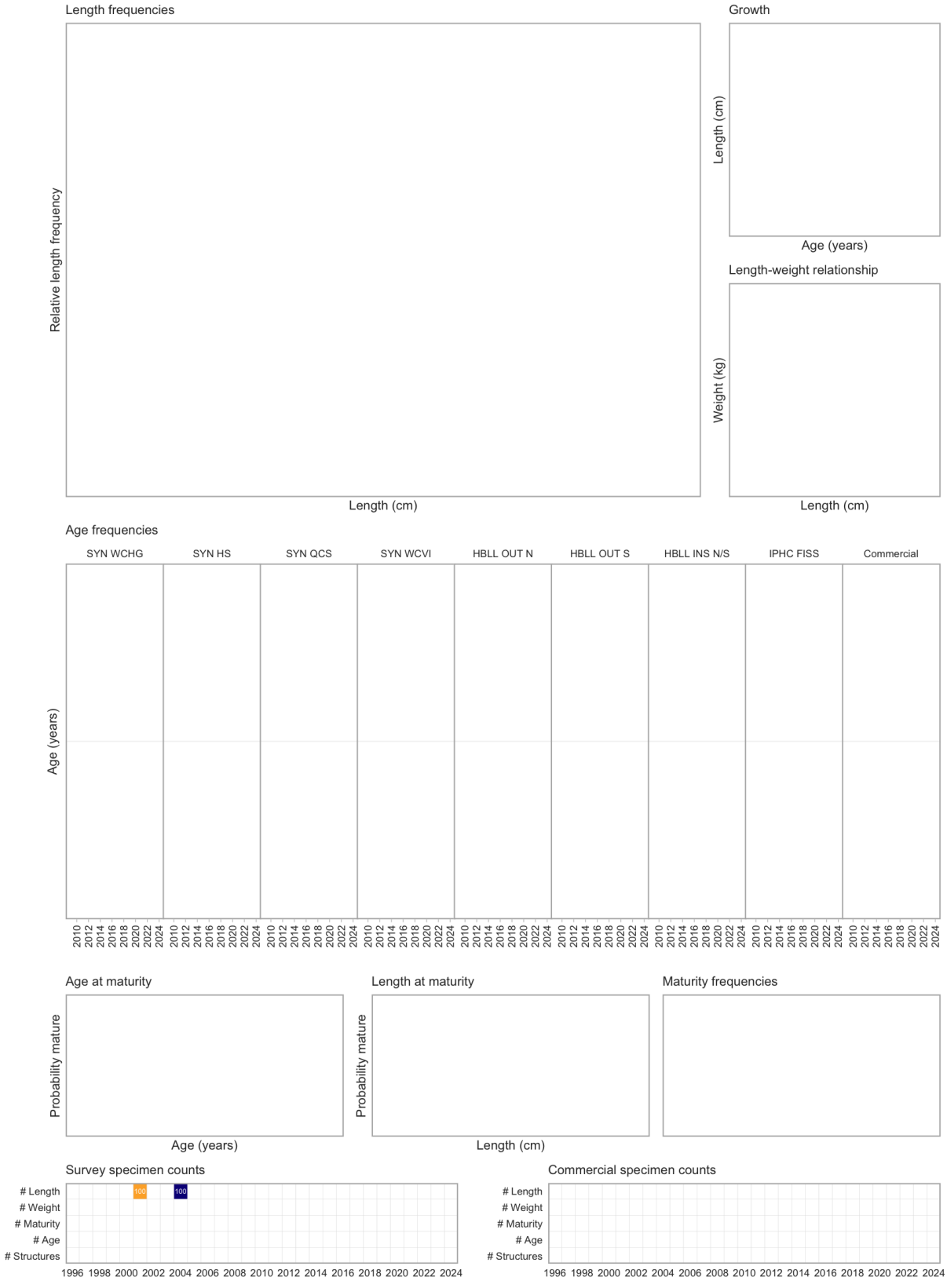



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.23
b = 2.95
Males
ln(a) = -11.27
b = 2.96
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.18 Whitebait Smelt

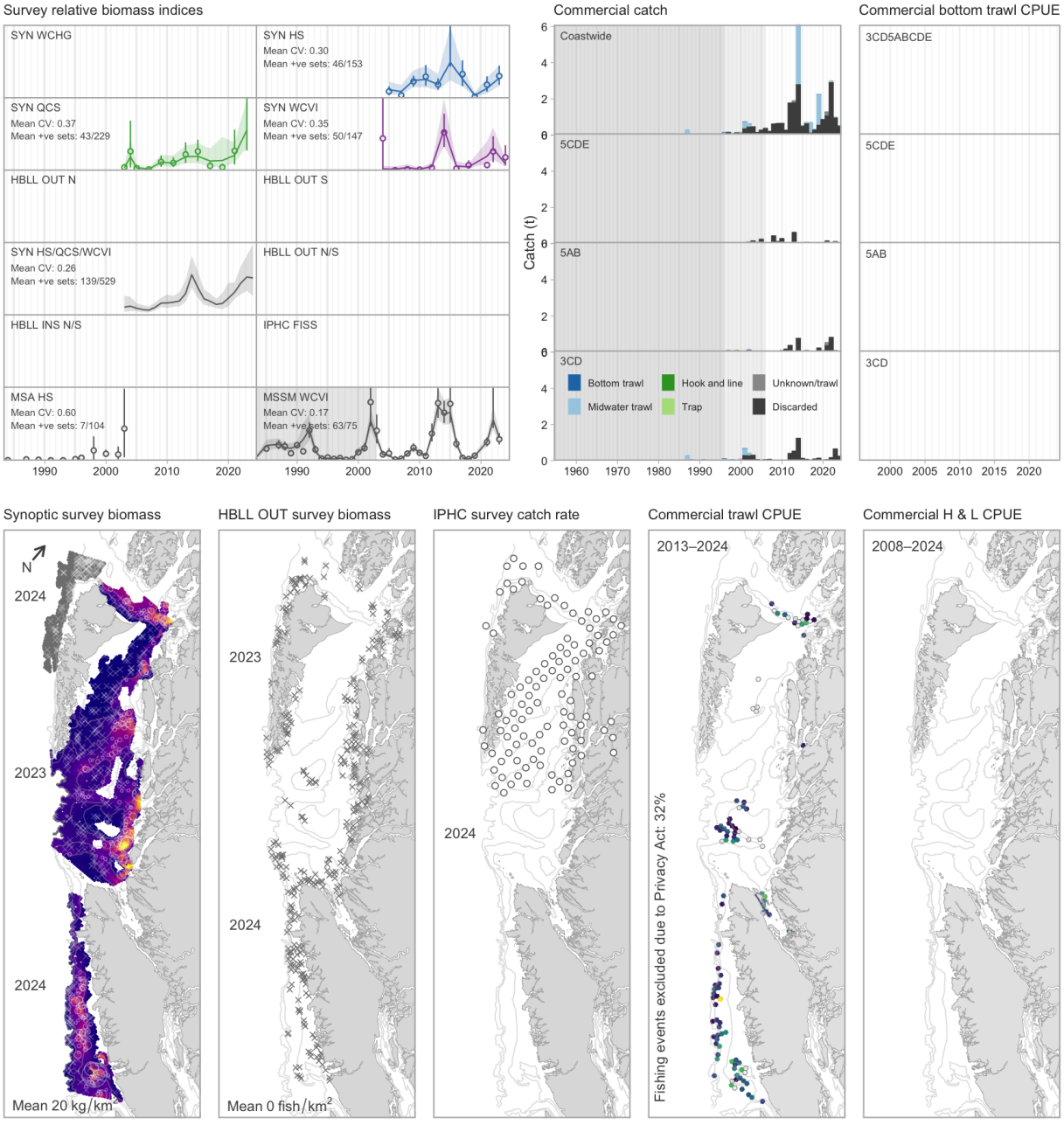
Allosmerus elongatus (138)
Order: Osmeriformes, Family: Osmeridae, FishBase, WoRMS

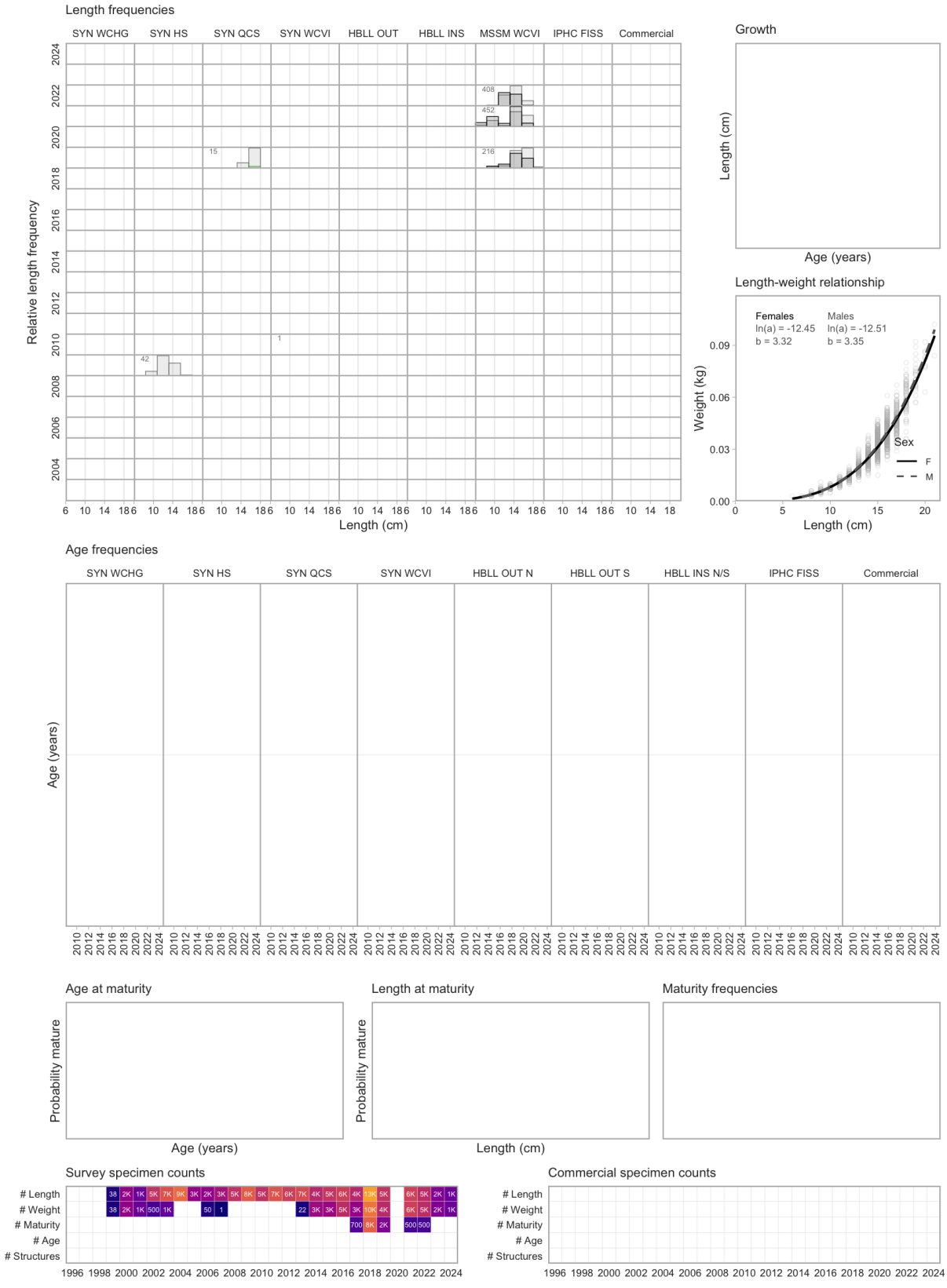



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
100
100
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.19 Eulachon

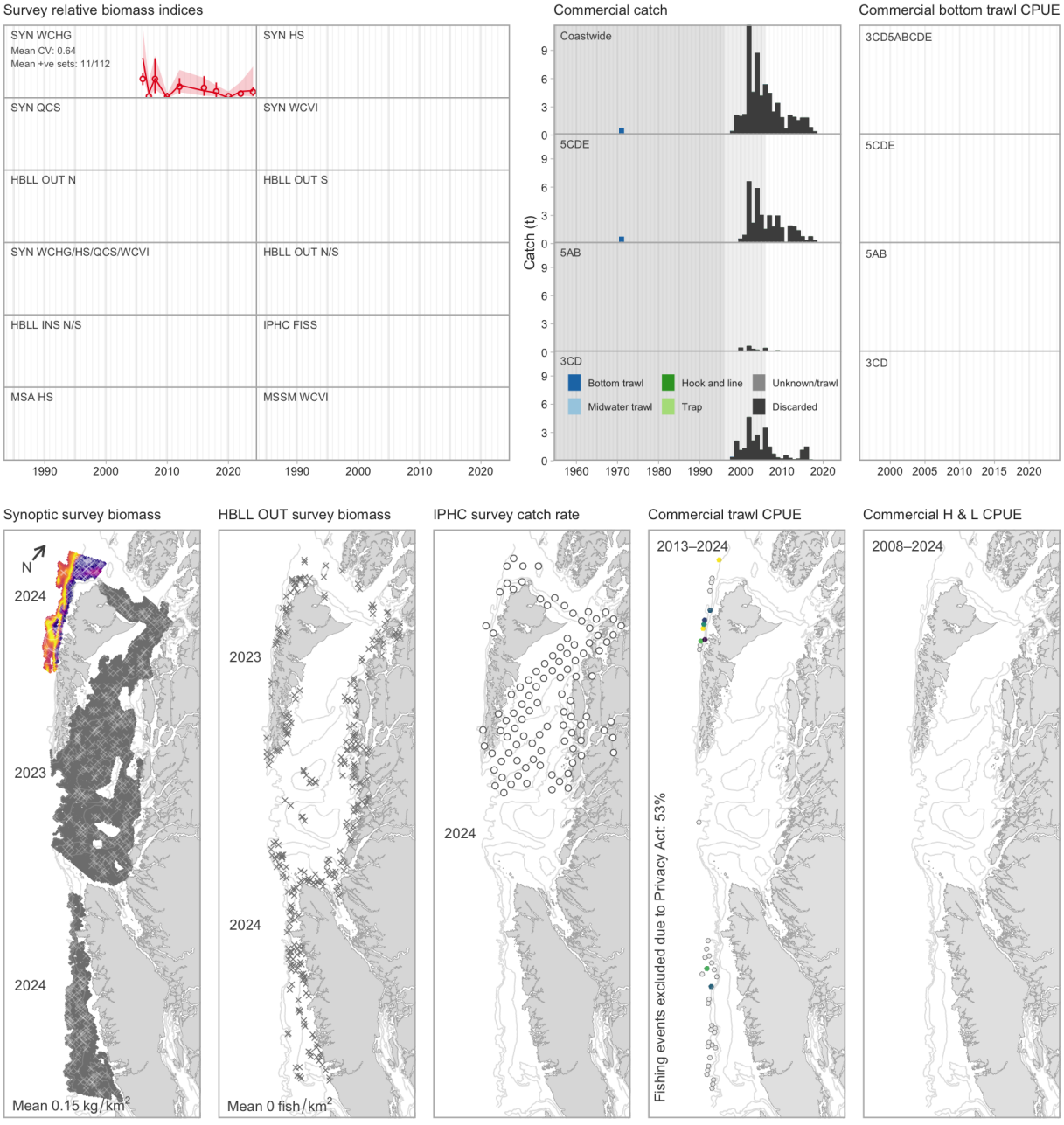
Thaleichthys pacificus (148)
Order: Osmeriformes, Family: Osmeridae, FishBase, WoRMS
Last Research Document: Schweigert et al. (2012)
Last Science Advisory Report: DFO (2015a)
COSEWIC Status Report: COSEWIC (2013a)
COSEWIC Status: Endangered (Central Pacific Coast population, Fraser River population), Special Concern (Nass / Skeena Rivers population), SARA Status: No Status

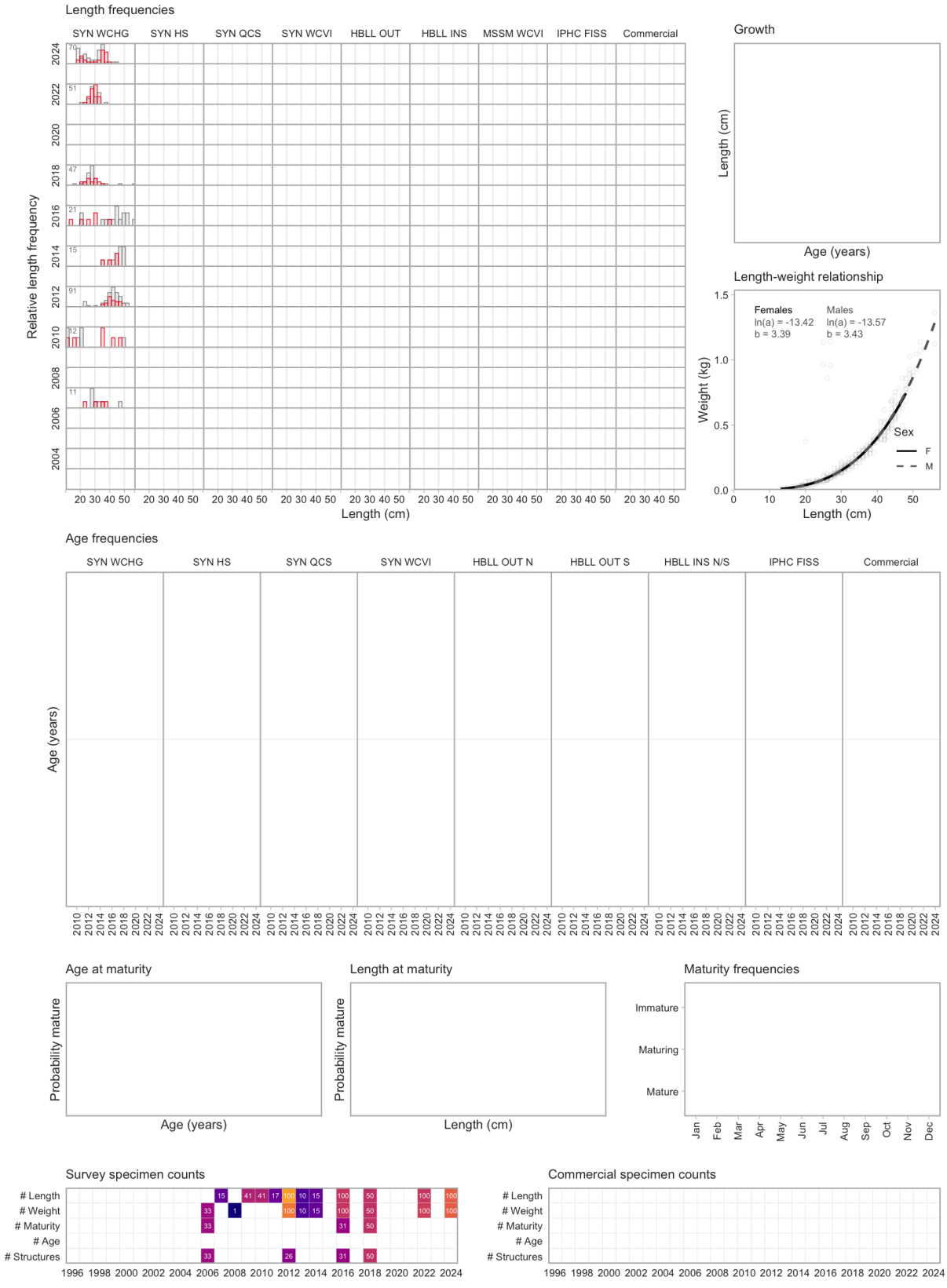



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.45
b = 3.32
Males
ln(a) = -12.51
b = 3.35
Weight (kg)
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.20 Pacific Flatnose

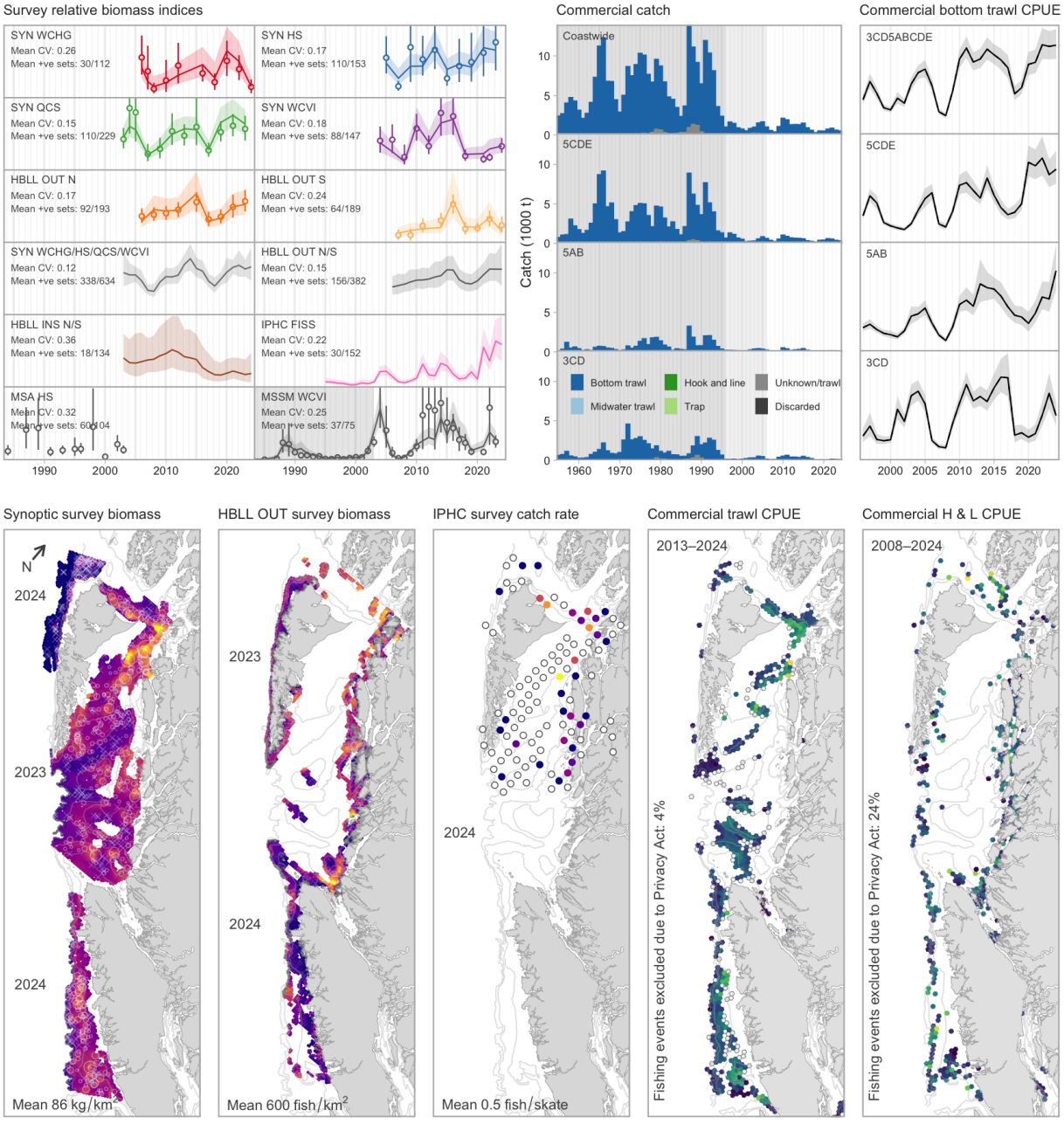
Antimora microlepis (220)
Order: Gadiformes, Family: Moridae, FishBase, WoRMS

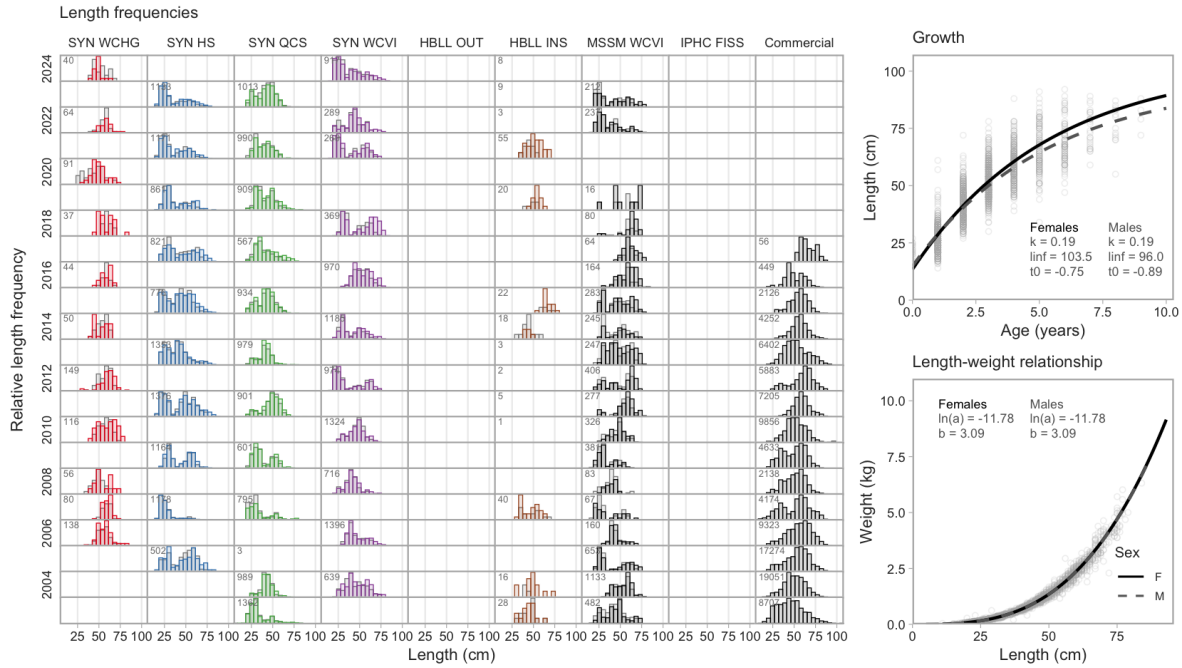



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -13.42
b = 3.39
Males
ln(a) = -13.57
b = 3.43
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.21 Pacific Cod

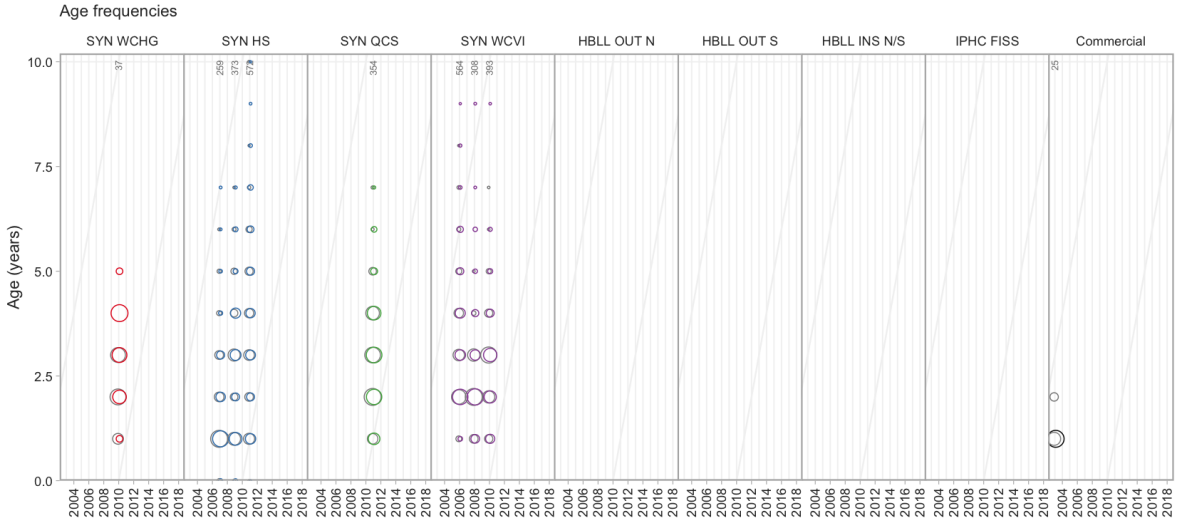
Gadus macrocephalus (222)
Order: Gadiformes, Family: Gadidae, FishBase, WoRMS
Last Research Document: Forrest et al. (2020)
Last Science Advisory Report: DFO (2019a)
Last Science Response: DFO (2021a), DFO (2024a)

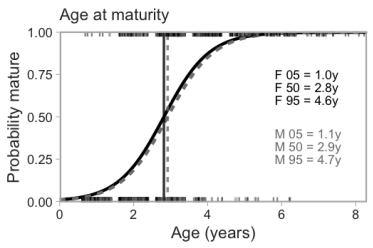


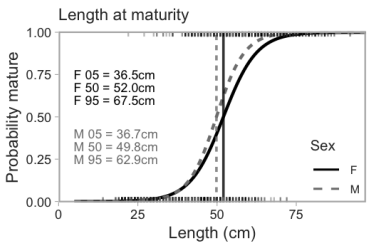

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

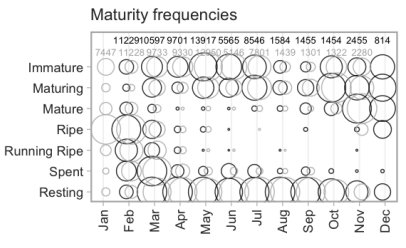
Growth
Length (cm)
Age (years)
Females
k = 0.19
linf = 103.5
t0 = -0.75
Males
k = 0.19
linf = 96.0
t0 = -0.89

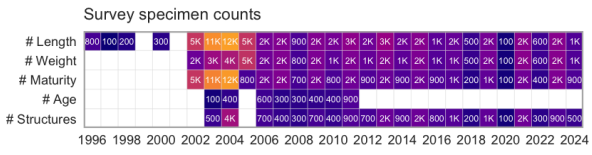
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.78
b = 3.09
Males
ln(a) = -11.78
b = 3.09
Sex
F
M

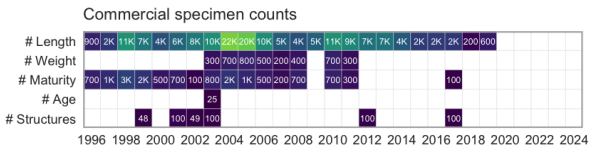

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 1.0y
F 50 = 2.8y
F 95 = 4.6y
M 05 = 1.1y
M 50 = 2.9y
M 95 = 4.7y


Length at maturity
Probability mature
Length (cm)
F 05 = 36.5cm
F 50 = 52.0cm
F 95 = 67.5cm
M 05 = 36.7cm
M 50 = 49.8cm
M 95 = 62.9cm
Sex
F
M

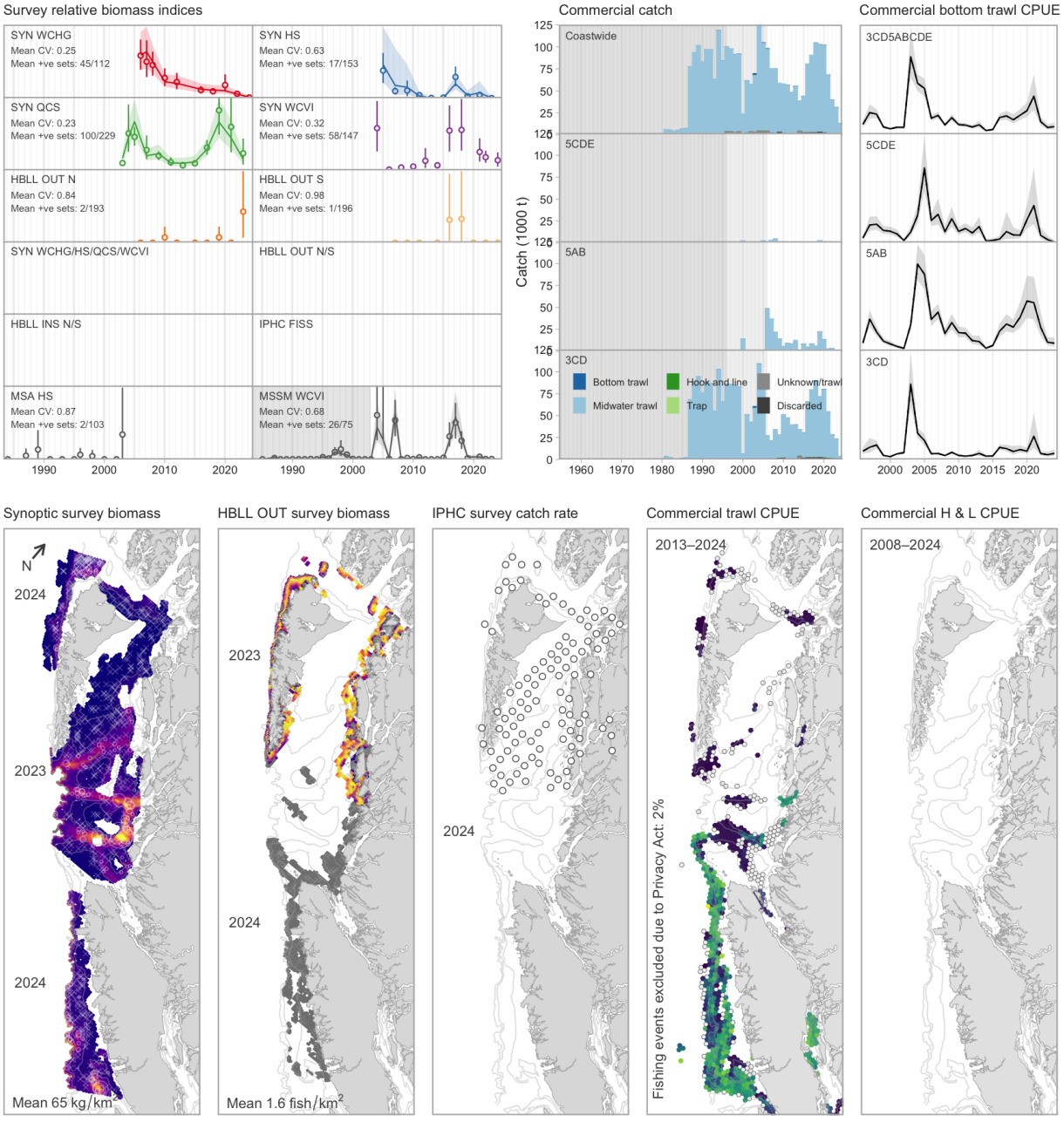

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

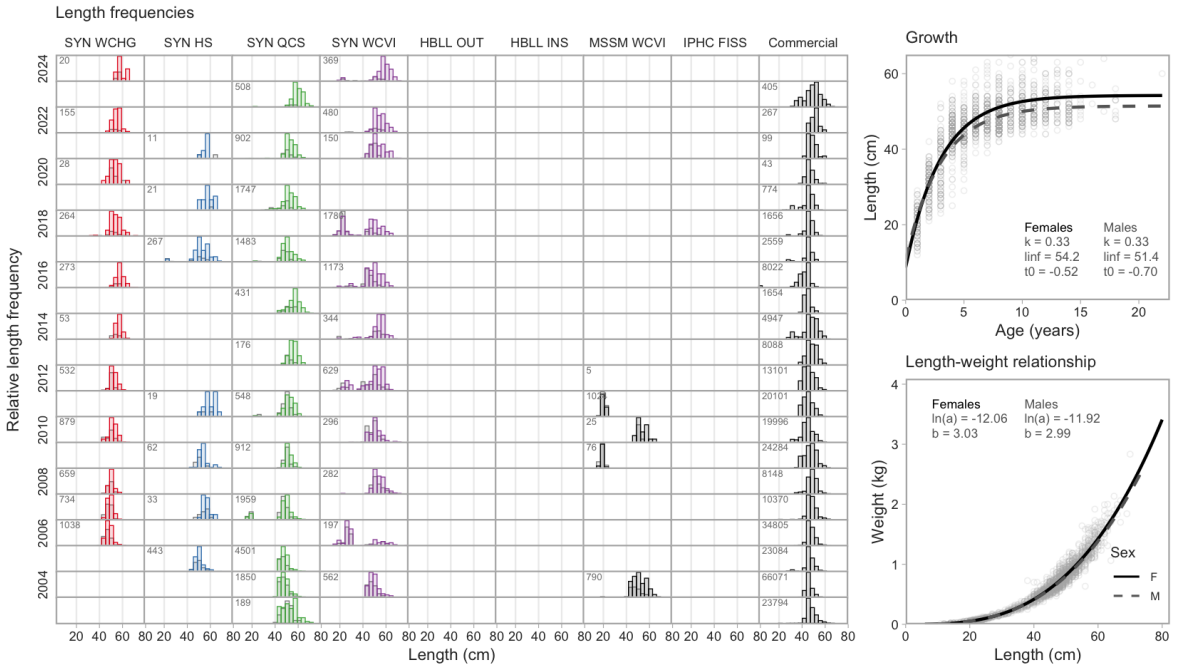

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.22 Pacific Hake

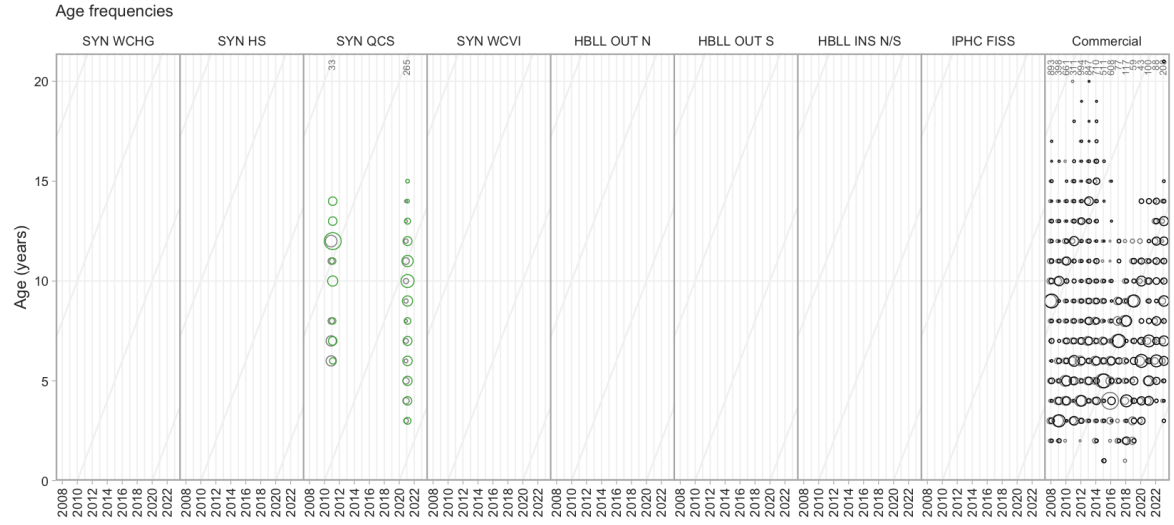
Merluccius productus (225)
Order: Gadiformes, Family: Merlucciidae, FishBase, WoRMS
Last joint Canada-US stock assessment: Johnson et al. (2025a)
Note that Pacific Hake undergoes a directed joint Canada-US coastwide acoustic survey and annual assessment, which are not included in this report. The most recent stock assessment should be consulted for details on stock status.

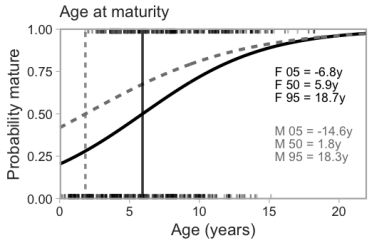


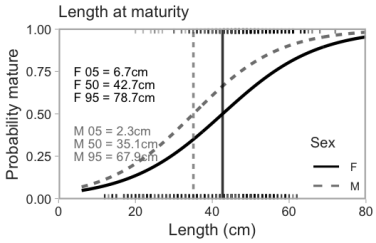

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

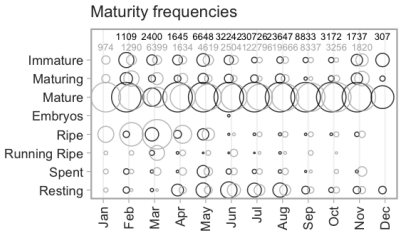
Growth
Length (cm)
Age (years)
Females
k = 0.33
linf = 54.2
t0 = -0.52
Males
k = 0.33
linf = 51.4
t0 = -0.70

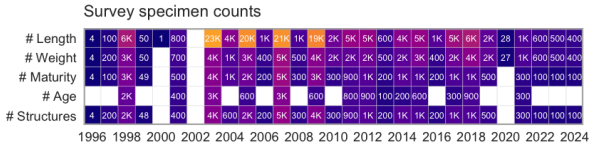
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -12.06
b = 3.03
Males
ln(a) = -11.92
b = 2.99
Sex
F
M

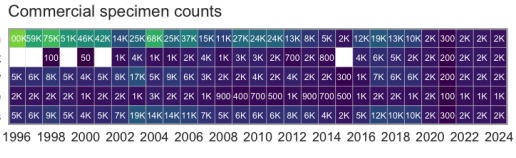

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = -6.8y
F 50 = 5.9y
F 95 = 18.7y
M 05 = -14.6y
M 50 = 1.8y
M 95 = 18.3y


Length at maturity
Probability mature
Length (cm)
F 05 = 6.7cm
F 50 = 42.7cm
F 95 = 78.7cm
M 05 = 2.3cm
M 50 = 35.1cm
M 95 = 67.9cm
Sex
F
M

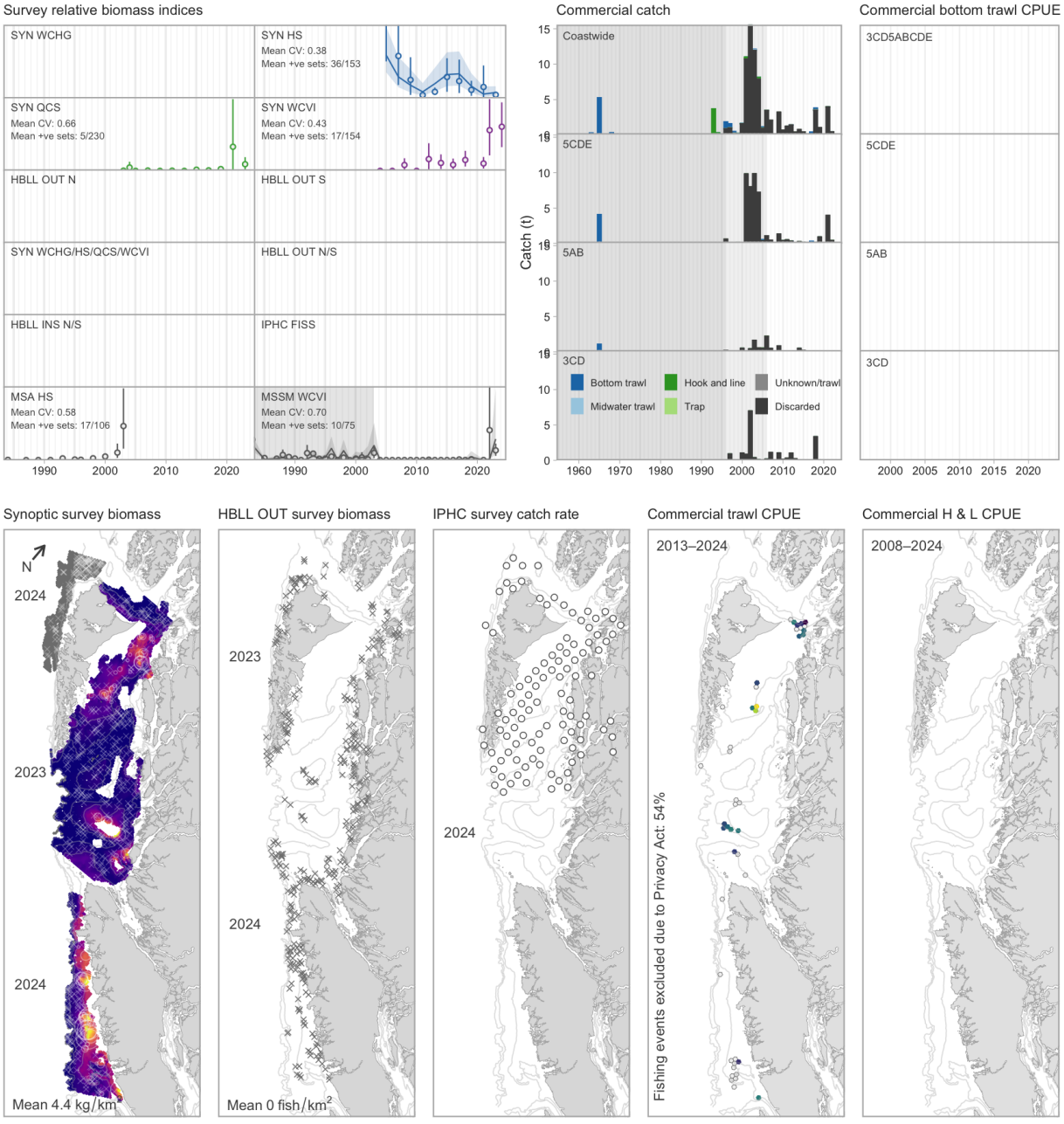

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

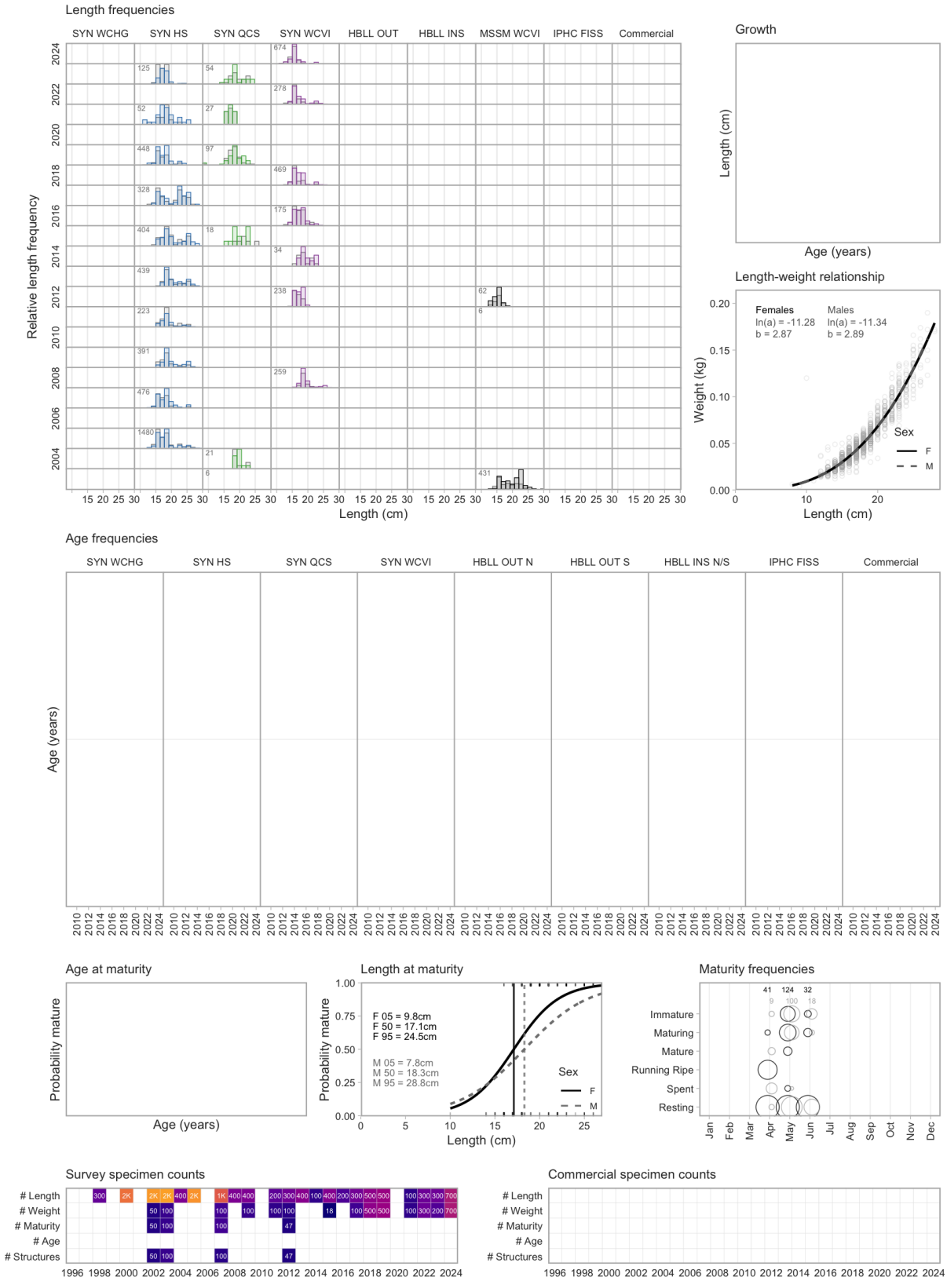

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.23 Pacific Tomcod

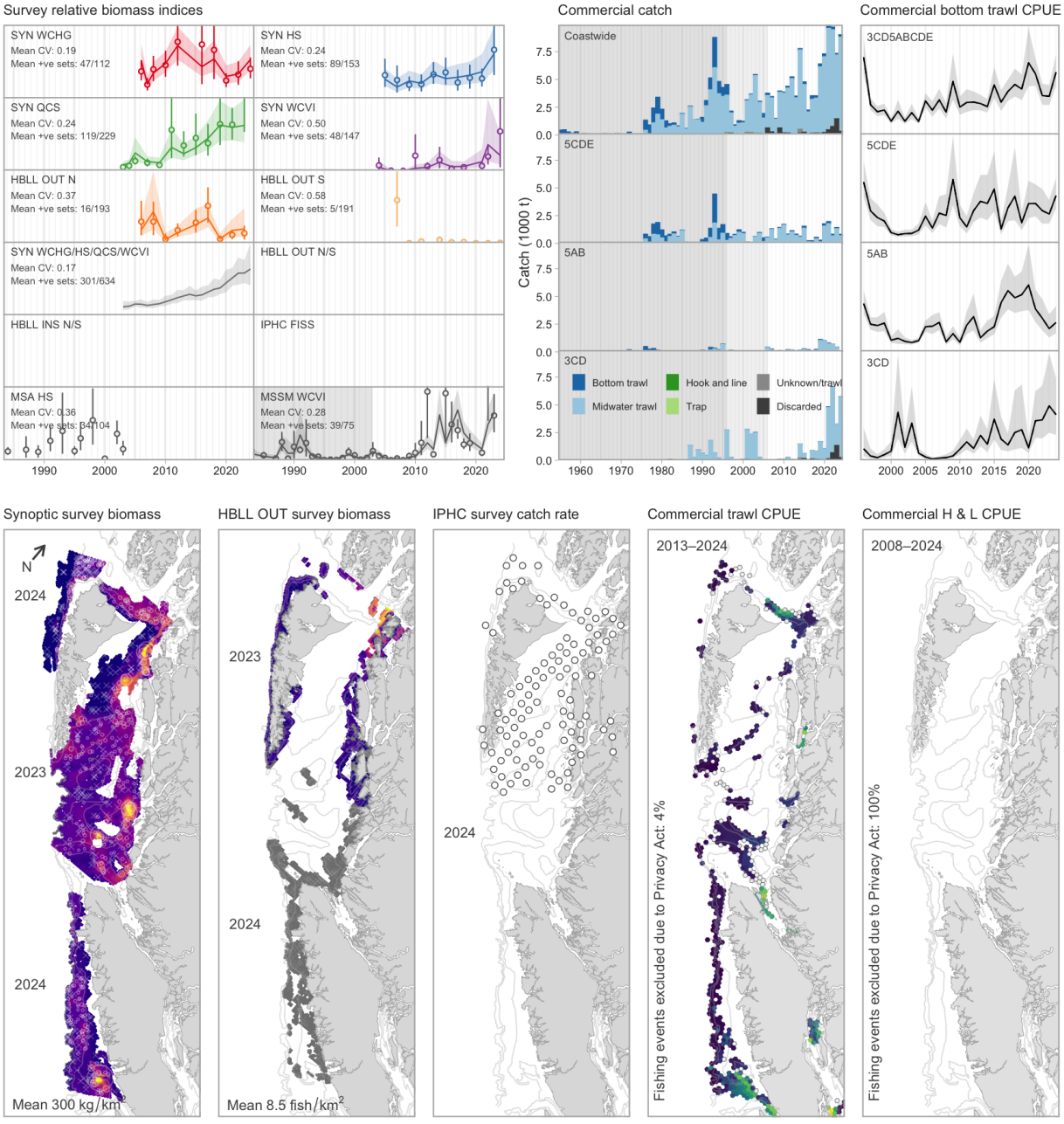
Microgadus proximus (226)
Order: Gadiformes, Family: Gadidae, FishBase, WoRMS

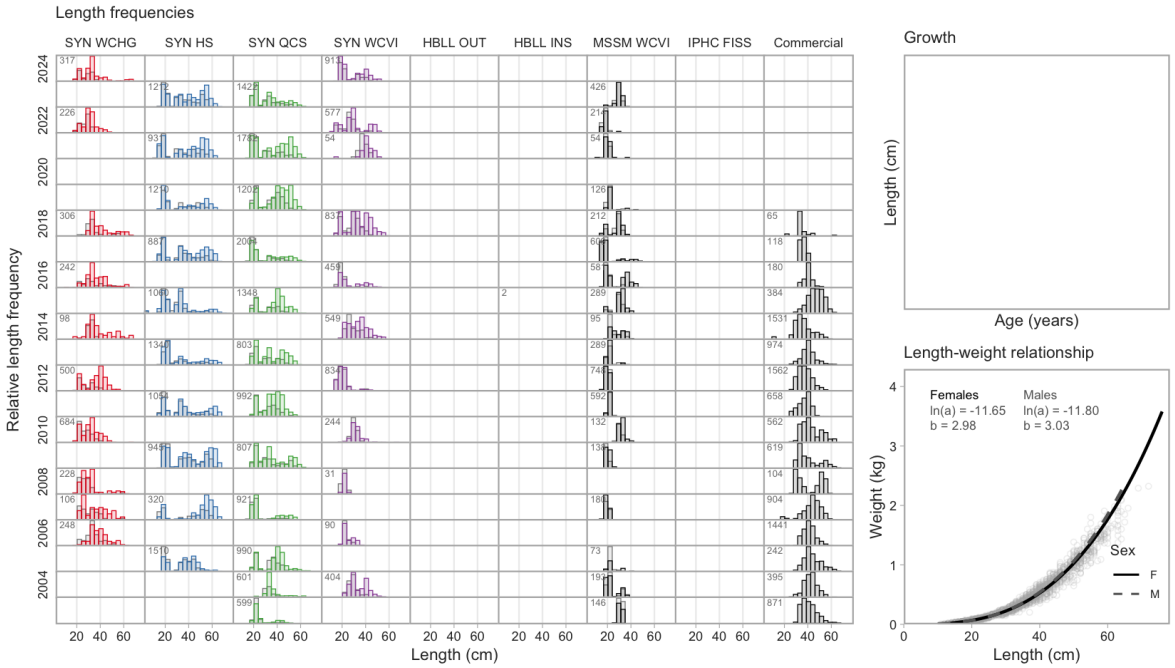



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.28
b = 2.87
Males
ln(a) = -11.34
b = 2.89
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
F 05 = 9.8cm
F 50 = 17.1cm
F 95 = 24.5cm
M 05 = 7.8cm
M 50 = 18.3cm
M 95 = 28.8cm
Probability mature
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Running Ripe
Spent
Resting
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

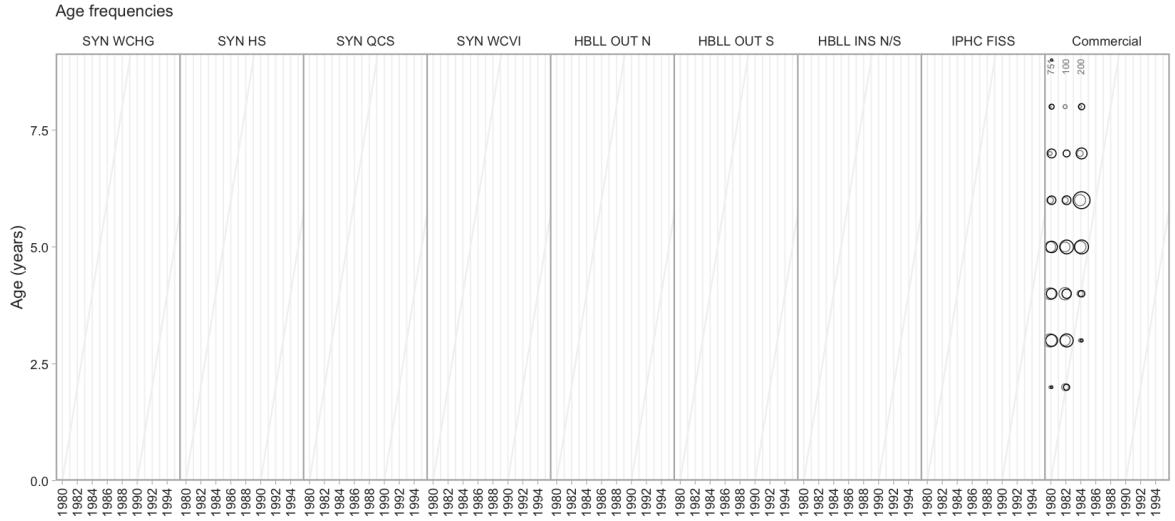
6.24 Walleye Pollock

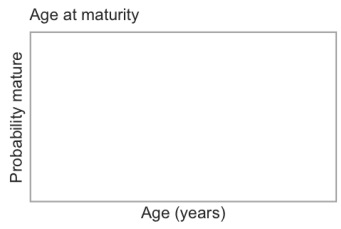
Gadus chalcogrammus (228)
Order: Gadiformes, Family: Gadidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2021a)
Last Science Advisory Report: DFO (2018a)

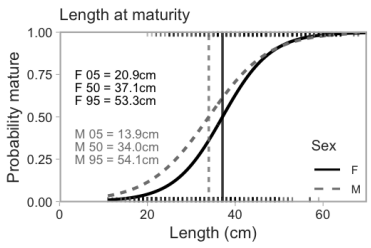


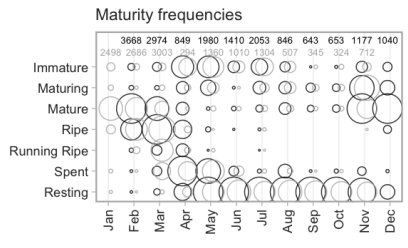

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

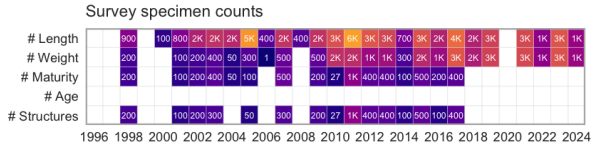
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.65
b = 2.98
Males
ln(a) = -11.80
b = 3.03
Weight (kg)
Sex
F
M
Length (cm)

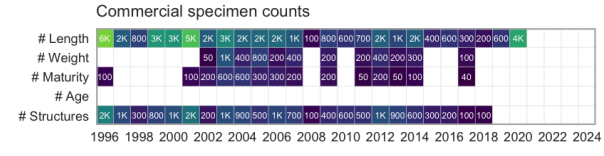

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
F 05 = 20.9cm
F 50 = 37.1cm
F 95 = 53.3cm
M 05 = 13.9cm
M 50 = 34.0cm
M 95 = 54.1cm
Sex
F
M
Length (cm)

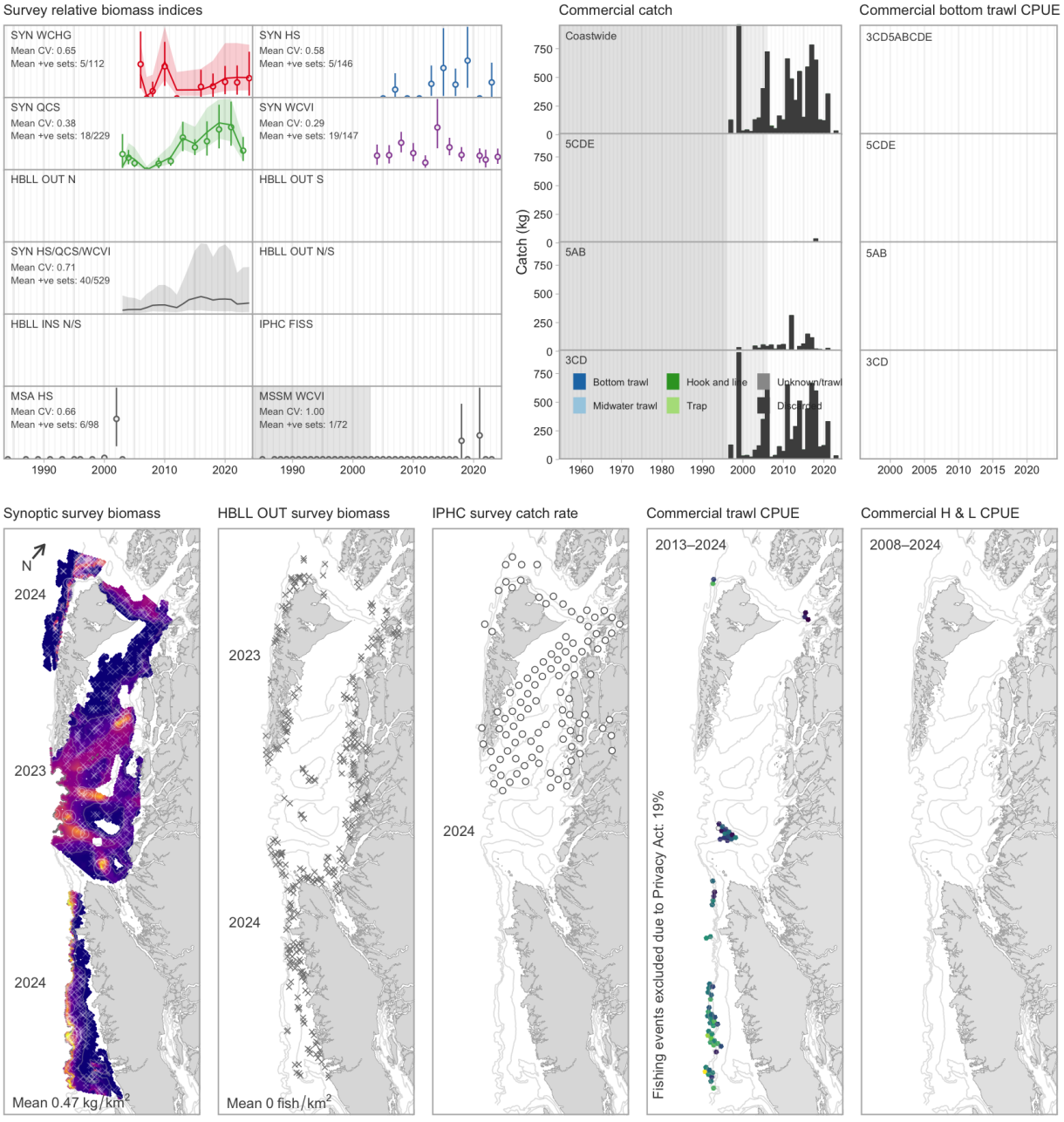

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

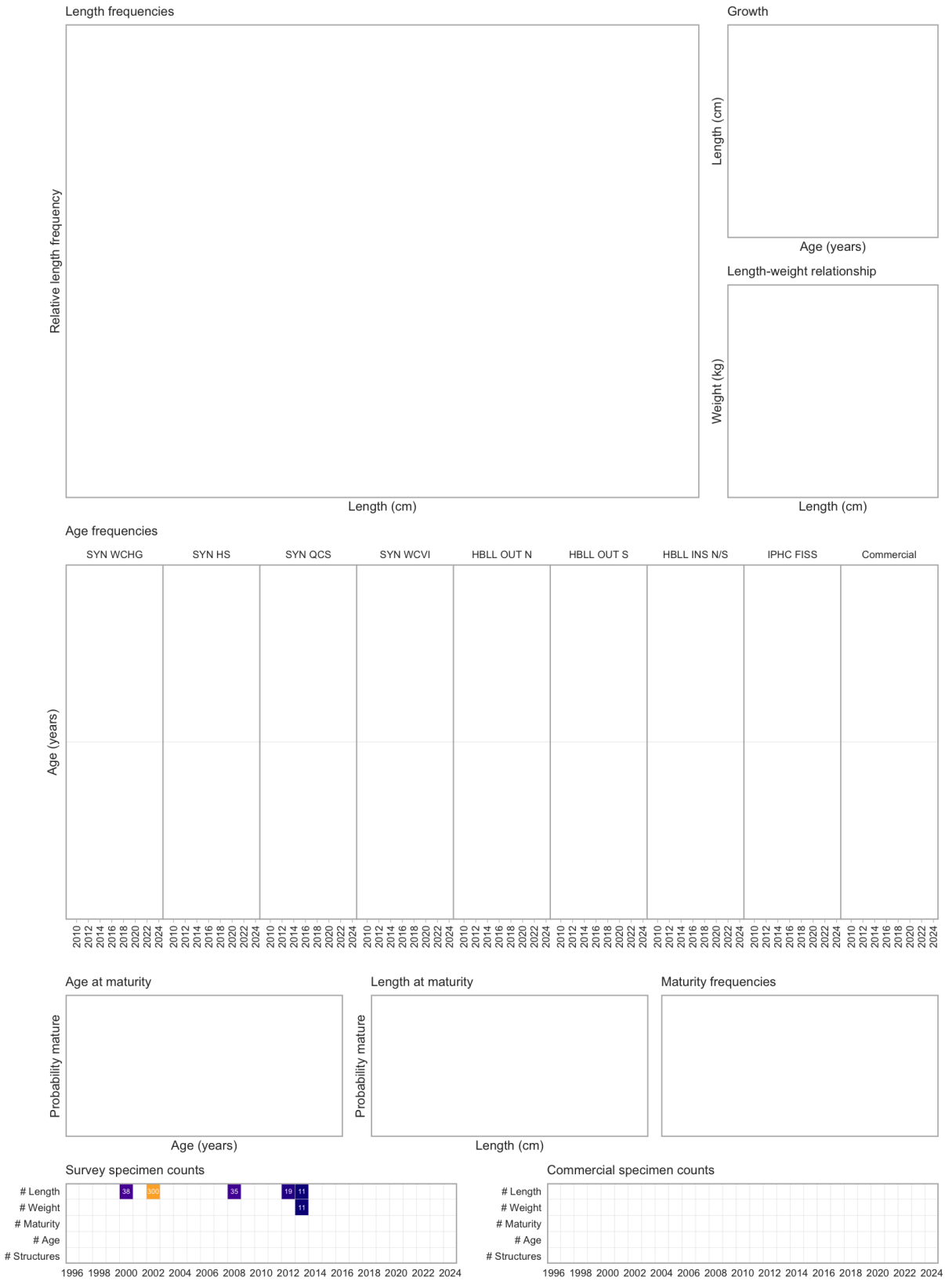

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.25 Bigfin Eelpout

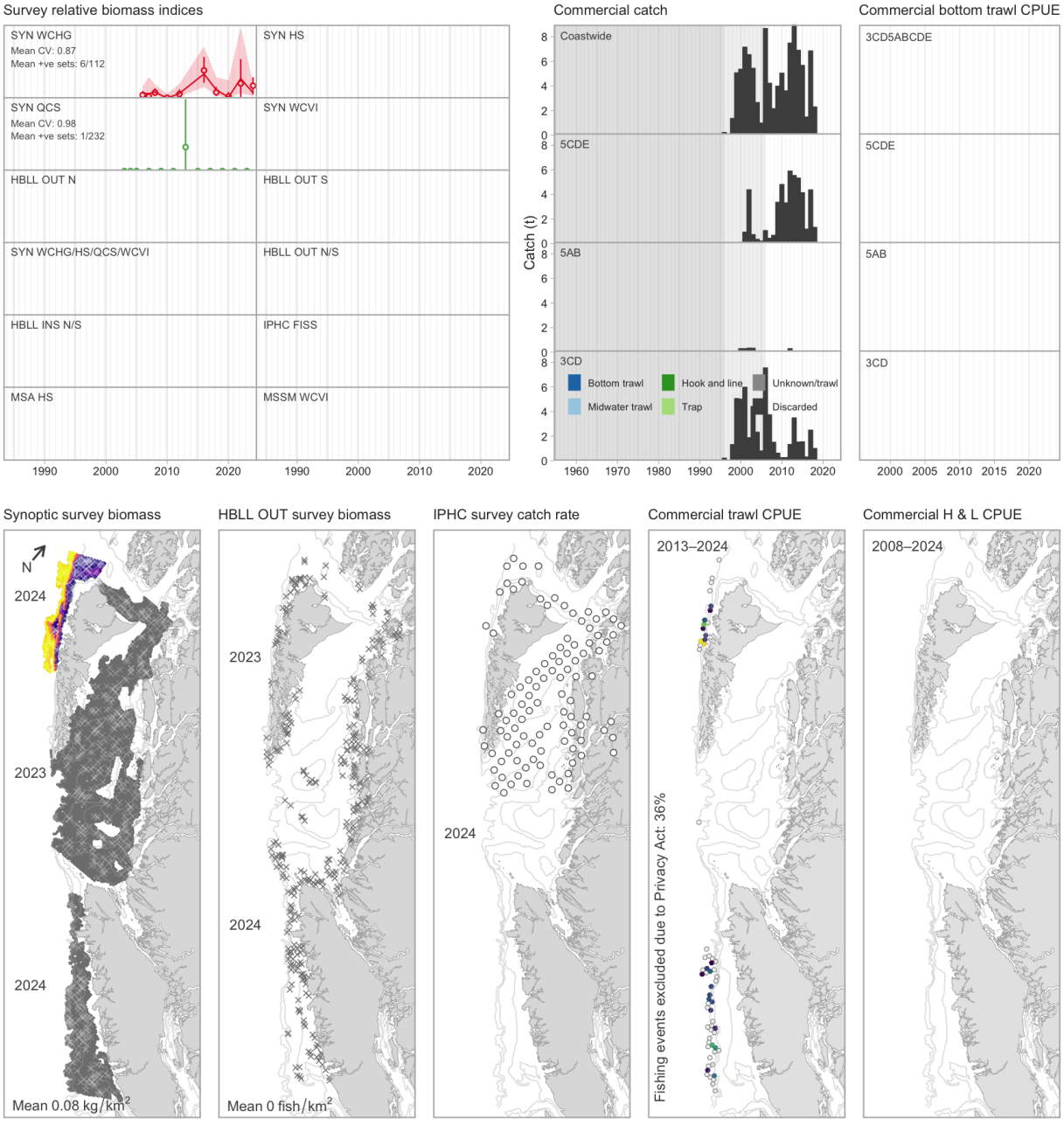
Lycodes cortezianus (233)
Order: Perciformes, Family: Zoarcidae, FishBase, WoRMS

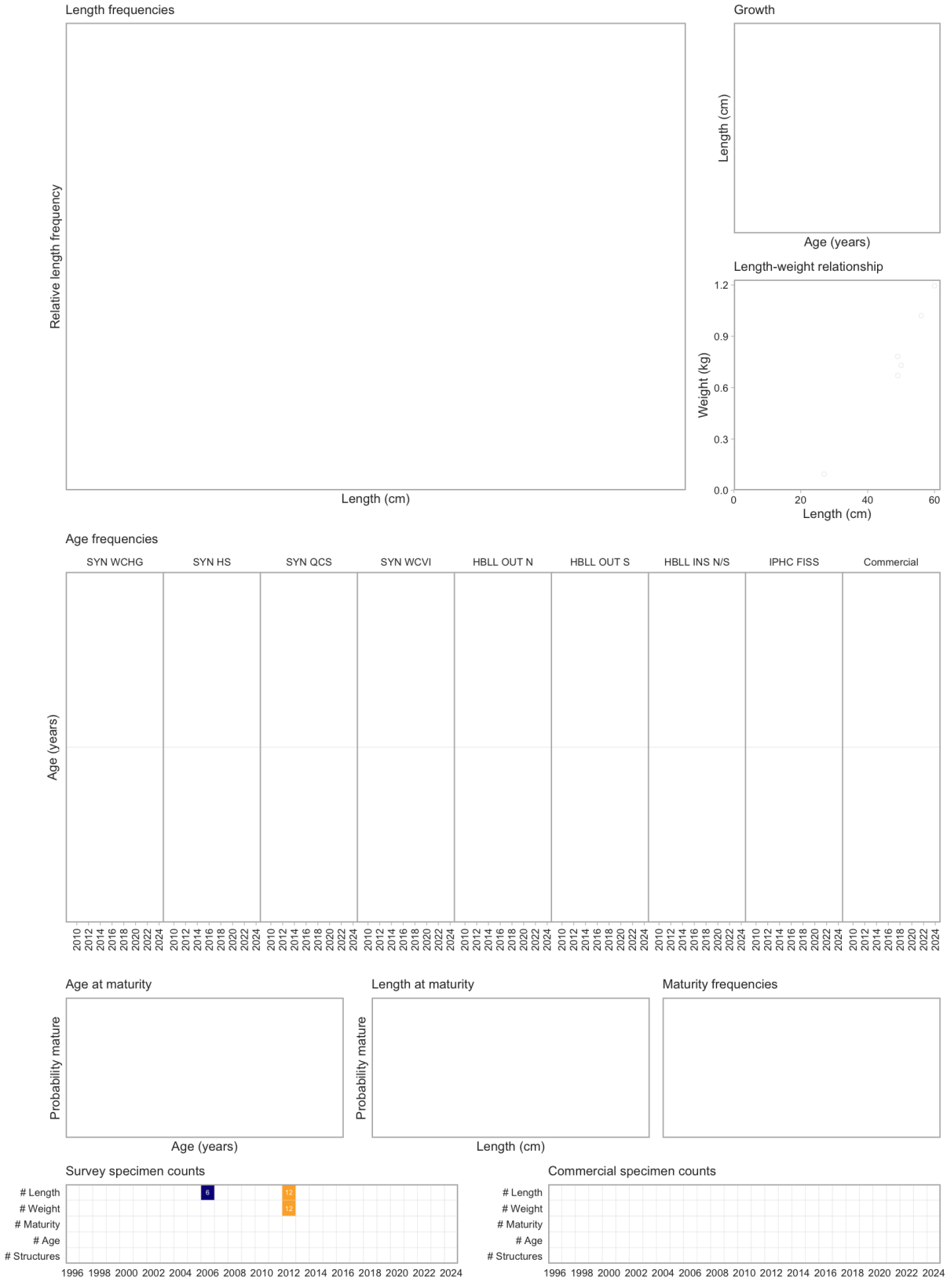



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
38
300
35
19
11
11
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.26 Twoline Eelpout

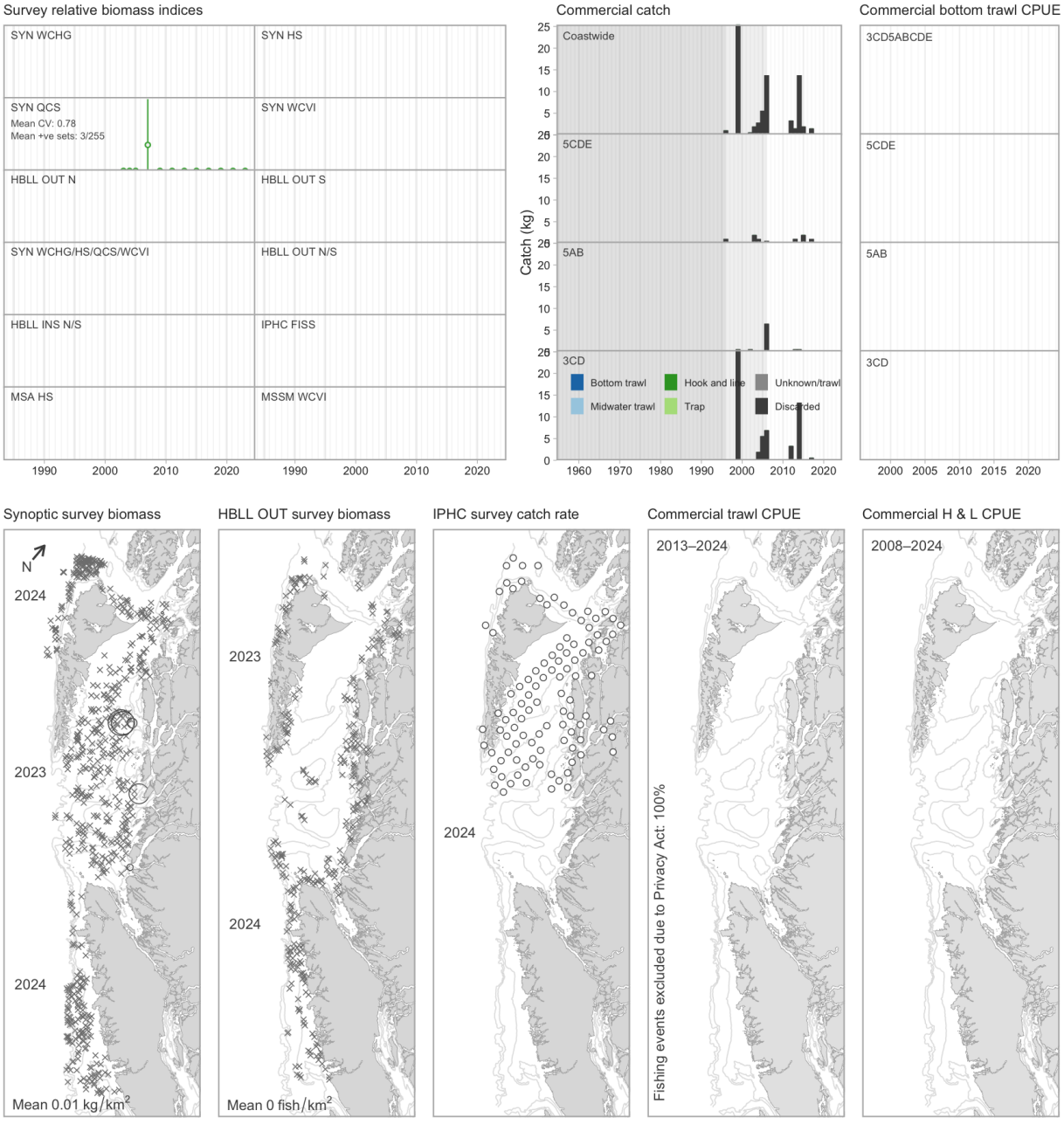
Bothrocara brunneum (235)
Order: Perciformes, Family: Zoarcidae, FishBase, WoRMS

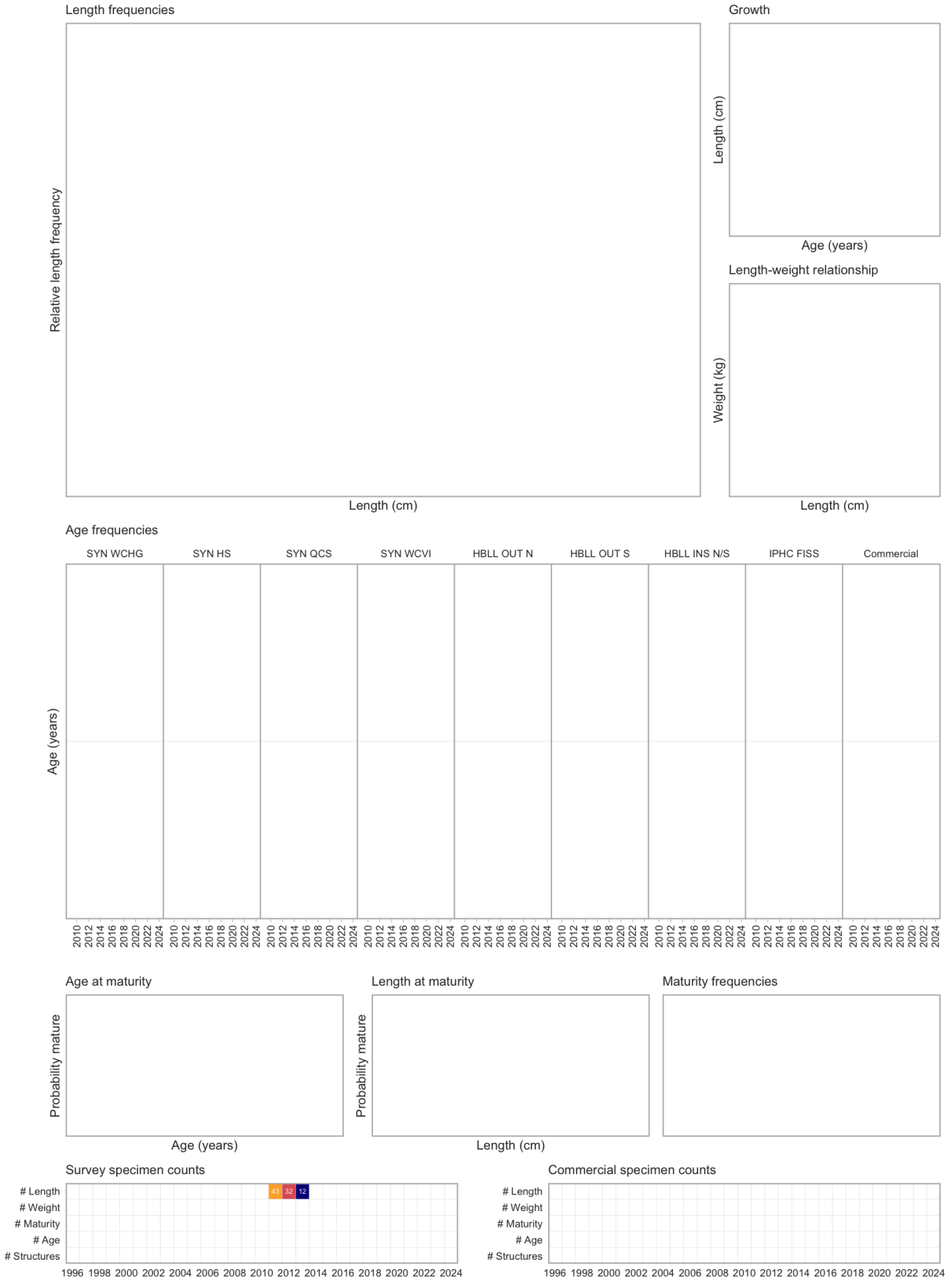



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
1.2
0.9
0.6
0.3
0.0
0
20
40
60
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
2010 2012 2014 2016 2018 2020 2022 2024
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
6
12
12
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.27 Shortfin Eelpout

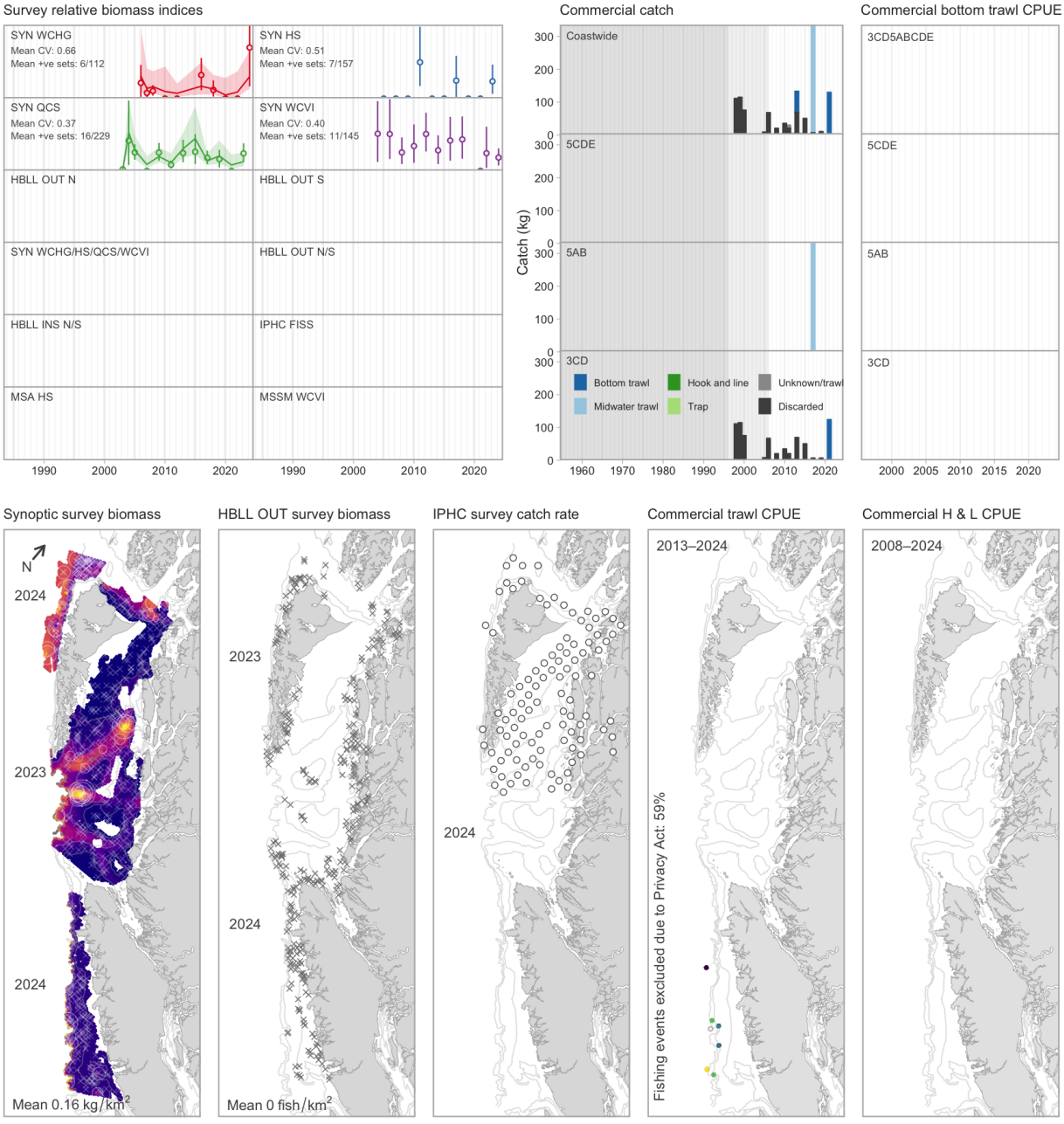
Lycodes brevipes (242)
Order: Perciformes, Family: Zoarcidae, FishBase, WoRMS

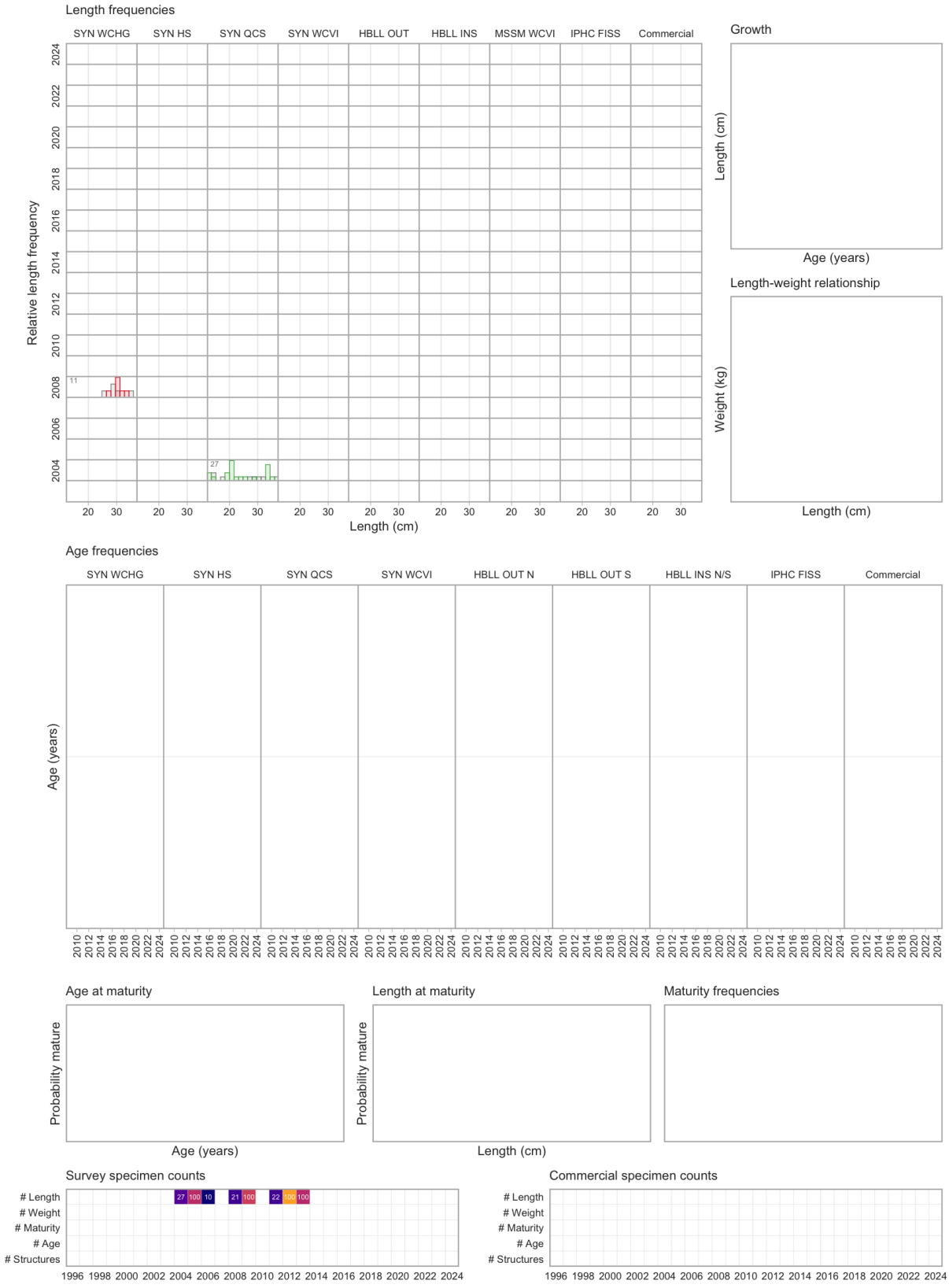



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
43
32
12
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.28 Black Eelpout

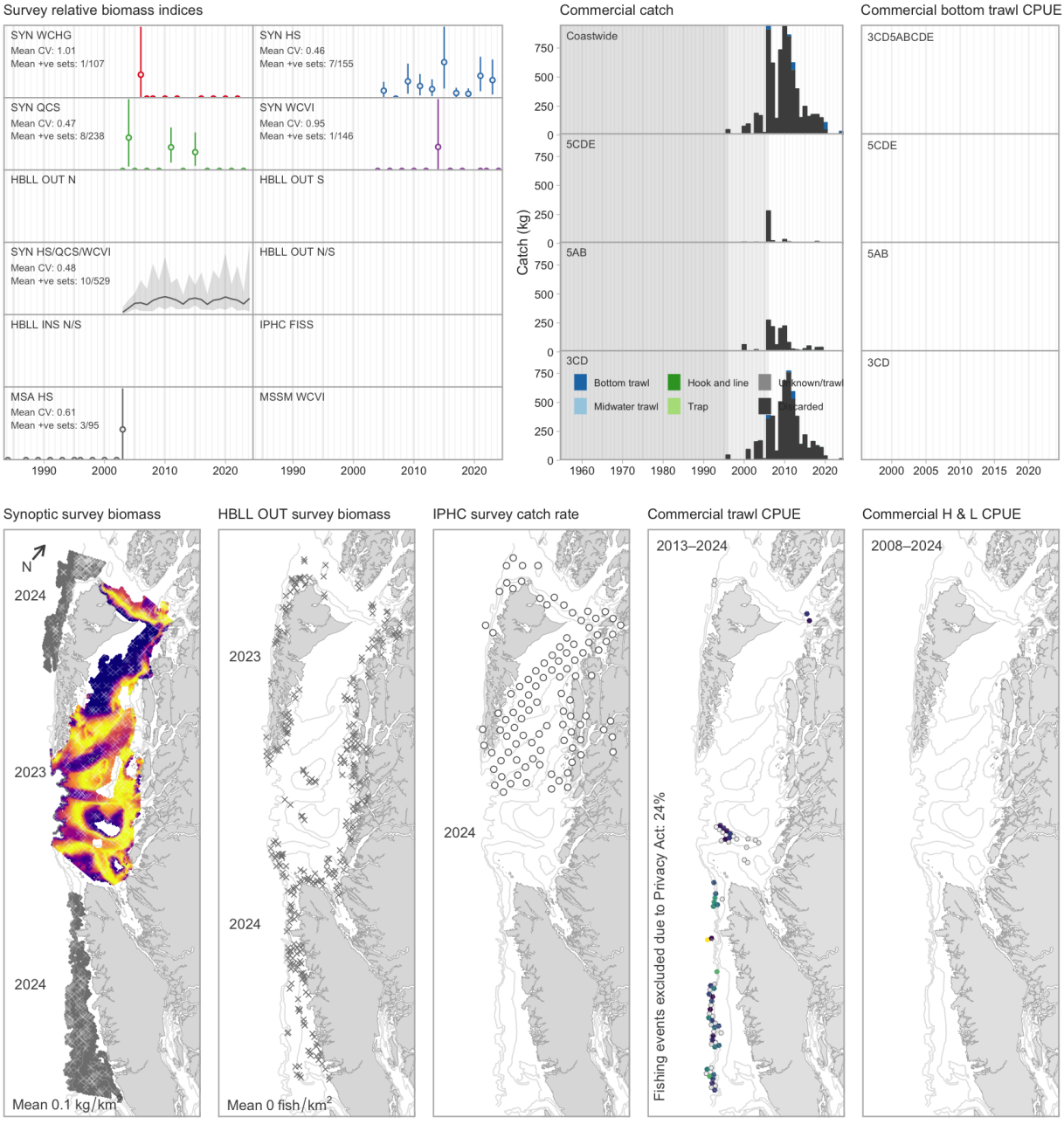
Lycodes diapterus (243)
Order: Perciformes, Family: Zoarcidae, FishBase, WoRMS

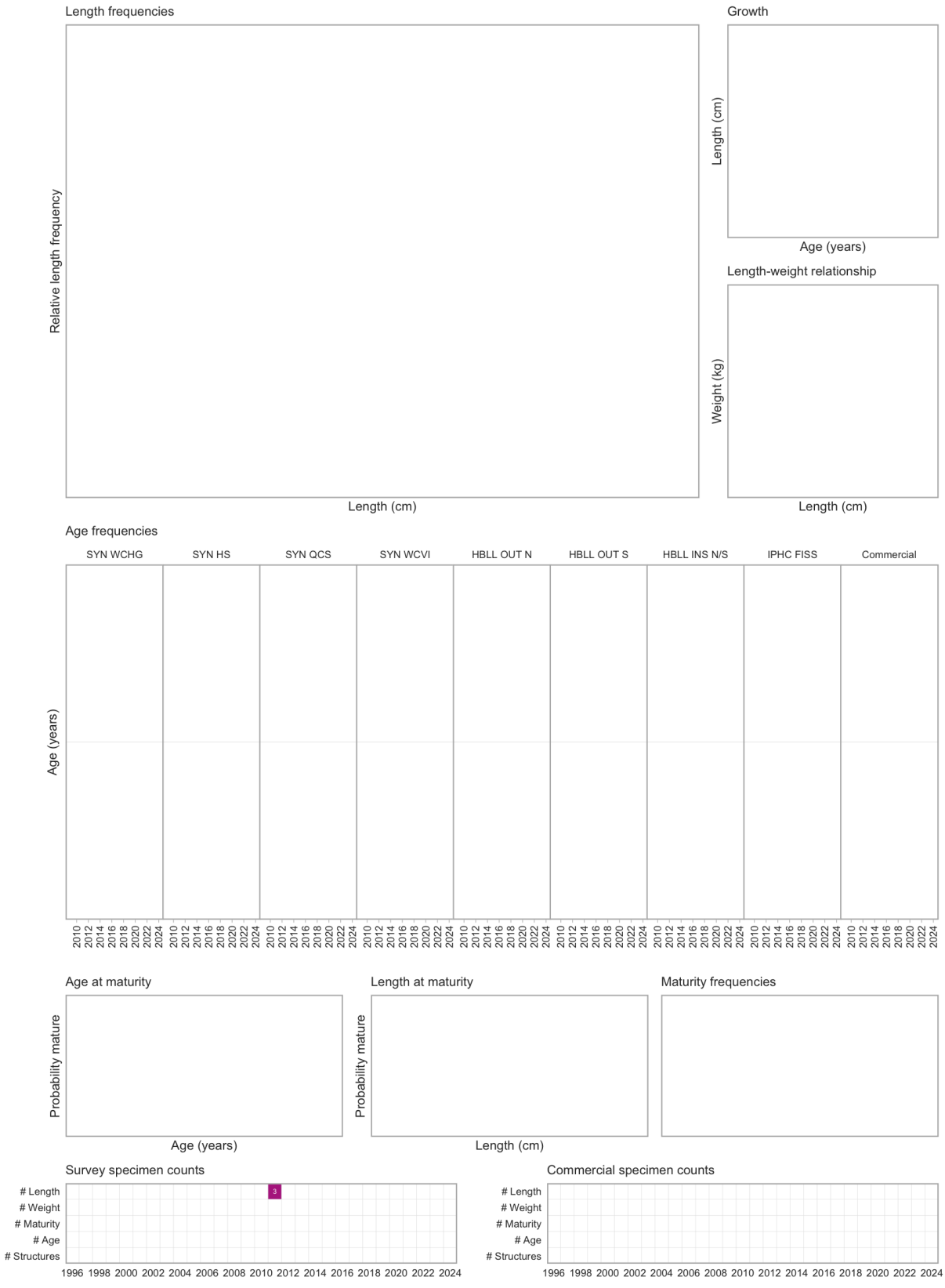



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.29 Wattled Eelpout

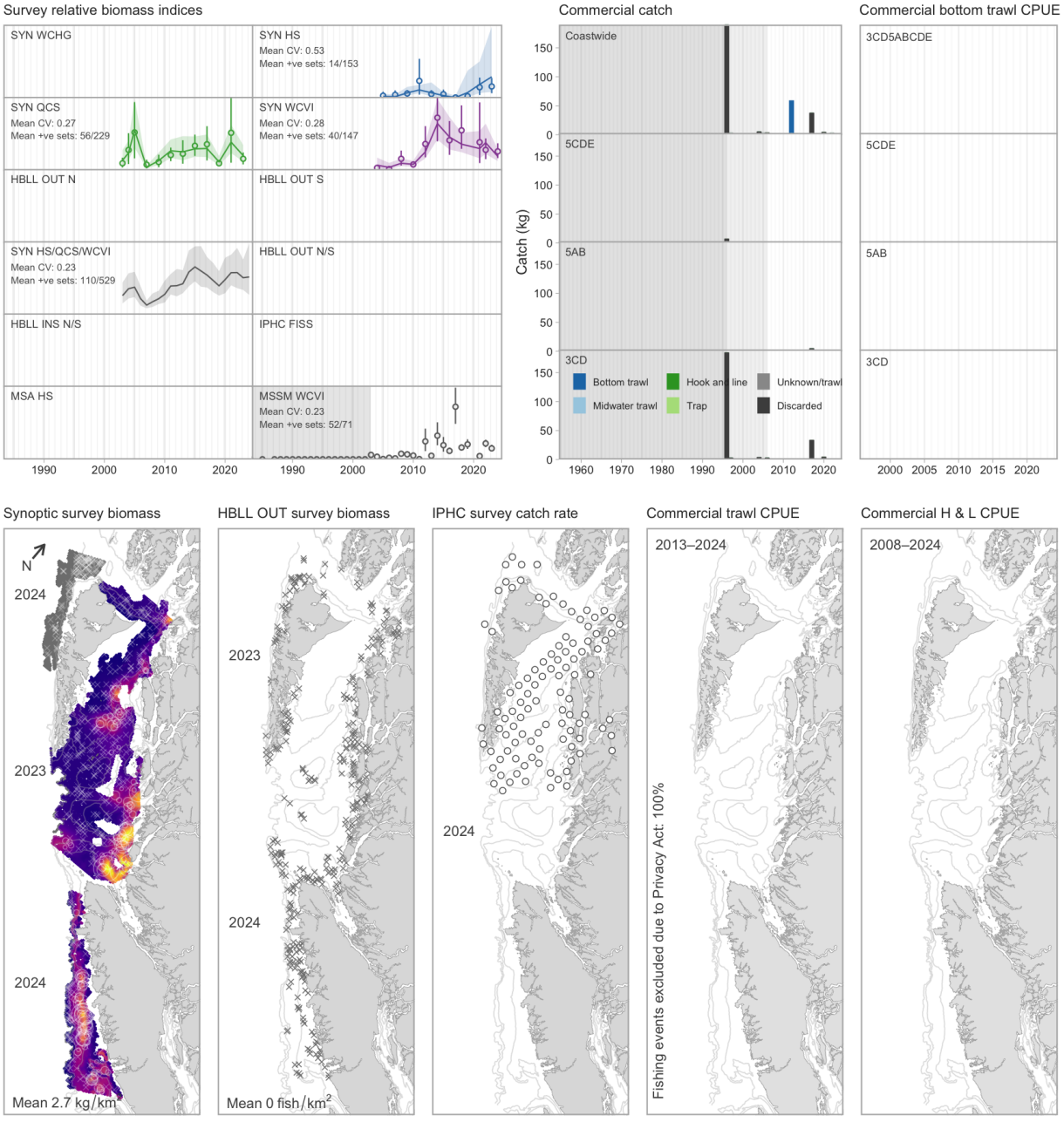
Lycodes palearis (244)
Order: Perciformes, Family: Zoarcidae, FishBase, WoRMS

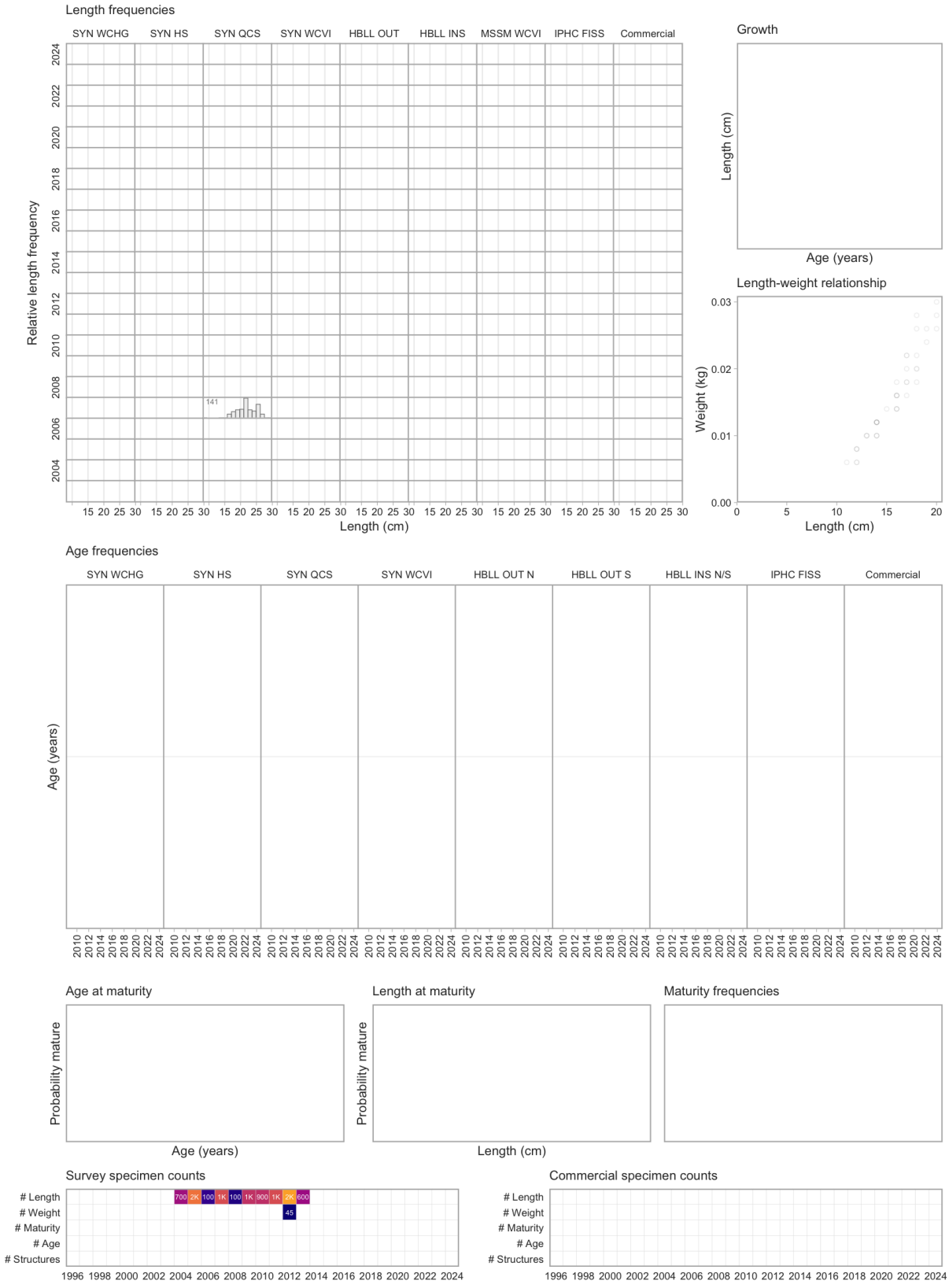



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
3
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.30 Blackbelly Eelpout

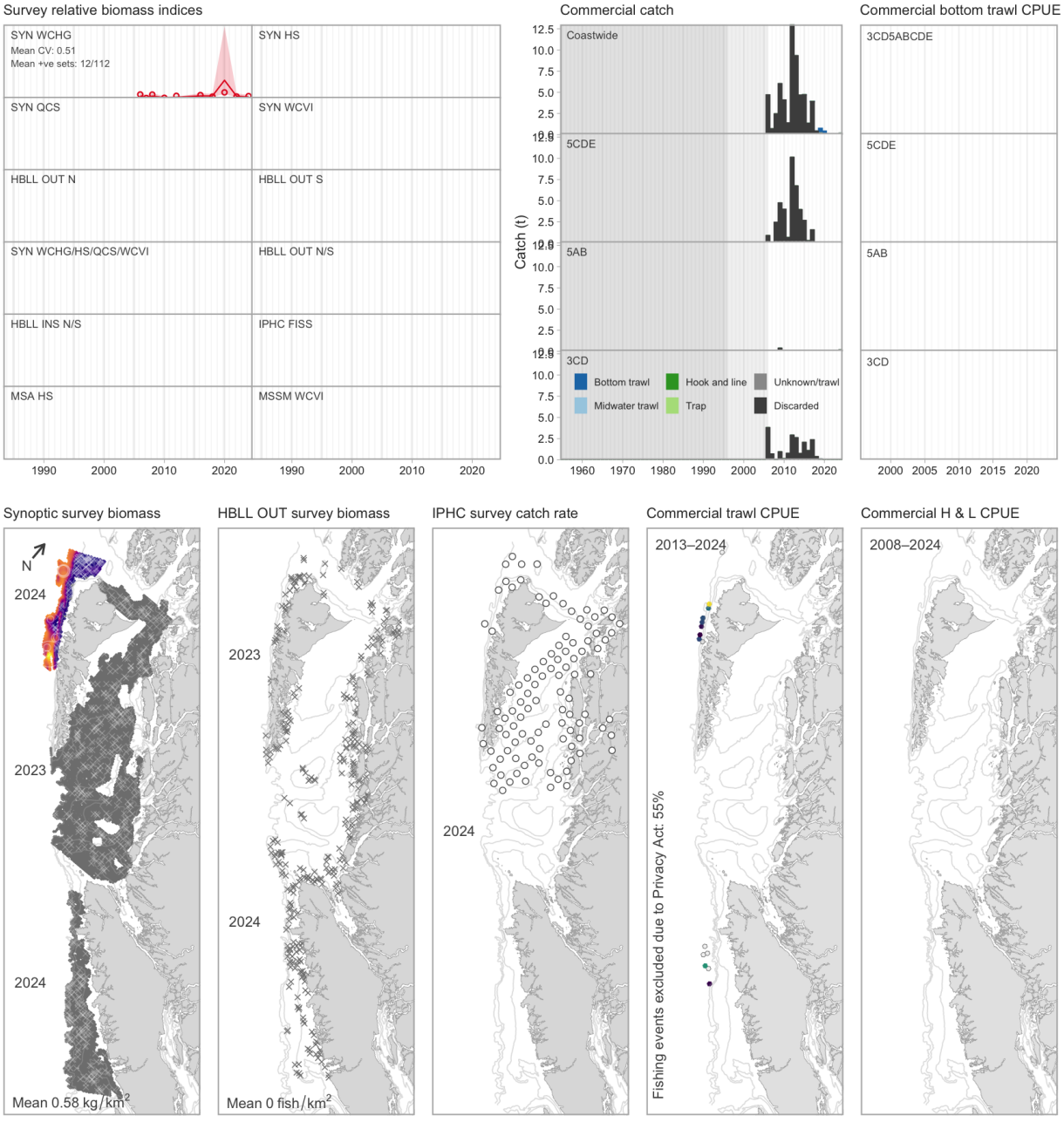
Lycodes pacificus (245)
Order: Perciformes, Family: Zoarcidae, FishBase, WoRMS

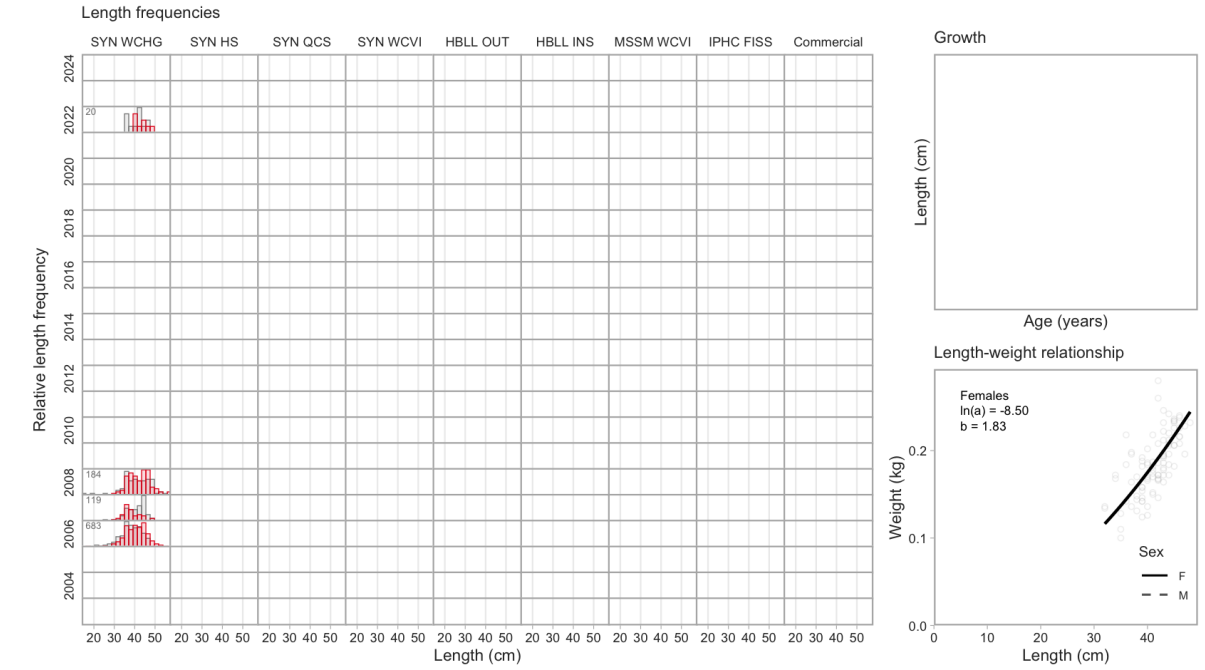



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

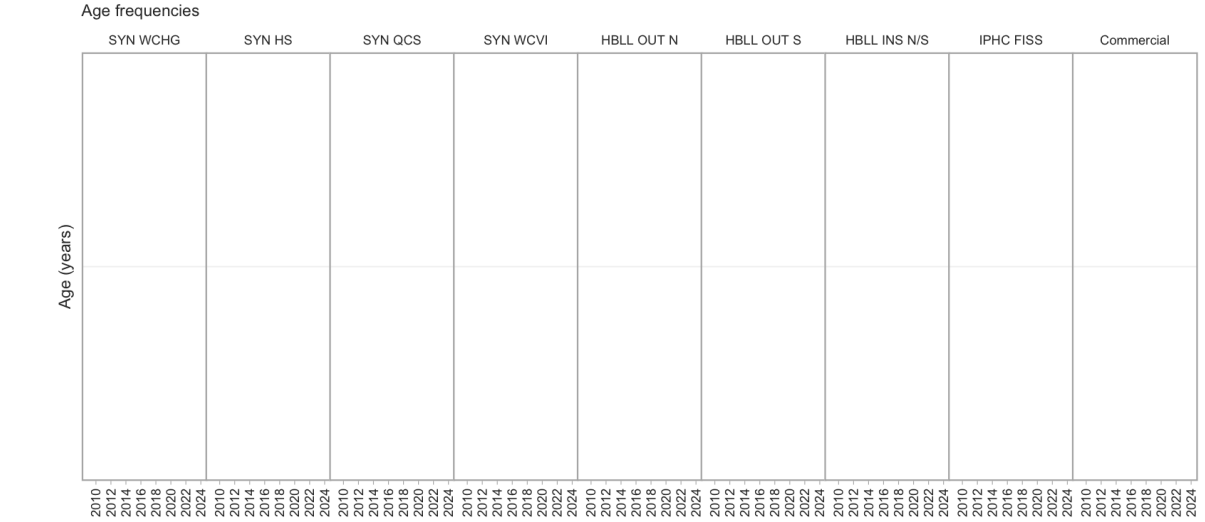
6.31 Popeye grenadier

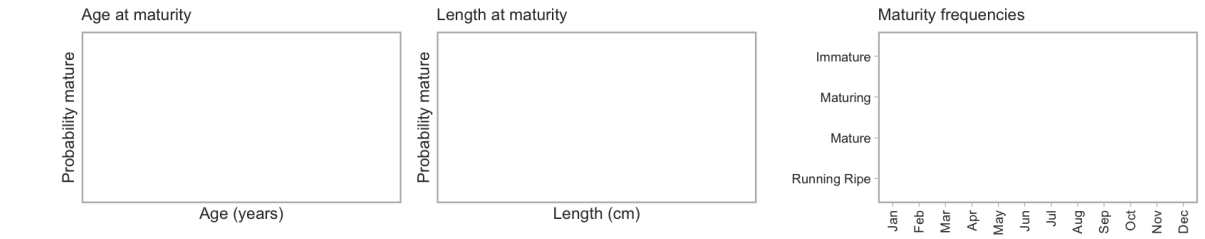
Coryphaenoides cinereus (250)
Order: Gadiformes, Family: Macrouridae, FishBase, WoRMS

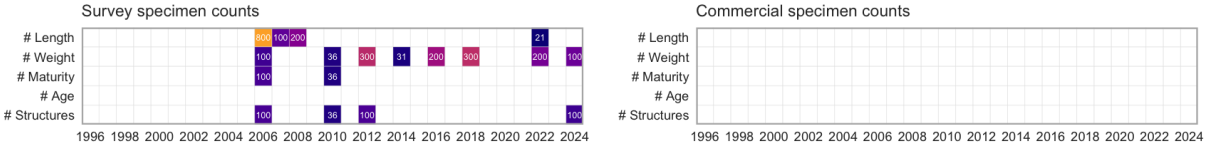



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -8.50
b = 1.83
Weight (kg)
Sex
F
M
Length (cm)

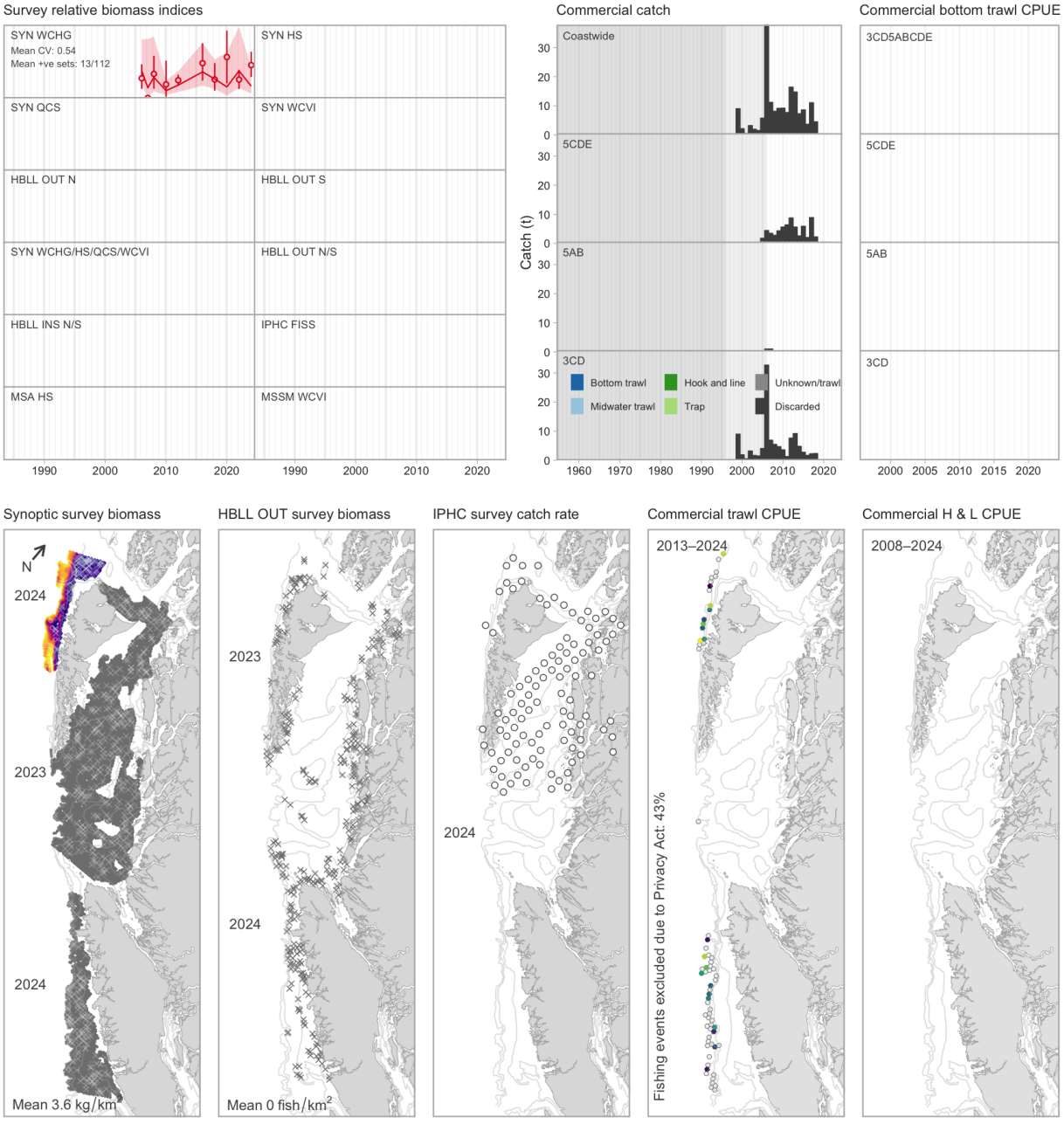

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)

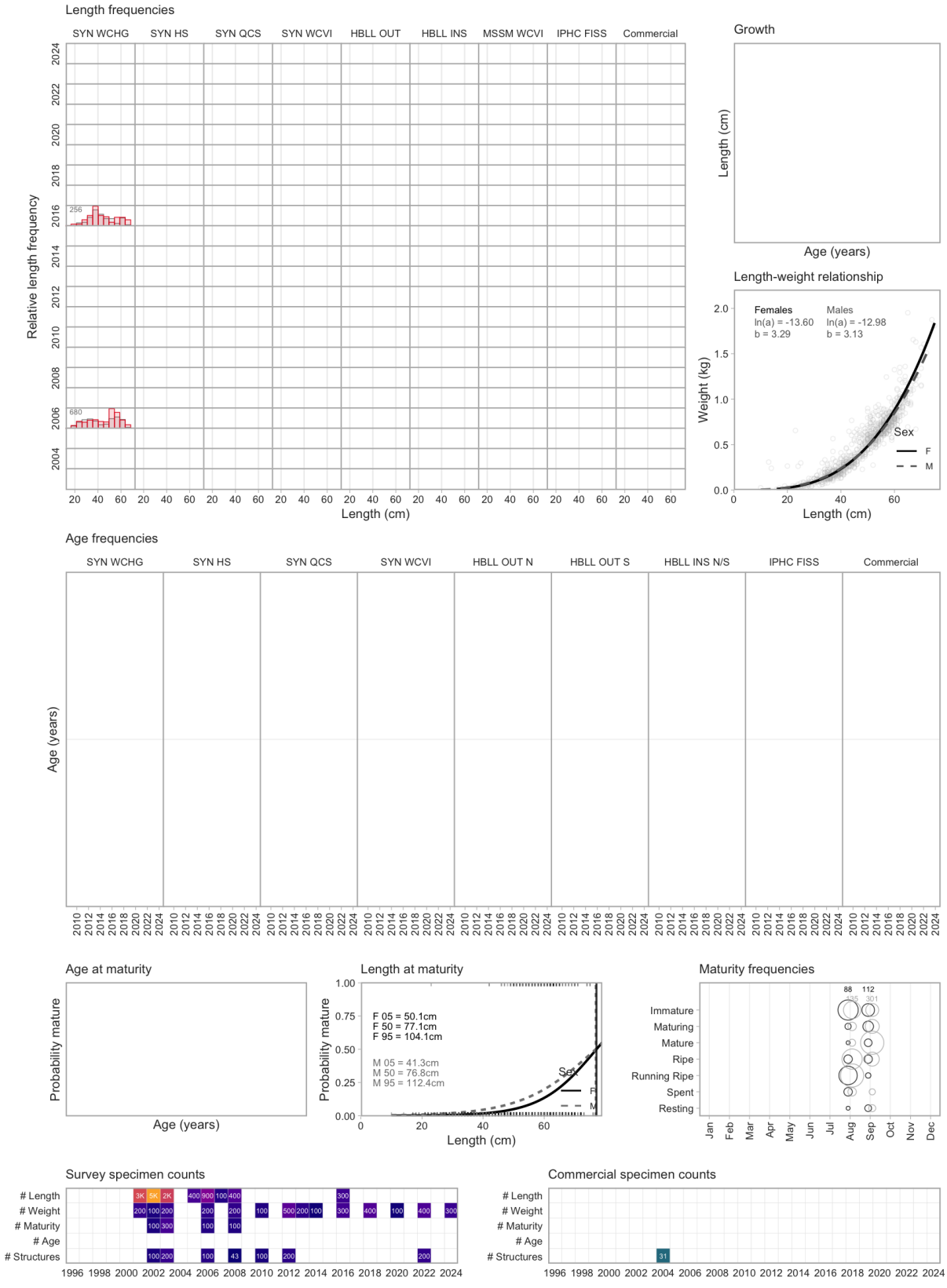

Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Running Ripe
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.32 Pacific Grenadier

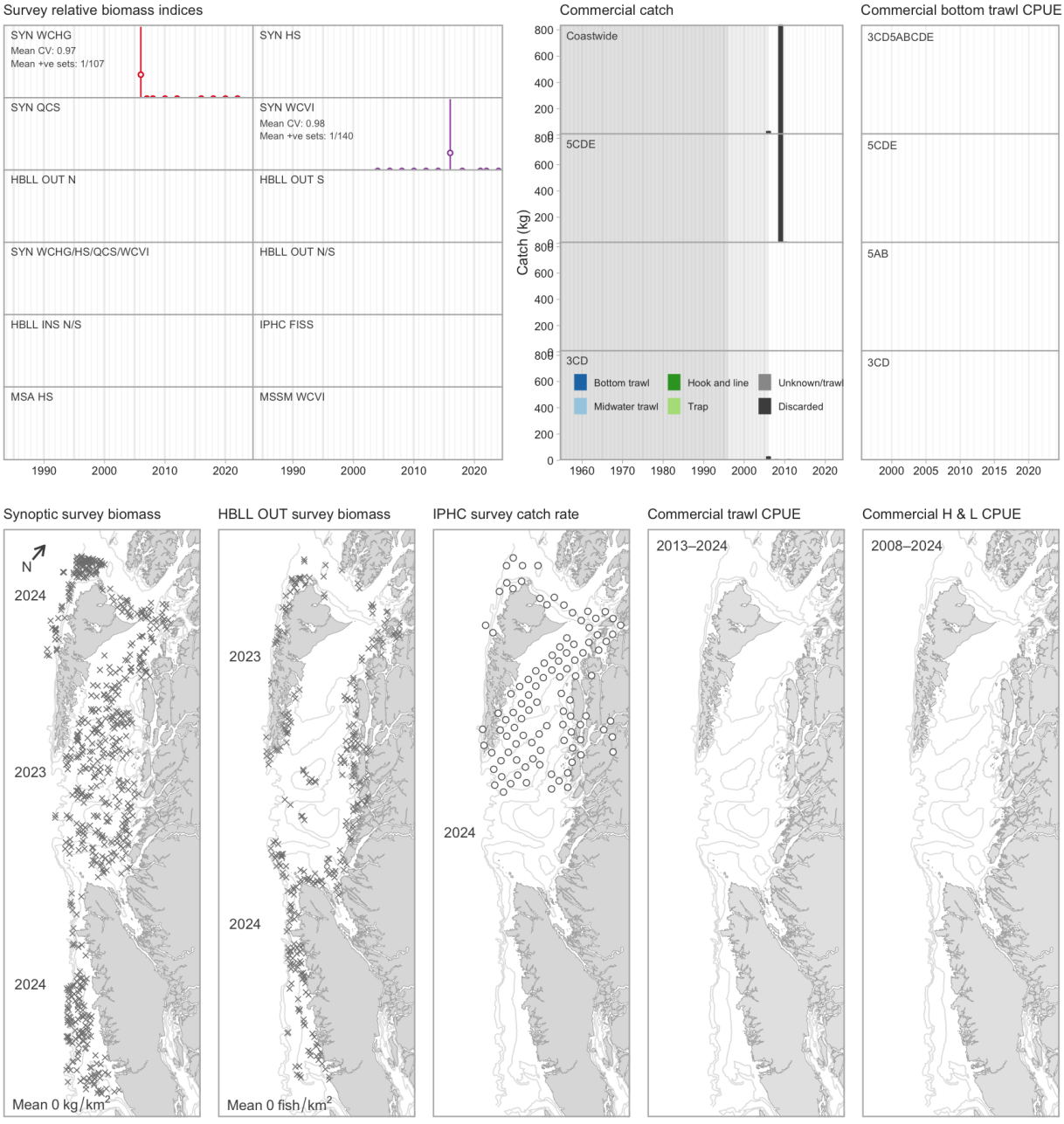
Coryphaenoides acrolepis (251)
Order: Gadiformes, Family: Macrouridae, FishBase, WoRMS

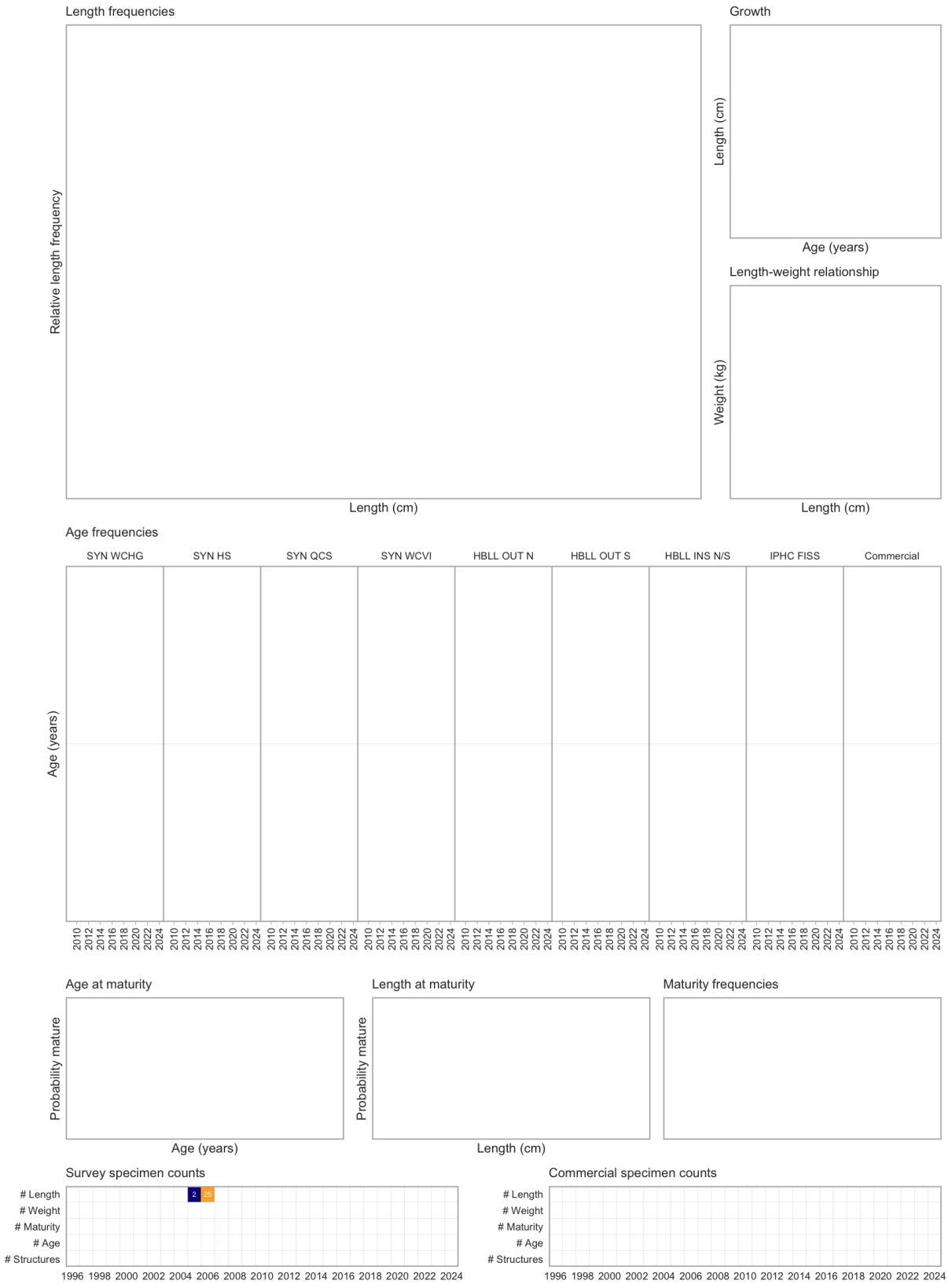



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -13.60
b = 3.29
Males
ln(a) = -12.98
b = 3.13
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
F 05 = 50.1cm
F 50 = 77.1cm
F 95 = 104.1cm
M 05 = 41.3cm
M 50 = 76.8cm
M 95 = 112.4cm
Probability mature
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.33 Threadfin Grenadier

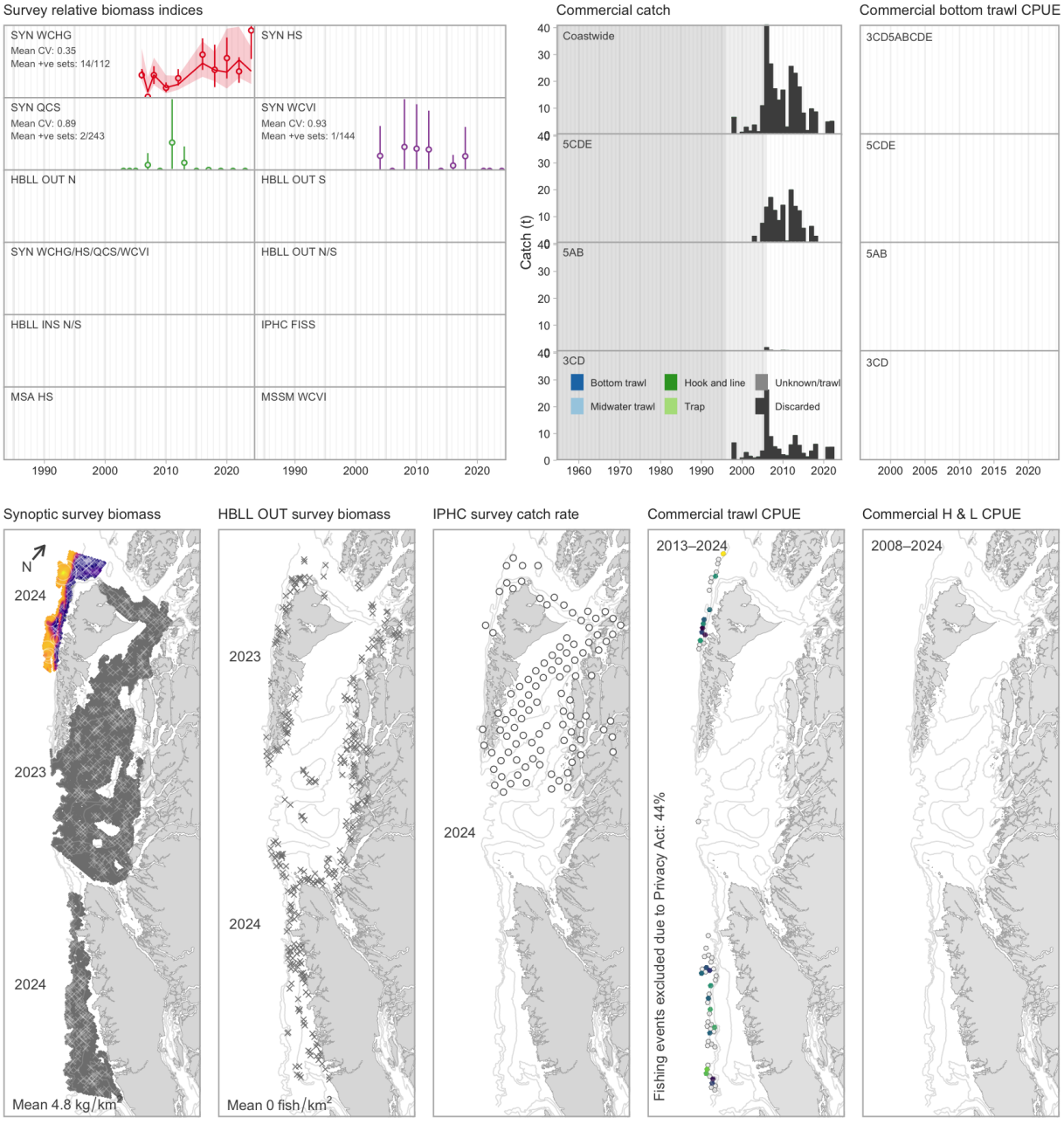
Coryphaenoides filifer (254)
Order: Gadiformes, Family: Macrouridae, FishBase, WoRMS

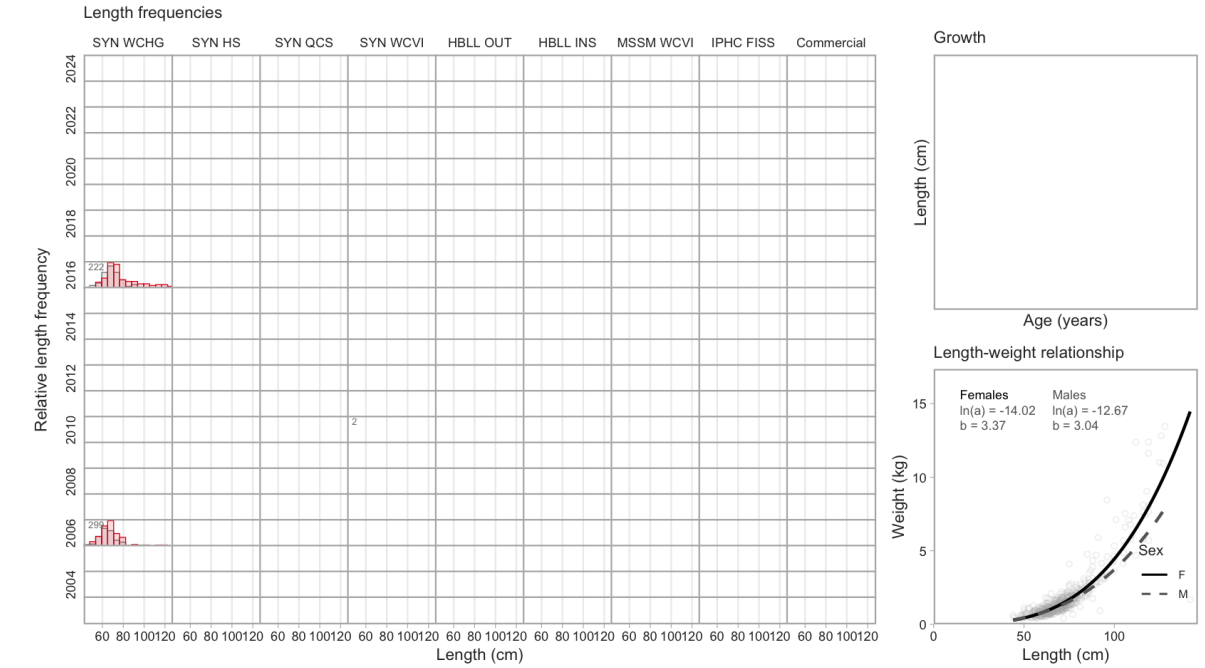


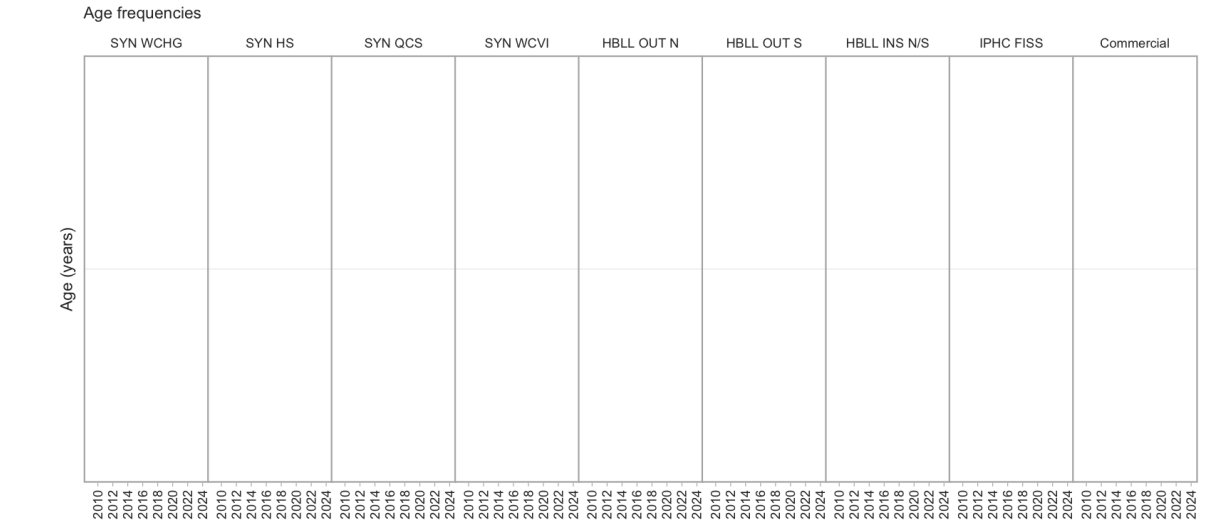

Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

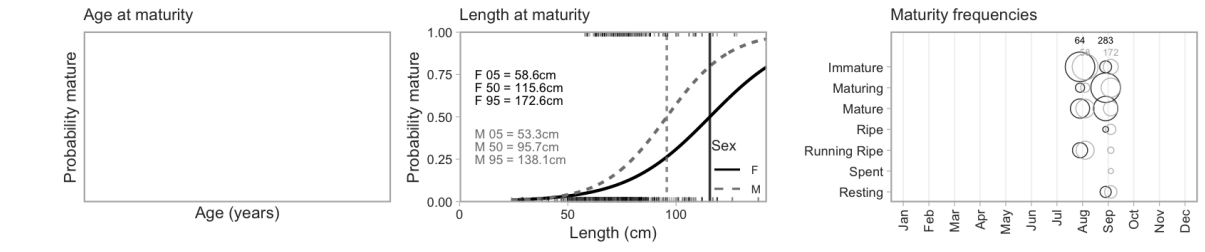
6.34 Giant Grenadier

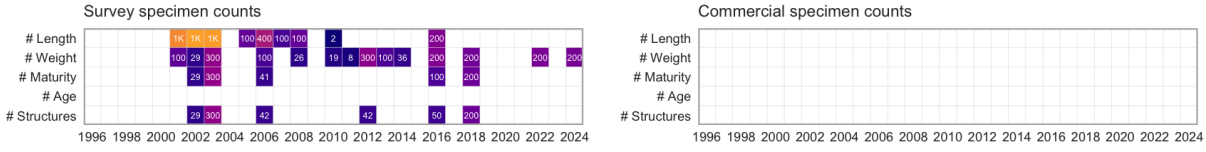
Albatrossia pectoralis (256)
Order: Gadiformes, Family: Macrouridae, FishBase, WoRMS




Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -14.02
b = 3.37
Males
ln(a) = -12.67
b = 3.04
Weight (kg)
Sex
F
M
Length (cm)

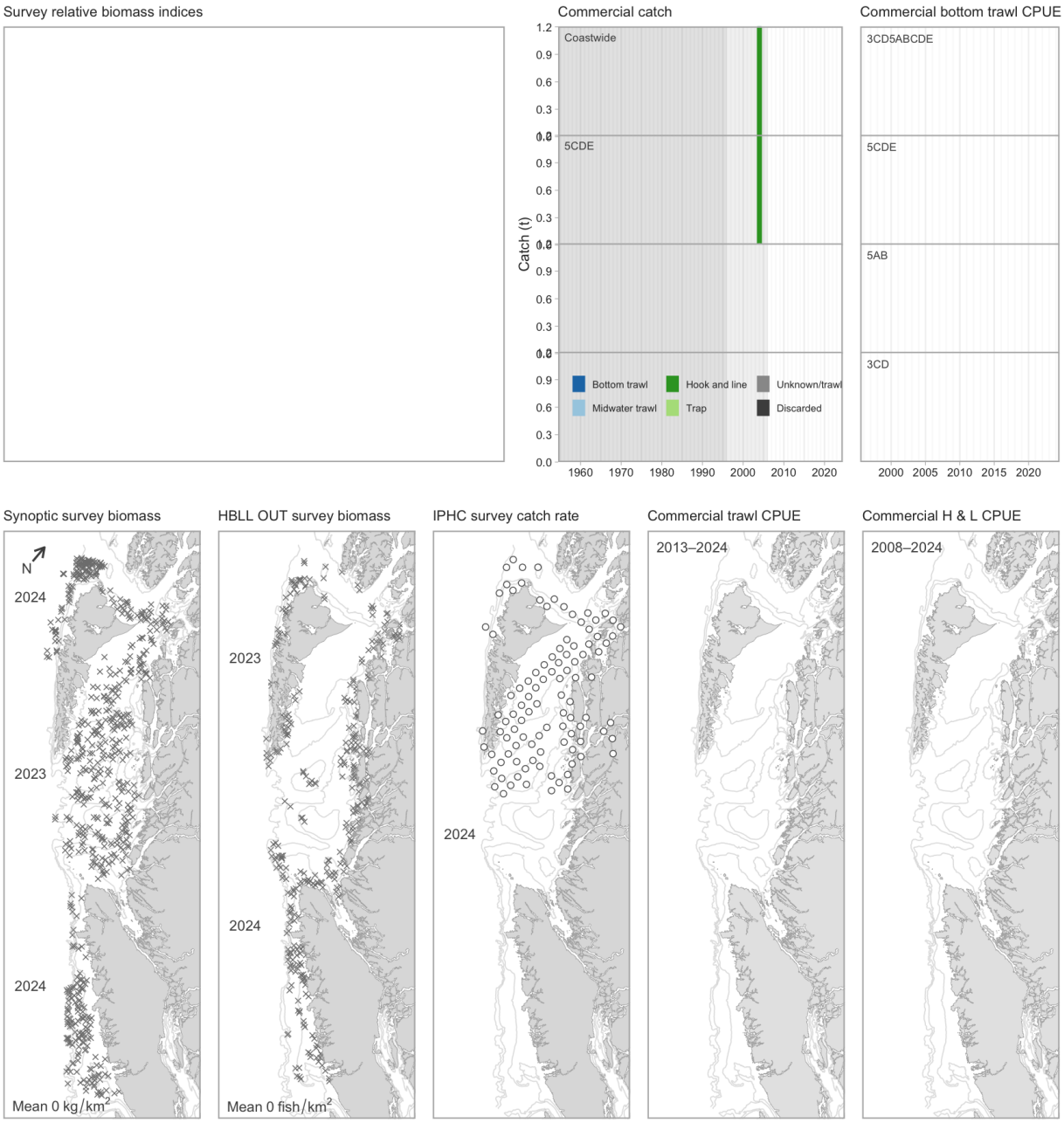

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)

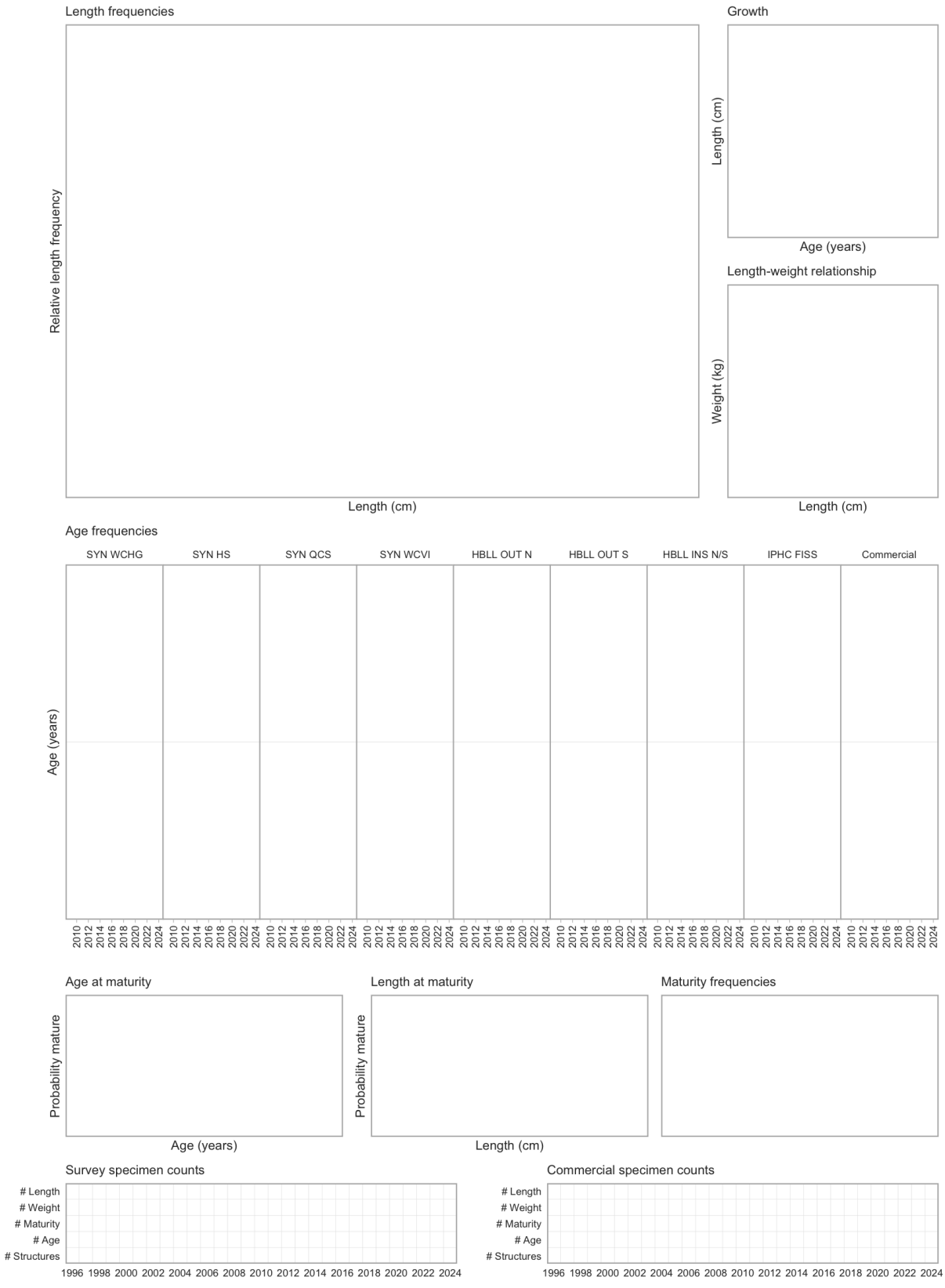

Age at maturity
Probability mature
Age (years)
Length at maturity
F 05 = 58.6cm
F 50 = 115.6cm
F 95 = 172.6cm
M 05 = 53.3cm
M 50 = 95.7cm
M 95 = 138.1cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts

6.35 California Grenadier

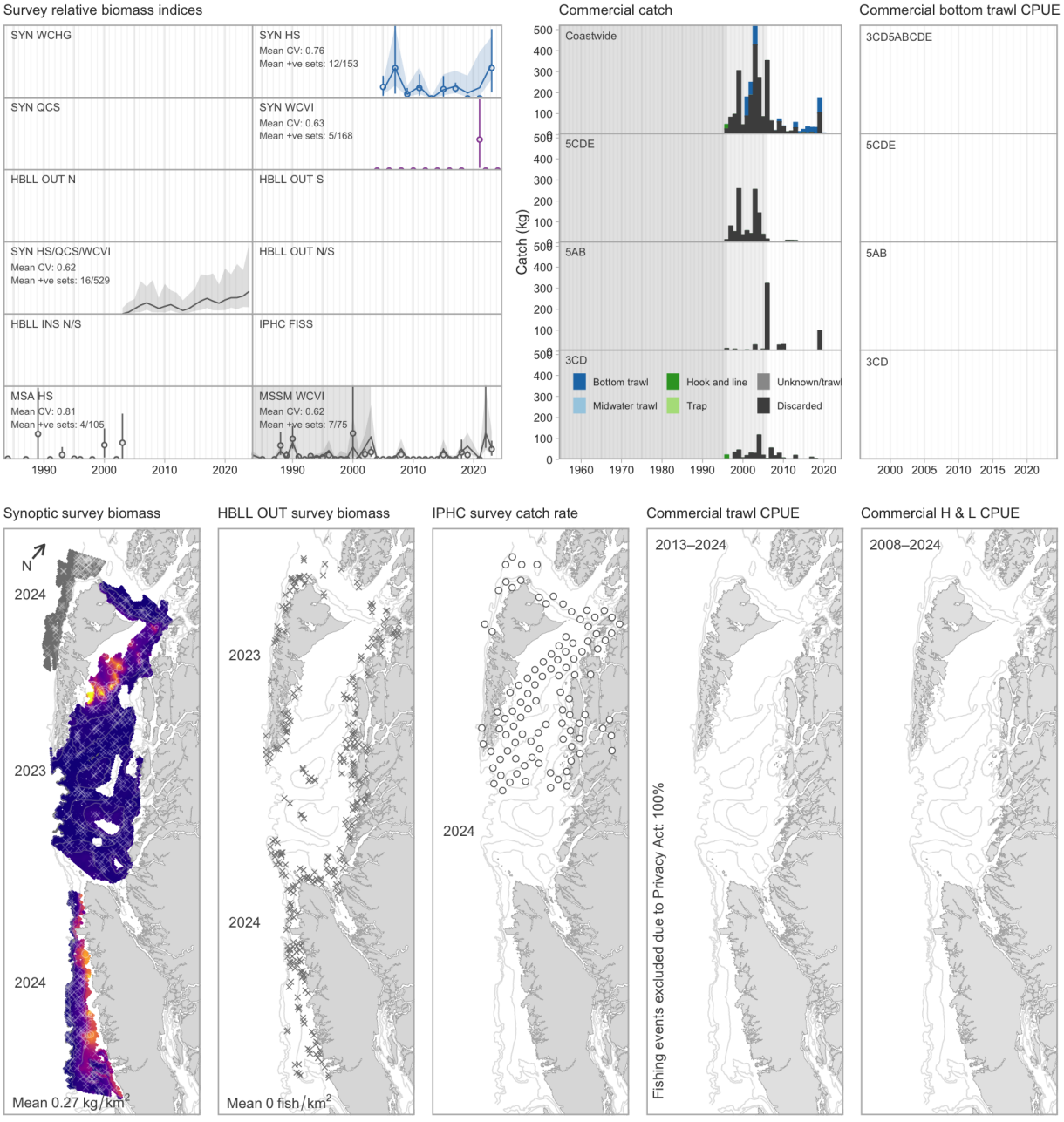
Nezumia stelgidolepis (257)
Order: Gadiformes, Family: Macrouridae, FishBase, WoRMS

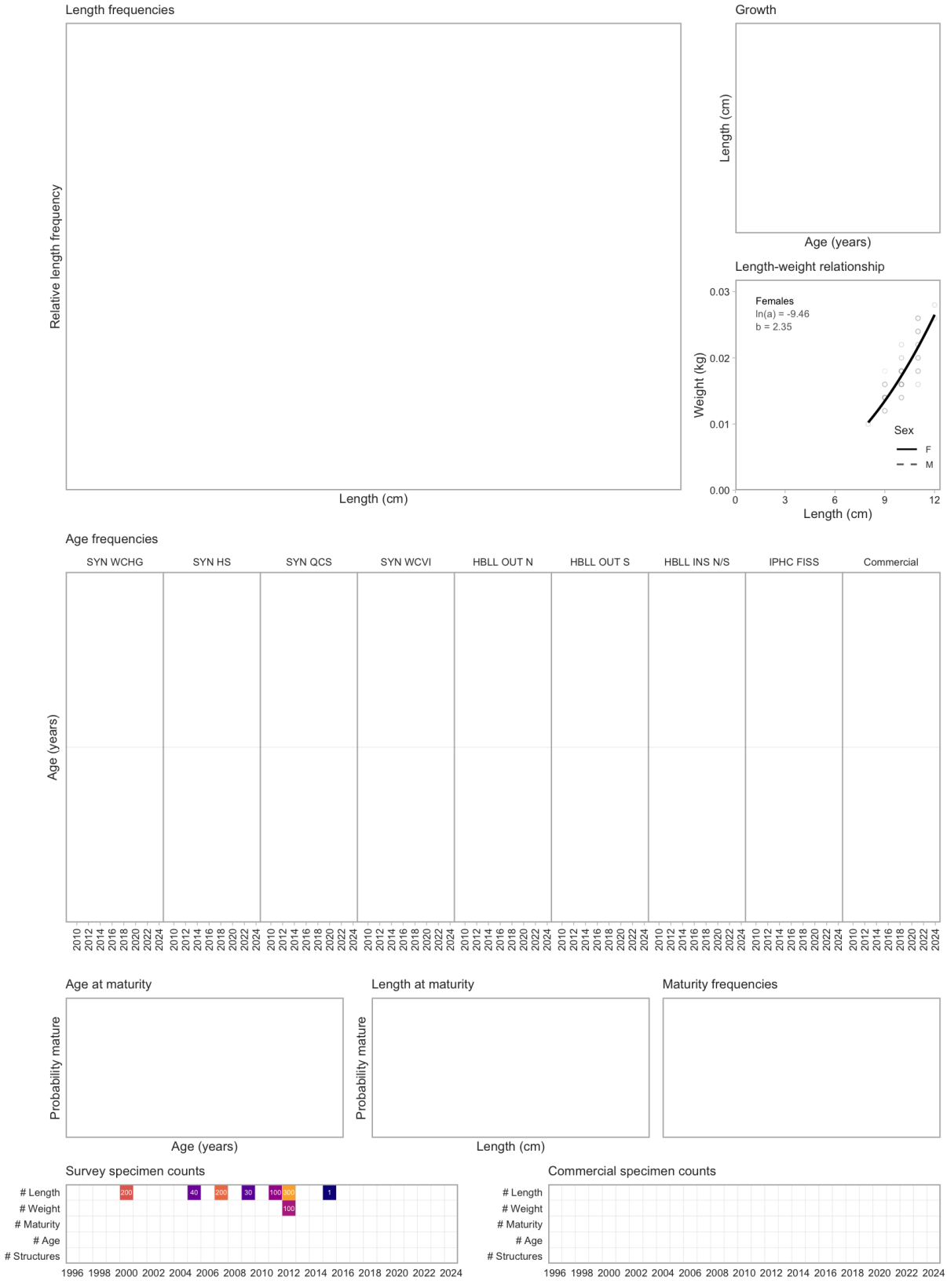



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.36 Shiner Perch

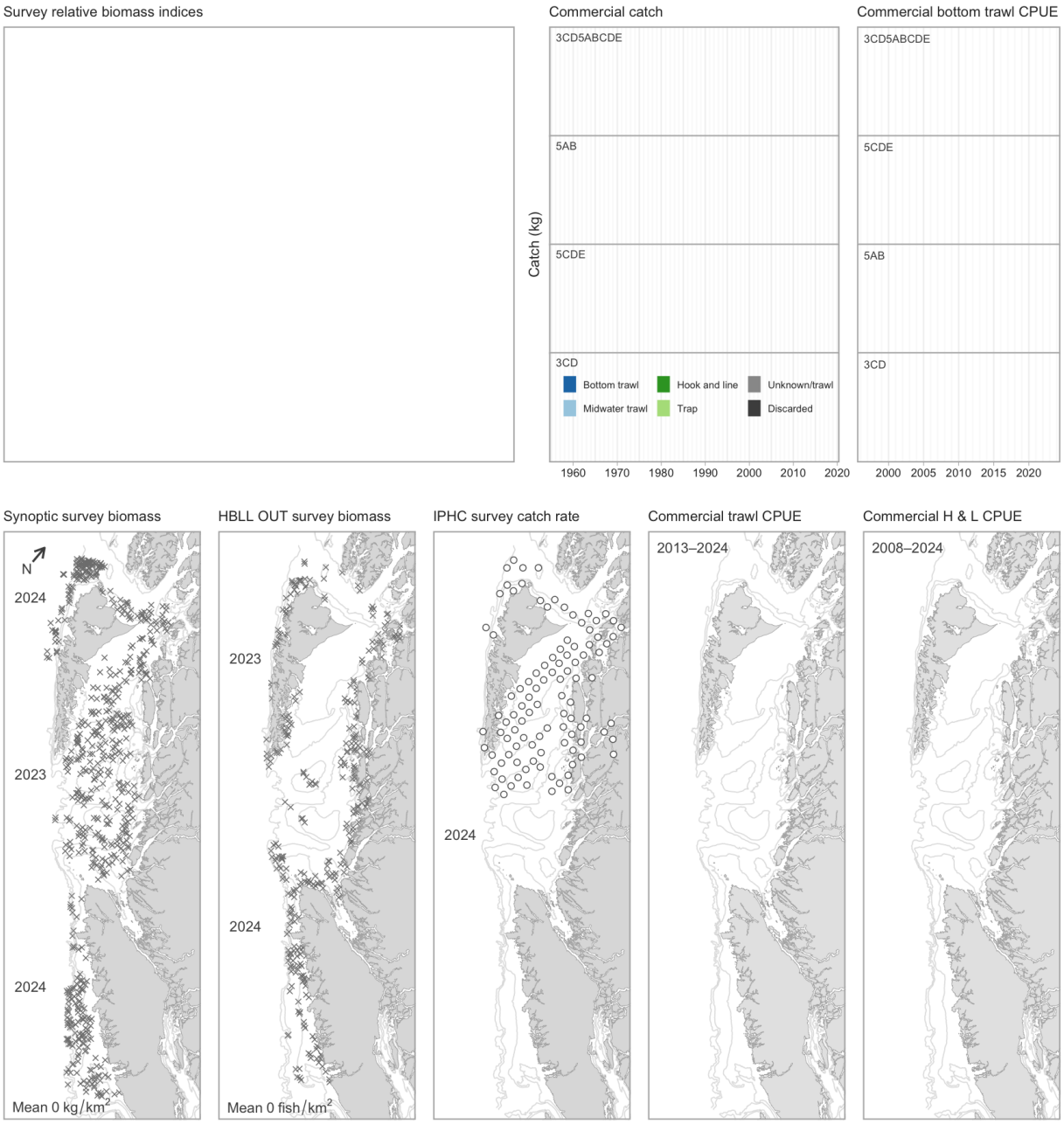
Cymatogaster aggregata (304)
Order: Ovalentaria incertae sedis, Family: Embiotocidae, FishBase, WoRMS

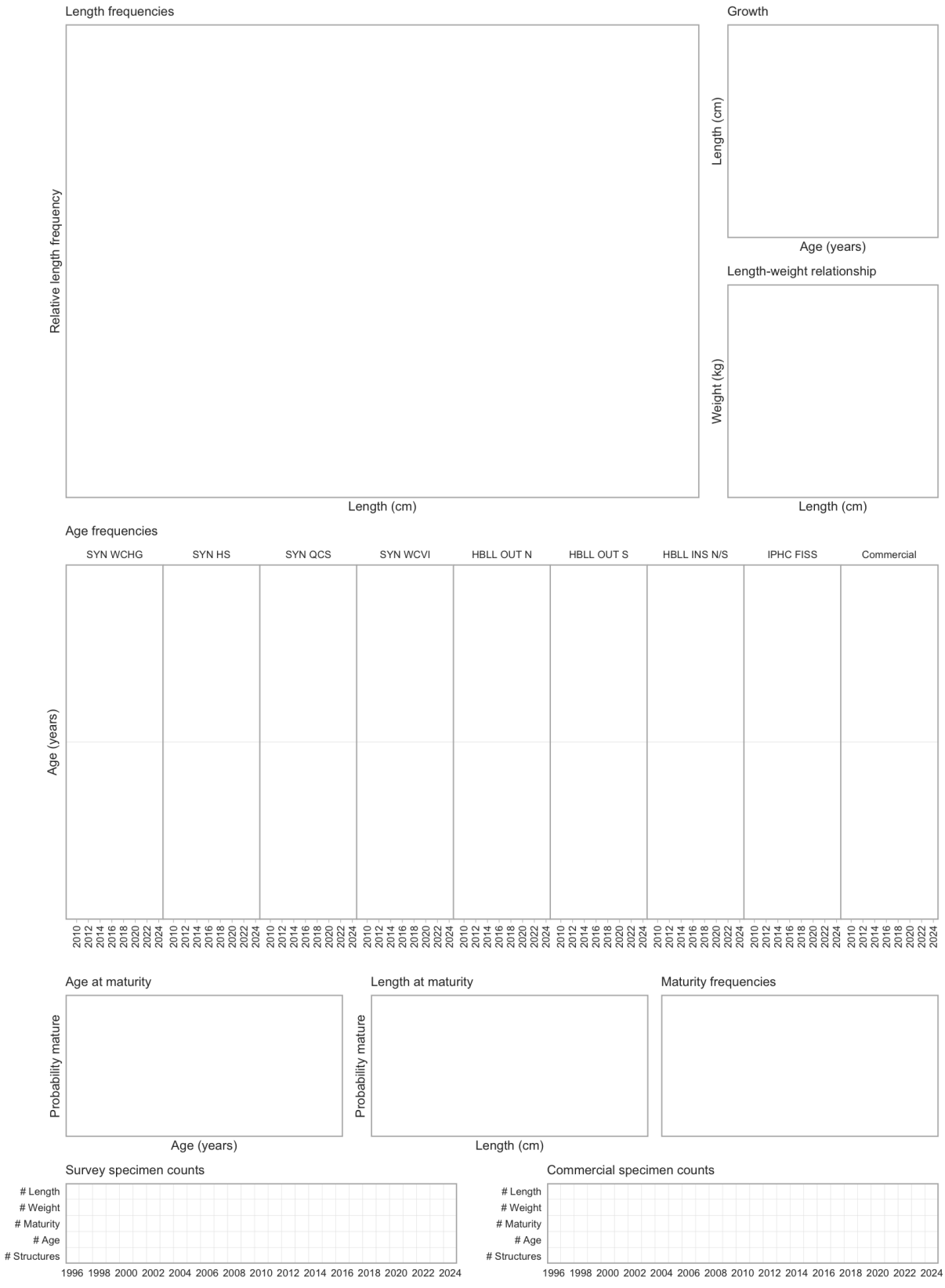



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -9.46
b = 2.35
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts

6.37 Pearly Prickleback

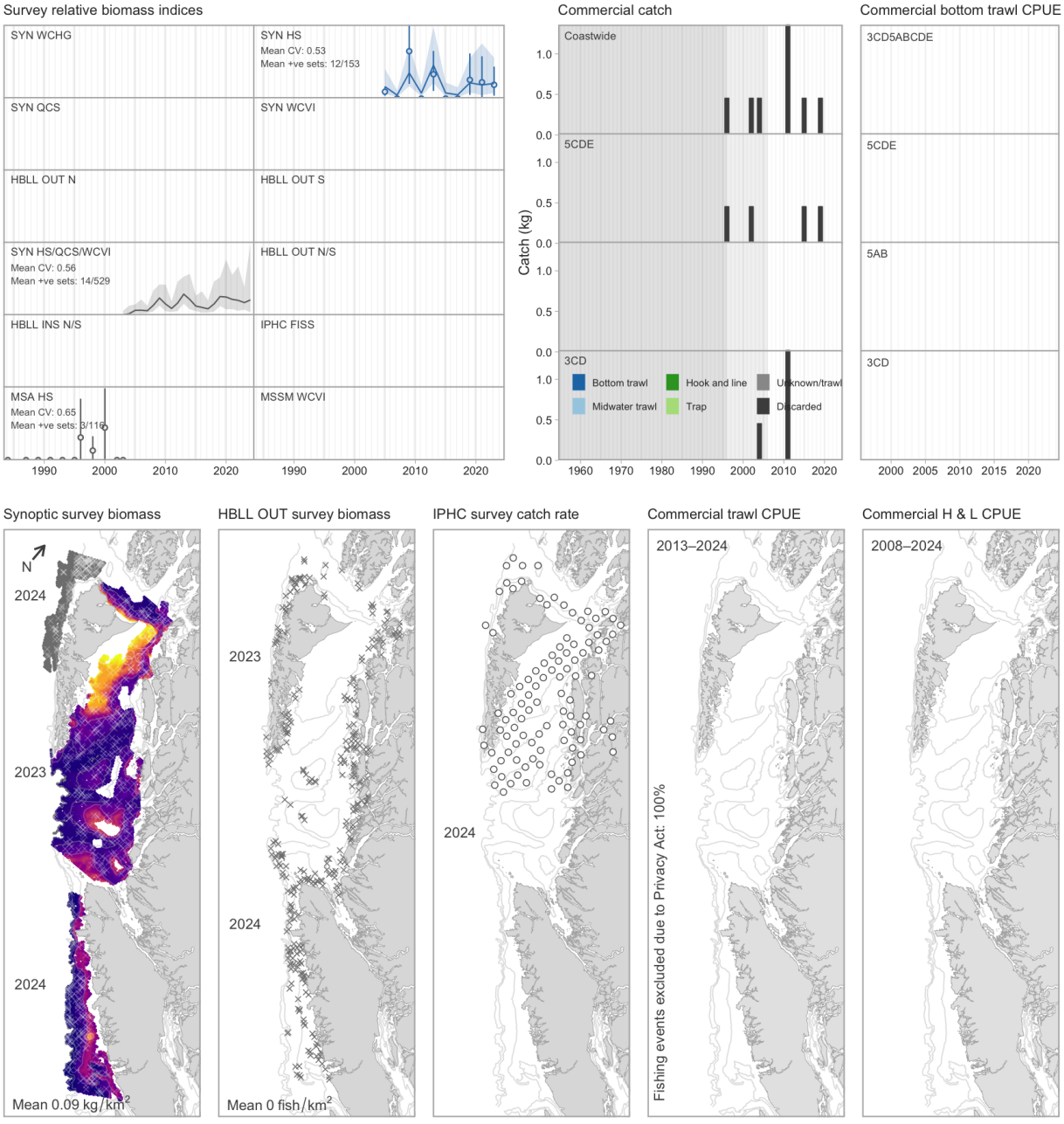
Bryozoichthys marjorius (331)
Order: Perciformes, Family: Stichaeidae, FishBase, WoRMS

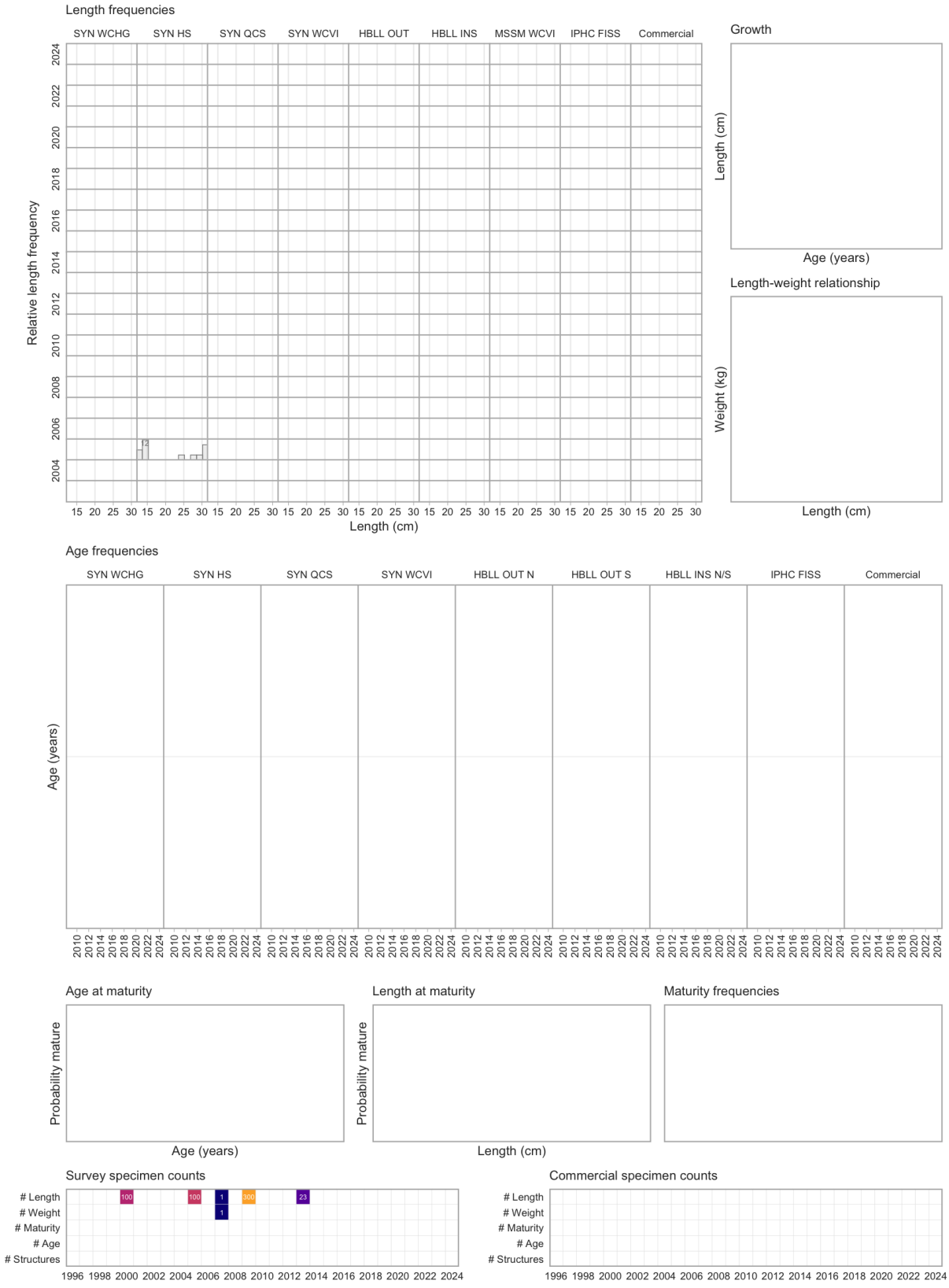



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.38 Snake Prickleback

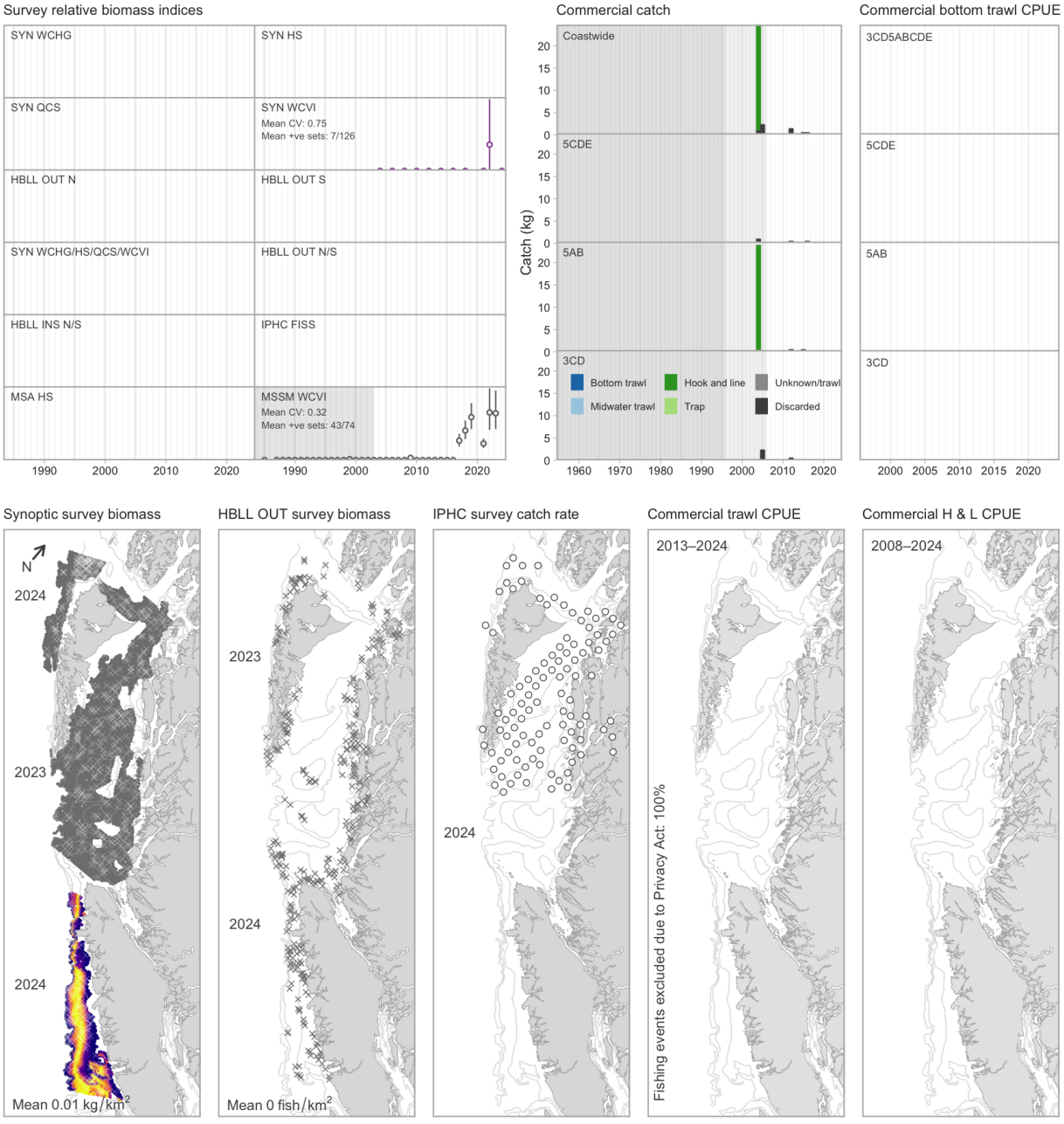
Lumpenus sagitta (337)
Order: Perciformes, Family: Lumpenidae, FishBase, WoRMS

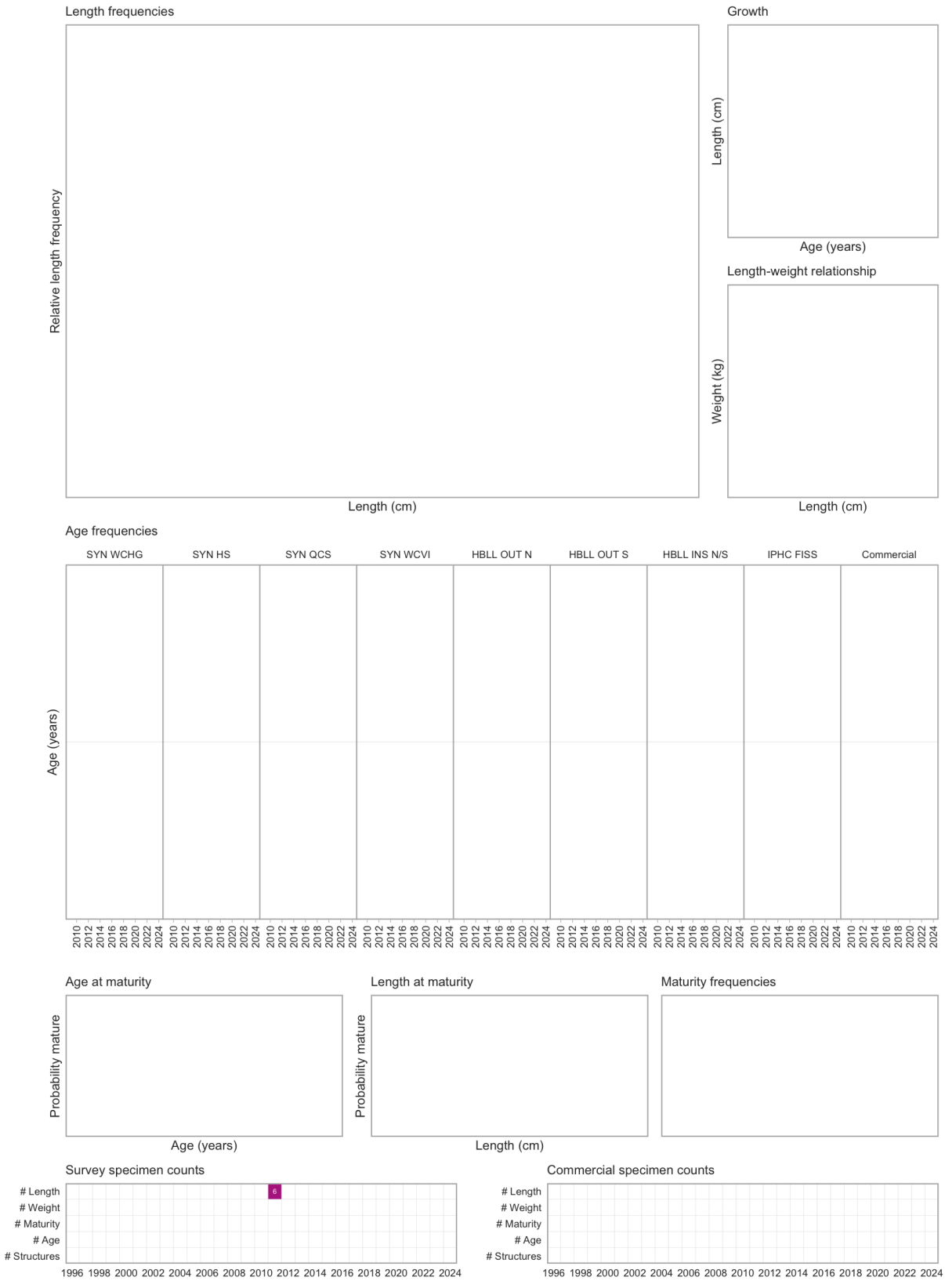



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.39 Whitebarred Prickleback

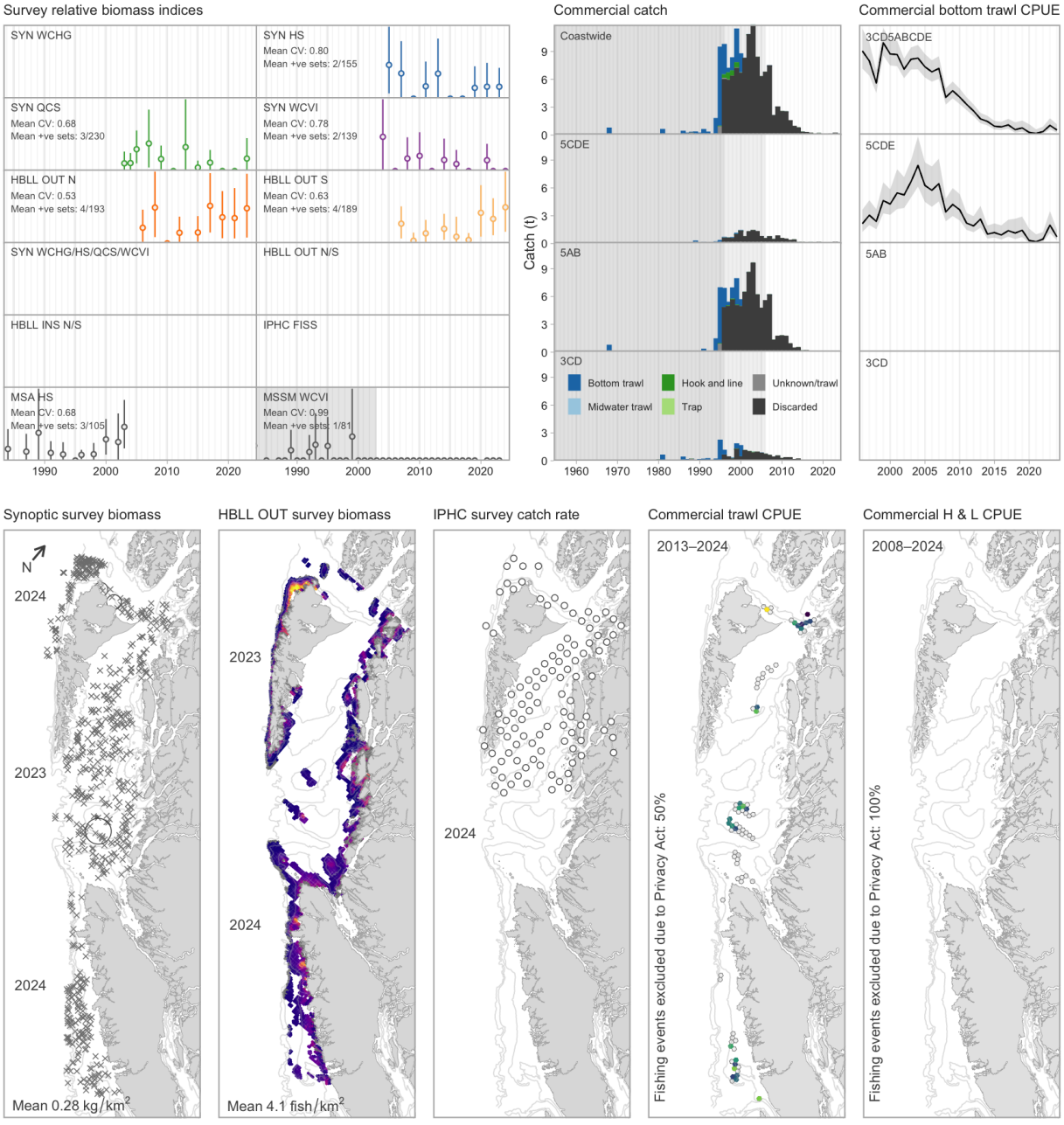
Poroclinus rothrocki (340)
Order: Perciformes, Family: Lumpenidae, FishBase, WoRMS

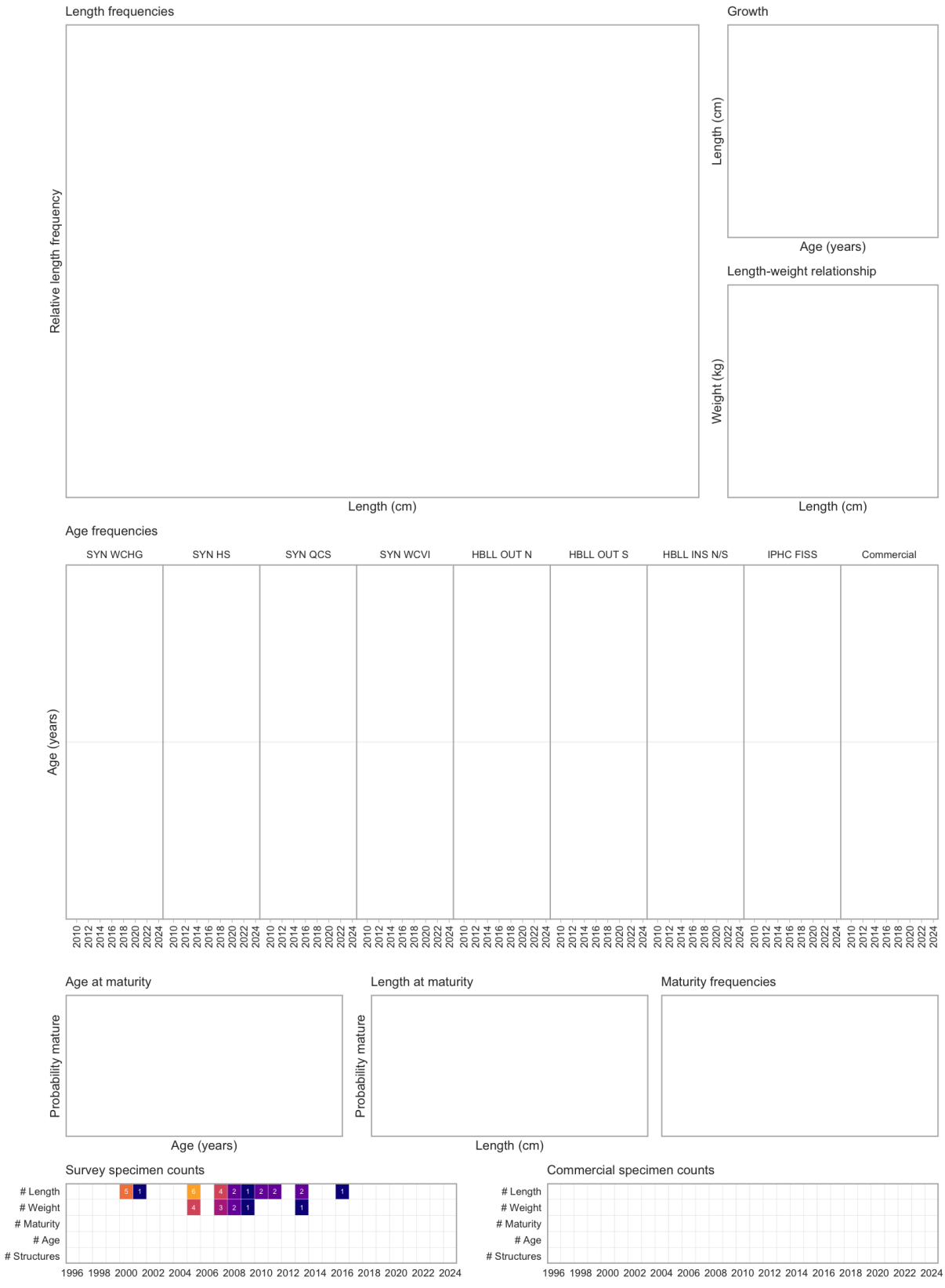



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
6
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.40 Wolf Eel

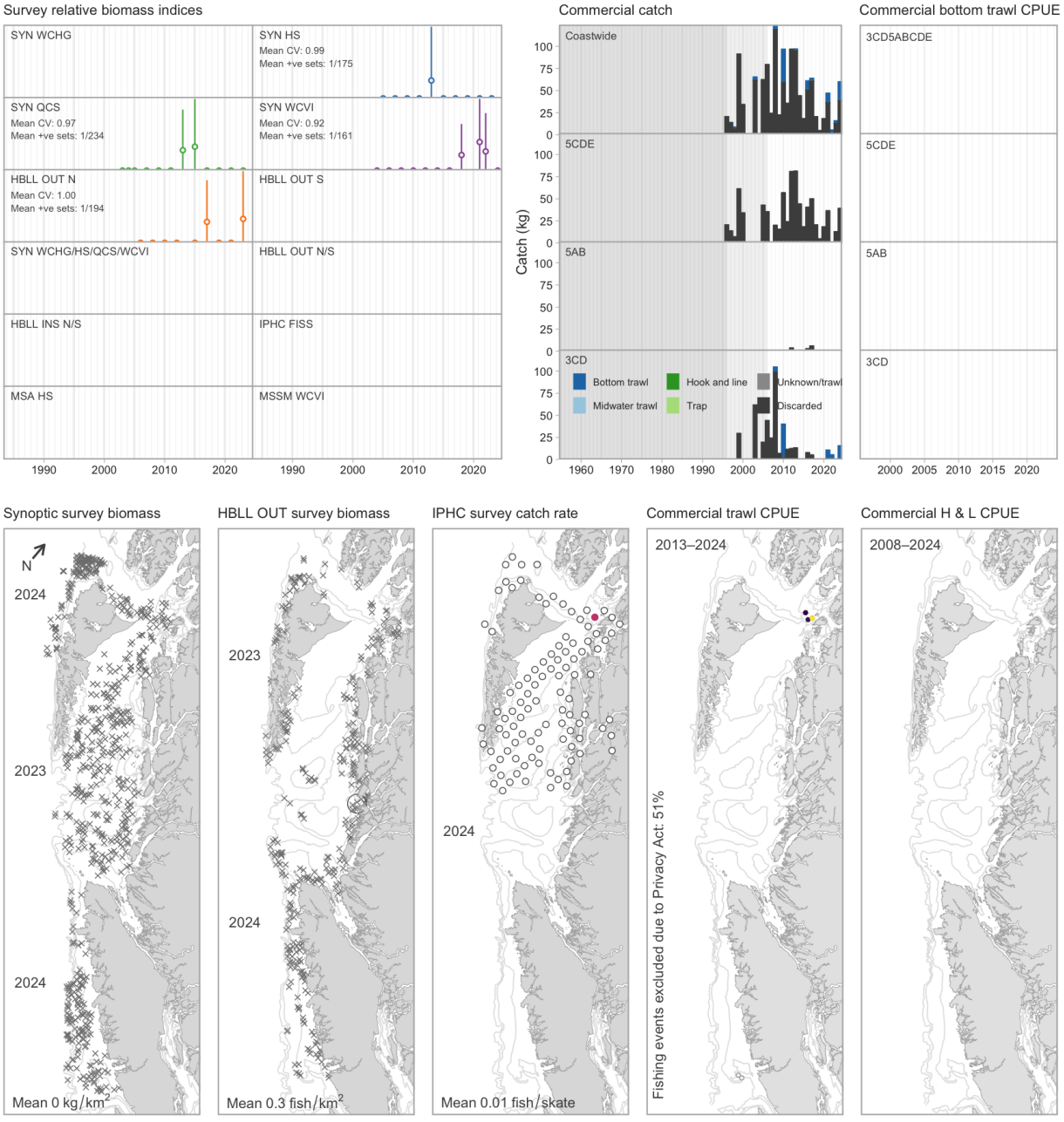
Anarrhichthys ocellatus (351)
Order: Perciformes, Family: Anarhichadidae, FishBase, WoRMS
COSEWIC Annual Report: COSEWIC (2003)
COSEWIC Status: Not at Risk, SARA Status: No Status

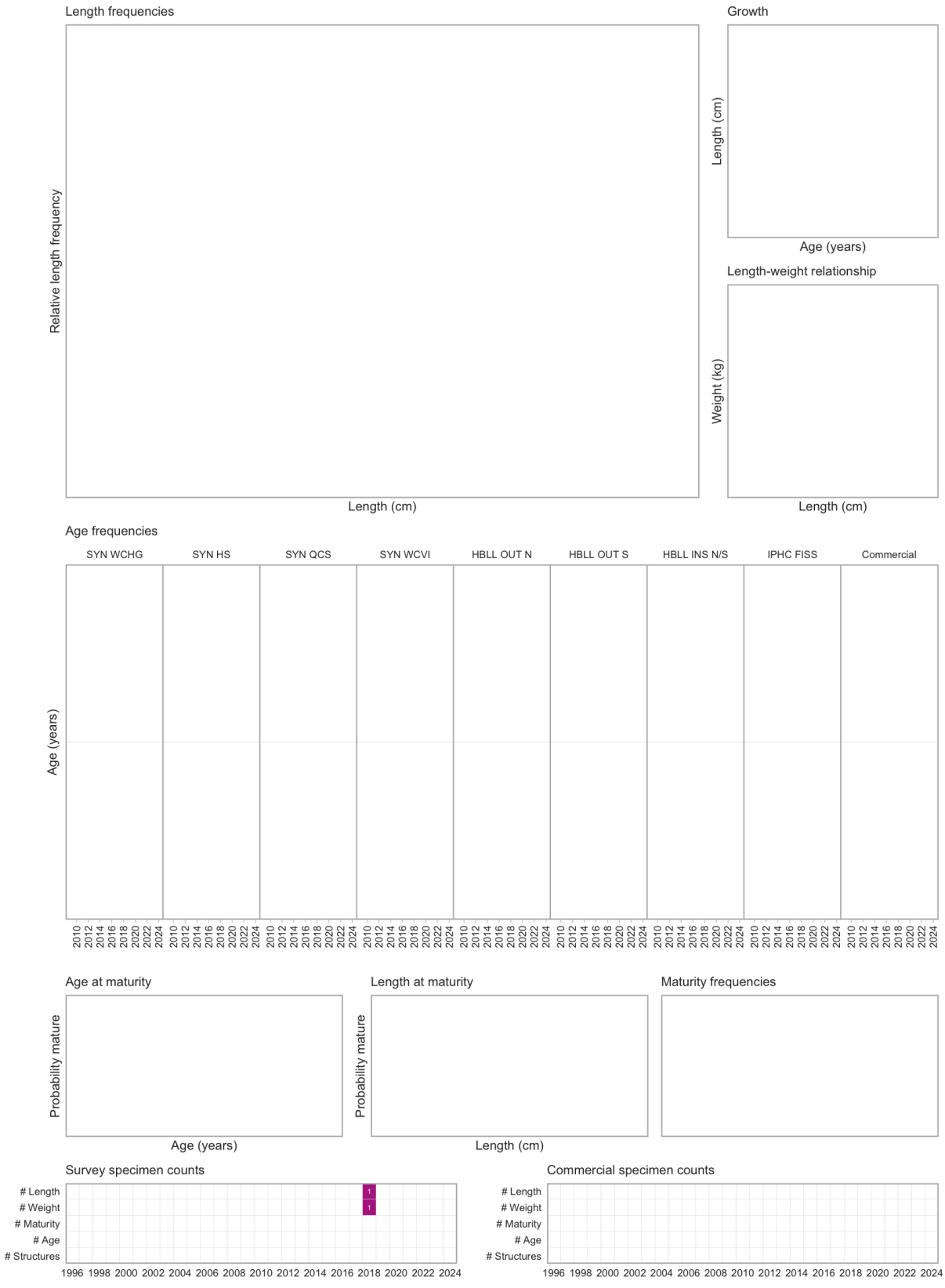



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.41 Giant Wrymouth

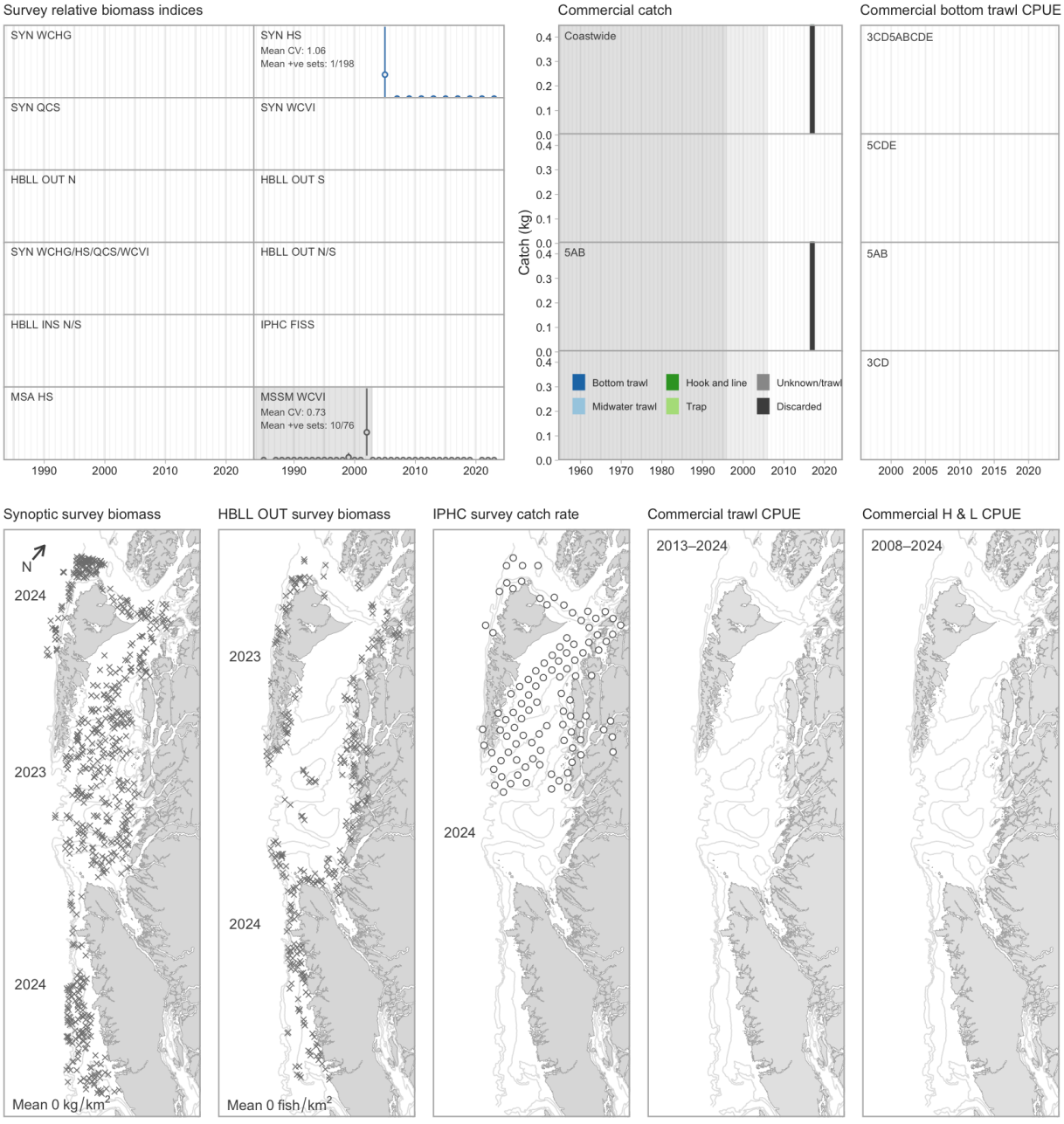
Cryptacanthodes giganteus (355)
Order: Perciformes, Family: Cryptacanthodidae, FishBase, WoRMS

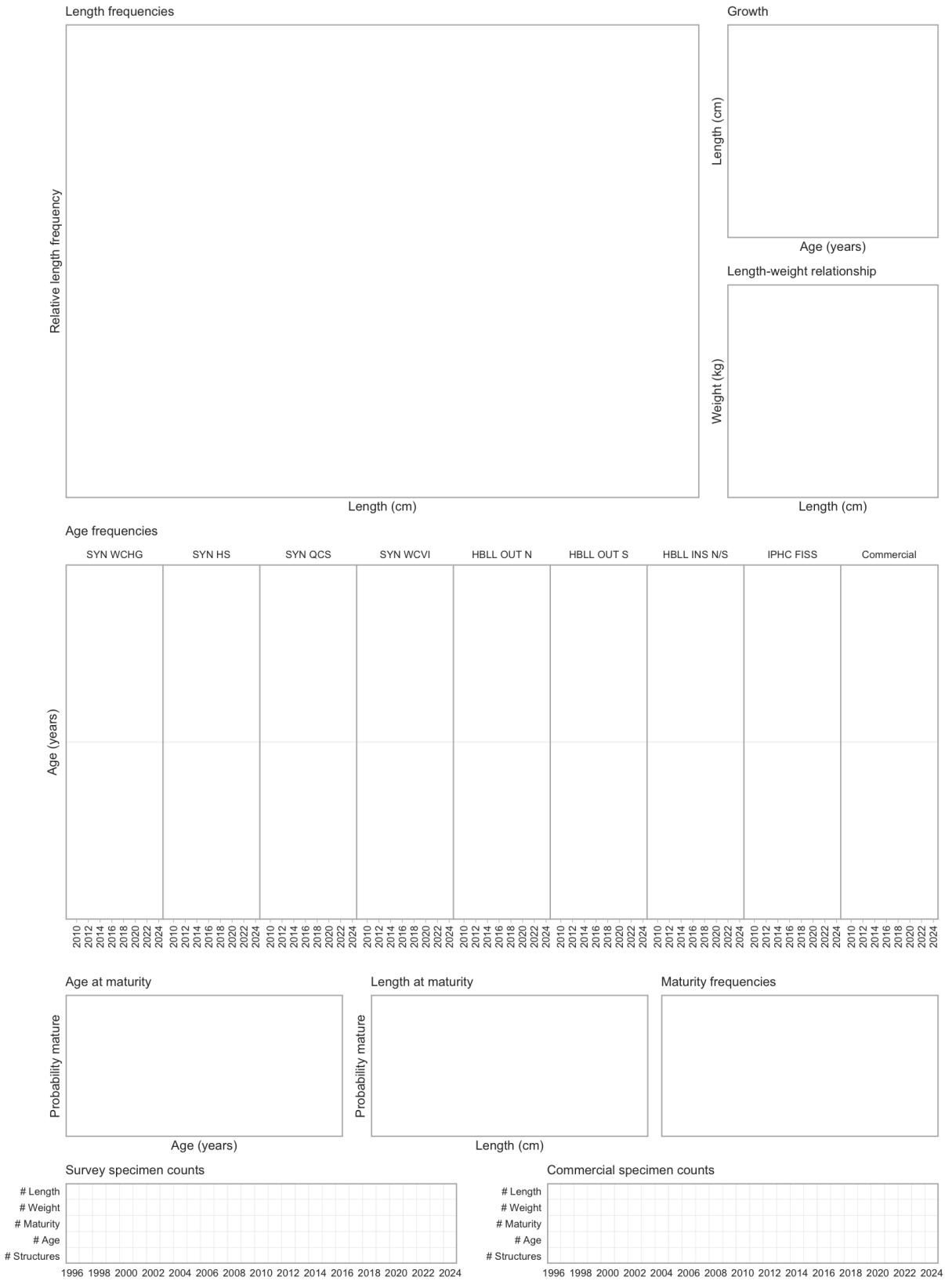



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.42 Dwarf Wrymouth

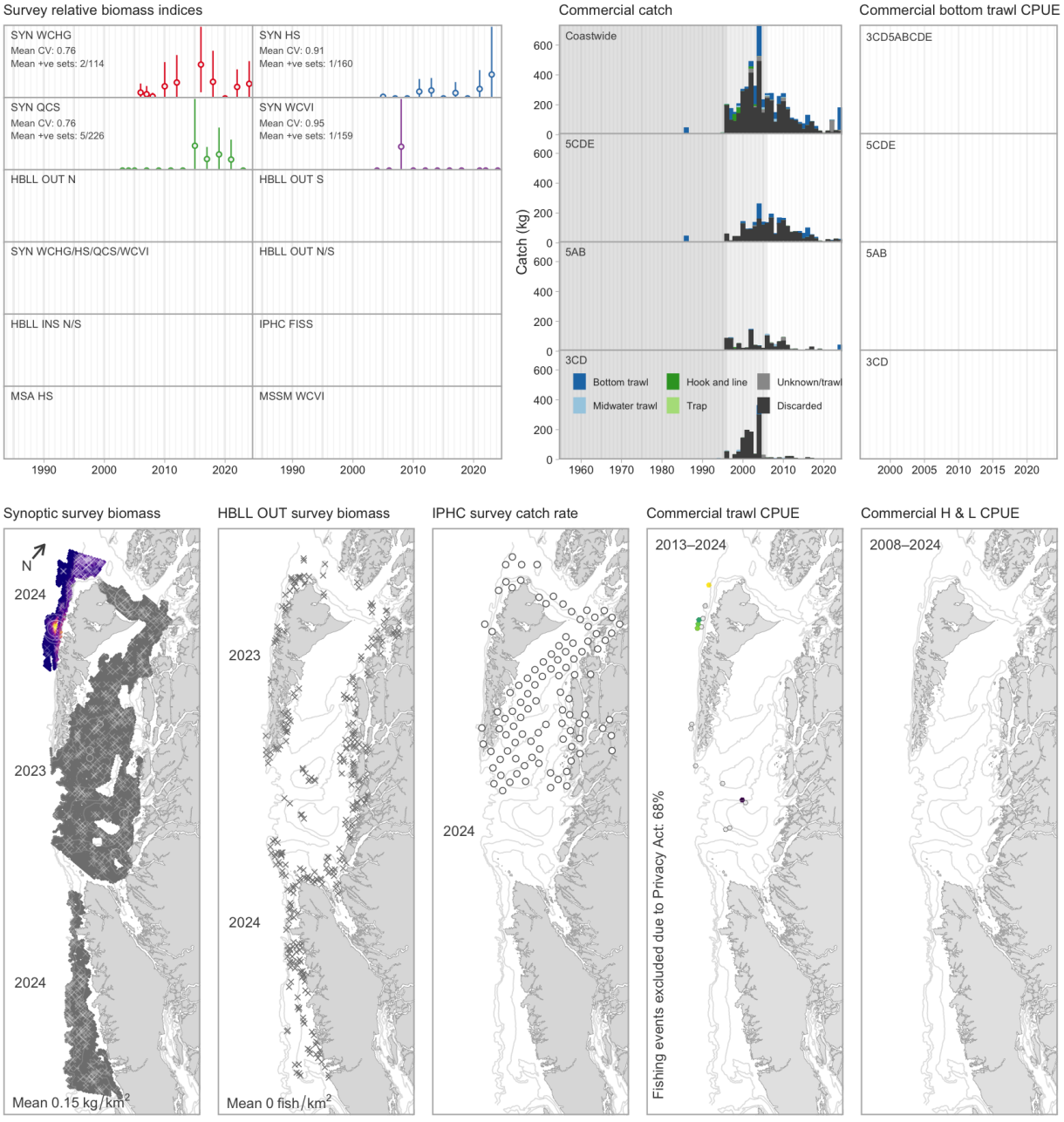
Cryptacanthodes aleutensis (356)
Order: Perciformes, Family: Cryptacanthodidae, FishBase, WoRMS

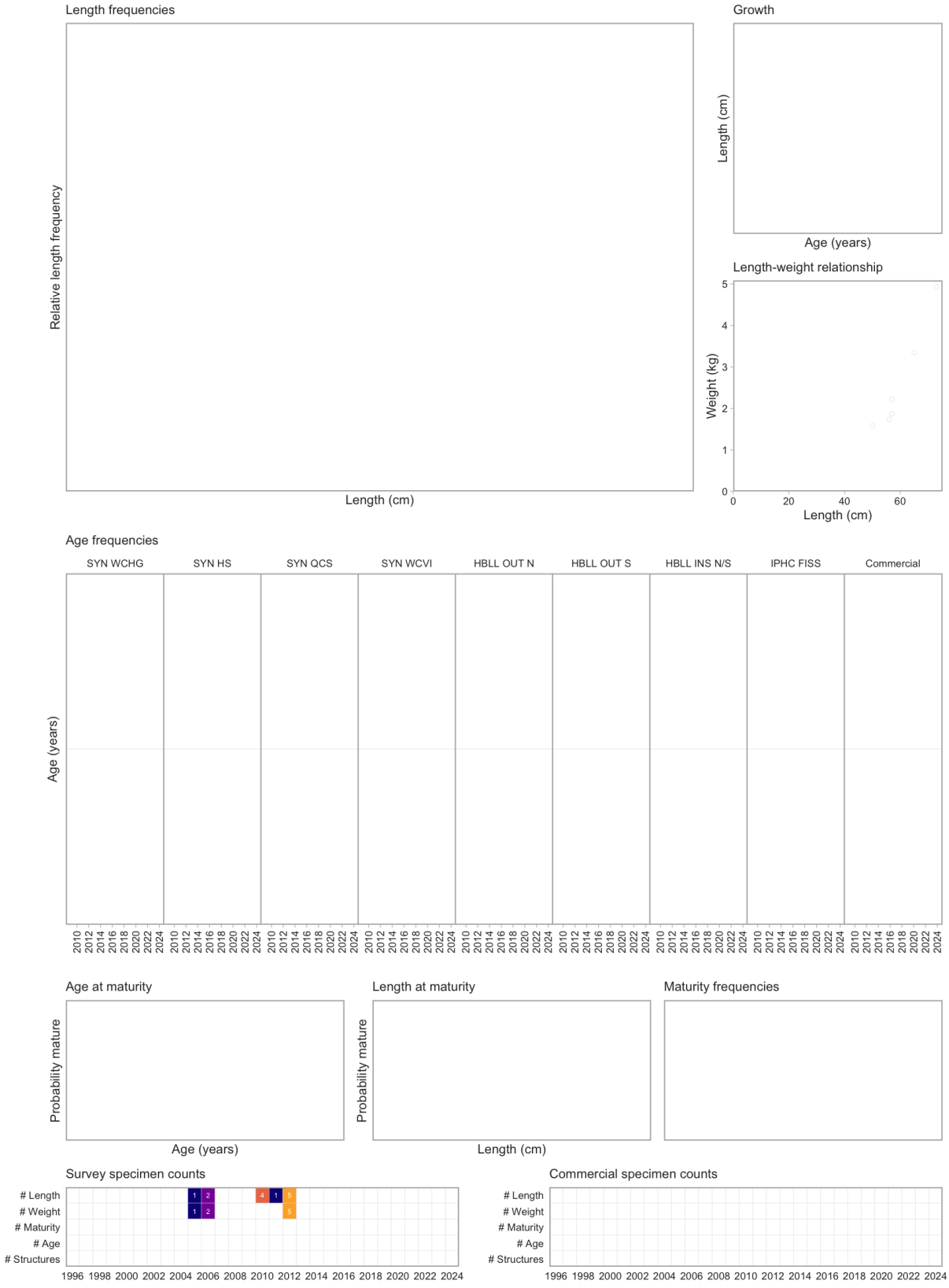



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.43 Prowfish

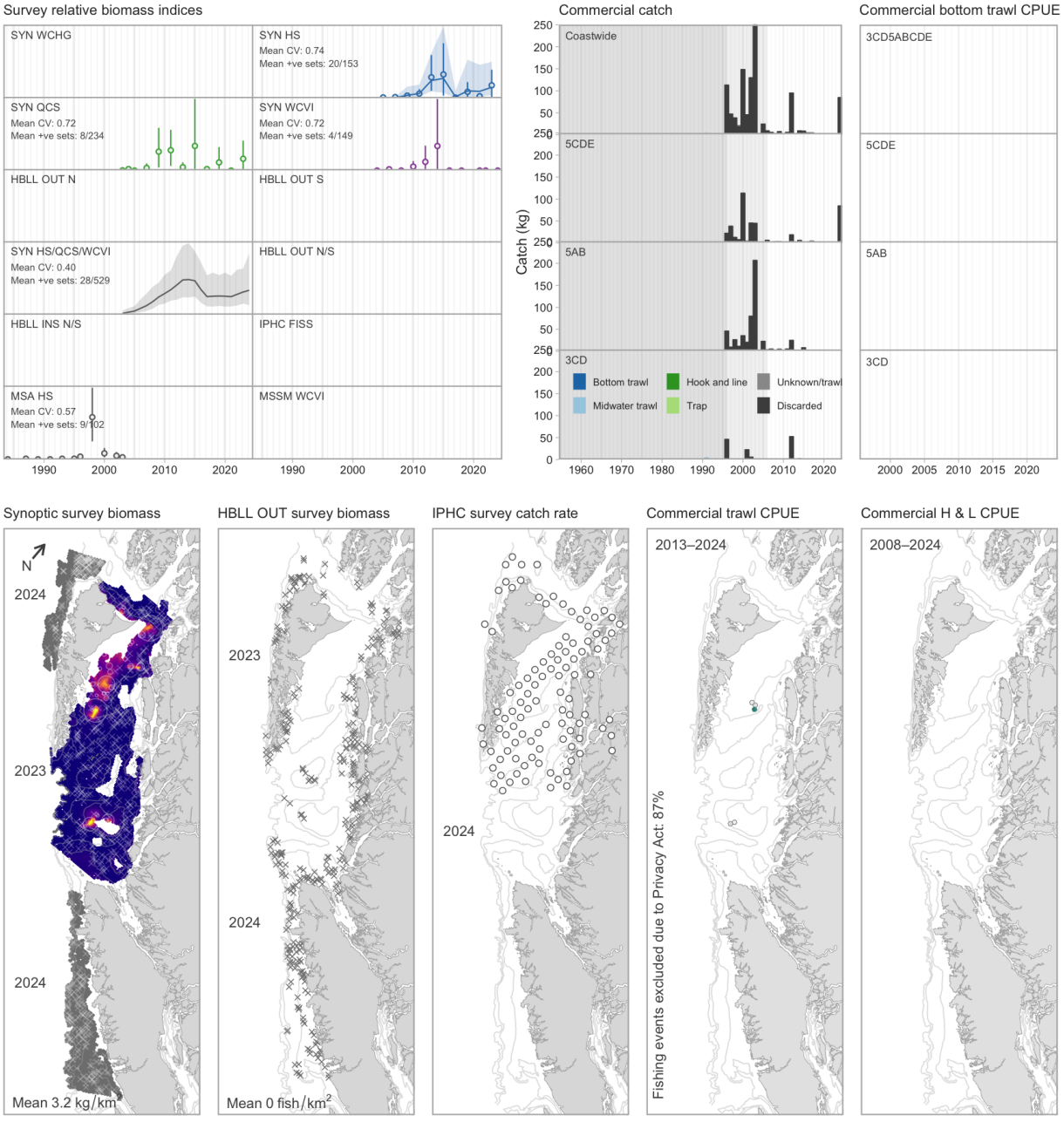
Zaprora silenus (359)
Order: Perciformes, Family: Zaproridae, FishBase, WoRMS

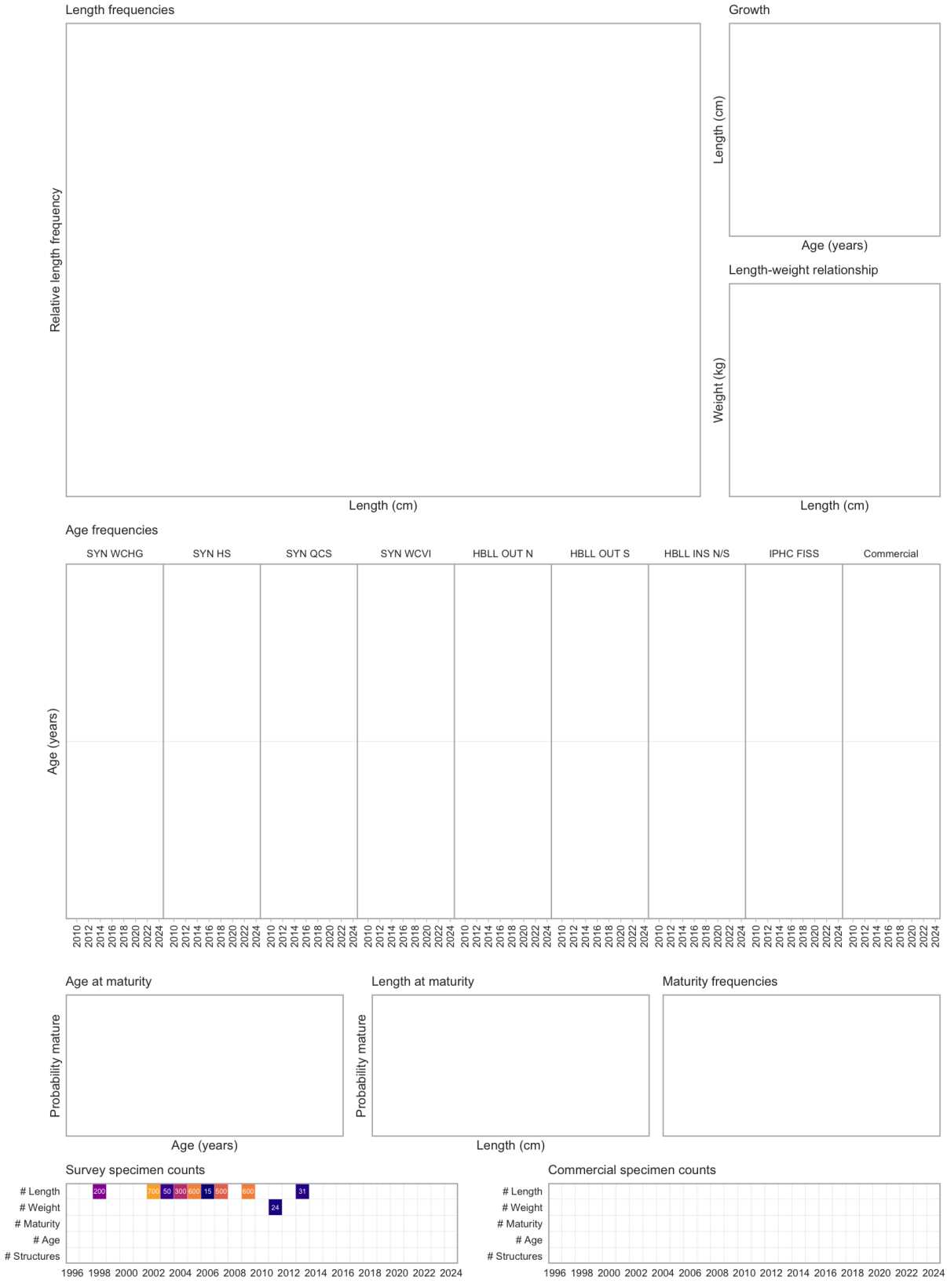



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.44 Pacific Sand Lance

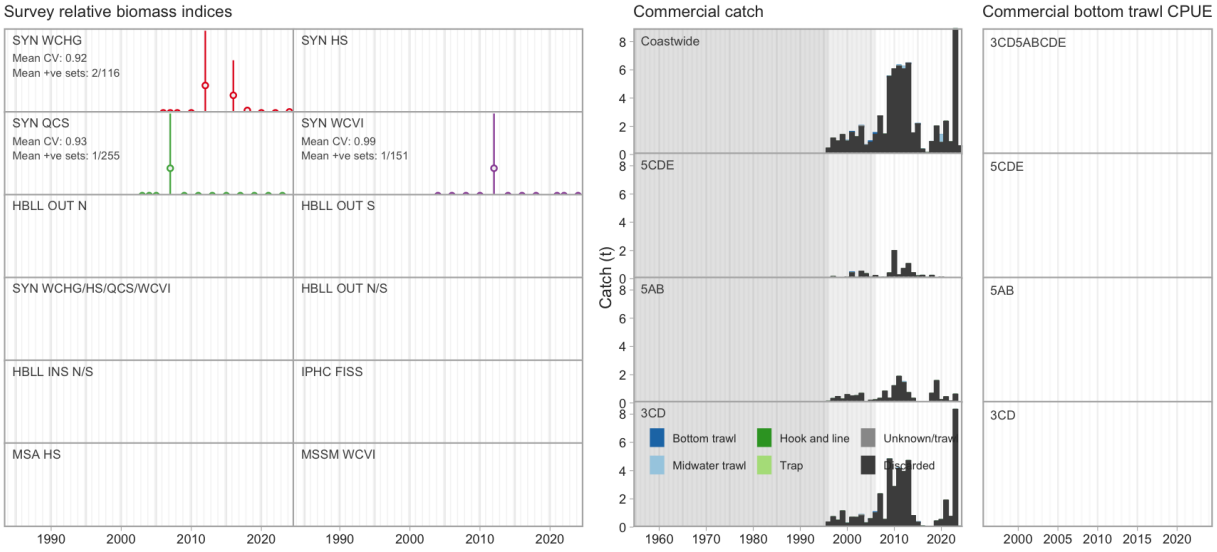
Ammodytes personatus (361)
Order: Perciformes, Family: Ammodytidae, FishBase, WoRMS

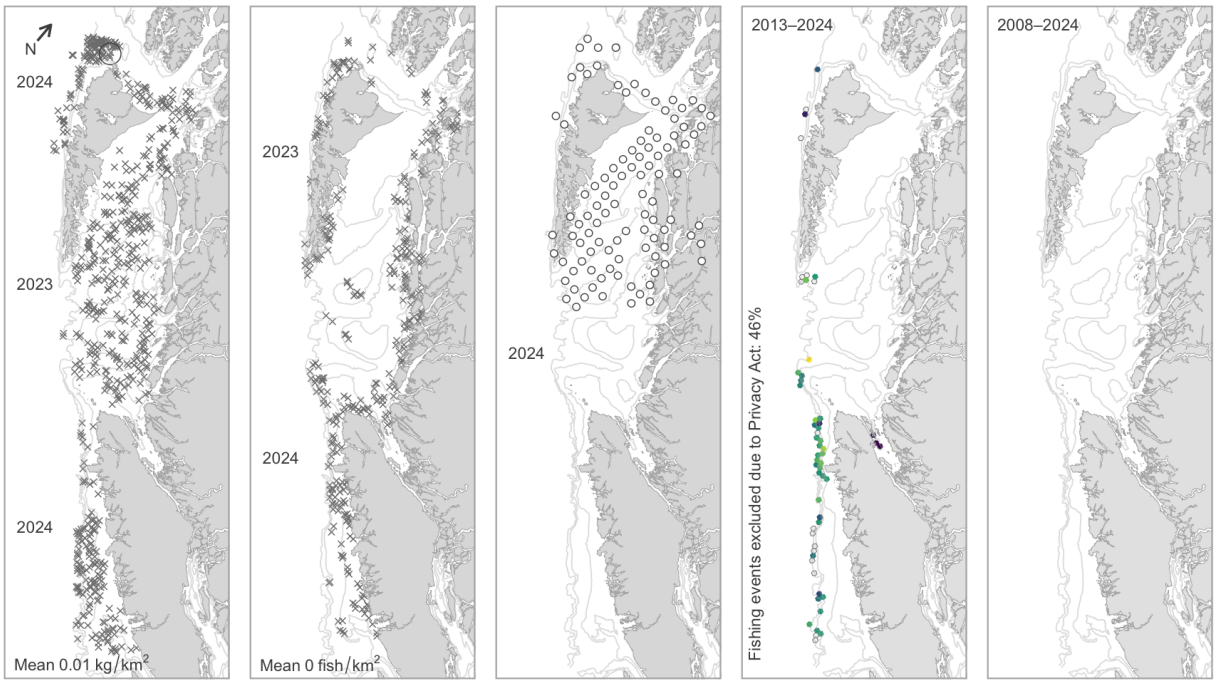


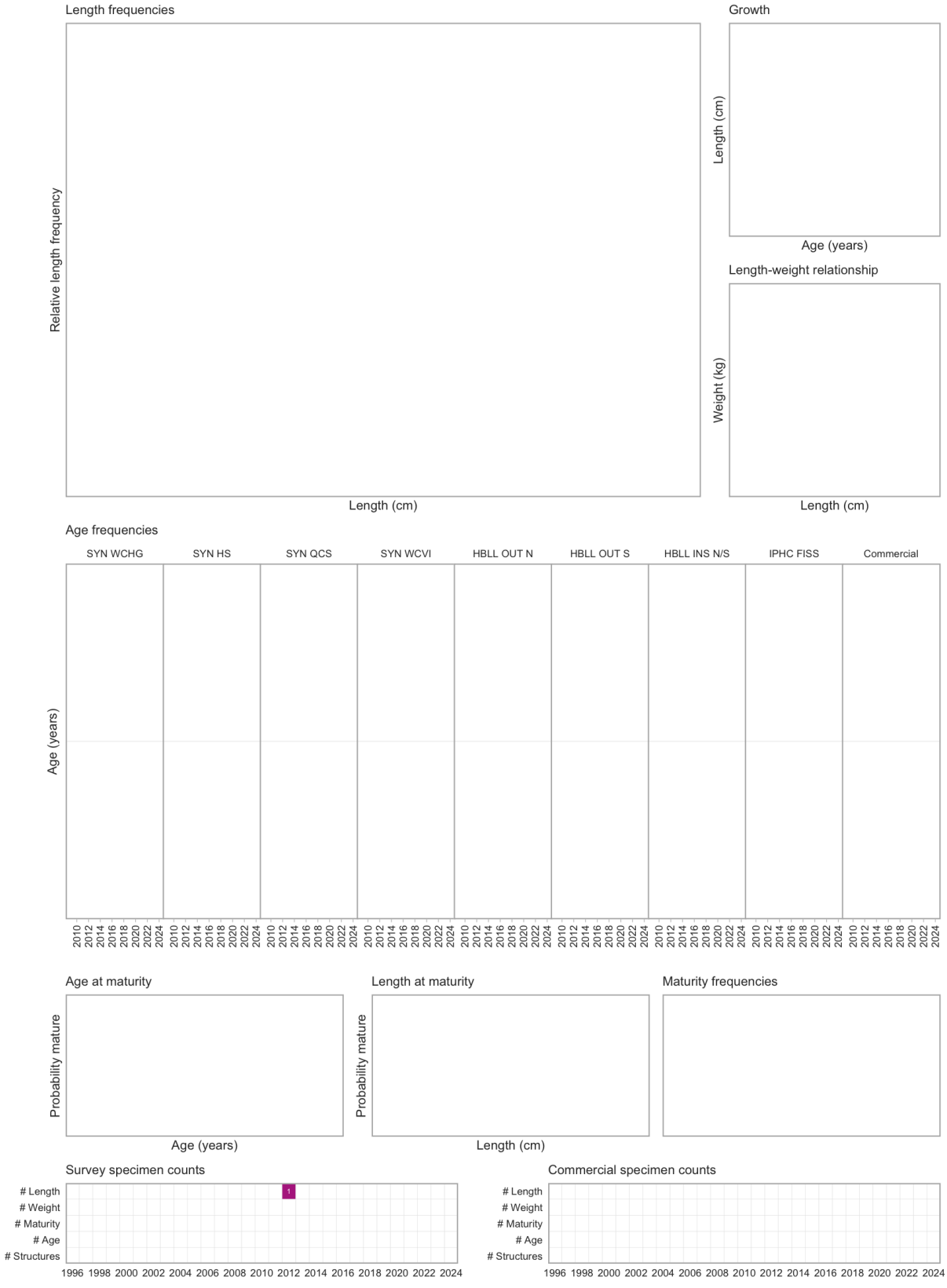

Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
200
700
50
300
600
15
500
600
24
31
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.45 Ragfish

Icosteus aenigmaticus (386)
Order: Scombriformes, Family: Icosteidae, FishBase, WoRMS

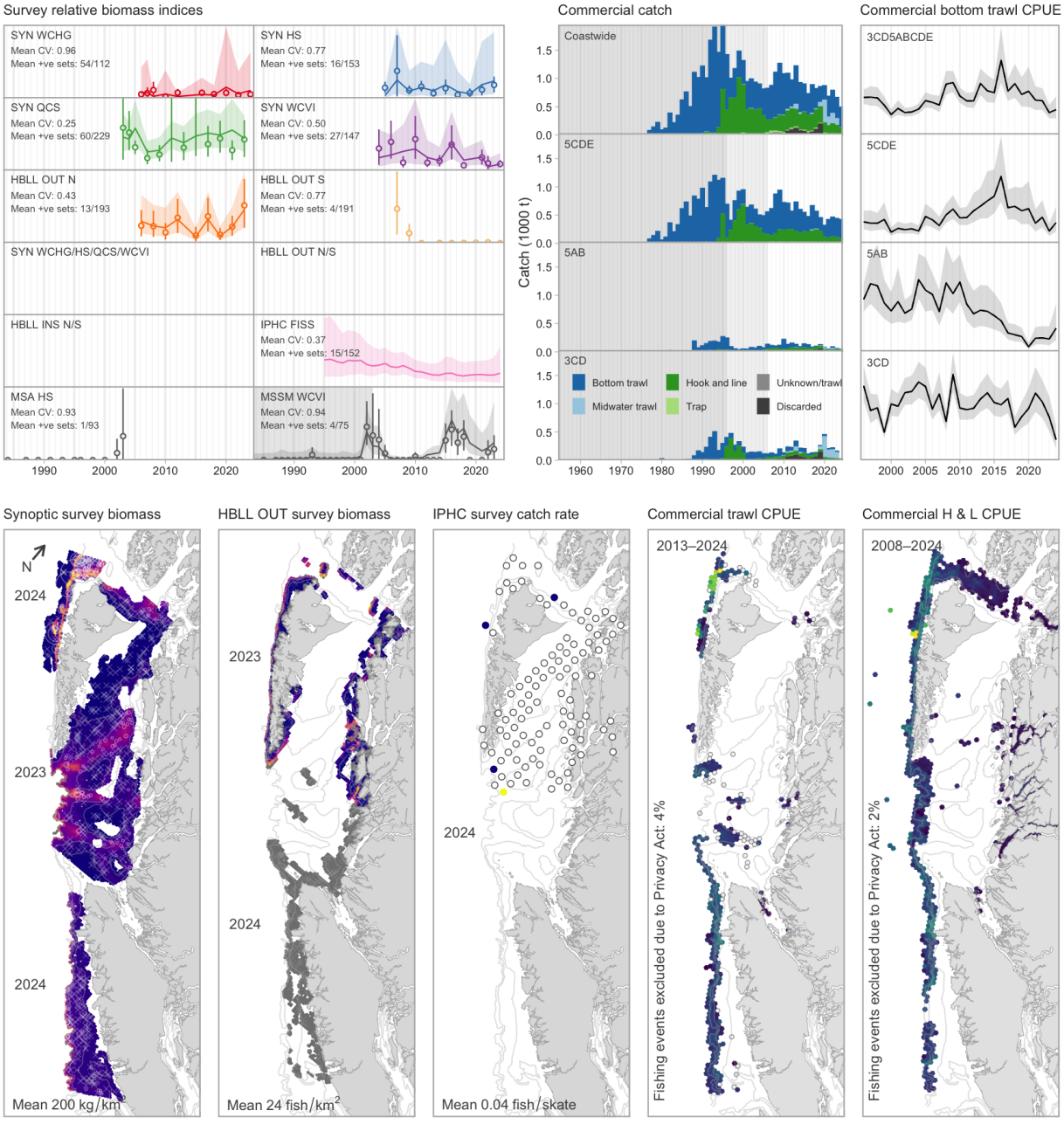


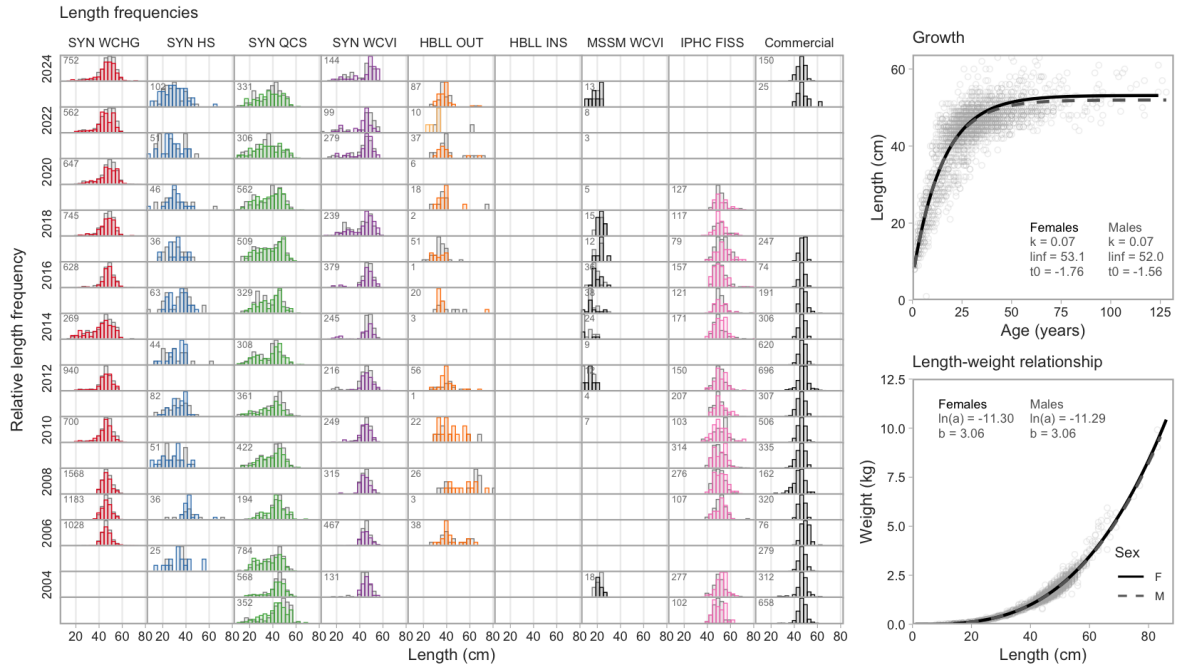



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.46 Rougheye/Blackspotted Rockfish Complex

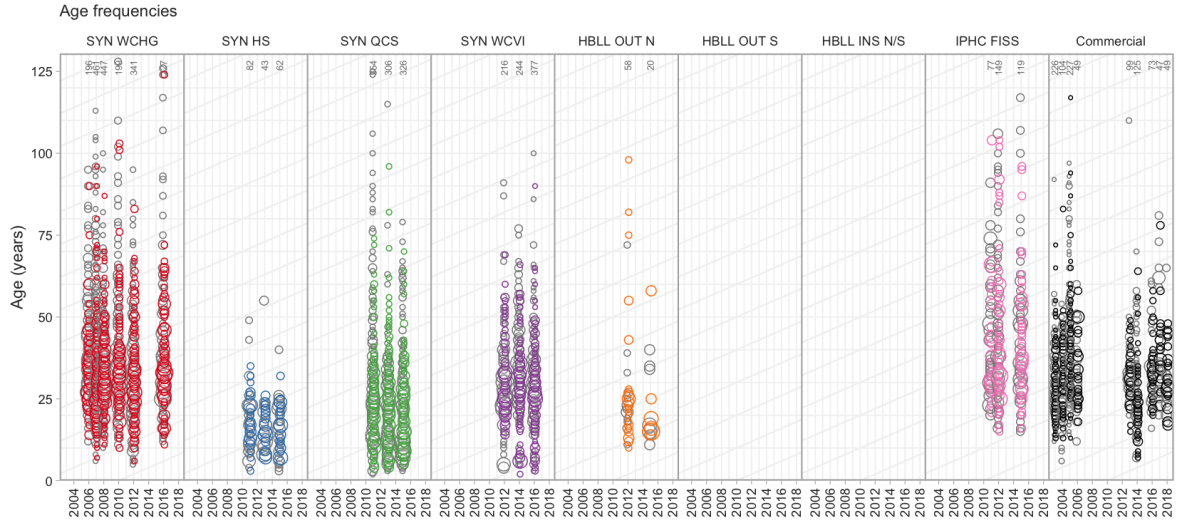
Sebastes aleutianus/melanostictus (394)
Order: Perciformes, Family: Sebastidae, FishBase 1, FishBase 2, WoRMS
Last Research Document: Starr and Haigh (2020)
Last Science Advisory Report: DFO (2020b)
Species at Risk Act Management Plan Series: DFO (2012)
COSEWIC Status Report: COSEWIC (2007c)
COSEWIC Status: Special Concern, SARA Status: Special Concern

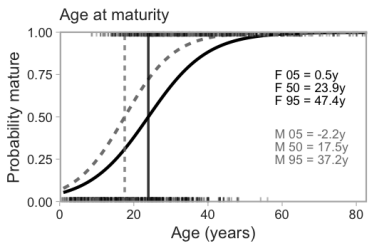


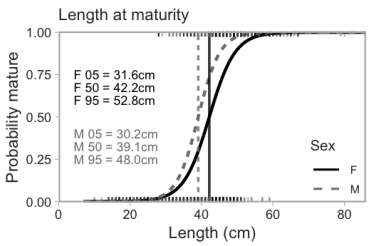

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

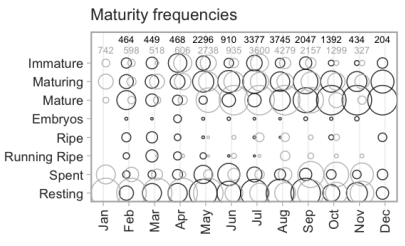
Growth
Length (cm)
Age (years)
Females
k = 0.07
linf = 53.1
t0 = -1.76
Males
k = 0.07
linf = 52.0
t0 = -1.56

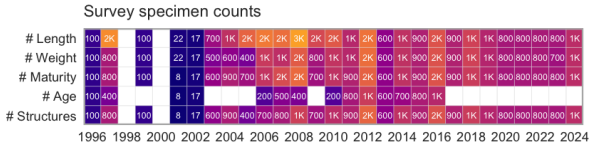
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.30
b = 3.06
Males
ln(a) = -11.29
b = 3.06
Sex
F
M

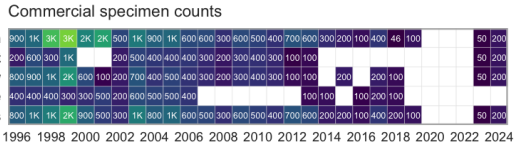

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 0.5y
F 50 = 23.9y
F 95 = 47.4y
M 05 = -2.2y
M 50 = 17.5y
M 95 = 37.2y


Length at maturity
Probability mature
Length (cm)
F 05 = 31.6cm
F 50 = 42.2cm
F 95 = 52.8cm
M 05 = 30.2cm
M 50 = 39.1cm
M 95 = 48.0cm
Sex
F
M

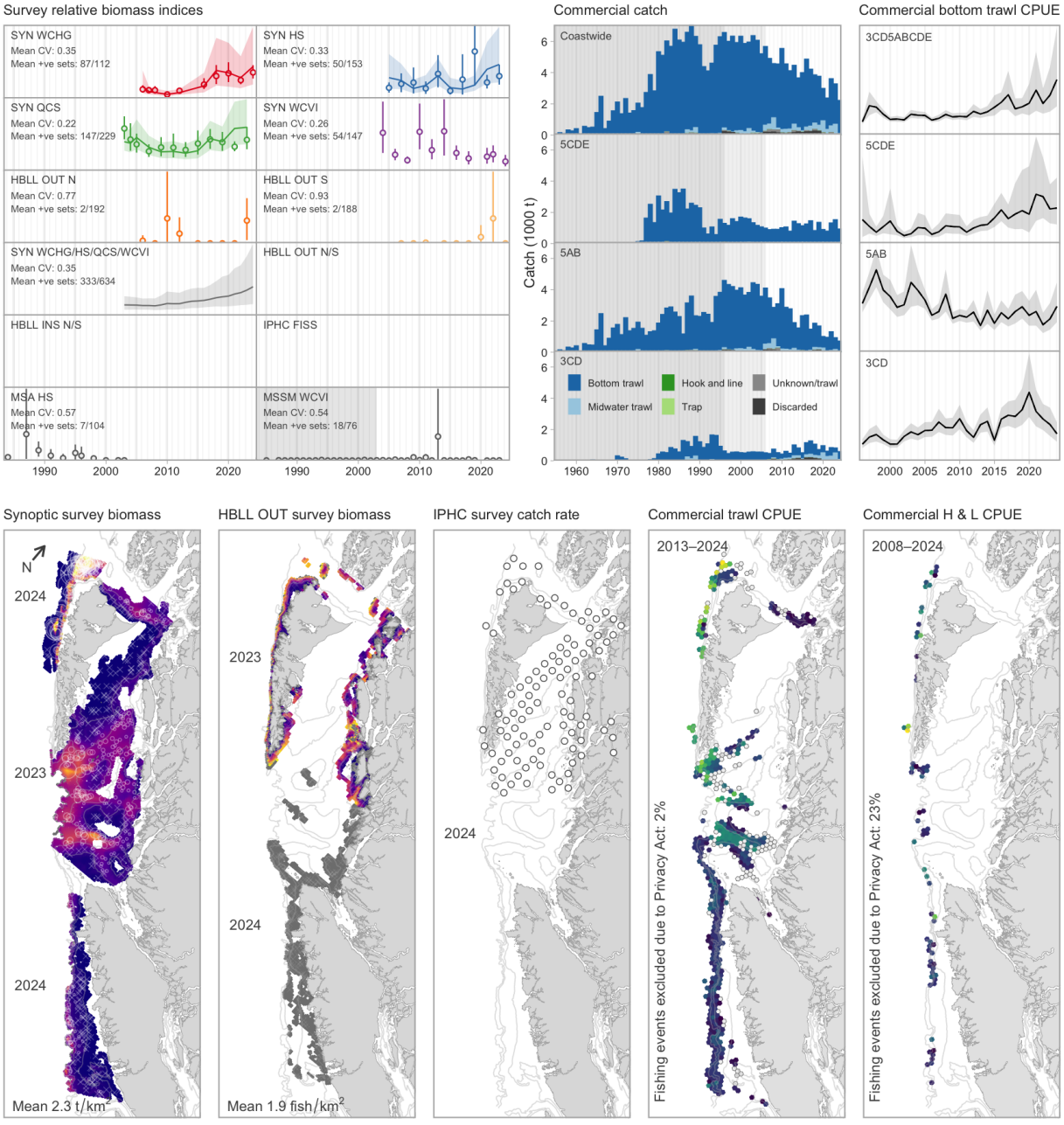

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

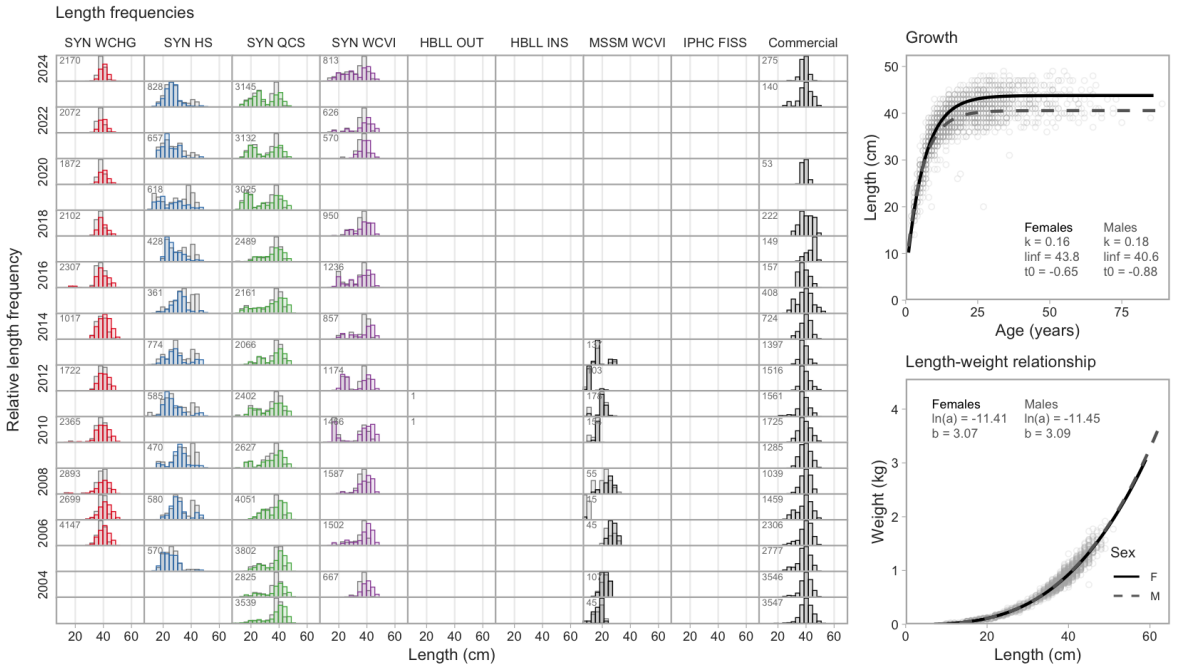

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.47 Pacific Ocean Perch

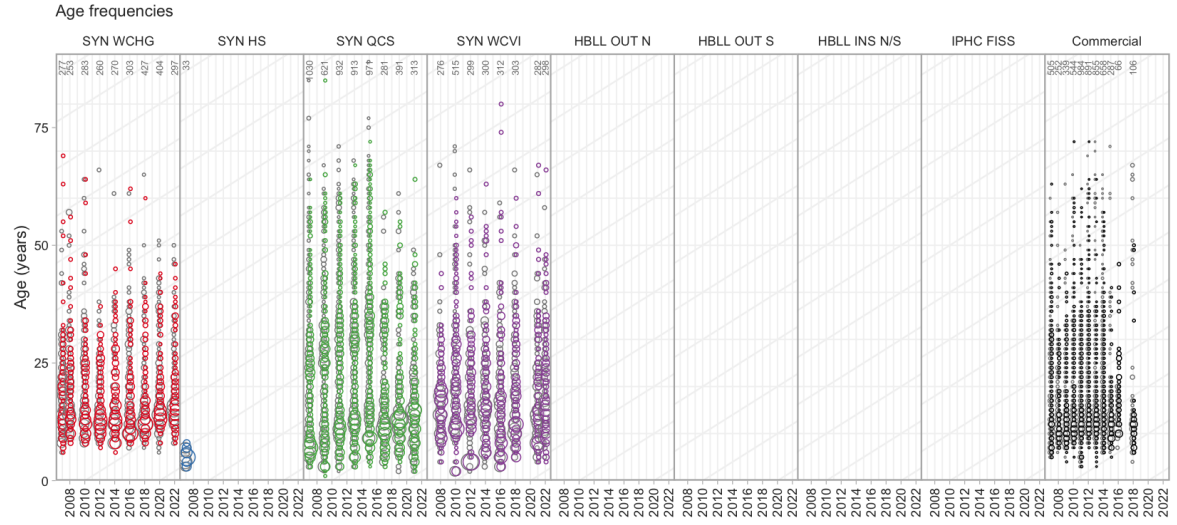
Sebastes alutus (396)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2025)
Last Science Advisory Report: DFO (2024b)

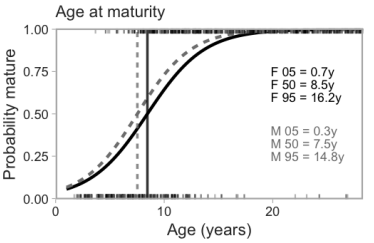


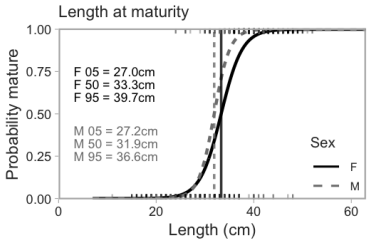

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

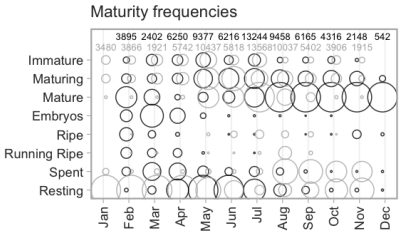
Growth
Length (cm)
Age (years)
Females
k = 0.16
linf = 43.8
t0 = -0.65
Males
k = 0.18
linf = 40.6
t0 = -0.88

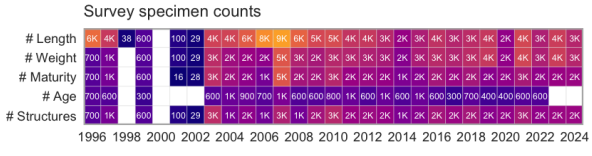
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.41
b = 3.07
Males
ln(a) = -11.45
b = 3.09
Sex
F
M

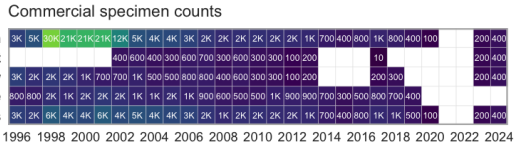

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 0.7y
F 50 = 8.5y
F 95 = 16.2y
M 05 = 0.3y
M 50 = 7.5y
M 95 = 14.8y


Length at maturity
Probability mature
Length (cm)
F 05 = 27.0cm
F 50 = 33.3cm
F 95 = 39.7cm
M 05 = 27.2cm
M 50 = 31.9cm
M 95 = 36.6cm
Sex
F
M

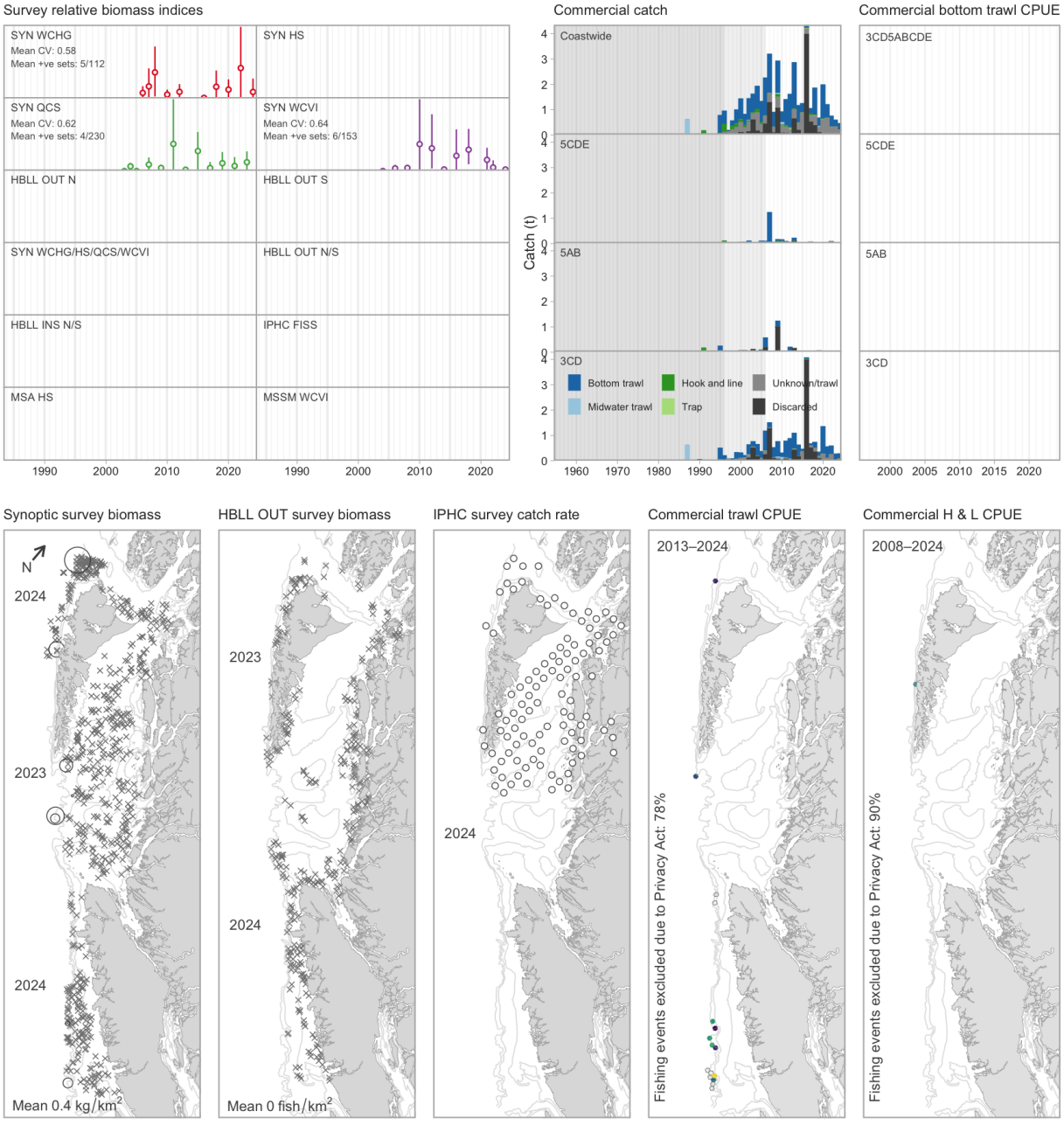

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

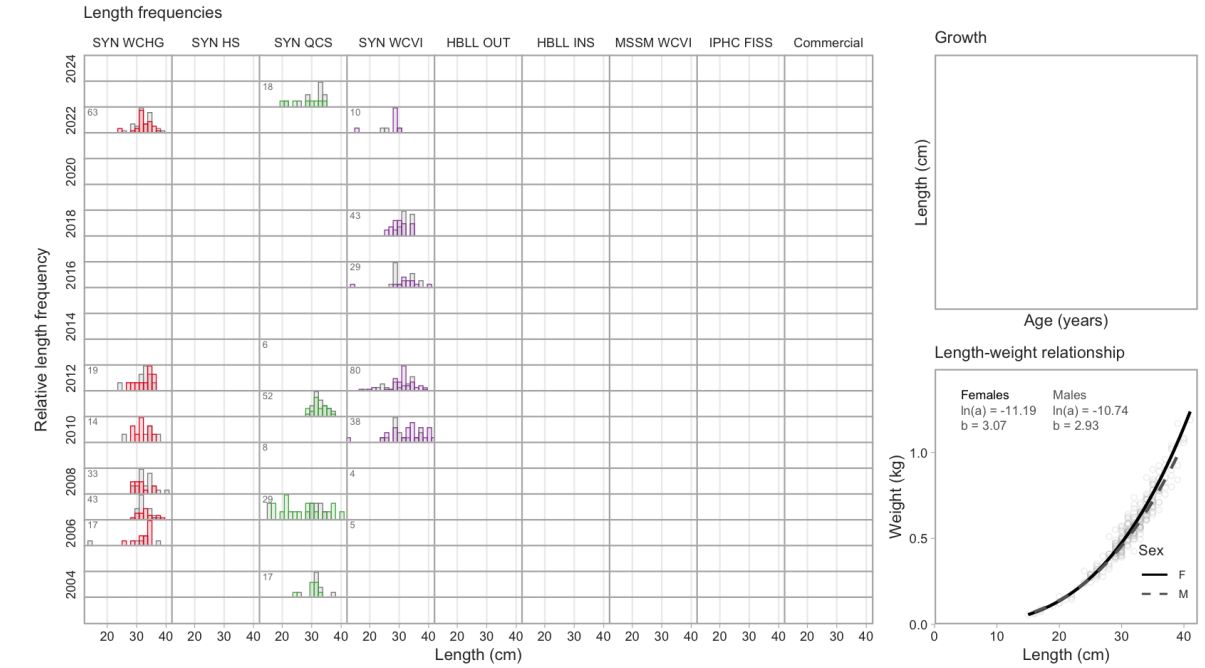

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.48 Aurora Rockfish

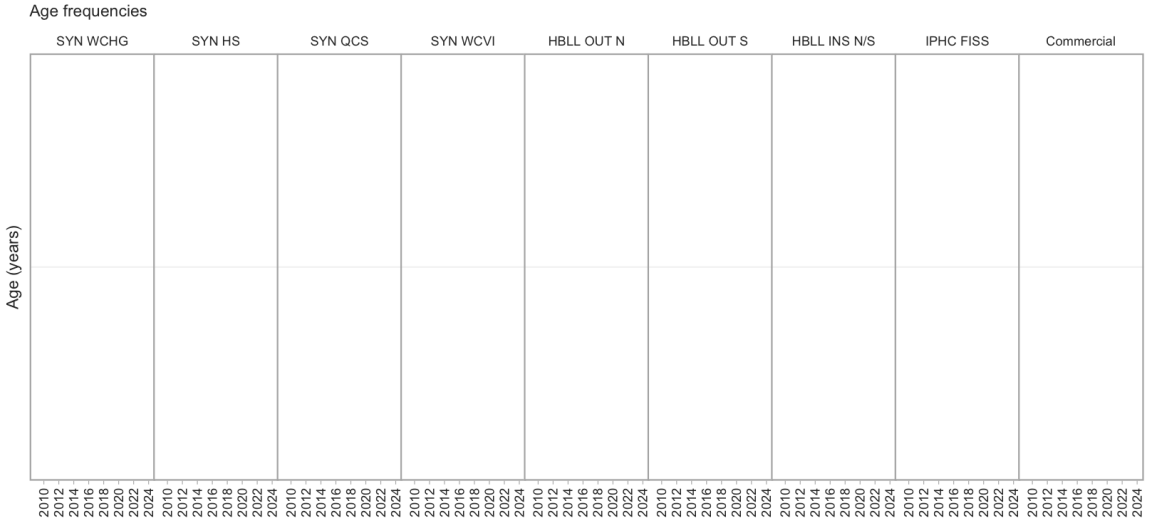
Sebastes aurora (400)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS



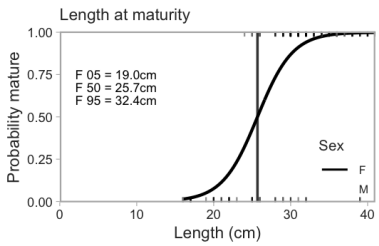

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

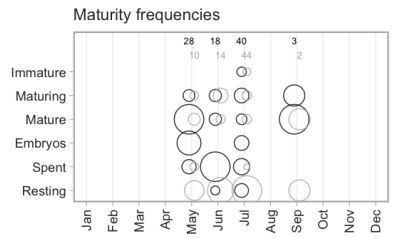
Growth
Length (cm)
Age (years)

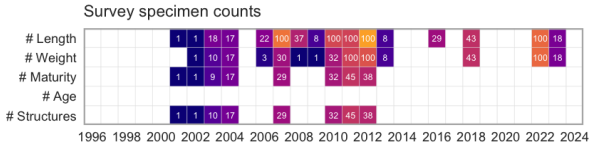
Length-weight relationship
Females
ln(a) = -11.19
b = 3.07
Males
ln(a) = -10.74
b = 2.93
Weight (kg)
Length (cm)
Sex
F
M

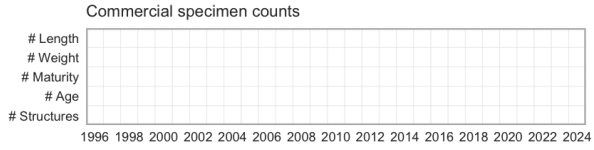

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
F 05 = 19.0cm
F 50 = 25.7cm
F 95 = 32.4cm
Probability mature
Sex
F
M
Length (cm)

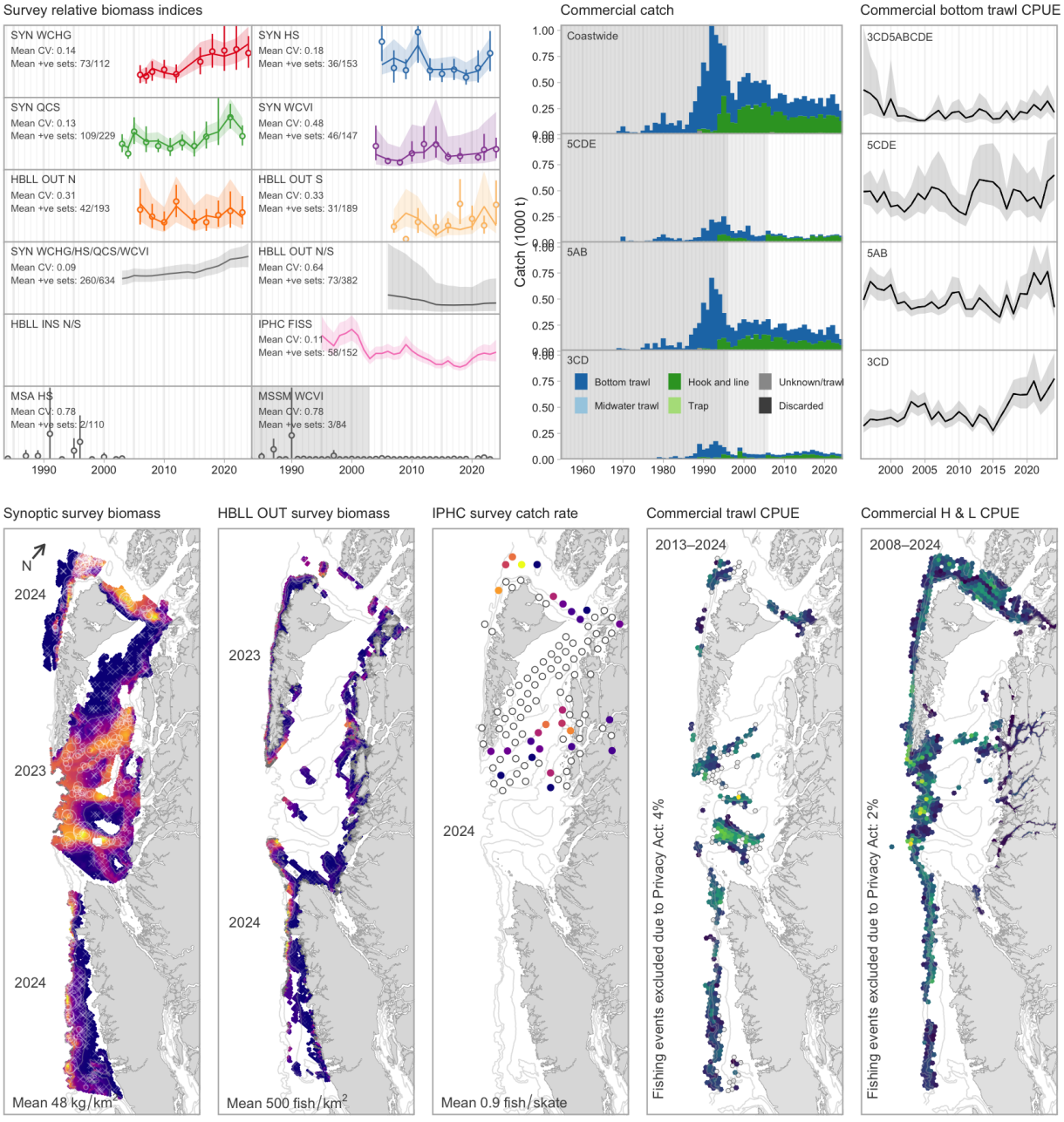

Maturity frequencies
Immature
Maturing
Mature
Embryos
Spent
Resting

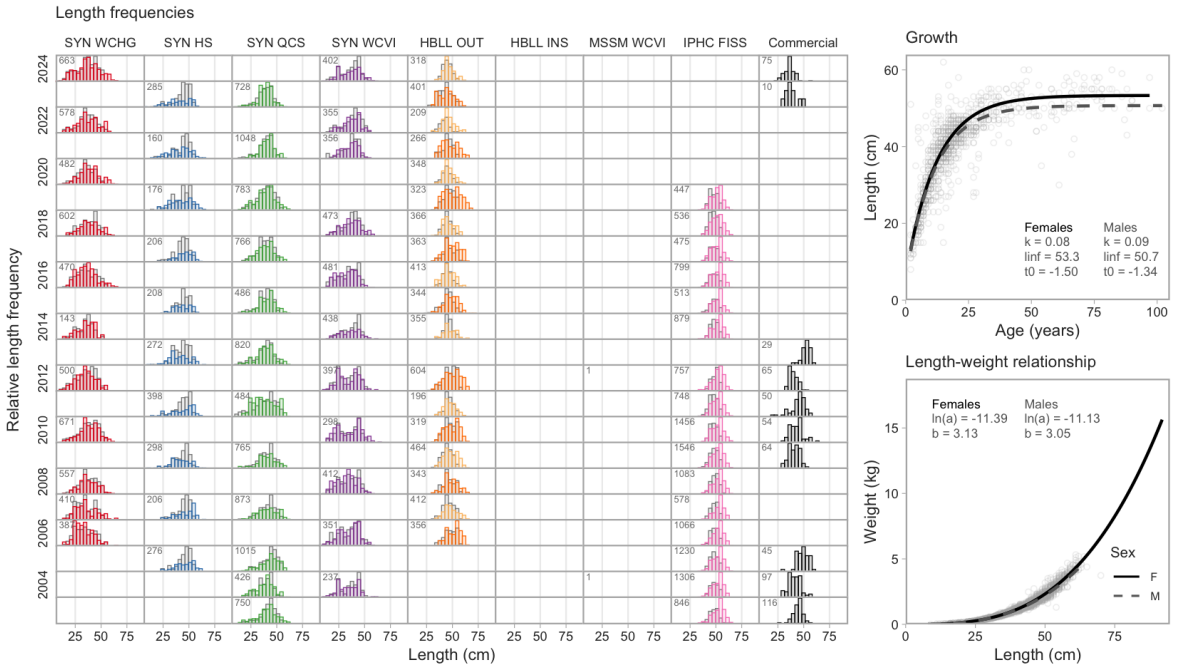

Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.49 Redbanded Rockfish

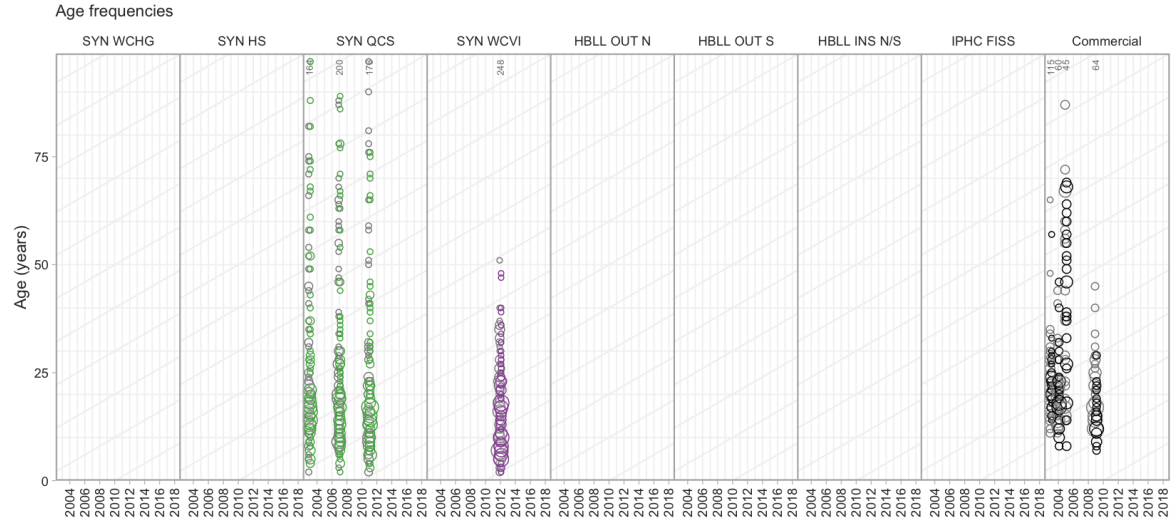
Sebastes babcocki (401)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Edwards et al. (2017)

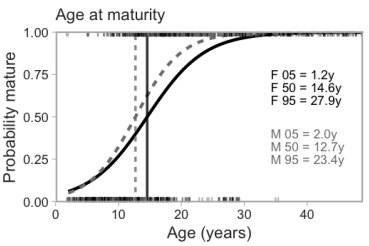


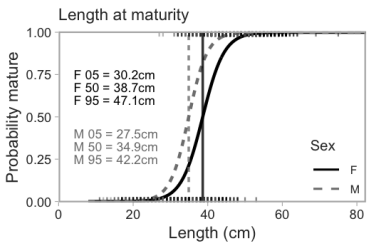

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

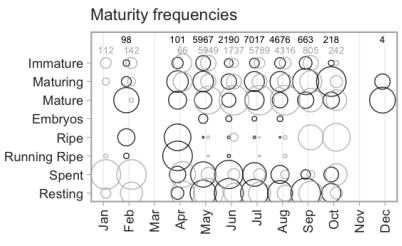
Growth
Length (cm)
Age (years)
Females
k = 0.08
linf = 53.3
t0 = -1.50
Males
k = 0.09
linf = 50.7
t0 = -1.34

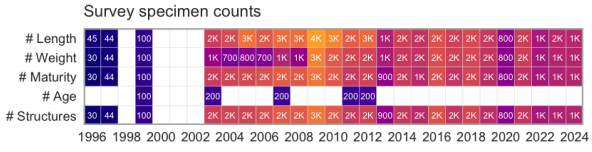
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.39
b = 3.13
Males
ln(a) = -11.13
b = 3.05
Sex
F
M

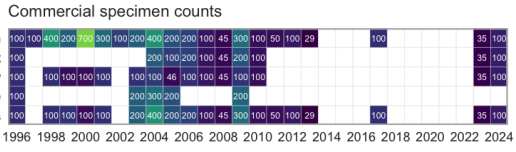

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 1.2y
F 50 = 14.6y
F 95 = 27.9y
M 05 = 2.0y
M 50 = 12.7y
M 95 = 23.4y


Length at maturity
Probability mature
Length (cm)
F 05 = 30.2cm
F 50 = 38.7cm
F 95 = 47.1cm
M 05 = 27.5cm
M 50 = 34.9cm
M 95 = 42.2cm
Sex
F
M

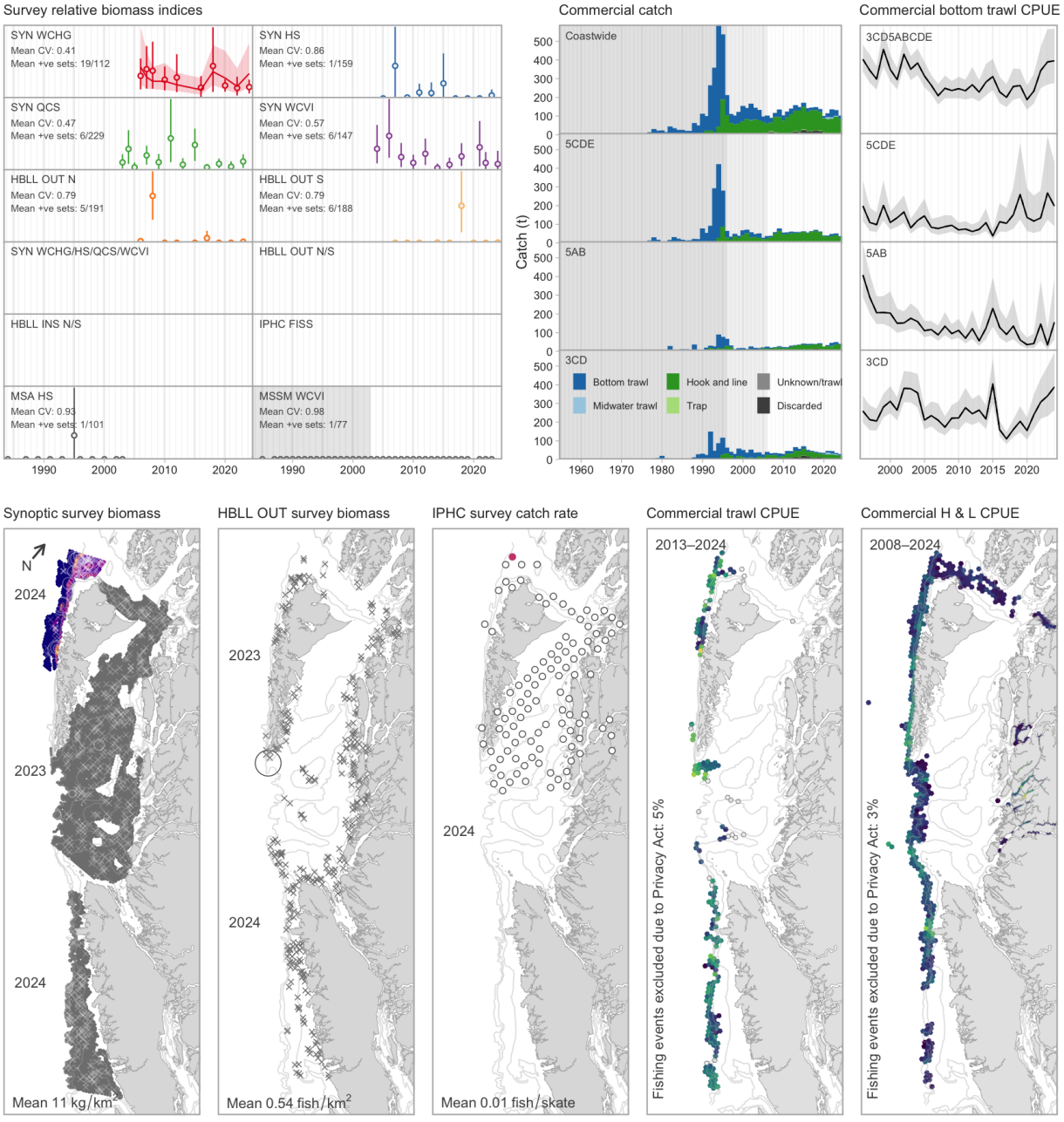

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

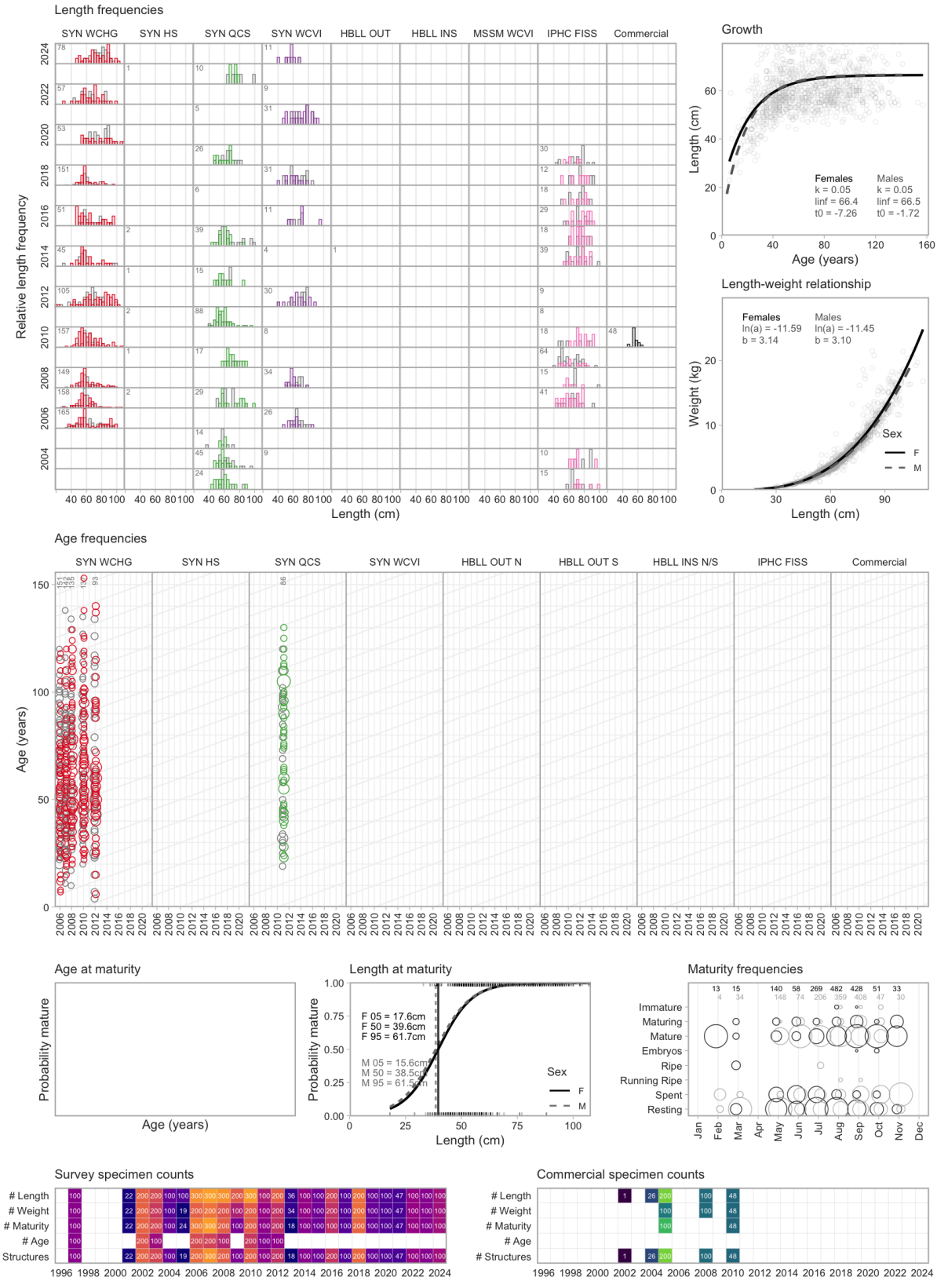

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.50 Shortraker Rockfish

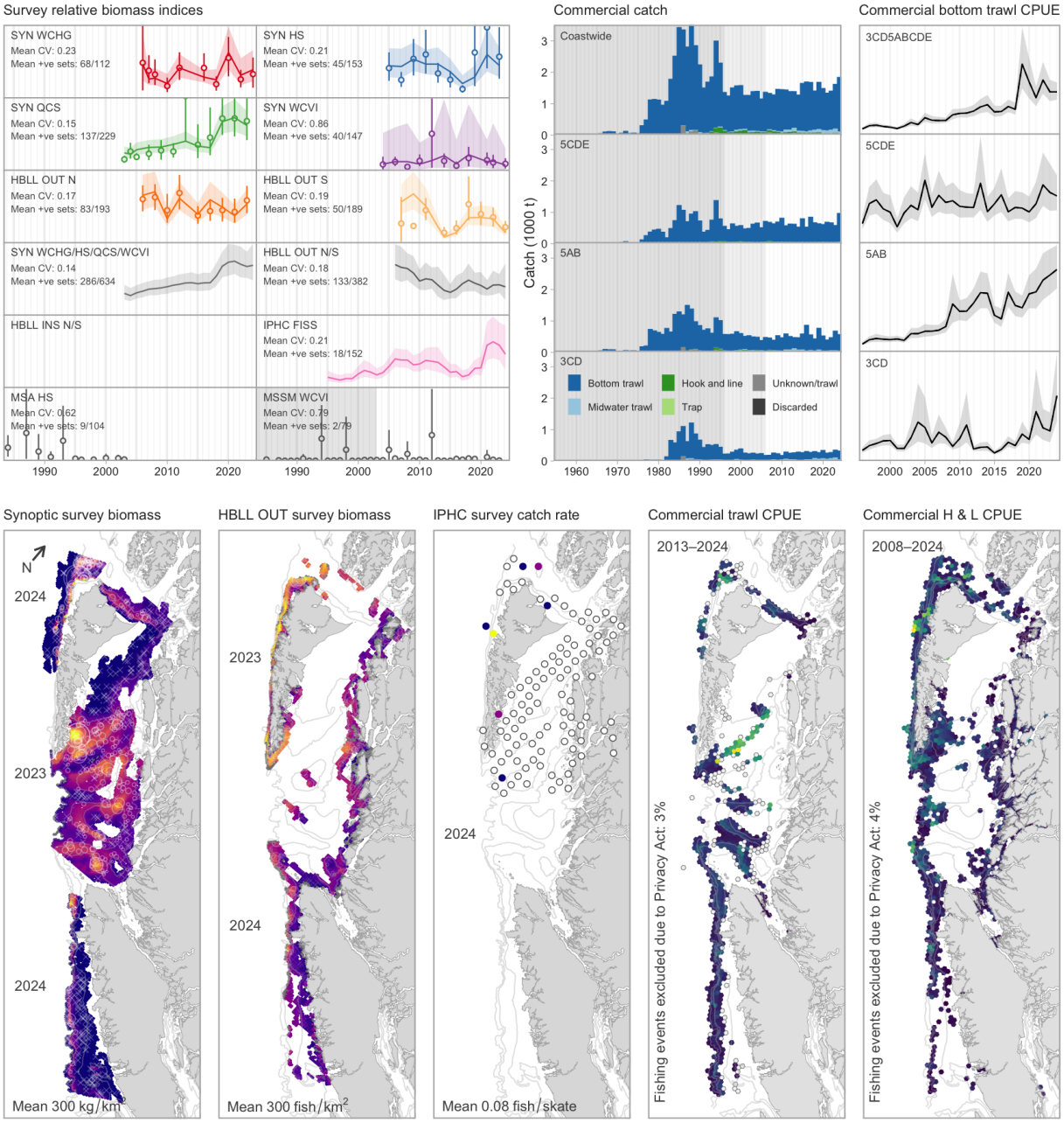
Sebastes borealis (403)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Schnute et al. (1999)
Last Science Advisory Report: DFO (1999a)

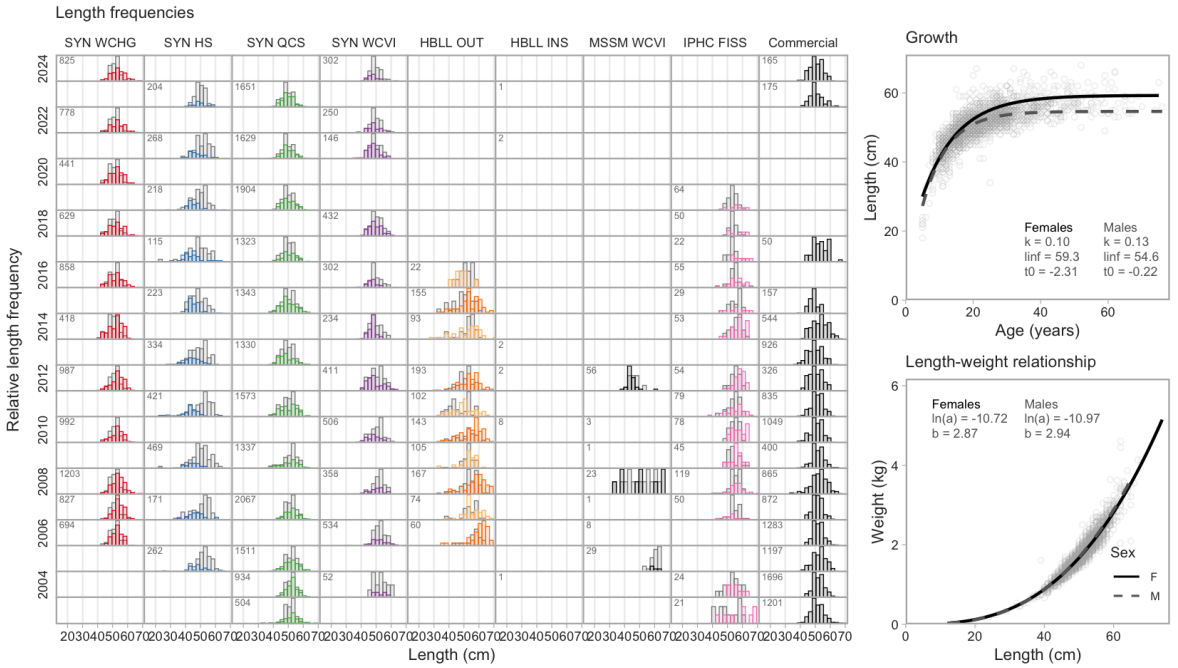



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Females
k = 0.05
linf = 66.4
t0 = -7.26
Males
k = 0.05
linf = 66.5
t0 = -1.72
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.59
b = 3.14
Males
ln(a) = -11.45
b = 3.10
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
F 05 = 17.6cm
F 50 = 39.6cm
F 95 = 61.7cm
M 05 = 15.6cm
M 50 = 38.5cm
M 95 = 61.5cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.51 Silvergray Rockfish

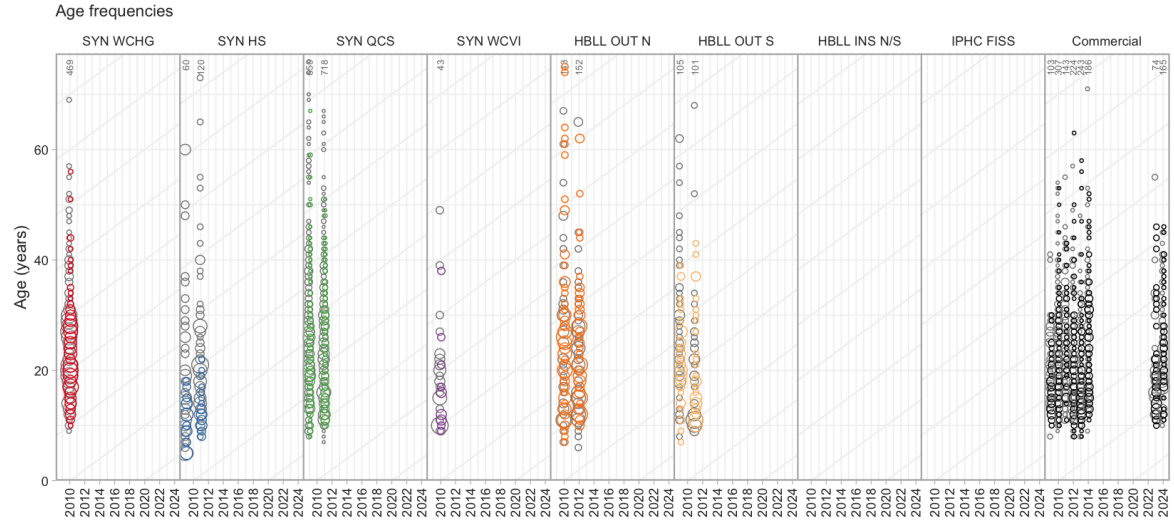
Sebastes brevispinis (405)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr et al. (2016)
Last Science Advisory Report: DFO (2014b)

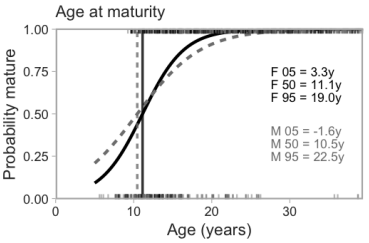


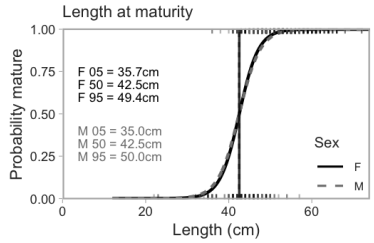

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

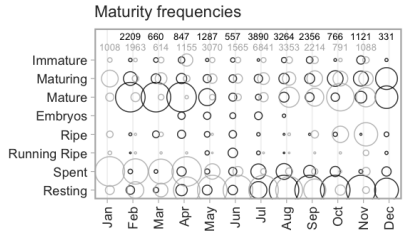
Growth
Length (cm)
Age (years)
Females
k = 0.10
linf = 59.3
t0 = -2.31
Males
k = 0.13
linf = 54.6
t0 = -0.22

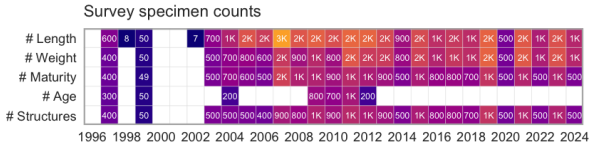
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -10.72
b = 2.87
Males
ln(a) = -10.97
b = 2.94
Sex
F
M

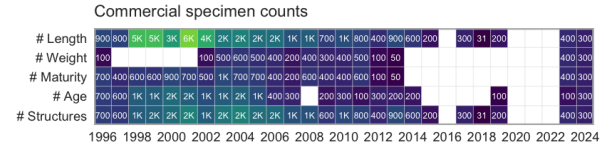

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 3.3y
F 50 = 11.1y
F 95 = 19.0y
M 05 = -1.6y
M 50 = 10.5y
M 95 = 22.5y


Length at maturity
Probability mature
Length (cm)
F 05 = 35.7cm
F 50 = 42.5cm
F 95 = 49.4cm
M 05 = 35.0cm
M 50 = 42.5cm
M 95 = 50.0cm
Sex
F
M

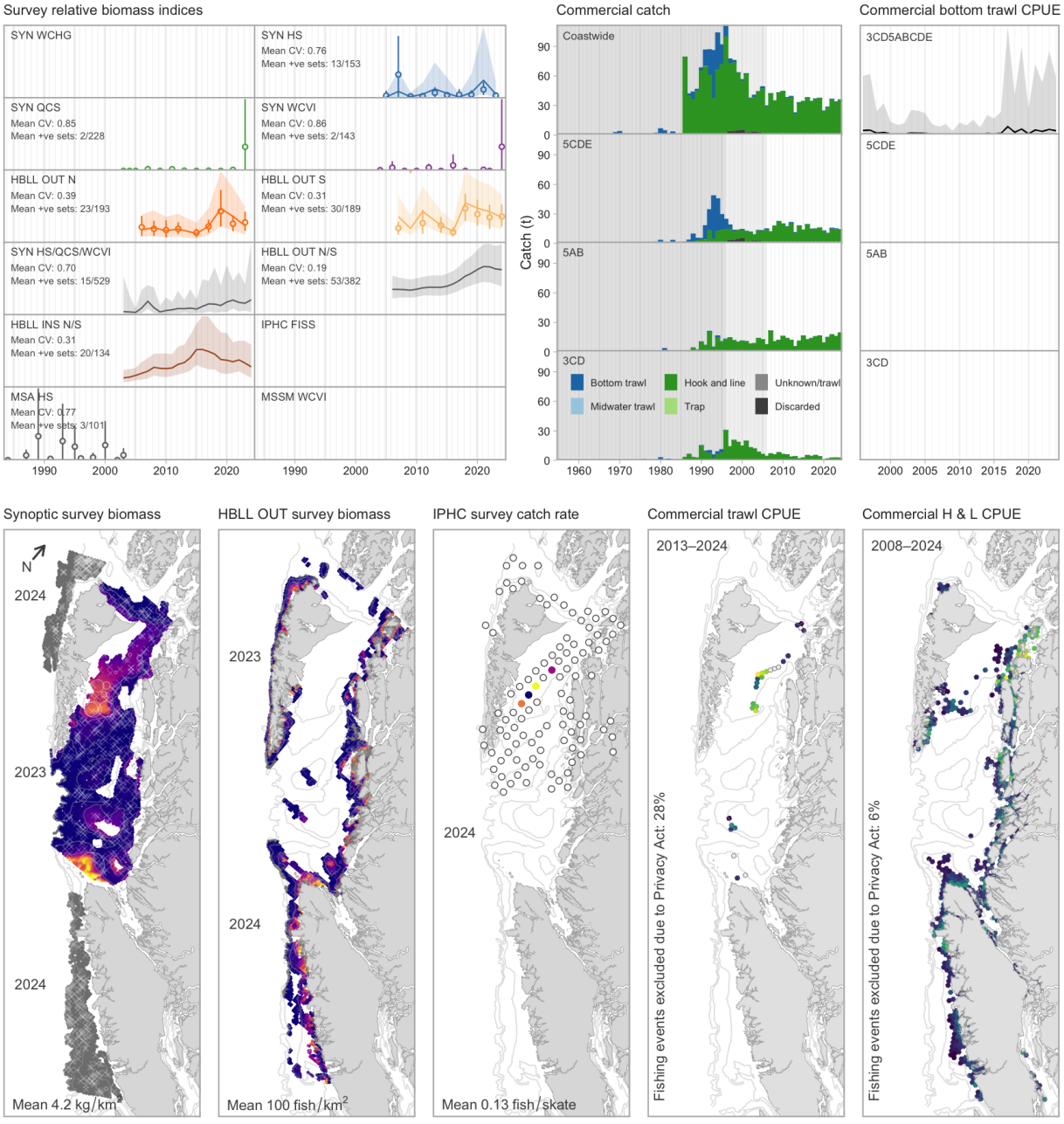

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

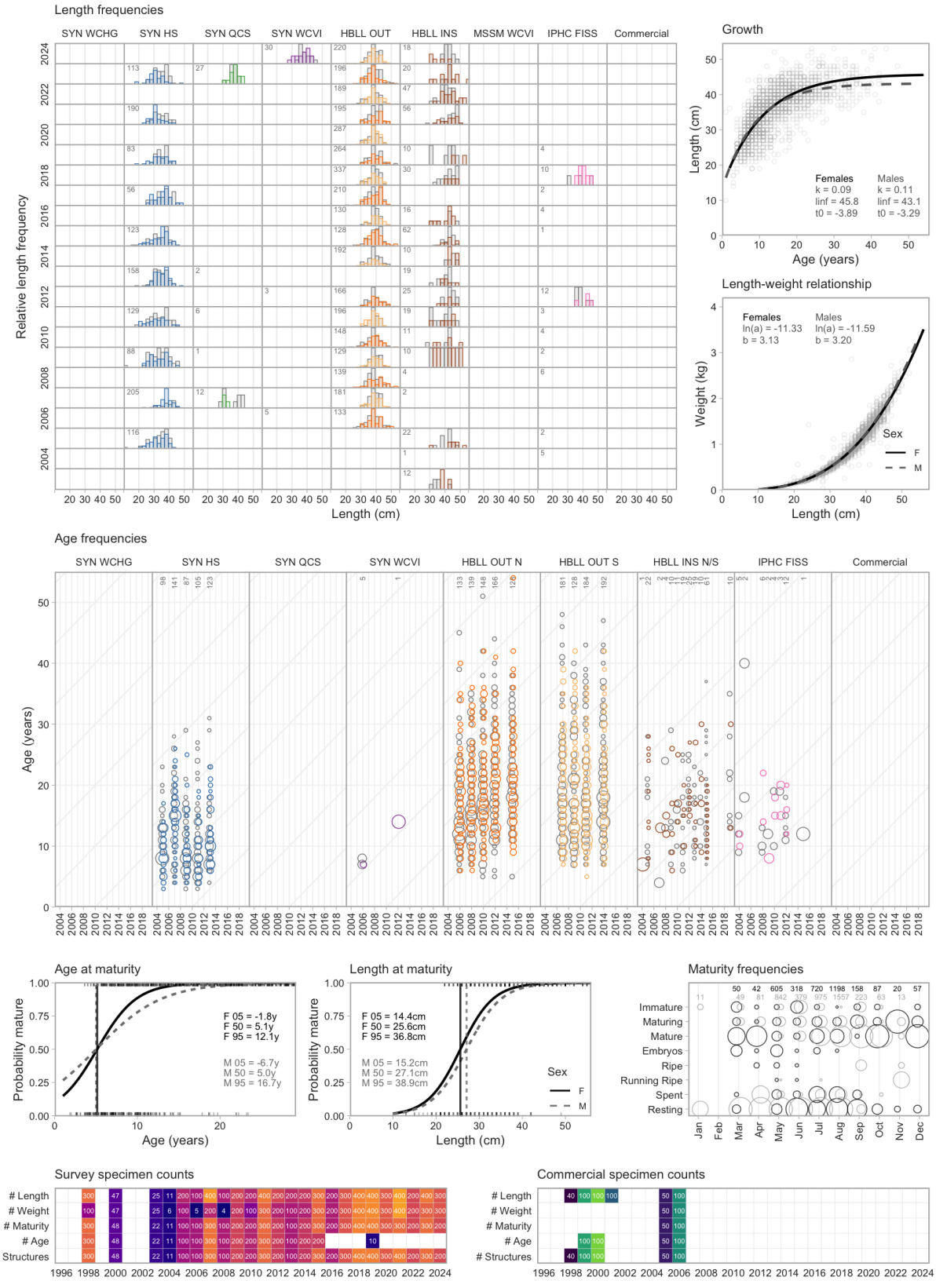

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.52 Copper Rockfish

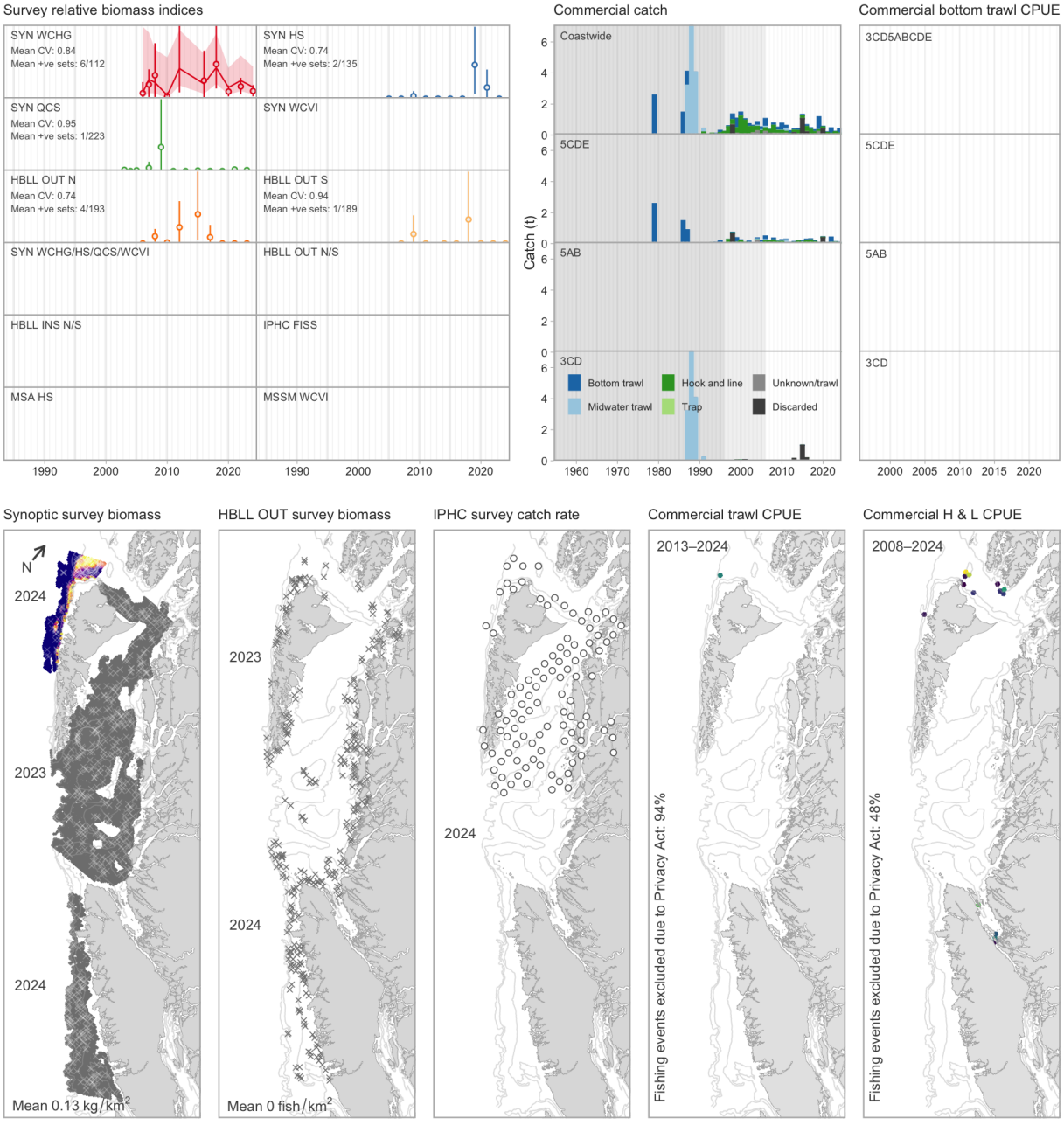
Sebastes caurinus (407)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Technical Report: Yamanaka and Lacko (2001)

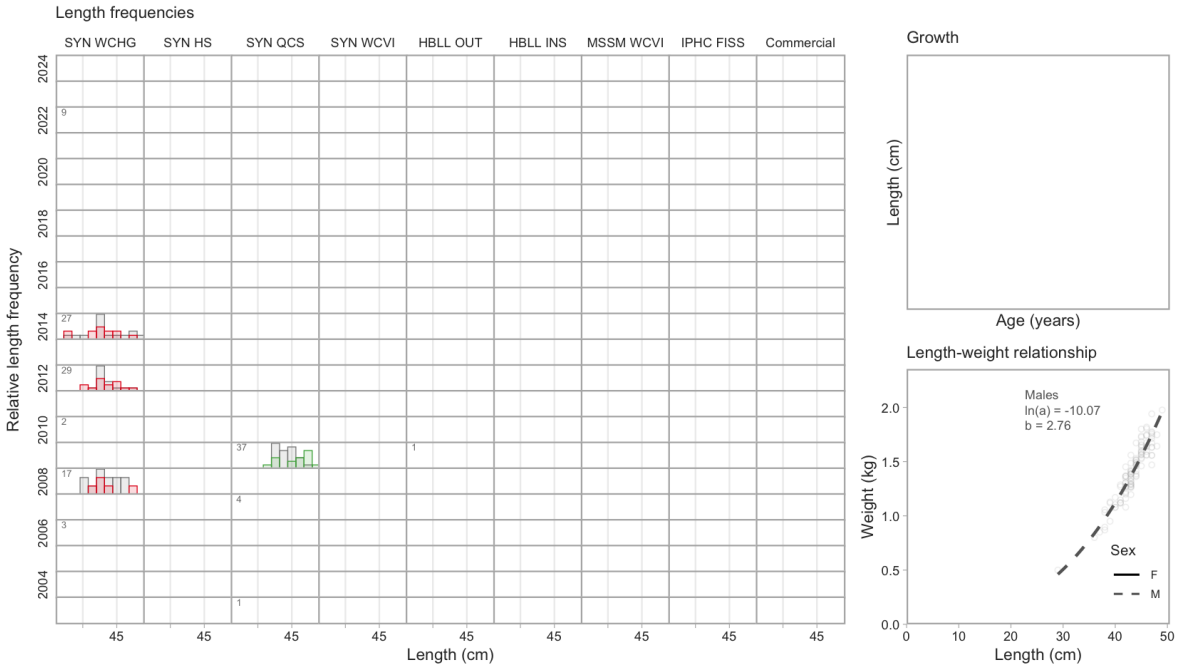



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Females
k = 0.09
linf = 45.8
t0 = -3.89
Males
k = 0.11
linf = 43.1
t0 = -3.29
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.33
b = 3.13
Males
ln(a) = -11.59
b = 3.20
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
F 05 = -1.8y
F 50 = 5.1y
F 95 = 12.1y
M 05 = -6.7y
M 50 = 5.0y
M 95 = 16.7y
Length at maturity
Probability mature
Length (cm)
F 05 = 14.4cm
F 50 = 25.6cm
F 95 = 36.8cm
M 05 = 15.2cm
M 50 = 27.1cm
M 95 = 38.9cm
Sex
F
M
Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.53 Dusky Rockfish

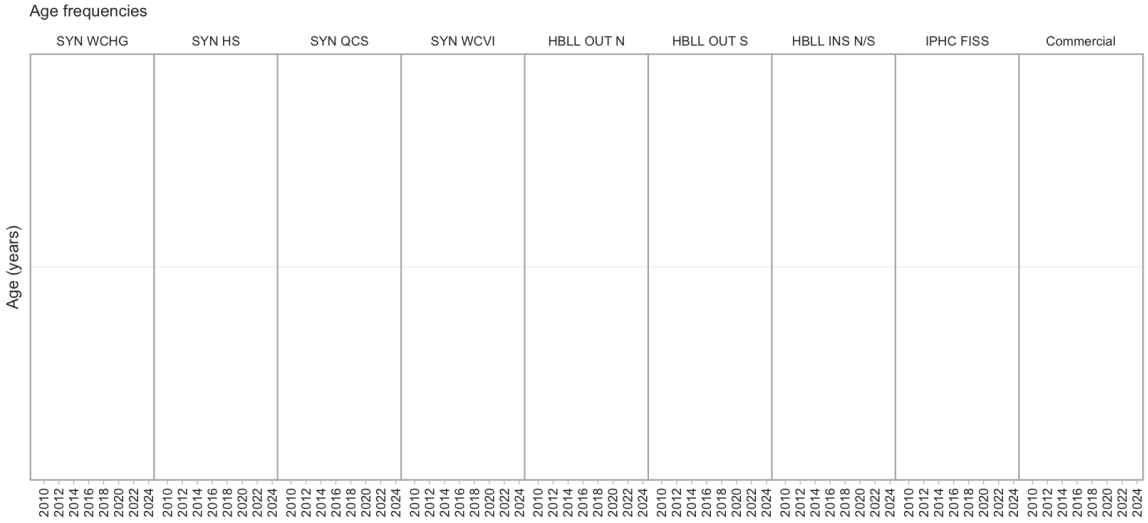
Sebastes variabilis (409)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS



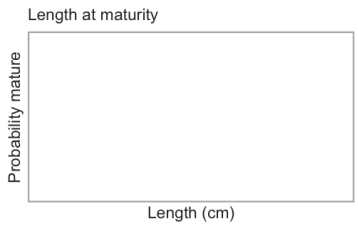

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

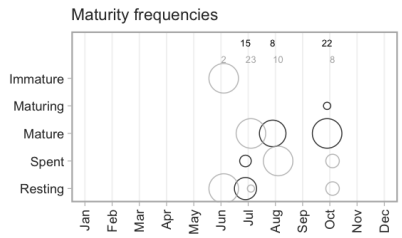
Growth
Length (cm)
Age (years)

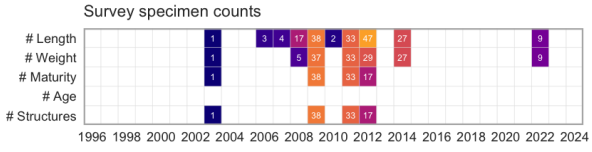
Length-weight relationship
Males
ln(a) = -10.07
b = 2.76
Sex
F
M
Weight (kg)
Length (cm)

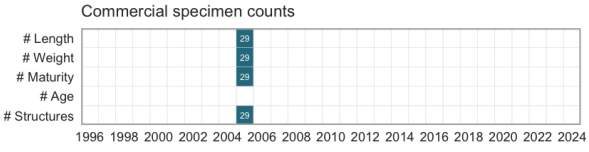

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
Length (cm)

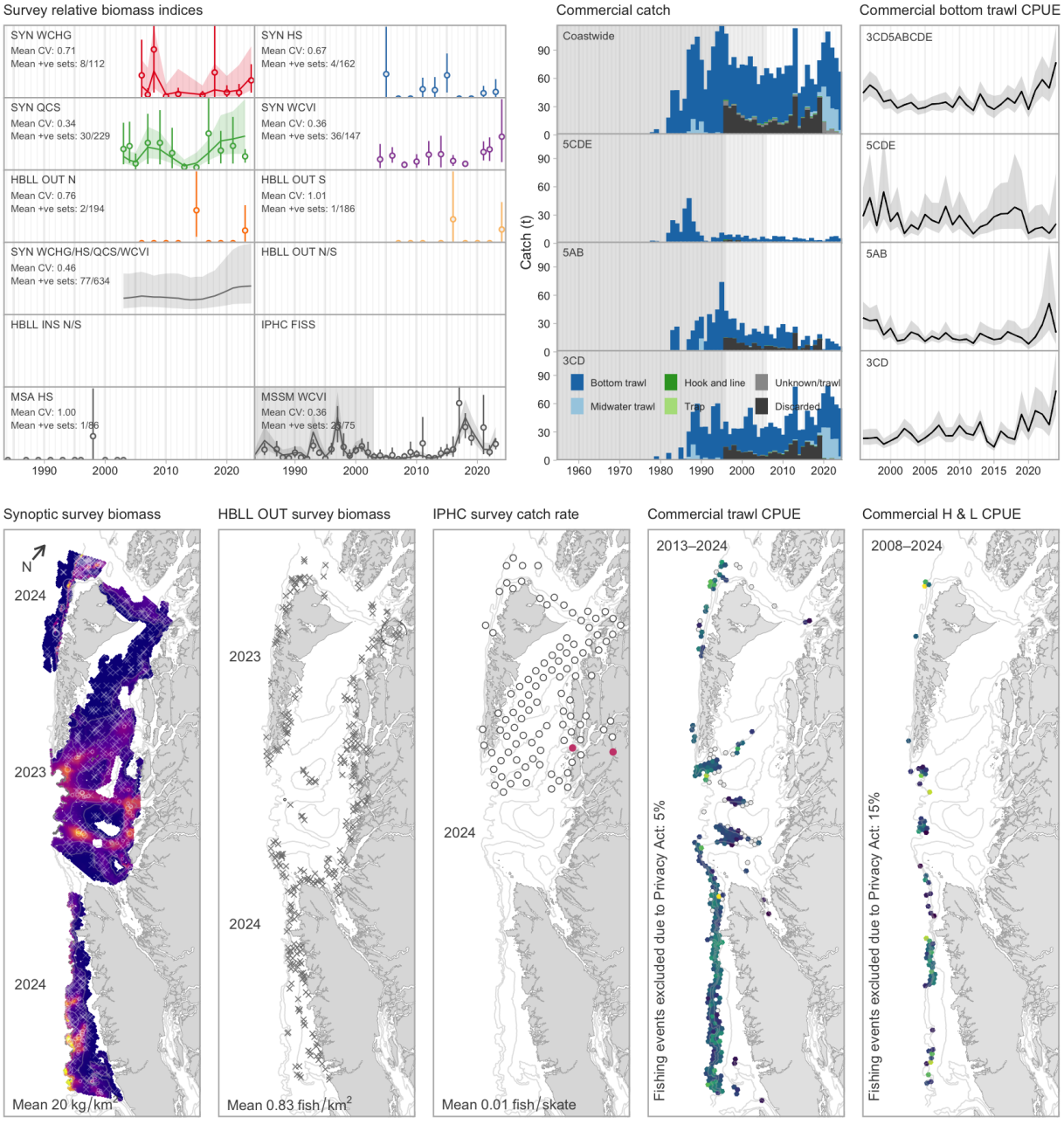

Maturity frequencies
Immature
Maturing
Mature
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

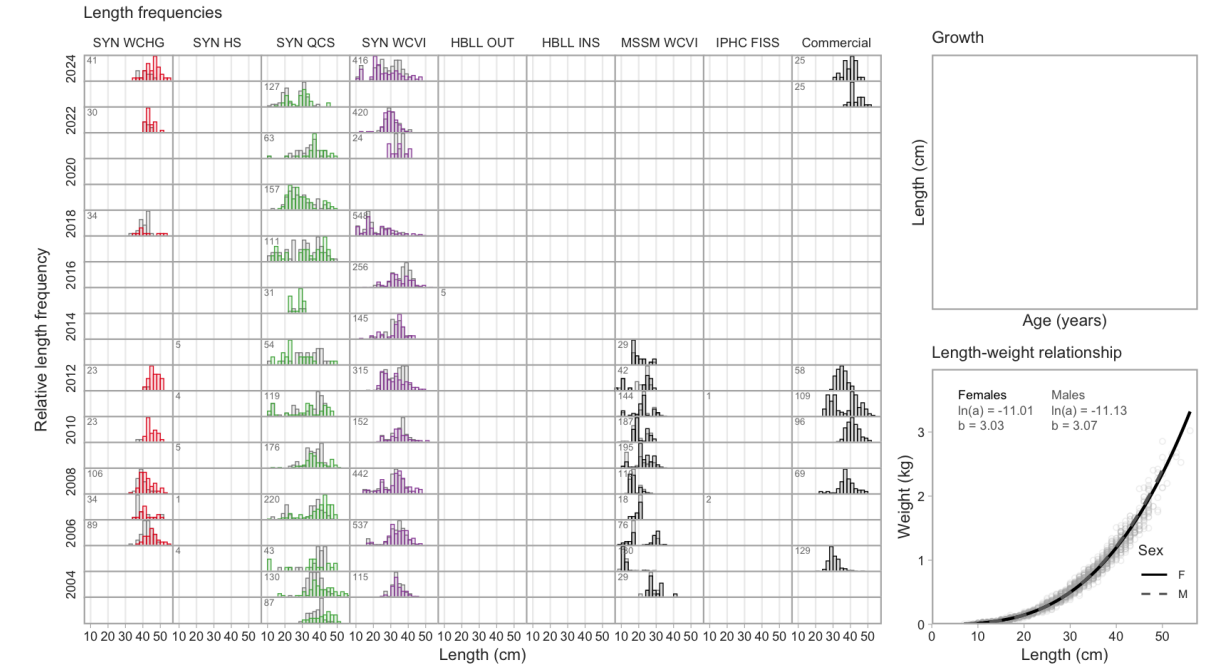

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.54 Darkblotched Rockfish

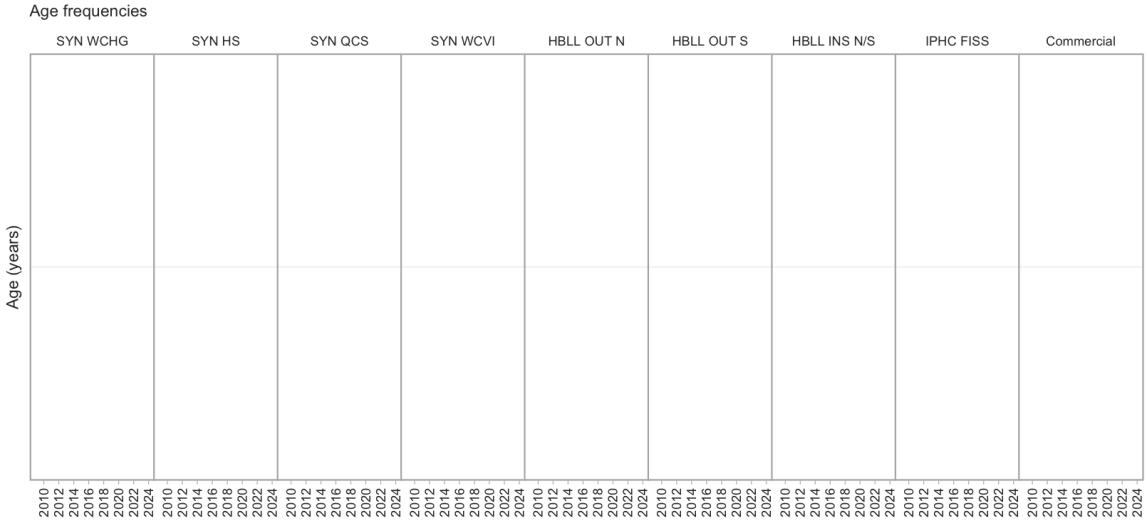
Sebastes crameri (410)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Haigh and Starr (2008)
COSEWIC Status Report: COSEWIC (2010a)
COSEWIC Status: Special Concern, SARA Status: No Status

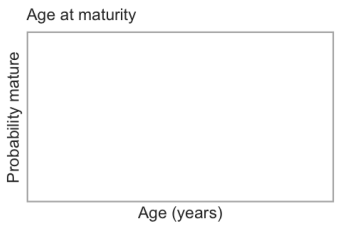


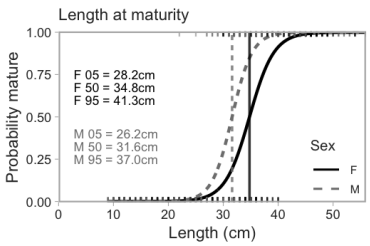

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

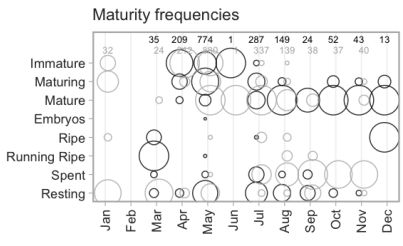
Growth
Length (cm)
Age (years)

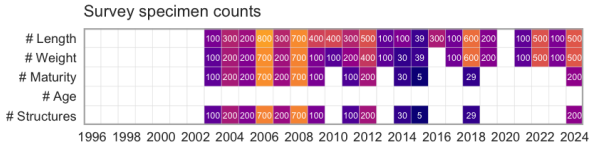
Length-weight relationship
Females
ln(a) = -11.01
b = 3.03
Males
ln(a) = -11.13
b = 3.07
Weight (kg)
Length (cm)
Sex
F
M

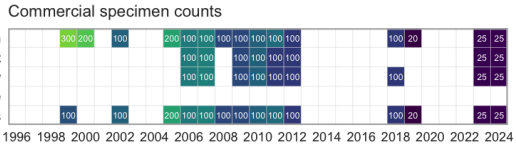

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
F 05 = 28.2cm
F 50 = 34.8cm
F 95 = 41.3cm
M 05 = 26.2cm
M 50 = 31.6cm
M 95 = 37.0cm
Probability mature
Length (cm)
Sex
F
M

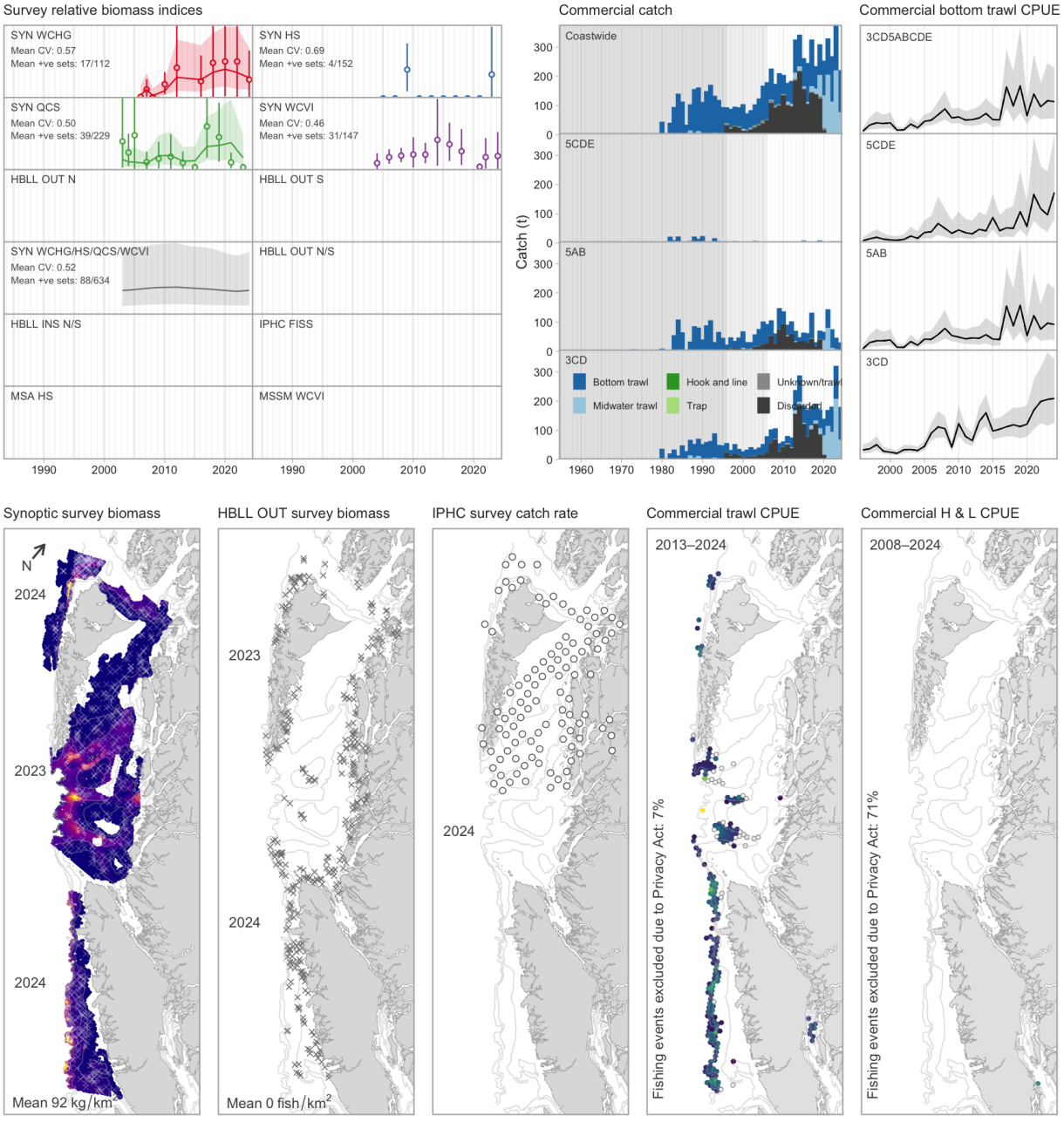

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

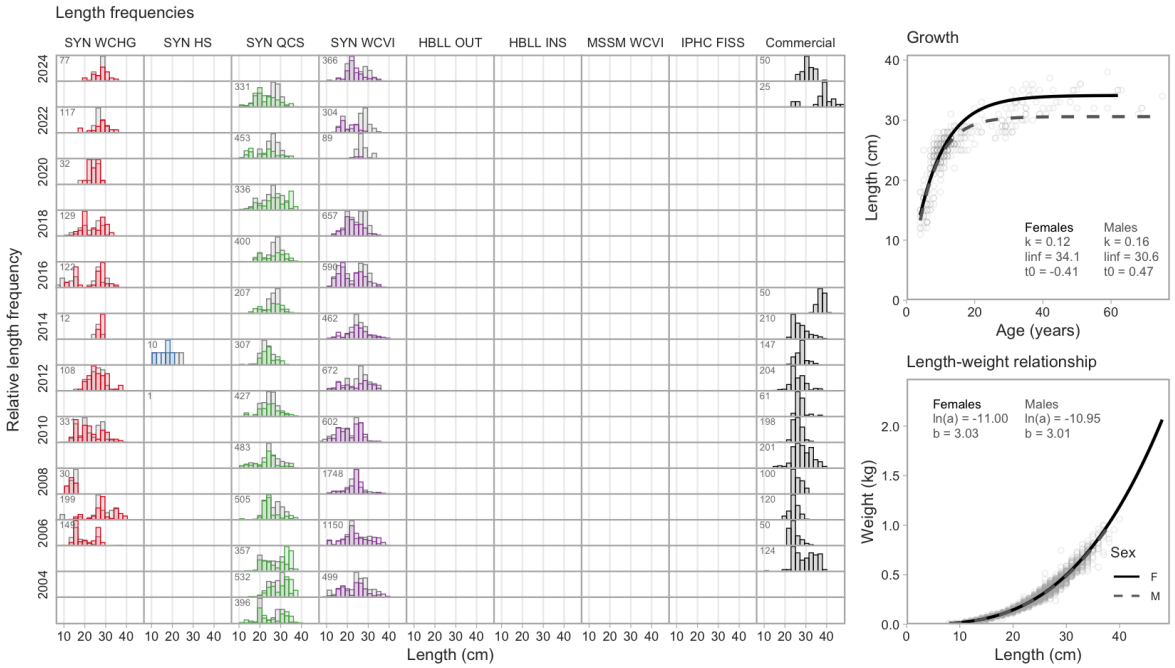

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.55 Splitnose Rockfish

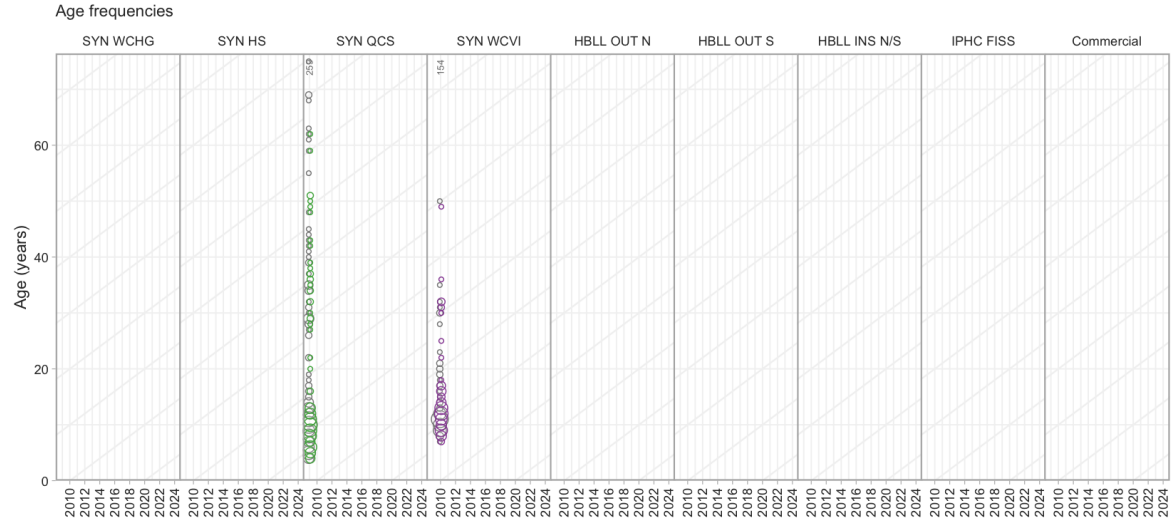
Sebastes diploproa (412)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

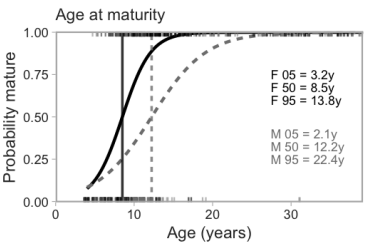


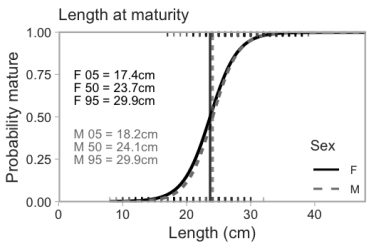

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

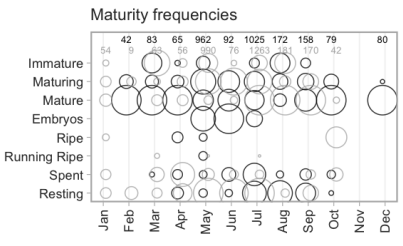
Growth
Length (cm)
Age (years)
Females
k = 0.12
linf = 34.1
t0 = -0.41
Males
k = 0.16
linf = 30.6
t0 = 0.47

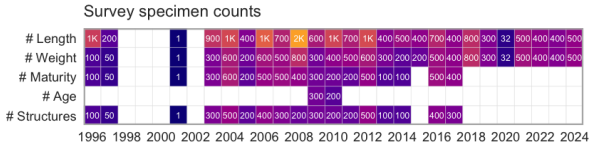
Length-weight relationship
Females
ln(a) = -11.00
b = 3.03
Males
ln(a) = -10.95
b = 3.01
Weight (kg)
Length (cm)
Sex
F
M

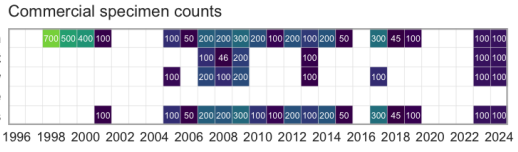

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
F 05 = 3.2y
F 50 = 8.5y
F 95 = 13.8y
M 05 = 2.1y
M 50 = 12.2y
M 95 = 22.4y
Age (years)


Length at maturity
Probability mature
F 05 = 17.4cm
F 50 = 23.7cm
F 95 = 29.9cm
M 05 = 18.2cm
M 50 = 24.1cm
M 95 = 29.9cm
Sex
F
M
Length (cm)

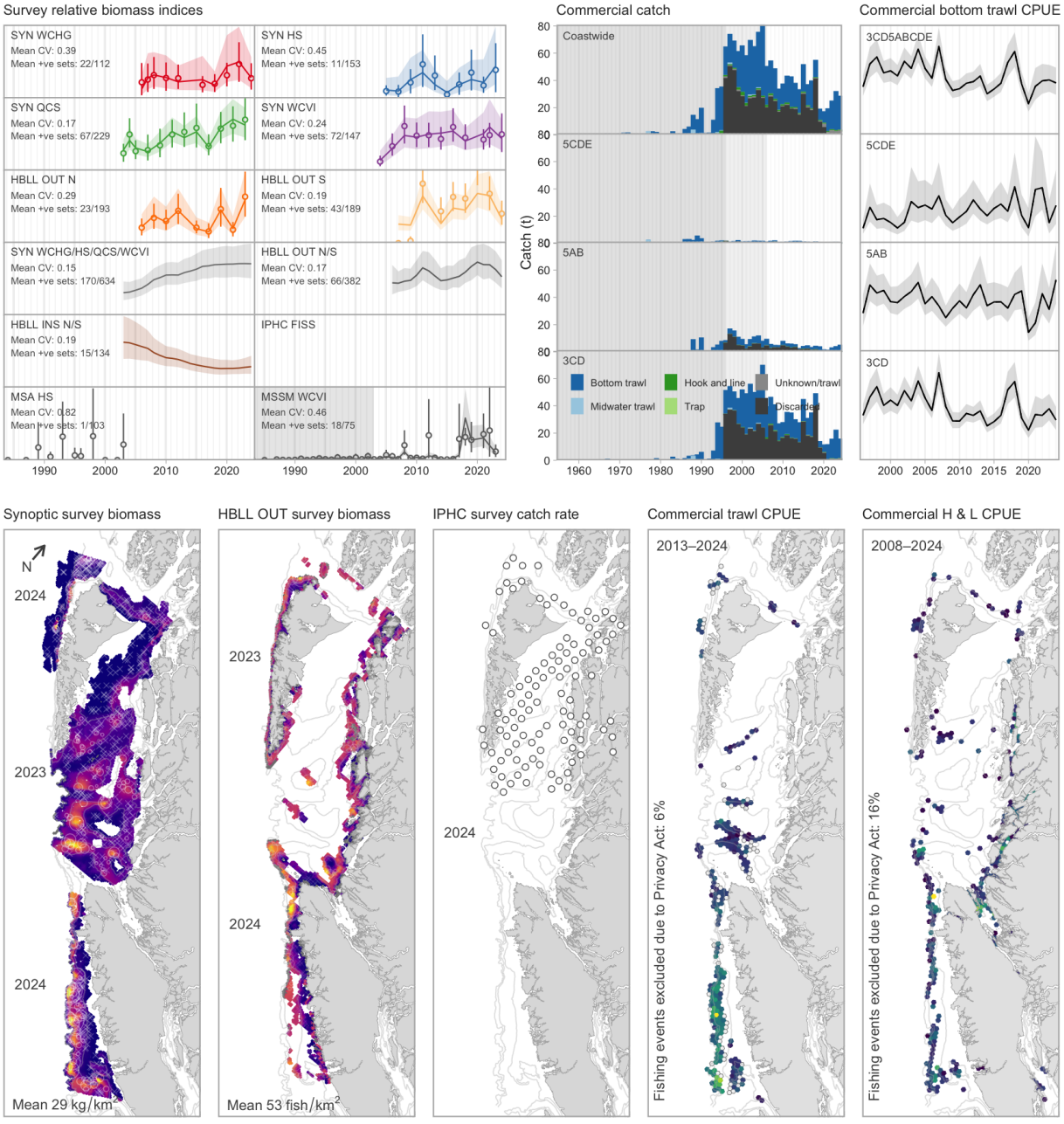

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

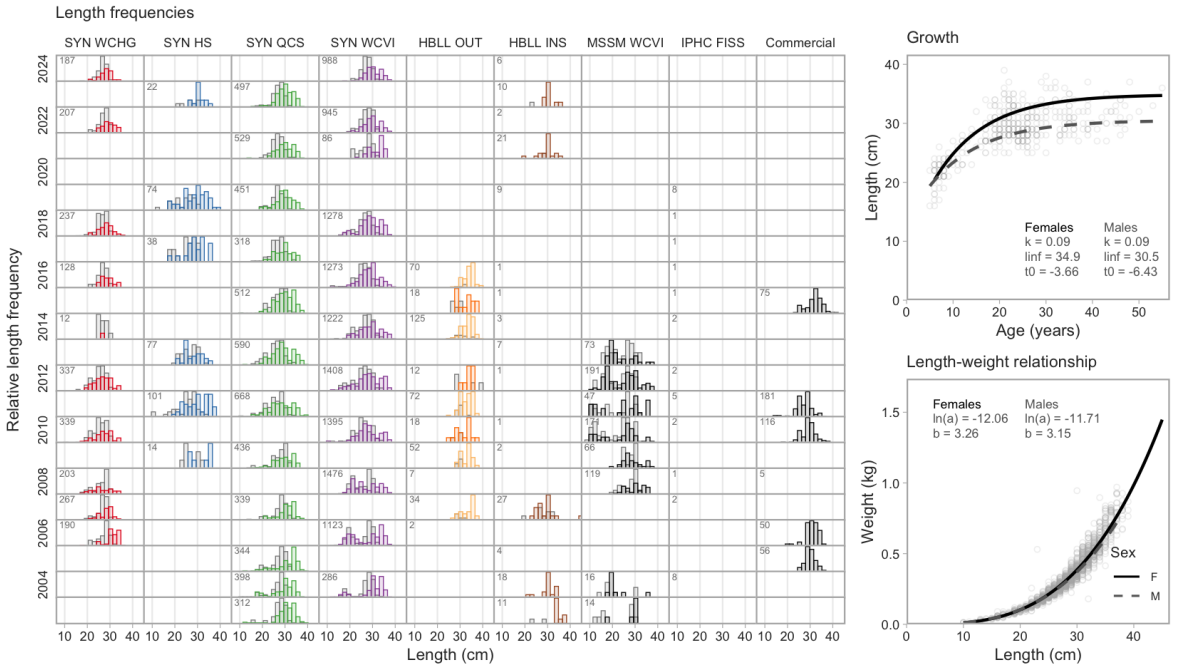

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.56 Greenstriped Rockfish

Sebastes elongatus (414)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

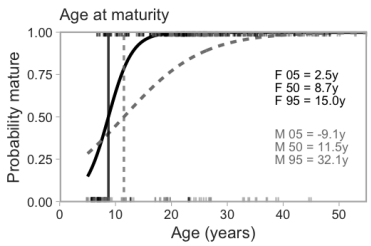


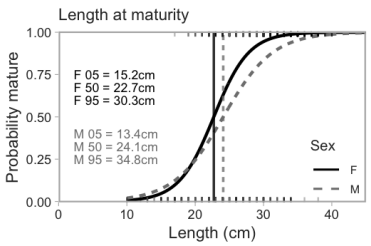

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

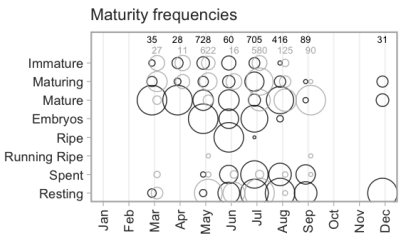
Growth
Length (cm)
Age (years)
Females
k = 0.09
linf = 34.9
t0 = -3.66
Males
k = 0.09
linf = 30.5
t0 = -6.43

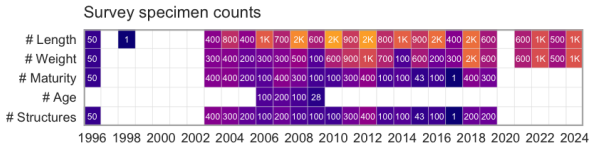
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -12.06
b = 3.26
Males
ln(a) = -11.71
b = 3.15
Sex
F
M

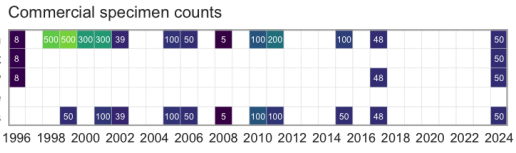

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 2.5y
F 50 = 8.7y
F 95 = 15.0y
M 05 = -9.1y
M 50 = 11.5y
M 95 = 32.1y


Length at maturity
Probability mature
Length (cm)
F 05 = 15.2cm
F 50 = 22.7cm
F 95 = 30.3cm
M 05 = 13.4cm
M 50 = 24.1cm
M 95 = 34.8cm
Sex
F
M

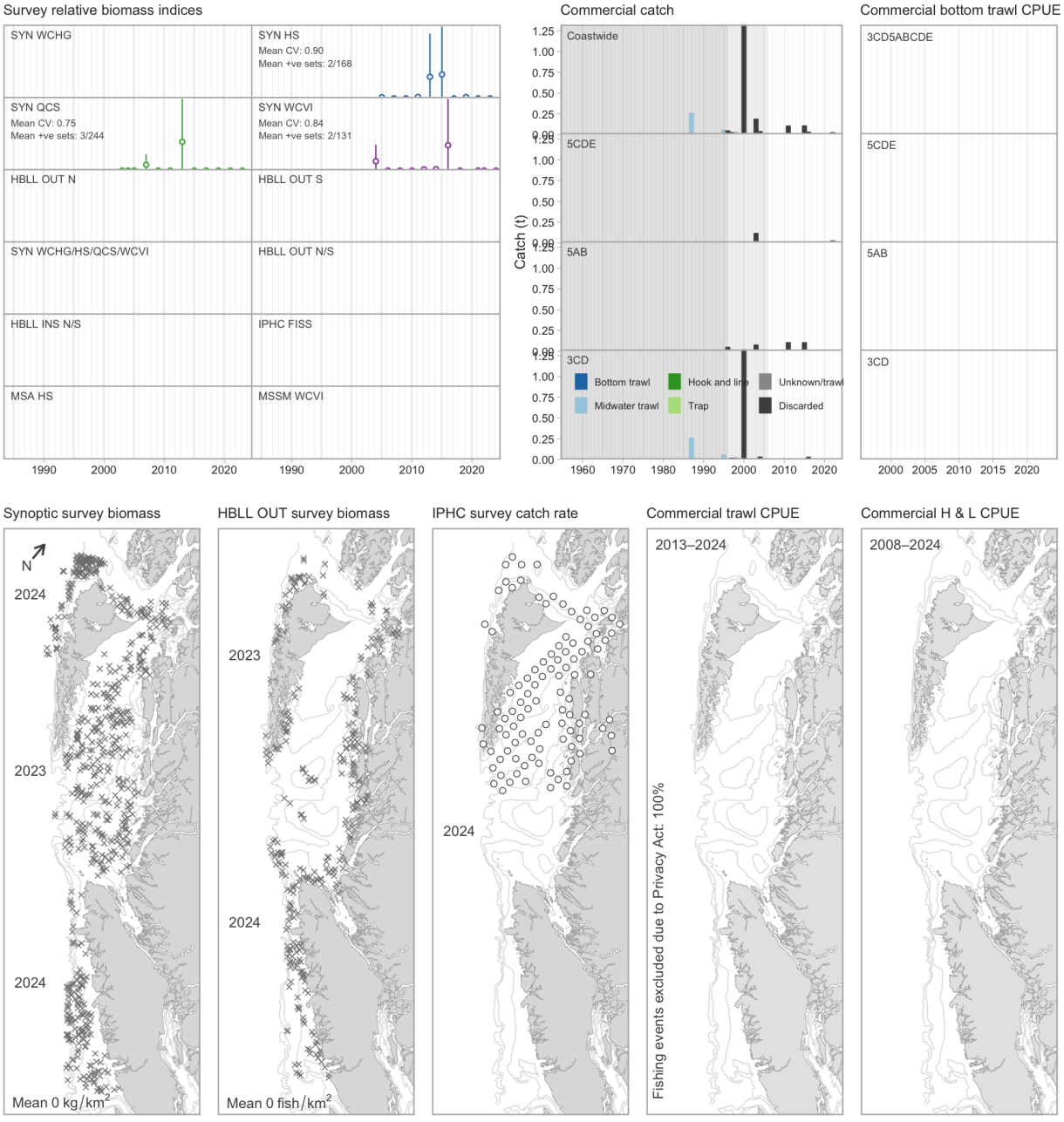

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

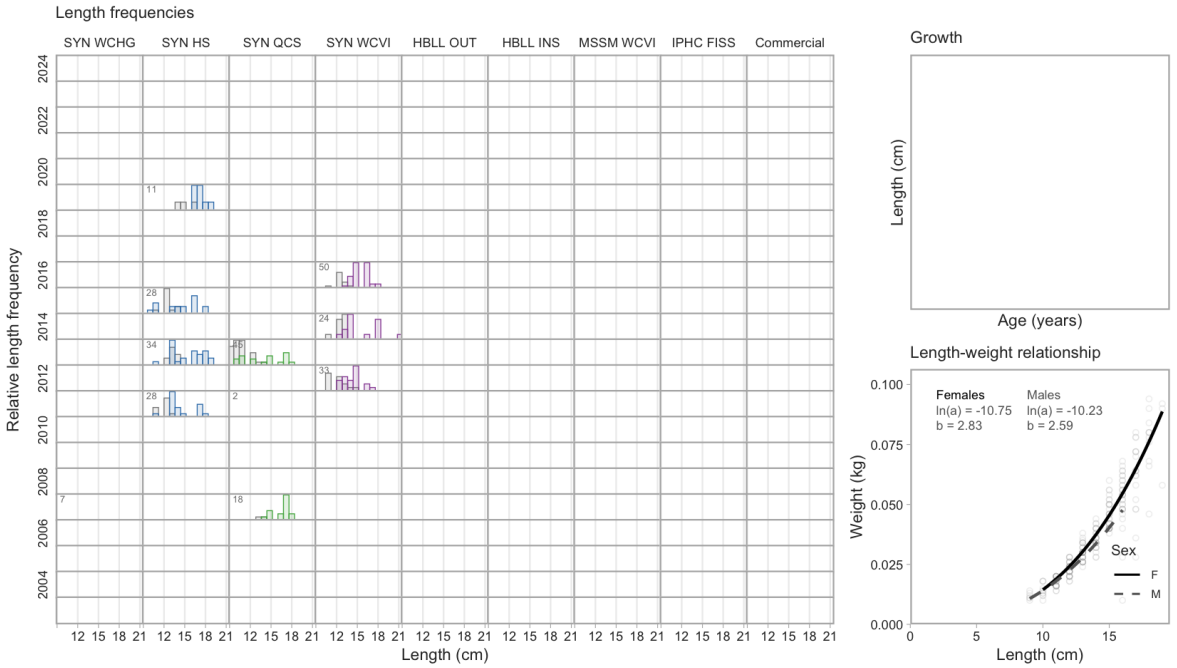

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.57 Puget Sound Rockfish

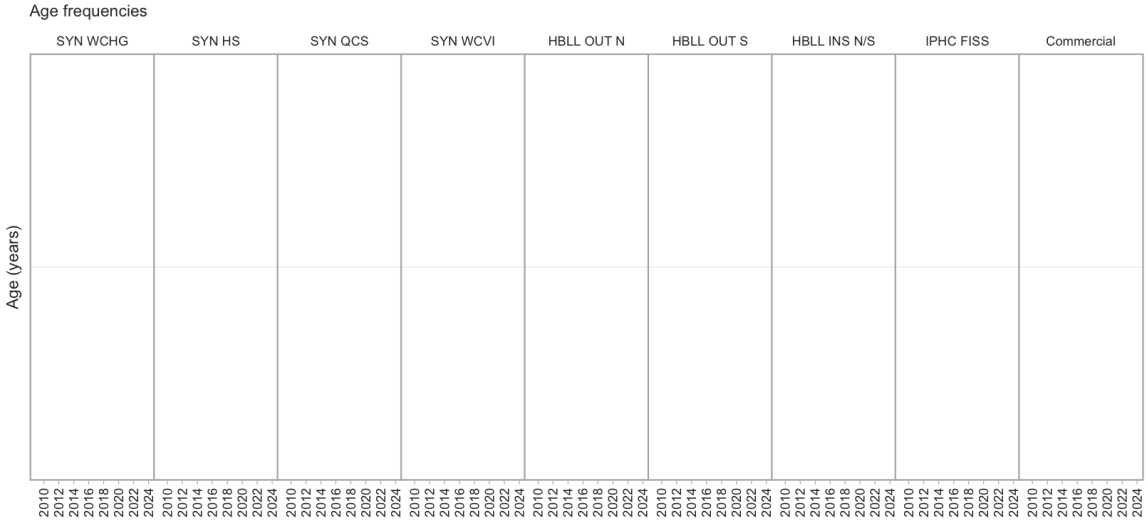
Sebastes emphaeus (415)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

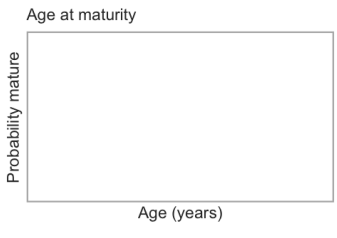


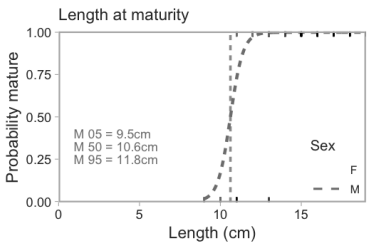

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

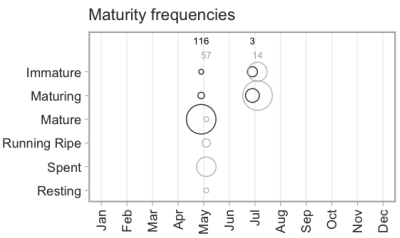
Growth
Length (cm)
Age (years)

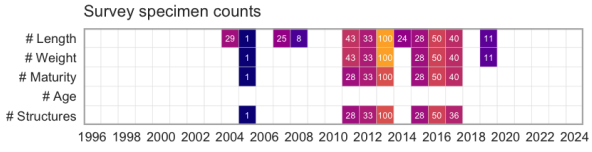
Length-weight relationship
Females
ln(a) = -10.75
b = 2.83
Males
ln(a) = -10.23
b = 2.59
Weight (kg)
Length (cm)
Sex
F
M

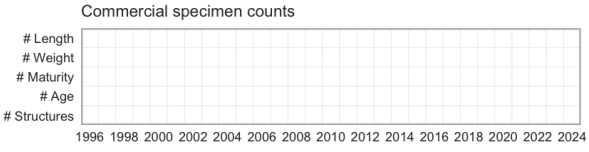

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
M 05 = 9.5cm
M 50 = 10.6cm
M 95 = 11.8cm
Sex
F
M
Length (cm)

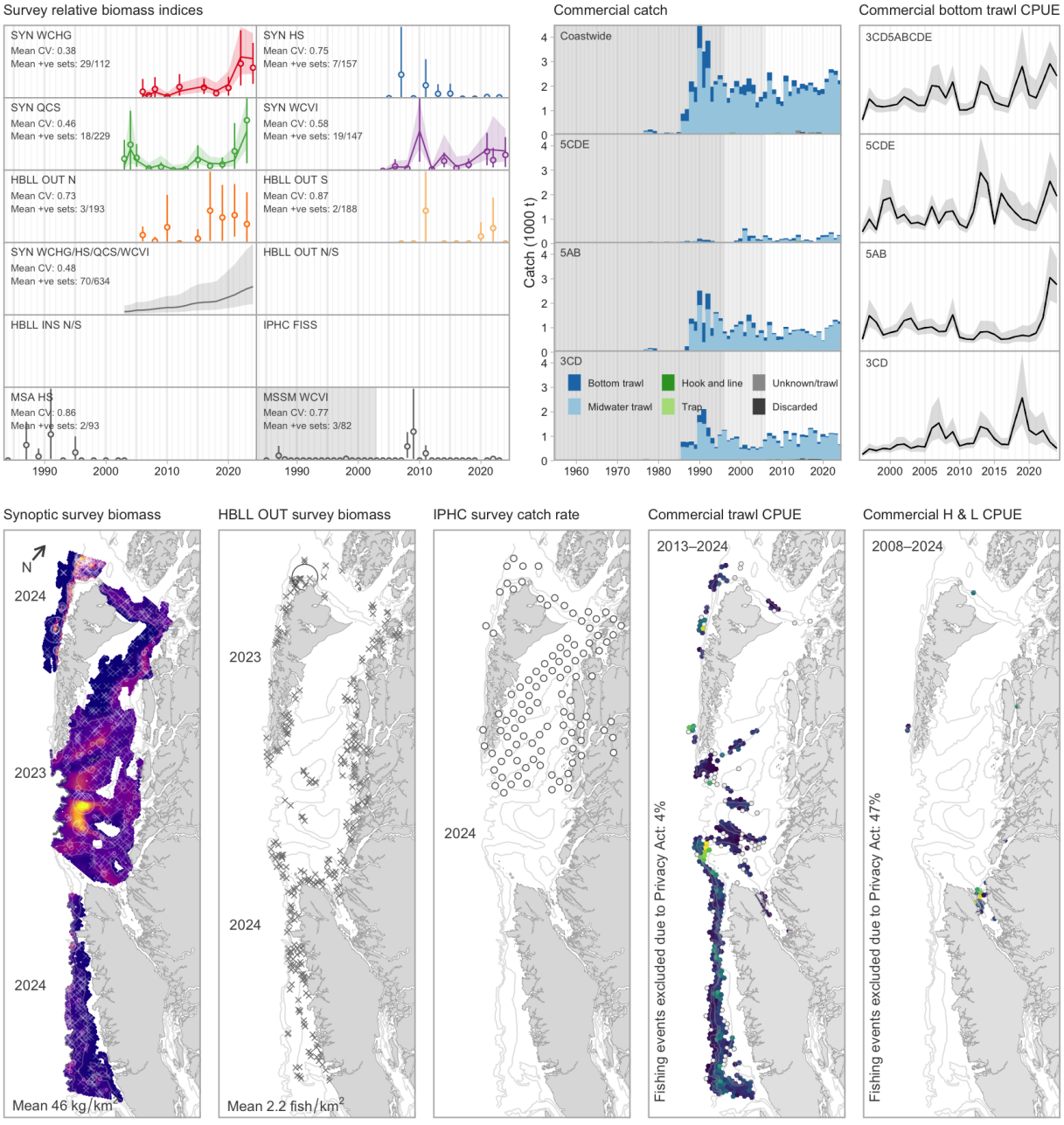

Maturity frequencies
Immature
Maturing
Mature
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

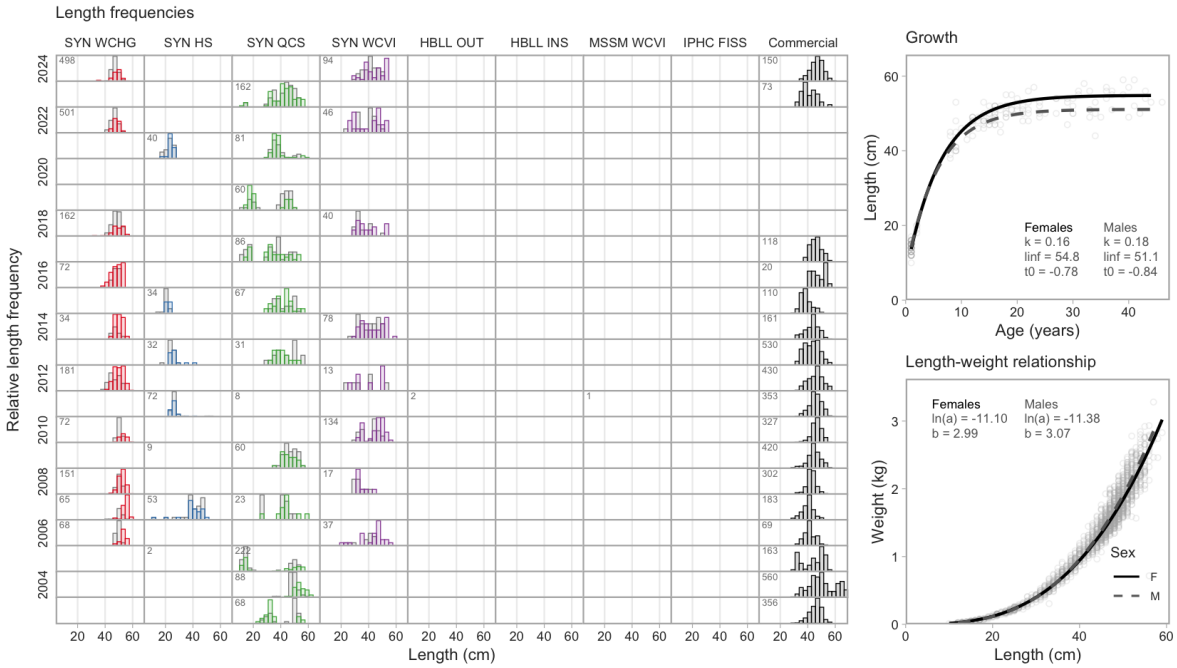

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.58 Widow Rockfish

Sebastes entomelas (417)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2021b)
Last Science Advisory Report: DFO (2019b)

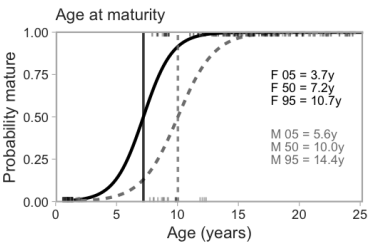


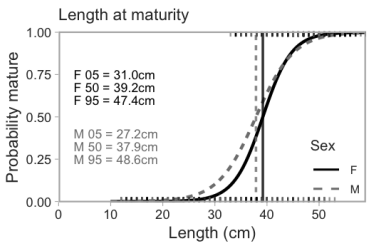

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

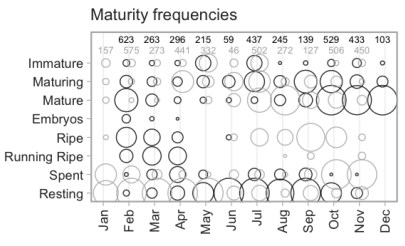
Growth
Length (cm)
Age (years)
Females
k = 0.16
linf = 54.8
t0 = -0.78
Males
k = 0.18
linf = 51.1
t0 = -0.84

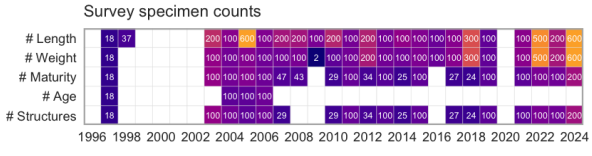
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.10
b = 2.99
Males
ln(a) = -11.38
b = 3.07
Sex
F
M


Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 3.7y
F 50 = 7.2y
F 95 = 10.7y
M 05 = 5.6y
M 50 = 10.0y
M 95 = 14.4y


Length at maturity
Probability mature
Length (cm)
F 05 = 31.0cm
F 50 = 39.2cm
F 95 = 47.4cm
M 05 = 27.2cm
M 50 = 37.9cm
M 95 = 48.6cm
Sex
F
M

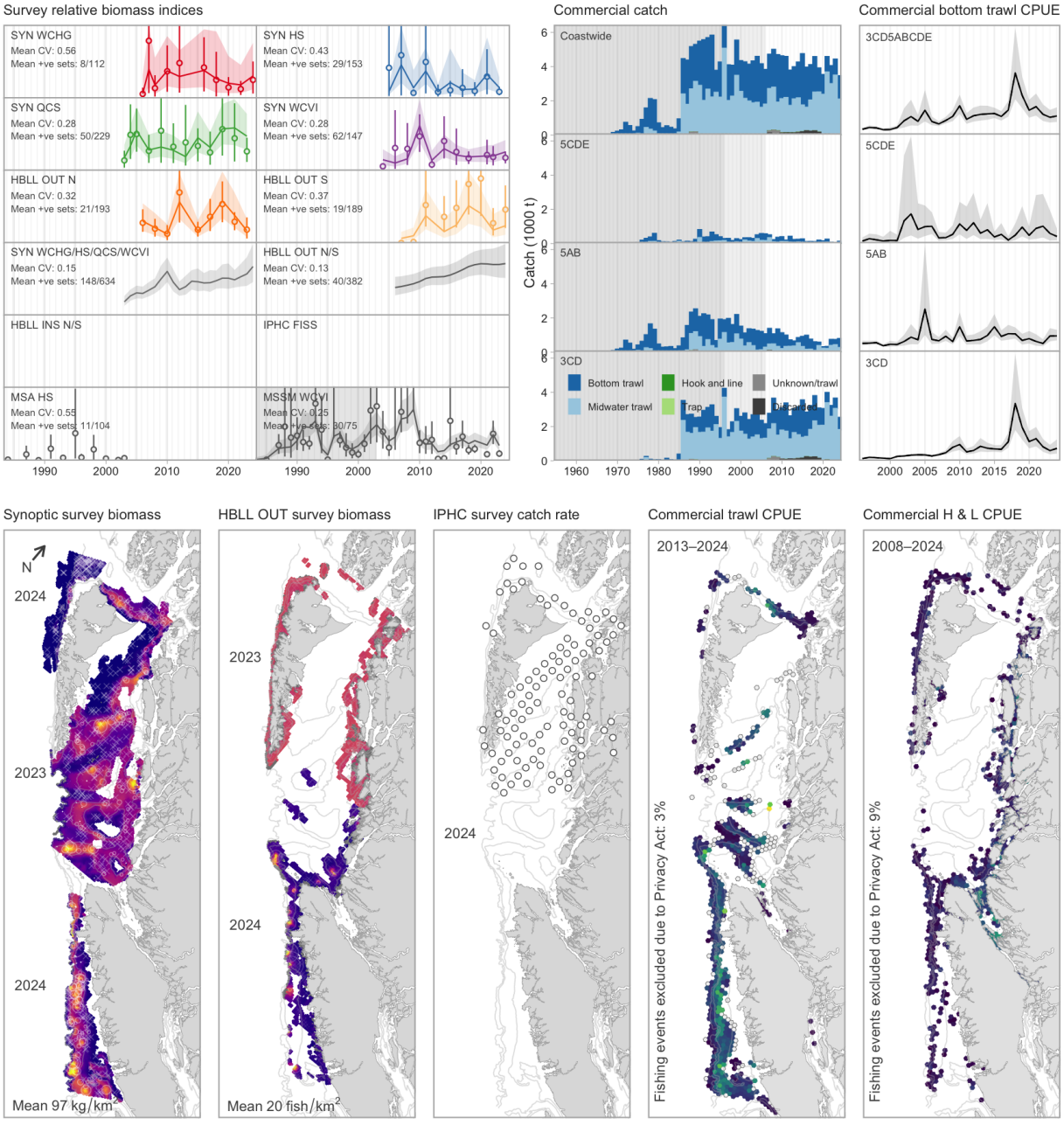

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

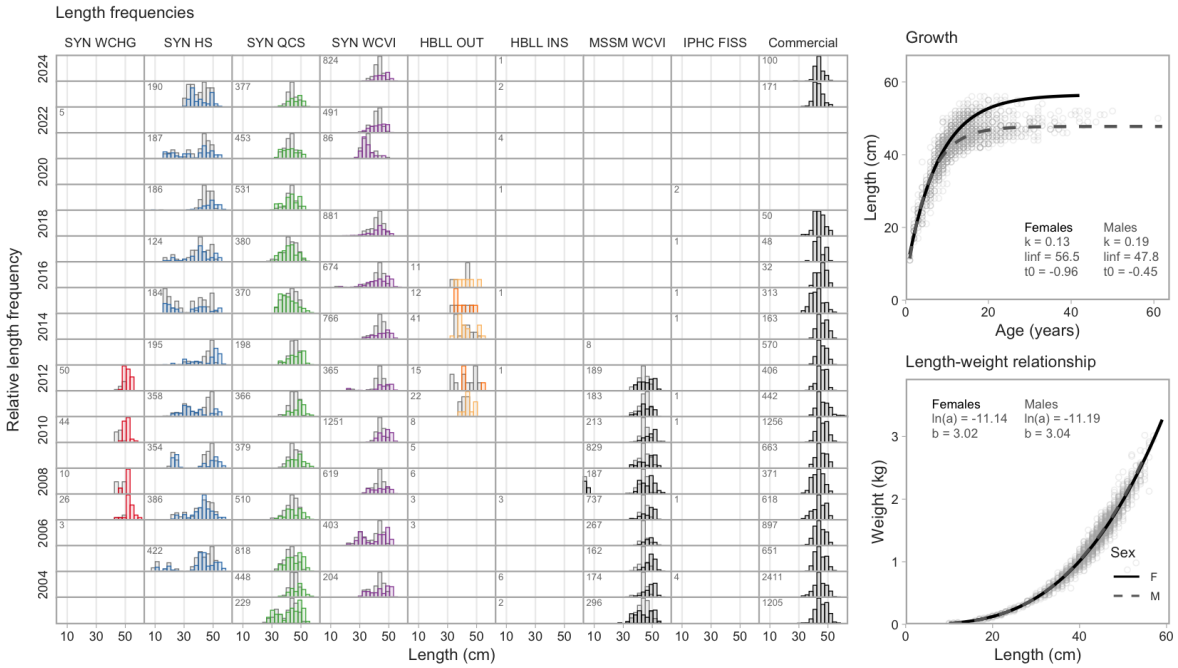

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.59 Yellowtail Rockfish

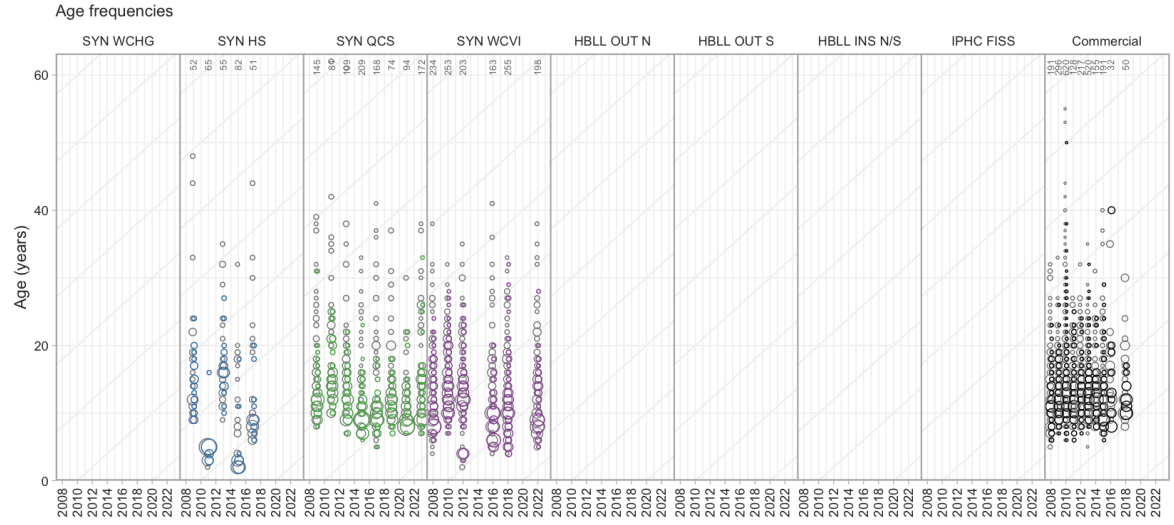
Sebastes flavidus (418)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Science Advisory Report: DFO (2015b)

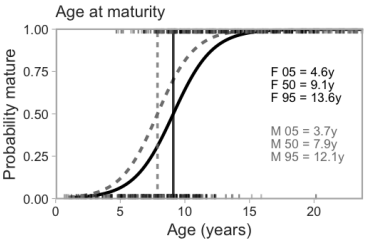


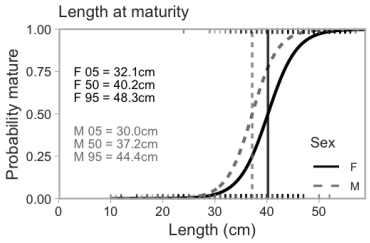

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

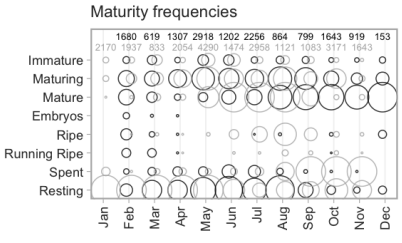
Growth
Length (cm)
Age (years)
Females
k = 0.13
linf = 56.5
t0 = -0.96
Males
k = 0.19
linf = 47.8
t0 = -0.45

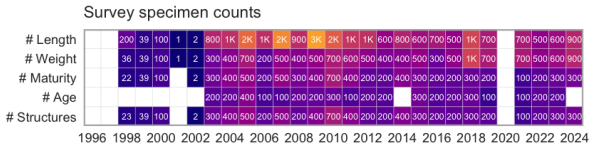
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.14
b = 3.02
Males
ln(a) = -11.19
b = 3.04
Sex
F
M

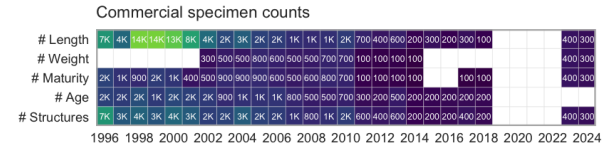

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 4.6y
F 50 = 9.1y
F 95 = 13.6y
M 05 = 3.7y
M 50 = 7.9y
M 95 = 12.1y


Length at maturity
Probability mature
Length (cm)
F 05 = 32.1cm
F 50 = 40.2cm
F 95 = 48.3cm
M 05 = 30.0cm
M 50 = 37.2cm
M 95 = 44.4cm
Sex
F
M

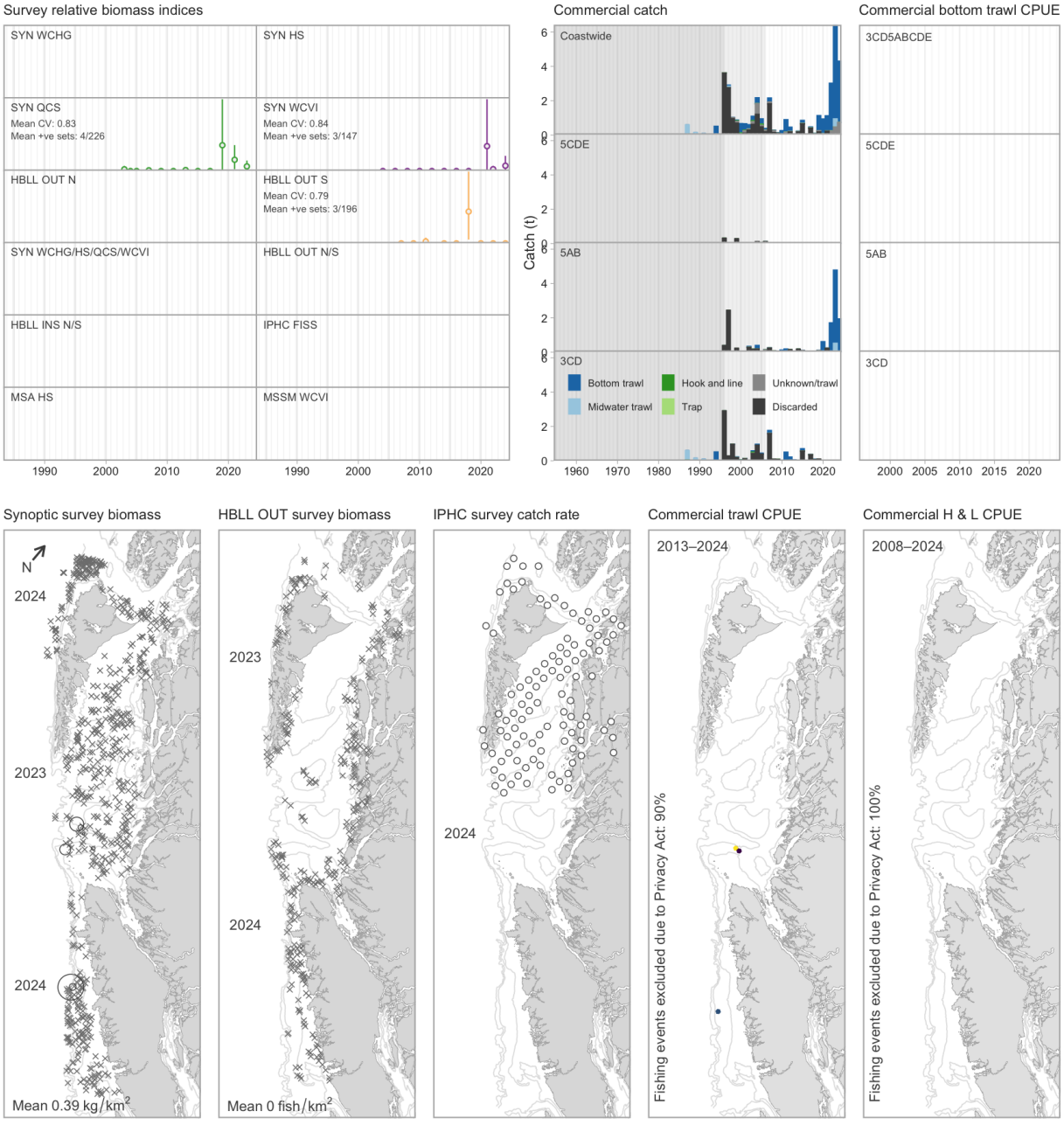

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

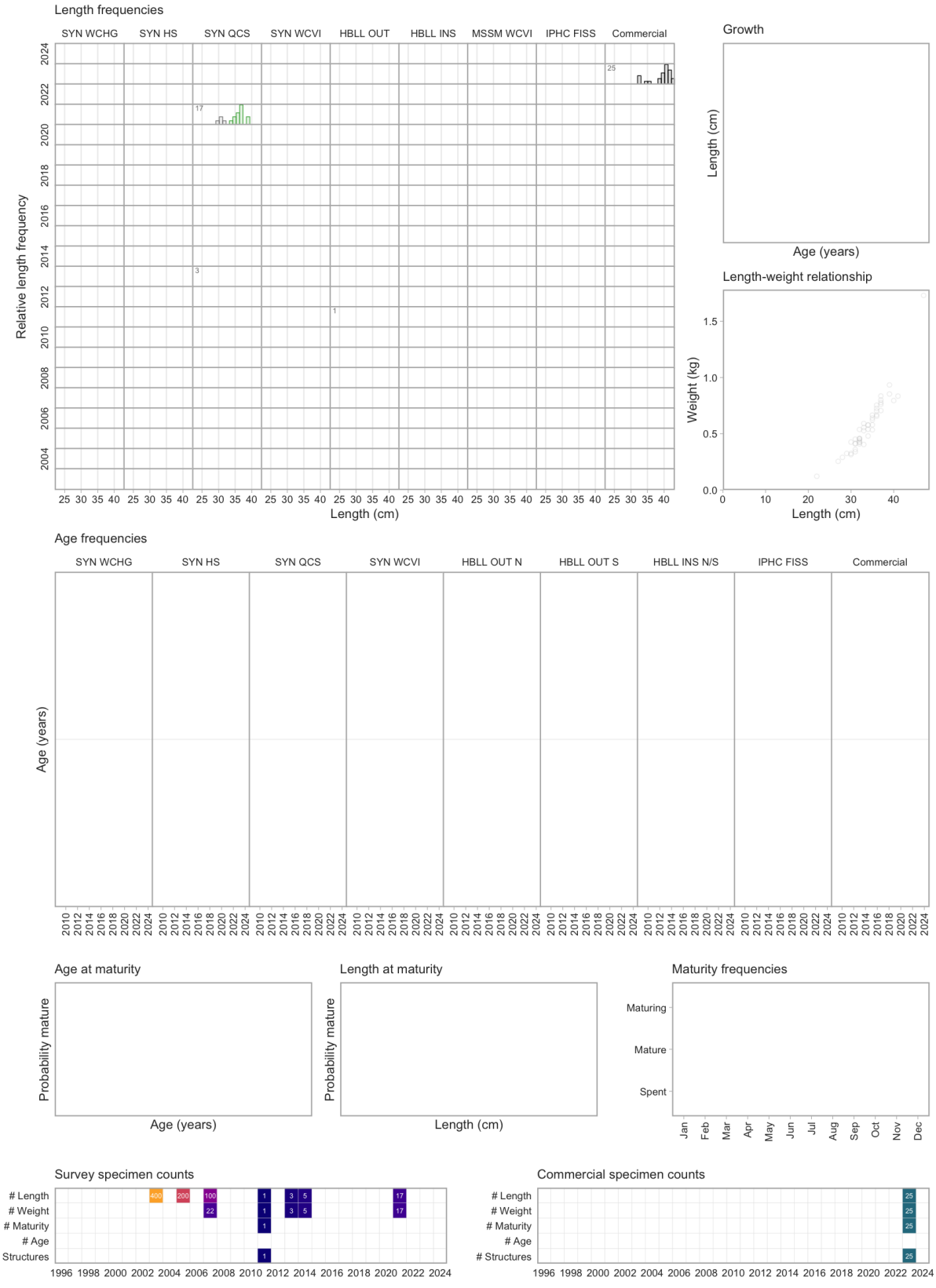

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.60 Chilipepper

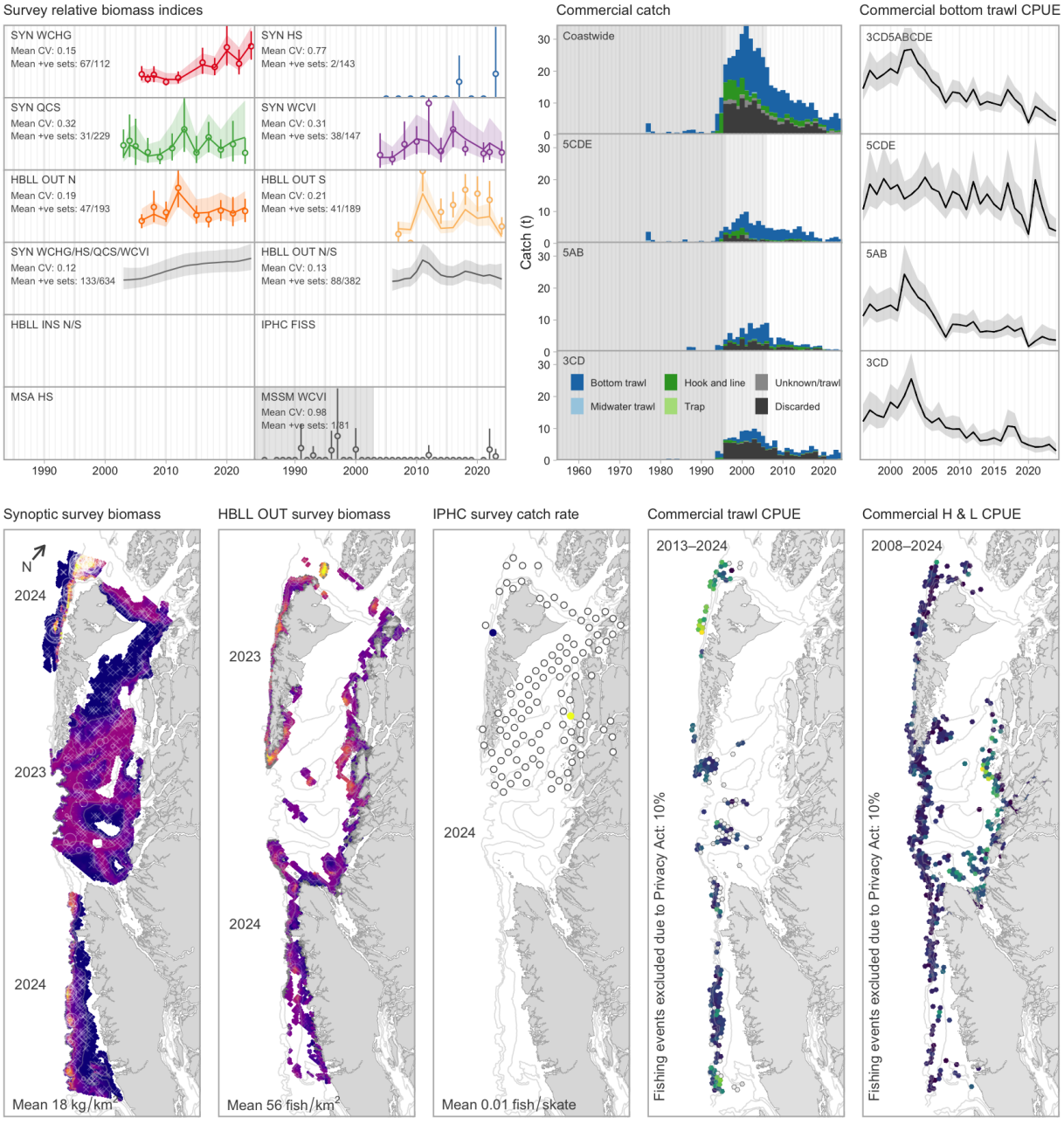
Sebastes goodei (420)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

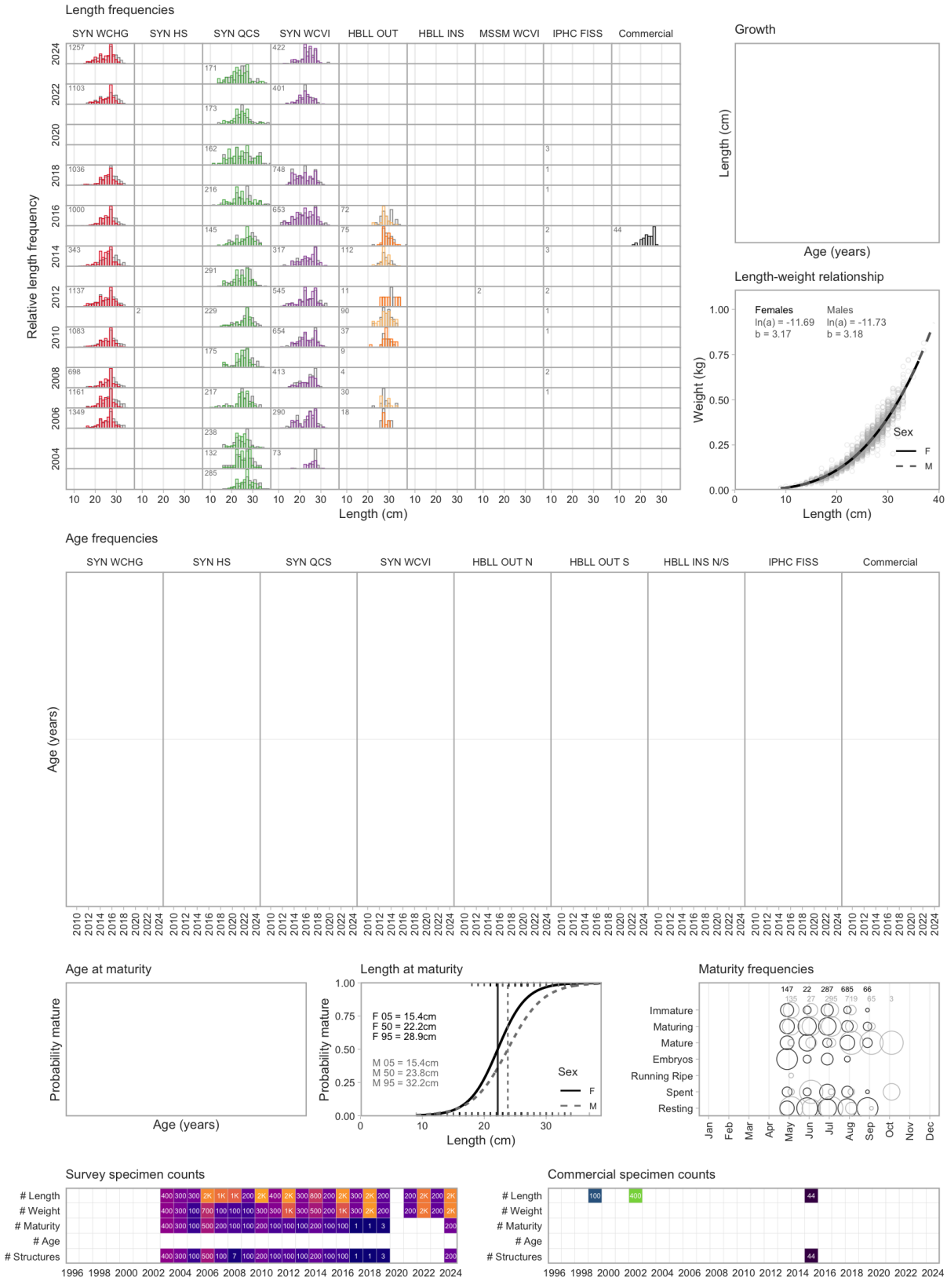



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Maturing
Mature
Spent
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.61 Rosethorn Rockfish

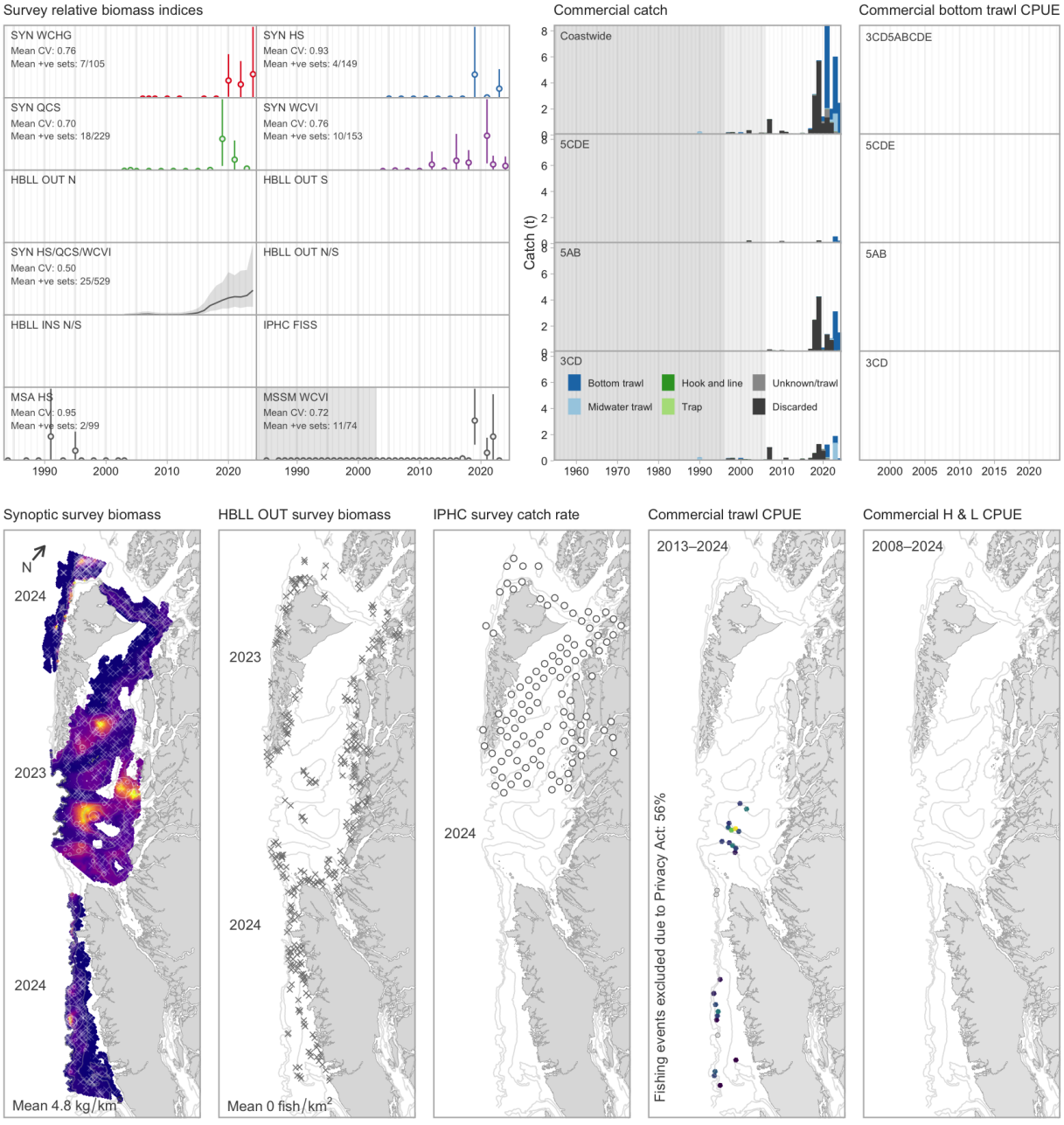
Sebastes helvomaculatus (421)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

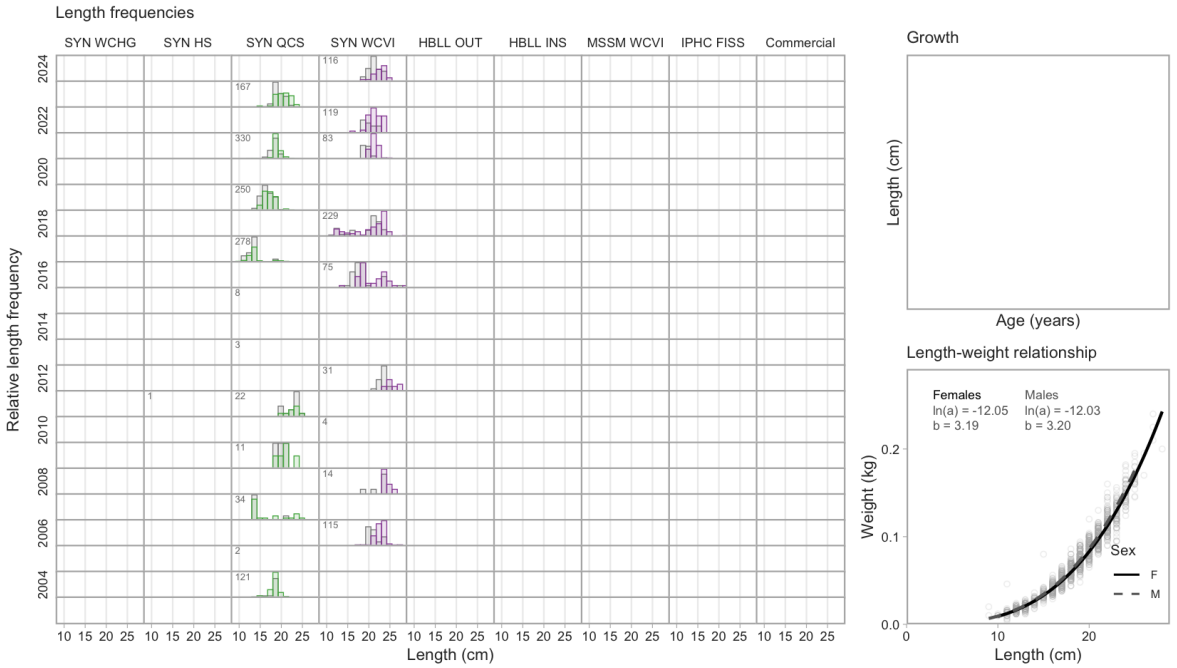



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.69
b = 3.17
Males
ln(a) = -11.73
b = 3.18
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
F 05 = 15.4cm
F 50 = 22.2cm
F 95 = 28.9cm
M 05 = 15.4cm
M 50 = 23.8cm
M 95 = 32.2cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Embryos
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.62 Shortbelly Rockfish

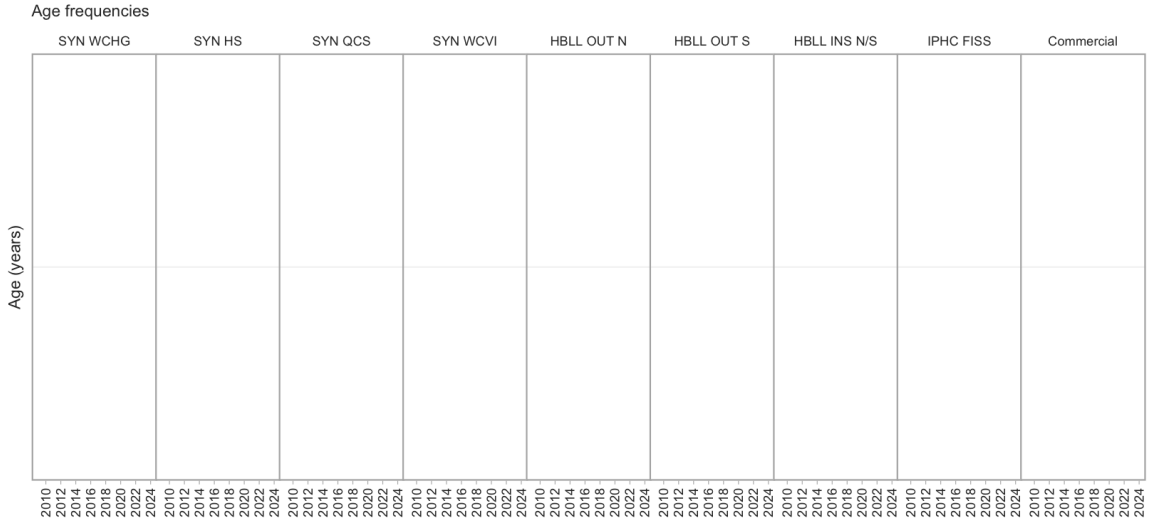
Sebastes jordani (423)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS



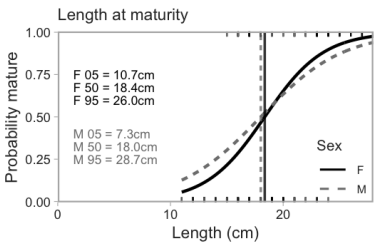

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

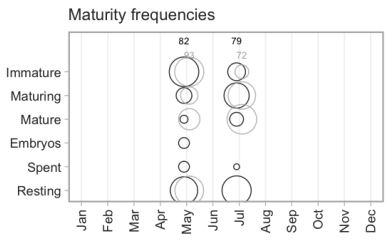
Growth
Length (cm)
Age (years)

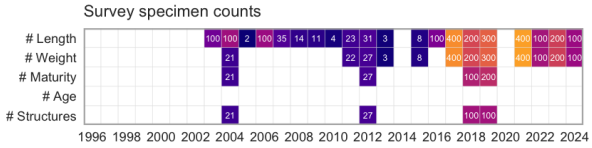
Length-weight relationship
Females
ln(a) = -12.05
b = 3.19
Males
ln(a) = -12.03
b = 3.20
Weight (kg)
Length (cm)
Sex
F
M

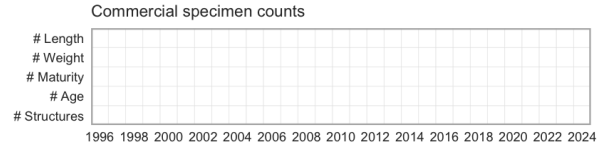

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
F 05 = 10.7cm
F 50 = 18.4cm
F 95 = 26.0cm
M 05 = 7.3cm
M 50 = 18.0cm
M 95 = 28.7cm
Probability mature
Length (cm)
Sex
F
M

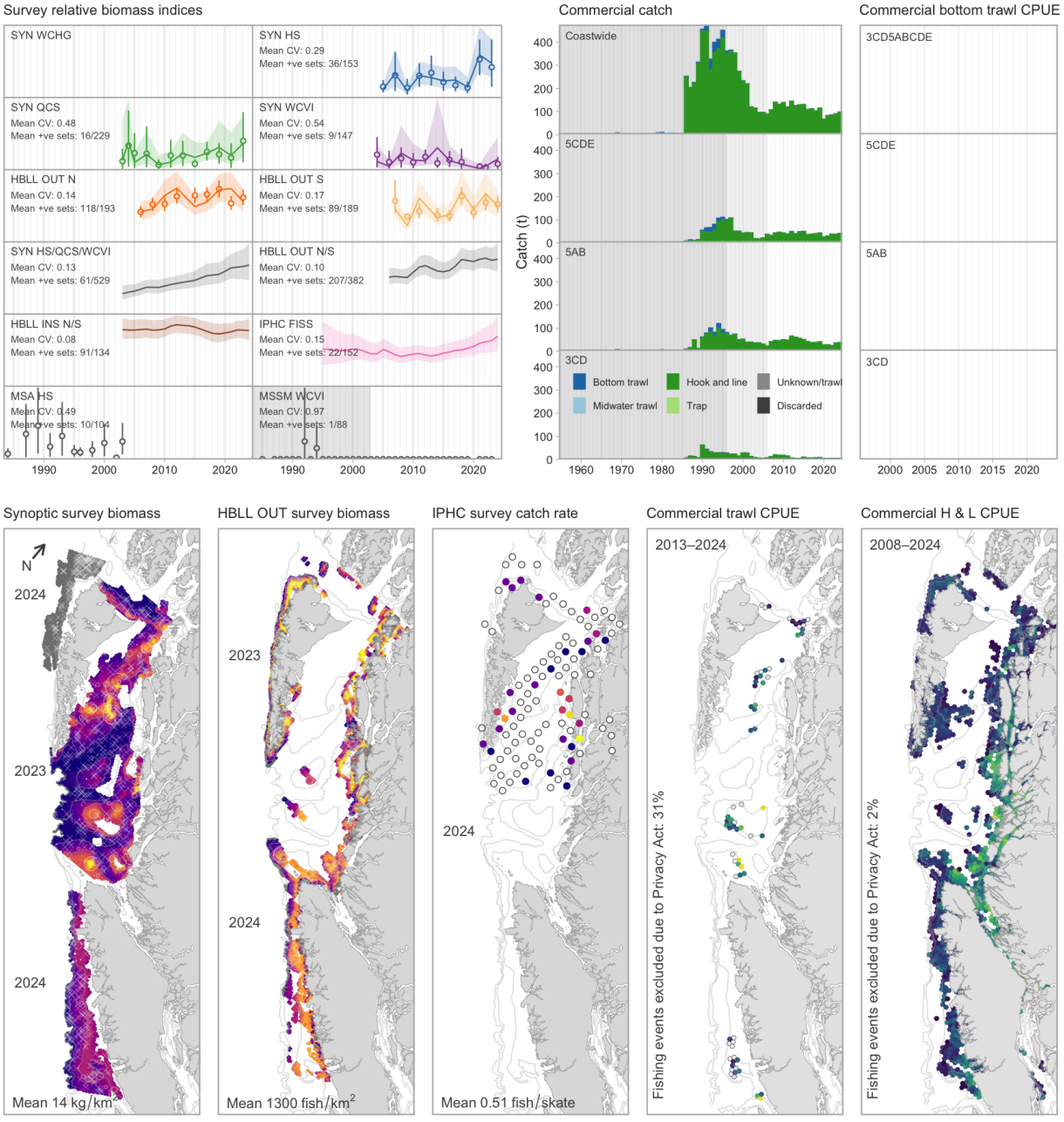

Maturity frequencies
Immature
Maturing
Mature
Embryos
Spent
Resting

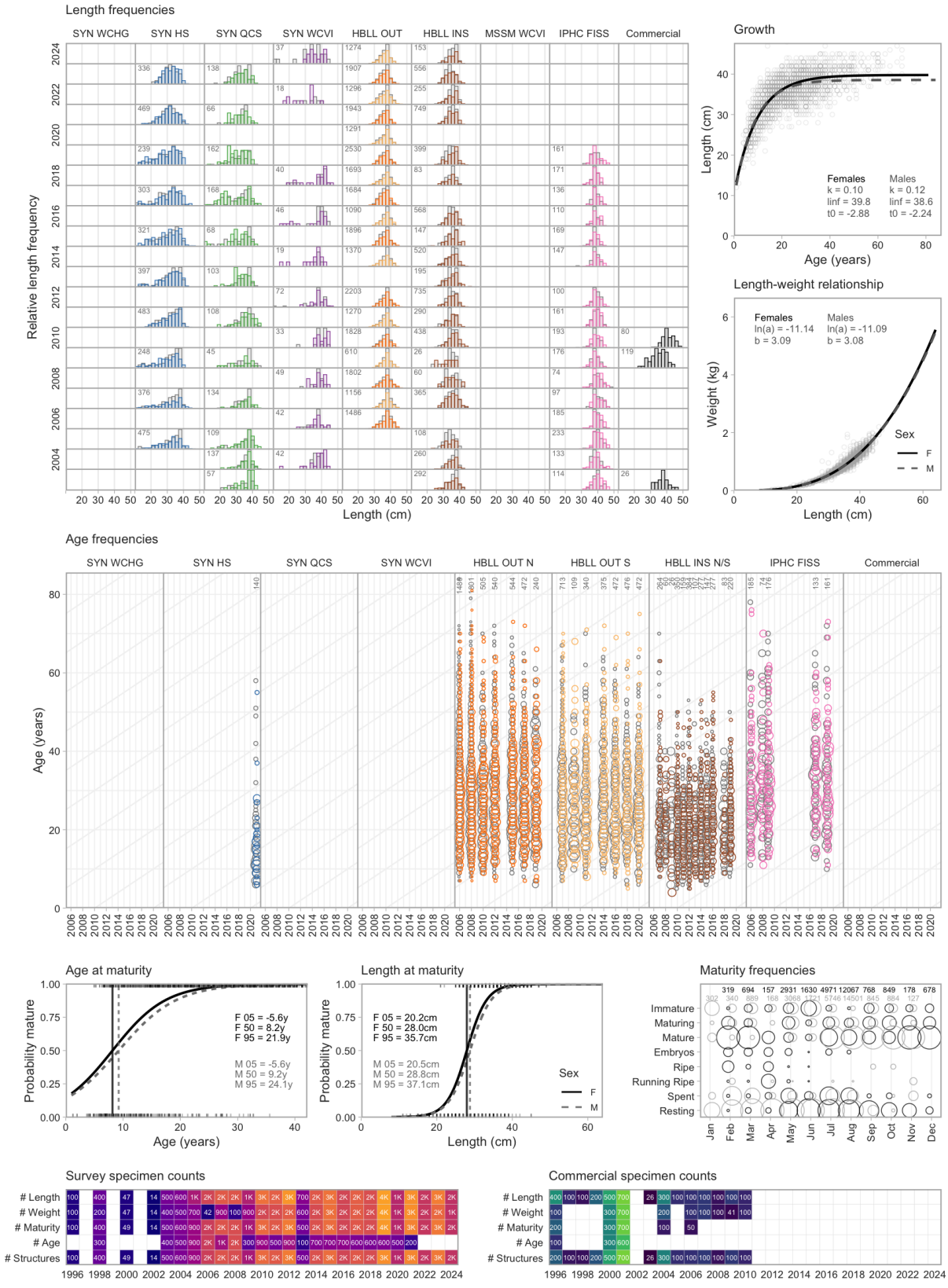

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.63 Quillback Rockfish

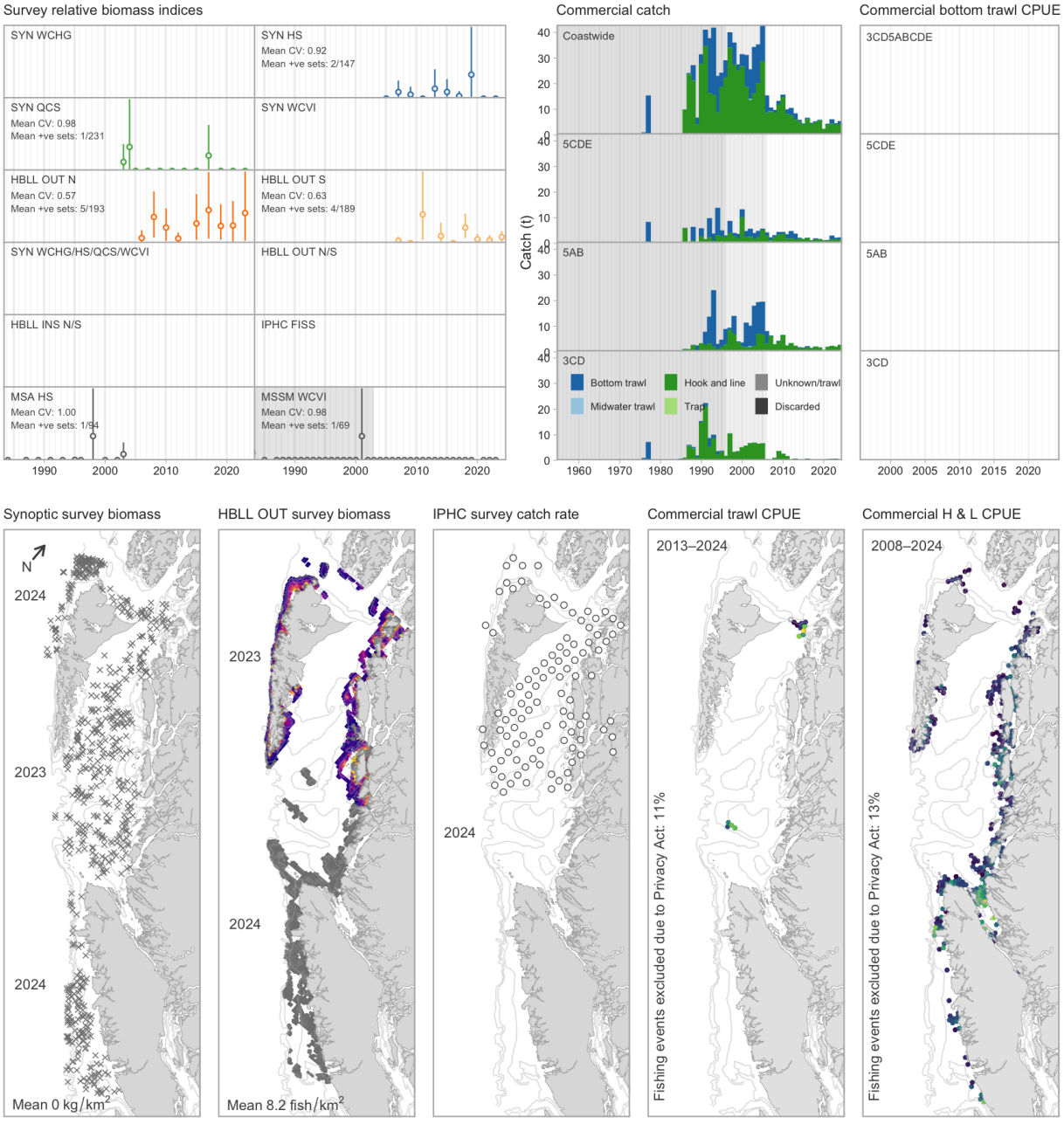
Sebastes maliger (424)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Documents: Yamanaka et al. (2011), Huynh et al. (2024)
Last Science Advisory Reports: DFO (2023a), DFO (2023b)
COSEWIC Status Report: COSEWIC (2009)
COSEWIC Status: Threatened, SARA Status: No Status

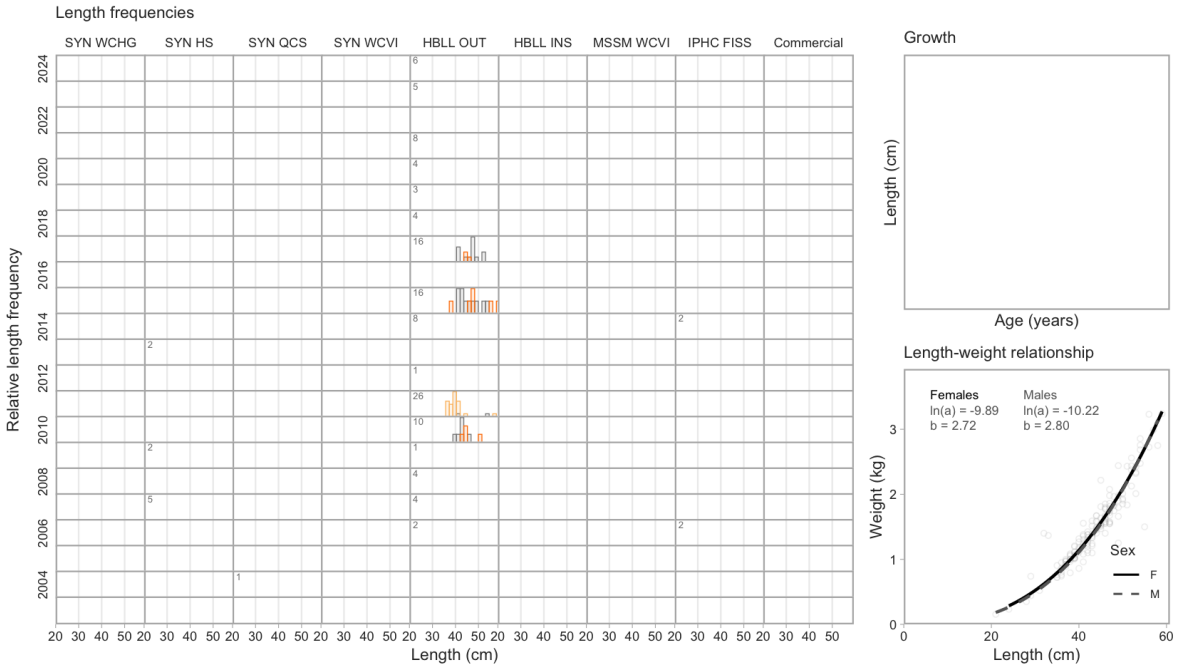



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Females
k = 0.10
linf = 39.8
t0 = -2.88
Males
k = 0.12
linf = 38.6
t0 = -2.24
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.14
b = 3.09
Males
ln(a) = -11.09
b = 3.08
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
F 05 = -5.6y
F 50 = 8.2y
F 95 = 21.9y
M 05 = -5.6y
M 50 = 9.2y
M 95 = 24.1y
Length at maturity
Probability mature
Length (cm)
F 05 = 20.2cm
F 50 = 28.0cm
F 95 = 35.7cm
M 05 = 20.5cm
M 50 = 28.8cm
M 95 = 37.1cm
Sex
F
M
Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.64 Black Rockfish

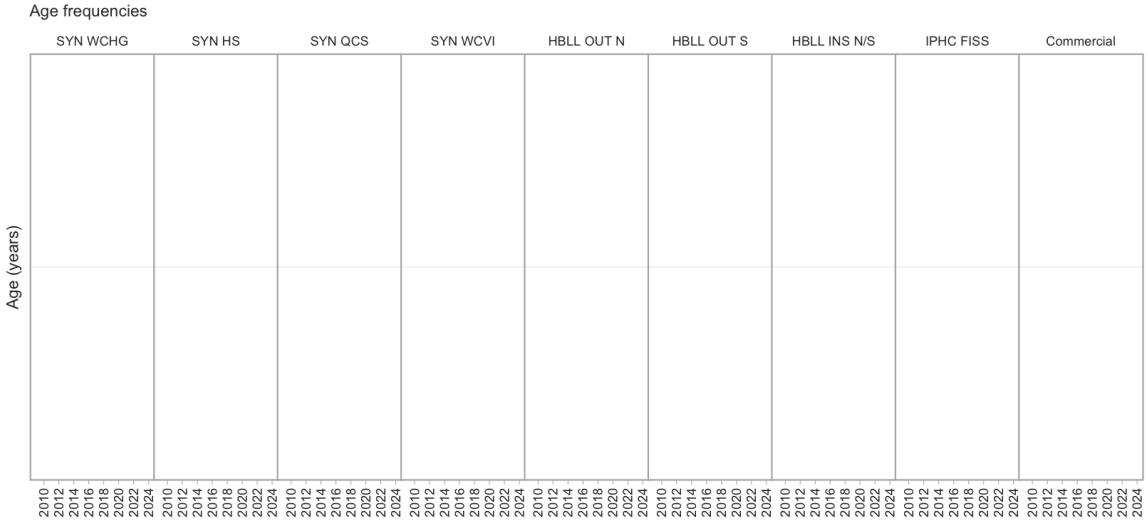
Sebastes melanops (426)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Yamanaka and Lacko (2001)



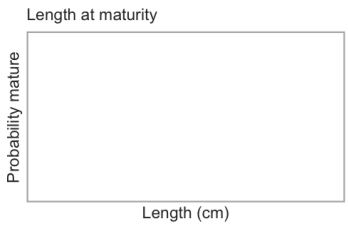

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

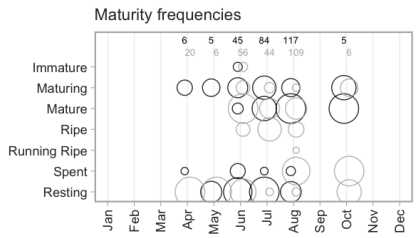
Growth
Length (cm)
Age (years)

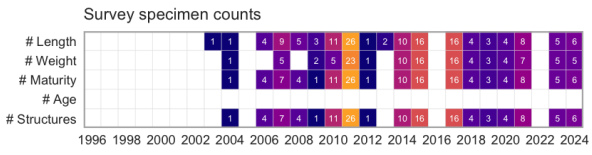
Length-weight relationship
Females
ln(a) = -9.89
b = 2.72
Males
ln(a) = -10.22
b = 2.80
Weight (kg)
Sex
F
M
Length (cm)

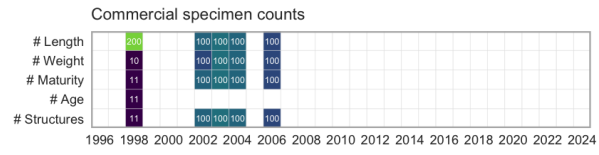

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
Length (cm)

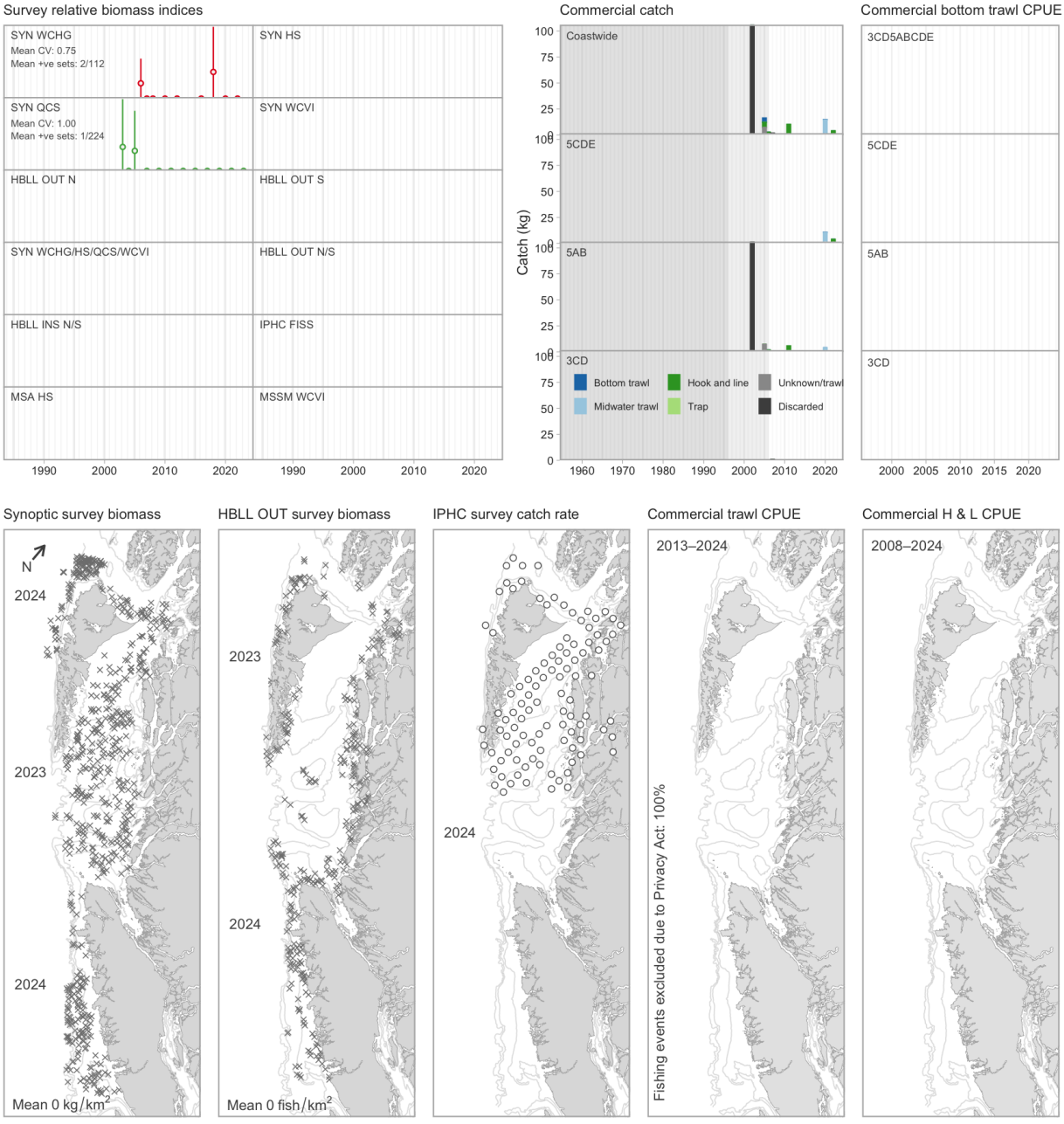

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

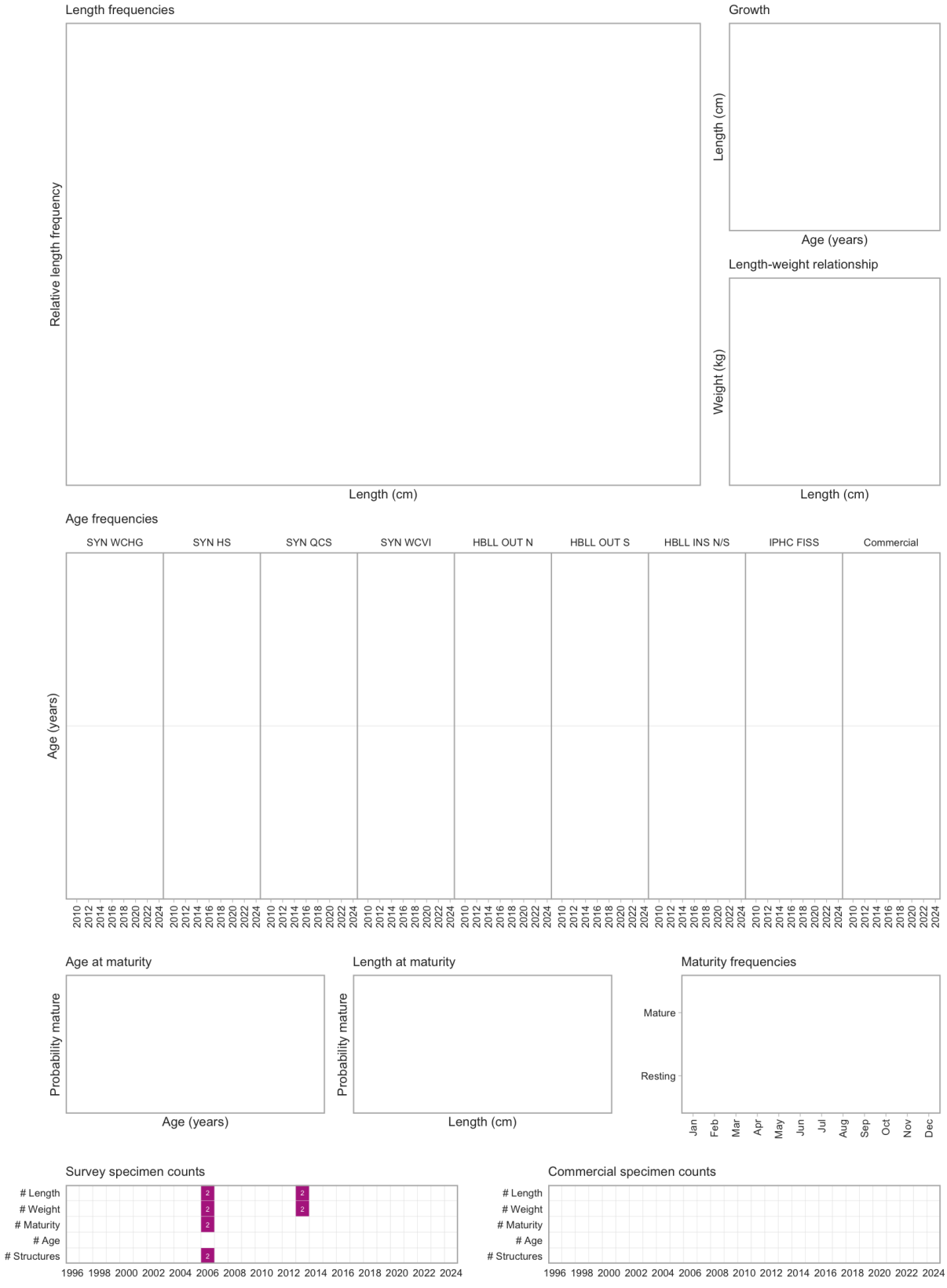

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.65 Blackgill Rockfish

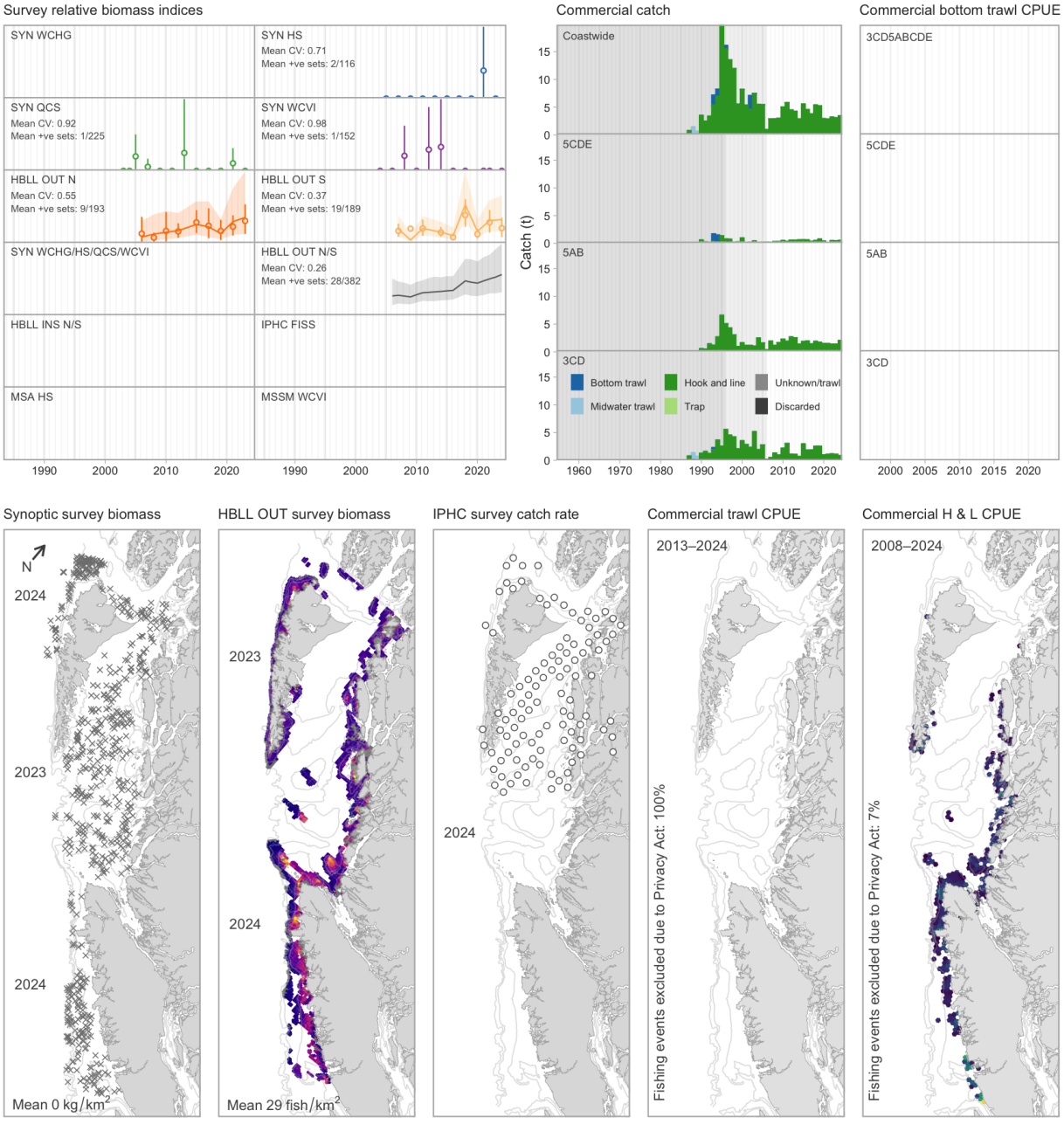
Sebastes melanostomus (427)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

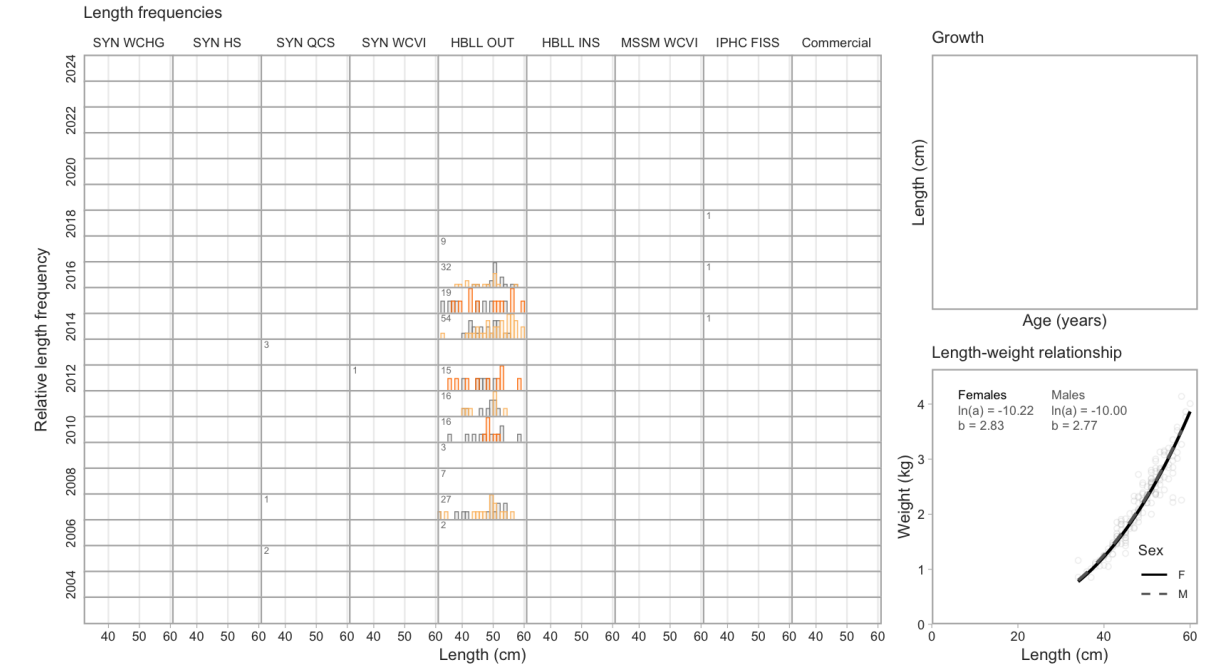



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Mature
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

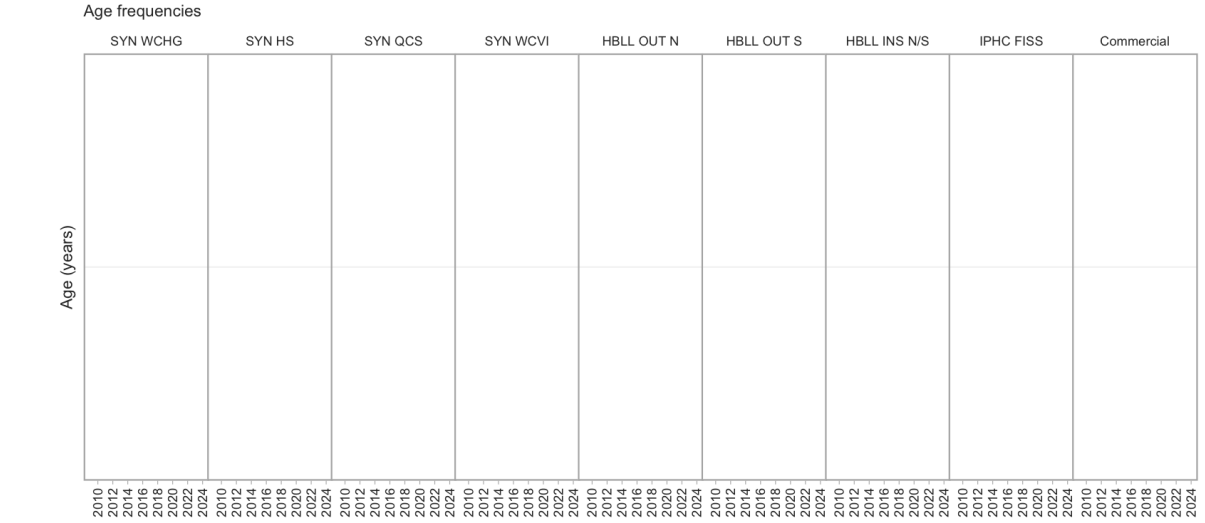
6.66 Vermilion Rockfish

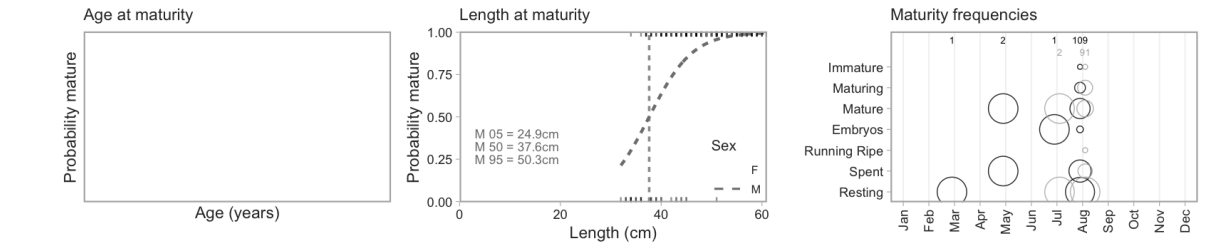
Sebastes miniatus (428)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

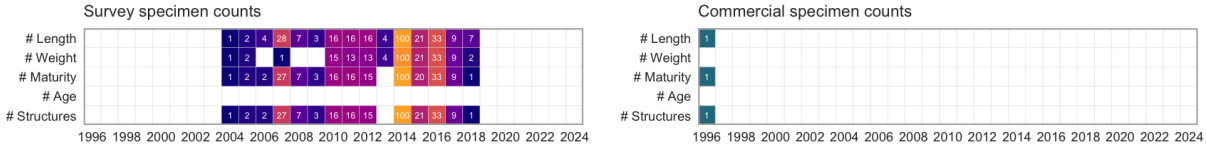



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -10.22
b = 2.83
Males
ln(a) = -10.00
b = 2.77
Weight (kg)
Sex
F
M
Length (cm)

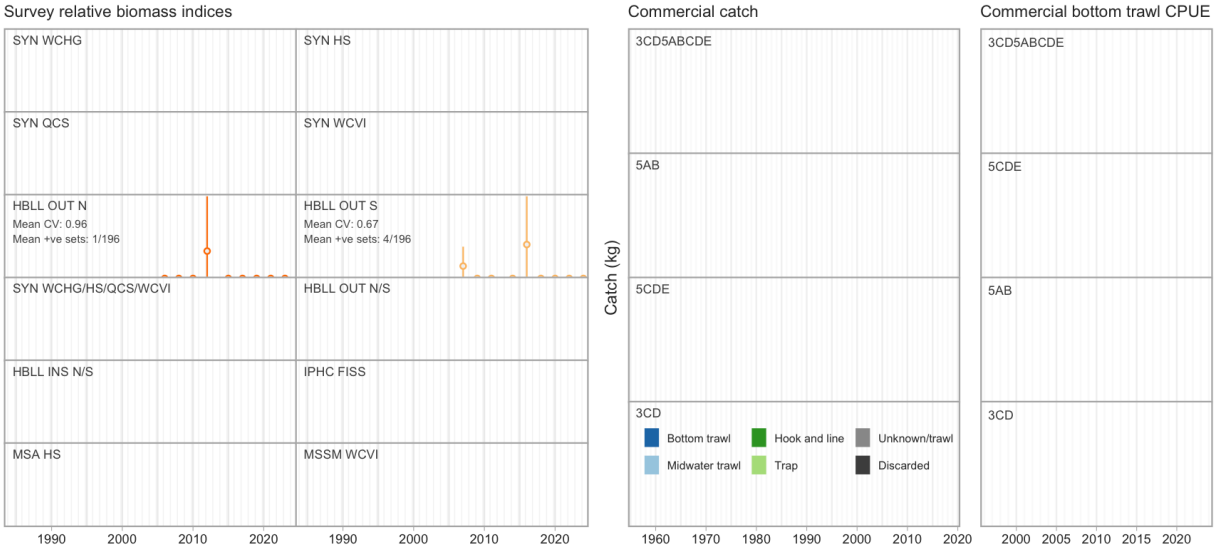

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)

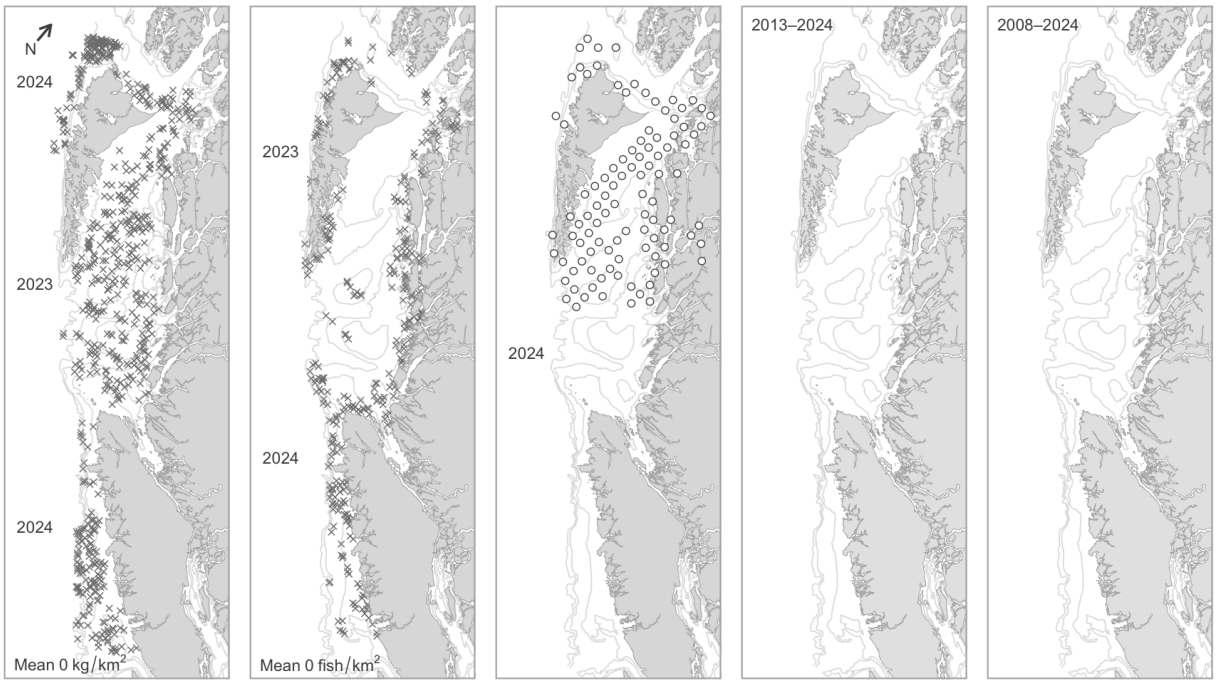

Age at maturity
Probability mature
Age (years)
Length at maturity
M 05 = 24.9cm
M 50 = 37.6cm
M 95 = 50.3cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Embryos
Running Ripe
Spent
Resting

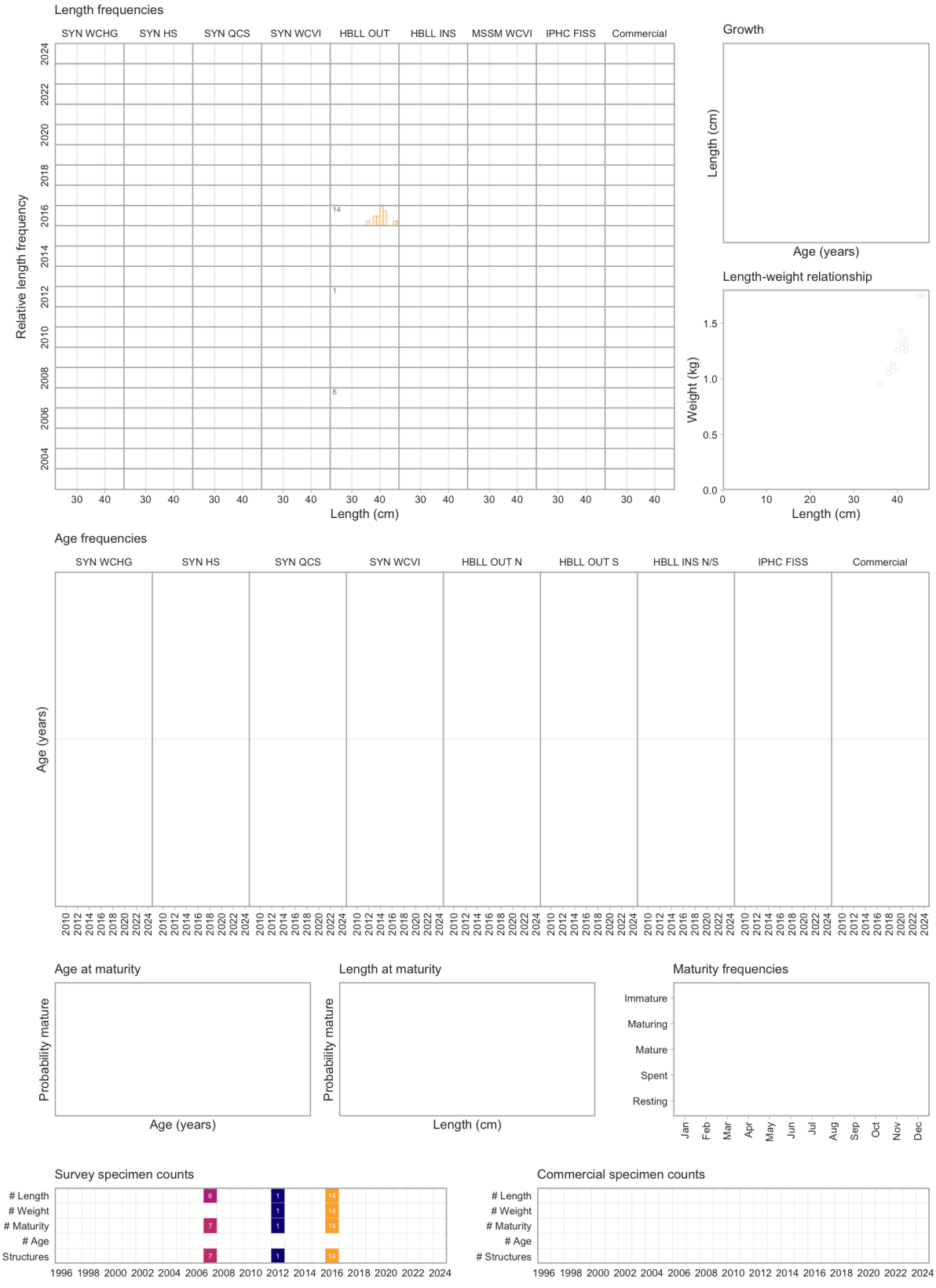

Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts

6.67 Deacon Rockfish

Sebastes diaconus (429)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

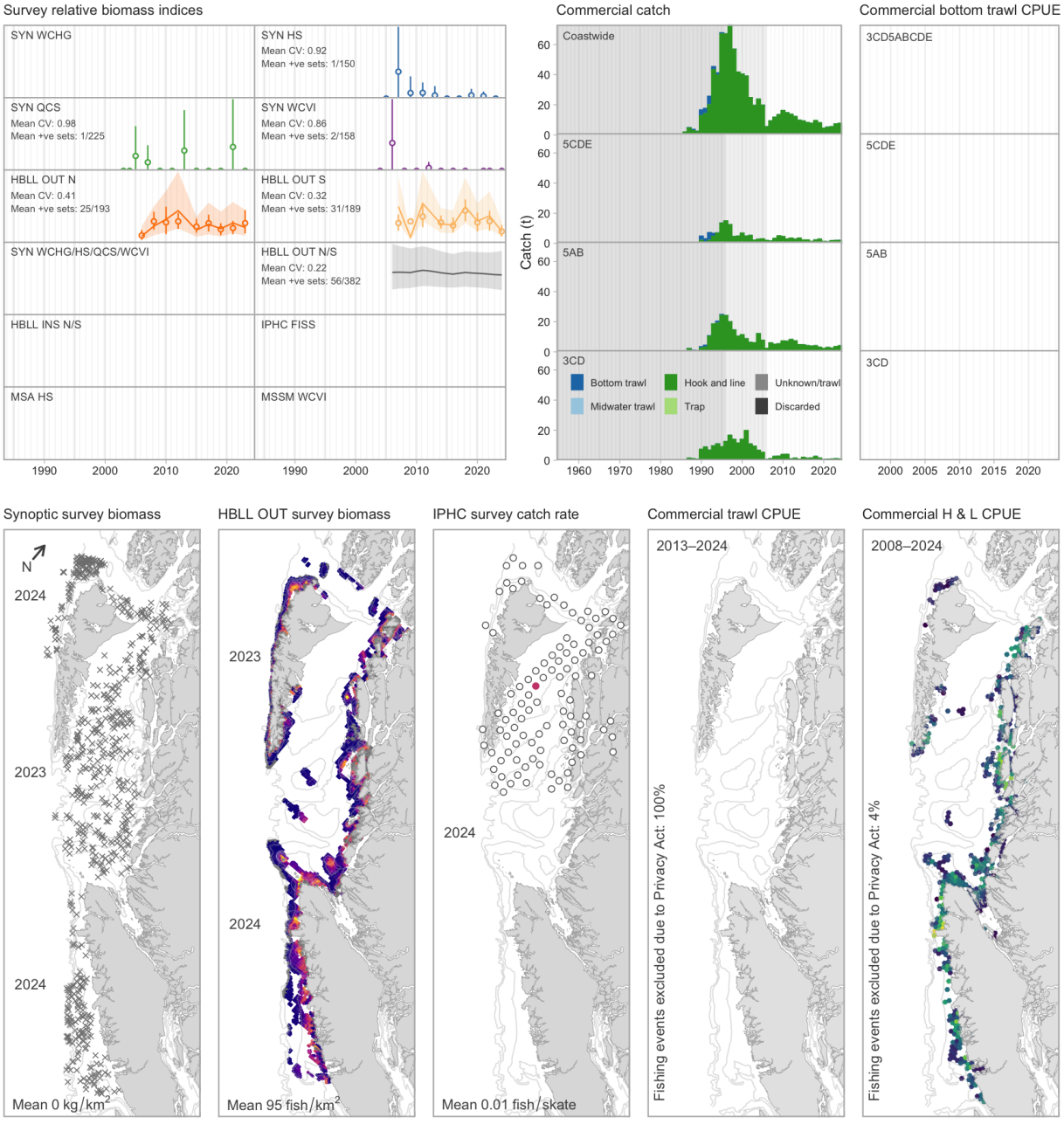


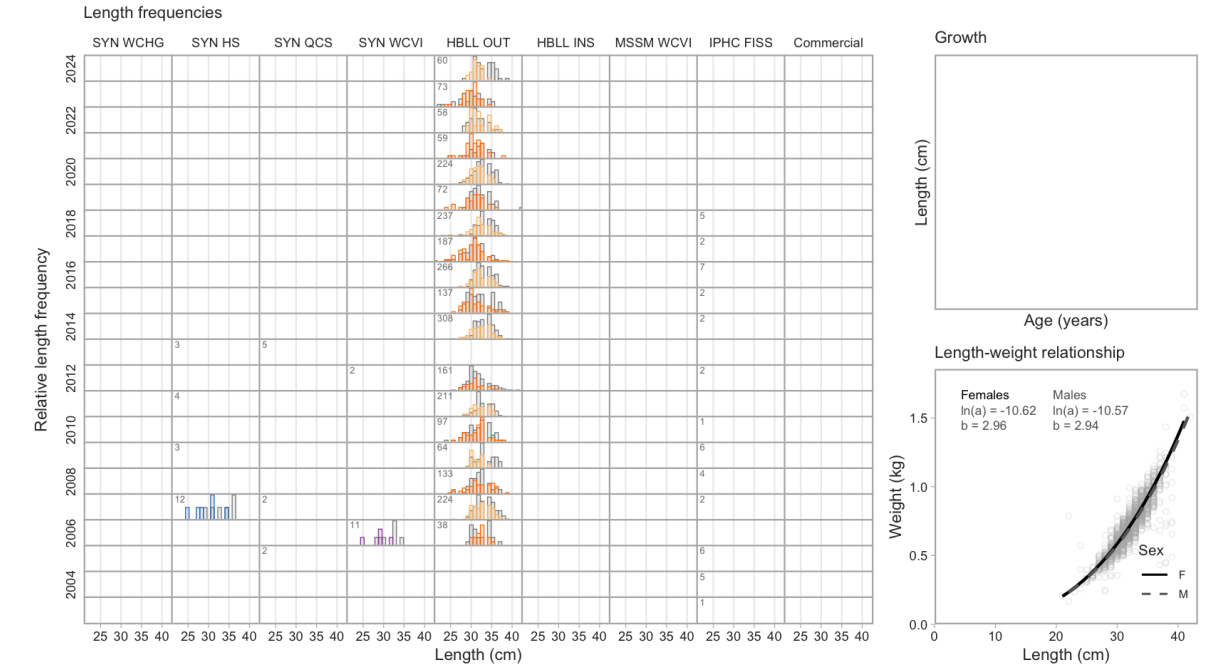



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.68 China Rockfish

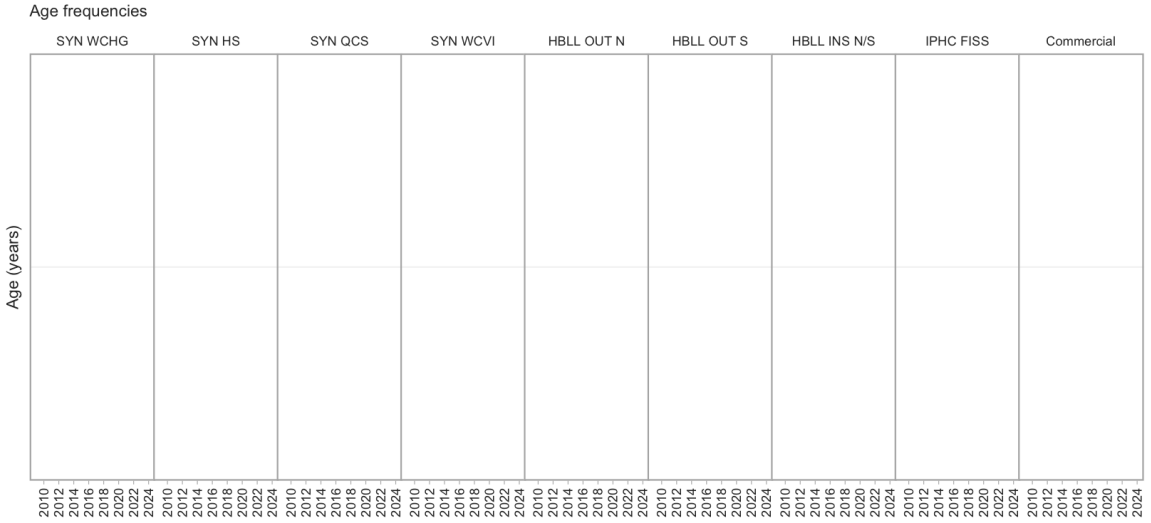
Sebastes nebulosus (431)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Yamanaka and Lacko (2001)

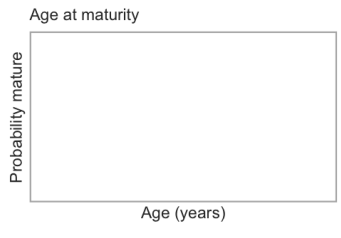


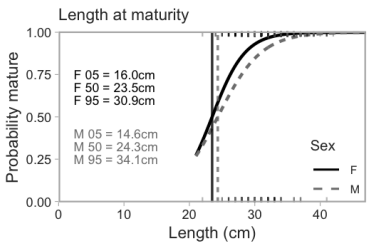

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

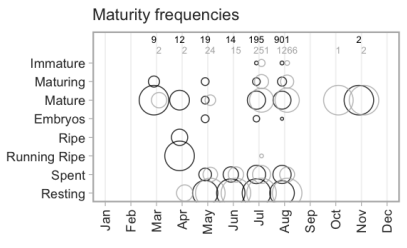
Growth
Length (cm)
Age (years)

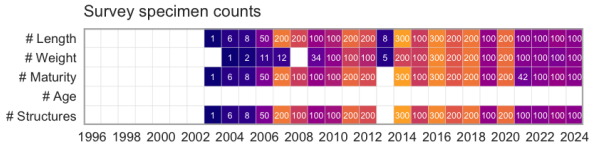
Length-weight relationship
Females
ln(a) = -10.62
b = 2.96
Males
ln(a) = -10.57
b = 2.94
Weight (kg)
Length (cm)
Sex
F
M

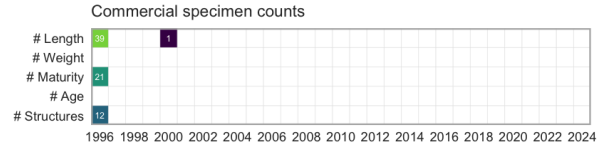

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
F 05 = 16.0cm
F 50 = 23.5cm
F 95 = 30.9cm
M 05 = 14.6cm
M 50 = 24.3cm
M 95 = 34.1cm
Probability mature
Length (cm)
Sex
F
M

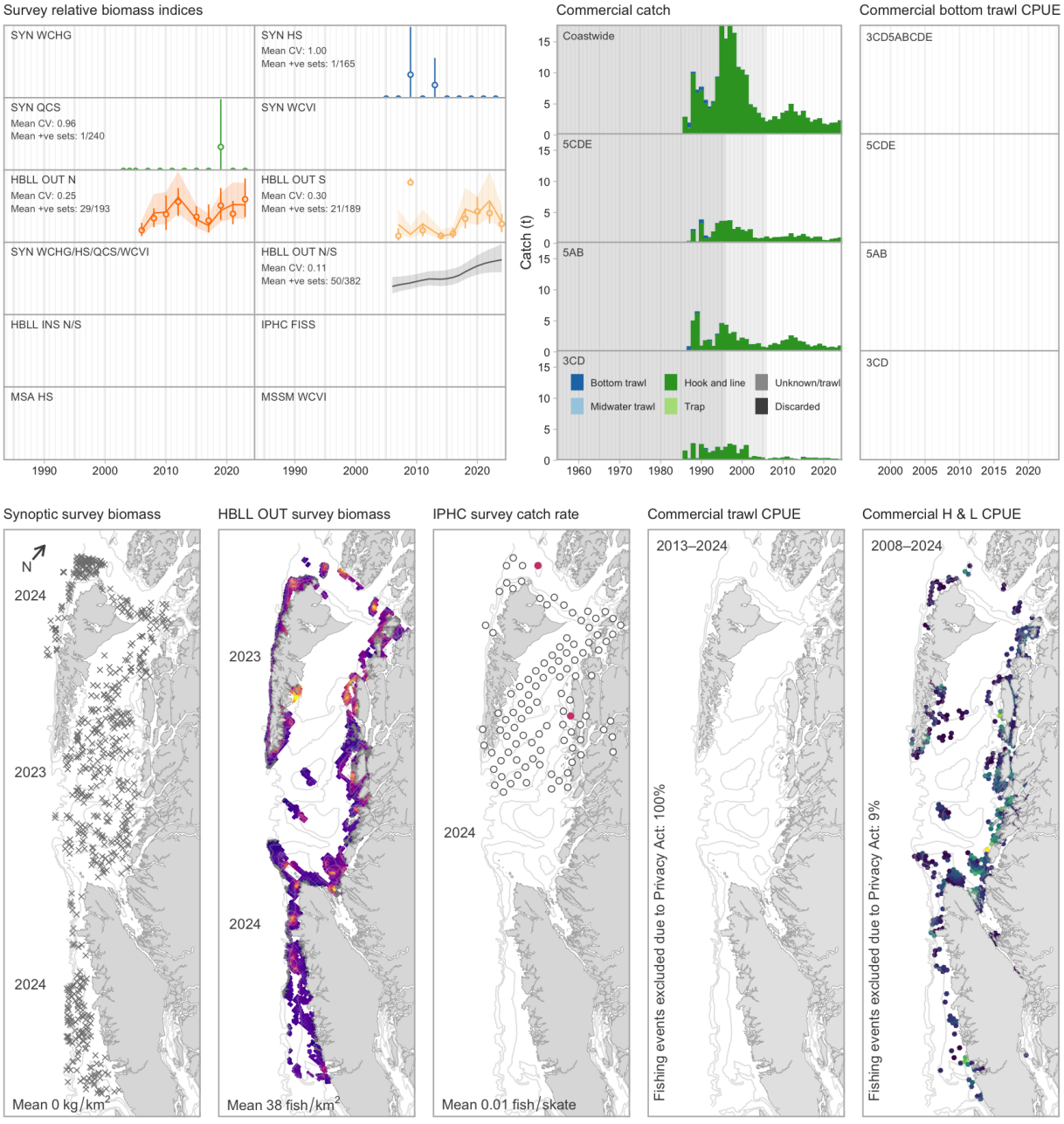

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

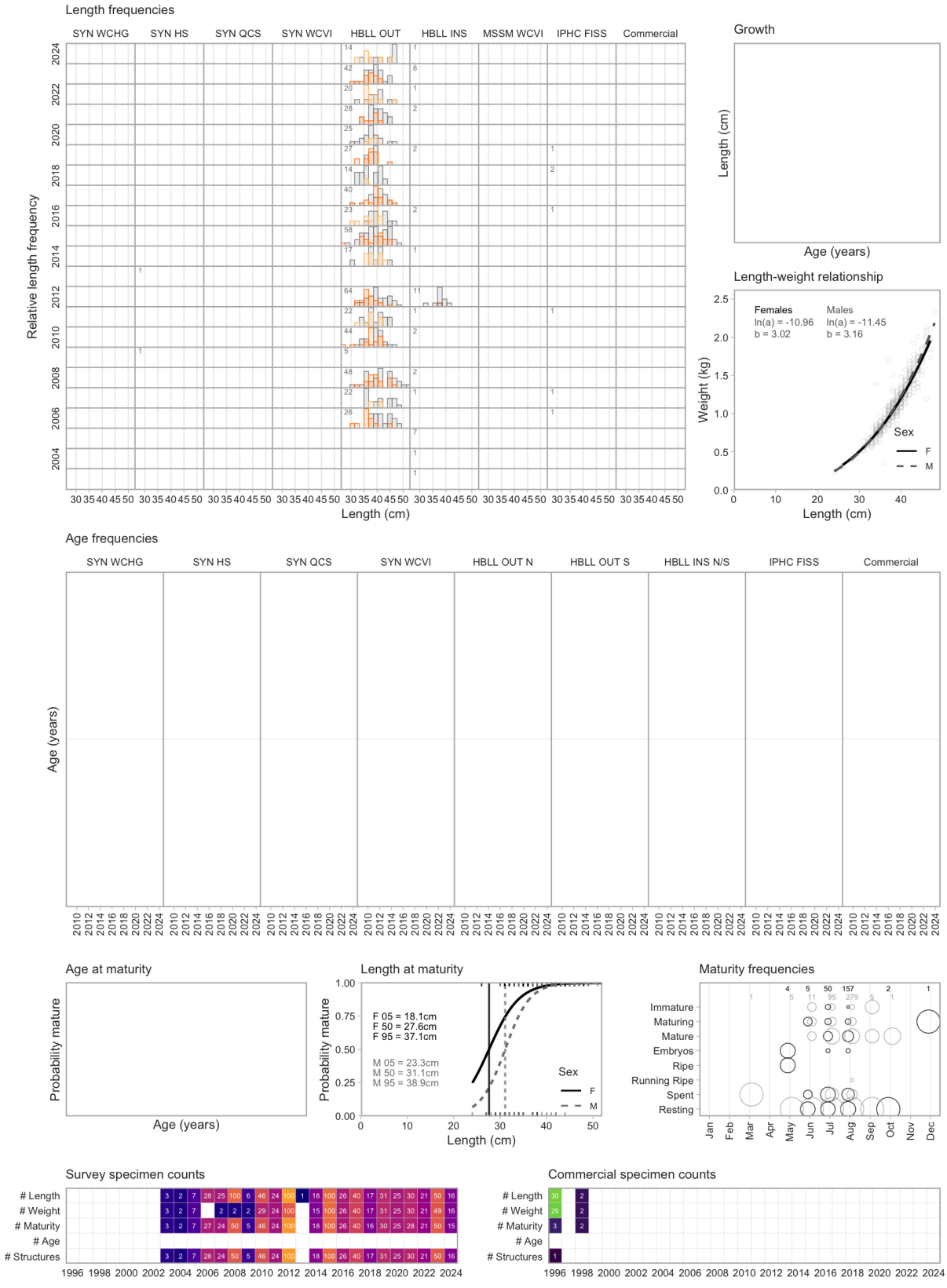

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.69 Tiger Rockfish

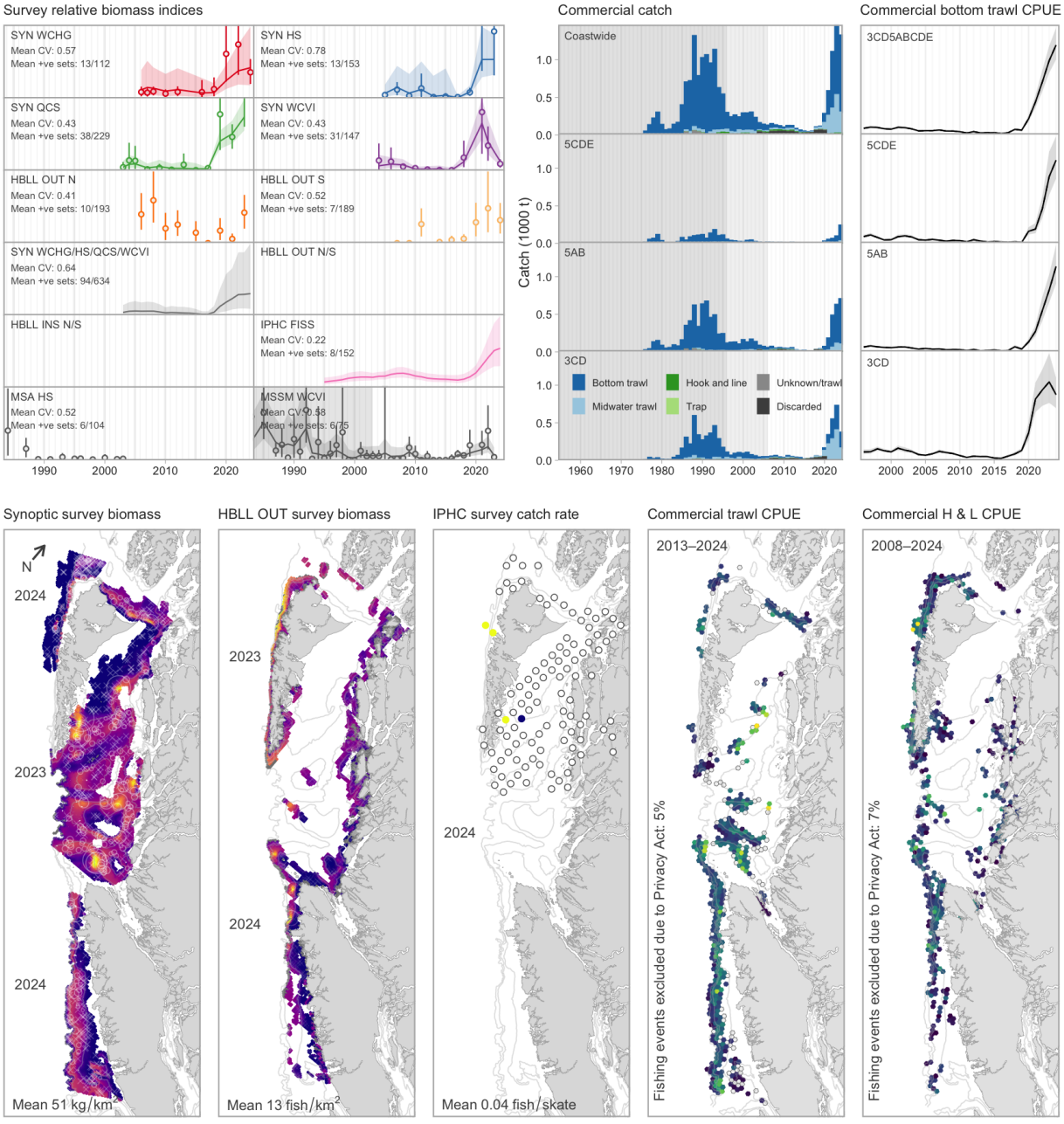
Sebastes nigrocinctus (433)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Yamanaka and Lacko (2001)

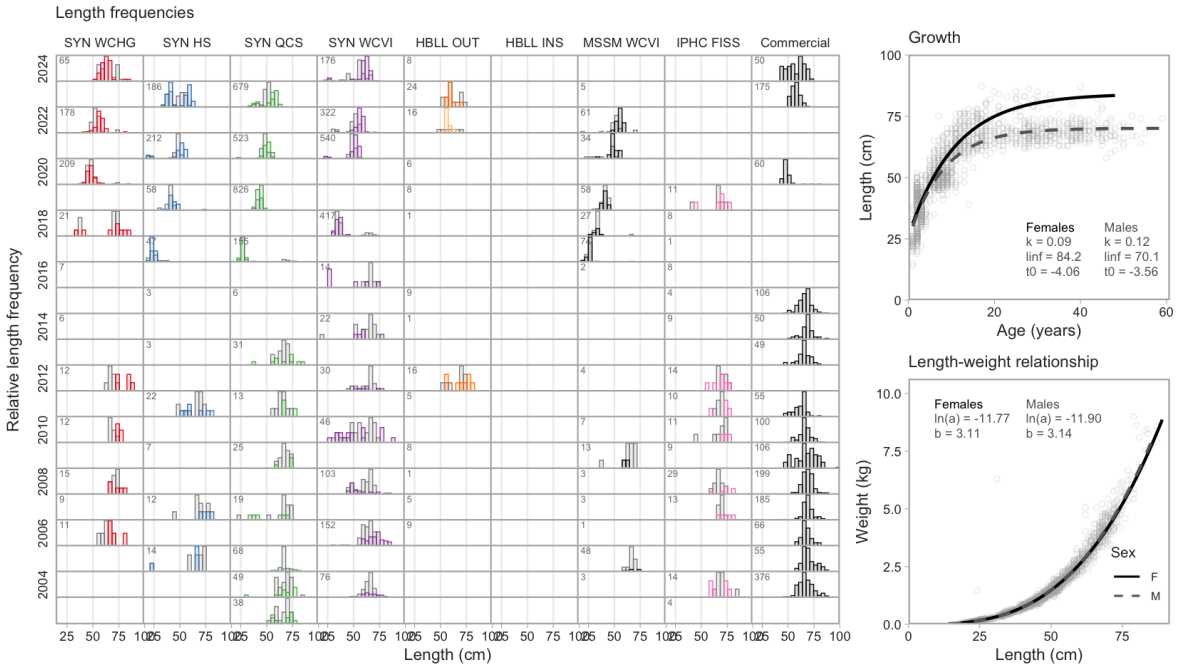



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -10.96
b = 3.02
Males
ln(a) = -11.45
b = 3.16
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
F 05 = 18.1cm
F 50 = 27.6cm
F 95 = 37.1cm
M 05 = 23.3cm
M 50 = 31.1cm
M 95 = 38.9cm
Probability mature
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.70 Bocaccio

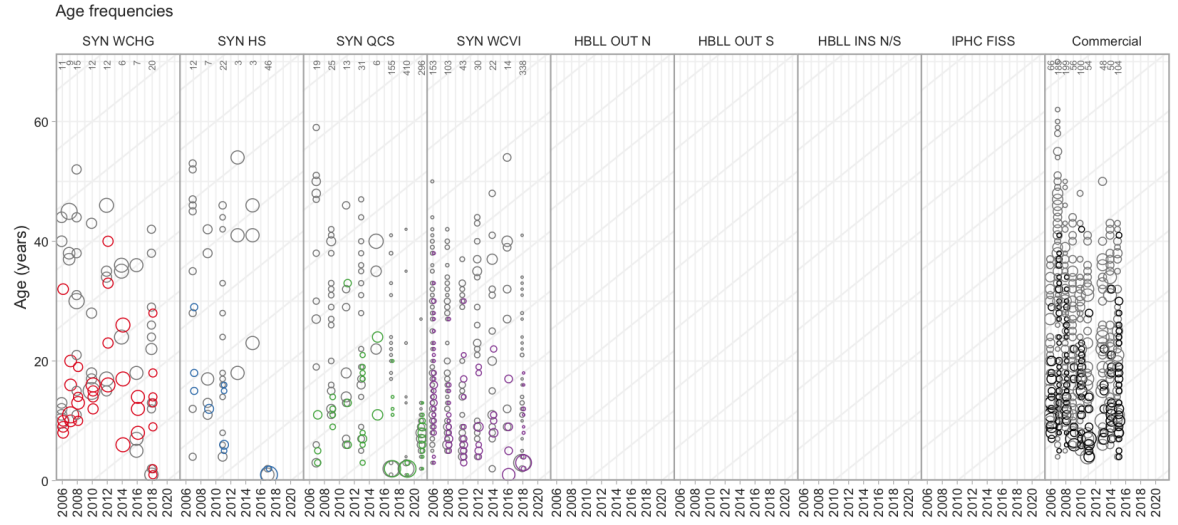
Sebastes paucispinis (435)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2022a)
Last Science Advisory Report: DFO (2020c)
Last Science Response: DFO (2024c)
COSEWIC Status Report: COSEWIC (2013b)
COSEWIC Status: Endangered, SARA Status: No Status

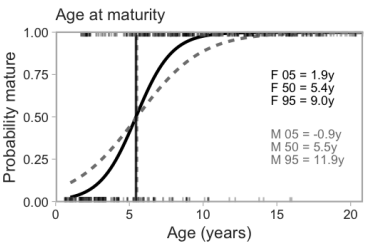


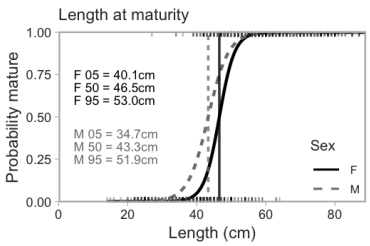

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

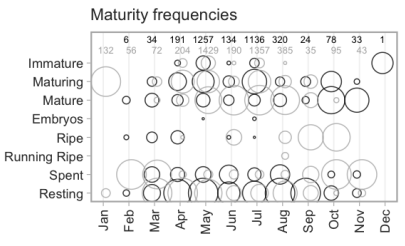
Growth
Length (cm)
Age (years)
Females
k = 0.09
linf = 84.2
t0 = -4.06
Males
k = 0.12
linf = 70.1
t0 = -3.56

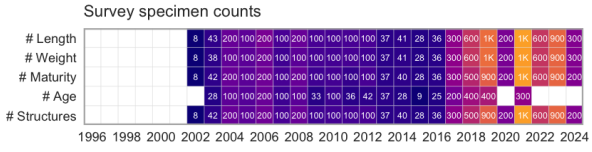
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.77
b = 3.11
Males
ln(a) = -11.90
b = 3.14
Sex
F
M

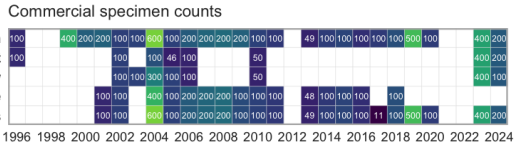

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 1.9y
F 50 = 5.4y
F 95 = 9.0y
M 05 = -0.9y
M 50 = 5.5y
M 95 = 11.9y


Length at maturity
Probability mature
Length (cm)
F 05 = 40.1cm
F 50 = 46.5cm
F 95 = 53.0cm
M 05 = 34.7cm
M 50 = 43.3cm
M 95 = 51.9cm
Sex
F
M

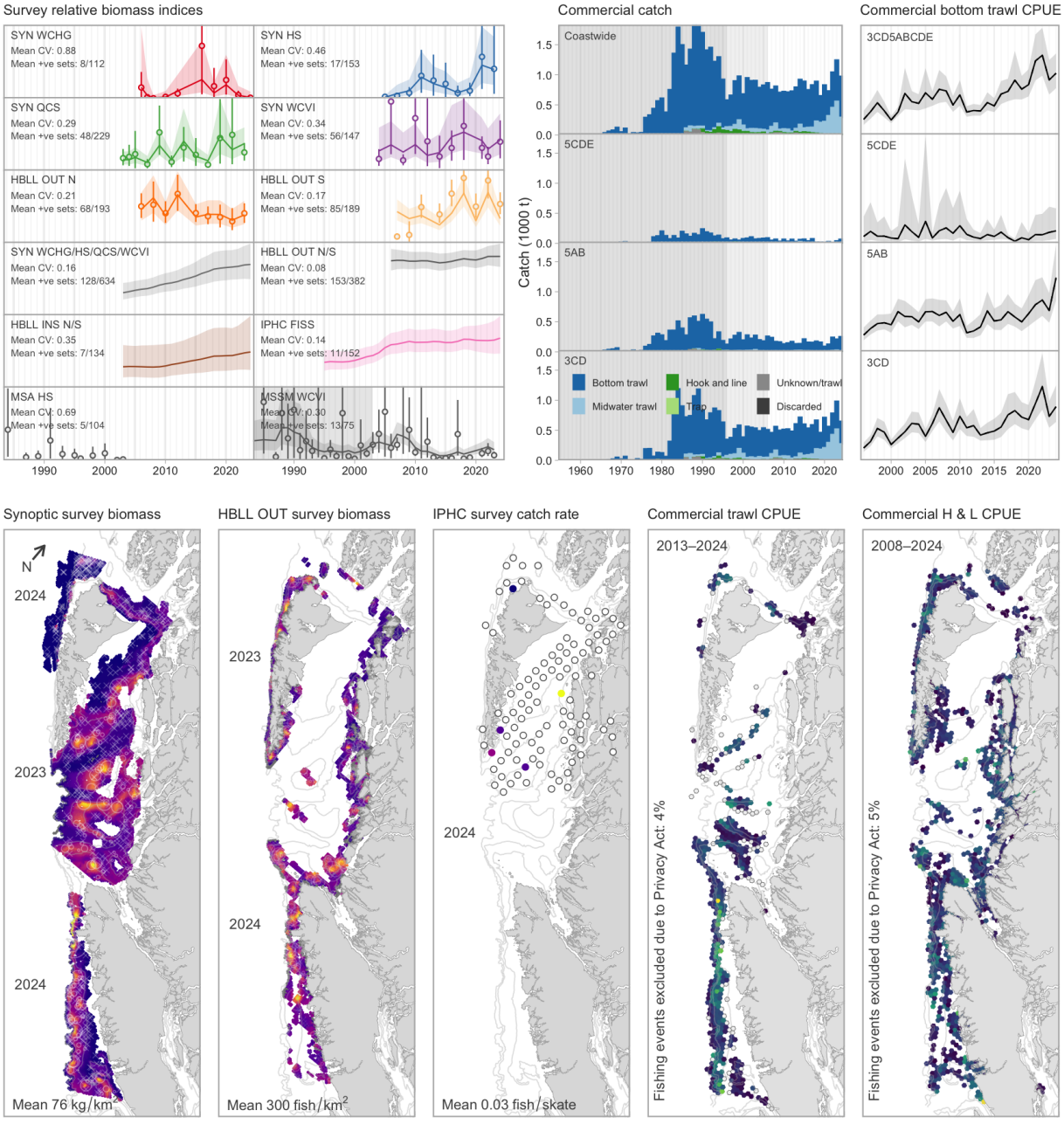

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

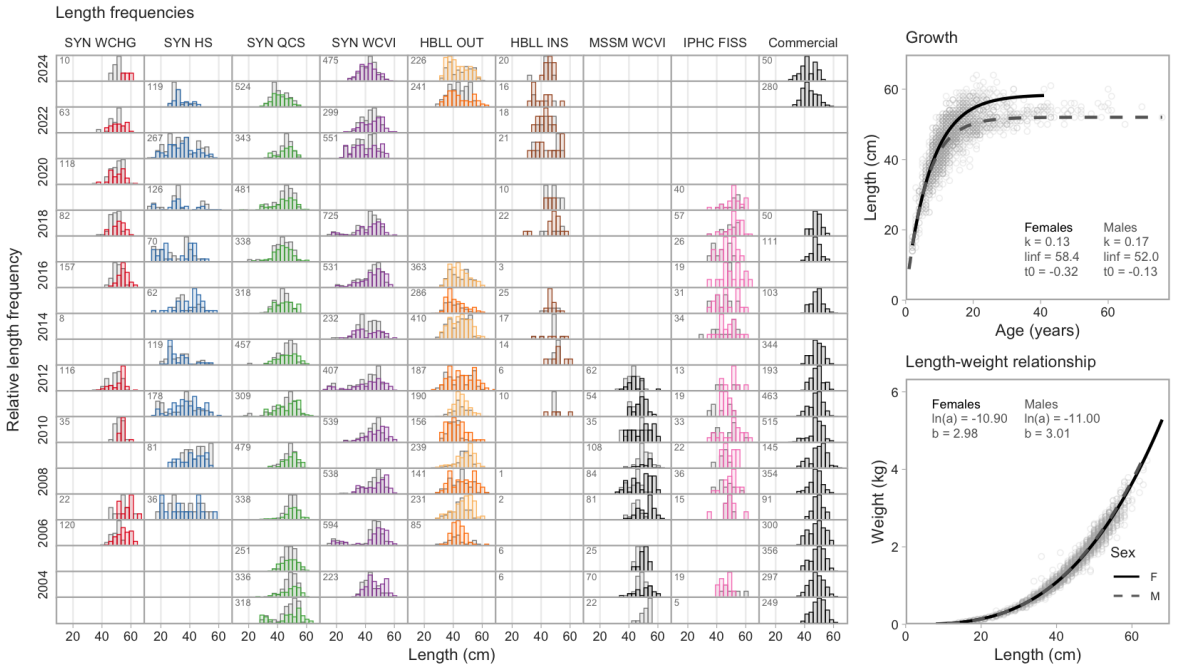

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.71 Canary Rockfish

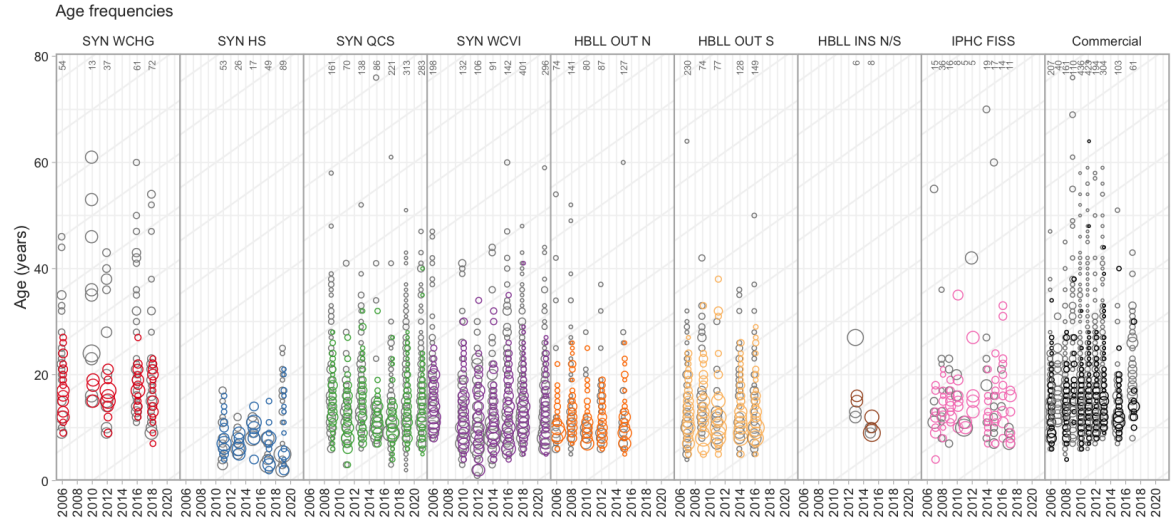
Sebastes pinniger (437)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2023)
Last Science Advisory Report: DFO (2023c)
COSEWIC Status Report: COSEWIC (2007d)
COSEWIC Status: Threatened, SARA Status: No Status

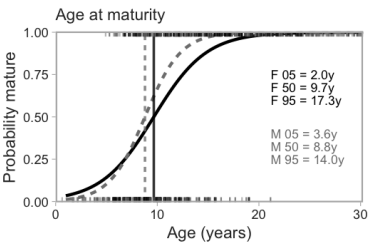


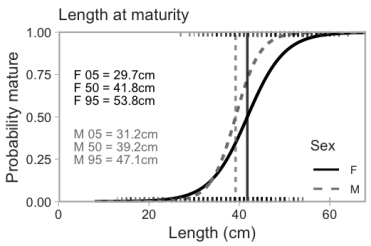

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

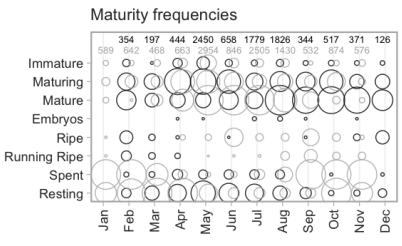
Growth
Length (cm)
Age (years)
Females
k = 0.13
linf = 58.4
t0 = -0.32
Males
k = 0.17
linf = 52.0
t0 = -0.13

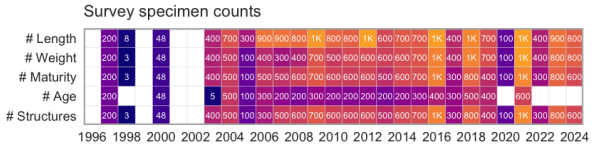
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -10.90
b = 2.98
Males
ln(a) = -11.00
b = 3.01
Sex
F
M


Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 2.0y
F 50 = 9.7y
F 95 = 17.3y
M 05 = 3.6y
M 50 = 8.8y
M 95 = 14.0y


Length at maturity
Probability mature
Length (cm)
F 05 = 29.7cm
F 50 = 41.8cm
F 95 = 53.8cm
M 05 = 31.2cm
M 50 = 39.2cm
M 95 = 47.1cm
Sex
F
M

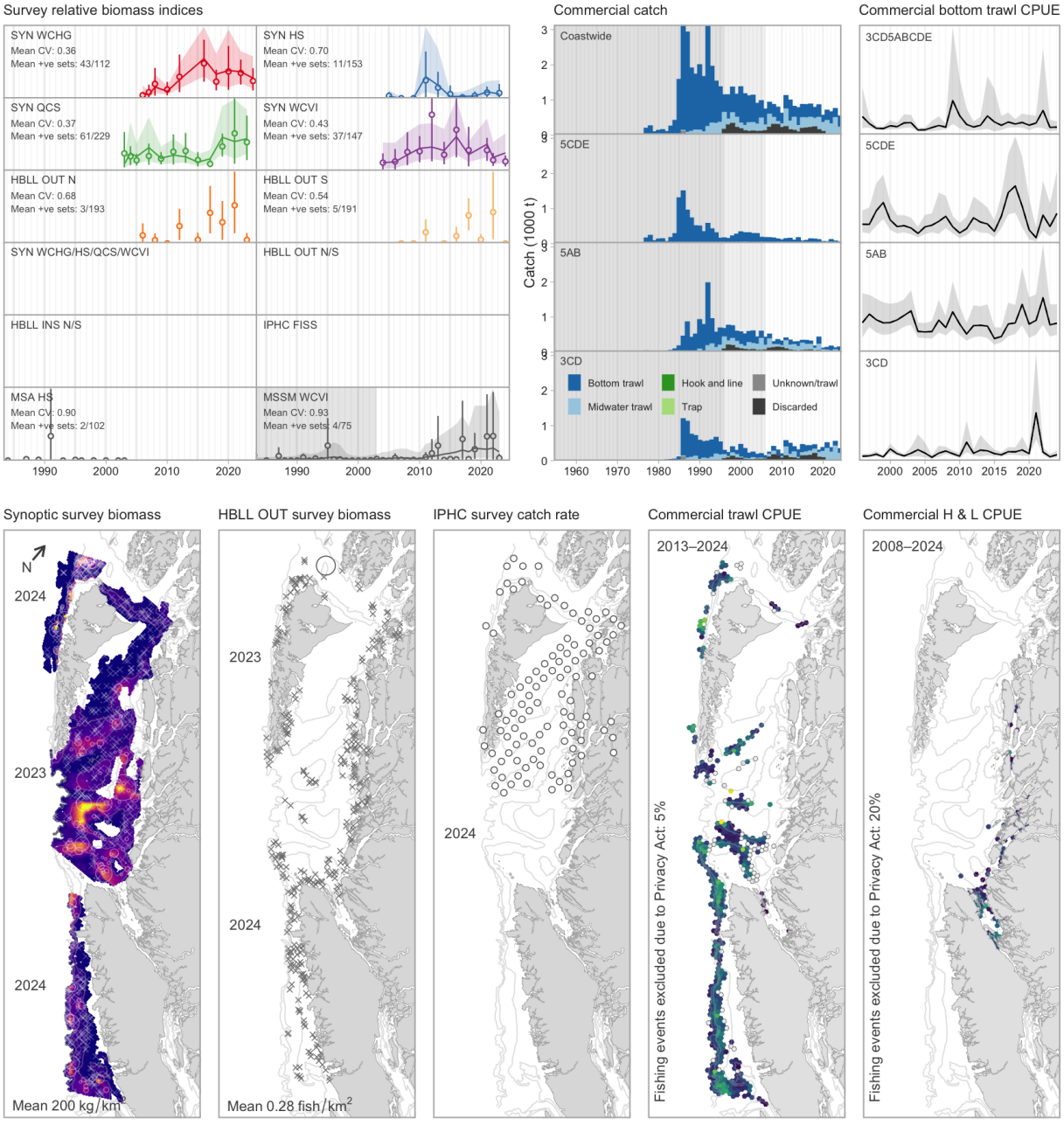

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

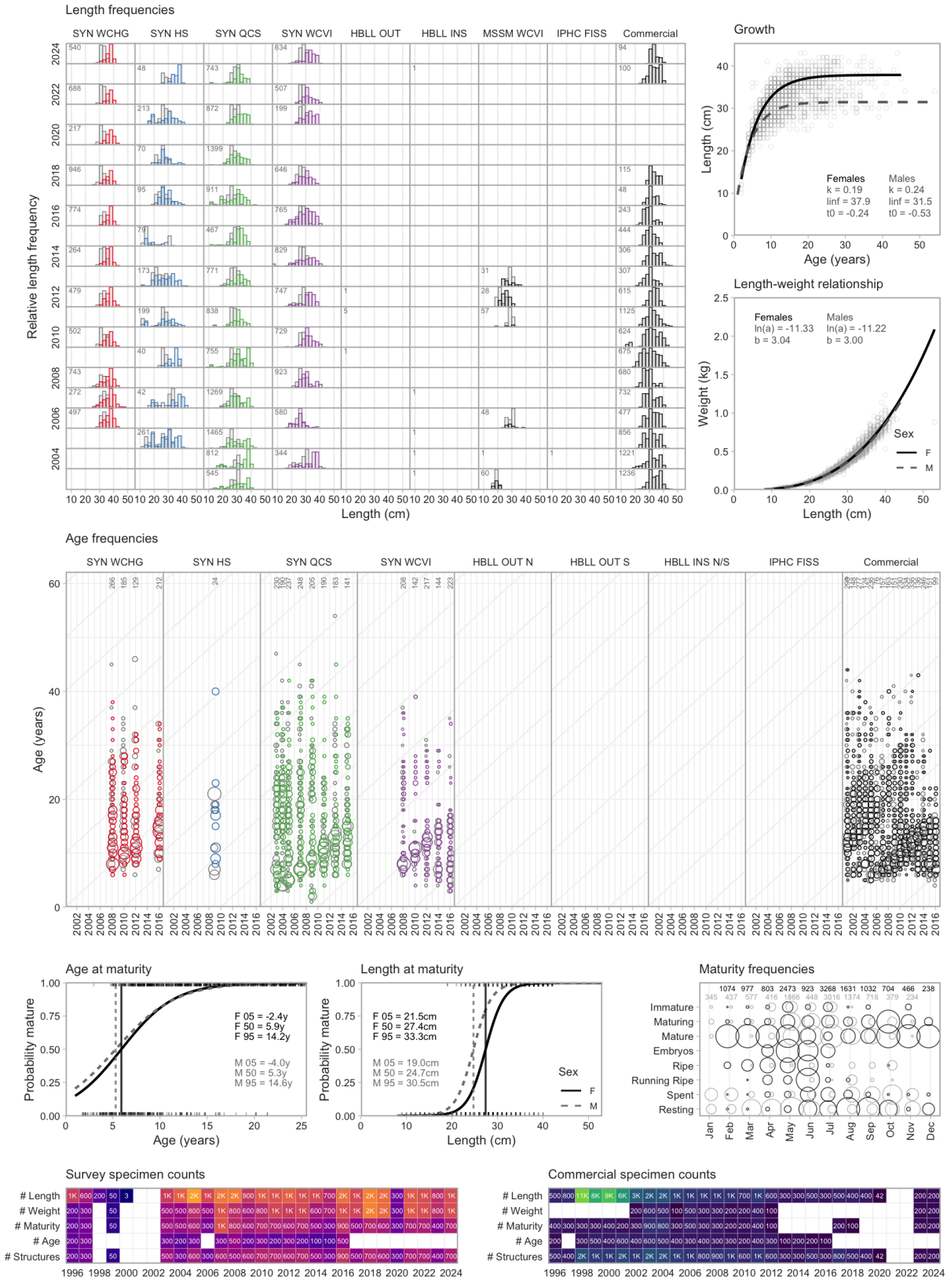

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.72 Redstripe Rockfish

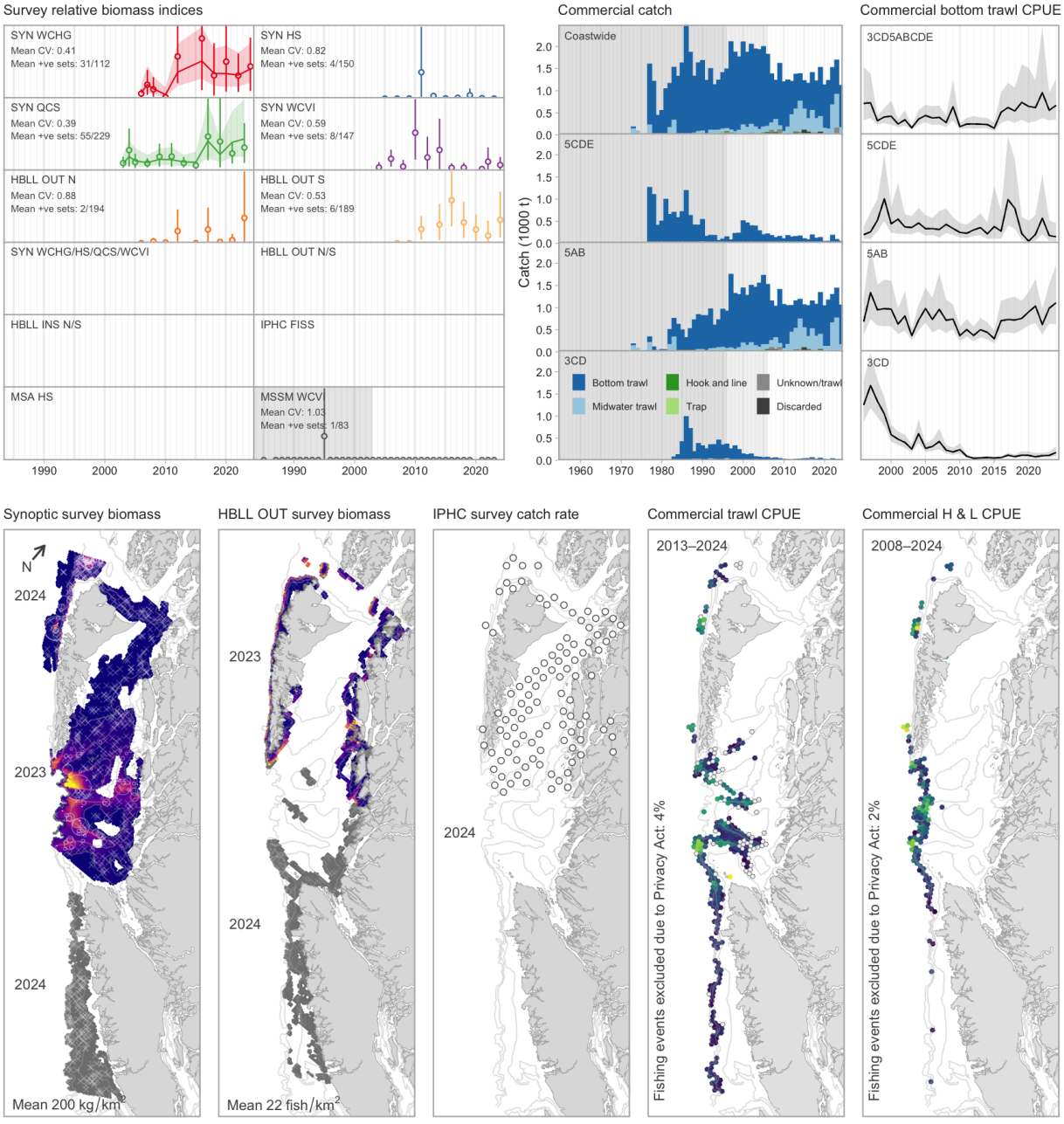
Sebastes proriger (439)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2021c)
Last Science Advisory Report: DFO (2018b)

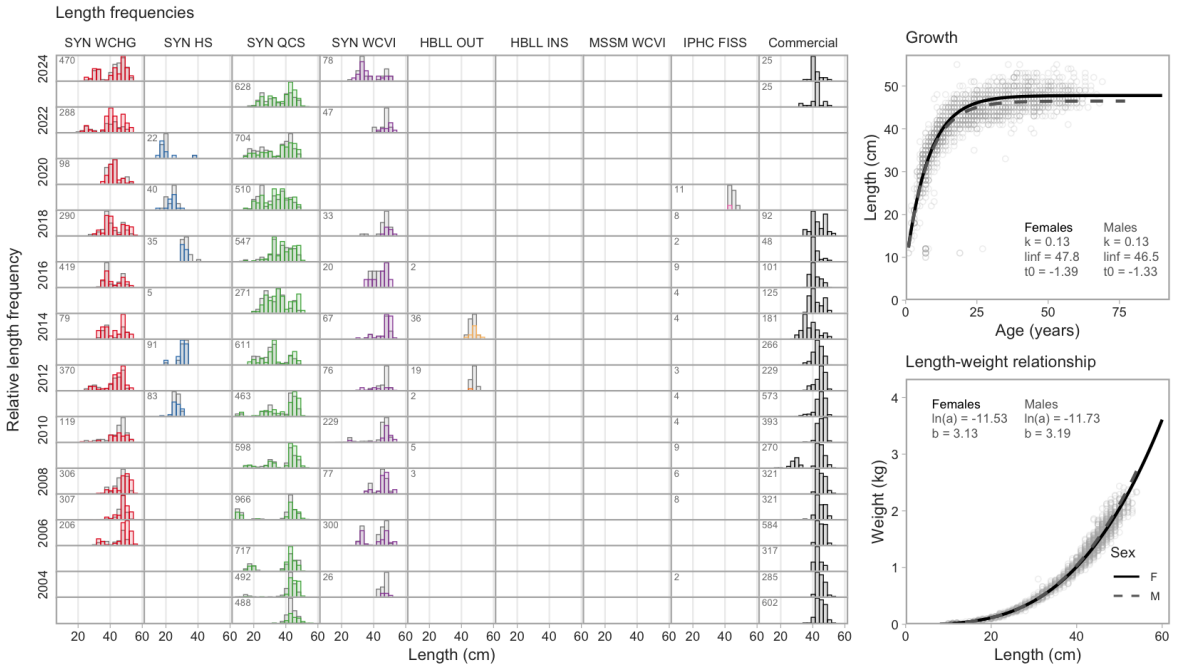



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Females
k = 0.19
linf = 37.9
t0 = -0.24
Males
k = 0.24
linf = 31.5
t0 = -0.53
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.33
b = 3.04
Males
ln(a) = -11.22
b = 3.00
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
F 05 = -2.4y
F 50 = 5.9y
F 95 = 14.2y
M 05 = -4.0y
M 50 = 5.3y
M 95 = 14.6y
Length at maturity
Probability mature
Length (cm)
F 05 = 21.5cm
F 50 = 27.4cm
F 95 = 33.3cm
M 05 = 19.0cm
M 50 = 24.7cm
M 95 = 30.5cm
Sex
F
M
Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.73 Yellowmouth Rockfish

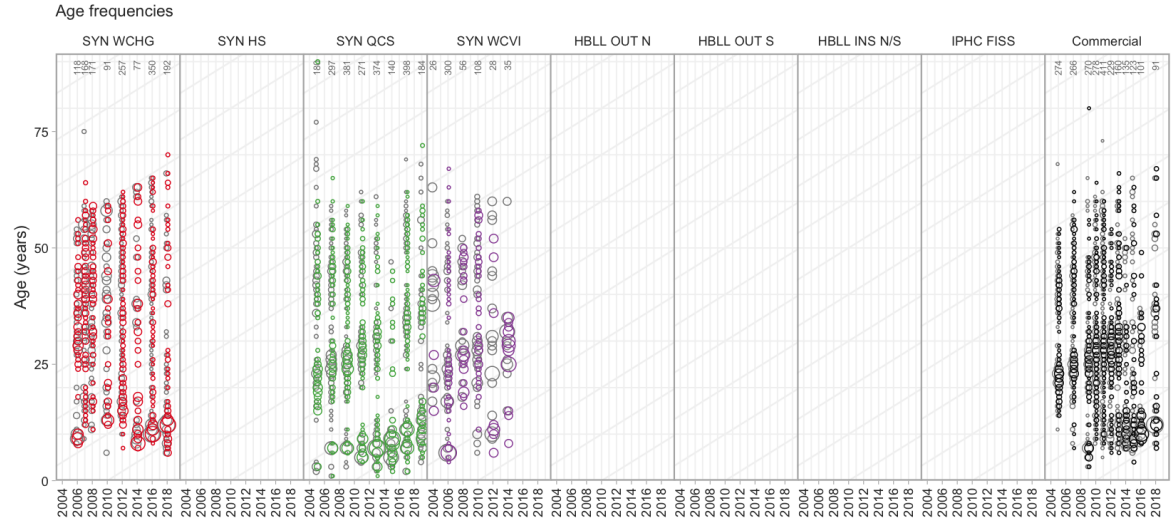
Sebastes reedi (440)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2022b)
Last Science Advisory Report: DFO (2022b)
COSEWIC Status Report: COSEWIC (2010b)
COSEWIC Status: Threatened, SARA Status: No Status

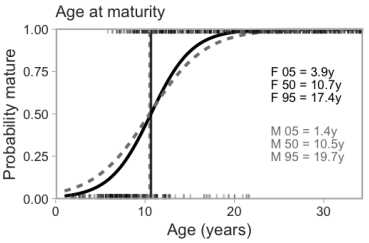


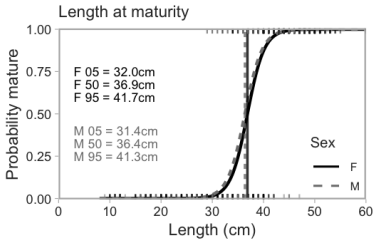

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

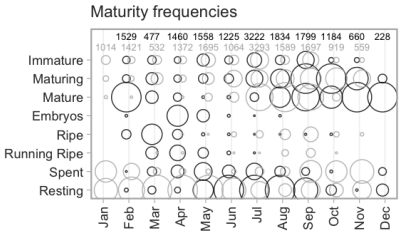
Growth
Length (cm)
Age (years)
Females
k = 0.13
linf = 47.8
t0 = -1.39
Males
k = 0.13
linf = 46.5
t0 = -1.33

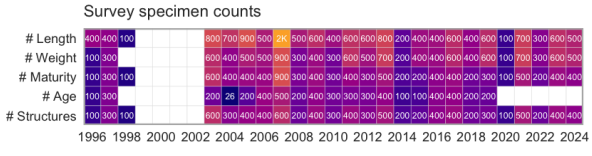
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.53
b = 3.13
Males
ln(a) = -11.73
b = 3.19
Sex
F
M

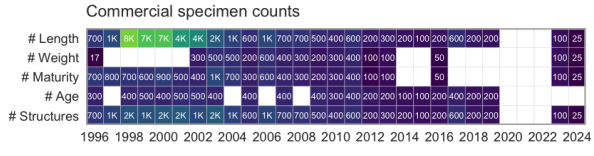

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 3.9y
F 50 = 10.7y
F 95 = 17.4y
M 05 = 1.4y
M 50 = 10.5y
M 95 = 19.7y


Length at maturity
Probability mature
Length (cm)
F 05 = 32.0cm
F 50 = 36.9cm
F 95 = 41.7cm
M 05 = 31.4cm
M 50 = 36.4cm
M 95 = 41.3cm
Sex
F
M

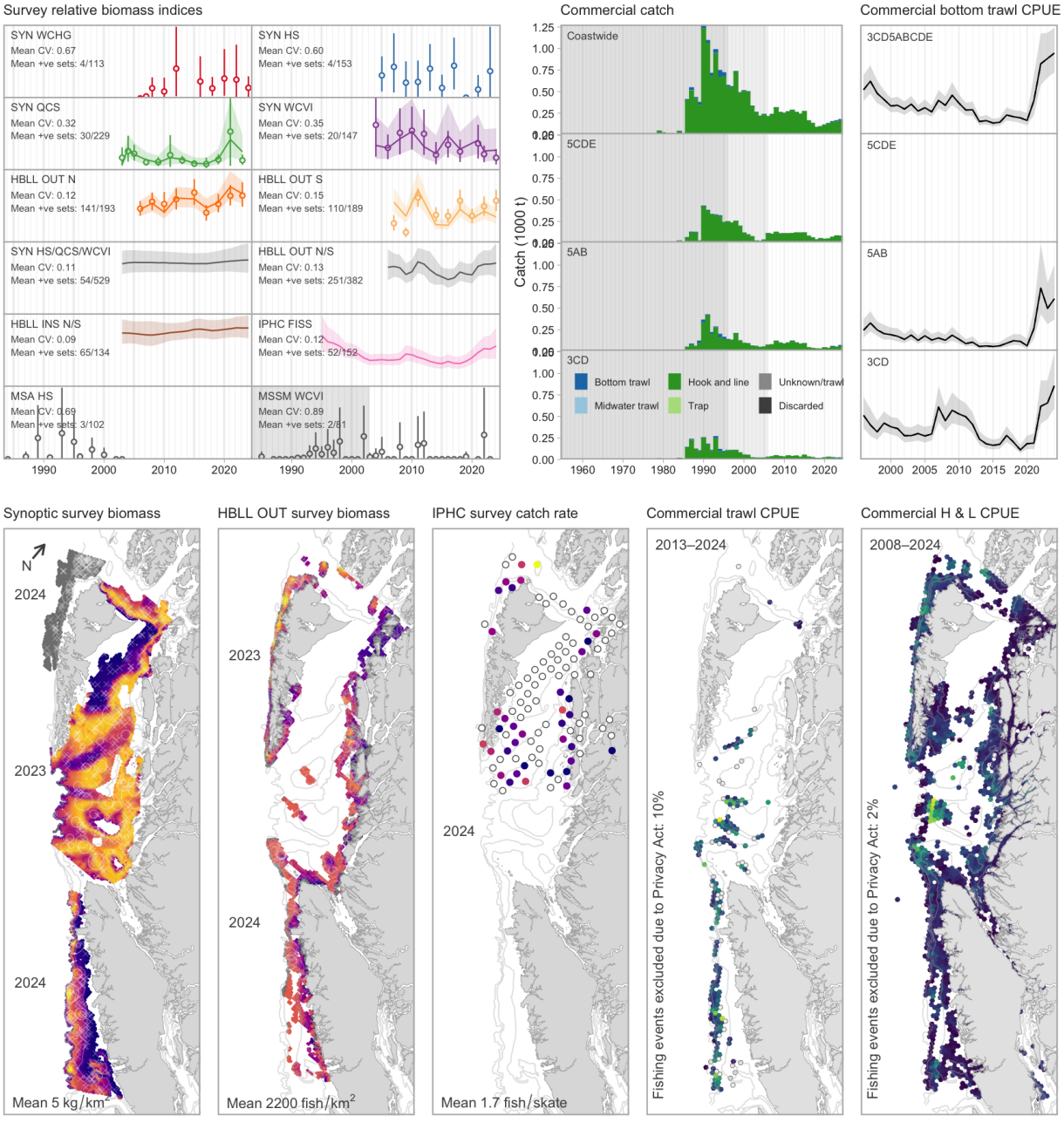

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

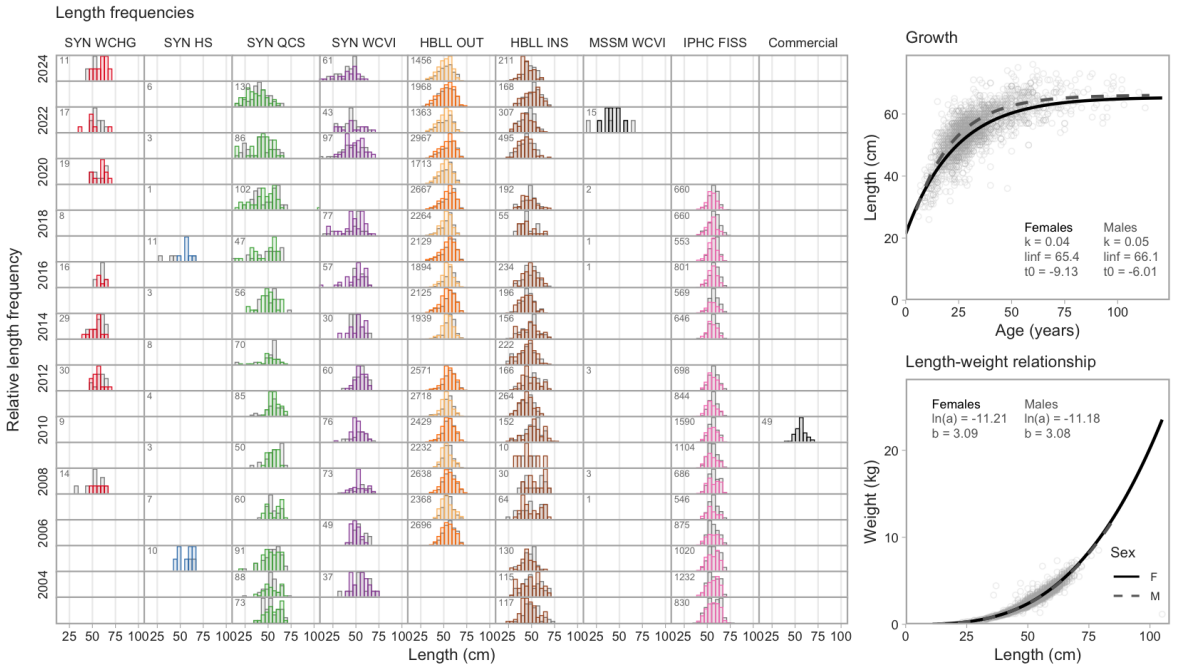

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.74 Yelloweye Rockfish

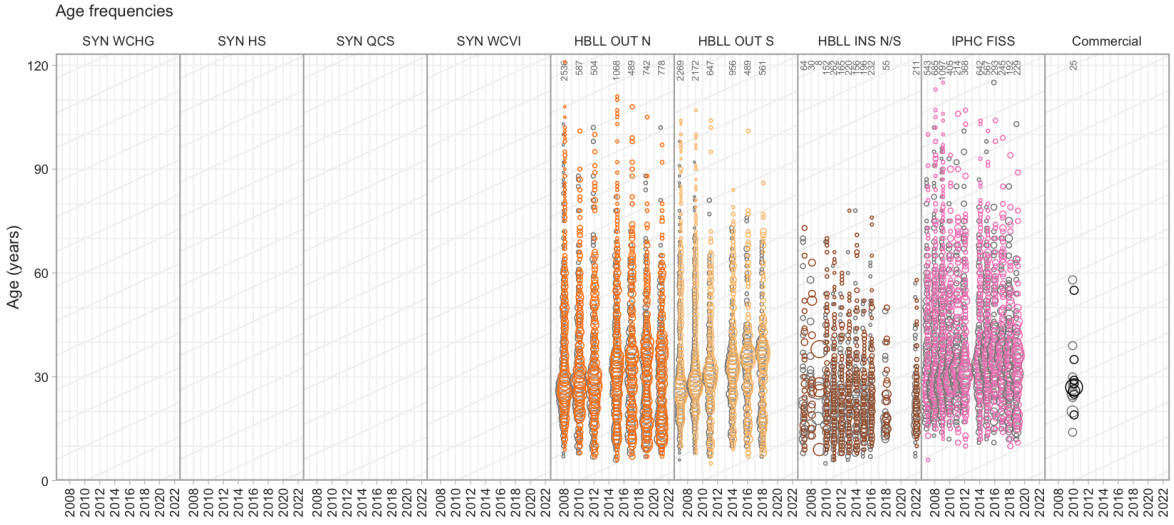
Sebastes ruberrimus (442)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Documents: Cox et al. (2020), Haggarty et al. (2022)
Last Science Advisory Reports: DFO (2020d), DFO (2020e)
Species at Risk Act Management Plan Series and Last Science Responses: DFO (2021b), DFO (2023d), DFO (2023e)
COSEWIC Status Report: COSEWIC (2020)
COSEWIC Status: Threatened, SARA Status: Special Concern

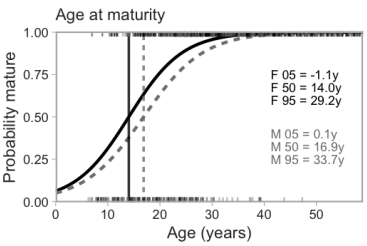


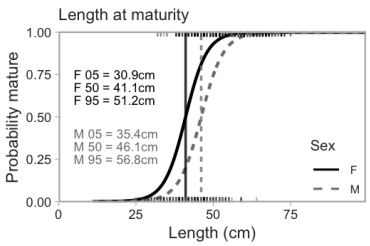

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

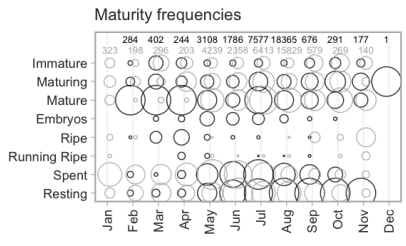
Growth
Length (cm)
Age (years)
Females
k = 0.04
linf = 65.4
t0 = -9.13
Males
k = 0.05
linf = 66.1
t0 = -6.01

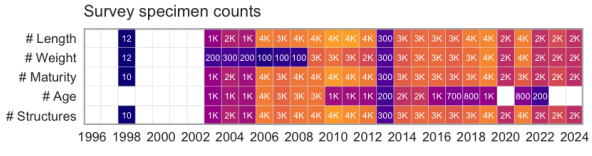
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.21
b = 3.09
Males
ln(a) = -11.18
b = 3.08
Sex
F
M

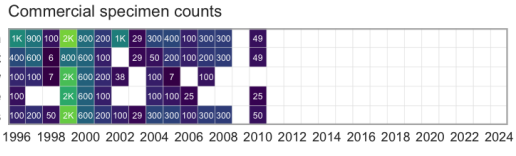

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = -1.1y
F 50 = 14.0y
F 95 = 29.2y
M 05 = 0.1y
M 50 = 16.9y
M 95 = 33.7y


Length at maturity
Probability mature
Length (cm)
F 05 = 30.9cm
F 50 = 41.1cm
F 95 = 51.2cm
M 05 = 35.4cm
M 50 = 46.1cm
M 95 = 56.8cm
Sex
F
M

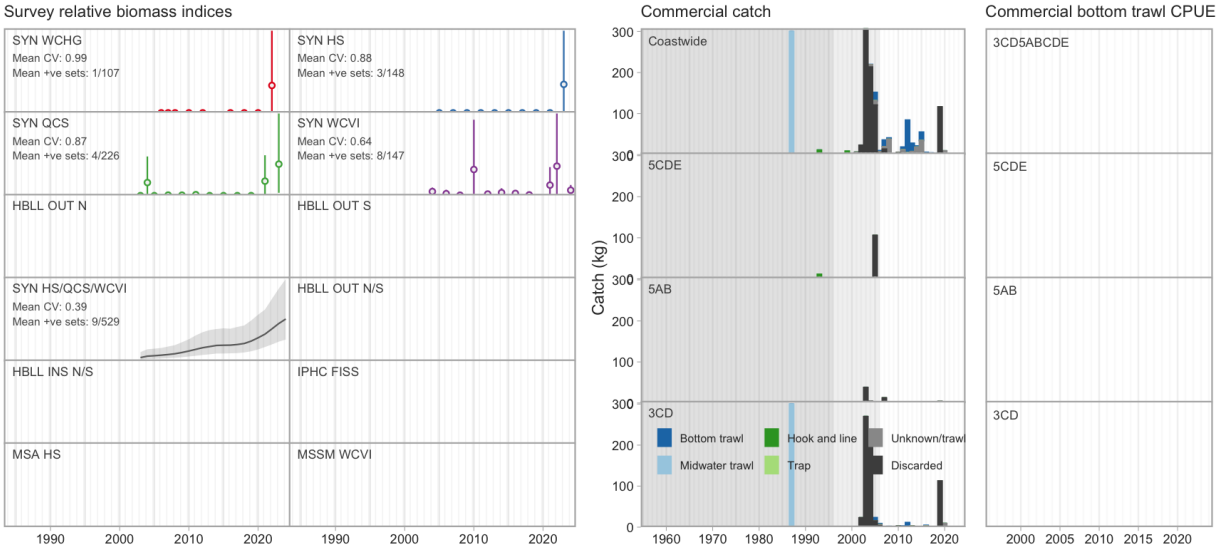

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

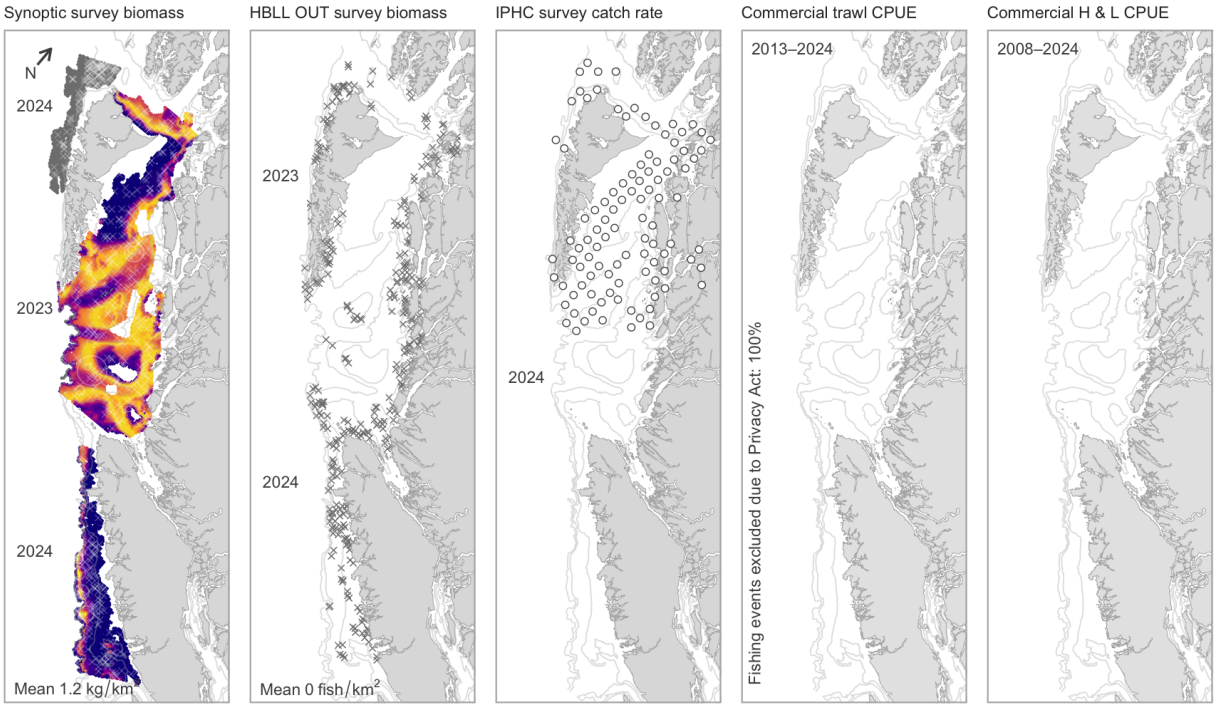

Survey specimen counts
Length
Weight
Maturity
Age
Structures

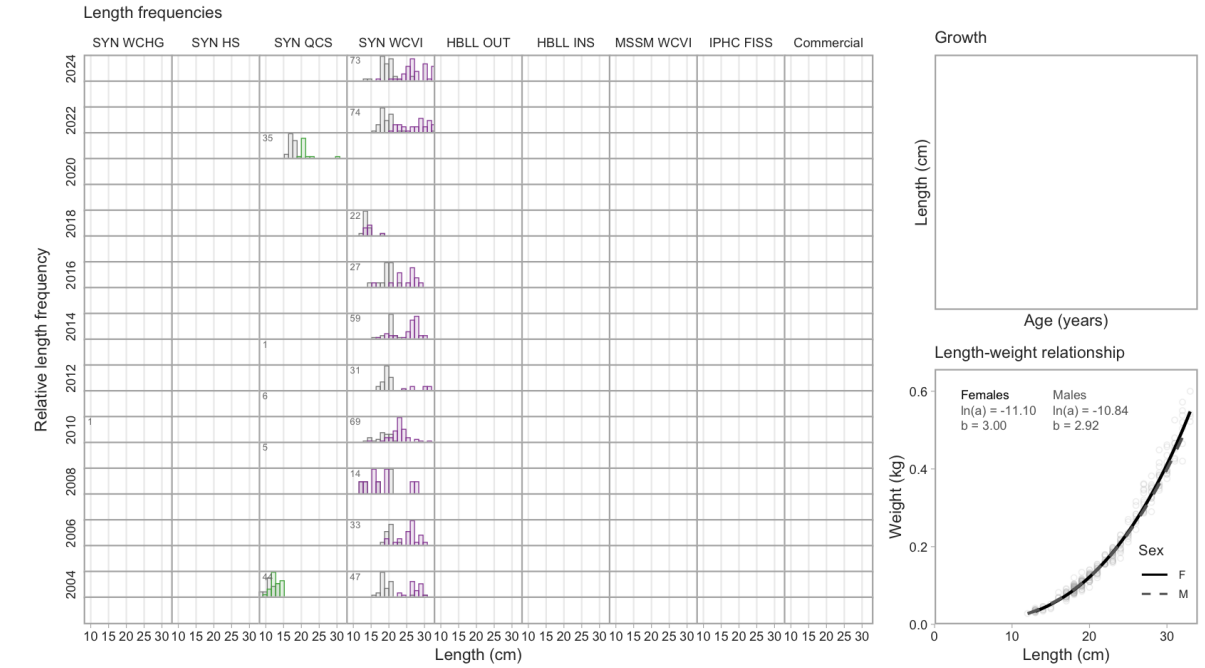

Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.75 Stripetail Rockfish

Sebastes saxicola (444)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

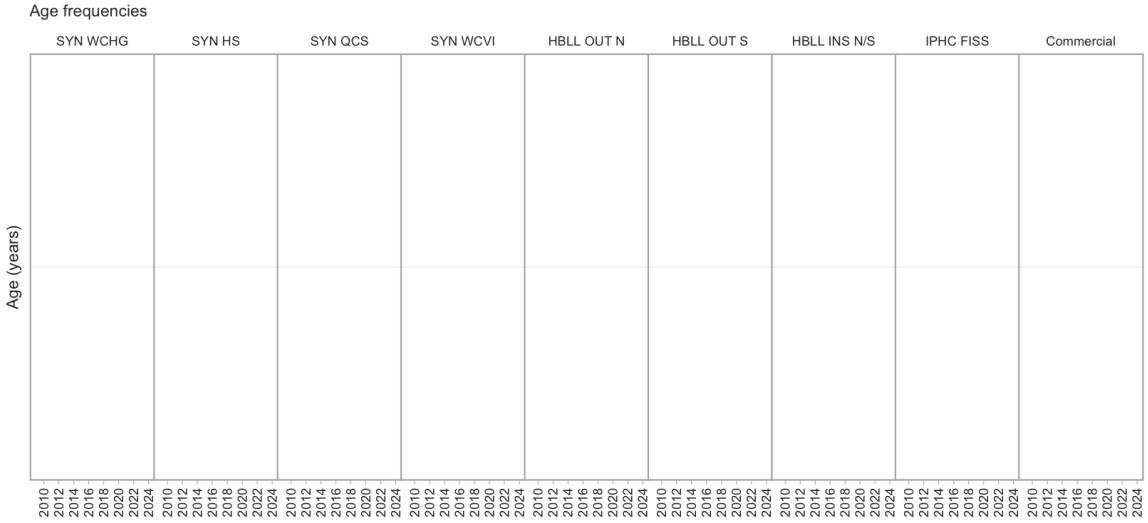




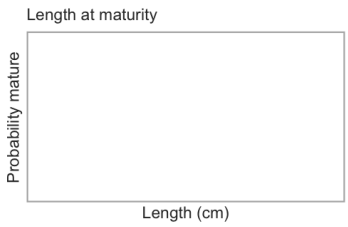

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

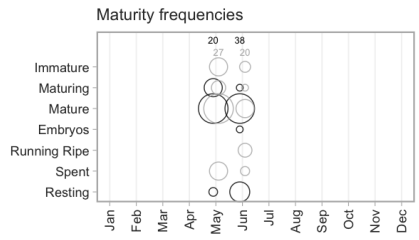
Growth
Length (cm)
Age (years)

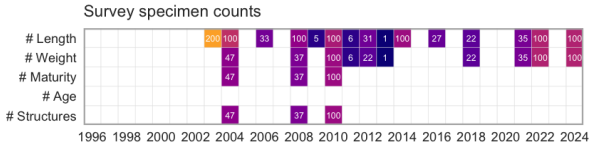
Length-weight relationship
Females
ln(a) = -11.10
b = 3.00
Males
ln(a) = -10.84
b = 2.92
Sex
F
M
Weight (kg)
Length (cm)

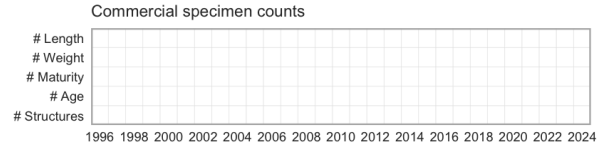

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
Length (cm)

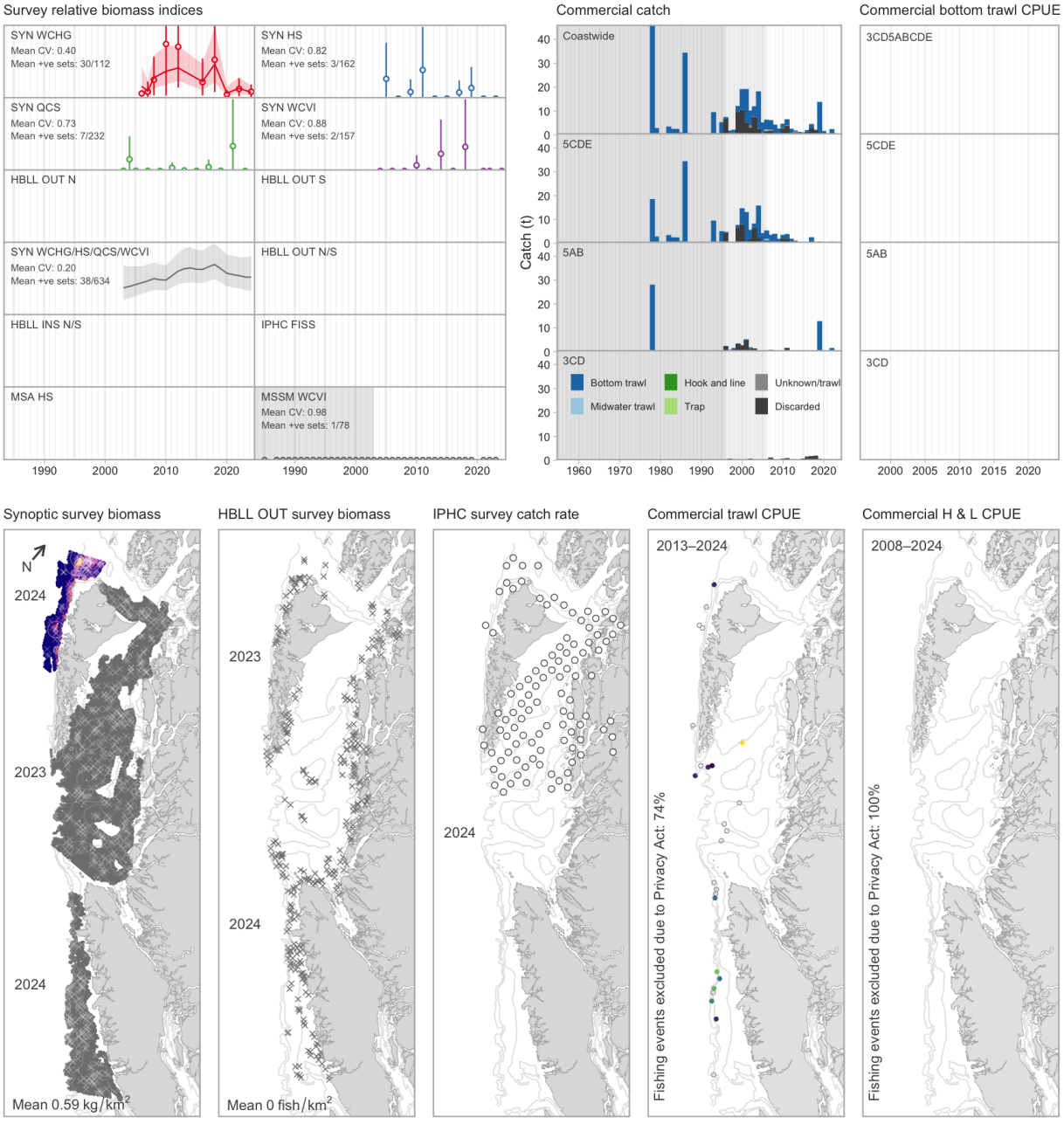

Maturity frequencies
Immature
Maturing
Mature
Embryos
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

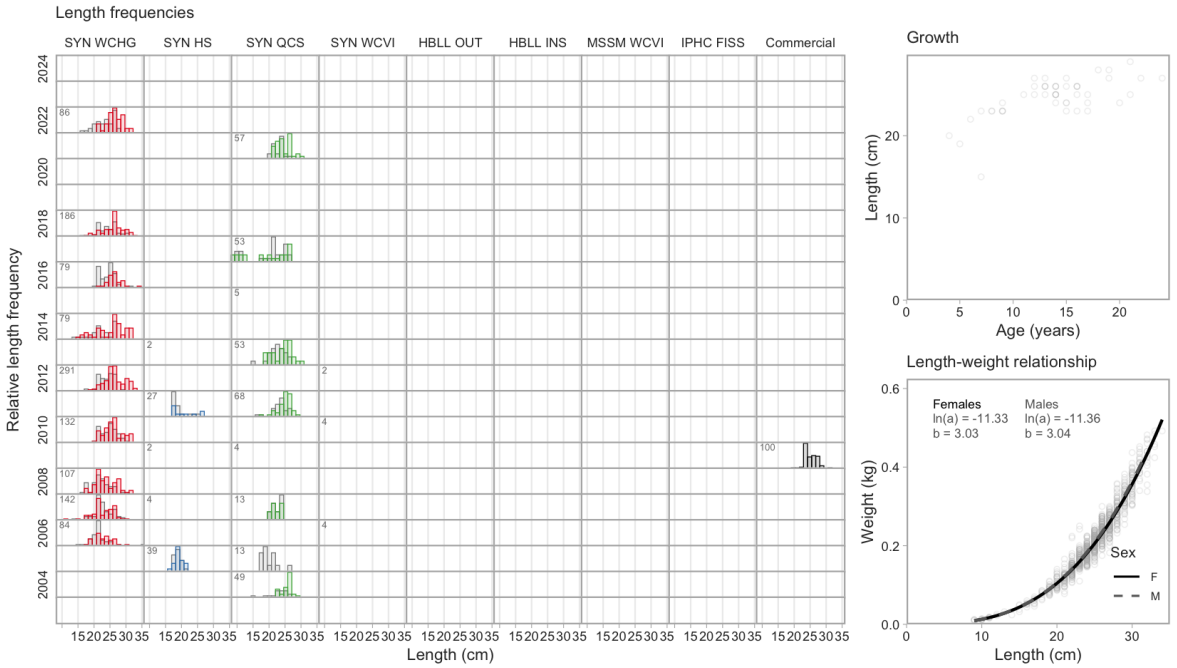

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.76 Harlequin Rockfish

Sebastes variegatus (446)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

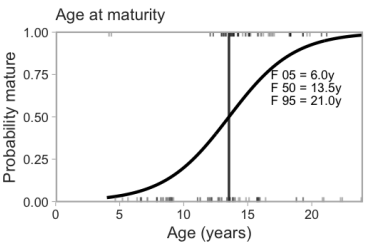


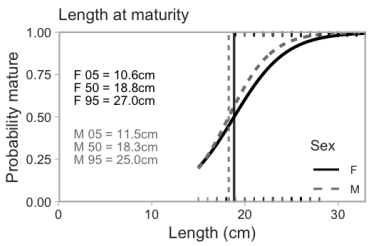

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

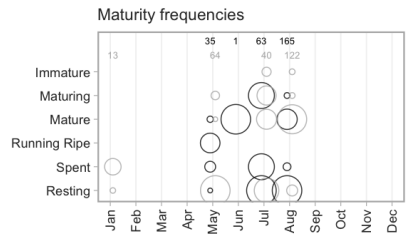
Growth
Length (cm)
Age (years)

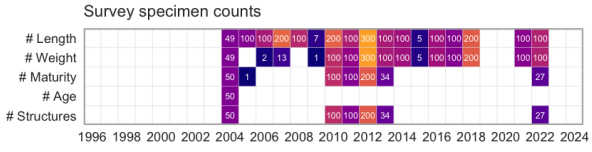
Length-weight relationship
Females
ln(a) = -11.33
b = 3.03
Males
ln(a) = -11.36
b = 3.04
Weight (kg)
Length (cm)
Sex
F
M

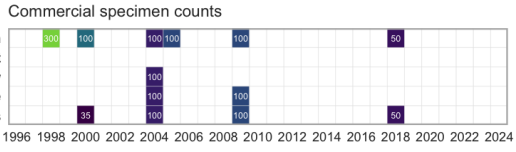

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
F 05 = 6.0y
F 50 = 13.5y
F 95 = 21.0y
Probability mature
Age (years)


Length at maturity
F 05 = 10.6cm
F 50 = 18.8cm
F 95 = 27.0cm
M 05 = 11.5cm
M 50 = 18.3cm
M 95 = 25.0cm
Sex
F
M
Probability mature
Length (cm)

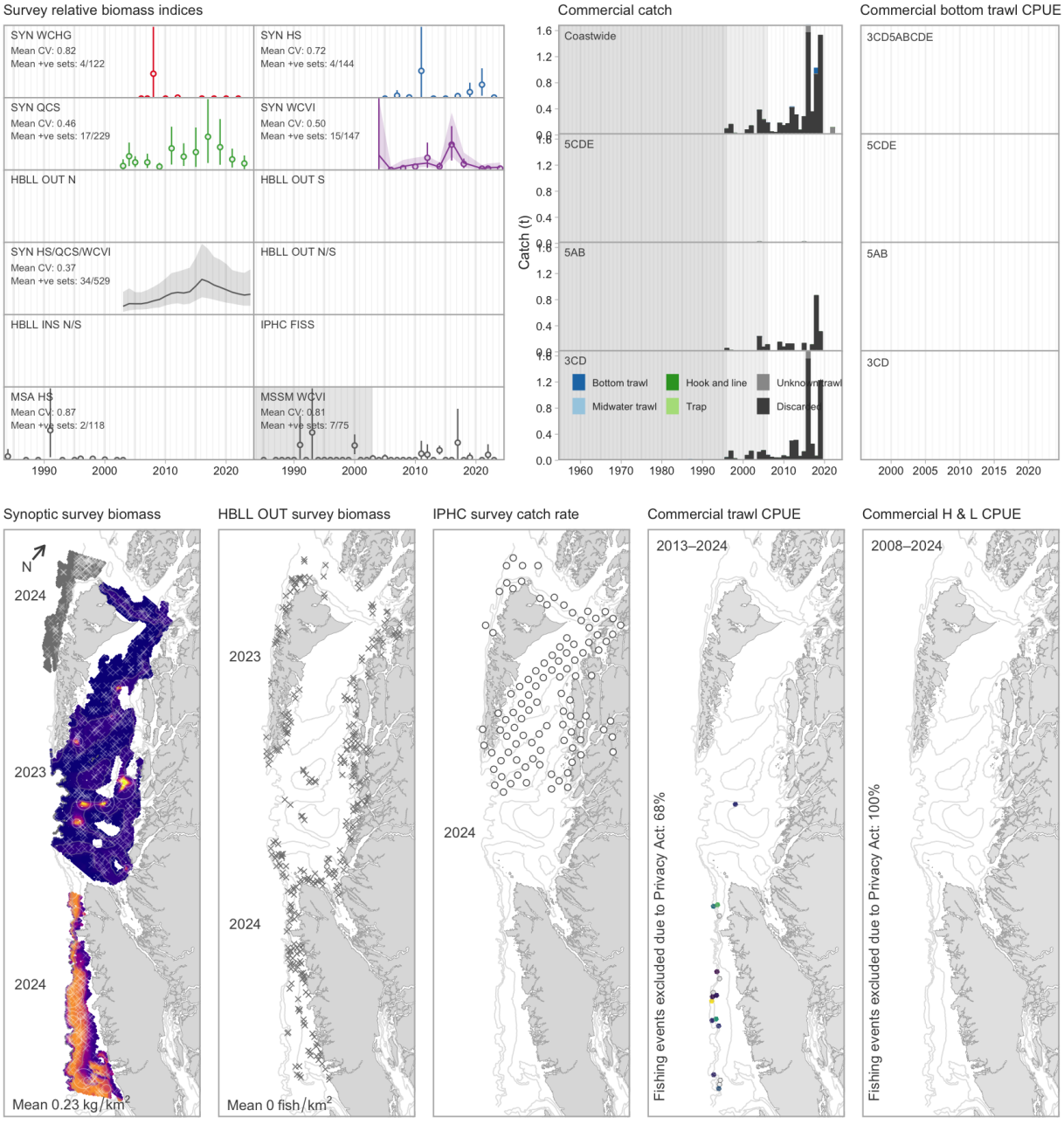

Maturity frequencies
Immature
Maturing
Mature
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

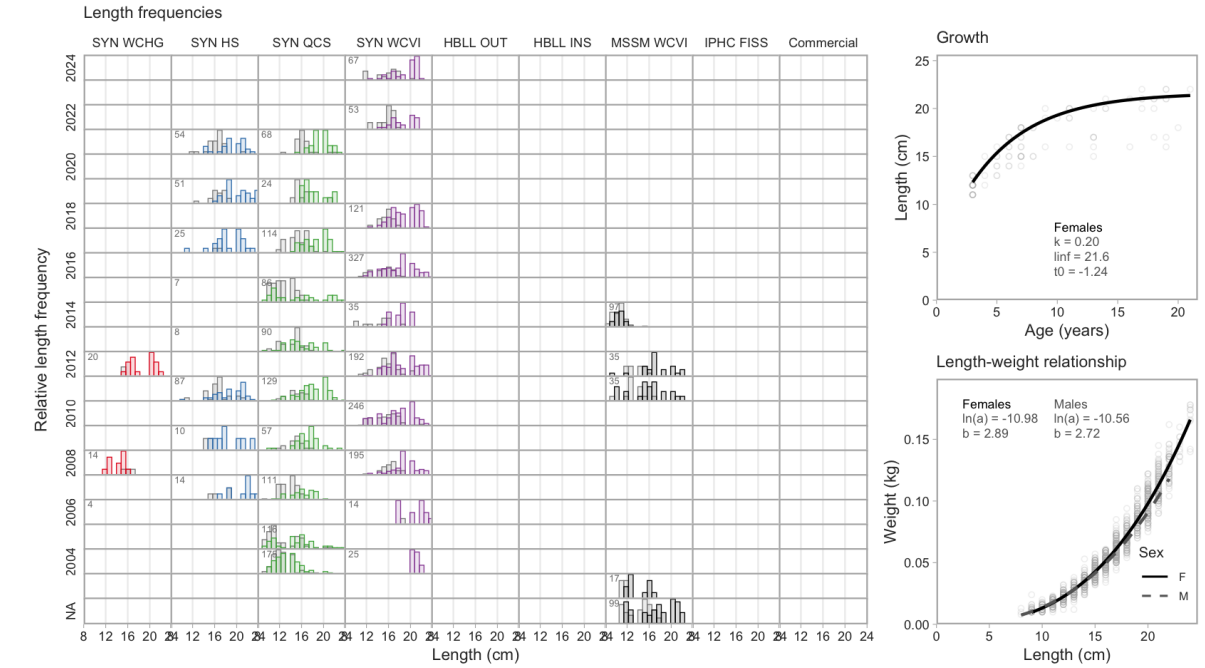

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.77 Pygmy Rockfish

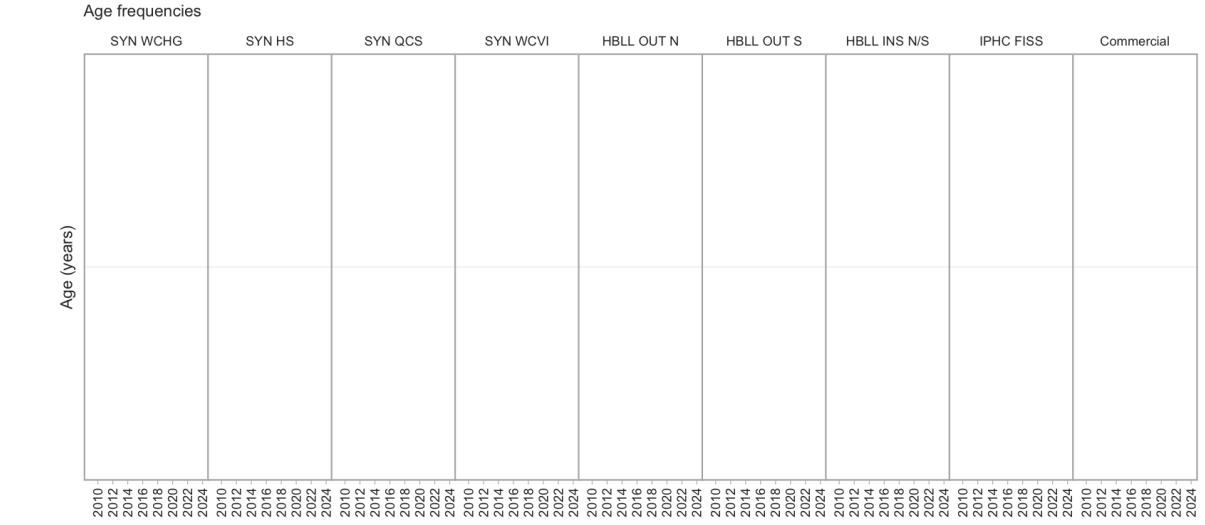
Sebastes wilsoni (448)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

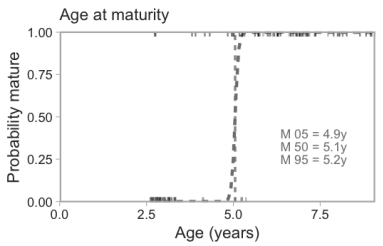


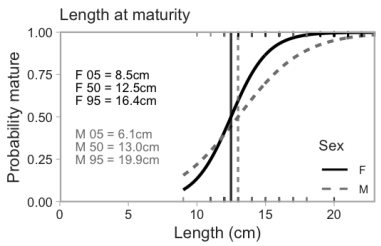

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

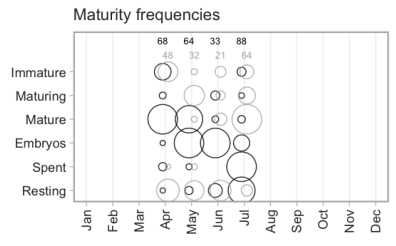
Growth
Length (cm)
Age (years)
Females
k = 0.20
linf = 21.6
t0 = -1.24

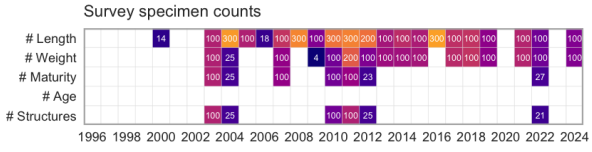
Length-weight relationship
Females
ln(a) = -10.98
b = 2.89
Males
ln(a) = -10.56
b = 2.72
Weight (kg)
Length (cm)
Sex
F
M

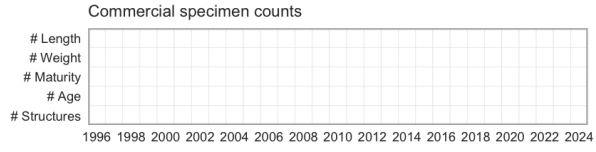

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
M 05 = 4.9y
M 50 = 5.1y
M 95 = 5.2y
Age (years)


Length at maturity
Probability mature
F 05 = 8.5cm
F 50 = 12.5cm
F 95 = 16.4cm
M 05 = 6.1cm
M 50 = 13.0cm
M 95 = 19.9cm
Sex
F
M
Length (cm)

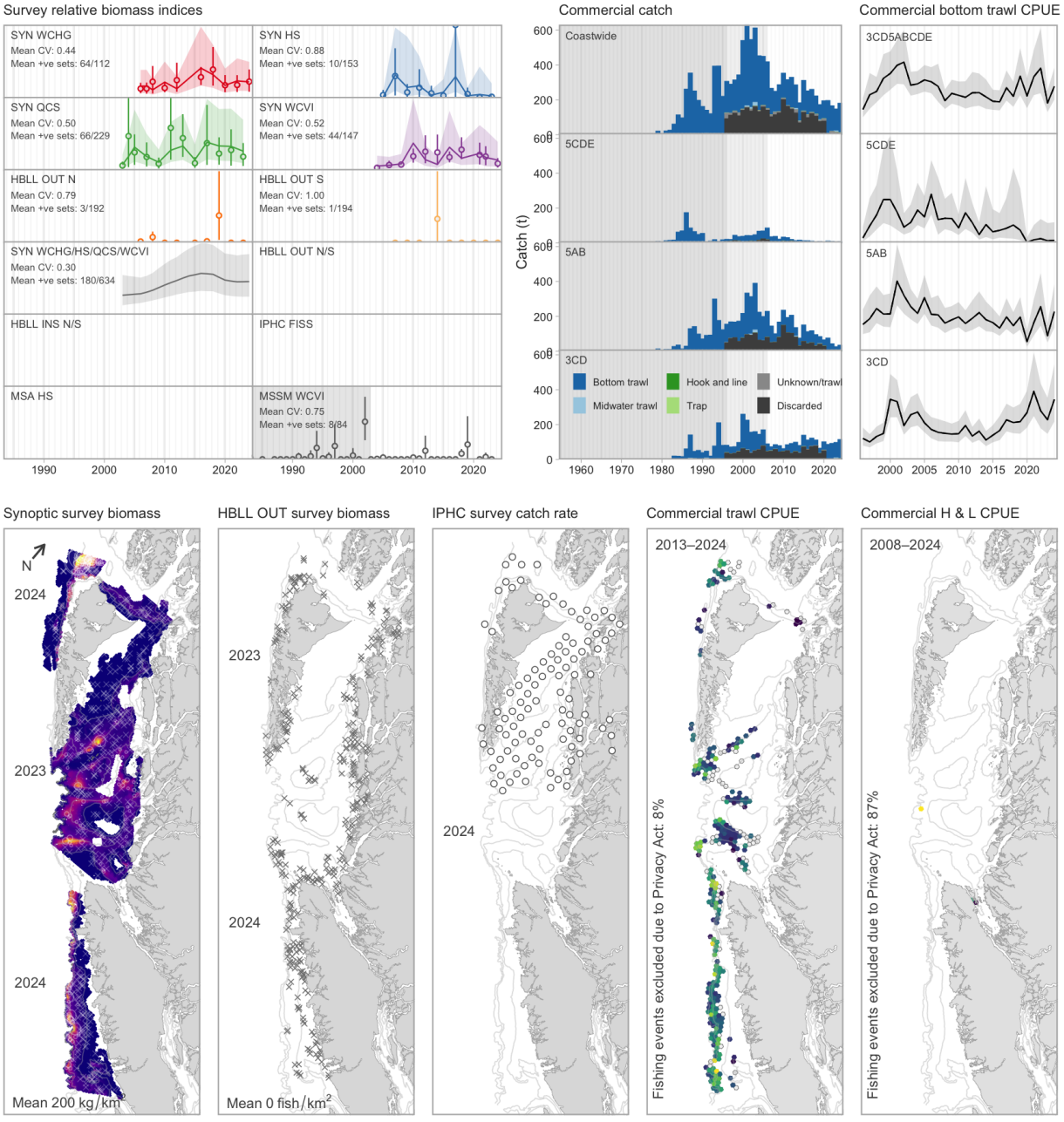

Maturity frequencies
Immature
Maturing
Mature
Embryos
Spent
Resting

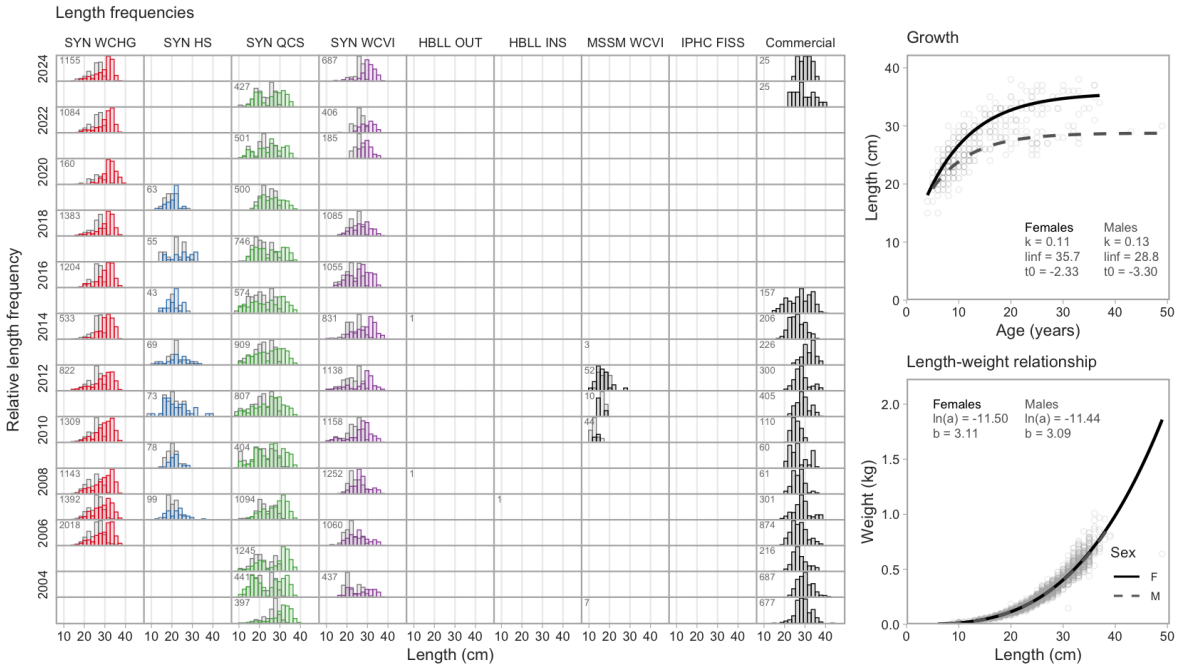

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.78 Sharpchin Rockfish

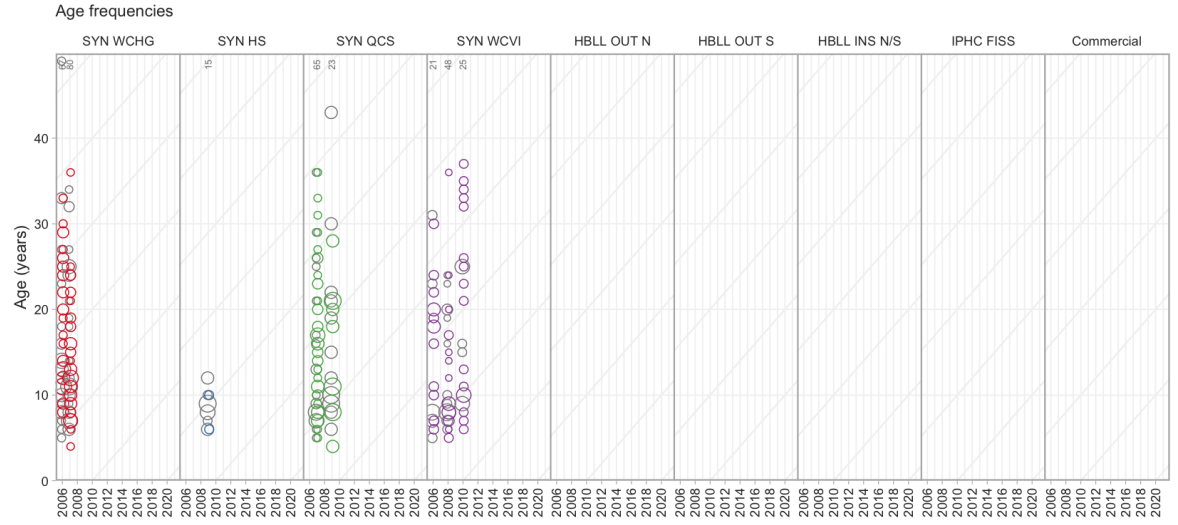
Sebastes zacentrus (450)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS

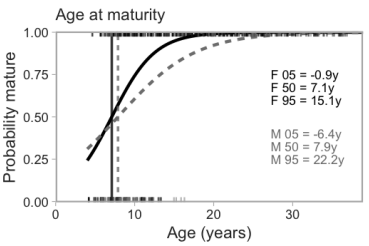


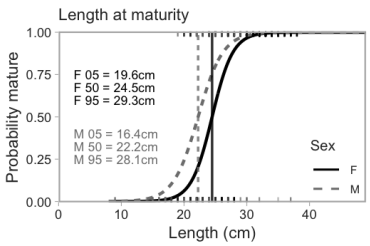

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

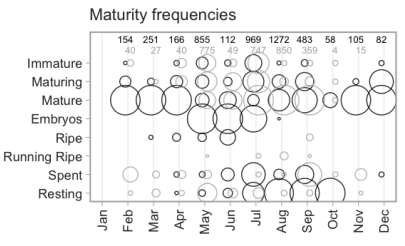
Growth
Length (cm)
Age (years)
Females
k = 0.11
linf = 35.7
t0 = -2.33
Males
k = 0.13
linf = 28.8
t0 = -3.30

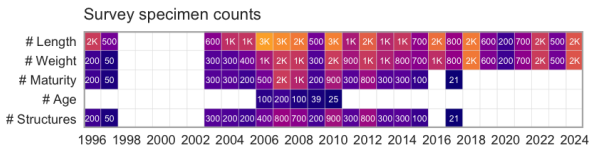
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.50
b = 3.11
Males
ln(a) = -11.44
b = 3.09
Sex
F
M

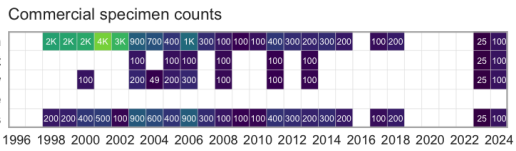

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = -0.9y
F 50 = 7.1y
F 95 = 15.1y
M 05 = -6.4y
M 50 = 7.9y
M 95 = 22.2y


Length at maturity
Probability mature
Length (cm)
F 05 = 19.6cm
F 50 = 24.5cm
F 95 = 29.3cm
M 05 = 16.4cm
M 50 = 22.2cm
M 95 = 28.1cm
Sex
F
M

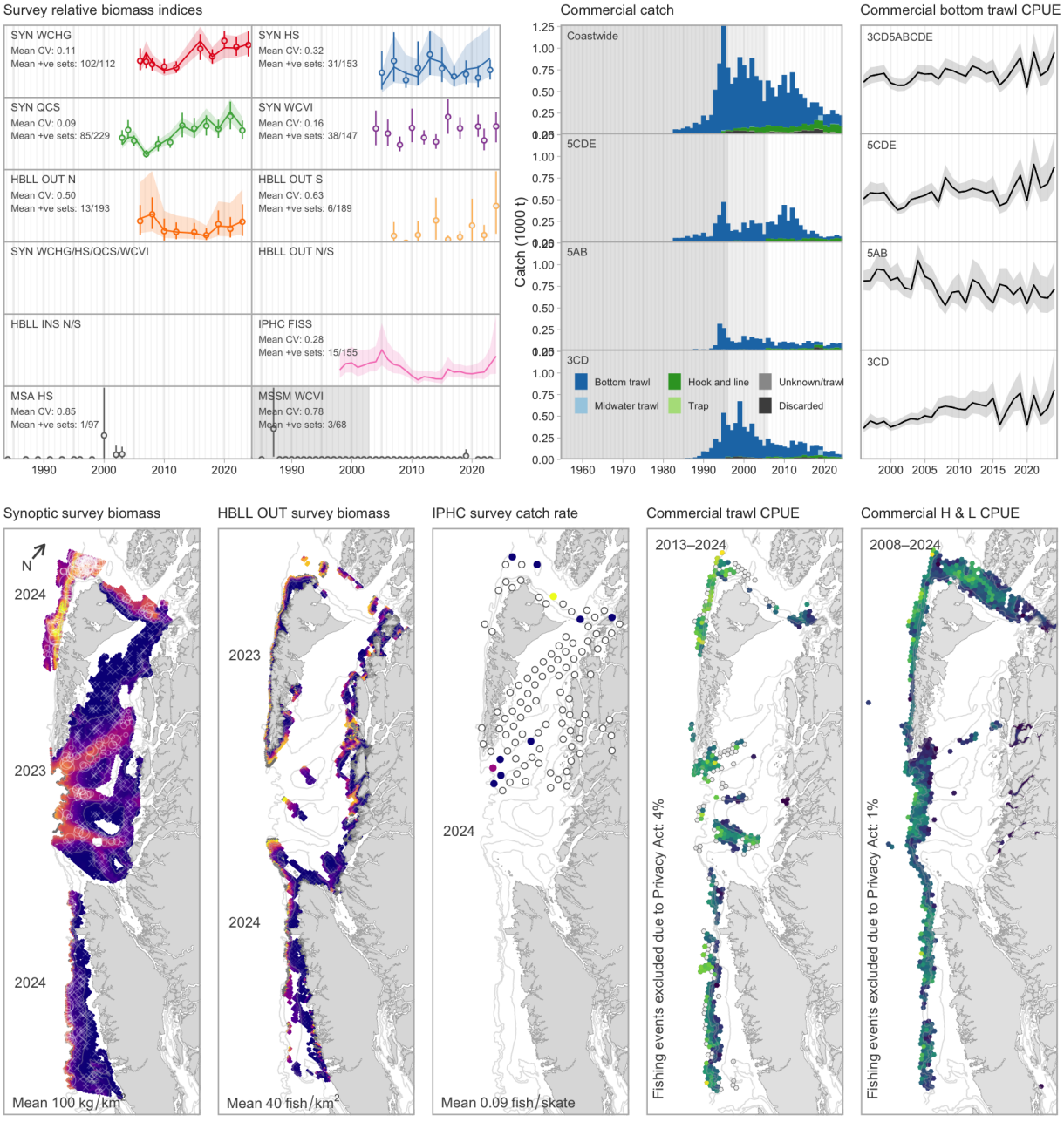

Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting

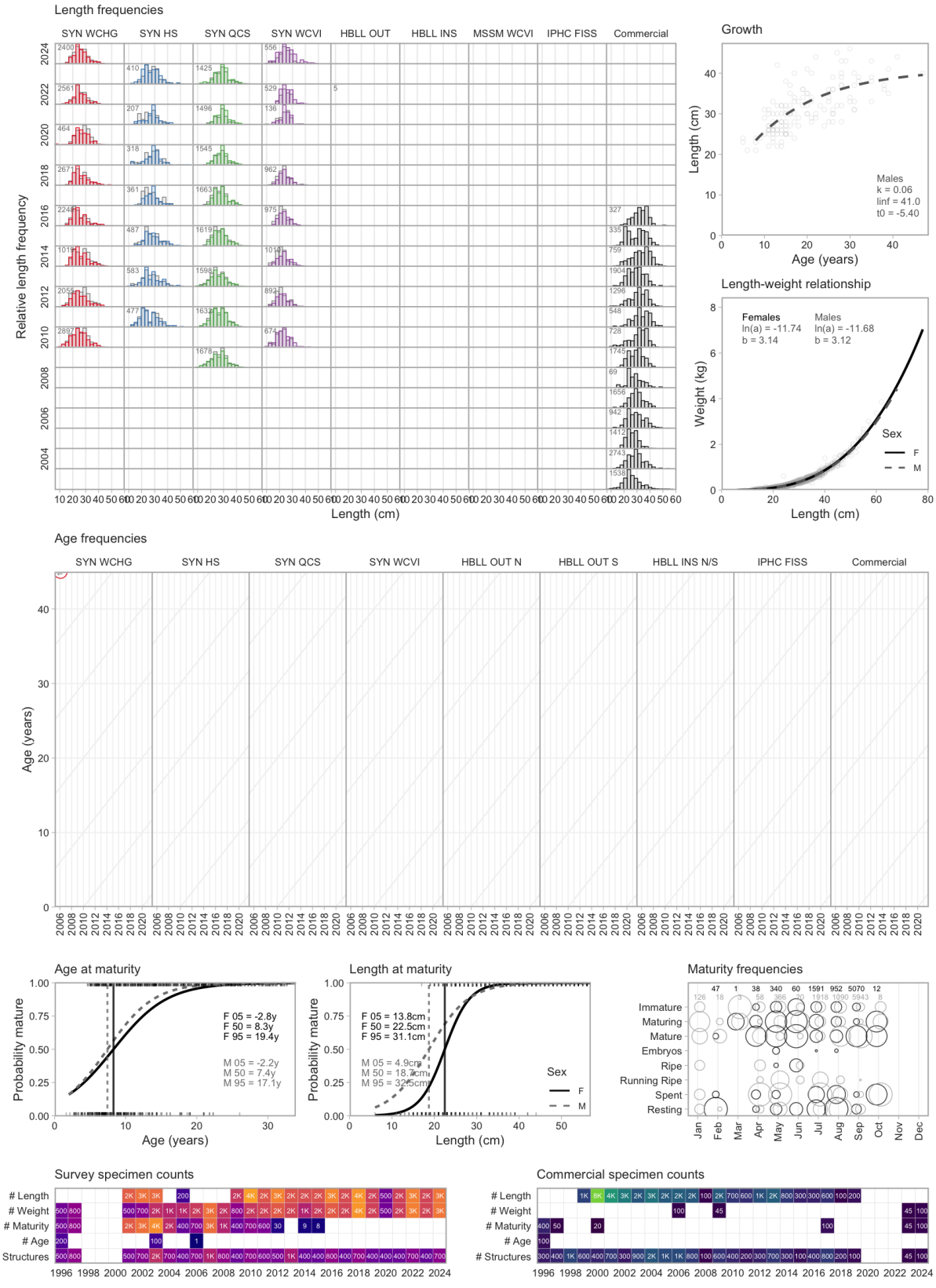

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.79 Shortspine Thornyhead

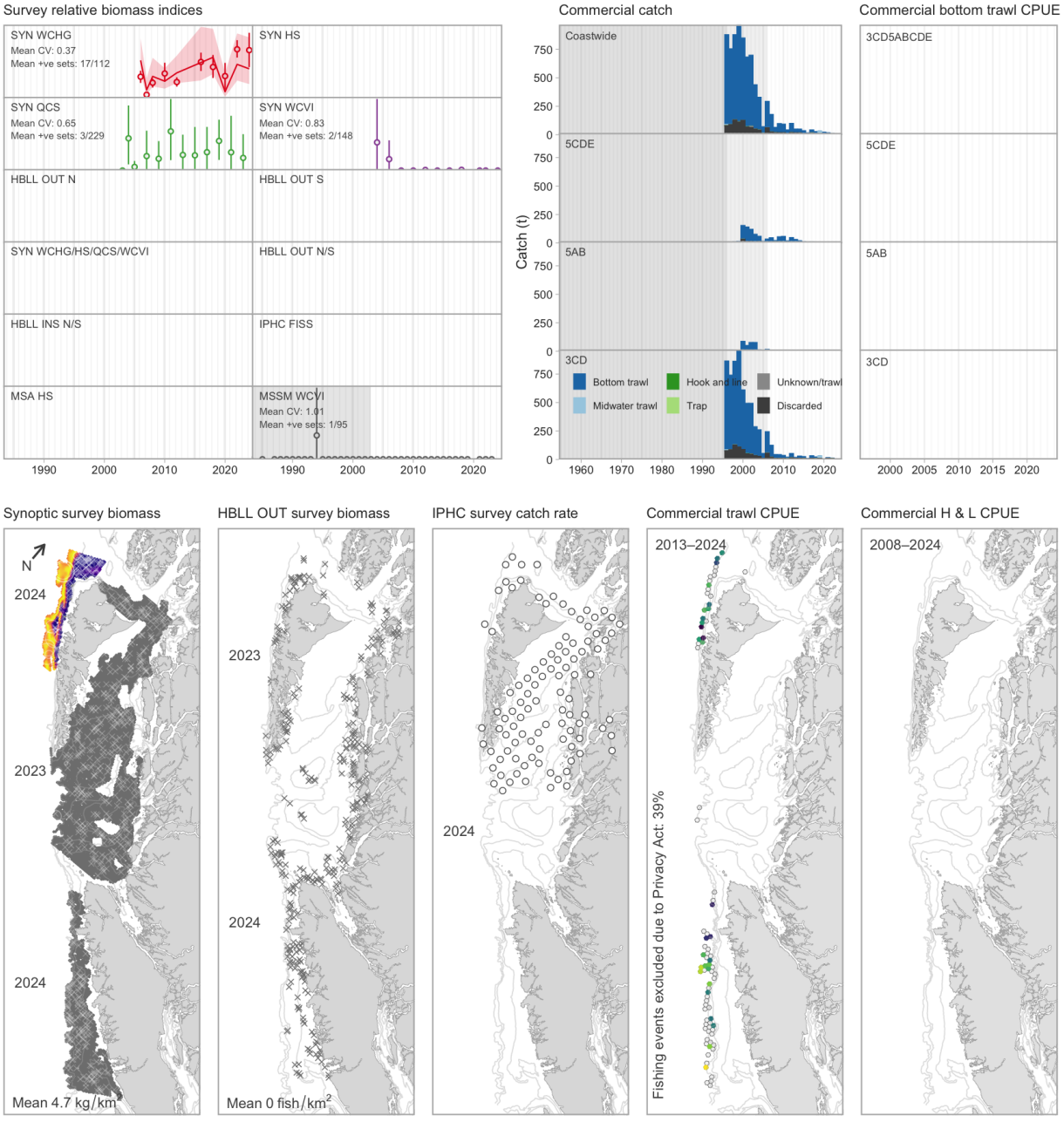
Sebastolobus alascanus (451)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Starr and Haigh (2017)
Last Science Advisory Report: DFO (2016)

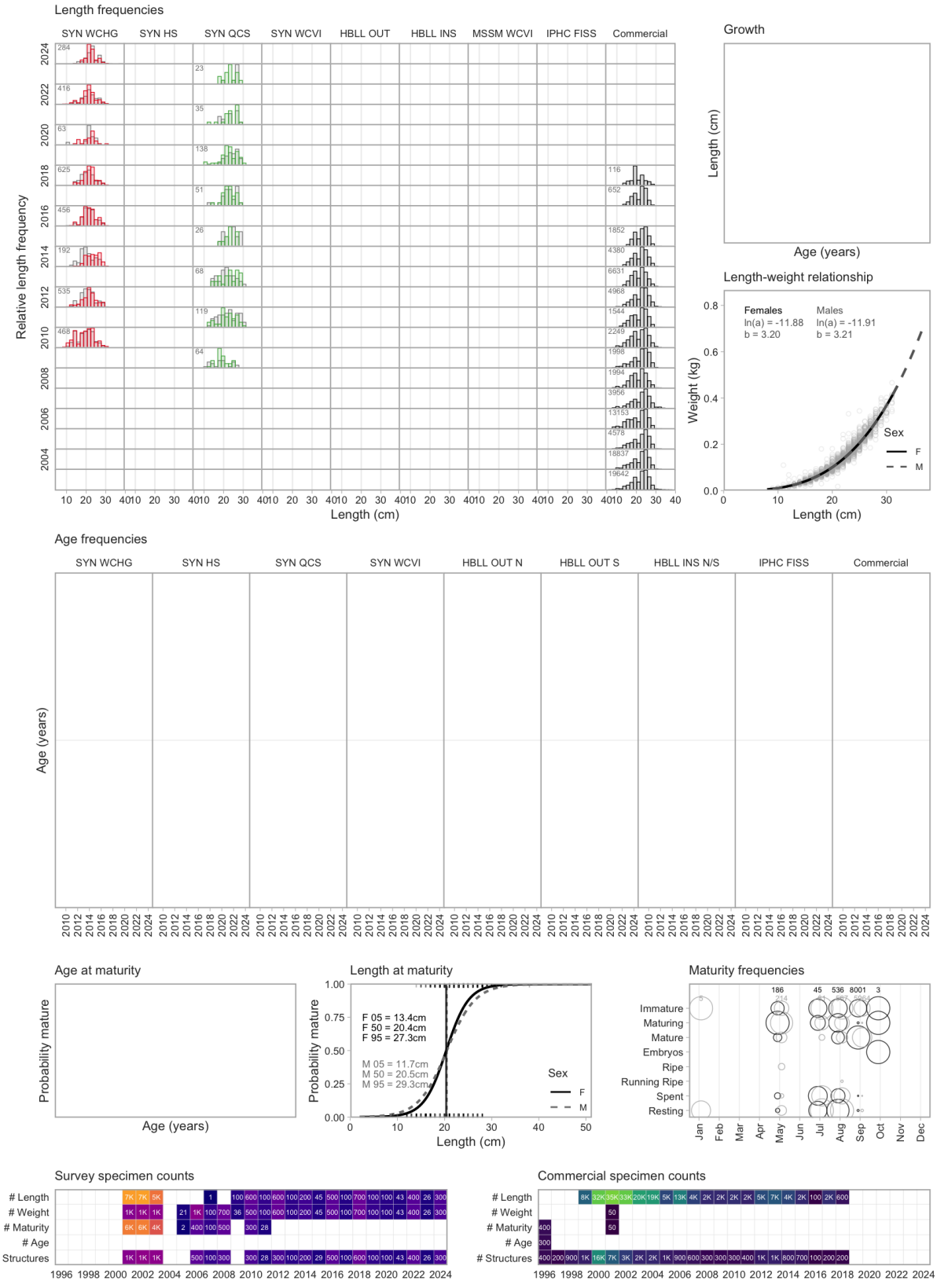



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Males
k = 0.06
linf = 41.0
t0 = -5.40
Length-weight relationship
Females
ln(a) = -11.74
b = 3.14
Males
ln(a) = -11.68
b = 3.12
Weight (kg)
Length (cm)
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
F 05 = -2.8y
F 50 = 8.3y
F 95 = 19.4y
M 05 = -2.2y
M 50 = 7.4y
M 95 = 17.1y
Age (years)
Length at maturity
Probability mature
F 05 = 13.8cm
F 50 = 22.5cm
F 95 = 31.1cm
M 05 = 4.9cm
M 50 = 18.7cm
M 95 = 32.5cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.80 Longspine Thornyhead

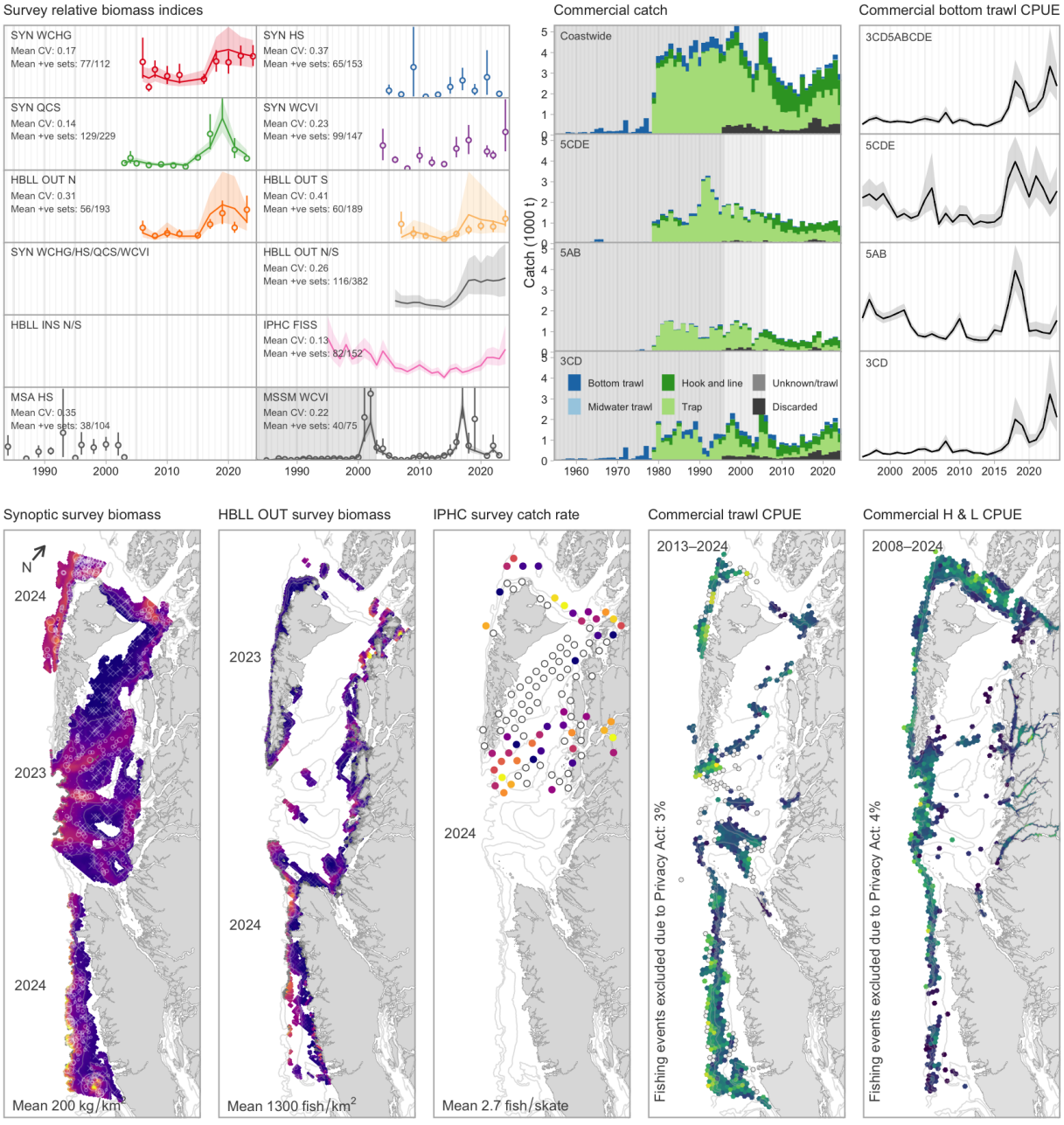
Sebastolobus altivelis (453)
Order: Perciformes, Family: Sebastidae, FishBase, WoRMS
Last Research Document: Haigh et al. (2005)
Species at Risk Act Management Plan Series: DFO (2012)
COSEWIC Status Report: COSEWIC (2007e)
COSEWIC Status: Special Concern, SARA Status: Special Concern

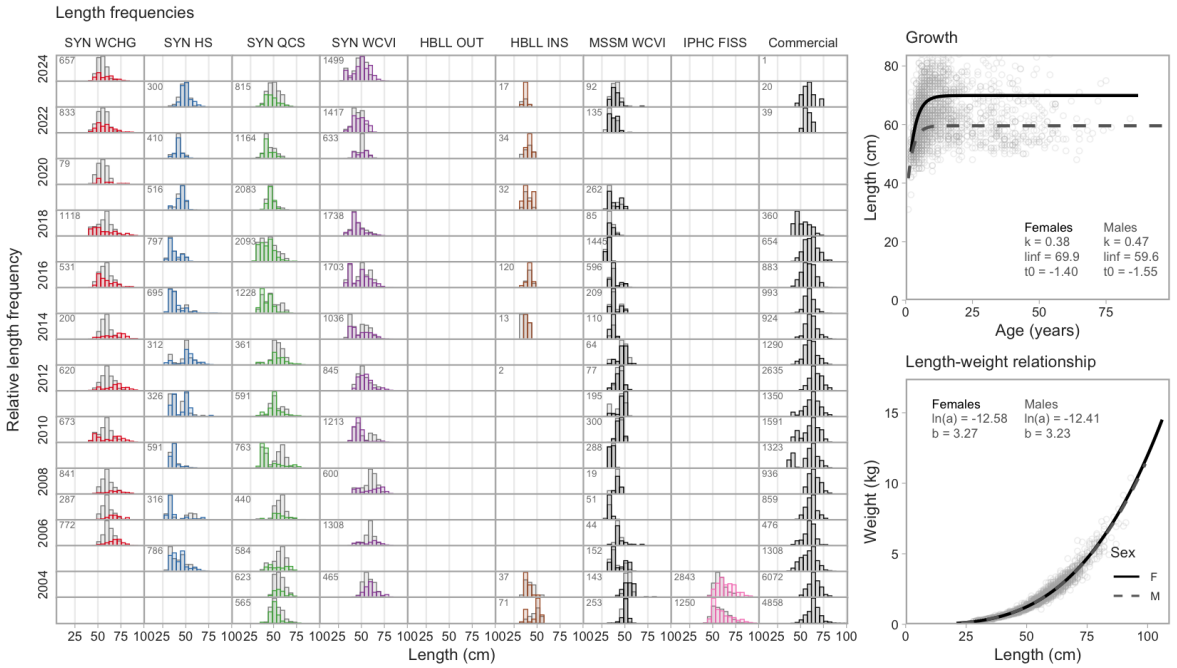



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.88
b = 3.20
Males
ln(a) = -11.91
b = 3.21
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
F 05 = 13.4cm
F 50 = 20.4cm
F 95 = 27.3cm
M 05 = 11.7cm
M 50 = 20.5cm
M 95 = 29.3cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Embryos
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.81 Sablefish

Anoplopoma fimbria (455)
Order: Perciformes, Family: Anoplopomatidae, FishBase, WoRMS
Last Research Document: Johnson et al. (2025b)
Last Science Advisory Reports: DFO (2017), DFO (2023f)
Last Science Response: DFO (2024d)
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.

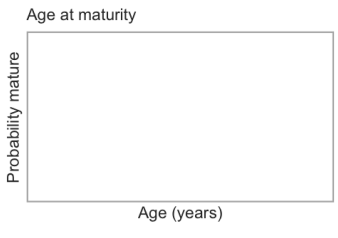


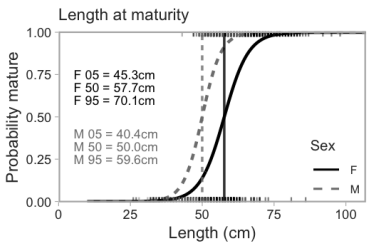

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

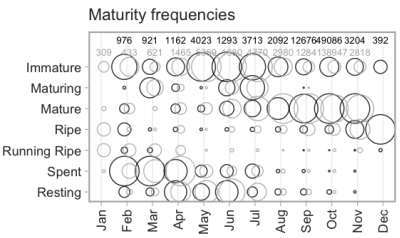
Growth
Length (cm)
Age (years)
Females
k = 0.38
linf = 69.9
t0 = -1.40
Males
k = 0.47
linf = 59.6
t0 = -1.55

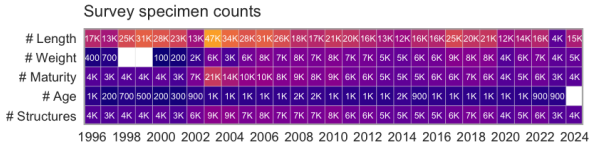
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -12.58
b = 3.27
Males
ln(a) = -12.41
b = 3.23
Sex
F
M

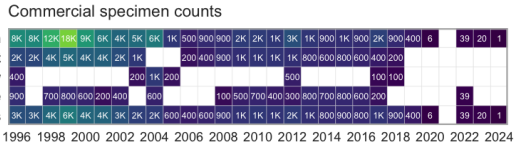

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
F 05 = 45.3cm
F 50 = 57.7cm
F 95 = 70.1cm
M 05 = 40.4cm
M 50 = 50.0cm
M 95 = 59.6cm
Sex
F
M
Length (cm)

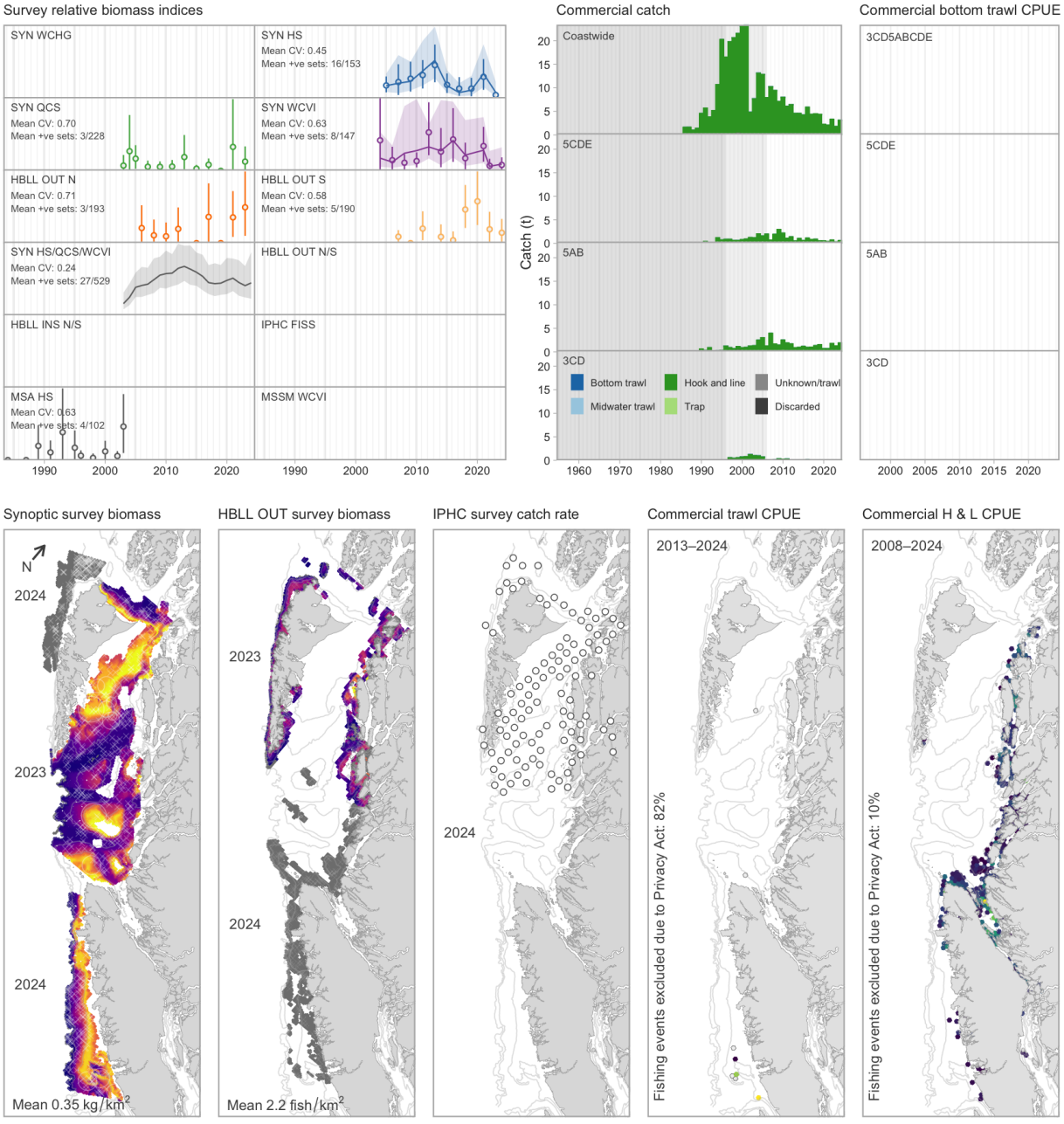

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

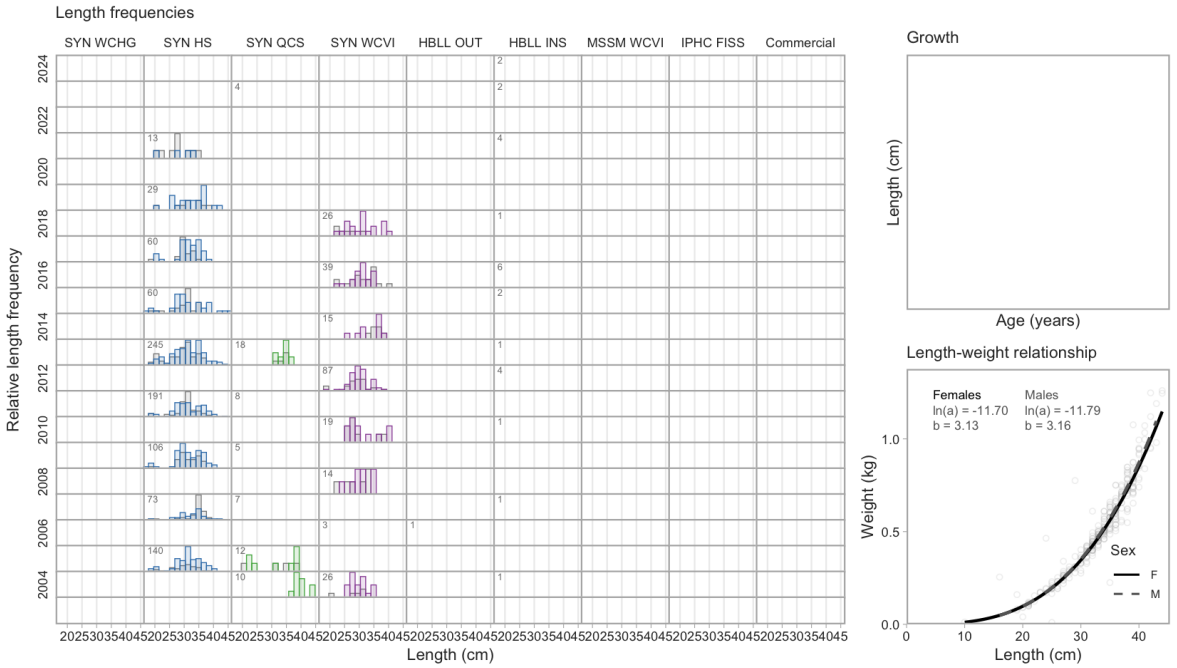

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.82 Kelp Greenling

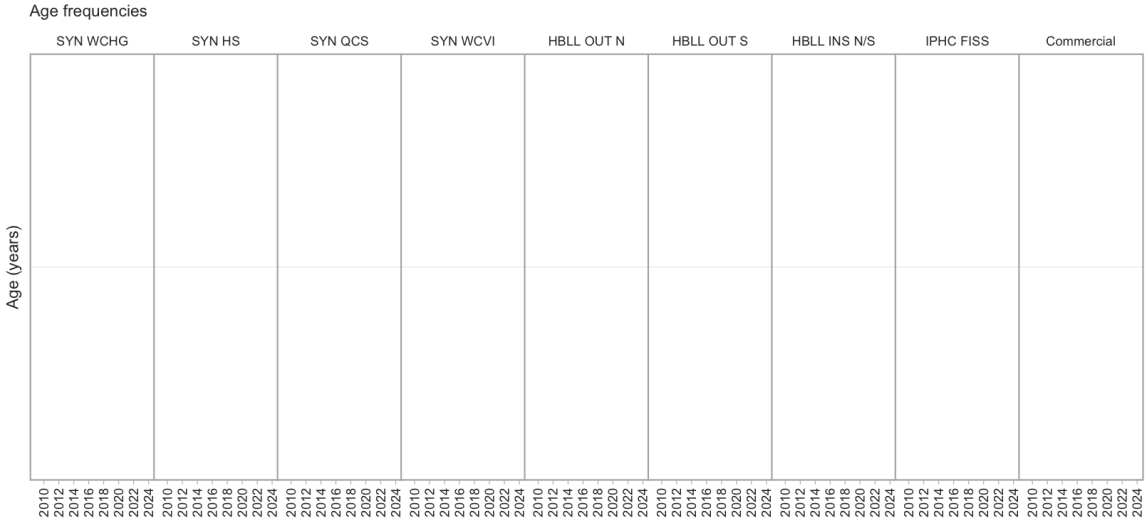
Hexagrammos decagrammus (461)
Order: Perciformes, Family: Hexagrammidae, FishBase, WoRMS



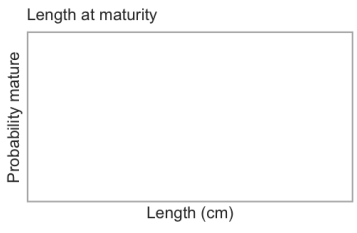

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

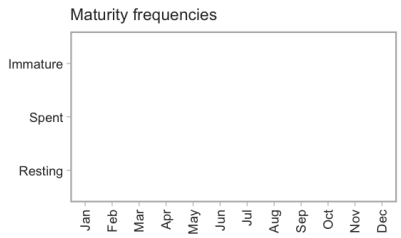
Growth
Length (cm)
Age (years)

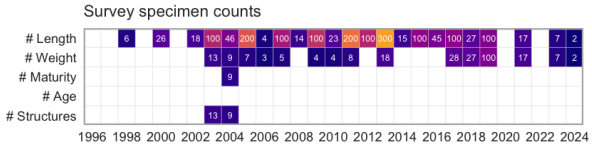
Length-weight relationship
Females
ln(a) = -11.70
b = 3.13
Males
ln(a) = -11.79
b = 3.16
Weight (kg)
Length (cm)
Sex
F
M

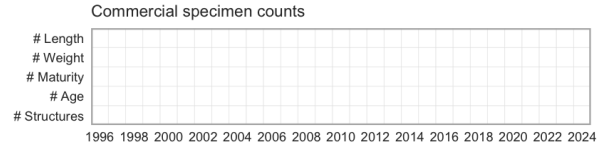

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
Length (cm)

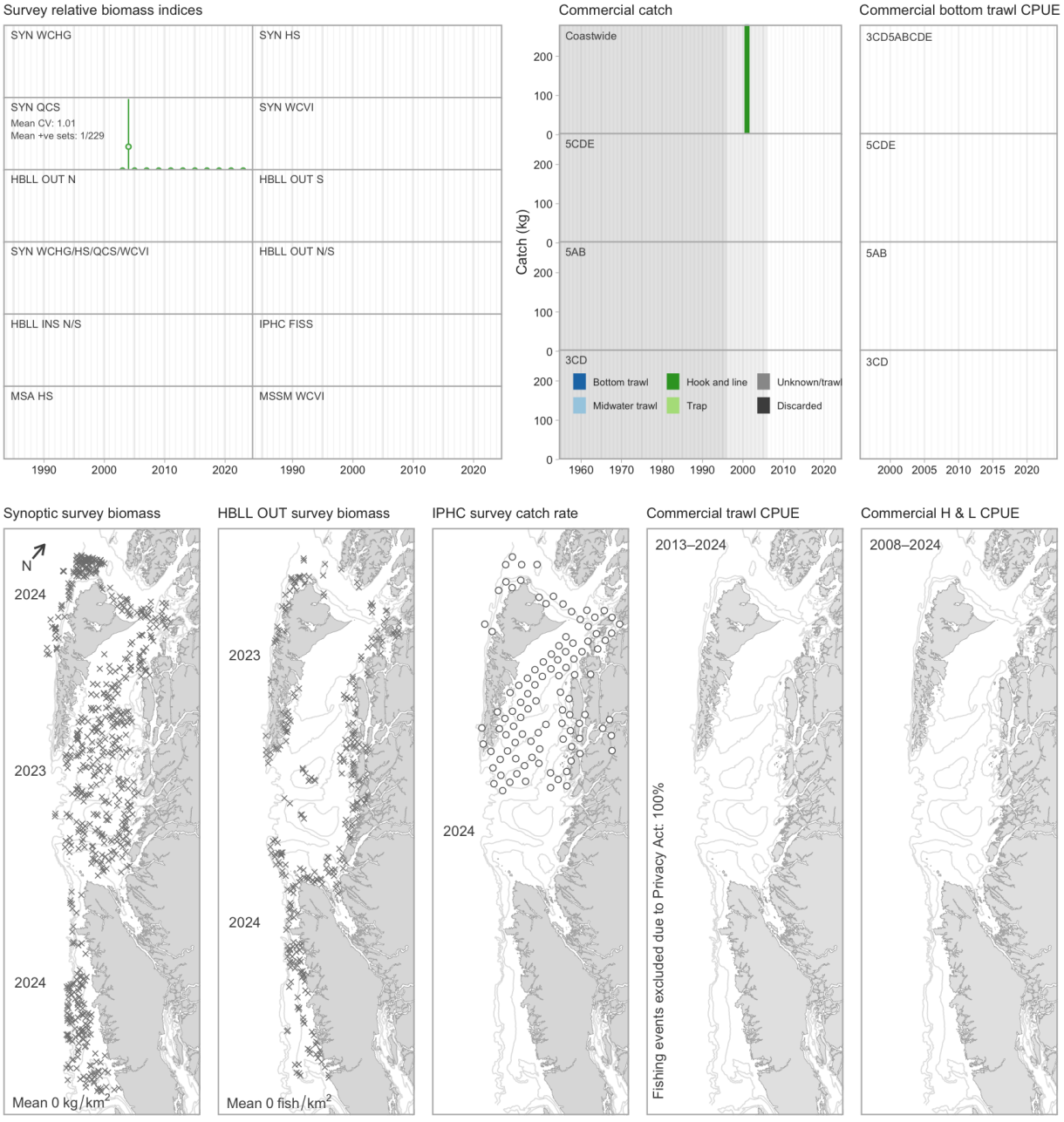

Maturity frequencies
Immature
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

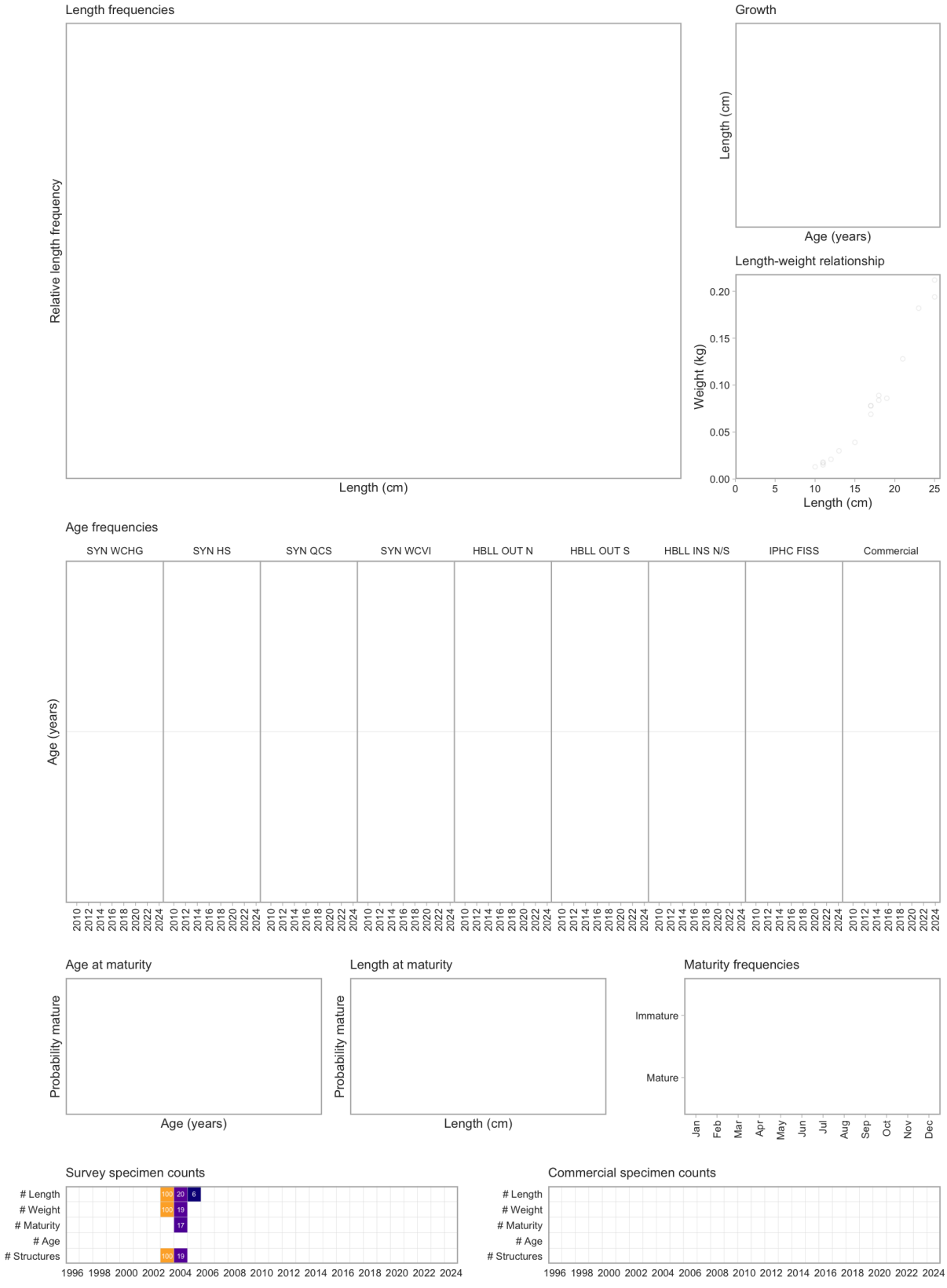

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.83 Whitespotted Greenling

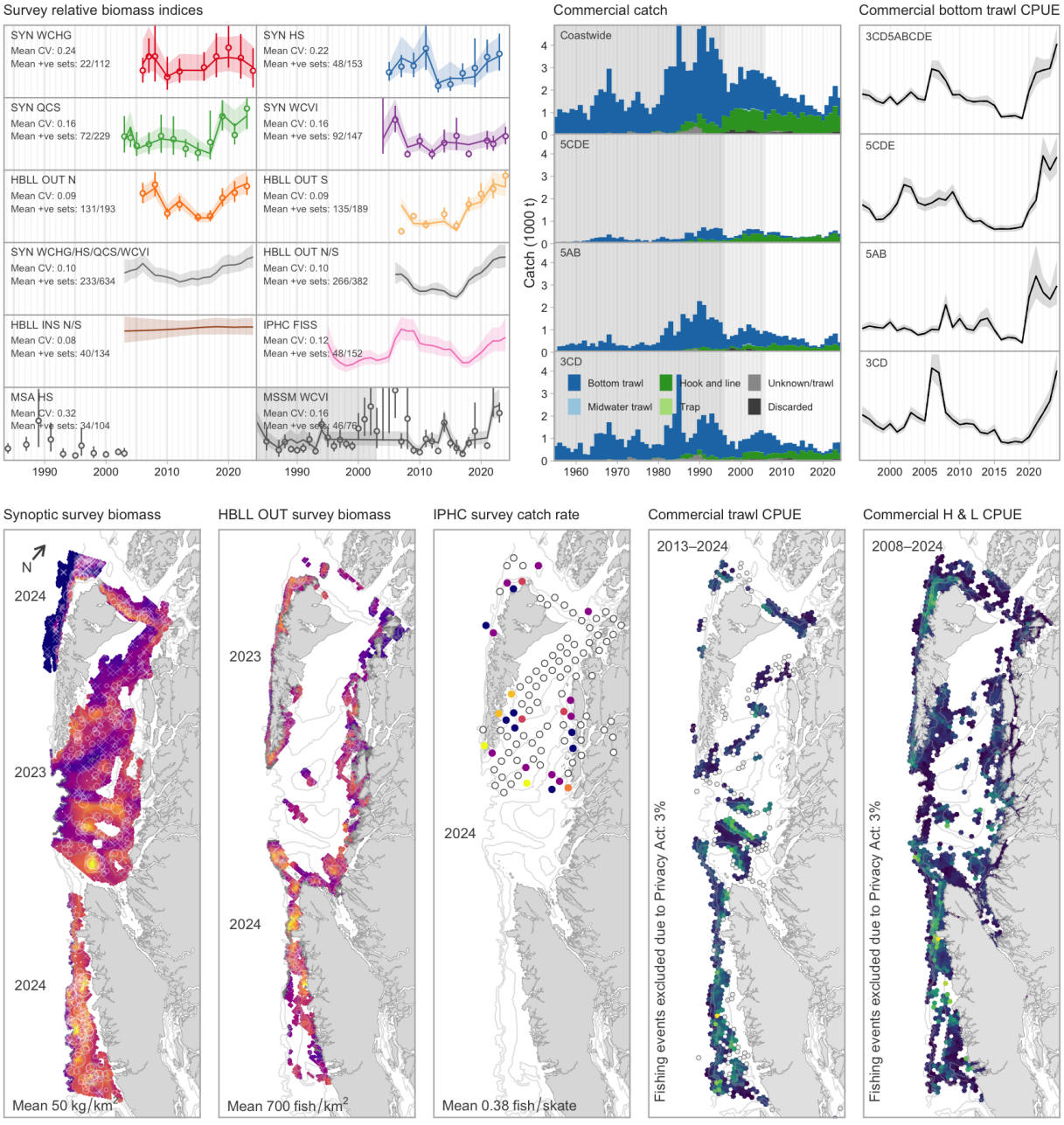
Hexagrammos stelleri (466)
Order: Perciformes, Family: Hexagrammidae, FishBase, WoRMS

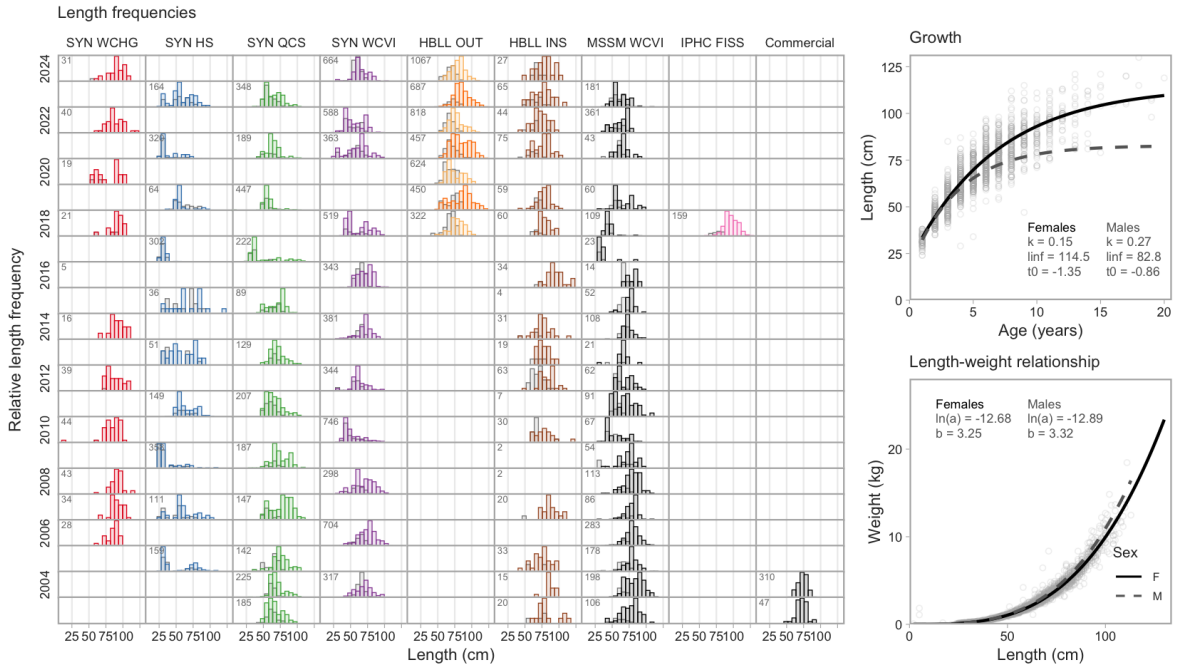



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
0.00
0.05
0.10
0.15
0.20
0
5
10
15
20
25
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
2010
2012
2014
2016
2018
2020
2022
2024
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Immature
Mature
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
100
20
6
100
19
17
100
19
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024

6.84 Lingcod

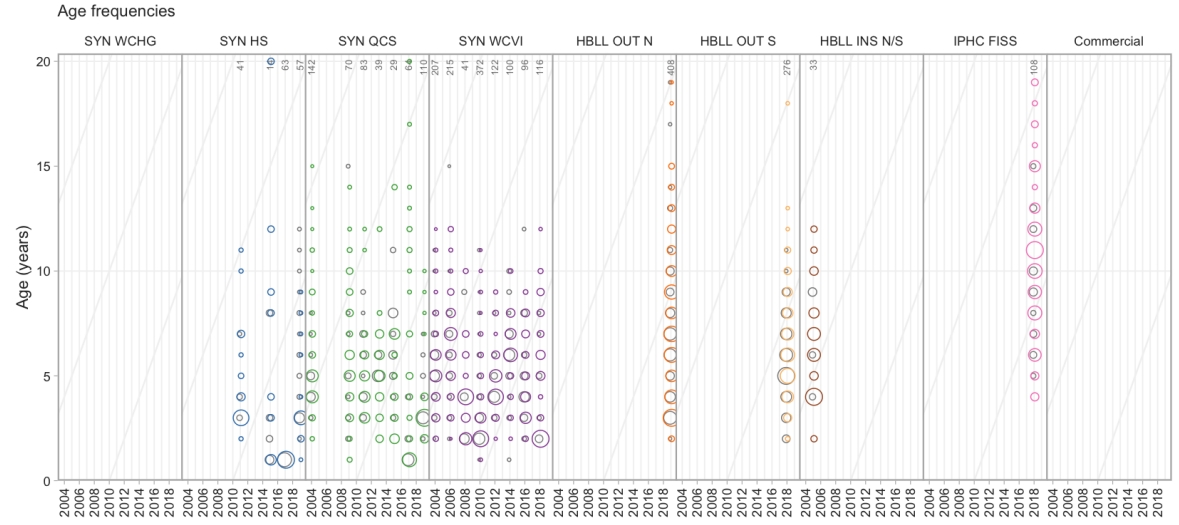
Ophiodon elongatus (467)
Order: Perciformes, Family: Hexagrammidae, FishBase, WoRMS
Last Research Documents: King et al. (2012), Holt et al. (2016a)
Last Science Advisory Reports: DFO (2011b), DFO (2015c)

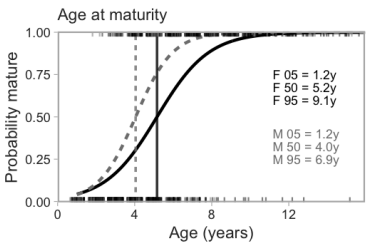


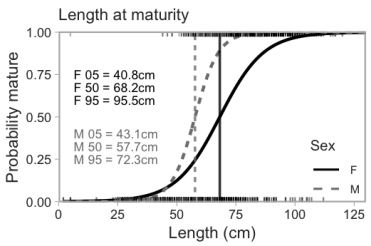

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

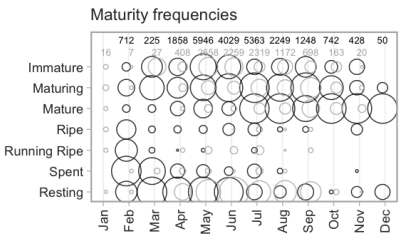
Growth
Length (cm)
Age (years)
Females
k = 0.15
linf = 114.5
t0 = -1.35
Males
k = 0.27
linf = 82.8
t0 = -0.86

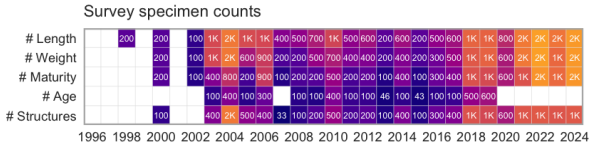
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -12.68
b = 3.25
Males
ln(a) = -12.89
b = 3.32
Sex
F
M

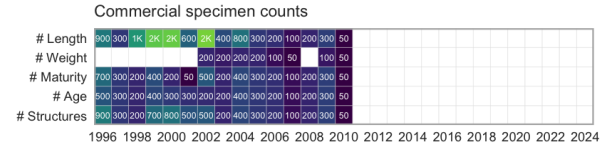

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 1.2y
F 50 = 5.2y
F 95 = 9.1y
M 05 = 1.2y
M 50 = 4.0y
M 95 = 6.9y


Length at maturity
Probability mature
Length (cm)
F 05 = 40.8cm
F 50 = 68.2cm
F 95 = 95.5cm
M 05 = 43.1cm
M 50 = 57.7cm
M 95 = 72.3cm
Sex
F
M

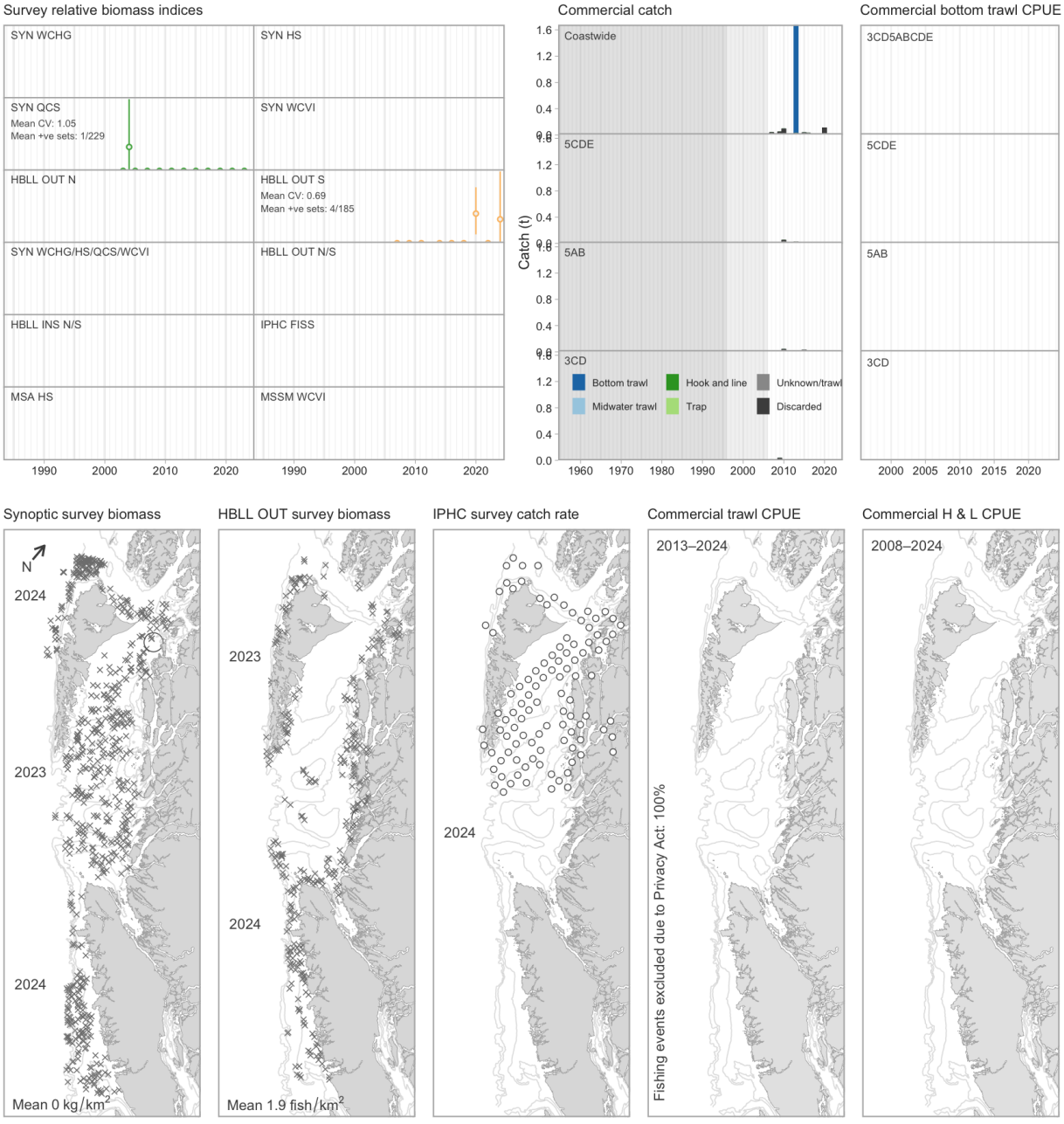

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

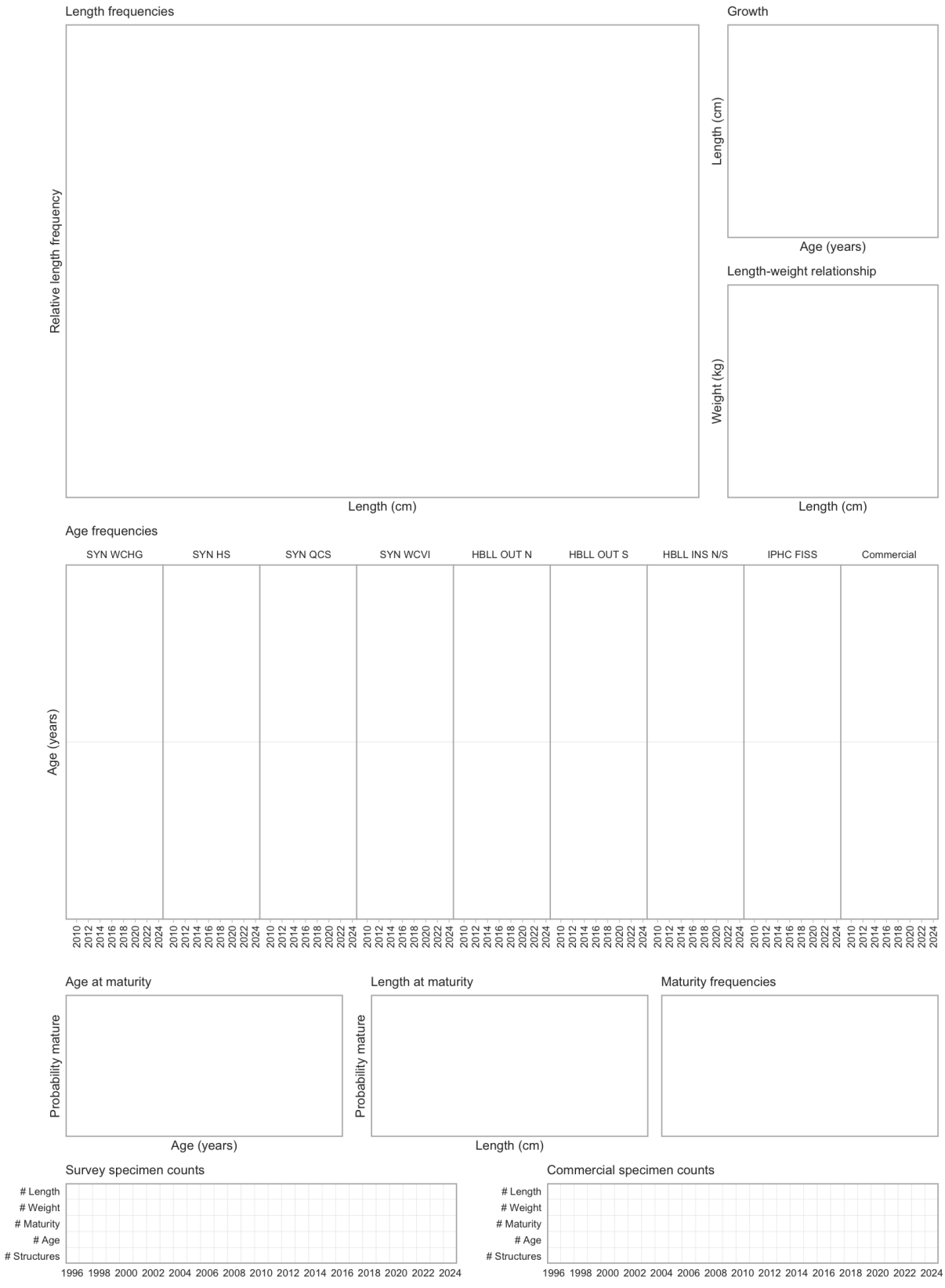

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.85 Spinyhead Sculpin

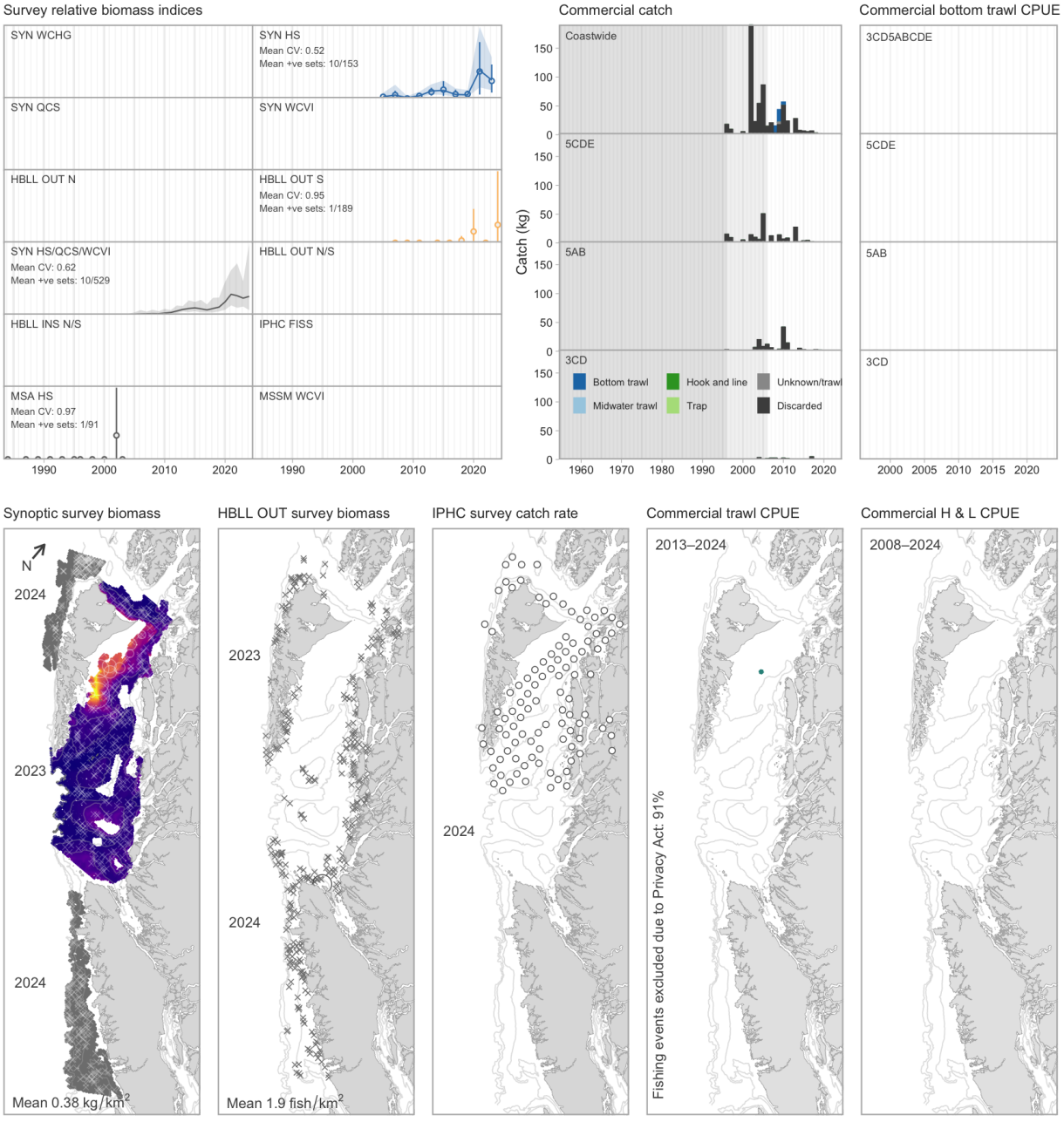
Dasycottus setiger (497)
Order: Perciformes, Family: Psychrolutidae, FishBase, WoRMS

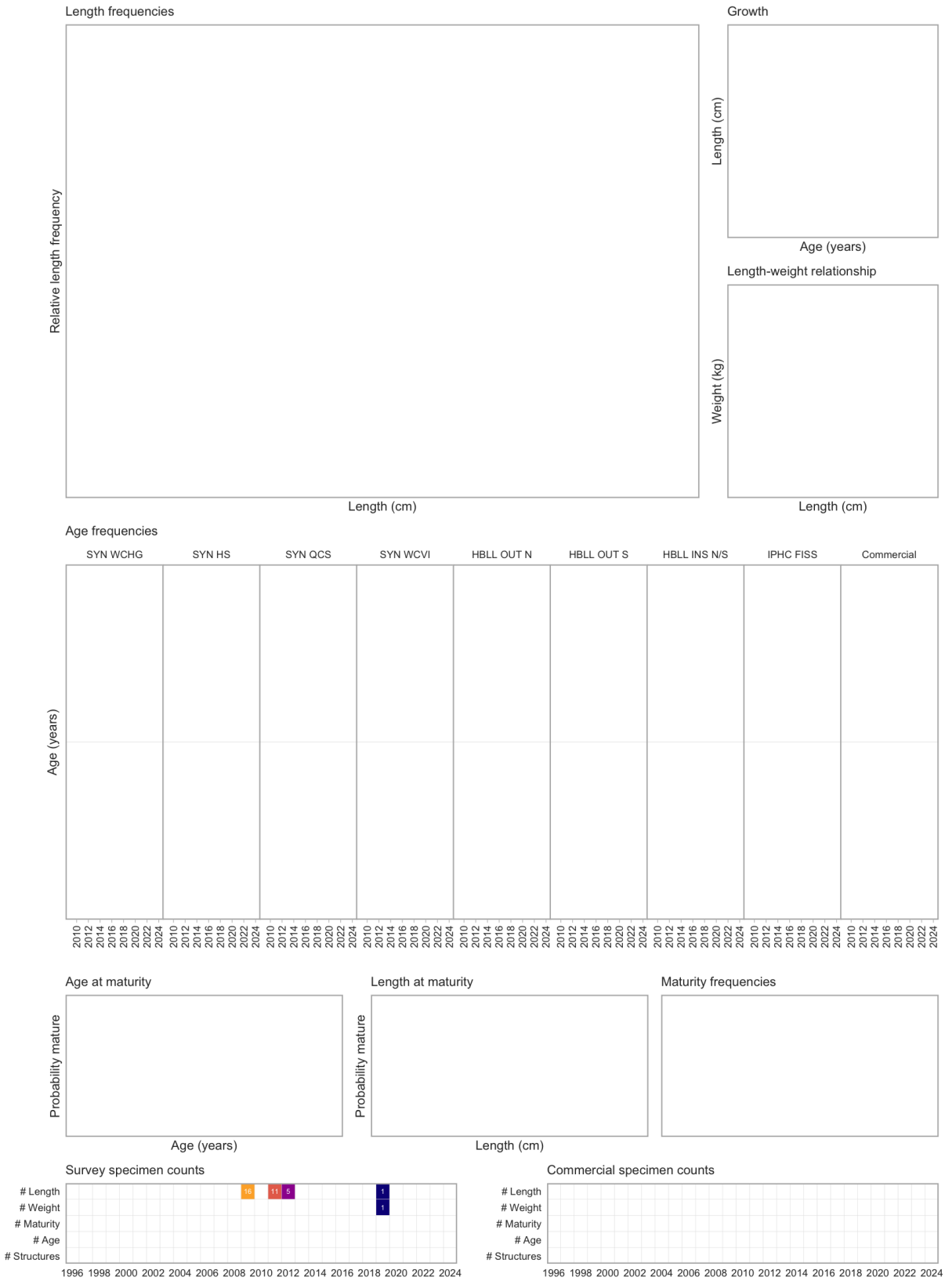



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.86 Buffalo Sculpin

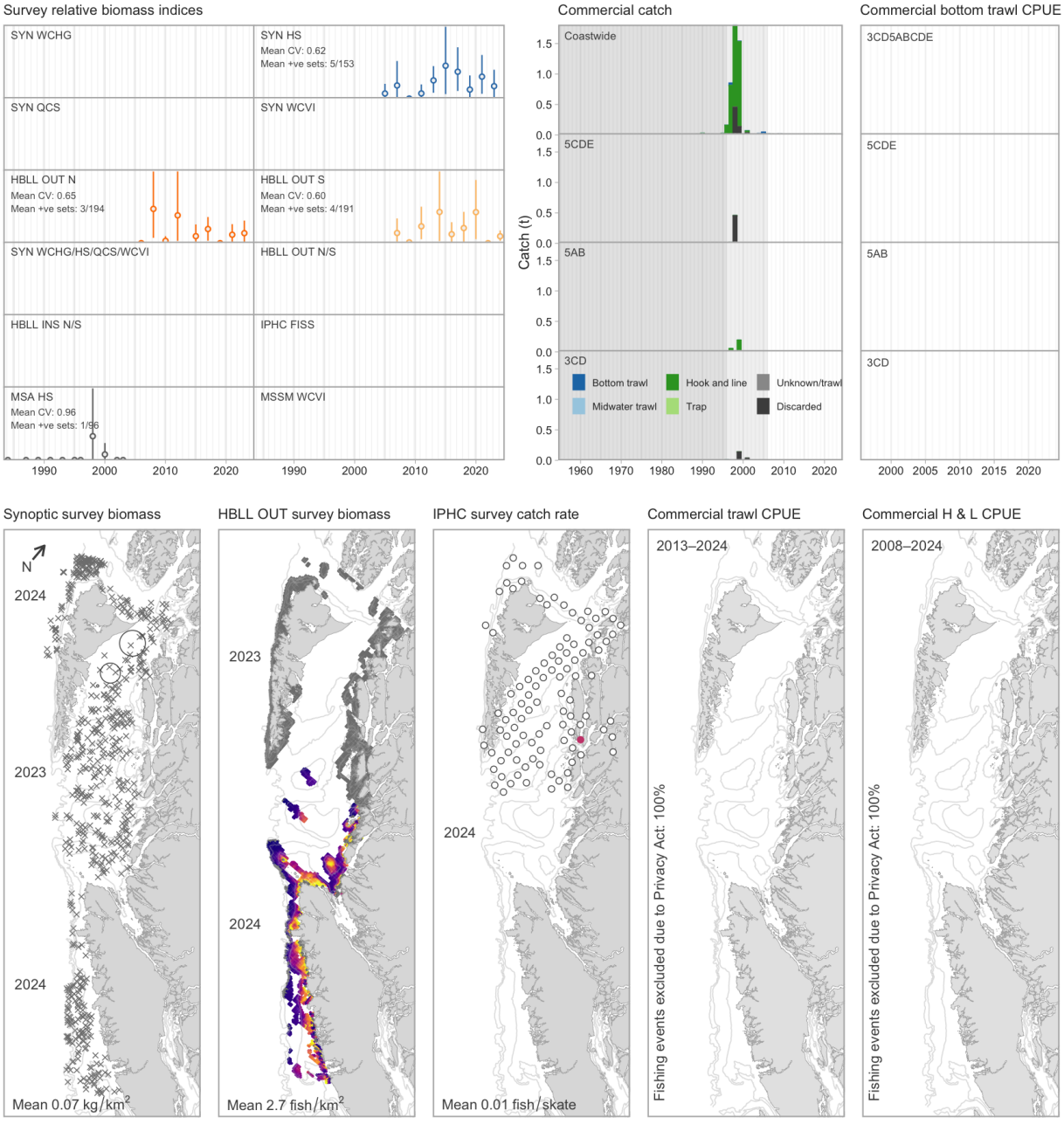
Enophrys bison (499)
Order: Perciformes, Family: Cottidae, FishBase, WoRMS

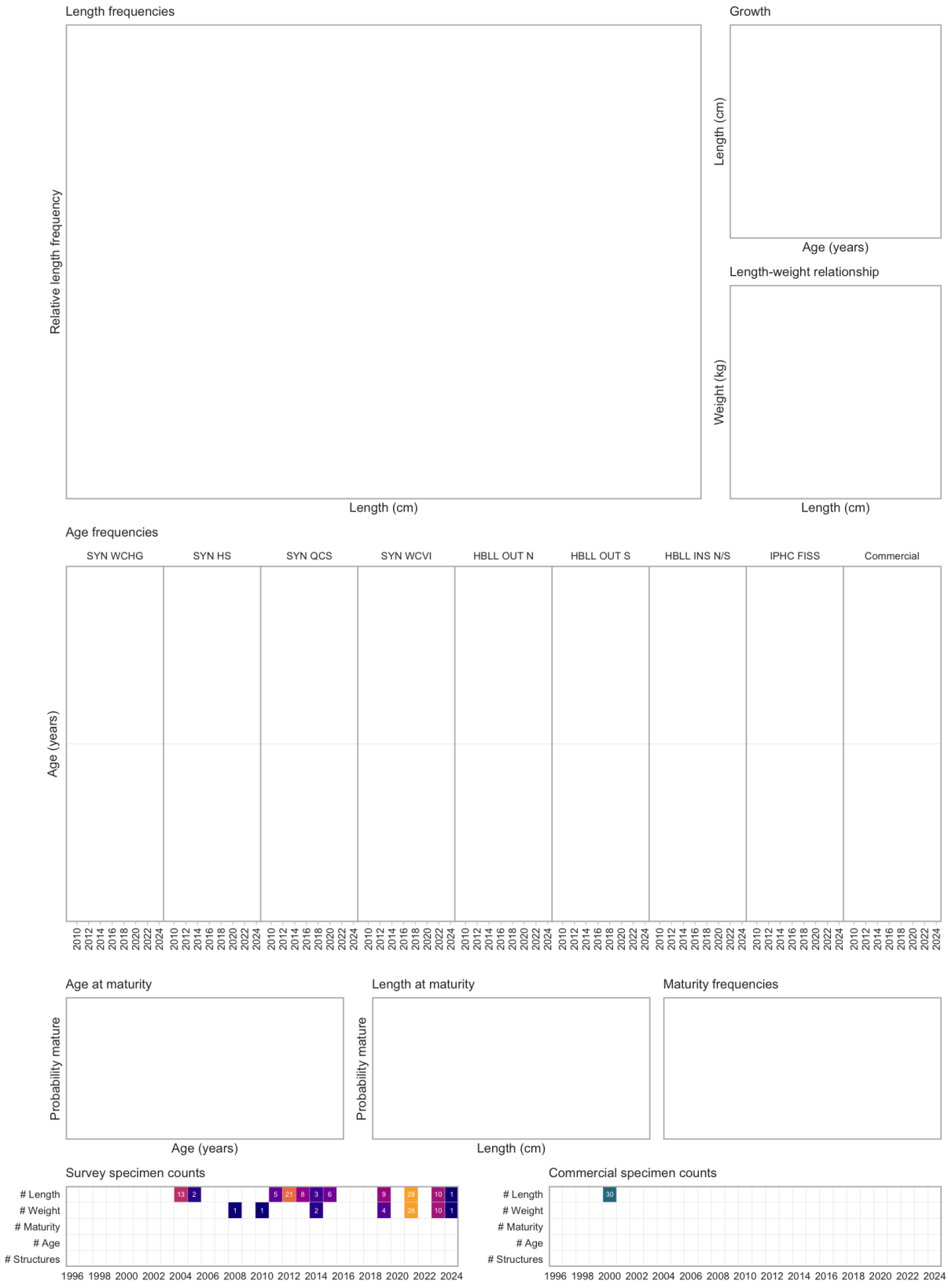



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
16
11
5
1
1
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.87 Red Irish Lord

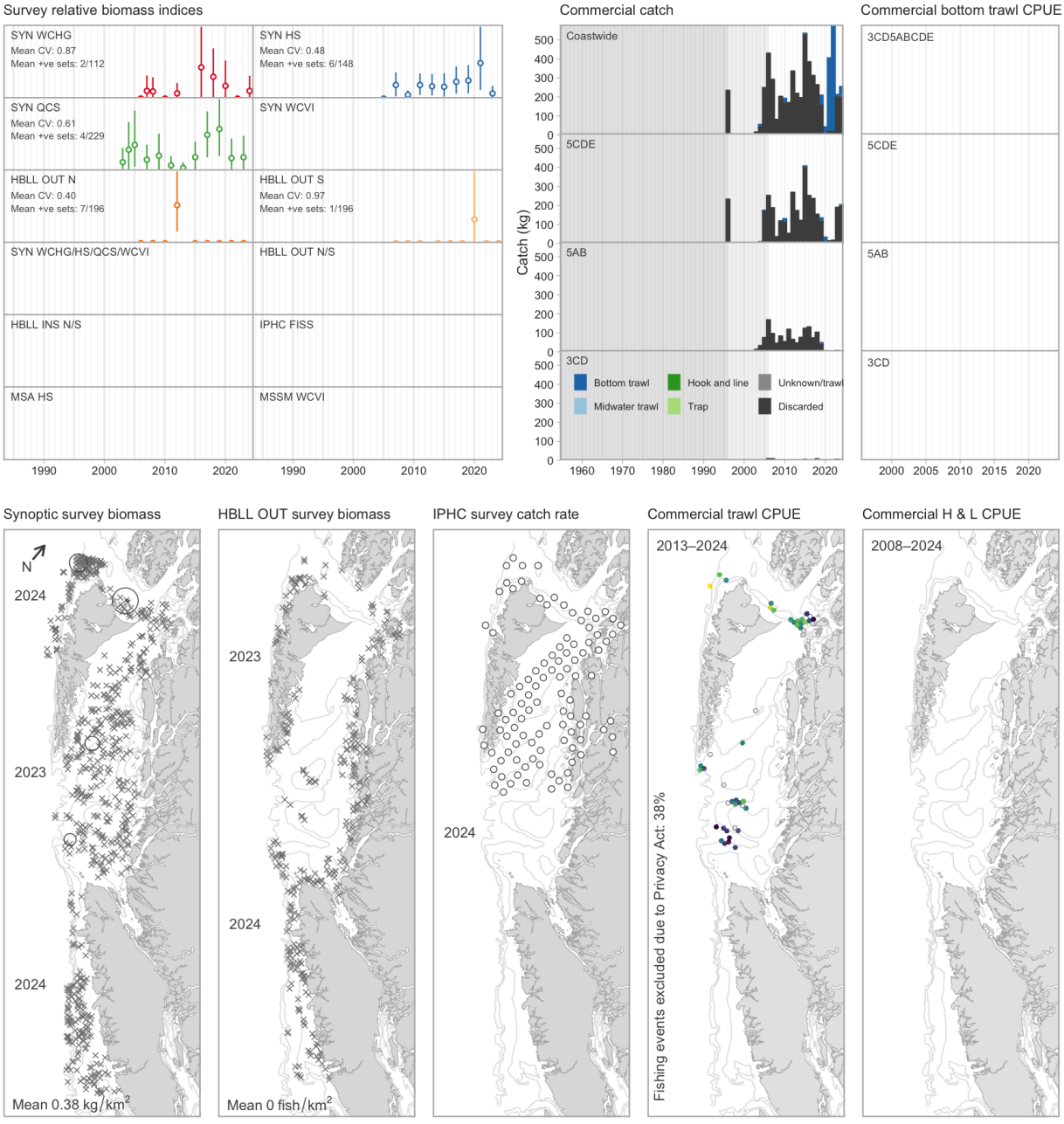
Hemilepidotus hemilepidotus (502)
Order: Perciformes, Family: Cottidae, FishBase, WoRMS

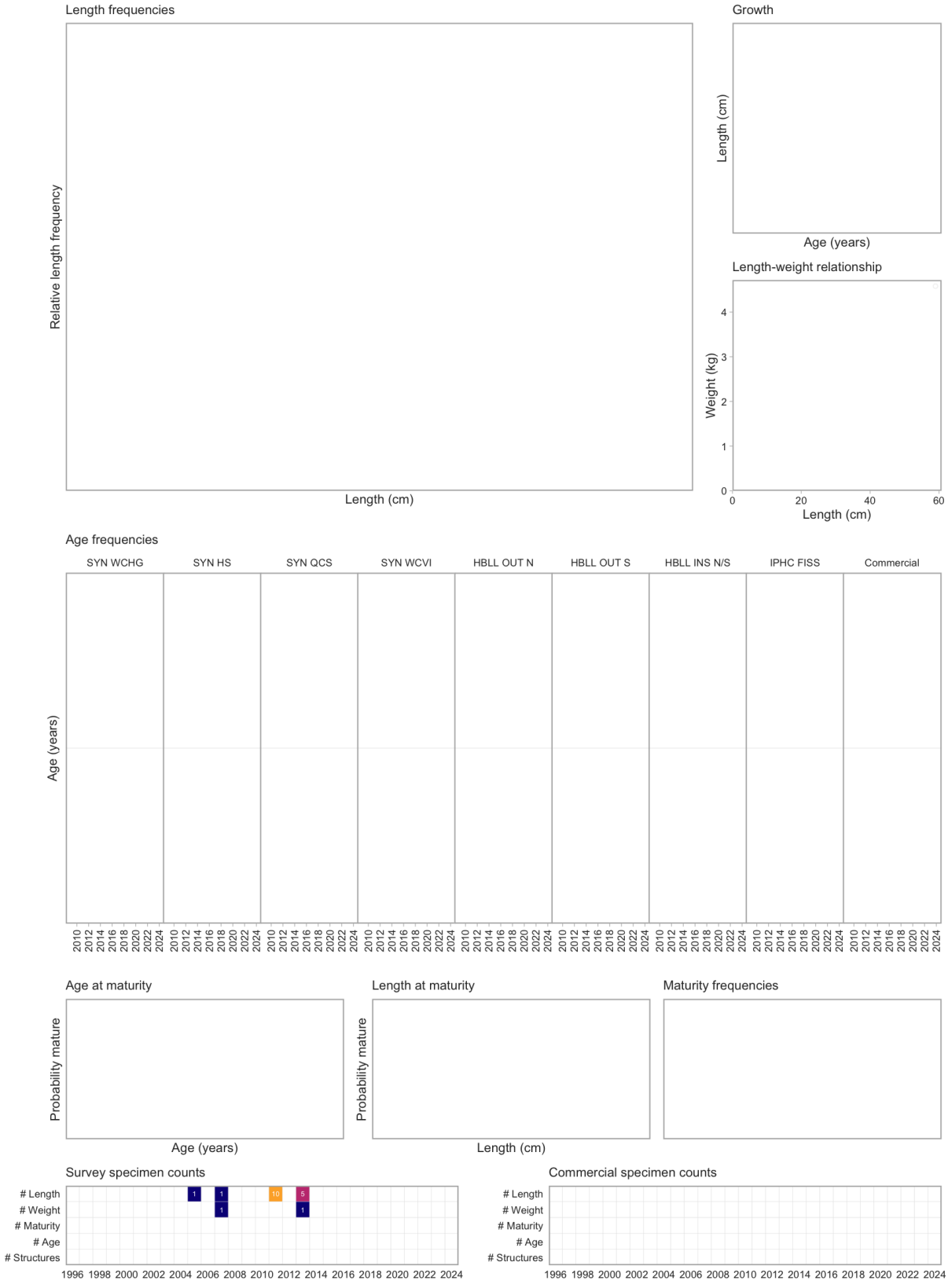



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.88 Bigmouth Sculpin

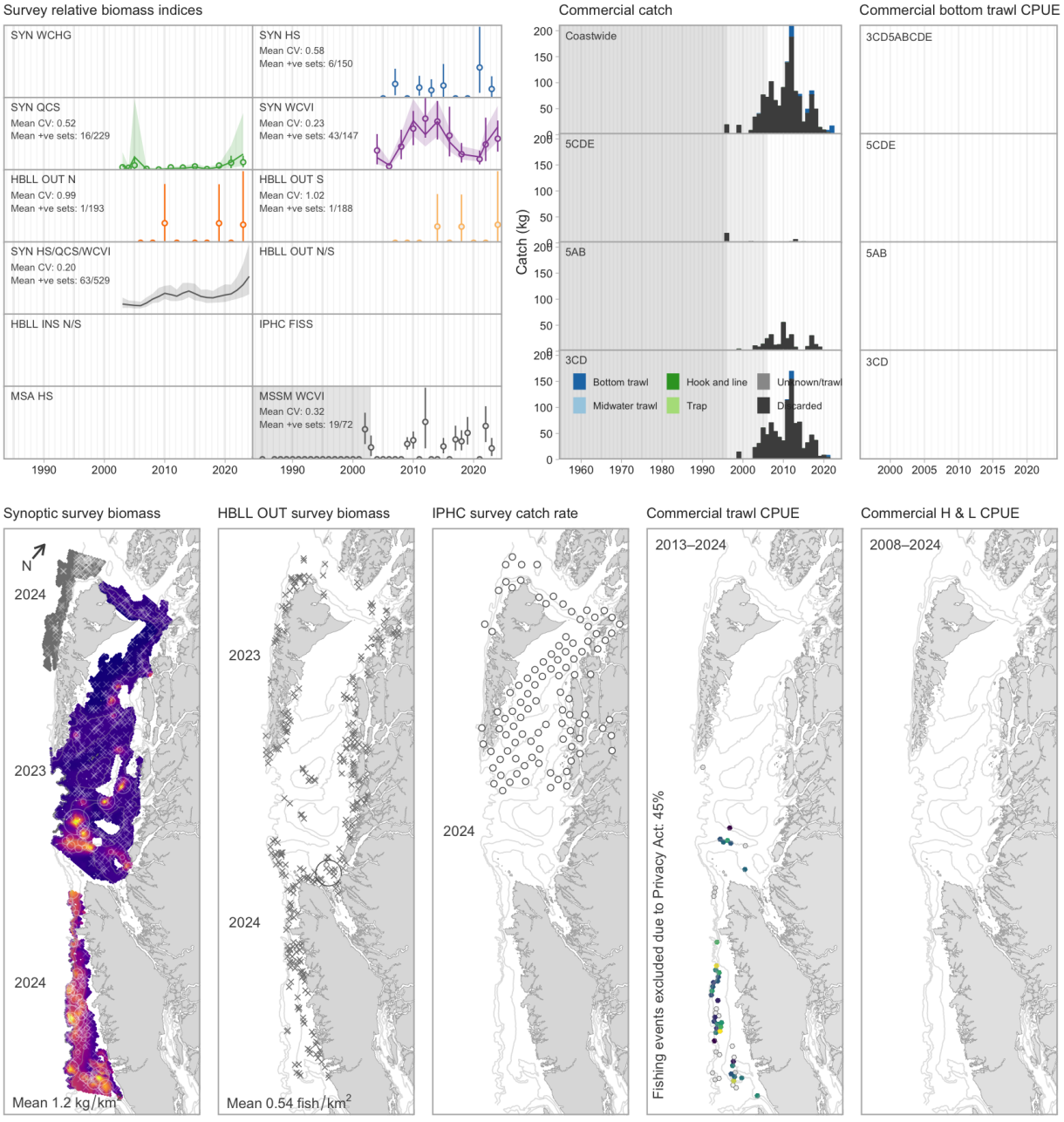
Hemitripterus bolini (505)
Order: Perciformes, Family: Hemitripteridae, FishBase, WoRMS

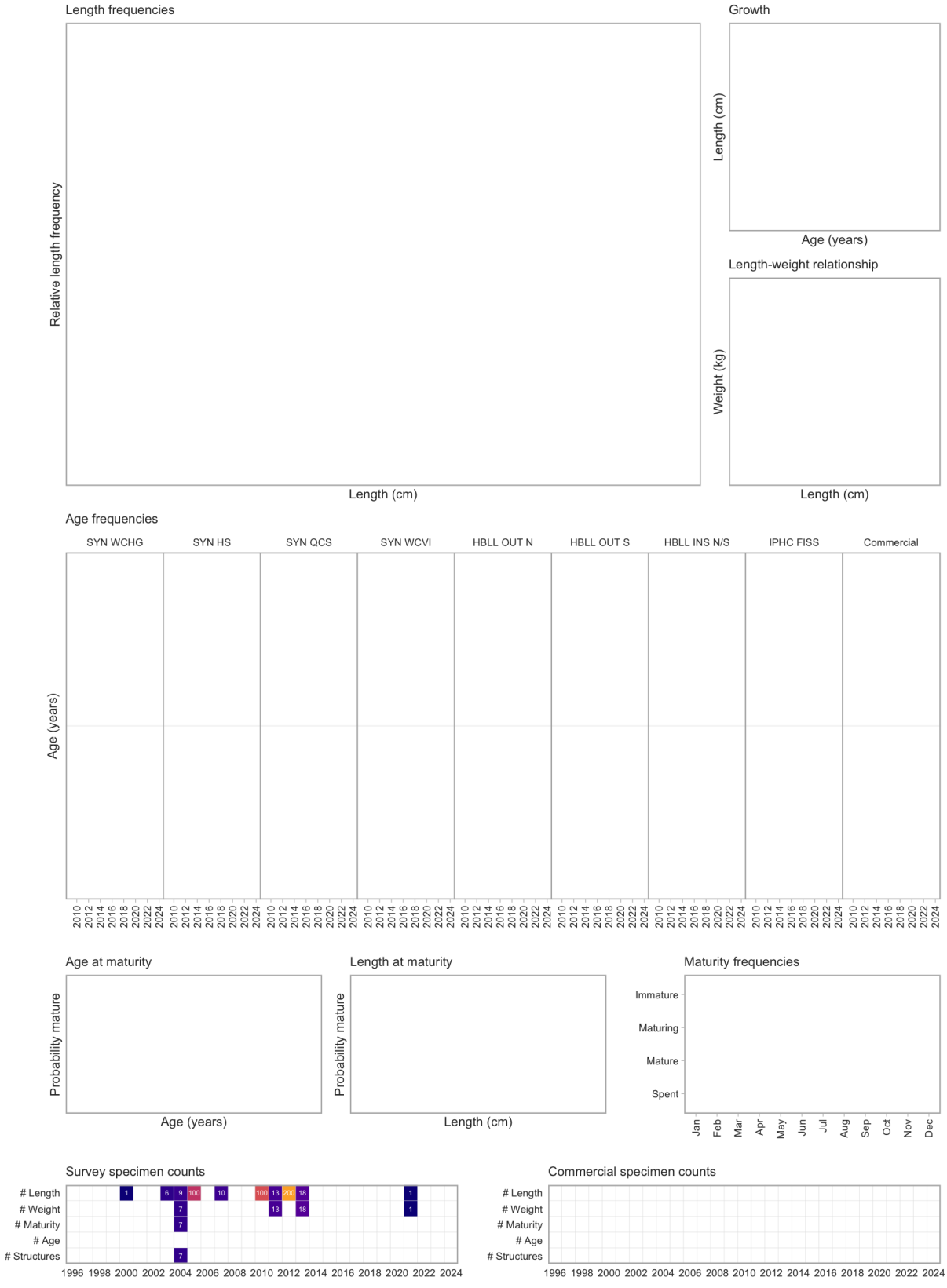



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
0
1
2
3
4
0
20
40
60
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
2010
2012
2014
2016
2018
2020
2022
2024
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1
1
1
10
5
1
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.89 Threadfin Sculpin

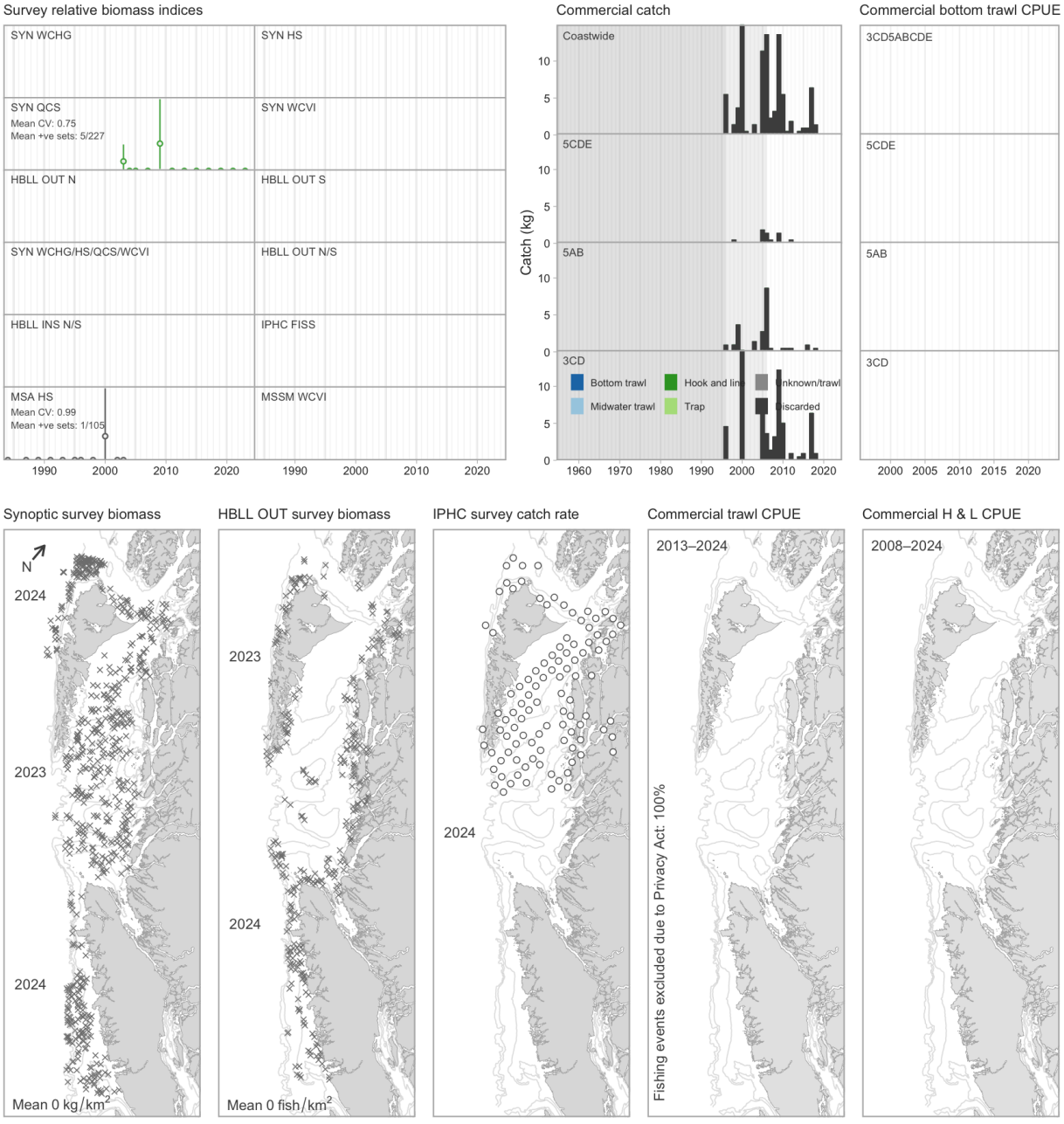
Icelinus filamentosus (510)
Order: Perciformes, Family: Cottidae, FishBase, WoRMS

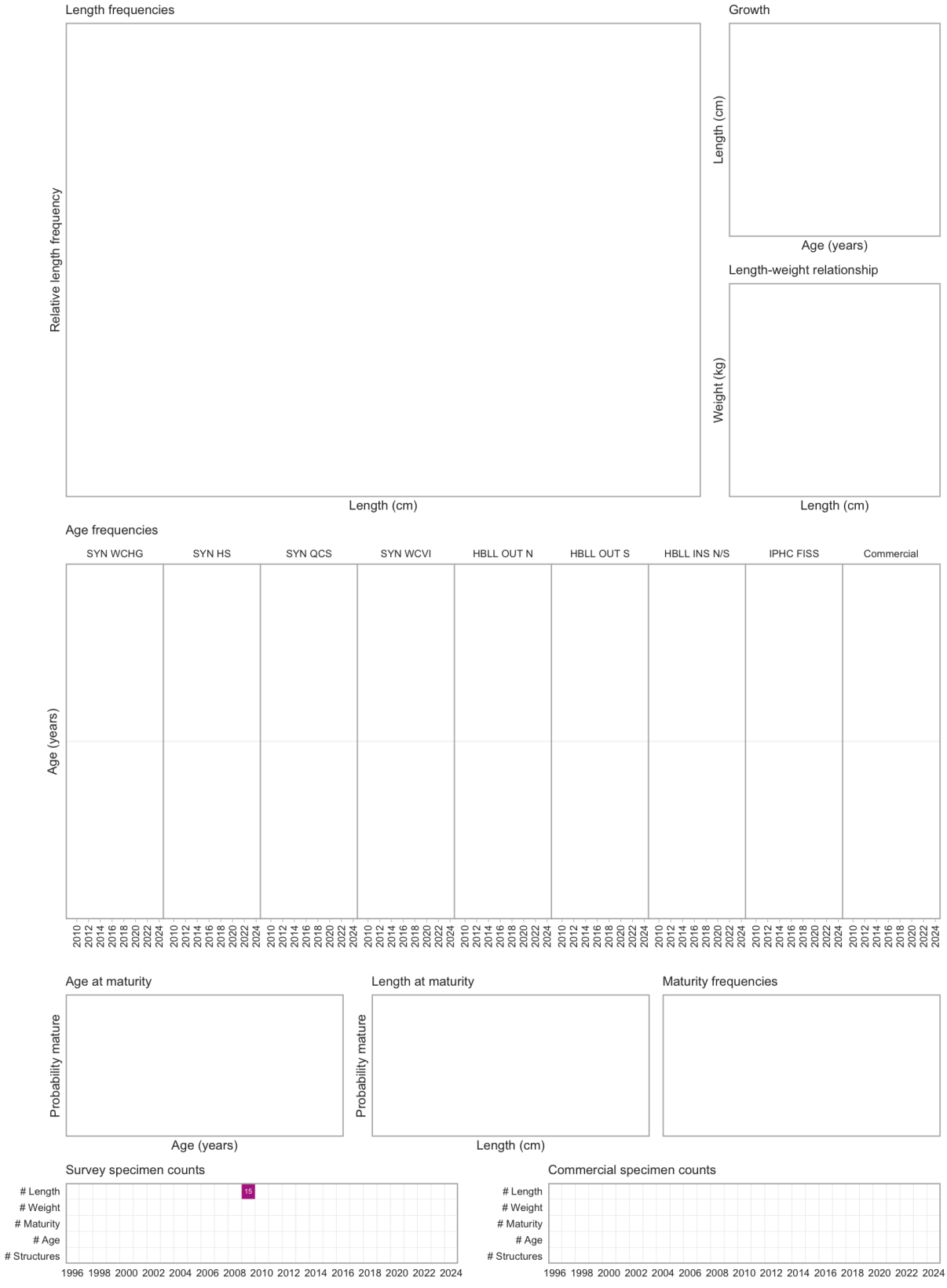



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Spent
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.90 Spotfin Sculpin

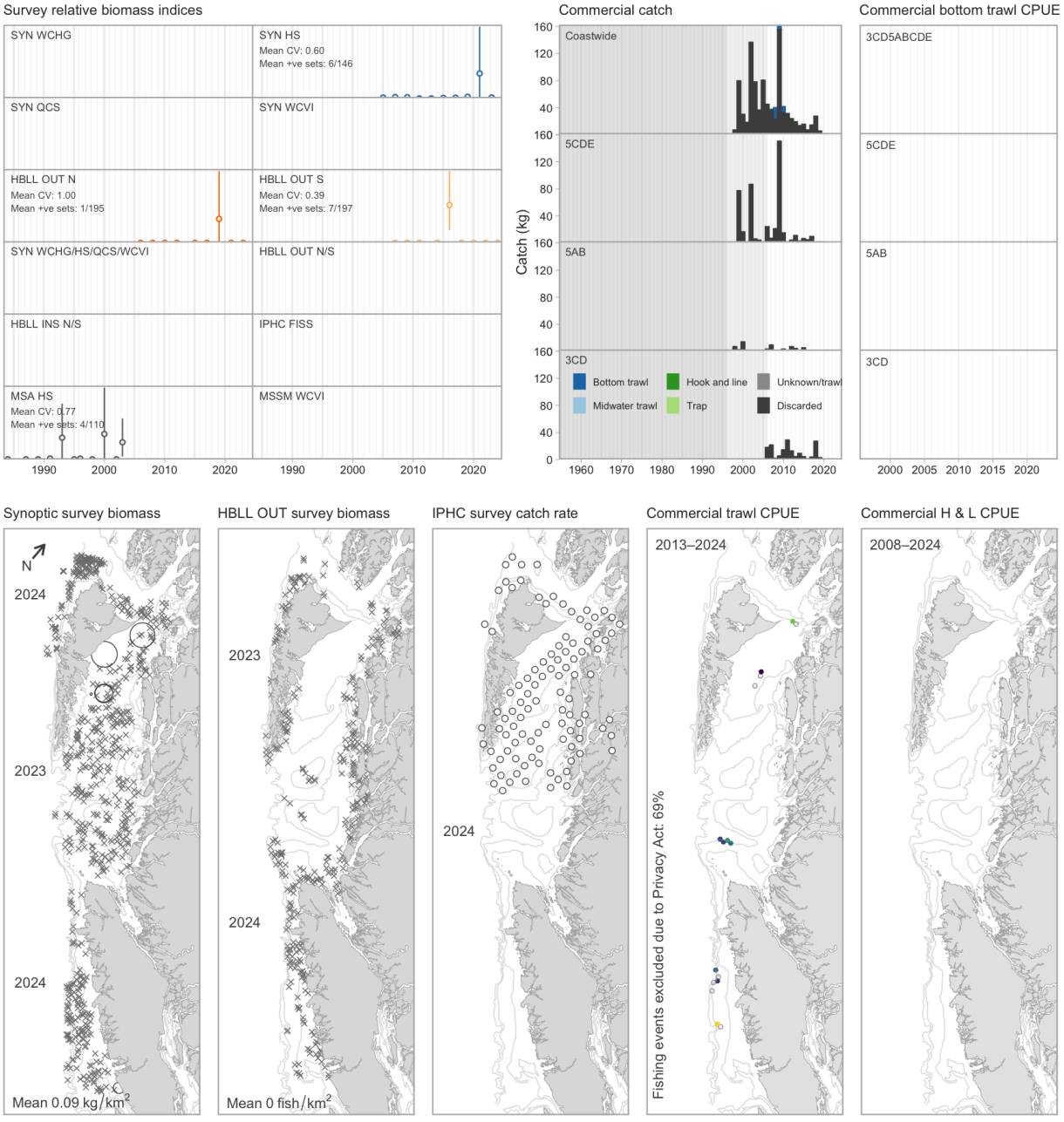
Icelinus tenuis (513)
Order: Perciformes, Family: Cottidae, FishBase, WoRMS

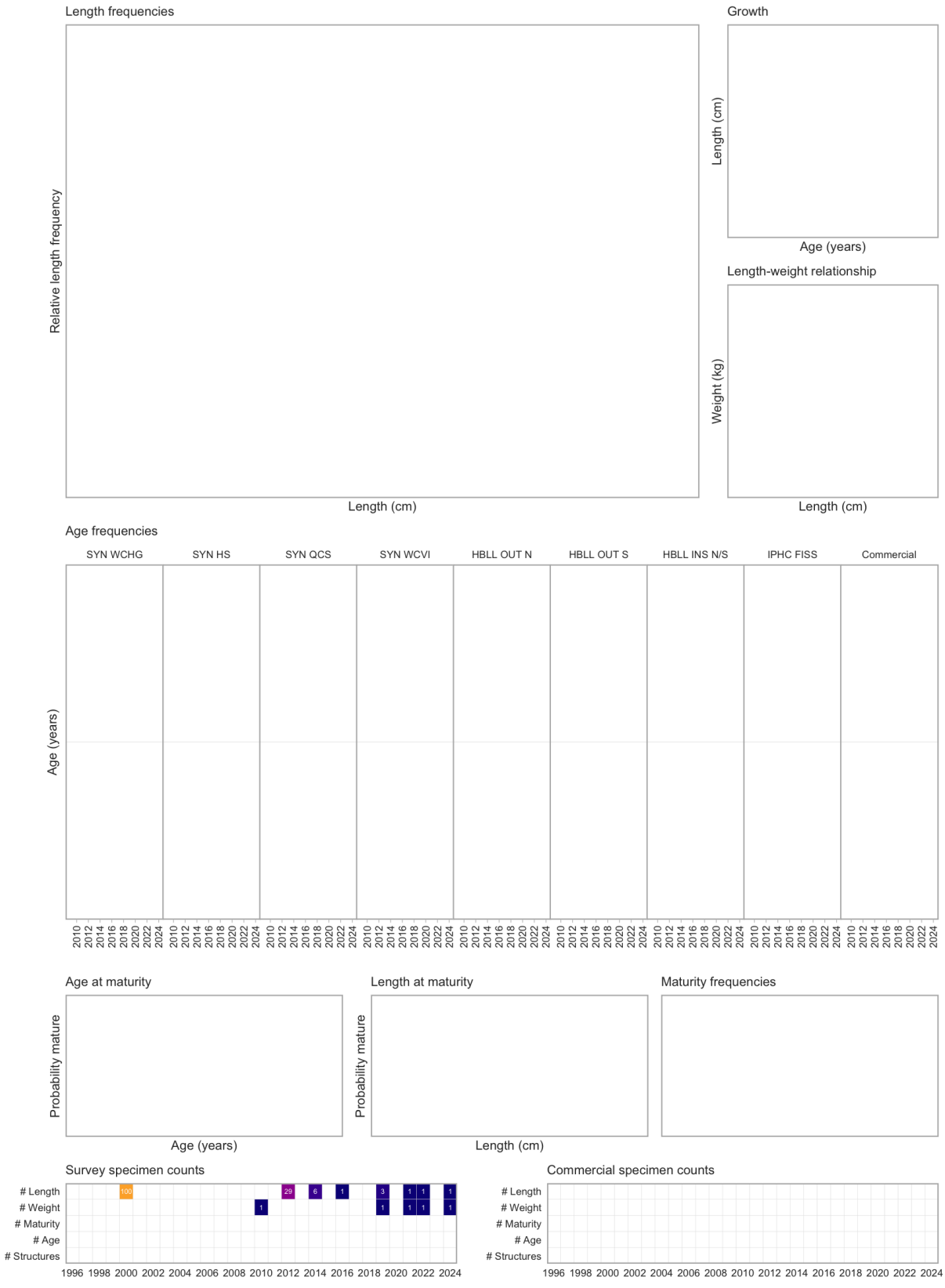



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
15
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.91 Pacific Staghorn Sculpin

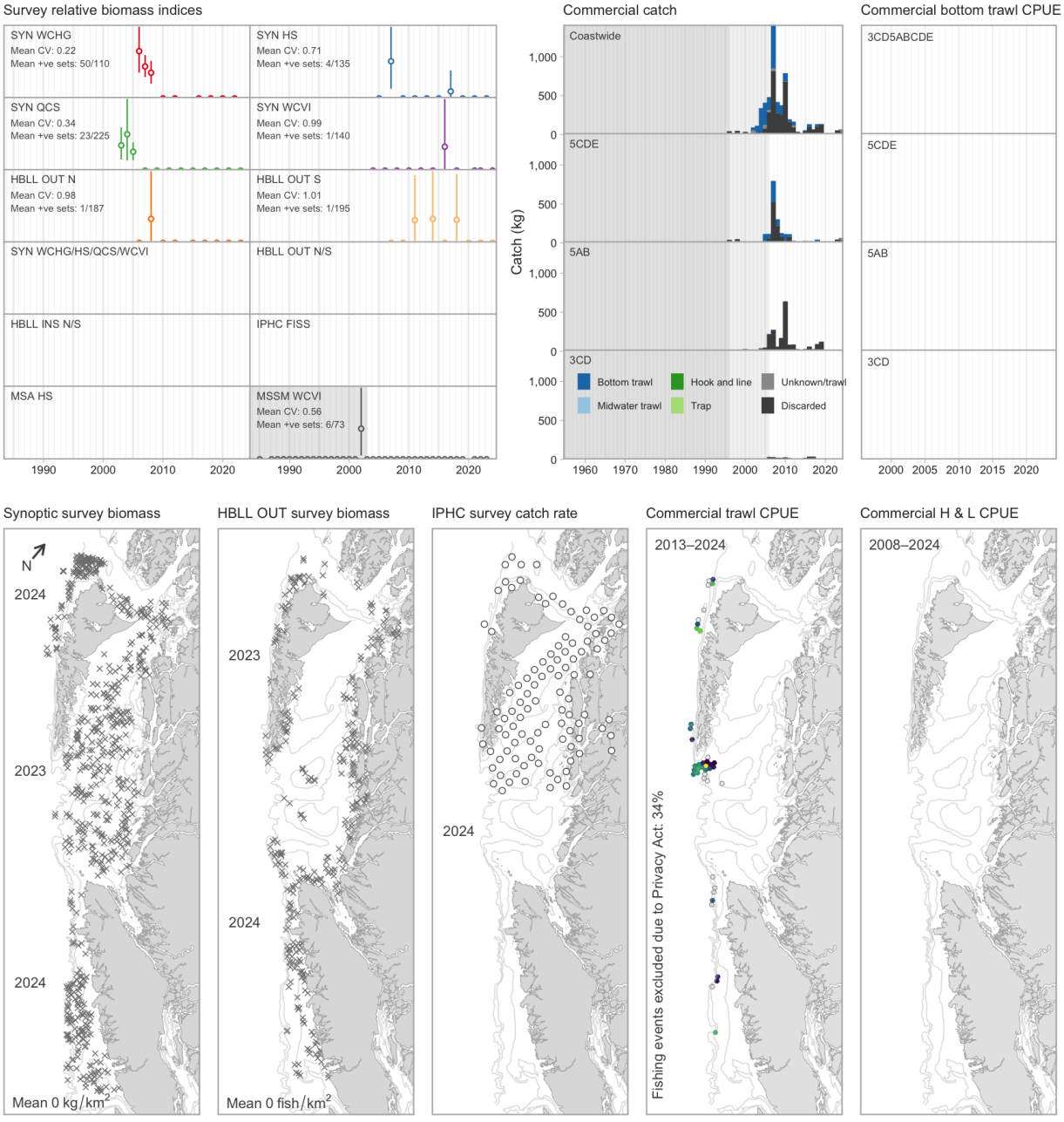
Leptocottus armatus (518)
Order: Perciformes, Family: Cottidae, FishBase, WoRMS

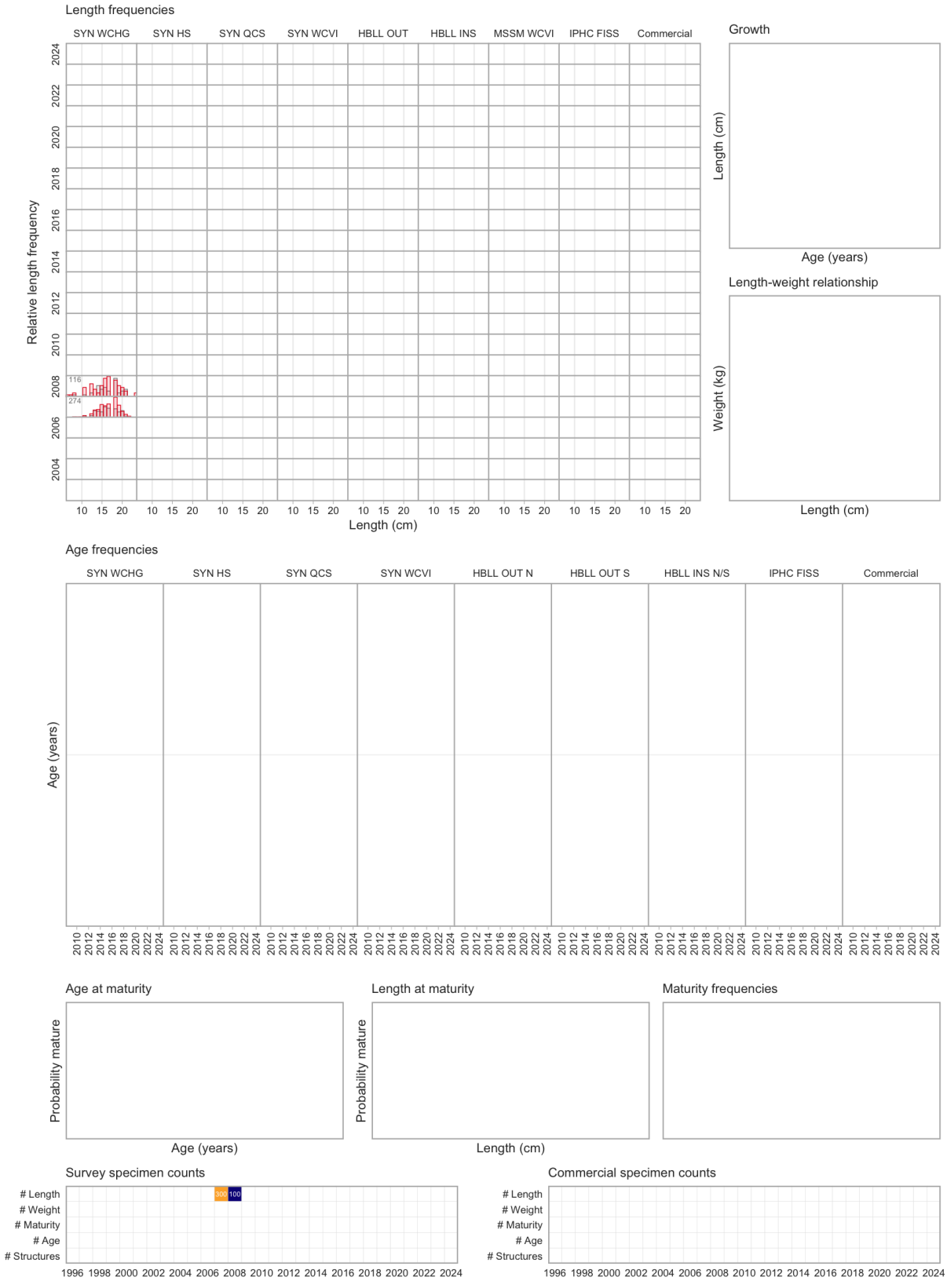



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.92 Blackfin Sculpin

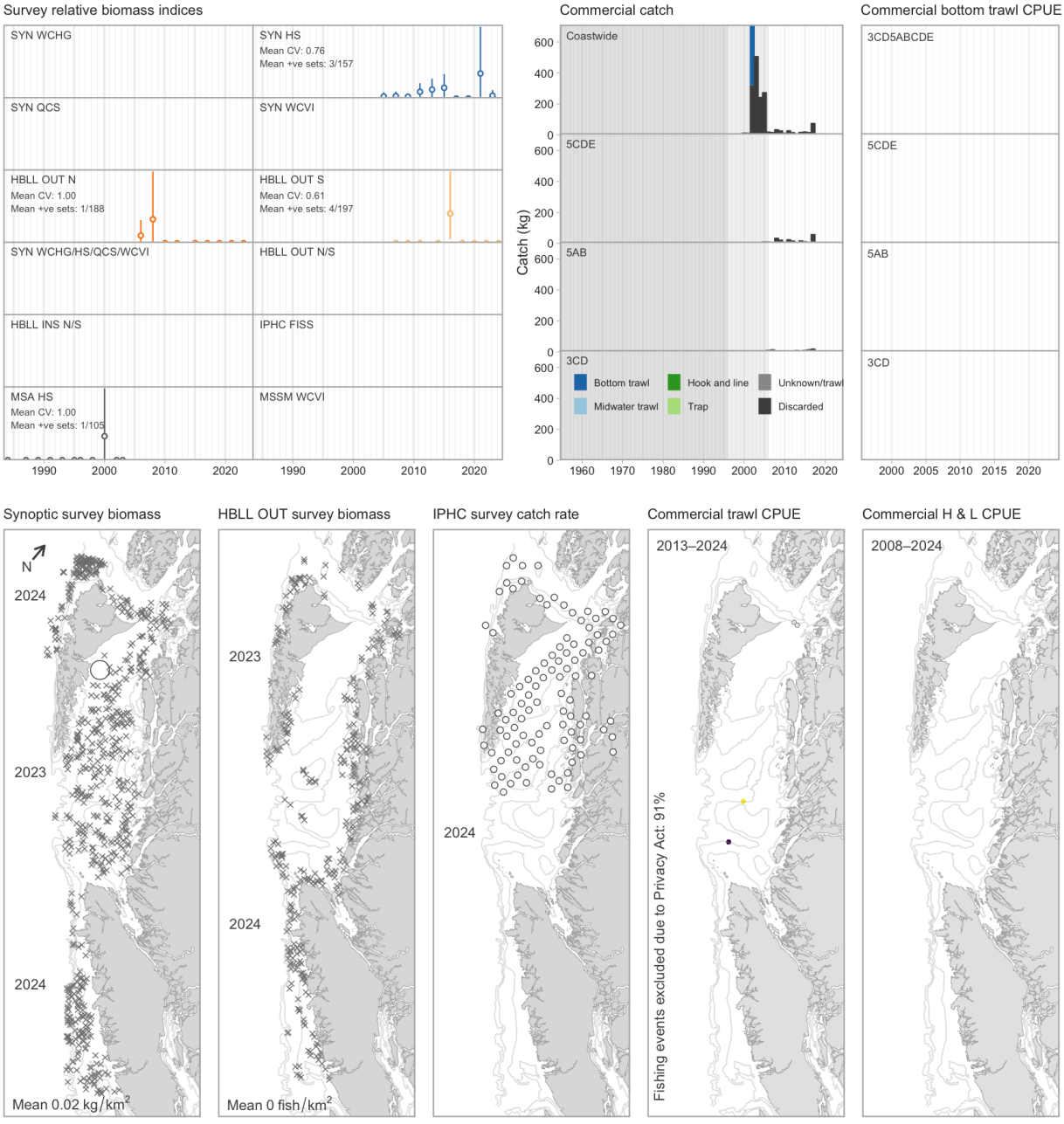
Malacocottus kincaidi (519)
Order: Perciformes, Family: Psychrolutidae, FishBase, WoRMS

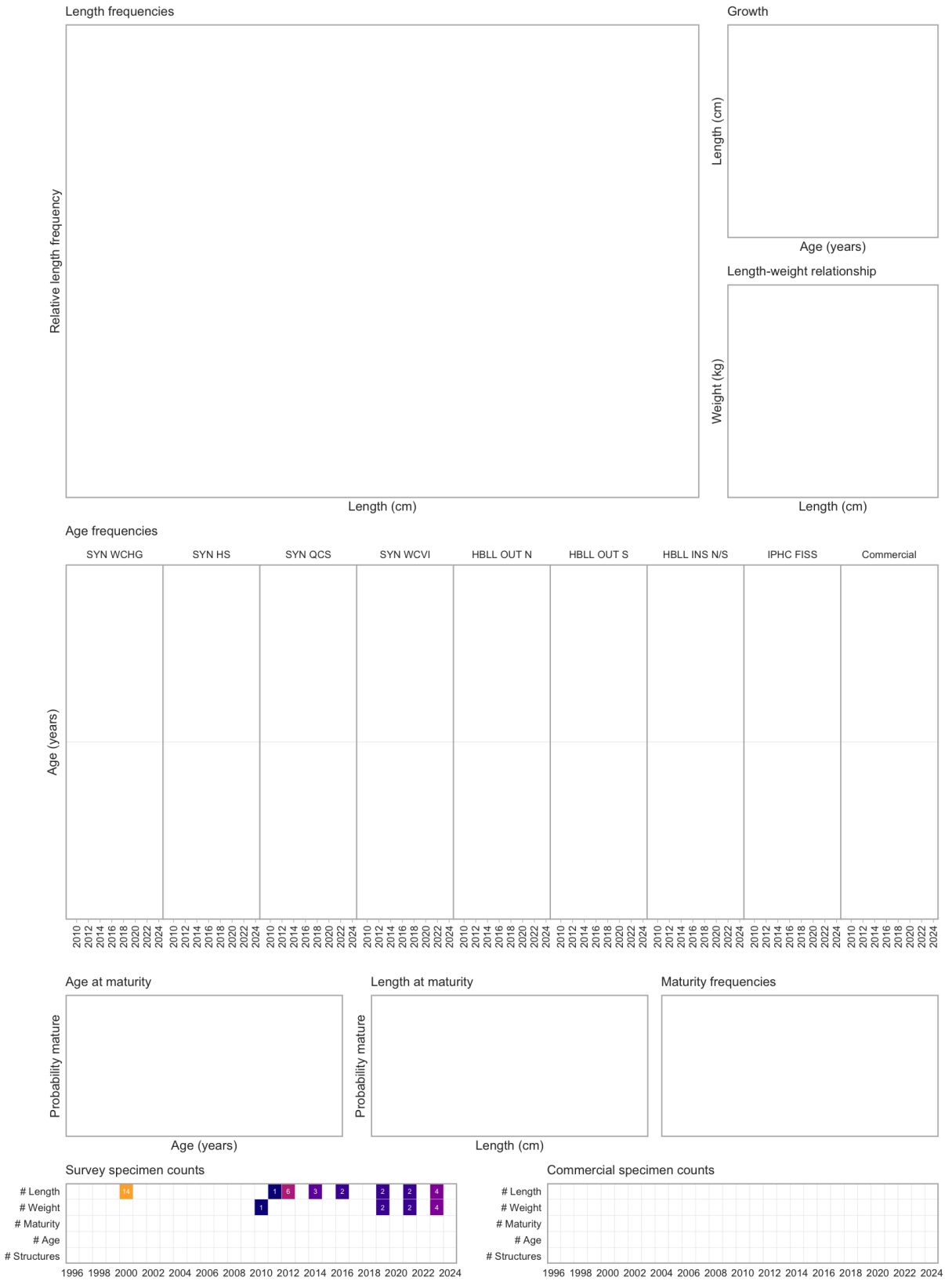



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.93 Great Sculpin

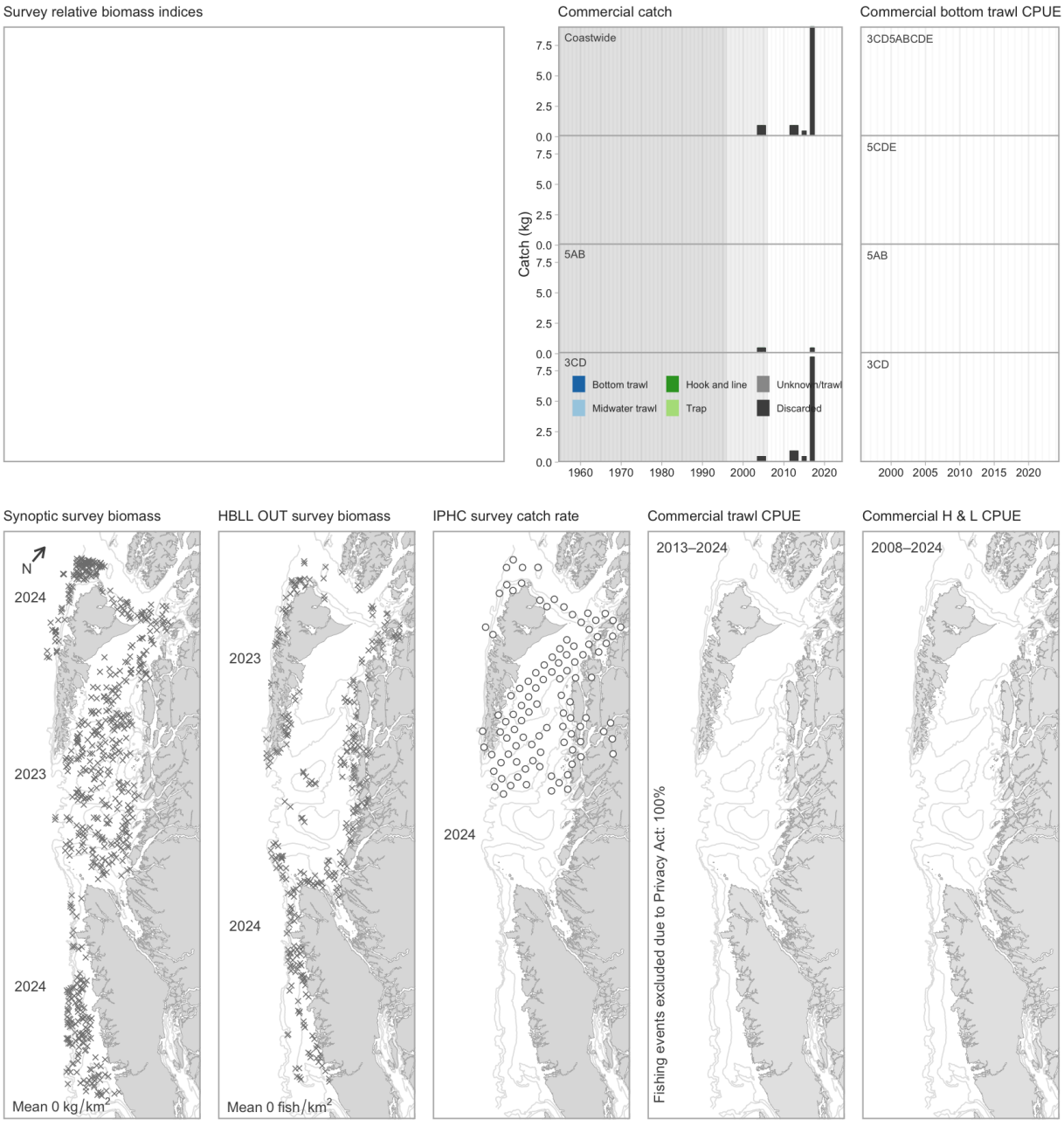
Myoxocephalus polyacanthocephalus (521)
Order: Perciformes, Family: Cottidae, FishBase, WoRMS

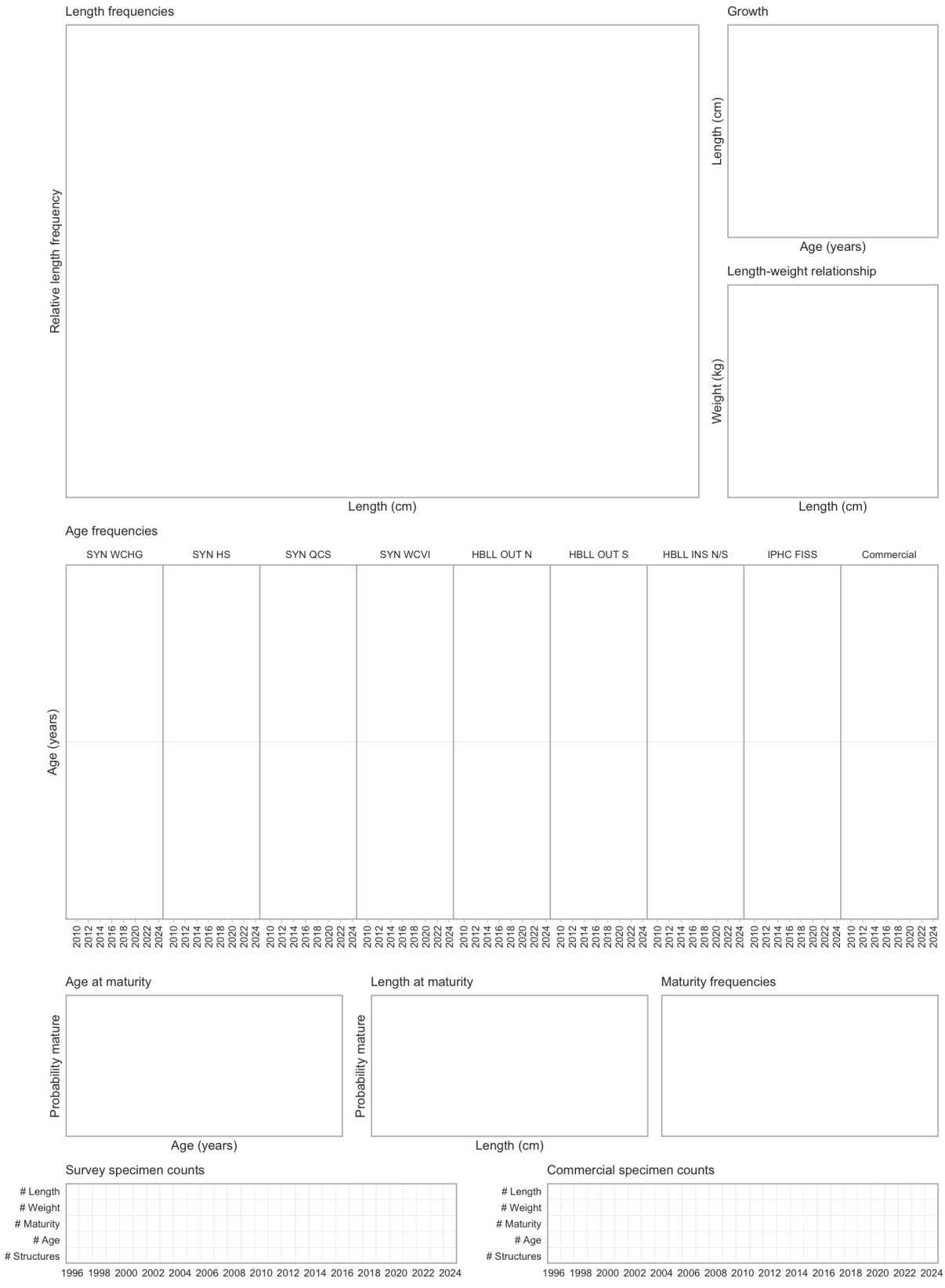



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.94 Thornback Sculpin

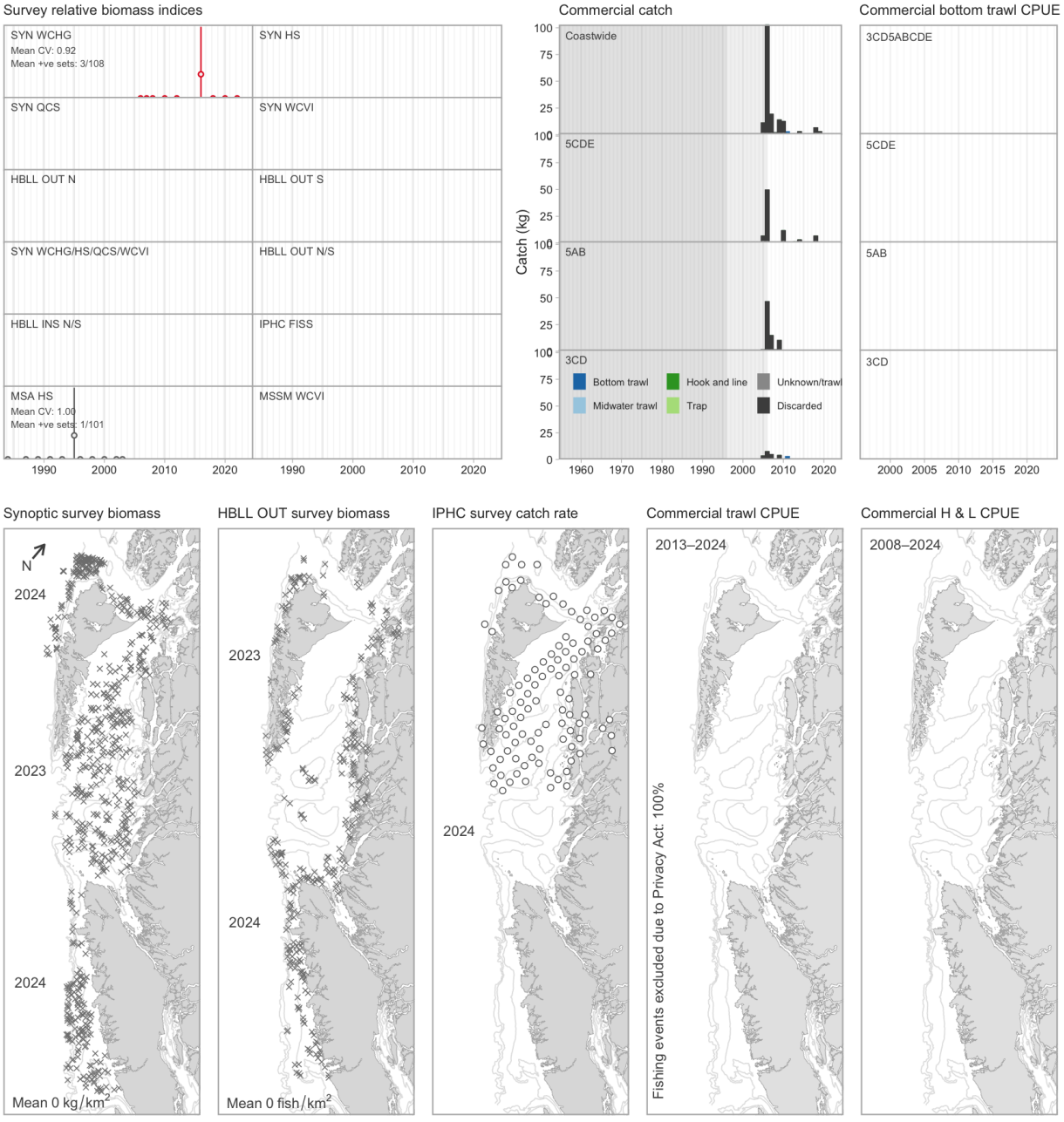
Paricelinus hopliticus (532)
Order: Perciformes, Family: Jordaniidae, FishBase, WoRMS

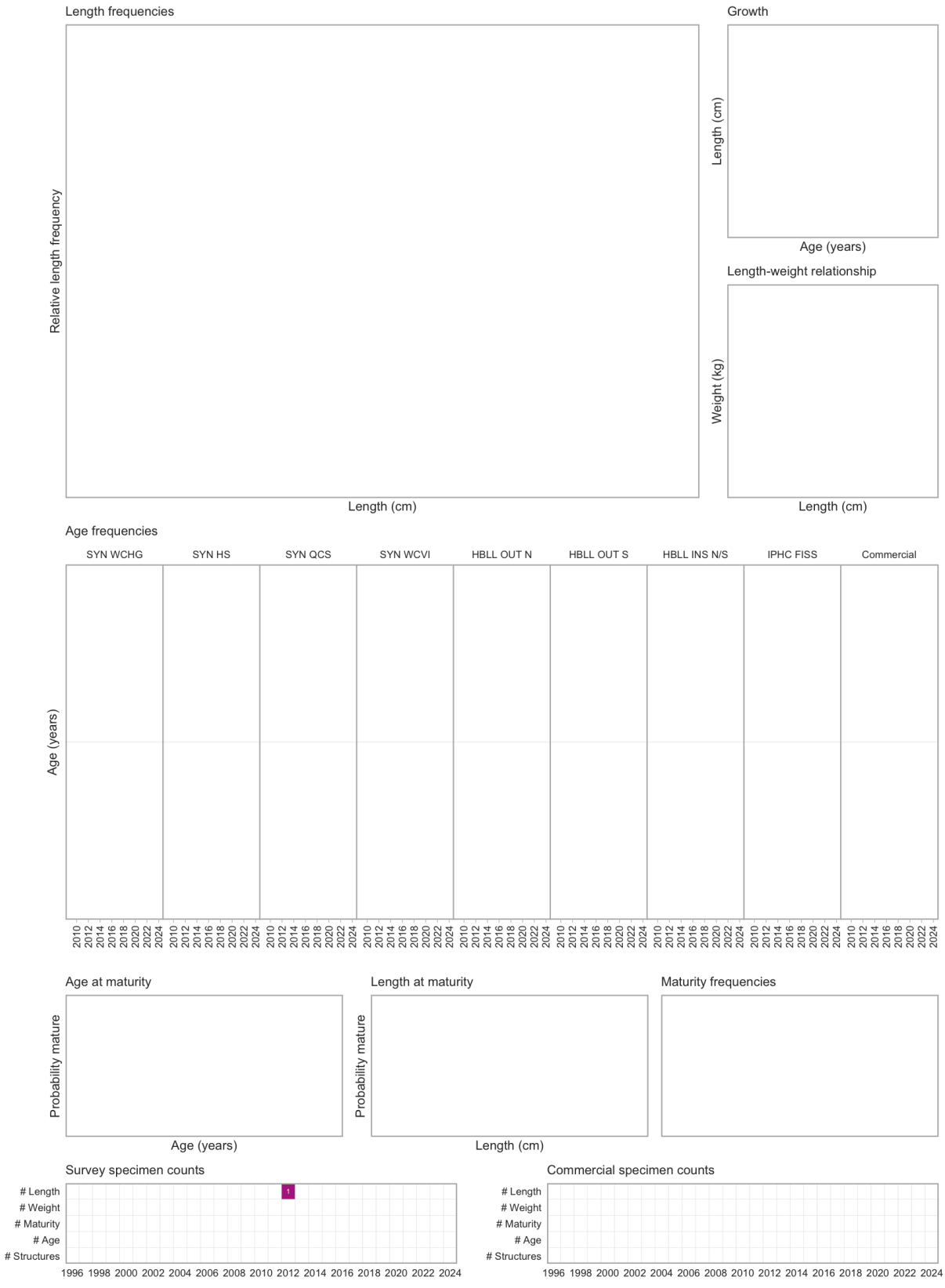



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.95 Giant Blobsculpin

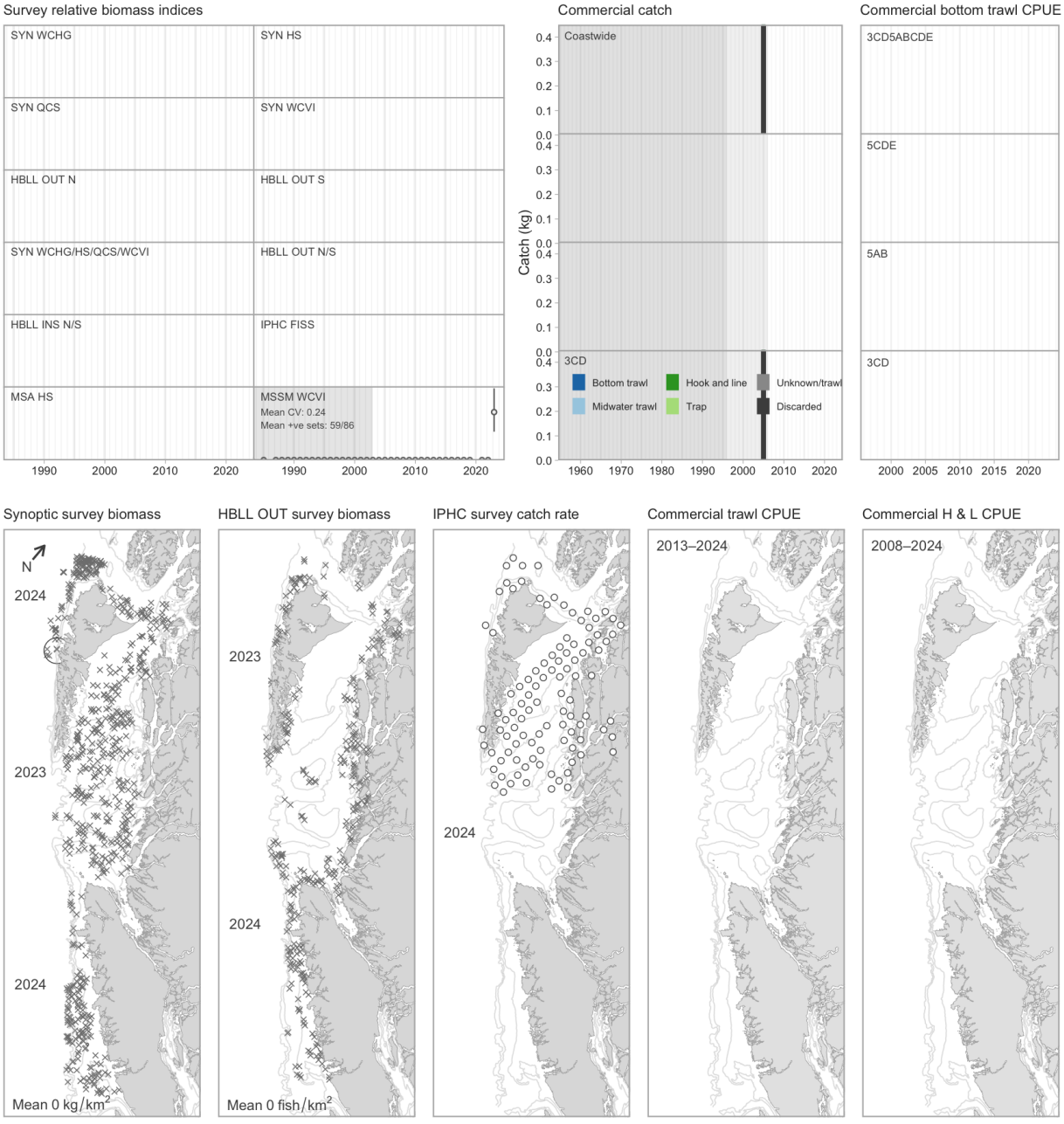
Psychrolutes phrictus (534)
Order: Perciformes, Family: Psychrolutidae, FishBase, WoRMS

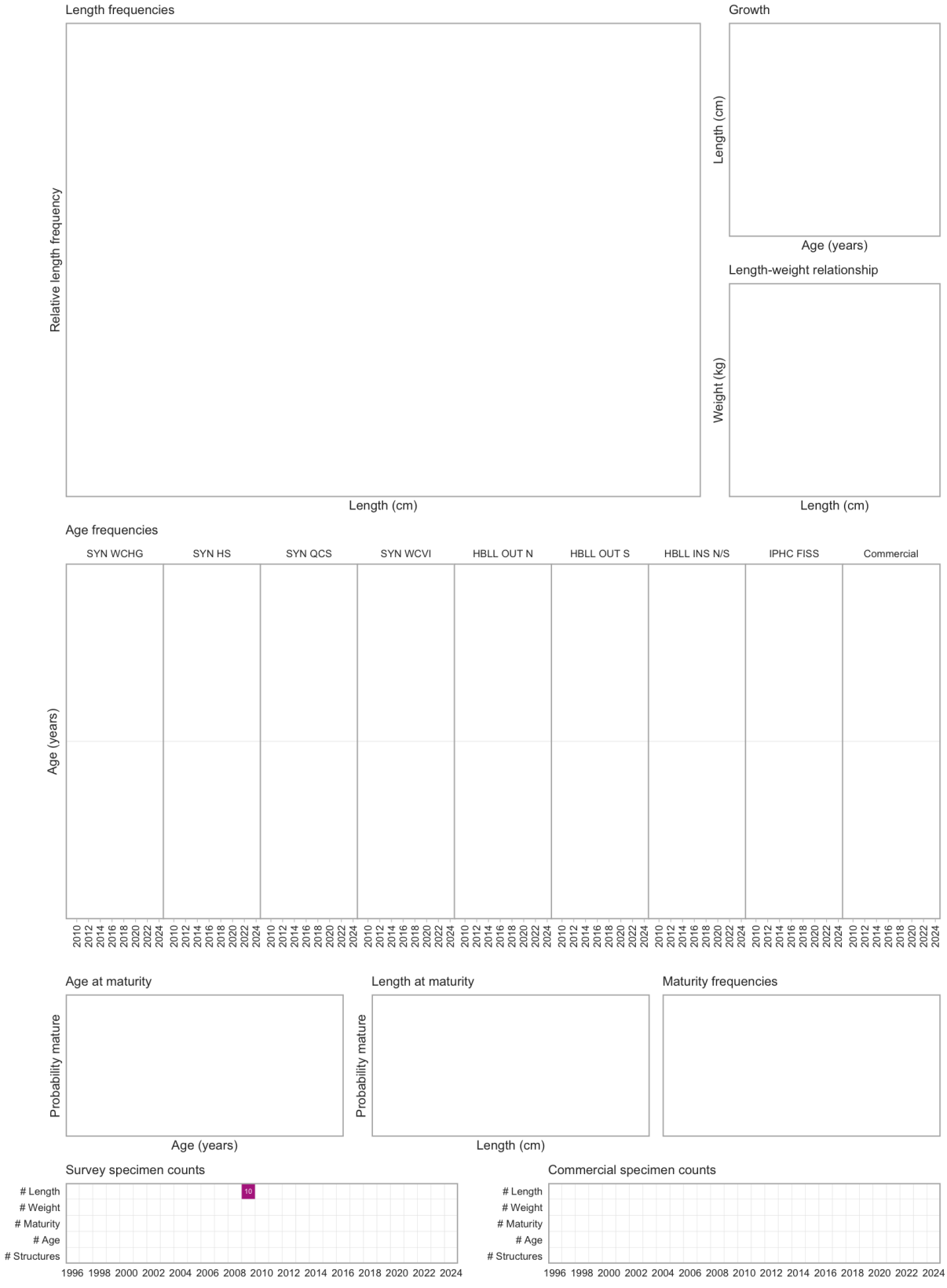



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.96 Slim Sculpin

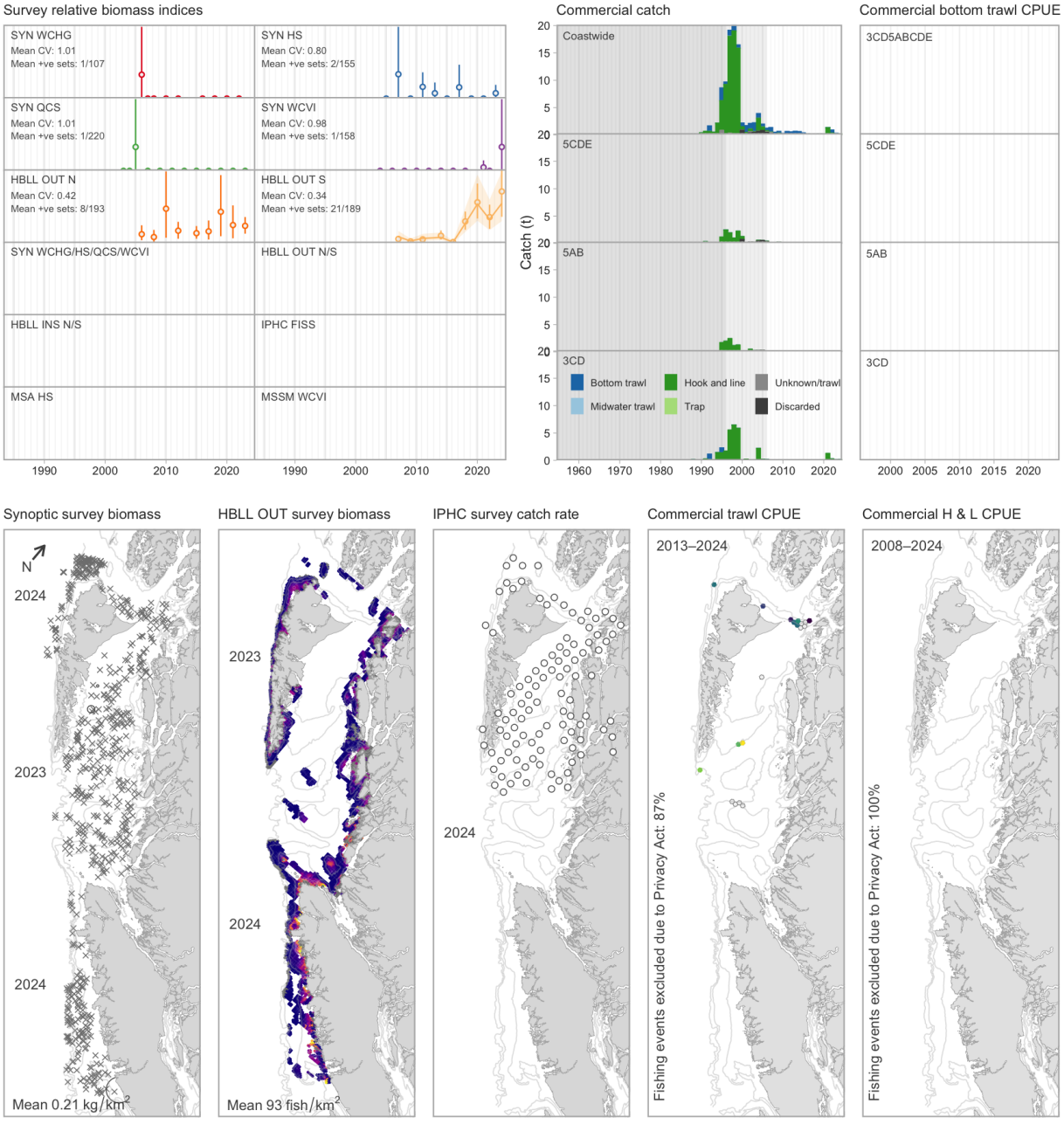
Radulinus asprellus (535)
Order: Perciformes, Family: Cottidae, FishBase, WoRMS

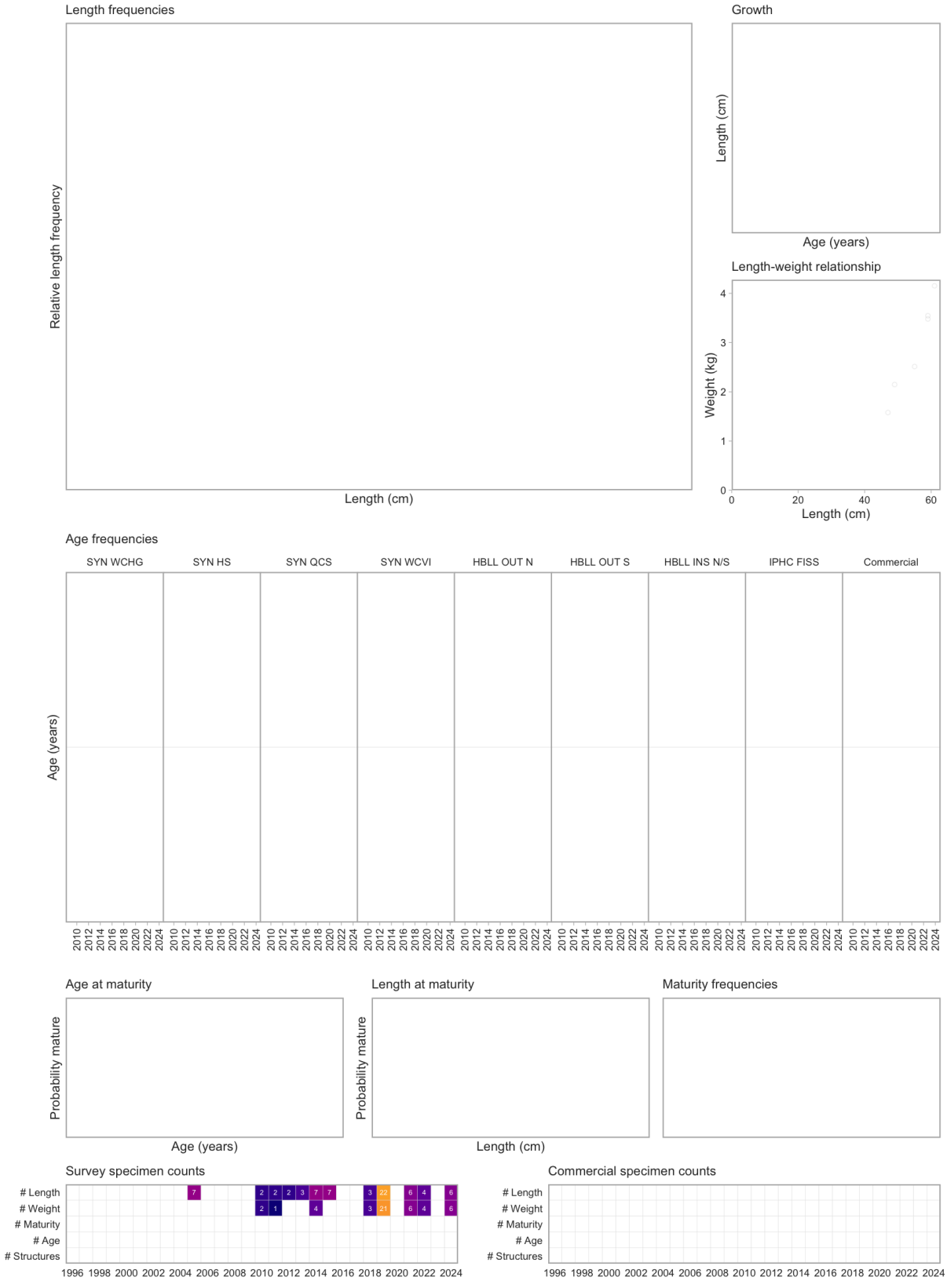



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
10
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.97 Cabezon

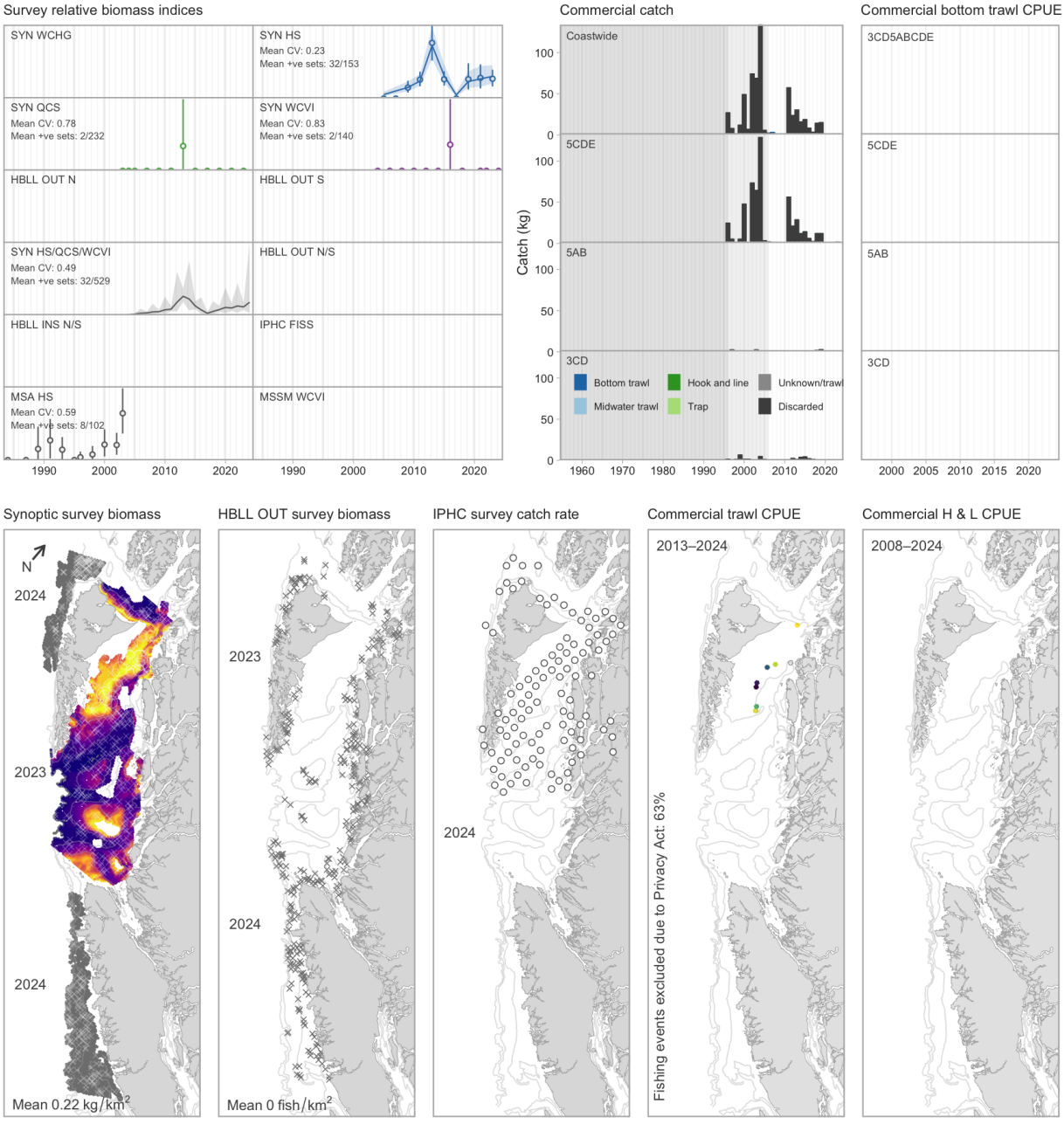
Scorpaenichthys marmoratus (540)
Order: Perciformes, Family: Jordaniidae, FishBase, WoRMS

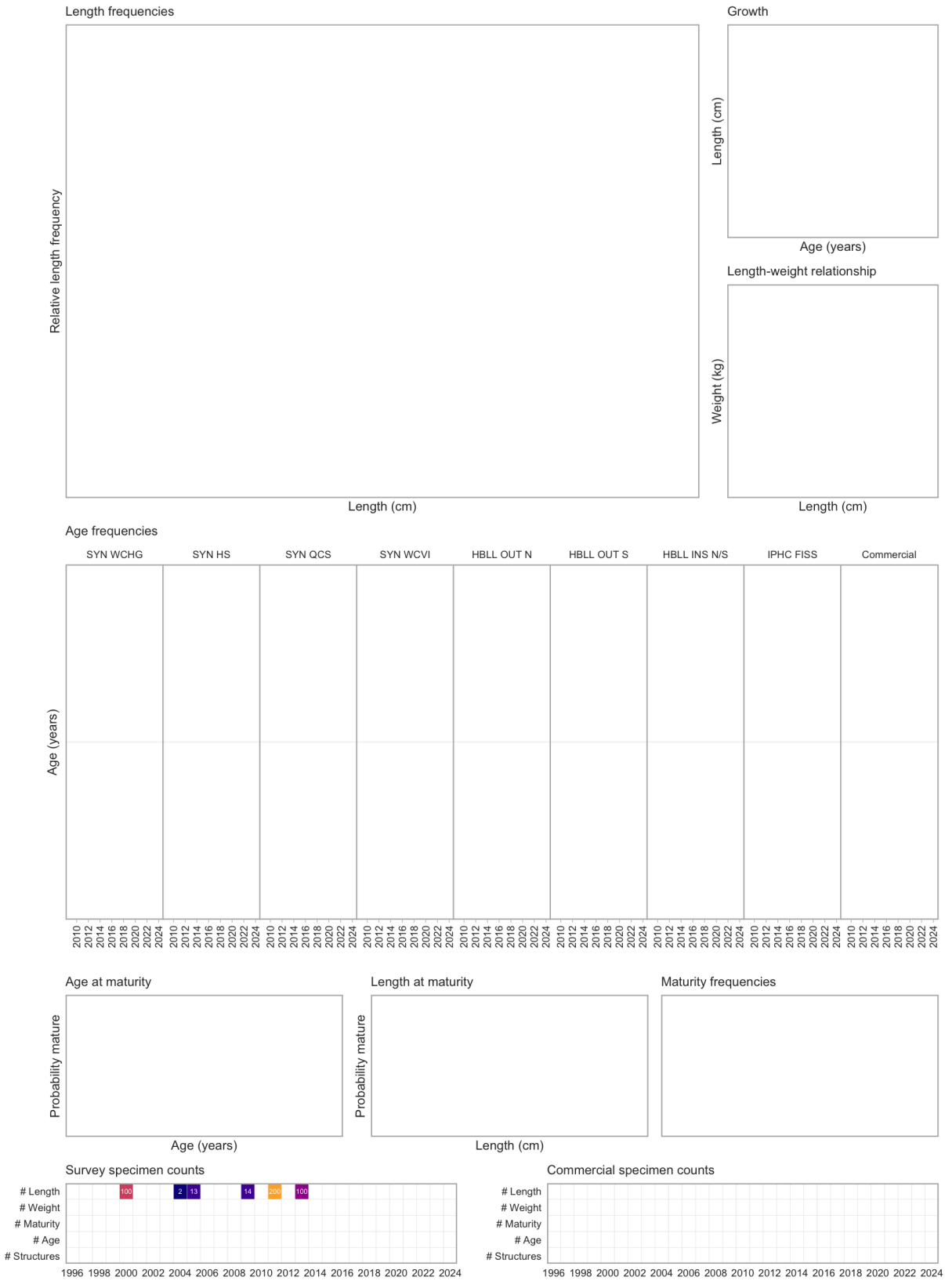



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.98 Sturgeon Poacher

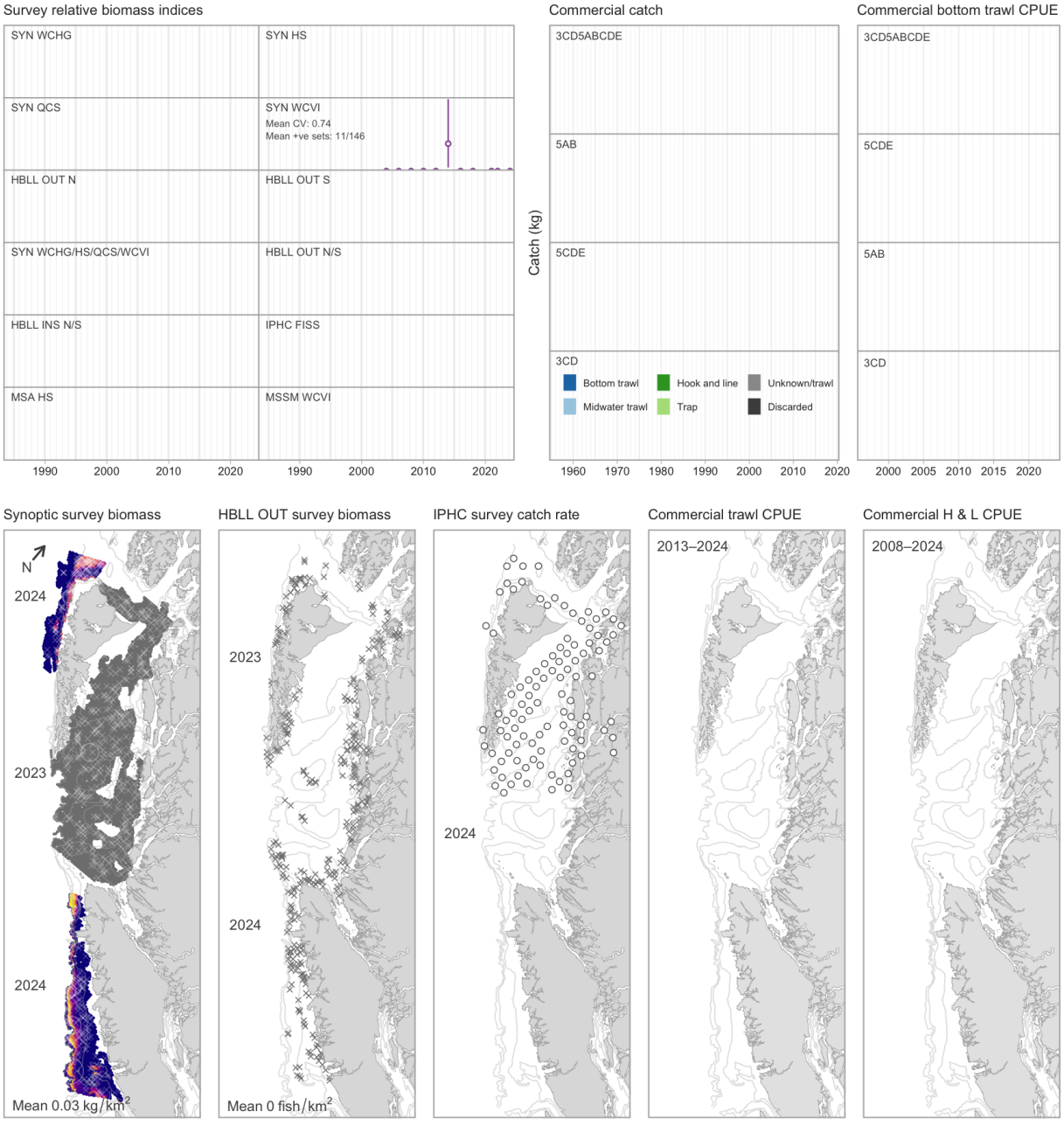
Podothecus accipenserinus (550)
Order: Perciformes, Family: Agonidae, FishBase, WoRMS

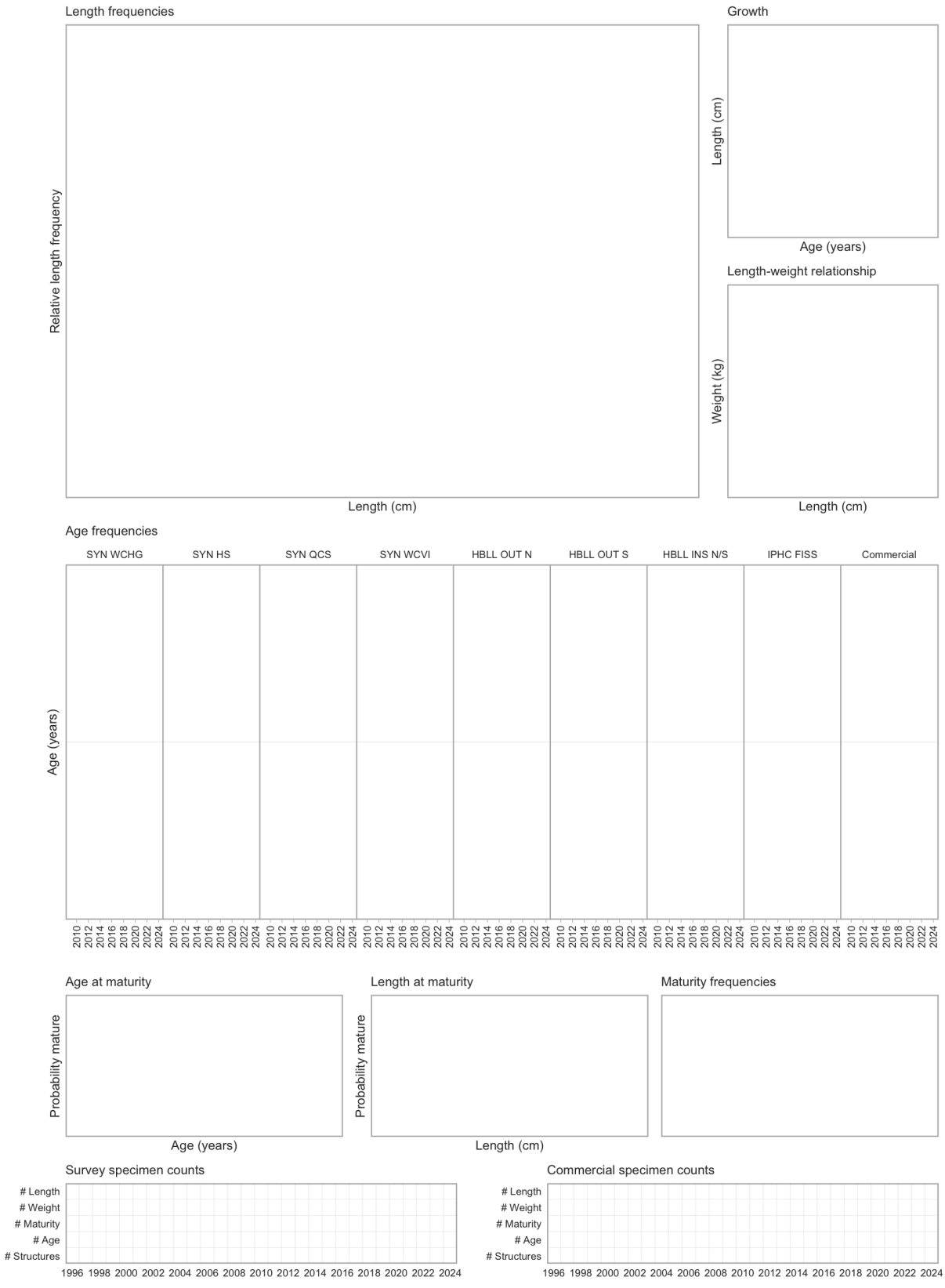



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
100
2
13
14
200
100
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.99 Smootheye Poacher

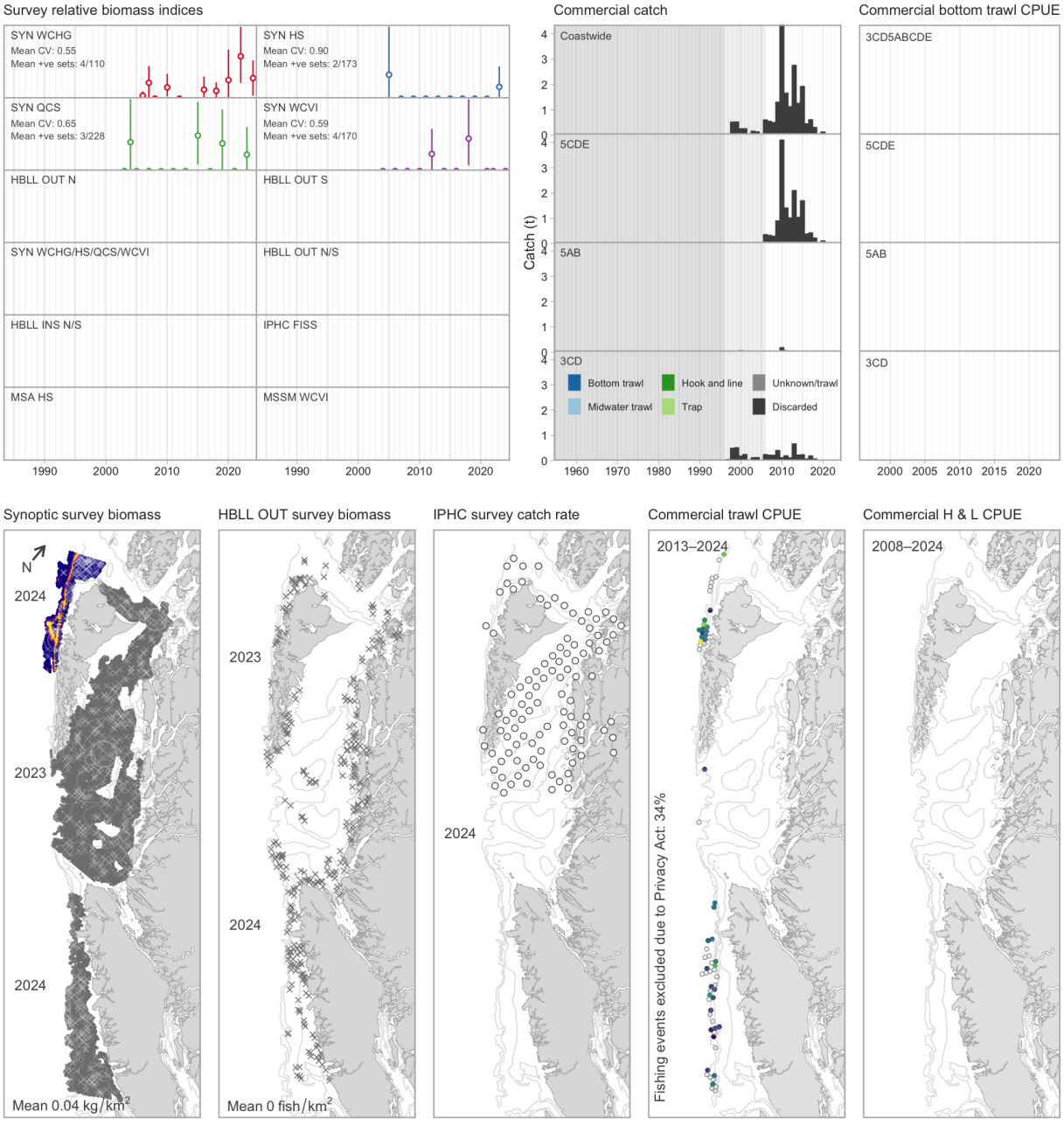
Xeneretmus leiops (555)
Order: Perciformes, Family: Agonidae, FishBase, WoRMS

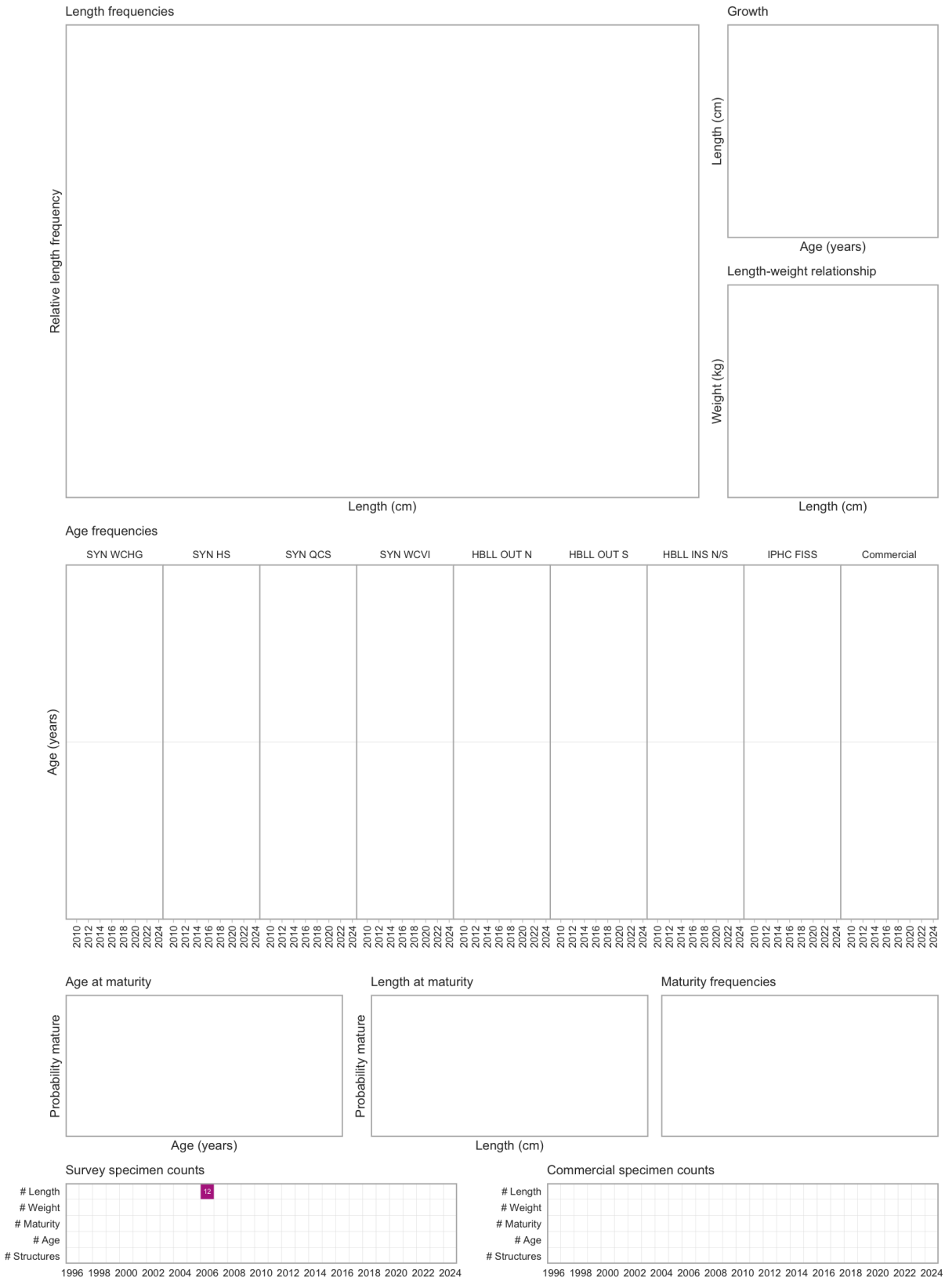



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.100 Blacktail Snailfish

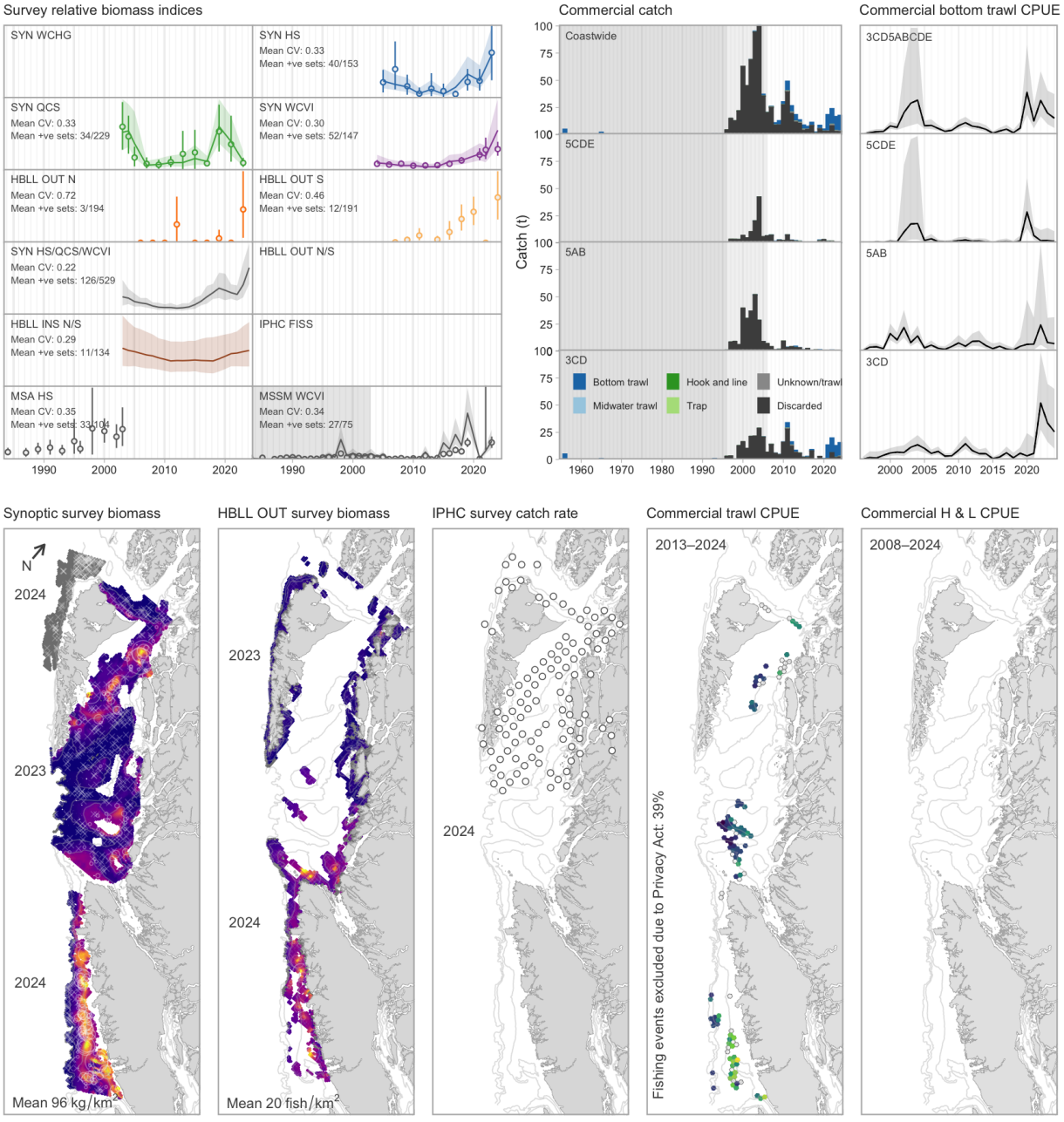
Careproctus melanurus (574)
Order: Perciformes, Family: Liparidae, FishBase, WoRMS

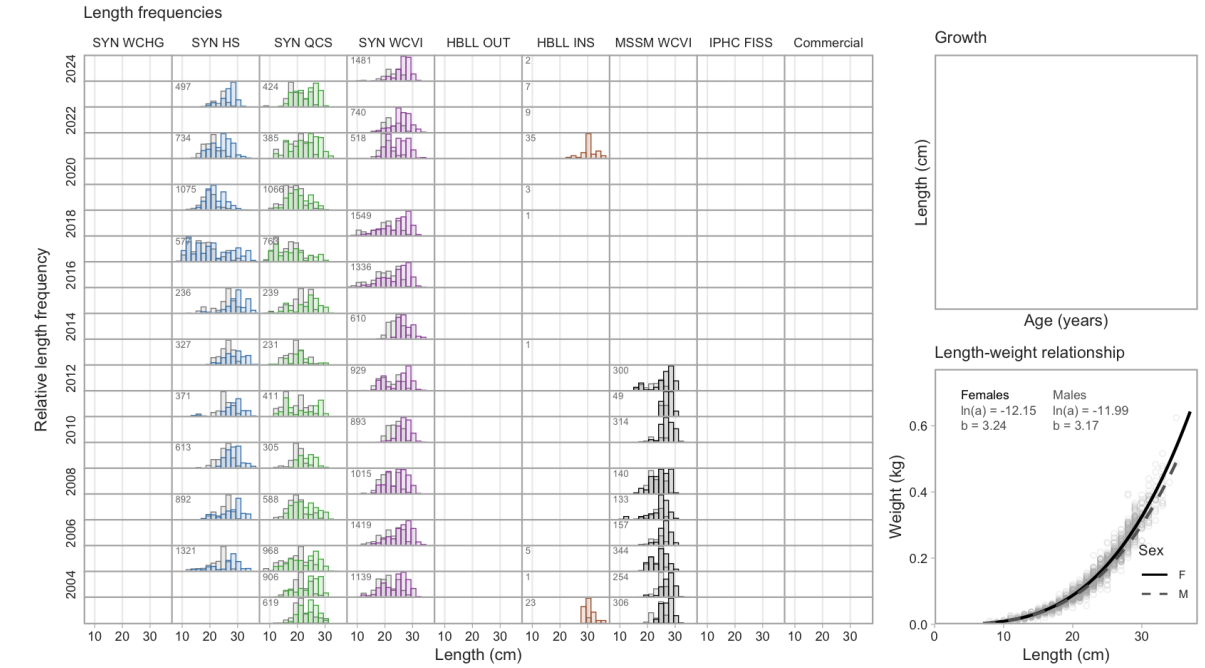



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
12
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.101 Pacific Sanddab

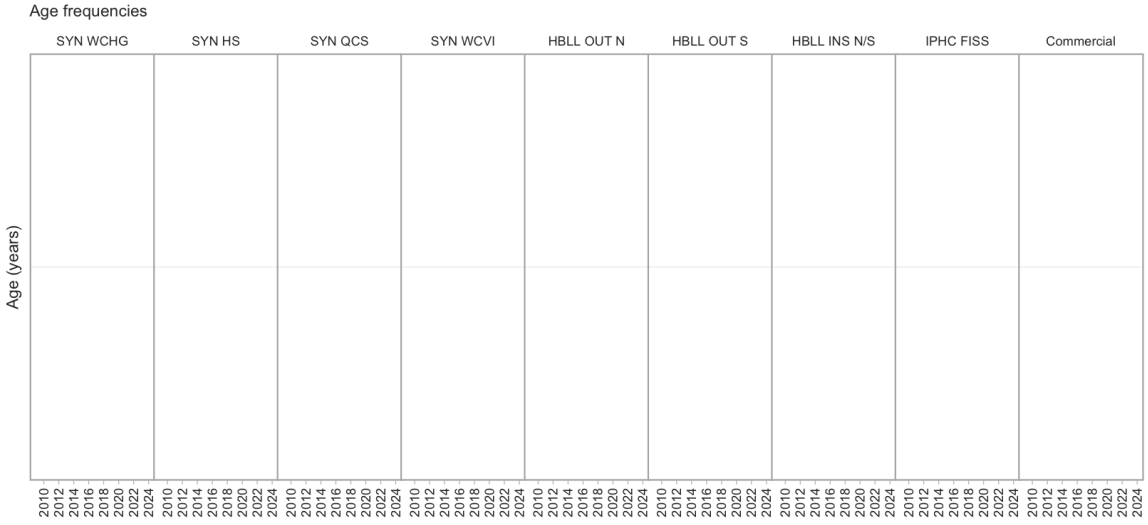
Citharichthys sordidus (596)
Order: Pleuronectiformes, Family: Paralichthyidae, FishBase, WoRMS

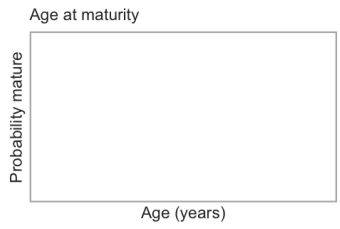


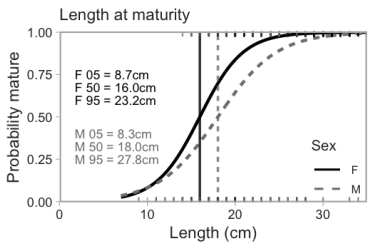

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

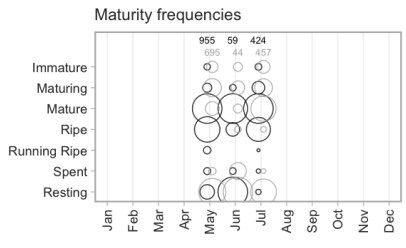
Growth
Length (cm)
Age (years)

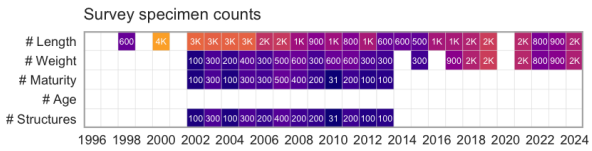
Length-weight relationship
Females
ln(a) = -12.15
b = 3.24
Males
ln(a) = -11.99
b = 3.17
Weight (kg)
Length (cm)
Sex
F
M

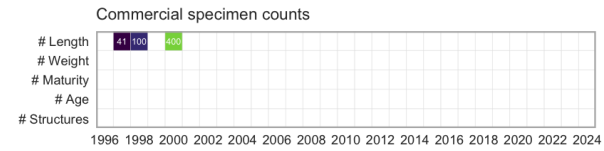

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
F 05 = 8.7cm
F 50 = 16.0cm
F 95 = 23.2cm
M 05 = 8.3cm
M 50 = 18.0cm
M 95 = 27.8cm
Probability mature
Length (cm)
Sex
F
M

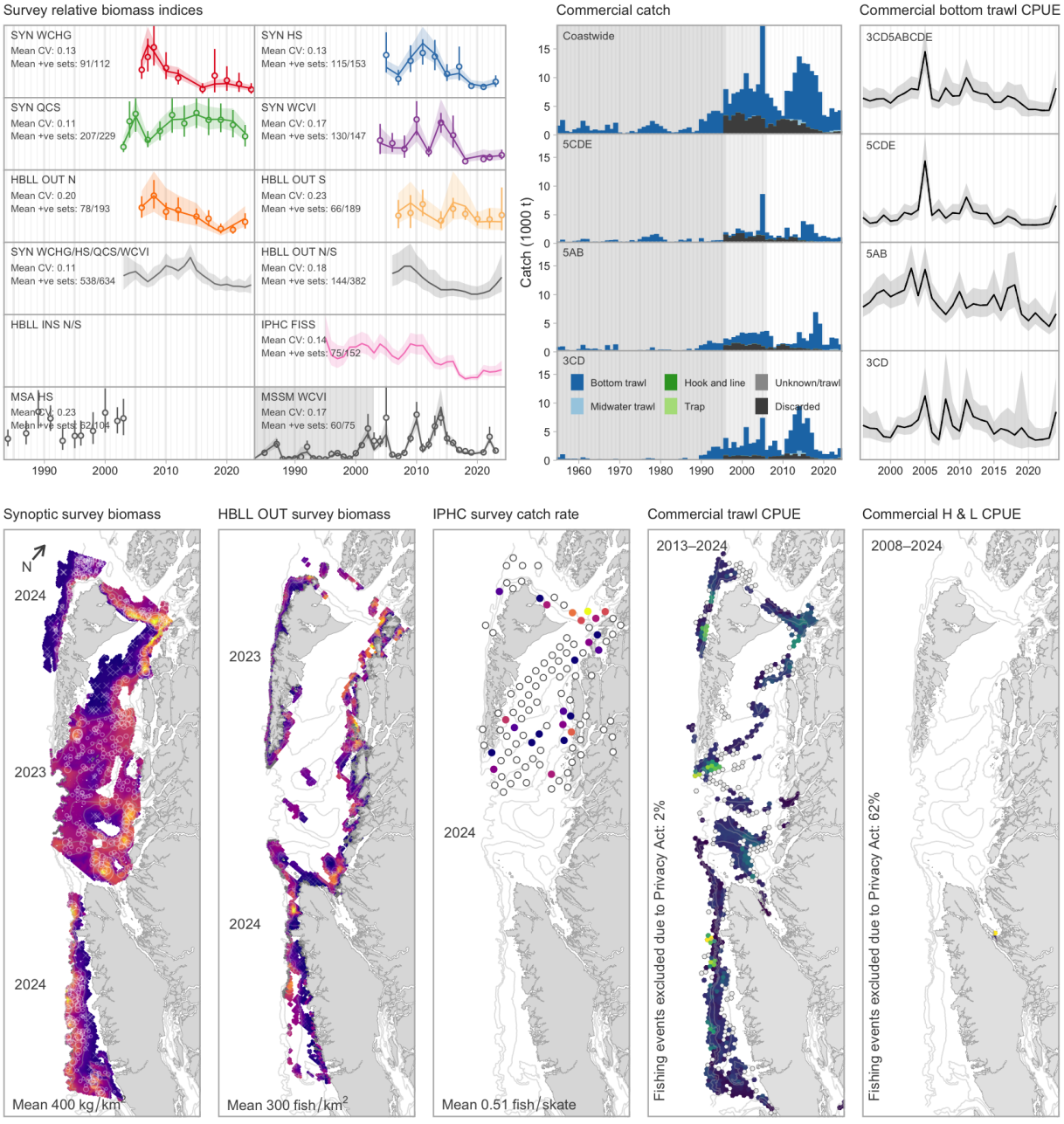

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

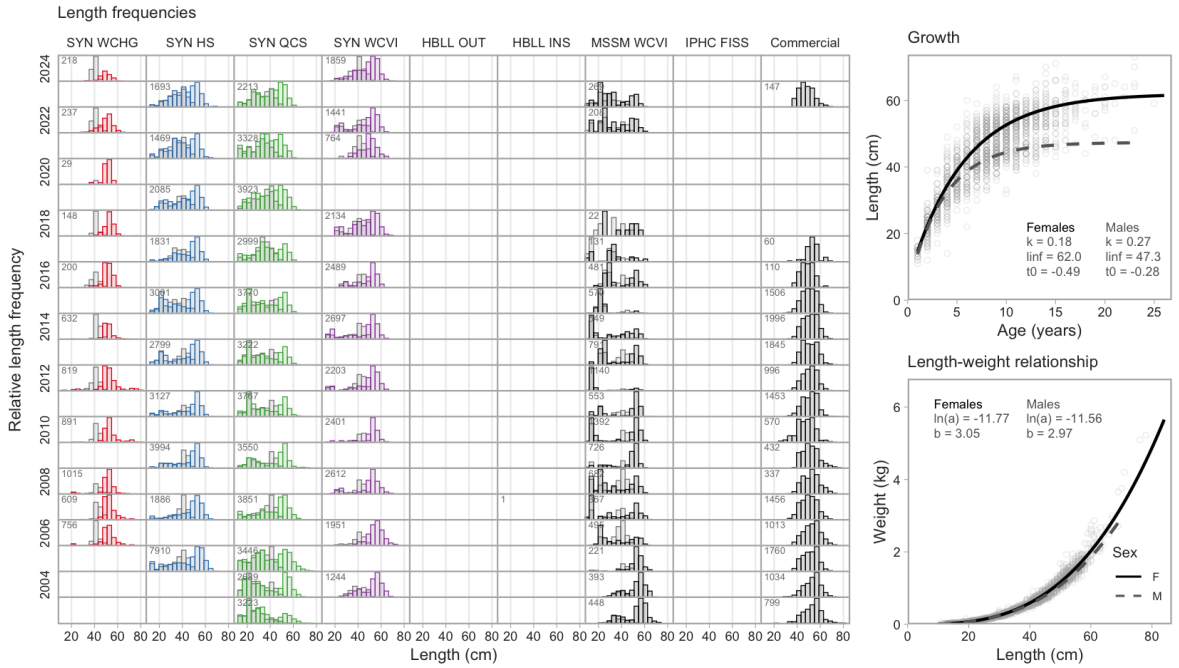

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.102 Arrowtooth Flounder

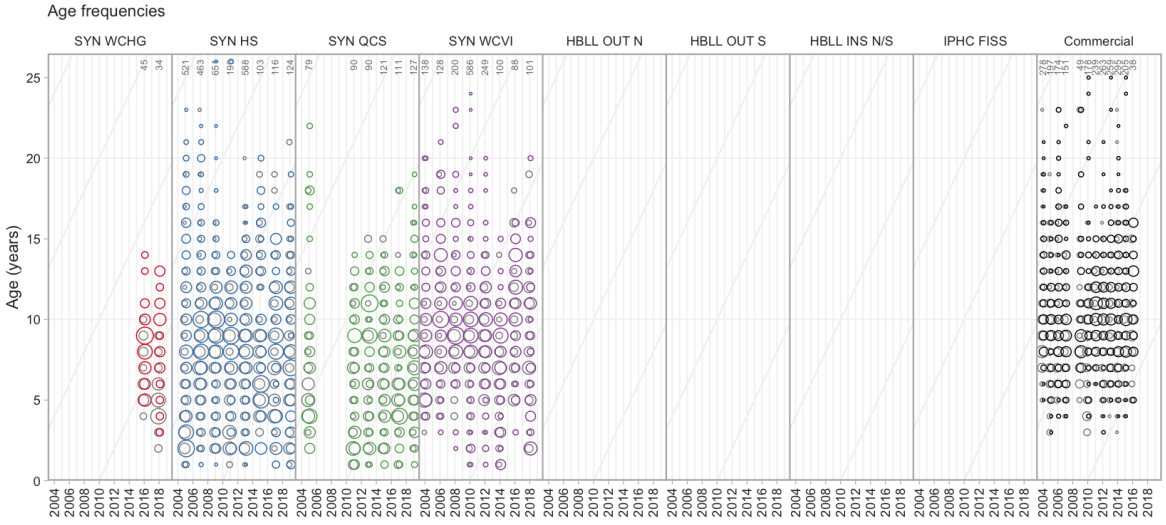
Atheresthes stomias (602)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS
Last Research Document: Grandin and Forrest (2017)
Last Science Advisory Report: DFO (2023g)
Last Science Response: DFO (2025a)

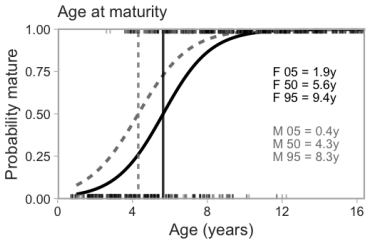


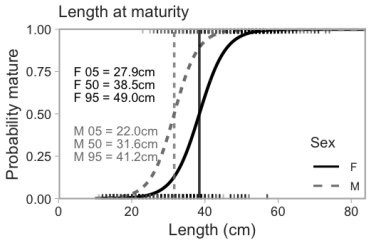

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

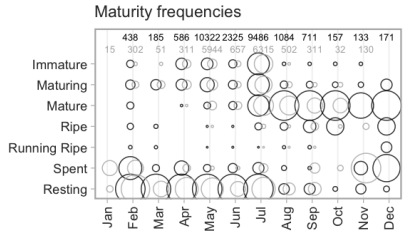
Growth
Length (cm)
Age (years)
Females
k = 0.18
linf = 62.0
t0 = -0.49
Males
k = 0.27
linf = 47.3
t0 = -0.28

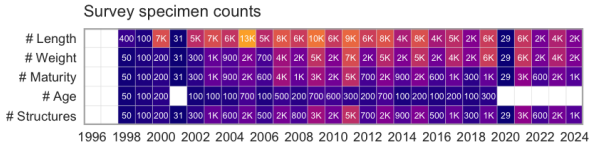
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.77
b = 3.05
Males
ln(a) = -11.56
b = 2.97
Sex
F
M

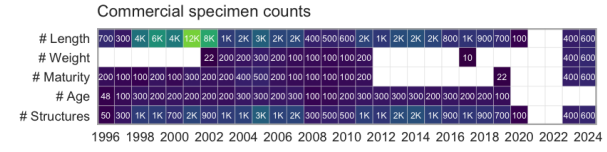

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 1.9y
F 50 = 5.6y
F 95 = 9.4y
M 05 = 0.4y
M 50 = 4.3y
M 95 = 8.3y


Length at maturity
Probability mature
Length (cm)
F 05 = 27.9cm
F 50 = 38.5cm
F 95 = 49.0cm
M 05 = 22.0cm
M 50 = 31.6cm
M 95 = 41.2cm
Sex
F
M

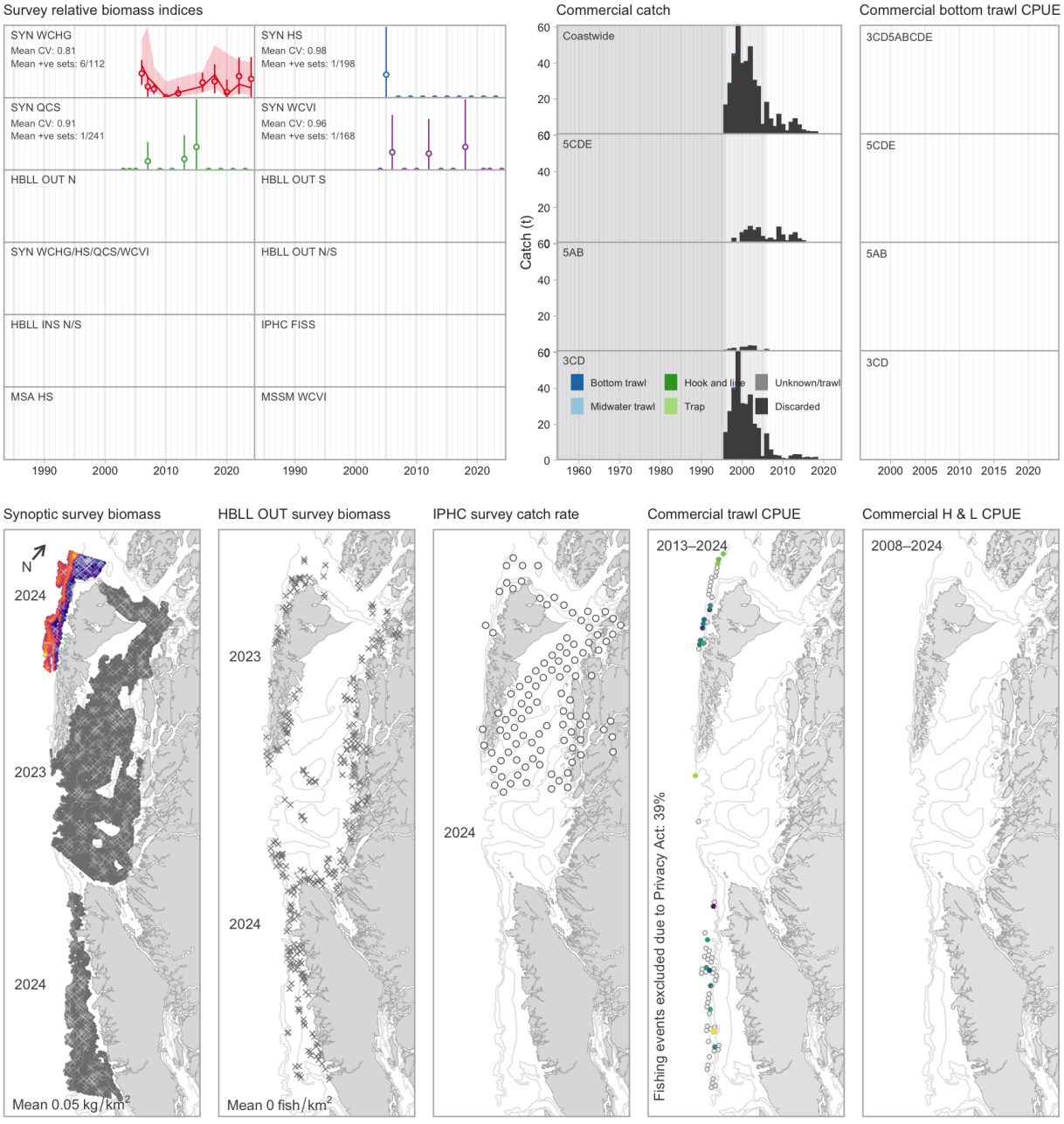

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

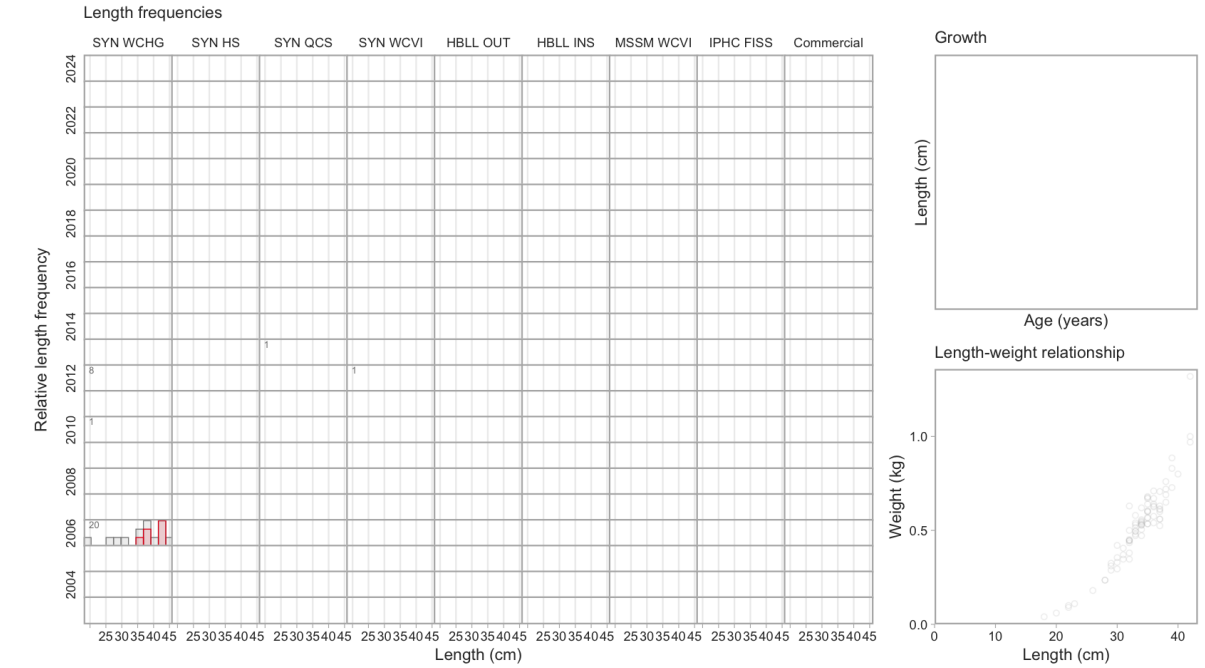

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.103 Deepsea Sole

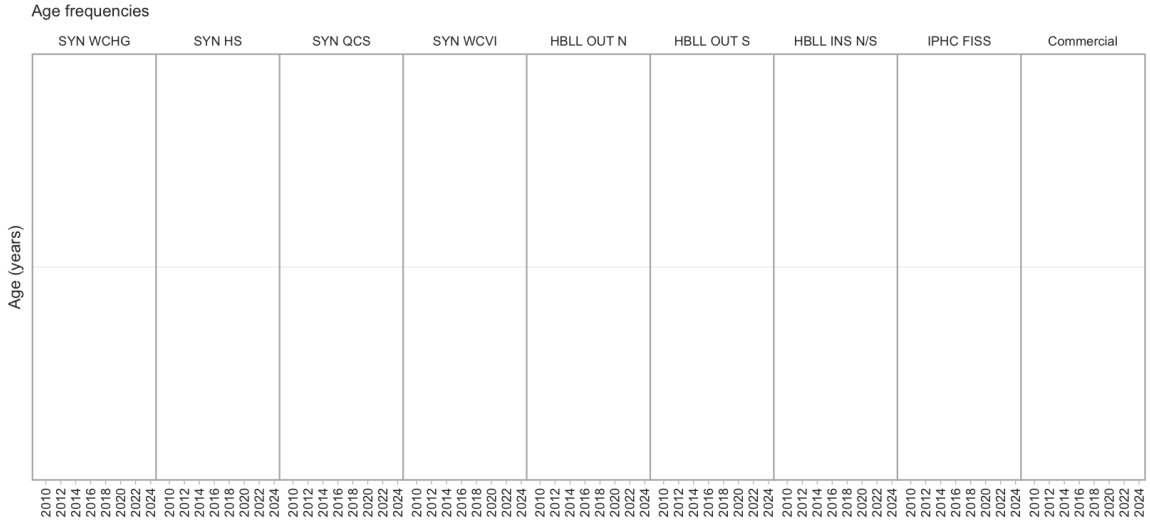
Embassichthys bathybius (605)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS



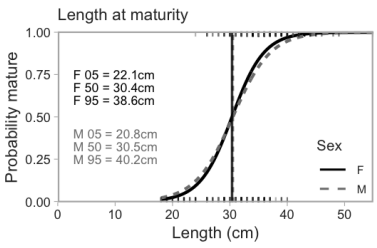

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

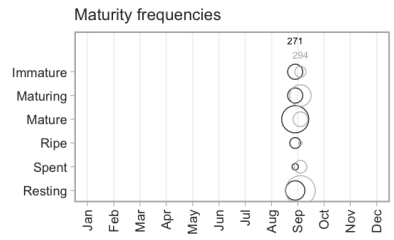
Growth
Length (cm)
Age (years)

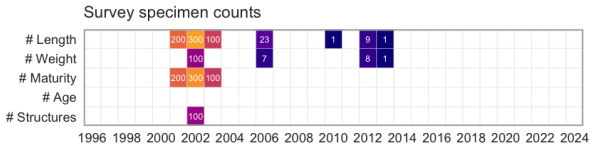
Length-weight relationship
Weight (kg)
Length (cm)

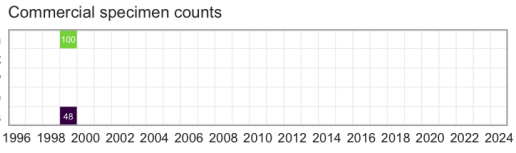

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
F 05 = 22.1cm
F 50 = 30.4cm
F 95 = 38.6cm
M 05 = 20.8cm
M 50 = 30.5cm
M 95 = 40.2cm
Sex
F
M
Length (cm)

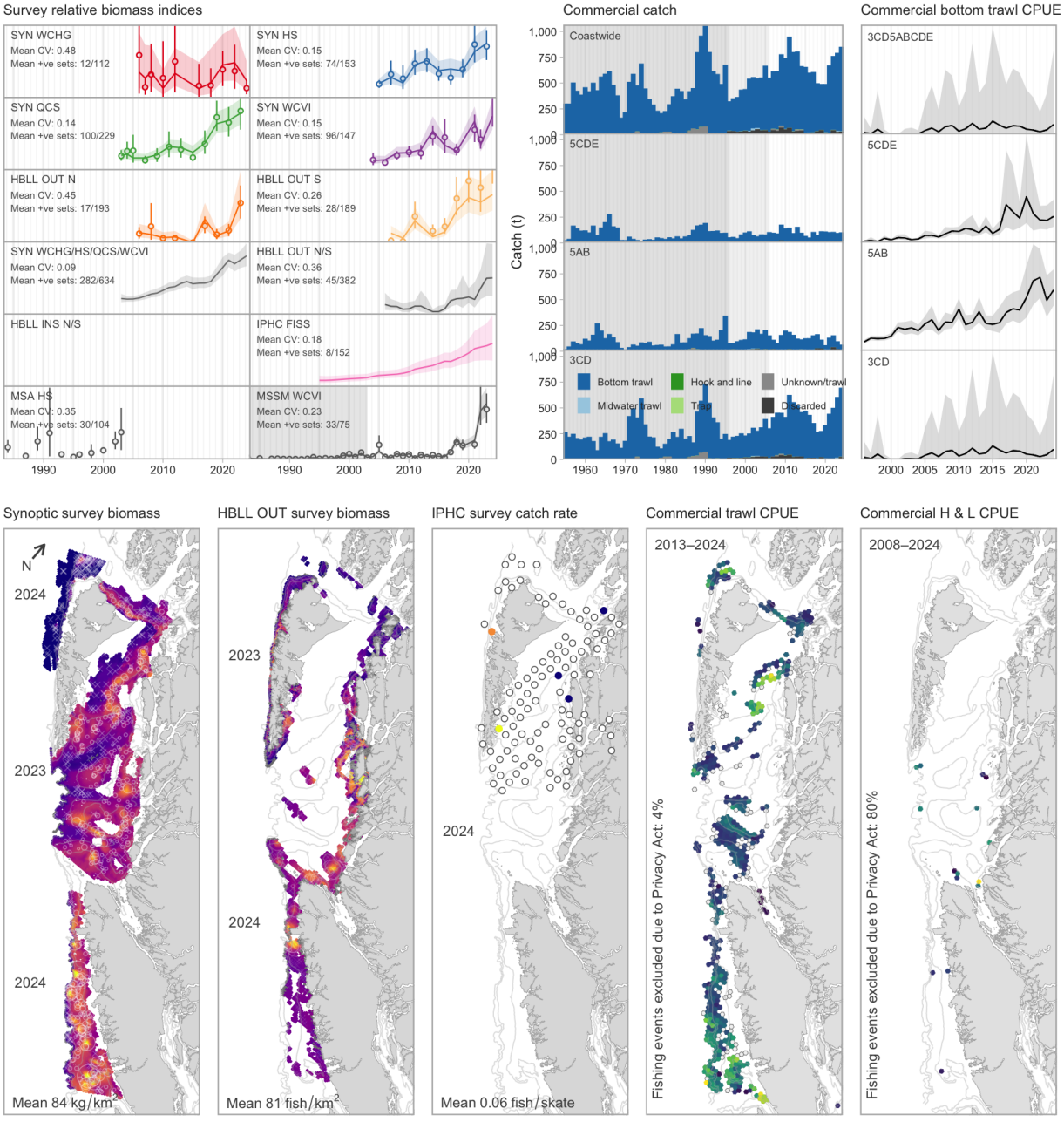

Maturity frequencies
Immature
Maturing
Mature
Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

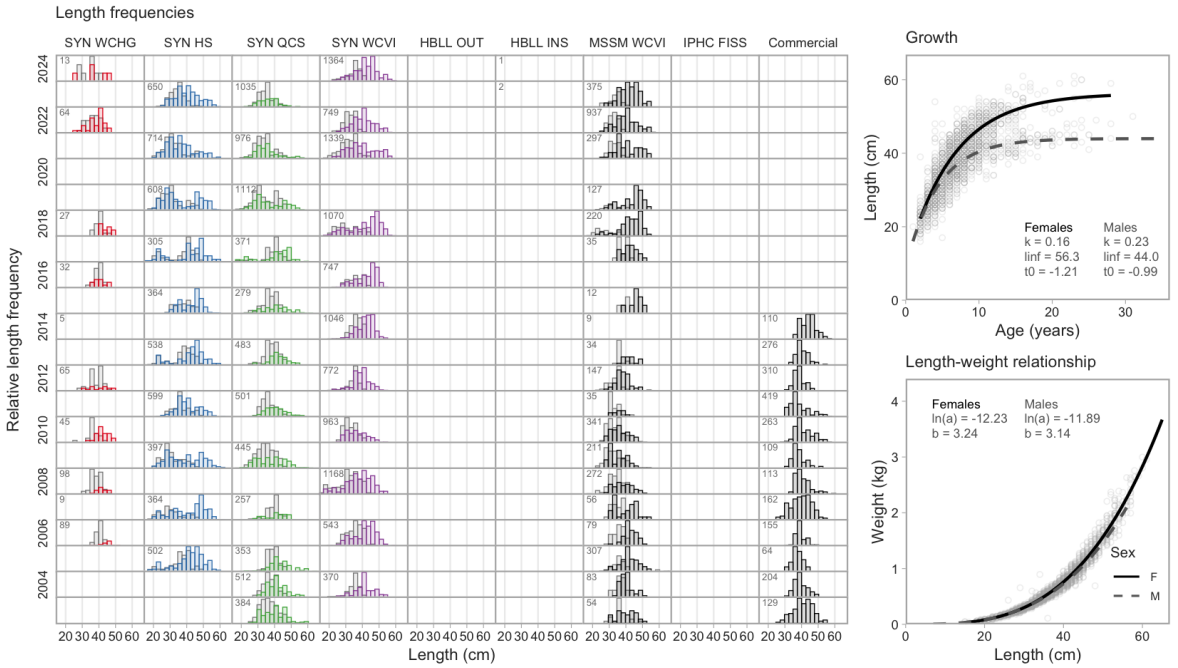

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.104 Petrale Sole

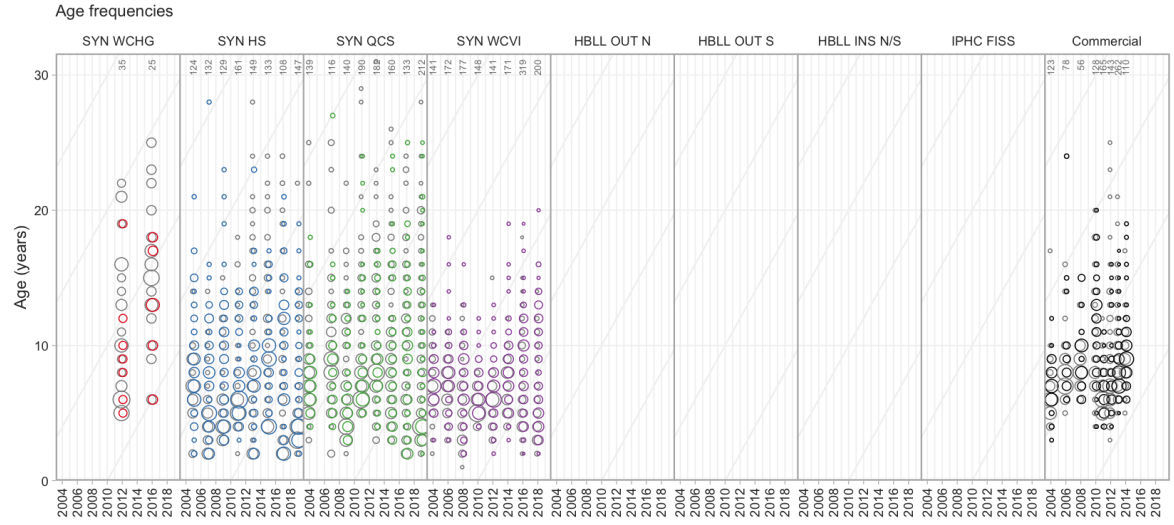
Eopsetta jordani (607)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS
Last Research Document: Starr (2009a)
Last Science Advisory Report: DFO (2025b)

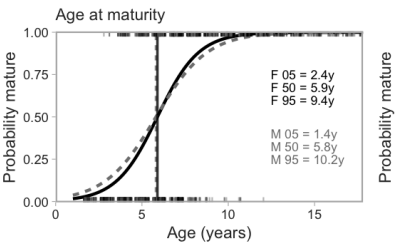


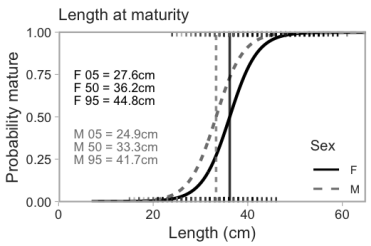

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

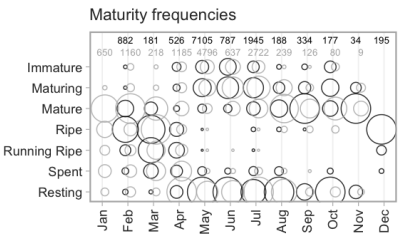
Growth
Length (cm)
Age (years)
Females
k = 0.16
linf = 56.3
t0 = -1.21
Males
k = 0.23
linf = 44.0
t0 = -0.99

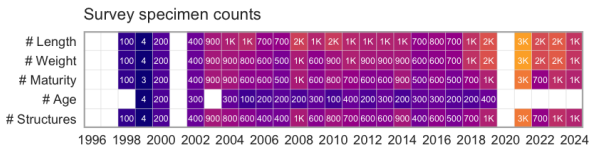
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -12.23
b = 3.24
Males
ln(a) = -11.89
b = 3.14
Sex
F
M

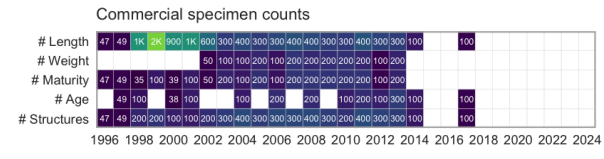

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 2.4y
F 50 = 5.9y
F 95 = 9.4y
M 05 = 1.4y
M 50 = 5.8y
M 95 = 10.2y


Length at maturity
Probability mature
Length (cm)
F 05 = 27.6cm
F 50 = 36.2cm
F 95 = 44.8cm
M 05 = 24.9cm
M 50 = 33.3cm
M 95 = 41.7cm
Sex
F
M

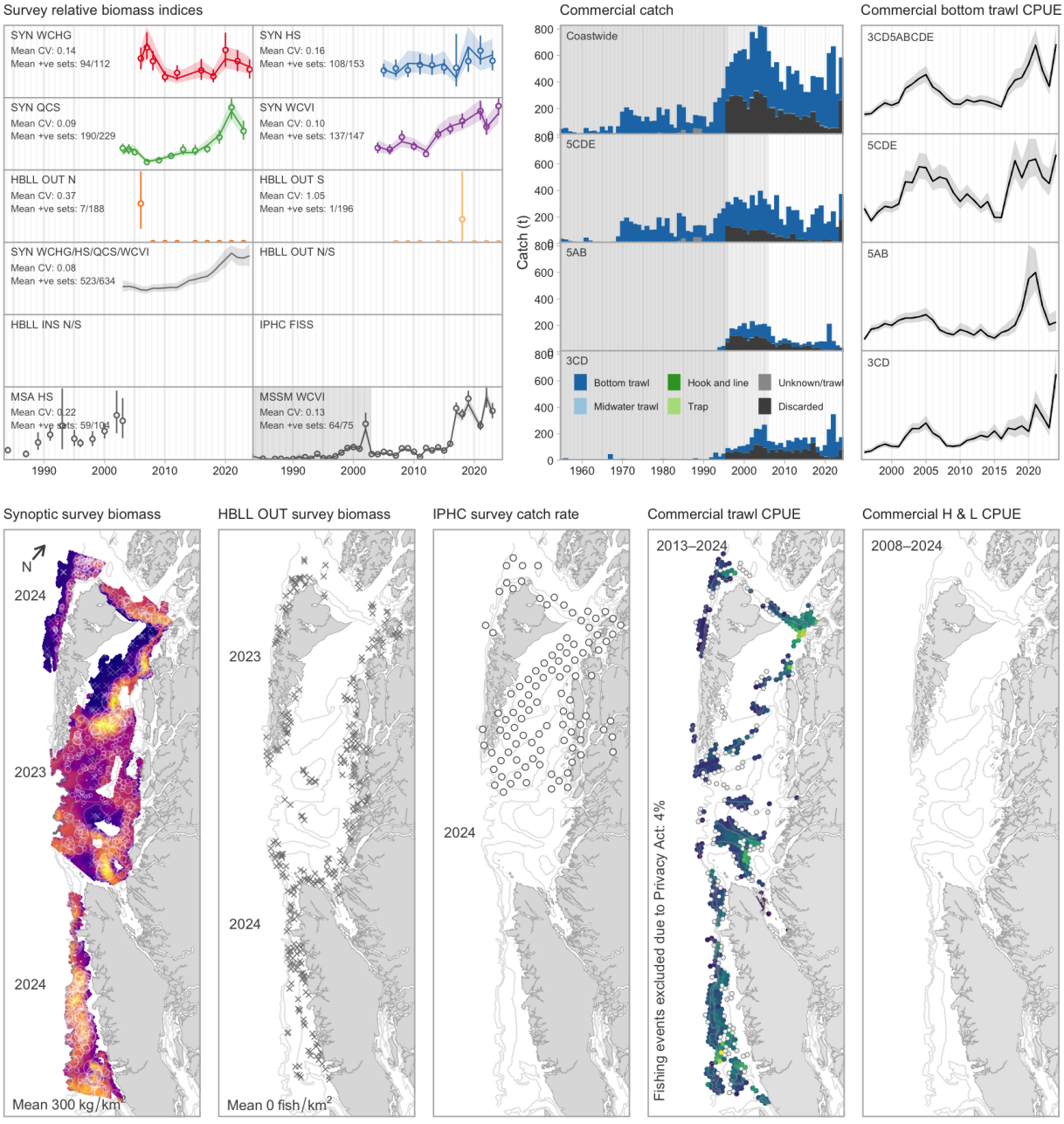

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

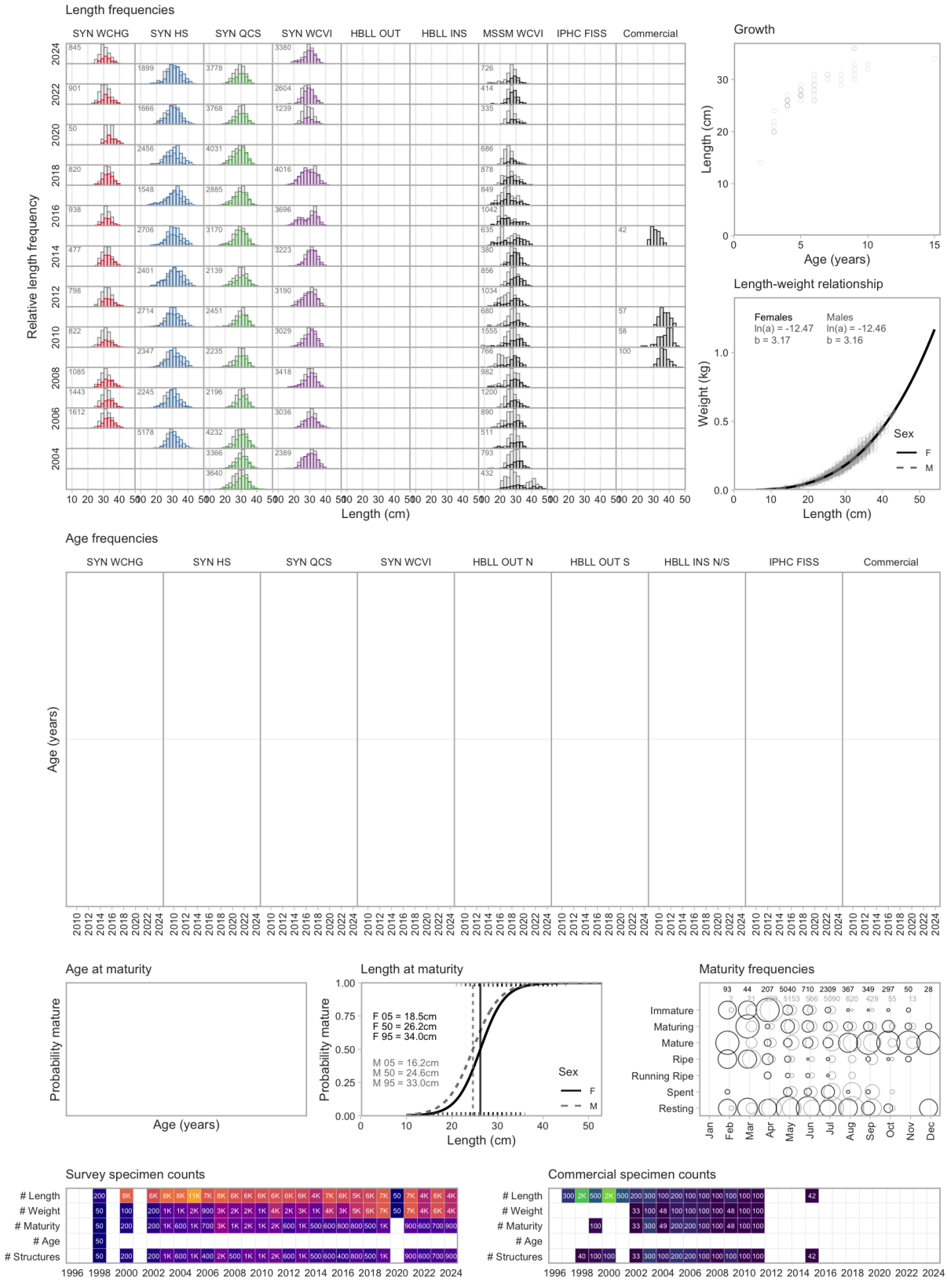

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.105 Rex Sole

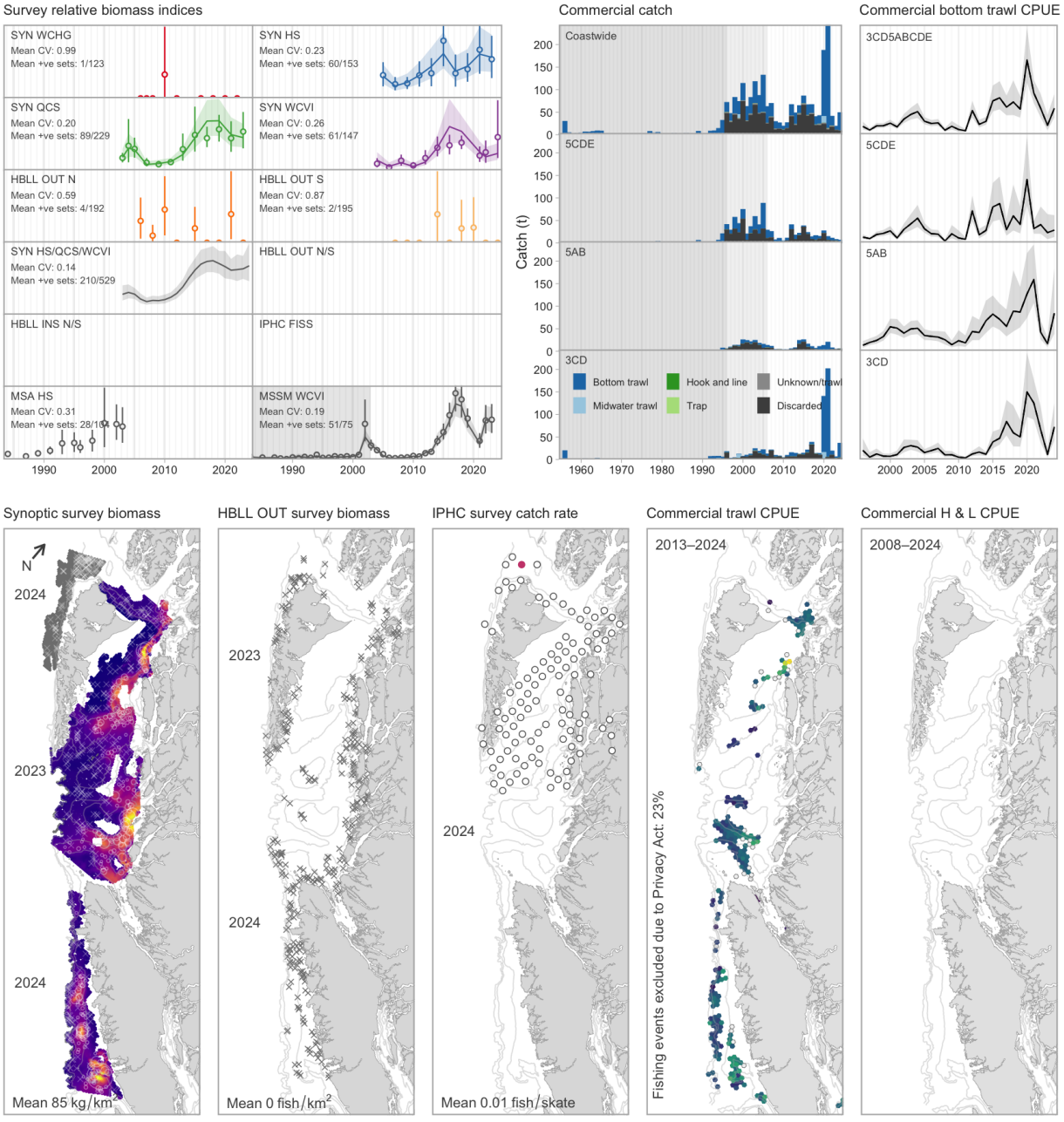
Glyptocephalus zachirus (610)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS
Research Document featuring a case study of 3CD Rex Sole: Anderson et al. (2021)

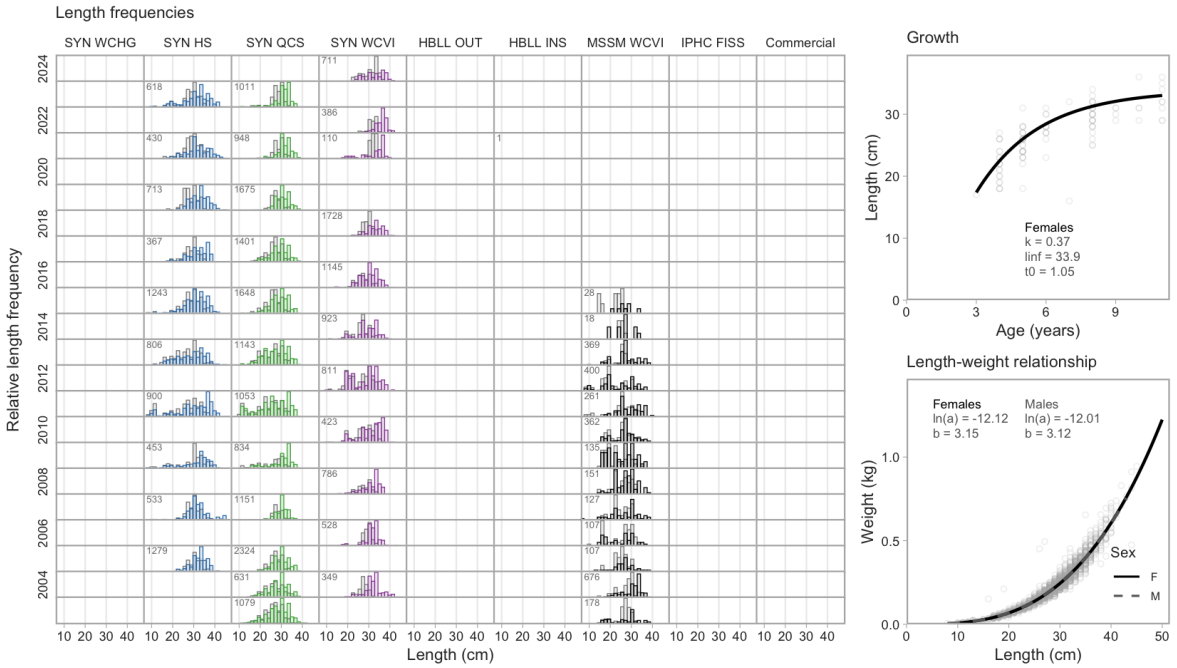



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.47
b = 3.17
Males
ln(a) = -12.46
b = 3.16
Weight (kg)
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
F 05 = 18.5cm
F 50 = 26.2cm
F 95 = 34.0cm
M 05 = 16.2cm
M 50 = 24.6cm
M 95 = 33.0cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.106 Flathead Sole

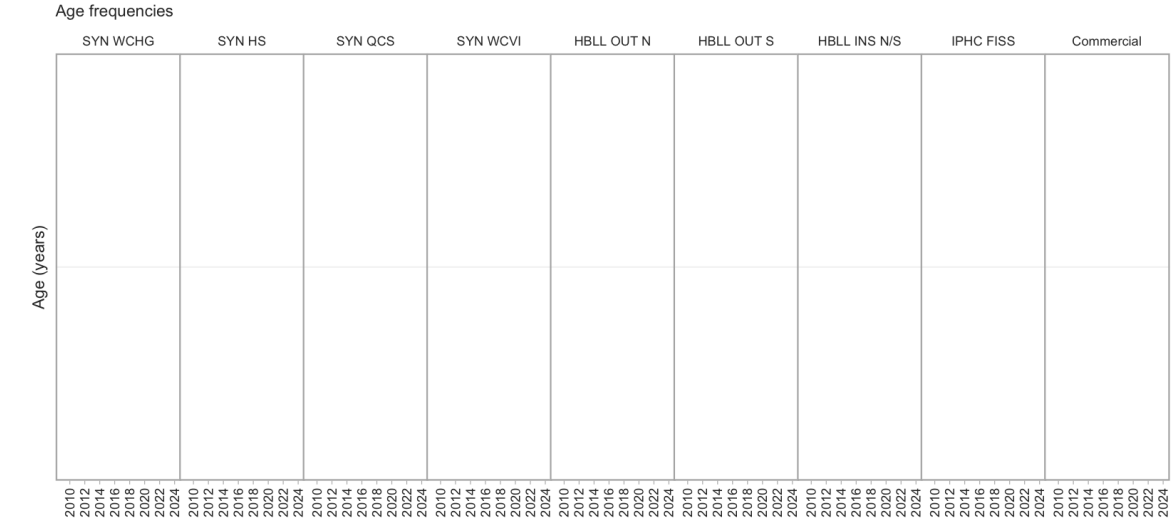
Hippoglossoides elassodon (612)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS

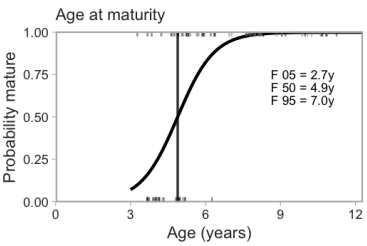


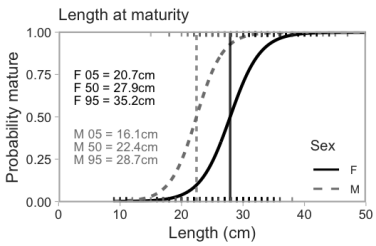

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

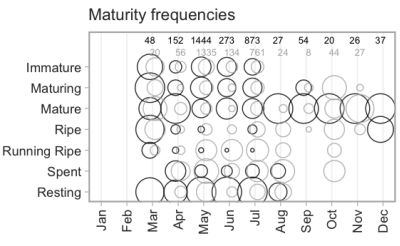
Growth
Length (cm)
Age (years)
Females
k = 0.37
linf = 33.9
t0 = 1.05

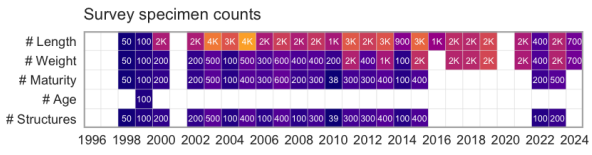
Length-weight relationship
Females
ln(a) = -12.12
b = 3.15
Males
ln(a) = -12.01
b = 3.12
Weight (kg)
Length (cm)
Sex
F
M

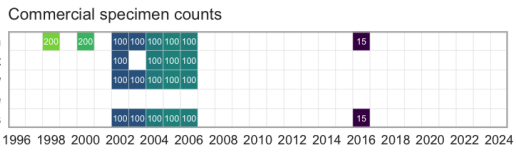

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
F 05 = 2.7y
F 50 = 4.9y
F 95 = 7.0y
Age (years)


Length at maturity
Probability mature
F 05 = 20.7cm
F 50 = 27.9cm
F 95 = 35.2cm
M 05 = 16.1cm
M 50 = 22.4cm
M 95 = 28.7cm
Sex
F
M
Length (cm)

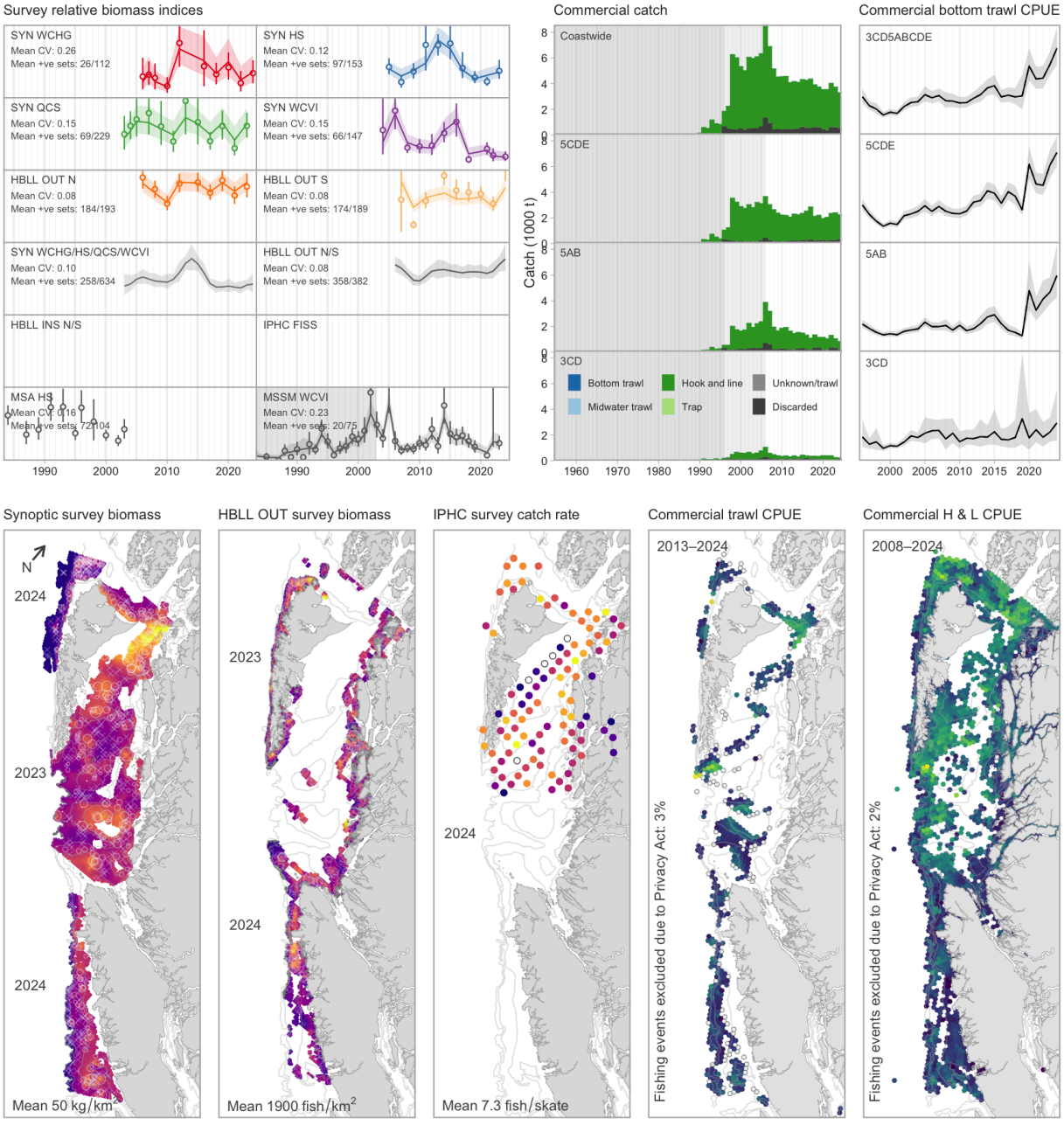

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

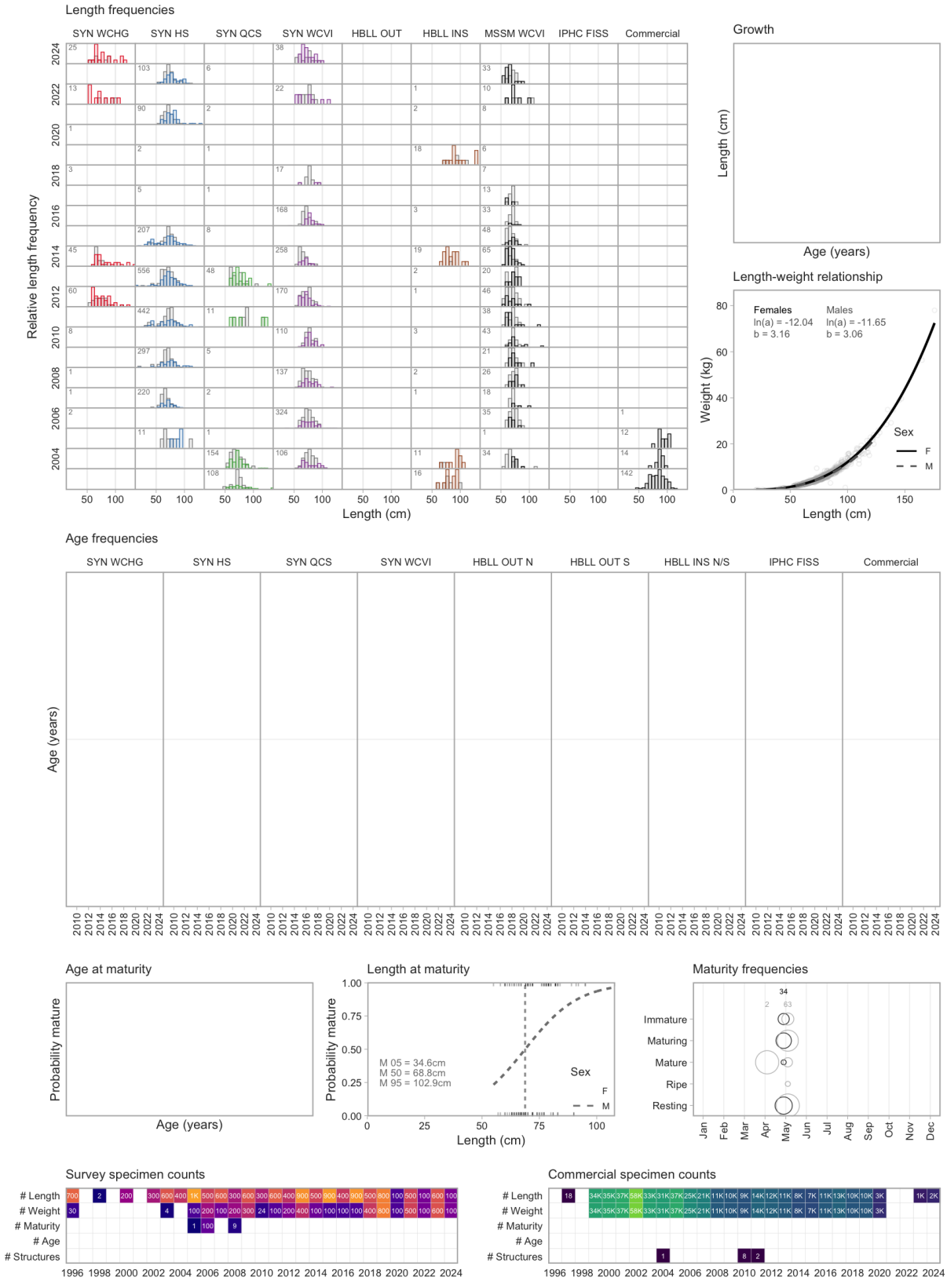

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.107 Pacific Halibut

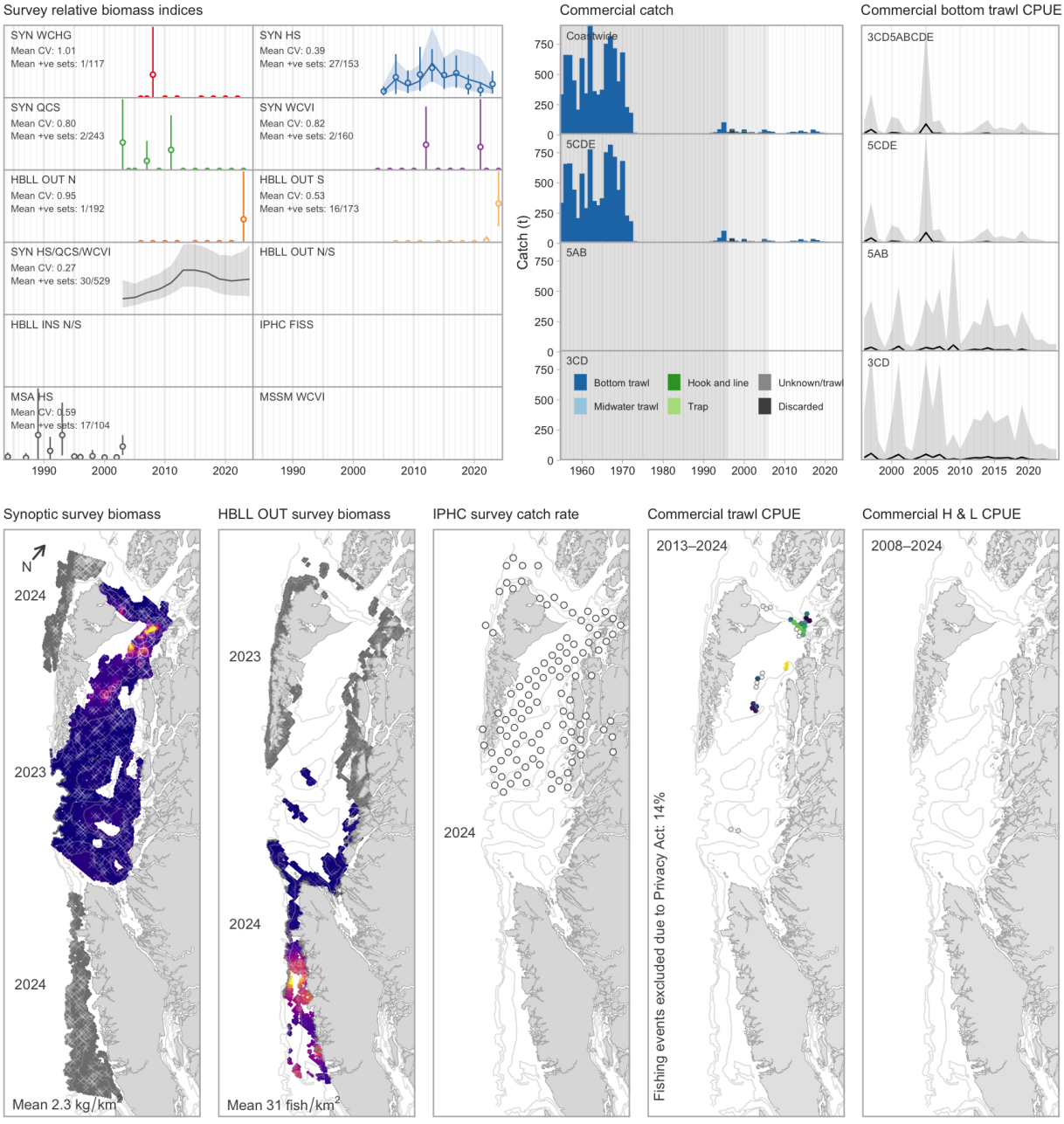
Hippoglossus stenolepis (614)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS
Most Recent Stock Assessment: Stewart and Hicks (2025)
Note that Pacific Halibut undergoes thorough assessment by the International Pacific Halibut Commission based on the annual standardized setline survey. The most recent stock assessment should be consulted for details on stock status.

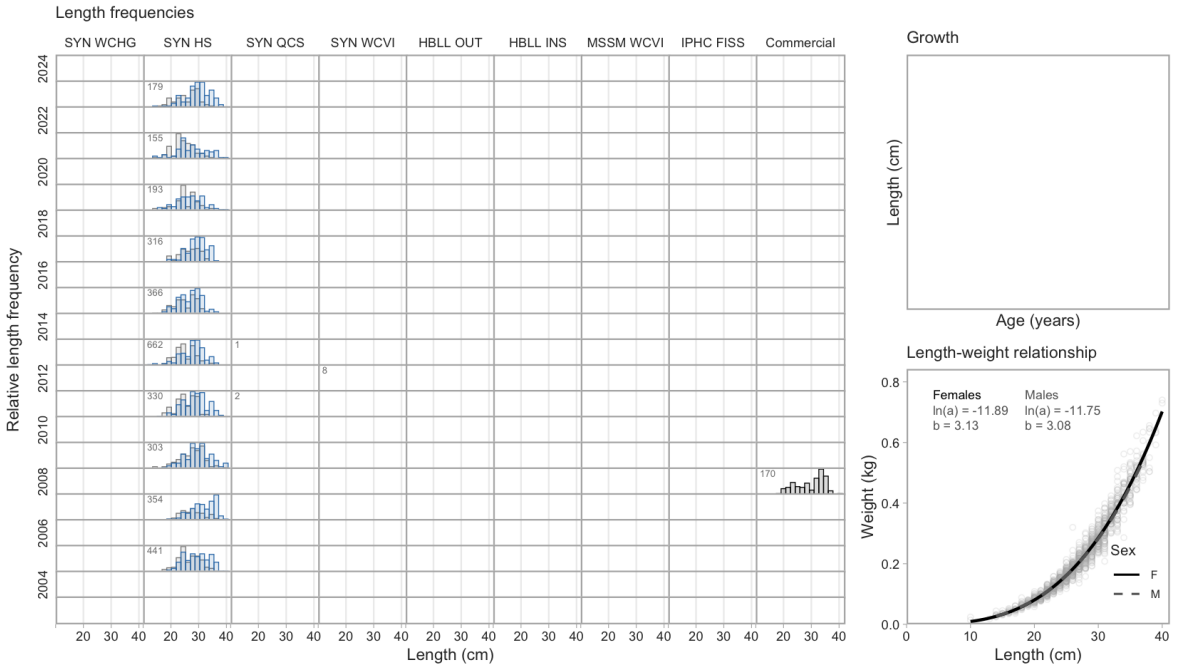



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.04
b = 3.16
Males
ln(a) = -11.65
b = 3.06
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
M 05 = 34.6cm
M 50 = 68.8cm
M 95 = 102.9cm
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Ripe
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.108 Butter Sole

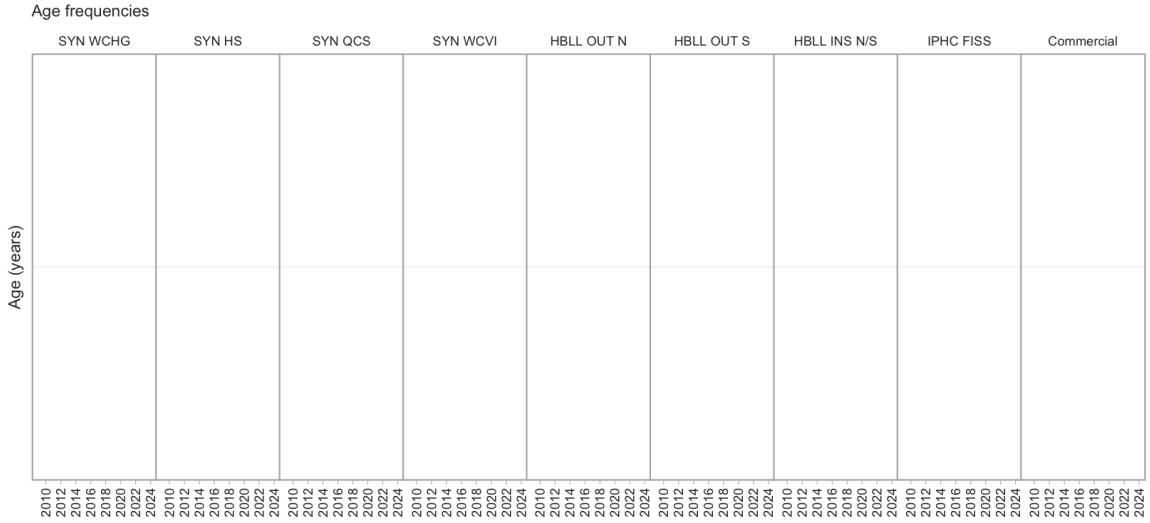
Isopsetta isolepis (619)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS

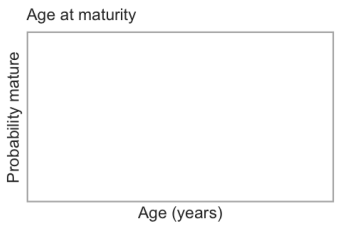


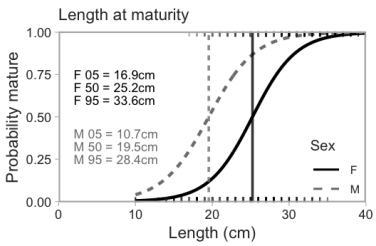

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

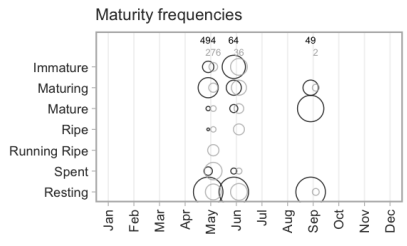
Growth
Length (cm)
Age (years)

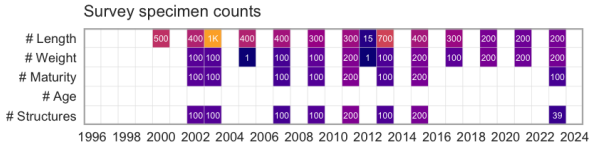
Length-weight relationship
Females
ln(a) = -11.89
b = 3.13
Males
ln(a) = -11.75
b = 3.08
Weight (kg)
Length (cm)
Sex
F
M

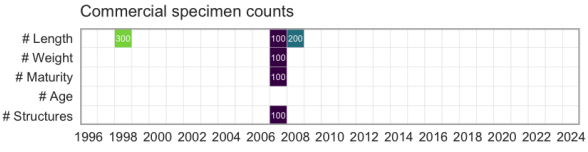

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
F 05 = 16.9cm
F 50 = 25.2cm
F 95 = 33.6cm
M 05 = 10.7cm
M 50 = 19.5cm
M 95 = 28.4cm
Probability mature
Length (cm)
Sex
F
M

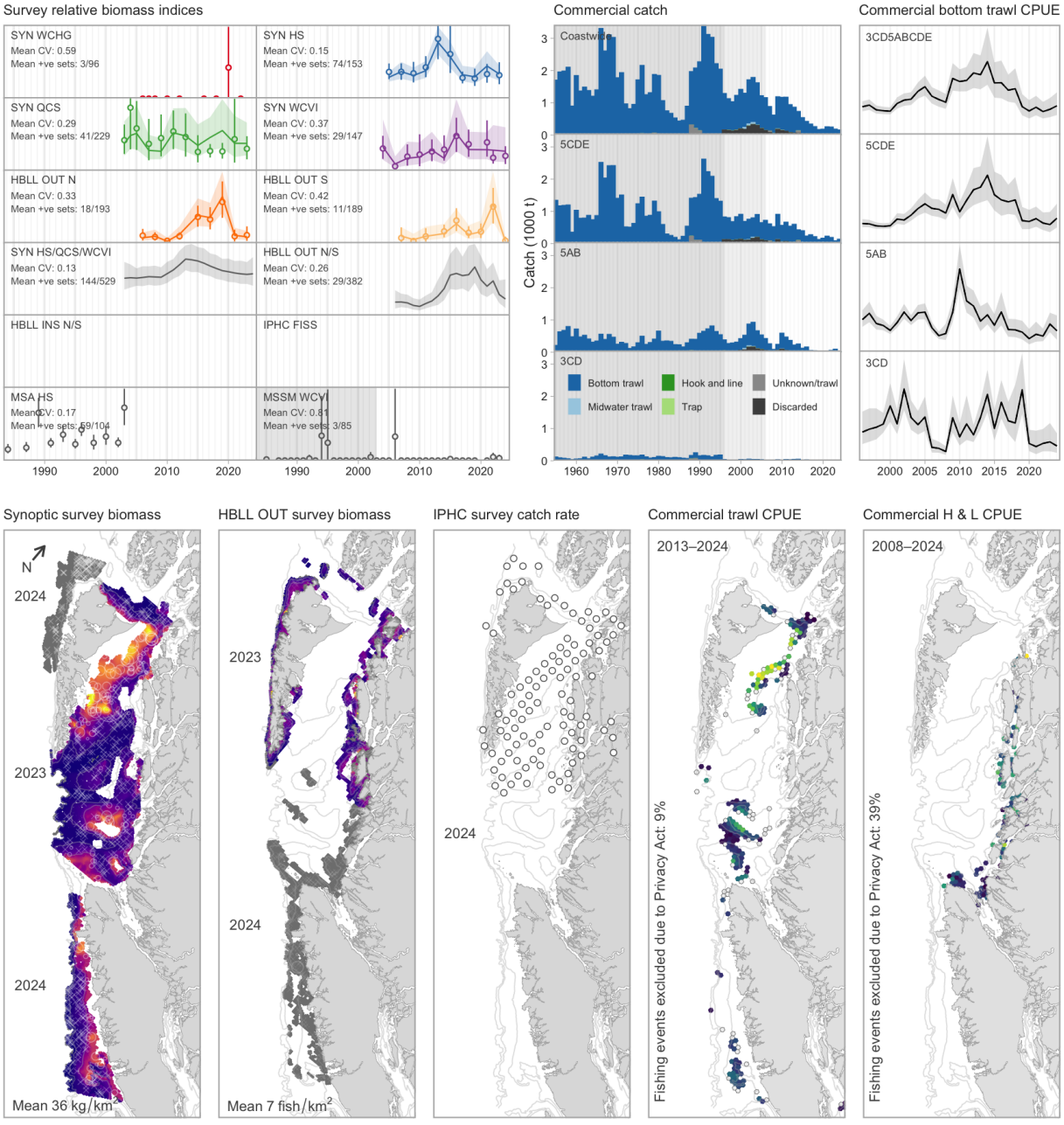

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

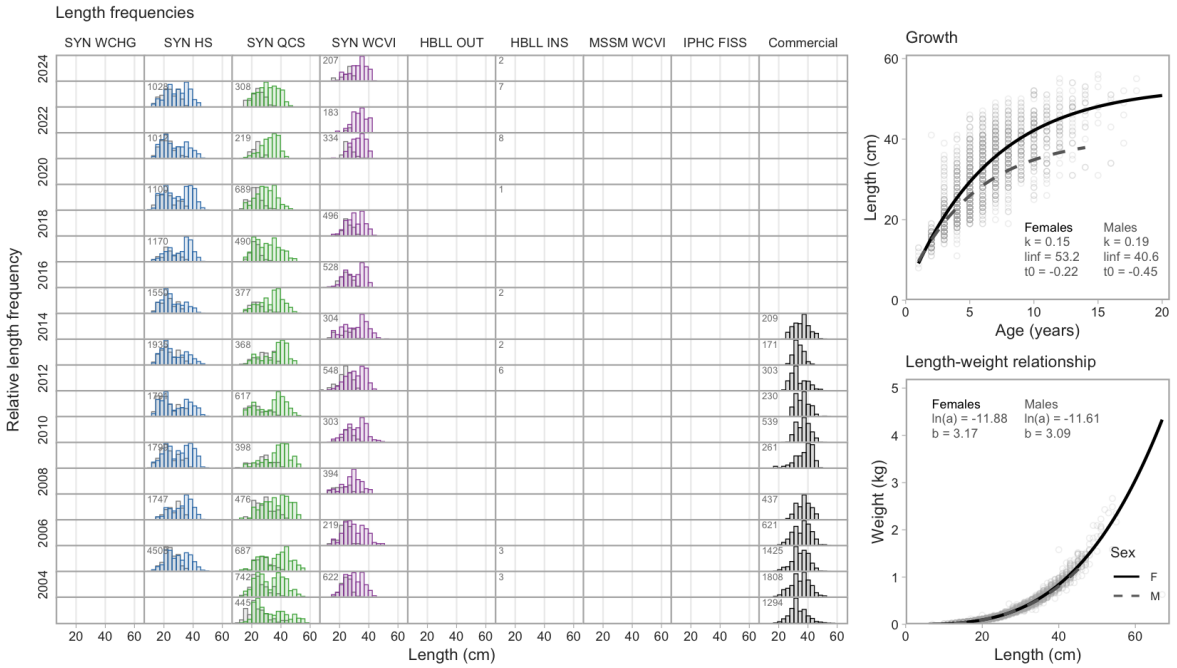

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.109 Southern Rock Sole

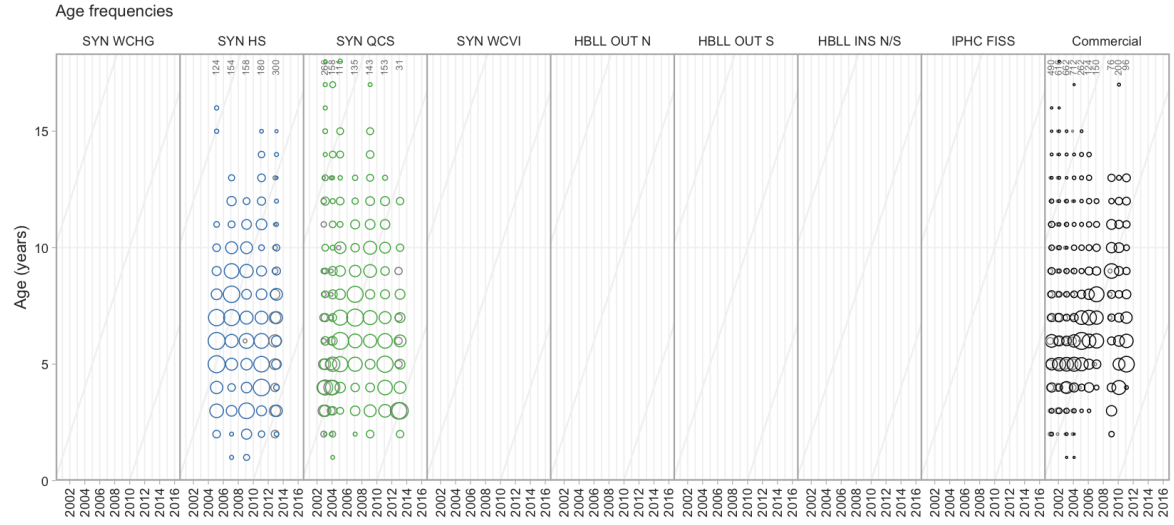
Lepidopsetta bilineata (621)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS
Last Research Document: Holt et al. (2016b)
Last Science Advisory Report: DFO (2014c)

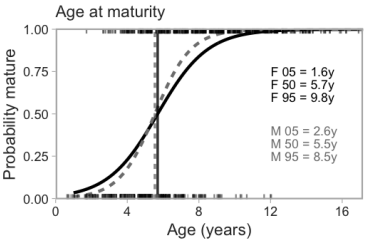


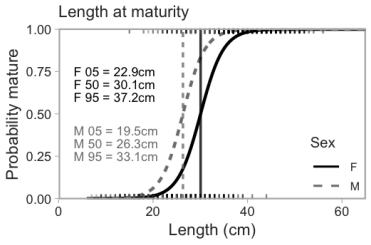

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

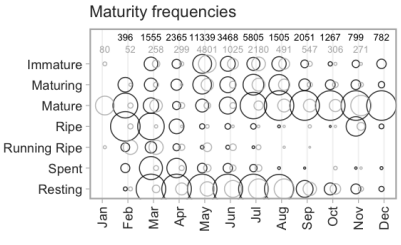
Growth
Length (cm)
Age (years)
Females
k = 0.15
linf = 53.2
t0 = -0.22
Males
k = 0.19
linf = 40.6
t0 = -0.45

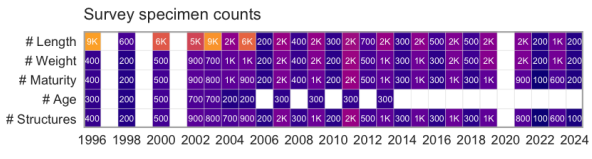
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.88
b = 3.17
Males
ln(a) = -11.61
b = 3.09
Sex
F
M

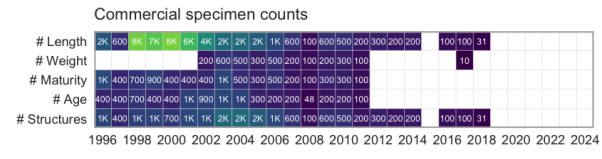

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 1.6y
F 50 = 5.7y
F 95 = 9.8y
M 05 = 2.6y
M 50 = 5.5y
M 95 = 8.5y


Length at maturity
Probability mature
Length (cm)
F 05 = 22.9cm
F 50 = 30.1cm
F 95 = 37.2cm
M 05 = 19.5cm
M 50 = 26.3cm
M 95 = 33.1cm
Sex
F
M

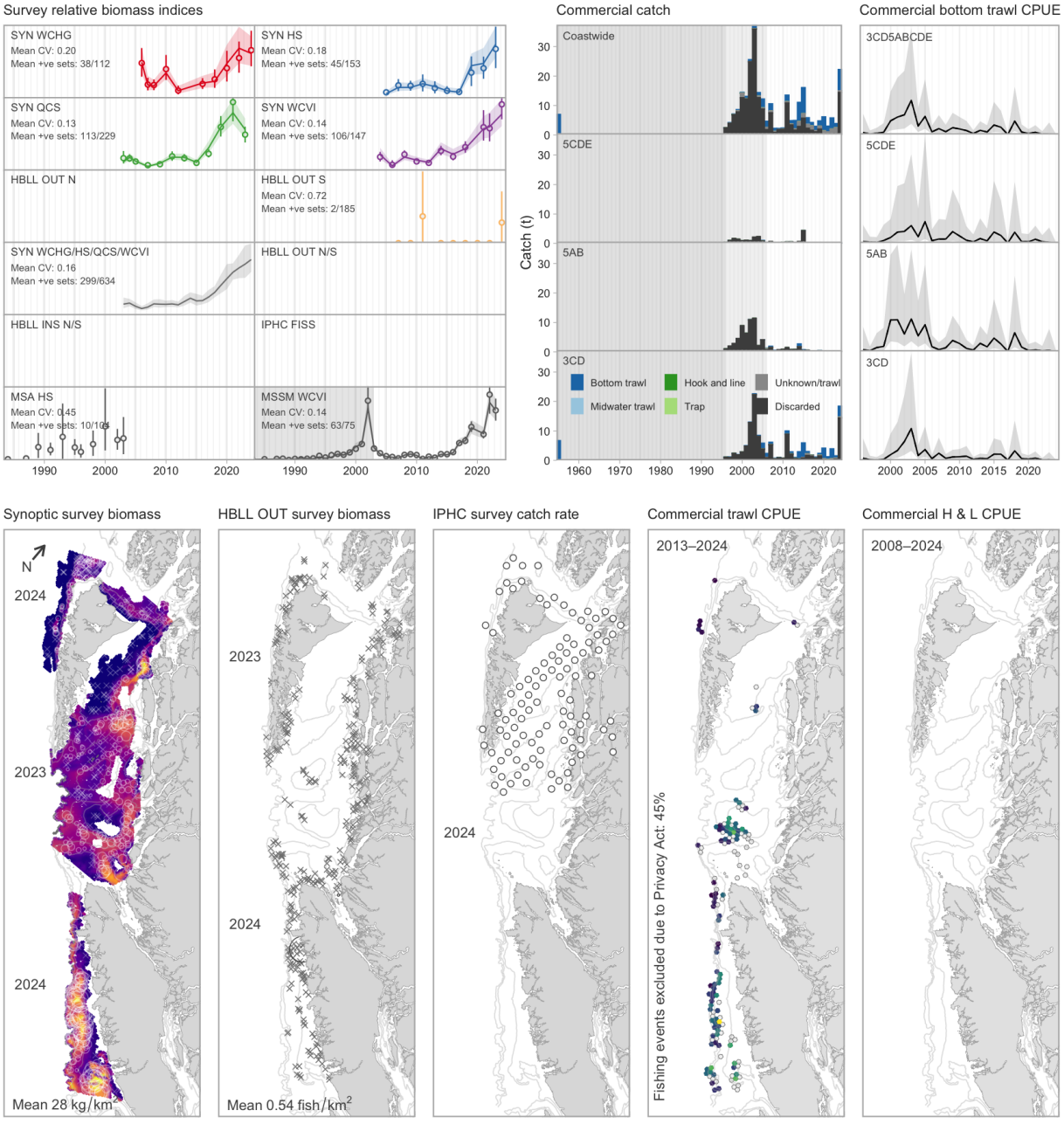

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

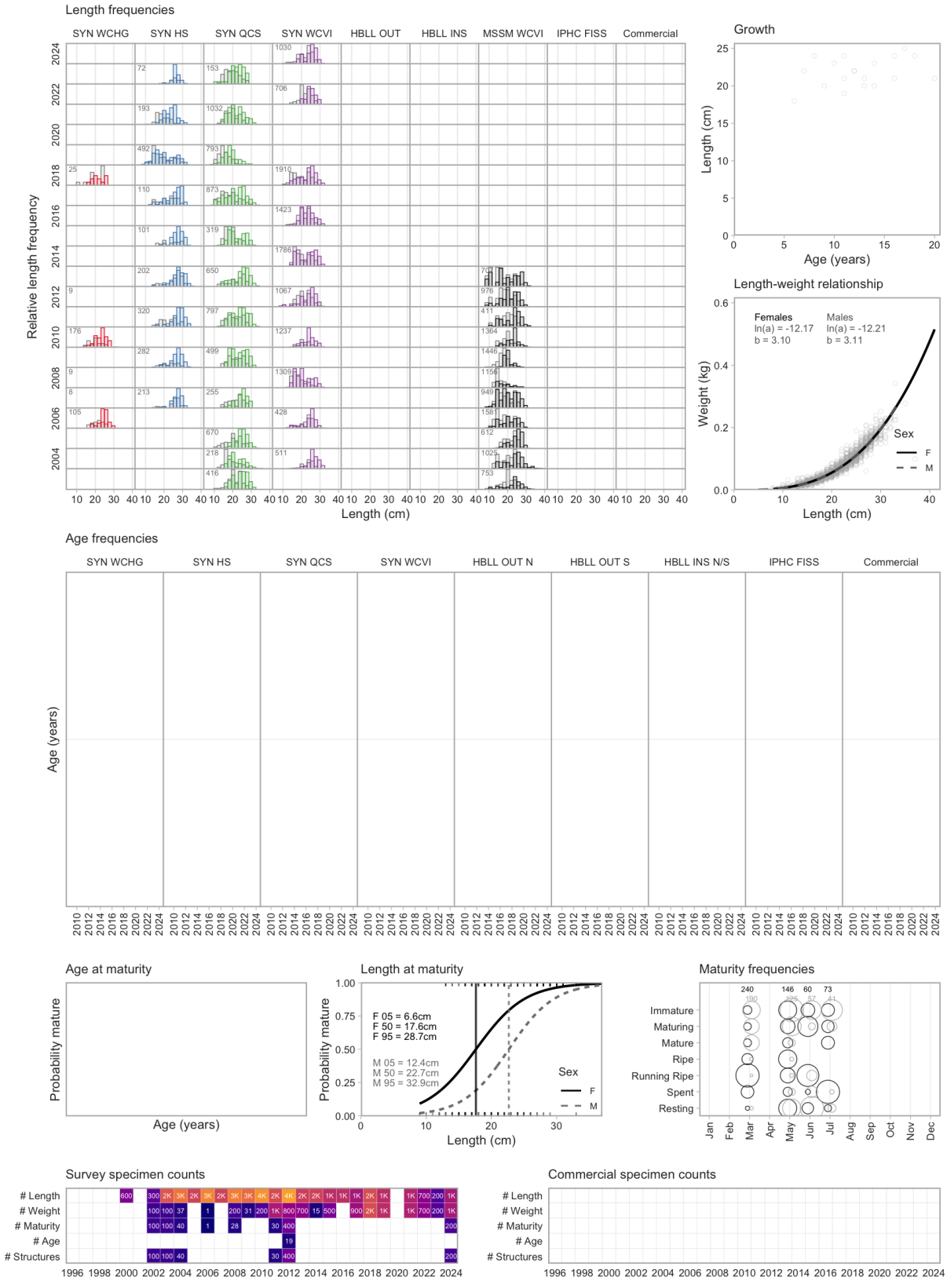

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.110 Slender Sole

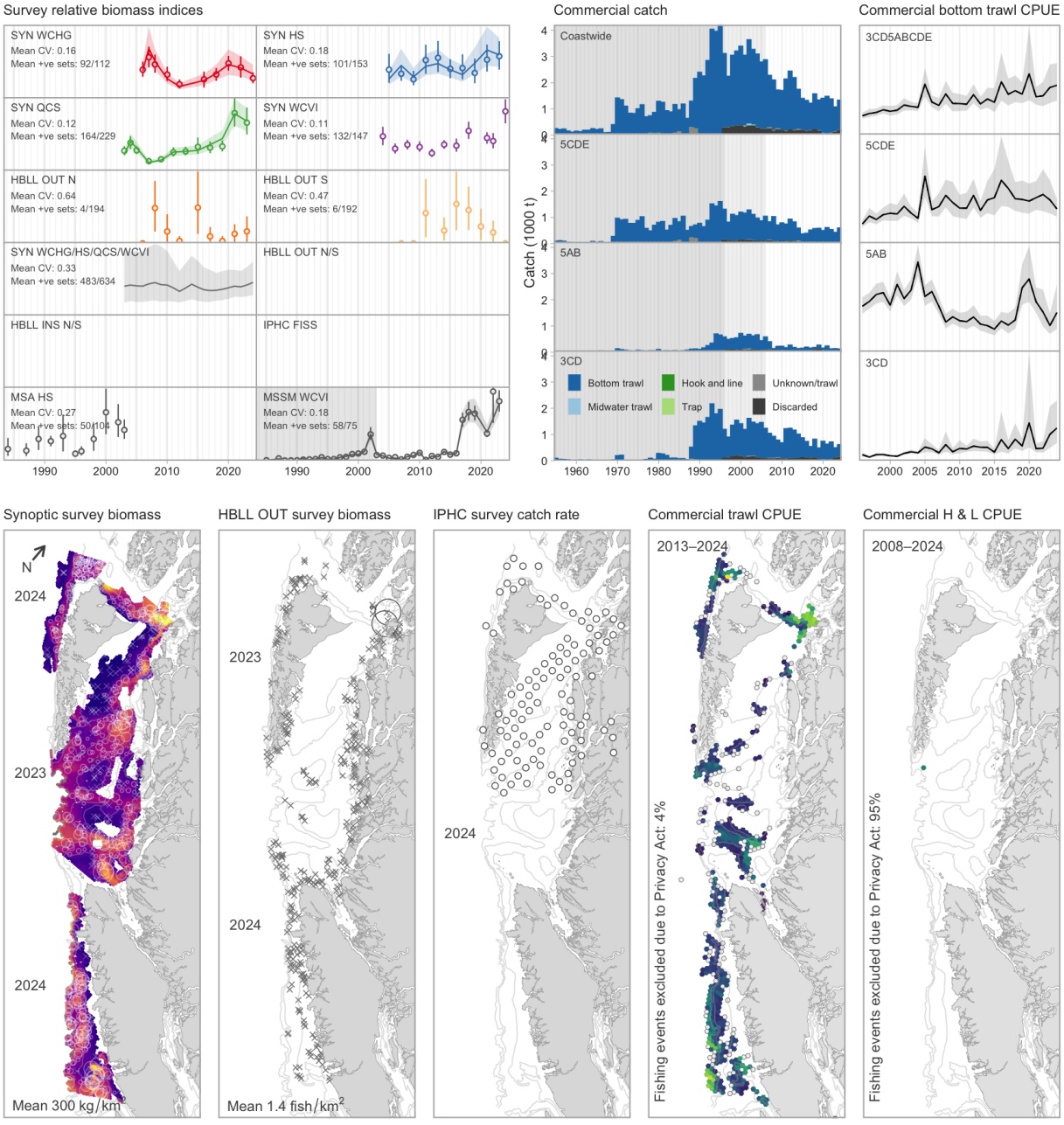
Lyopsetta exilis (625)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS

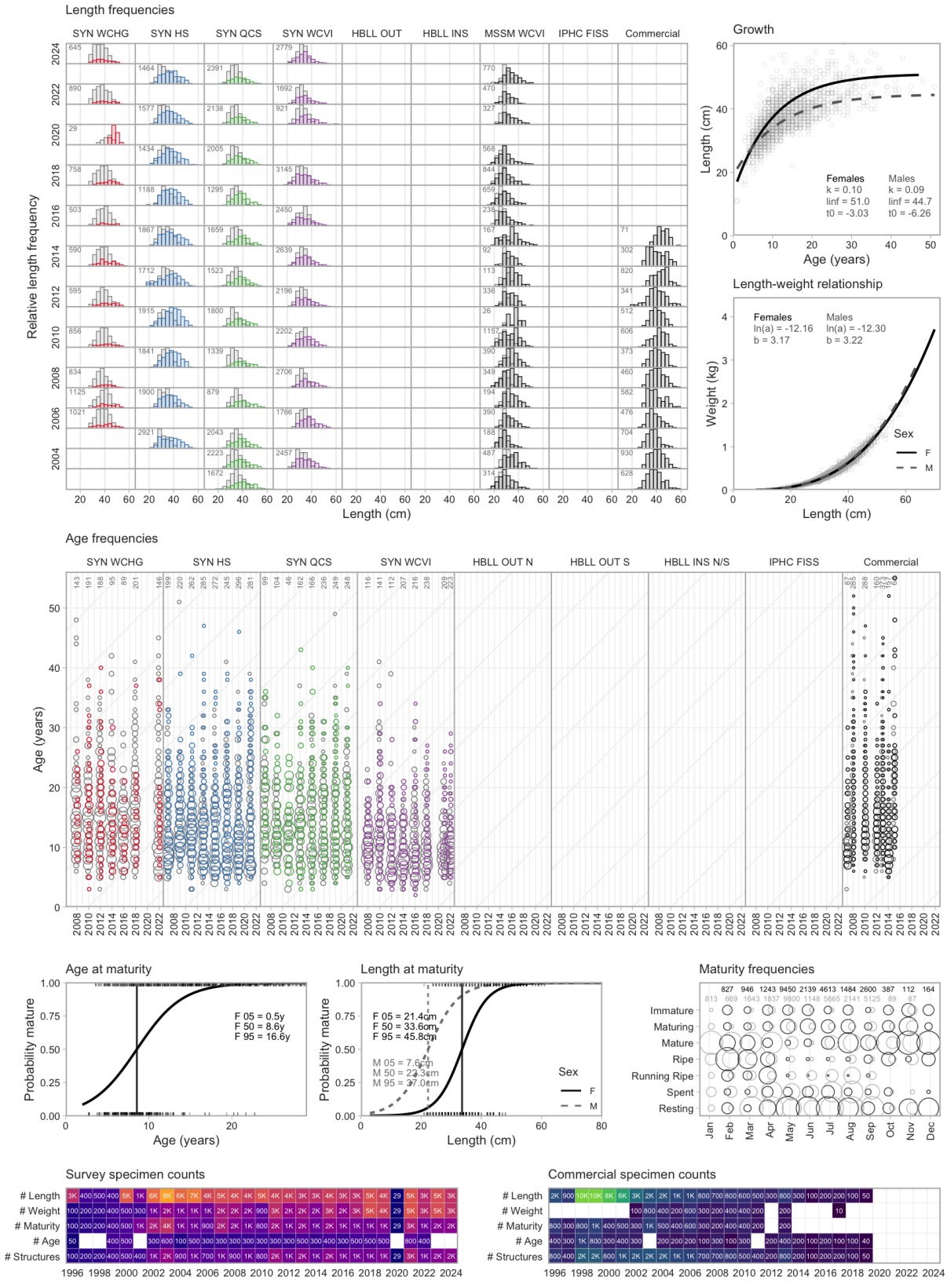



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -12.17
b = 3.10
Males
ln(a) = -12.21
b = 3.11
Weight (kg)
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
F 05 = 6.6cm
F 50 = 17.6cm
F 95 = 28.7cm
M 05 = 12.4cm
M 50 = 22.7cm
M 95 = 32.9cm
Probability mature
Length (cm)
Sex
F
M
Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.111 Dover Sole

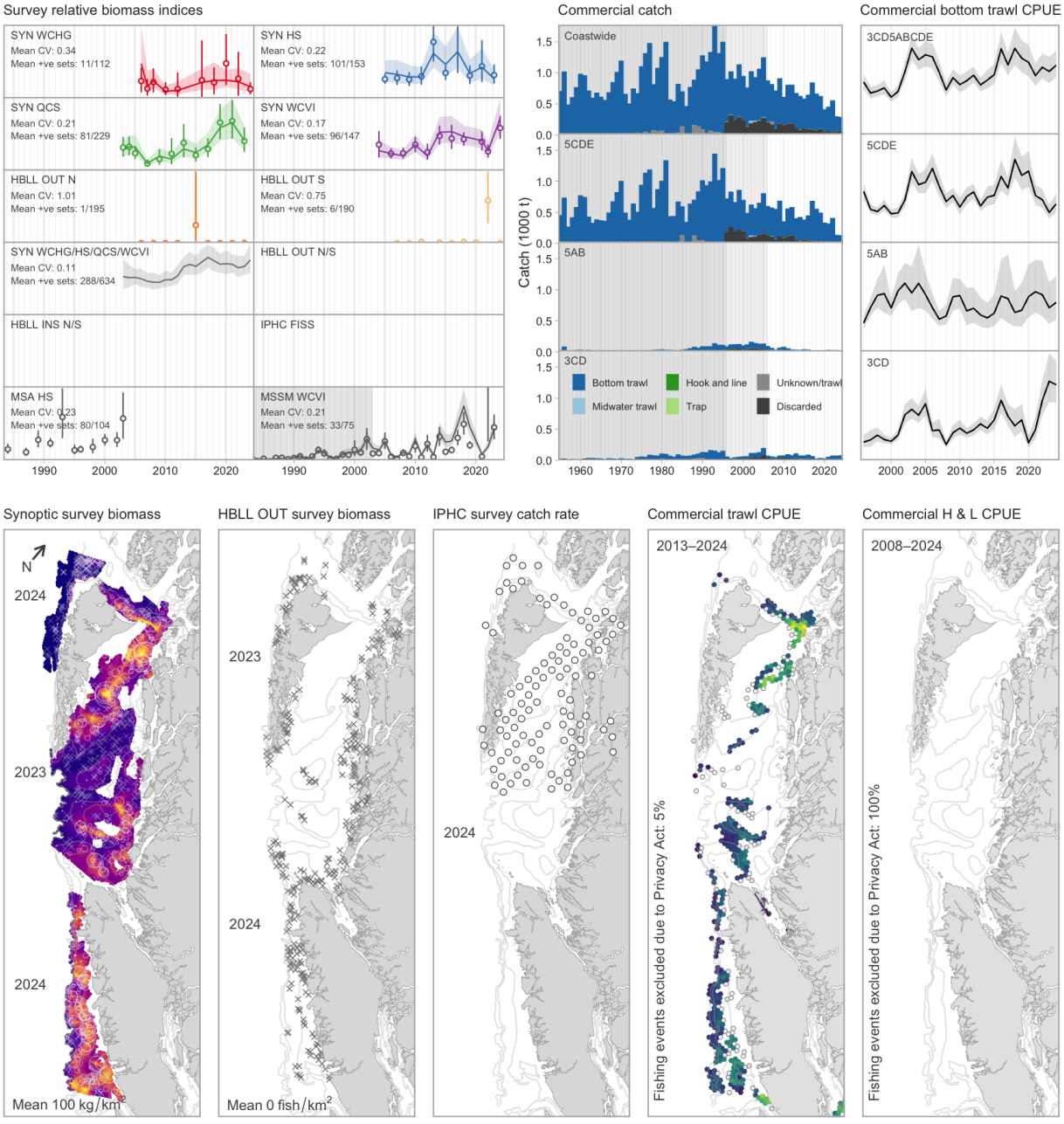
Microstomus pacificus (626)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS
Last Science Advisory Report: DFO (1999b)

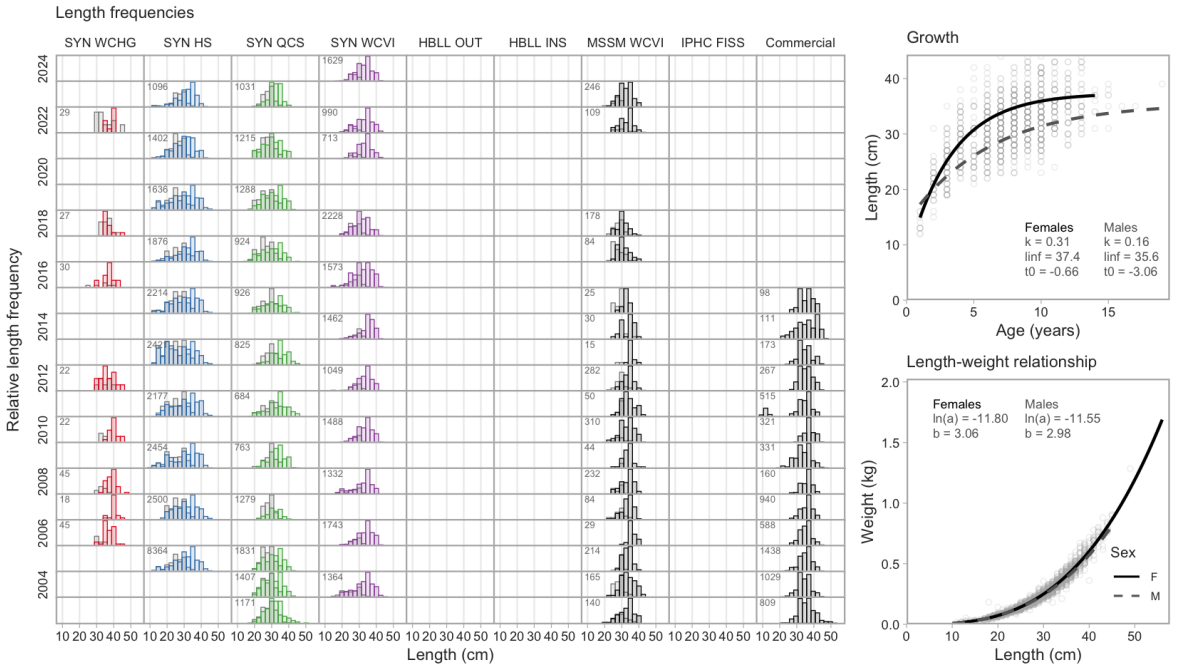



Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Females
k = 0.10
linf = 51.0
t0 = -3.03
Males
k = 0.09
linf = 44.7
t0 = -6.26
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -12.16
b = 3.17
Males
ln(a) = -12.30
b = 3.22
Sex
F
M
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
F 05 = 0.5y
F 50 = 8.6y
F 95 = 16.6y
Length at maturity
Probability mature
Length (cm)
F 05 = 21.4cm
F 50 = 33.6cm
F 95 = 45.8cm
M 05 = 7.6cm
M 50 = 22.3cm
M 95 = 37.0cm
Sex
F
M
Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.112 English Sole

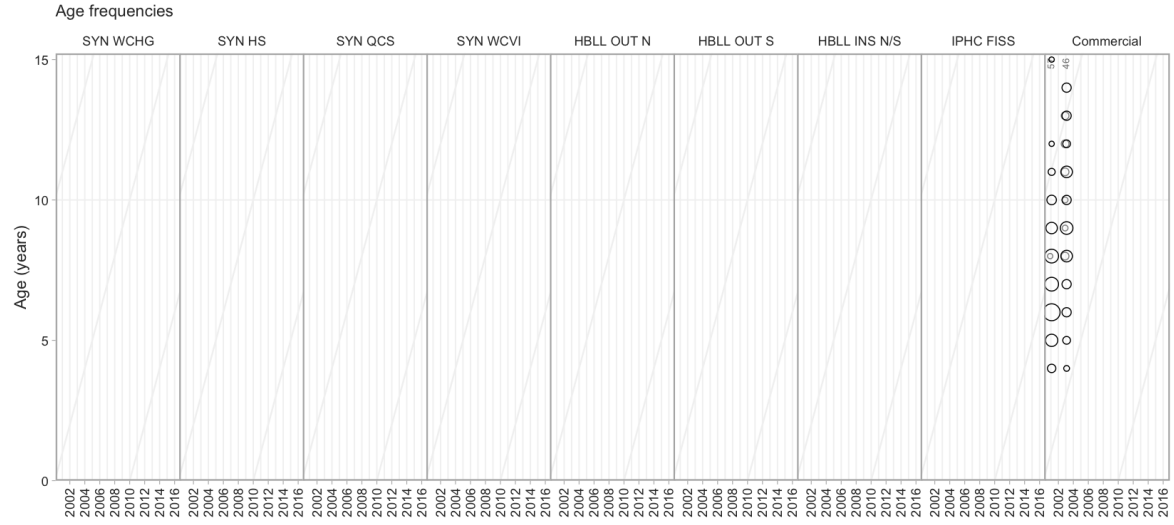
Parophrys vetulus (628)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS
Last Research Document: Starr (2009b)
Last Science Advisory Report: DFO (1999c)

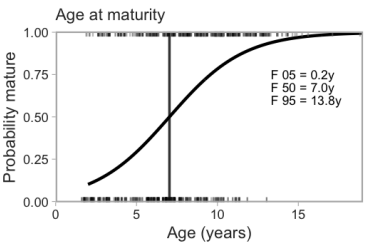


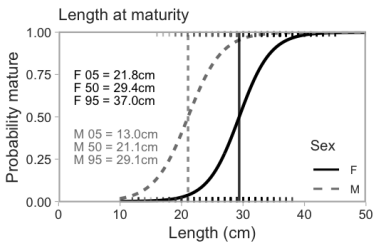

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

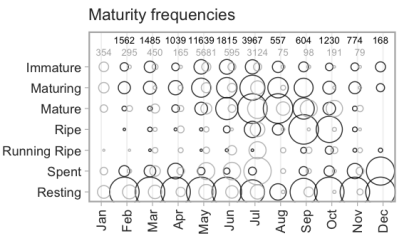
Growth
Length (cm)
Age (years)
Females
k = 0.31
linf = 37.4
t0 = -0.66
Males
k = 0.16
linf = 35.6
t0 = -3.06

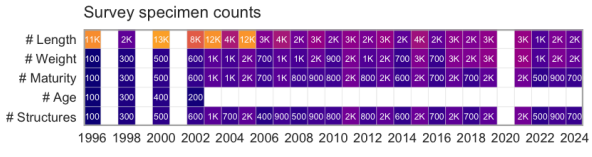
Length-weight relationship
Weight (kg)
Length (cm)
Females
ln(a) = -11.80
b = 3.06
Males
ln(a) = -11.55
b = 2.98
Sex
F
M

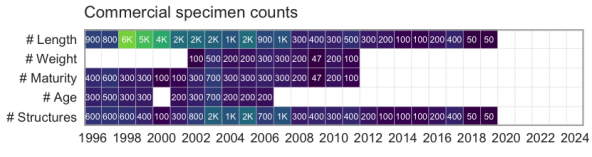

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)
F 05 = 0.2y
F 50 = 7.0y
F 95 = 13.8y


Length at maturity
Probability mature
Length (cm)
F 05 = 21.8cm
F 50 = 29.4cm
F 95 = 37.0cm
M 05 = 13.0cm
M 50 = 21.1cm
M 95 = 29.1cm
Sex
F
M

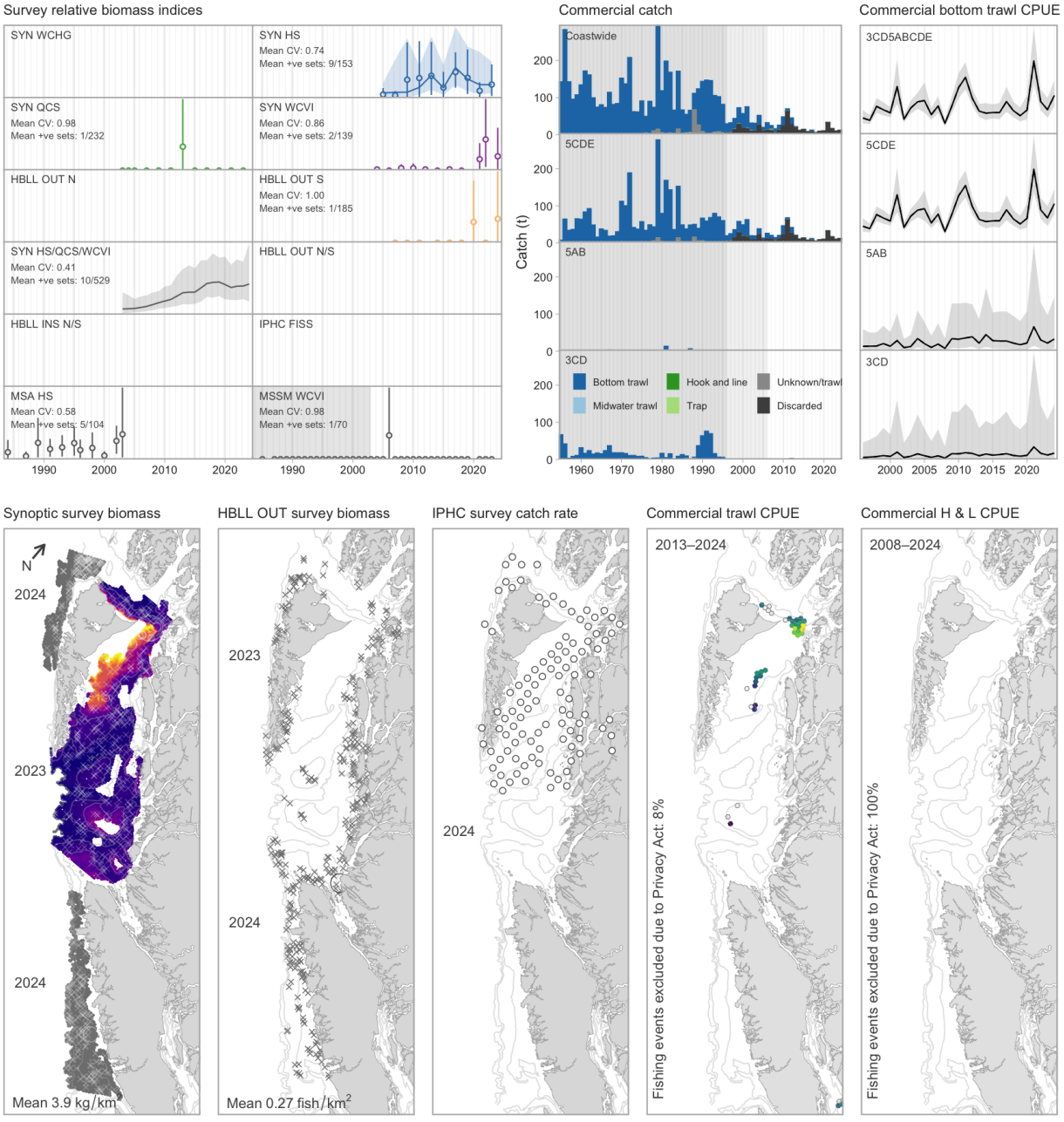

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

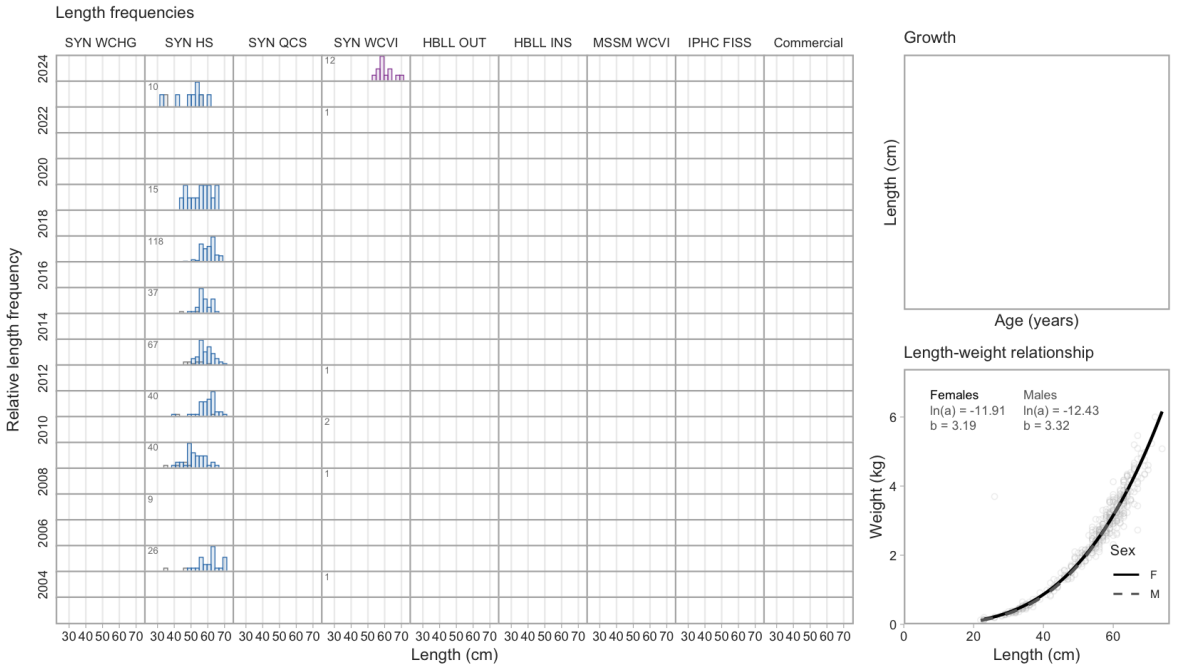

Survey specimen counts
Length
Weight
Maturity
Age
Structures

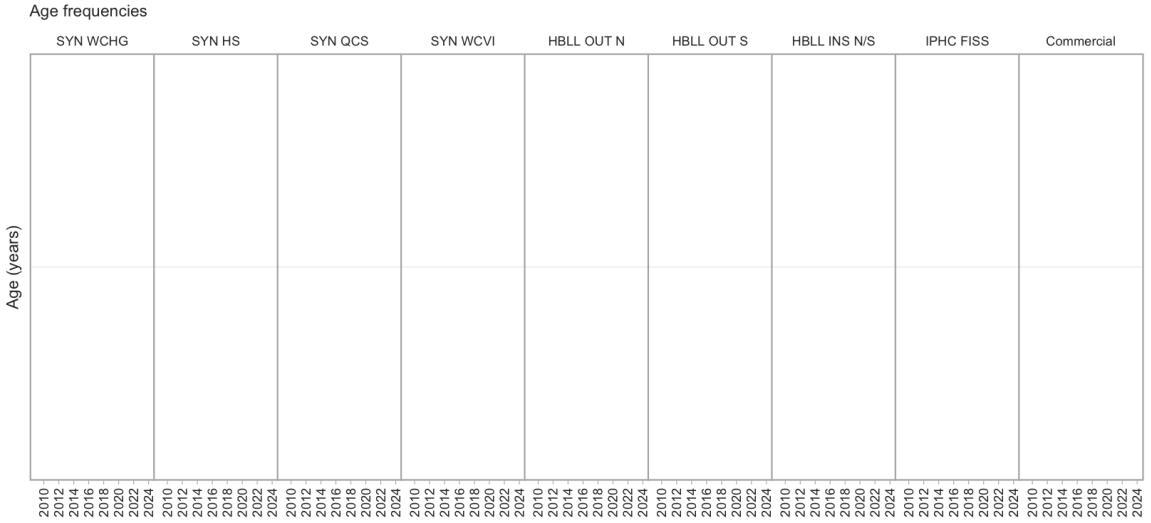

Commercial specimen counts
Length
Weight
Maturity
Age
Structures

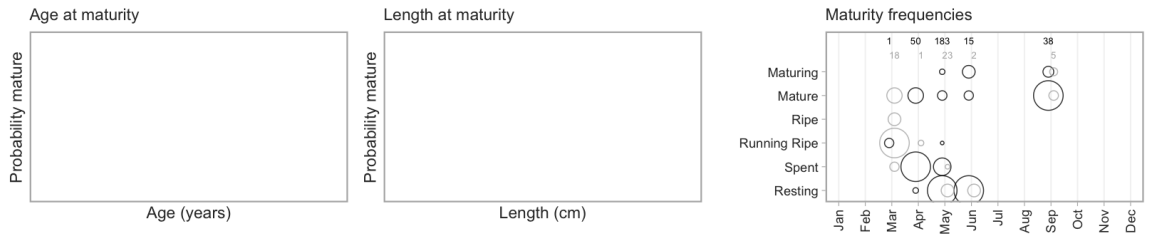
6.113 Starry Flounder

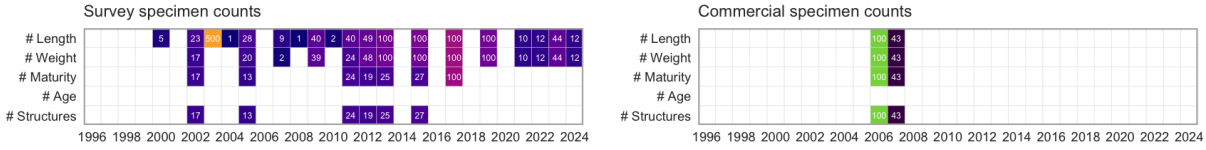
Platichthys stellatus (631)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS




Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.91
b = 3.19
Males
ln(a) = -12.43
b = 3.32
Weight (kg)
Sex
F
M
Length (cm)

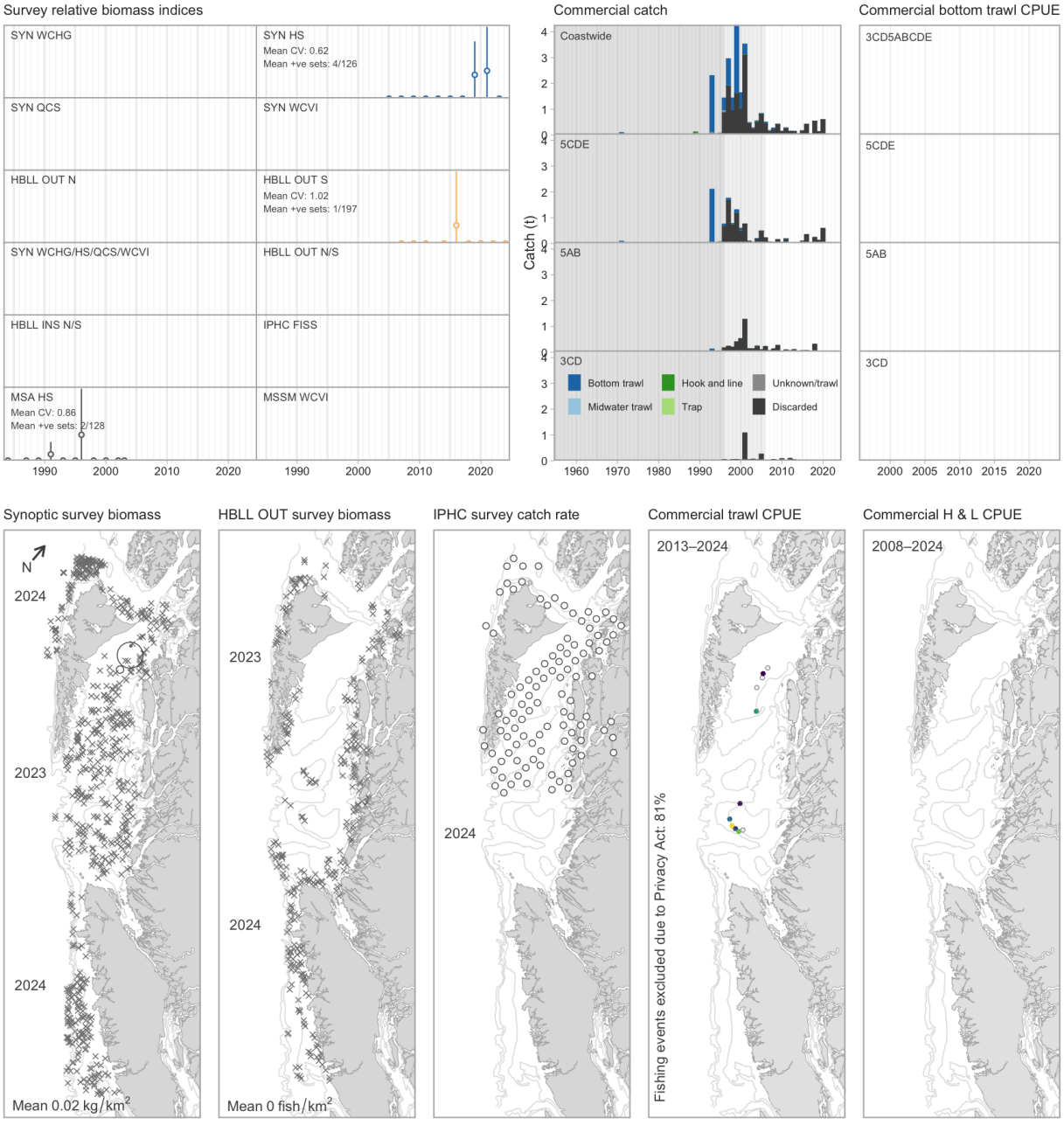

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)

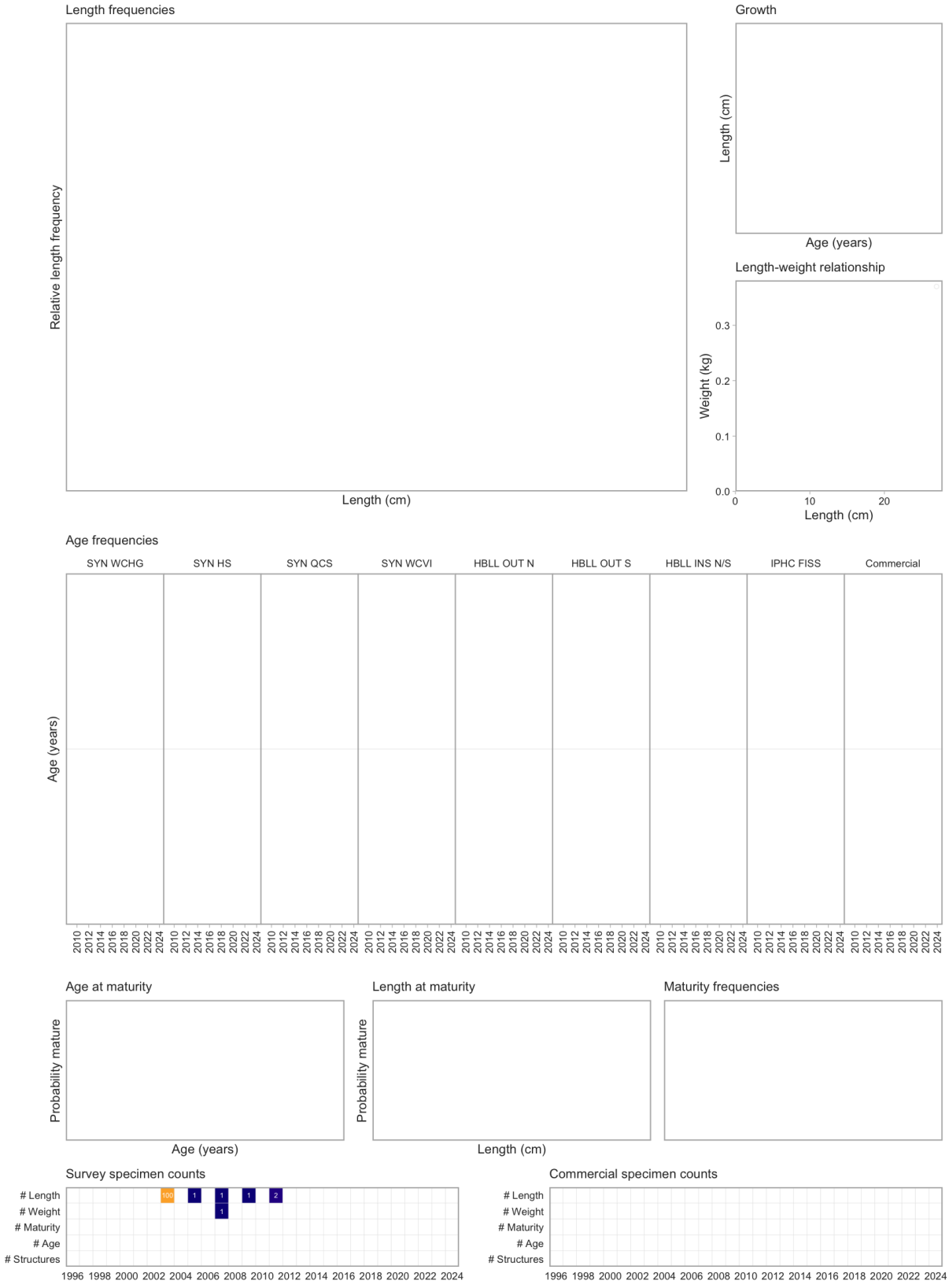

Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.114 C-O Sole

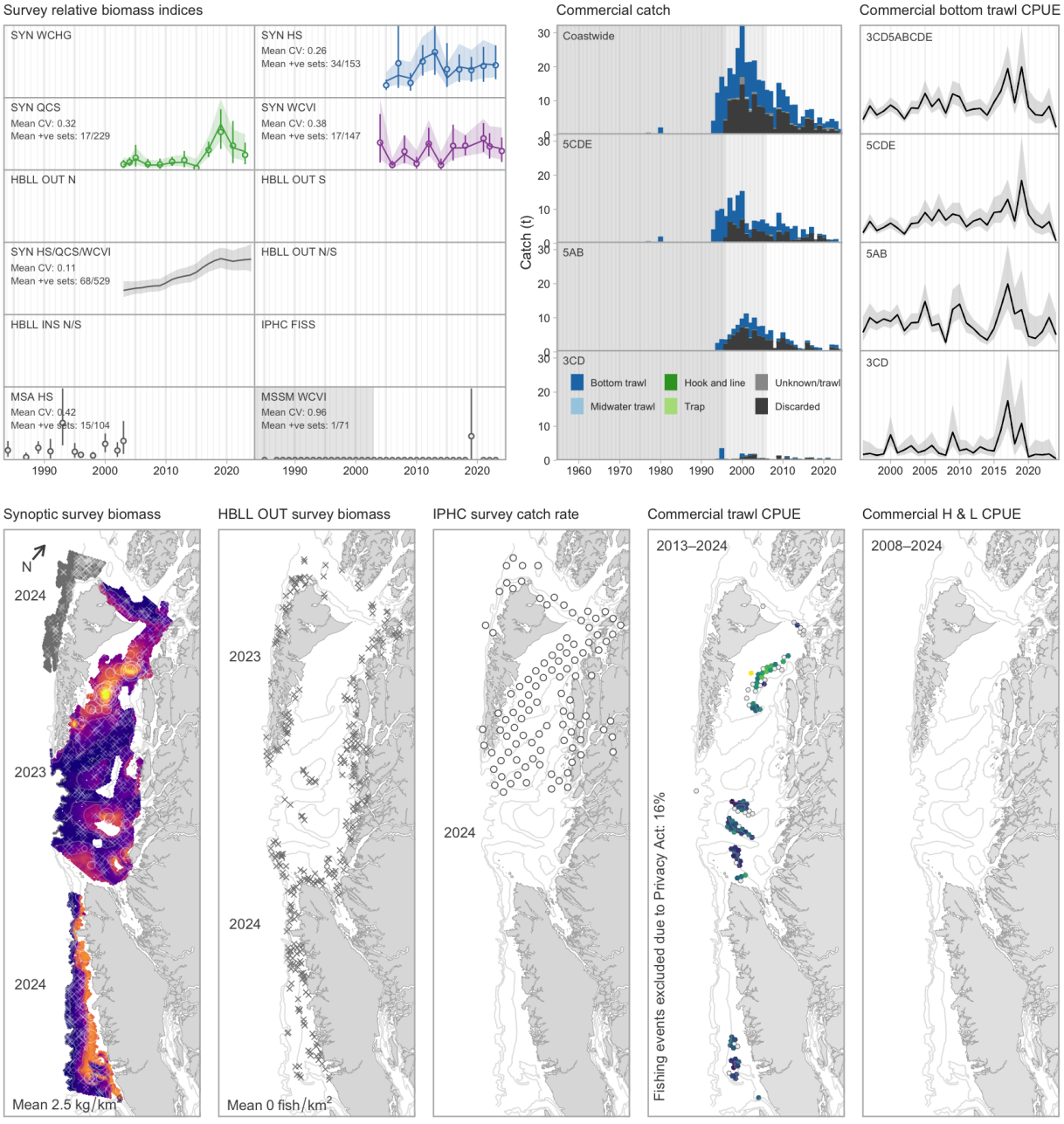
Pleuronichthys coenosus (633)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS

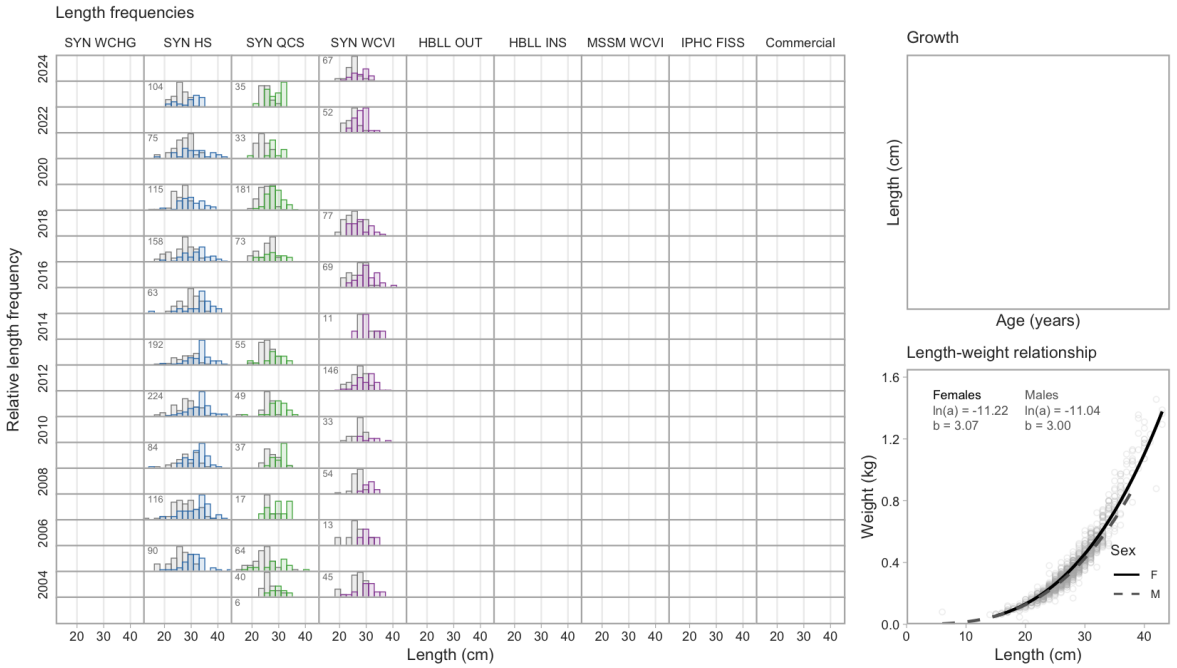



Length frequencies
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Weight (kg)
0.0
0.1
0.2
0.3
0
10
20
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
Probability mature
Length (cm)
Maturity frequencies
Survey specimen counts
Length
Weight
Maturity
Age
Structures
100
1
1
1
1
2
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Commercial specimen counts
Length
Weight
Maturity
Age
Structures
1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

6.115 Curlfin Sole

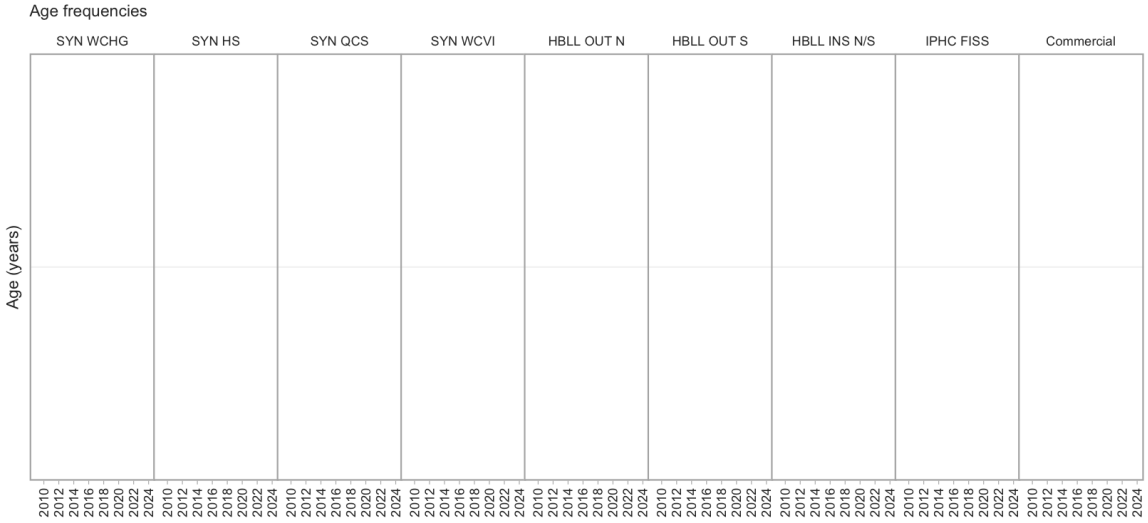
Pleuronichthys decurrens (635)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS



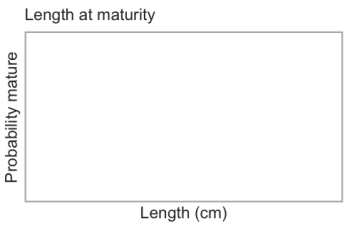

Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)

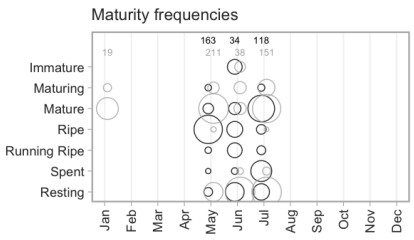
Growth
Length (cm)
Age (years)

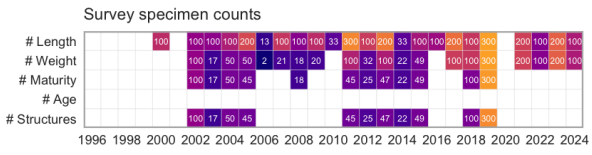
Length-weight relationship
Females
ln(a) = -11.22
b = 3.07
Males
ln(a) = -11.04
b = 3.00
Weight (kg)
Length (cm)
Sex
F
M

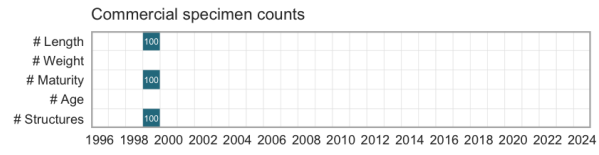

Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)


Age at maturity
Probability mature
Age (years)


Length at maturity
Probability mature
Length (cm)

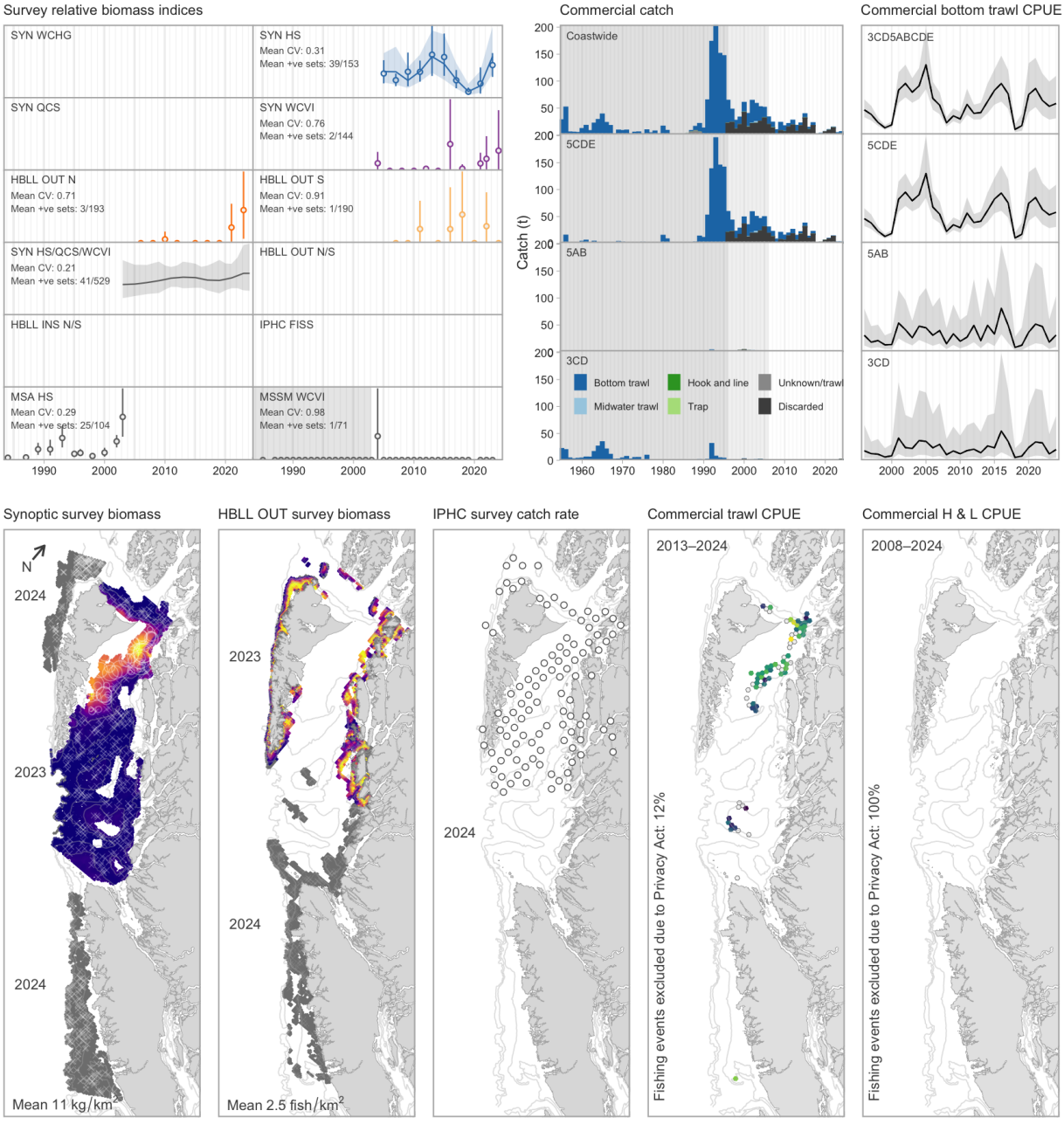

Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting

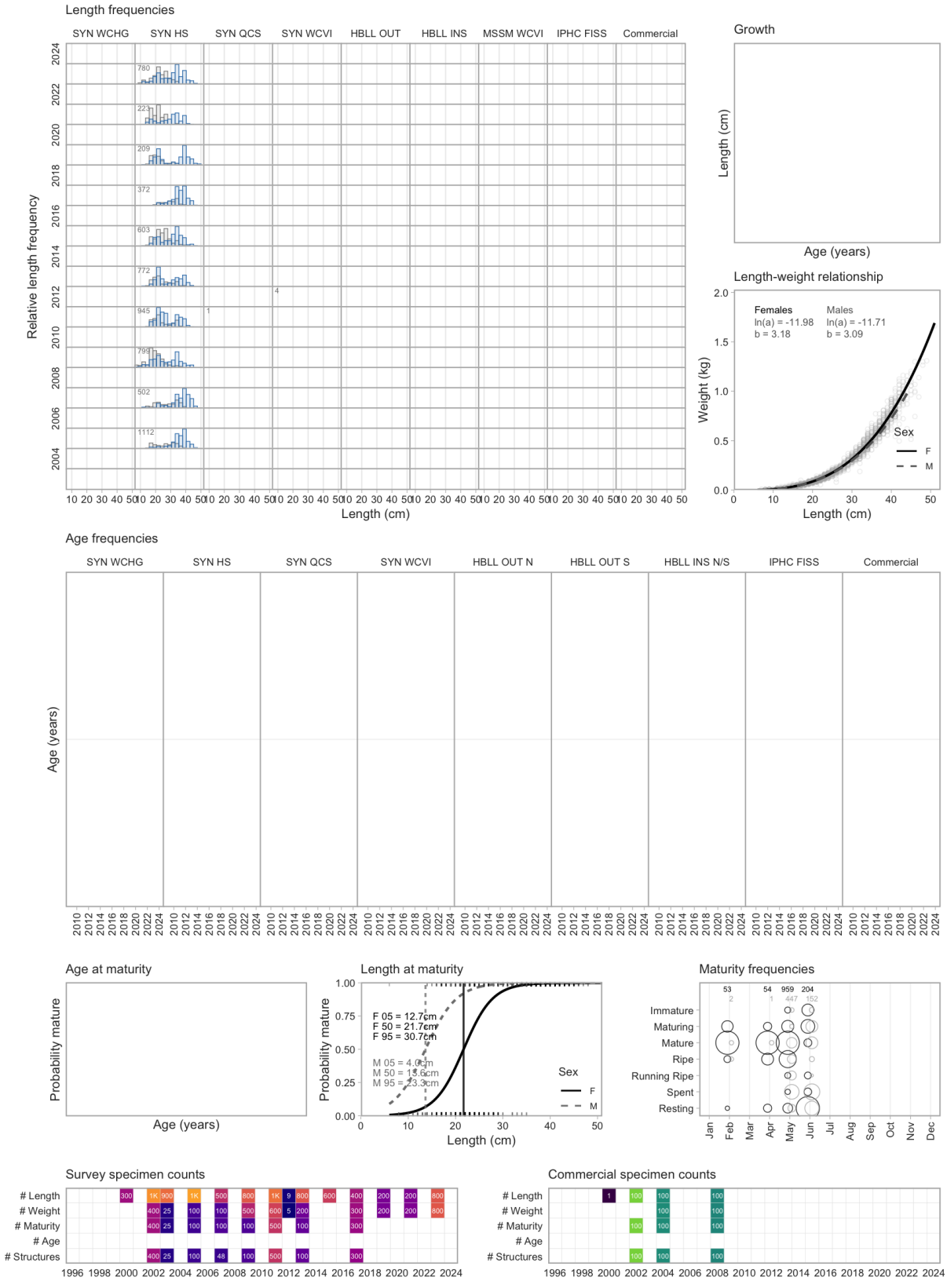

Survey specimen counts
Length
Weight
Maturity
Age
Structures


Commercial specimen counts
Length
Weight
Maturity
Age
Structures

6.116 Sand Sole

Psettichthys melanostictus (636)
Order: Pleuronectiformes, Family: Pleuronectidae, FishBase, WoRMS




Length frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT
HBLL INS
MSSM WCVI
IPHC FISS
Commercial
Relative length frequency
Length (cm)
Growth
Length (cm)
Age (years)
Length-weight relationship
Females
ln(a) = -11.98
b = 3.18
Males
ln(a) = -11.71
b = 3.09
Weight (kg)
Sex
F
M
Length (cm)
Age frequencies
SYN WCHG
SYN HS
SYN QCS
SYN WCVI
HBLL OUT N
HBLL OUT S
HBLL INS N/S
IPHC FISS
Commercial
Age (years)
Age at maturity
Probability mature
Age (years)
Length at maturity
F 05 = 12.7cm
F 50 = 21.7cm
F 95 = 30.7cm
M 05 = 4.0cm
M 50 = 15.6cm
M 95 = 23.3cm
Probability mature
Sex
F
M
Length (cm)
Maturity frequencies
Immature
Maturing
Mature
Ripe
Running Ripe
Spent
Resting
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Survey specimen counts
Length
Weight
Maturity
Age
Structures
Commercial specimen counts
Length
Weight
Maturity
Age
Structures

APPENDIX A Standardizing Commercial Catch Rate Data with Spatiotemporal Models

We used spatiotemporal models to standardize bottom trawl commercial catch per unit effort (CPUE). In the first three versions of this report, we used a non-spatial generalized linear mixed effect model (GLMM) approach (Anderson et al. 2019, 2024a; DFO 2022a). We used the model-based approach described here without documentation of the methodological change from the non-spatial GLMM in the 2023-data update version (Anderson et al. 2024b).

We fit our models with Poisson-link delta models (Thorson 2018). These delta or hurdle models contain two linked component models, more formally called "linear predictors". For any one linear predictor, we can represent the spatiotemporal model as:

$$\mathbb{E}[y_{\boldsymbol{s},t}] = \mu_{\boldsymbol{s},t}, \tag{A.1}$$

$$\mu_{\boldsymbol{s},t} = \exp\left(\eta_{\boldsymbol{s},t}\right), \tag{A.2}$$

$$\eta_{\boldsymbol{s},t} = \boldsymbol{X}_{\boldsymbol{s},t}\boldsymbol{\beta} + \gamma_v + \omega_{\boldsymbol{s}} + \delta_{\boldsymbol{s},t} \tag{A.3}$$

Here, the expected value, $\mathbb{E}[y_{s,t}]$, of response variable $y_{\boldsymbol{s},t}$ (catch weight) at spatial coordinates $\boldsymbol{s}$ and time (year) t is the mean at that point in space and time, given by $\mu_{\boldsymbol{s},t}$. That mean is then formed by an inverse link function applied to the linear predictor $\eta_{\boldsymbol{s},t}$. The linear predictor is comprised of a vector of main effect covariates $\boldsymbol{X}_{\boldsymbol{s},t}$ multiplied by a vector of coefficients $\boldsymbol{\beta}$, a random intercept for vessel v (γ_v), a spatial Gaussian random field value $\omega_{\boldsymbol{s}}$, and a spatiotemporal value $\delta_{\boldsymbol{s},t}$.

The spatial Gaussian Markov random field is assumed to be drawn from a multivariate normal (MVN) distribution with covariance (inverse precision) matrix $\boldsymbol{\Sigma}_\omega$ constrained by a Matérn covariance function.

$$\boldsymbol{\omega} \sim \mathrm{MVNormal}(\boldsymbol{0}, \boldsymbol{\Sigma}_\omega). \tag{A.4}$$

The spatiotemporal portion is structured as annual independent draws from a Gaussian Markov random field:

$$\boldsymbol{\epsilon_t} \sim \mathrm{MVNormal}\left(\boldsymbol{0}, \boldsymbol{\Sigma}_\epsilon\right). \tag{A.5}$$

The main effect coefficients varied by available data. For cases with data for 9 or greater months, we fit a model with a mean for each year, a quadratic effect of depth, and a penalized cyclical smoother for month. For cases with data for fewer than 9 months, we fit the same model but replaced the cyclical smoother with independent means for each month.

We chose Poisson-link (Thorson 2018) delta-lognormal models. In these models, the linear predictors in link (log) space (η_1 and η_2) represent theoretical group number n and theoretical catch per group w:

$$\log(n) = \eta_1, \tag{A.6}$$

$$\log(w) = \eta_2. \tag{A.7}$$

These get transformed (Thorson 2018) as

$$p = 1 - \exp(-a \cdot n), \tag{A.8}$$

$$r = \frac{nw}{p}, \tag{A.9}$$

where Eq. A.8 has its roots in a Poisson process (and the complementary log-log link) and the probabilities p and positive rates r are modelled as Bernoulli and lognormal, respectively. The symbol a represents the area swept for a given tow.

We implemented these models using the Stochastic Partial Differential Equation (SPDE) approximation to Gaussian random fields with Gaussian Markov random fields (Lindgren et al. 2011) for computational efficiency using the R (R Core Team 2025) package sdmTMB (Anderson et al. 2024c). sdmTMB estimates the marginal log likelihood using TMB to integrate over random effects with the Laplace approximation (Kristensen et al. 2016). This SPDE approach requires creating finite-element triangulation "meshes" for SPDE calculations and to interpolate from the random effects to the data locations or prediction locations with bilinear interpolation (Lindgren et al. 2011). We constructed our meshes with the fmesher R package (Lindgren 2025).

We retained the same approach to defining the data representing a "fleet" for a given species as in Anderson et al. (2019), but applied these criteria only to generating a coastwide fleet (region specific indices are described below). These criteria included retaining all vessels that had at least 100 tows that were positive for a given species and had at least 5 years with 5 trips that were positive for a given species.

We attempted to fit our models to all species with at least 200 rows of data given the fleet definition. We omitted models that did not pass convergence criteria. To assess convergence, we checked that the Hessian was positive definite, that the maximum absolute marginal log likelihood gradient was < 0.001 with respect to all fixed effects, and that no Gaussian random field marginal standard deviation was approaching a boundary (interpreted as ensuring their values were > 0.01).

From our fitted models, we calculated an area-weighted biomass index by predicting density from our model across a grid, multiplying that density by grid cell area, and summing the resulting biomass across grid cells (e.g., Thorson et al. 2015). We defined the grid as the intersection between the full synoptic survey 2×2 km grid and all commercial trawl locations for a given species fleet. I.e., only grid cells with at least one fishing event for a given species fleet were included. This grid definition includes some cells that are outside the frozen trawl footprint. Future versions may consider dropping cells outside the footprint and/or increasing the fishing-event threshold for defining the grid. We created region-specific standardized indices (i.e., indices for 5CDE, and 5AB, and 3CD) by partitioning the prediction grid by the given regions.

7 References

Anderson, S.C., Dunic, J.C., Keppel, E.A., and Edwards, A.M. 2024b. A data synopsis for British Columbia groundfish: 2023 data update. Can. Tech. Rep. Fish. Aquat. Sci. 3641: viii + 262 p.

Anderson, S.C., Dunic, J.C., Keppel, E.A., and Edwards, A.M. 2024a. A data synopsis for British Columbia groundfish: 2022 data update. Can. Tech. Rep. Fish. Aquat. Sci. 3624: viii + 267 p.

Anderson, S.C., Forrest, R.E., Huynh, Q.C., and Keppel, E.A. 2021. A management procedure framework for groundfish in British Columbia. DFO Can. Sci. Advis. Sec. Res. Doc. 2021/007. vi + 139 p.

Anderson, S.C., Huynh, Q.C., Davidson, L.N.K., and King, J.R. 2025. Pacific Spiny Dogfish (*Squalus suckleyi*) population modelling for outside waters of British Columbia in 2024. DFO Can. Sci. Advis. Sec. Res. Doc. Accepted at CSAS review/In press.

Anderson, S.C., Keppel, E.A., and Edwards, A.M. 2019. A reproducible data synopsis for over 100 species of British Columbia groundfish. DFO Can. Sci. Advis. Sec. Res. Doc. 2019/041. vii + 321 p.

Anderson, S.C., Keppel, E.A., and Edwards, A.M. 2020. Reproducible visualization of raw fisheries data for 113 species improves transparency, assessment efficiency, and monitoring. Fisheries 45: 535–543.

Anderson, S.C., Ward, E.J., English, P.A., Barnett, L.A.K., and Thorson, J.T. 2024c. sdmTMB: An R package for fast, flexible, and user-friendly generalized linear mixed effects models with spatial and spatiotemporal random fields. In press at Journal of Statistical Software. bioRxiv preprint 2022.03.24.485545.

COSEWIC. 2003. Annual report to the Canadian Endangered Species Conservation Council (CESCC). COSEWIC: 56 p.

COSEWIC. 2007a. COSEWIC assessment and status report on the Bluntnose Sixgill shark *Hexanchus griseus* in Canada. COSEWIC: vii + 33 p.

COSEWIC. 2007d. COSEWIC assessment and status report on the Canary Rockfish *Sebastes pinniger* in Canada. COSEWIC: vii + 71 p.

COSEWIC. 2007e. COSEWIC assessment and status report on the Longspine Thornyhead *Sebastolobus altivelis* in Canada. COSEWIC: vii + 27 p.

COSEWIC. 2007c. COSEWIC assessment and status report on the Rougheye Rockfish *Sebastes* sp. type I and *Sebastes* sp. type II in Canada. COSEWIC: viii + 36 p.

COSEWIC. 2007b. Annual report presented to the Minister of the Environment and the Canadian Endangered Species Conservation Council (CESCC). COSEWIC: 119 p.

COSEWIC. 2009. COSEWIC assessment and status report on the Quillback Rockfish *Sebastes maliger* in Canada. COSEWIC: vii + 71 p.

COSEWIC. 2010a. COSEWIC assessment and status report on the Darkblotched Rockfish, *Sebastes crameri*, in Canada. COSEWIC: vii + 48 p.

COSEWIC. 2010b. COSEWIC assessment and status report on the Yellowmouth Rockfish *Sebastes reedi* in Canada. COSEWIC: vii + 57 p.

COSEWIC. 2011. COSEWIC assessment and status report on the North Pacific Spiny Dogfish *Squalus suckleyi* in Canada. COSEWIC: x + 45 p.

COSEWIC. 2013b. COSEWIC assessment and status report on Bocaccio *Sebastes paucispinis* in Canada. COSEWIC: xi + 49 p.

COSEWIC. 2013a. COSEWIC assessment and status report on the Eulachon, Nass/Skeena population, *Thaleichthys pacificus* in Canada. COSEWIC: xi + 18 p.
COSEWIC. 2016. COSEWIC assessment and status report on the Blue Shark *Prionace glauca*, North Atlantic population and North Pacific population, in Canada. COSEWIC: xv + 50 p.
COSEWIC. 2018. COSEWIC status appraisal summary on the Basking Shark *Cetorhinus maximus*, Pacific population, in Canada. COSEWIC: xii.
COSEWIC. 2020. COSEWIC assessment and status report on the Yelloweye Rockfish *Sebastes ruberrimus*, Pacific Ocean outside waters population and Pacific Ocean inside waters population in Canada. COSEWIC: xvi + 72 p.
COSEWIC. 2021. COSEWIC assessment and status report on the Tope *Galeorhinus galeus* in Canada. COSEWIC: xi + 49 p.
Cox, S.P., Doherty, B., Benson, A.J., Johnson, S.D.N., and Haggarty, D.R. 2020. Evaluation of potential rebuilding strategies for Outside Yelloweye Rockfish in British Columbia. DFO Can. Sci. Advis. Sec. Res. Doc. 2020/069. viii + 135 p.
DFO. 1999a. Shortraker Rockfish British Columbia coast. DFO Sci. Stock Status Rep. 1999/A6-14: 3 p.
DFO. 1999b. Dover Sole west coast Vancouver Island (Areas 3C, D) to Queen Charlotte Islands (Areas 5A-E). DFO Sci. Stock Status Rep. A6-04: 3 p.
DFO. 1999c. English Sole Hecate Strait (Areas 5C/D). DFO Can. Sci. Advis. Sec. DFO Sci. Stock Status Rep. A6-05: 3 p.
DFO. 2010. Assessment of Spiny Dogfish (*Squalus acanthias*) in British Columbia in 2010. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2010/057.
DFO. 2011b. Lingcod (*Ophiodon elongatus*) stock assessment and yield advice for outside stocks in British Columbia. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/051.
DFO. 2011a. Recovery strategy for the Basking Shark (*Cetorhinus maximus*) in Canadian Pacific waters. *Species at Risk Act* Recovery Strategy: v + 25 p.
DFO. 2012. Management plan for the Rougheye/Blackspotted Rockfish Complex (*Sebastes aleutianus* and *S. melanostictus*) and Longspine Thornyhead (*Sebastolobus altivelis*) in Canada. DFO (*Species at Risk Act*) Management Plan Series: vi + 49 p.
DFO. 2014a. Big Skate (*Raja binoculata*) and Longnose Skate (*R. rhina*) stock assessments for British Columbia. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/027.
DFO. 2014b. Stock assessment for Silvergray Rockfish (*Sebastes brevispinis*) along the Pacific coast of Canada. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/028.
DFO. 2014c. Stock assessment and harvest advice for Rock Sole (*Lepidopsetta* spp.) in British Columbia. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/039.
DFO. 2015b. Yellowtail Rockfish (*Sebastes flavidus*) stock assessment for the coast of British Columbia, Canada. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2015/010.
DFO. 2015c. Stock assessment for Lingcod (*Ophiodon elongatus*) in the Strait of Georgia, British Columbia in 2014. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2015/014.
DFO. 2015a. Recovery potential assessment for eulachon – Fraser River designatable unit. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2015/002.
DFO. 2016. Stock assessment of the coastwide population of Shortspine Thornyhead (*Sebastolobus alascanus*) for British Columbia, Canada in 2015. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2016/016.
DFO. 2017. Evaluating the robustness of management procedures for the Sablefish (*Anoplopoma fimbria*) fishery in British Columbia, Canada for 2017–18. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2017/017.

DFO. 2018a. Walleye Pollock (*Theragra chalcogramma*) stock assessment for British Columbia in 2017. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2018/020.
DFO. 2018b. Redstripe Rockfish (*Sebastes proriger*) stock assessment for British Columbia in 2018. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2018/049.
DFO. 2019b. Widow Rockfish (*Sebastes entomelas*) stock assessment for British Columbia in 2019. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2019/044.
DFO. 2019a. Assessment of British Columbia Pacific Cod for areas 3CD and 5ABCD in 2018. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2019/008.
DFO. 2020b. Rougheye/Blackspotted Rockfish (*Sebastes aleutianus/melanostictus*) stock assessment for British Columbia in 2020. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/047.
DFO. 2020c. Bocaccio (*Sebastes paucispinis*) stock assessment for British Columbia in 2019, including guidance for rebuilding plans. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/025.
DFO. 2020e. Evaluation of potential rebuilding strategies for outside Yelloweye Rockfish in British Columbia. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/024.
DFO. 2020d. Evaluation of management procedures for the inside population of Yelloweye Rockfish rebuilding plan in British Columbia. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/056.
DFO. 2020a. Action Plan for the Basking Shark *Cetorhinus maximus* in Canadian Pacific waters. Species at Risk Act Action Plan Series: iii + 17 p.
DFO. 2021a. Status update of Pacific Cod (*Gadus macrocephalus*) for West Coast Vancouver Island (area 3CD), and Hecate strait and Queen Charlotte sound (area 5ABCD) in 2020. DFO Can. Sci. Advis. Sec. Sci. Resp. 2021/002.
DFO. 2021b. Management plan for the Yelloweye Rockfish (*Sebastes ruberrimus*) in Canada. DFO *Species at Risk Act* Management Plan Series: iv + 33 p.
DFO. 2022b. Yellowmouth Rockfish (*Sebastes reedi*) Stock Assessment for British Columbia in 2021. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2022/001.
DFO. 2022a. A data synopsis for British Columbia groundfish: 2021 data update. DFO Can. Sci. Advis. Sec. Sci. Resp. 2022/020.
DFO. 2023f. A revised operating model for Sablefish in British Columbia in 2022. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2023/010.
DFO. 2023c. Canary Rockfish (*sebastes pinniger*) stock assessment for British Columbia in 2022. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2023/002.
DFO. 2023d. Recovery potential assessment for Yelloweye Rockfish (*Sebastes ruberrimus*) in British Columbia. DFO Can. Sci. Advis. Sec. Sci. Resp. 2023/003.
DFO. 2023e. Management procedures update and catch advice for 2023/24–2026/27 fishing seasons for outside Yelloweye Rockfish (*Sebastes ruberrimus*) in the Pacific Region. DFO Can. Sci. Advis. Sec. Sci. Resp. 2023/037.
DFO. 2023a. Application of the Management Procedure Framework for Inside Quillback Rockfish (*Sebastes maliger*) in British Columbia in 2022. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2023/033.
DFO. 2023g. Arrowtooth Flounder (*Atheresthes stomias*) stock assessment for British Columbia in 2021. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2023/042.
DFO. 2023b. Application of the Management Procedure Framework for Outside Quillback Rockfish (*Sebastes maliger*) in British Columbia in 2021. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2023/041.

DFO. 2024b. Pacific Ocean Perch (*Sebastes alutus*) Stock Assessment for British Columbia in 2023. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2024/012.
DFO. 2024a. Status update of Pacific Cod (*Gadus macrocephalus*) off the West Coast of Vancouver Island in 2023. DFO Can. Sci. Advis. Sec. Sci. Resp. 2024/003.
DFO. 2024d. Application of the British Columbia Sablefsh (*Anoplopoma fimbria*) Management Procedure for the 2024-25 Fishing Year. DFO Can. Sci. Advis. Sec. Sci. Resp. 2024/013.
DFO. 2024c. Update of the 2019 Bocaccio (*sebastes paucispinis*) Stock Assessment for British Columbia in 2024. DFO Can. Sci. Advis. Sec. Sci. Resp. 2024/033.
DFO. 2025b. Assessment of Petrale Sole in British Columbia in 2024. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2025/002.
DFO. 2025a. Stock Status Update for Arrowtooth Flounder (*Atheresthes stomias*) for the West Coast of British Columbia in 2024. DFO Can. Sci. Advis. Sec. Sci. Resp.
Dunic, J.C., and Anderson, S.C. 2025. A data synopsis for British Columbia groundfish: 2023 data update. Can. Tech. Rep. Fish. Aquat. Sci. 3667: v + 40 p.
Dunic, J.C., Conner, J., Anderson, S.C., and Thorson, J.T. 2025. The generalized gamma is a flexible distribution that outperforms alternatives when modelling catch rate data. ICES Journal of Marine Science 82(4): fsaf040.
Edwards, A.M., Haigh, R., and Starr, P.J. 2017. Redbanded Rockfish (*Sebastes babcocki*) stock assessment for the Pacific coast of Canada in 2014. DFO Can. Sci. Advis. Sec. Res. Doc. 2017/058. v + 182 p.
Forrest, R.E., Anderson, S.C., Grandin, C.J., and J., S.P. 2020. Assessment of Pacific Cod (*Gadus macrocephalus*) for Hecate Strait and Queen Charlotte Sound (Area 5ABCD), and West Coast Vancouver Island (Area 3CD) in 2018. DFO Can. Sci. Advis. Sec. Res. Doc. 2020/070. v + 215 p.
Galluci, V., Taylor, I., King, J., McFarlane, G.A., and McPhie, R. 2011. Spiny Dogfish (*Squalus acanthias*) assessment and catch recommendations for 2010. DFO Can. Sci. Advis. Sec. Res. Doc. 2011/034. xii + 69 p.
Grandin, C.J., and Forrest, R.E. 2017. Arrowtooth Flounder (*Atheresthes stomias*) stock assessment for the west coast of British Columbia. DFO Can. Sci. Advis. Sec. Res. Doc. 2017/25. v + 87 p.
Haggarty, D.R., Huynh, Q.C., Forrest, R.E., Anderson, S.C., Bresch, M.J., and Keppel, E.A. 2022. Evaluation of potential rebuilding strategies for Inside Yelloweye Rockfish (*Sebastes ruberrimus*) in British Columbia. DFO Can. Sci. Advis. Sec. Res. Doc. 2021/008. vi + 139 p.
Haigh, R., Olsen, N., and Starr, P. 2005. A review of Longspine Thornyhead (*Sebastolobus altivelis*) along the Pacific coast of Canada: Biology, distribution, and abundance trends. DFO Can. Sci. Advis. Sec. Res. Doc. 2005/097. 44 p.
Haigh, R., and Starr, P. 2008. A review of Darkblotched Rockfish (*Sebastes crameri*) along the Pacific coast of Canada: Biology, distribution, and abundance trends. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2008/056.
Hart, J.L., Clemens, W.A., and Fisheries Research Board of Canada. 1988. Pacific fishes of Canada. Fisheries Research Board of Canada.
Holt, K.R., King, J.R., and Krishka, B.A. 2016a. Stock assessment for Lingcod (*Ophiodon elongatus*) in the Strait of Georgia, British Columbia in 2014. DFO Can. Sci. Advis. Sec. Res. Doc. 2016/013. xi + 186 p.
Holt, K.R., Starr, P.J., Haigh, R., and Krishka, B. 2016b. Stock assessment and harvest advice for Rock Sole (*Lepidopsetta* spp.) in British Columbia. DFO Can. Sci. Advis. Sec. Res. Doc. 2016/009. ix + 256 p.

Huynh, Q.C., Siegle, M.R., and Haggarty, D.R. 2024. Application of the Management Procedure Framework for Inside Quillback Rockfish (*Sebastes maliger*) in British Columbia in 2021. DFO Can. Sci. Advis. Sec. Res. Doc. 2024/017. iv + 157 p.

Johnson, K., Edwards, A., Berger, A., Grandin, C., and Wetzel, C. 2025a. Status of the Pacific Hake (whiting) stock in U.S. and Canadian waters in 2025. Prepared by the Joint Technical Committee of the U.S. and Canada Pacific Hake/Whiting Agreement, National Marine Fishery Service and Fisheries and Oceans Canada.

Johnson, S.D.N., Cox, S.P., Holt, K.R., Lacko, L.C., Kronlund, A.R., and Rooper, C.N. 2025b. Stock Status and Management Procedure Performance for the BC Sablefish (*Anoplopoma fimbria*) Fishery for 2022/23. DFO Can. Sci. Advis. Sec. Res. Doc. 2024/072. iv + 132 p.

King, J.R., McAllister, M., Holt, K.R., and Starr, P.J. 2012. Lingcod (*Ophiodon elongatus*) stock assessment and yield advice for outside stocks in British Columbia. DFO Can. Sci. Advis. Sec. Res. Doc. 2011/124. viii + 177 p.

King, J.R., Surry, A.M., Garcia, S., and Starr, P.J. 2015. Big Skate (*Raja binoculata*) and Longnose Skate (*R. rhina*) stock assessments for British Columbia. DFO Can. Sci. Advis. Sec. Res. Doc. 2015/070. ix + 329 p.

Kristensen, K., Nielsen, A., Berg, C.W., Skaug, H., and Bell, B.M. 2016. TMB: Automatic differentiation and Laplace approximation. J. Stat. Softw. 70(5): 1–21.

Lacko, L.C., Temple, K.L., Holt, K.R., Supernault, J.K., Kronlund, A.R., Wyeth, M.R., and Connors, B.M. 2023. Development of methods in support of a head-only sampling program for Sablefish (*Anoplopoma fimbria*) in British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 3580: vi + 19 p.

Lindgren, F. 2025. Fmesher: Triangle meshes and related geometry tools.

Lindgren, F., Rue, H., and Lindström, J. 2011. An explicit link between Gaussian fields and Gaussian Markov random fields: The stochastic partial differential equation approach. Journal of the Royal Statistical Society: Series B (Statistical Methodology) 73(4): 423–498.

McFarlane, G., King, J., Leask, K., and Christensen, L.B. 2008. Assessment of information used to develop a recovery potential assessment for Basking Shark (*Cetorhinus maximus*) (Pacific population) in Canada. DFO Can. Sci. Advis. Sec. Res. Doc. 2008/071. vi + 104 p.

R Core Team. 2025. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.

Schnute, J.T., Olsen, N., and Haigh, R. 1999. Slope rockfish assessment for the west coast of Canada in 1998. DFO Can. Stock Assess. Sec. Res. Doc. 99/16: vi + 79 p.

Schweigert, J., Wood, C., Hay, D., McAllister, M., Boldt, J., McCarter, B., Therriault, T.W., and Brekke, H. 2012. Recovery potential assessment of eulachon (*Thaleichthys pacificus*) in Canada. DFO Can. Sci. Advis. Sec. Res. Doc. 2012/098. 121 p.

Starr, P.J. 2009a. Petrale Sole (*Eopsetta jordani*) in British Columbia, Canada: Stock assessment for 2006/07 and advice to managers for 2007/08. DFO Can. Sci. Advis. Sec. Res. Doc. 2009/070. v + 134 p.

Starr, P.J. 2009b. English Sole (*Parophrys vetulus*) in British Columbia, Canada: Stock assessment for 2006-07 and advice to managers for 2007/08. DFO Can. Sci. Advis. Sec. Res. Doc. 2009/069. v + 149 p.

Starr, P.J., and Haigh, R. 2017. Stock assessment of the coastwide population of Shortspine Thornyhead (*Sebastolobus alascanus*) in 2015 off the British Columbia coast. DFO Can. Sci. Advis. Sec. Res. Doc. 2017/015. ix + 174 p.

Starr, P.J., and Haigh, R. 2020. Rougheye/Blackspotted Rockfish (*Sebastes aleutianus/melanostictus*) stock assessment for British Columbia in 2020. DFO Can. Sci.

Advis. Sec. Res. Doc. 2020/020. vii + 384 p.
Starr, P.J., and Haigh, R. 2021c. Redstripe Rockfish (*Sebastes proriger*) stock assessment for British Columbia in 2018. DFO Can. Sci. Advis. Sec. Res. Doc. 2021/014. vi + 340 p.
Starr, P.J., and Haigh, R. 2021a. Walleye Pollock (*Theragra chalcogramma*) stock assessment for British Columbia in 2017. DFO Can. Sci. Advis. Sec. Res. Doc. 2021/004. vii + 265 p.
Starr, P.J., and Haigh, R. 2021b. Widow Rockfish (*Sebastes entomelas*) stock assessment for British Columbia in 2019. DFO Can. Sci. Advis. Sec. Res. Doc. 2021/039. viii + 238 p.
Starr, P.J., and Haigh, R. 2022a. Bocaccio (*Sebastes paucispinis*) stock assessment for British Columbia in 2019, including guidance for rebuilding plans. DFO Can. Sci. Advis. Sec. Res. Doc. 2022/001. vii + 292 p.
Starr, P.J., and Haigh, R. 2022b. Yellowmouth Rockfish (*Sebastes reedi*) stock assessment for British Columbia in 2021. DFO Can. Sci. Advis. Sec. Res. Doc. 2022/010. viii + 288 p.
Starr, P.J., and Haigh, R. 2023. Canary Rockfish (*Sebastes pinniger*) stock assessment for British Columbia in 2022. DFO Can. Sci. Advis. Sec. Res. Doc. 2023/070. vi + 293 p.
Starr, P.J., and Haigh, R. 2025. Pacific Ocean Perch (*sebastes alutus*) stock assessment for British Columbia in 2023. DFO Can. Sci. Advis. Sec. Res. Doc. 2025/004. iv + 303 p.
Starr, P.J., Haigh, R., and Grandin, C. 2016. Stock assessment for Silvergray Rockfish (*Sebastes brevispinis*) along the Pacific coast of Canada. DFO Can. Sci. Advis. Sec. Res. Doc. 2016/042. vi + 170 p.
Stewart, I.J., and Hicks, A.C. 2025. Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2024. Int. Pac. Halibut Comm. IPHC-2025-SA-01: 40 p.
Thorson, J.T. 2018. Three problems with the conventional delta-model for biomass sampling data, and a computationally efficient alternative. Canadian Journal of Fisheries and Aquatic Sciences 75(9): 1369–1382.
Thorson, J.T., Shelton, A.O., Ward, E.J., and Skaug, H.J. 2015. Geostatistical delta-generalized linear mixed models improve precision for estimated abundance indices for West Coast groundfishes. ICES J. Mar. Sci. 72(5): 1297–1310.
Wallace, S., Turris, B., Driscoll, J., Bodtker, K., Mose, B., and Munro, G. 2015. Canada's Pacific groundfish trawl habitat agreement: A global first in an ecosystem approach to bottom trawl impacts. Marine Policy 60: 240–248.
Yamanaka, K.L., and Lacko, L. 2001. Inshore rockfish stock assessment (*Sebastes ruberrimus, S. maliger, S. caurinus, S. melanops, S. nigrocinctus,* and *S. nebulosus*) for the west coast of Canada and recommendations for management. DFO Can. Stock Assess. Sec. Res. Doc. 2001/139. vi + 101 p.
Yamanaka, K.L., McAllister, M.K., Etienne, M.-P., and Flemming, R. 2011. Stock assessment and recovery potential assessment for Quillback Rockfish (*Sebastes maliger*) on the Pacific coast of Canada. DFO Can. Sci. Advis. Sec. Res. Doc. 2011/135. vii + 151 p.