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Analysis of purse-seine and longline size frequency data for the 2023 bigeye and yellowfin tuna assessments

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Executive Summary

This Information Paper describes the pre-processing of size composition data prior to integration into the 2023 stock assessment models for yellowfin and bigeye.

A key area of focus for this assessment cycle was exploring the use of stronger filtering rules to attempt to improve reweighted size compositions, in particular to further remove apparent noise in fishery-level size compositions driven by strata with low levels of sampling. We also explored the use of trips and sets instead of individuals as the unit of sampling for purse seine fisheries.

The Information Paper includes a comprehensive summary of reweighted size compositions, and their associated input sample sizes. Increasing the strength of filtering reduced apparent noise in size compositions, though at the expense of truncated time-series of compositional inputs for some fisheries. We also provide suggestions on further work that could help inform filtering of compositional inputs to assessment models, as well as alternative approaches that may perform better than the existing reweighting procedure with available size samples for WCPO fisheries.

1 Introduction

This Information Paper describes the pre-processing of size composition data prior to integration into the 2023 stock assessment models for yellowfin and bigeye tuna. Statistical correction of size composition data is required as size samples are often collected unevenly in space and time such that the samples require reweighting spatially using either catch, to be representative of the size of fish being removed from the population in the case of extraction fisheries, or estimated relative abundance (CPUE), to be representative of the size of fish in the population in the case of index fisheries. Corrections are also applied for any known measurement bias.

2 Methods

The procedure used to reweight size compositions for purse seine fisheries was based on the approach used for the 2022 skipjack assessment (Teears et al., 2022). The procedure for longline extraction and index fisheries was based on the approach used to prepare size compositions for the 2020 bigeye and yellowfin assessments (Peatman et al., 2020), which was developed from the approach of McKechnie (2014) and Tremblay-Boyer et al. (2018) for regular and index fisheries respectively. For both species, 95 2cm length classes were used covering the range 10-200cm (i.e., with lower limits 10cm, 12cm, . . . , 198cm), with 200 1kg weight classes covering the range 0-200kg.

2.1 Region structures and fisheries

Reweighted size compositions were generated for both the nine region structure from the 2020 assessments, along with a simplified five region structure (Figure 1). In the report text, we use region numbers from the nine region specification throughout, e.g. when referring to data filtering rules that were applied.

Reweighted size compositions were generated for a subset of purse seine and longline fisheries included in the 2023 assessments (Tables 1 and 2). Size compositions were reweighted for all index fisheries. For extraction fisheries, size compositions were not reweighted for fisheries with insufficient data to support the reweighting procedure, (e.g., domestic fisheries in region 7). Additionally, extraction fishery compositions were not reweighted for some fisheries, consistent with an assumption that available size samples are representative of catches (e.g., fishery '3.LL.US.2').

For the five region structure, the extraction fishery definitions remained the same (i.e., implementing an 'areas-as-fleets' approach), and so the same reweighted size compositions were used for both the nine and five region structures. For example, with the five region structure there were three extraction longline fisheries in region 1, corresponding to fisheries '1.LL.ALL.1', '2.LL.ALL.2' and '3.LL.US.2' with the nine region structure. For index fisheries with the five region structure, there were five index fisheries with one per region.

2.2 Purse seine data preparation

Length samples from the US Multilateral Treaty Port Sampling (i.e. origin ID = 'TTPS') and Japanese Purse Seine Port Sampling (origin ID = 'JPPS') datasets were extracted from SPC's LF MASTER database. Data from 2010 onwards were excluded due to the high observer coverage during this period. Samples that could not be attributed to assessment fisheries were excluded, e.g., samples with unknown school association in regions where fisheries are specific to set-type. Samples provided at a 10 (latitude) x 20° (longitude) or 5 x 10° spatial resolution were split to 5° cells, using the proportion of reported US (TTPS data) or Japanese catch (JPPS) in each 5° cell, for the year-quarter and set type in question (i.e. associated vs unassociated). We note that the majority of TTPS (85%) and JPPS (83%) samples were available at a 5° resolution.

Observer grab and spill samples were extracted from SPC's master observer database, along with the association type and total catch of each set recorded by observers. Data from an observer's first purse seine trip were excluded. Spill samples were used where available, including both paired grab / spill trips and observer data from the Philippines observer programme, otherwise grab samples were used. Grab samples were corrected for grab sample bias using correction factors (Peatman et al., 2019).

The resolution of strata used in the reweighting process was year-quarter, 5° cell, and fishery. Fisheries were specific to set type, i.e., free-school vs associated. First, we implemented a set-level lower limit for observer sampling intensity, i.e. total samples per tonne of catch. This ensures that high volume sets with low levels of sampling do not have excessive influence on reweighted length compositions in years with relatively limited sampling coverage. The lower limit was set at approximately 20% of the target grab sampling rate, i.e. 0.33 grab samples per tonne .

Observer length samples of all tropical tunas were raised from set-level to strata-level by first converting set-level numbers by species and length class to proportions by species and length class. These proportions were then raised to estimated numbers caught by species and length class, so that the estimated set catch across all species summed to the observer's estimate of catch weight for the set. Length weight parameters used in this process are provided in Table 3. We then aggregated from set-level to strata-level by summing estimated numbers caught by species and length class across sets, and then rescaling the strata-level numbers so that the total frequency in each strata was equal to the original sample size. We then filtered the length frequencies for yellowfin and bigeye.

Separately, US Multilateral Treaty Port Sampling data and Japanese Port Sampling data were raised to a strata-level by summing the numbers of samples in each length class across records. These samples were then combined with the strata-level observer samples, giving bigeye and yellowfin length frequencies per strata (i.e., a resolution of year-quarter, 5° cell, and fishery).

2.3 Reweighting of purse seine extraction fishery compositions

The strata-level purse-seine length frequencies were raised to an MFCL fishery resolution, i.e. year-quarter and fishery, separately by species as follows:

1. The size samples were filtered for strata with a minimum of samples, to attempt to reduce noise in size compositions due to low sample sizes.
2. Strata-level numbers by size class were converted to catch weight proportions by size class, using the length-weight parameters in Table 3.
3. Strata-level catch weight proportions by size class were then converted to total species-specific catch weights by size class by multiplying by strata-level species-specific catch taken from S BEST data.
4. Strata-level catch weights by size class were then aggregated across strata to obtain MFCL fishery resolution catch weights by size class (i.e., year-quarter, fishery and length class).
5. Catch weights by size class were then converted to numbers caught by size class, by calculating the average weight of each size class using the length-weight relationships in Table 3.
6. Numbers caught by size class were then converted to proportions by size class, and rescaled so that the total frequency in each year-quarter for a given fishery equalled the original number of samples after step 1.
7. The MFCL fishery resolution length compositions were then filtered for year-quarters where sampled strata accounted for a minimum proportion of the species-specific total catch of the fishery. This limit is referred to as the 'minimum sampled weighting'.

Purse seine length compositions were also generated using sets or trips as the unit of sampling, rather than individual fish. This was implemented by generating strata-level frequencies in the data preparation stage in units of sets or trips rather than individual fish, for both port samples (where the sampled number of sets or trips was available) and observer samples. Otherwise, the reweighting procedure was identical. In particular, we note that the minimum samples per strata was still implemented on a sampled fish basis, to facilitate direct comparison of MFCL model runs using different units of sampling. This approach also avoided noise in fishery-level size compositions caused by strata with reasonable numbers of sampled sets or trips, but limited numbers of sampled fish.

2.4 Longline data preparation

Available length and weight samples from SPC's LF MASTER database were extracted. Size samples, and aggregate longline catch data, were aggregated to consistent flag-fleet groupings, using lookup tables held by SPC's Data Management team.

The reweighting procedure was implemented at a 10 x 20° spatial resolution. However, 10 x 20° cells

can span multiple assessment regions, as well as the boundary of the spatial domain of the assessment model. As an initial step, size samples were aggregated to a 10 x 20° and region spatial resolution as follows:

1. There were a relatively low number of bigeye weight samples provided to SPC at a 4 (latitude) x 10° (longitude) resolution. These 4 x 10° data were converted to a 10 x 10° resolution by splitting samples 50:50 from any 4 x 10° cell that spanned two 10 x 10° cells. These samples were then treated consistently with other samples provided at a 10 x 10° resolution.
2. All size samples were split to a 5° spatial resolution using the proportion of species-specific reported catches by 5° degree cell for a given year-quarter and flag-fleet. For example, size samples provided at a 10 x 20° resolution would be split between a maximum of eight 5° cells.
3. The 5° cells were then assigned to an assessment model region, and any 5° cells outside the spatial domain of the assessment model were excluded.
4. The size samples in each region were then aggregated back up to a 10 x 20° and region resolution, i.e. an overall resolution of year-quarter, region, 10 x 20° cell and flag-fleet.

2.5 Reweighting of longline extraction and index fishery compositions

The size compositions were then reweighted spatially by fishery in the assessment model, separately for each species and unit of size (i.e., length and weight), using the following approach:

1. For a given fishery, size samples and aggregate catches (numbers) were aggregated to a strata resolution (i.e., a stratification of year-quarter, 10 x 20° cell and fishery).
2. The size samples were filtered for strata with a minimum of samples, to attempt to reduce noise in size compositions due to low sample sizes.
3. 'Strata weights' for regular fisheries were then calculated using the proportion of catch over a time-window of $2k + 1$ quarters accounted for by each 10 x 20° cell

$$W_{i,t} = \frac{\sum_{\tau=t-k}^{t+k} C_{i,\tau}}{\sum_i \sum_{\tau=t-k}^{t+k} C_{i,\tau}}$$

   where $W_{i,t}$ and $C_{i,t}$ are the strata weight and catch (respectively) for 10 x 20° cell i and year-quarter t. Strata weights for index fisheries were equivalent but weighted by estimated relative abundance from the CPUE standardisation model by 10 x 20° cell and year-quarter, rather than catch.
4. Strata-level numbers by size class were then converted to proportions by size class.
5. Strata-level proportions by size class were then weighted by multiplying by the appropriate strata weight $W_{i,t}$.

6. The weighted proportions by size class were then summed across strata to obtain proportions by size class and year-quarter for the fishery.

7. The fishery-resolution proportions by size class were then raised to numbers by size class, by multiplying by the total number of length samples for the fishery and year-quarter.

8. The MFCL fishery resolution length compositions were then filtered for year-quarters where sampled strata accounted for a minimum proportion of the species-specific total catch (regular fisheries) or relative abundance (index fisheries), i.e., filtering for year-quarters where the sum of strata weights from sampled 10 x 20° cells exceeded a specified threshold. This limit is referred to as the 'minimum sampled weighting'.

This approach implicitly scales the sample size at a year-quarter and fishery resolution by the proportion of catch (regular fisheries) or relative abundance (index fisheries) accounted for by 10 x 20° cells with size samples. For example, if sampled 10 x 20° cells accounted for 75% of the total catch for an extraction fishery and year-quarter, then the input sample size would be equal to 75% of the original sample size for that year-quarter.

Weight compositions for longline fisheries are preferred for use in assessments of tropical tuna in the WCPO as they are considered to be more representative of the catch compositions of the Japanese longline fleet (e.g. McKechnie, 2014). For regions 4, 5 and 6, there were relatively few available weight samples in the latter part of the time-series, with low spatial coverage. For these regions, we also generated reweighted length compositions for 2006 onwards for both extraction and index fisheries. These were intended to be used instead of available weight compositions over this time-period, given concerns around the inclusion of both length and weight compositions for a fishery in a given year-quarter (e.g., see McKechnie, 2014).

2.6 Input sample sizes for the assessment models

We refer to the unit of frequencies of the reweighted size compositions as 'input sample sizes'. Input sample sizes were equivalent for all likelihood components, i.e., decreased using the proportion of total catch (extraction fisheries) or abundance (index fisheries) from strata with size samples. The input sample sizes were also further reduced by 50% for fisheries where samples were used for both extraction and index fisheries size compositions. We note that the input sample sizes are commonly further decreased within MFCL as part of the model fitting procedure when using the robust-normal likelihood. The use of the same input sample size for the different likelihood components ensures that the compositional data inputs are the same regardless of the likelihood component used, allowing direct 'like-for-like' comparisons of MFCL model fits with different likelihood components for compositional data.

2.7 Changes compared to the reweighting procedure from the 2020 assessments

The reweighting procedures for purse seine and longline fisheries were similar to those used for the 2020 assessments (Peatman et al., 2020), though with some minor changes and improvements which we outline below.

When preparing compositional inputs for the 2020 assessments, purse seine size samples for all tropical tuna were included to generate species and size class proportions by weight for purse seine fisheries (see step 2 in Section 2.3), which were then applied to the total catch of tropical tuna in a strata (in step 3) to obtain species and size class specific catch weights. This assumes that the samples are representative of both the species compositions and size compositions of catches. The first assumption is not appropriate given the structure, and sampling protocols, of the analysed port sampling datasets. Instead, we used species-specific length samples and species-specific catches from S BEST data to estimate the proportions of bigeye and yellowfin catch weights by size class within a strata.

For the 2020 assessments, reweighted size compositions were not generated for the longline extraction fishery '29.LL.ALL.9', due to the limited number of available samples. For the 2023 assessments, we applied the reweighting procedure to this fishery, and used the compositions if there were data remaining after application of the various filtering steps. Additionally, in the 2020 assessments index fishery compositions for region 9 (fishery '41.LL.Index.9') used samples from Australian longliners. For 2023, we used samples corresponding to the '29.LL.ALL.9' extraction fishery to generate the index fishery compositions, almost all from Japanese longliners. This was considered more appropriate given that selectivities for the index fisheries are shared across regions.

For the 2020 assessments, the filtering for the minimum samples per strata was erroneously applied at finer resolution than a strata level in some cases. This has now been corrected. Visual comparisons confirmed that the size compositional inputs to the 2020 assessment were reasonably insensitive to the erroneous application of the filter.

For the 2020 assessments, the cutoff for the switch from weight to length compositions for longline fisheries in regions 4, 5 and 6 was implemented on a species and fisheries specific basis, ranging from the mid-1990s to the mid-2000s (Peatman et al., 2020). For the 2023 inputs, we implemented a cutoff of 2006 for all species and fisheries (Section 2.5). The additional complexity of the former approach did not appear to be warranted when revisited for this assessment cycle.

Additionally, for the 2023 assessment we revisited the overall strength of data filtering that is applied when preparing the size compositional inputs. This is described in Section 2.8.

2.8 Options for strengths of data filtering for the 2023 assessment

Fits to reweighted size compositions in earlier assessments have sometimes been poor for some fisheries and time-periods (e.g. see discussion in Punt et al., 2023). In some cases, the poor fits to the size compositions appears to reflect noise in reweighted size compositions, that could have been removed

with stronger filtering of size samples. For the 2023 assessment, three options were provided for filtering of data for the 2023 assessment:

1. 'Weak' filtering (F0): relatively weak filtering, equivalent to that used to prepare reweighted size compositions for the diagnostic models in 2020. The minimum sample size per strata was set at 30, with a minimum sampled weight of 0.3 for extraction fisheries and 0.1 for index fisheries.

2. 'Stronger' filtering (F1): the minimum sample size per strata was increased to 250, with minimum sampled weights kept at 0.3 for extraction fisheries and 0.1 for index fisheries.

3. 'Strongest' filtering (F2): a minimum sample size per strata of 250, minimum sampled weights for index fisheries kept at 0.1, and minimum sampled weights for extraction fisheries increased to 0.7 where possible. Additionally, for purse seine extraction fisheries, port-sampling data were excluded as there was evidence of under-representation of smaller size-classes relative to observer data. Furthermore, for longline index fisheries, only weight samples from Japanese vessels were included, to remove variation in size compositions due to temporal variation in sampling intensity between fleets.

For all filtering strength options, there were additional filtering rules that were applied which were either modified from, or not applied in, the 2020 assessments. Longline weight samples for the Taiwanese offshore ('TWOS') fleet were excluded from 2004 to 2009 (inclusive) for the offshore fisheries in regions 3 and 7, due to an unexplained shift in size compositions over this period. In the 2020 assessment, a similar filtering was applied for the 'offshore' fishery in region 3 only, and for 2004 onwards. Weight samples for the Taiwanese distant-water ('TWDW') longline fleet from 2014, and the Fijian longline fleet from 2001 in region 6, were also excluded as the weights appeared to be rounded to 2kg (or larger) weight bins. Weight samples for the Japanese fleet in region 1 were excluded for 2019 onwards, due to a strong increase in sizes. Additionally, for index longline fisheries, recent weight samples collected on non-Japanese fleets were excluded for region 1 (2019 onwards) and region 2 (2018 onwards), to remove a strong apparent increase in sizes resulting from changes in sampling intensity between fleets. Finally, we excluded length samples from Taiwanese longliners with an origin ID of 'TWLL', which removed strong increases in size in the mid-2000s in region 4. We note that the average lengths for Taiwanese longliners from the 'TWLL' dataset were substantially larger than those available for Taiwanese longliners from other data sources.

3 Results and Discussion

Reweighted size compositions and their associated input sample sizes are provided in Appendices specific to each gear and fishery type (i.e., extraction and index fisheries). Compositional inputs are provided in:

- Purse seine extraction fisheries: Appendix A, Figures A.1 to A.32.

- Longline extraction fisheries: Appendix B, Figures B.1 to B.54.
- Longline index fisheries with the nine region structure: Appendix C, Figures C.1 to C.48.
- Longline index fisheries with the simplified five region structure: Appendix D, Figures D.1 to D.28.
- Purse seine extraction fisheries with trips as the unit of sampling: Appendix E, Figures E.1 to E.32.

The reweighting process reduces apparent noise in size compositions, even with the 'weak filtering' approach (Peatman et al., 2020). This appears to be primarily due to the removal of apparent noise through data filtering, rather than the reweighting of the size samples. However, some apparent noise remained in size compositions, which was commonly associated with year-quarters with relatively low sample sizes, e.g., the 'weak filtering' options for fishery '2.LL.ALL.2' for bigeye in the late-2010s (Figures B.7 and B.8) and fishery '6.LL.OS.7' for yellowfin in the mid-2000s (Figures B.37 and B.38).

Increasing the strength of filtering reduced apparent noise in size compositions (e.g. see fishery '6.LL.OS.7' for bigeye, Figure B.16), though this can sometimes come at the expense of excluding plausible compositions in other time-periods or fisheries. This is further complicated by the use of consistent filtering strengths for all fisheries. The 'stronger filtering' option appears to provide a compromise between removing apparent noise in size compositions, whilst also avoiding excessive filtering of plausible size compositions and corresponding truncation of the time-series of reweighted size compositions. However, there is the potential for the inclusion of port-sampling data (pre-2010) to introduce bias into the assessment models, as the smaller size-classes appear to be under-represented in port samples. Additionally, there is the potential for shifts in sampling between longline fisheries to lead to changes in apparent size compositions for index fisheries, which are unlikely to reflect changes in the size structure of the underlying population. The 'strongest filtering' option addresses these potential causes of bias, but in doing so truncates the time-series of size compositions for purse seine fisheries, and reduces the spatial coverage of samples for longline index fisheries, particularly in recent years where the coverage of Japanese samples are more limited.

There was apparent cohort progression in reweighted size compositions for a number of fisheries, most clearly seen in longline fisheries in regions 1 and 2 (e.g. Figures B.2, B.8, B.24, B.30).

Observer coverage rates decreased in the second half of 2020 and 2021 due to COVID-19, leading to lower numbers of samples in these years, particularly for purse seine fisheries in regions 3 and 4 (see Appendix A). There was also a corresponding reduction in the spatial coverage of samples for the purse seine fisheries in regions 3 and 4. This may lead to biased size compositions for these fisheries in these years, if available samples are not representative of the fishery as a whole.

Strata weights are calculated across time-windows. A longer time window 'smooths' out temporal

variation in the weighting for a given strata through time, whereas shorter time windows allow the influence of a given strata to vary more strongly through time. A time window of 11 quarters was used for longline extraction and index fisheries, following the approach of McKechnie (2014). A time window of 1 quarter was implicitly used to generate purse seine extraction fishery compositions. However, reweighted size compositions have been demonstrated to be relatively insensitive to the length of the time window used (Peatman et al., 2020), and so the choice of time-window length for strata weights does not appear to be as influential as the other 'tuning' parameters used in the reweighting procedure, e.g., the strengths of data filtering applied.

We explored the use of sets and trips instead of individual fish as the unit of sampling for purse seine compositions. This typically reduced input sample sizes by an order of magnitude (Appendix E). The reweighted proportions by length class were reasonably insensitive to the assumed unit of sampling. Trips appears to be the more appropriate choice than sets, as otherwise the port-sampling dataset is strongly downweighted relative to the observer dataset. This is due to the port samples being collected from one set per sampled trip (for the datasets where sampled set and trip numbers were available), whereas observers typically collect samples from all sets on a trip. We note that information on sampled sets and trips is not currently available for the majority of longline size samples, particularly for weight samples.

There was some evidence that the simplified five region structure led to apparent trends in size compositions that reflected variation in sampling intensity between regions, and not necessarily changes in the size structure of the underlying population. For example, the index fishery for region 1 of the five region structure displays a relatively strong declining trend for bigeye (Figure D.2). This declining trend appears to partially reflect the relatively low coverage of samples in region 2 of the nine region structure towards the end of the time period (Figure C.4), where the bigeye appear to be relatively large compared to region 1 of the nine region structure (Figure C.2).

It is difficult to objectively assess the quality of size composition inputs, e.g., when comparing different filtering strengths, as the underlying size composition of catches (extraction fisheries) and population (index fisheries) are not known. The approach implemented here is to attempt to remove apparent noise in size compositions through the application of consistent data filtering rules. If apparent noise at a fishery level can be removed by excluding size compositions from strata with limited sampling, then it suggests that the observed patterns in compositions were an artefact of sampling. Additionally, if temporal variation is removed when increasing the 'minimum sampled weighting', it suggests that the apparent variation reflected unrepresentative sampling. However, it is relatively time-consuming to construct various options for size composition inputs and assess the sensitivity of the assessment models to the different approaches. An alternative approach would be to undertake a systematic review of size data in SPC holdings, and the sampling approaches used (e.g. Hoyle et al., 2021). This would complement the data-driven approach implemented here, and may identify datasources that should be excluded on a more objective basis.

The existing procedures used to reweight size compositions provide a means of accounting for imbalanced sampling across fleets and regions. However, the reweighting procedure can not infer size compositions for strata with no available samples. There are numerous cases where there is no coverage of key fleets with available size samples for some years, particularly for longline fisheries. This can result in temporal variation in index and extraction fishery compositions which likely reflects changes in sampling availability and intensity between fleets, rather than changes in the composition of catches or the underlying population. Spatial-temporal modelling approaches provide a means of inferring size compositions for strata missing samples (Maunder et al., 2020).

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Tables

Table 1: Extraction fisheries in the 2023 assessment models for both the nine and five region structure, and whether their size compositions are reweighted. LL = longline; PL = pole and line; PS = purse seine unspecified; PS-ASS = associated purse seine; PS-UNA = unassociated purse seine, Dom = artisanal gear types used in domestic fisheries. Flag-fleets: ALL = all nationalities; AU = Australia; ID = Indonesia; JP = Japan; OS = Offshore; PH = Philippines; US = United States; VN = Vietnam.

Fishery ID	Nationality	Gear	Region	Reweighted compositions?
1.LL.ALL.1	ALL	LL	1	TRUE
2.LL.ALL.2	ALL	LL	2	TRUE
3.LL.US.2	US	LL	2	FALSE
4.LL.ALL.3	ALL	LL	3	TRUE
5.LL.OS.3	OS	LL	3	TRUE
6.LL.OS.7	OS	LL	7	TRUE
7.LL.ALL.7	ALL	LL	7	TRUE
8.LL.ALL.8	ALL	LL	8	TRUE
9.LL.ALL.4	ALL	LL	4	TRUE
10..LL.AU.5	AU	LL	5	FALSE
11.LL.ALL.5	ALL	LL	5	TRUE
12.LL.ALL.6	ALL	LL	6	TRUE
13.PS.ASS.3	ALL	PS-ASS	3	TRUE
14.PS.UNA.3	ALL	PS-UNA	3	TRUE
15.PS.ASS.4	ALL	PS-ASS	4	TRUE
16.PS.UNA.4	ALL	PS-UNA	4	TRUE
17.MISC.PH.7	PH	Dom	7	FALSE
18.HL.PHID.7	ID.PH	HL	7	FALSE
19.PS.JP.1	JP	PS	1	FALSE
20.PL.JP.1	JP	PL	1	FALSE
21.PL.ALL.3	ALL	PL	3	FALSE
22.PL.ALL.8	ALL	PL	8	FALSE
23.MISC.ID.7	ID	Dom	7	FALSE
24.PS.PHID.7	ID.PH	PS	7	FALSE
25.PS.ASS.8	ALL	PS-ASS	8	TRUE
26.PS.UNA.8	ALL	PS-UNA	8	TRUE
27.LL.AU.9	AU	LL	9	FALSE
28.PL.ALL.7	ALL	PL	7	FALSE
29.LL.ALL.9	ALL	LL	9	TRUE
30.PS.ASS.7	ALL	PS-ASS	7	TRUE
31.PS.UNA.7	ALL	PS-UNA	7	TRUE
32.MISC.VN.7	VN	Dom	7	FALSE

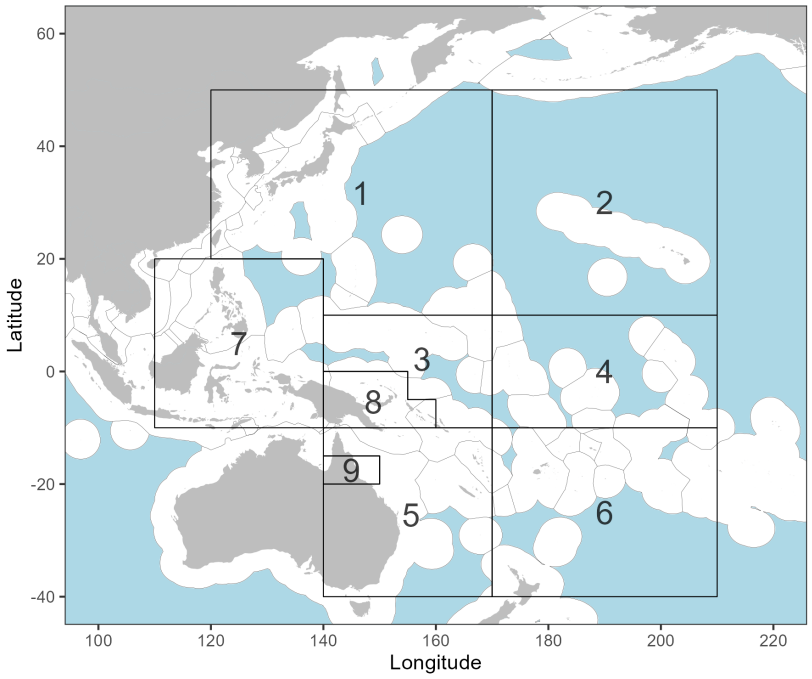
Table 2: Index fisheries in the 2023 assessment models with the nine region structure, and whether their size compositions are reweighted. Gears: I = index fishery. Flag-fleets: ALL = all nationalities.

Fishery ID	Nationality	Gear	Region	Reweighted compositions?
33.LL.Index.1	ALL	I	1	TRUE
34.LL.Index.2	ALL	I	2	TRUE
35.LL.Index.3	ALL	I	3	TRUE
36.LL.Index.4	ALL	I	4	TRUE
37.LL.Index.5	ALL	I	5	TRUE
38.LL.Index.6	ALL	I	6	TRUE
39.LL.Index.7	ALL	I	7	TRUE
40.LL.Index.8	ALL	I	8	TRUE
41.LL.Index.9	ALL	I	9	TRUE

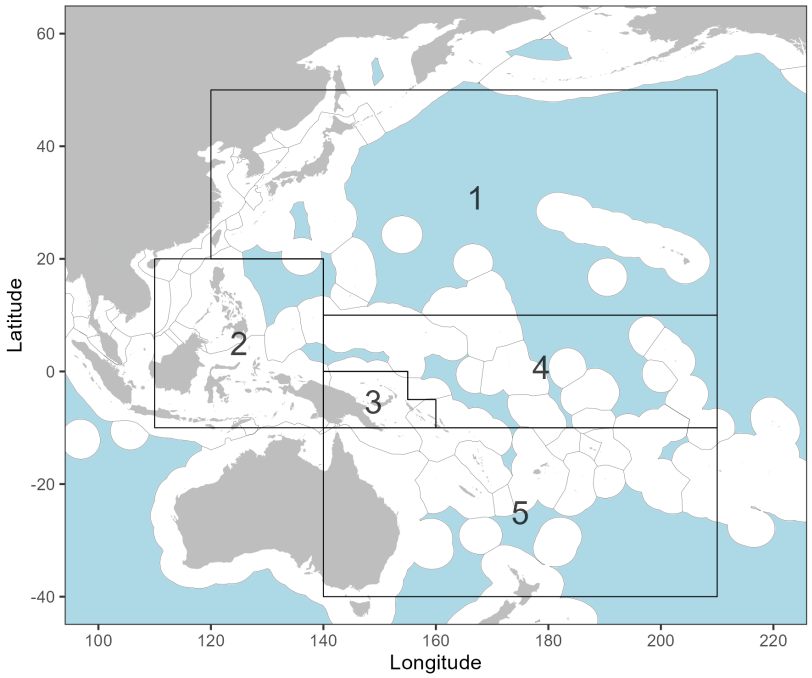
Table 3: Length-weight parameters used to reweight purse seine fishery compositions. Parameters for skipjack were taken from Teears et al. (2022). Parameters for bigeye and yellowfin were generated through WCPFC Project 90 (Macdonald, 2023).

Species code	a	b
SKJ	1.14e-05	3.1483
YFT	1.99e-05	2.9908
BET	3.06e-05	2.9324

Figures



(a) Nine region specification

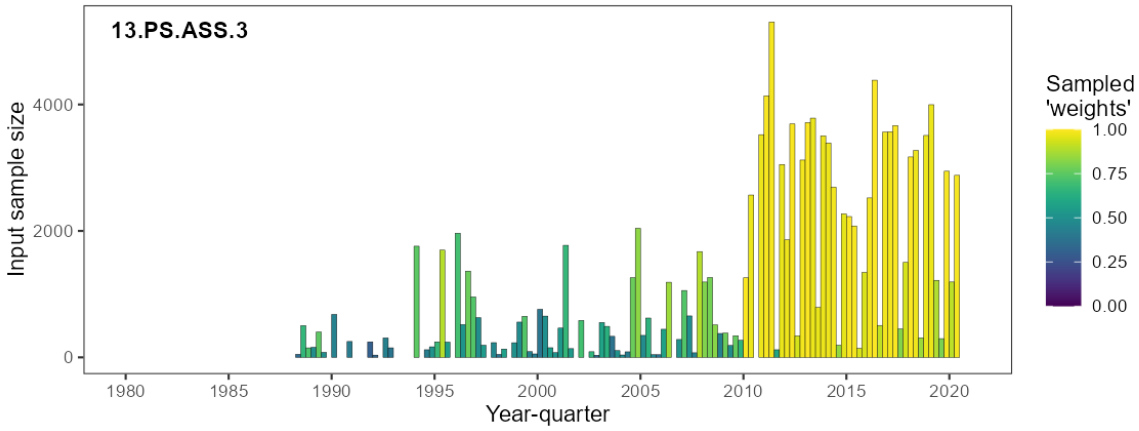


(b) Five region specification

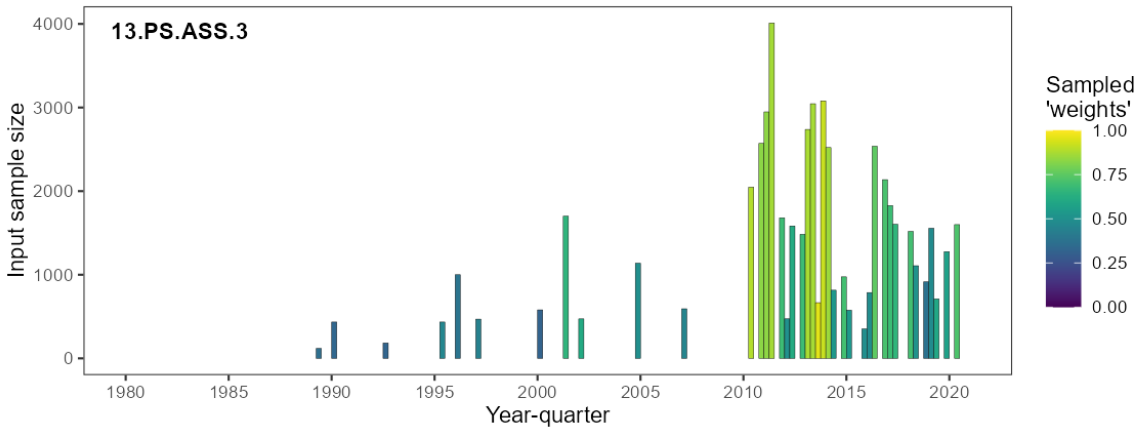
Figure 1: The (a) nine region and (b) five region structures used to generate reweighted size compositions for the 2023 bigeye and yellowfin assessments.

Appendices

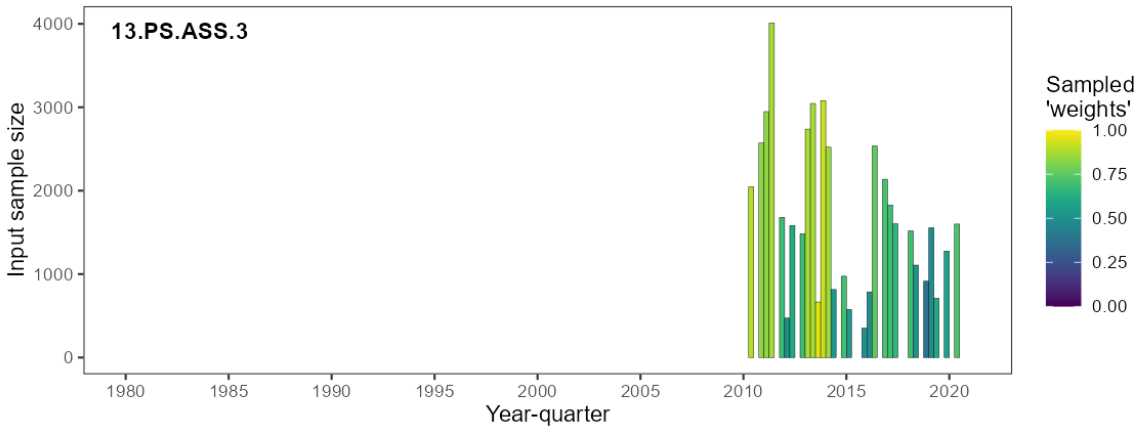
A Purse seine extraction fishery compositions



(a) 'Weak filtering' option

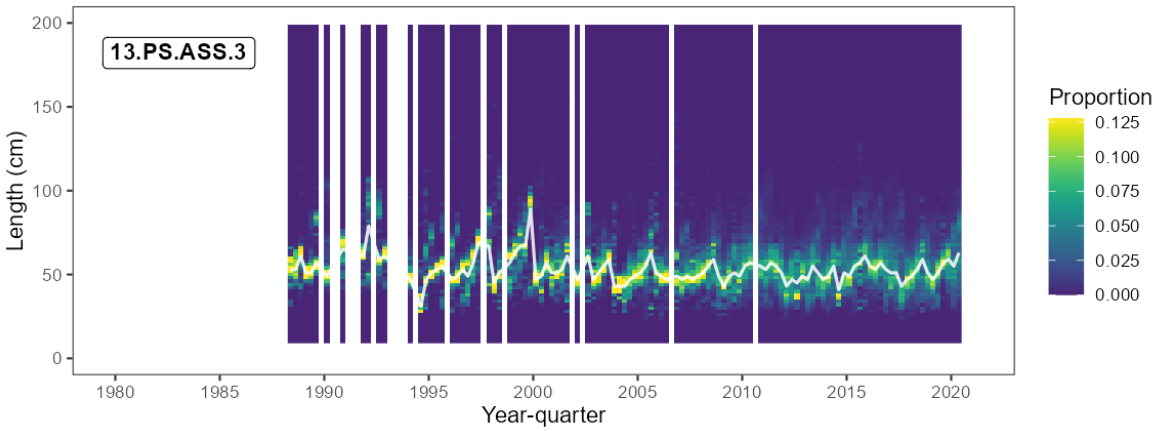


(b) 'Stronger filtering' option

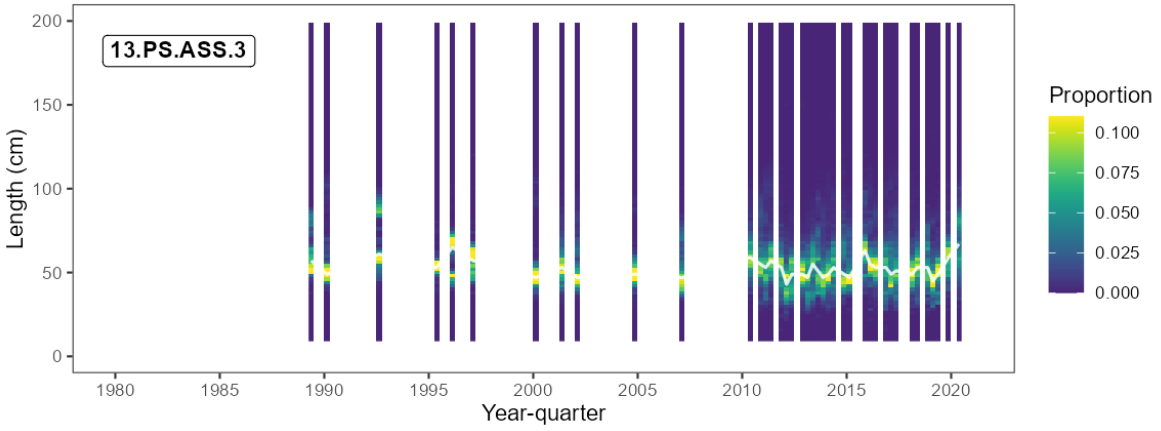


(c) 'Strongest filtering' option

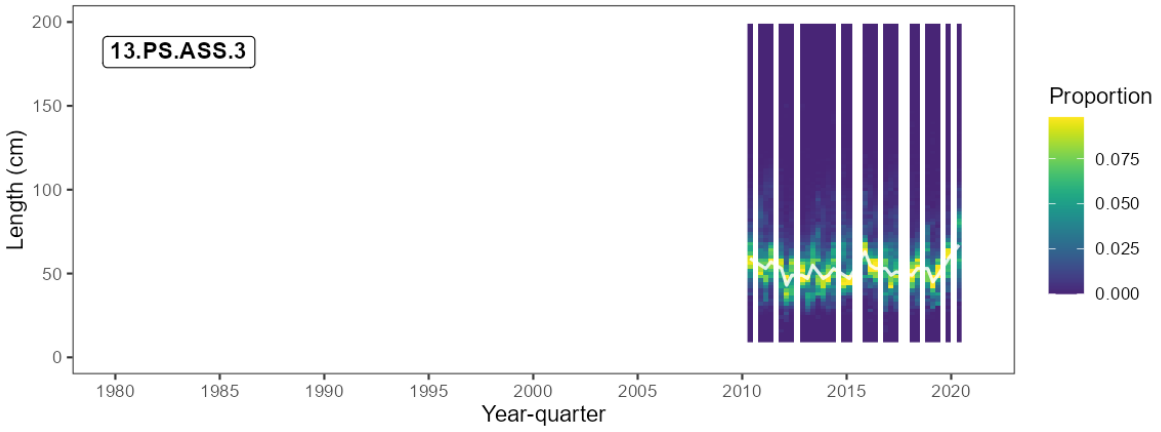
Figure A.1: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

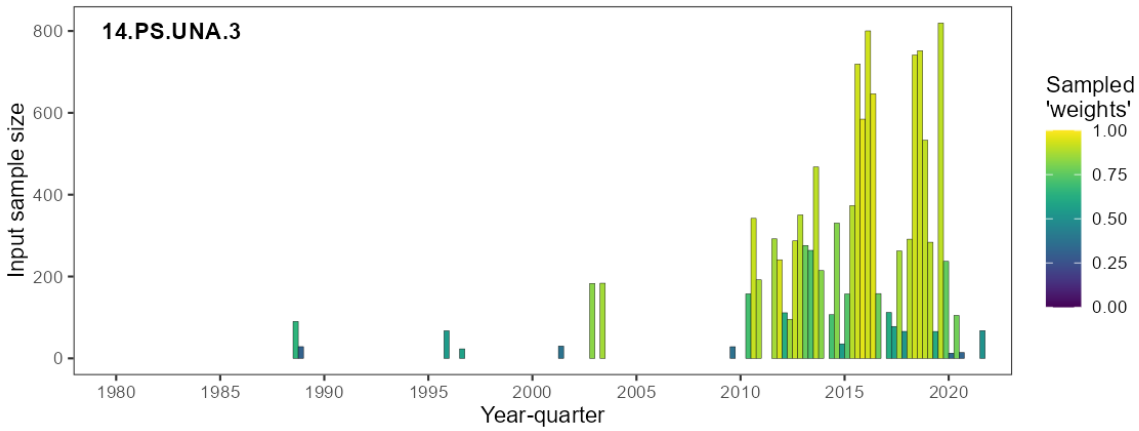


(b) 'Stronger filtering' option

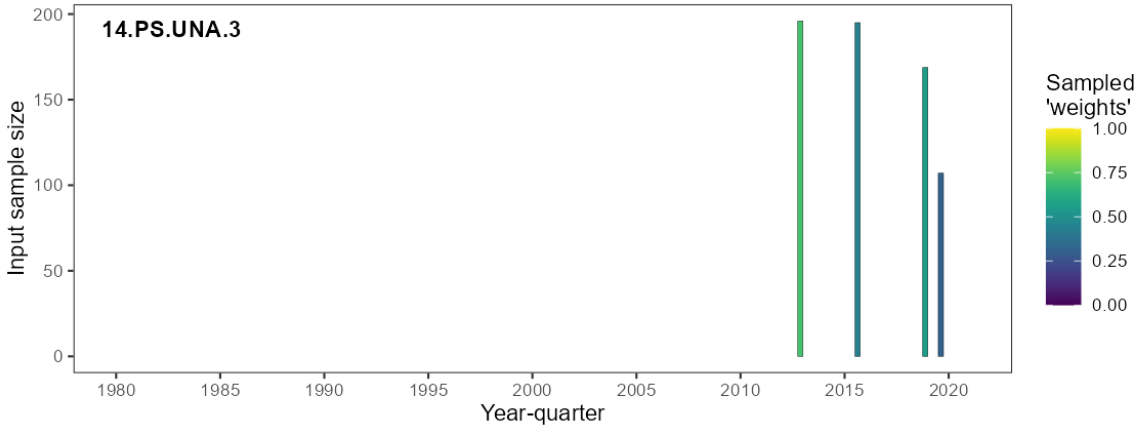


(c) 'Strongest filtering' option

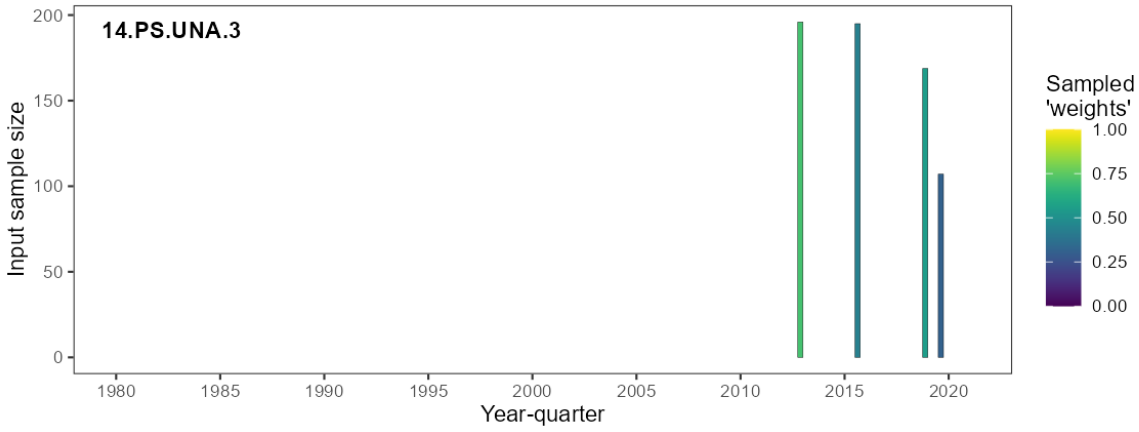
Figure A.2: Reweighted length compositions of bigeye for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

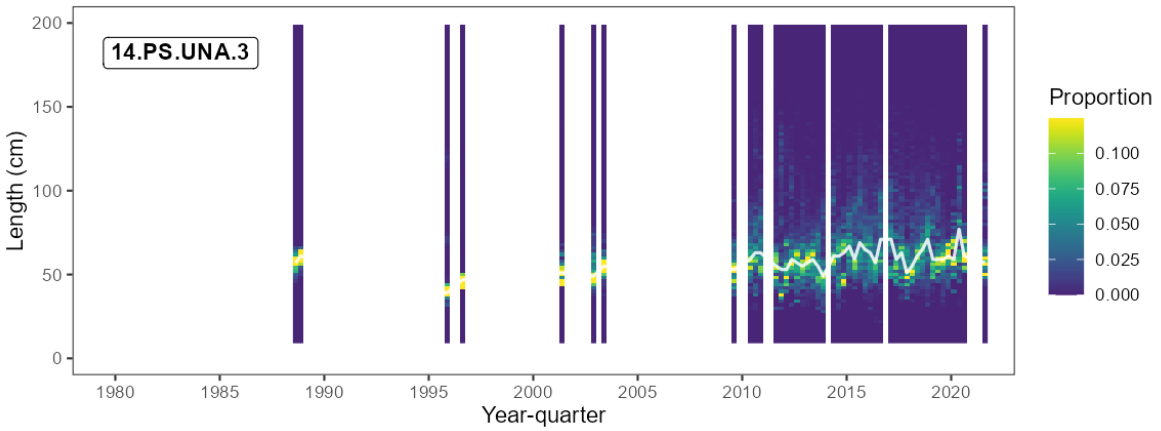


(b) 'Stronger filtering' option

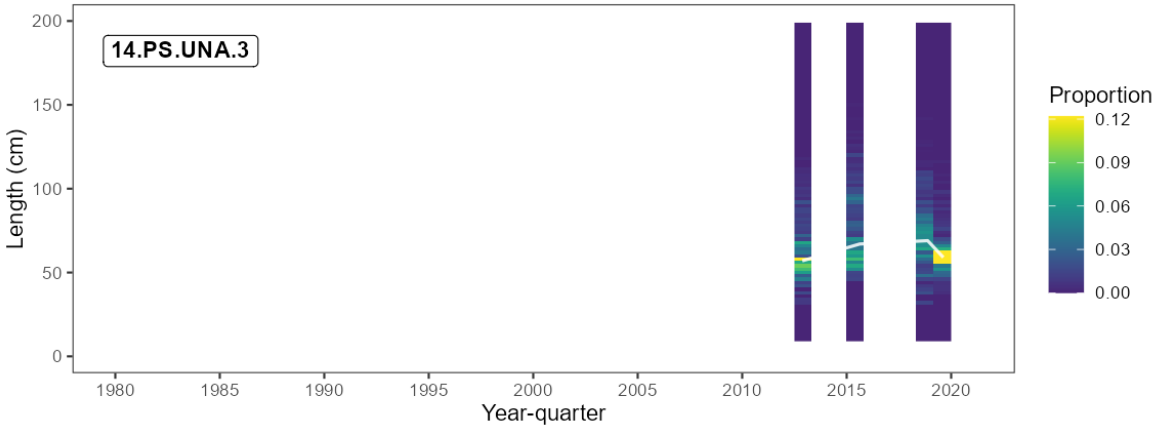


(c) 'Strongest filtering' option

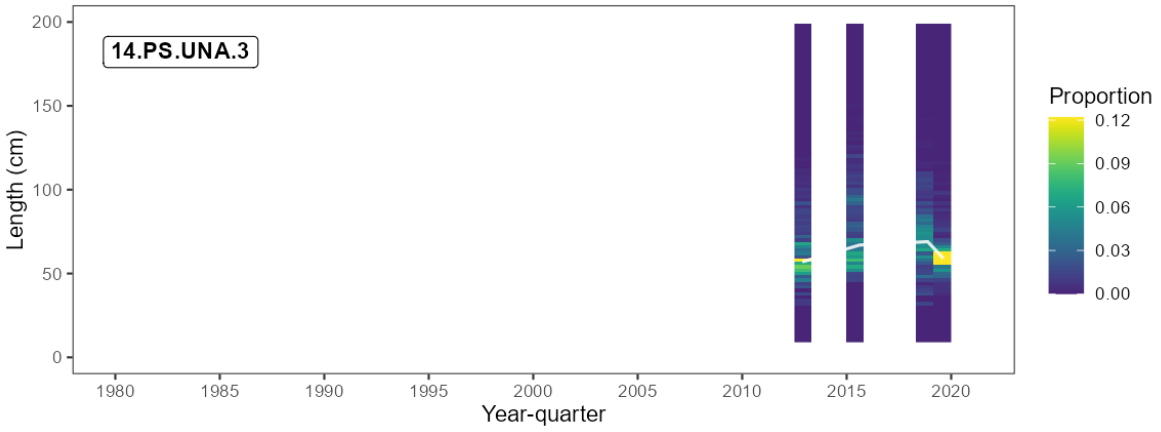
Figure A.3: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

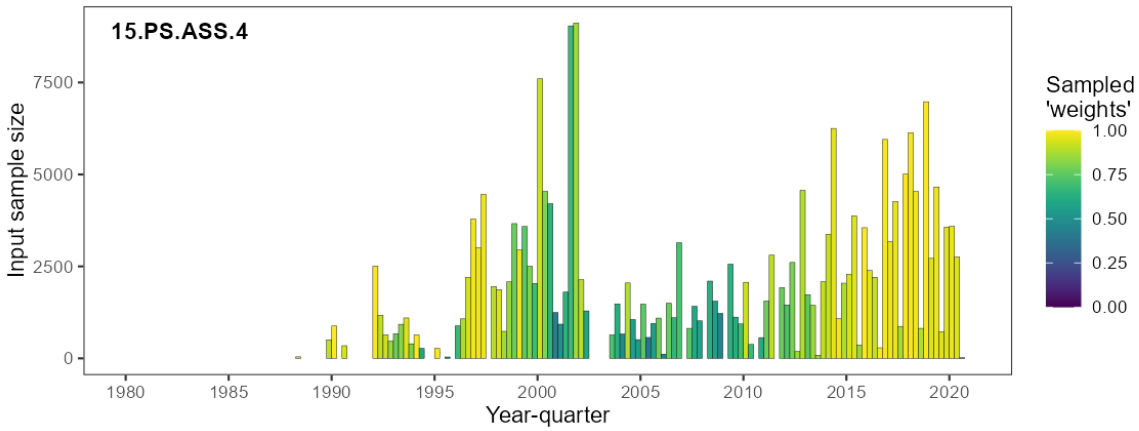


(b) 'Stronger filtering' option

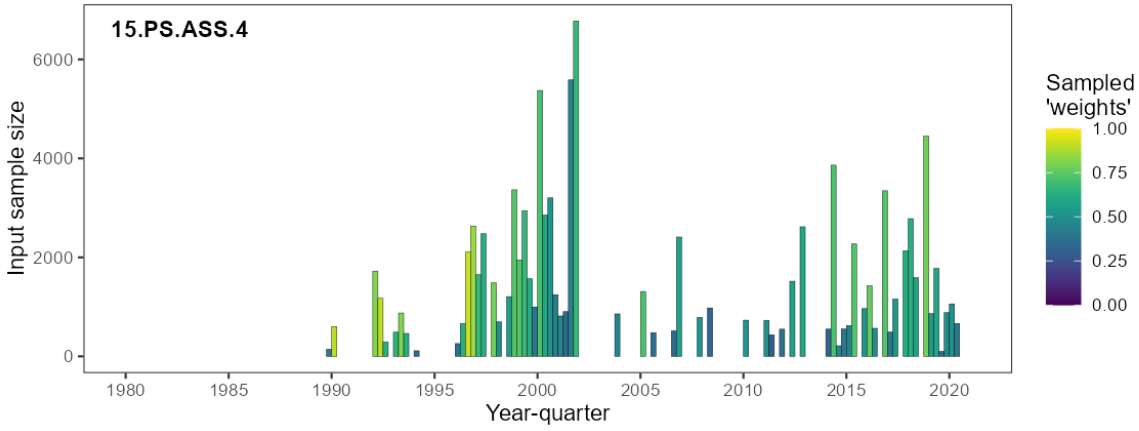


(c) 'Strongest filtering' option

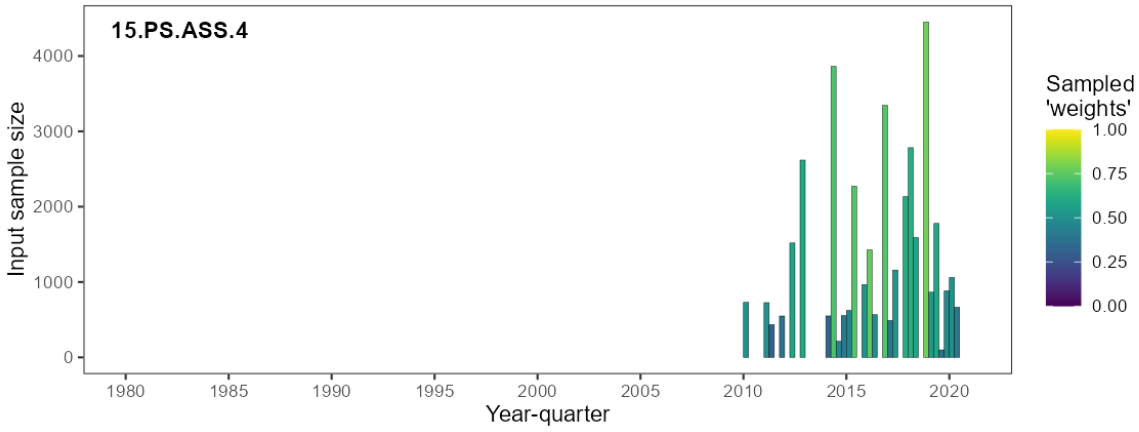
Figure A.4: Reweighted length compositions of bigeye for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

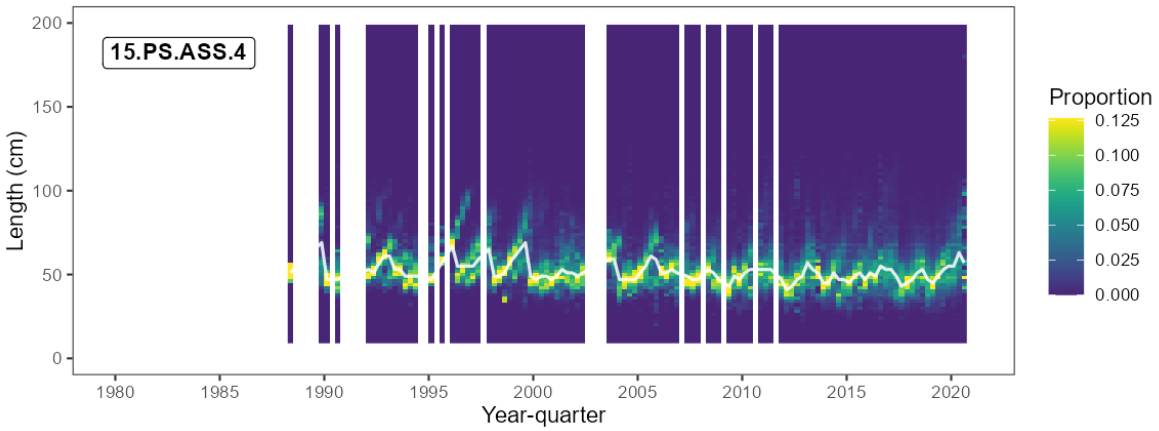


(b) 'Stronger filtering' option

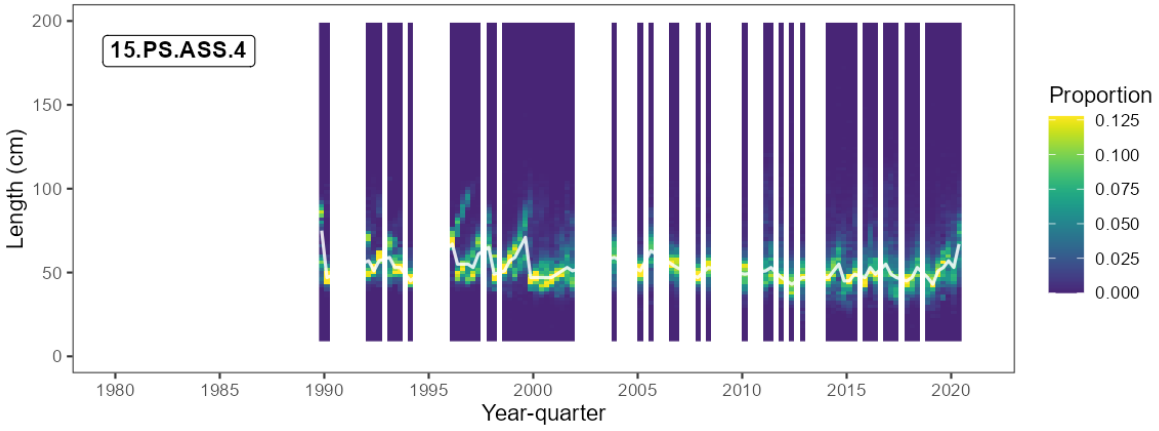


(c) 'Strongest filtering' option

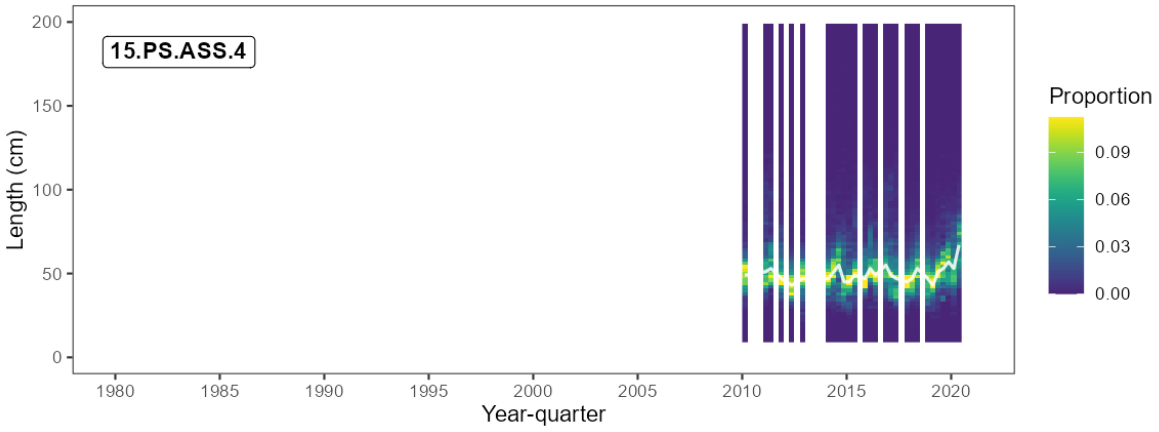
Figure A.5: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

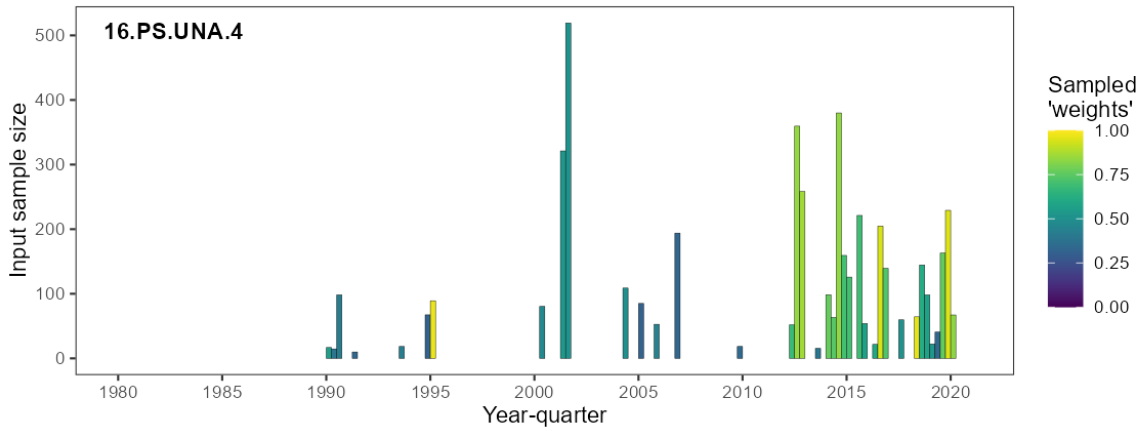


(b) 'Stronger filtering' option

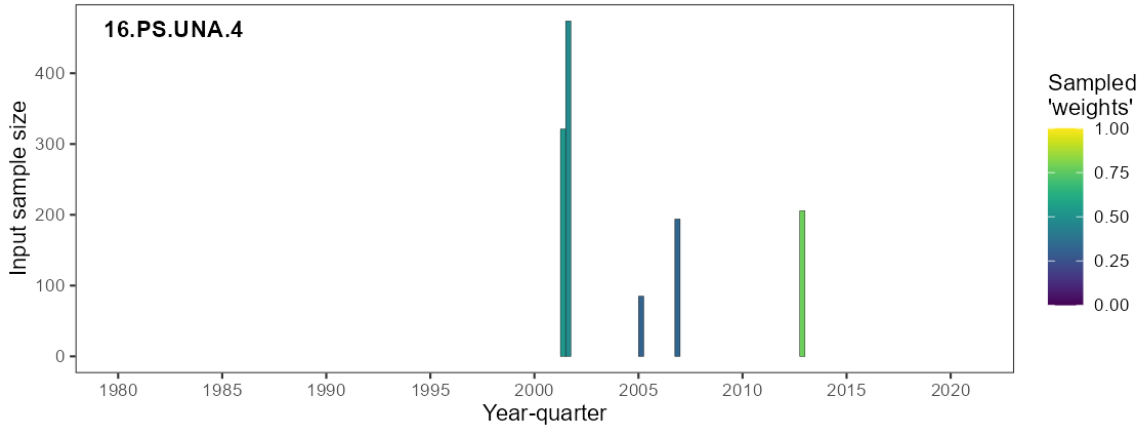


(c) 'Strongest filtering' option

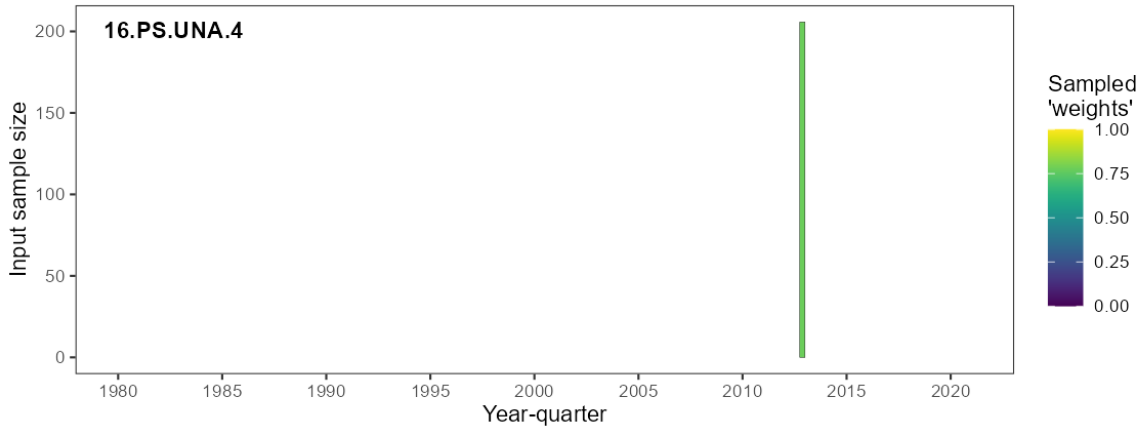
Figure A.6: Reweighted length compositions of bigeye for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

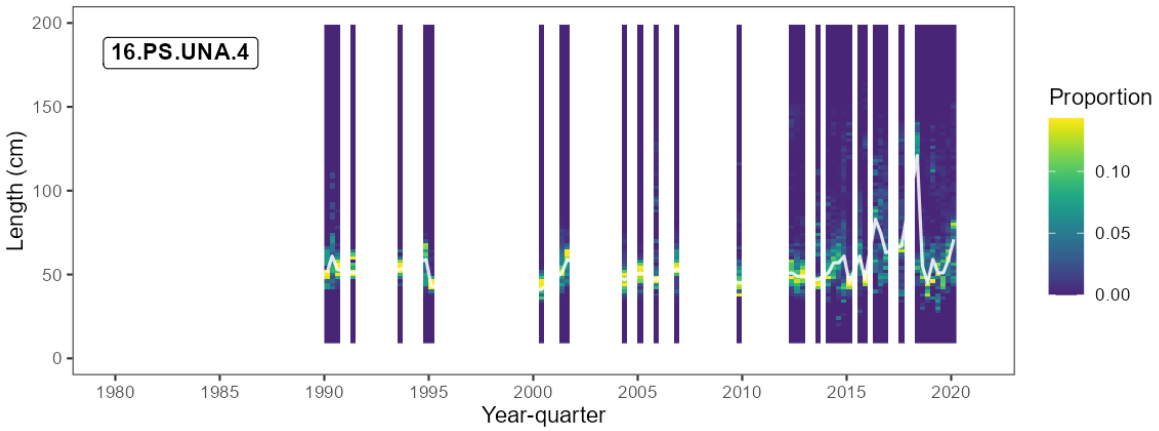


(b) 'Stronger filtering' option

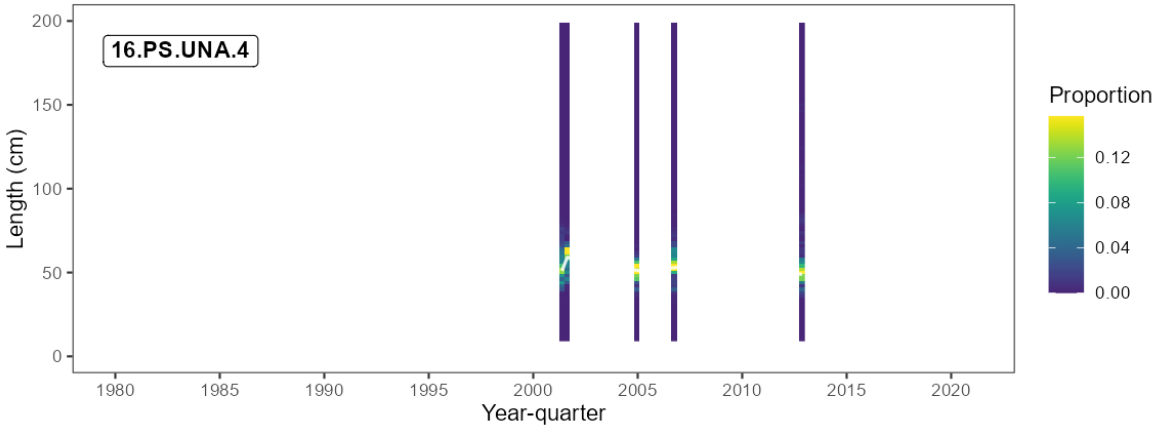


(c) 'Strongest filtering' option

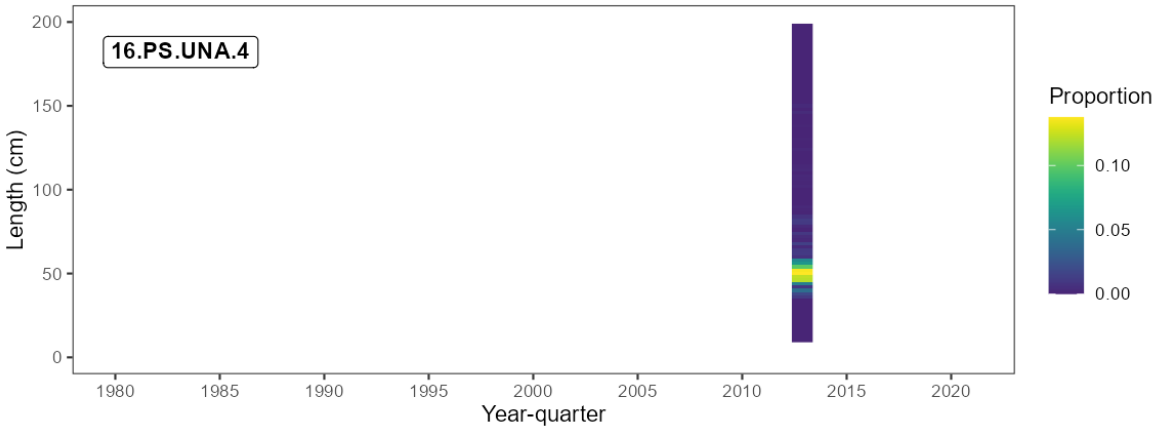
Figure A.7: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

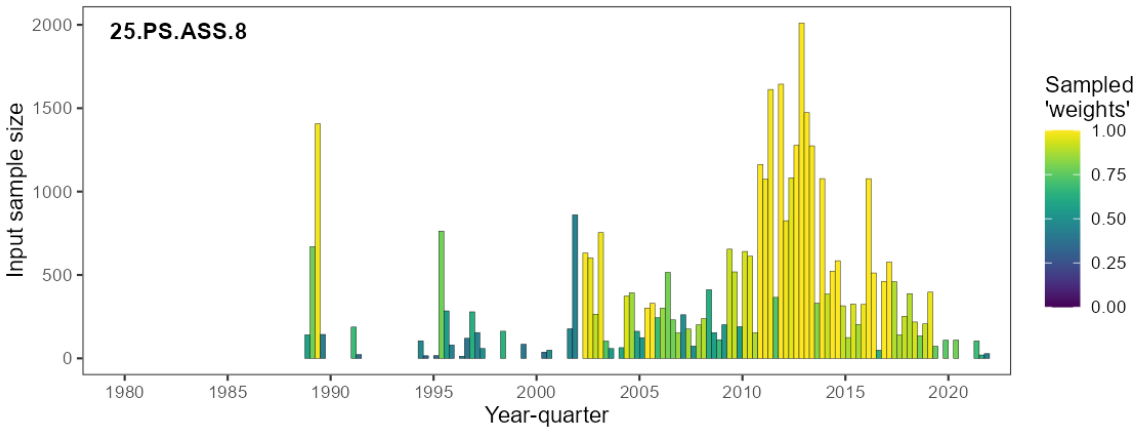


(b) 'Stronger filtering' option

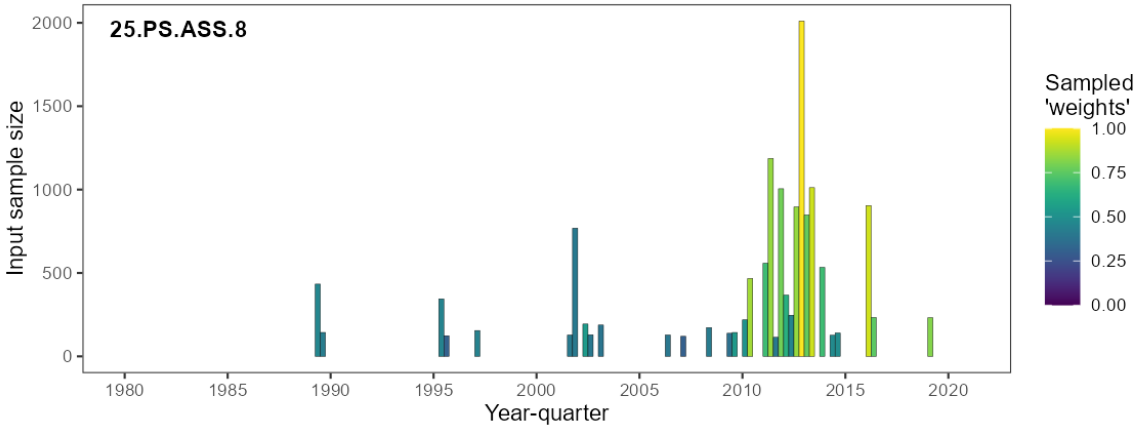


(c) 'Strongest filtering' option

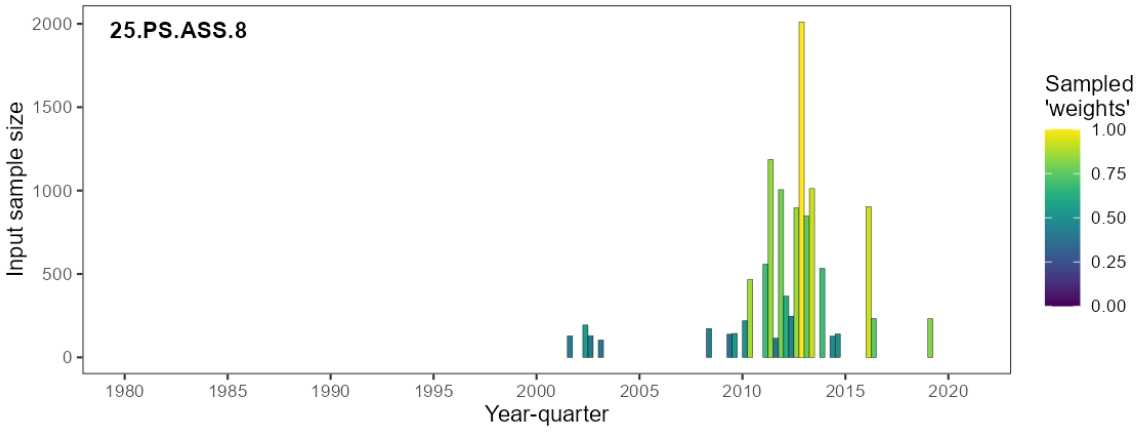
Figure A.8: Reweighted length compositions of bigeye for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

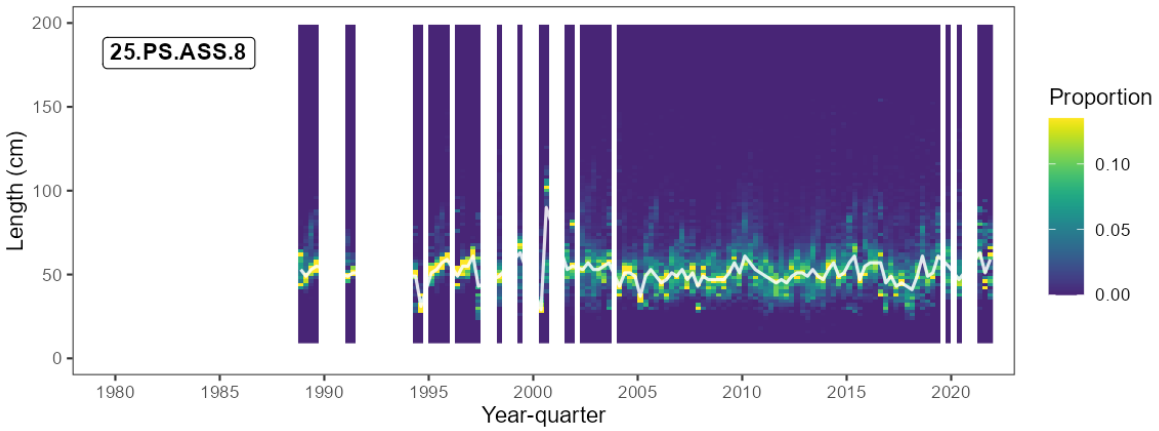


(b) 'Stronger filtering' option

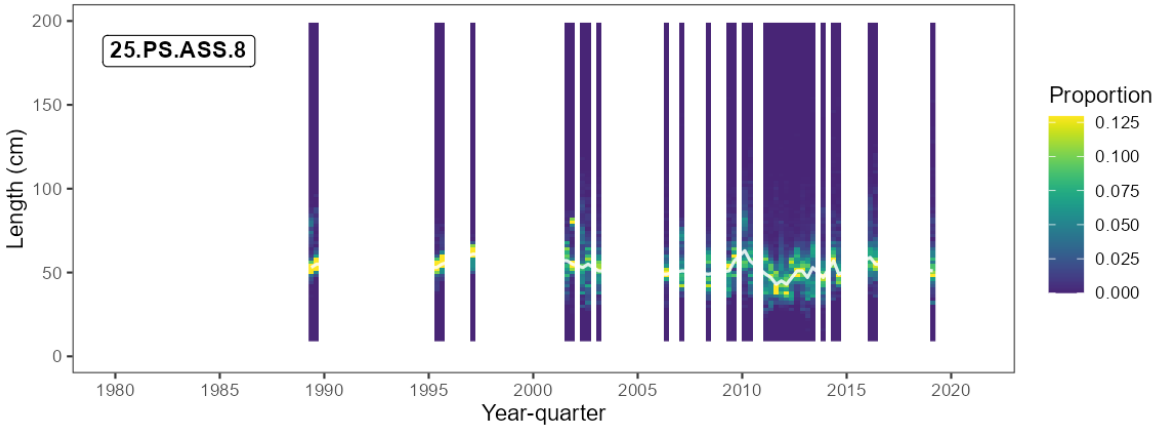


(c) 'Strongest filtering' option

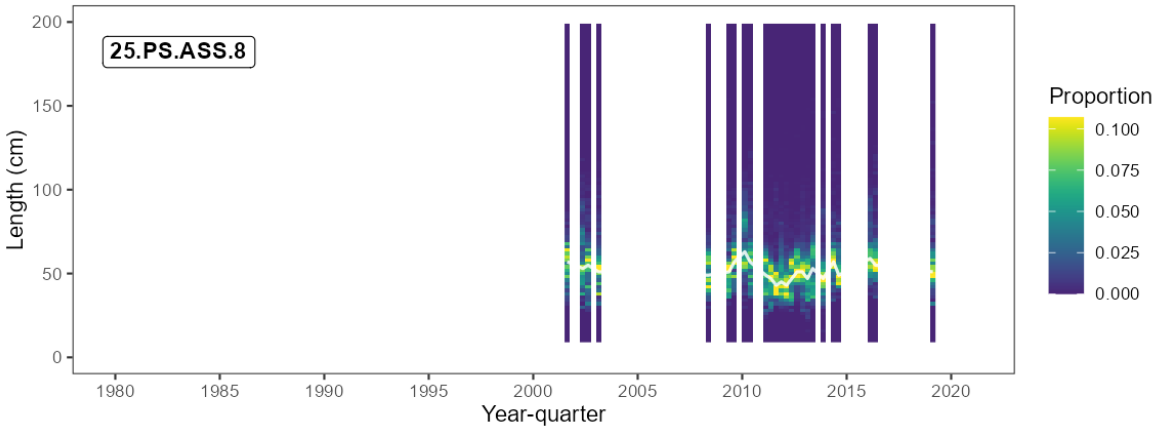
Figure A.9: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

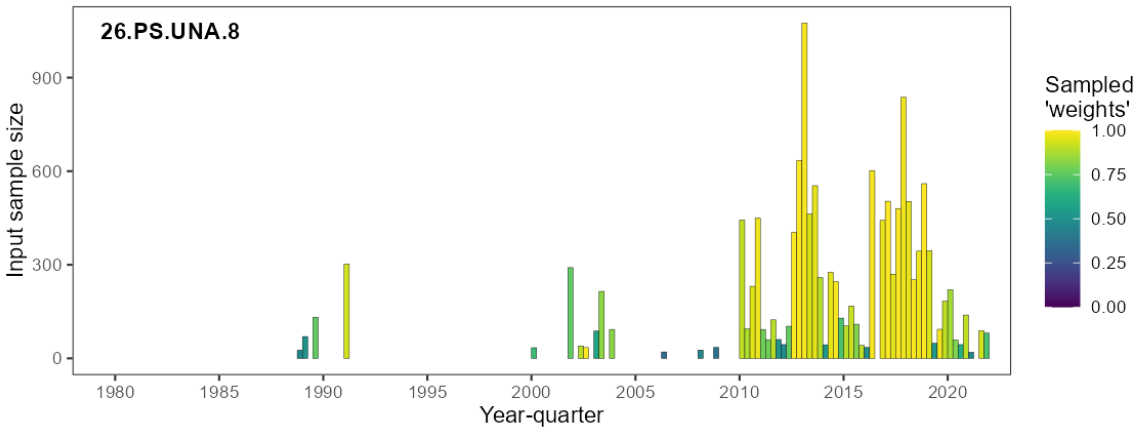


(b) 'Stronger filtering' option

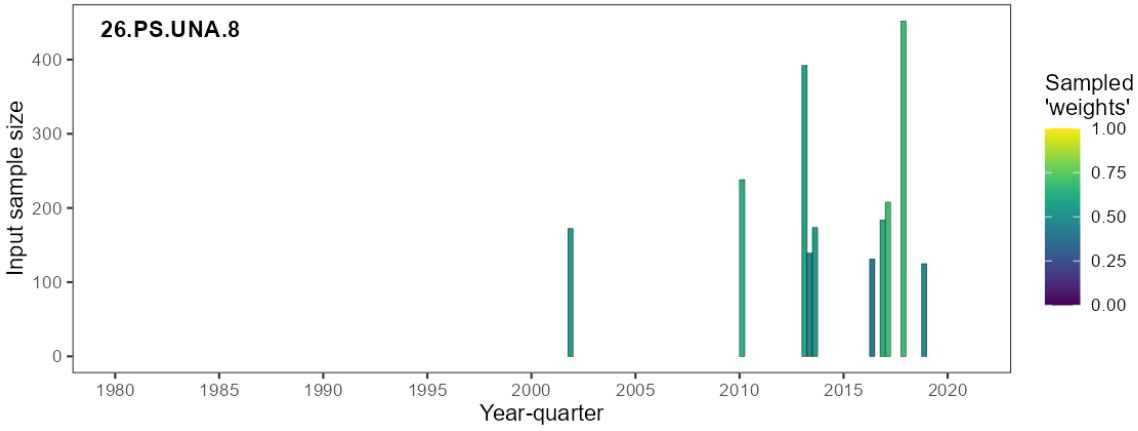


(c) 'Strongest filtering' option

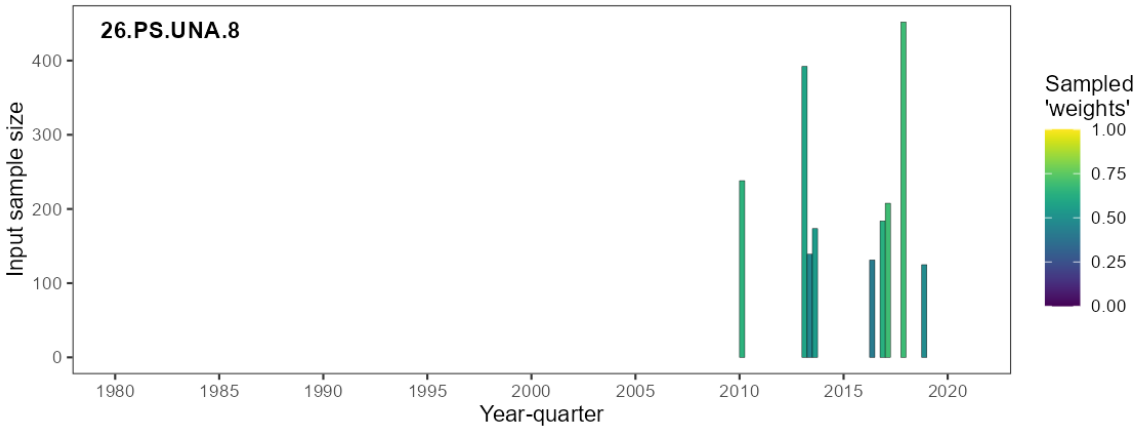
Figure A.10: Reweighted length compositions of bigeye for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

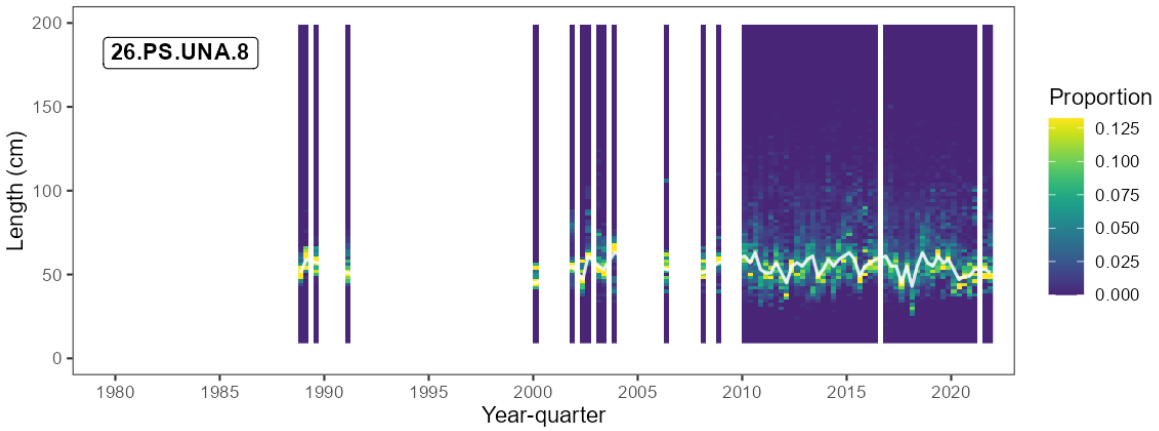


(b) 'Stronger filtering' option

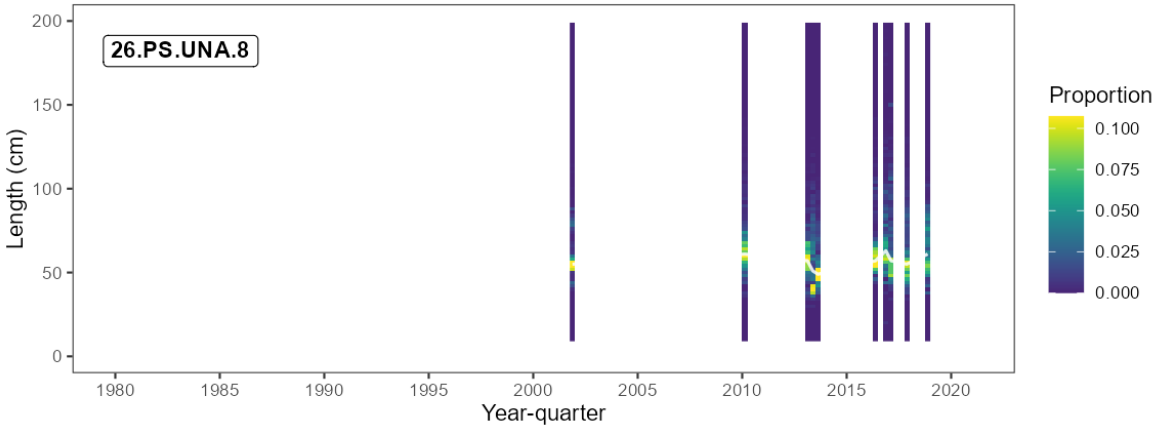


(c) 'Strongest filtering' option

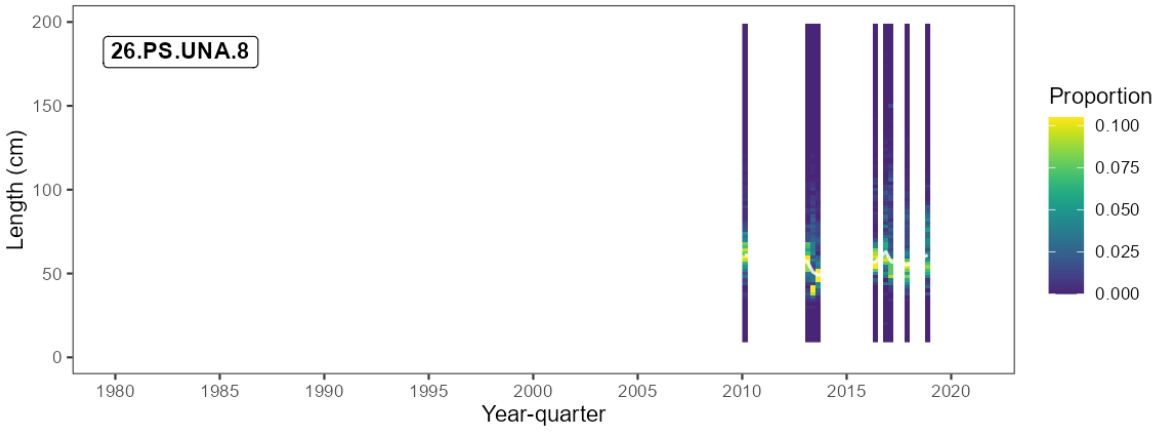
Figure A.11: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option



(b) 'Stronger filtering' option



(c) 'Strongest filtering' option

Figure A.12: Reweighted length compositions of bigeye for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

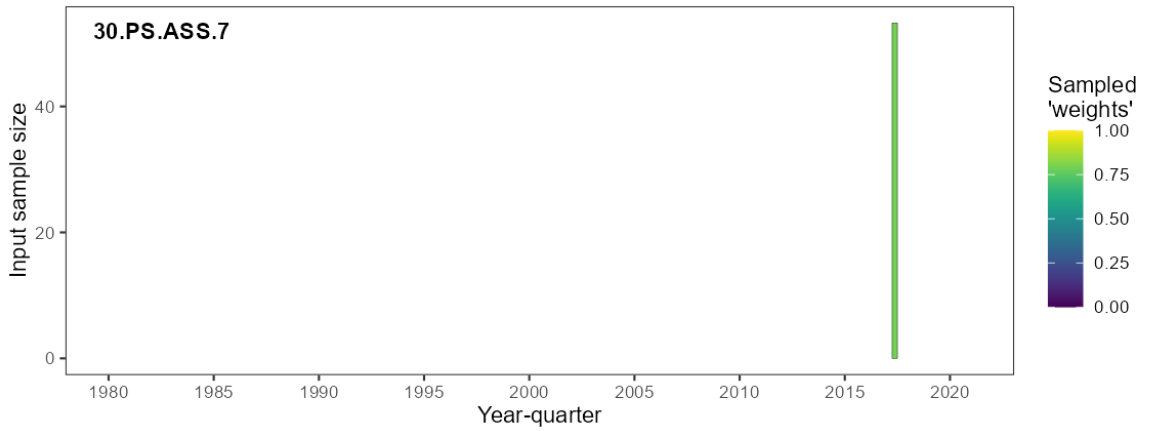


Figure A.13: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 30.PS.ASS.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.

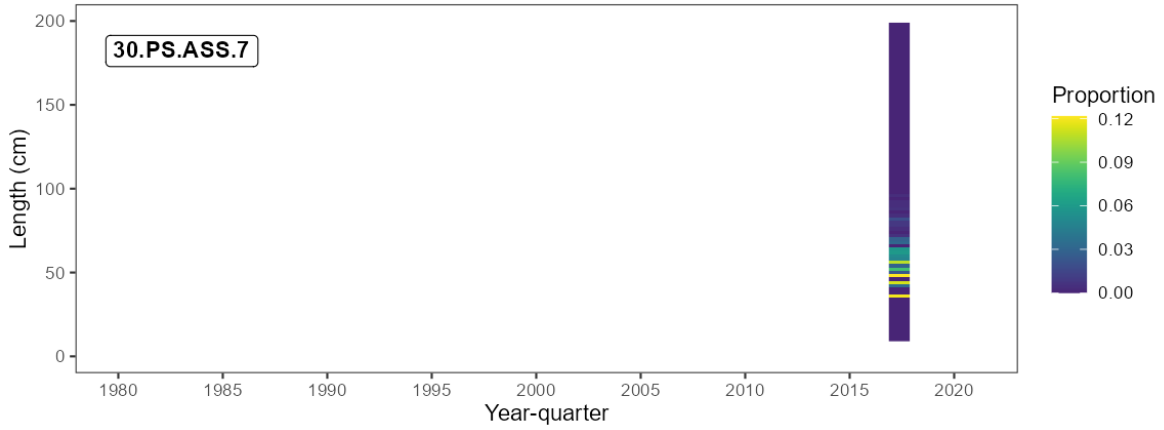


Figure A.14: Reweighted length compositions of bigeye for the purse seine extraction fishery 30.PS.ASS.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

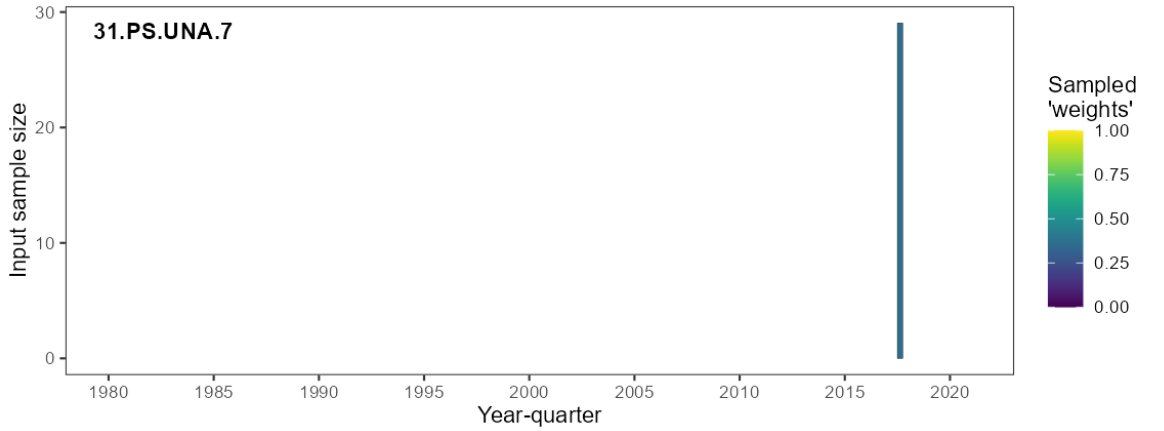


Figure A.15: Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 31.PS.UNA.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.

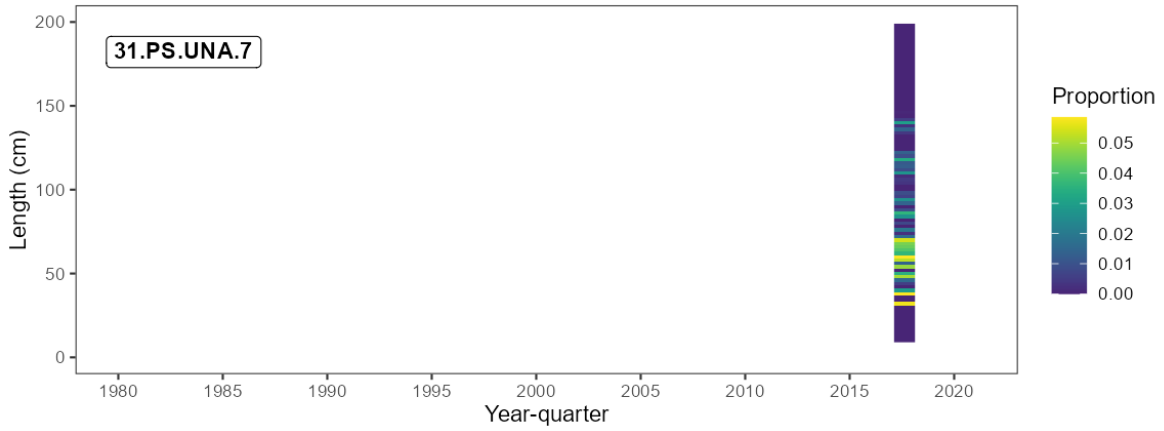
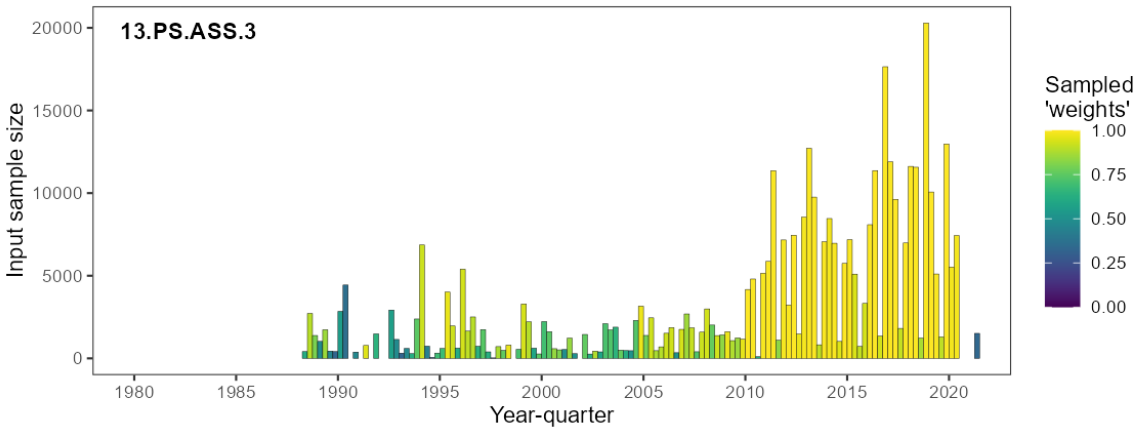
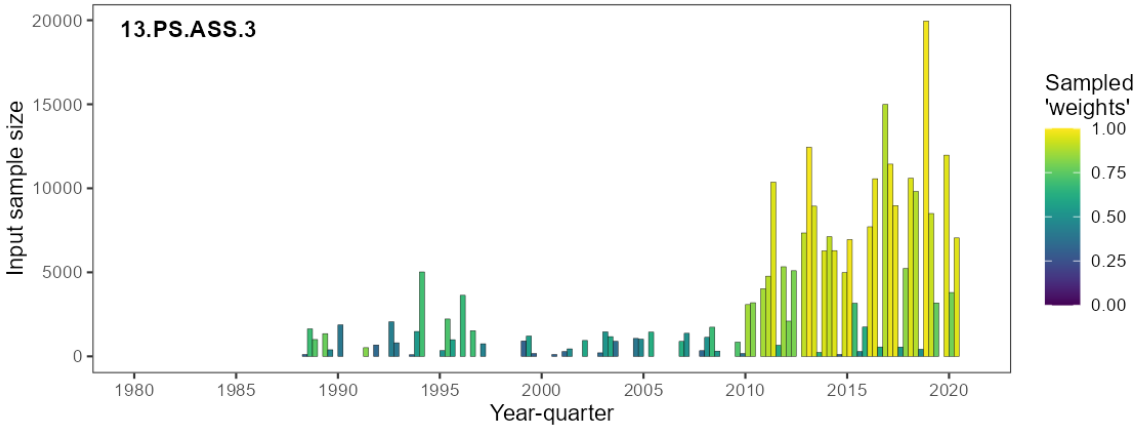


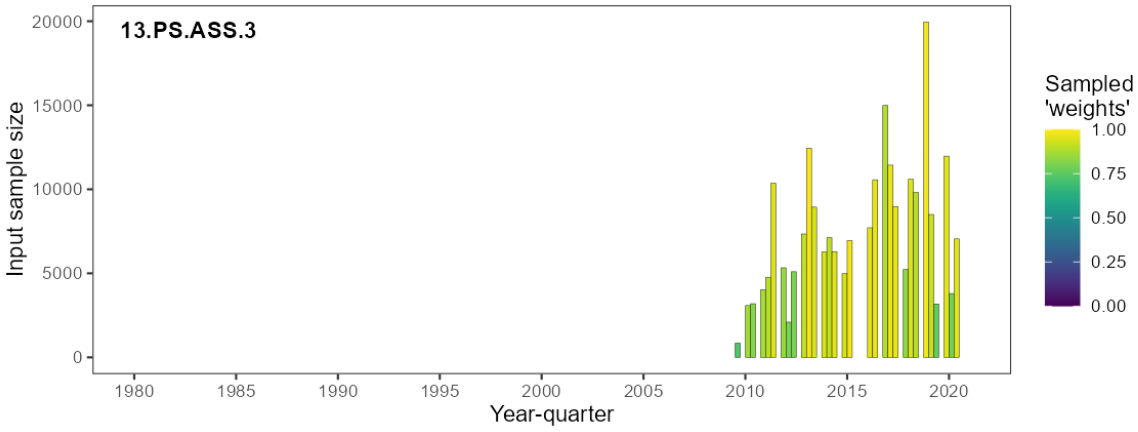
Figure A.16: Reweighted length compositions of bigeye for the purse seine extraction fishery 31.PS.UNA.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

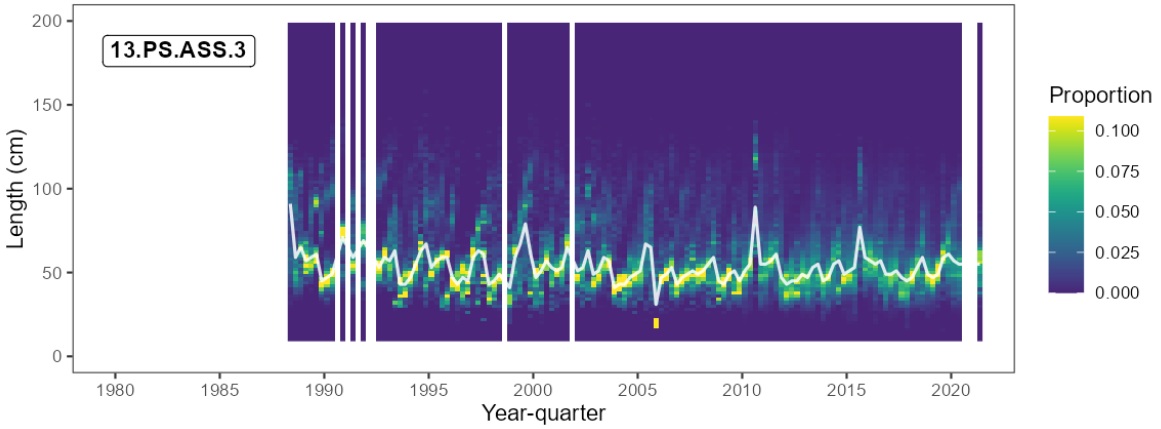


(b) 'Stronger filtering' option

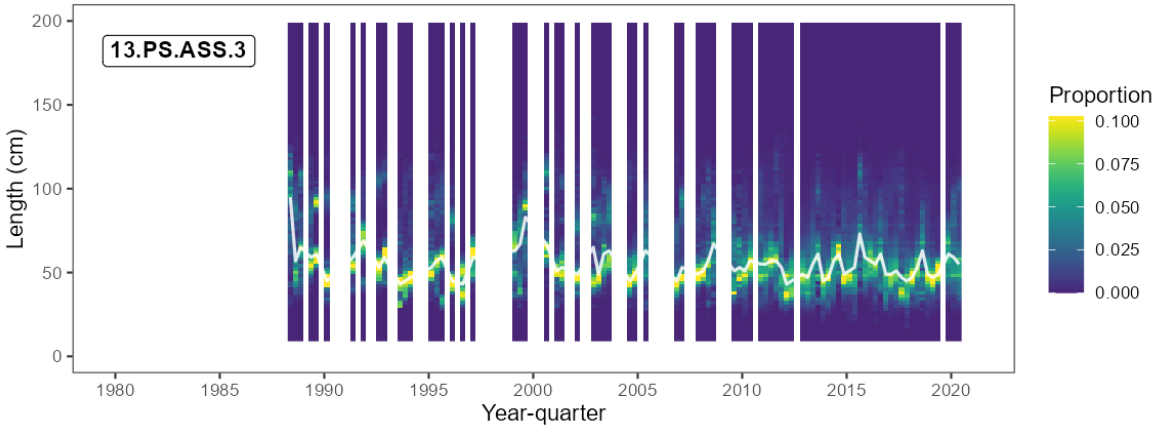


(c) 'Strongest filtering' option

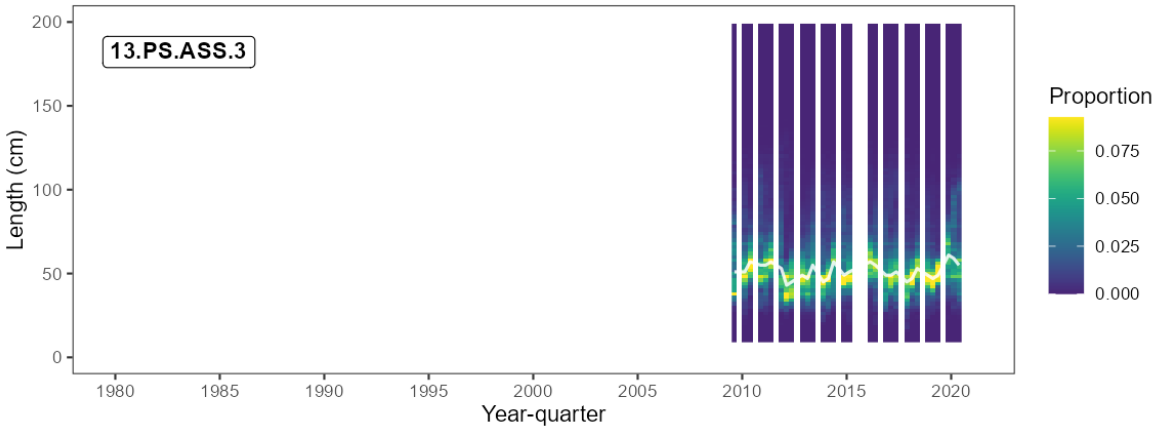
Figure A.17: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

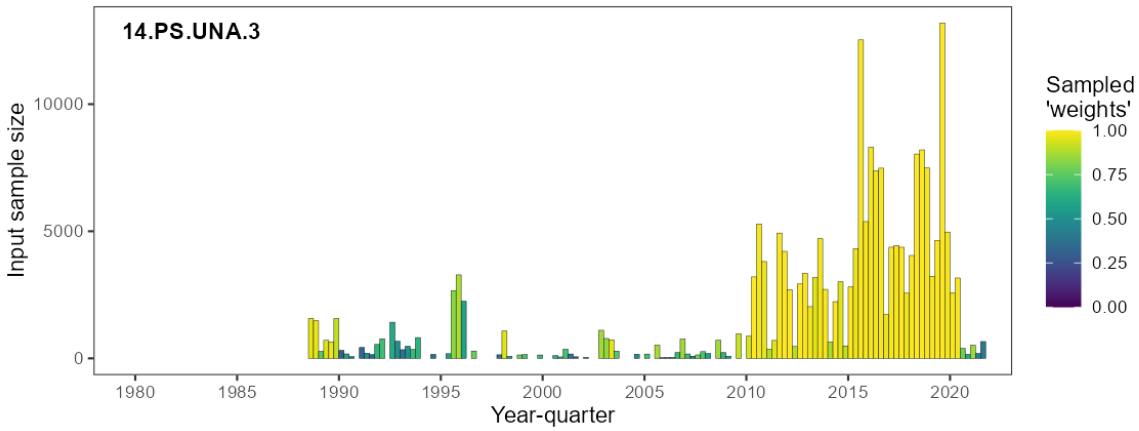


(b) 'Stronger filtering' option

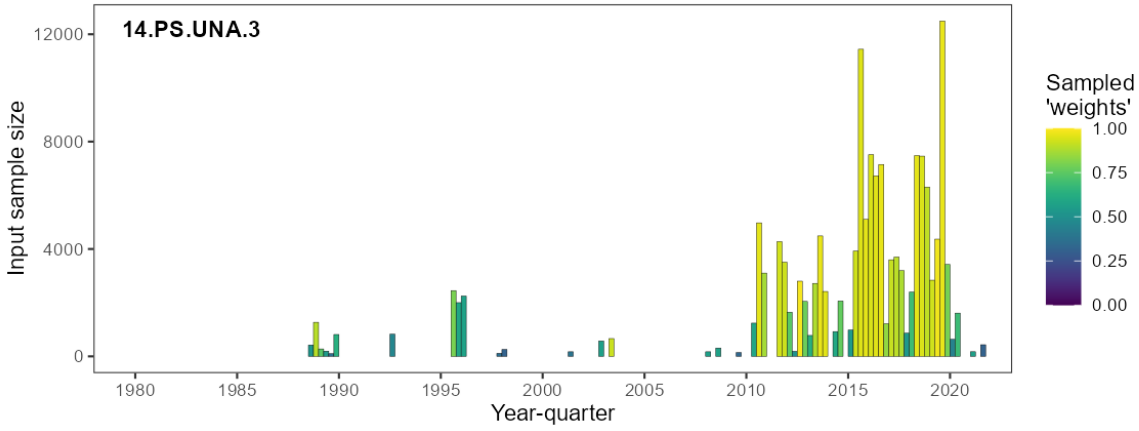


(c) 'Strongest filtering' option

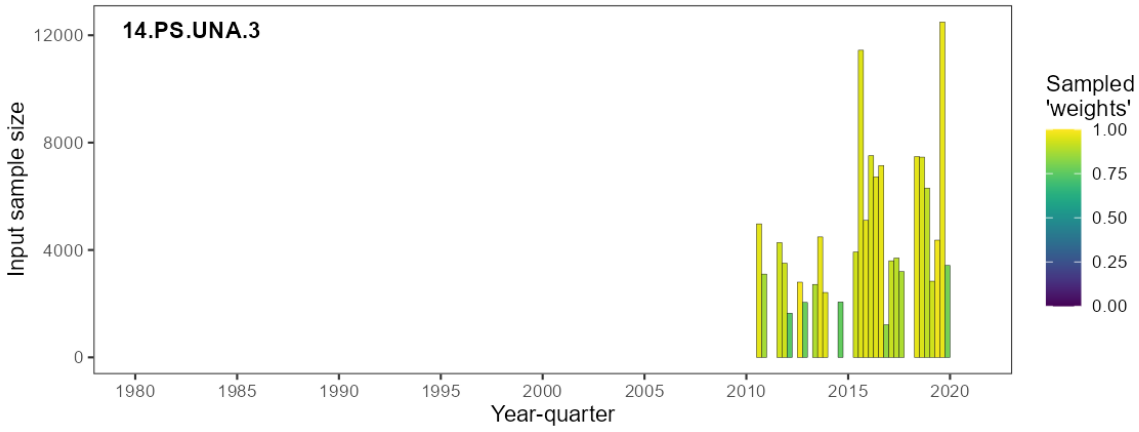
Figure A.18: Reweighted length compositions of yellowfin for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

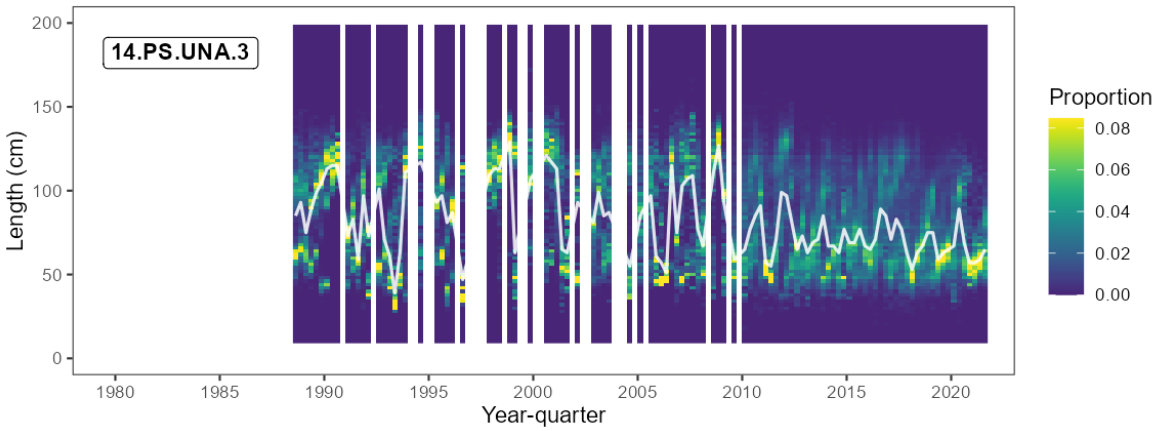


(b) 'Stronger filtering' option

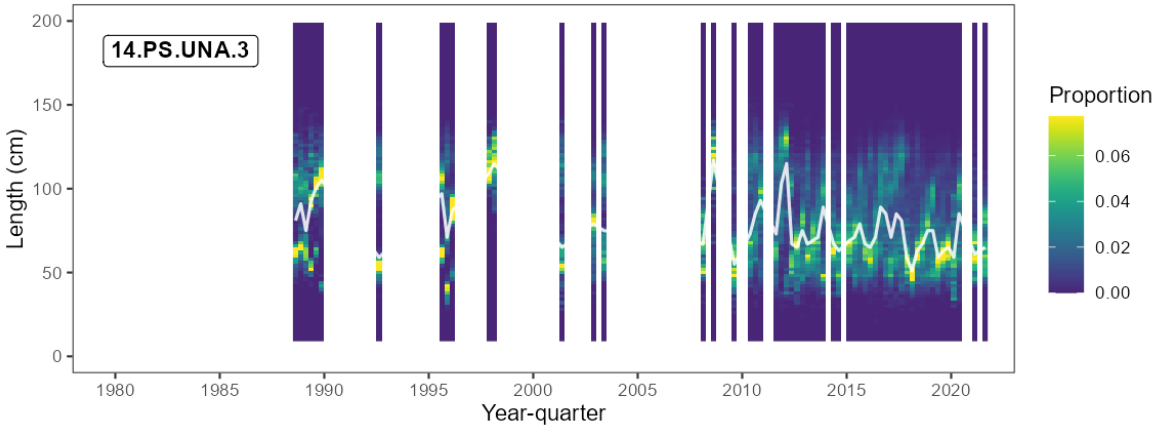


(c) 'Strongest filtering' option

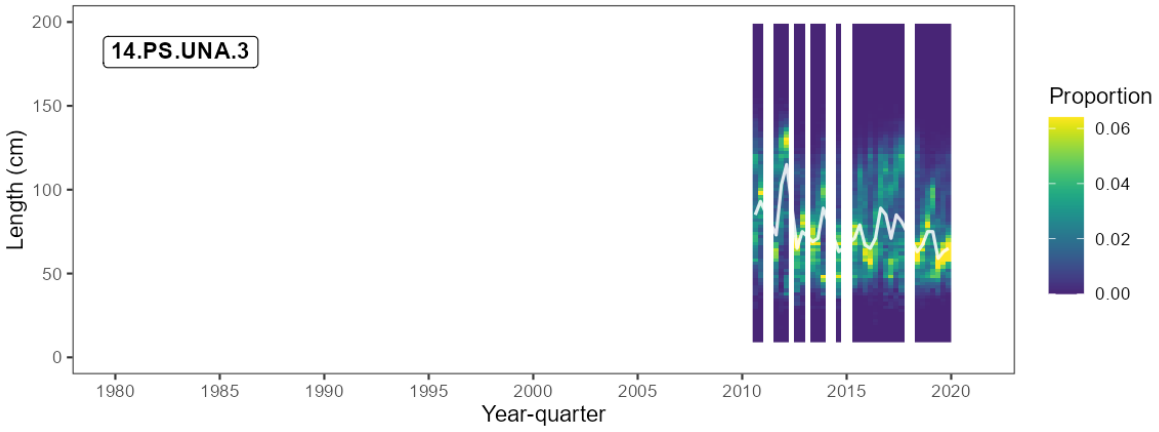
Figure A.19: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

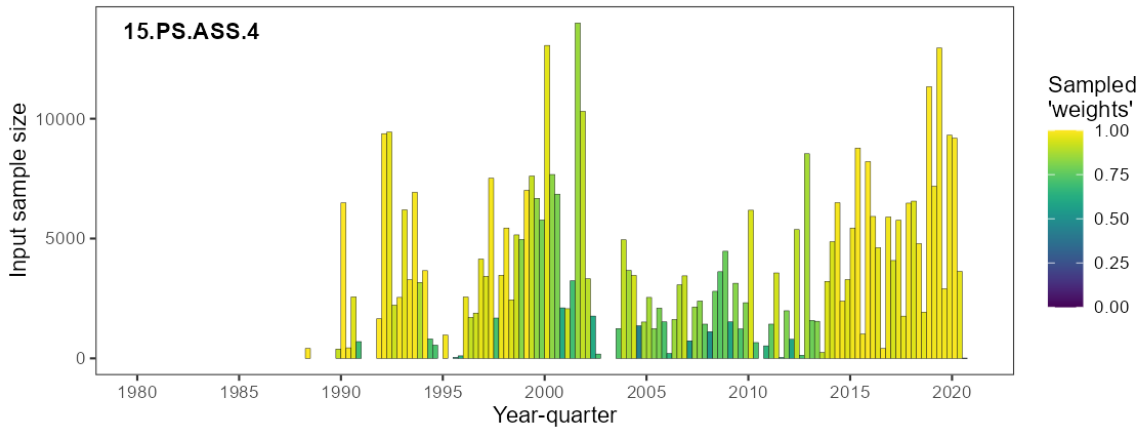


(b) 'Stronger filtering' option

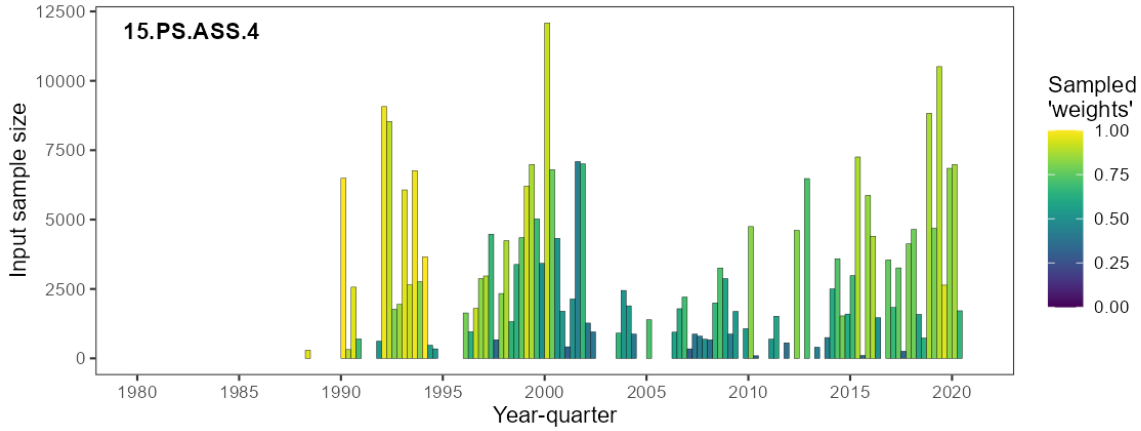


(c) 'Strongest filtering' option

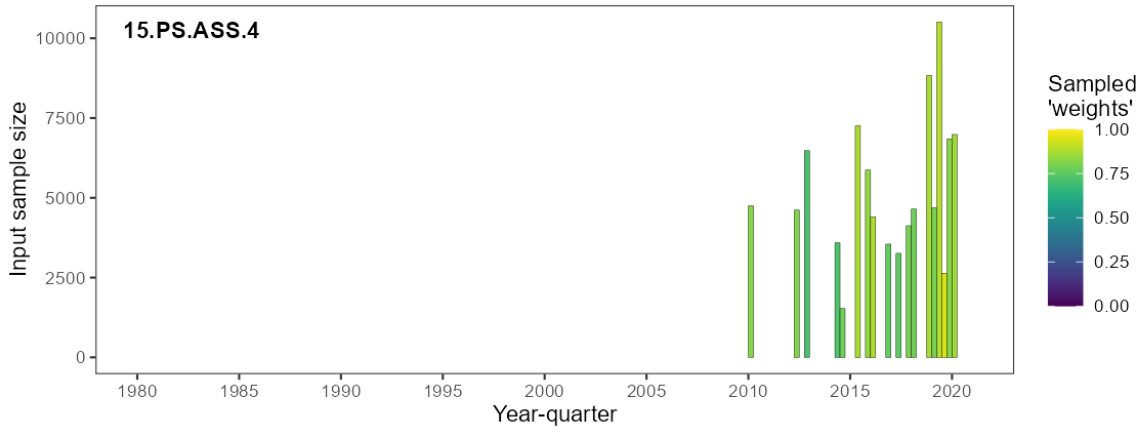
Figure A.20: Reweighted length compositions of yellowfin for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

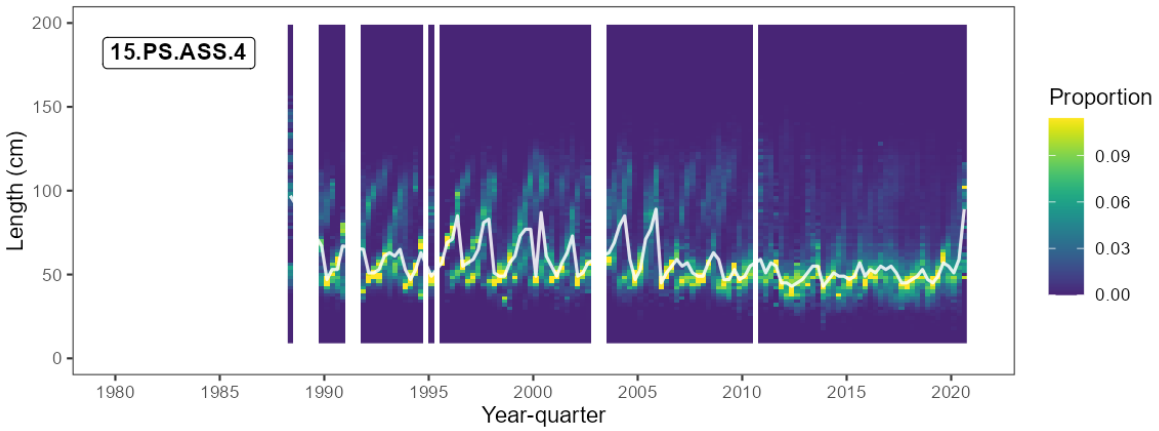


(b) 'Stronger filtering' option

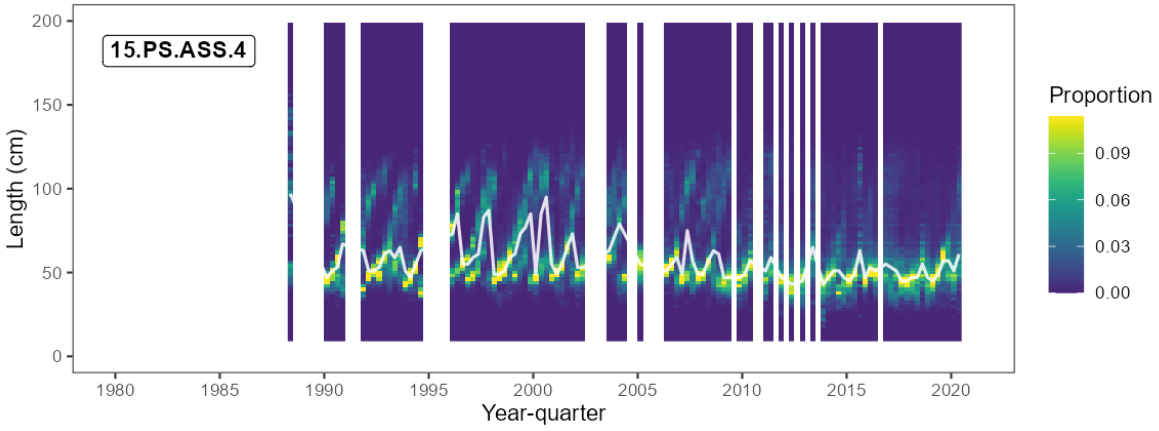


(c) 'Strongest filtering' option

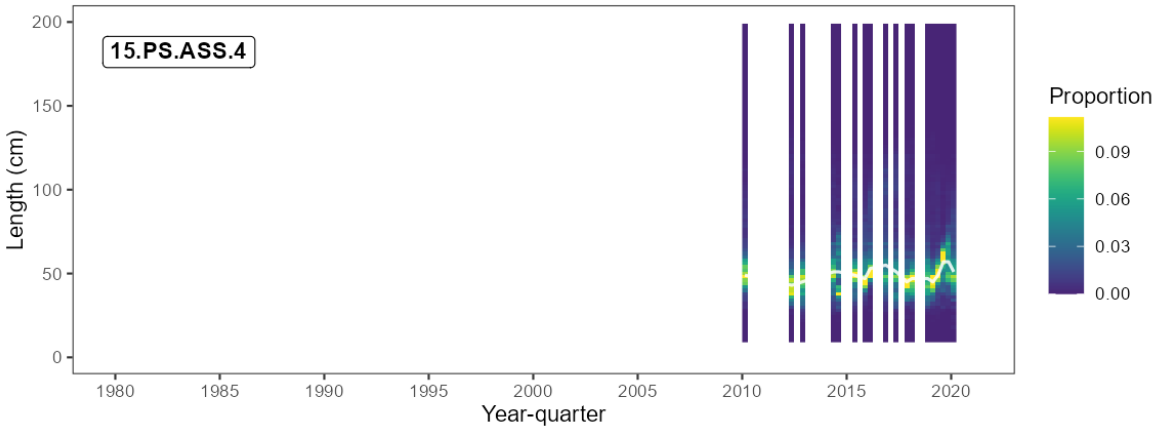
Figure A.21: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

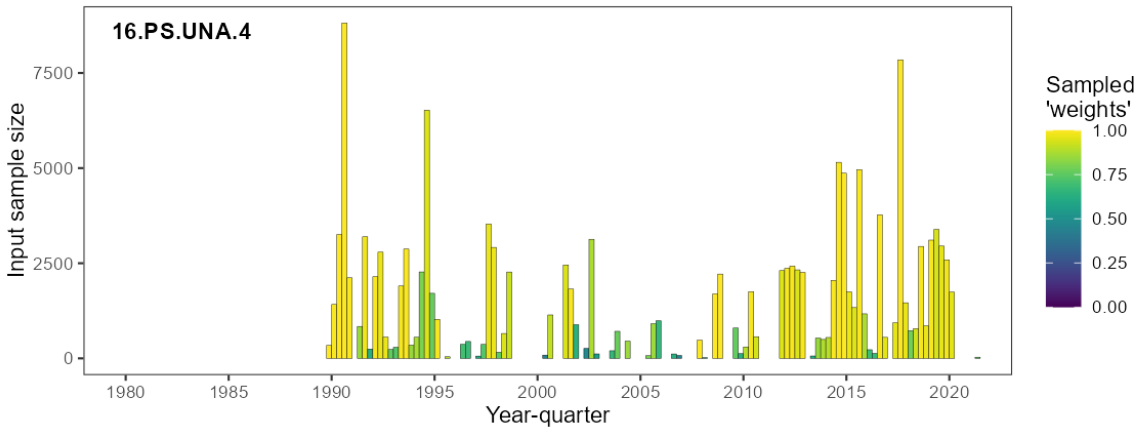


(b) 'Stronger filtering' option

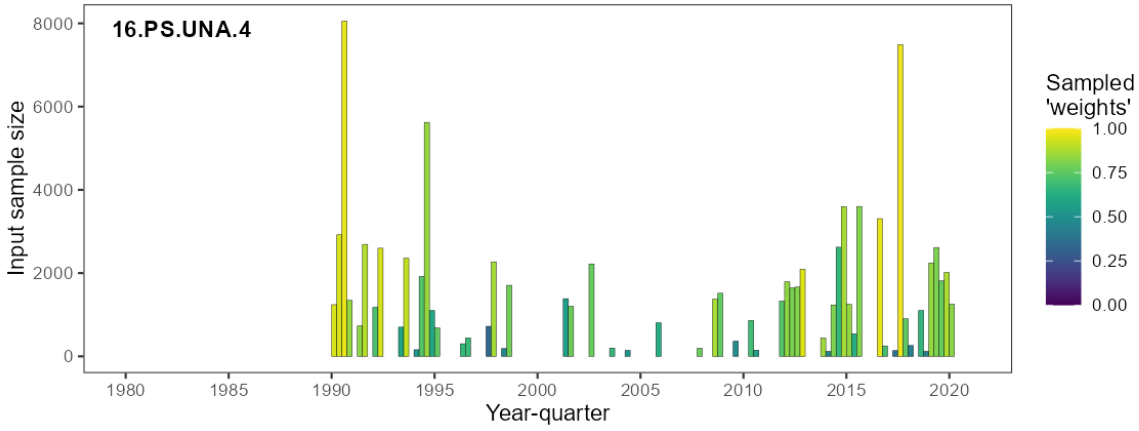


(c) 'Strongest filtering' option

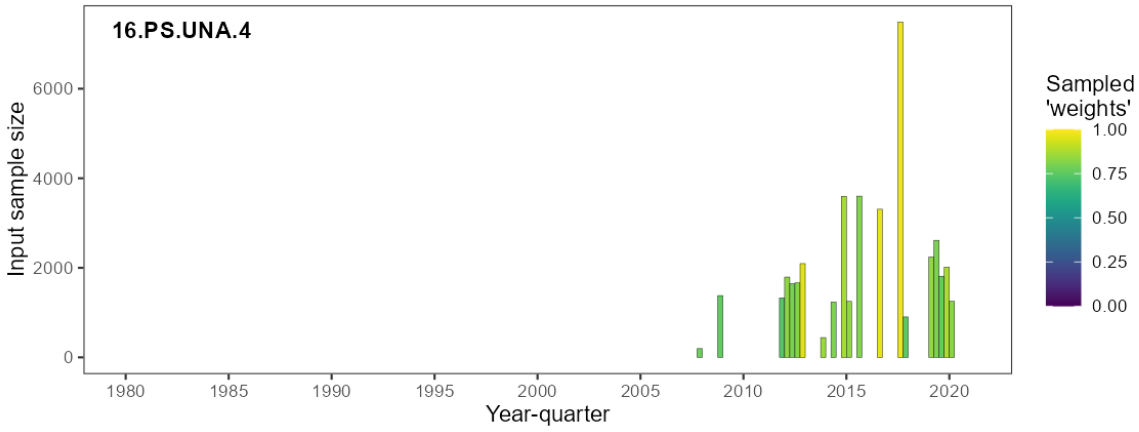
Figure A.22: Reweighted length compositions of yellowfin for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

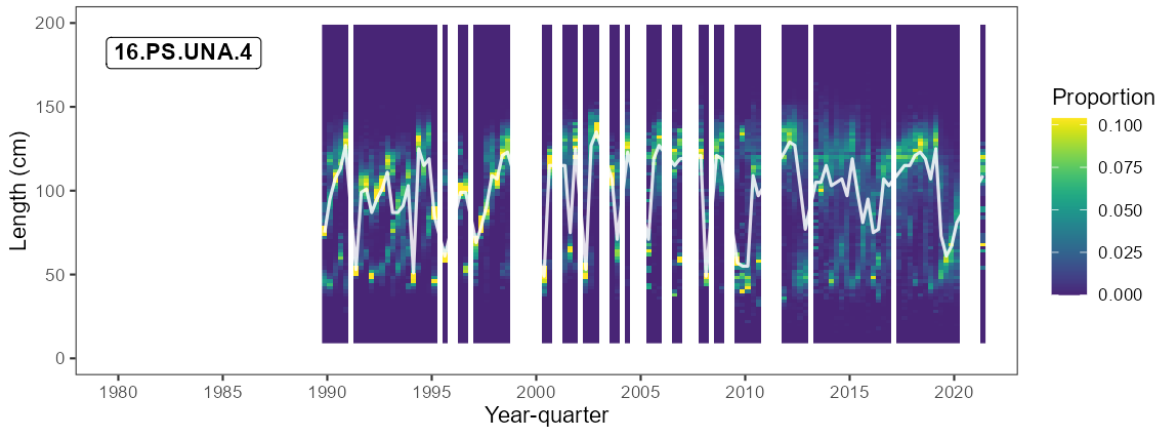


(b) 'Stronger filtering' option

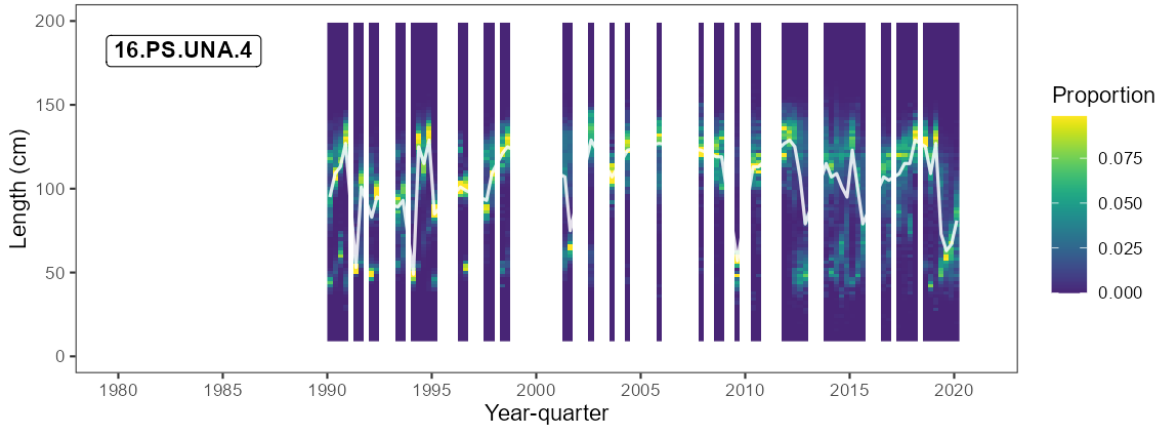


(c) 'Strongest filtering' option

Figure A.23: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



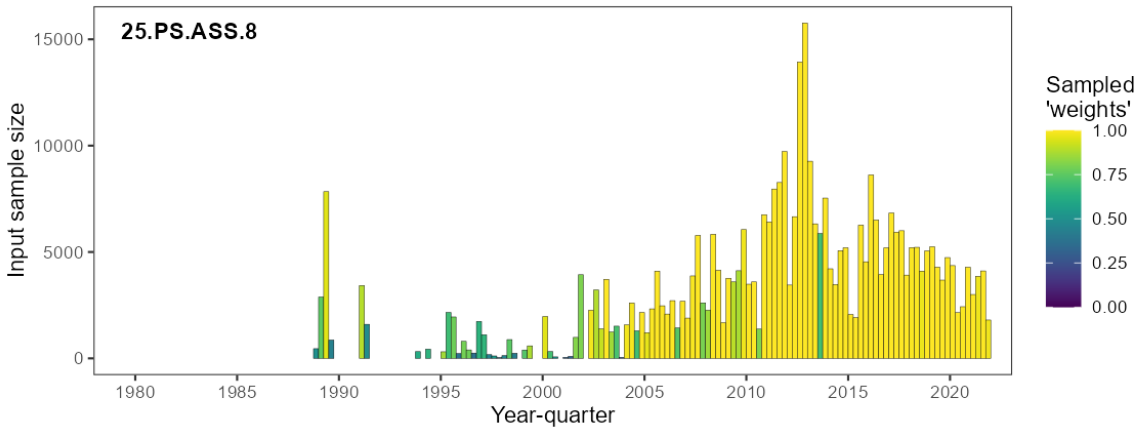
(a) 'Weak filtering' option



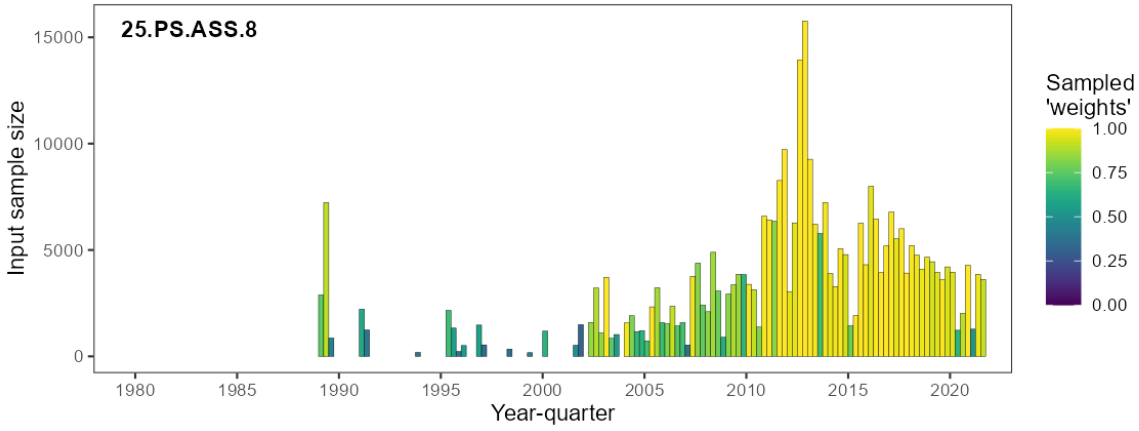
(b) 'Stronger filtering' option

(c) 'Strongest filtering' option

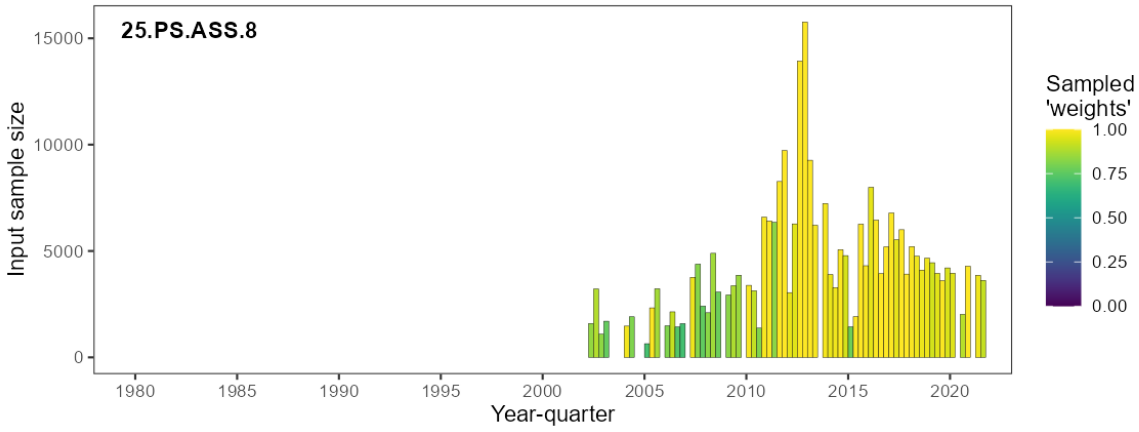
Figure A.24: Reweighted length compositions of yellowfin for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

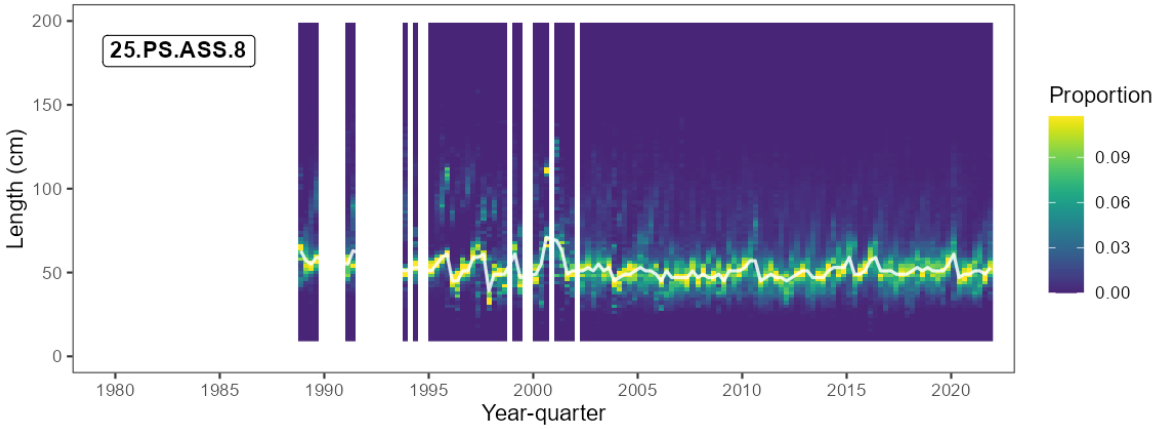


(b) 'Stronger filtering' option

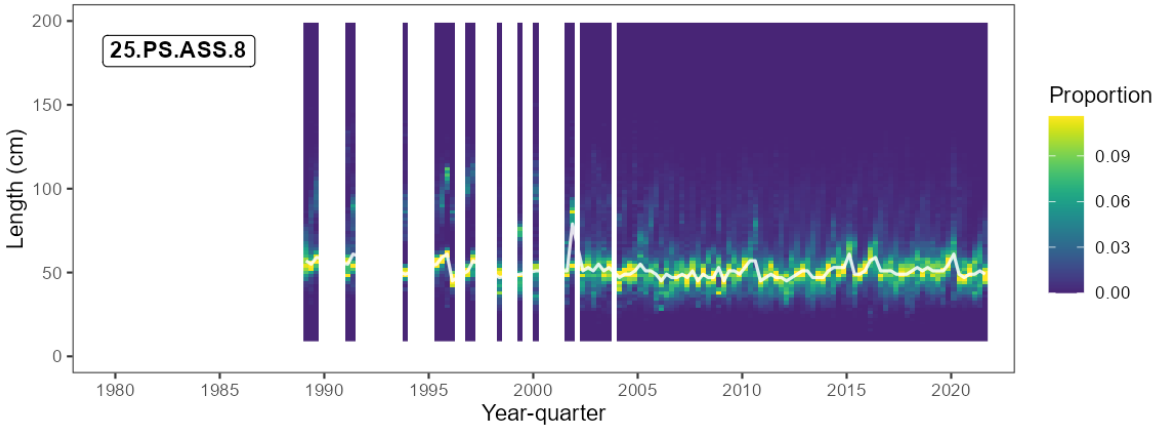


(c) 'Strongest filtering' option

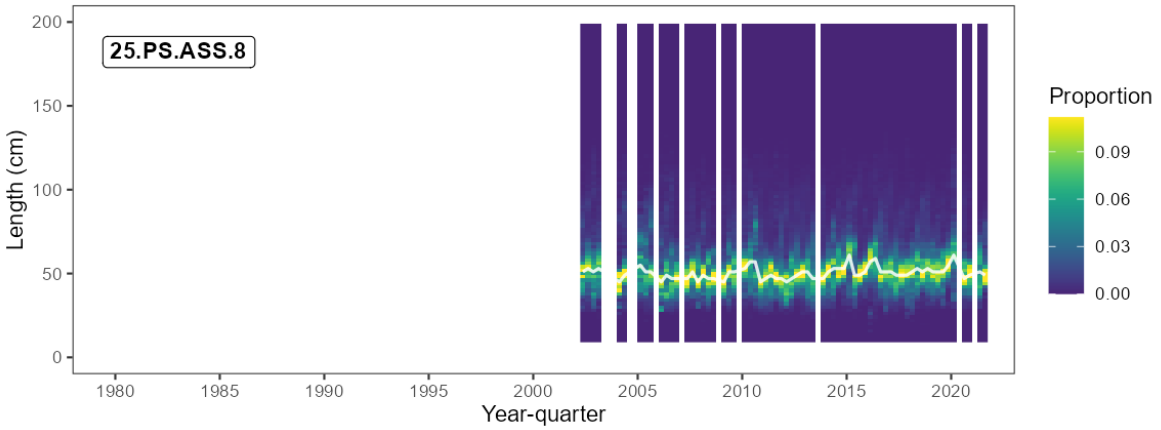
Figure A.25: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

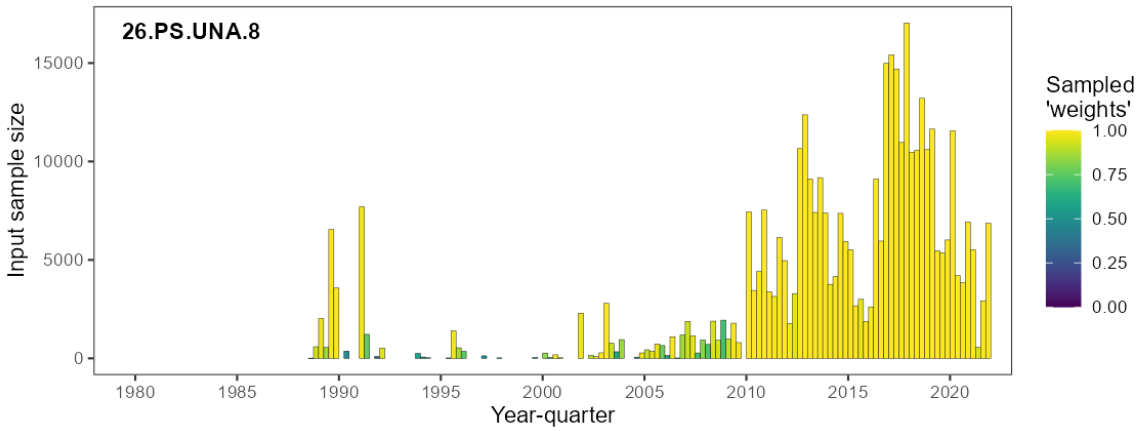


(b) 'Stronger filtering' option

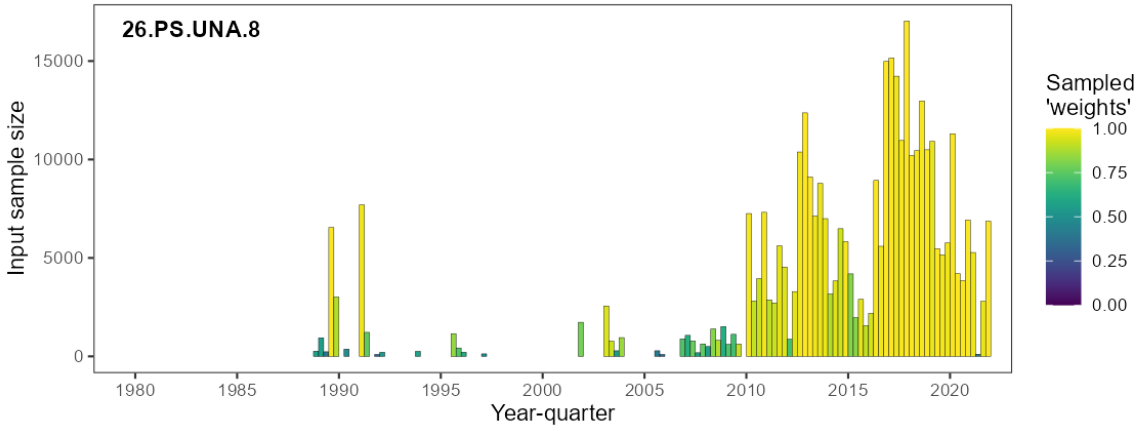


(c) 'Strongest filtering' option

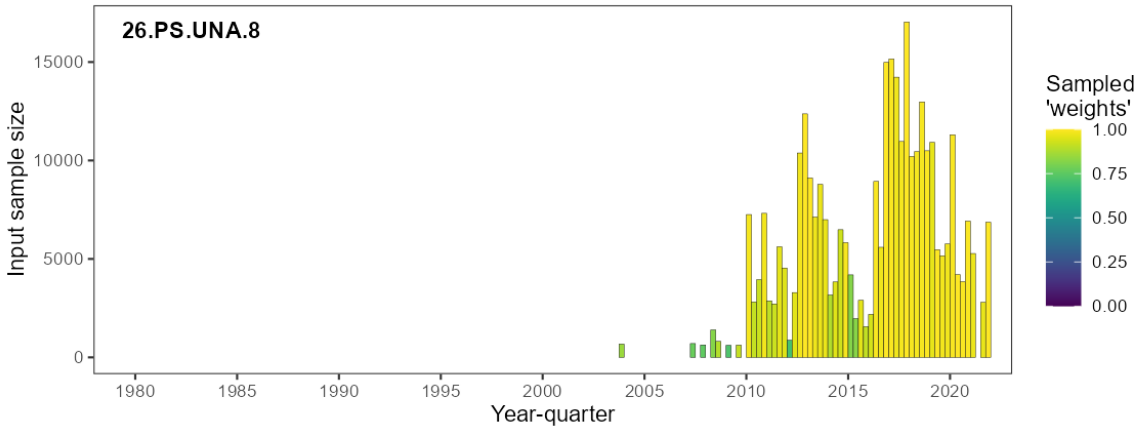
Figure A.26: Reweighted length compositions of yellowfin for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

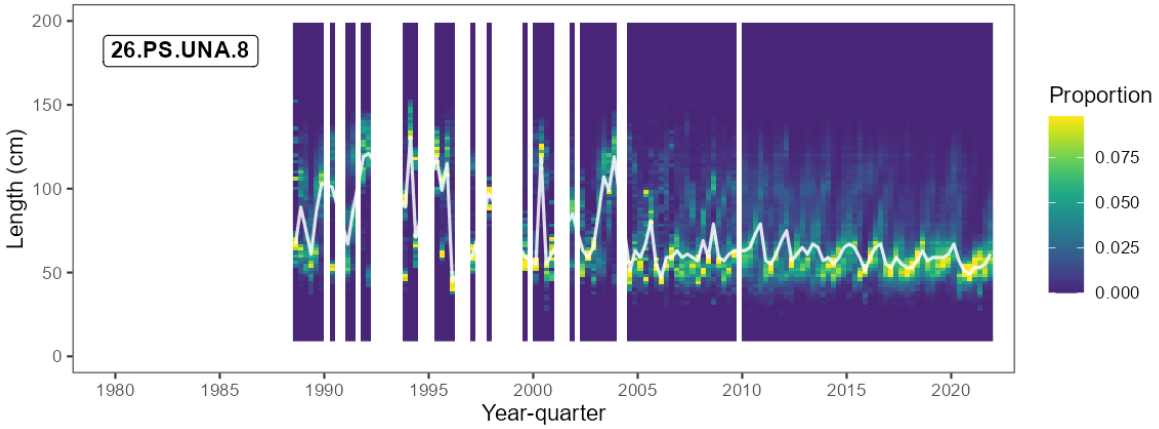


(b) 'Stronger filtering' option

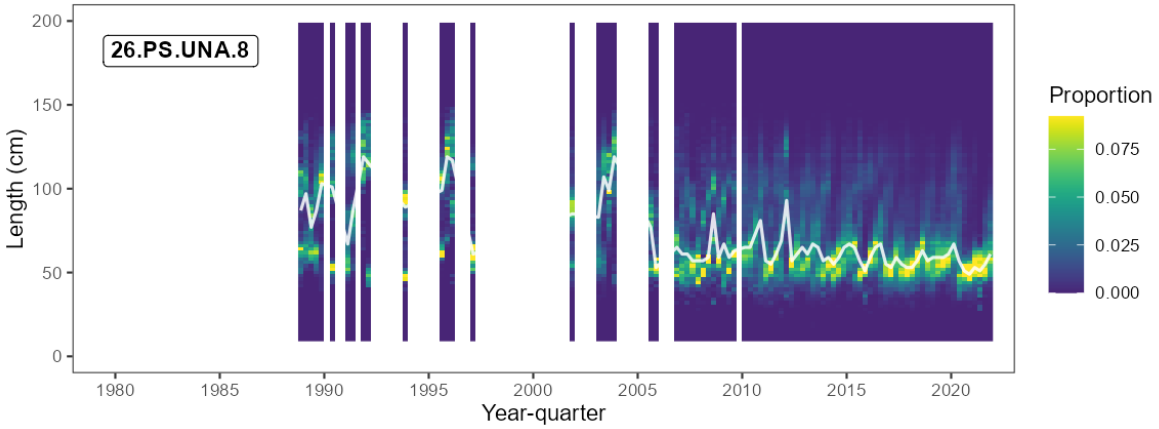


(c) 'Strongest filtering' option

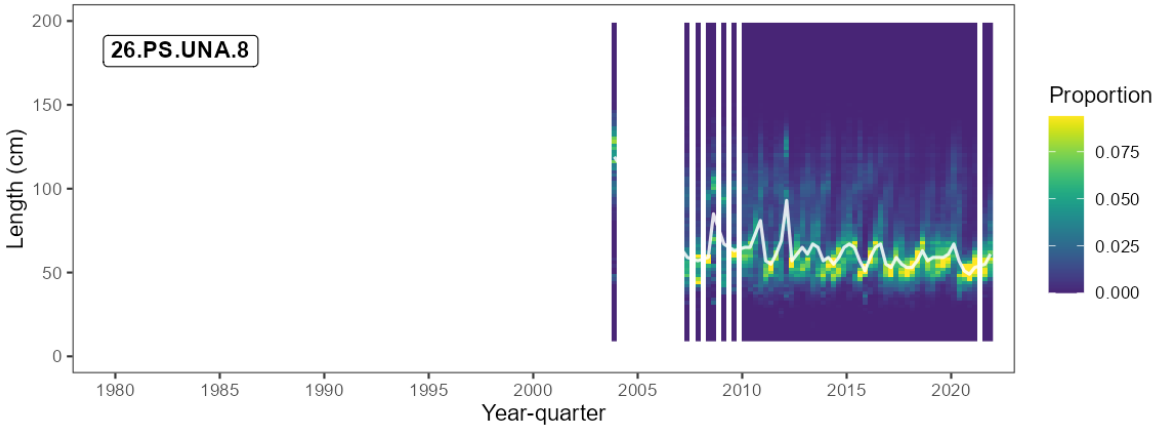
Figure A.27: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

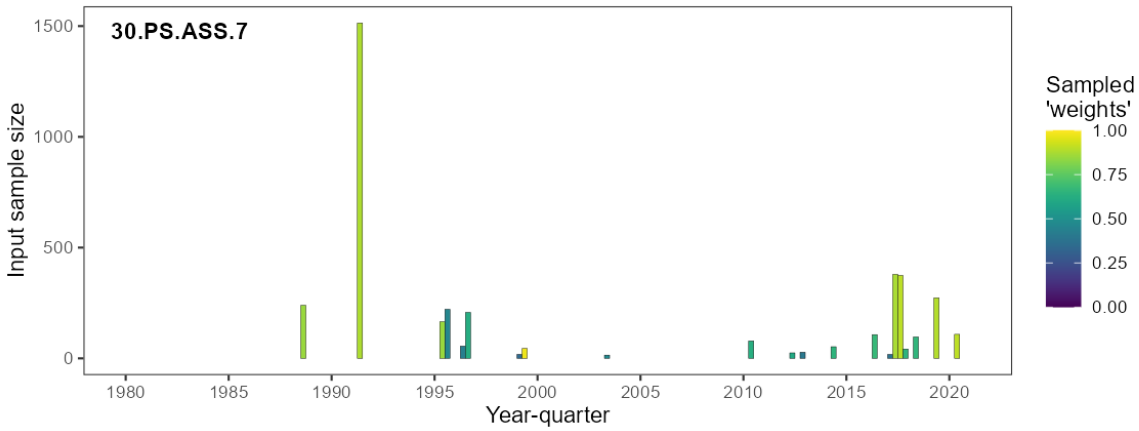


(b) 'Stronger filtering' option

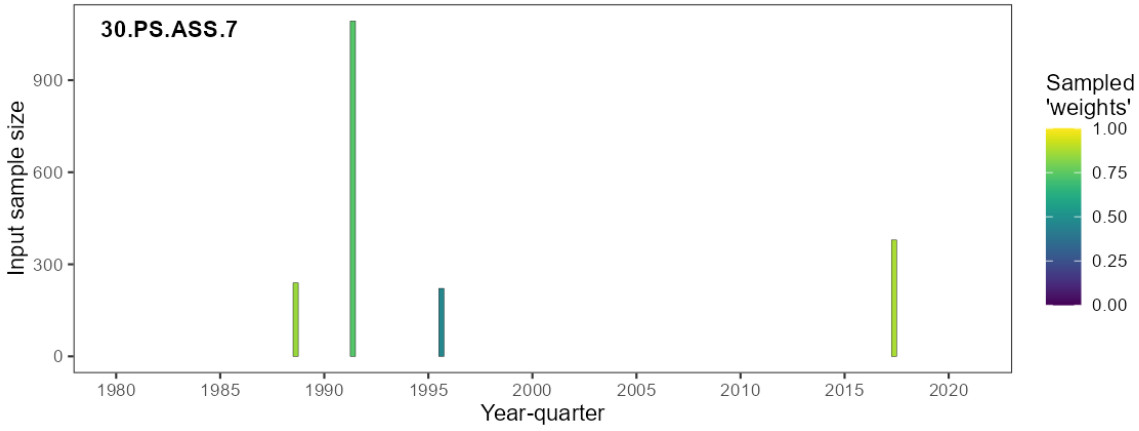


(c) 'Strongest filtering' option

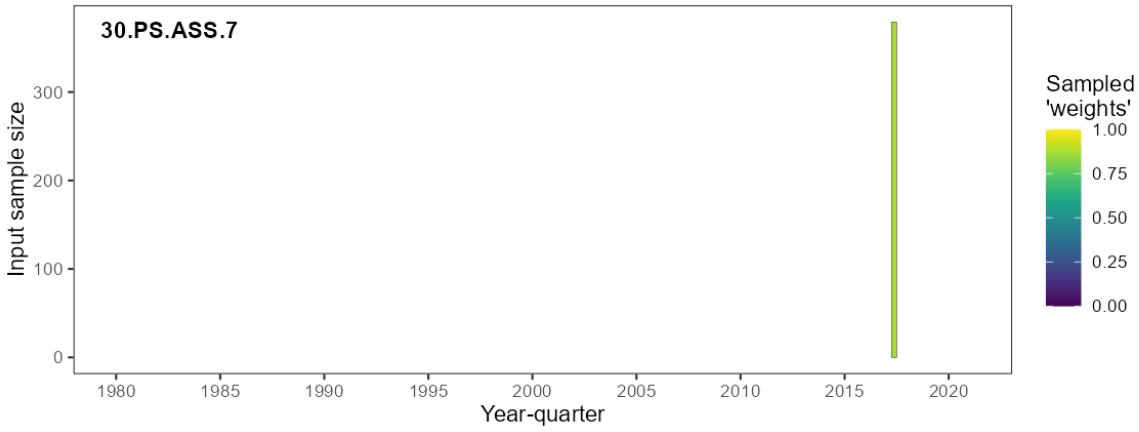
Figure A.28: Reweighted length compositions of yellowfin for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

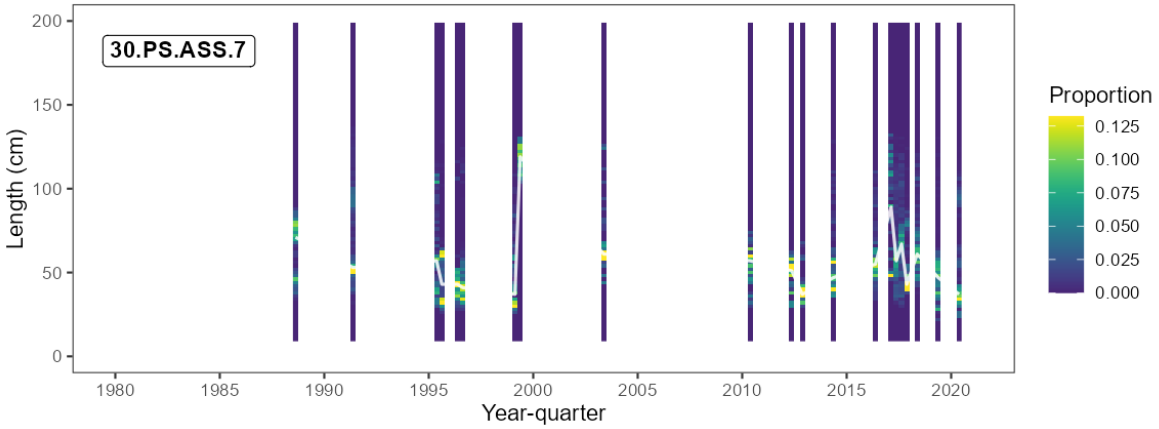


(b) 'Stronger filtering' option

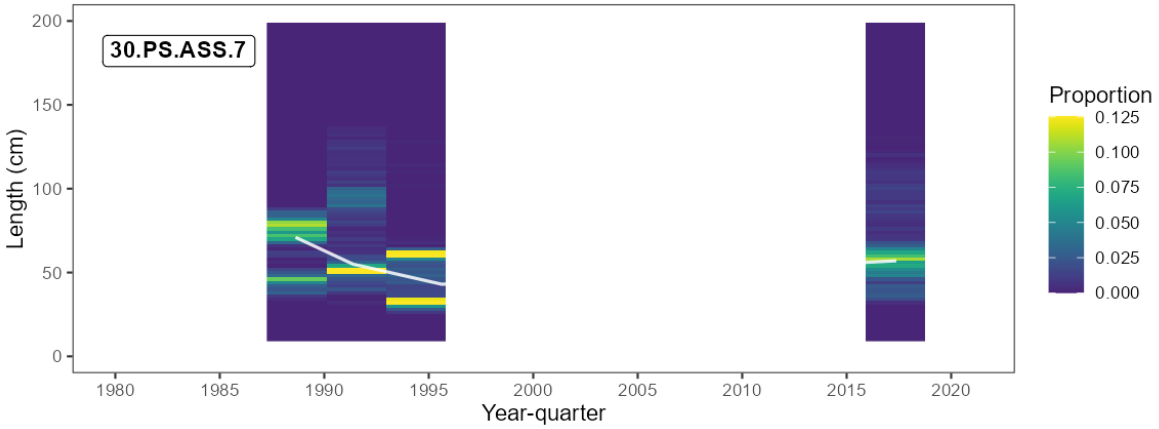


(c) 'Strongest filtering' option

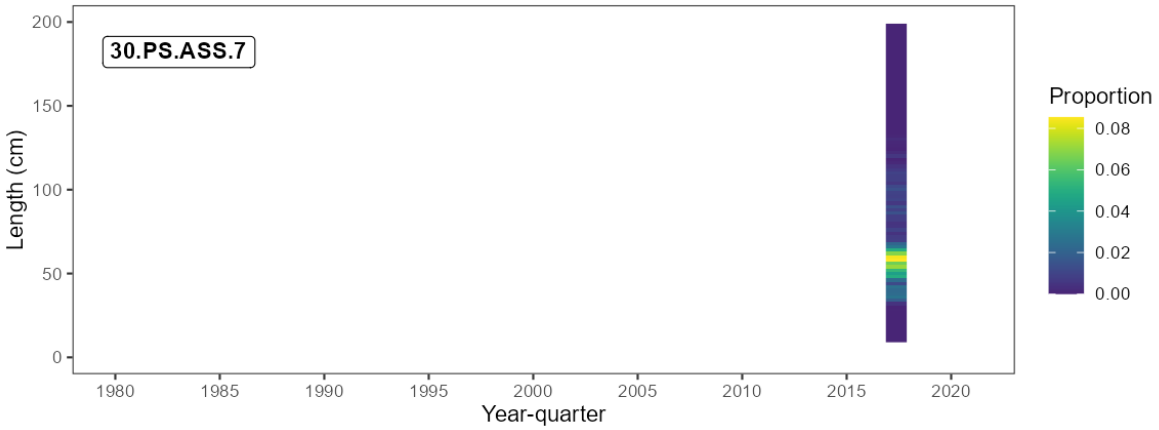
Figure A.29: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 30.PS.ASS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

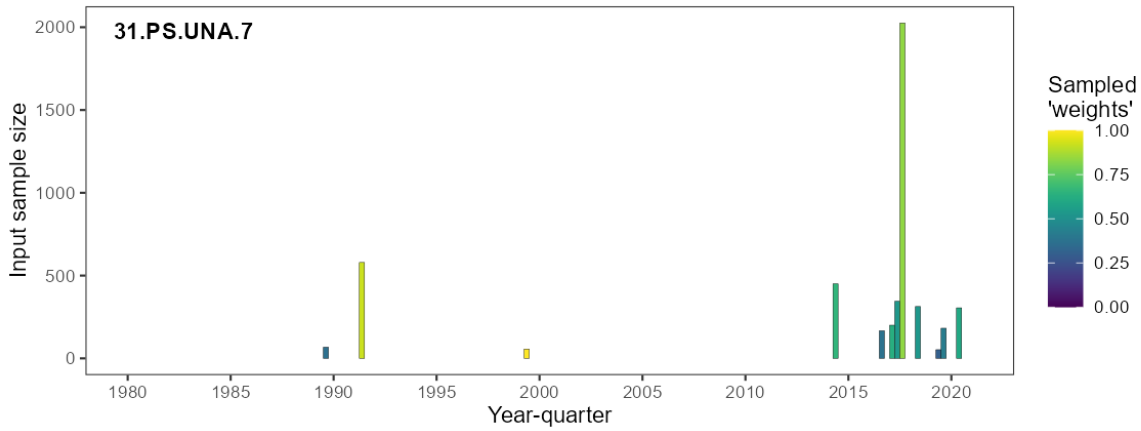


(b) 'Stronger filtering' option

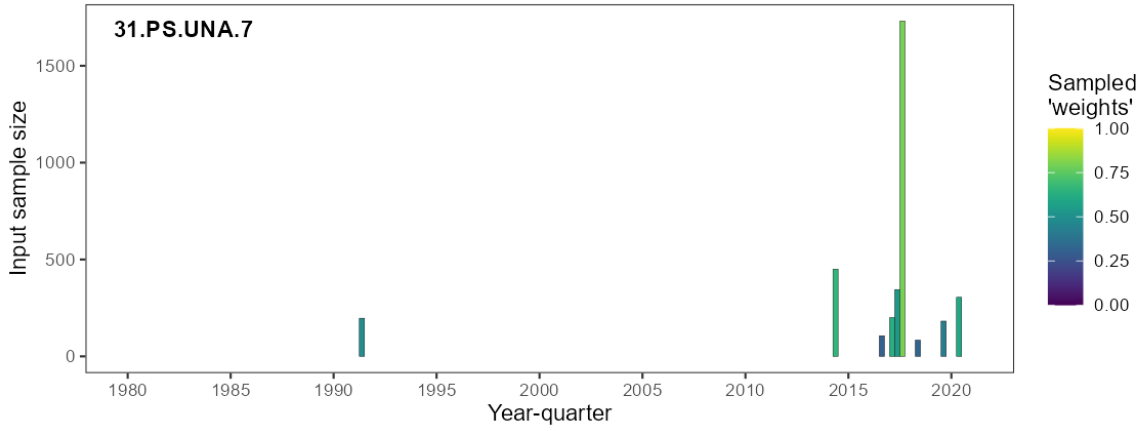


(c) 'Strongest filtering' option

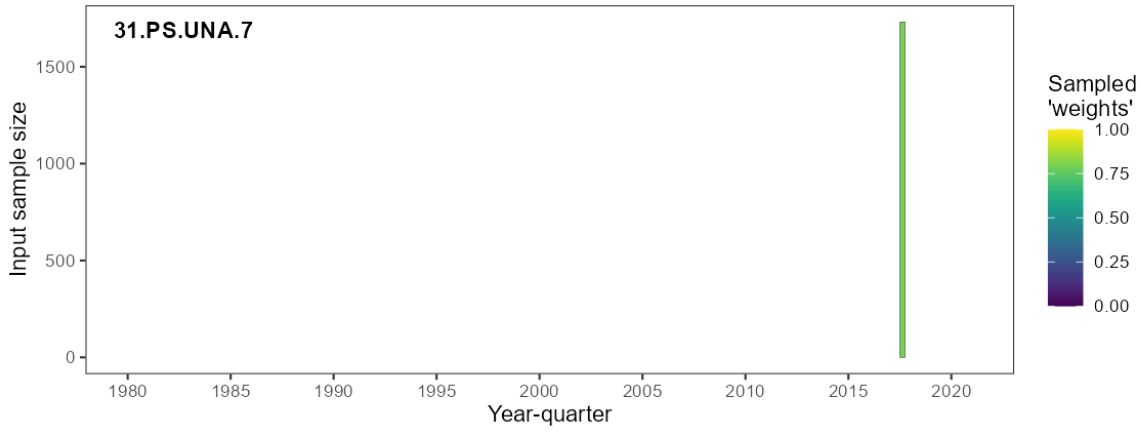
Figure A.30: Reweighted length compositions of yellowfin for the purse seine extraction fishery 30.PS.ASS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

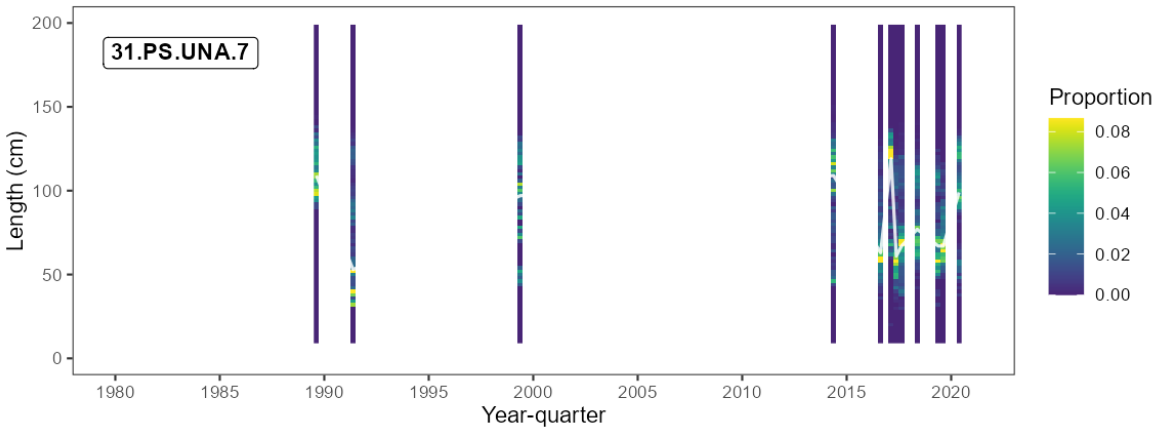


(b) 'Stronger filtering' option

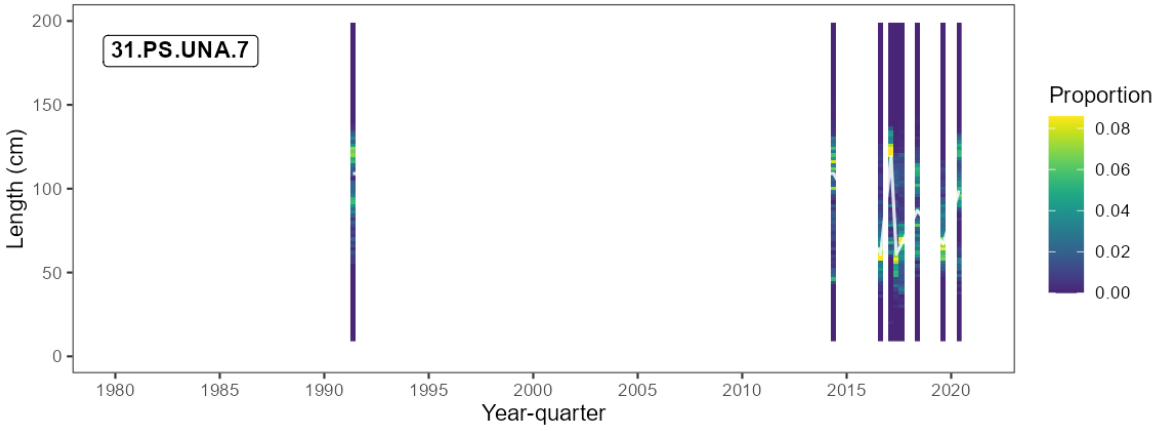


(c) 'Strongest filtering' option

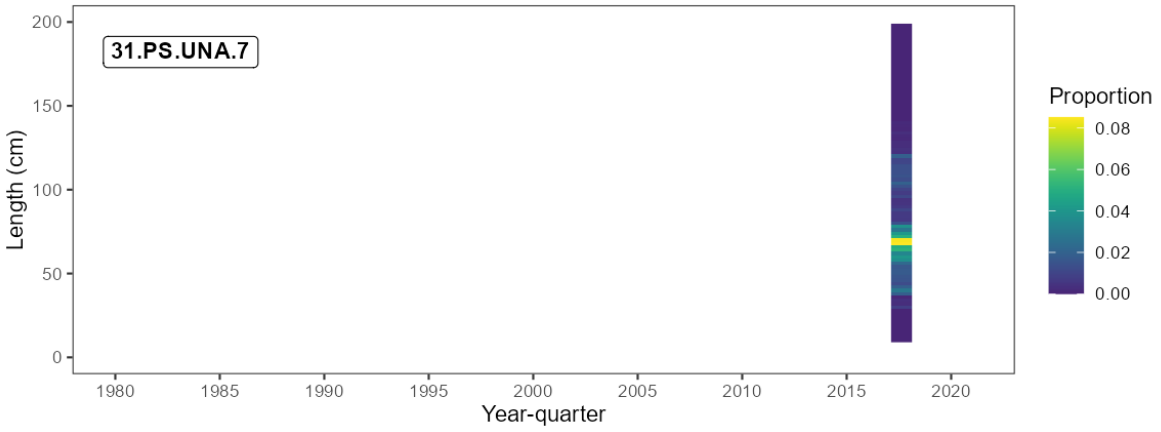
Figure A.31: Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 31.PS.UNA.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option



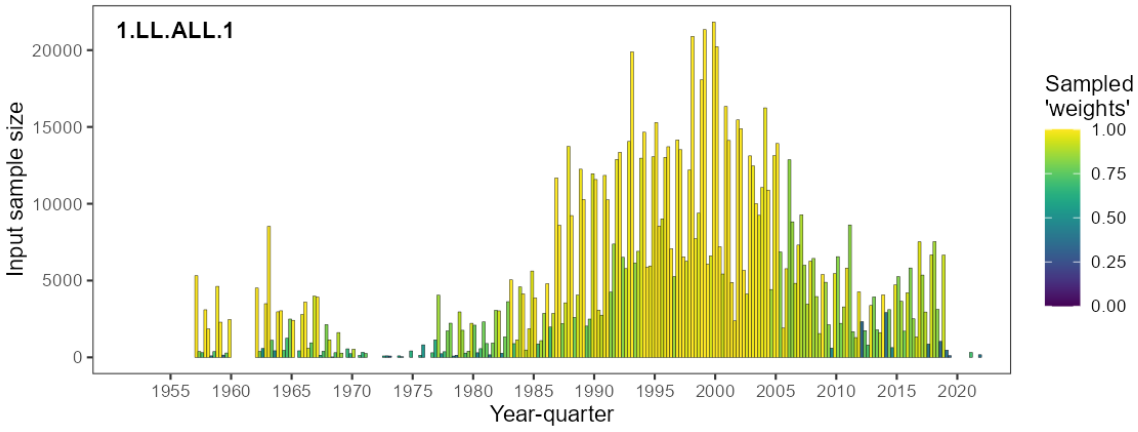
(b) 'Stronger filtering' option



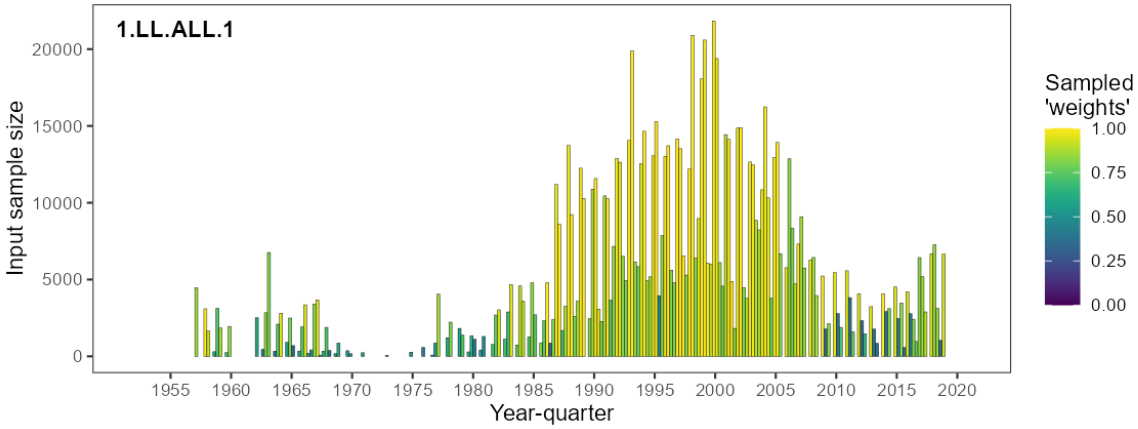
(c) 'Strongest filtering' option

Figure A.32: Reweighted length compositions of yellowfin for the purse seine extraction fishery 31.PS.UNA.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

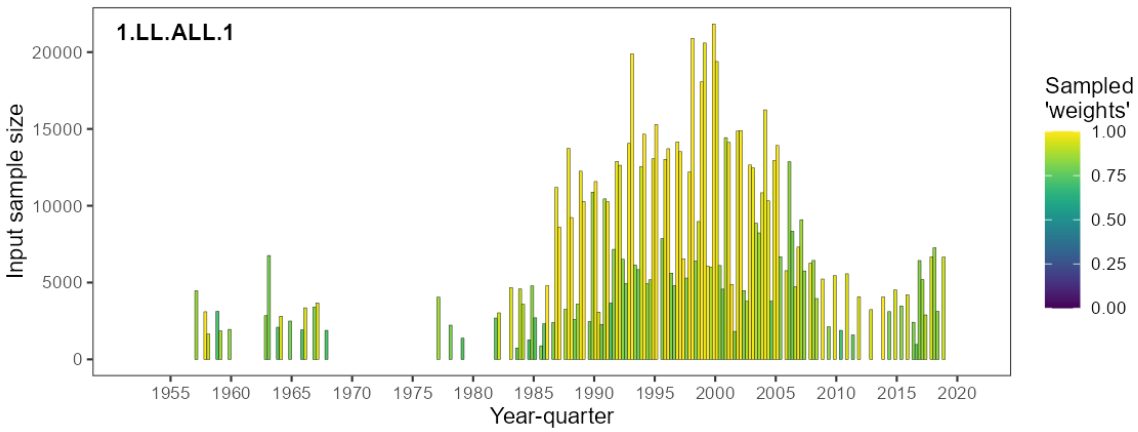
B Longline extraction fishery compositions



(a) 'Weak filtering' option

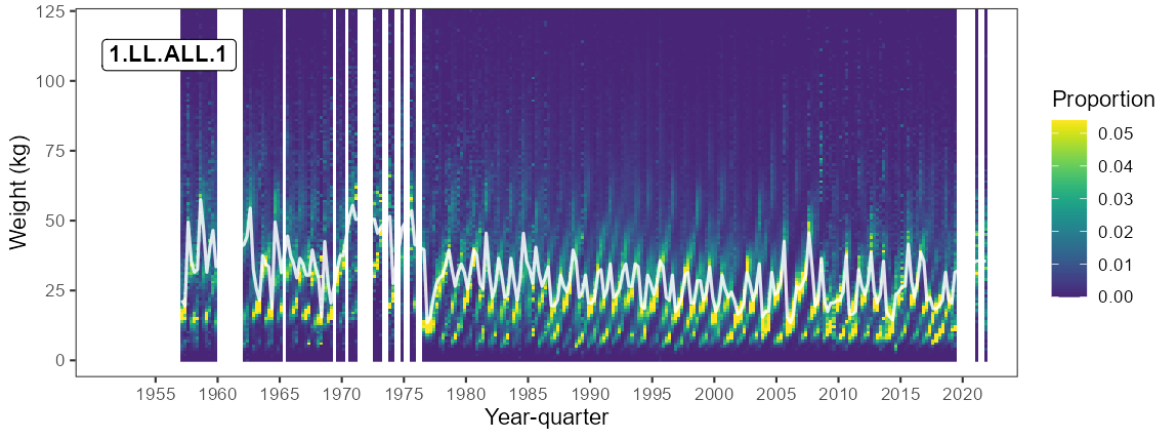


(b) 'Stronger filtering' option

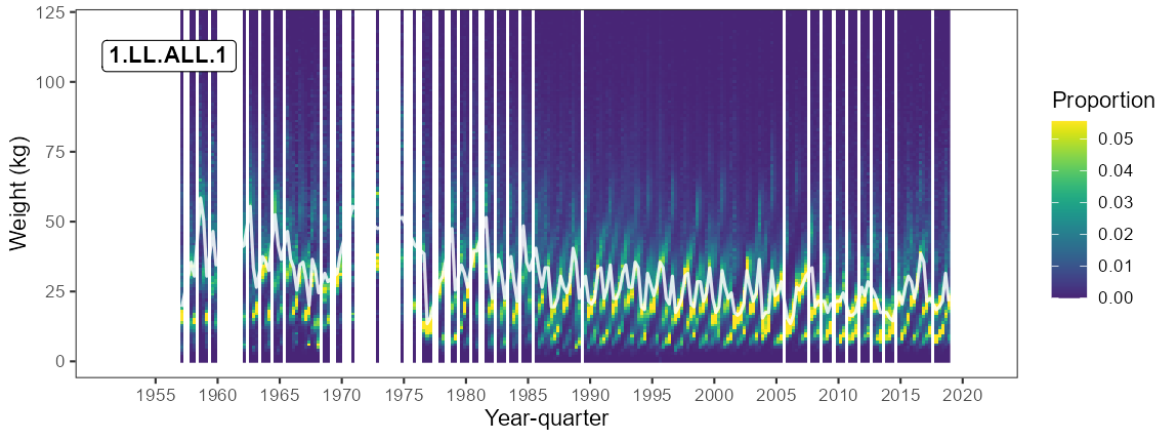


(c) 'Strongest filtering' option

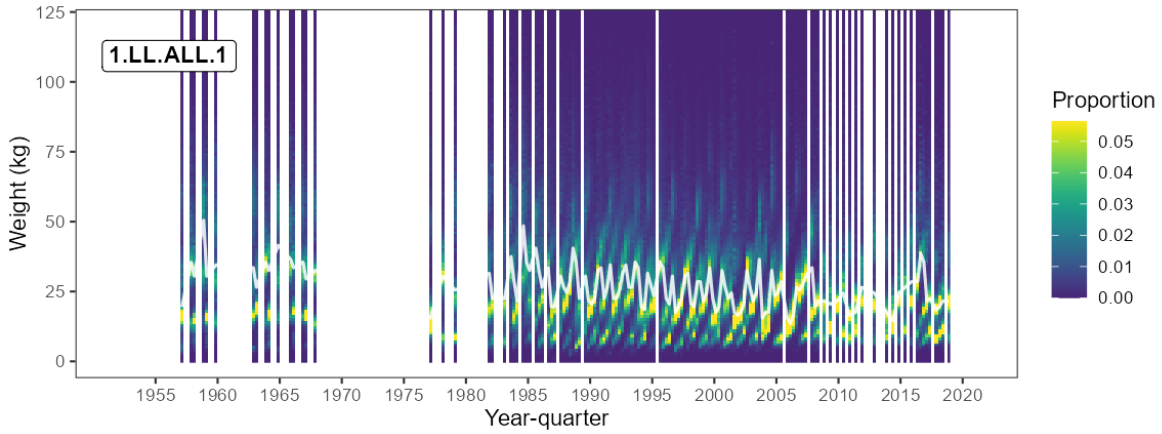
Figure B.1: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 1.LL.ALL.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

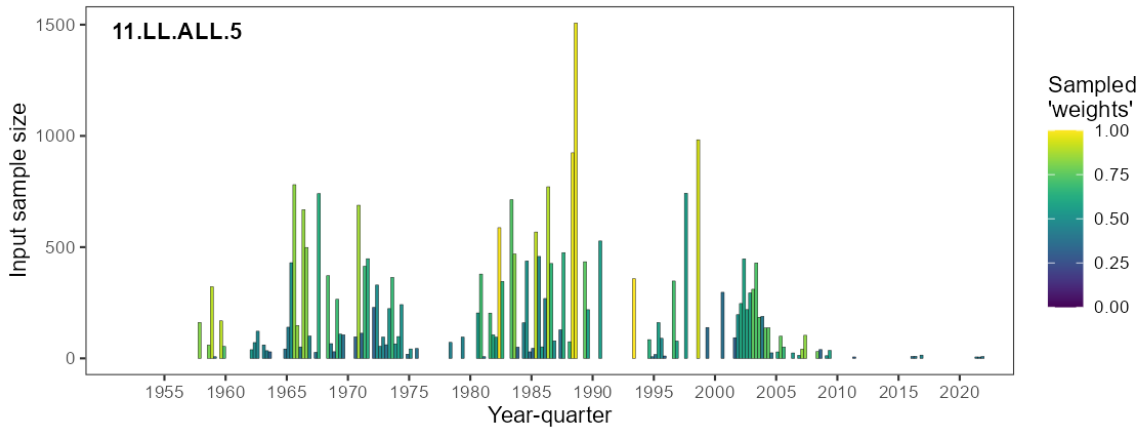


(b) 'Stronger filtering' option

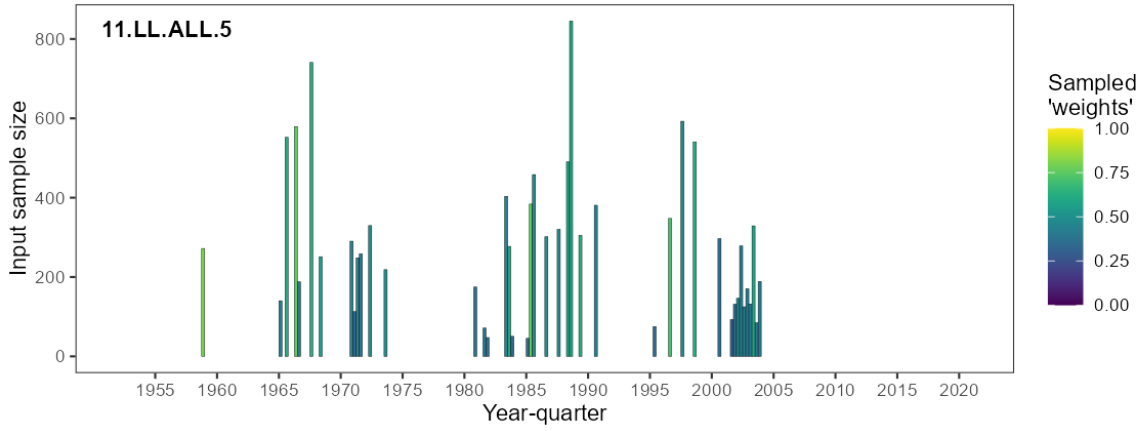


(c) 'Strongest filtering' option

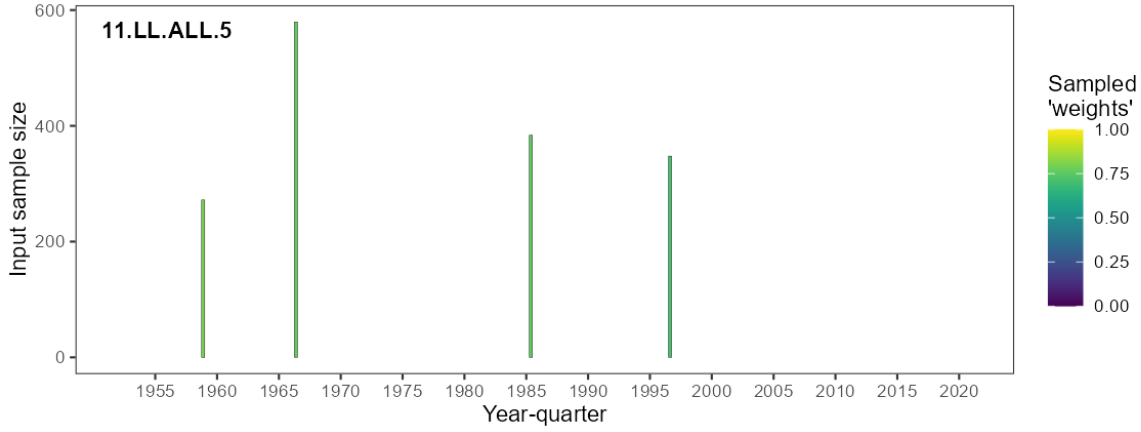
Figure B.2: Reweighted weight compositions of bigeye for the longline extraction fishery 1.LL.ALL.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

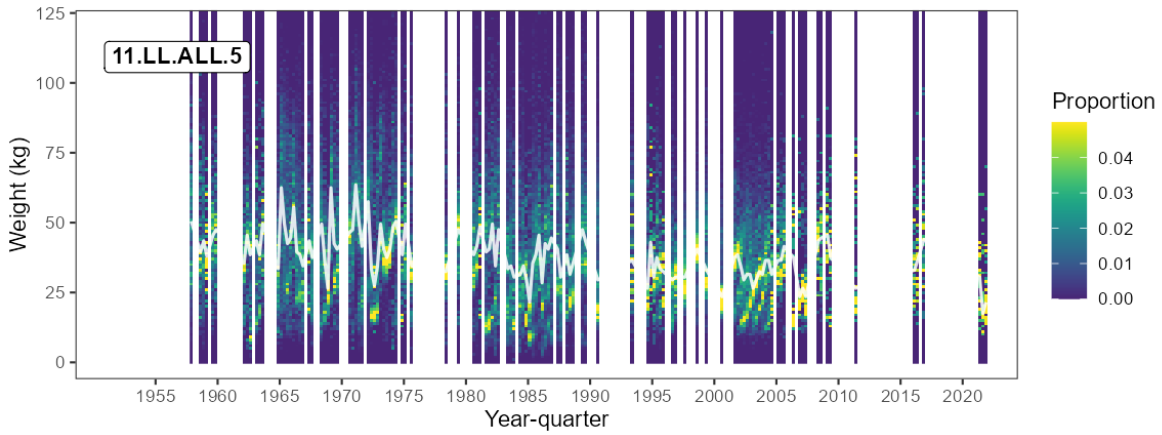


(b) 'Stronger filtering' option

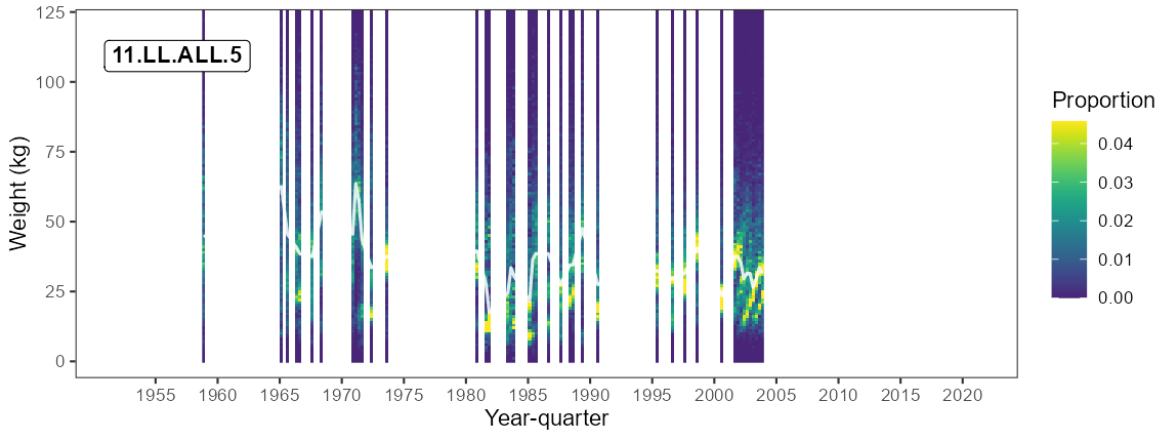


(c) 'Strongest filtering' option

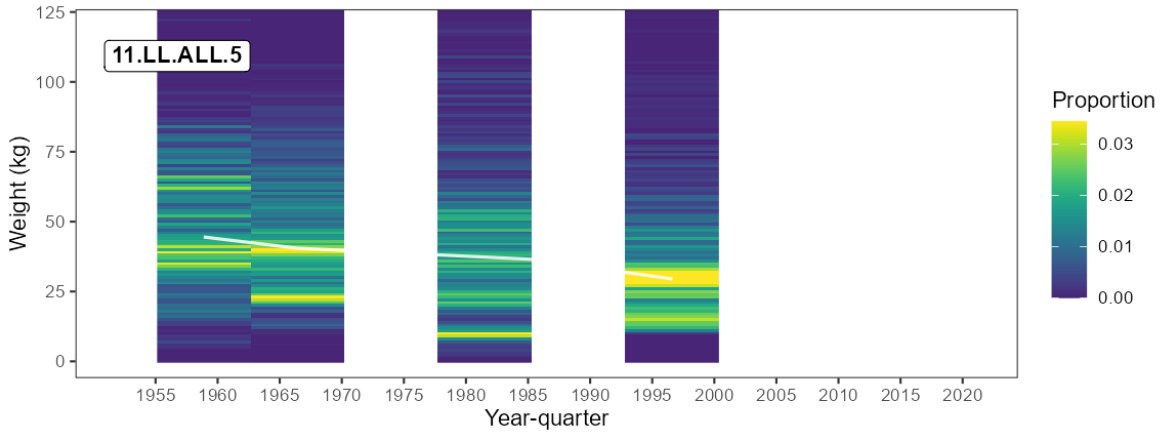
Figure B.3: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

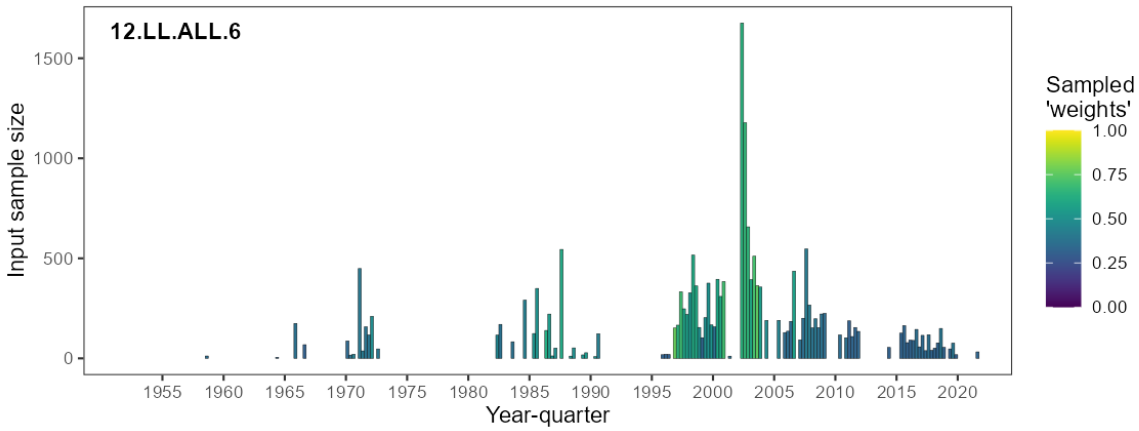


(b) 'Stronger filtering' option

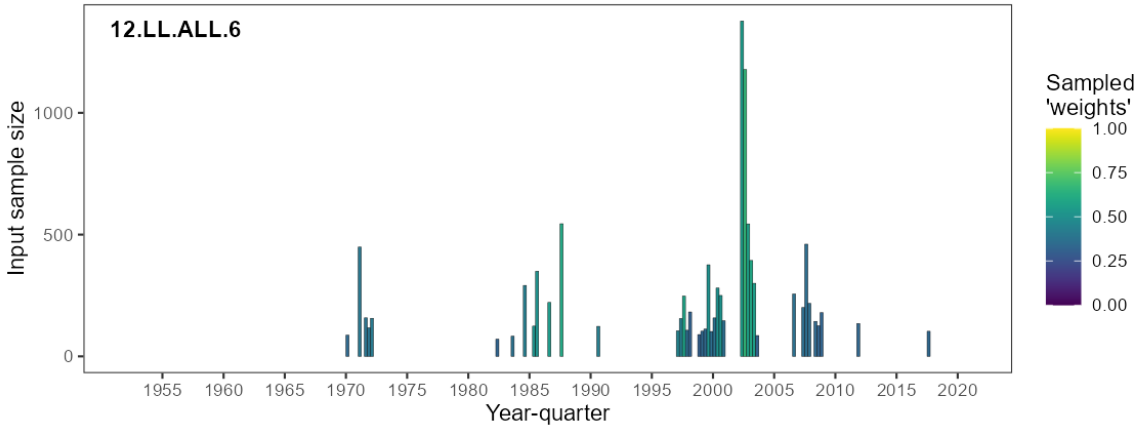


(c) 'Strongest filtering' option

Figure B.4: Reweighted weight compositions of bigeye for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

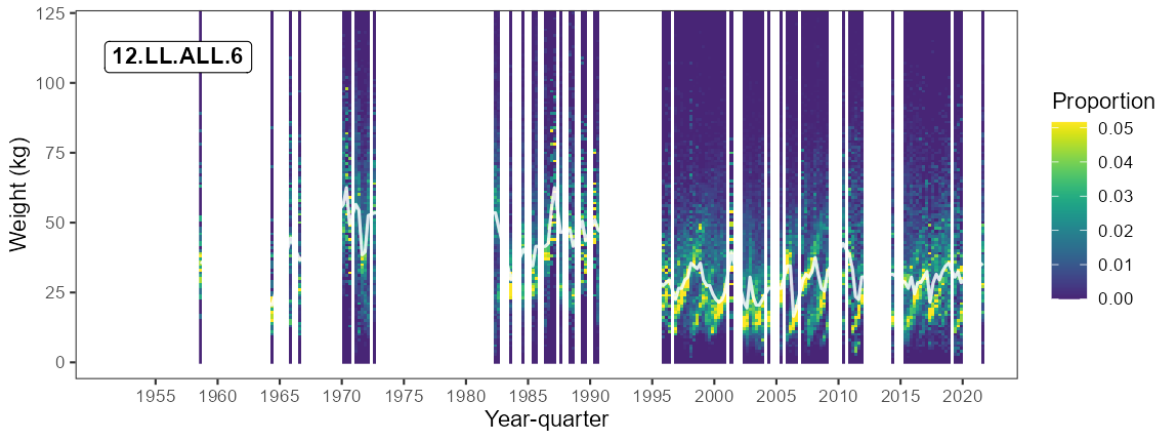


(a) 'Weak filtering' option

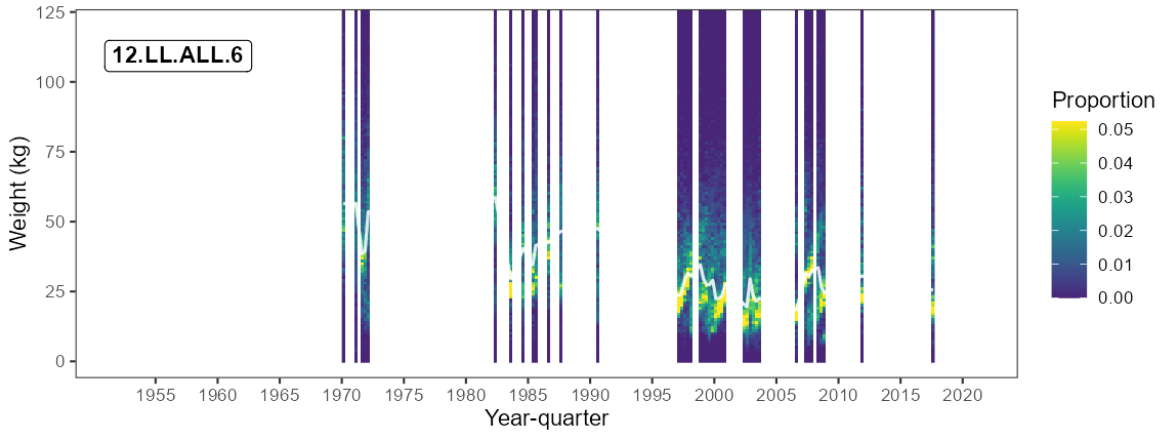


(b) 'Stronger filtering' option

Figure B.5: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0) and b) 'stronger' (F1) filtering. There were no reweighted compositions for the 'strongest' (F2) filtering option. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.

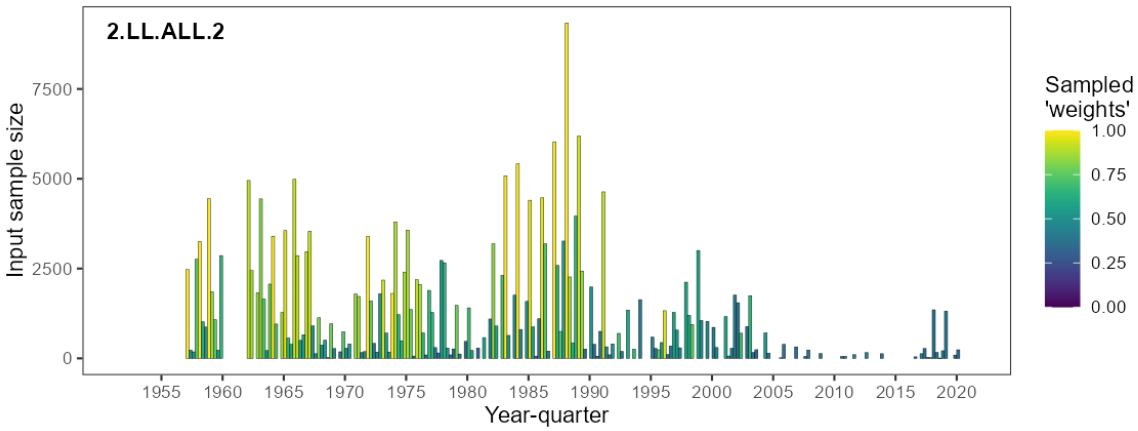


(a) 'Weak filtering' option

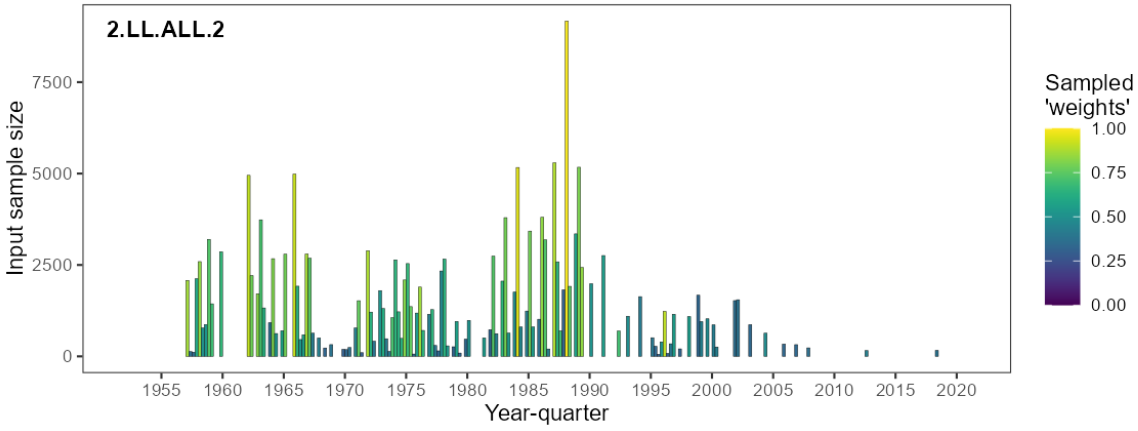


(b) 'Stronger filtering' option

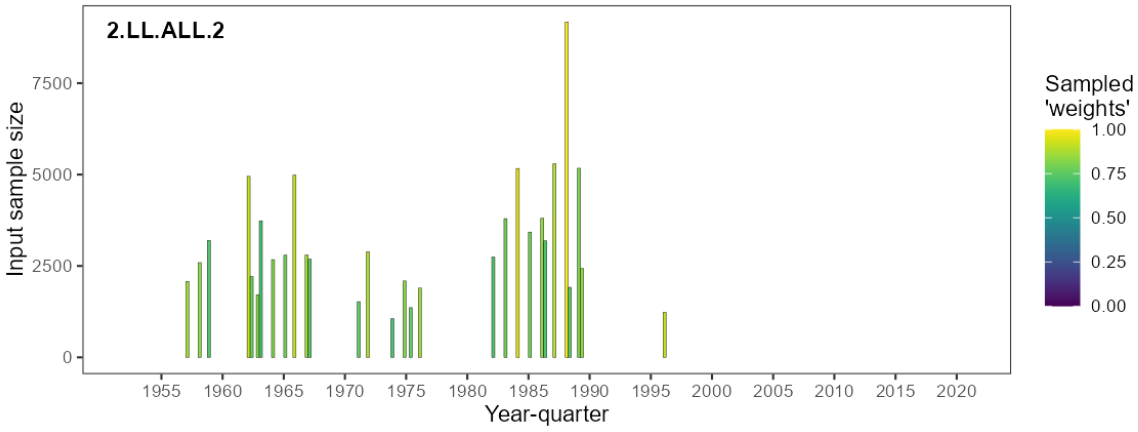
Figure B.6: Reweighted weight compositions of bigeye for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0) and b) 'stronger' (F1) filtering. There were no reweighted compositions for the 'strongest' (F2) filtering option. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

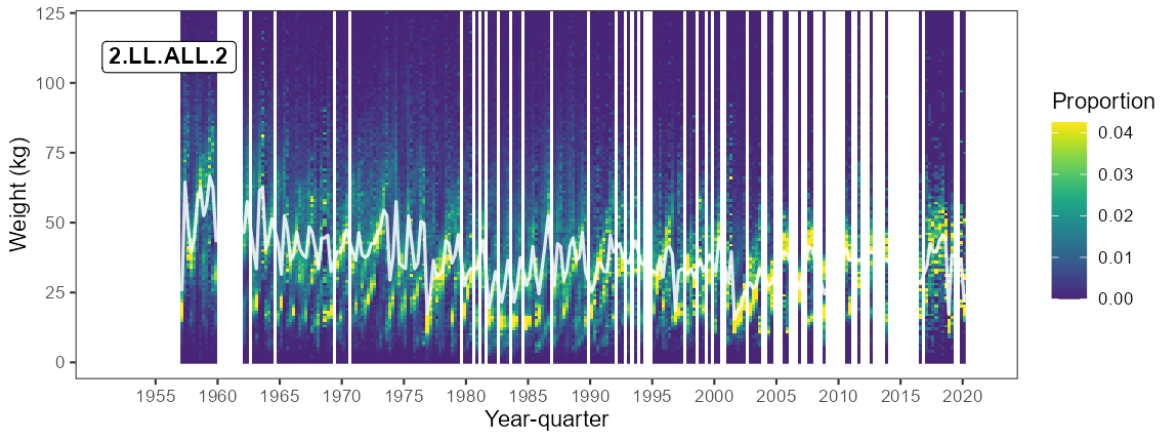


(b) 'Stronger filtering' option

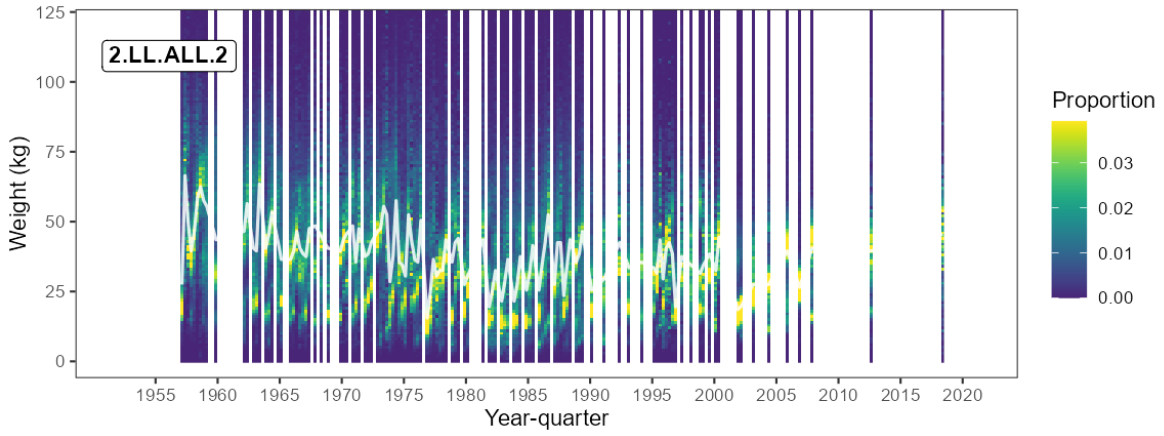


(c) 'Strongest filtering' option

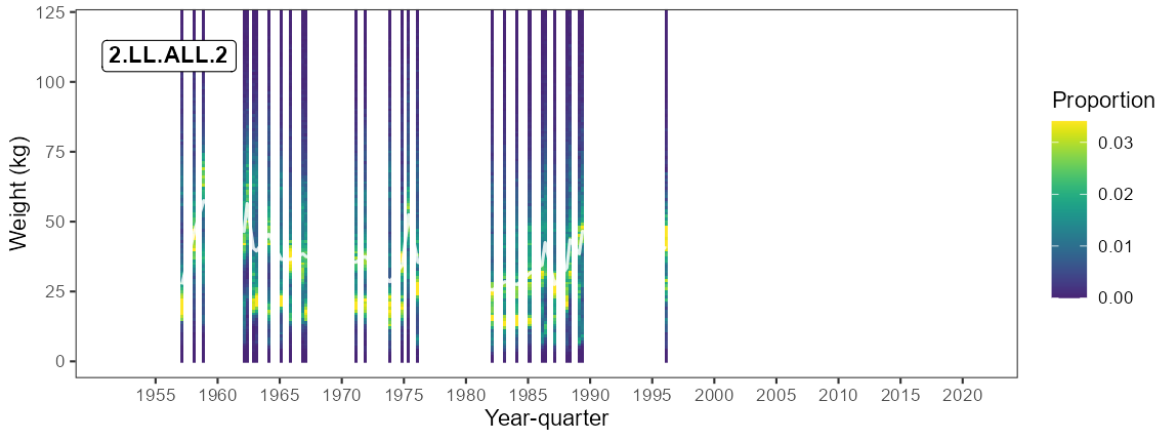
Figure B.7: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 2.LL.ALL.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

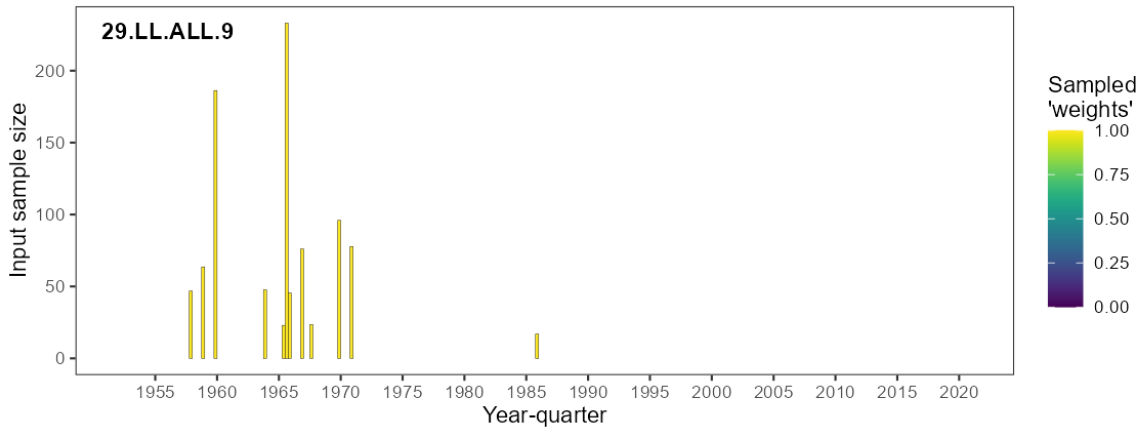


(b) 'Stronger filtering' option

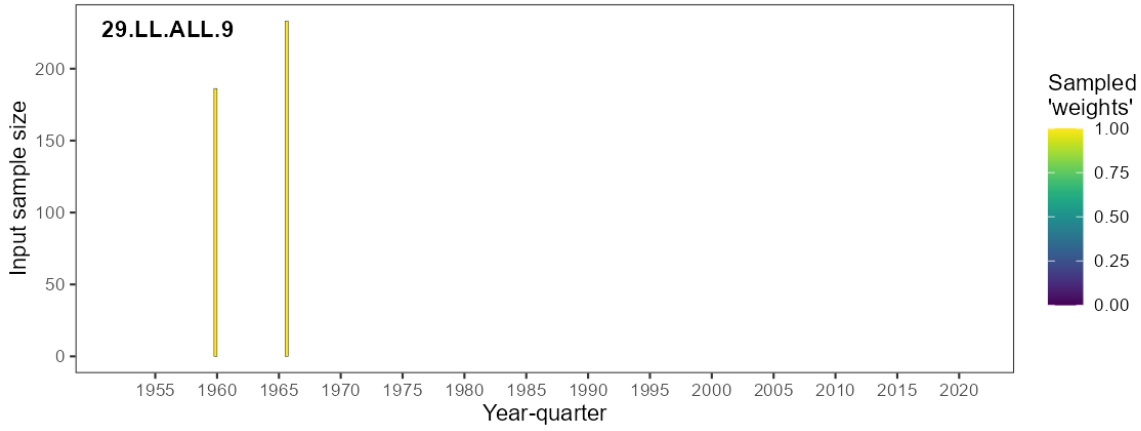


(c) 'Strongest filtering' option

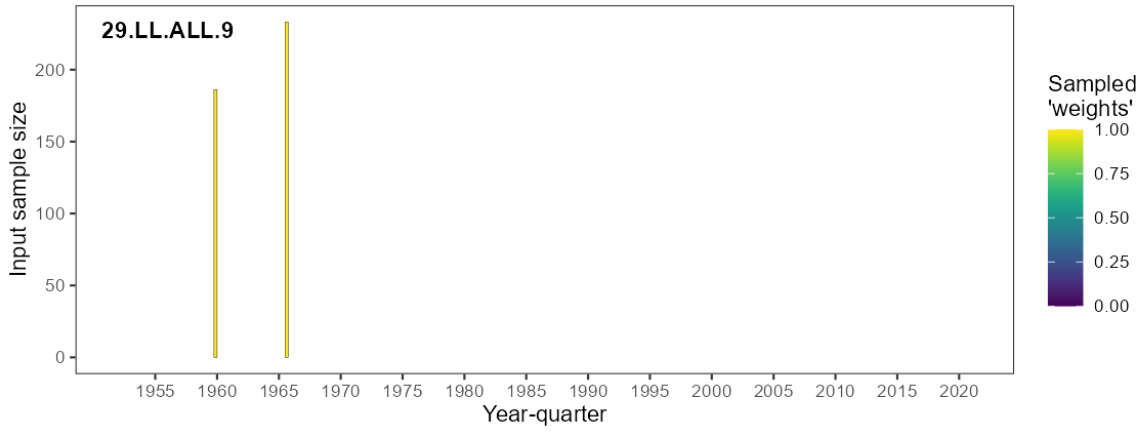
Figure B.8: Reweighted weight compositions of bigeye for the longline extraction fishery 2.LL.ALL.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

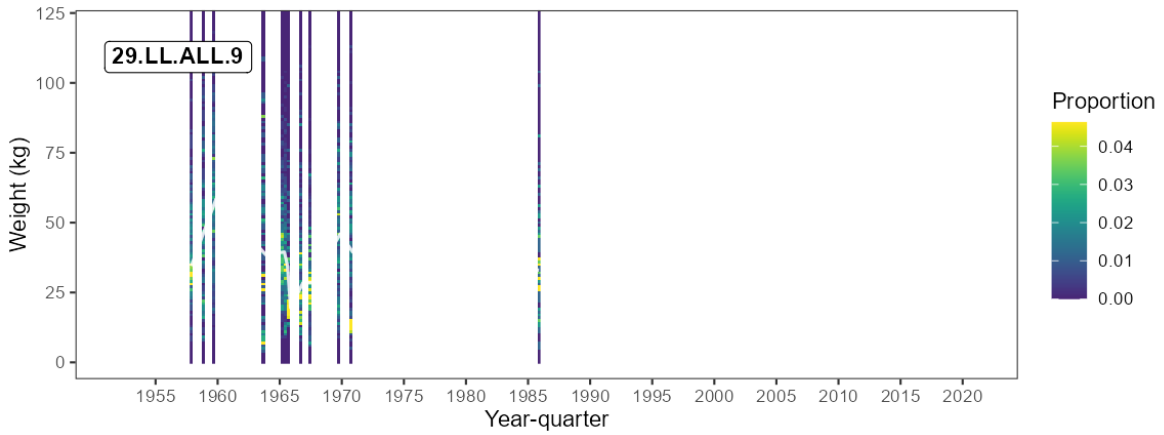


(b) 'Stronger filtering' option

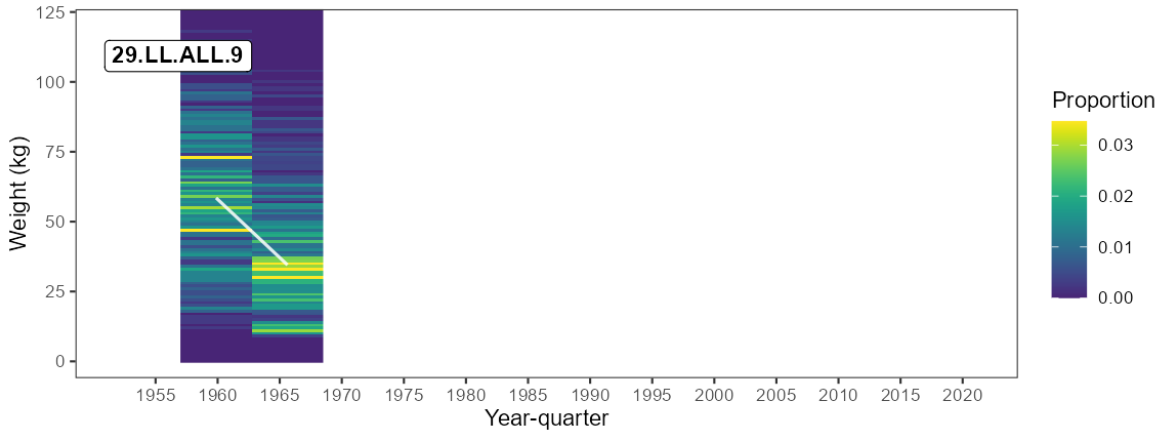


(c) 'Strongest filtering' option

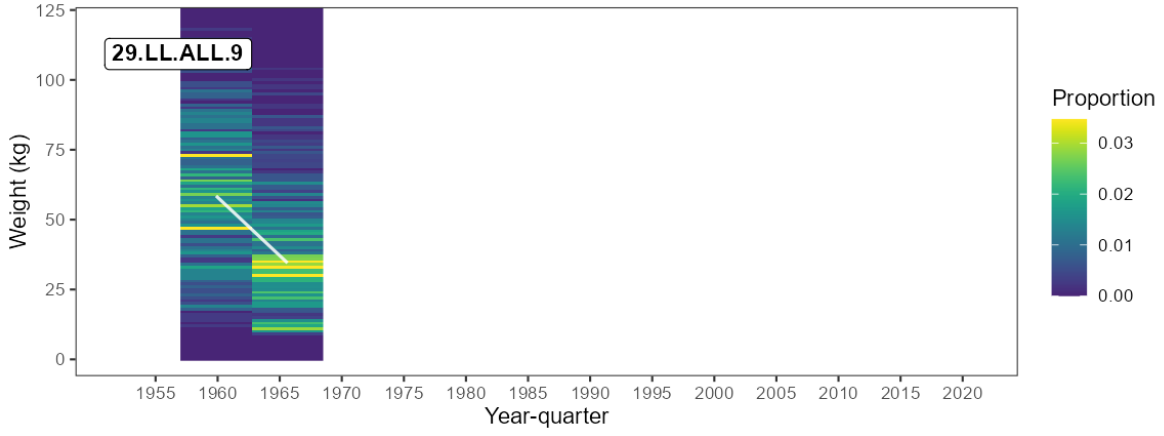
Figure B.9: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 29.LL.ALL.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

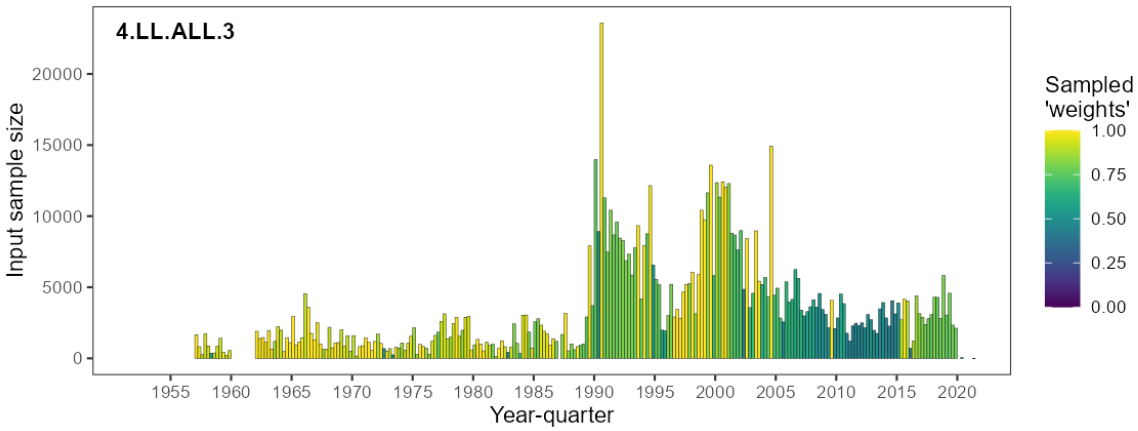


(b) 'Stronger filtering' option

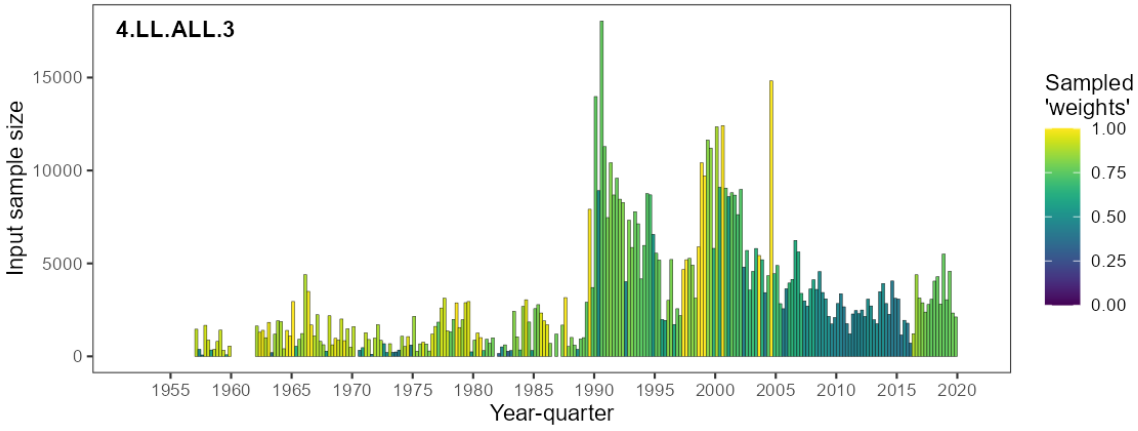


(c) 'Strongest filtering' option

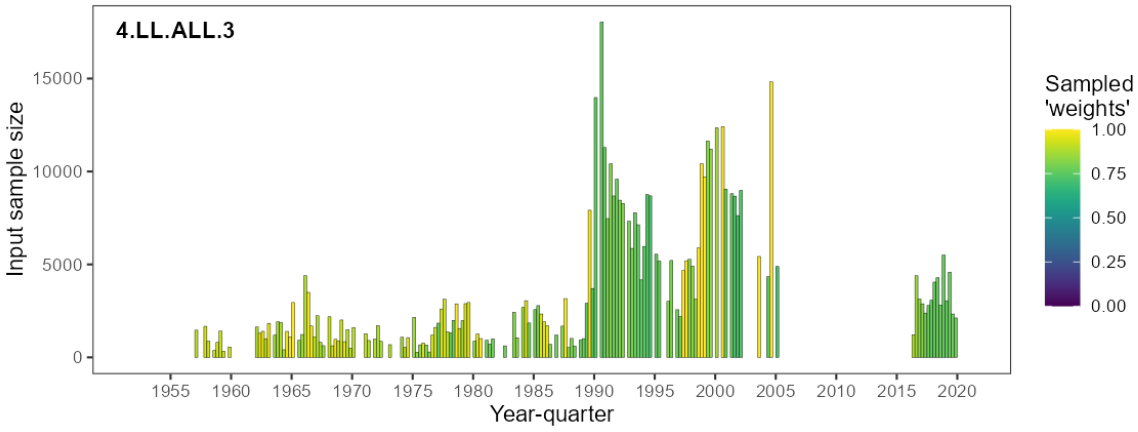
Figure B.10: Reweighted weight compositions of bigeye for the longline extraction fishery 29.LL.ALL.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

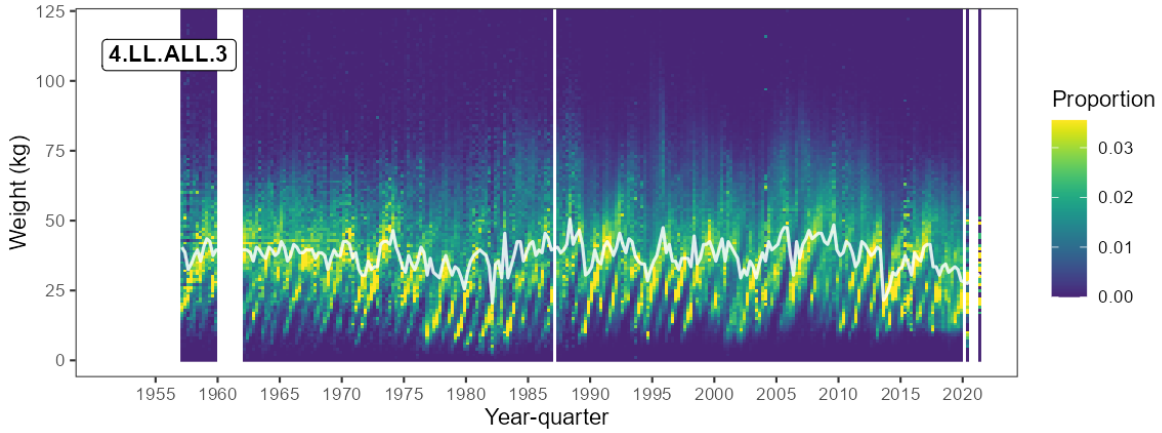


(b) 'Stronger filtering' option

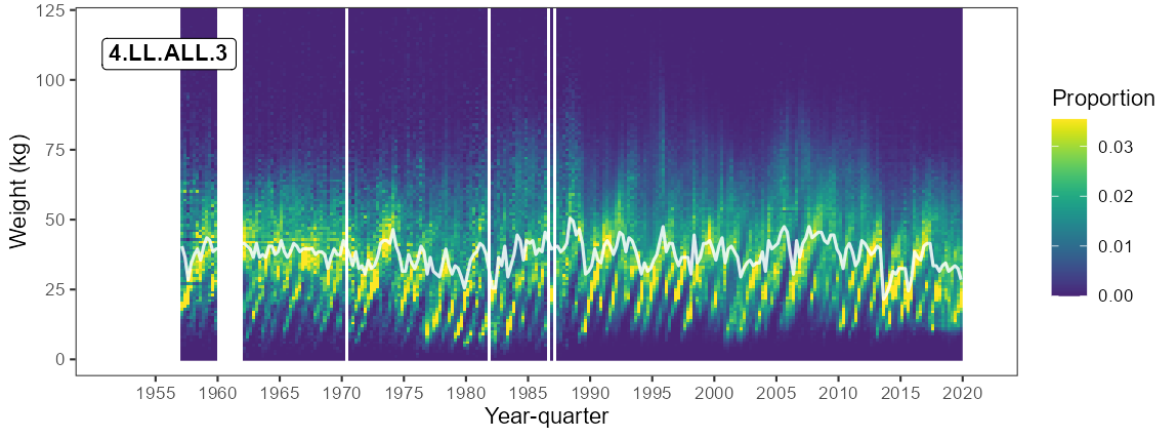


(c) 'Strongest filtering' option

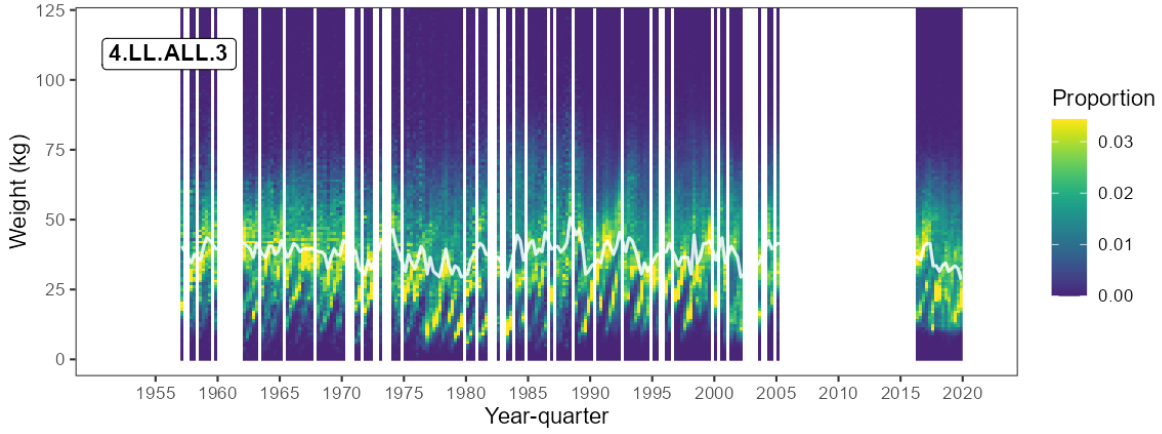
Figure B.11: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 4.LL.ALL.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

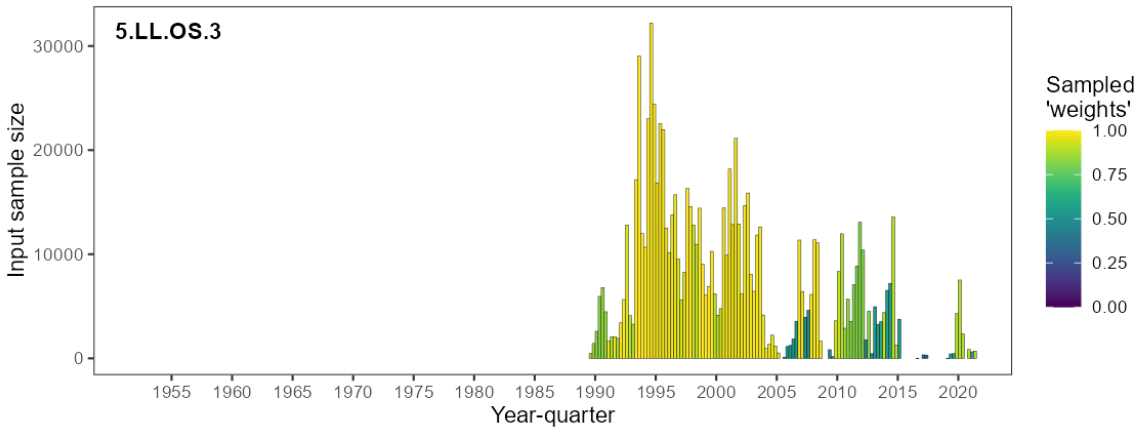


(b) 'Stronger filtering' option

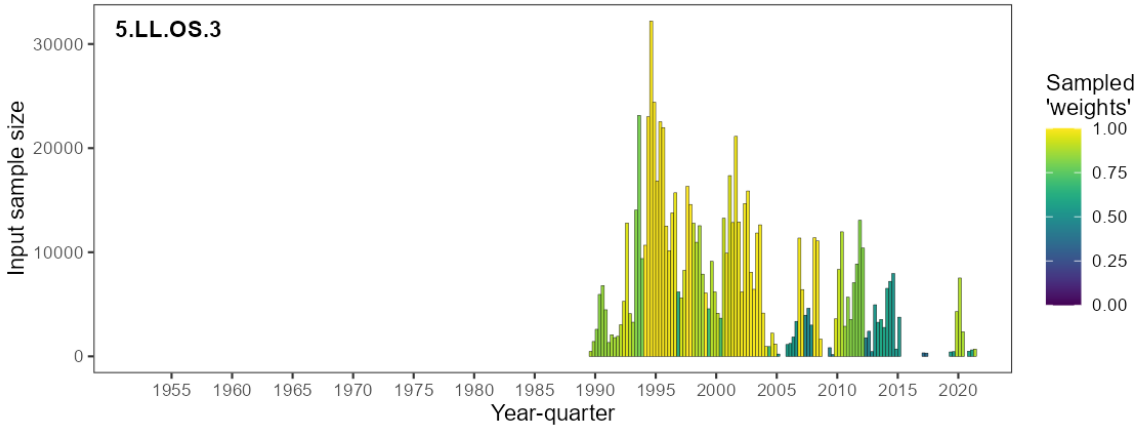


(c) 'Strongest filtering' option

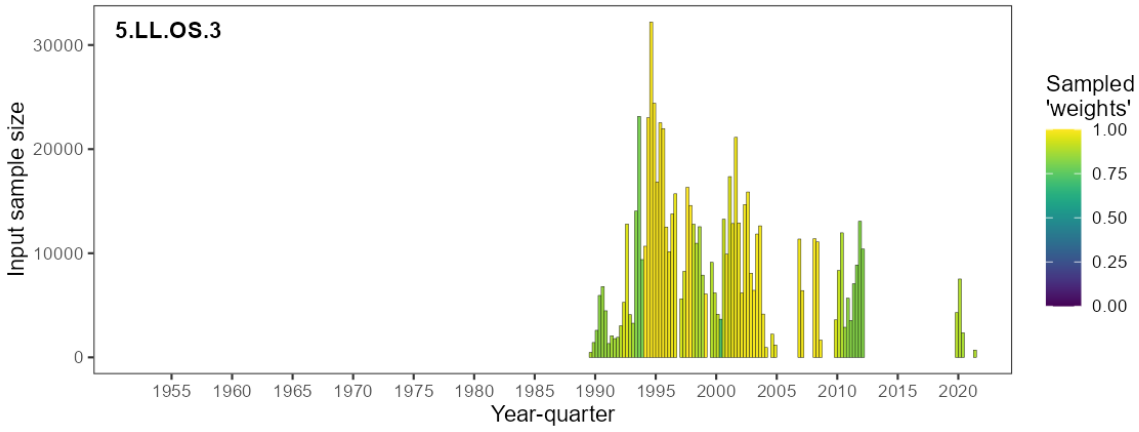
Figure B.12: Reweighted weight compositions of bigeye for the longline extraction fishery 4.LL.ALL.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

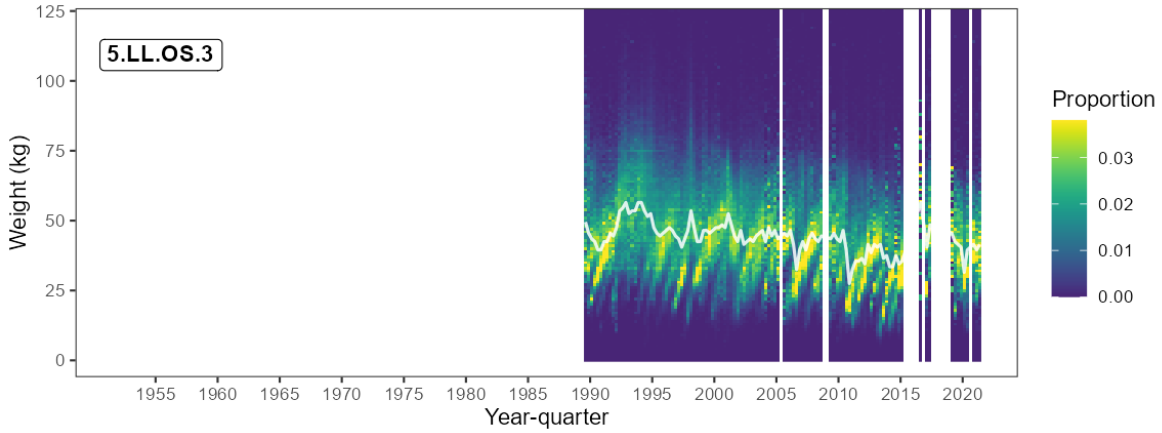


(b) 'Stronger filtering' option

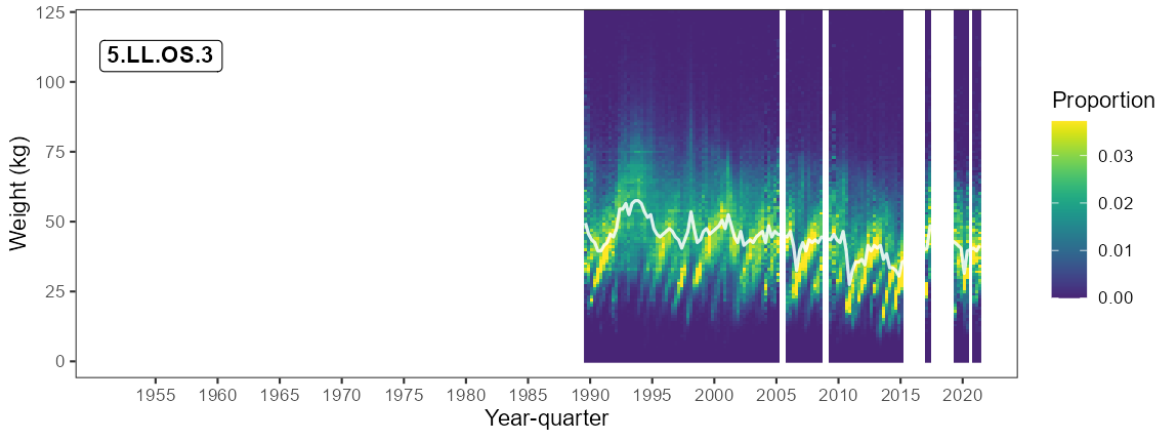


(c) 'Strongest filtering' option

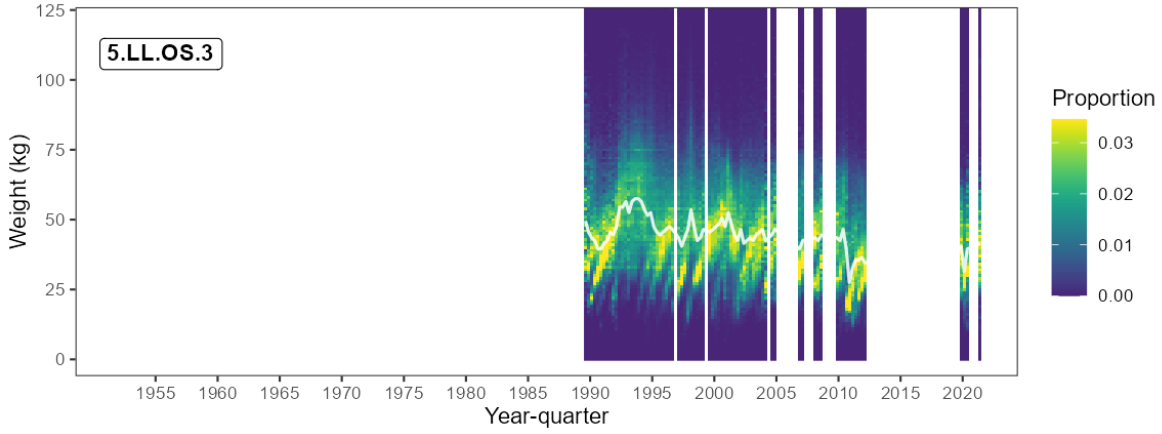
Figure B.13: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 5.LL.OS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

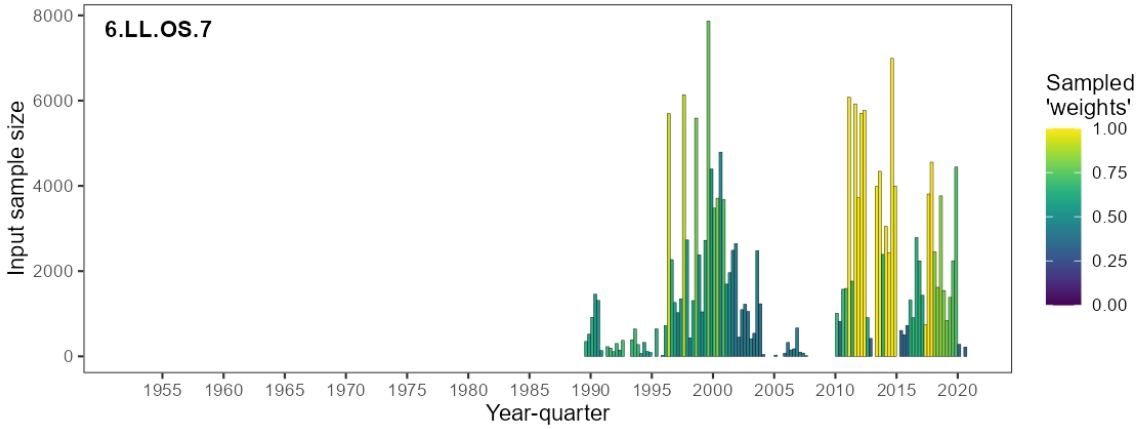


(b) 'Stronger filtering' option

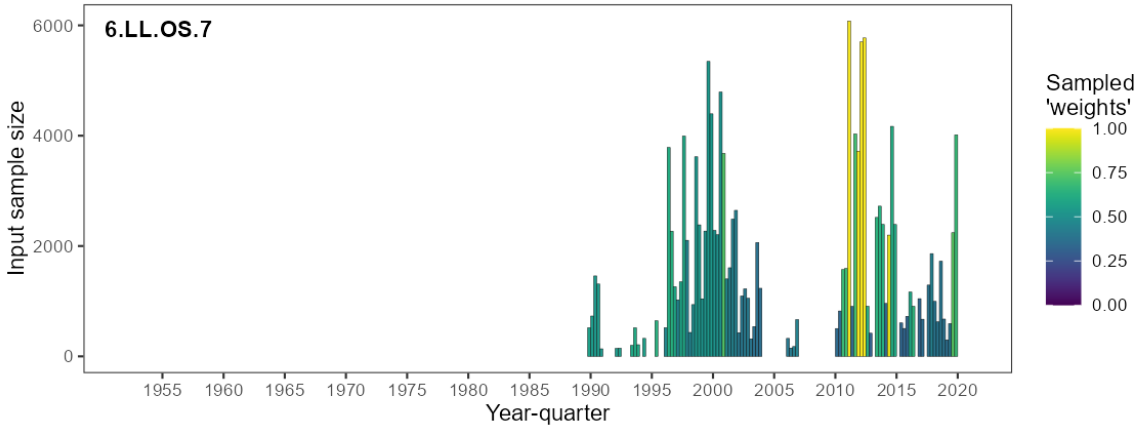


(c) 'Strongest filtering' option

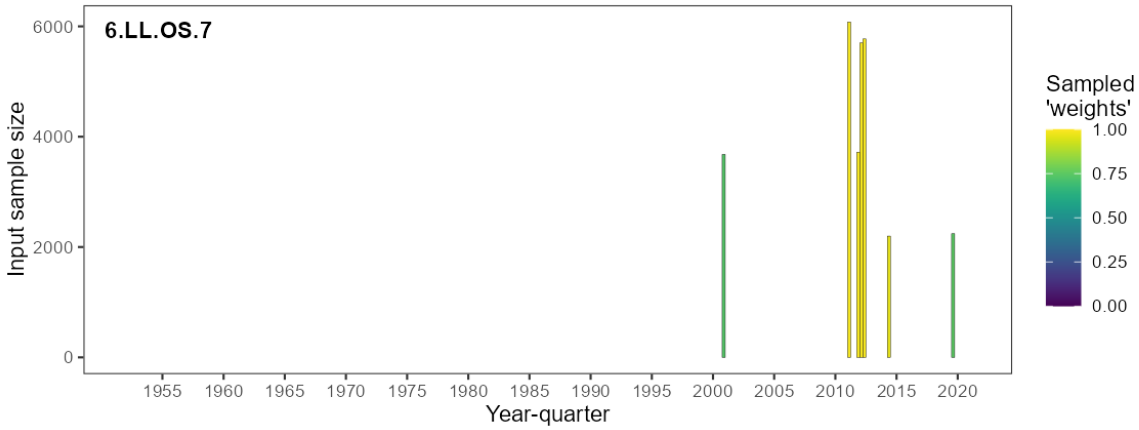
Figure B.14: Reweighted weight compositions of bigeye for the longline extraction fishery 5.LL.OS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

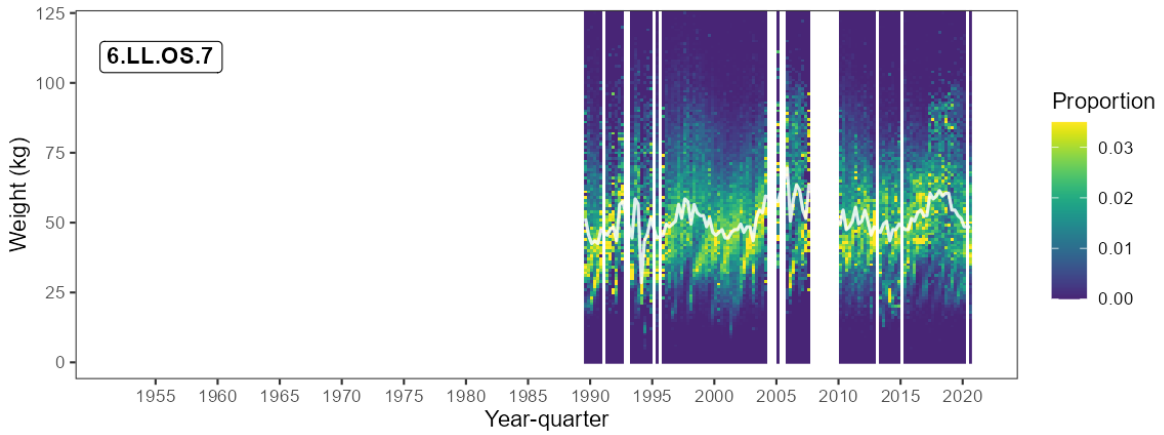


(b) 'Stronger filtering' option

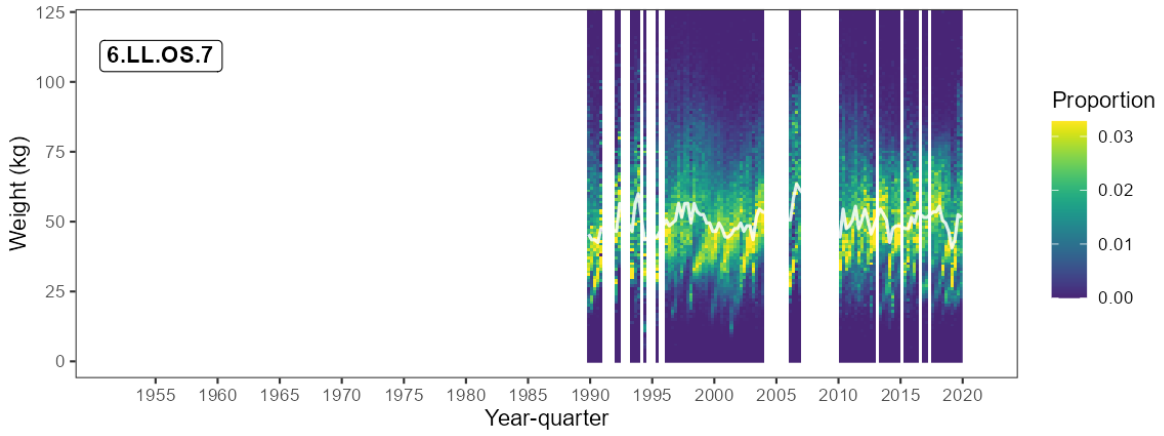


(c) 'Strongest filtering' option

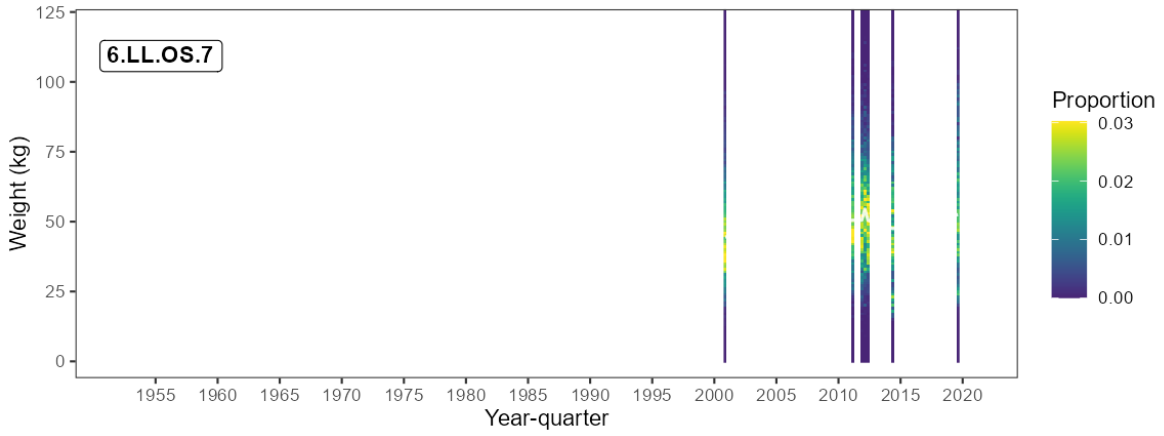
Figure B.15: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 6.LL.OS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

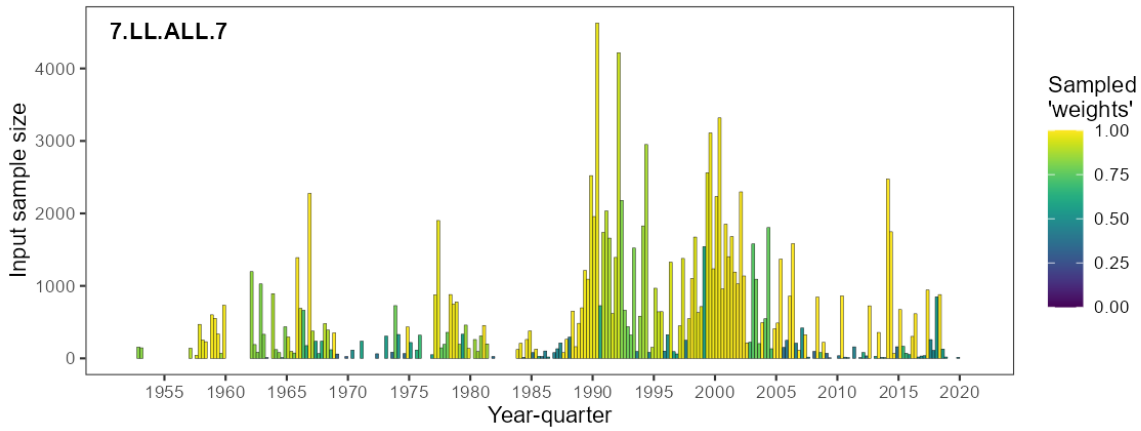


(b) 'Stronger filtering' option

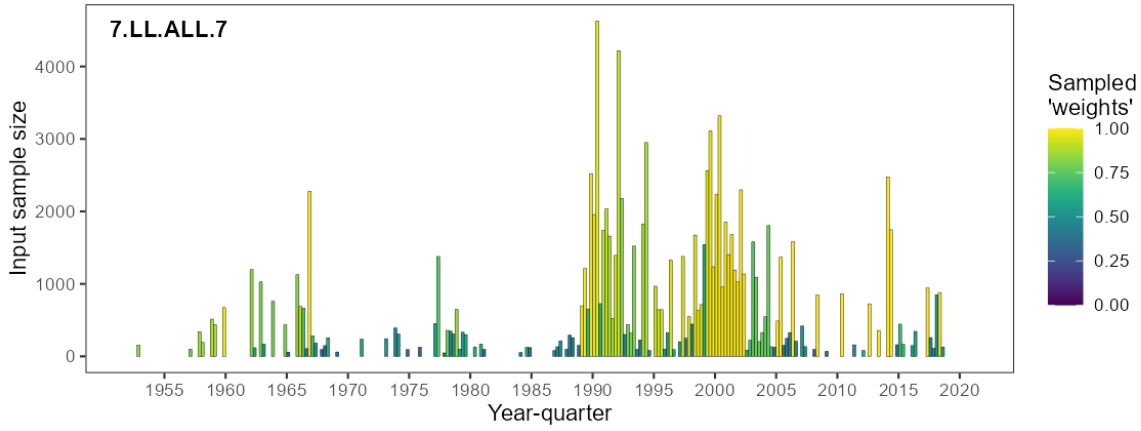


(c) 'Strongest filtering' option

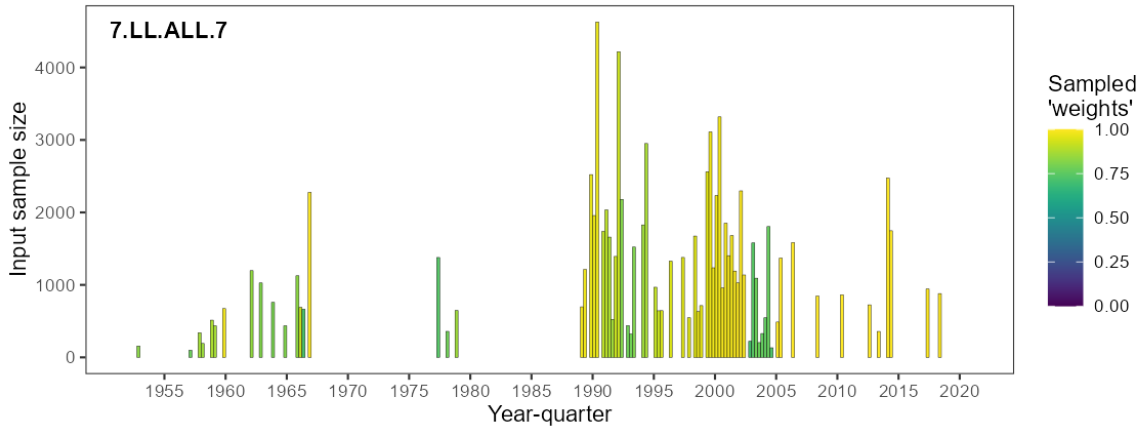
Figure B.16: Reweighted weight compositions of bigeye for the longline extraction fishery 6.LL.OS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

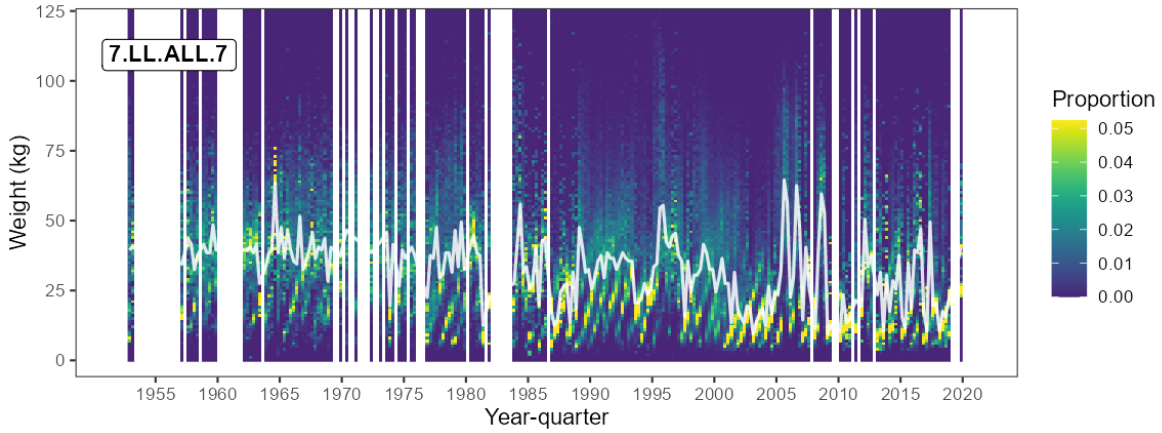


(b) 'Stronger filtering' option

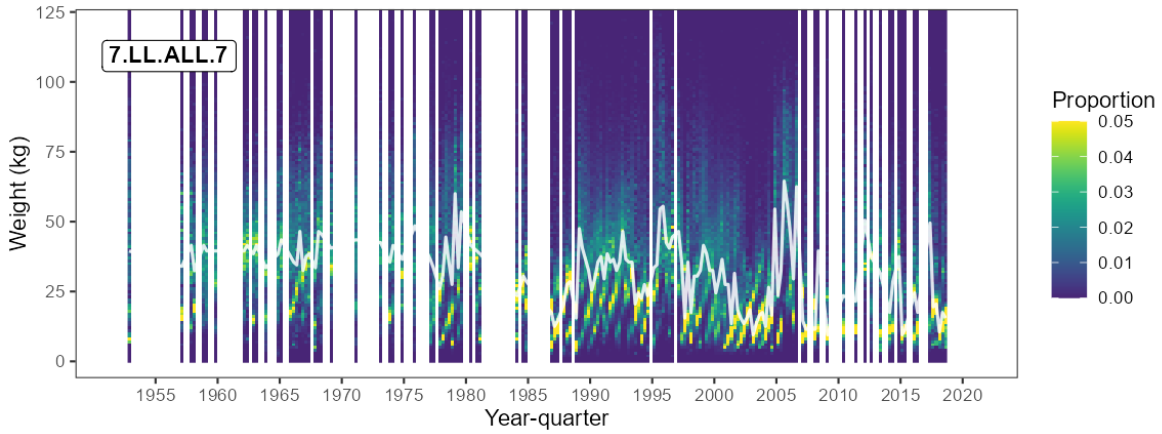


(c) 'Strongest filtering' option

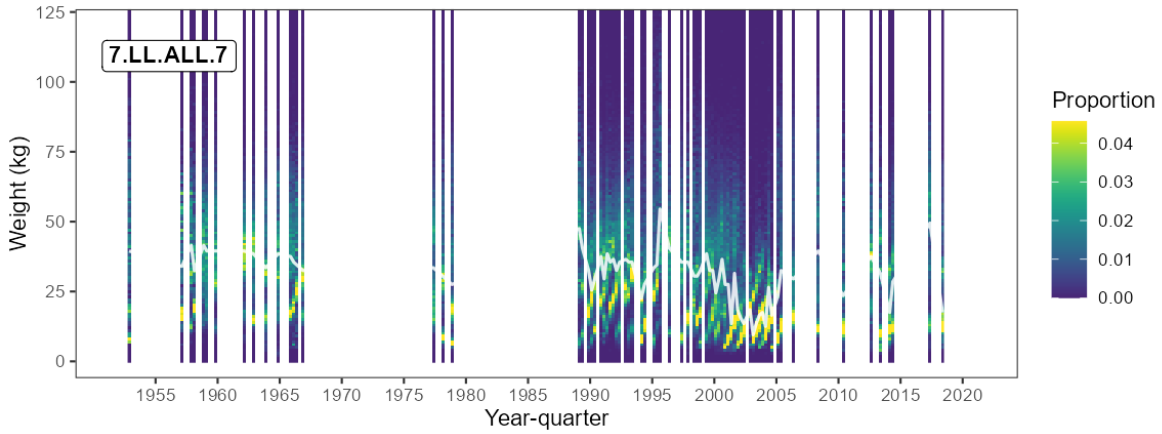
Figure B.17: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 7.LL.ALL.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

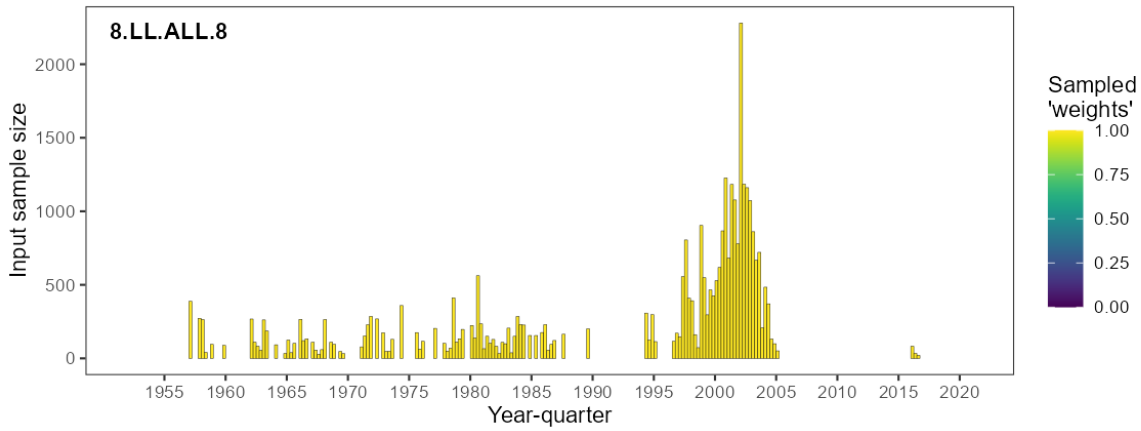


(b) 'Stronger filtering' option

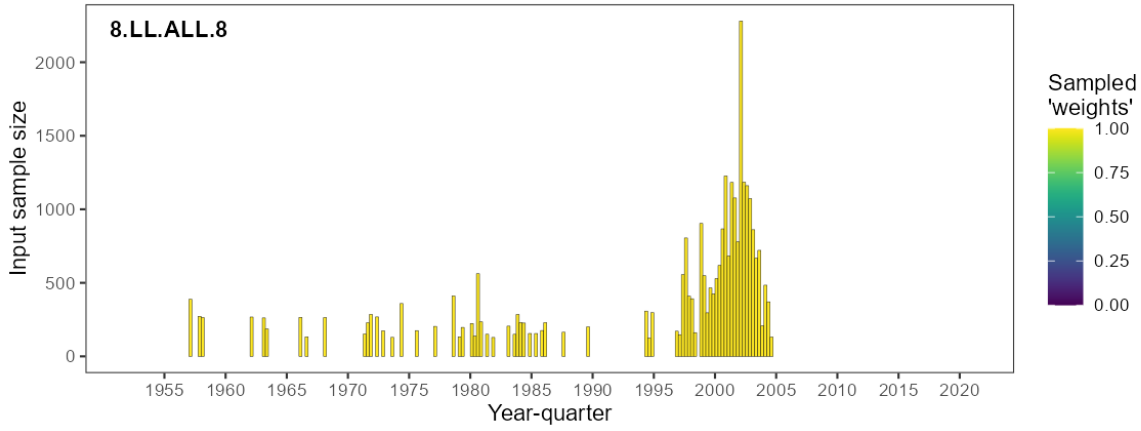


(c) 'Strongest filtering' option

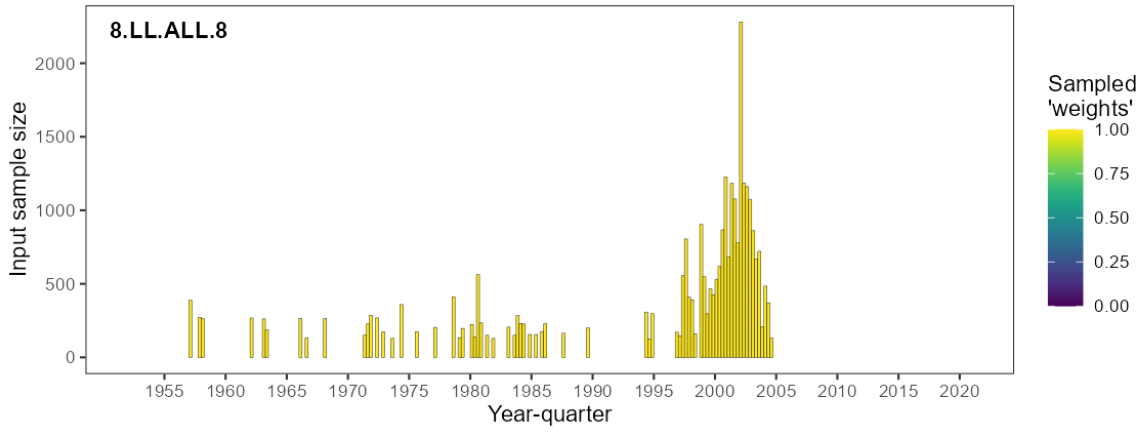
Figure B.18: Reweighted weight compositions of bigeye for the longline extraction fishery 7.LL.ALL.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

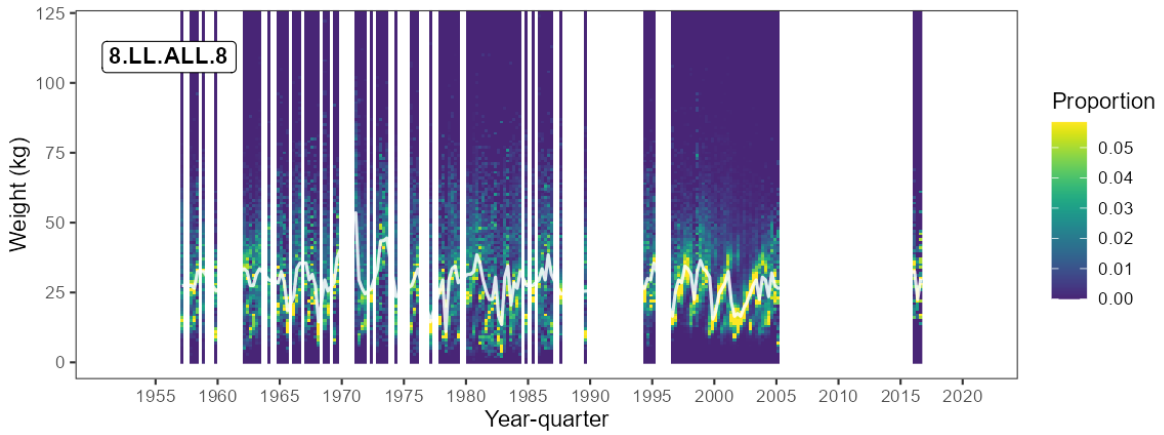


(b) 'Stronger filtering' option

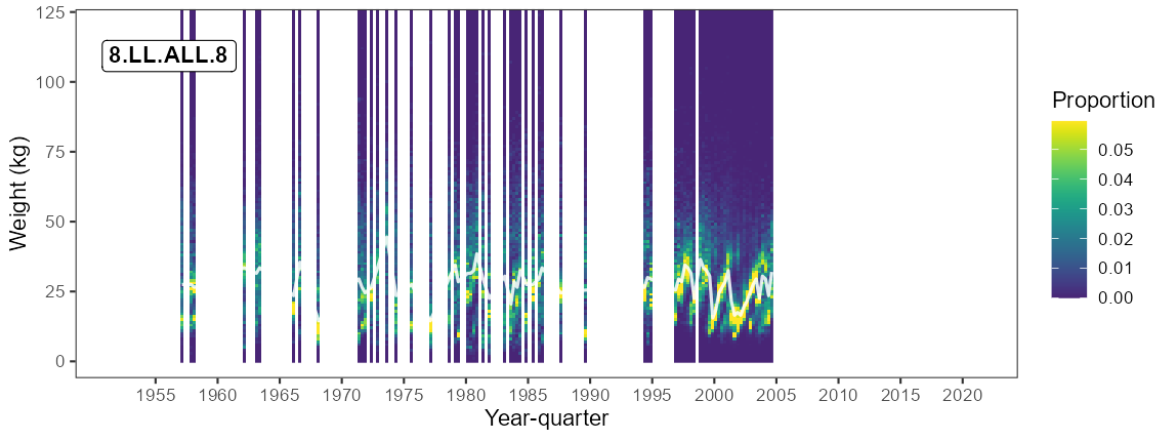


(c) 'Strongest filtering' option

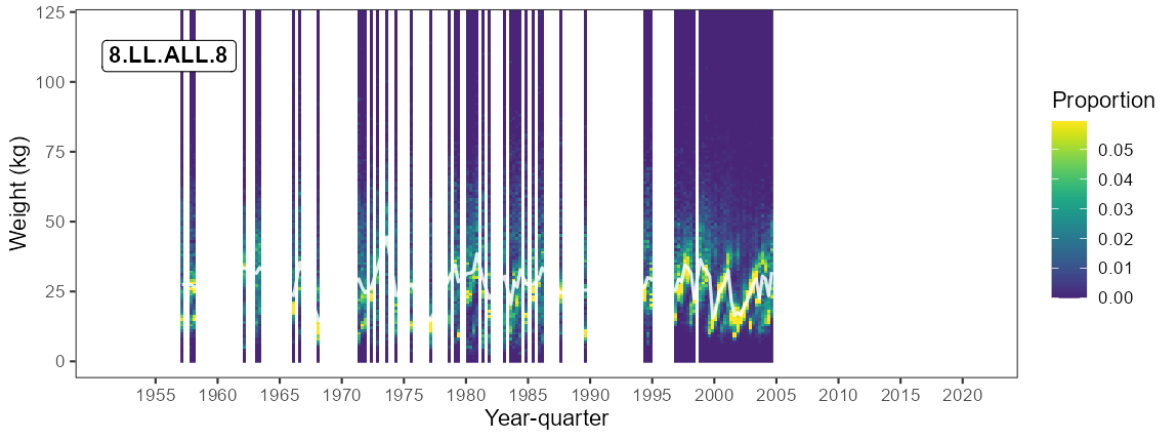
Figure B.19: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 8.LL.ALL.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

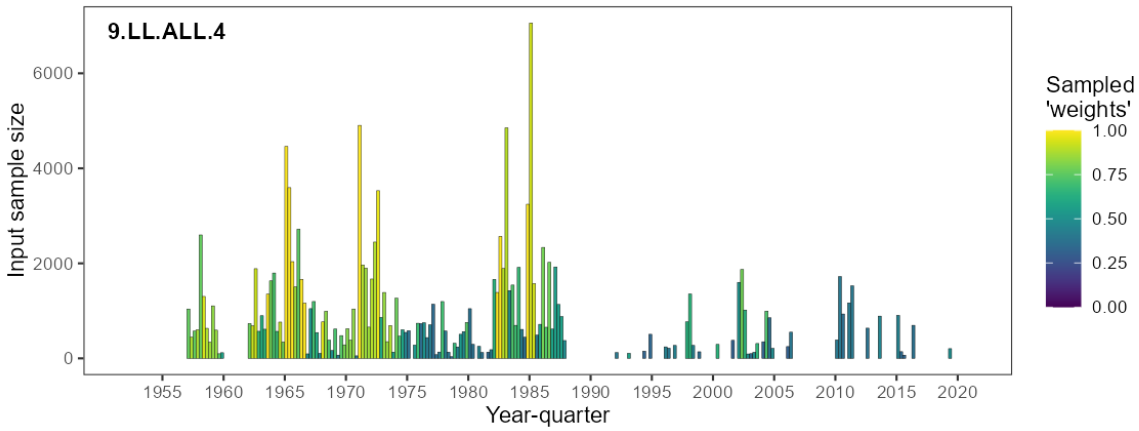


(b) 'Stronger filtering' option

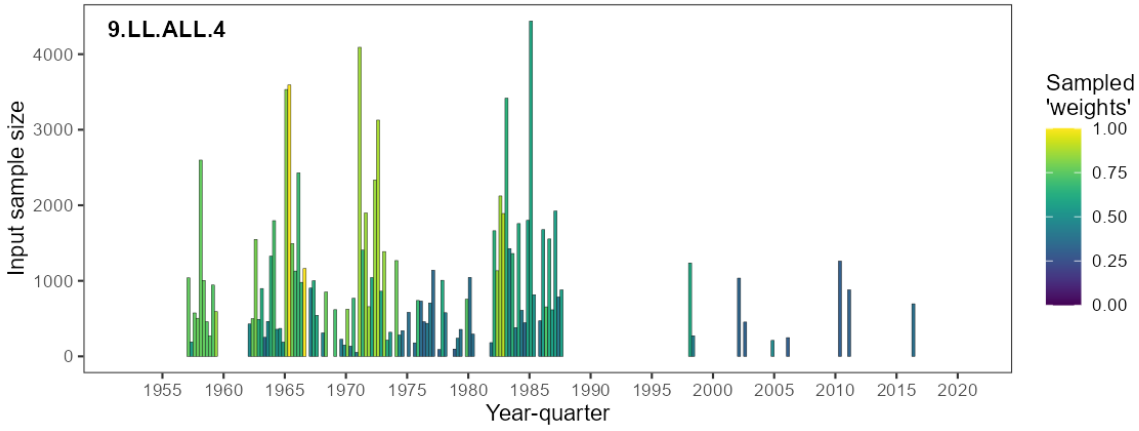


(c) 'Strongest filtering' option

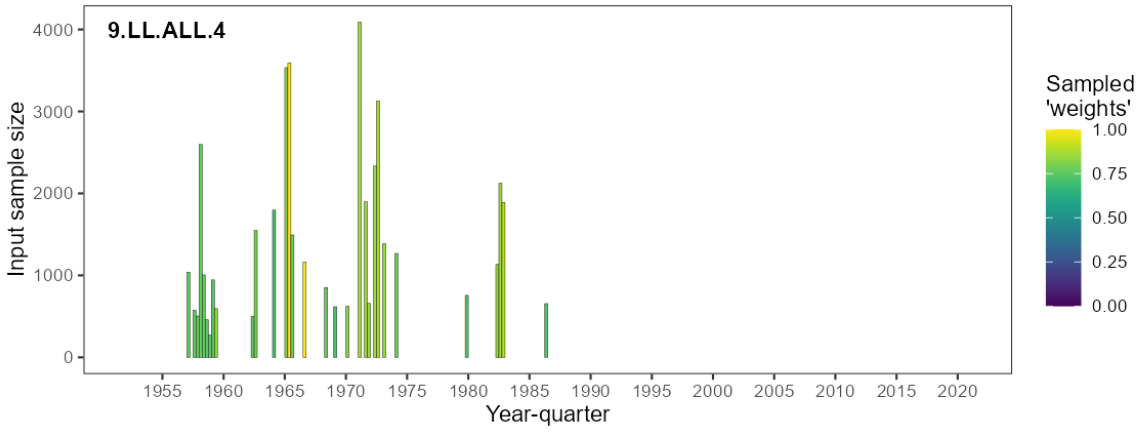
Figure B.20: Reweighted weight compositions of bigeye for the longline extraction fishery 8.LL.ALL.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

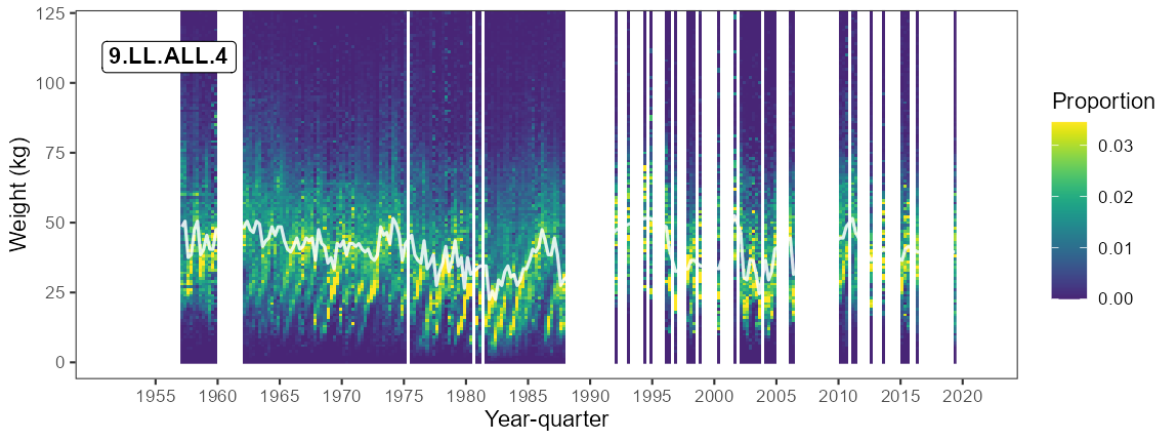


(b) 'Stronger filtering' option

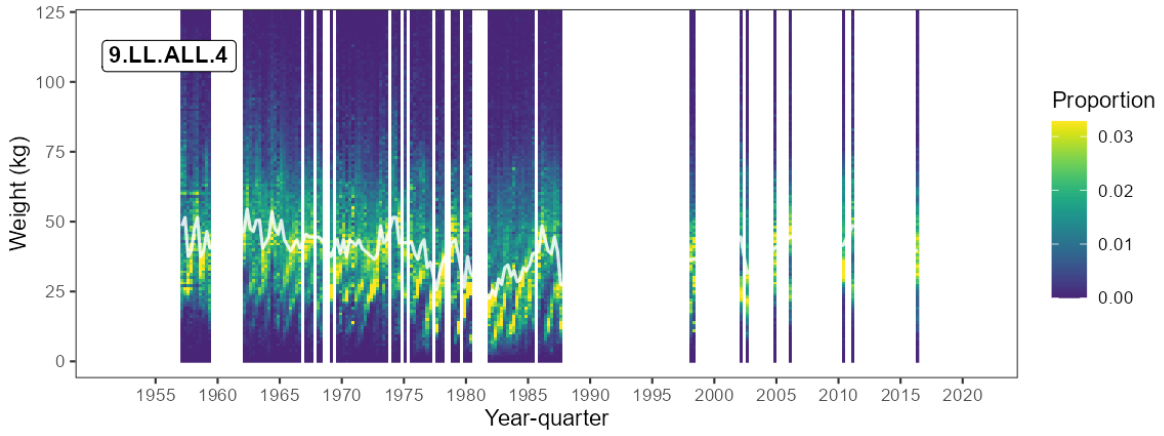


(c) 'Strongest filtering' option

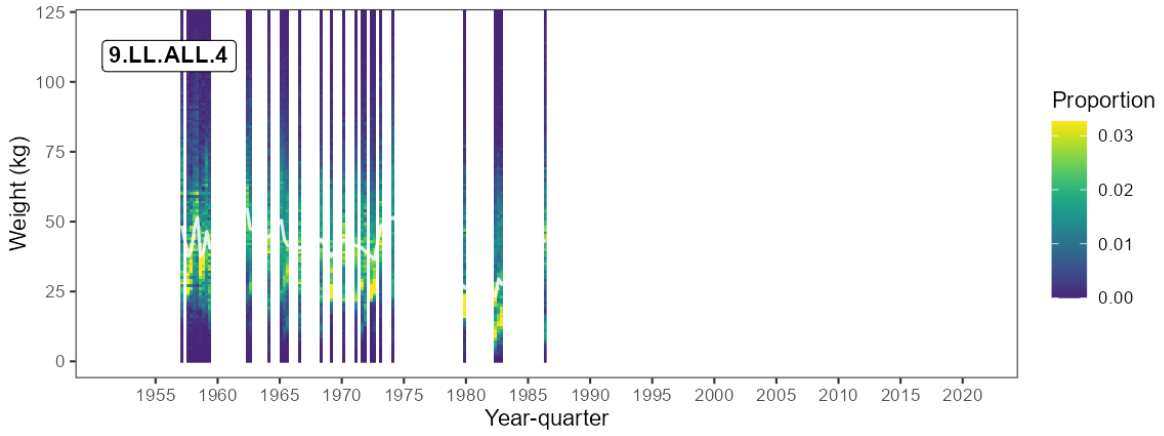
Figure B.21: Input sample sizes for reweighted weight compositions of bigeye for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

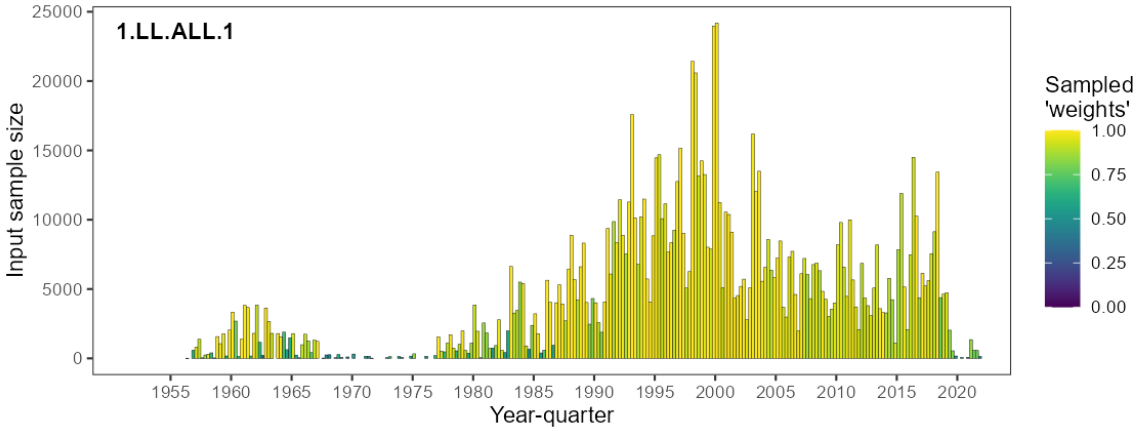


(b) 'Stronger filtering' option

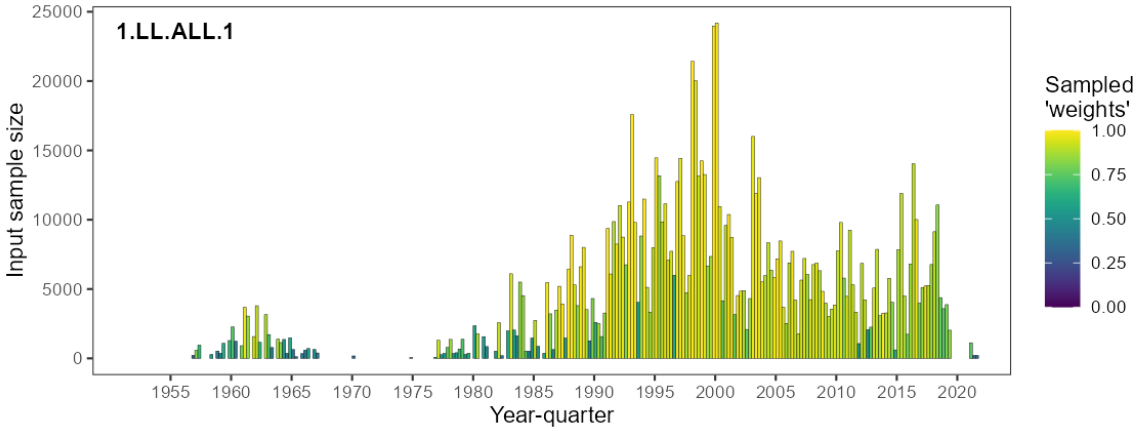


(c) 'Strongest filtering' option

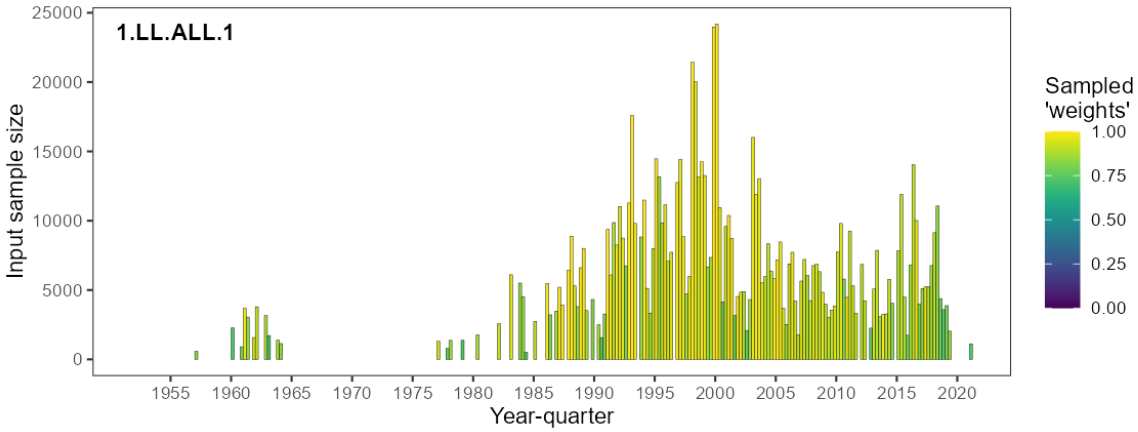
Figure B.22: Reweighted weight compositions of bigeye for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

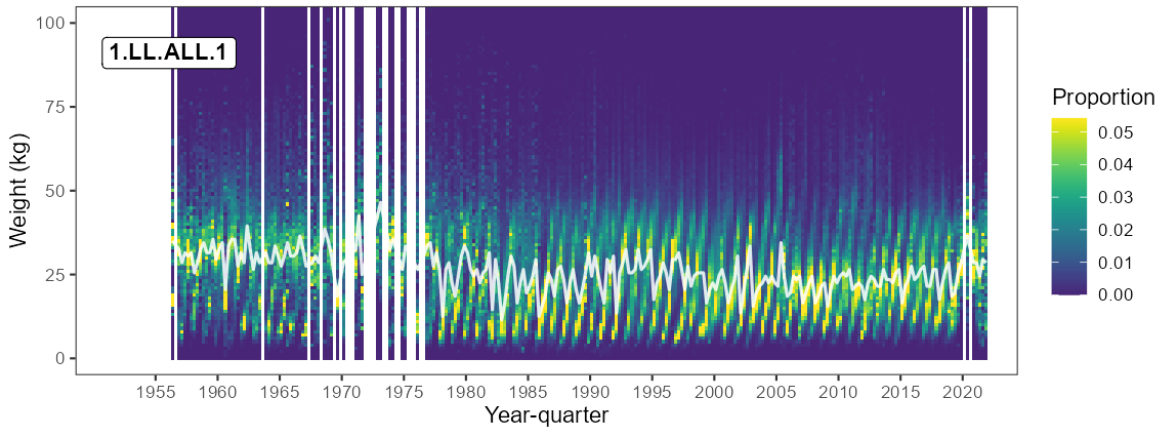


(b) 'Stronger filtering' option

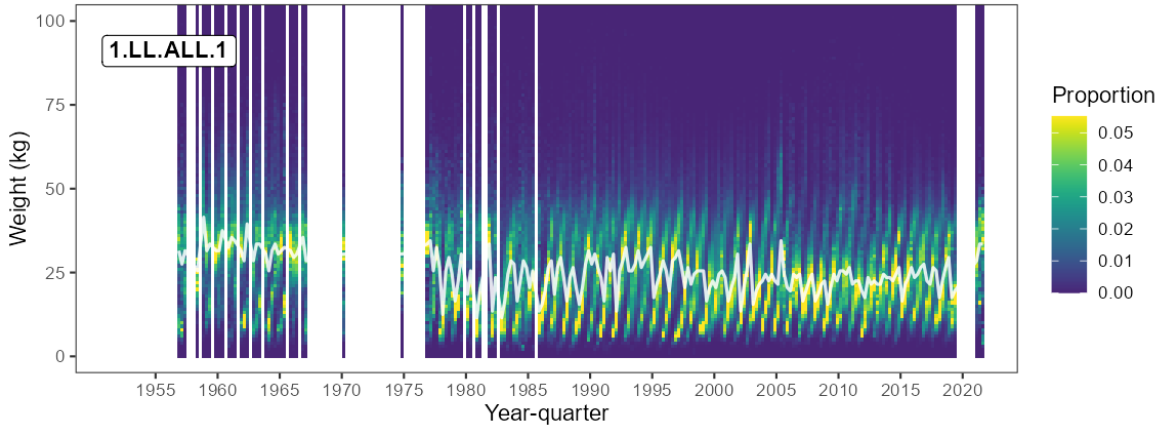


(c) 'Strongest filtering' option

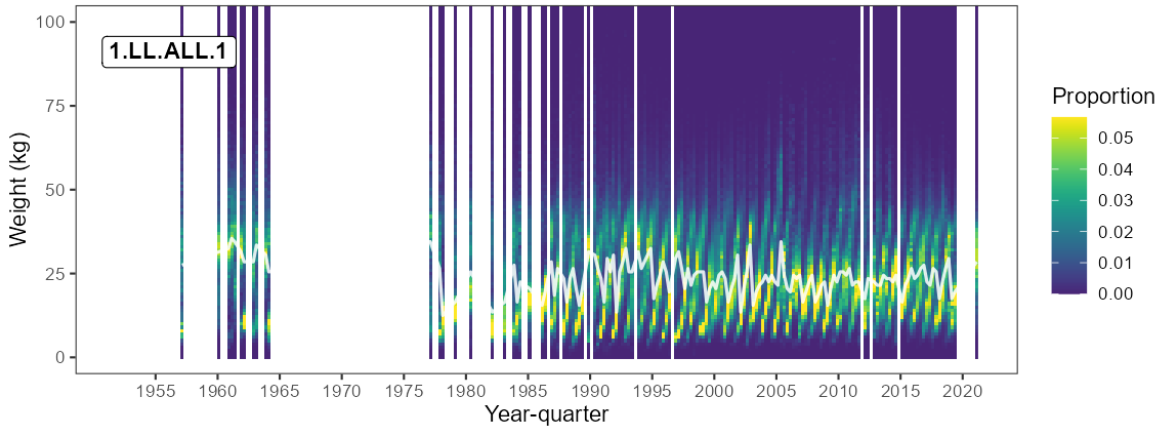
Figure B.23: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 1.LL.ALL.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

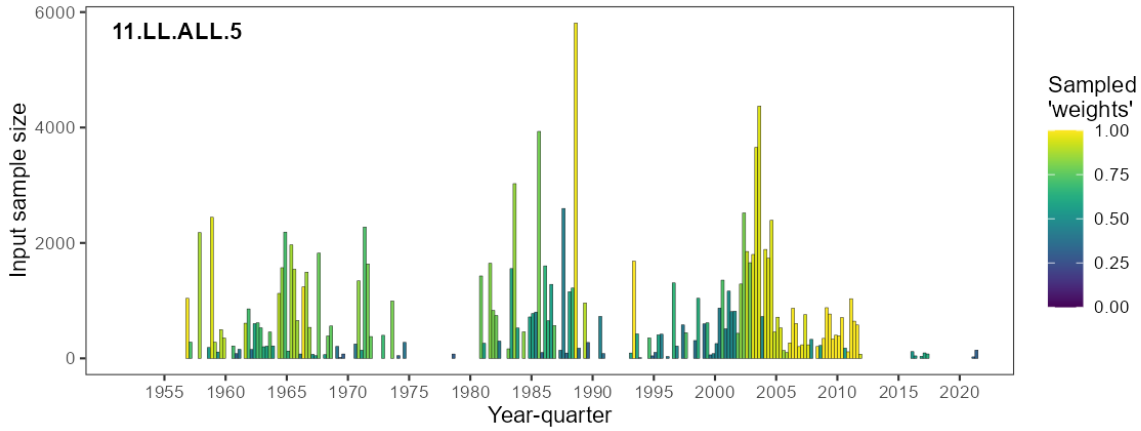


(b) 'Stronger filtering' option

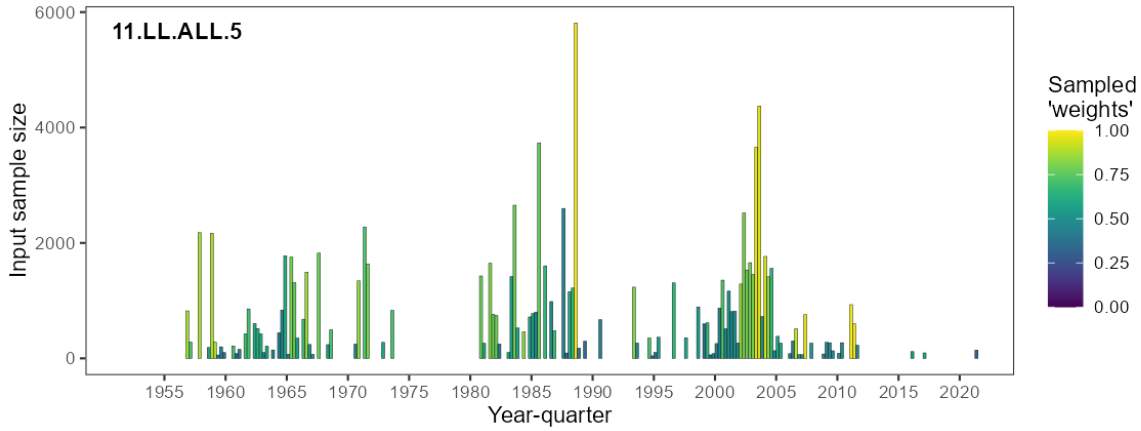


(c) 'Strongest filtering' option

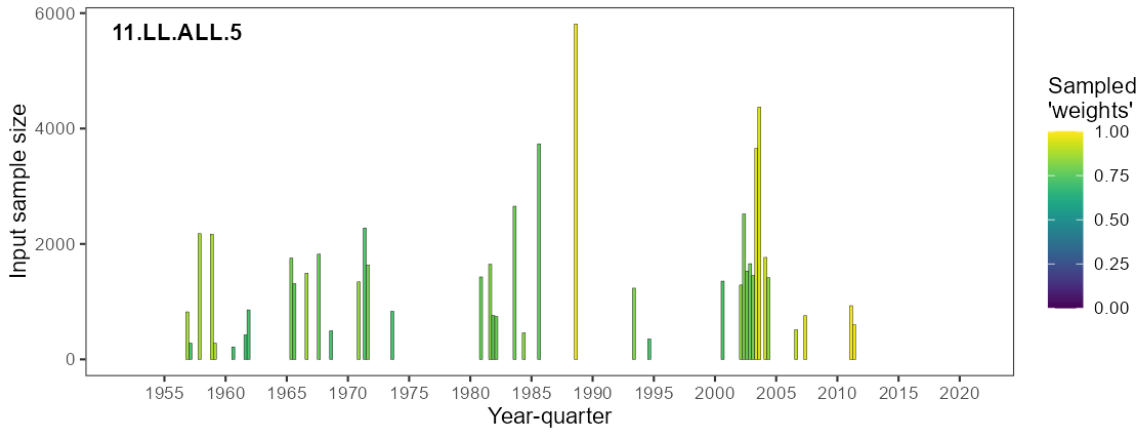
Figure B.24: Reweighted weight compositions of yellowfin for the longline extraction fishery 1.LL.ALL.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

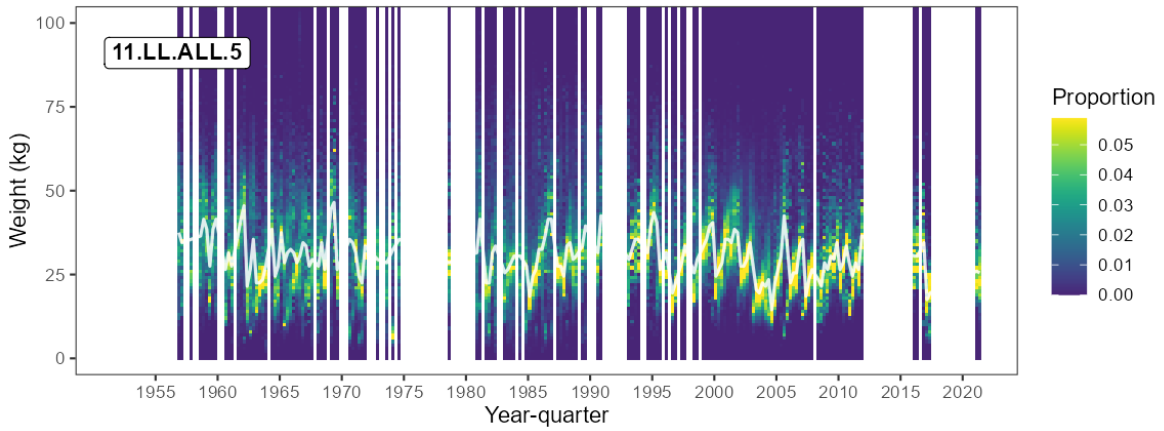


(b) 'Stronger filtering' option

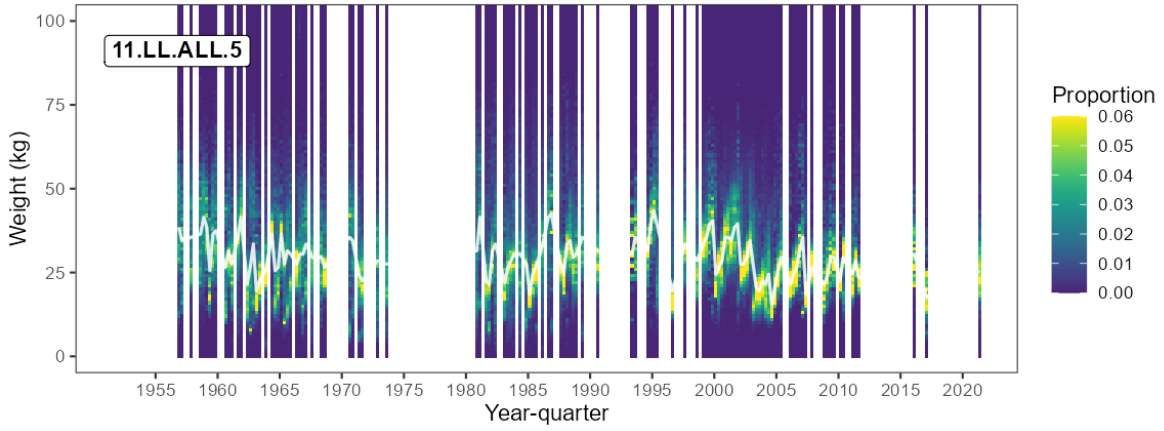


(c) 'Strongest filtering' option

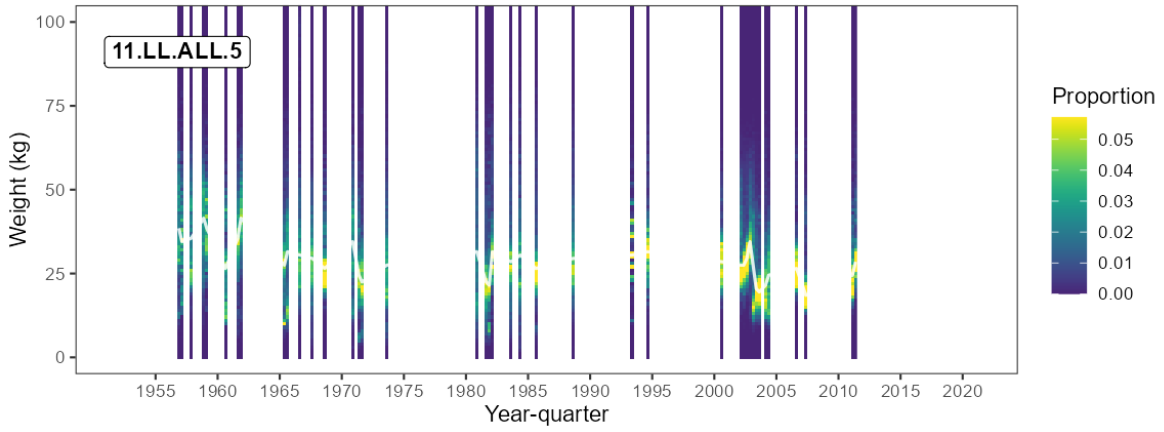
Figure B.25: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

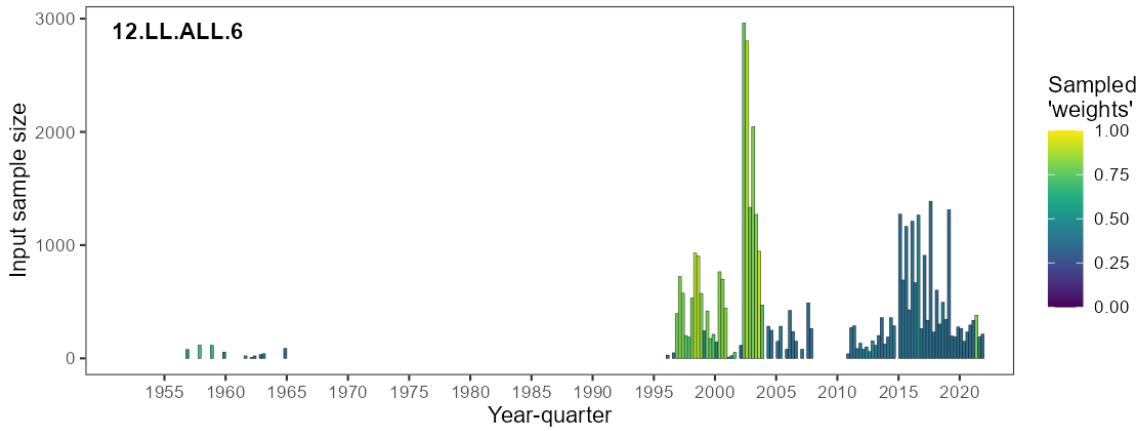


(b) 'Stronger filtering' option

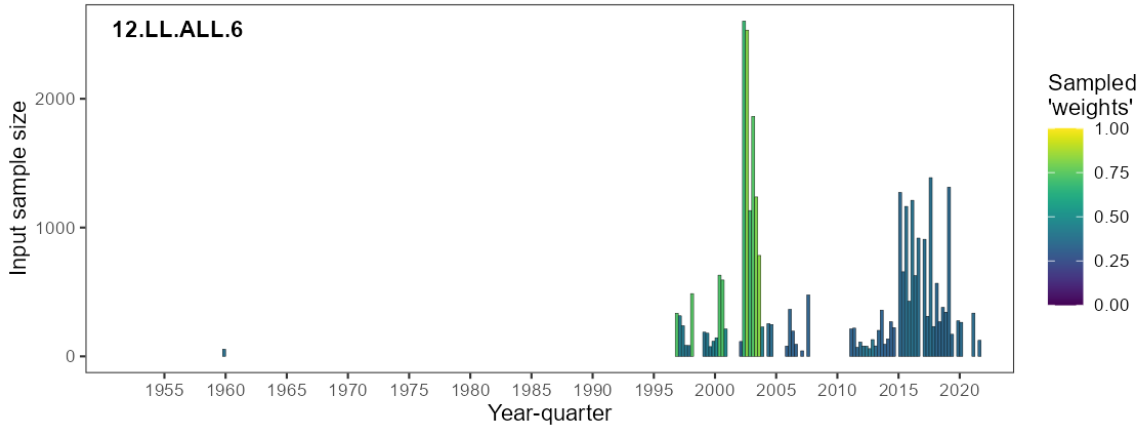


(c) 'Strongest filtering' option

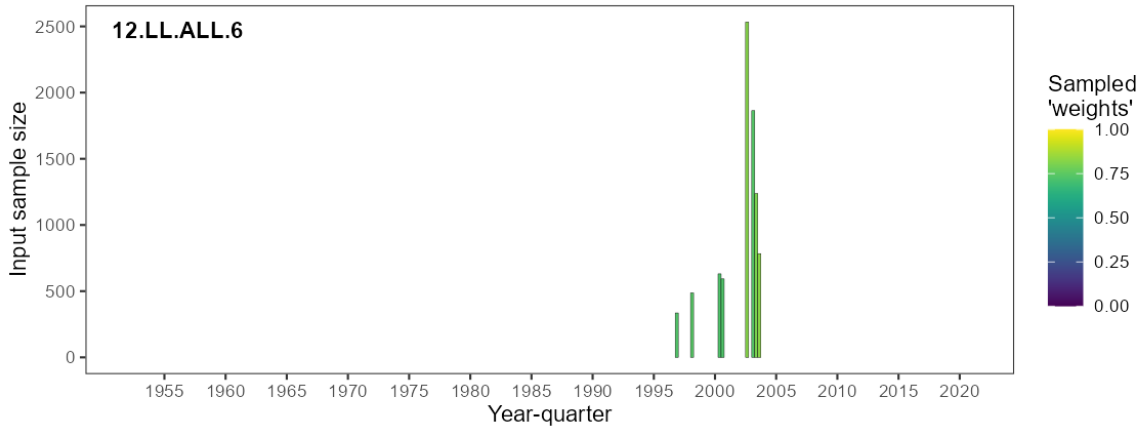
Figure B.26: Reweighted weight compositions of yellowfin for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

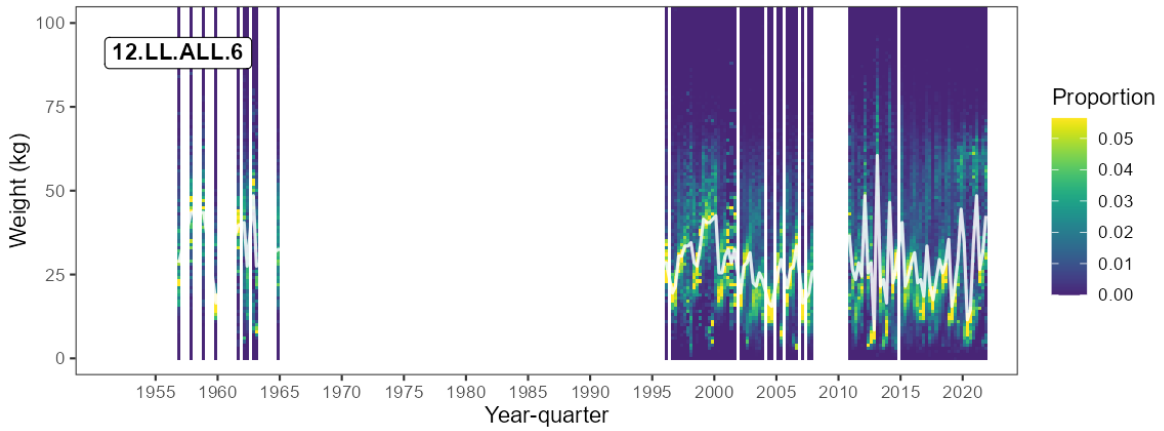


(b) 'Stronger filtering' option

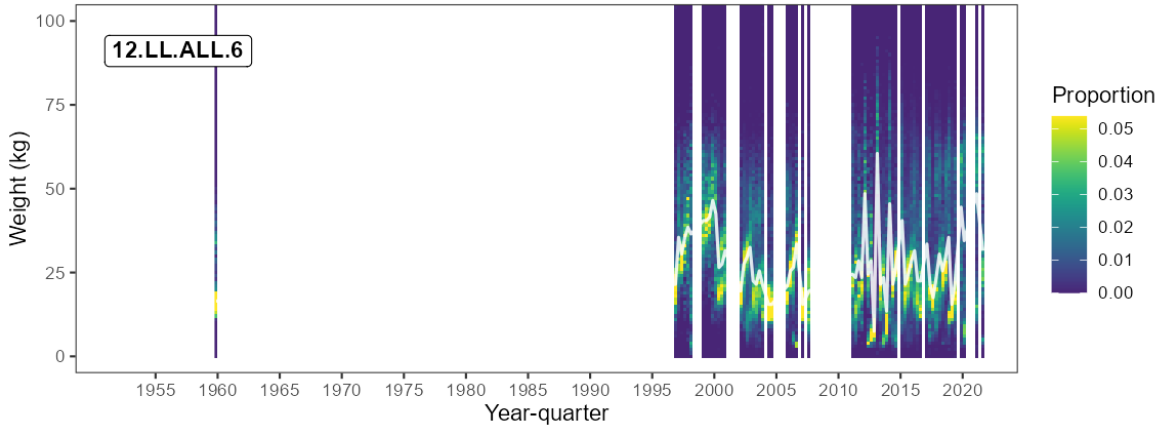


(c) 'Strongest filtering' option

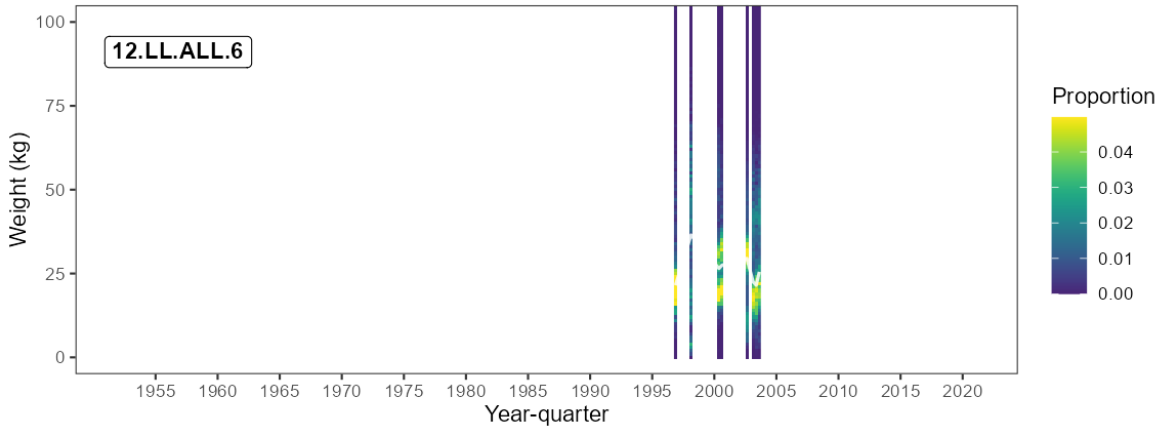
Figure B.27: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

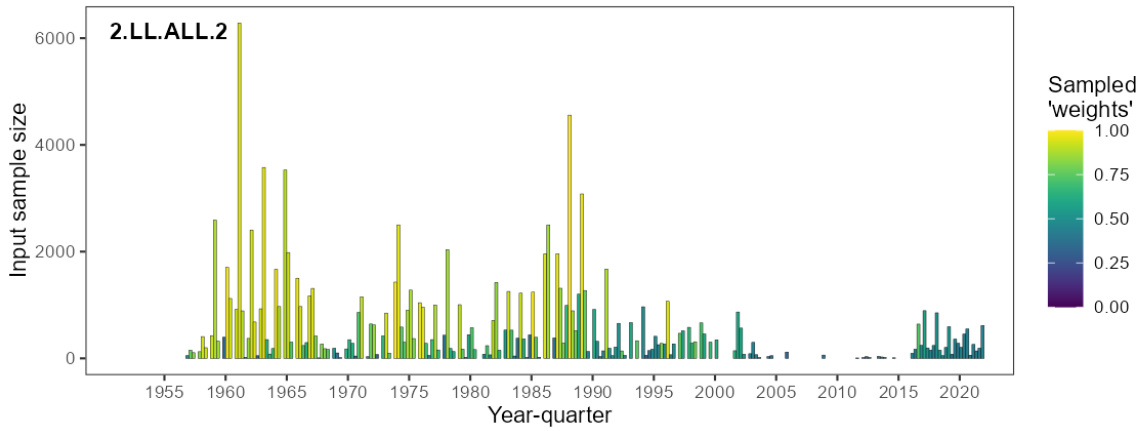


(b) 'Stronger filtering' option

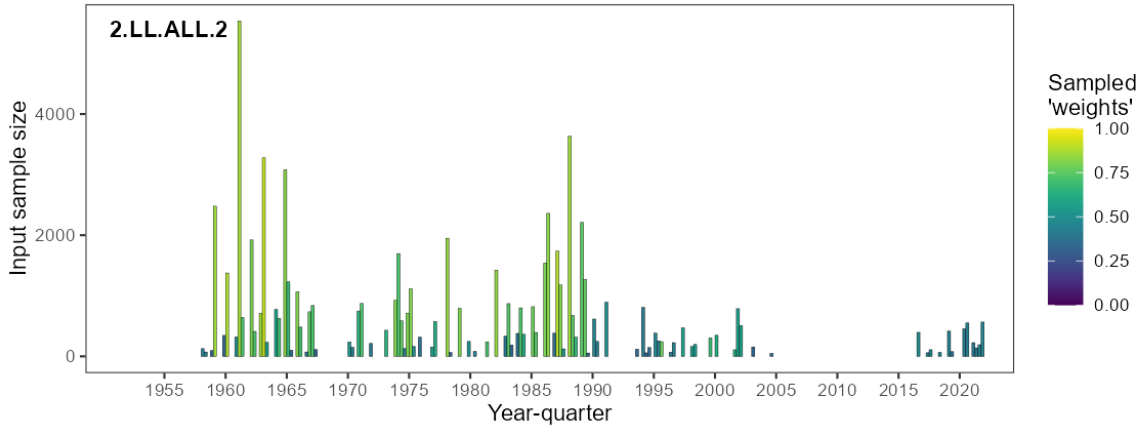


(c) 'Strongest filtering' option

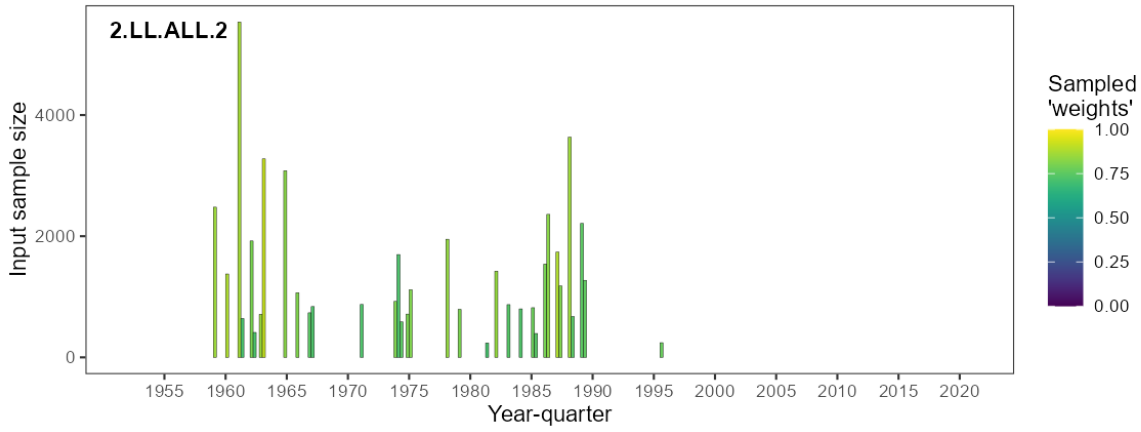
Figure B.28: Reweighted weight compositions of yellowfin for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

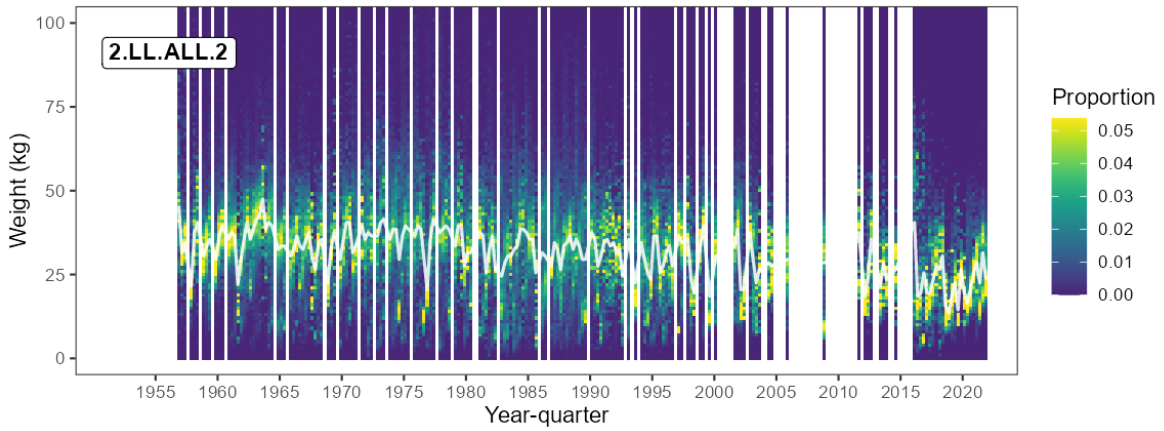


(b) 'Stronger filtering' option

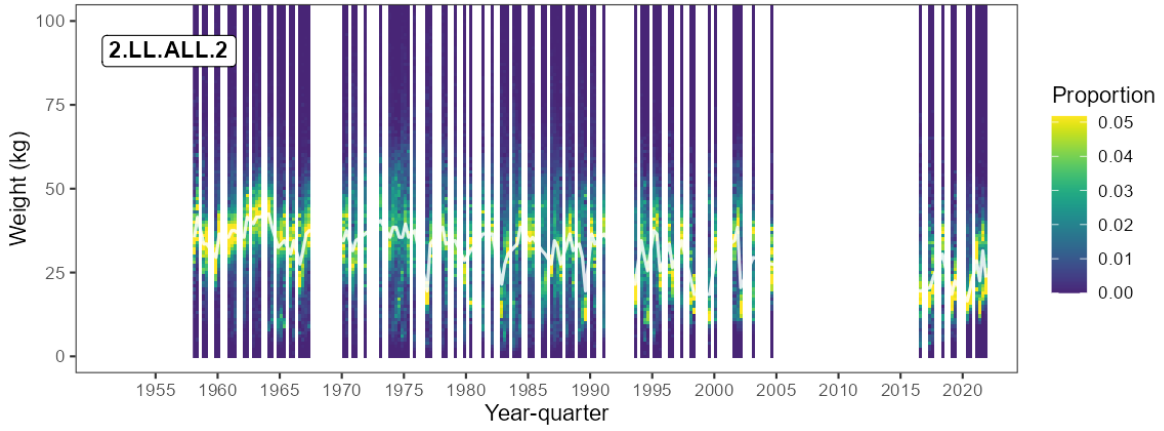


(c) 'Strongest filtering' option

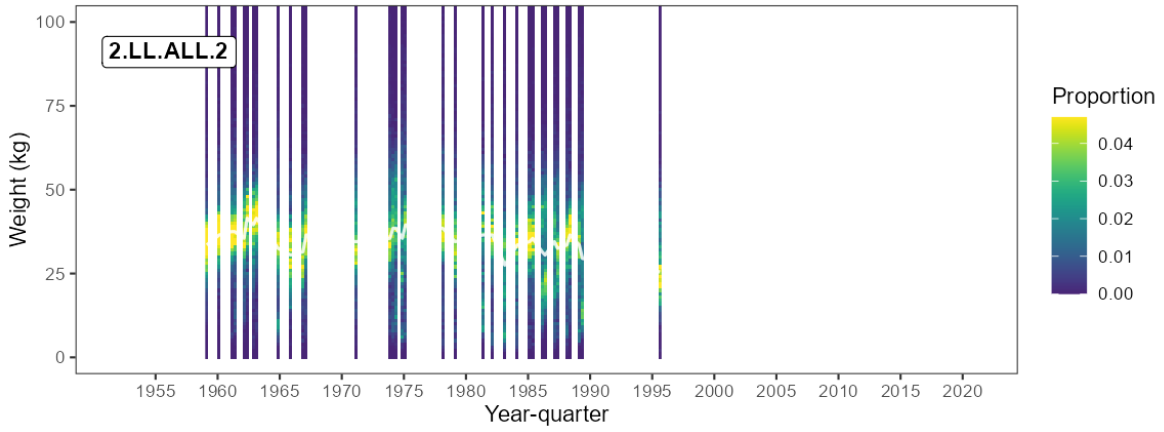
Figure B.29: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 2.LL.ALL.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

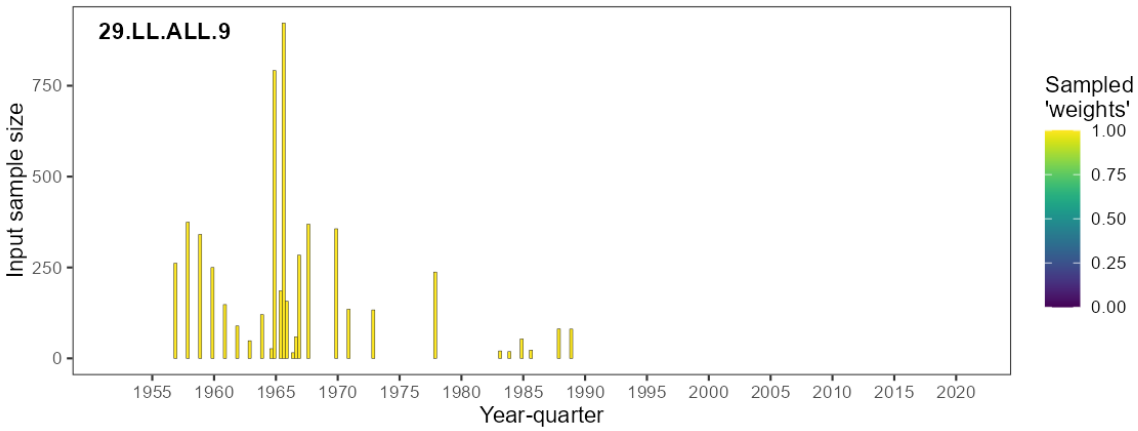


(b) 'Stronger filtering' option

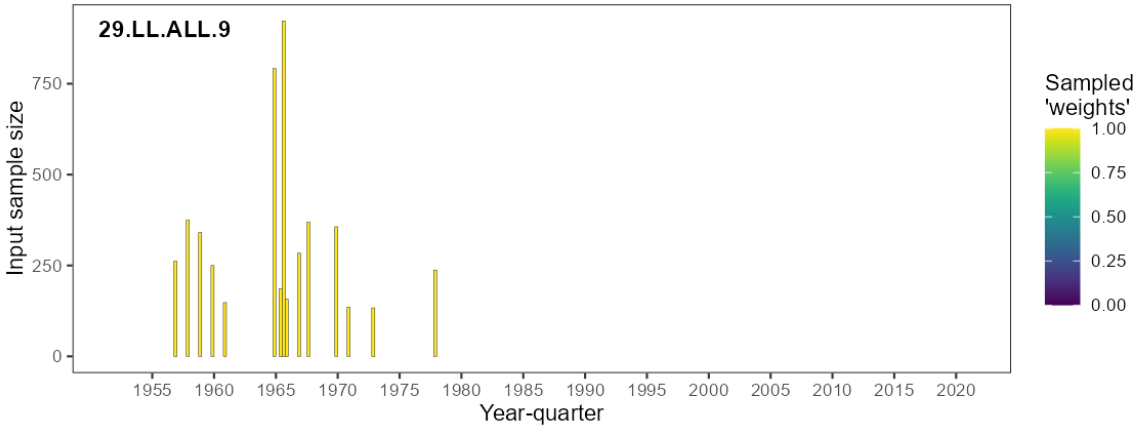


(c) 'Strongest filtering' option

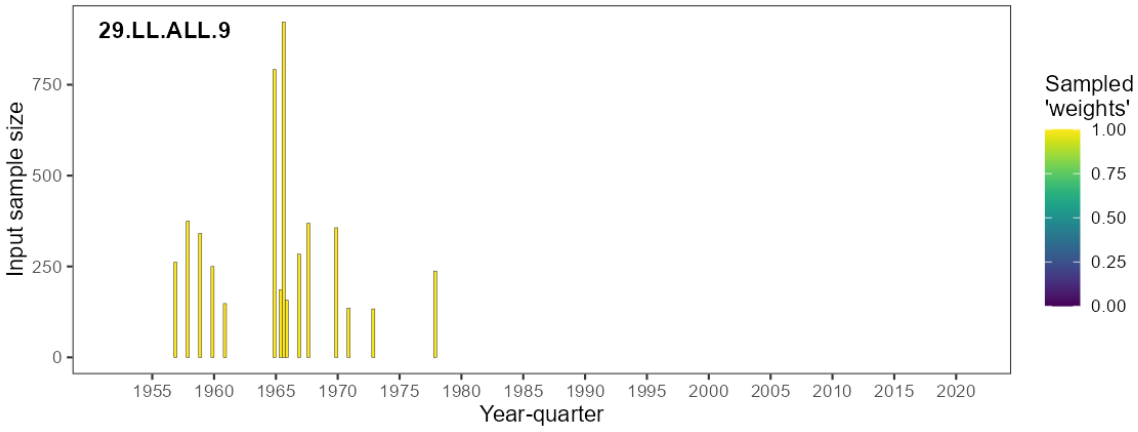
Figure B.30: Reweighted weight compositions of yellowfin for the longline extraction fishery 2.LL.ALL.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

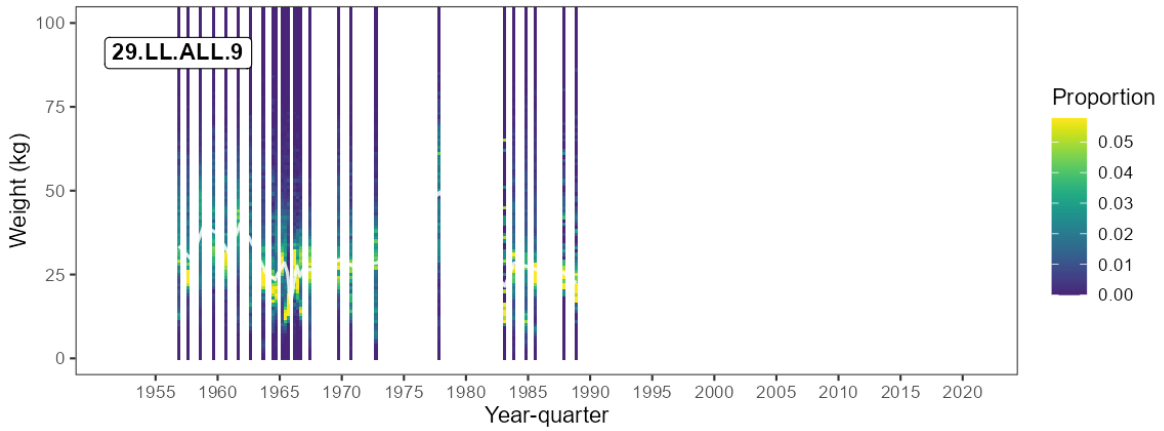


(b) 'Stronger filtering' option

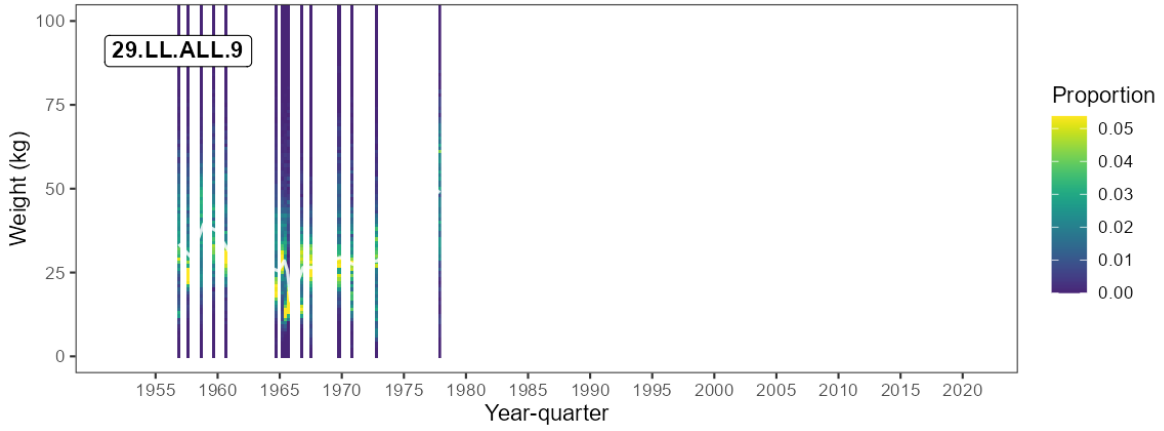


(c) 'Strongest filtering' option

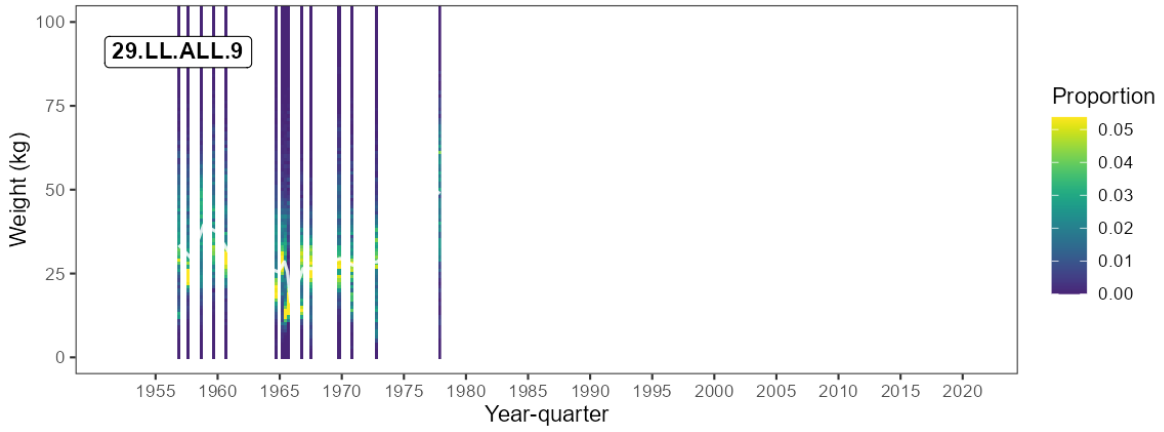
Figure B.31: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 29.LL.ALL.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

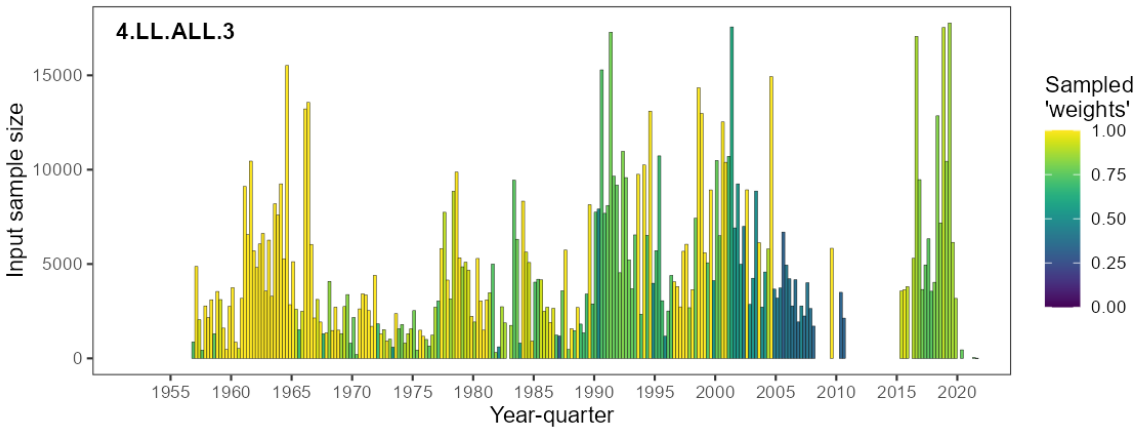


(b) 'Stronger filtering' option

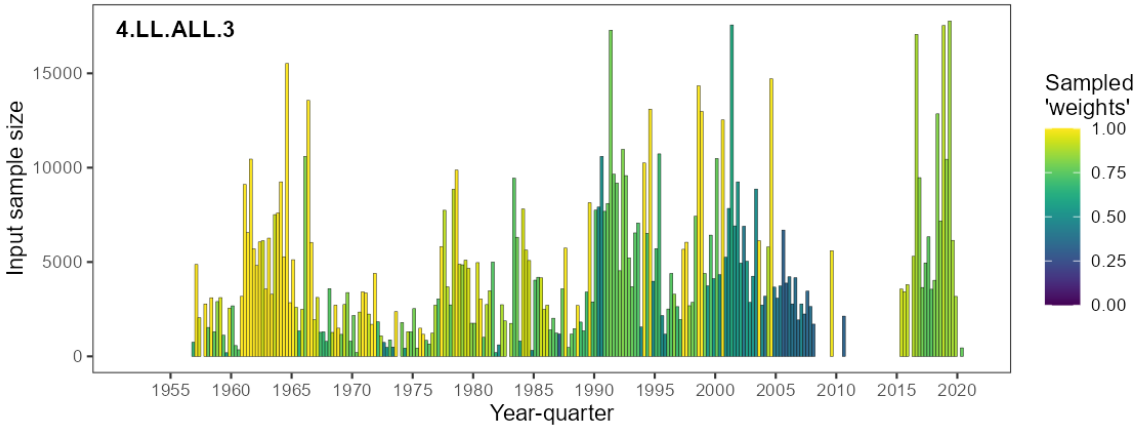


(c) 'Strongest filtering' option

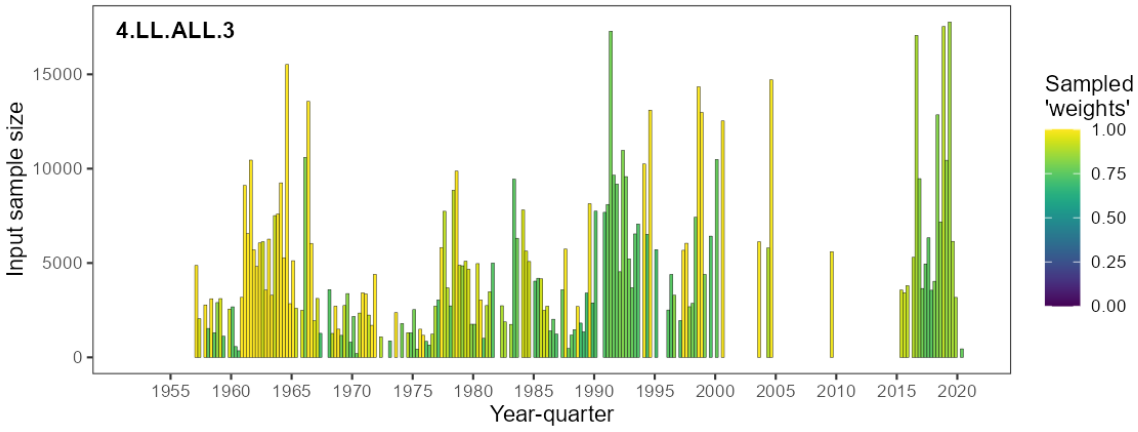
Figure B.32: Reweighted weight compositions of yellowfin for the longline extraction fishery 29.LL.ALL.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

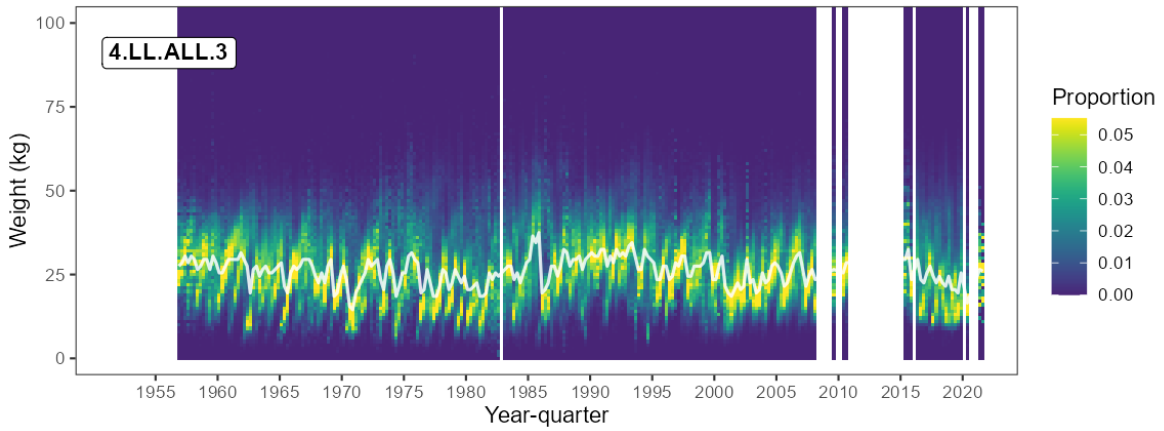


(b) 'Stronger filtering' option

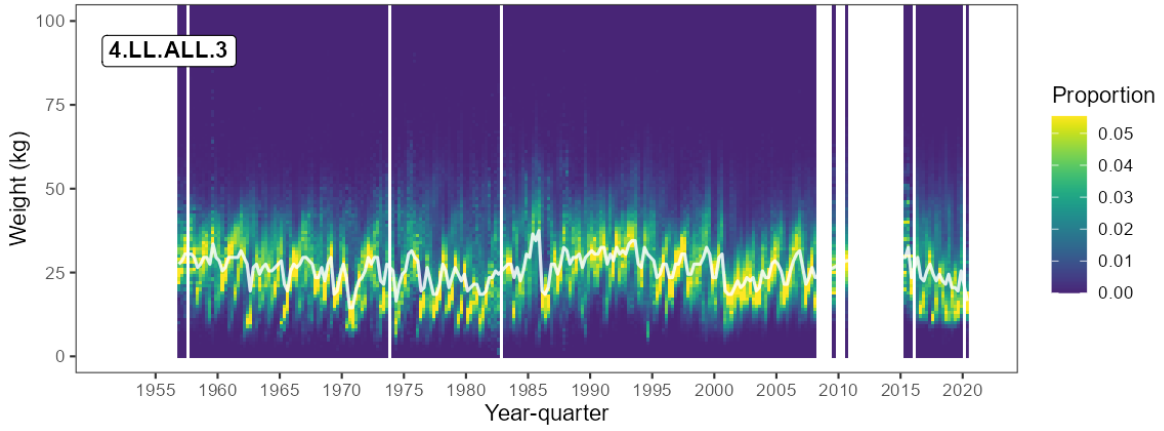


(c) 'Strongest filtering' option

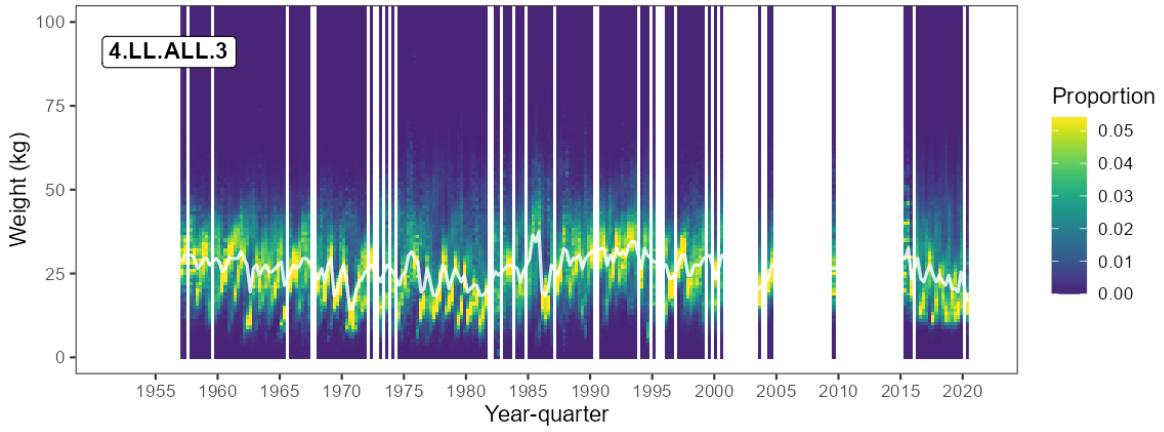
Figure B.33: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 4.LL.ALL.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

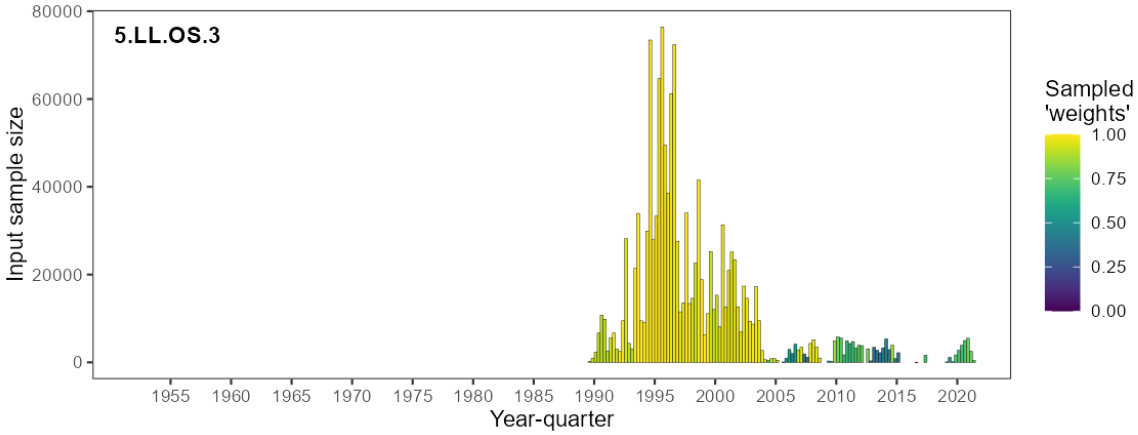


(b) 'Stronger filtering' option

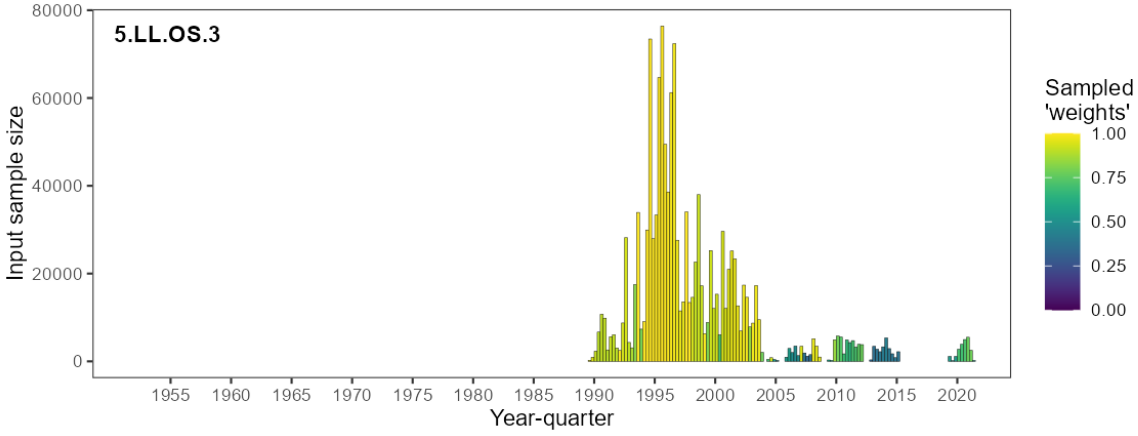


(c) 'Strongest filtering' option

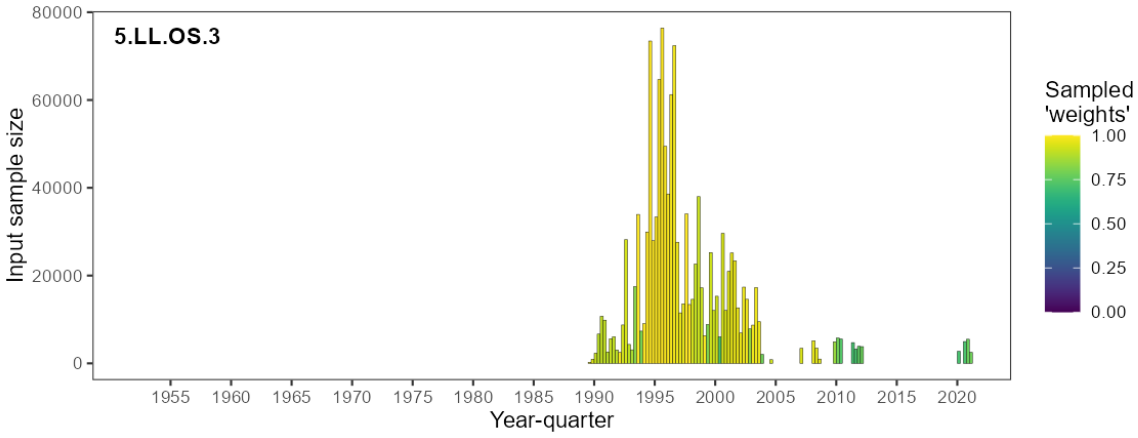
Figure B.34: Reweighted weight compositions of yellowfin for the longline extraction fishery 4.LL.ALL.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

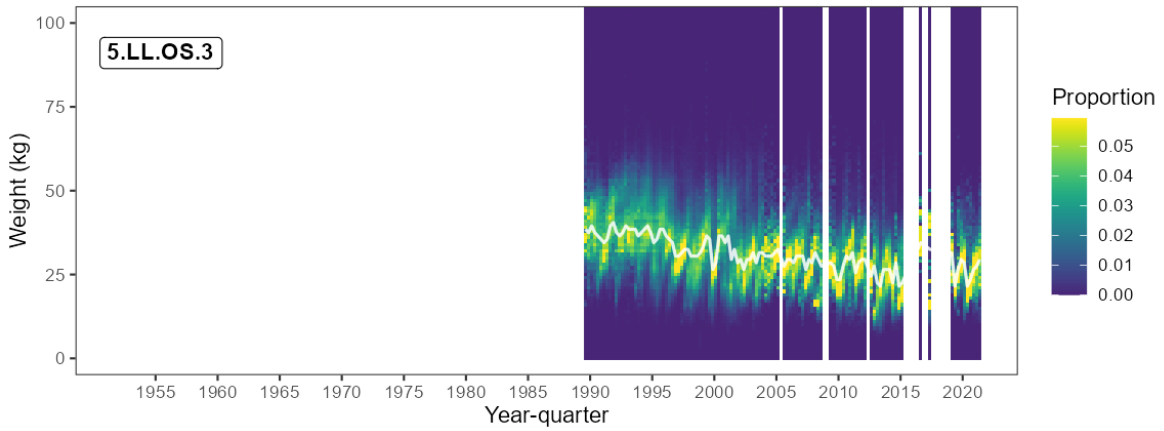


(b) 'Stronger filtering' option

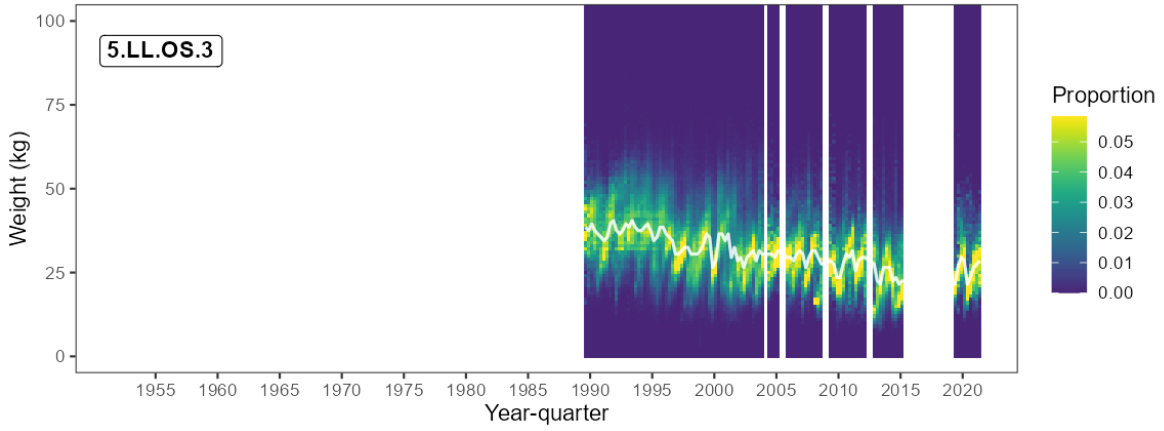


(c) 'Strongest filtering' option

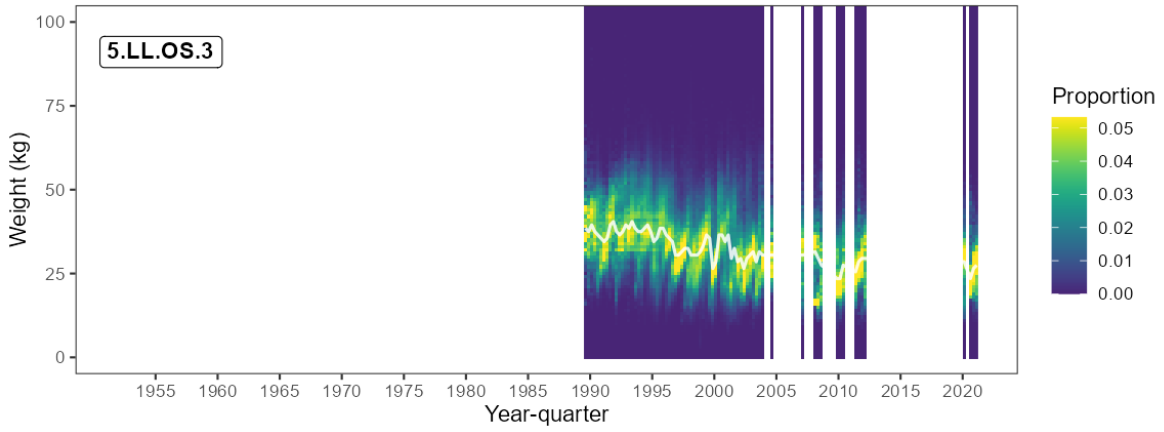
Figure B.35: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 5.LL.OS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

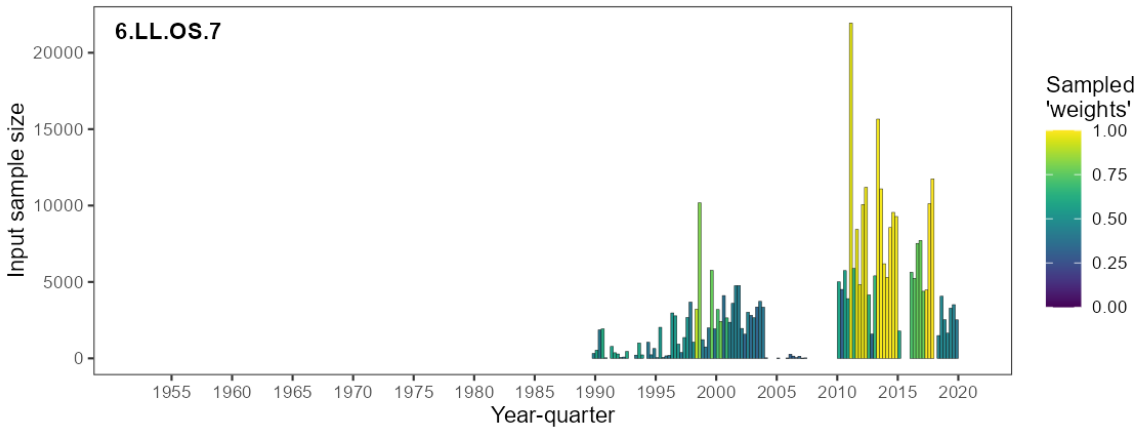


(b) 'Stronger filtering' option

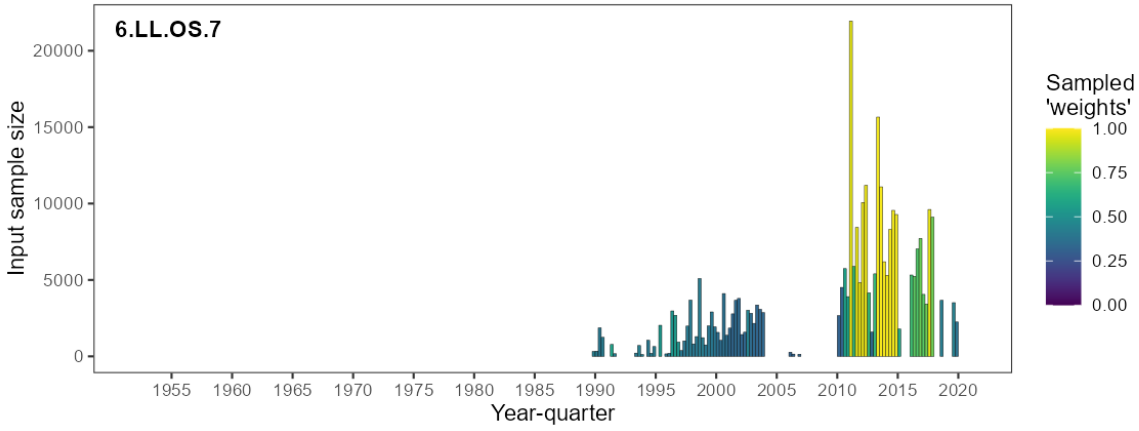


(c) 'Strongest filtering' option

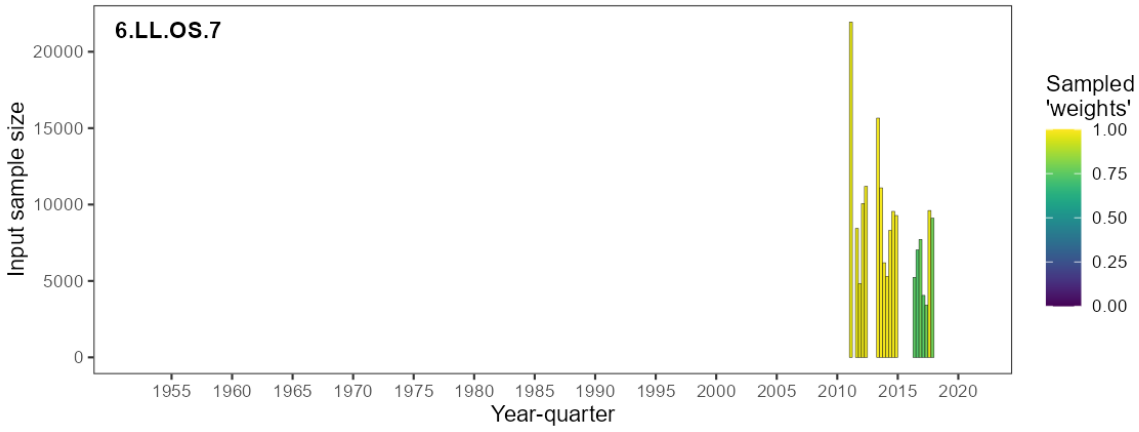
Figure B.36: Reweighted weight compositions of yellowfin for the longline extraction fishery 5.LL.OS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

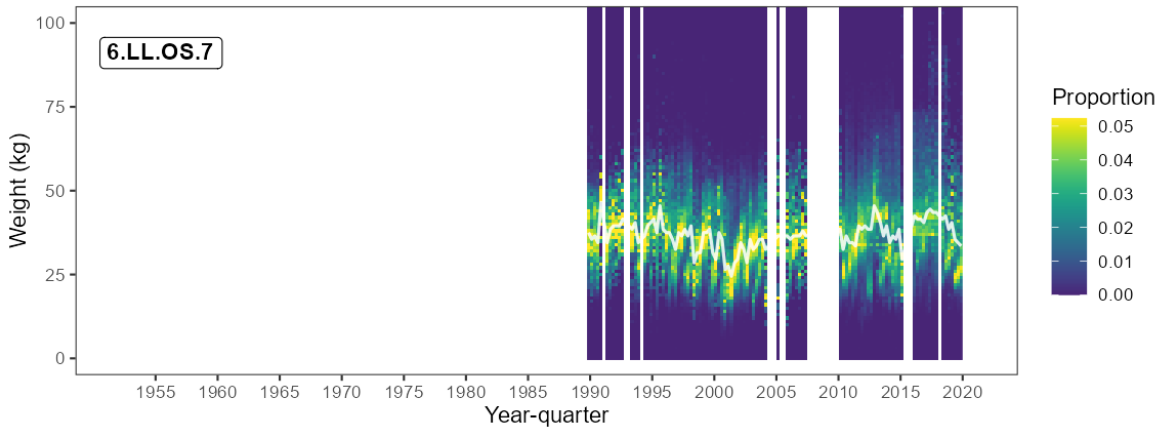


(b) 'Stronger filtering' option

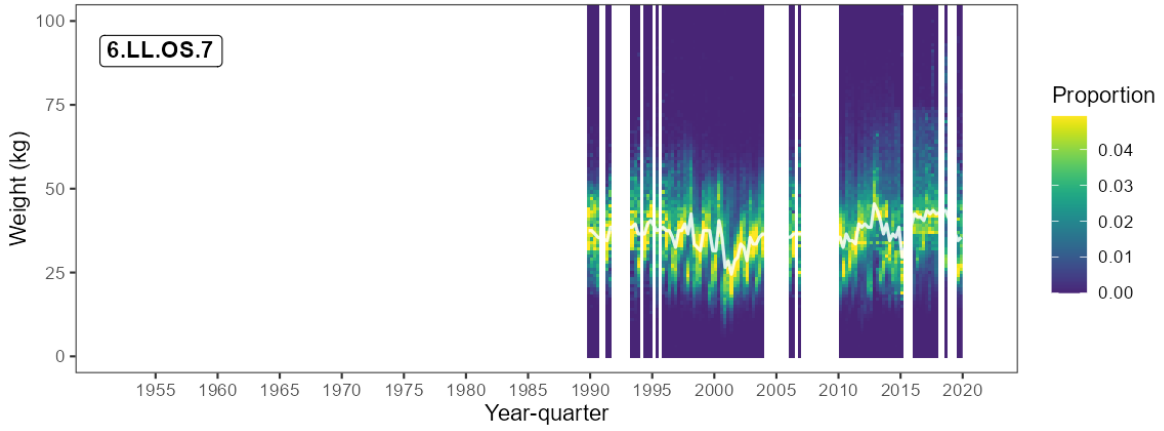


(c) 'Strongest filtering' option

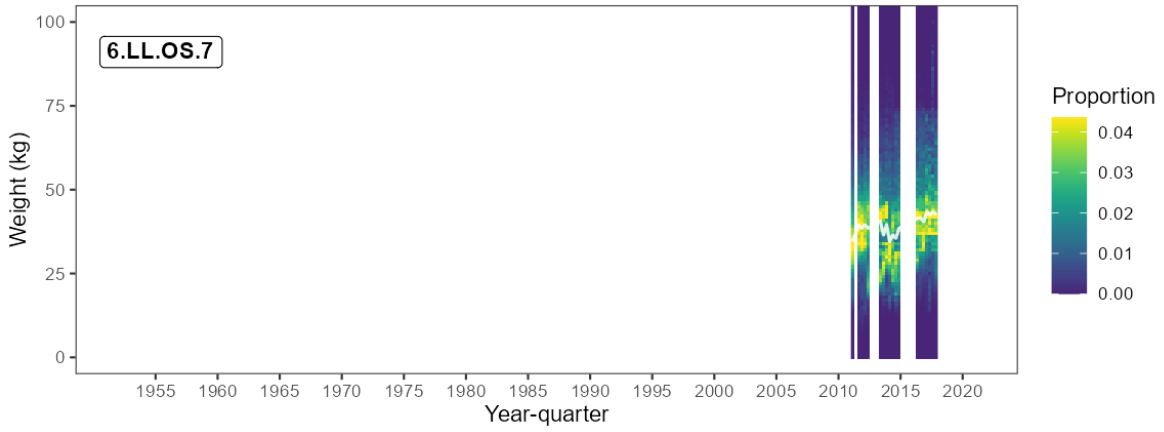
Figure B.37: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 6.LL.OS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

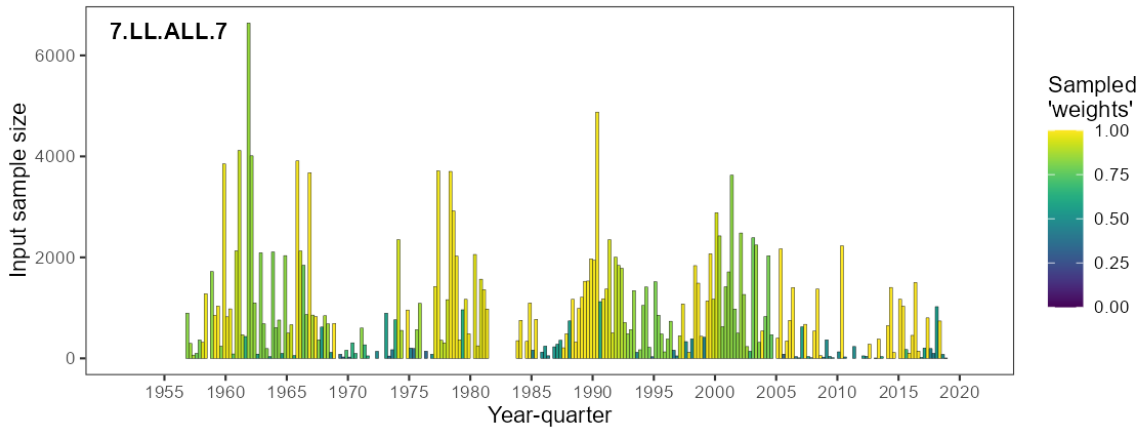


(b) 'Stronger filtering' option

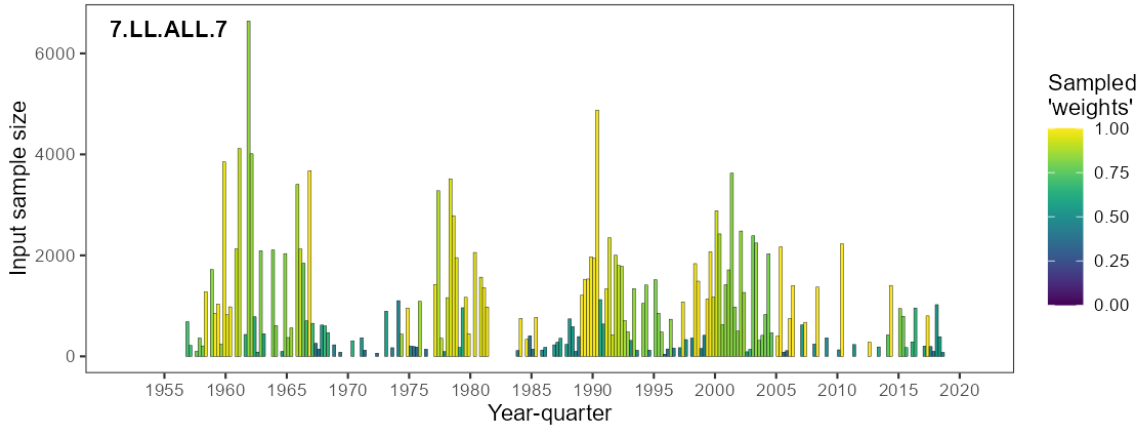


(c) 'Strongest filtering' option

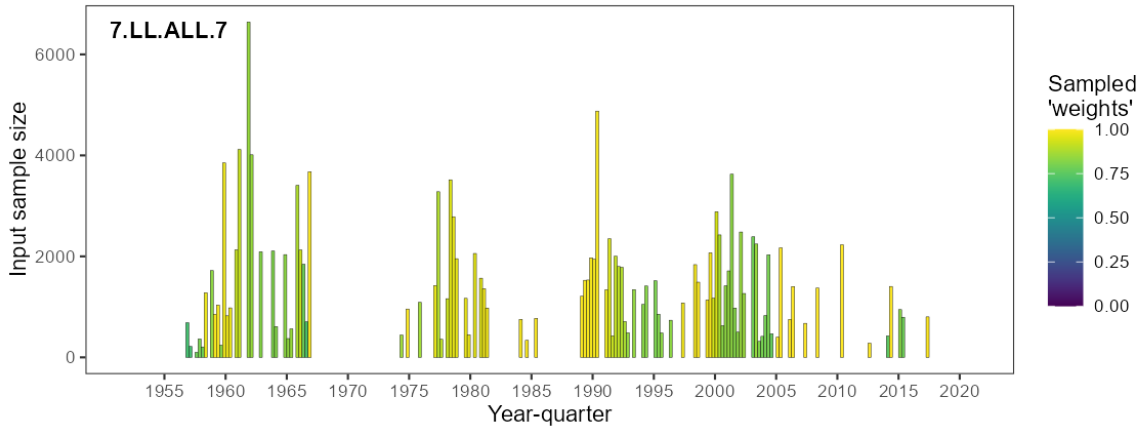
Figure B.38: Reweighted weight compositions of yellowfin for the longline extraction fishery 6.LL.OS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

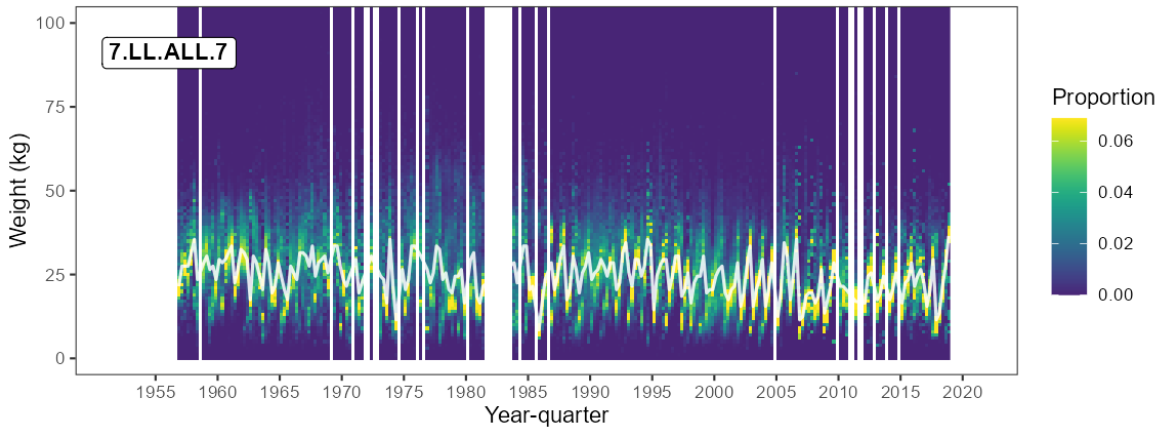


(b) 'Stronger filtering' option

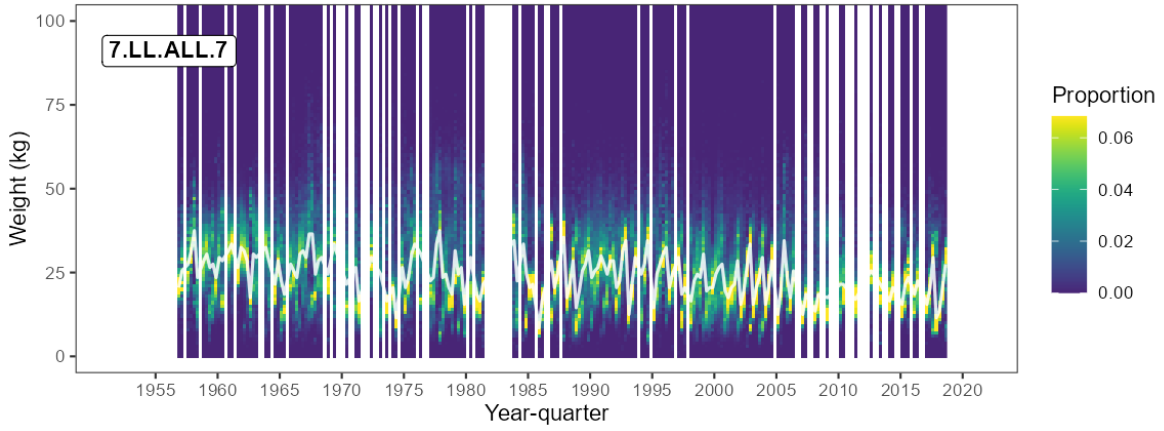


(c) 'Strongest filtering' option

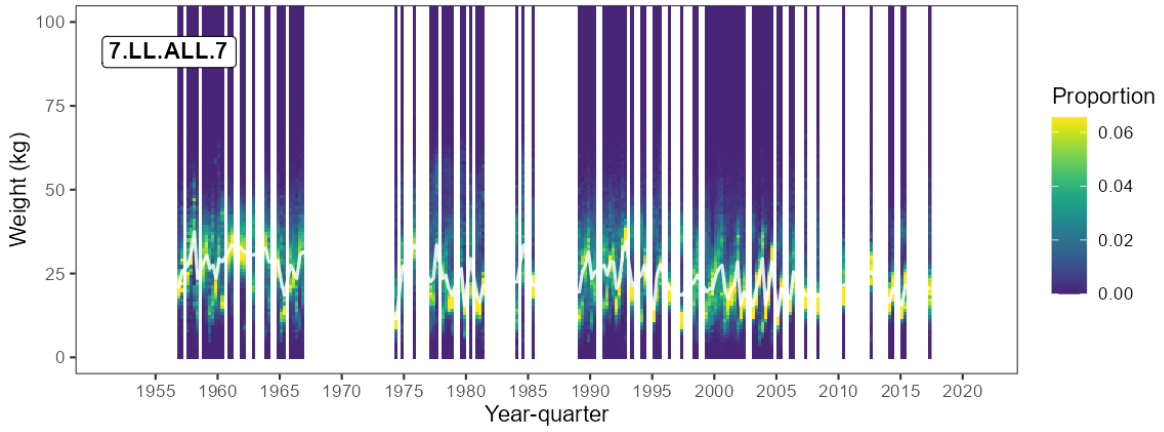
Figure B.39: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 7.LL.ALL.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

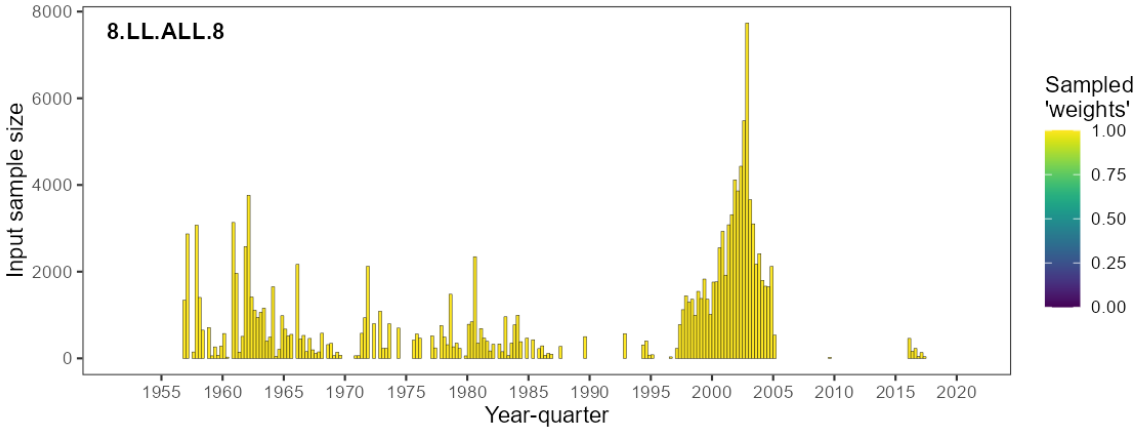


(b) 'Stronger filtering' option

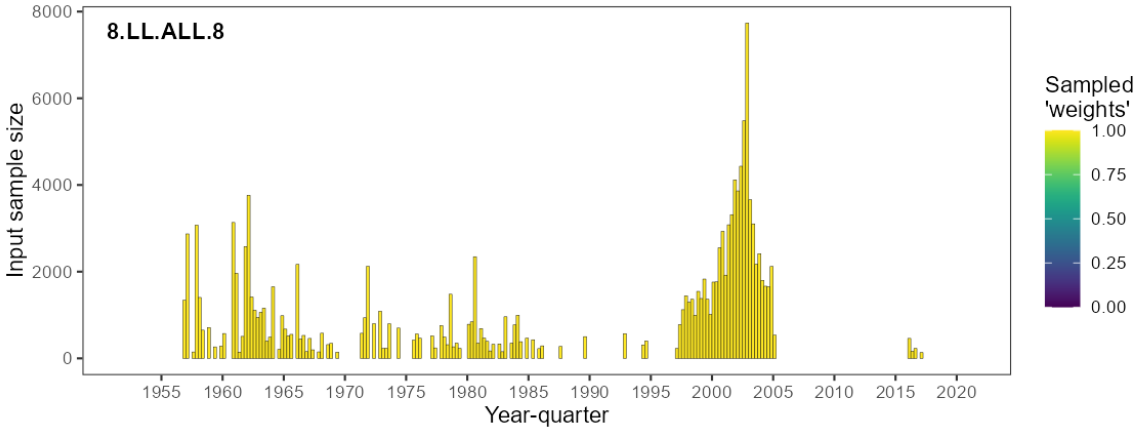


(c) 'Strongest filtering' option

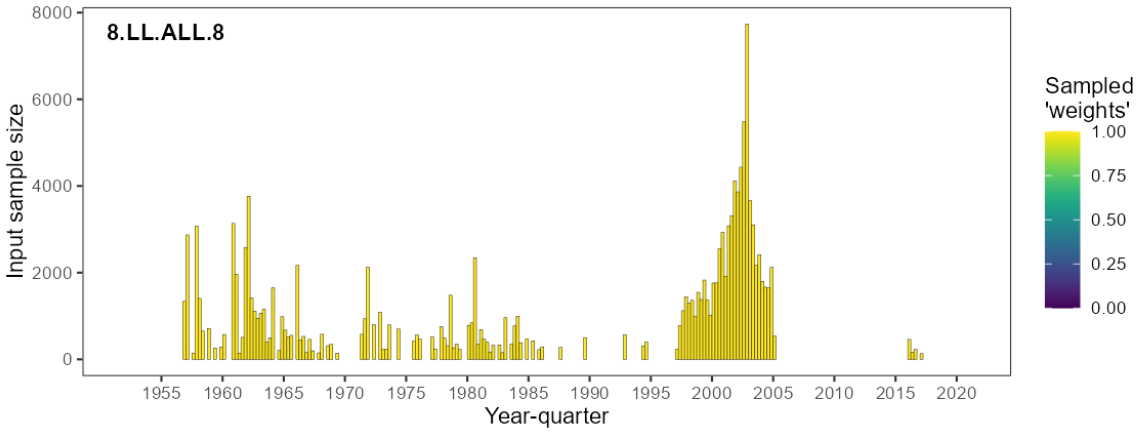
Figure B.40: Reweighted weight compositions of yellowfin for the longline extraction fishery 7.LL.ALL.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

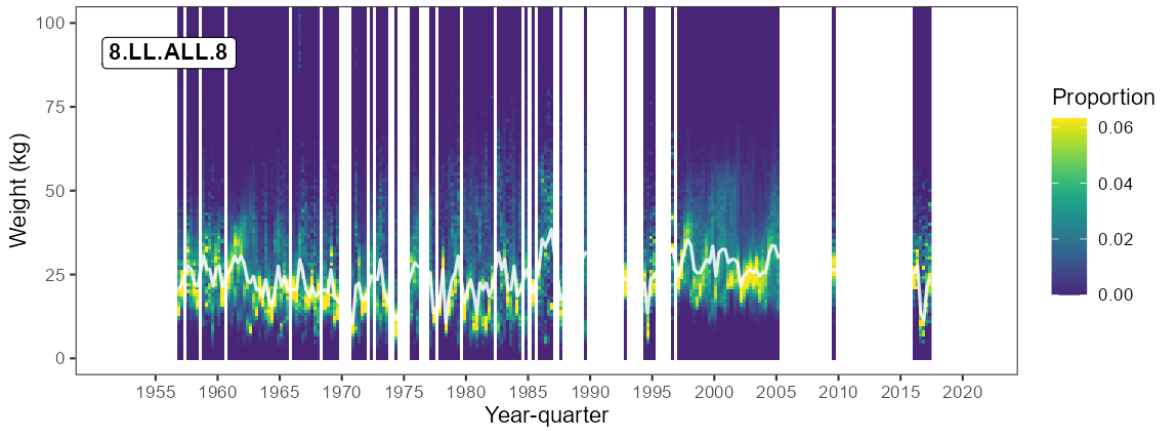


(b) 'Stronger filtering' option

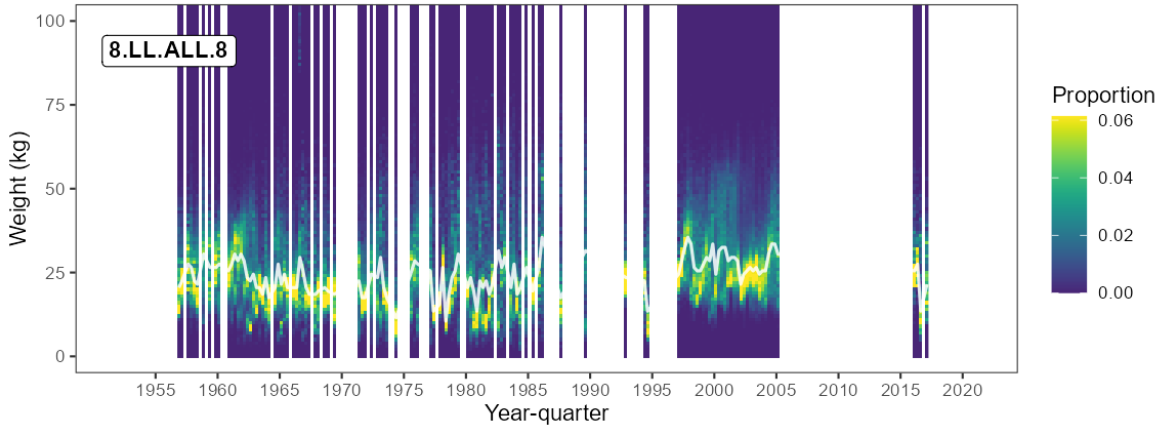


(c) 'Strongest filtering' option

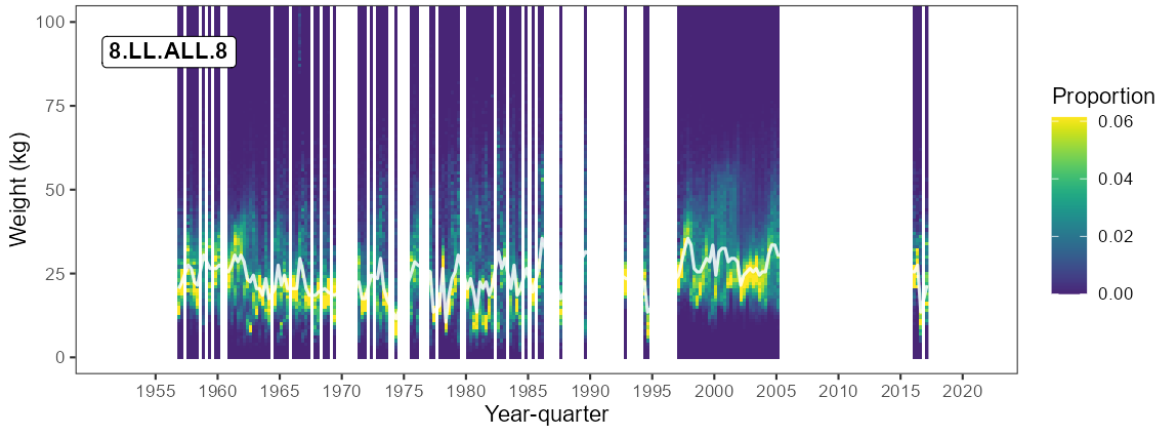
Figure B.41: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 8.LL.ALL.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

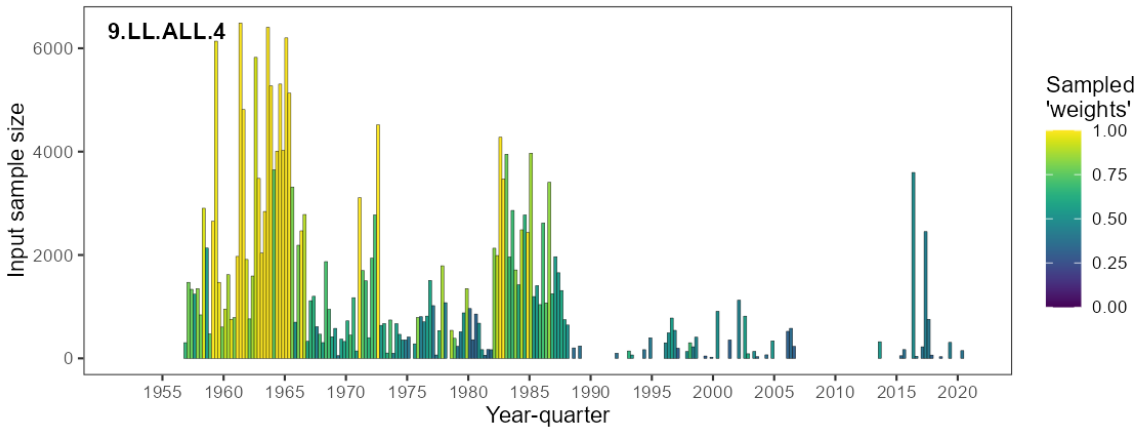


(b) 'Stronger filtering' option

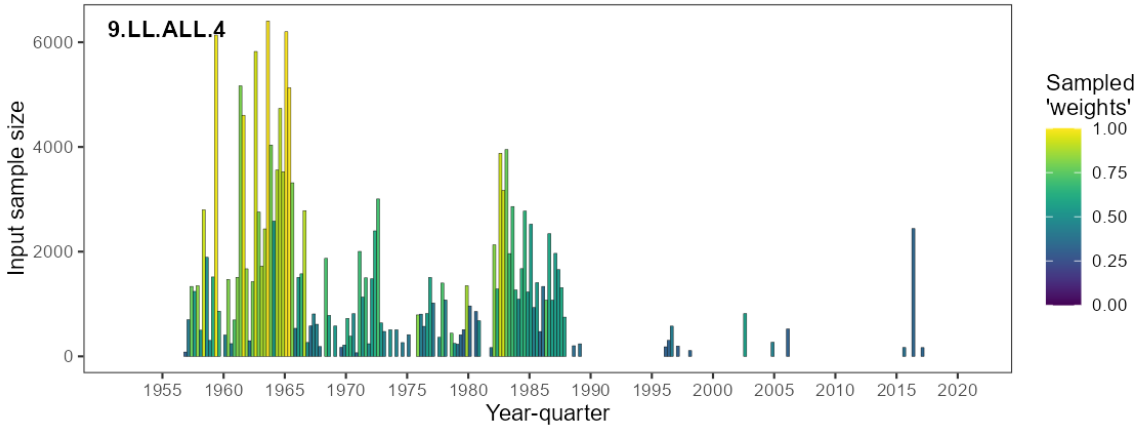


(c) 'Strongest filtering' option

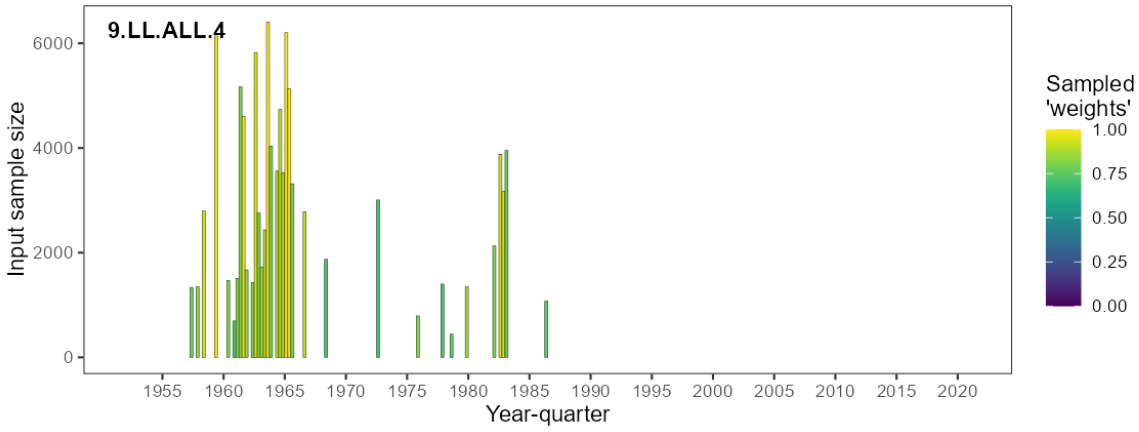
Figure B.42: Reweighted weight compositions of yellowfin for the longline extraction fishery 8.LL.ALL.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

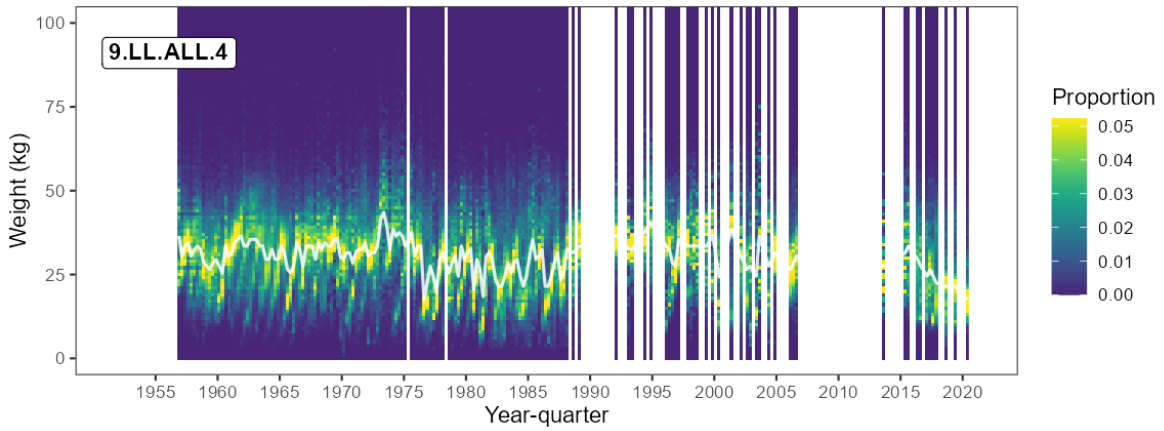


(b) 'Stronger filtering' option

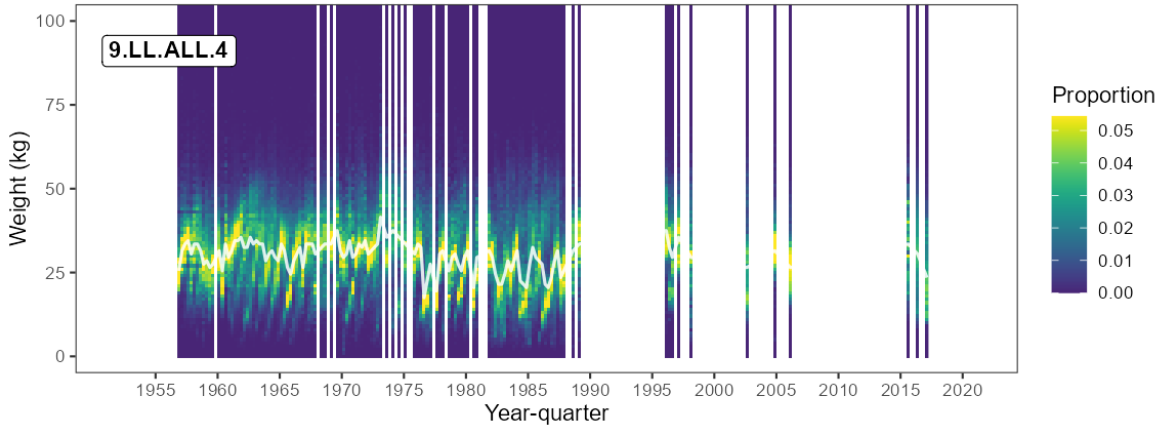


(c) 'Strongest filtering' option

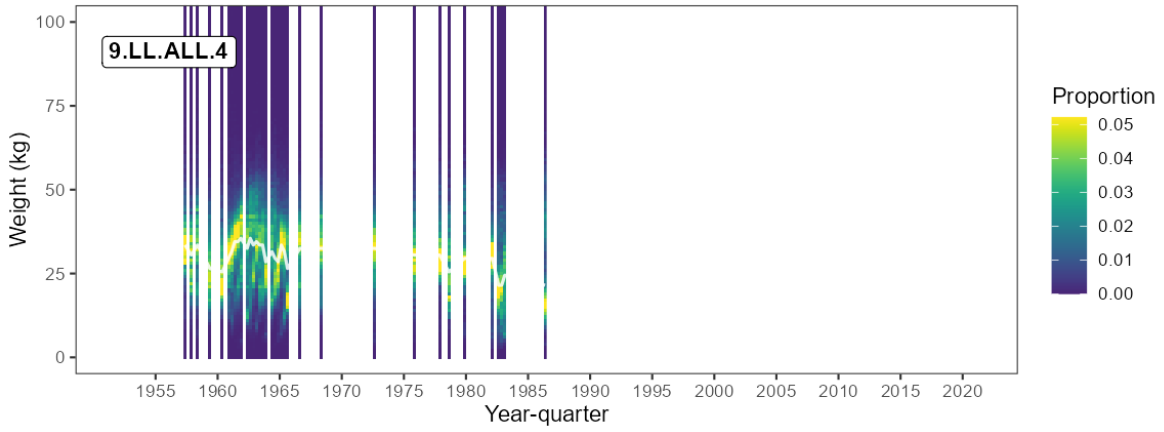
Figure B.43: Input sample sizes for reweighted weight compositions of yellowfin for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

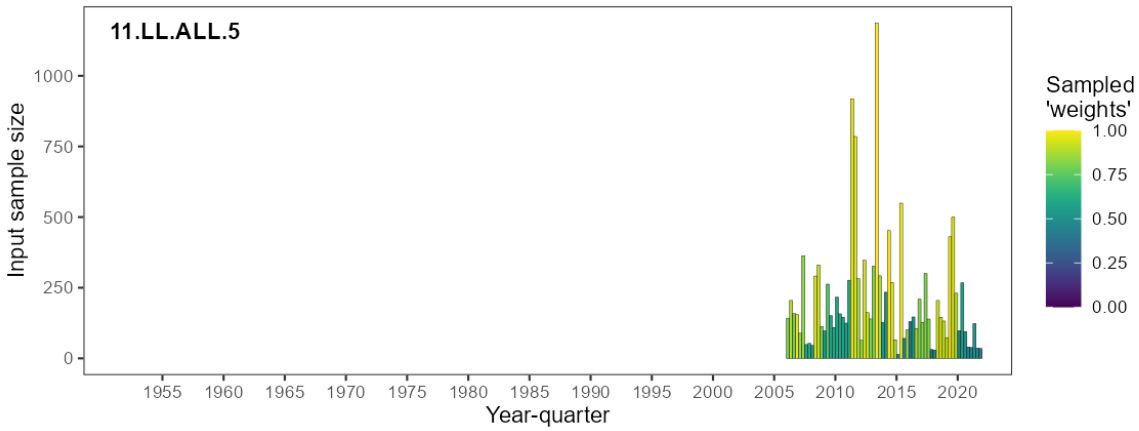


(b) 'Stronger filtering' option

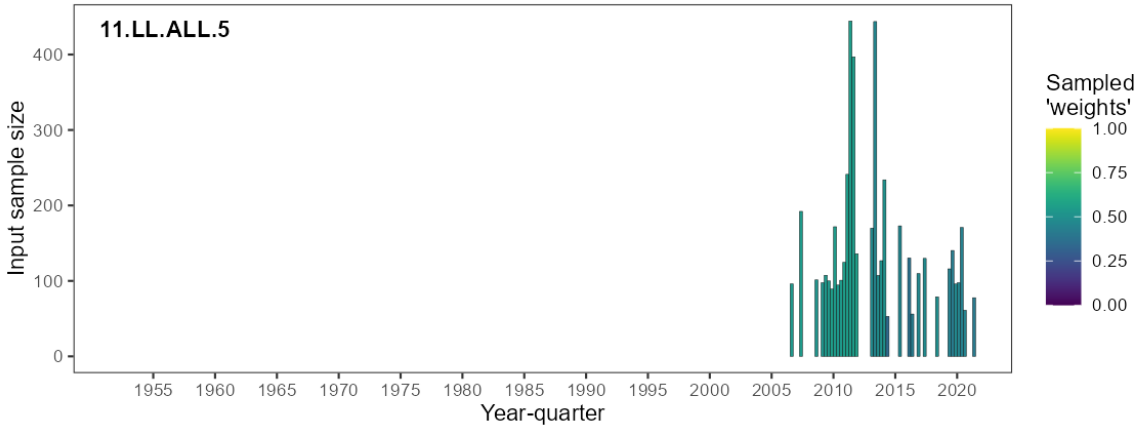


(c) 'Strongest filtering' option

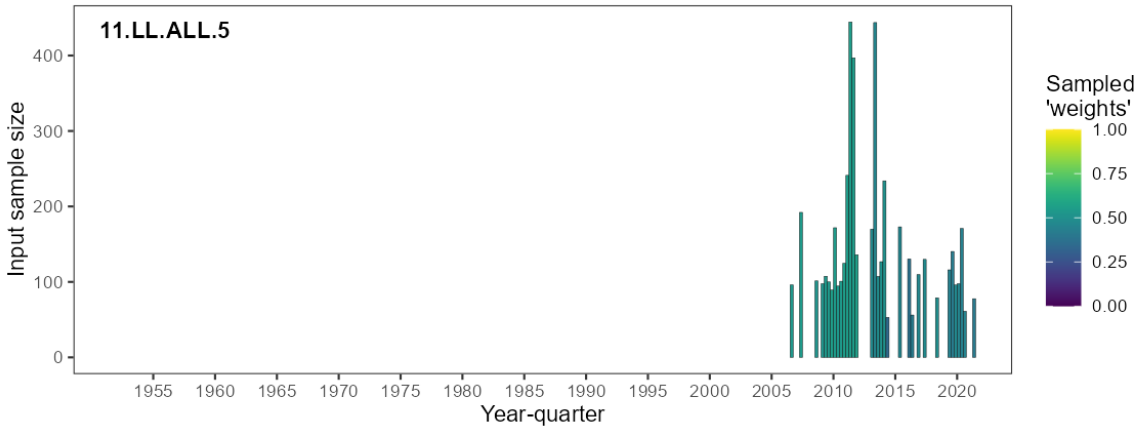
Figure B.44: Reweighted weight compositions of yellowfin for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

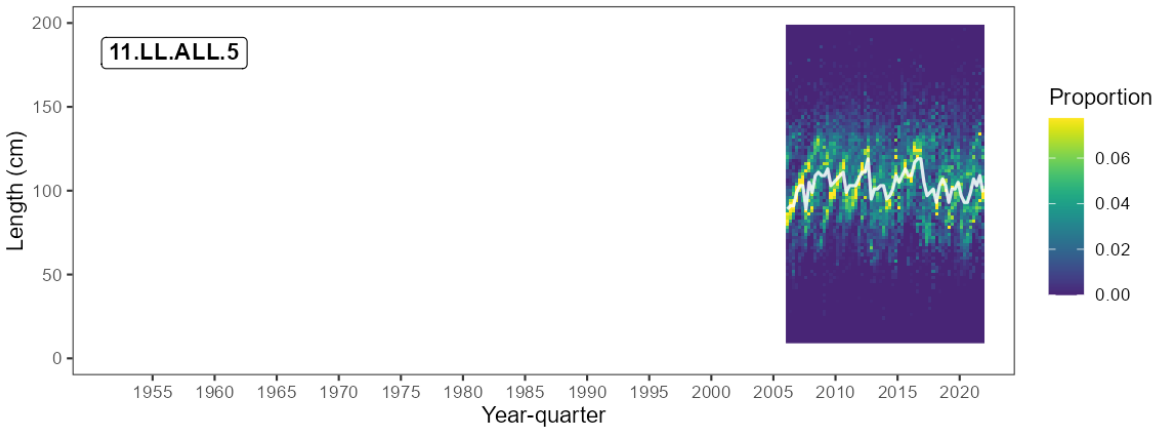


(b) 'Stronger filtering' option

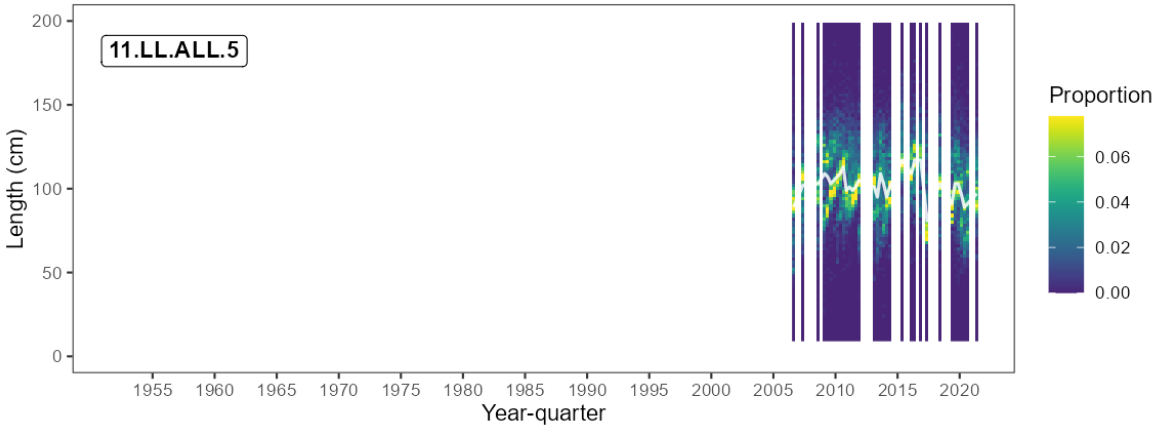


(c) 'Strongest filtering' option

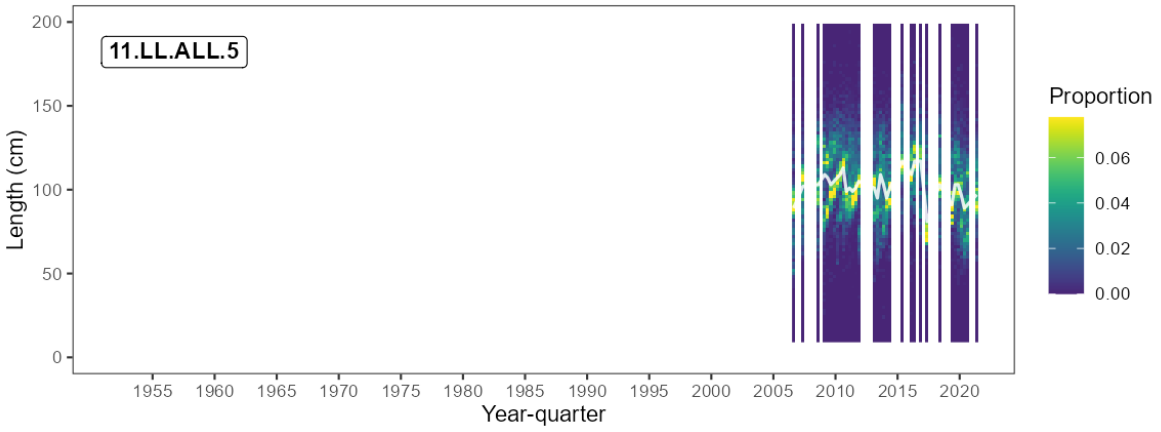
Figure B.45: Input sample sizes for reweighted length compositions of bigeye for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

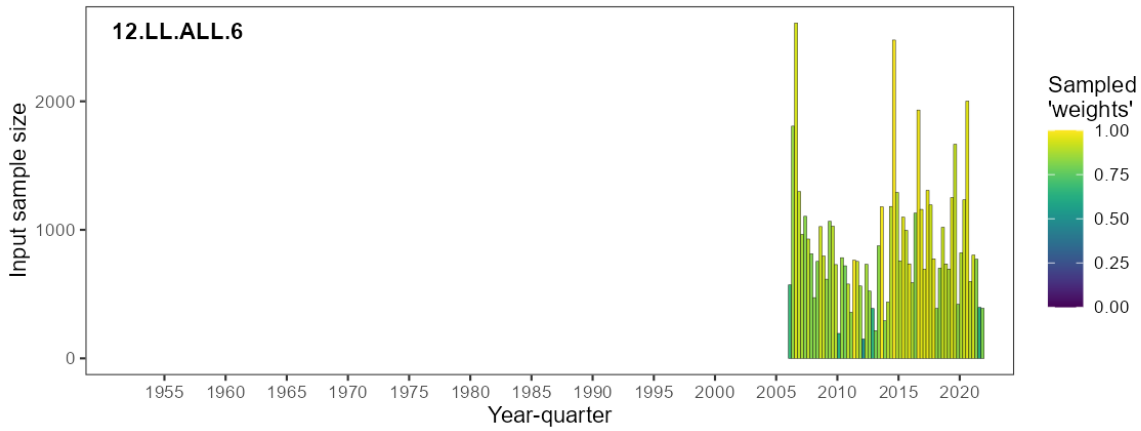


(b) 'Stronger filtering' option

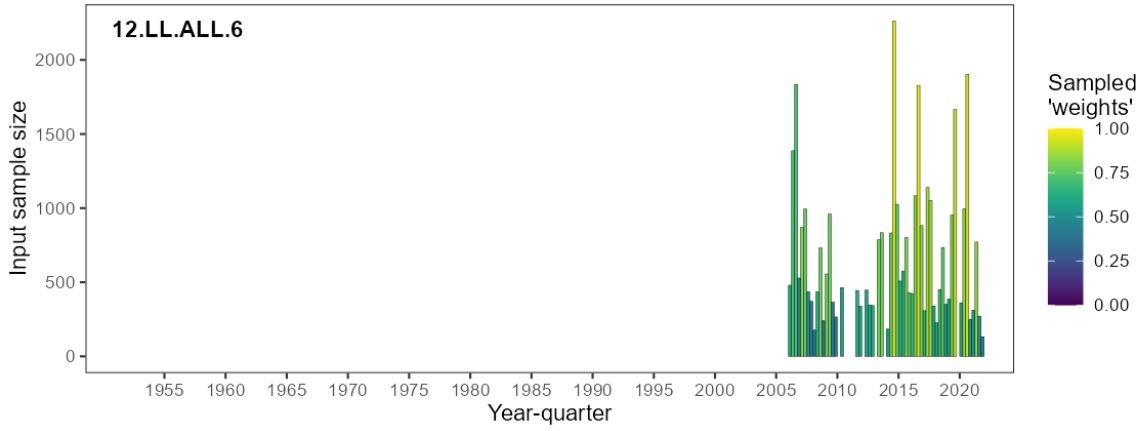


(c) 'Strongest filtering' option

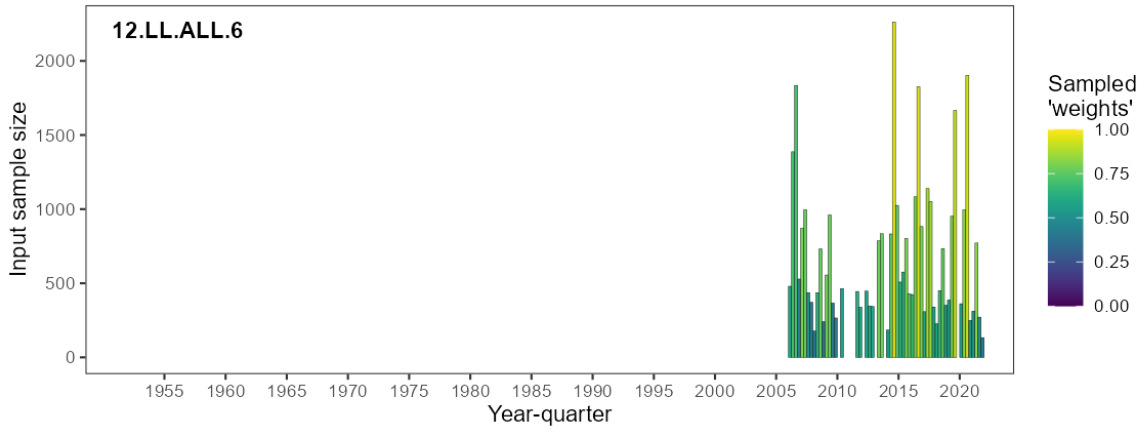
Figure B.46: Reweighted length compositions of bigeye for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

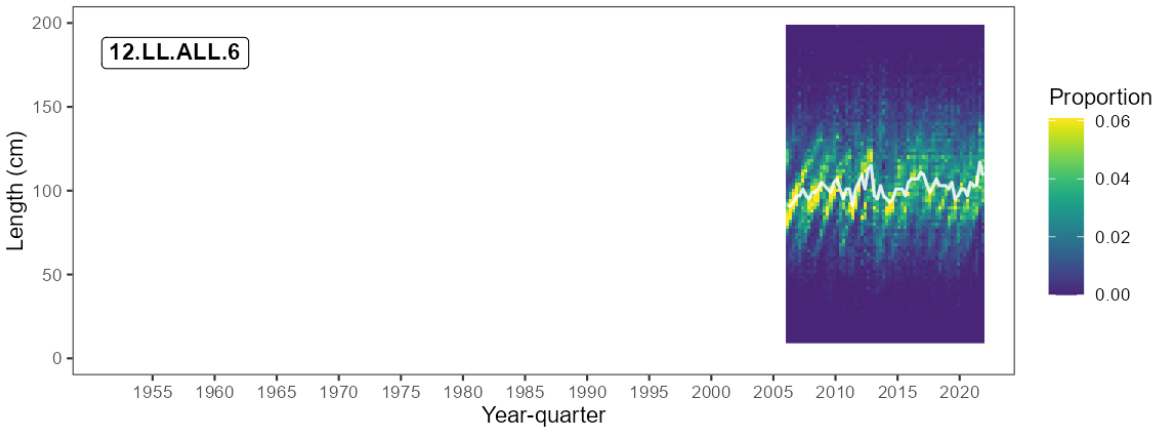


(b) 'Stronger filtering' option

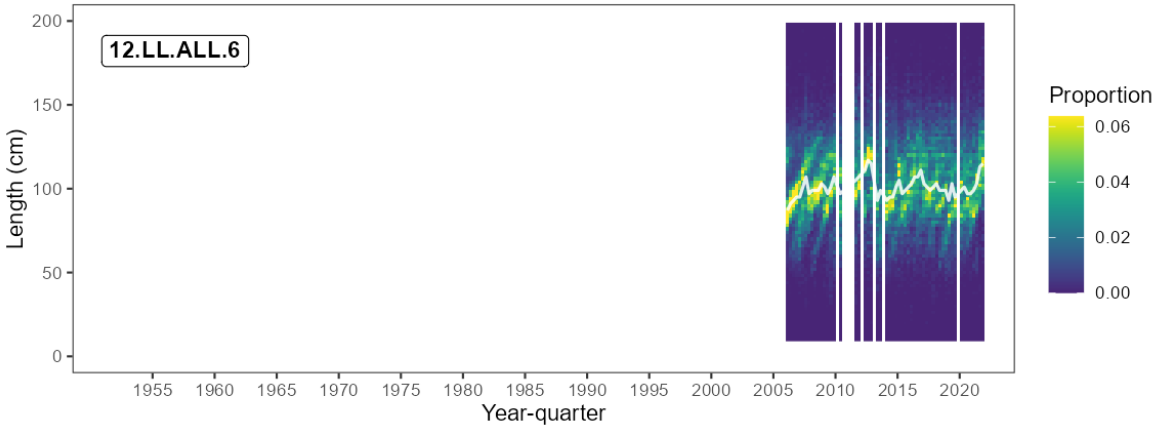


(c) 'Strongest filtering' option

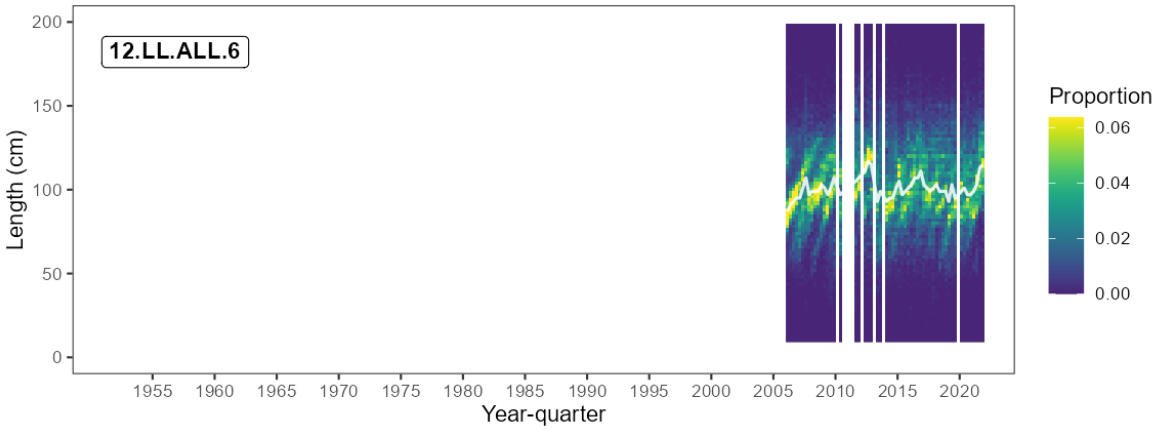
Figure B.47: Input sample sizes for reweighted length compositions of bigeye for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

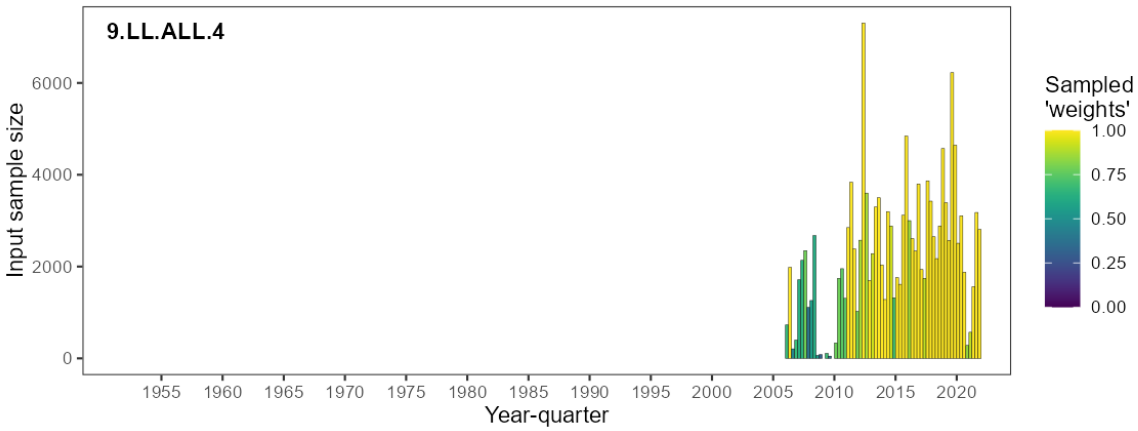


(b) 'Stronger filtering' option

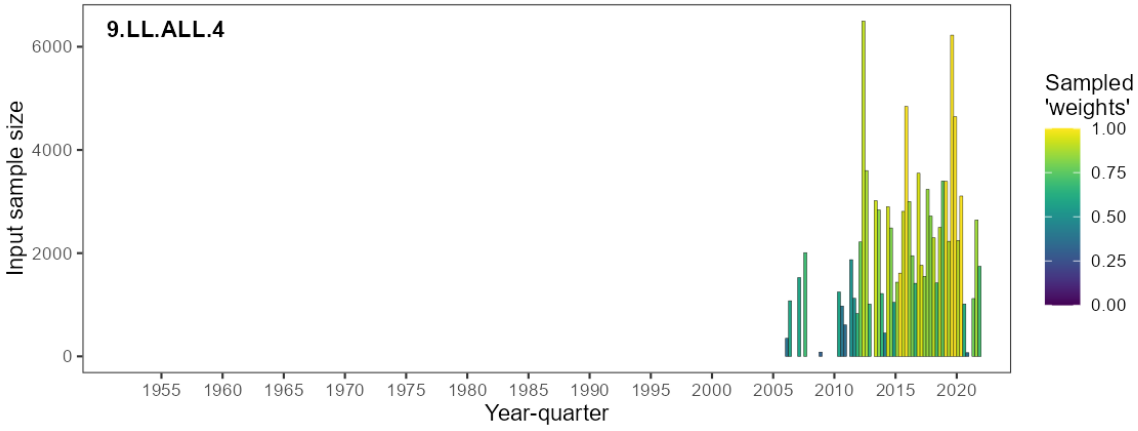


(c) 'Strongest filtering' option

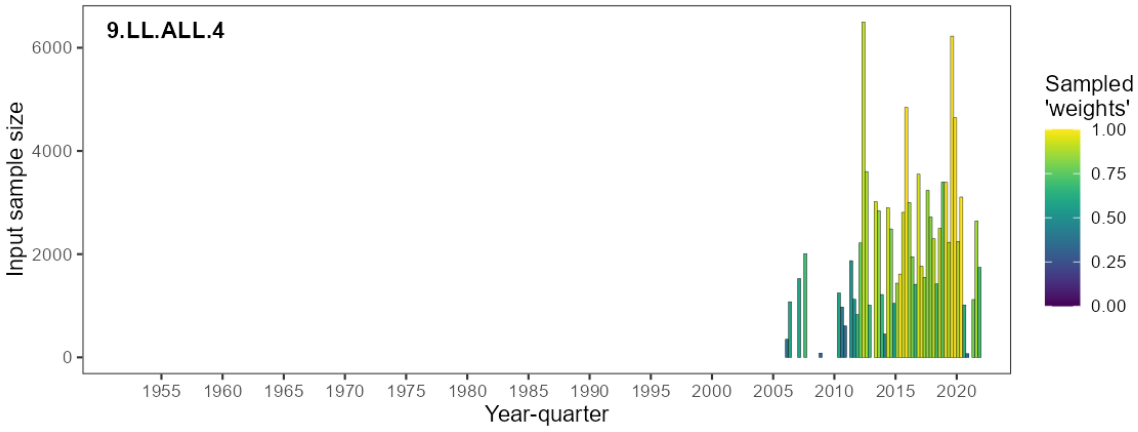
Figure B.48: Reweighted length compositions of bigeye for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

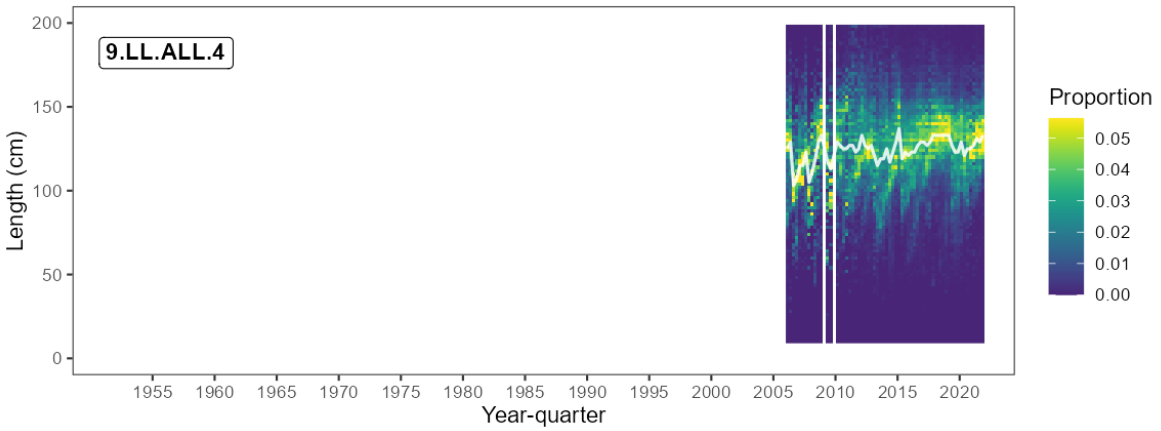


(b) 'Stronger filtering' option

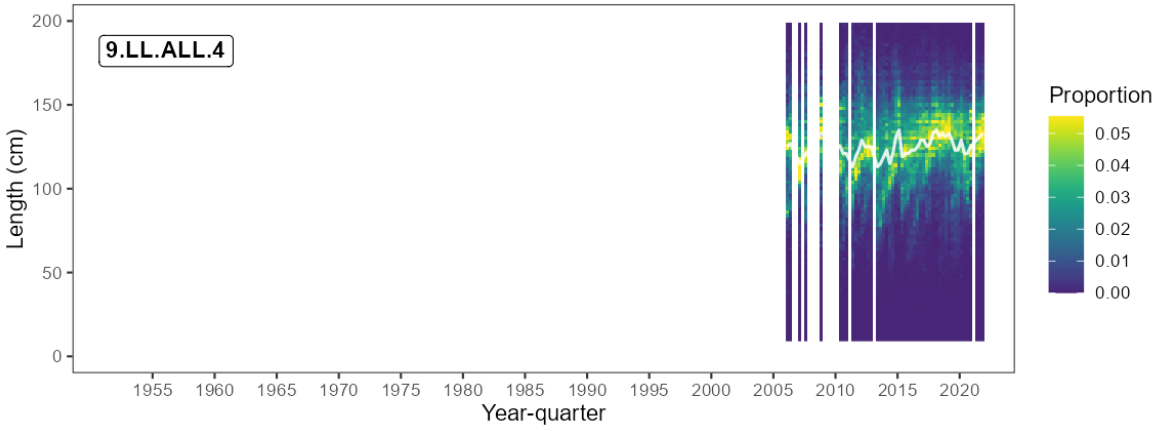


(c) 'Strongest filtering' option

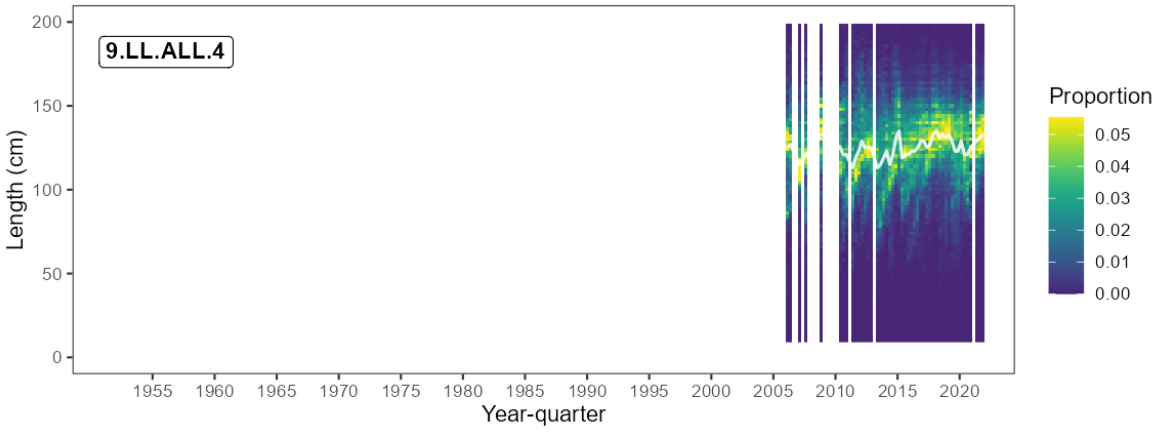
Figure B.49: Input sample sizes for reweighted length compositions of bigeye for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

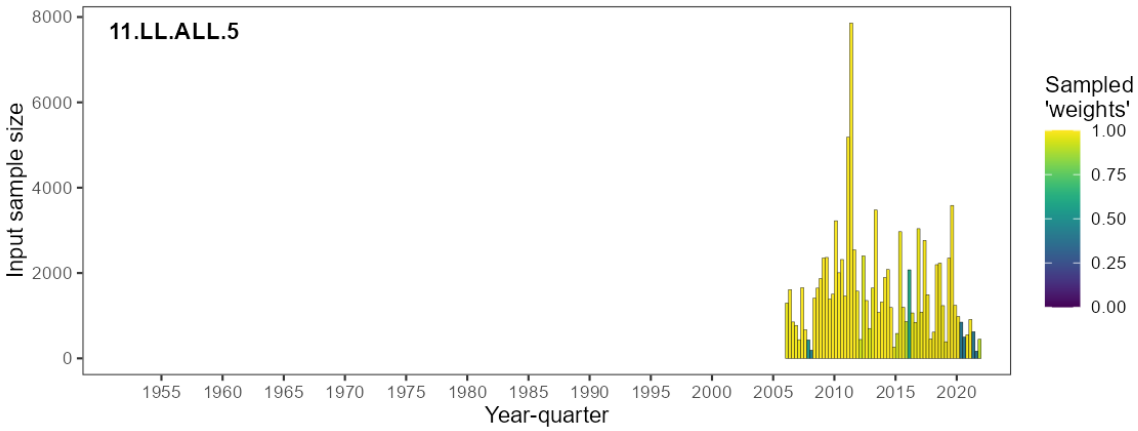


(b) 'Stronger filtering' option

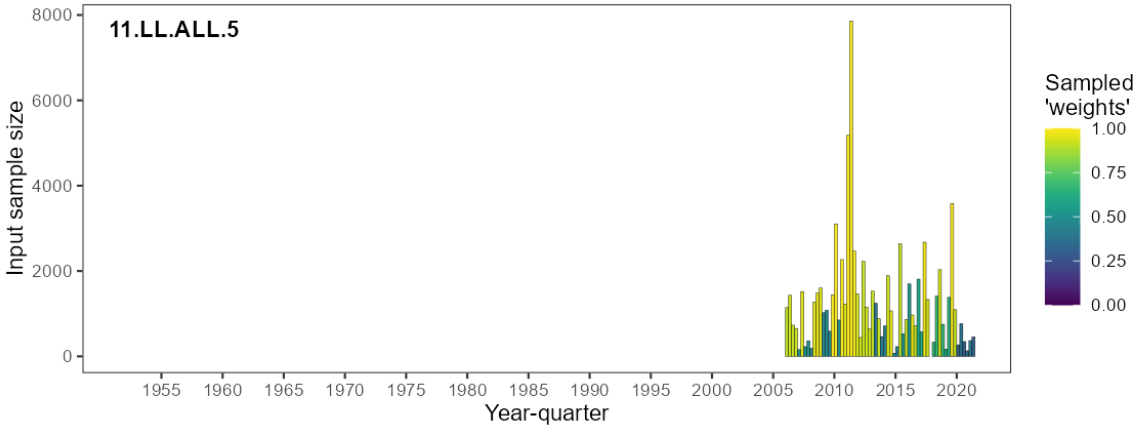


(c) 'Strongest filtering' option

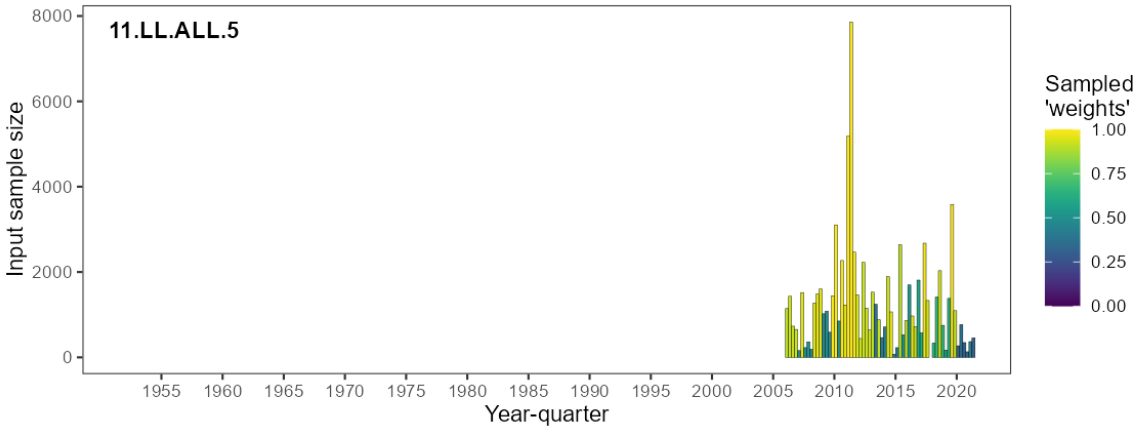
Figure B.50: Reweighted length compositions of bigeye for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

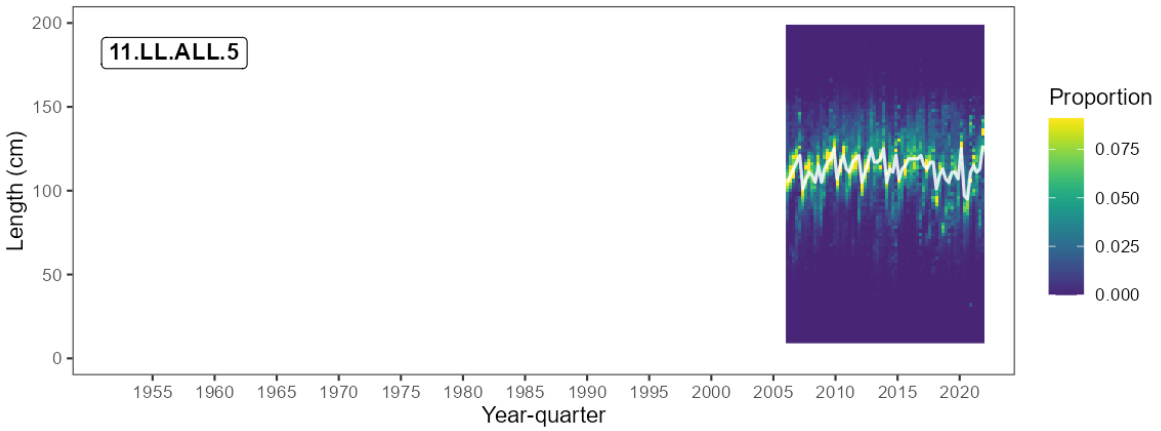


(b) 'Stronger filtering' option

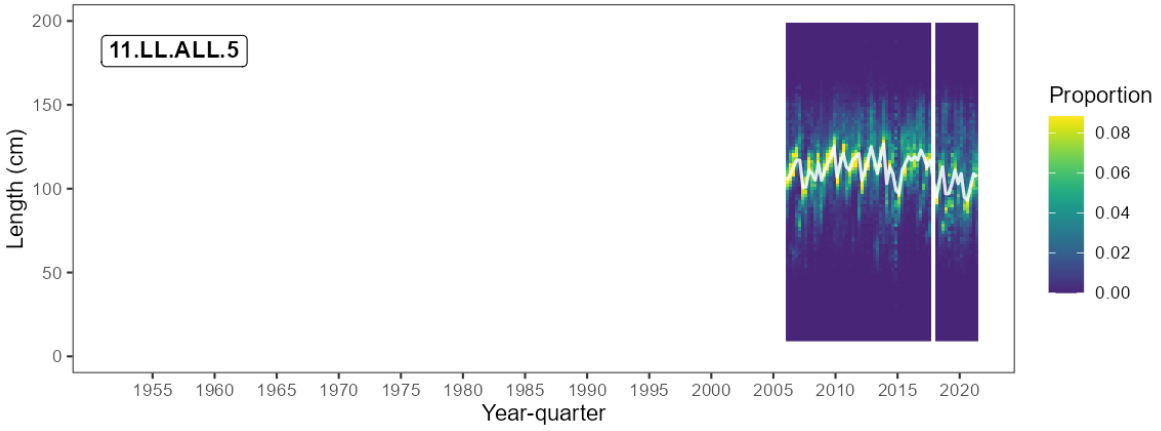


(c) 'Strongest filtering' option

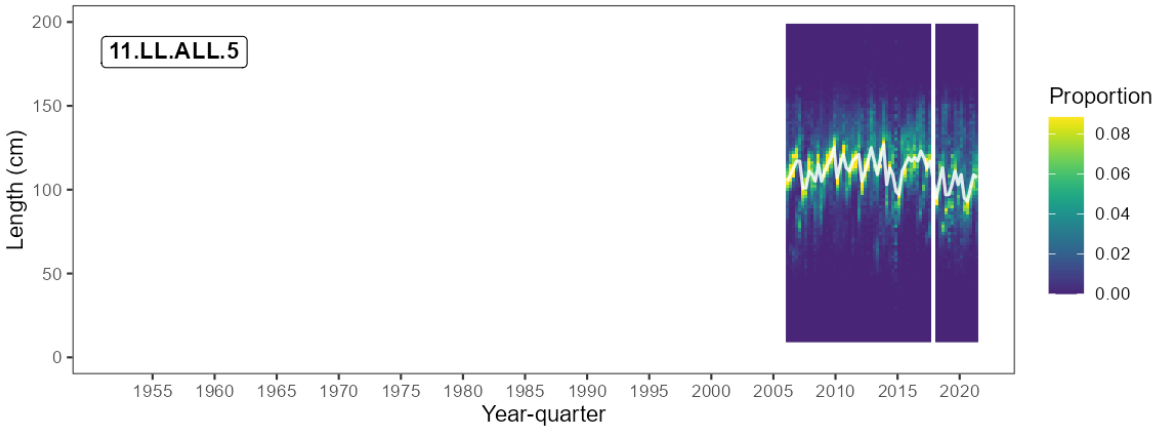
Figure B.51: Input sample sizes for reweighted length compositions of yellowfin for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

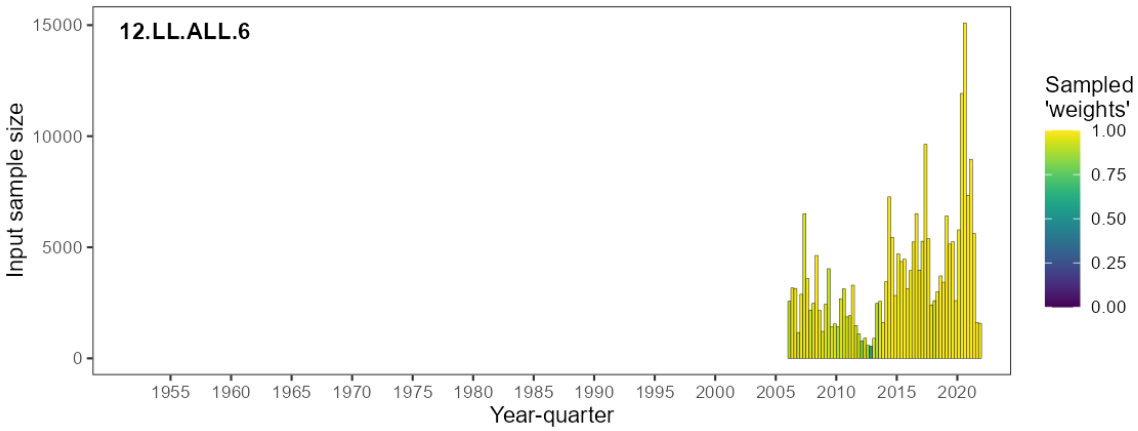


(b) 'Stronger filtering' option

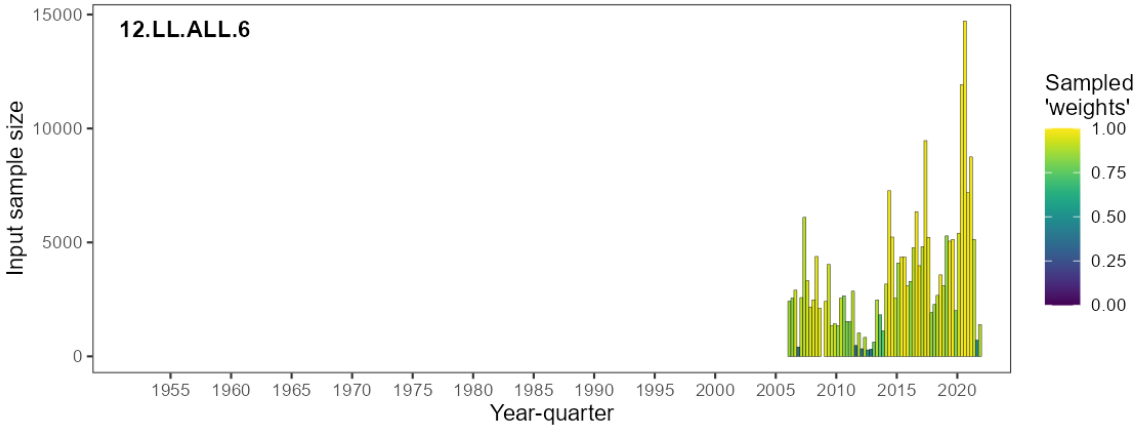


(c) 'Strongest filtering' option

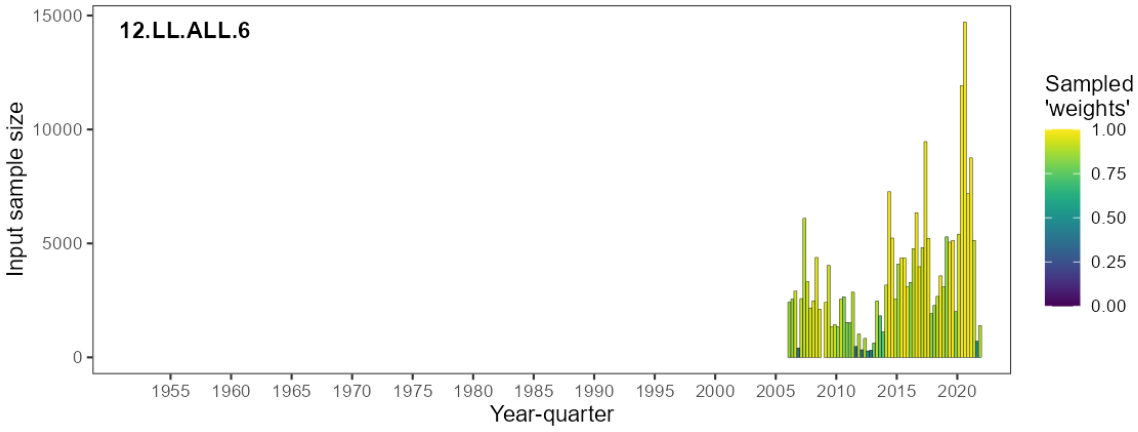
Figure B.52: Reweighted length compositions of yellowfin for the longline extraction fishery 11.LL.ALL.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

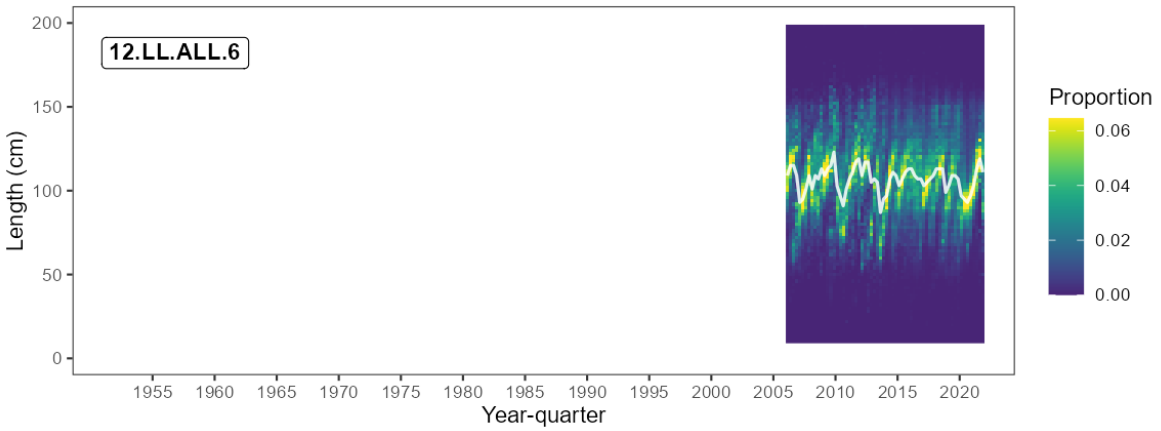


(b) 'Stronger filtering' option

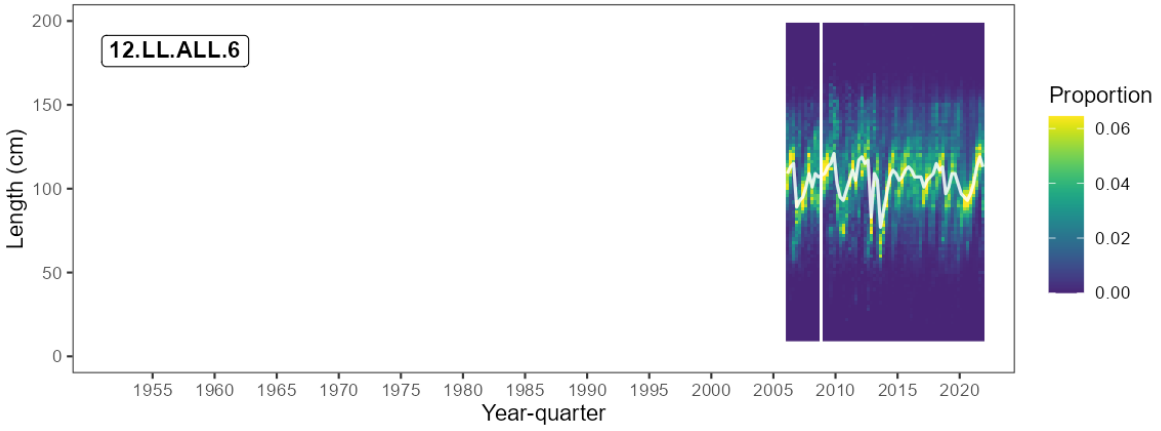


(c) 'Strongest filtering' option

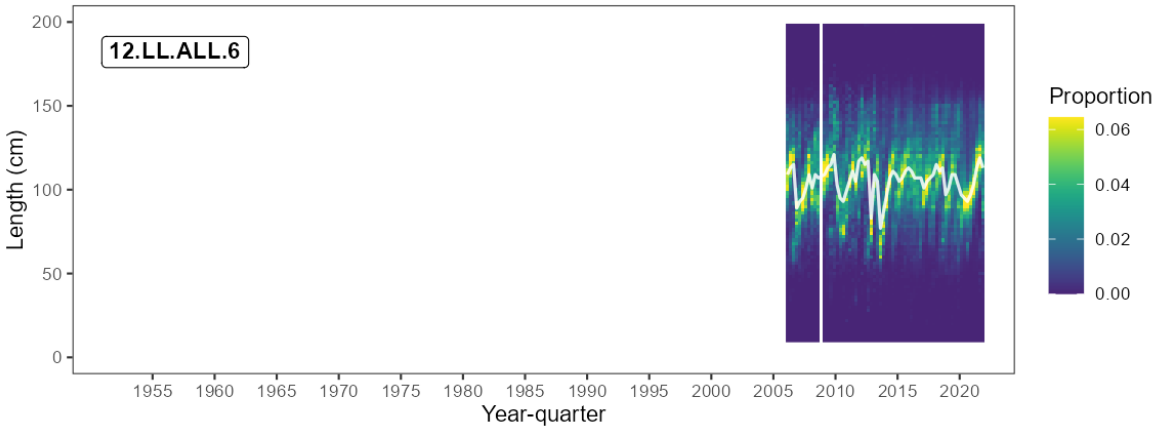
Figure B.53: Input sample sizes for reweighted length compositions of yellowfin for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

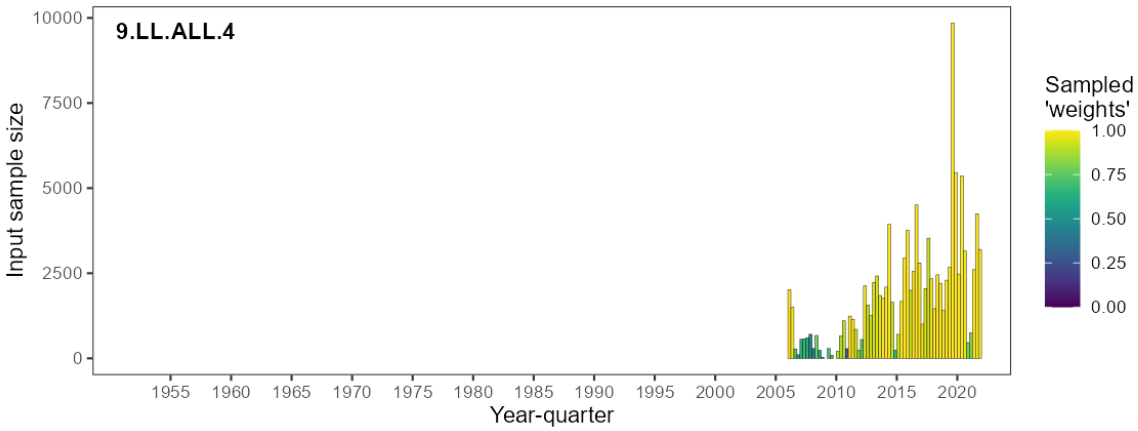


(b) 'Stronger filtering' option

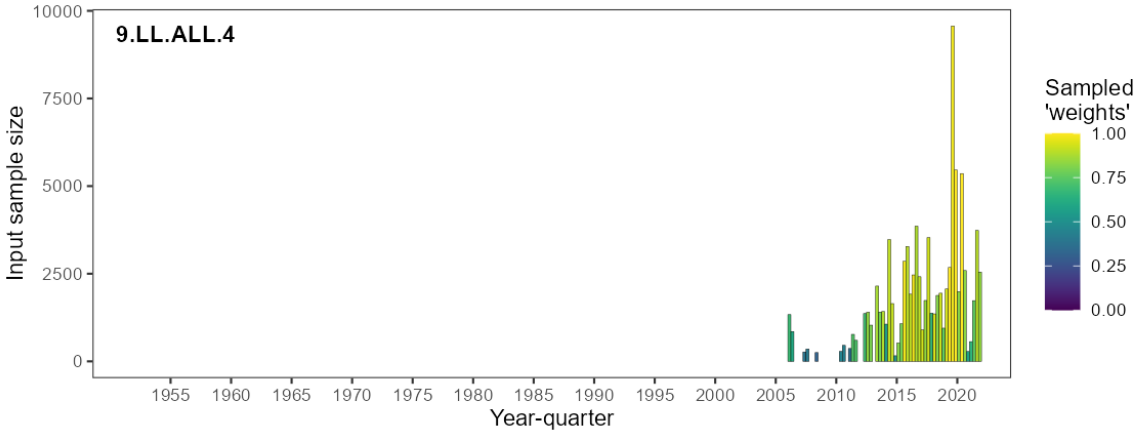


(c) 'Strongest filtering' option

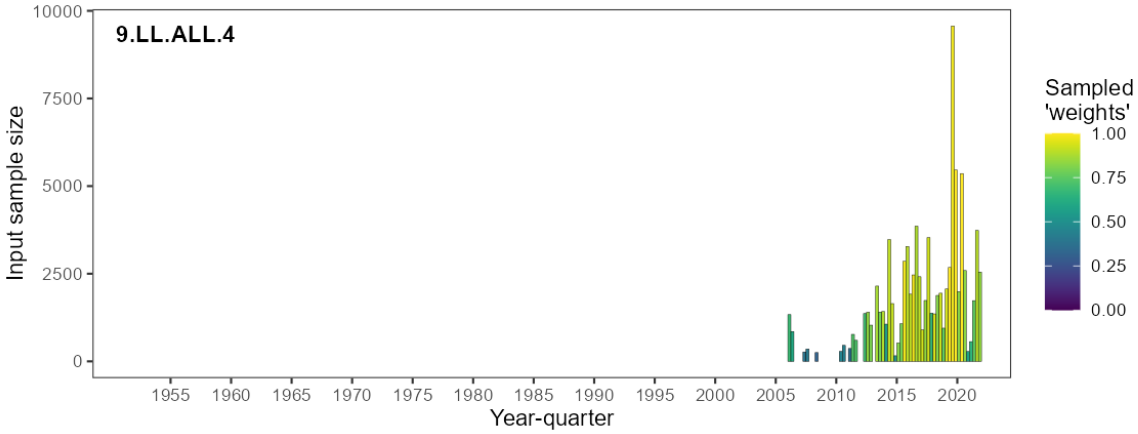
Figure B.54: Reweighted length compositions of yellowfin for the longline extraction fishery 12.LL.ALL.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

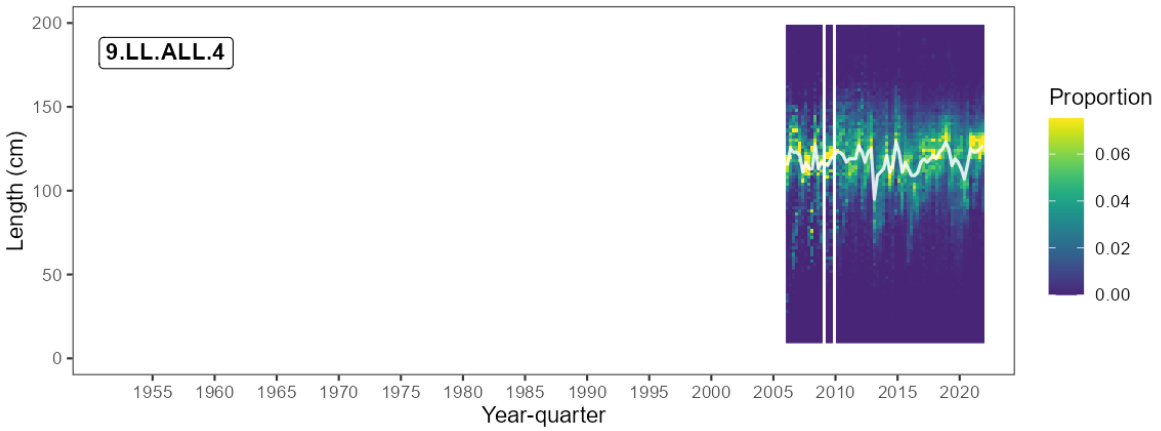


(b) 'Stronger filtering' option

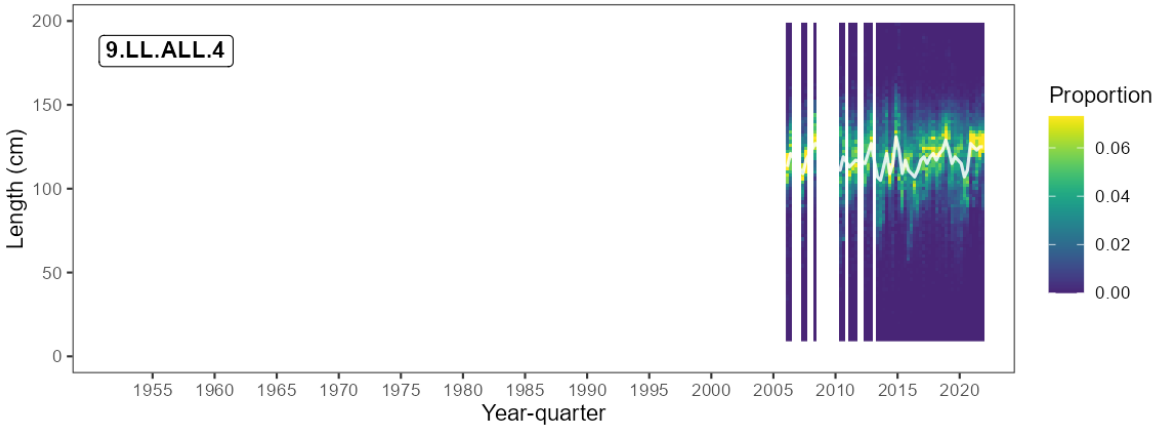


(c) 'Strongest filtering' option

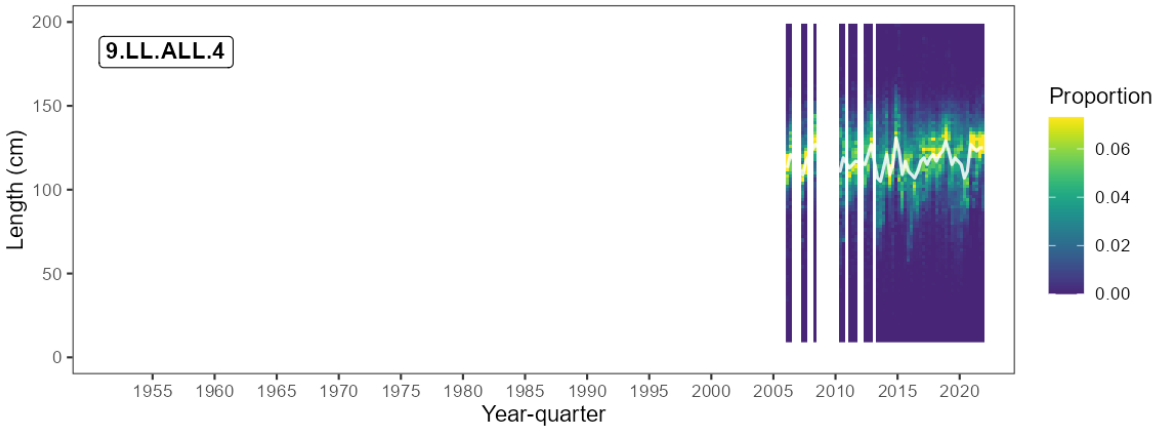
Figure B.55: Input sample sizes for reweighted length compositions of yellowfin for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option



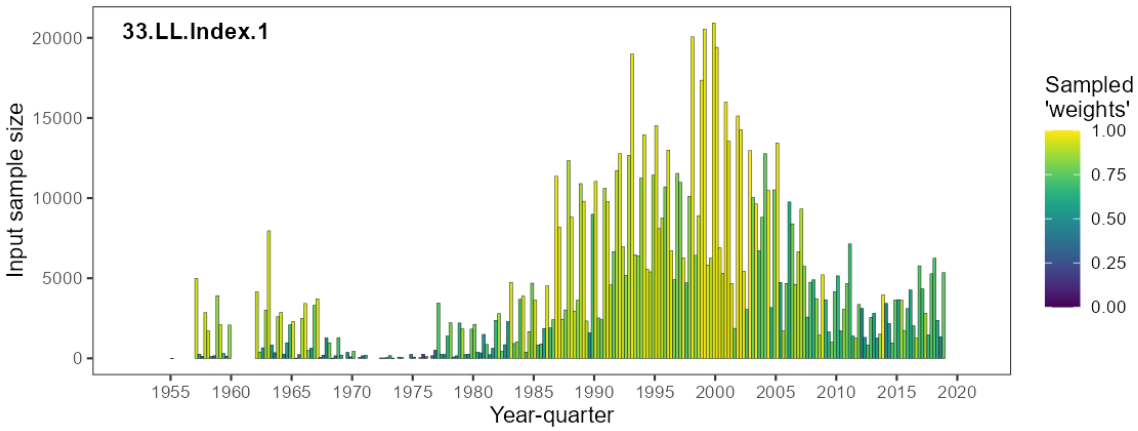
(b) 'Stronger filtering' option



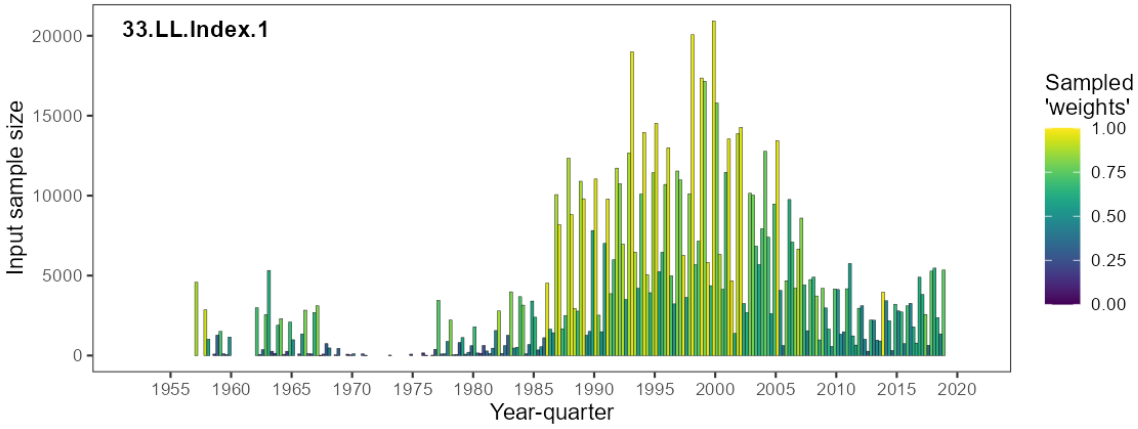
(c) 'Strongest filtering' option

Figure B.56: Reweighted length compositions of yellowfin for the longline extraction fishery 9.LL.ALL.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

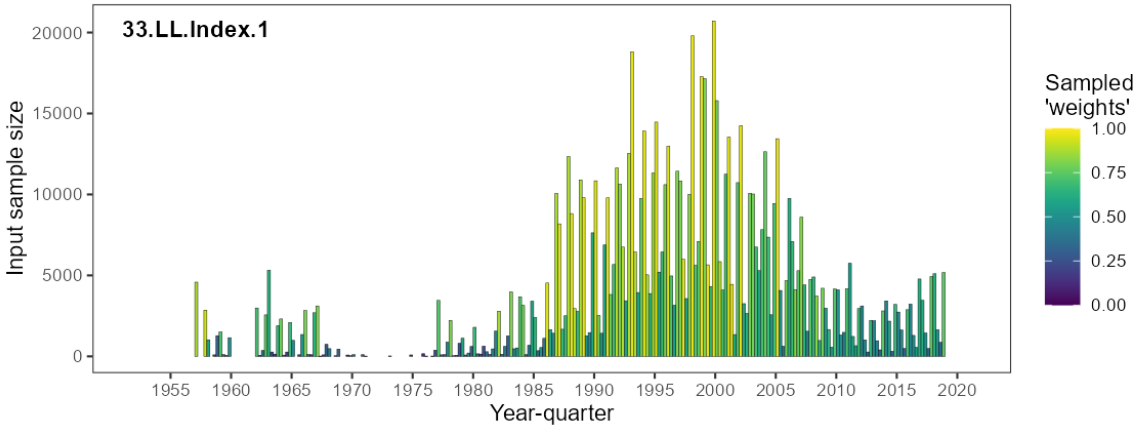
C Longline index fishery compositions with the nine region structure



(a) 'Weak filtering' option

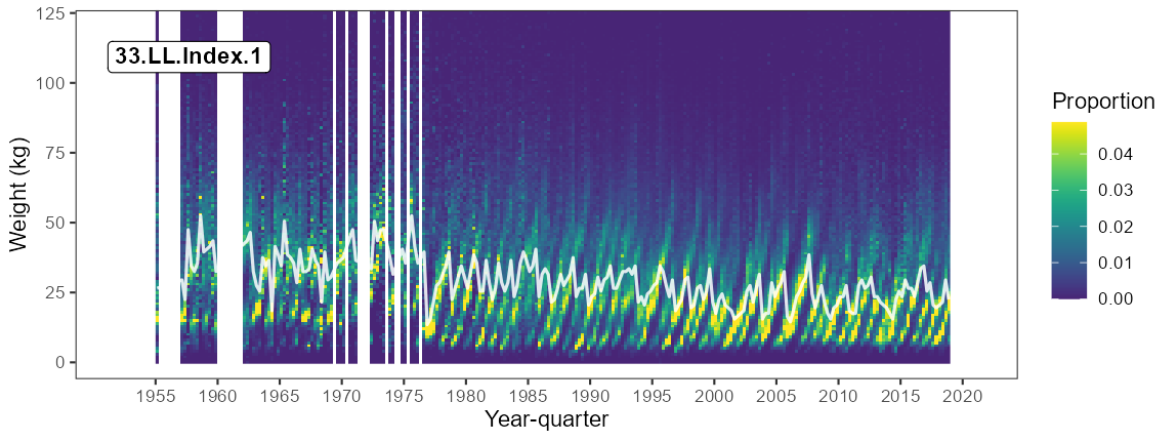


(b) 'Stronger filtering' option

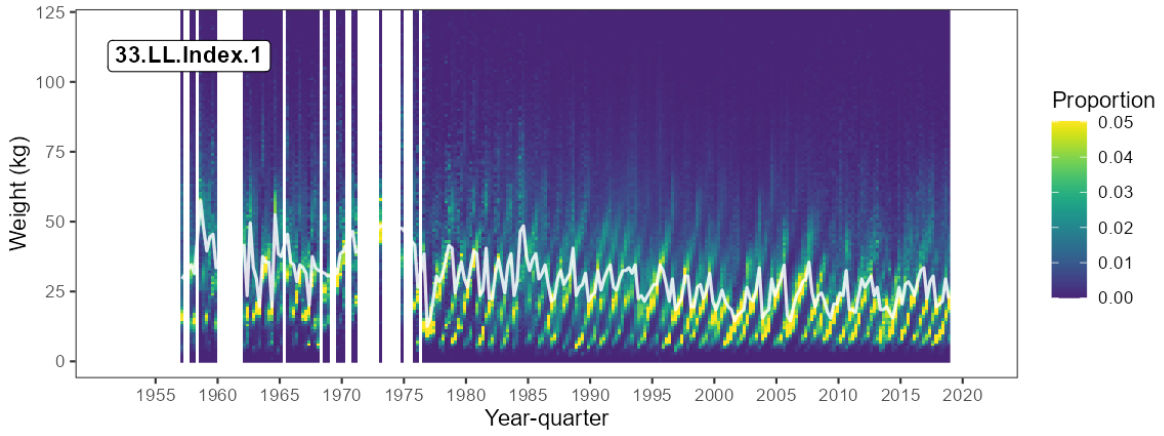


(c) 'Strongest filtering' option

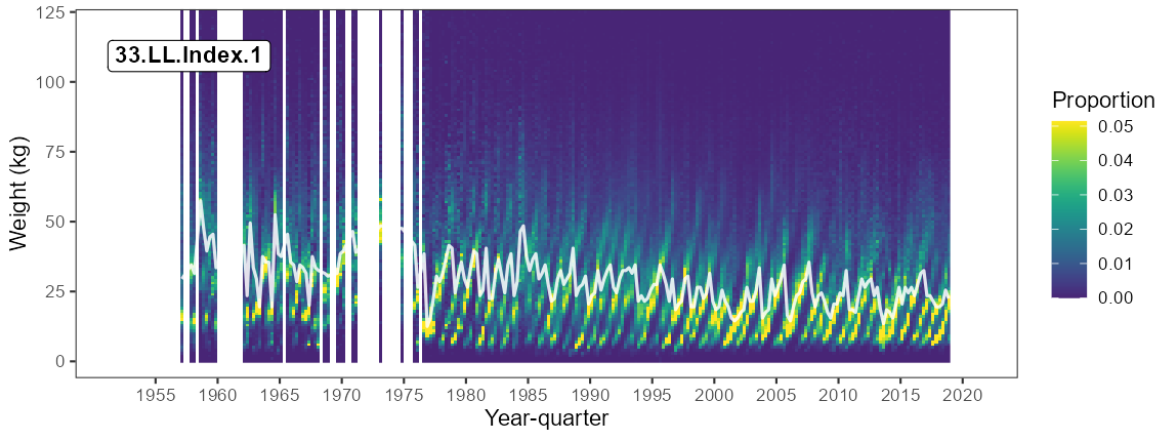
Figure C.1: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

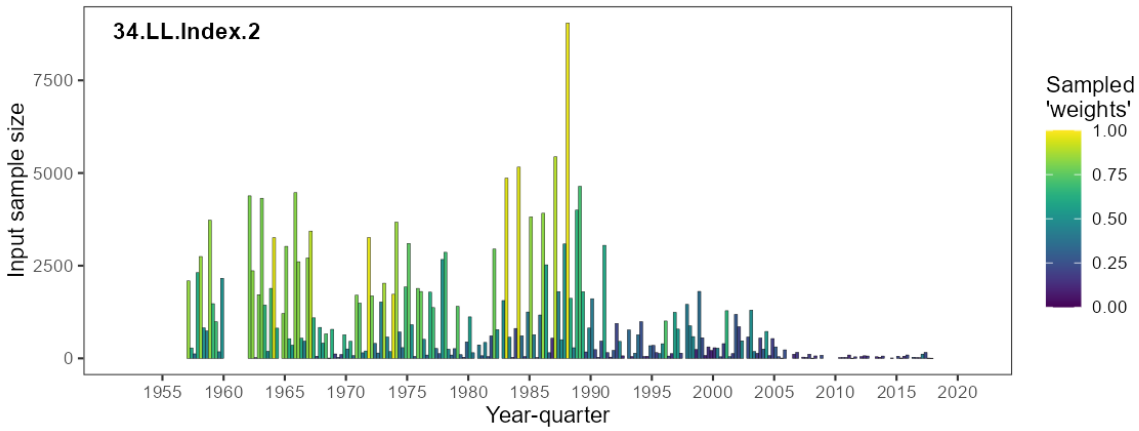


(b) 'Stronger filtering' option

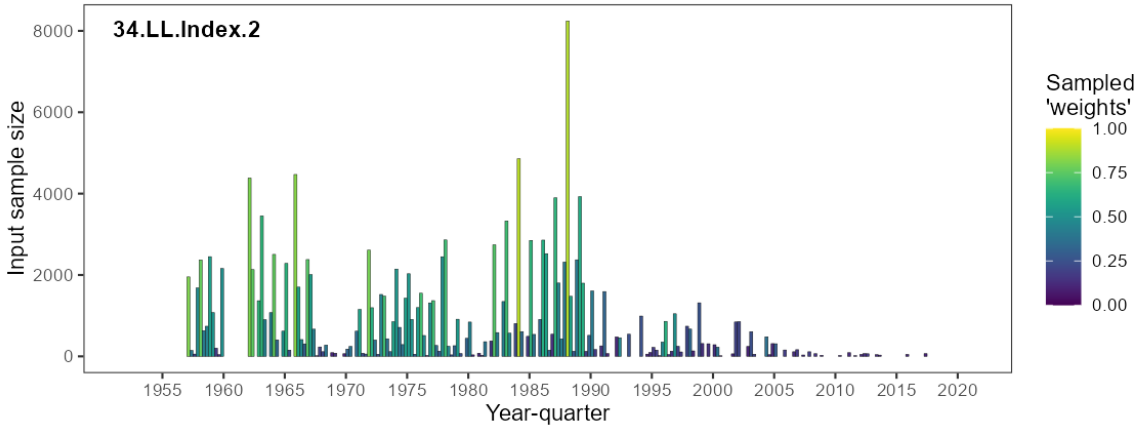


(c) 'Strongest filtering' option

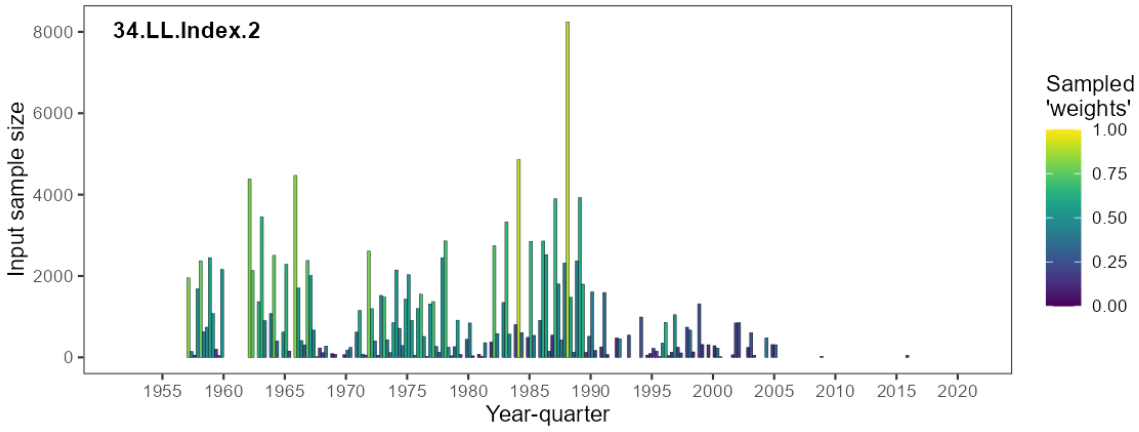
Figure C.2: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

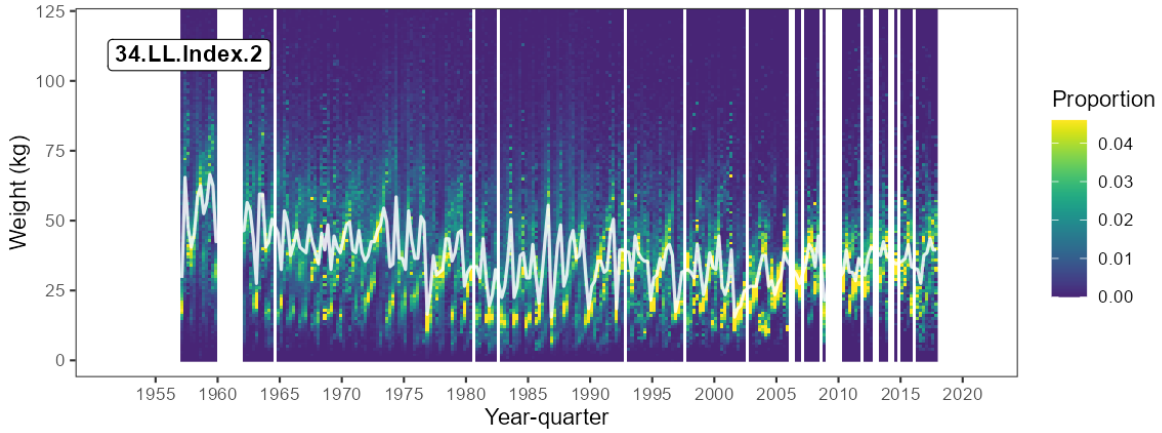


(b) 'Stronger filtering' option

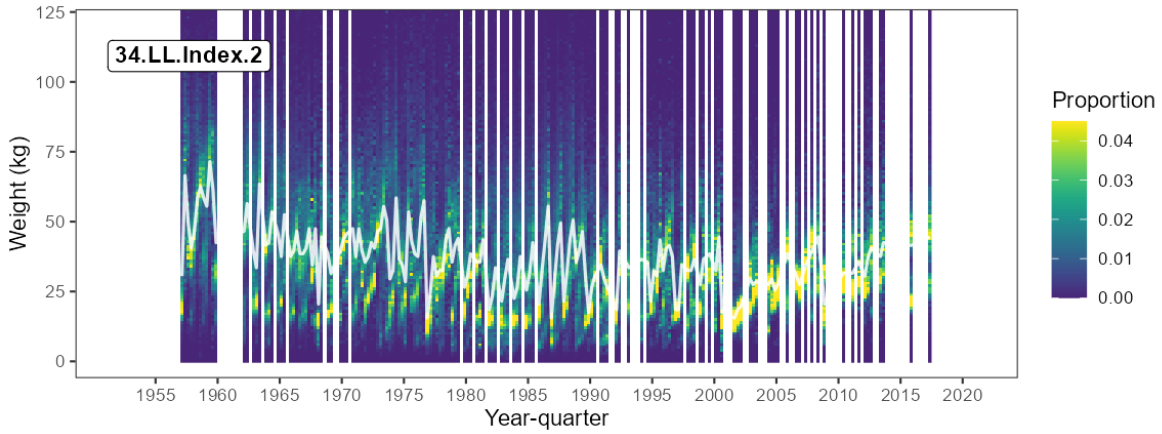


(c) 'Strongest filtering' option

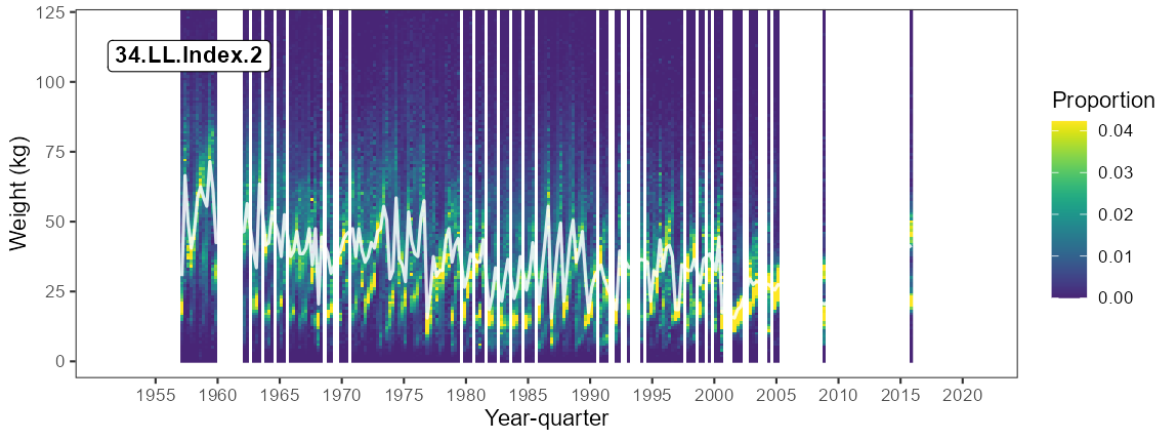
Figure C.3: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

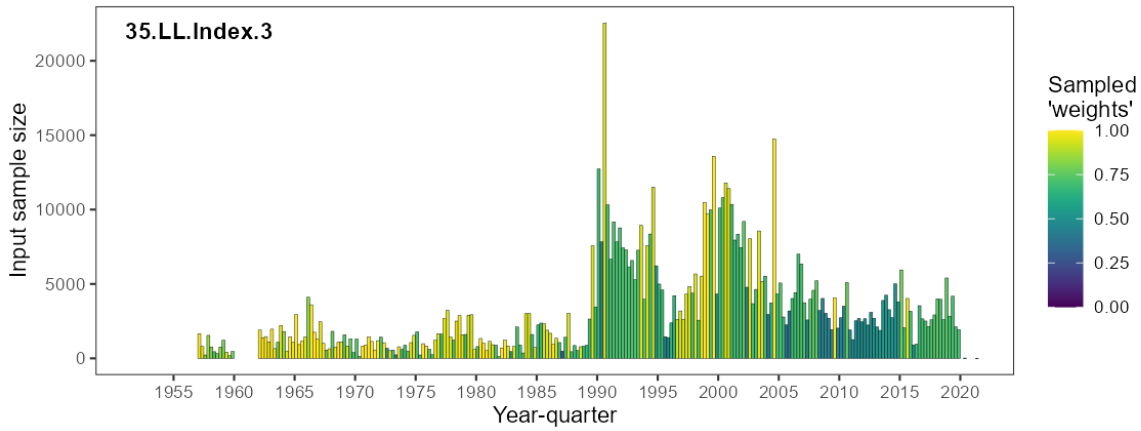


(b) 'Stronger filtering' option

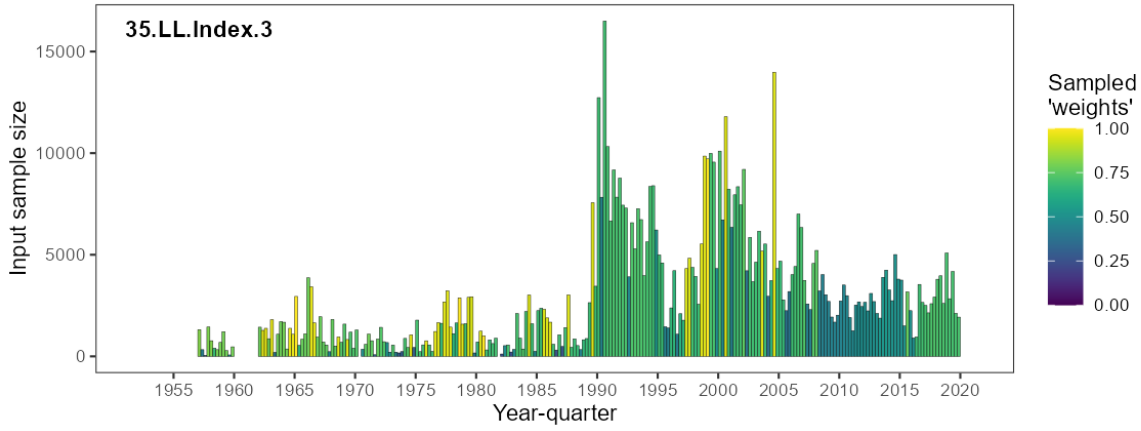


(c) 'Strongest filtering' option

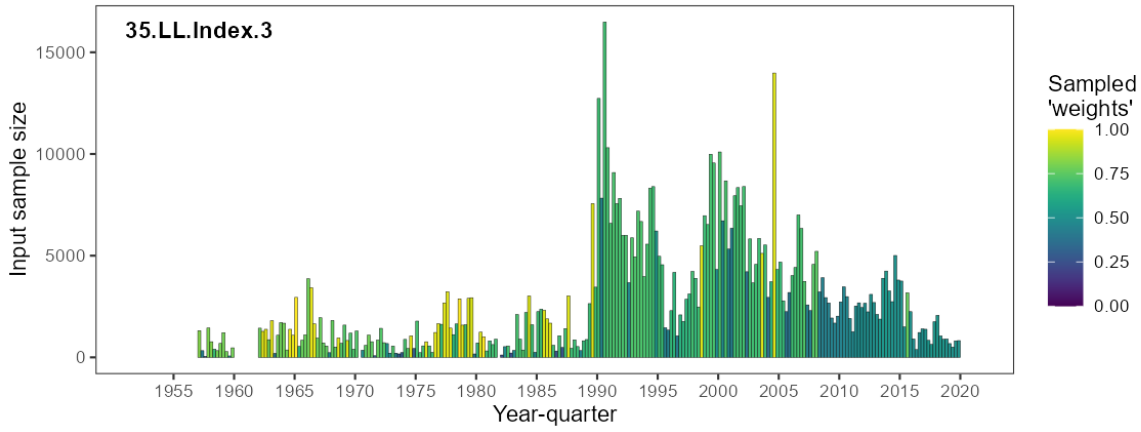
Figure C.4: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

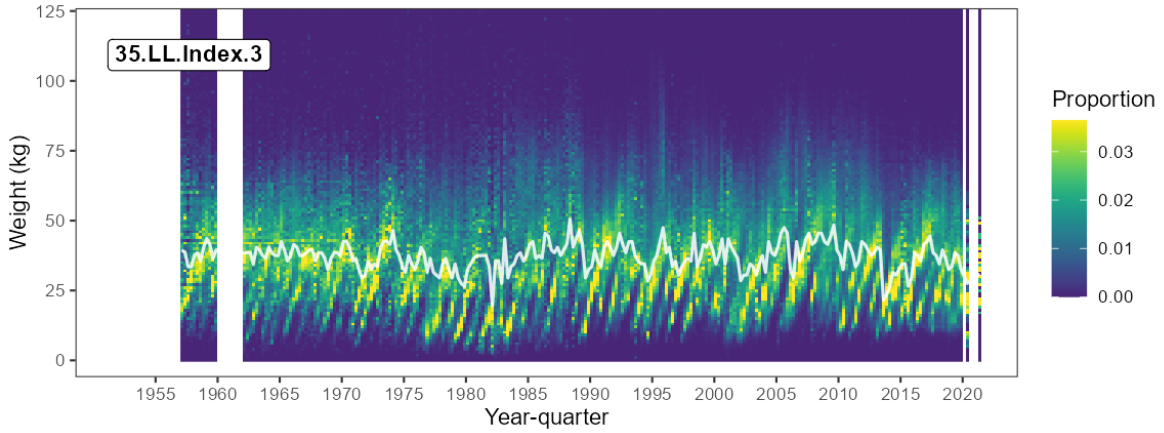


(b) 'Stronger filtering' option

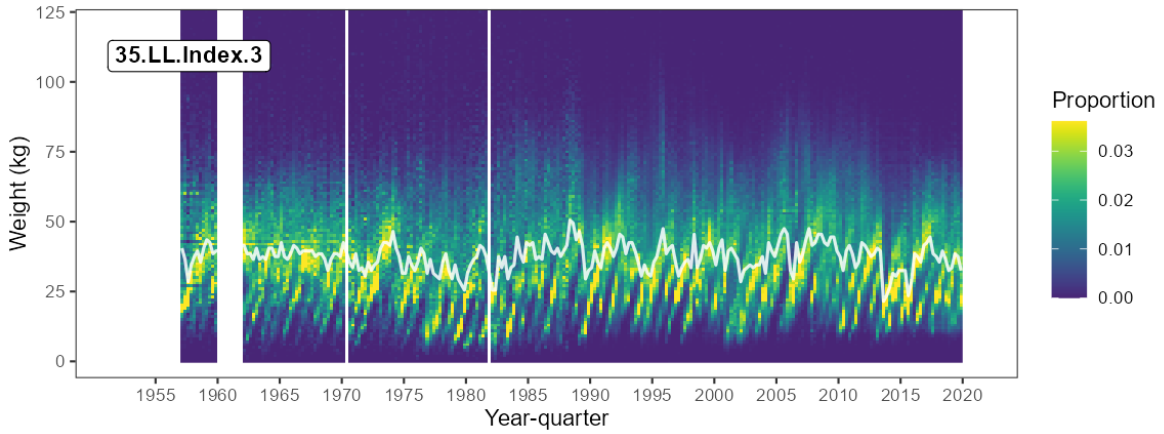


(c) 'Strongest filtering' option

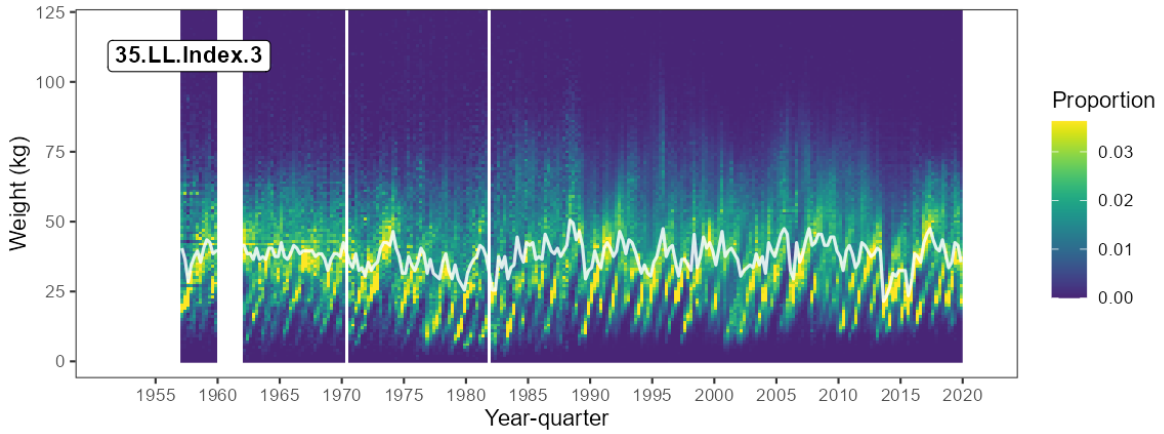
Figure C.5: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

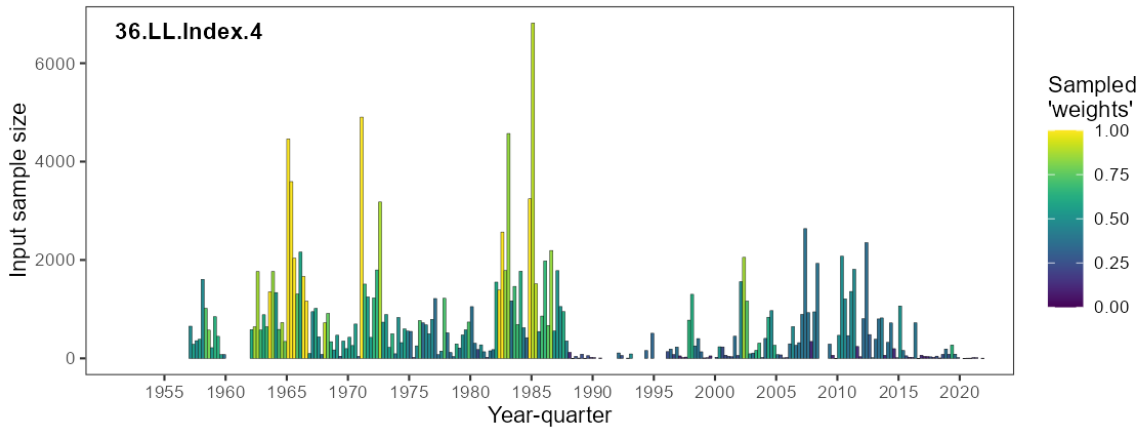


(b) 'Stronger filtering' option

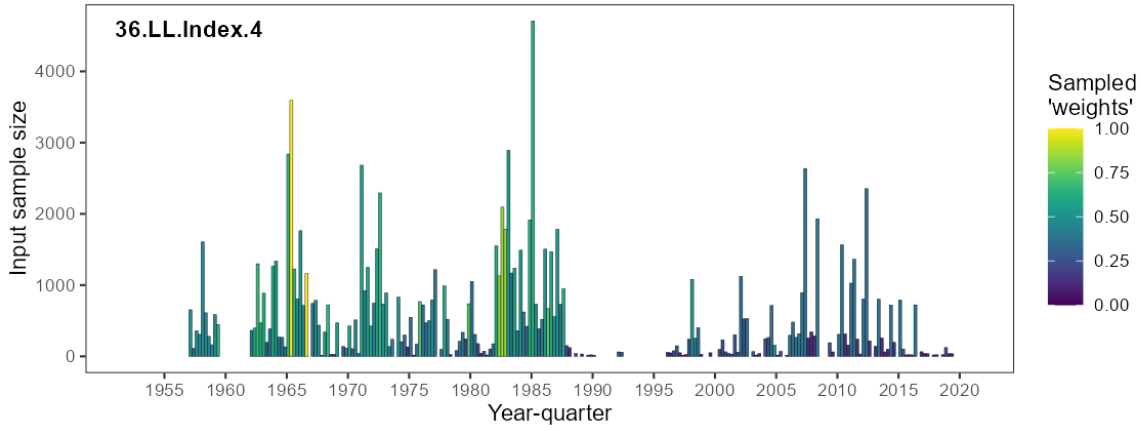


(c) 'Strongest filtering' option

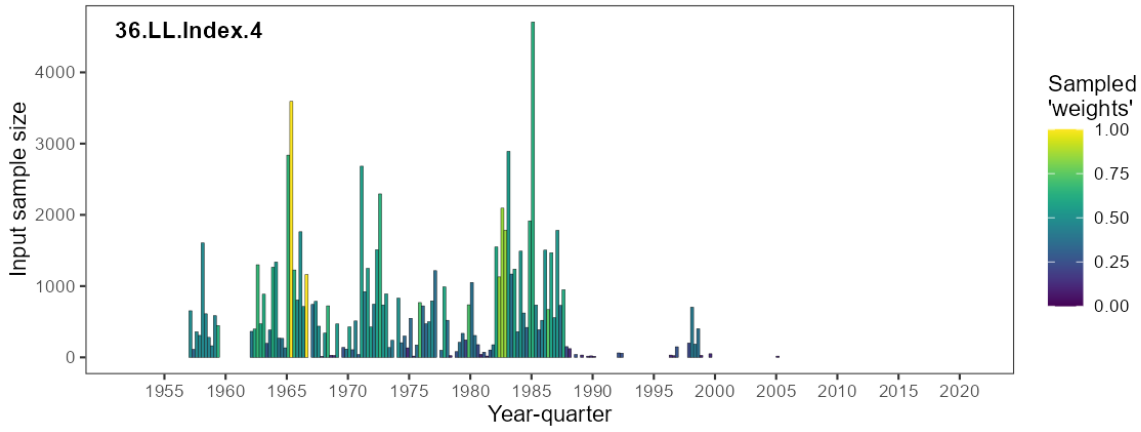
Figure C.6: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

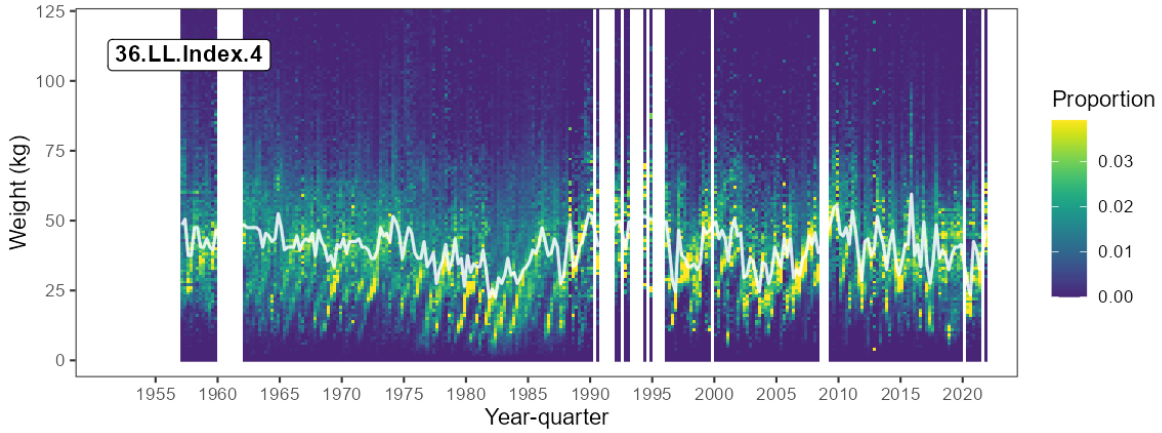


(b) 'Stronger filtering' option

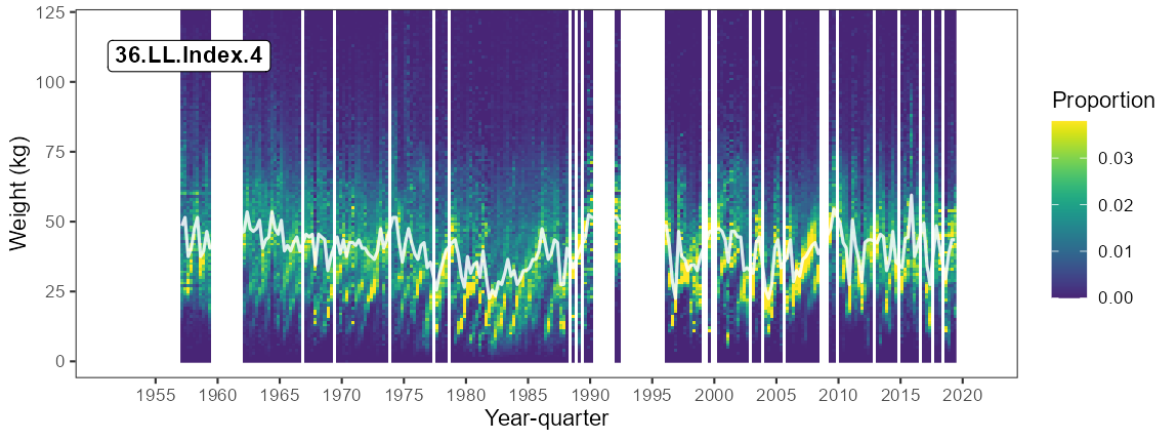


(c) 'Strongest filtering' option

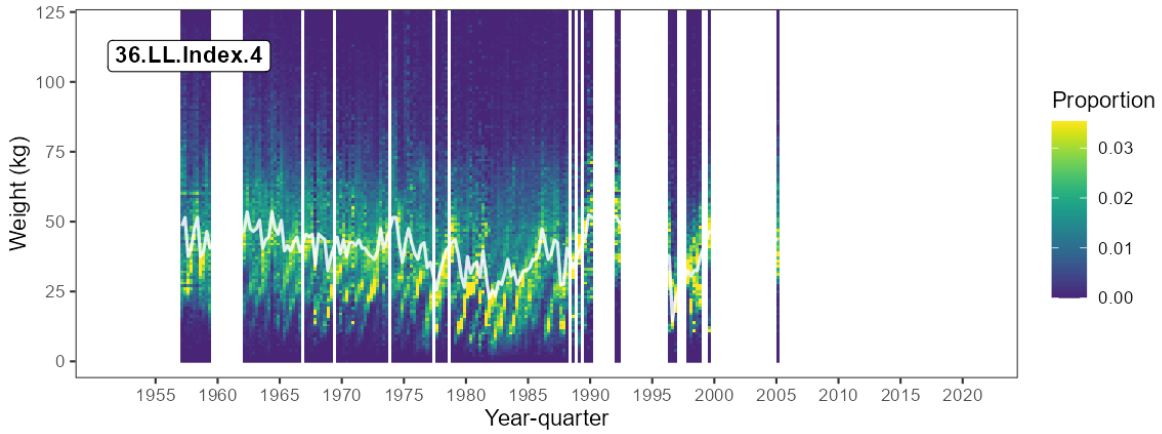
Figure C.7: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

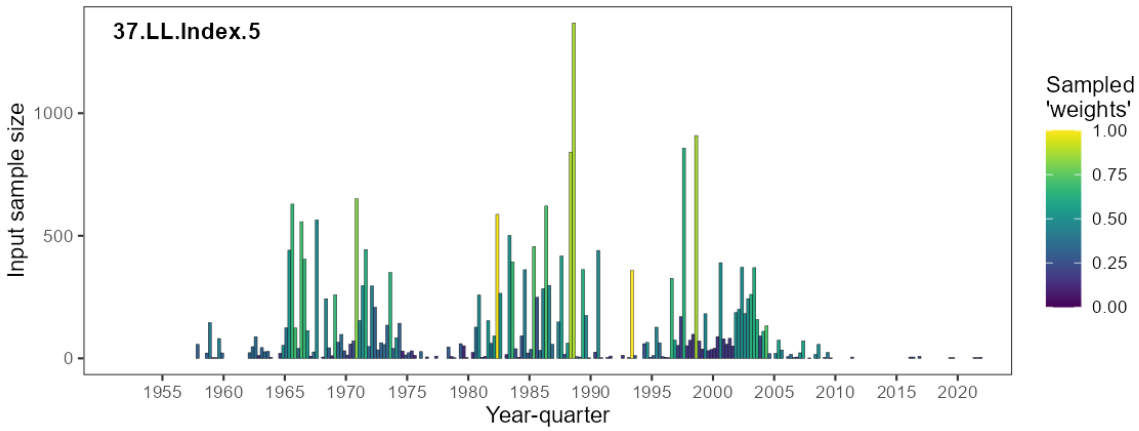


(b) 'Stronger filtering' option

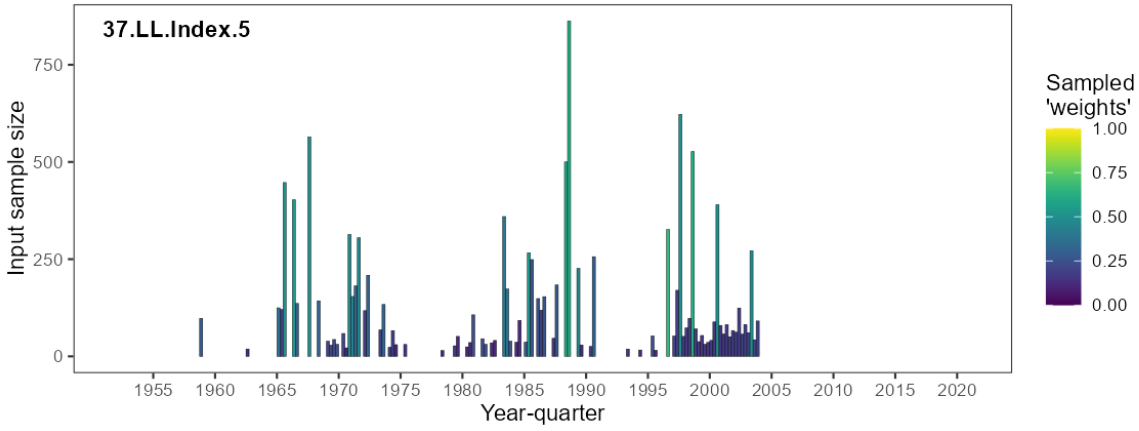


(c) 'Strongest filtering' option

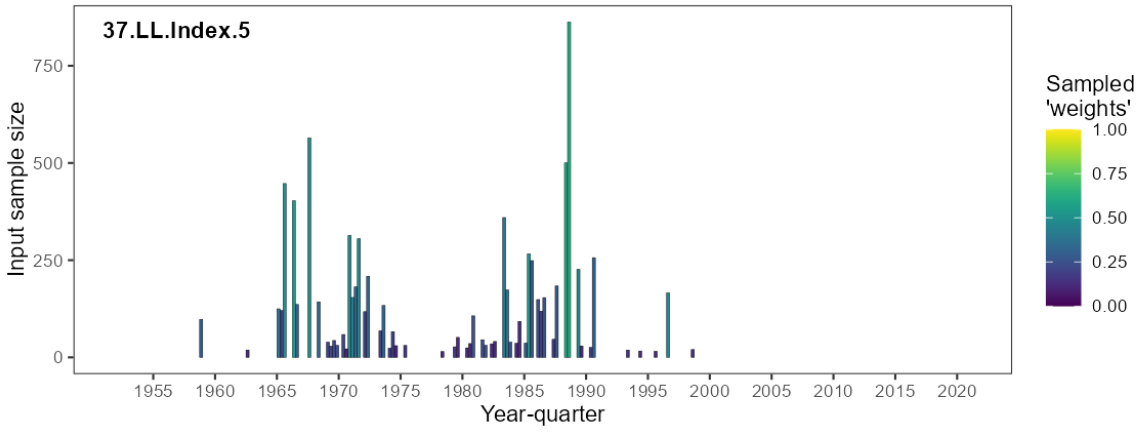
Figure C.8: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

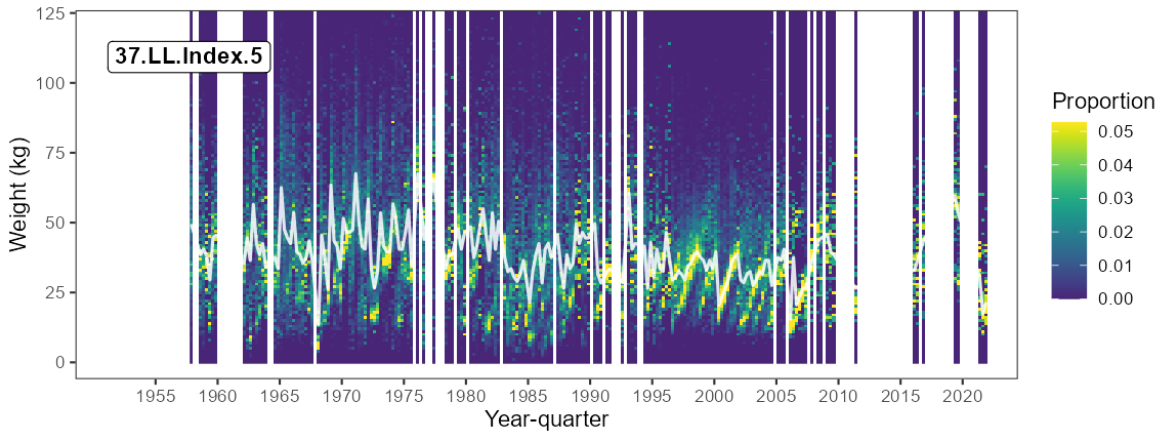


(b) 'Stronger filtering' option

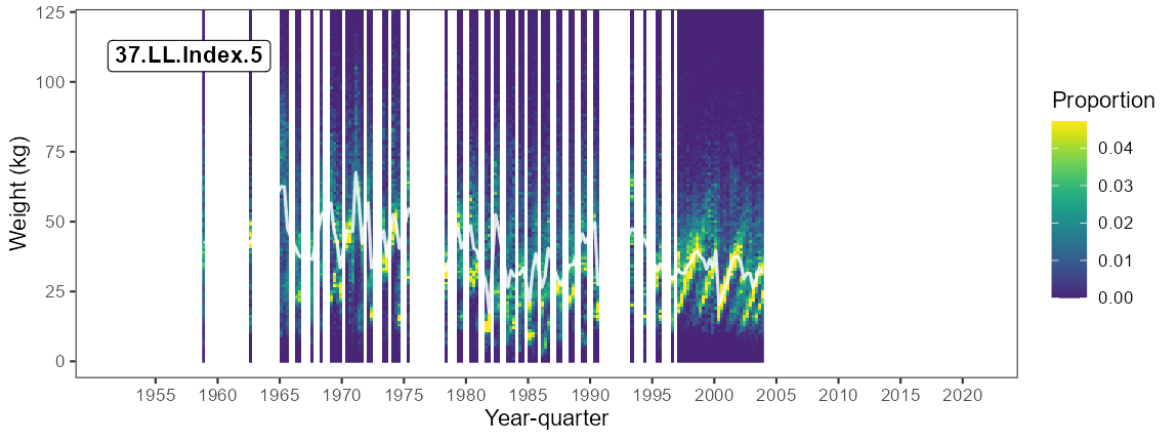


(c) 'Strongest filtering' option

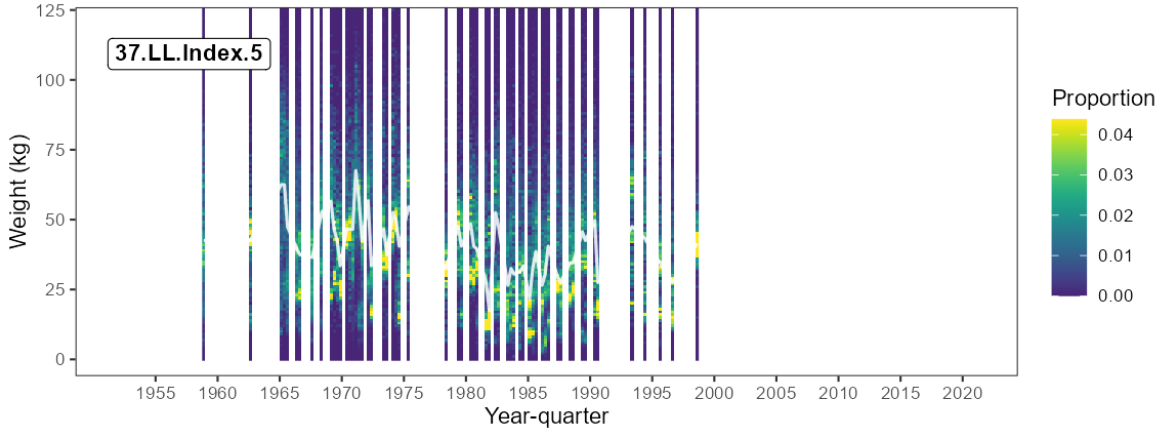
Figure C.9: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

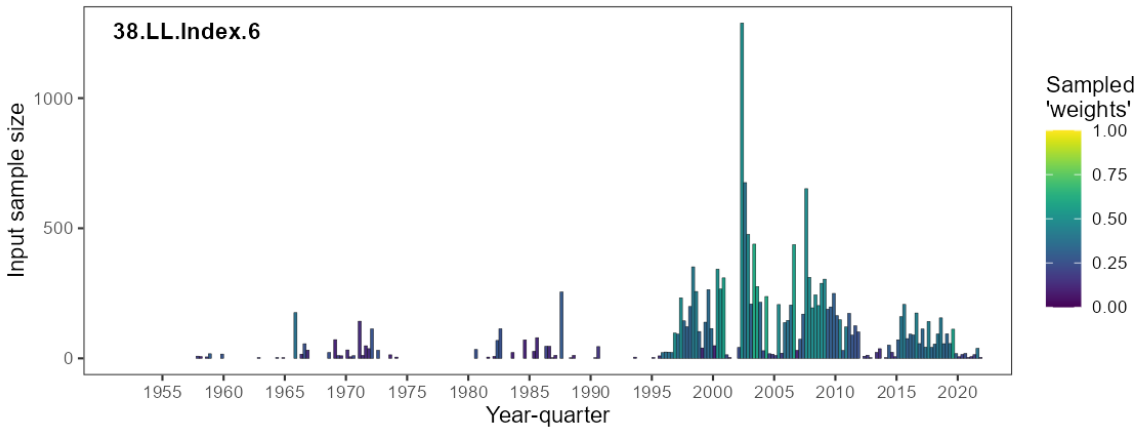


(b) 'Stronger filtering' option

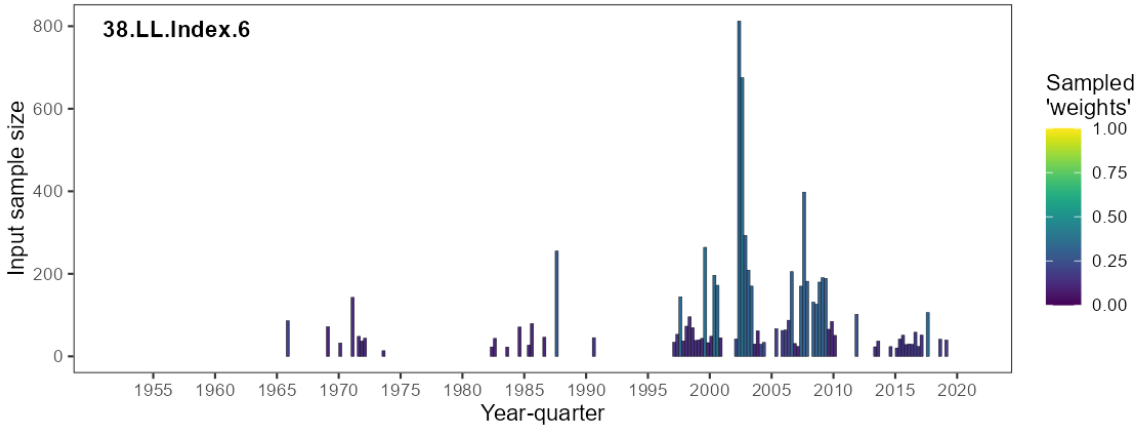


(c) 'Strongest filtering' option

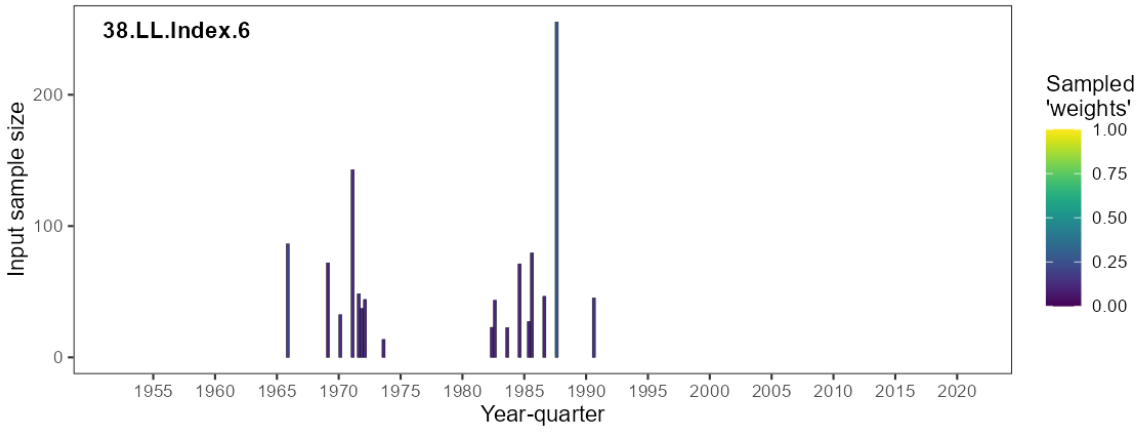
Figure C.10: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

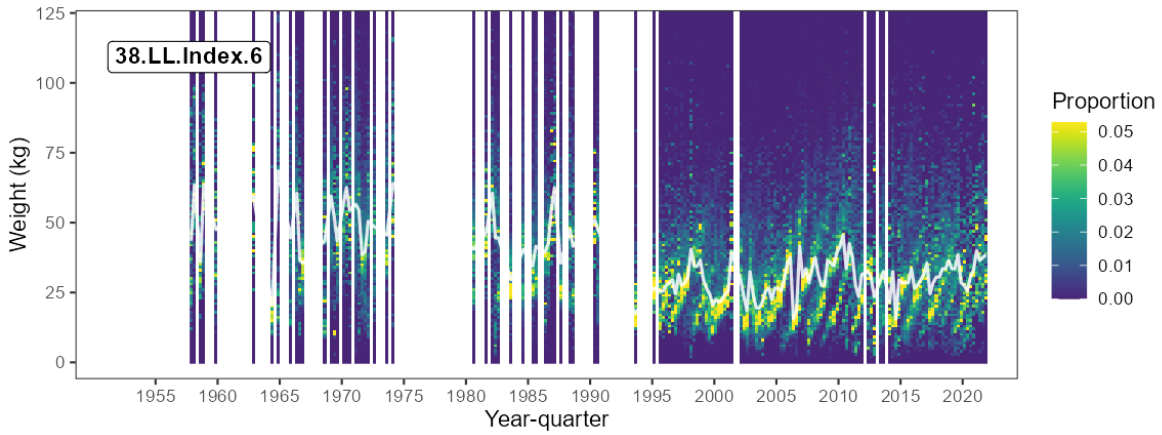


(b) 'Stronger filtering' option

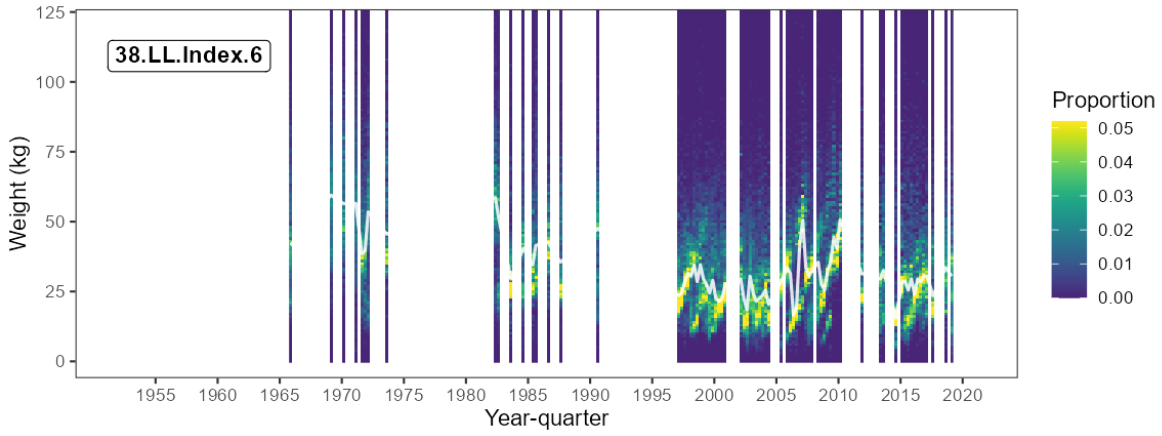


(c) 'Strongest filtering' option

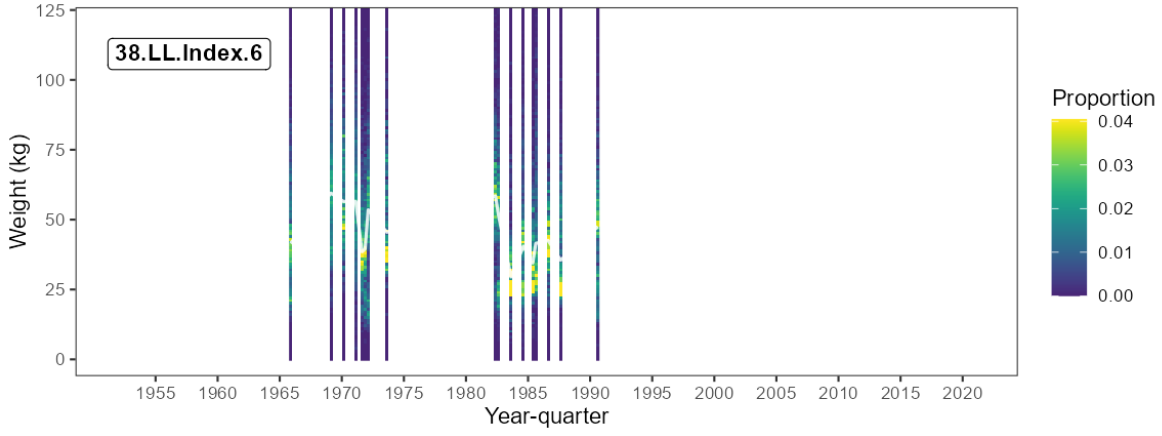
Figure C.11: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

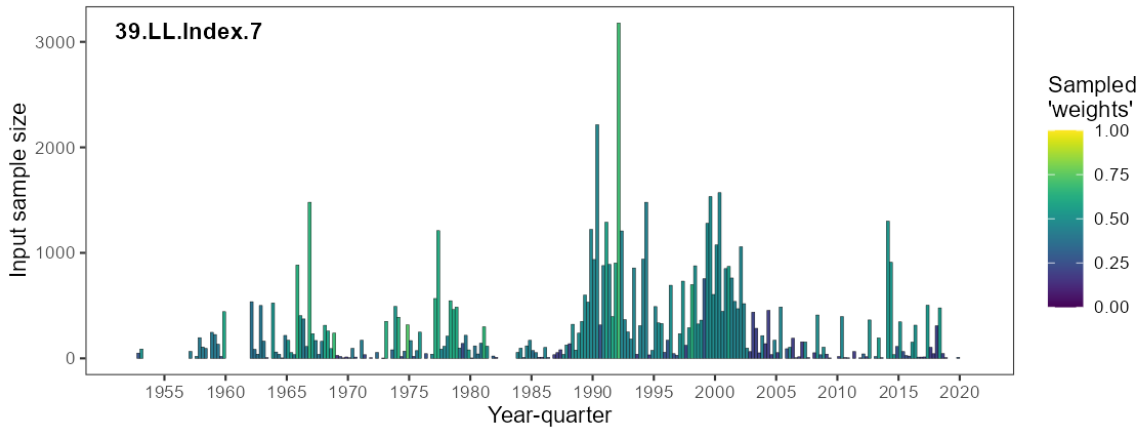


(b) 'Stronger filtering' option

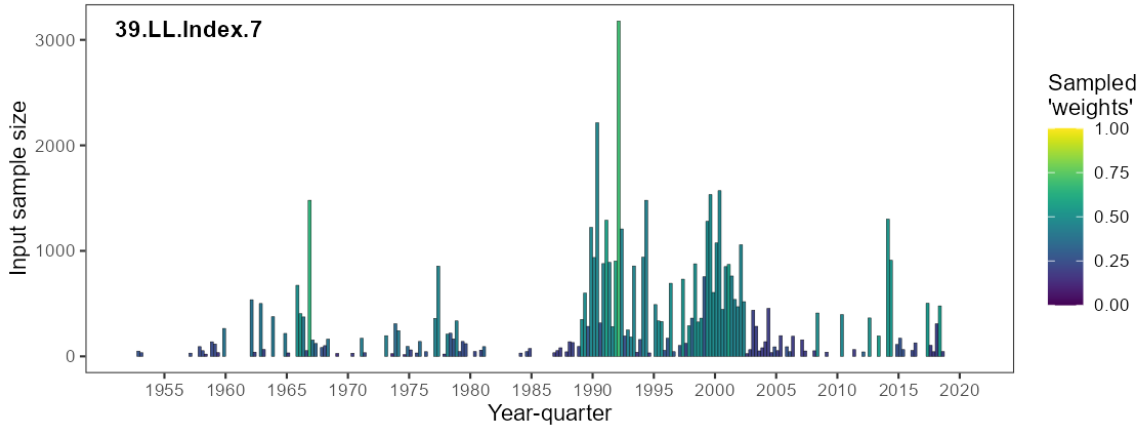


(c) 'Strongest filtering' option

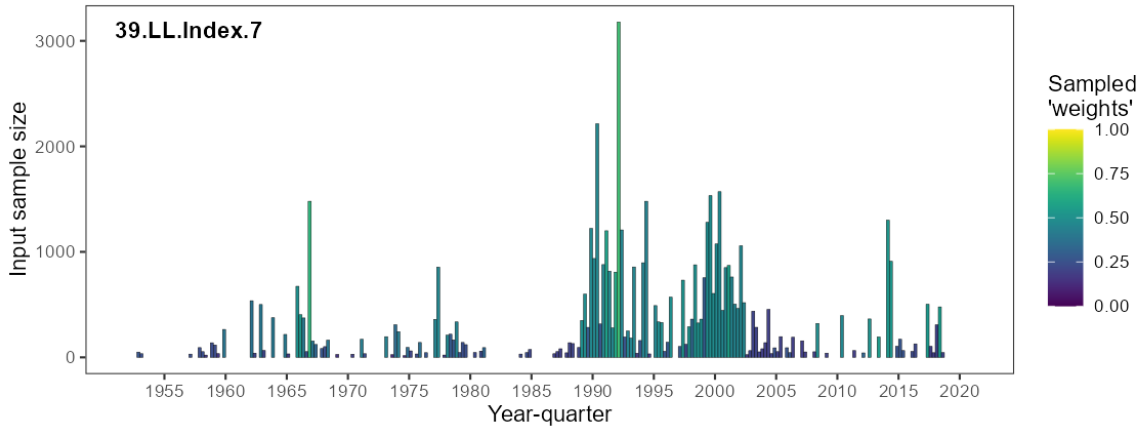
Figure C.12: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

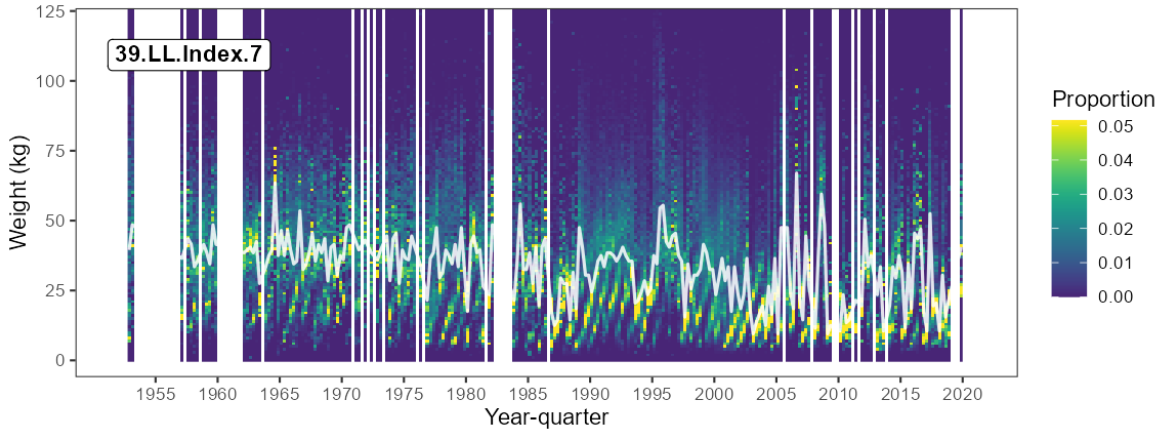


(b) 'Stronger filtering' option

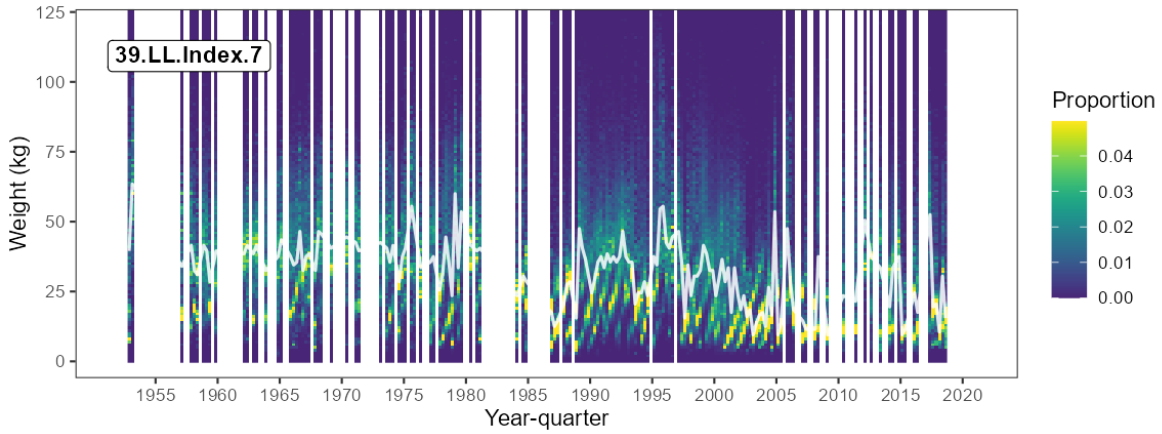


(c) 'Strongest filtering' option

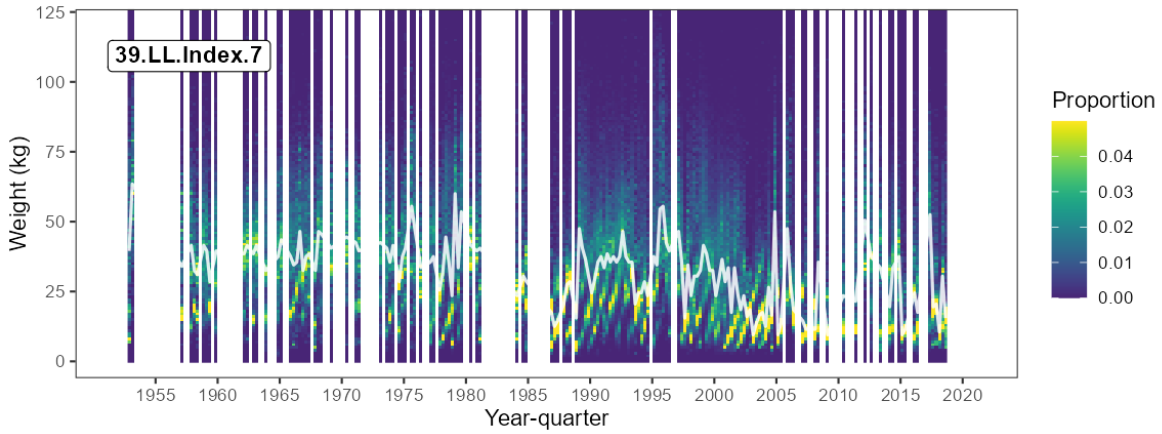
Figure C.13: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 39.LL.Index.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

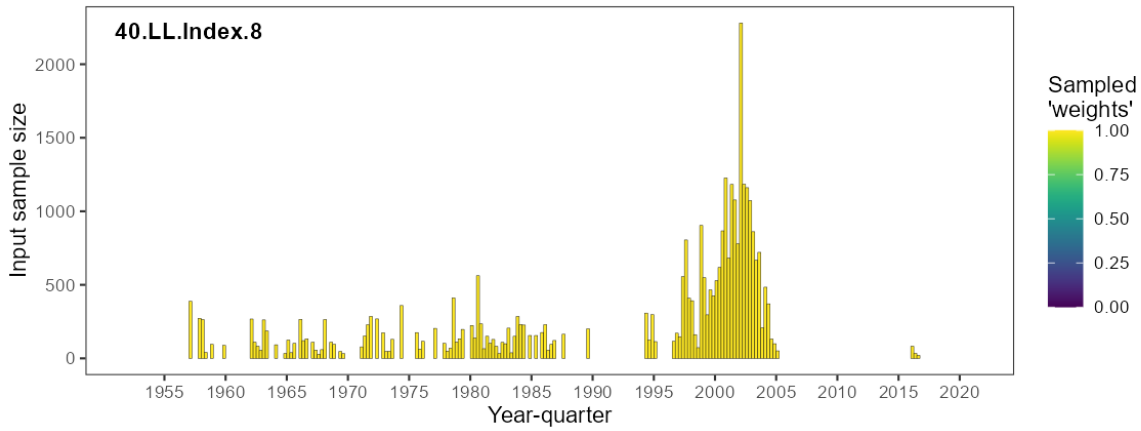


(b) 'Stronger filtering' option

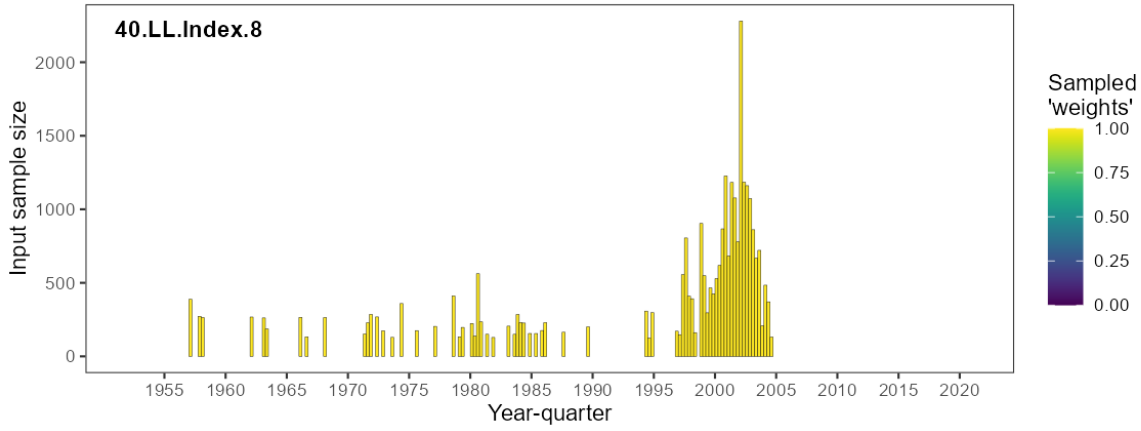


(c) 'Strongest filtering' option

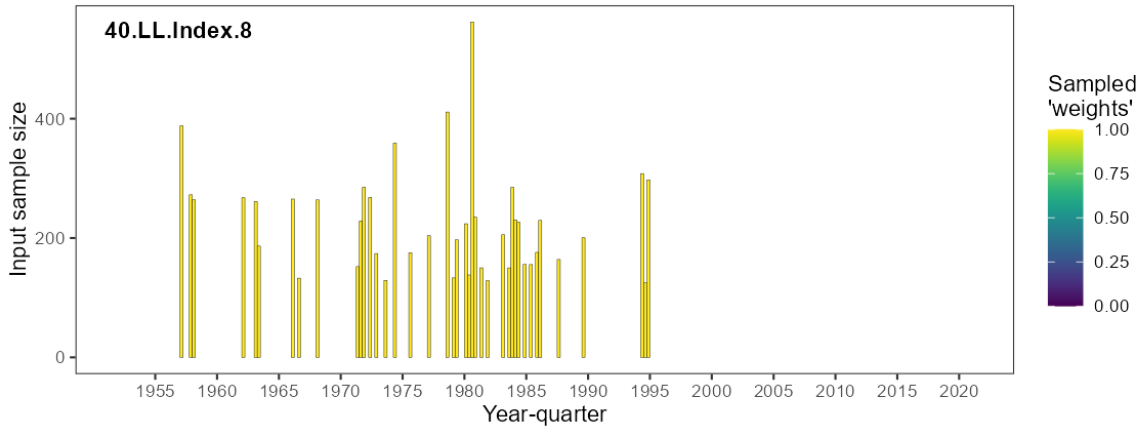
Figure C.14: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 39.LL.Index.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

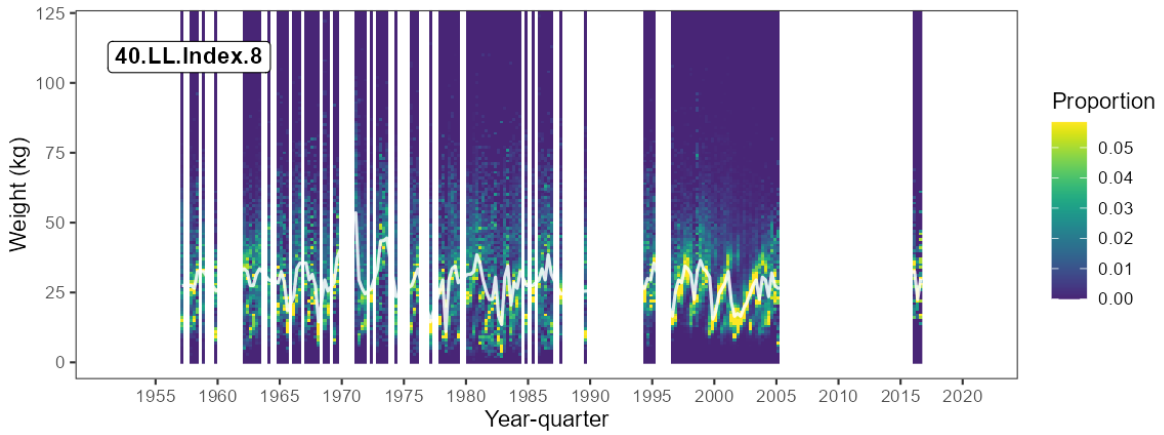


(b) 'Stronger filtering' option

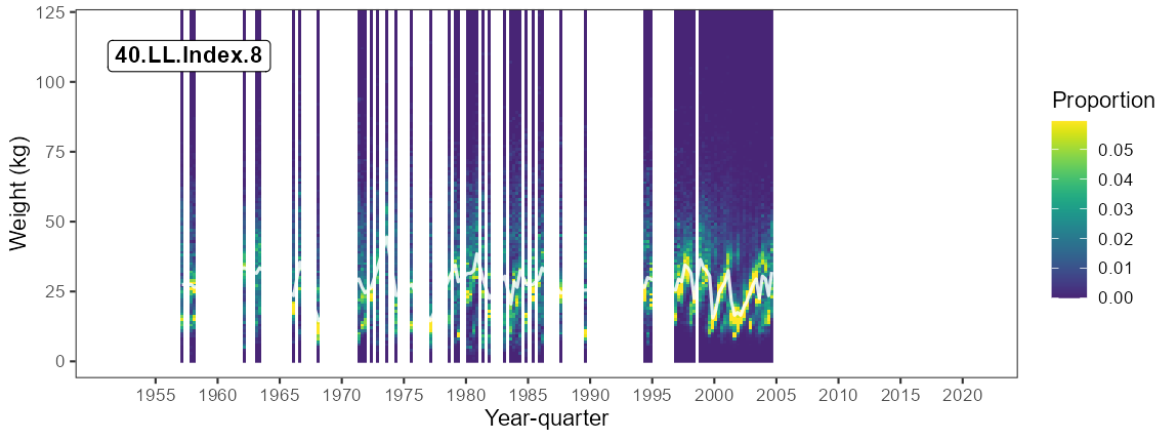


(c) 'Strongest filtering' option

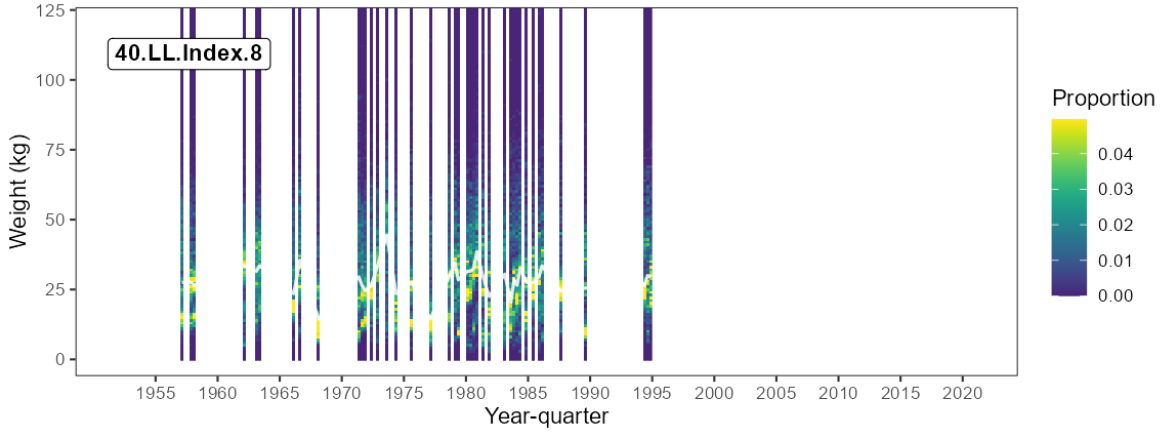
Figure C.15: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 40.LL.Index.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

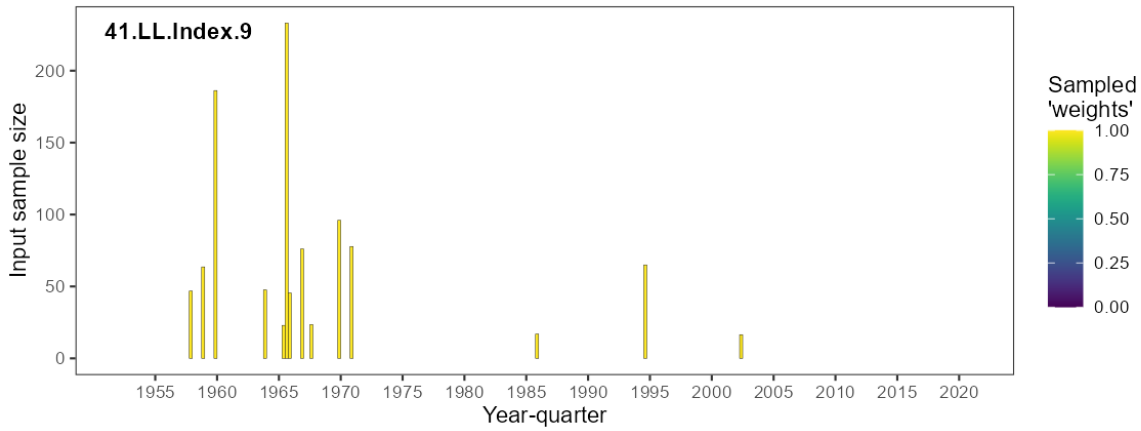


(b) 'Stronger filtering' option

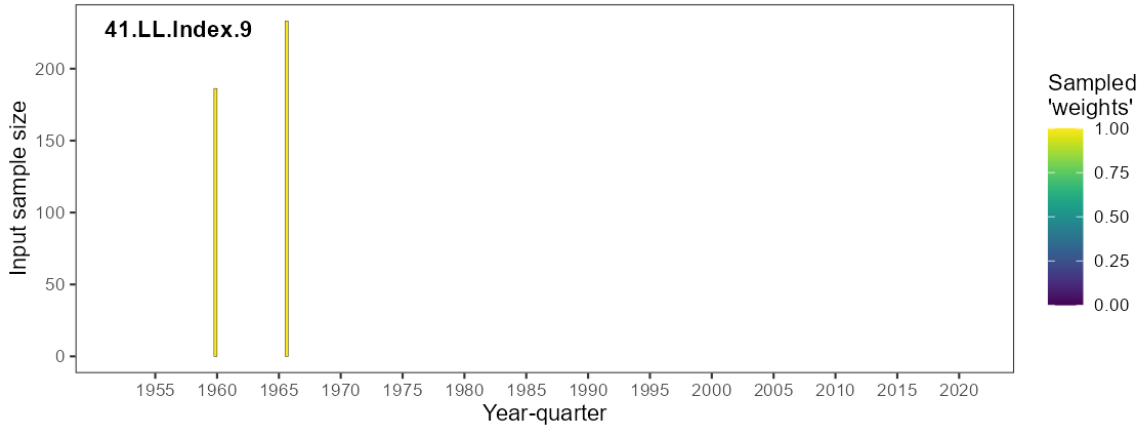


(c) 'Strongest filtering' option

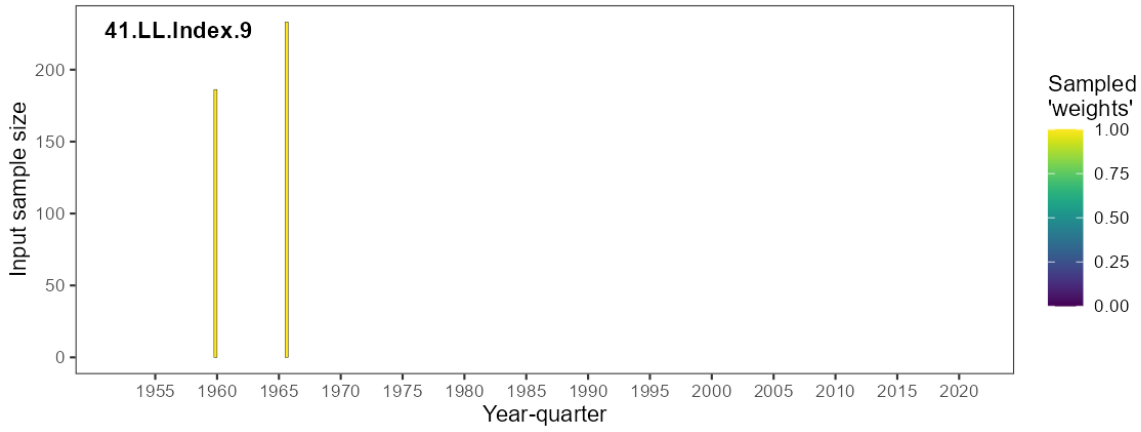
Figure C.16: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 40.LL.Index.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

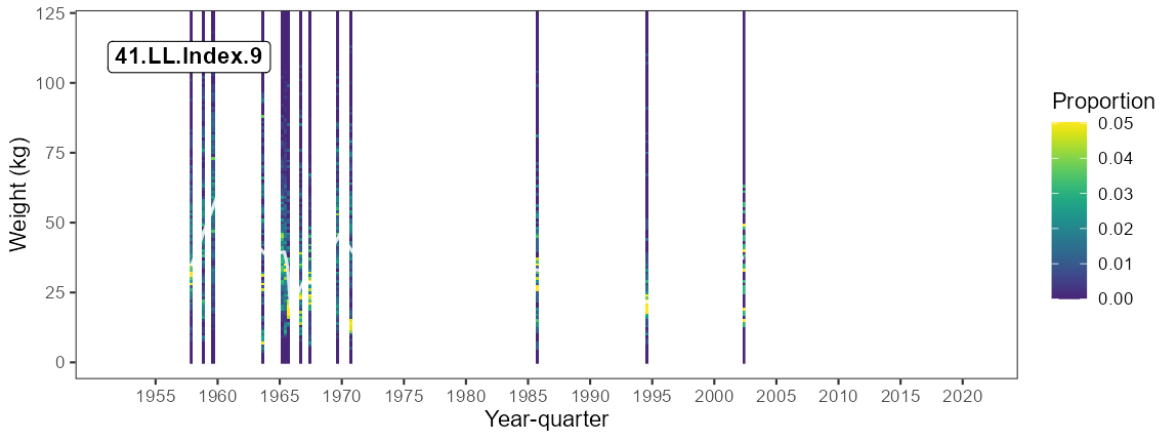


(b) 'Stronger filtering' option

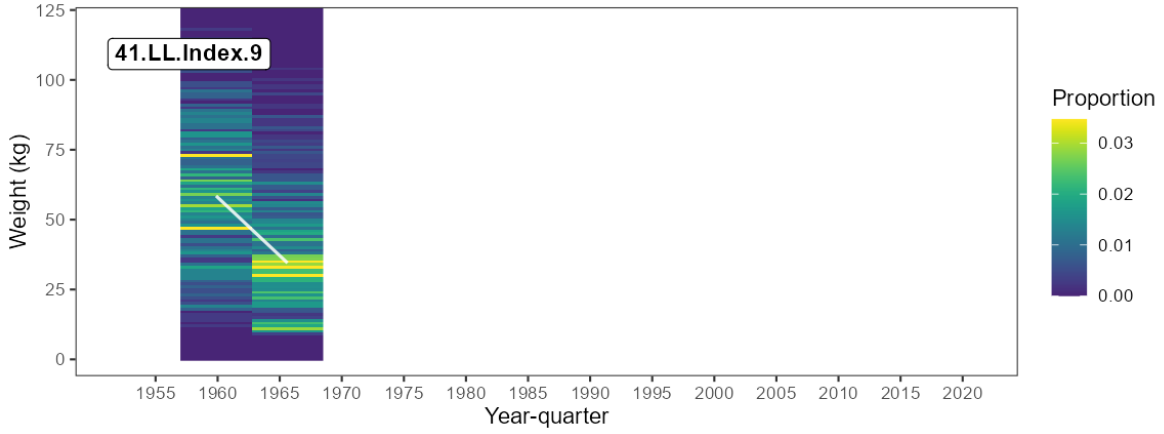


(c) 'Strongest filtering' option

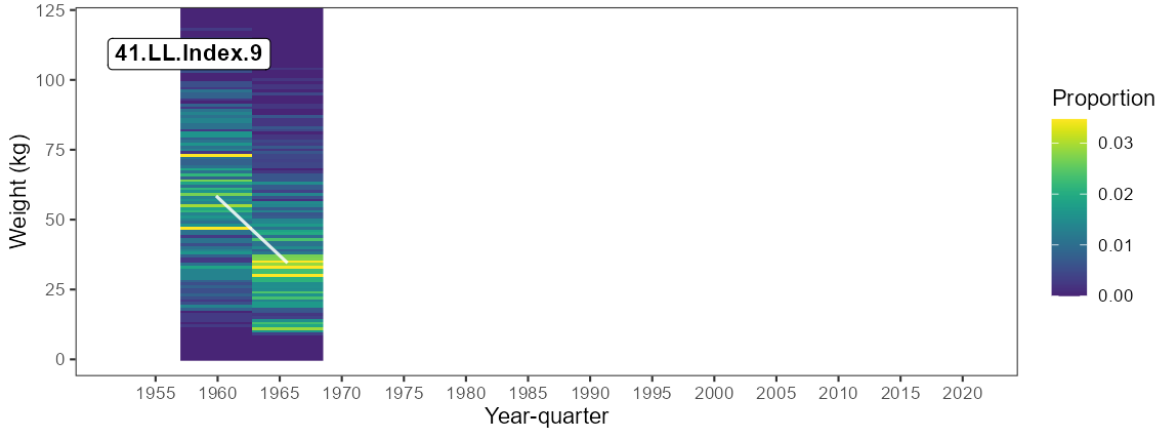
Figure C.17: (Nine region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 41.LL.Index.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

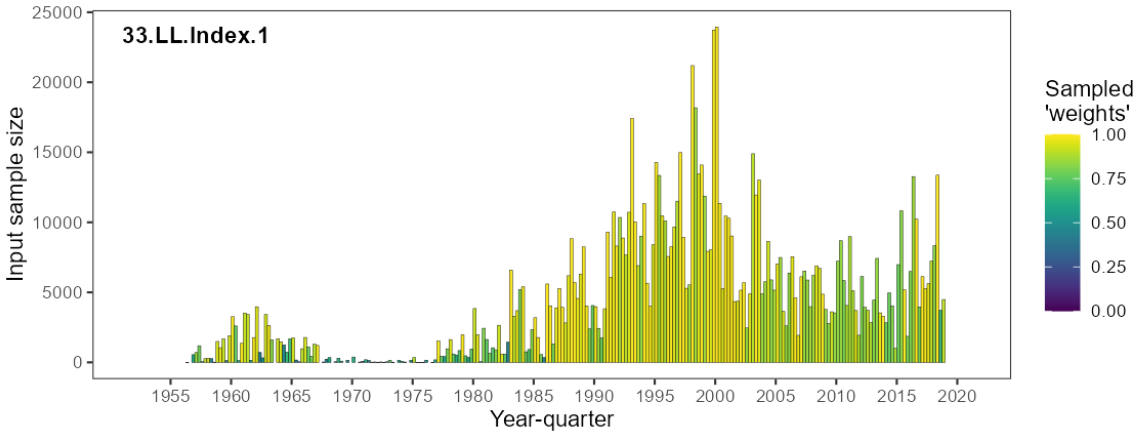


(b) 'Stronger filtering' option

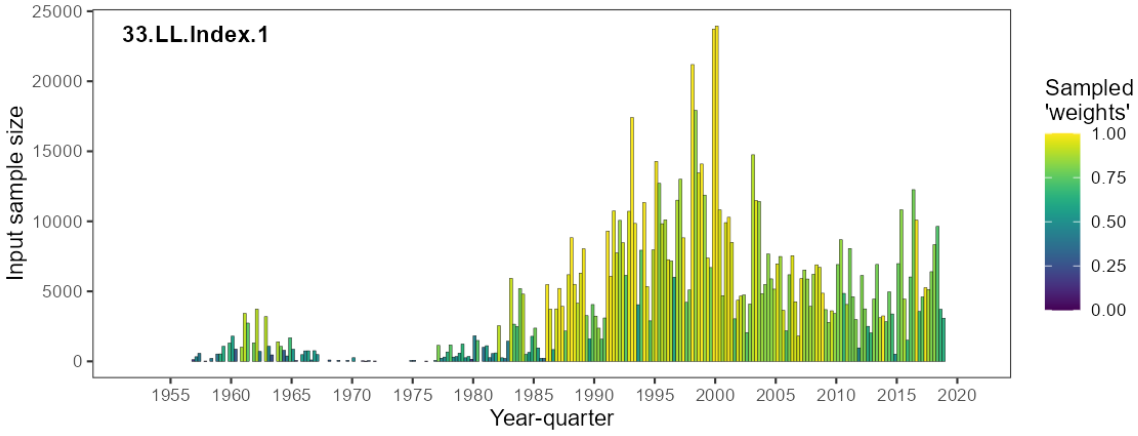


(c) 'Strongest filtering' option

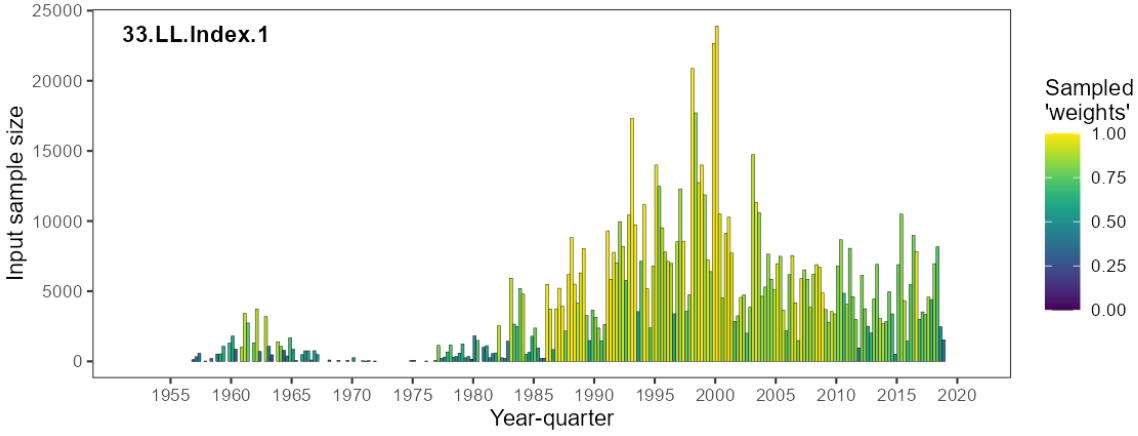
Figure C.18: (Nine region structure) Reweighted weight compositions of bigeye for the longline index fishery 41.LL.Index.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

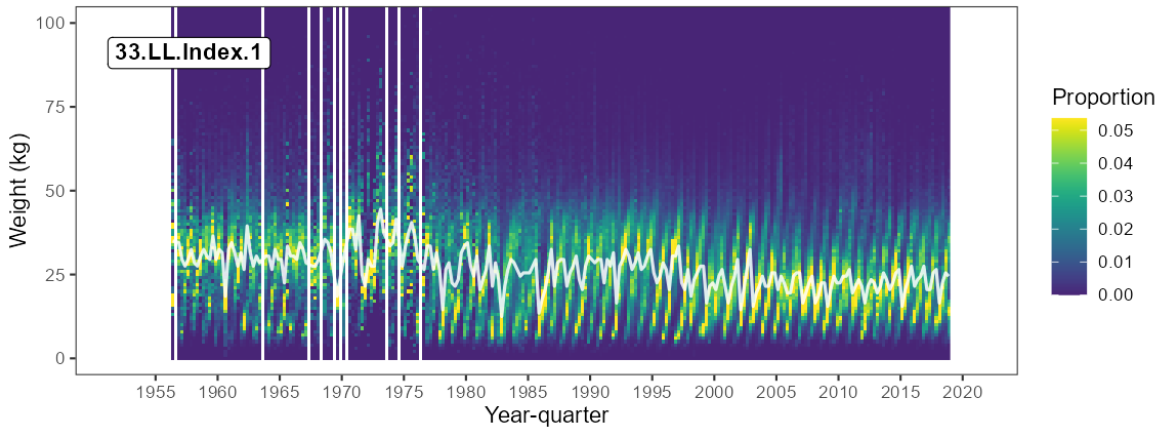


(b) 'Stronger filtering' option

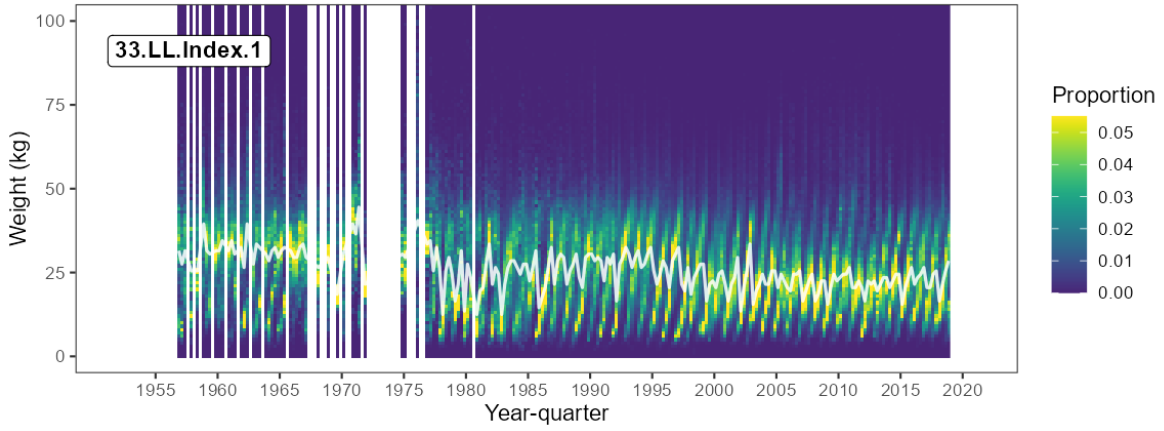


(c) 'Strongest filtering' option

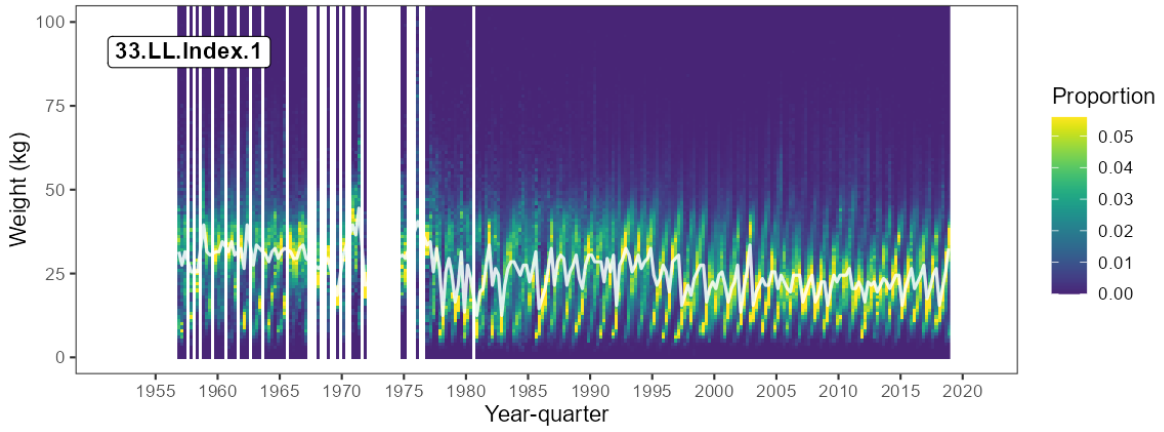
Figure C.19: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

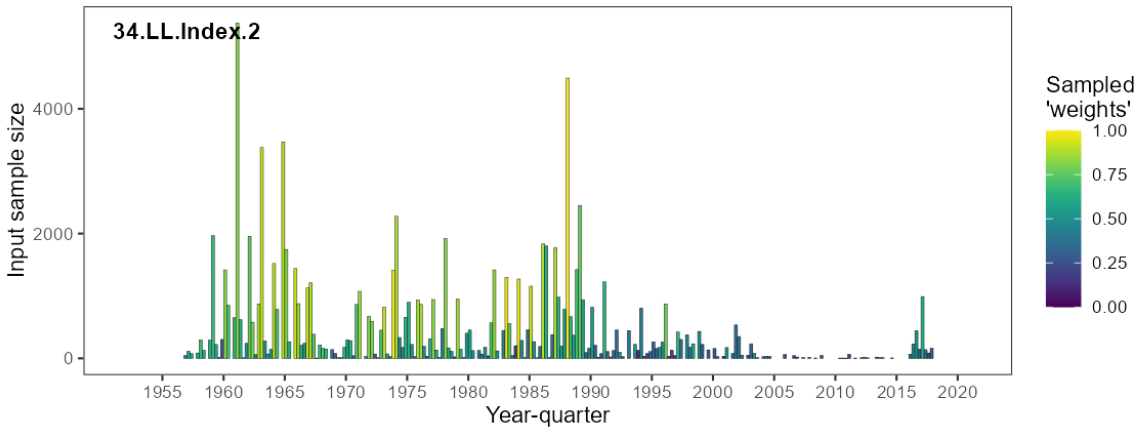


(b) 'Stronger filtering' option

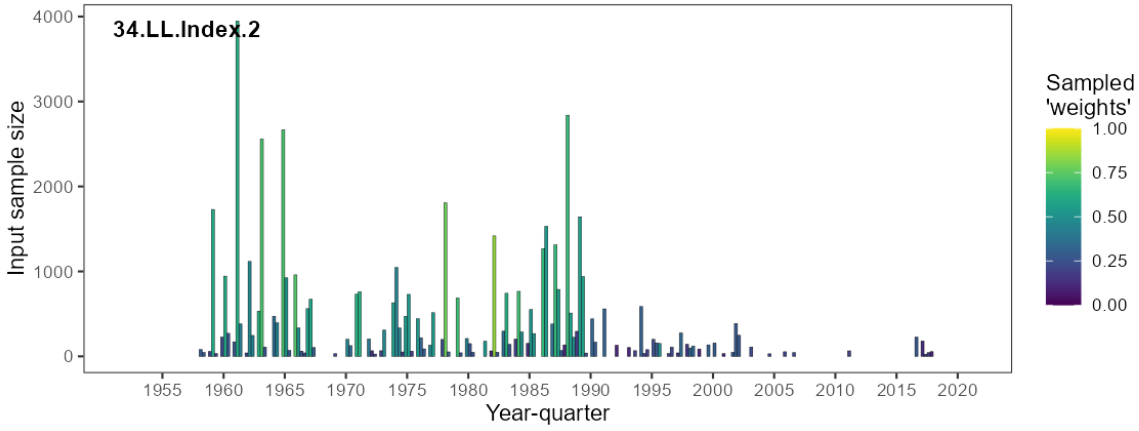


(c) 'Strongest filtering' option

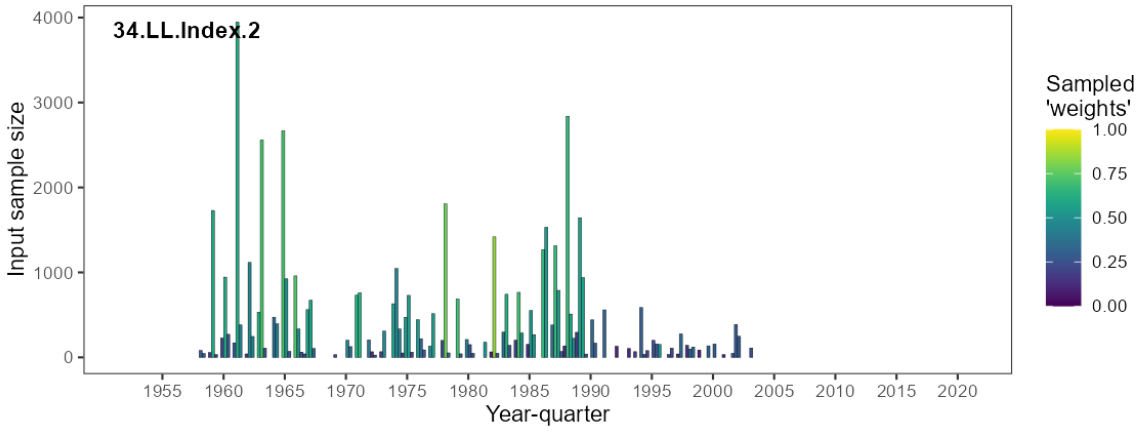
Figure C.20: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

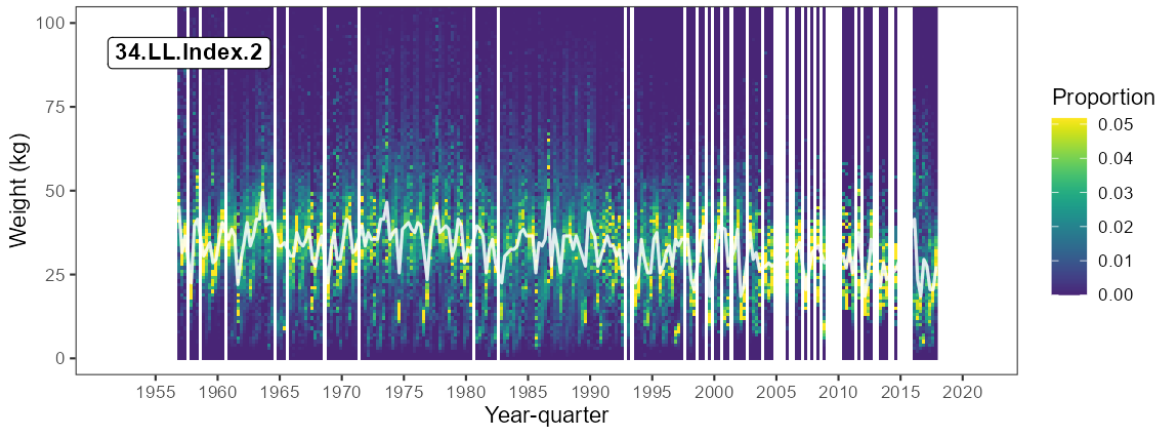


(b) 'Stronger filtering' option

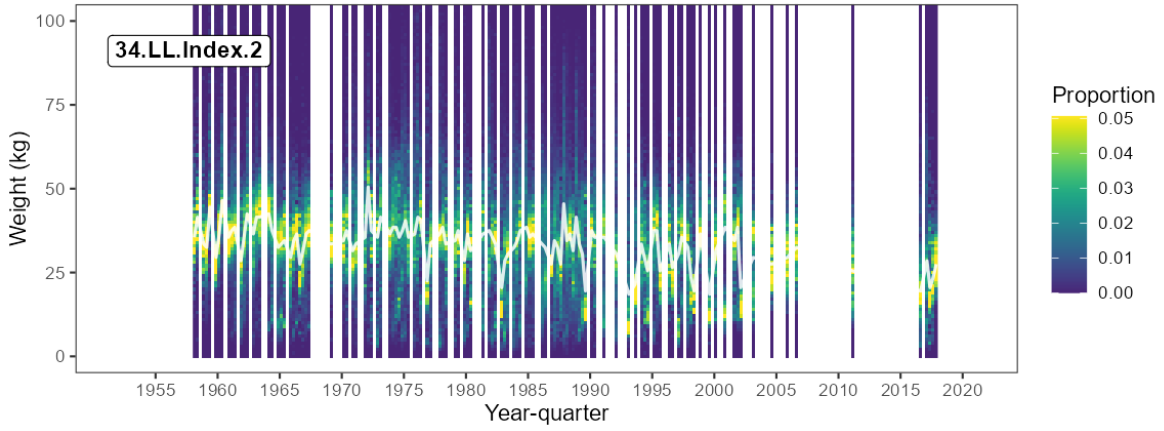


(c) 'Strongest filtering' option

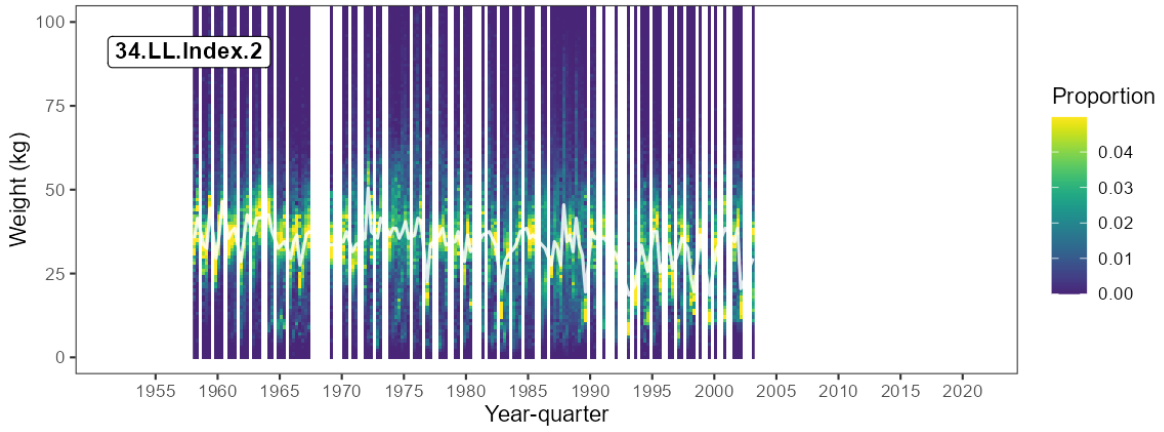
Figure C.21: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

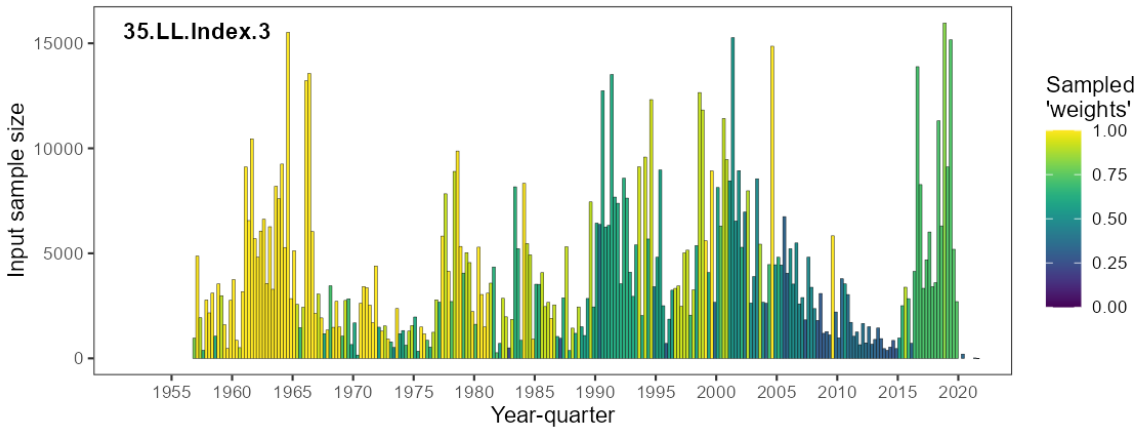


(b) 'Stronger filtering' option

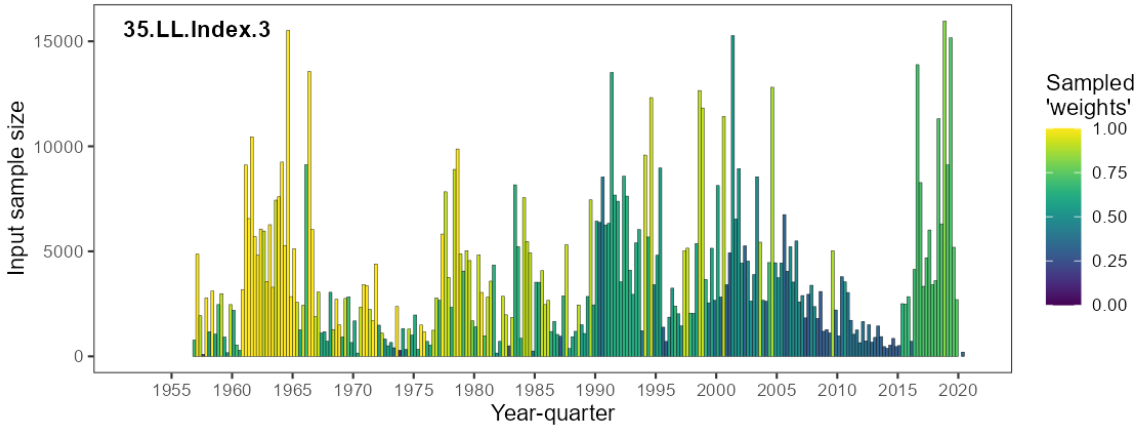


(c) 'Strongest filtering' option

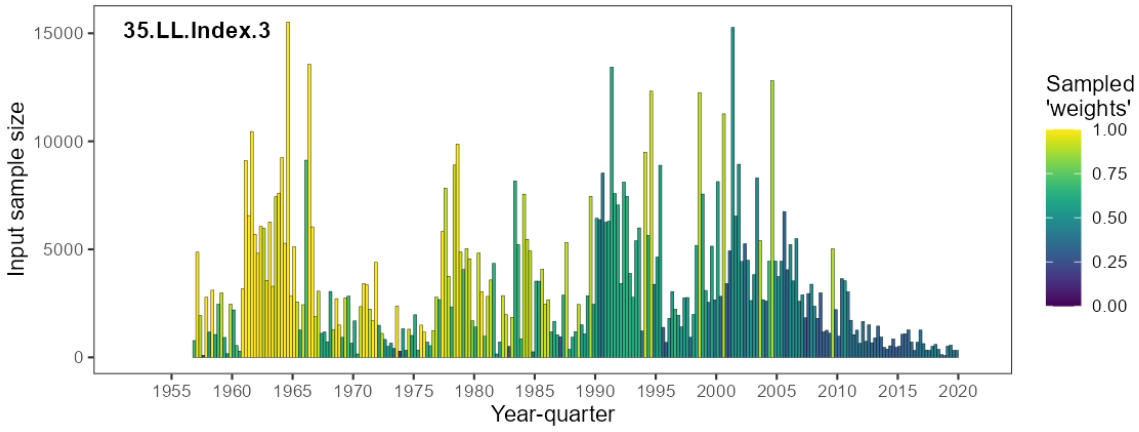
Figure C.22: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

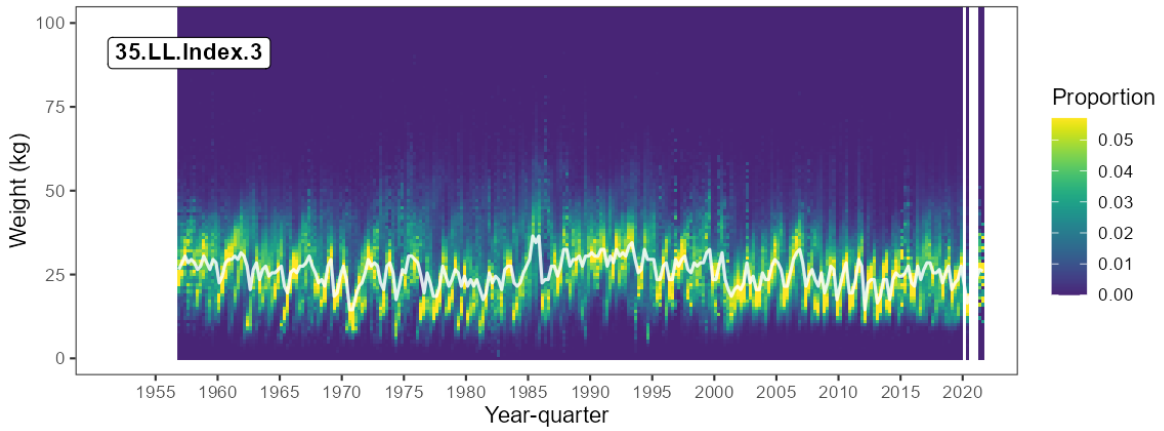


(b) 'Stronger filtering' option

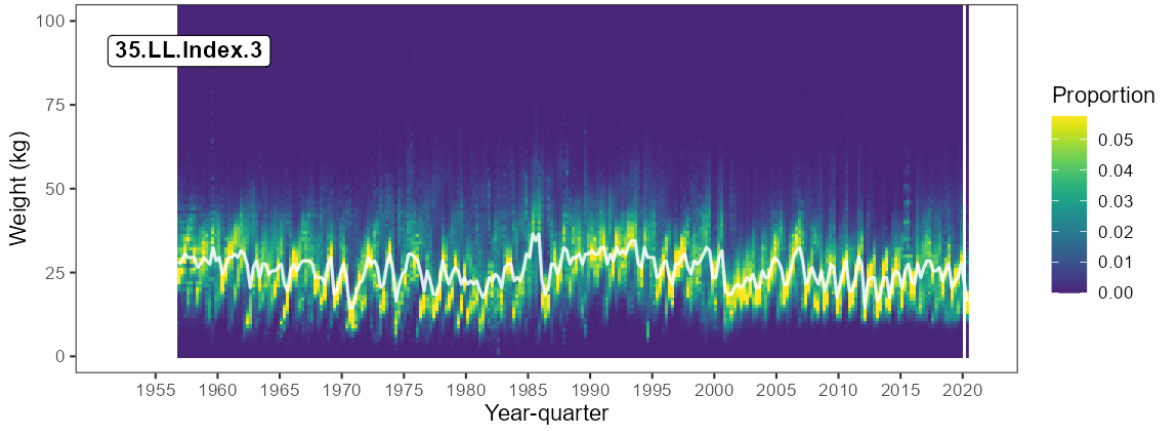


(c) 'Strongest filtering' option

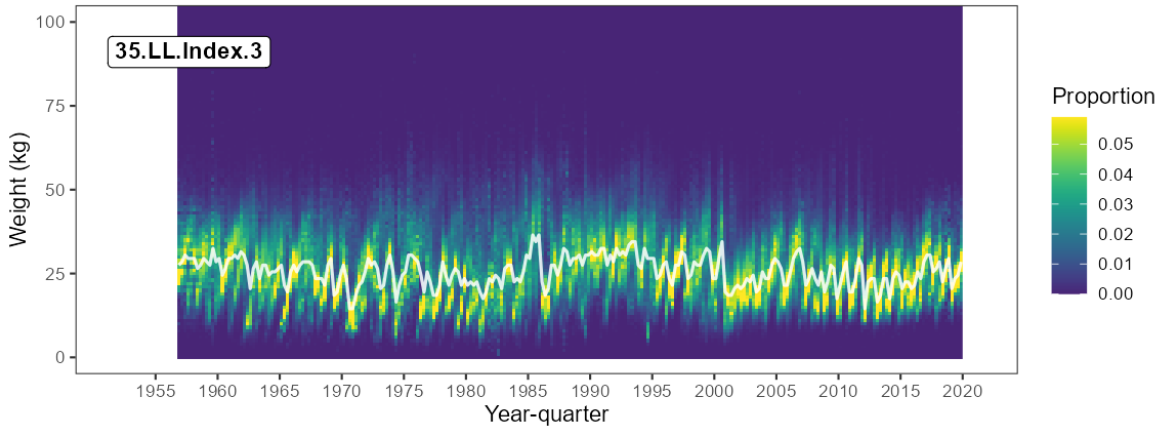
Figure C.23: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

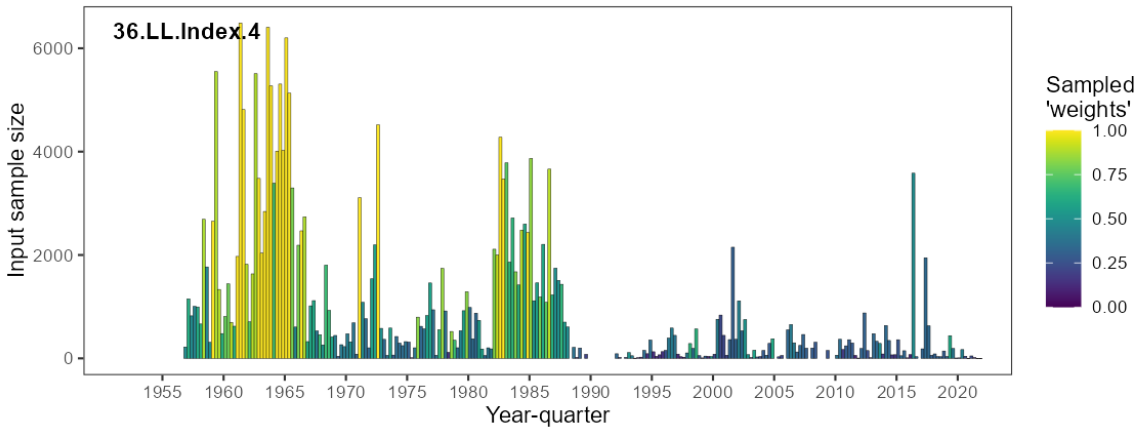


(b) 'Stronger filtering' option

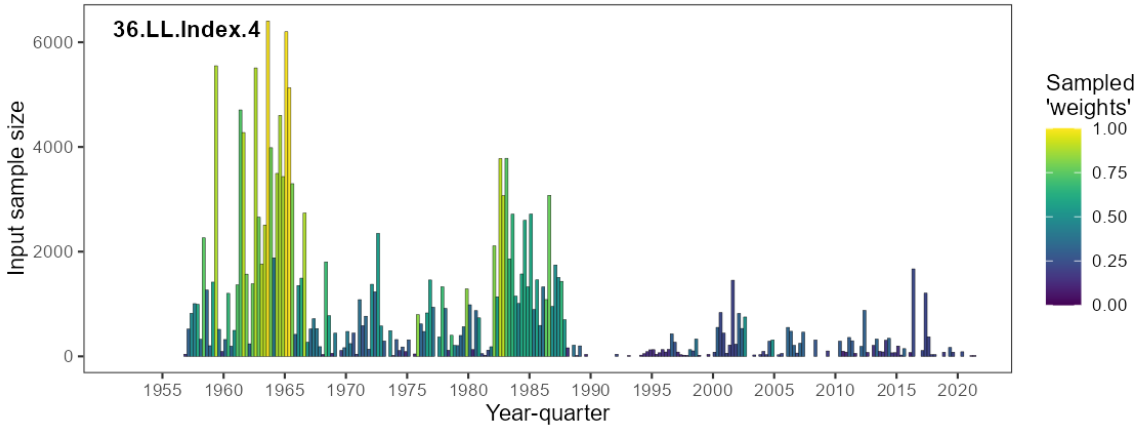


(c) 'Strongest filtering' option

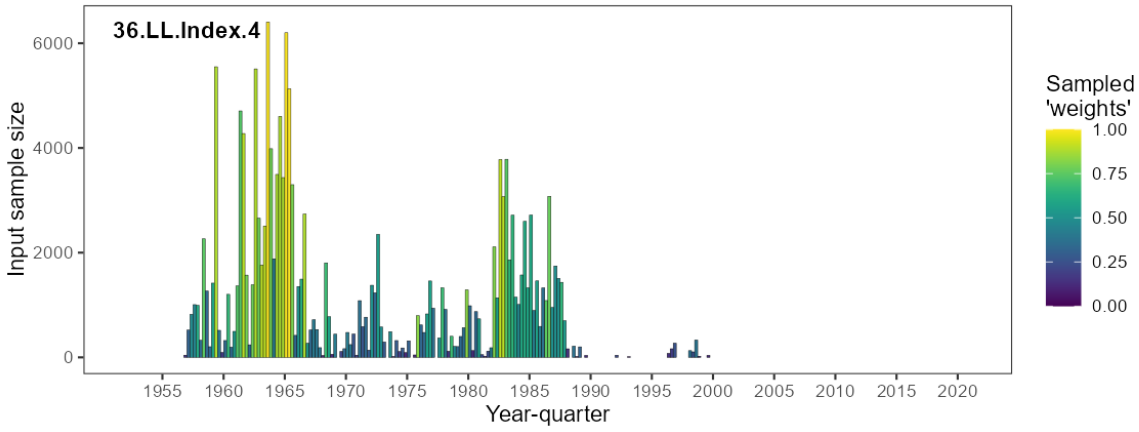
Figure C.24: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

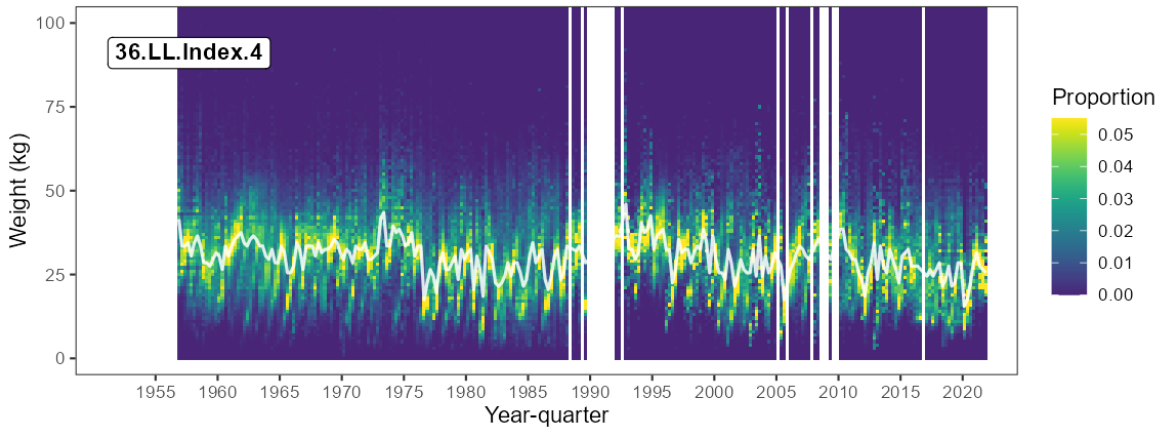


(b) 'Stronger filtering' option

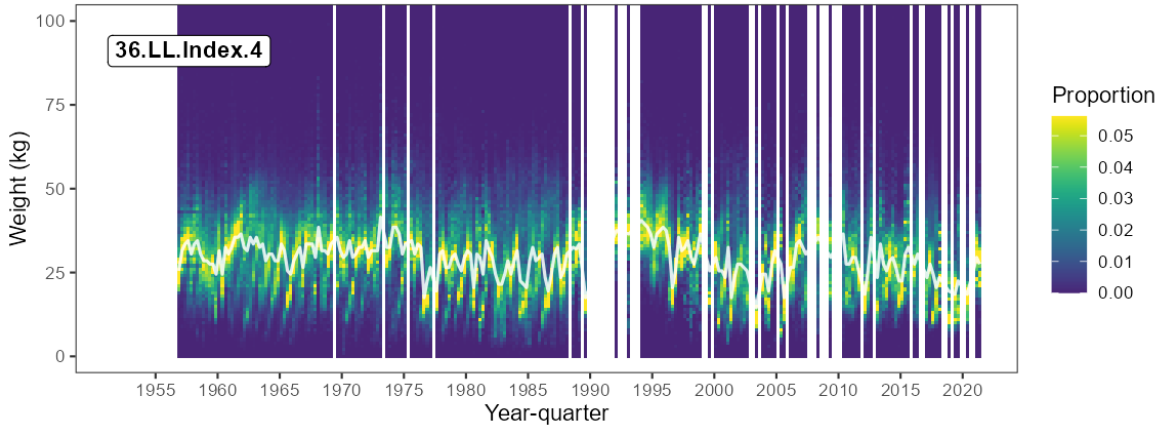


(c) 'Strongest filtering' option

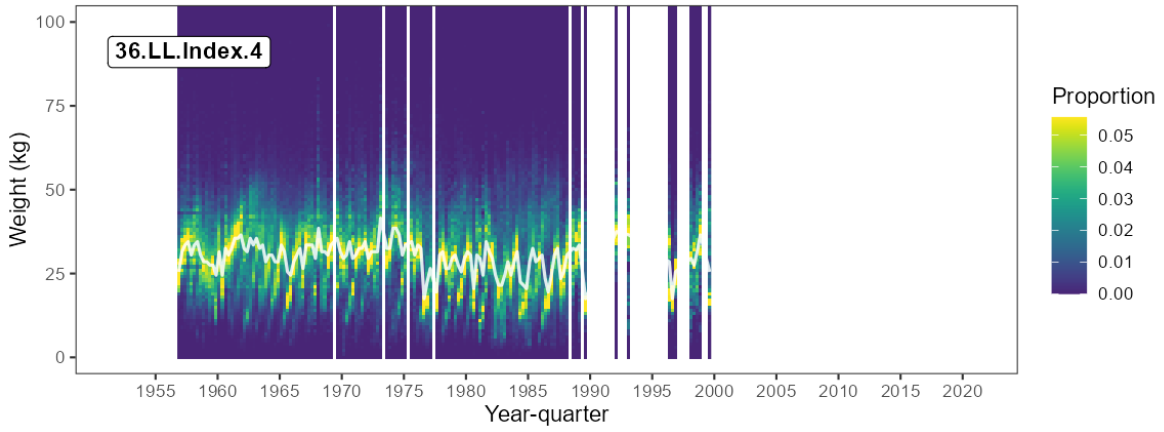
Figure C.25: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

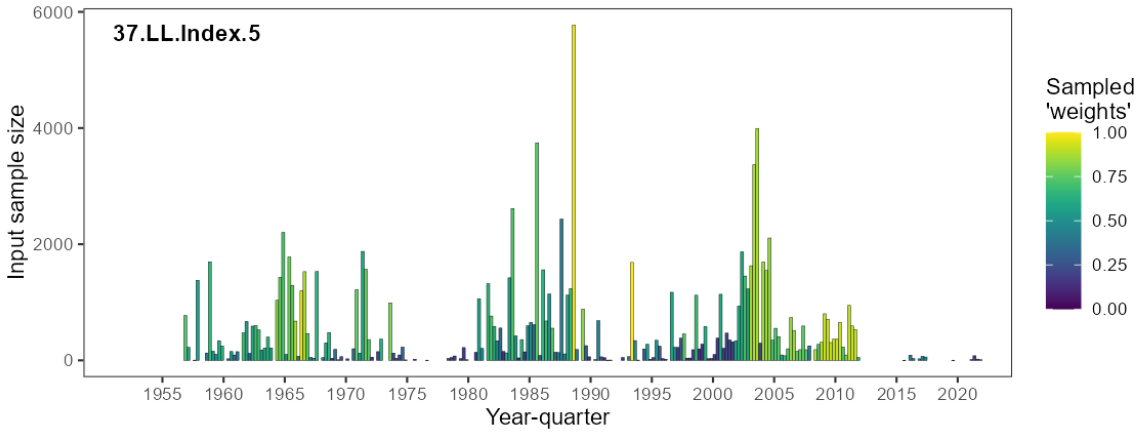


(b) 'Stronger filtering' option

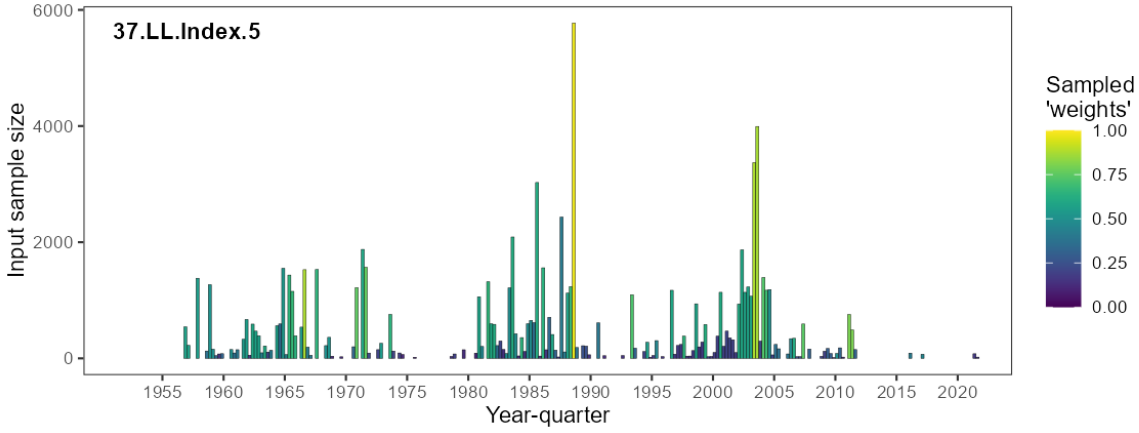


(c) 'Strongest filtering' option

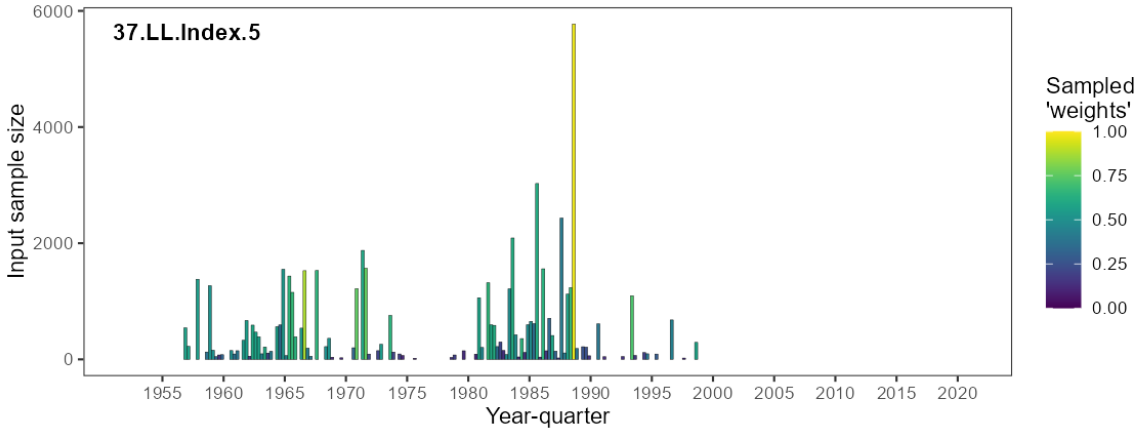
Figure C.26: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

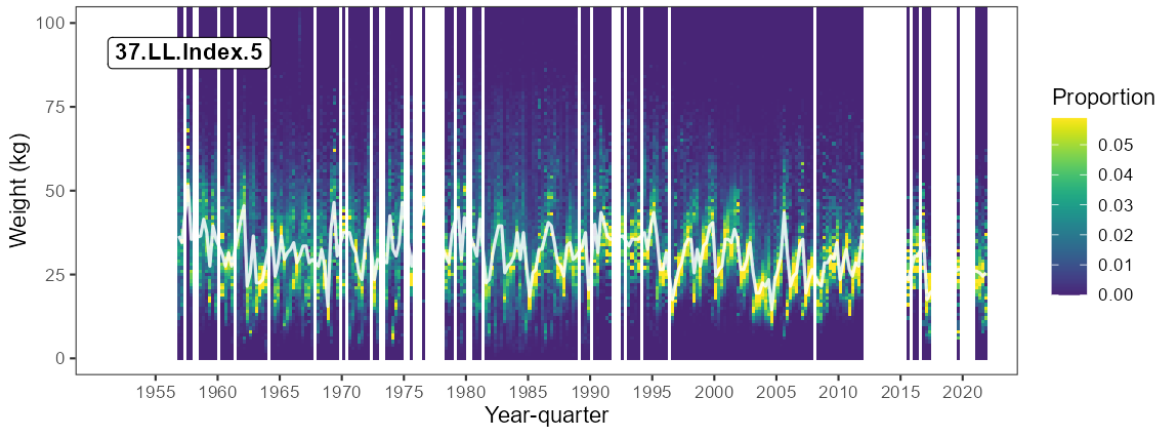


(b) 'Stronger filtering' option

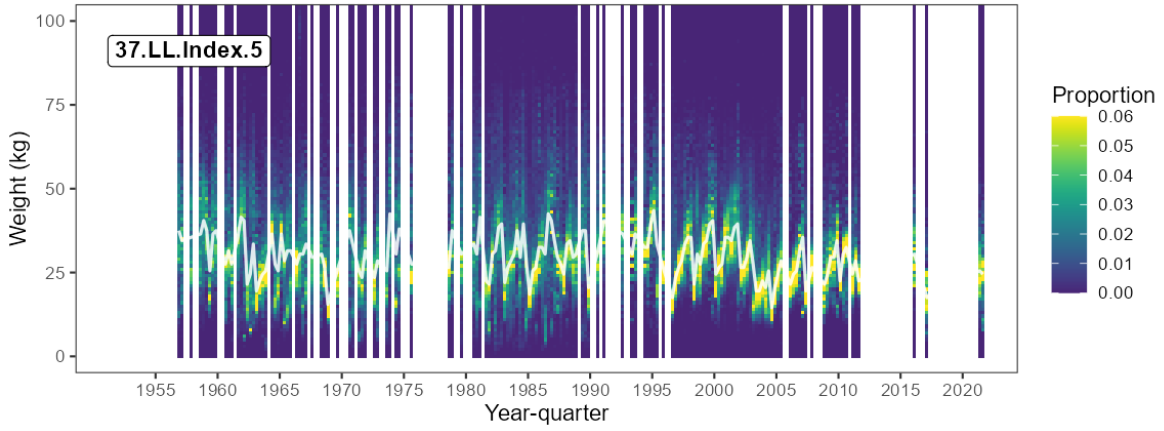


(c) 'Strongest filtering' option

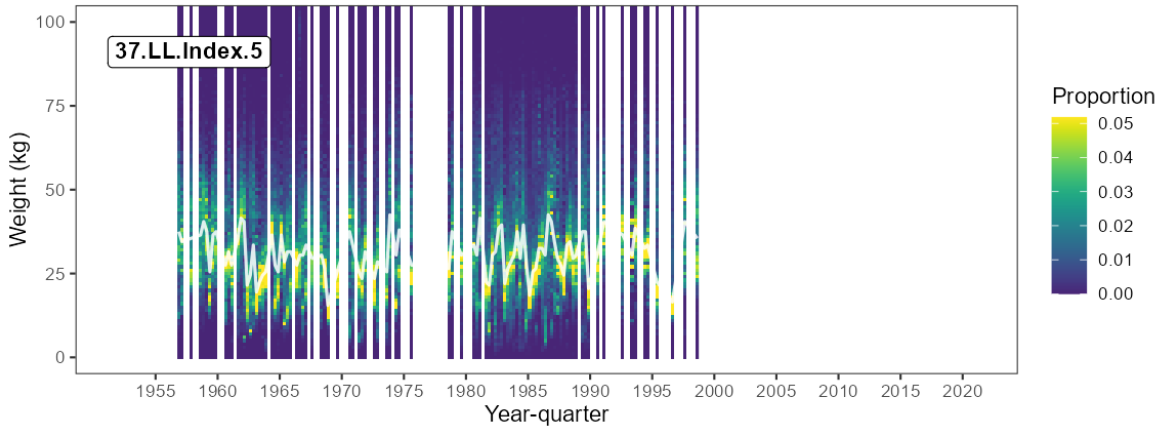
Figure C.27: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

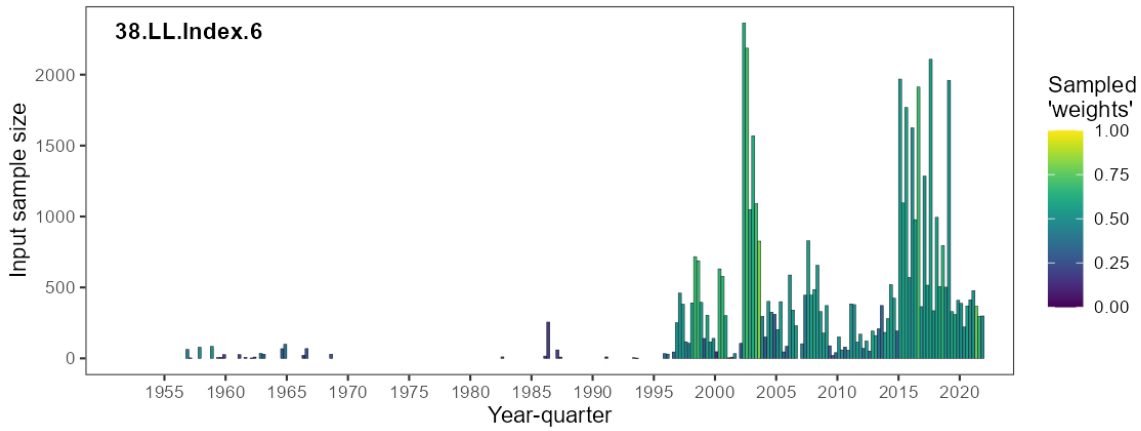


(b) 'Stronger filtering' option

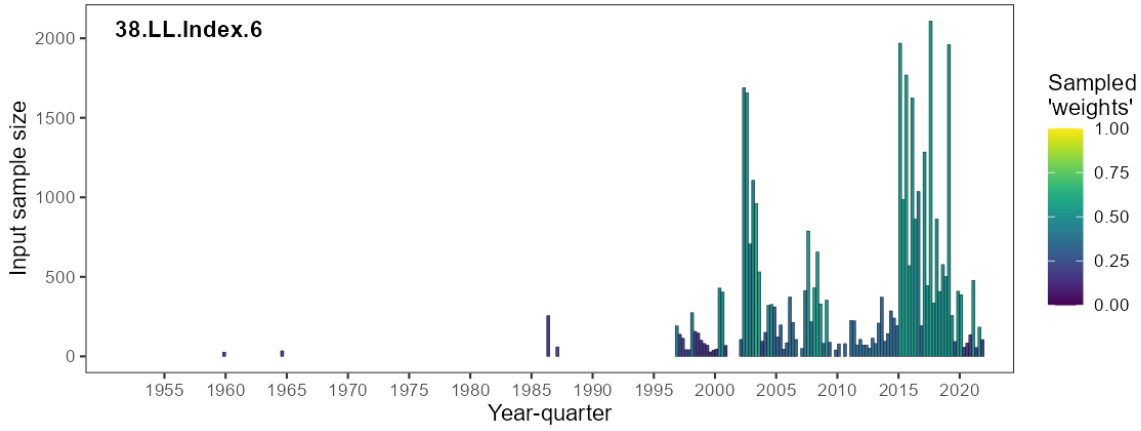


(c) 'Strongest filtering' option

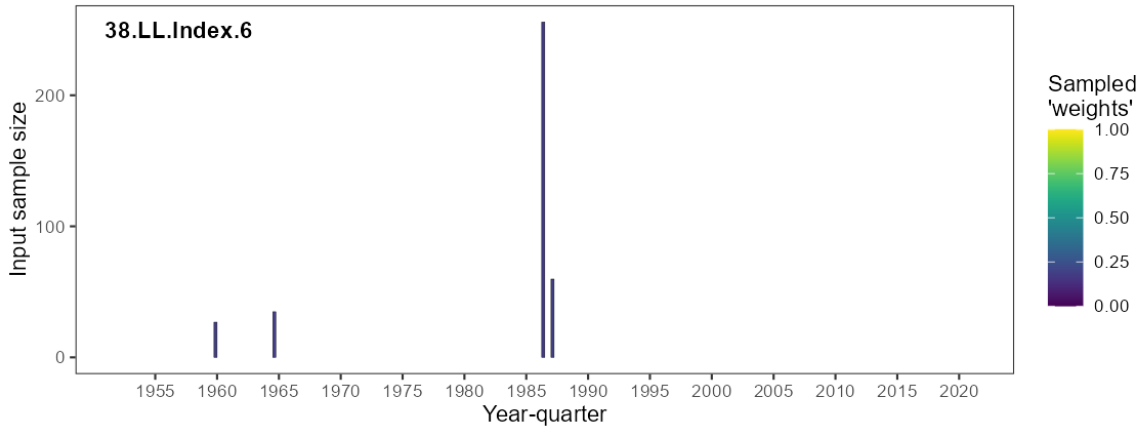
Figure C.28: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

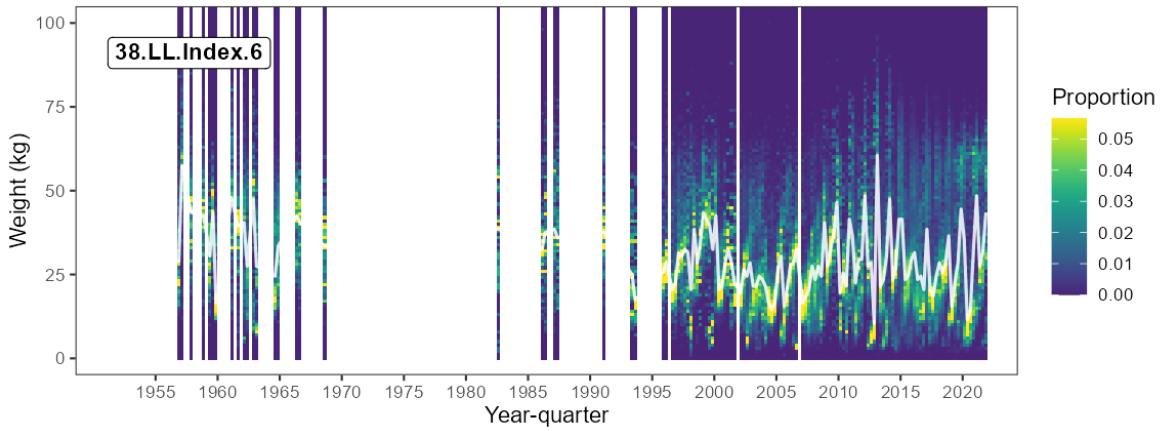


(b) 'Stronger filtering' option

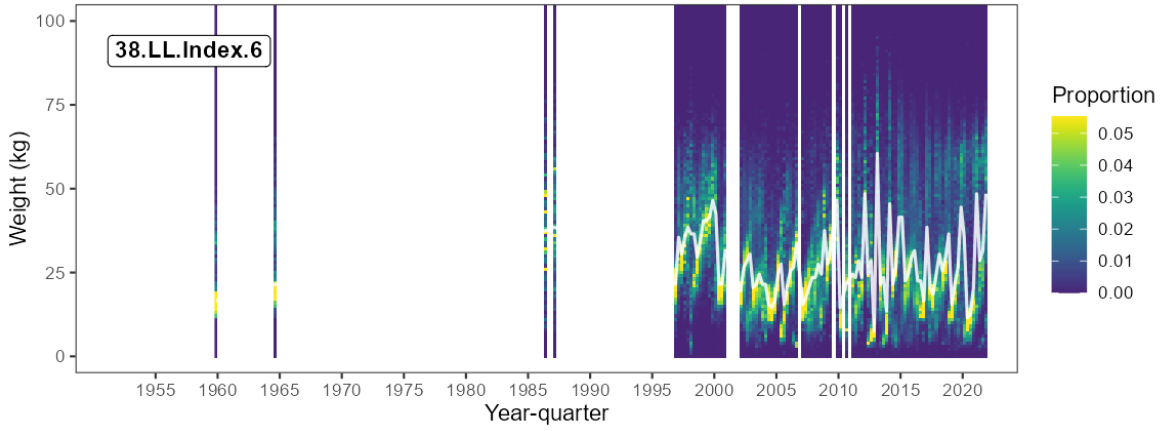


(c) 'Strongest filtering' option

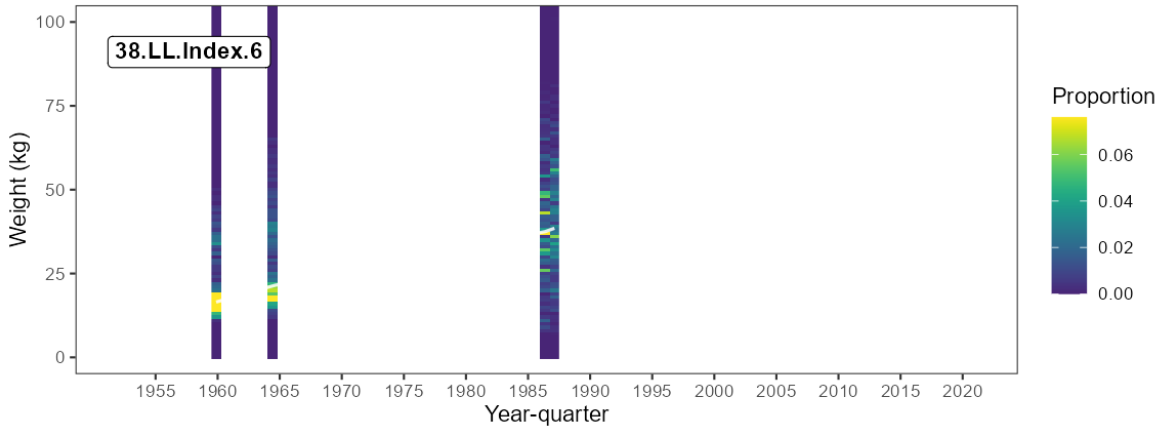
Figure C.29: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

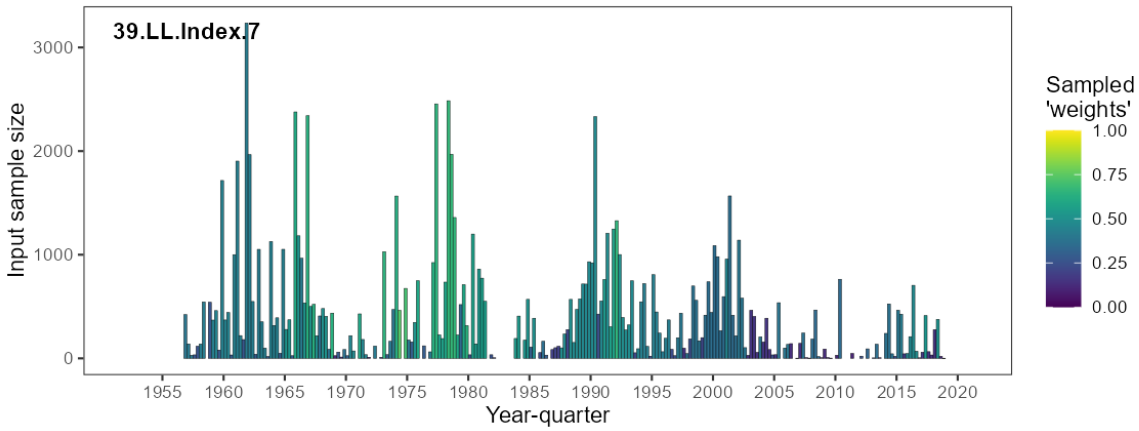


(b) 'Stronger filtering' option

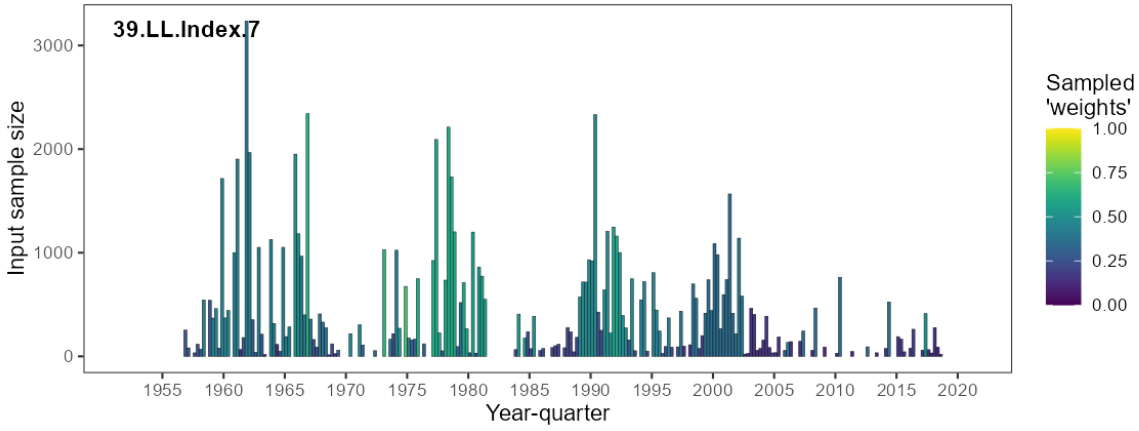


(c) 'Strongest filtering' option

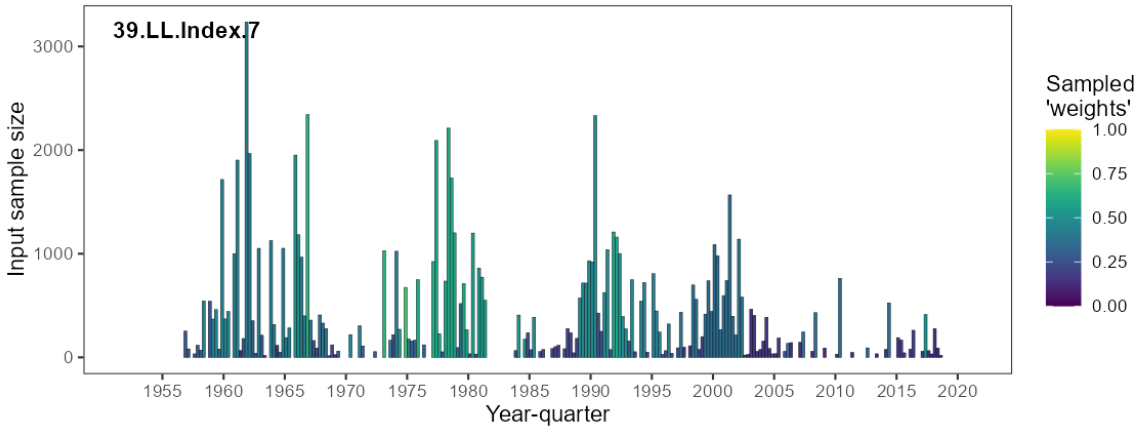
Figure C.30: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

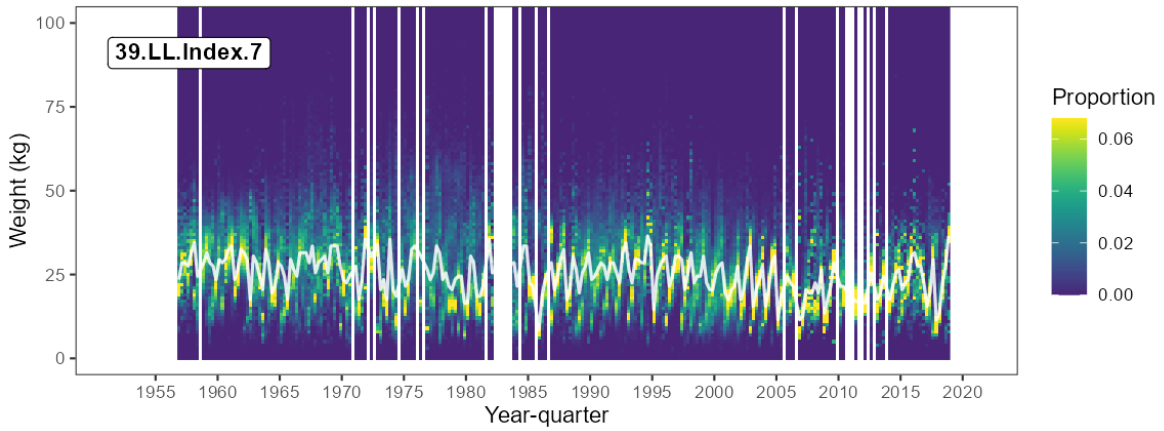


(b) 'Stronger filtering' option

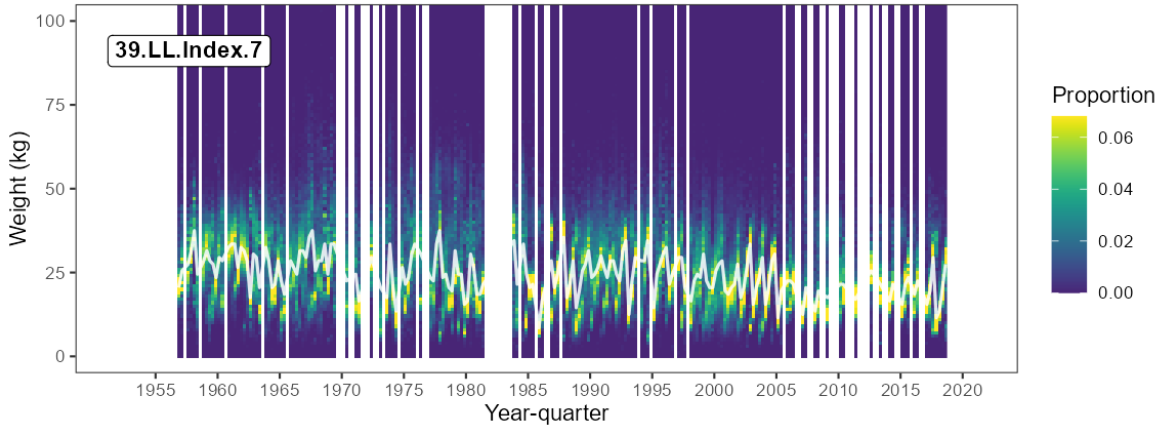


(c) 'Strongest filtering' option

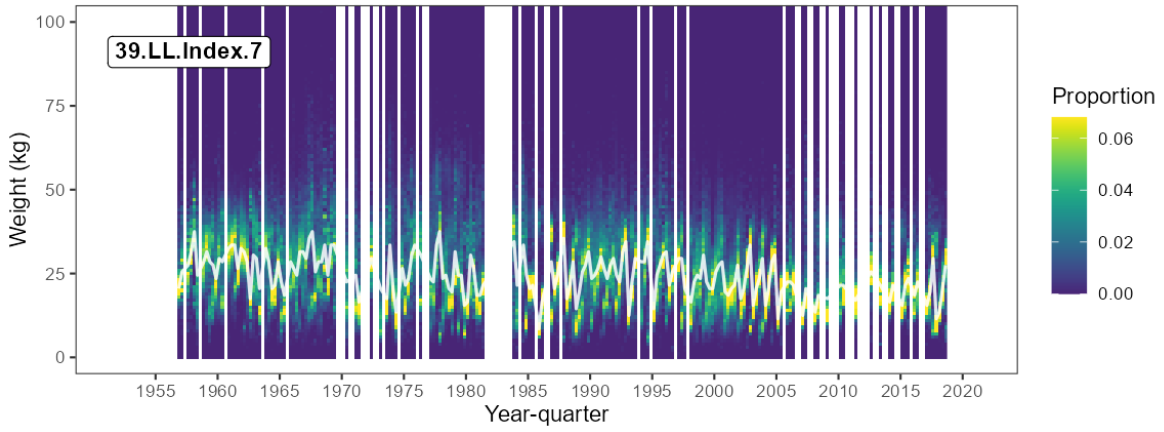
Figure C.31: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 39.LL.Index.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

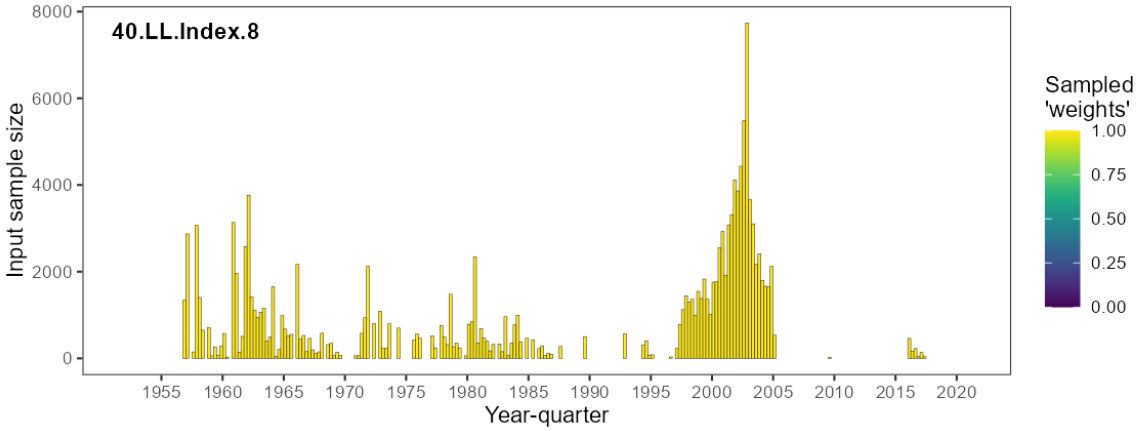


(b) 'Stronger filtering' option

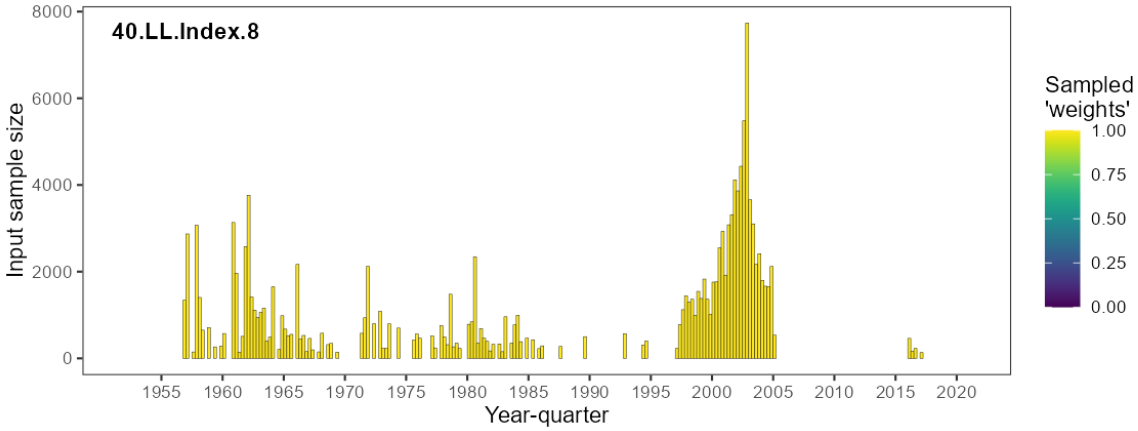


(c) 'Strongest filtering' option

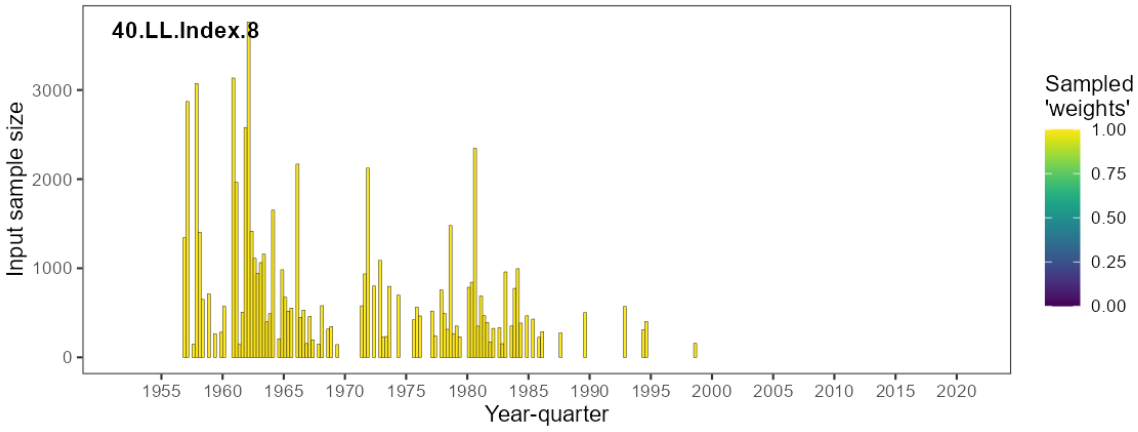
Figure C.32: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 39.LL.Index.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

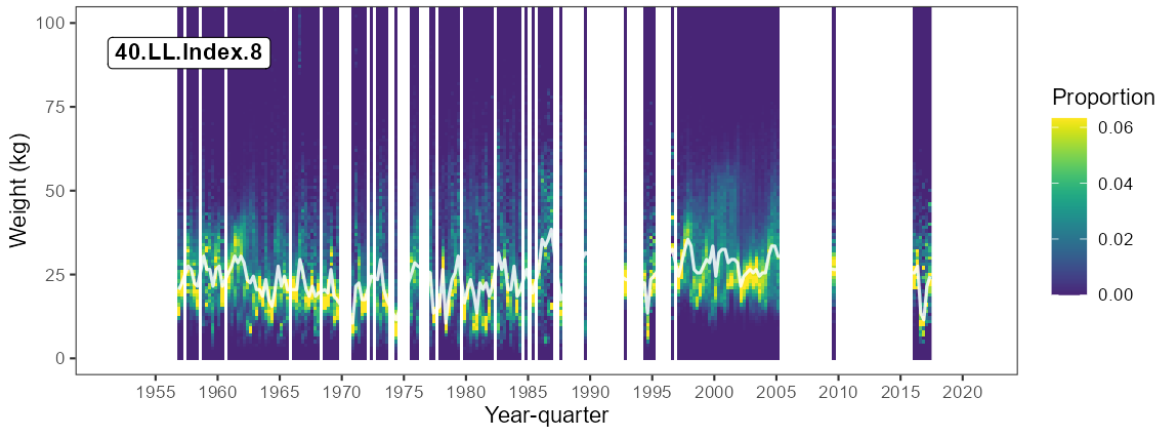


(b) 'Stronger filtering' option

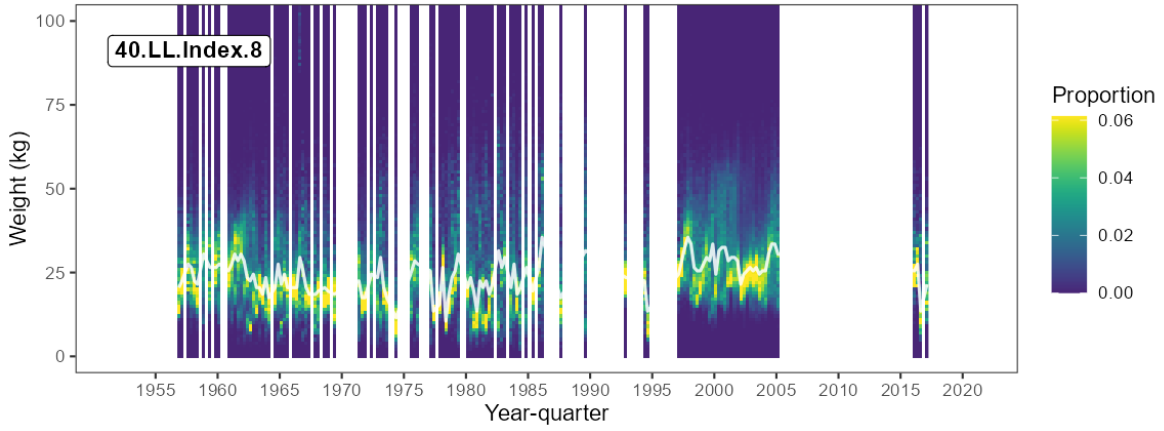


(c) 'Strongest filtering' option

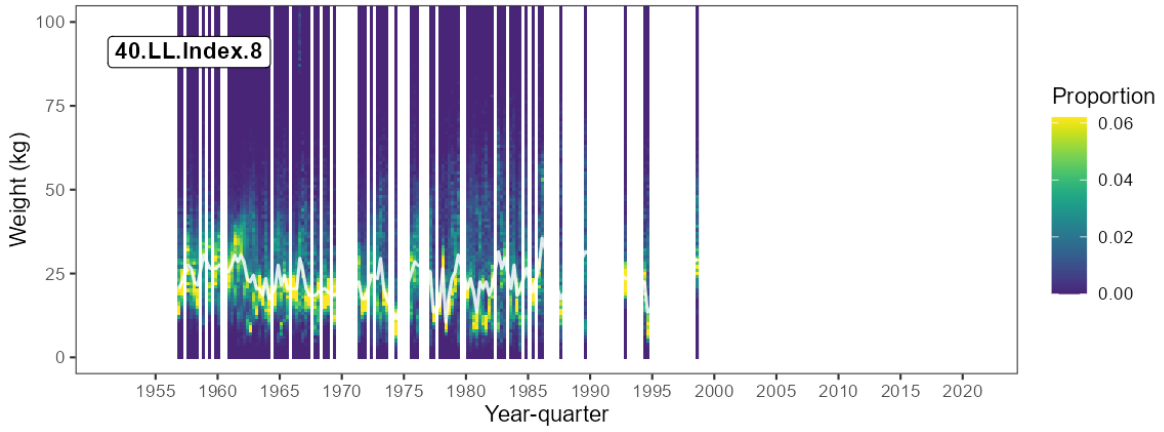
Figure C.33: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 40.LL.Index.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

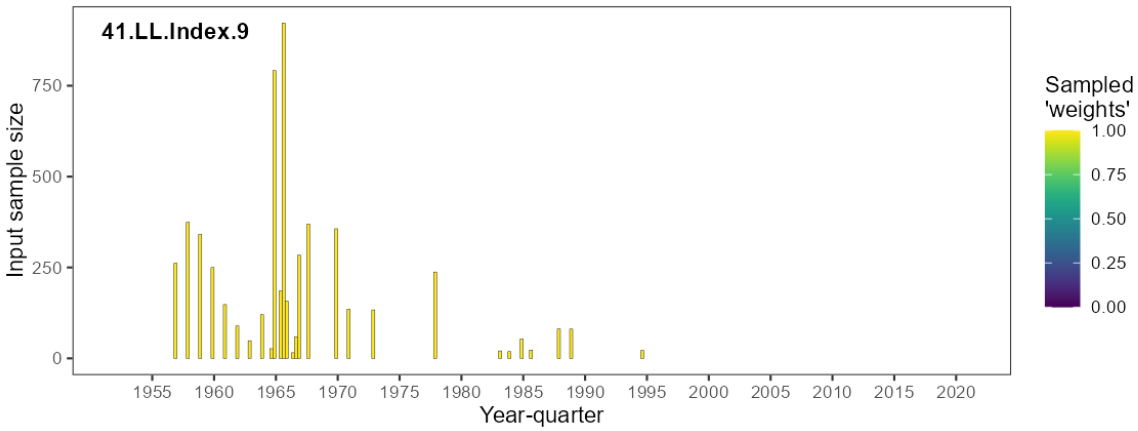


(b) 'Stronger filtering' option

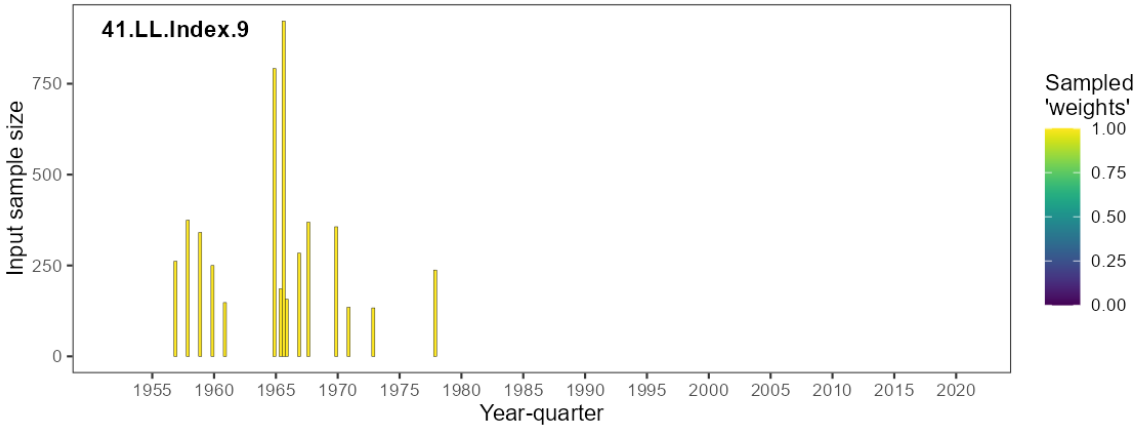


(c) 'Strongest filtering' option

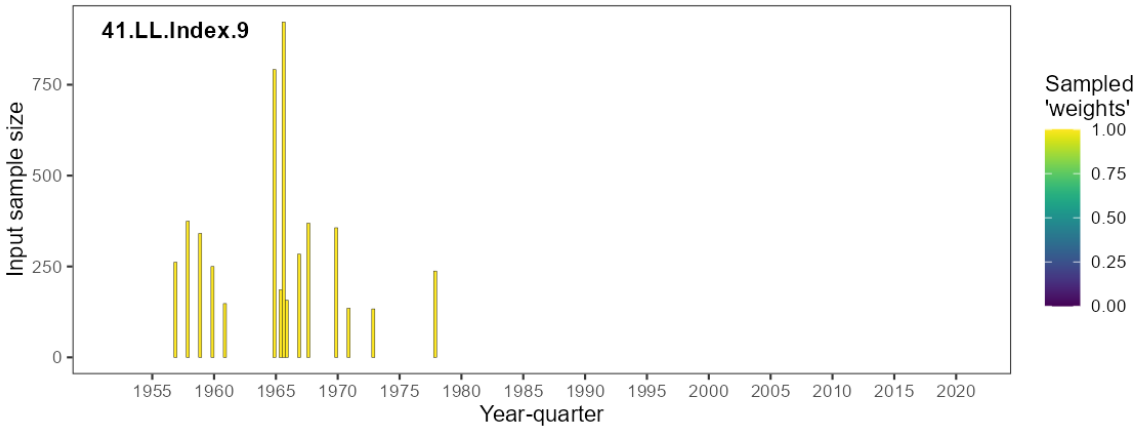
Figure C.34: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 40.LL.Index.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

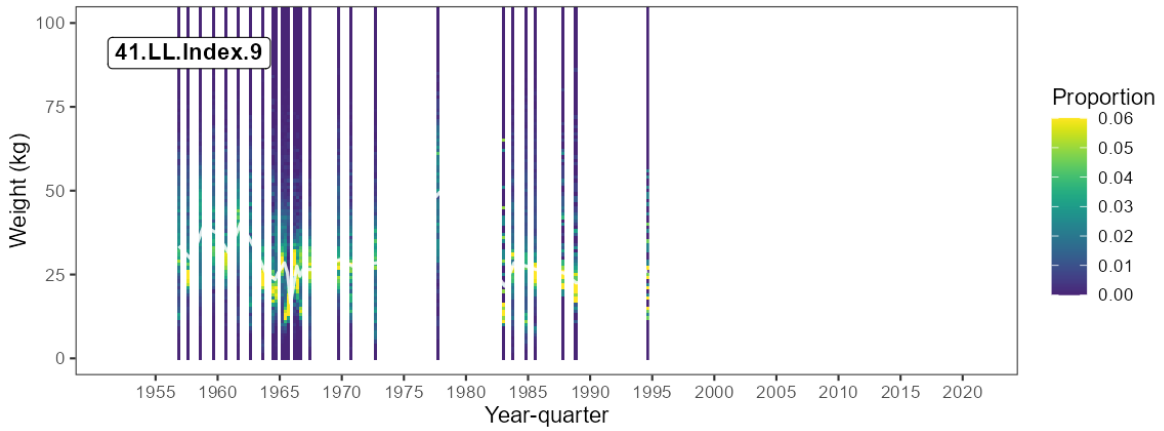


(b) 'Stronger filtering' option

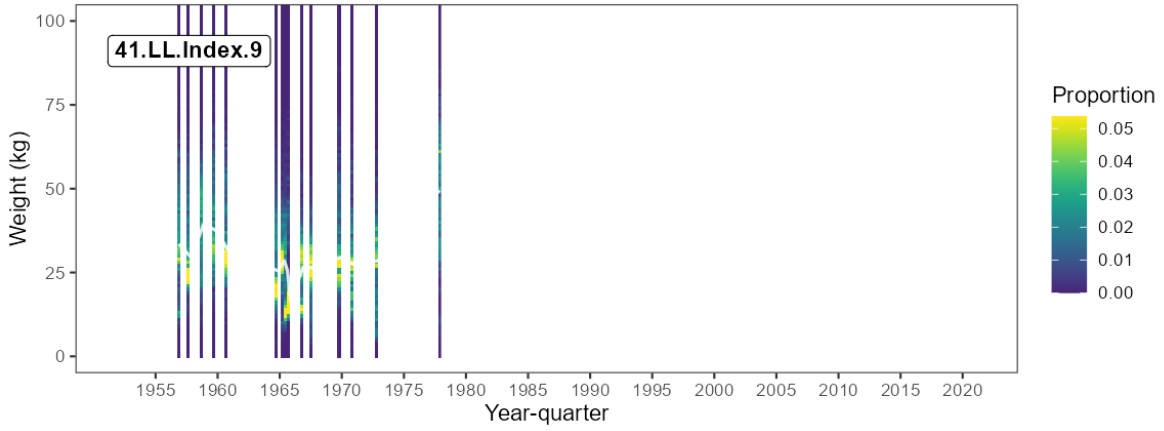


(c) 'Strongest filtering' option

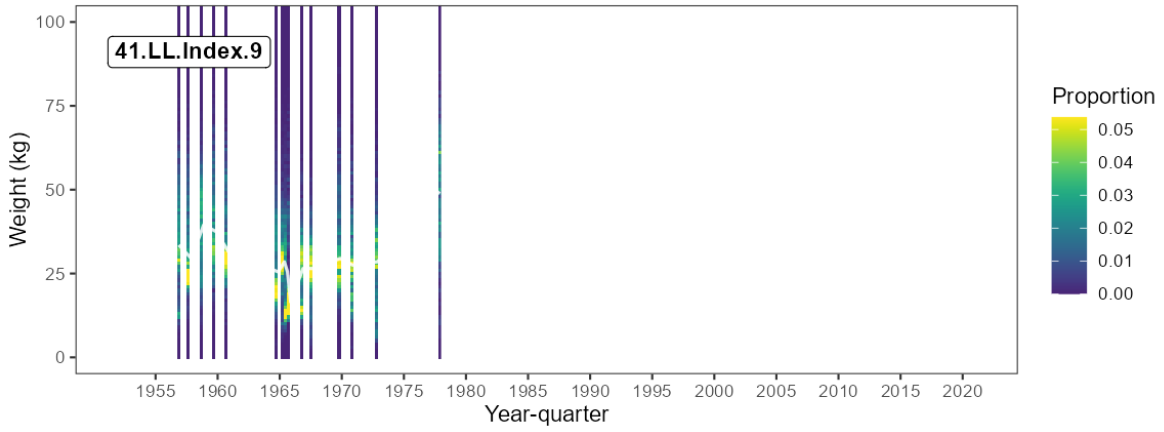
Figure C.35: (Nine region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 41.LL.Index.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

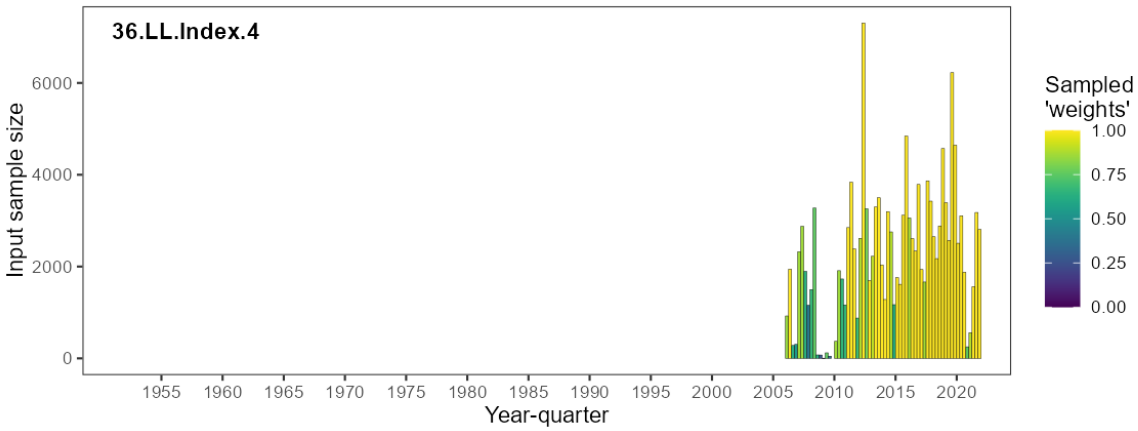


(b) 'Stronger filtering' option

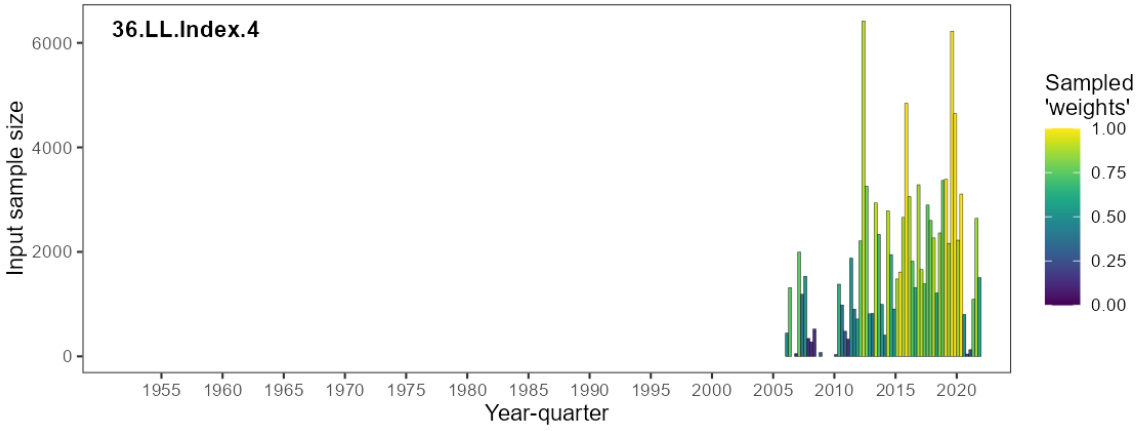


(c) 'Strongest filtering' option

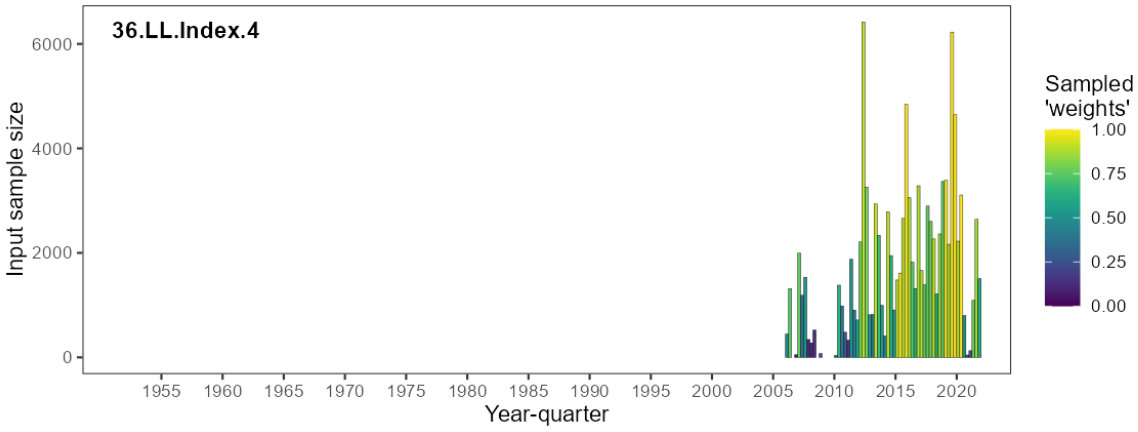
Figure C.36: (Nine region structure) Reweighted weight compositions of yellowfin for the longline index fishery 41.LL.Index.9 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

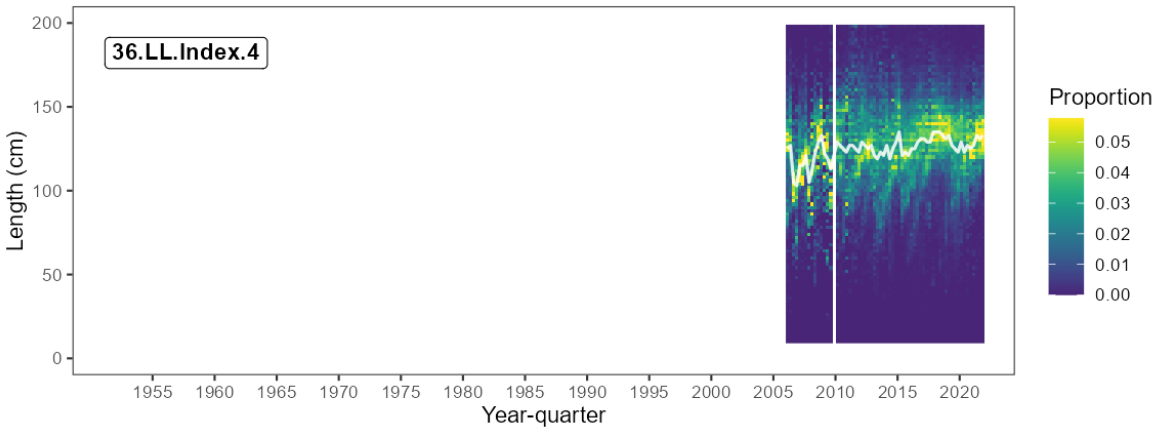


(b) 'Stronger filtering' option

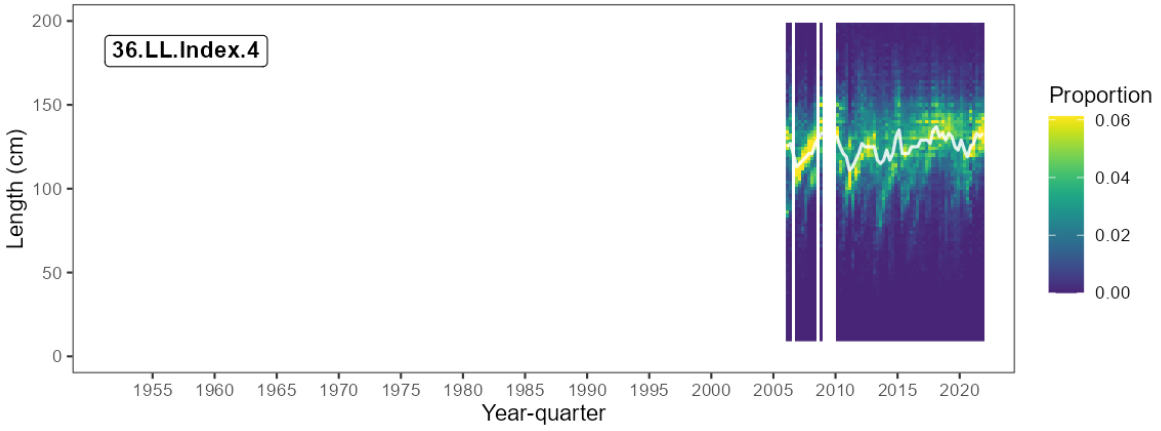


(c) 'Strongest filtering' option

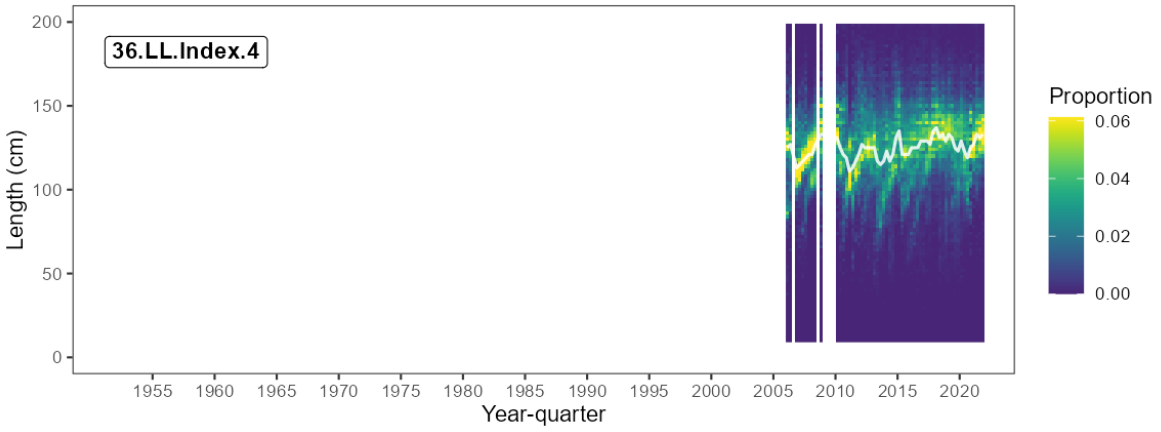
Figure C.37: (Nine region structure) Input sample sizes for reweighted length compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

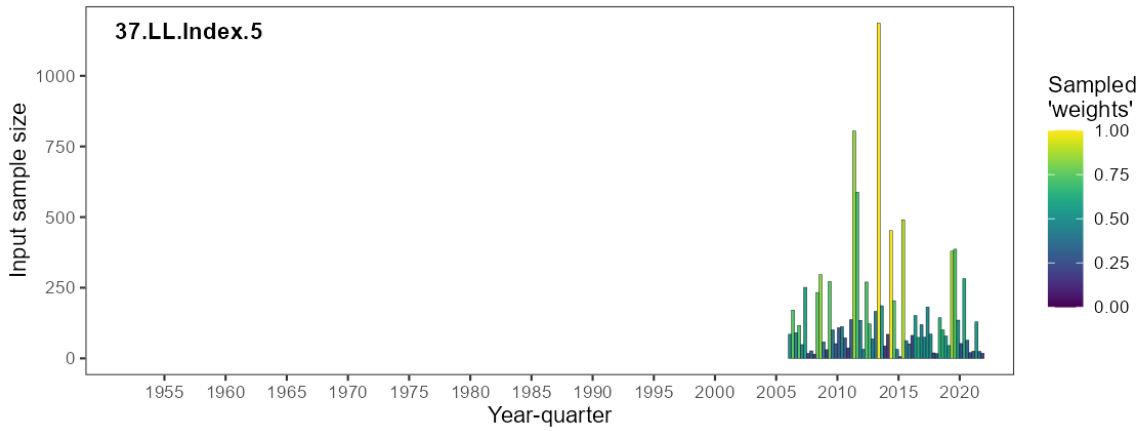


(b) 'Stronger filtering' option

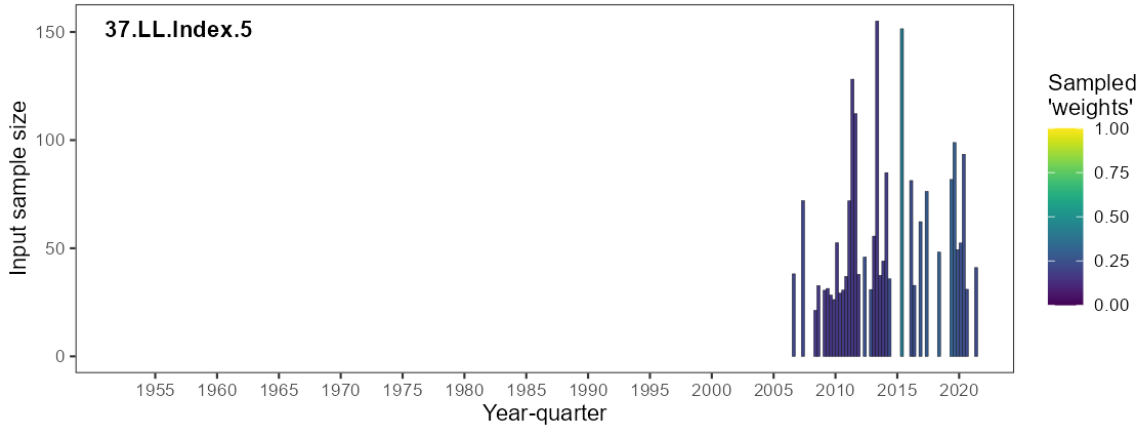


(c) 'Strongest filtering' option

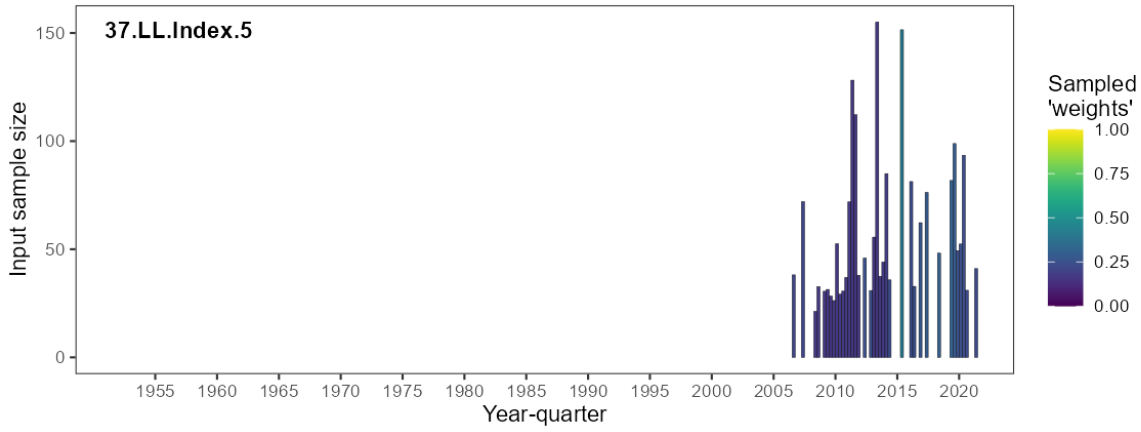
Figure C.38: (Nine region structure) Reweighted length compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

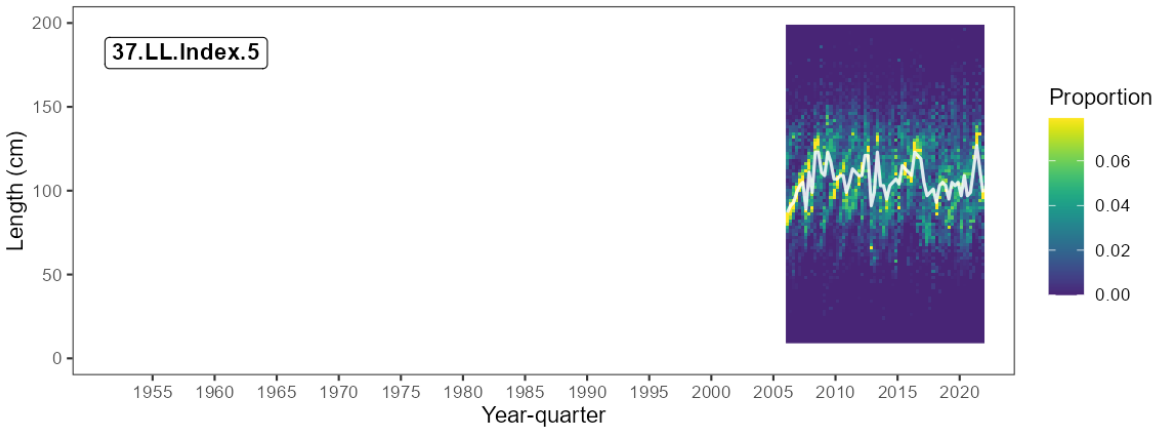


(b) 'Stronger filtering' option

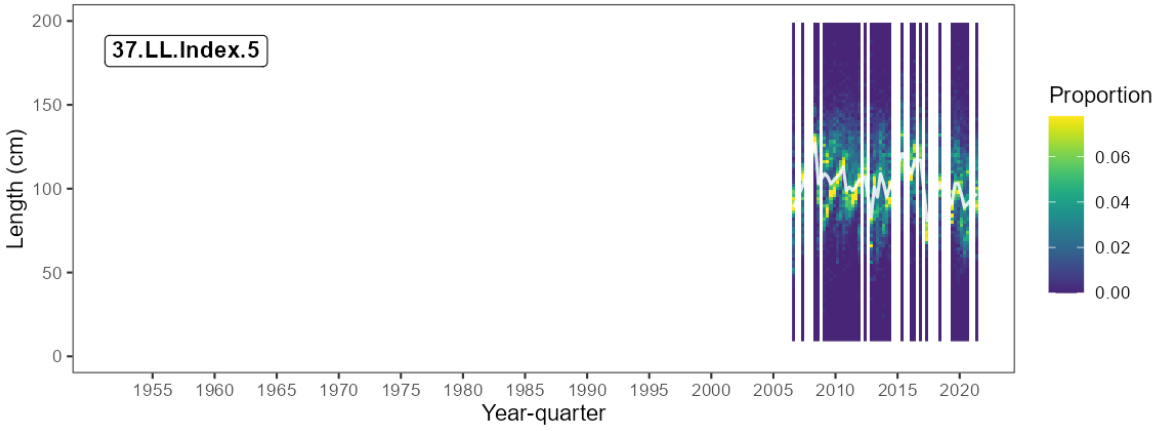


(c) 'Strongest filtering' option

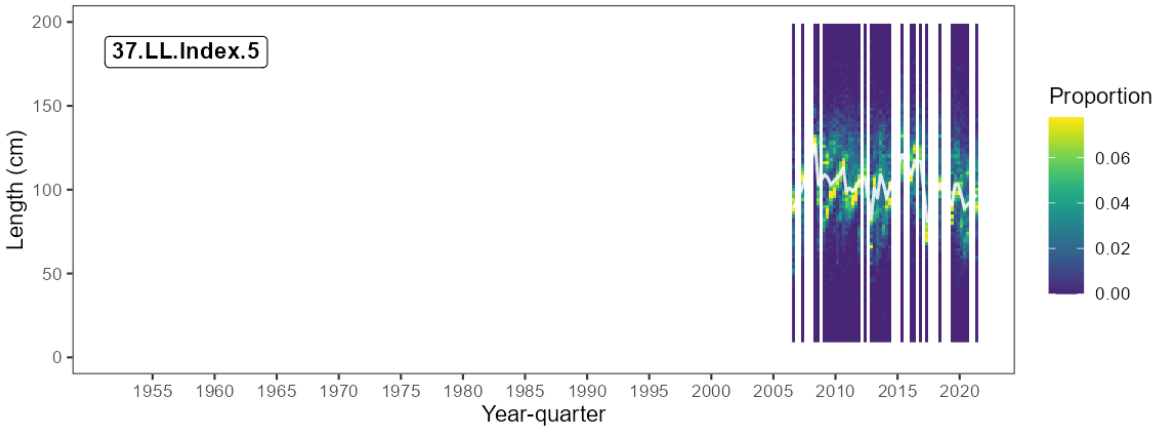
Figure C.39: (Nine region structure) Input sample sizes for reweighted length compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

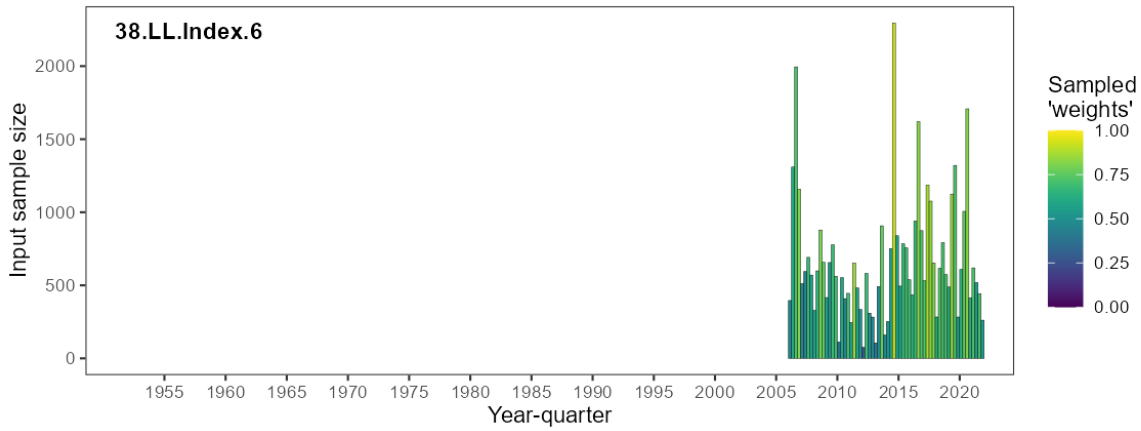


(b) 'Stronger filtering' option

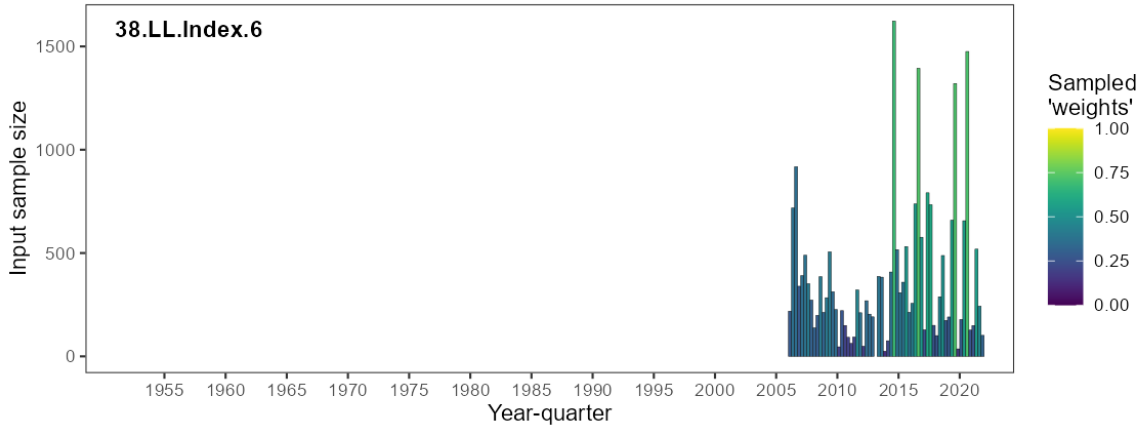


(c) 'Strongest filtering' option

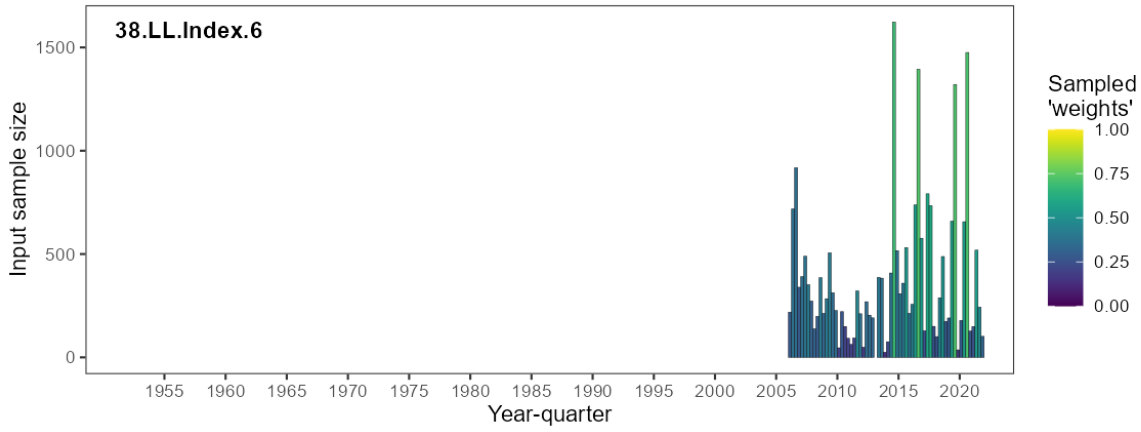
Figure C.40: (Nine region structure) Reweighted length compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

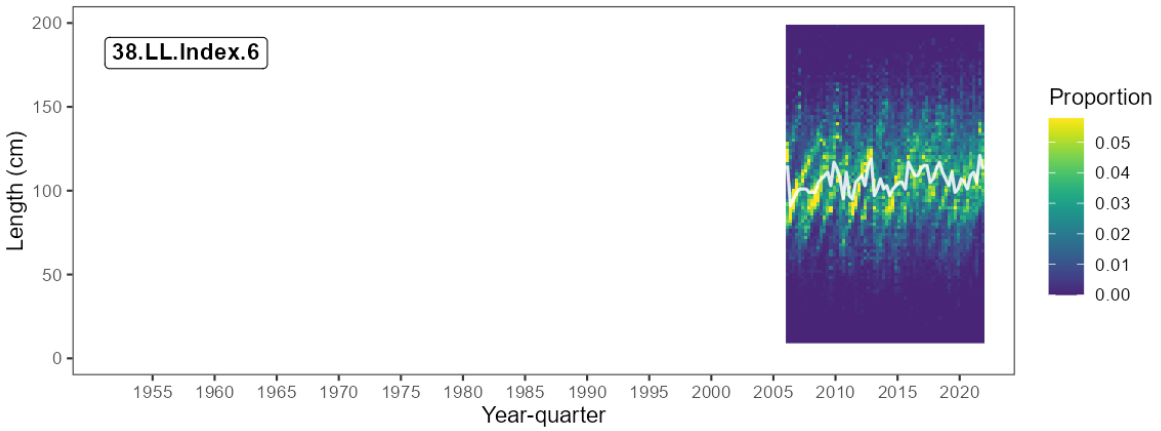


(b) 'Stronger filtering' option

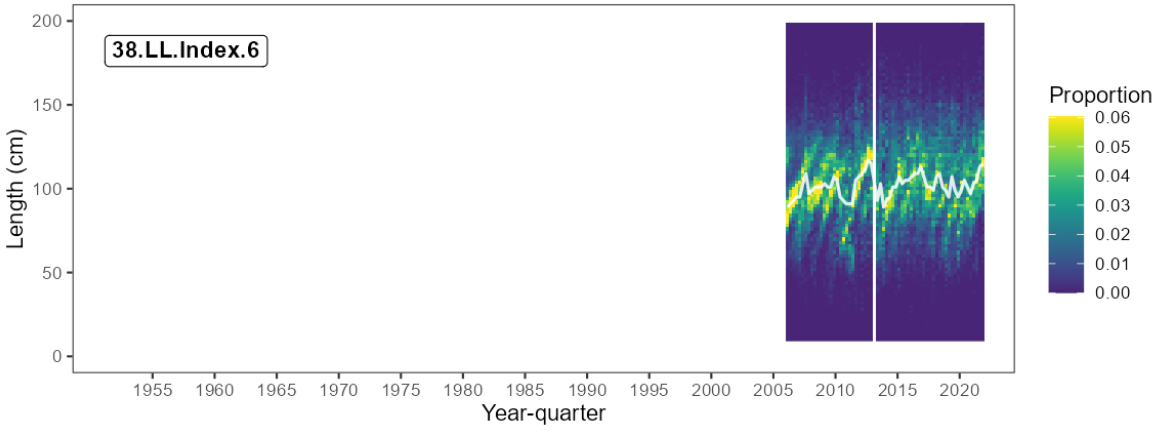


(c) 'Strongest filtering' option

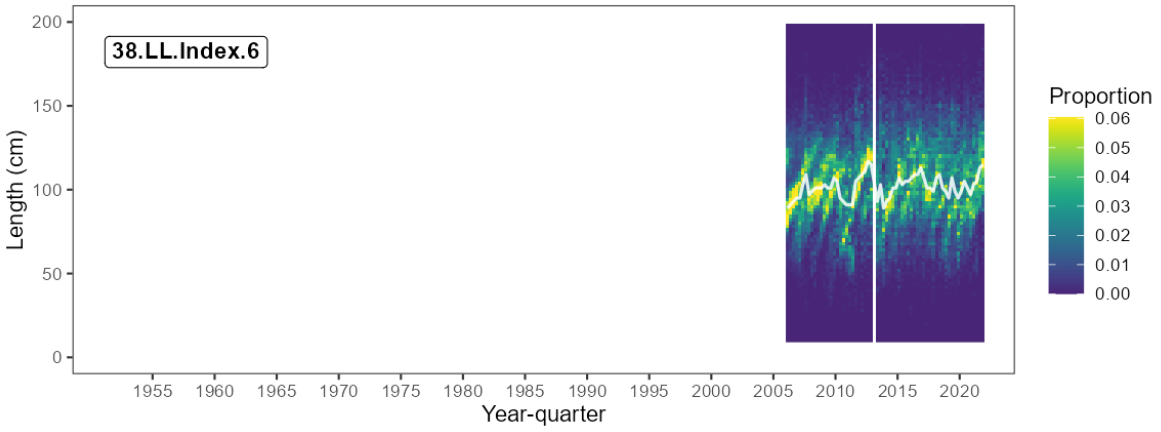
Figure C.41: (Nine region structure) Input sample sizes for reweighted length compositions of bigeye for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

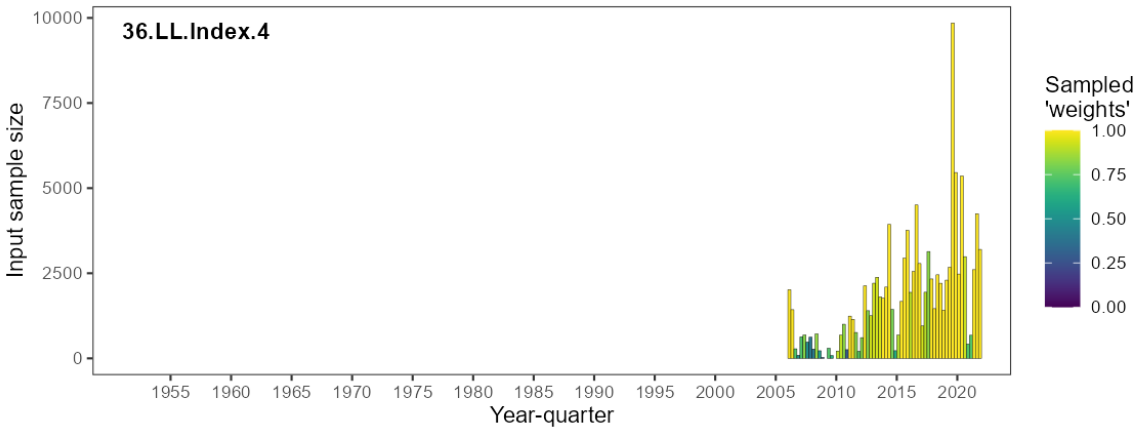


(b) 'Stronger filtering' option

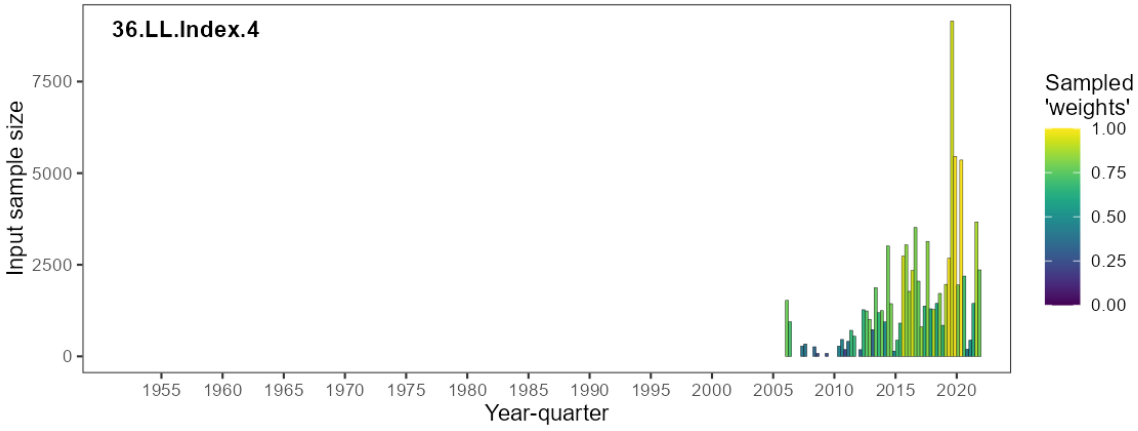


(c) 'Strongest filtering' option

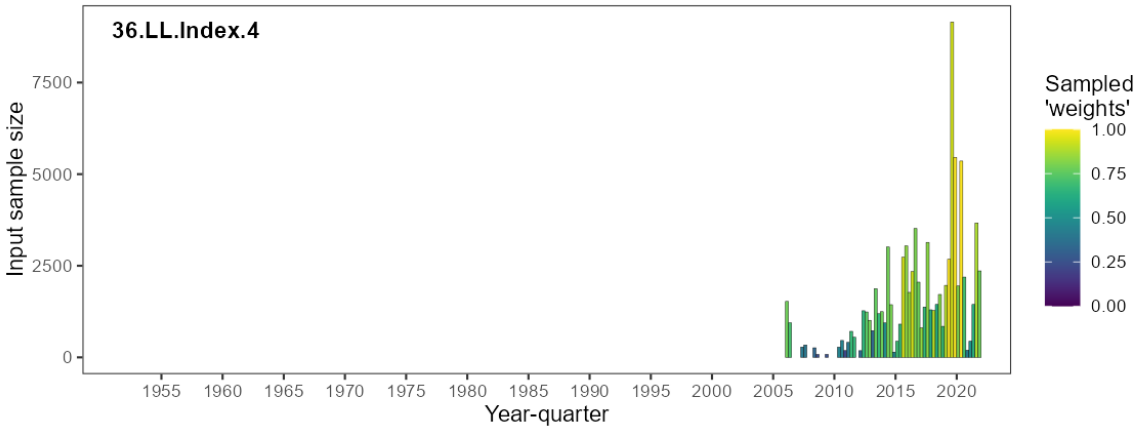
Figure C.42: (Nine region structure) Reweighted length compositions of bigeye for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

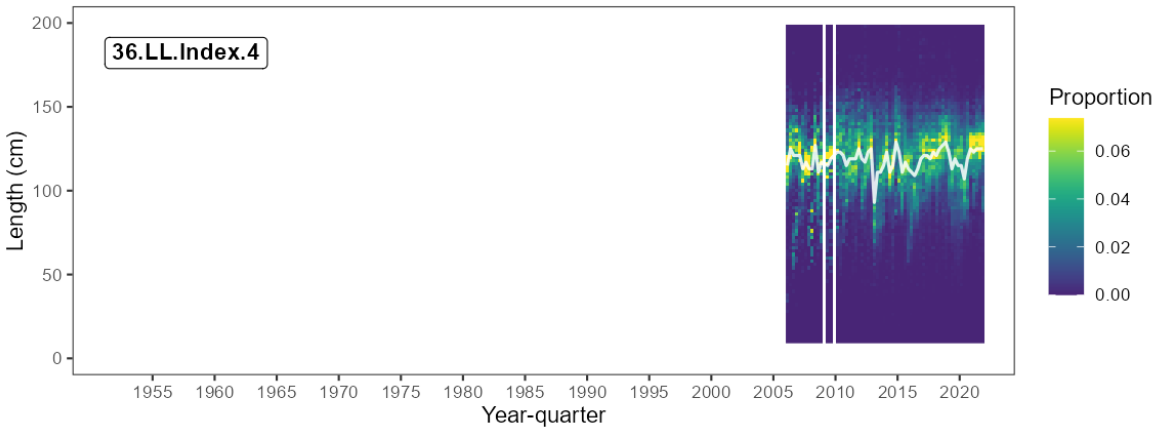


(b) 'Stronger filtering' option

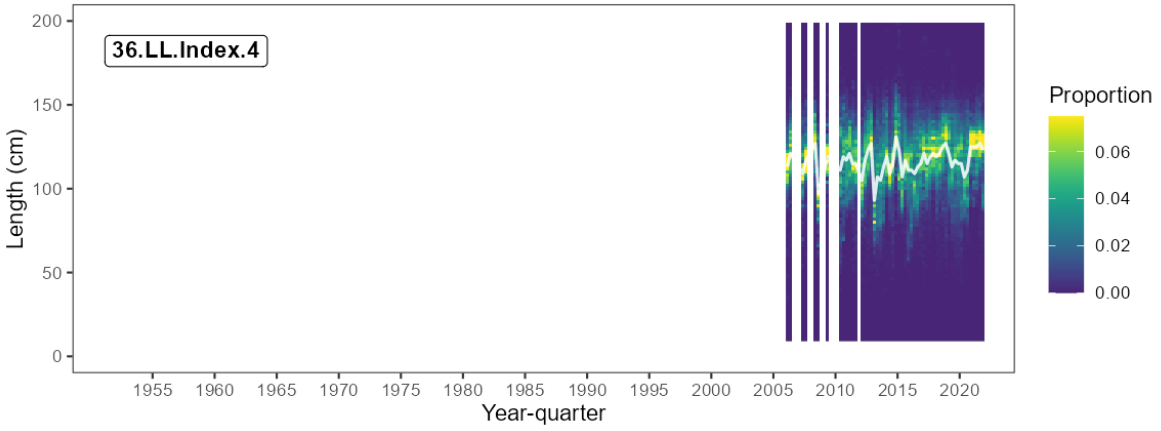


(c) 'Strongest filtering' option

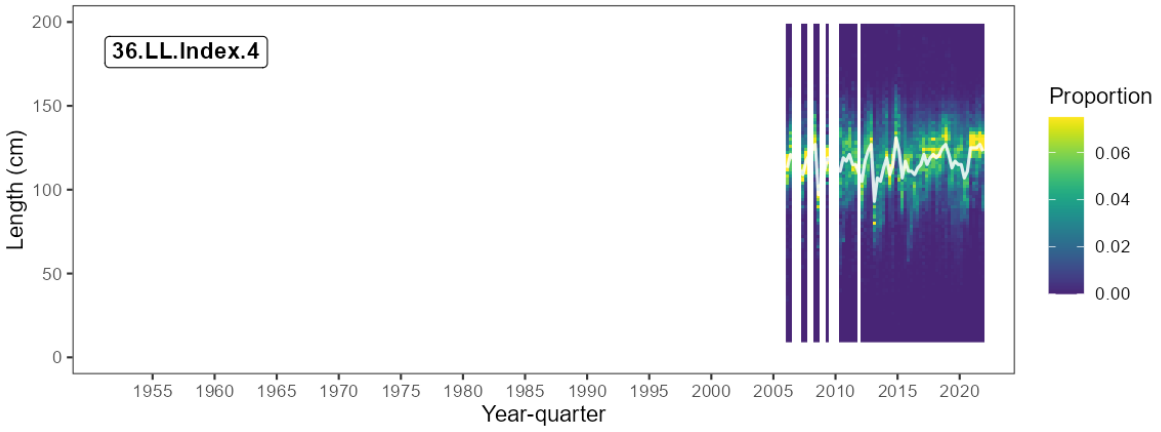
Figure C.43: (Nine region structure) Input sample sizes for reweighted length compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

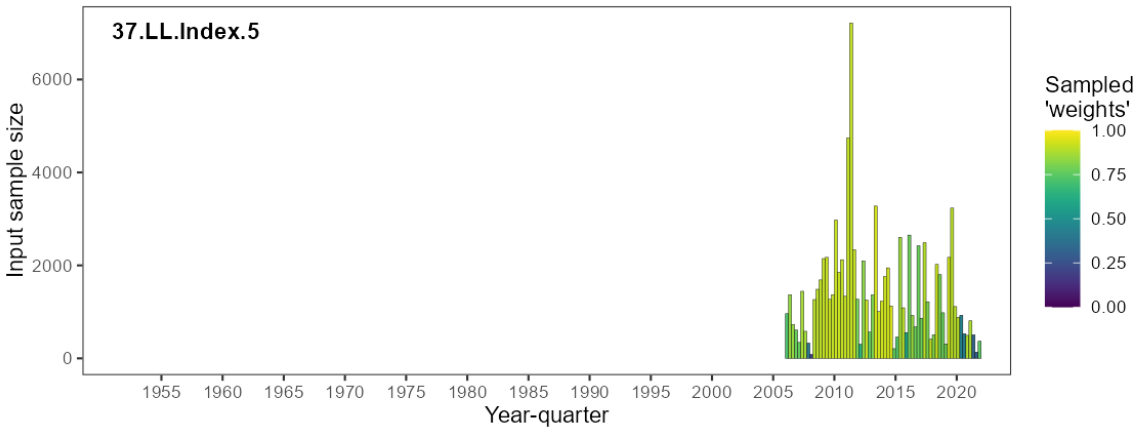


(b) 'Stronger filtering' option

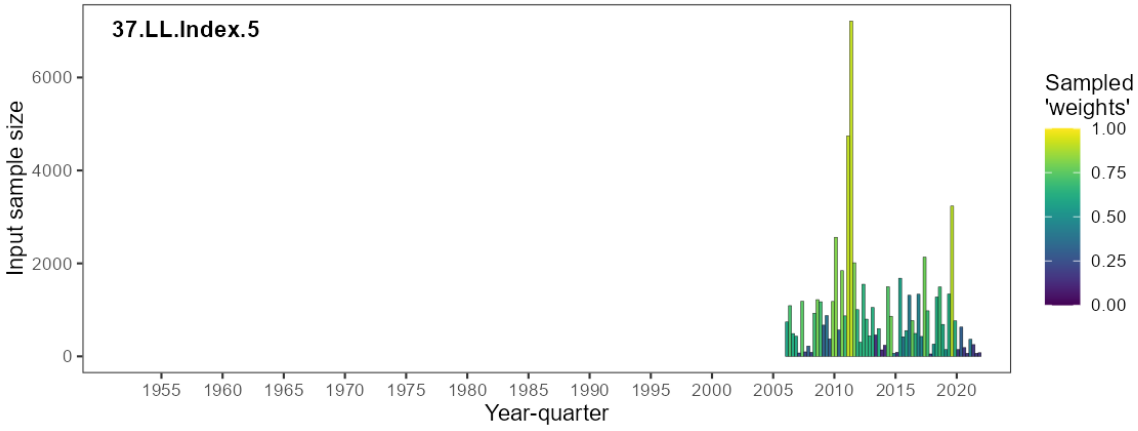


(c) 'Strongest filtering' option

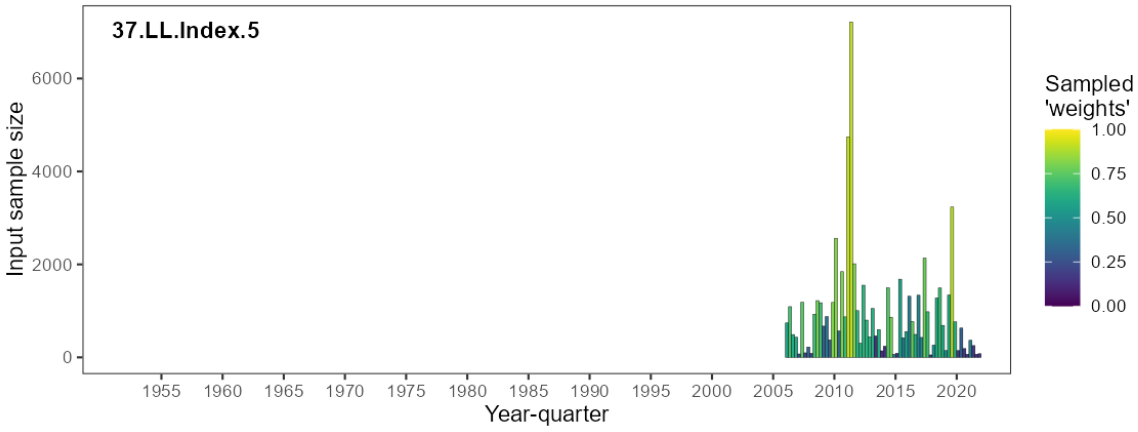
Figure C.44: (Nine region structure) Reweighted length compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

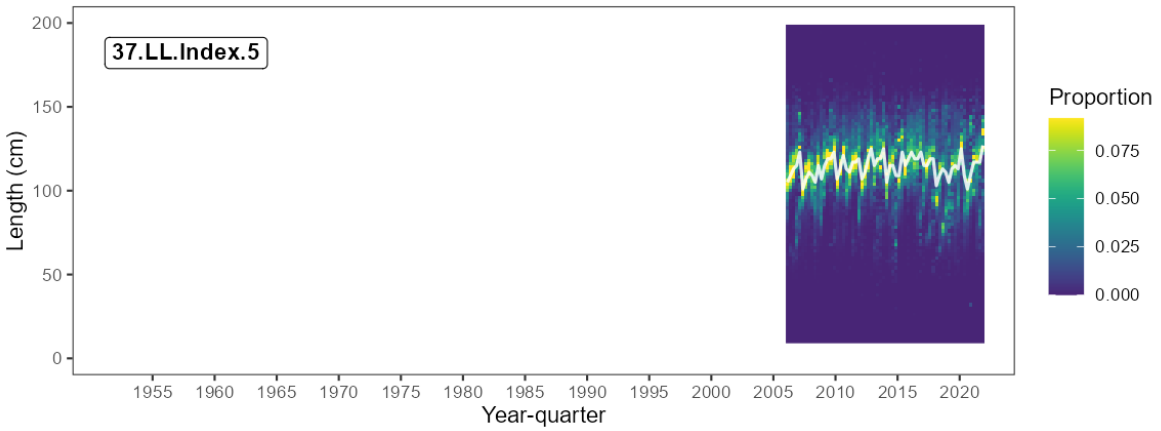


(b) 'Stronger filtering' option

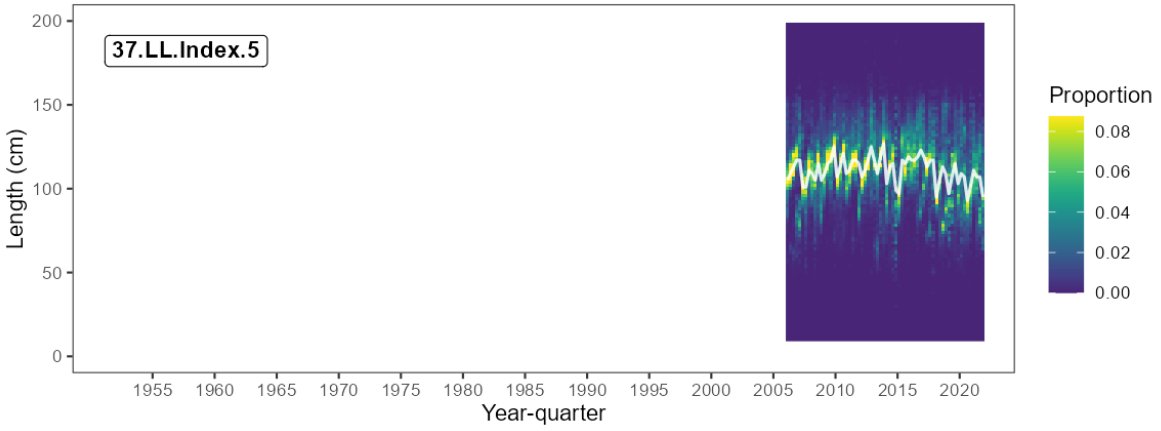


(c) 'Strongest filtering' option

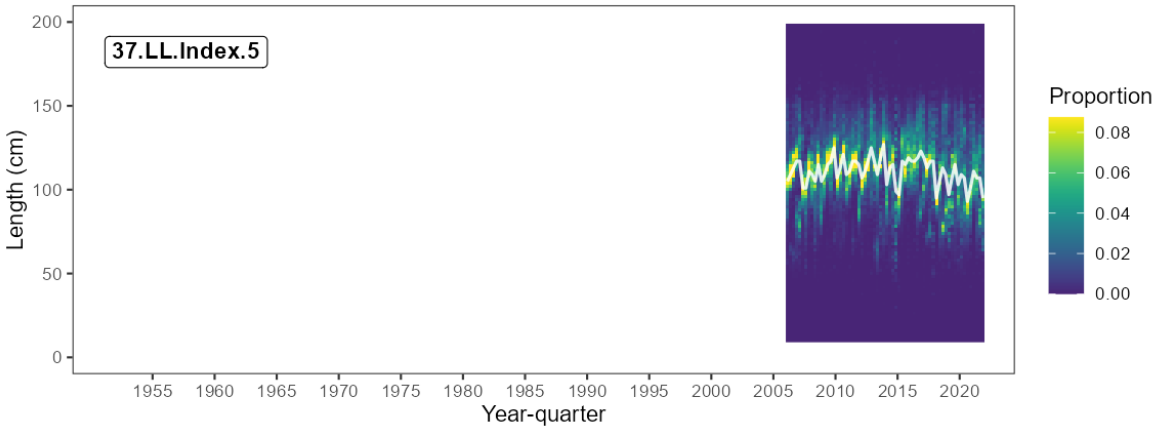
Figure C.45: (Nine region structure) Input sample sizes for reweighted length compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

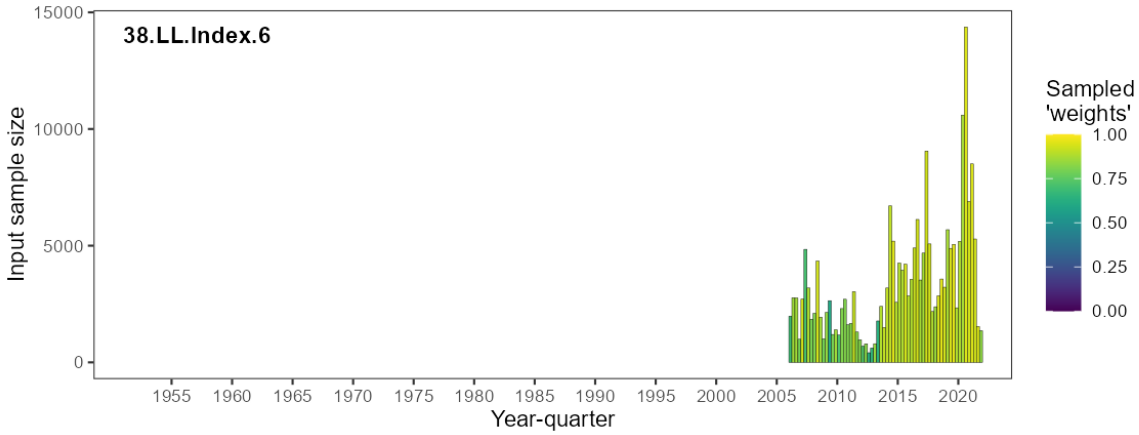


(b) 'Stronger filtering' option

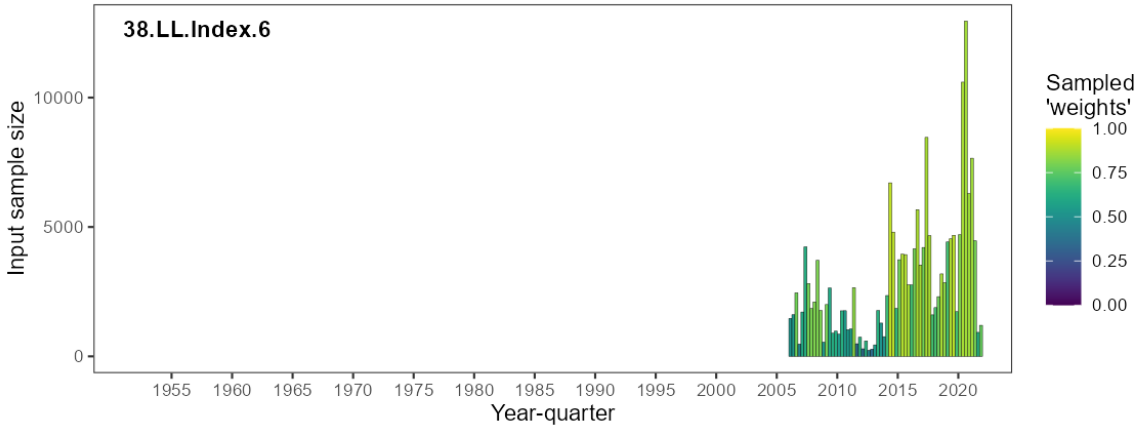


(c) 'Strongest filtering' option

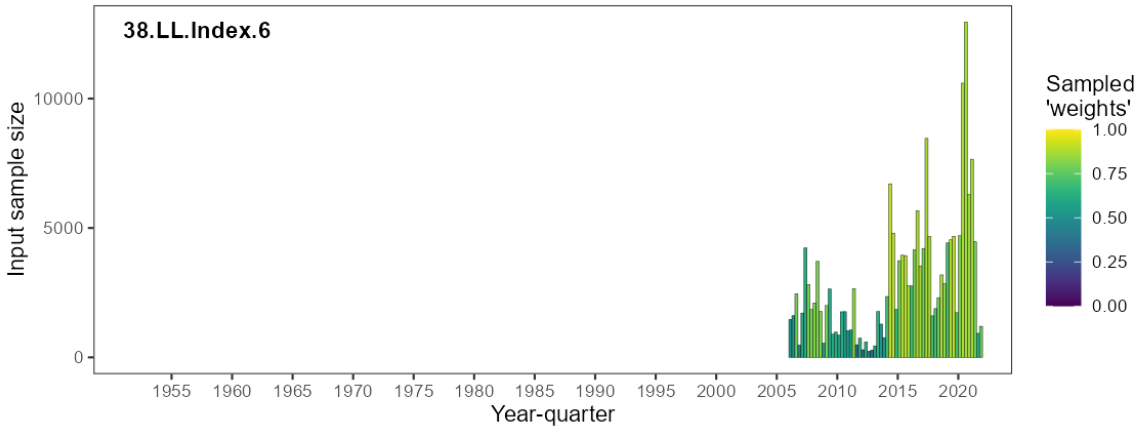
Figure C.46: (Nine region structure) Reweighted length compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

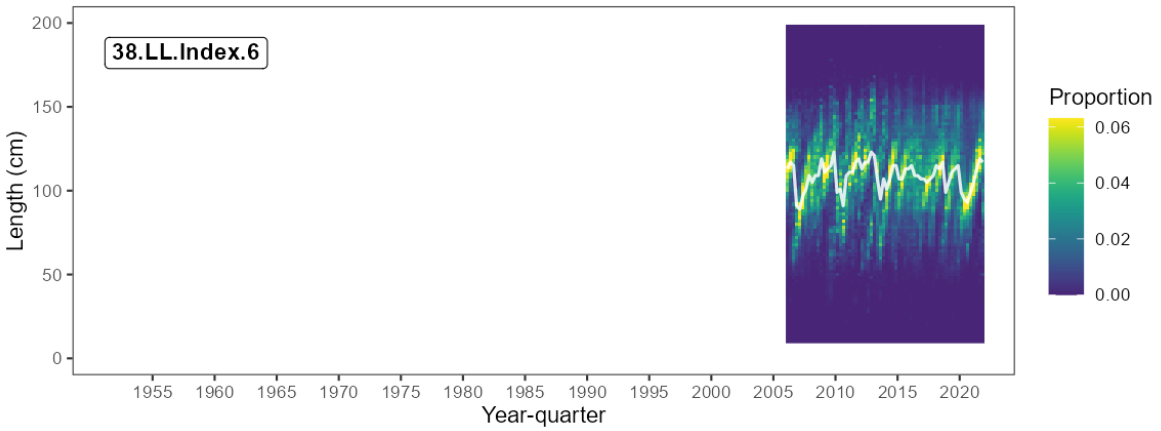


(b) 'Stronger filtering' option

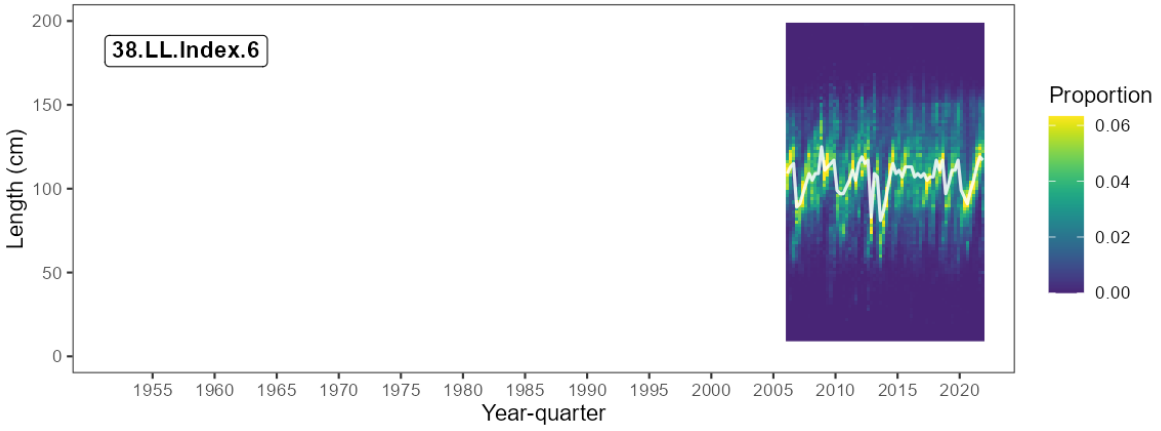


(c) 'Strongest filtering' option

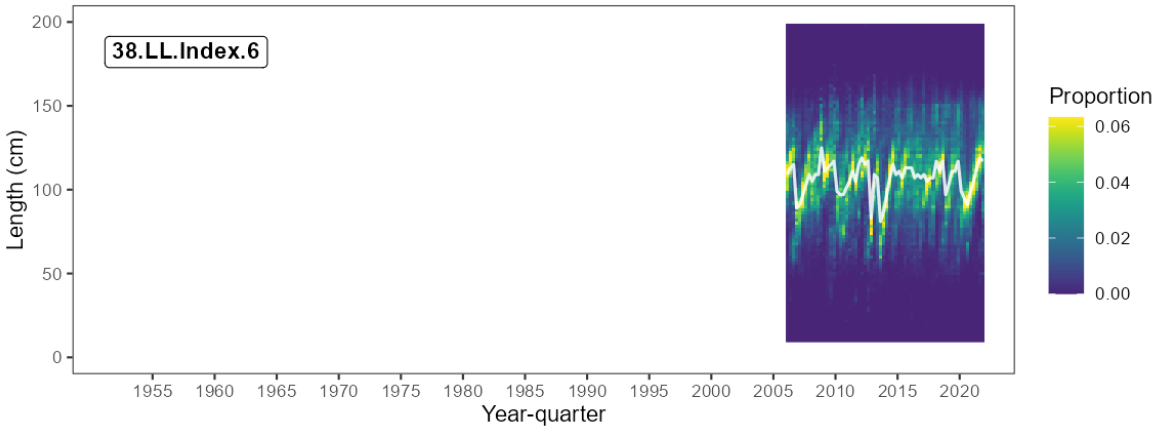
Figure C.47: (Nine region structure) Input sample sizes for reweighted length compositions of yellowfin for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option



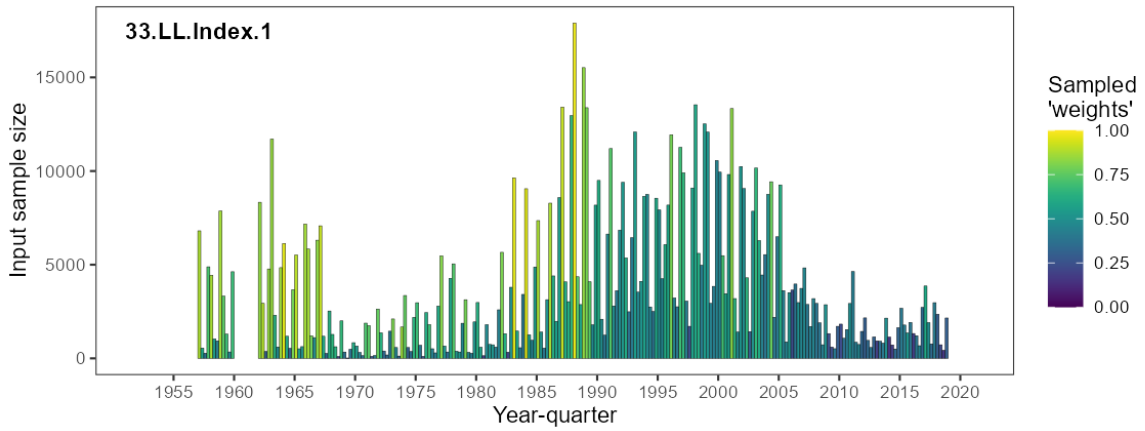
(b) 'Stronger filtering' option



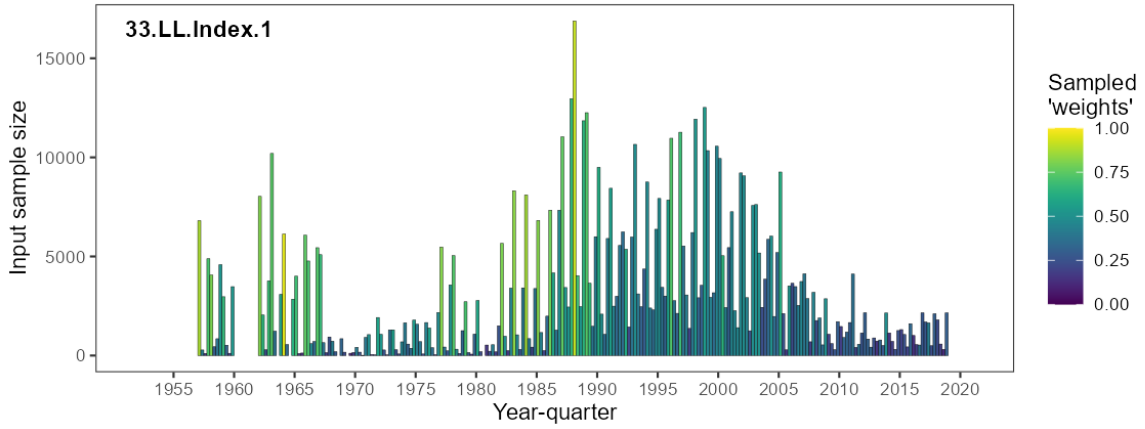
(c) 'Strongest filtering' option

Figure C.48: (Nine region structure) Reweighted length compositions of yellowfin for the longline index fishery 38.LL.Index.6 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

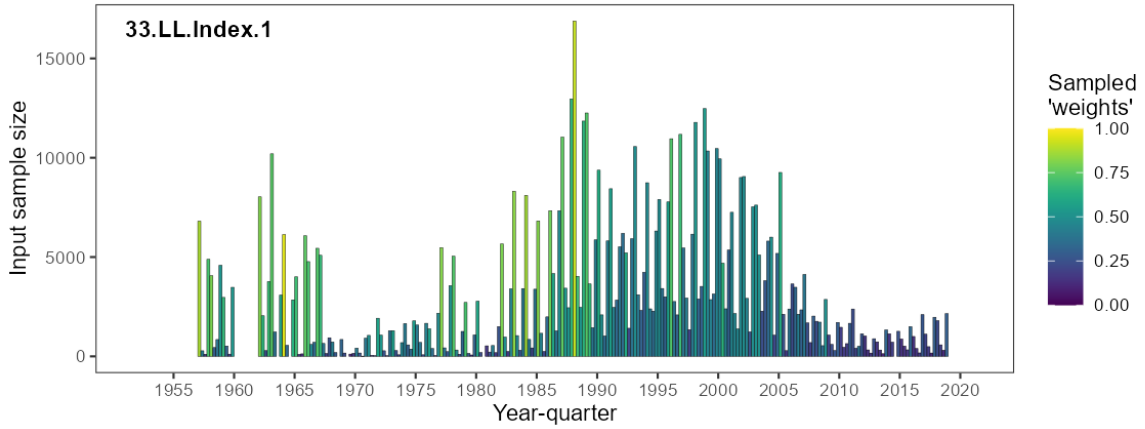
D Longline index fishery compositions with the five region structure



(a) 'Weak filtering' option

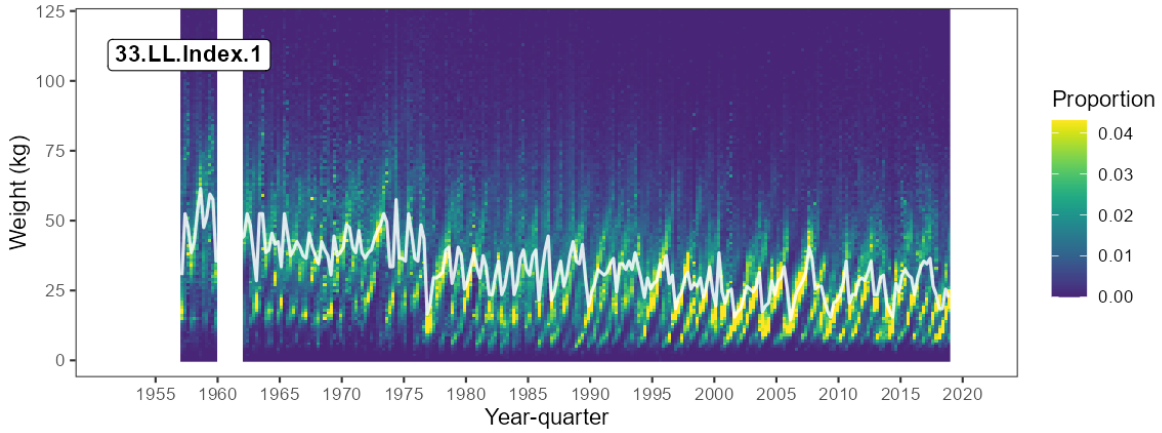


(b) 'Stronger filtering' option

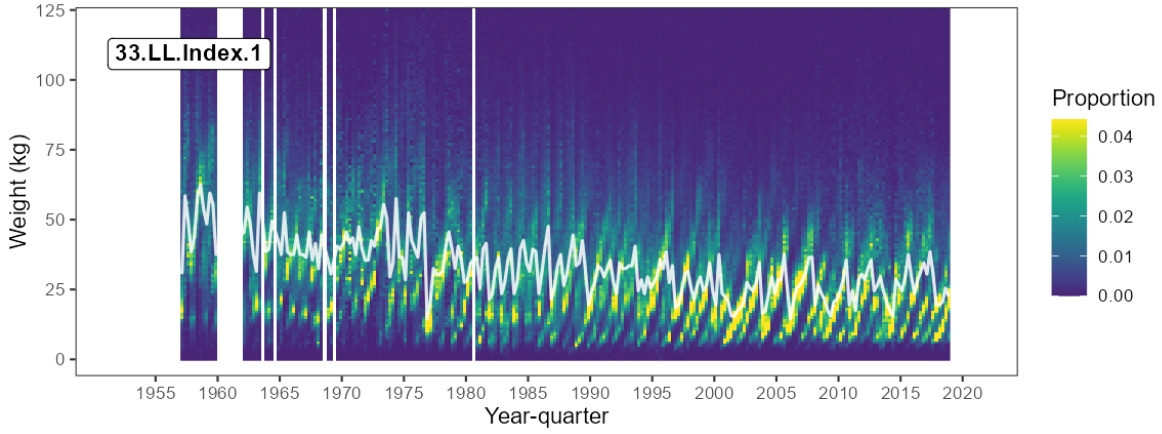


(c) 'Strongest filtering' option

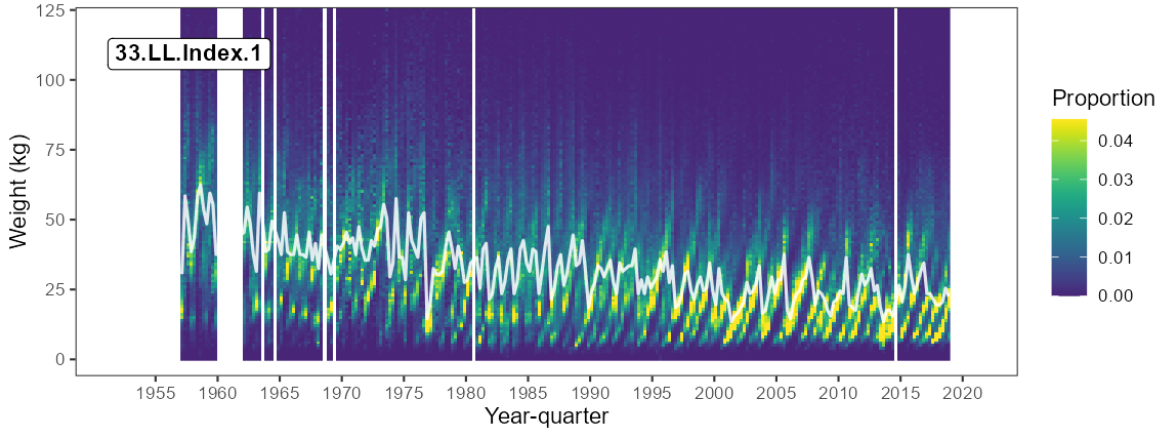
Figure D.1: (Five region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

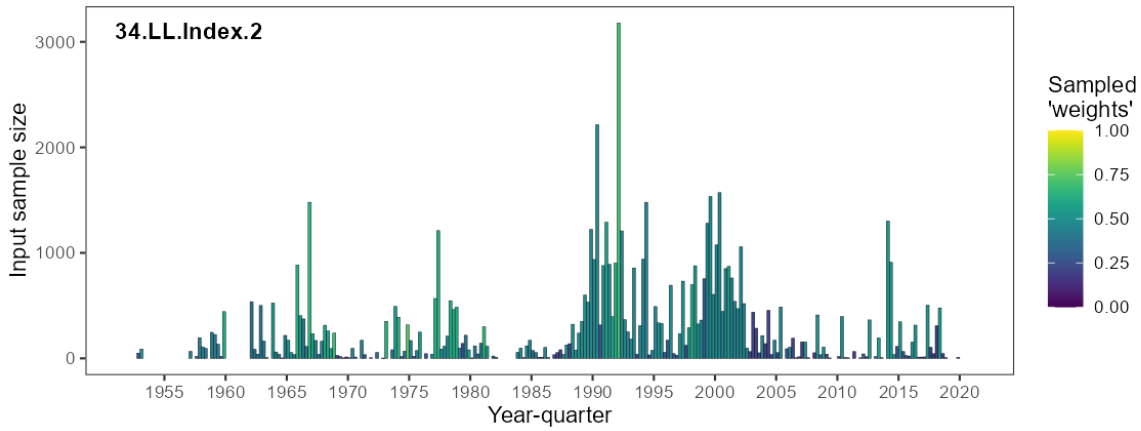


(b) 'Stronger filtering' option

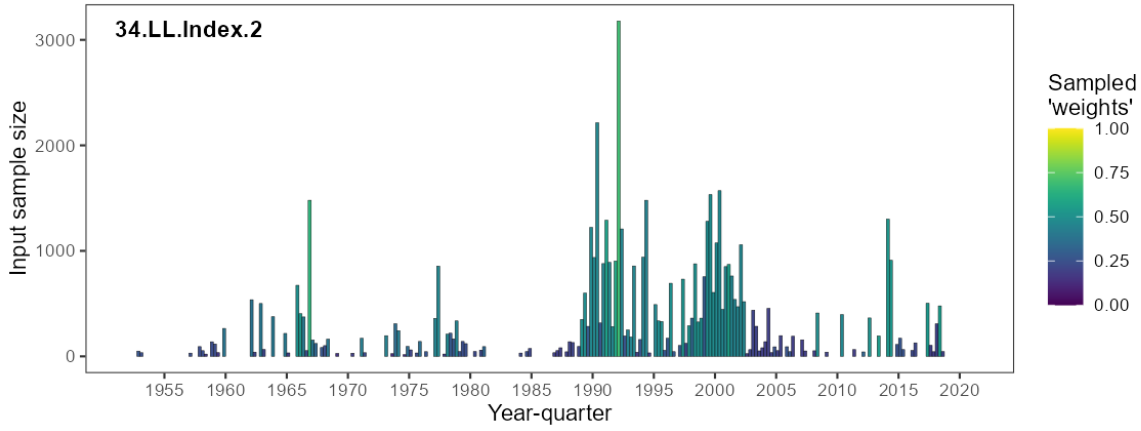


(c) 'Strongest filtering' option

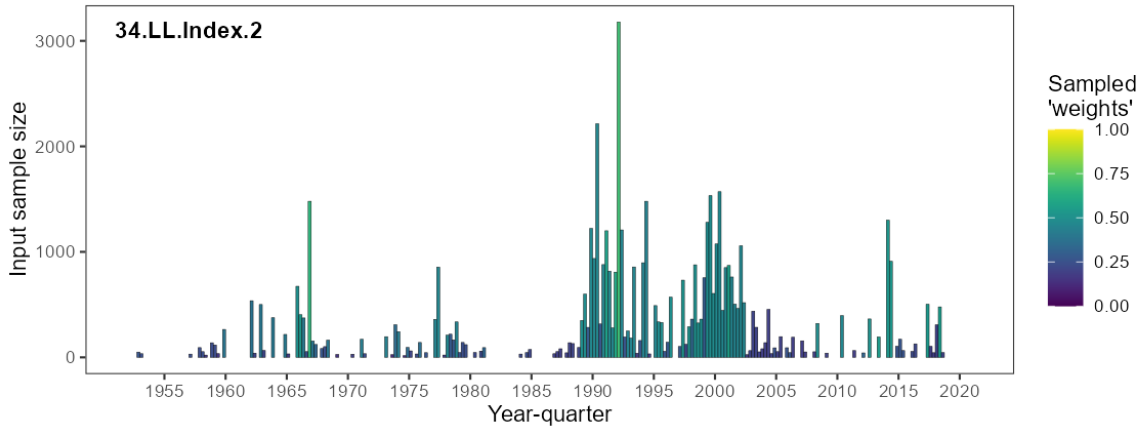
Figure D.2: (Five region structure) Reweighted weight compositions of bigeye for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

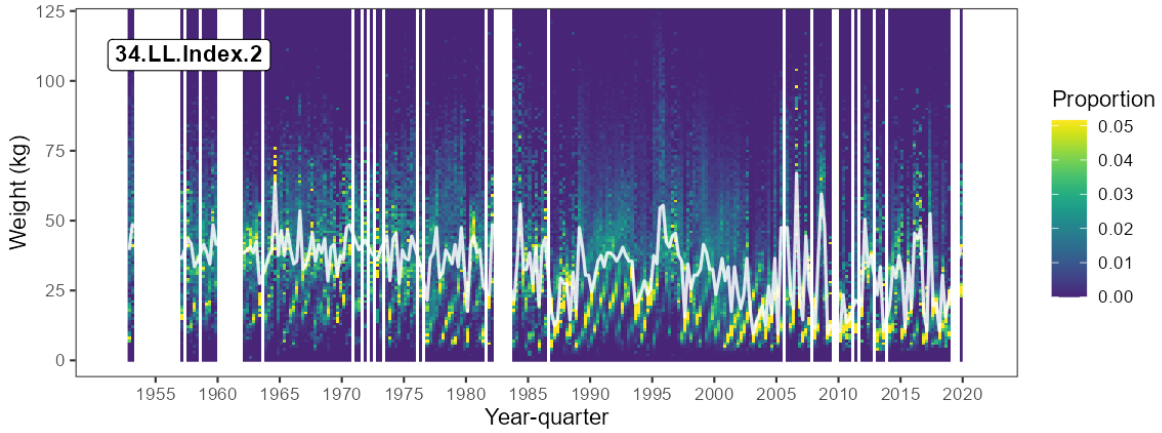


(b) 'Stronger filtering' option

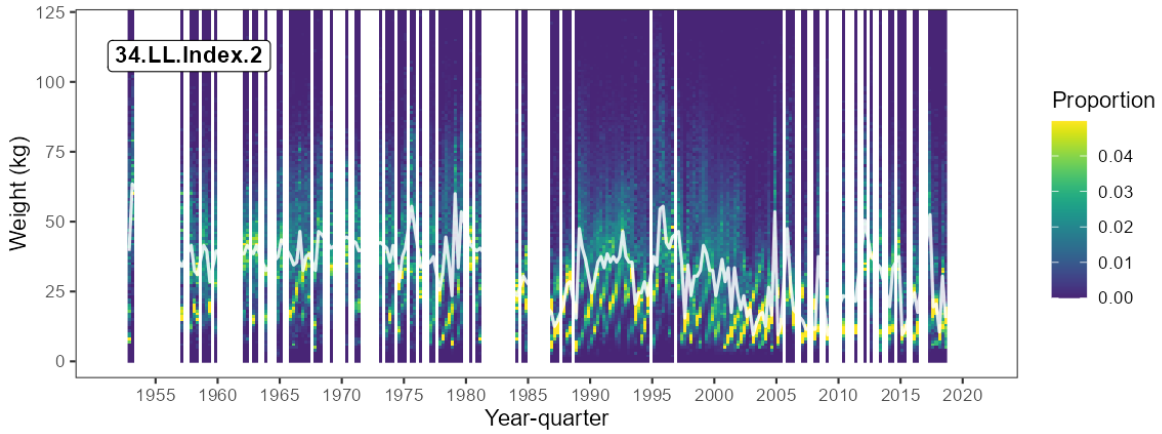


(c) 'Strongest filtering' option

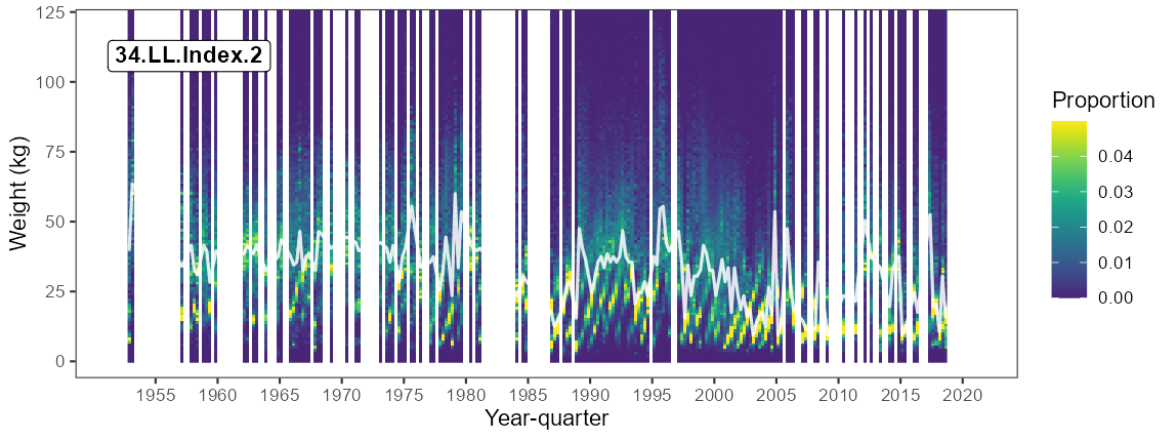
Figure D.3: (Five region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

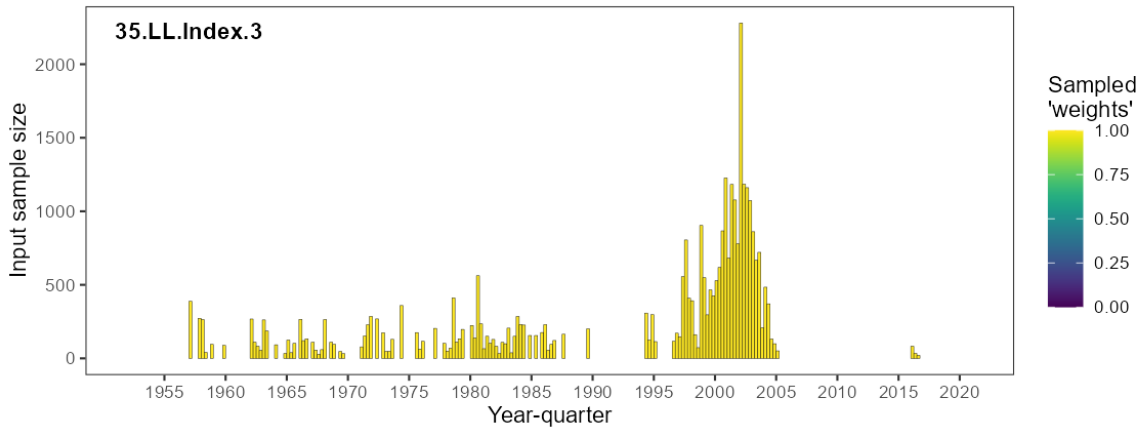


(b) 'Stronger filtering' option

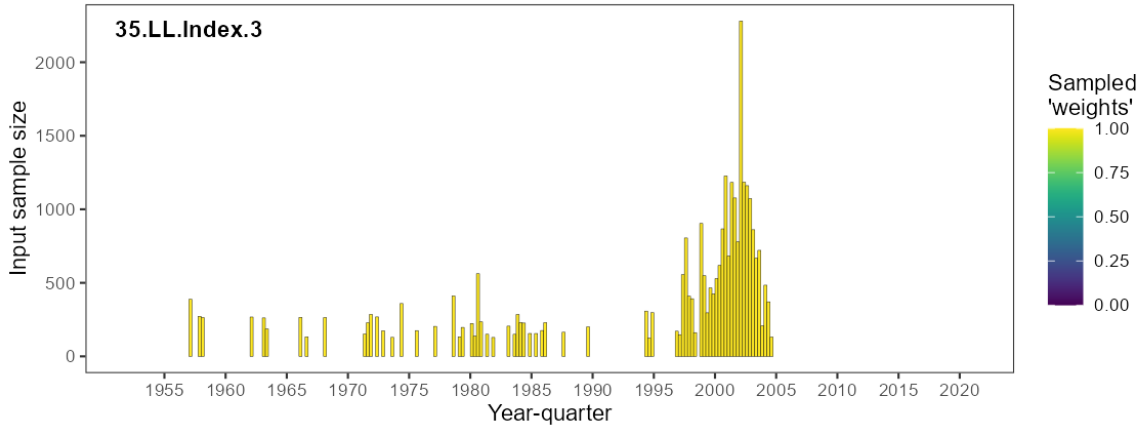


(c) 'Strongest filtering' option

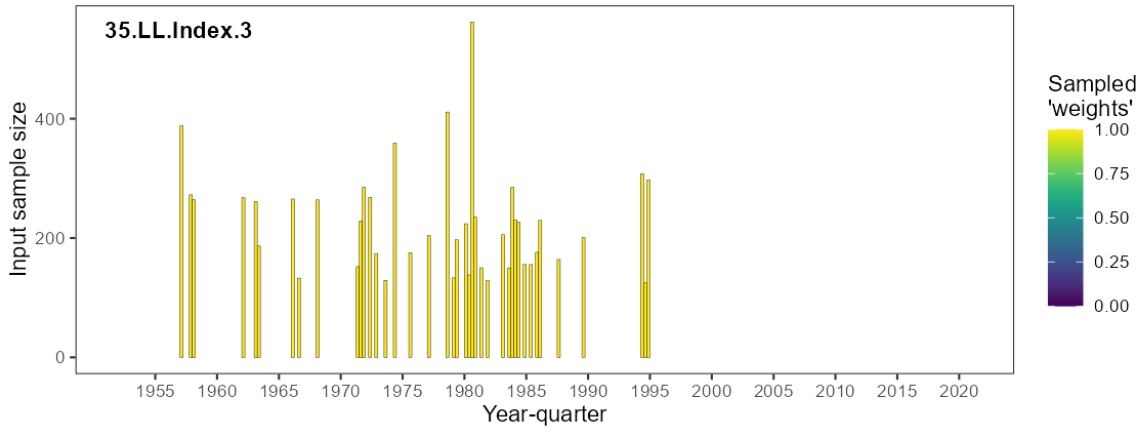
Figure D.4: (Five region structure) Reweighted weight compositions of bigeye for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

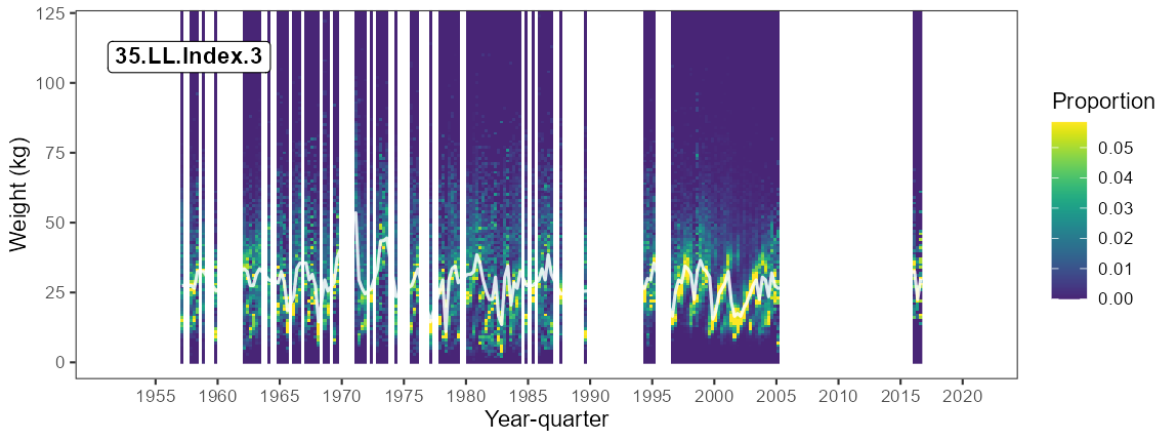


(b) 'Stronger filtering' option

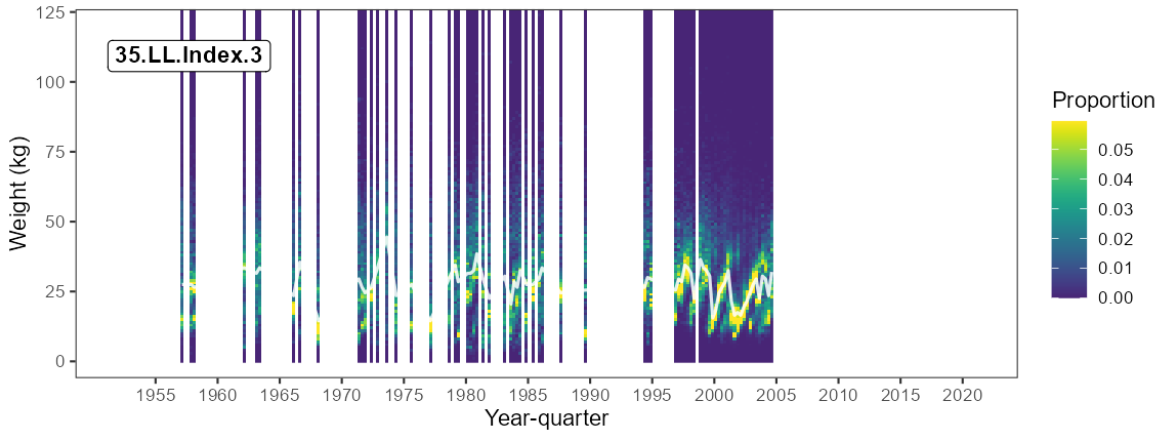


(c) 'Strongest filtering' option

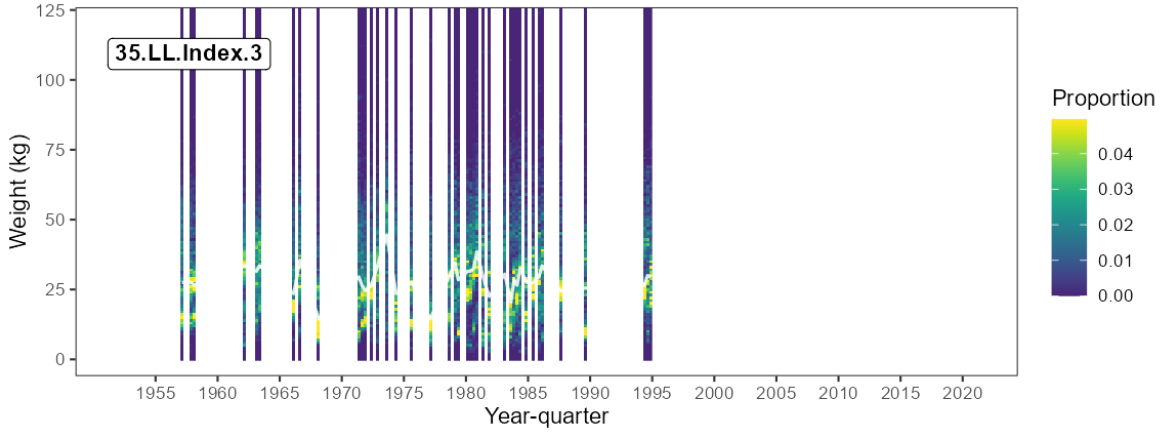
Figure D.5: (Five region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

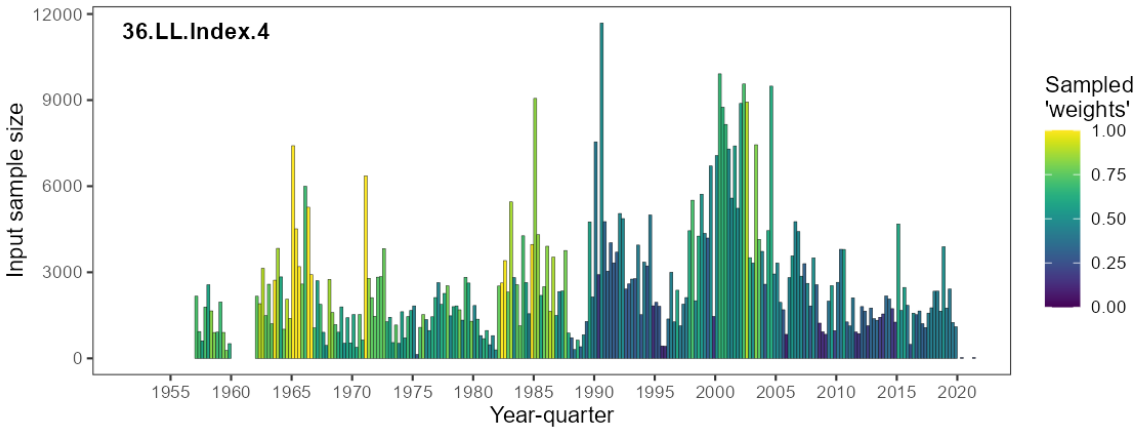


(b) 'Stronger filtering' option

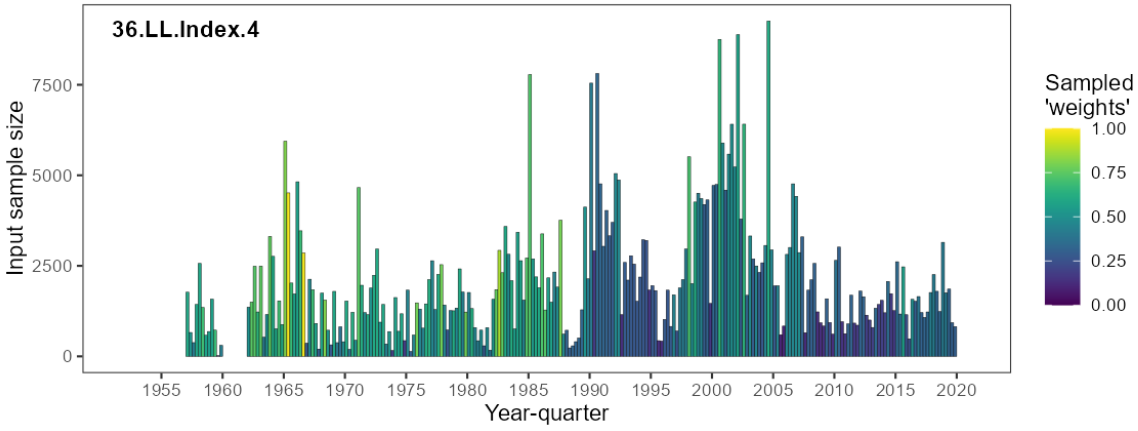


(c) 'Strongest filtering' option

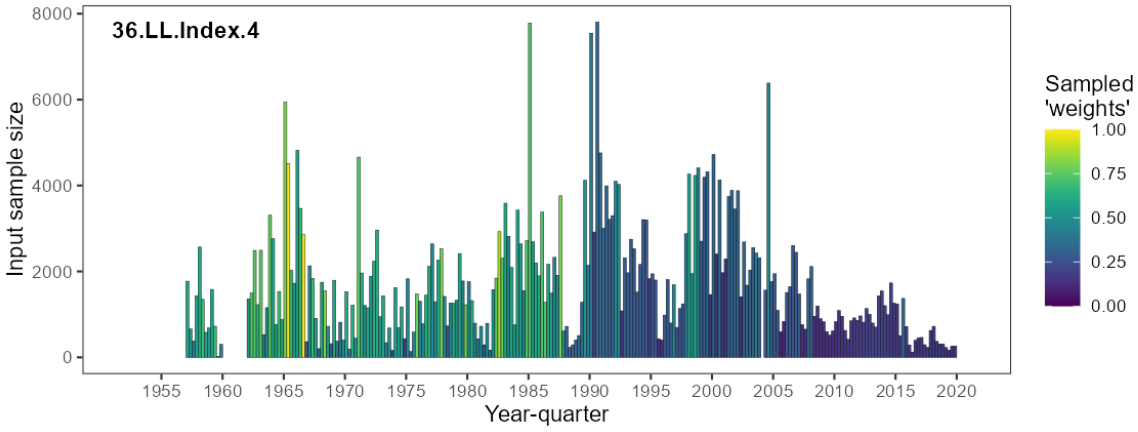
Figure D.6: (Five region structure) Reweighted weight compositions of bigeye for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

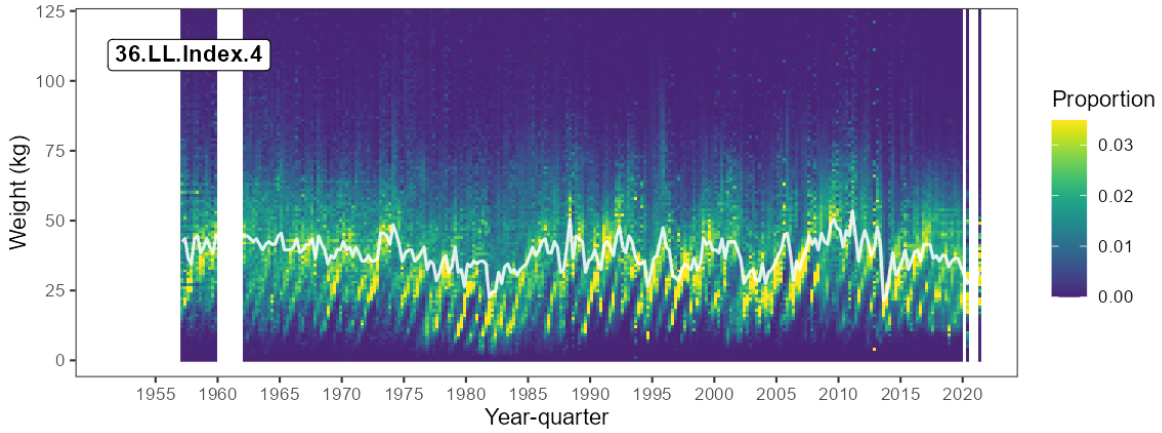


(b) 'Stronger filtering' option

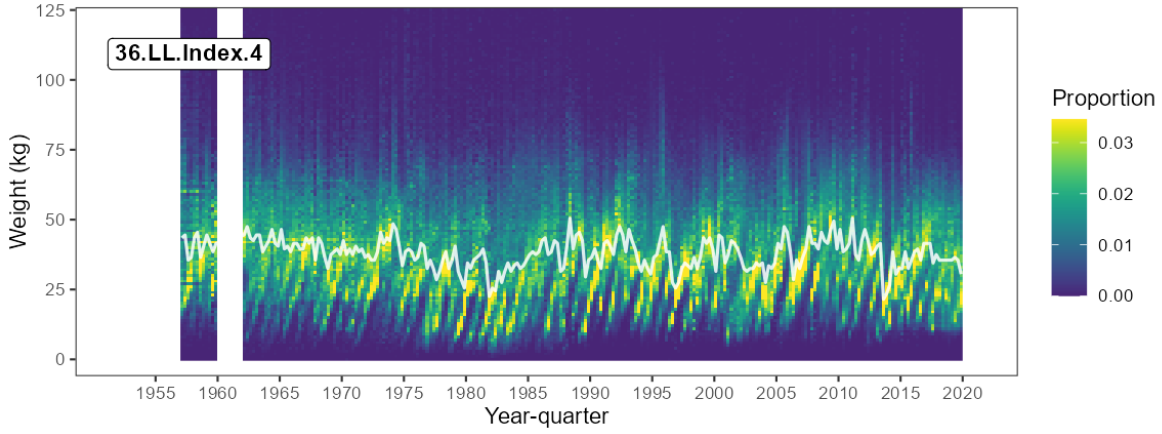


(c) 'Strongest filtering' option

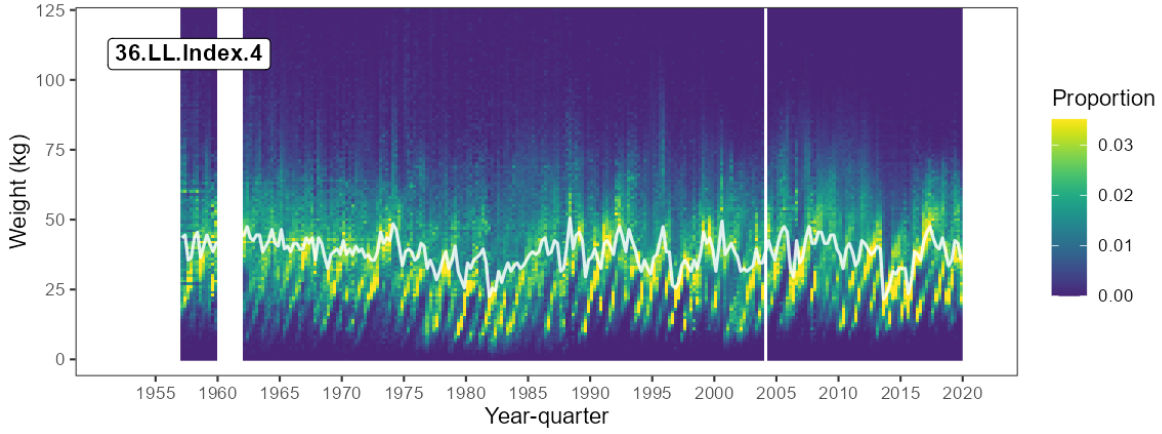
Figure D.7: (Five region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

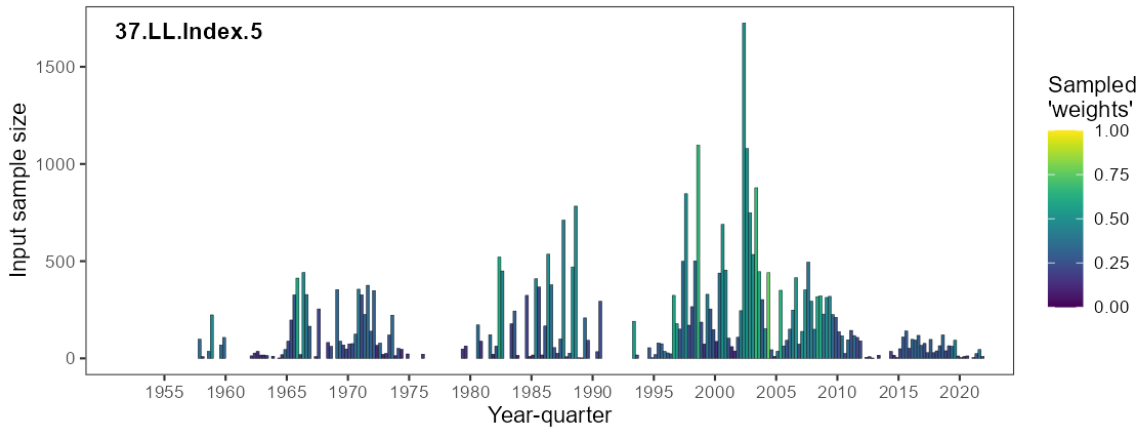


(b) 'Stronger filtering' option

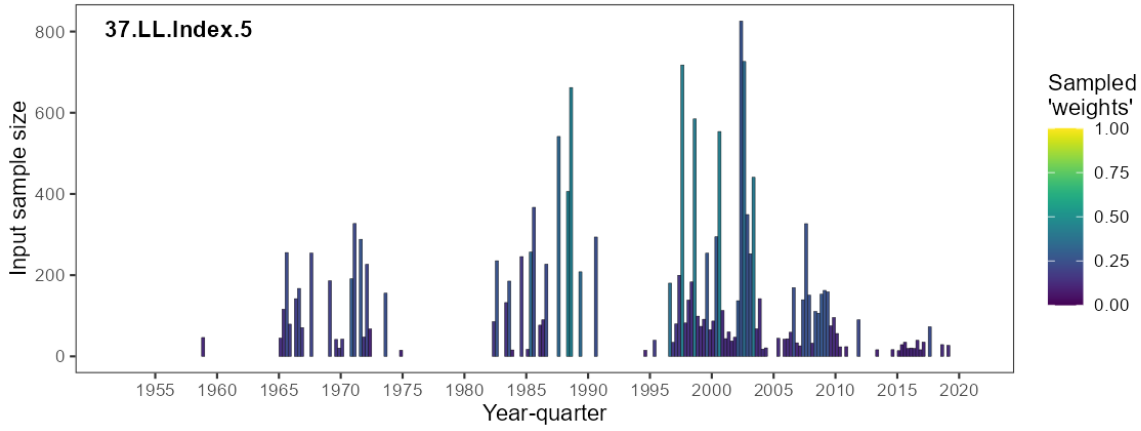


(c) 'Strongest filtering' option

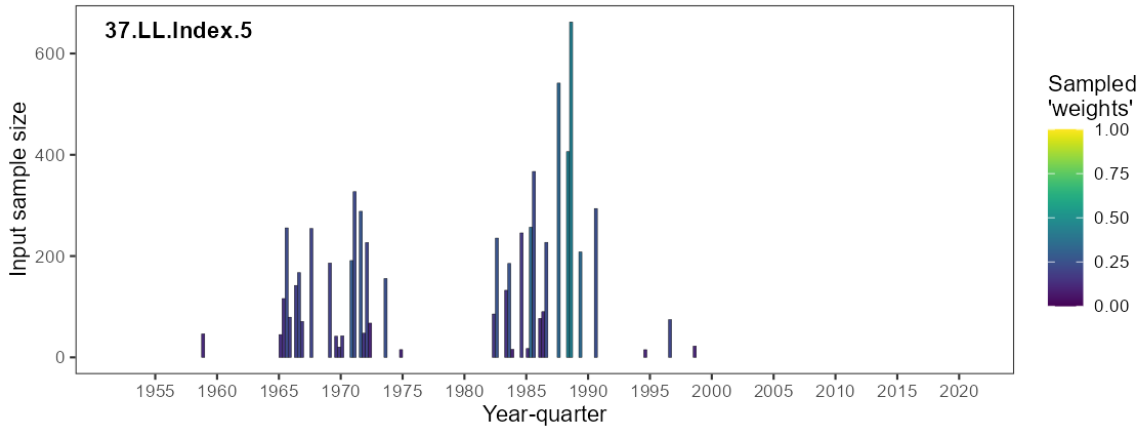
Figure D.8: (Five region structure) Reweighted weight compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

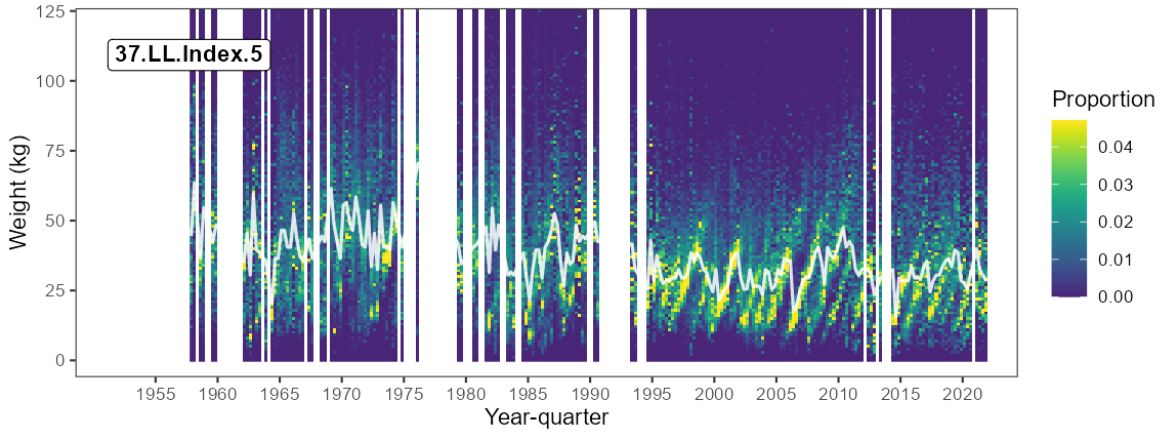


(b) 'Stronger filtering' option

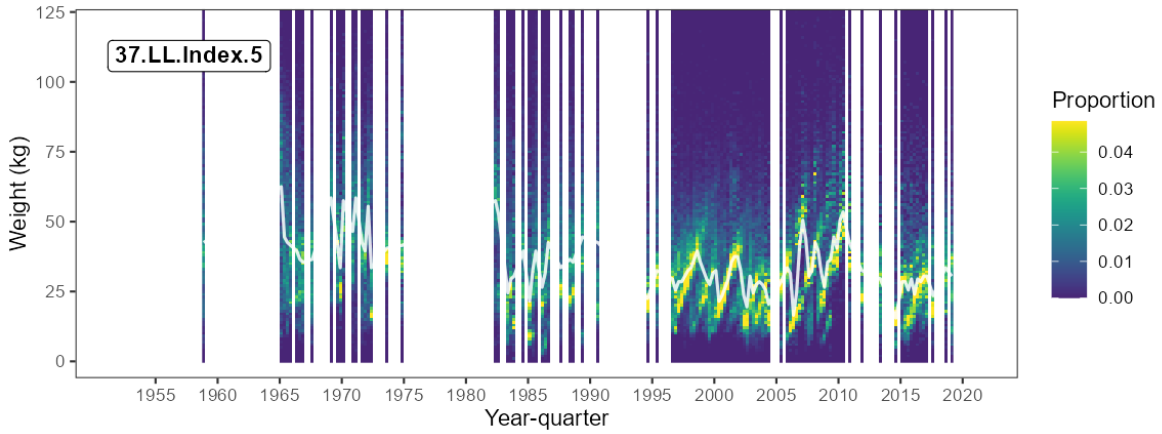


(c) 'Strongest filtering' option

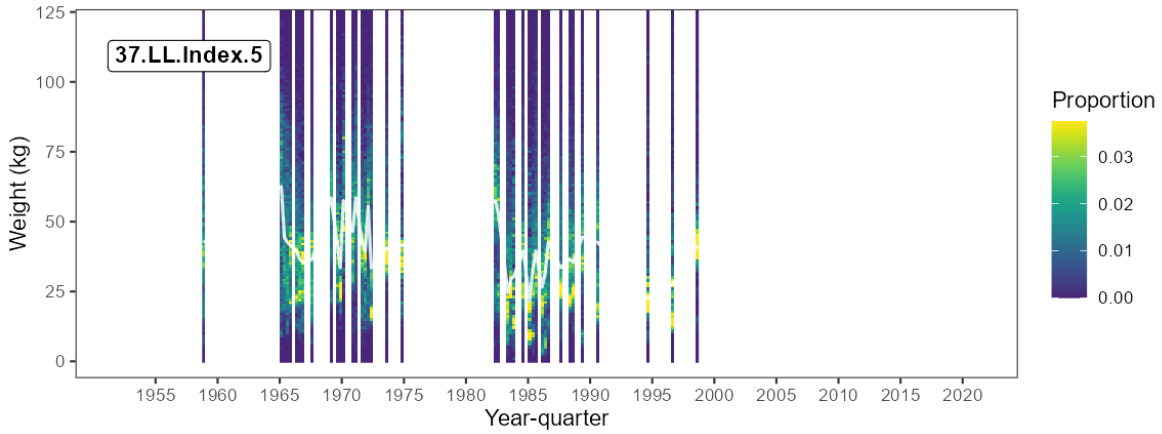
Figure D.9: (Five region structure) Input sample sizes for reweighted weight compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

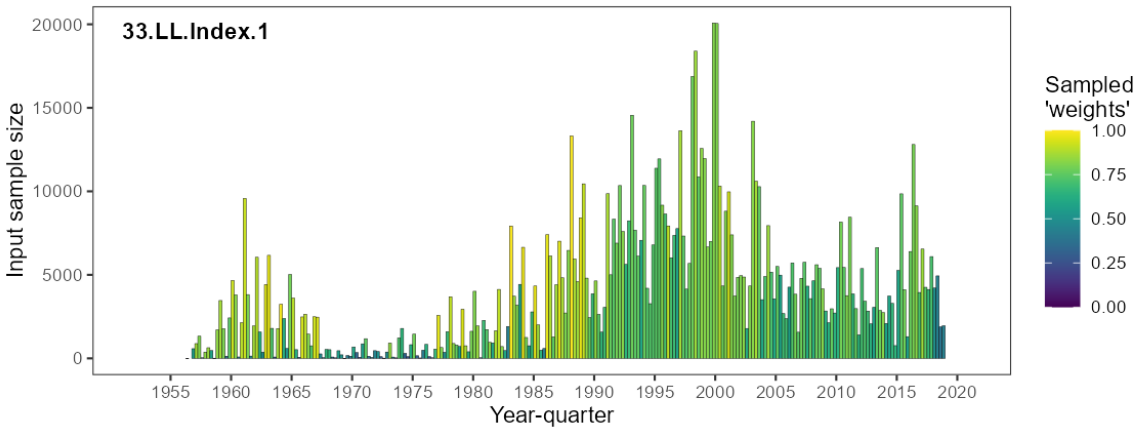


(b) 'Stronger filtering' option

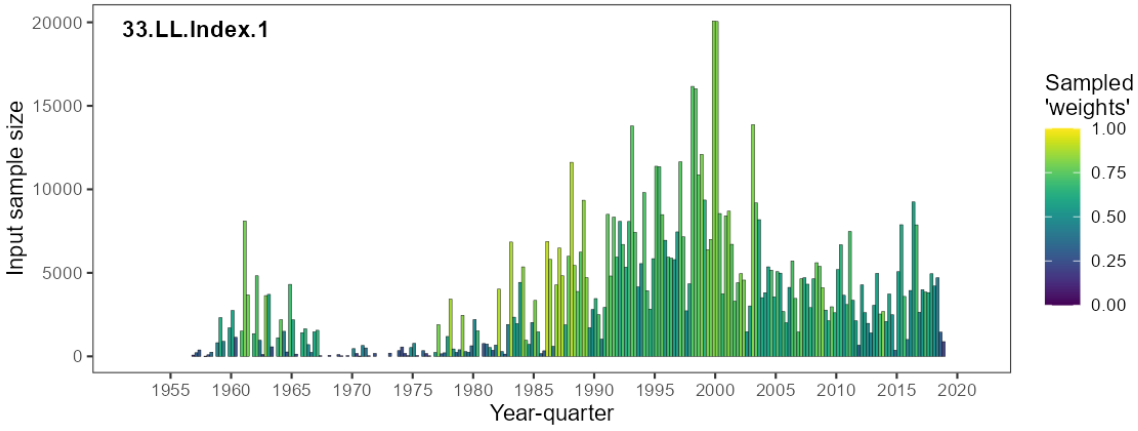


(c) 'Strongest filtering' option

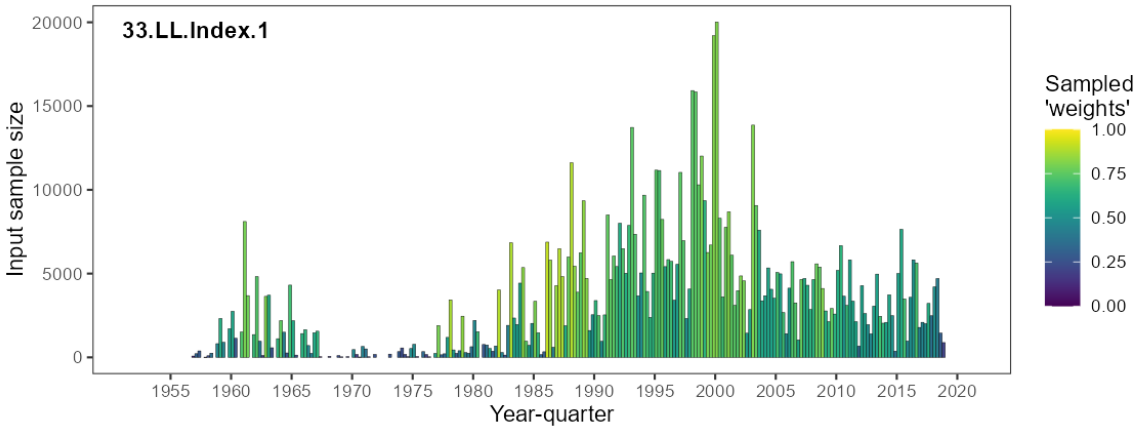
Figure D.10: (Five region structure) Reweighted weight compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

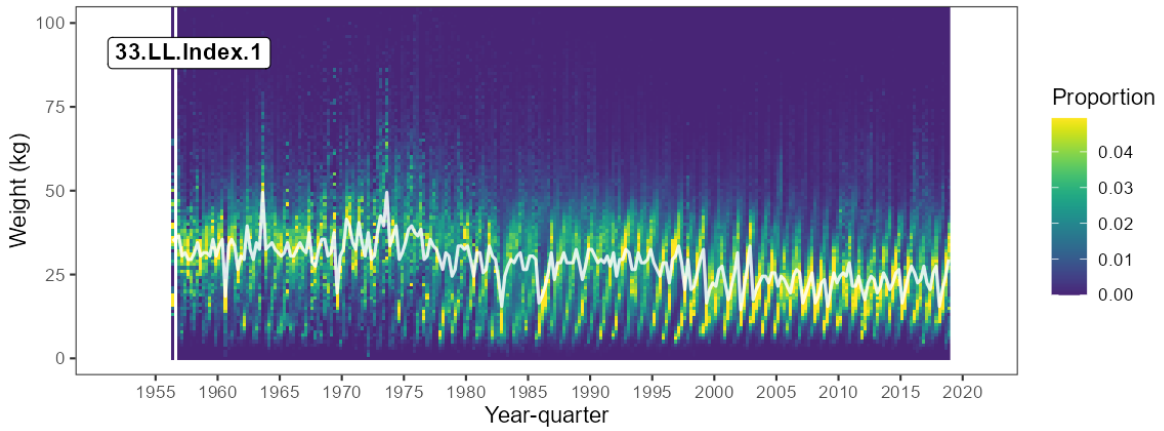


(b) 'Stronger filtering' option

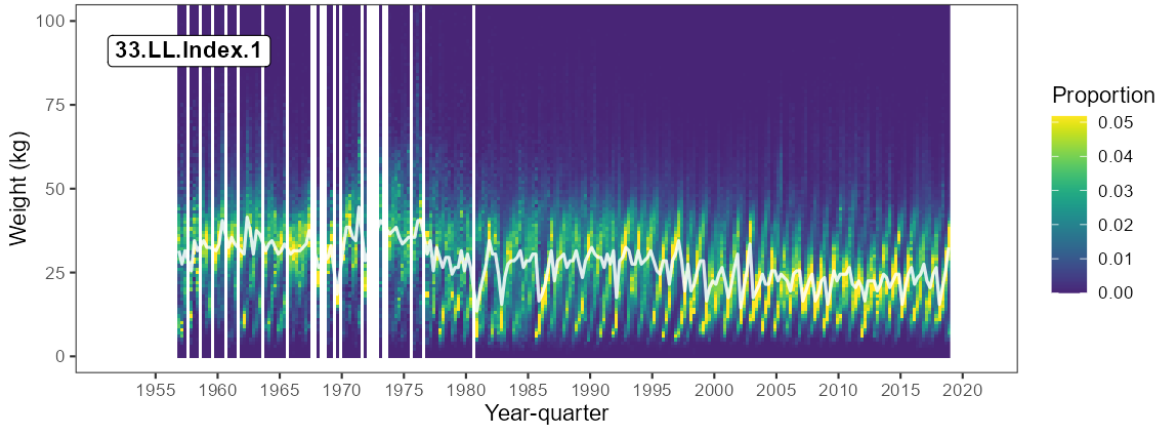


(c) 'Strongest filtering' option

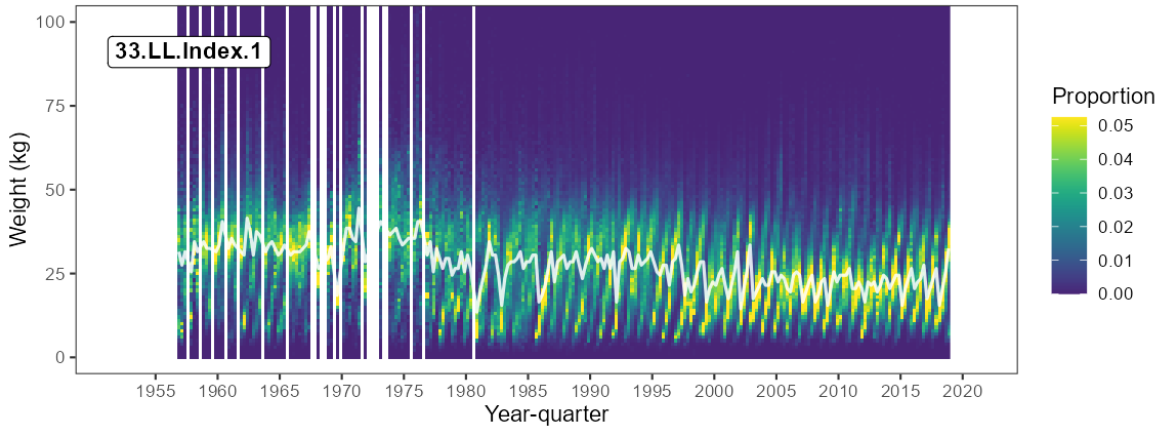
Figure D.11: (Five region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

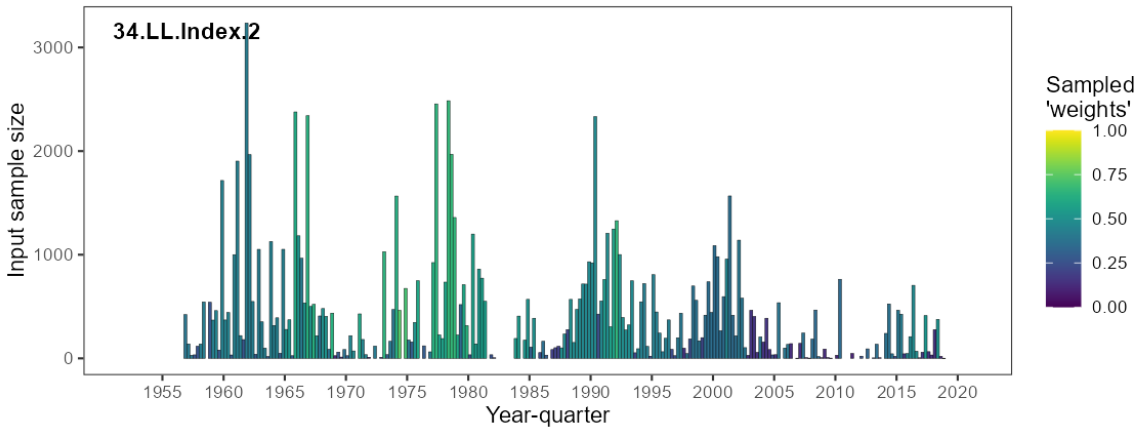


(b) 'Stronger filtering' option

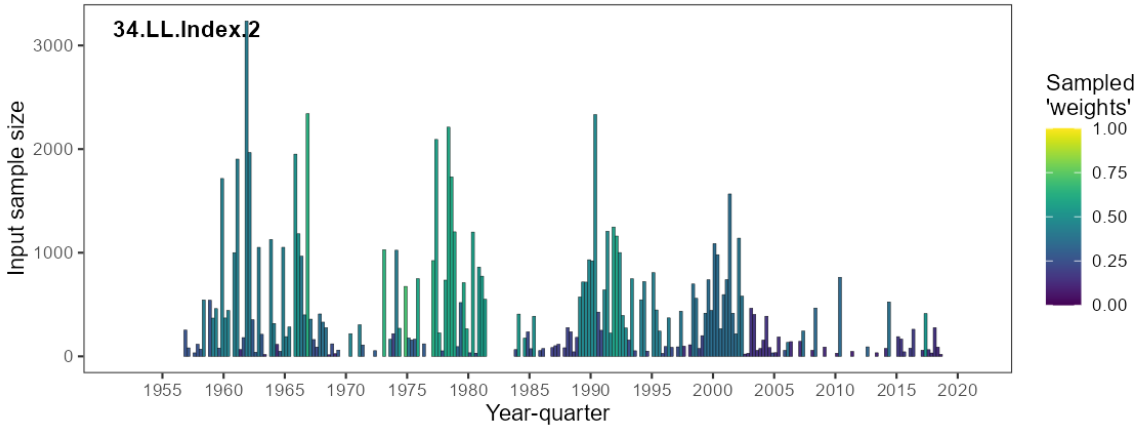


(c) 'Strongest filtering' option

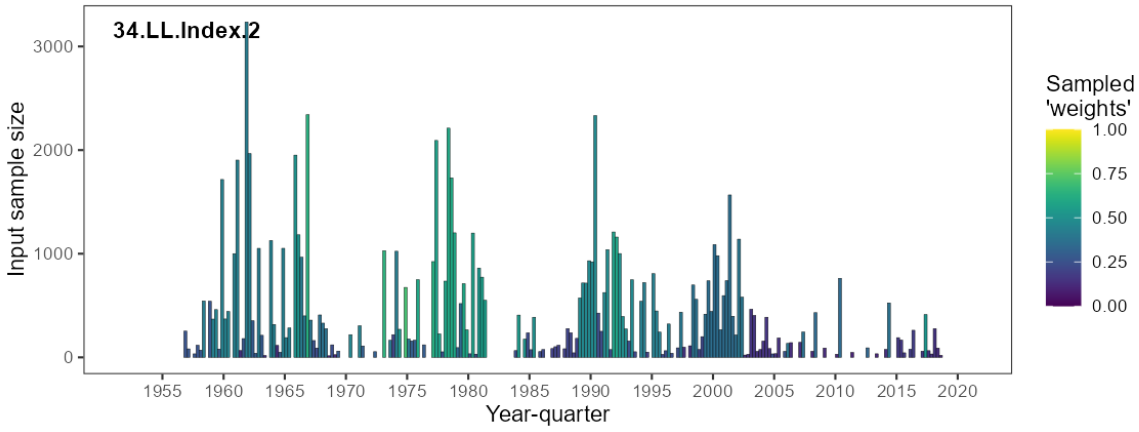
Figure D.12: (Five region structure) Reweighted weight compositions of yellowfin for the longline index fishery 33.LL.Index.1 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

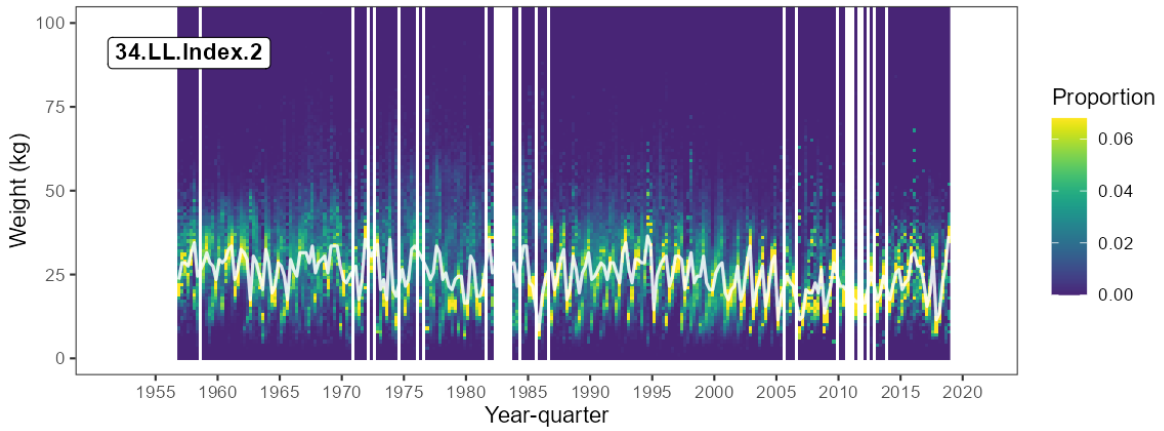


(b) 'Stronger filtering' option

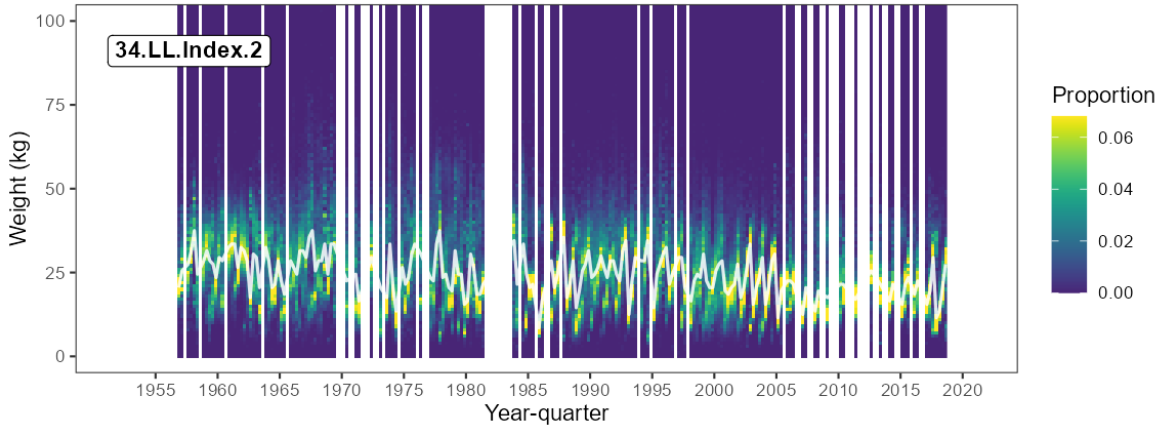


(c) 'Strongest filtering' option

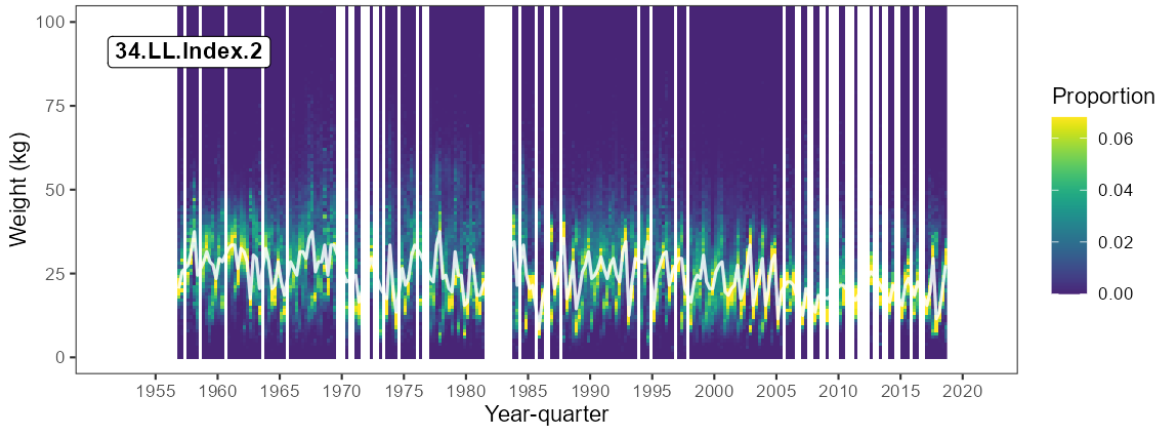
Figure D.13: (Five region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

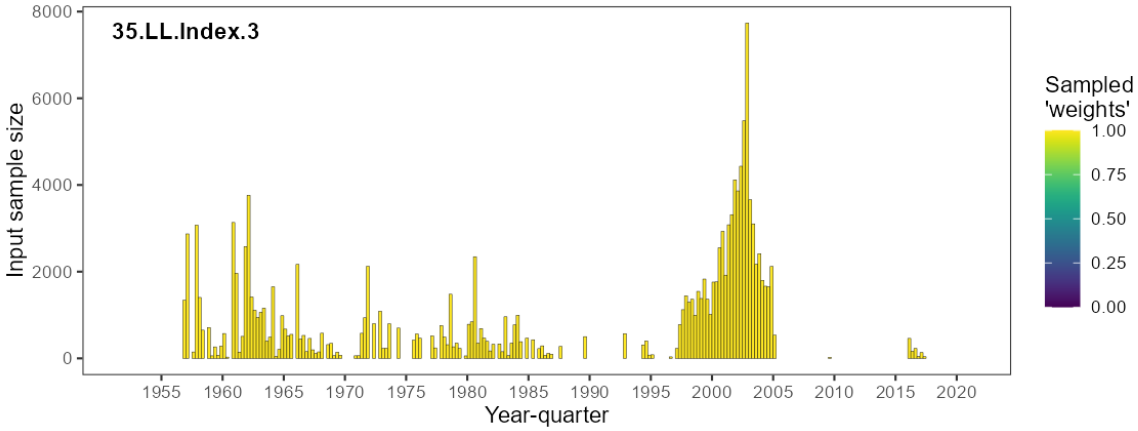


(b) 'Stronger filtering' option

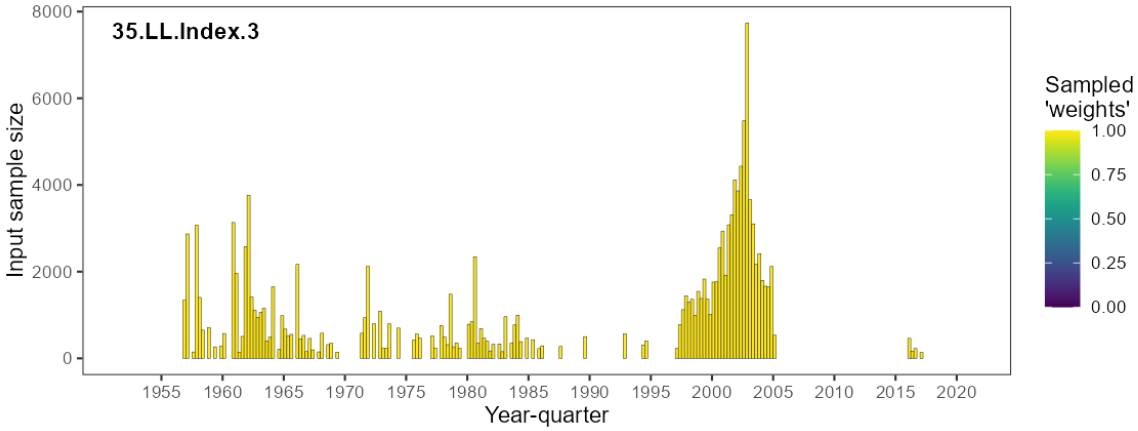


(c) 'Strongest filtering' option

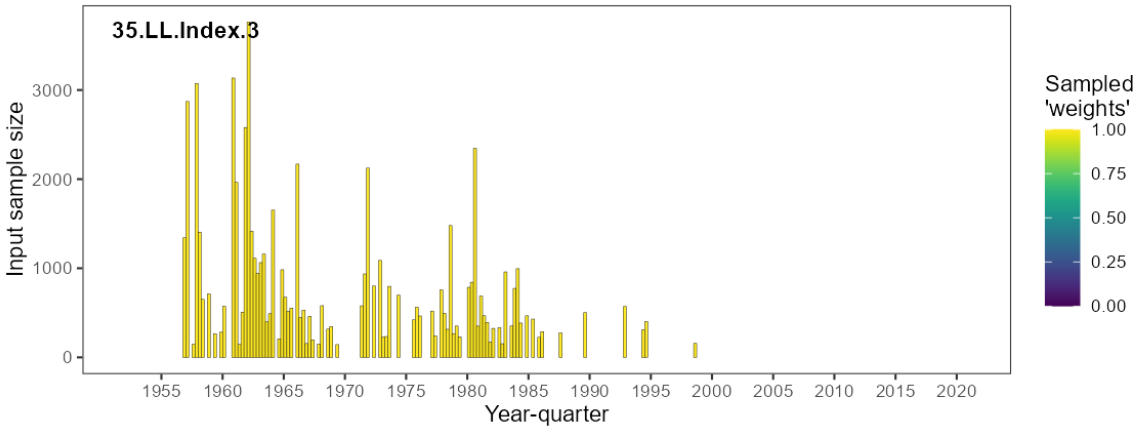
Figure D.14: (Five region structure) Reweighted weight compositions of yellowfin for the longline index fishery 34.LL.Index.2 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

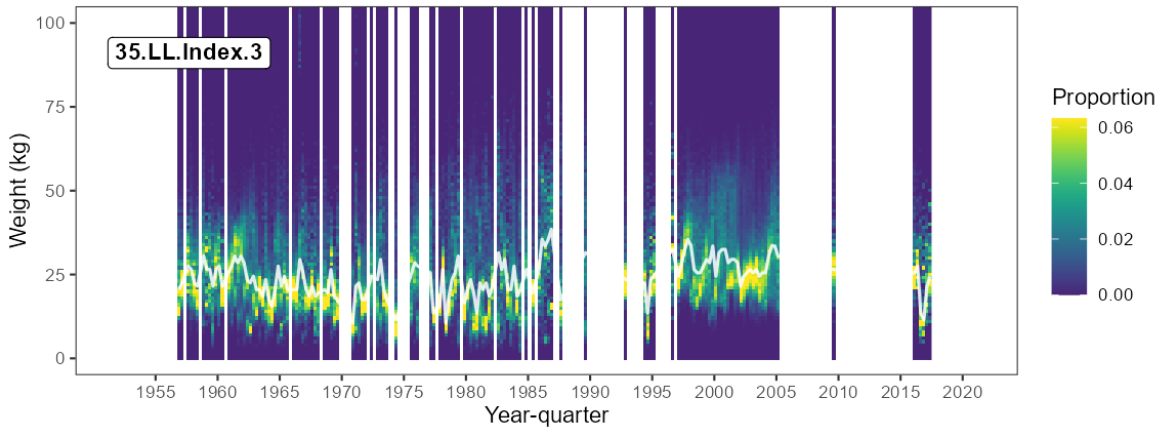


(b) 'Stronger filtering' option

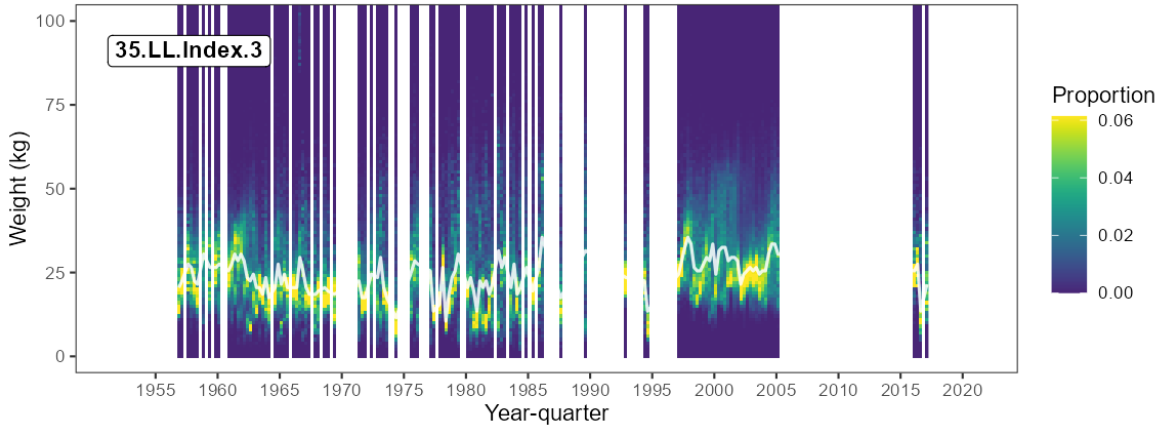


(c) 'Strongest filtering' option

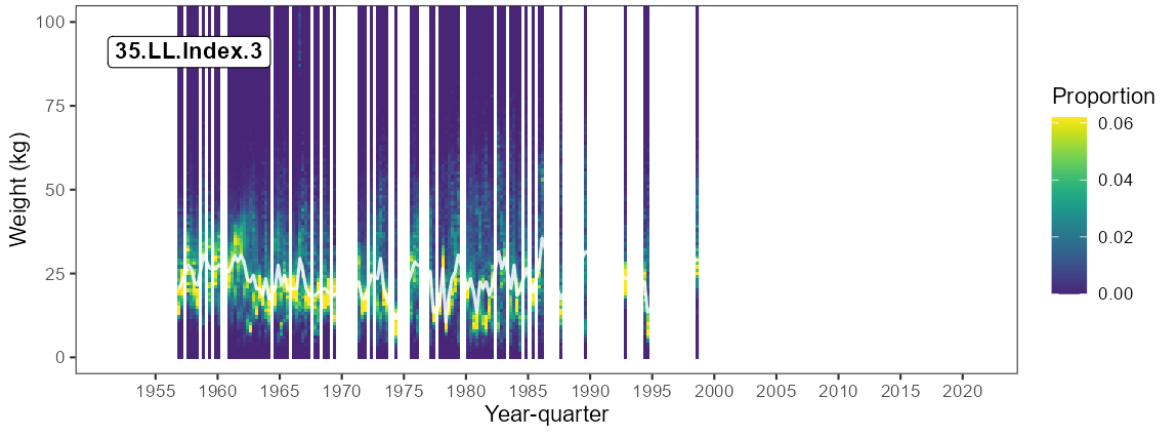
Figure D.15: (Five region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

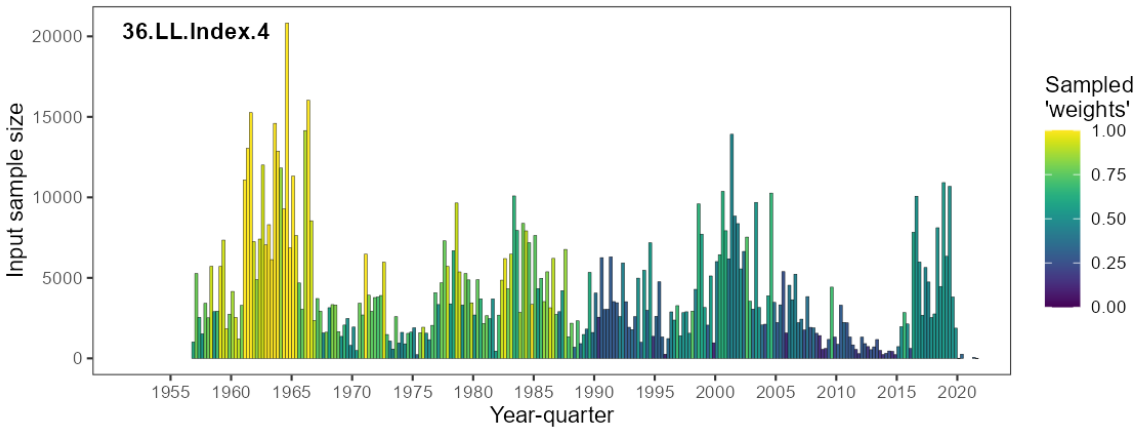


(b) 'Stronger filtering' option

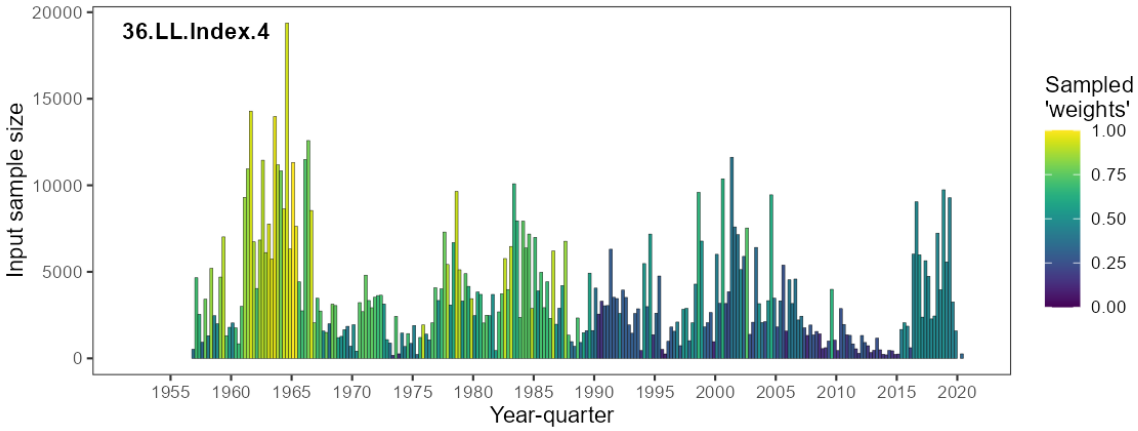


(c) 'Strongest filtering' option

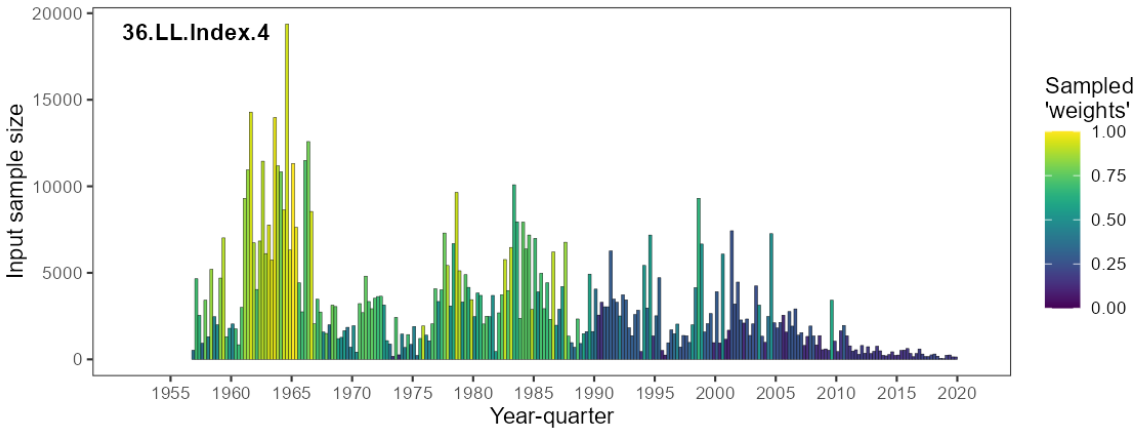
Figure D.16: (Five region structure) Reweighted weight compositions of yellowfin for the longline index fishery 35.LL.Index.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

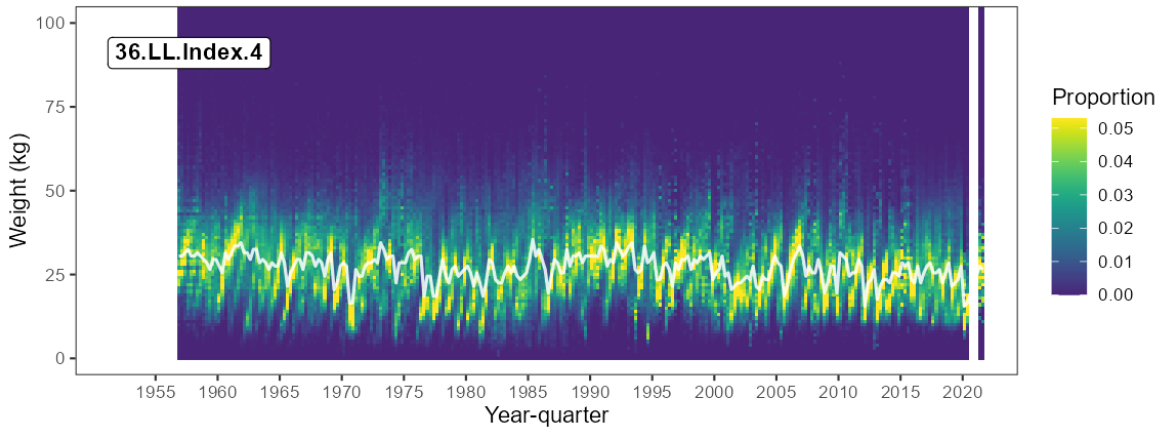


(b) 'Stronger filtering' option

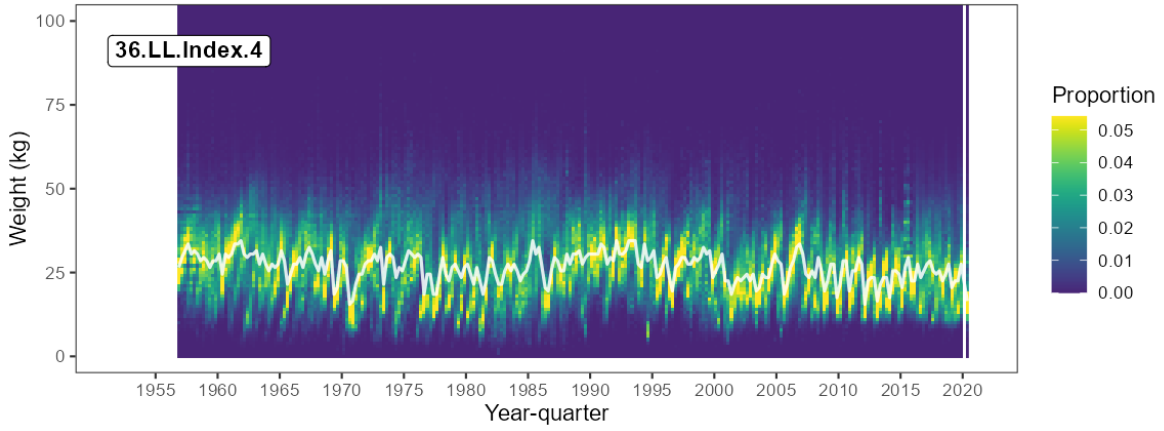


(c) 'Strongest filtering' option

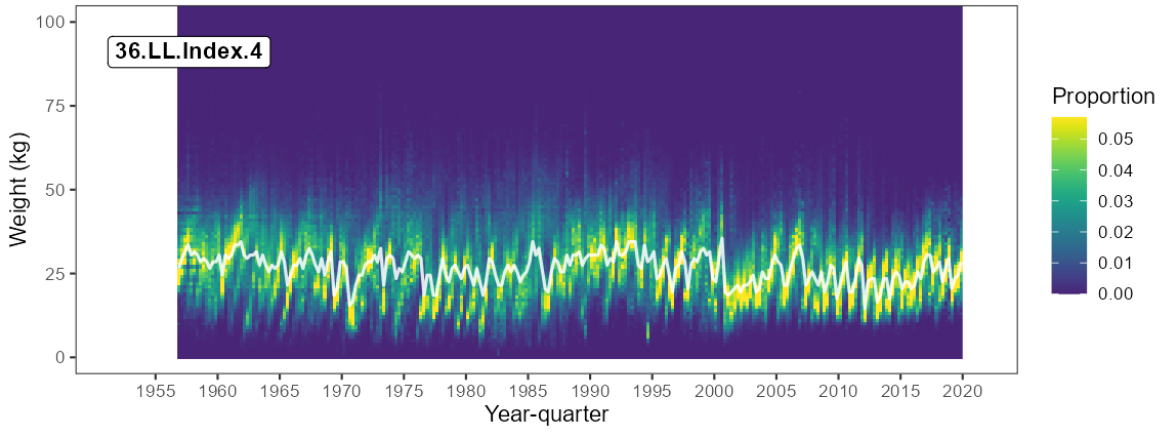
Figure D.17: (Five region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

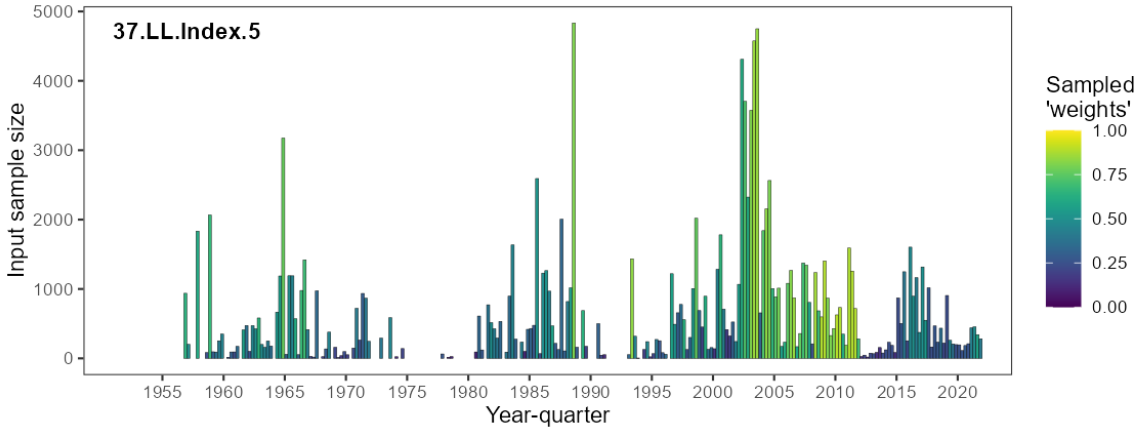


(b) 'Stronger filtering' option

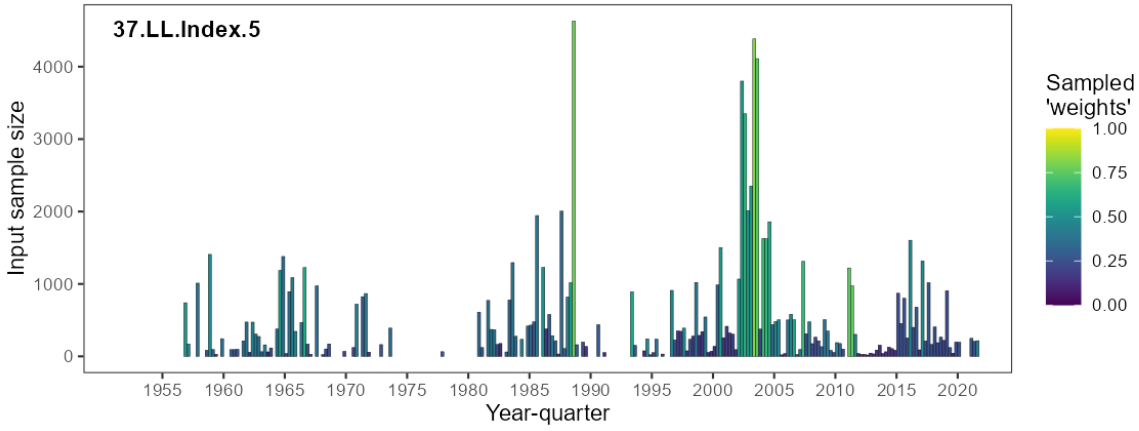


(c) 'Strongest filtering' option

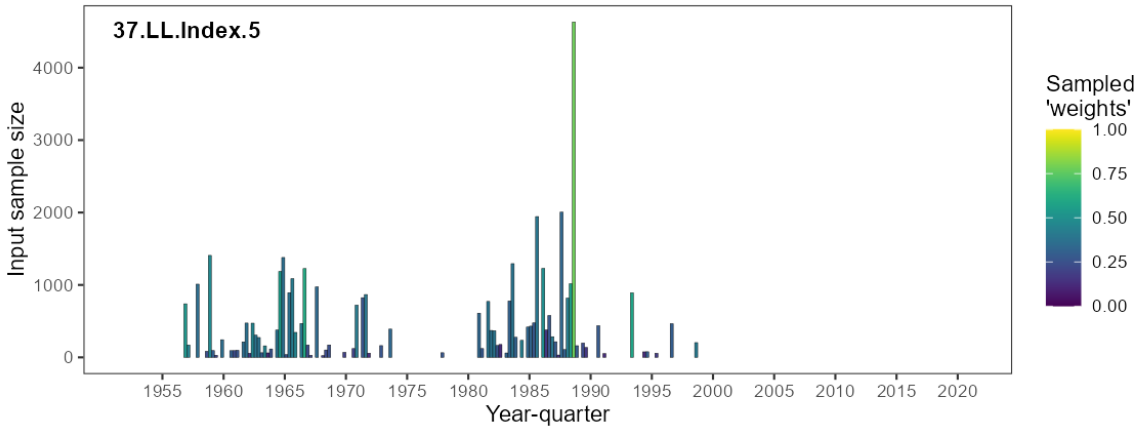
Figure D.18: (Five region structure) Reweighted weight compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

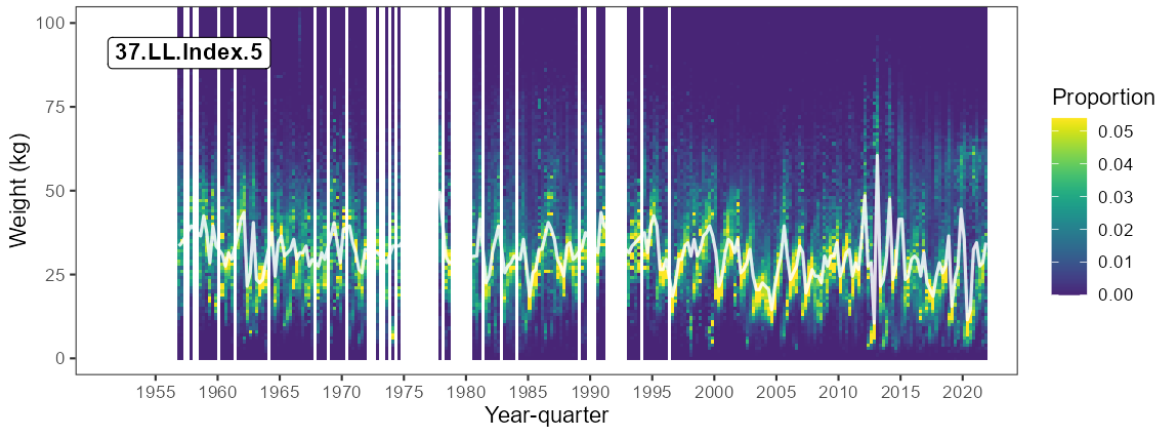


(b) 'Stronger filtering' option

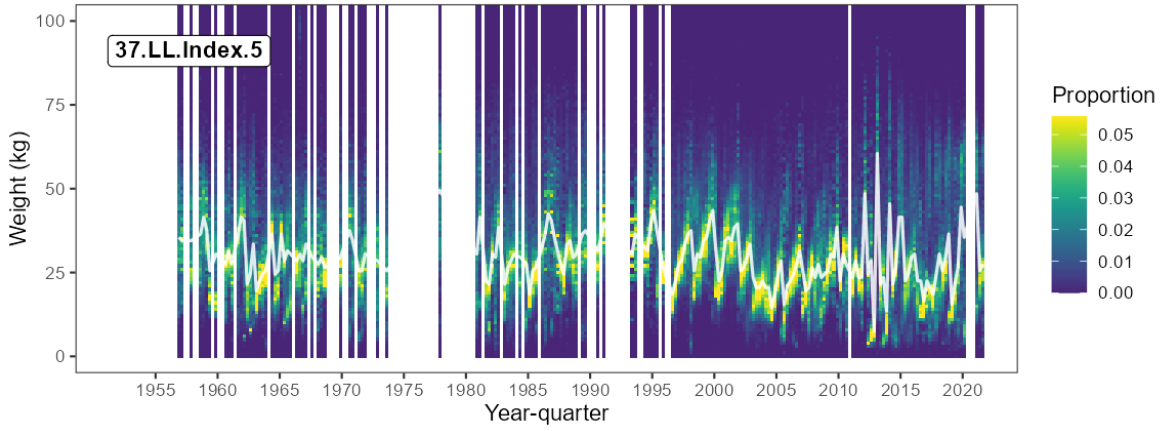


(c) 'Strongest filtering' option

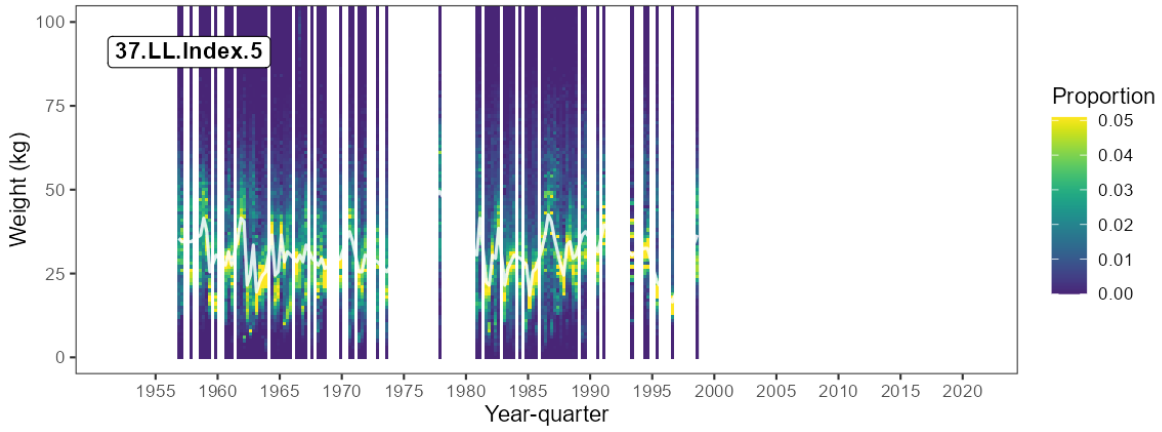
Figure D.19: (Five region structure) Input sample sizes for reweighted weight compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

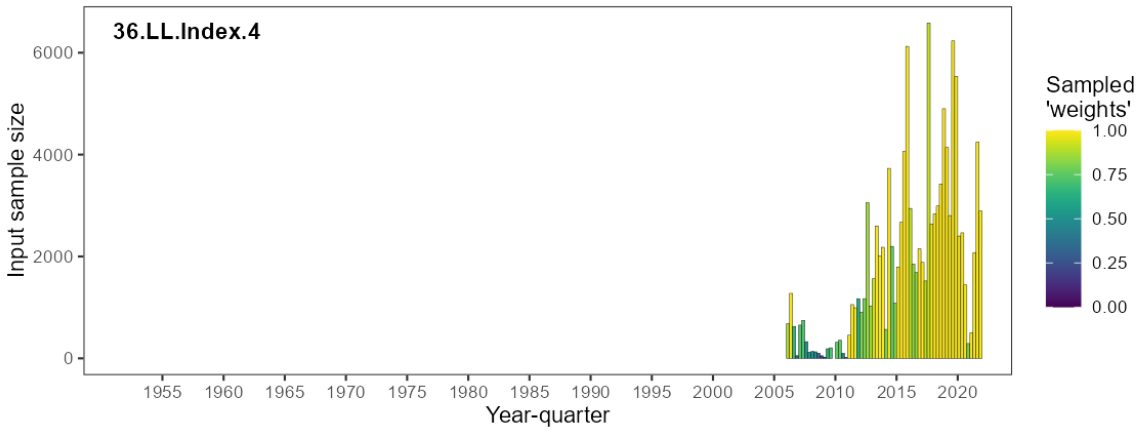


(b) 'Stronger filtering' option

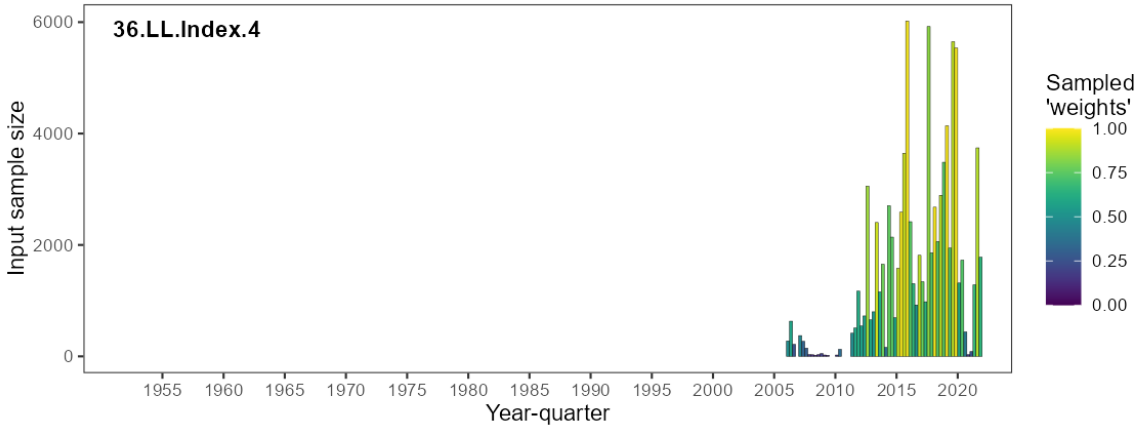


(c) 'Strongest filtering' option

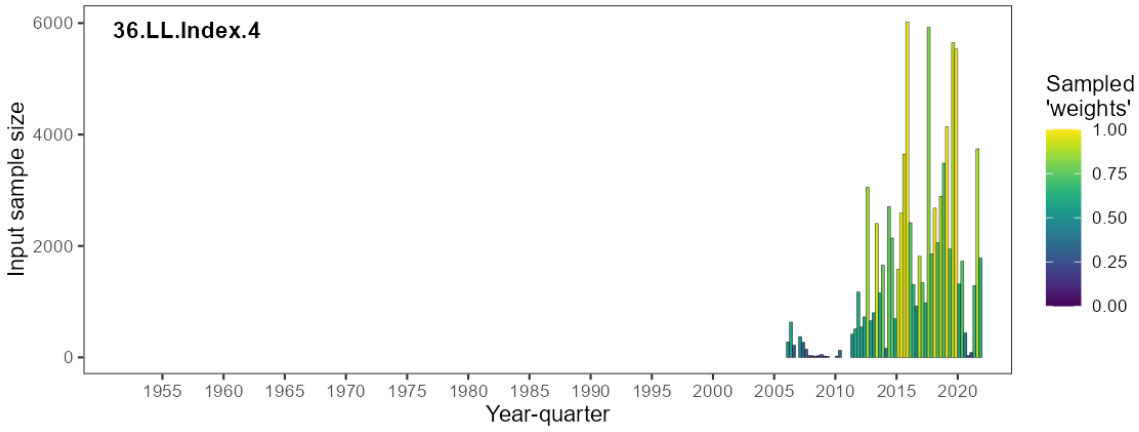
Figure D.20: (Five region structure) Reweighted weight compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

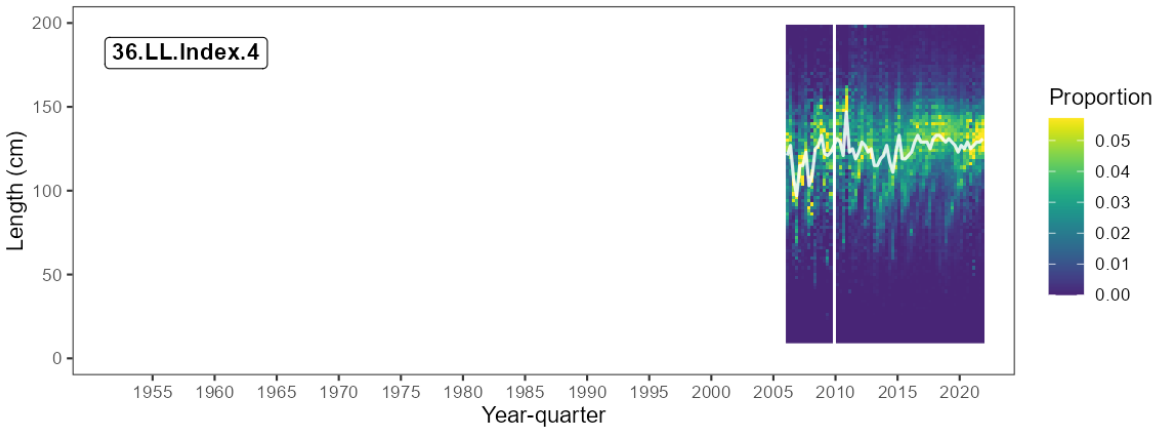


(b) 'Stronger filtering' option

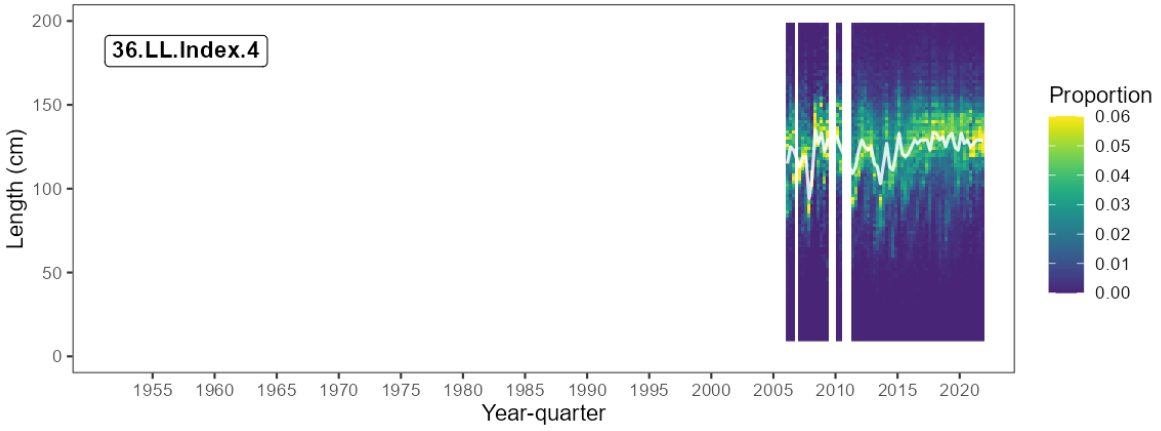


(c) 'Strongest filtering' option

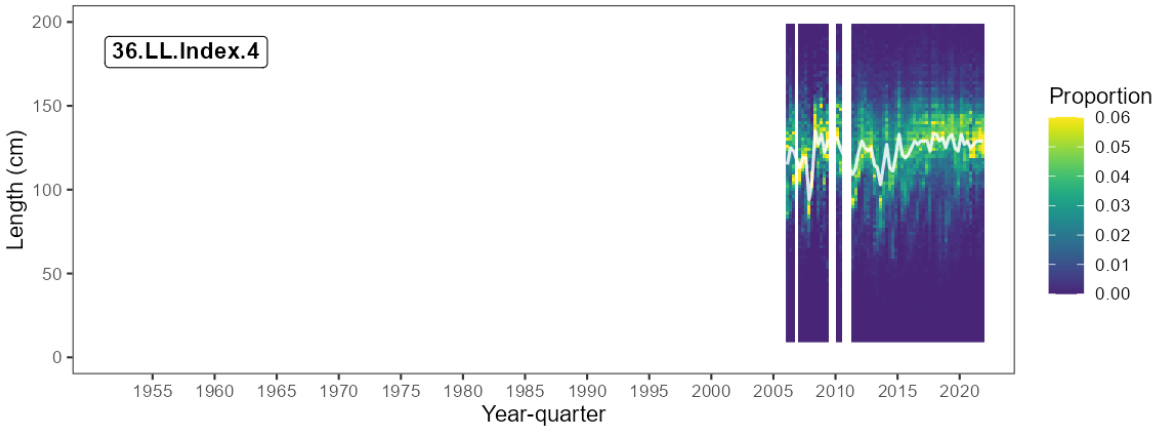
Figure D.21: (Five region structure) Input sample sizes for reweighted length compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

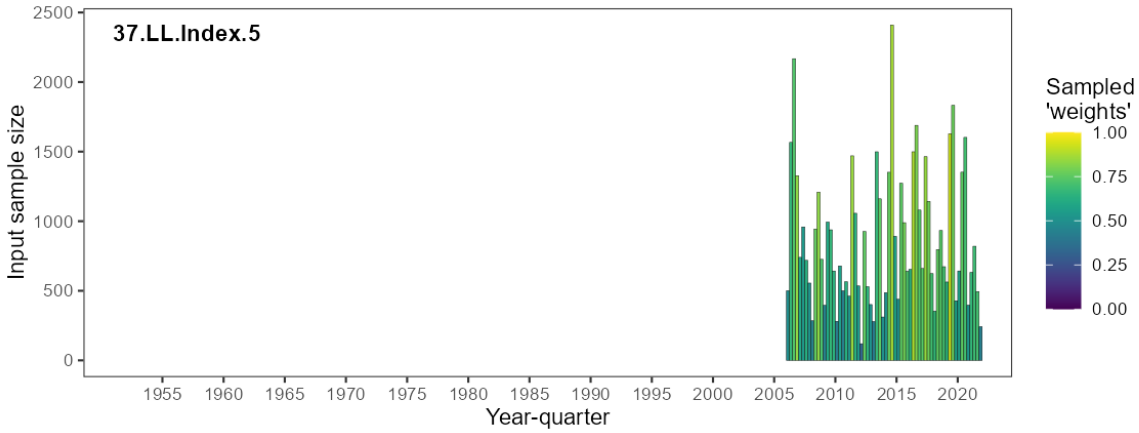


(b) 'Stronger filtering' option

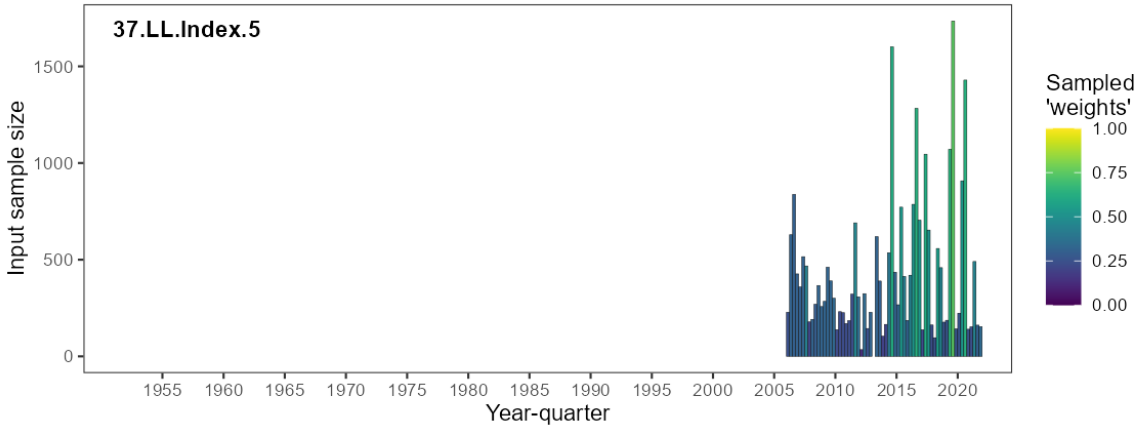


(c) 'Strongest filtering' option

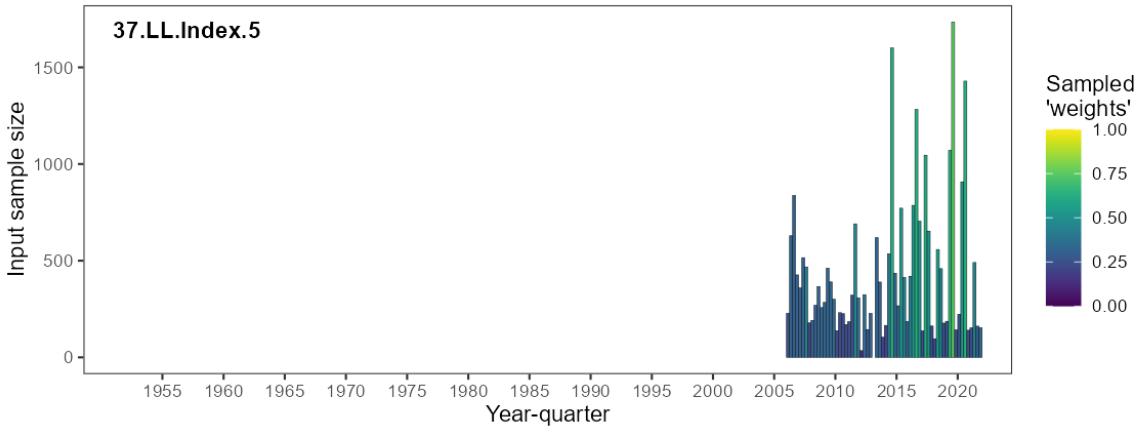
Figure D.22: (Five region structure) Reweighted length compositions of bigeye for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

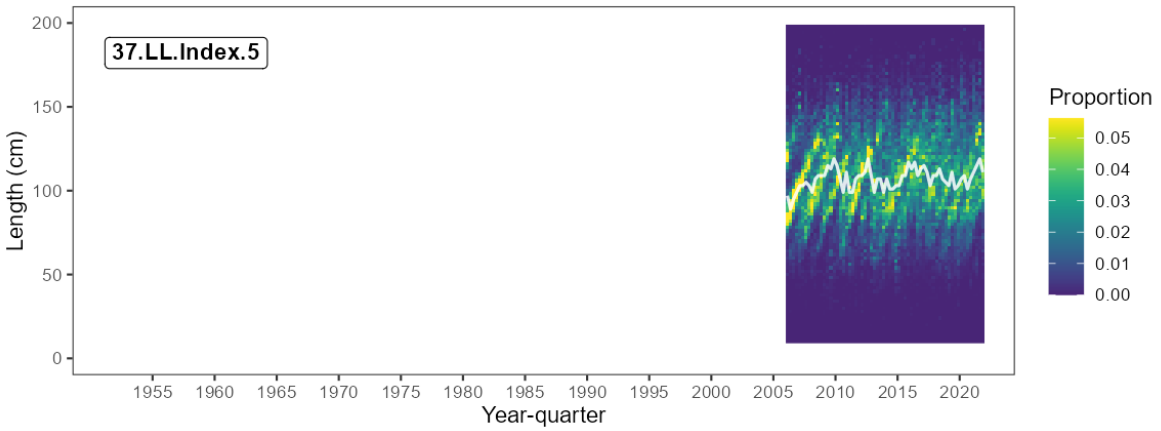


(b) 'Stronger filtering' option

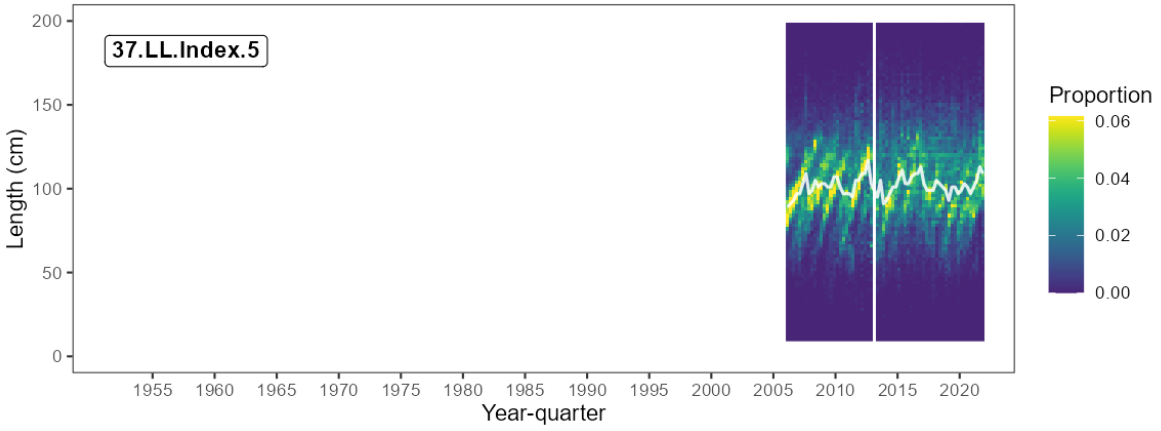


(c) 'Strongest filtering' option

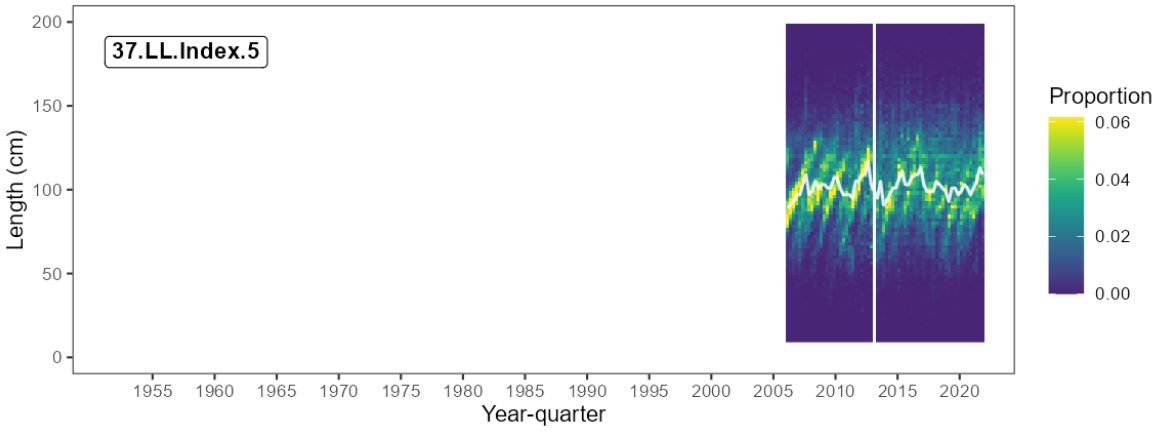
Figure D.23: (Five region structure) Input sample sizes for reweighted length compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

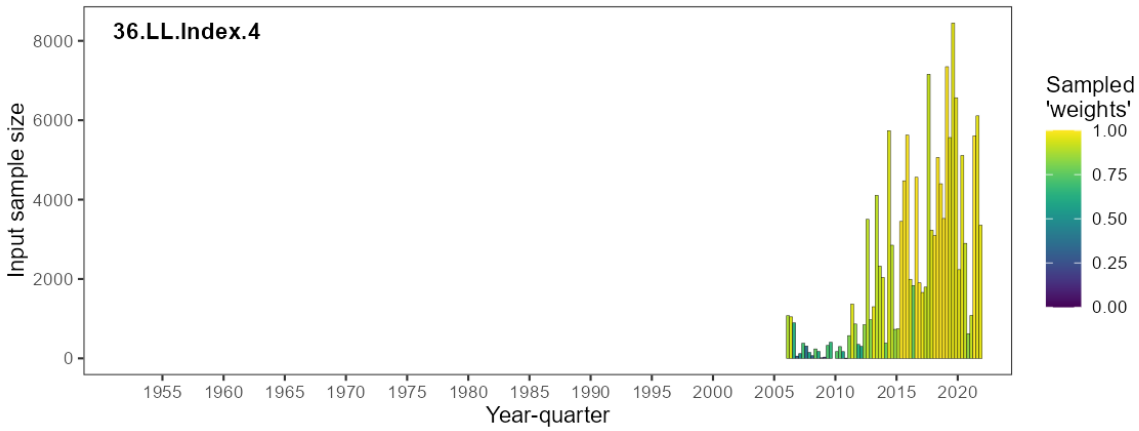


(b) 'Stronger filtering' option

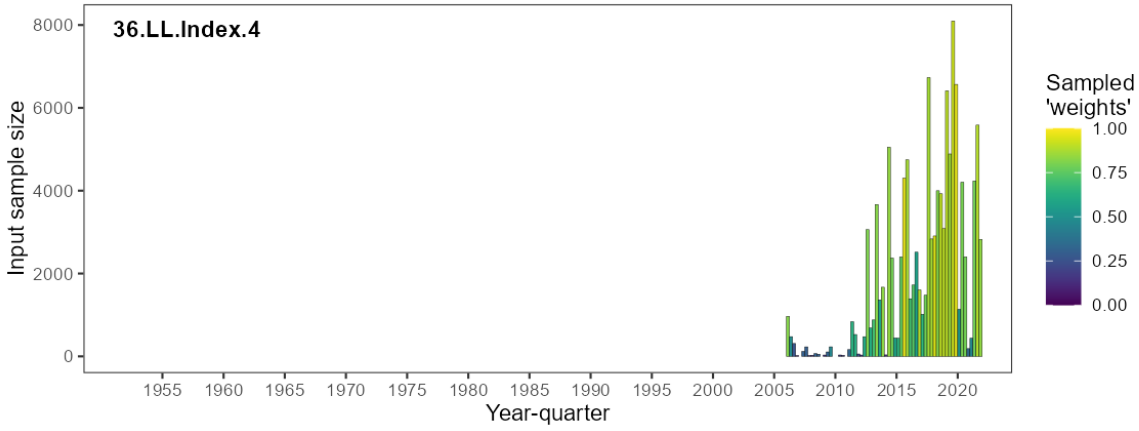


(c) 'Strongest filtering' option

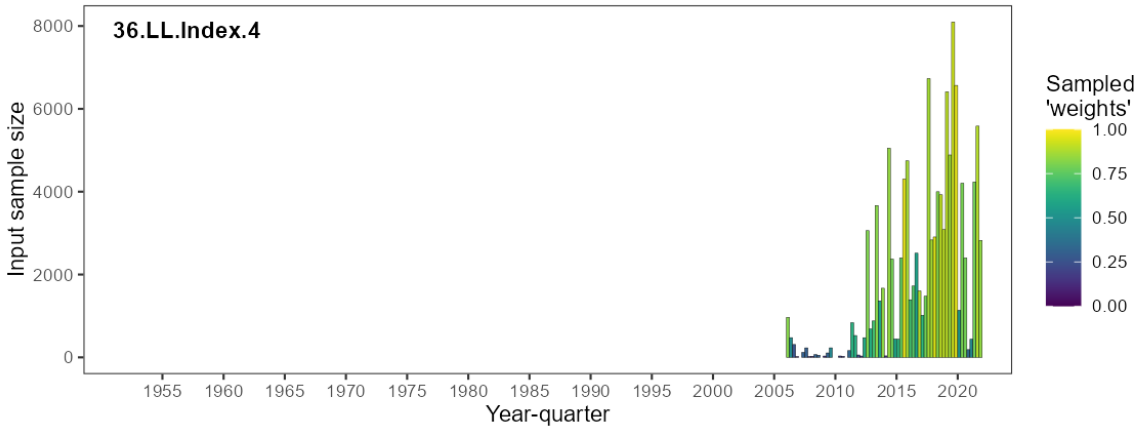
Figure D.24: (Five region structure) Reweighted length compositions of bigeye for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

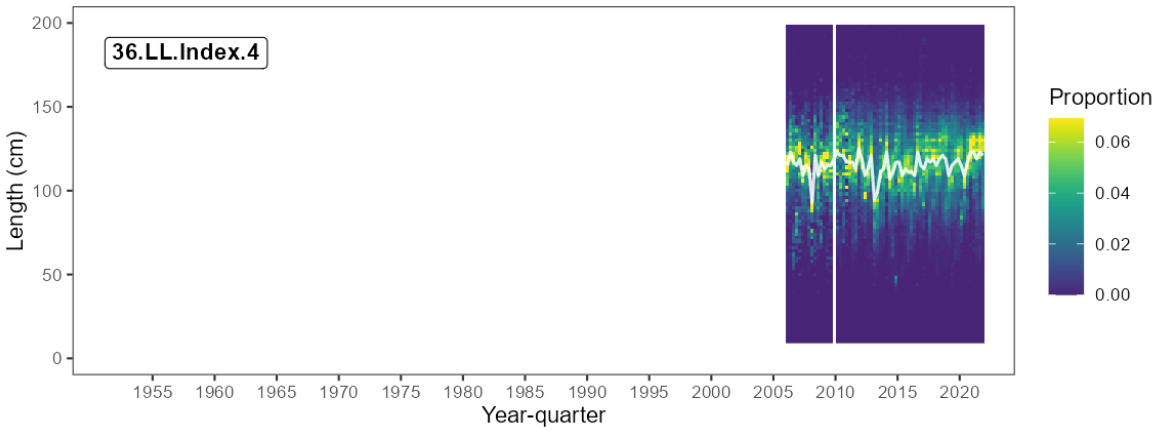


(b) 'Stronger filtering' option

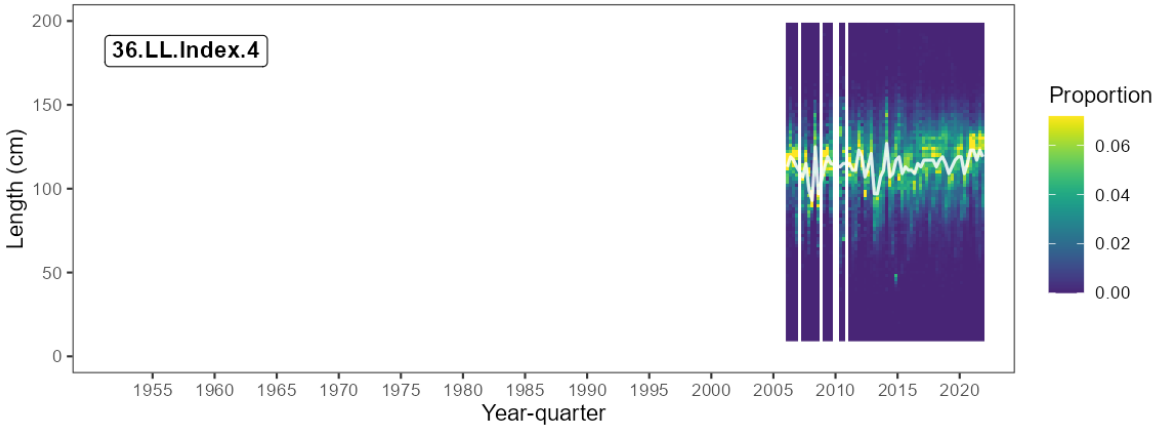


(c) 'Strongest filtering' option

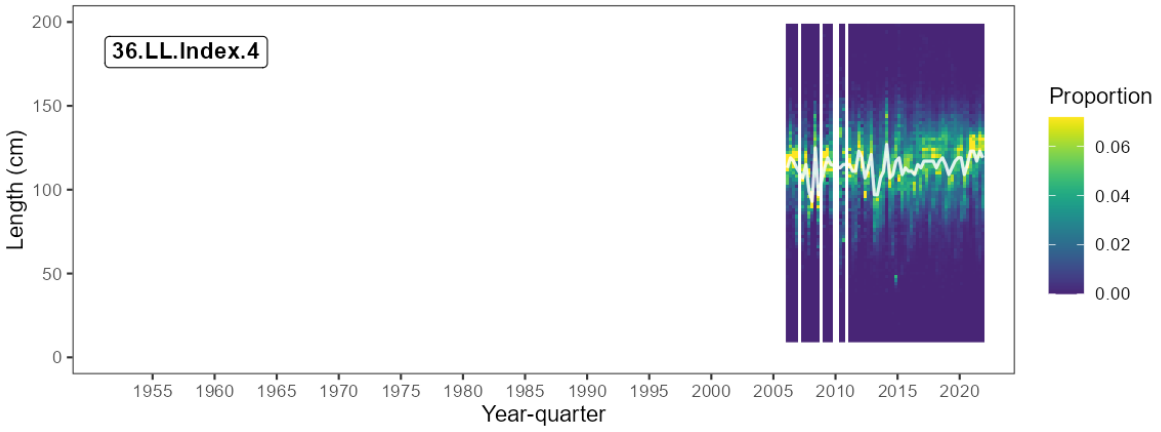
Figure D.25: (Five region structure) Input sample sizes for reweighted length compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

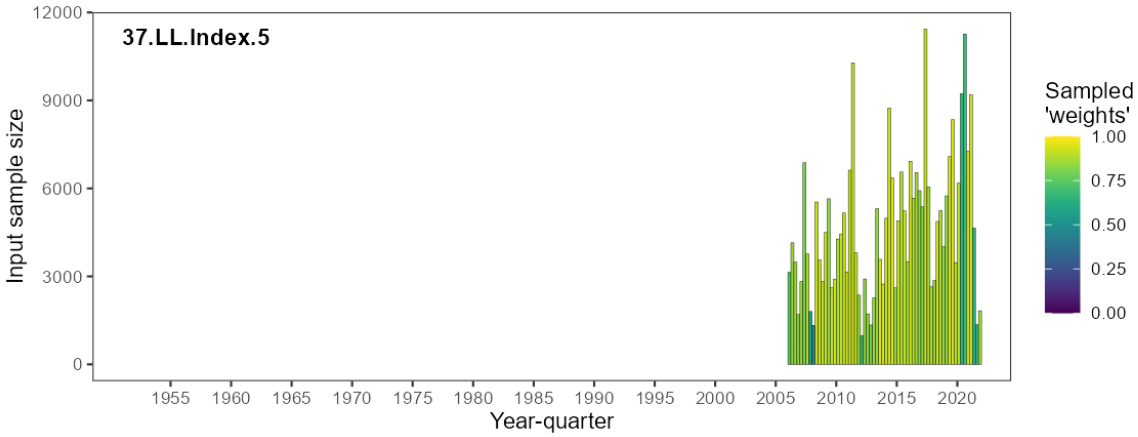


(b) 'Stronger filtering' option

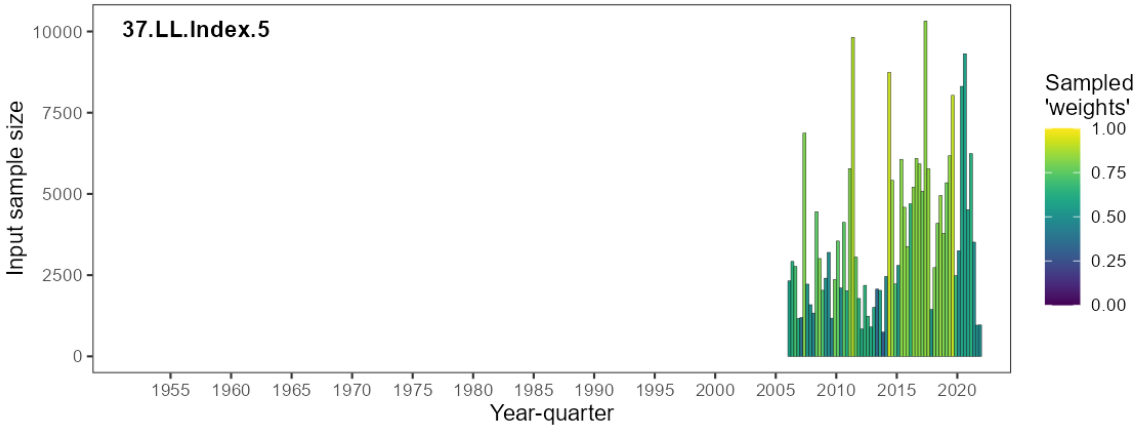


(c) 'Strongest filtering' option

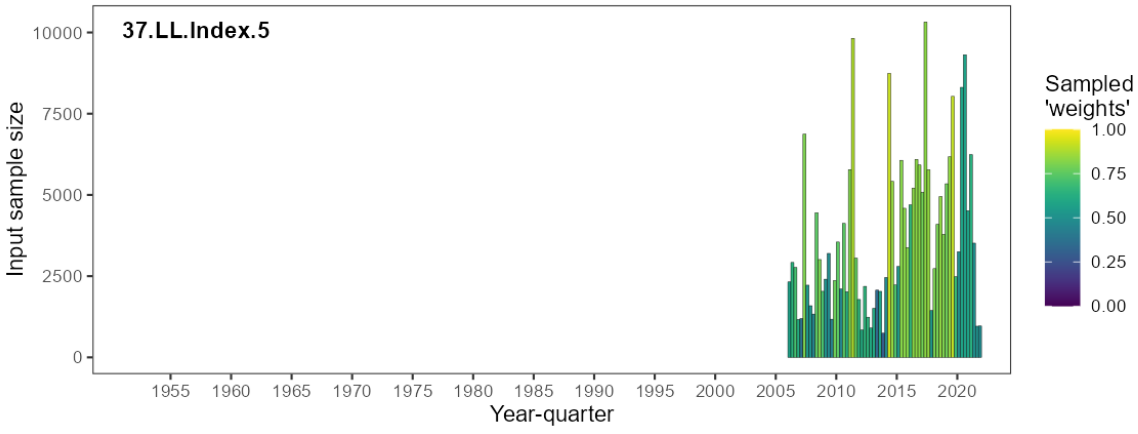
Figure D.26: (Five region structure) Reweighted length compositions of yellowfin for the longline index fishery 36.LL.Index.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

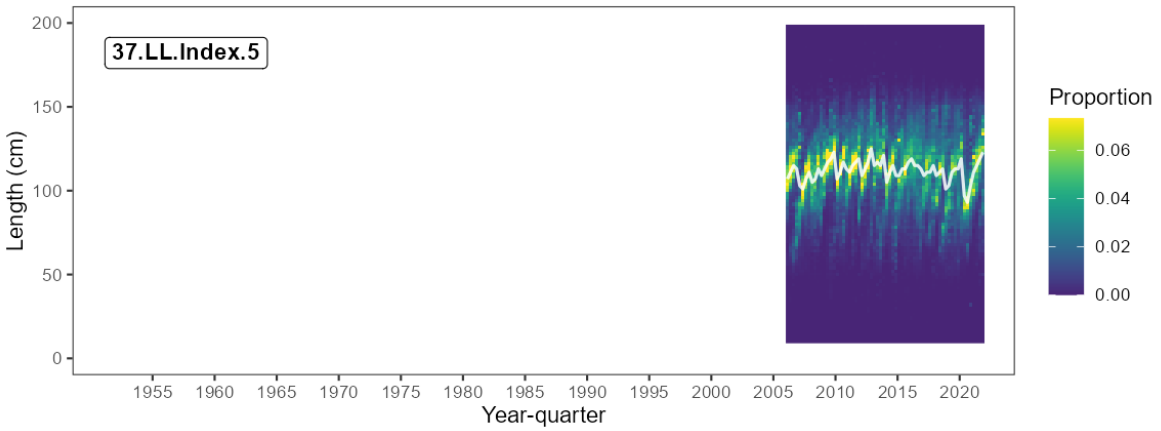


(b) 'Stronger filtering' option

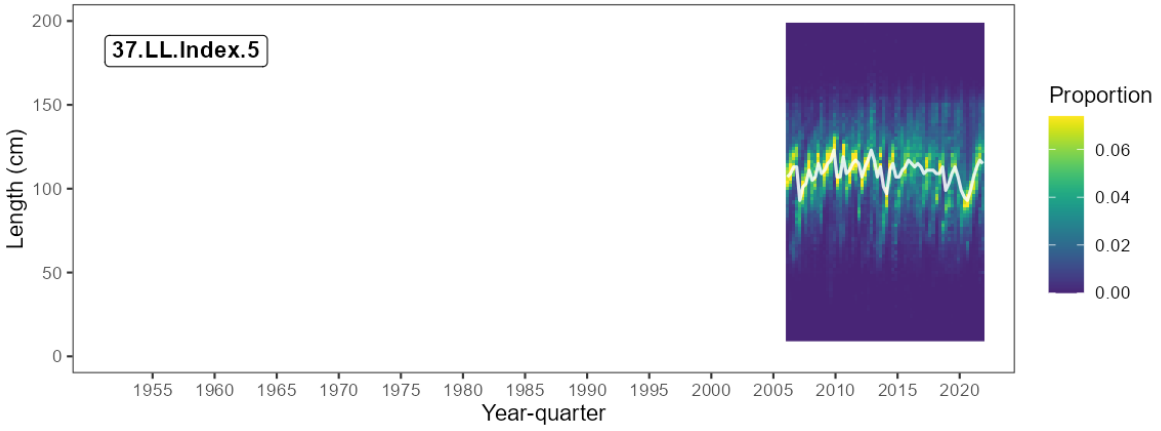


(c) 'Strongest filtering' option

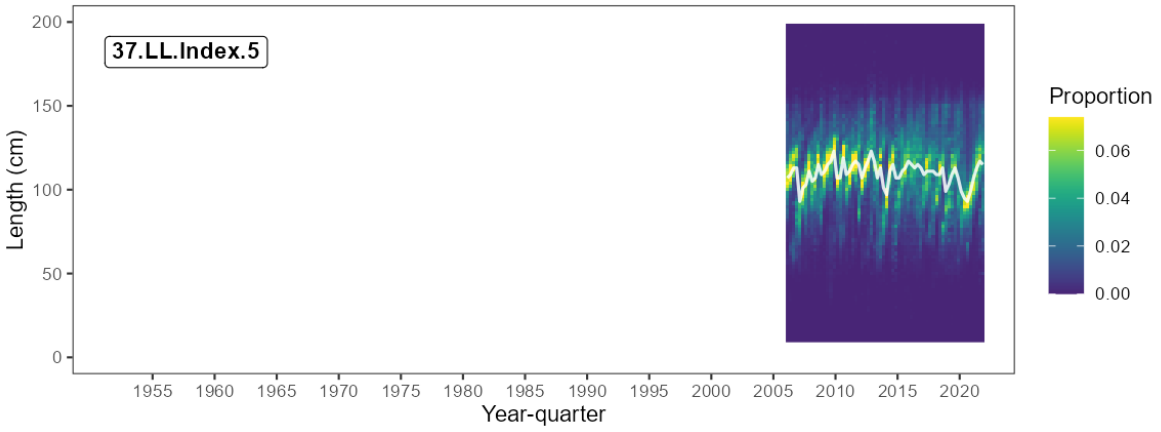
Figure D.27: (Five region structure) Input sample sizes for reweighted length compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option



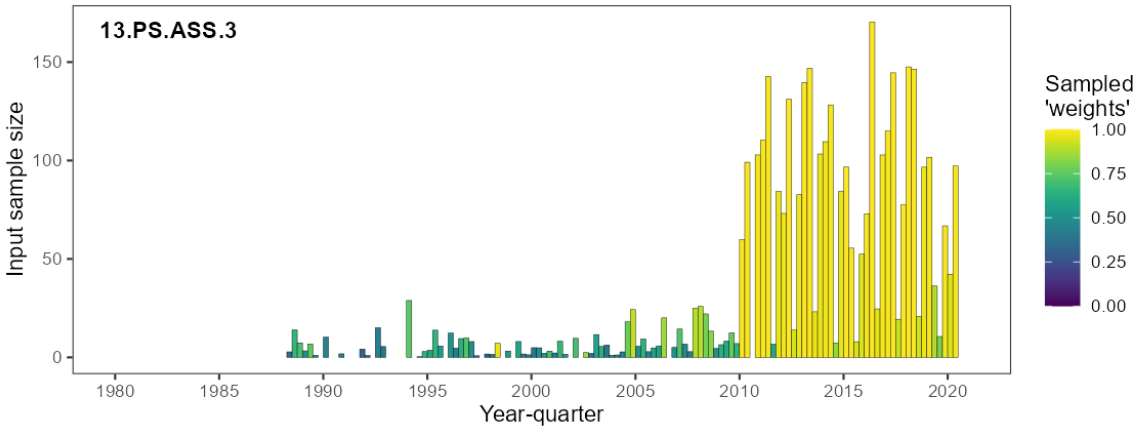
(b) 'Stronger filtering' option



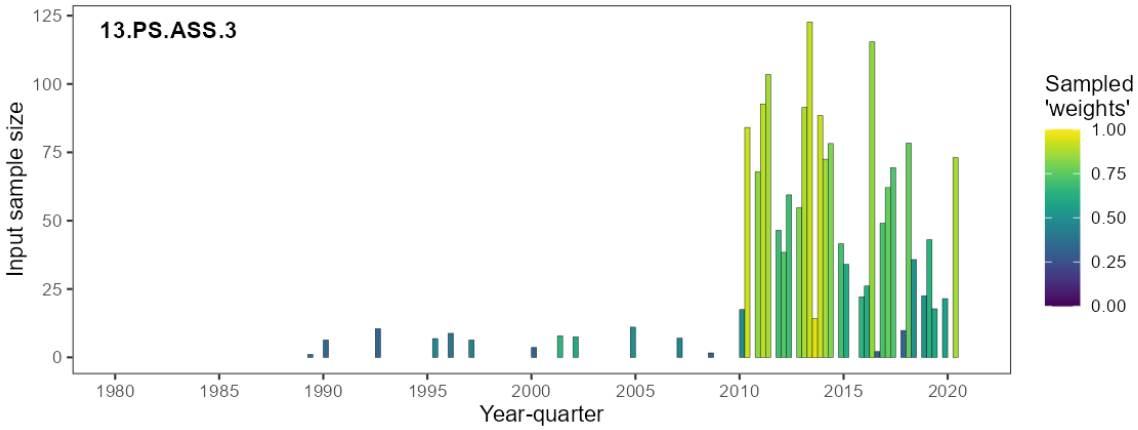
(c) 'Strongest filtering' option

Figure D.28: (Five region structure) Reweighted length compositions of yellowfin for the longline index fishery 37.LL.Index.5 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

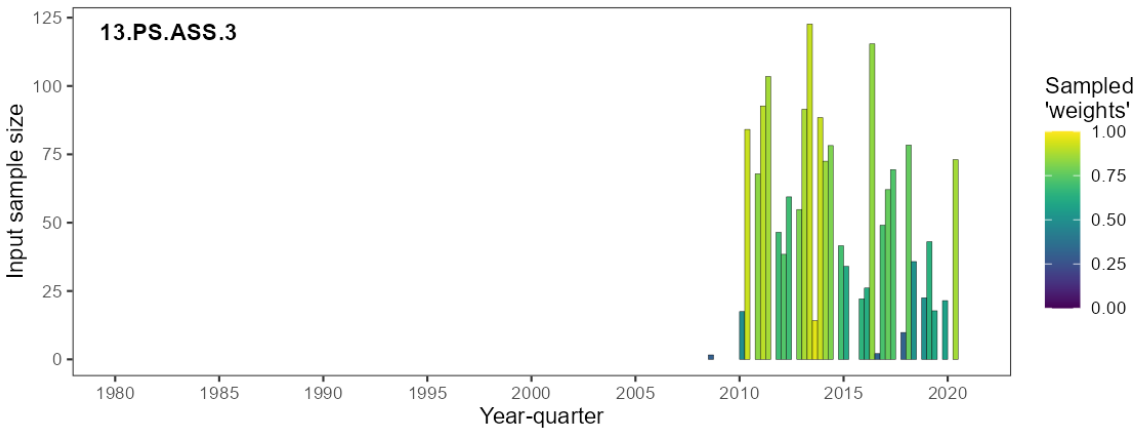
E Purse seine extraction fishery compositions with trips as the unit of sample size



(a) 'Weak filtering' option

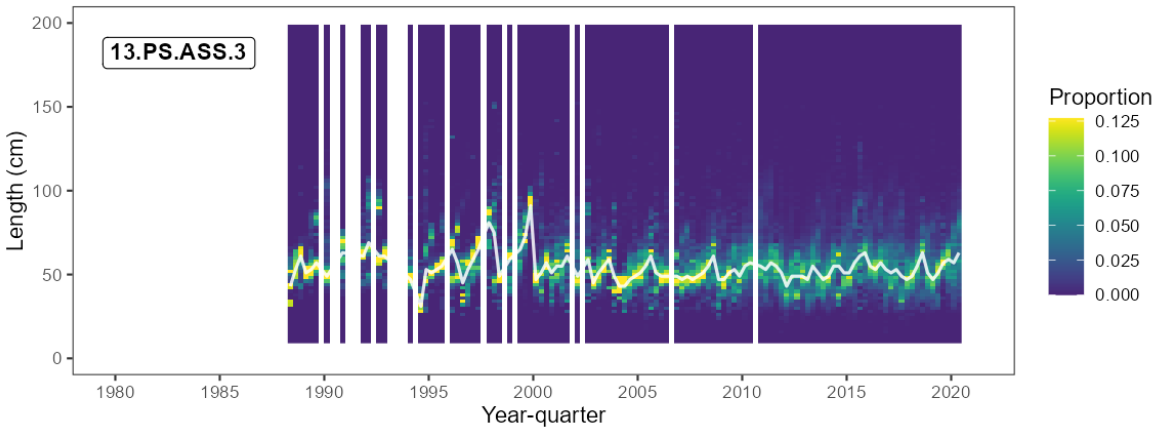


(b) 'Stronger filtering' option

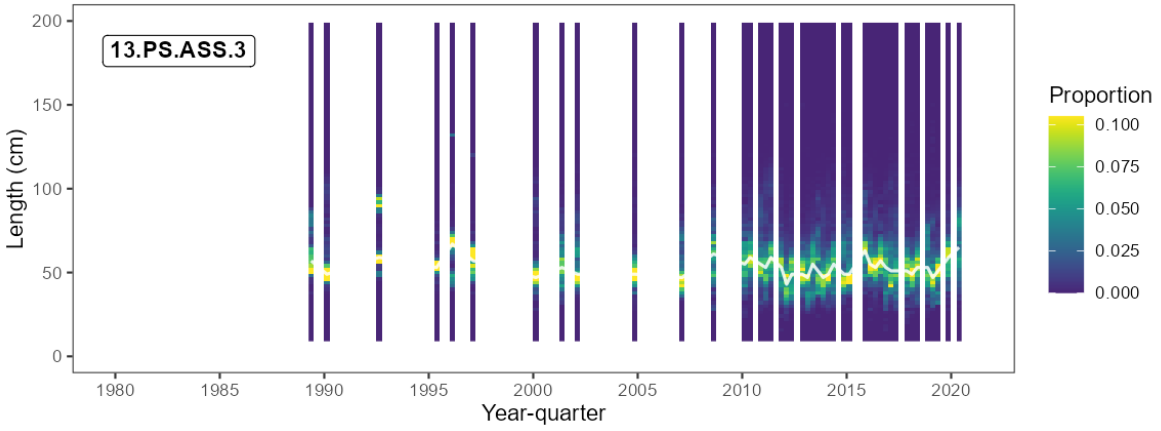


(c) 'Strongest filtering' option

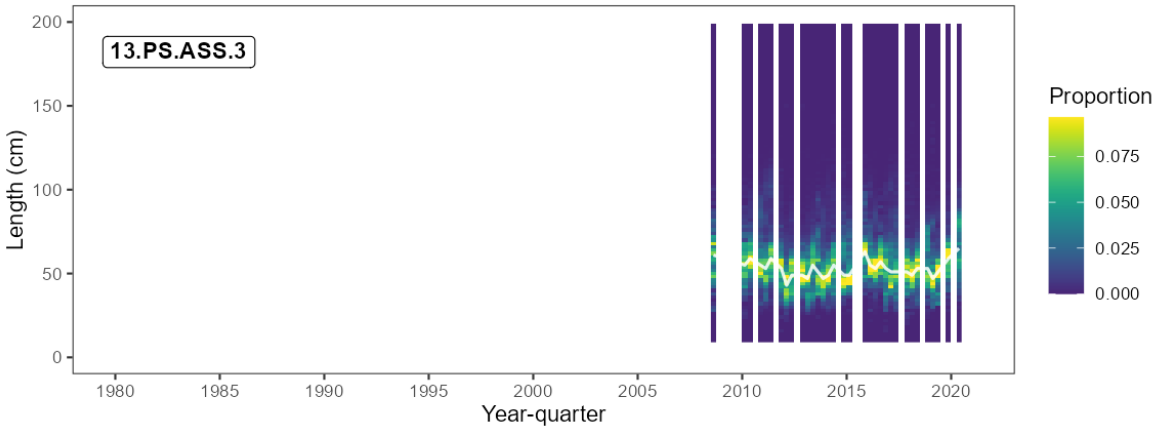
Figure E.1: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

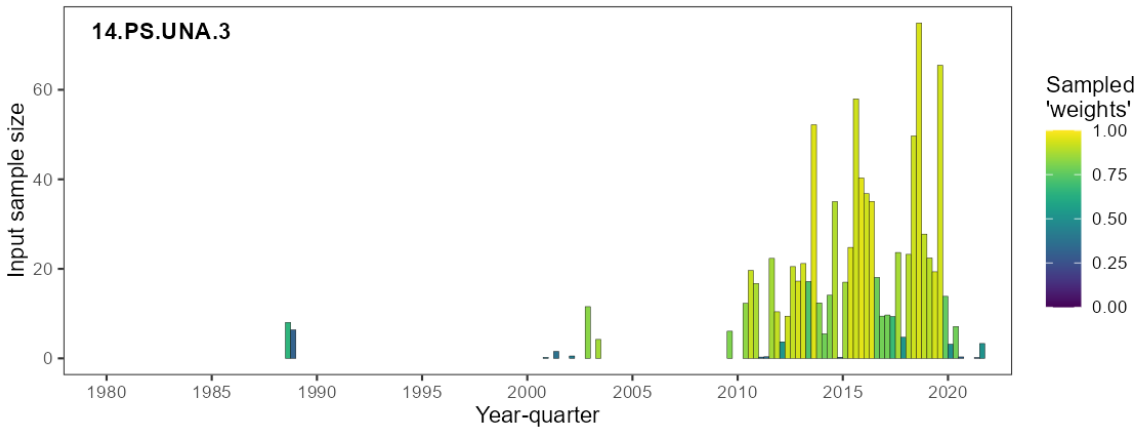


(b) 'Stronger filtering' option

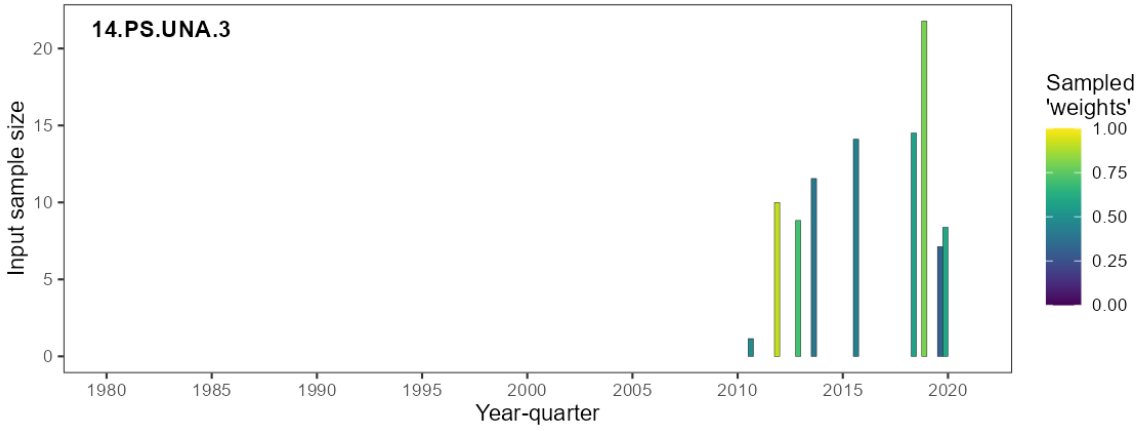


(c) 'Strongest filtering' option

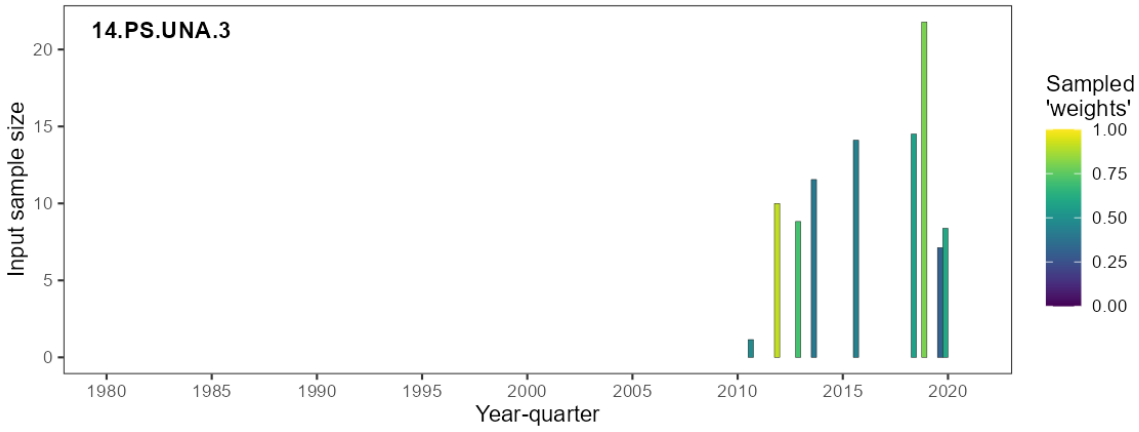
Figure E.2: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

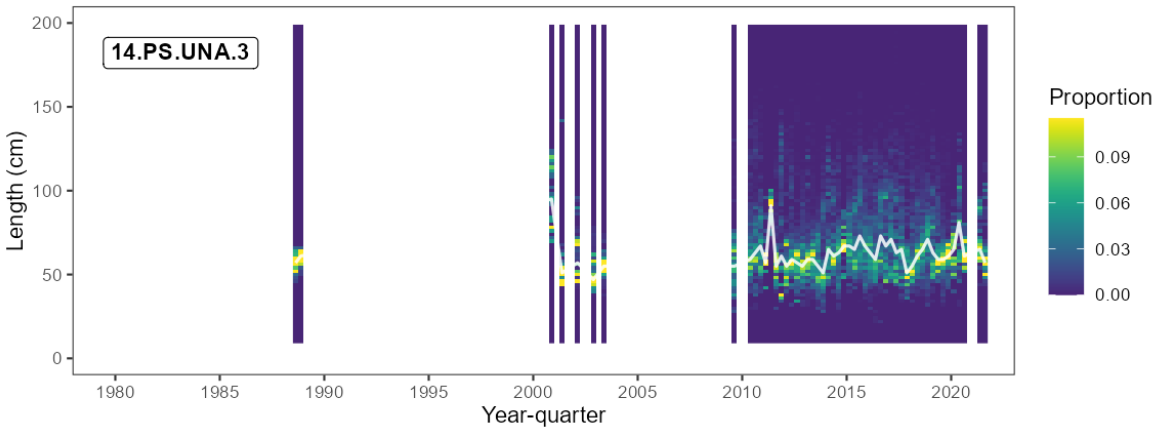


(b) 'Stronger filtering' option

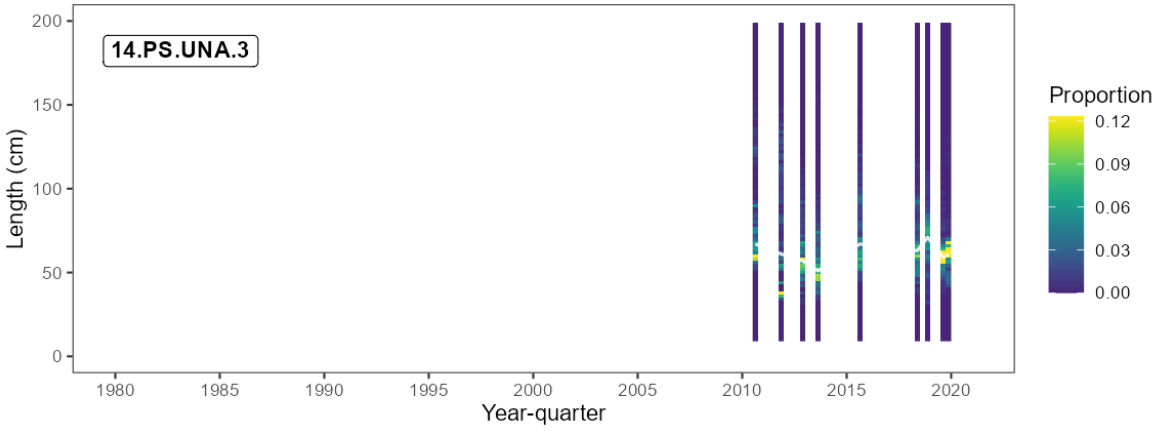


(c) 'Strongest filtering' option

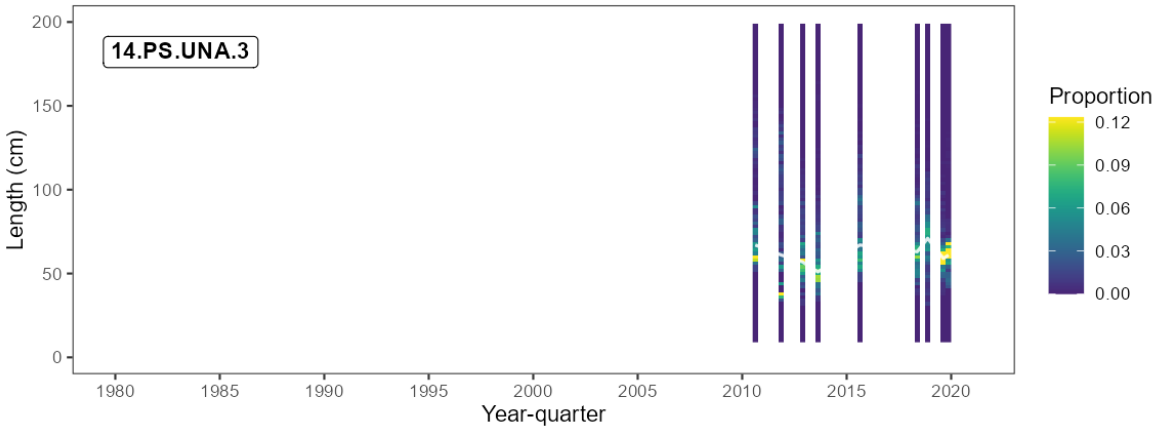
Figure E.3: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

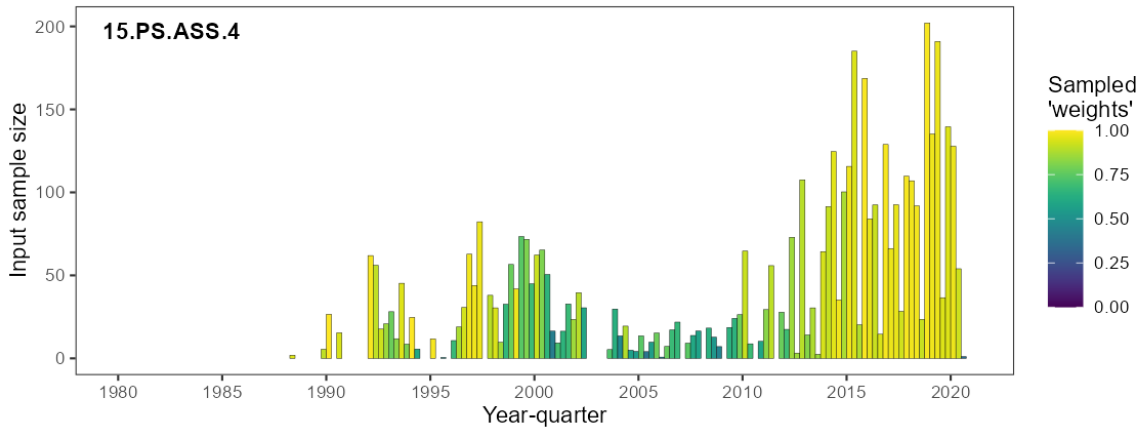


(b) 'Stronger filtering' option

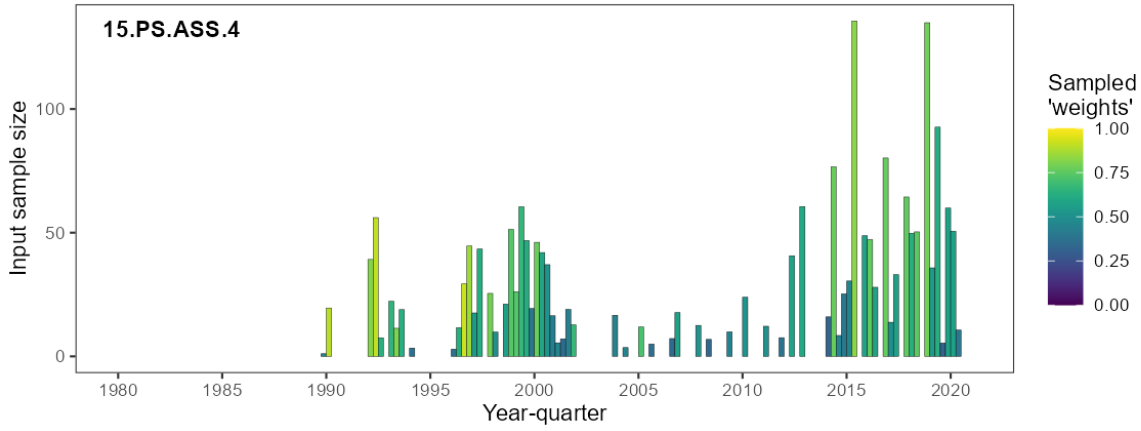


(c) 'Strongest filtering' option

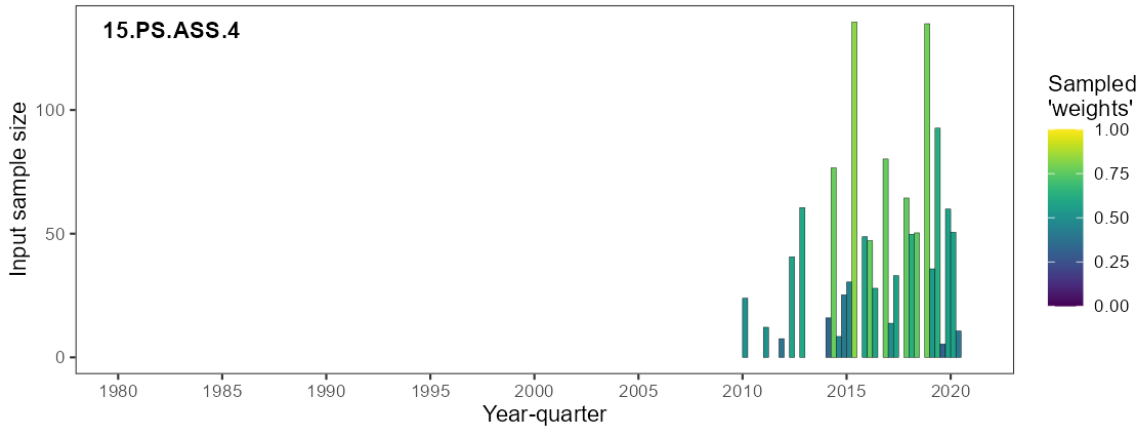
Figure E.4: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

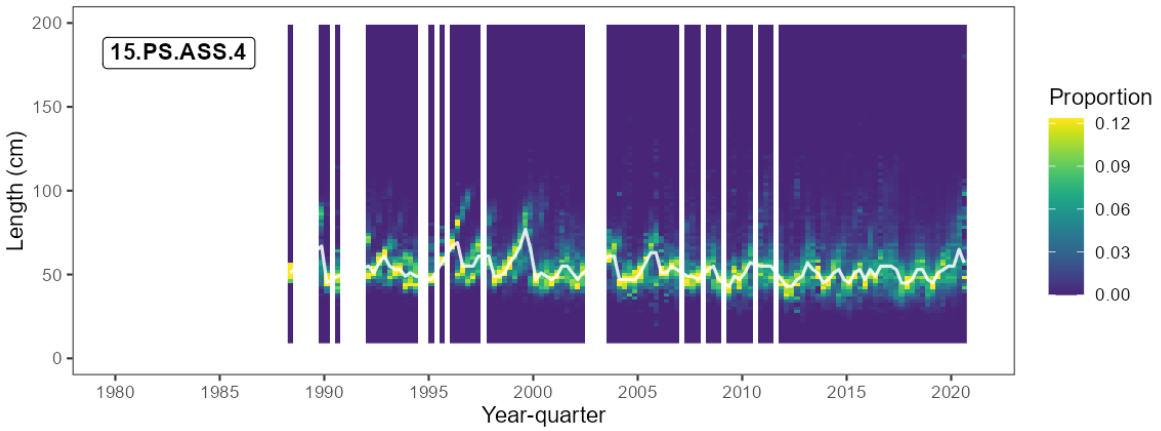


(b) 'Stronger filtering' option

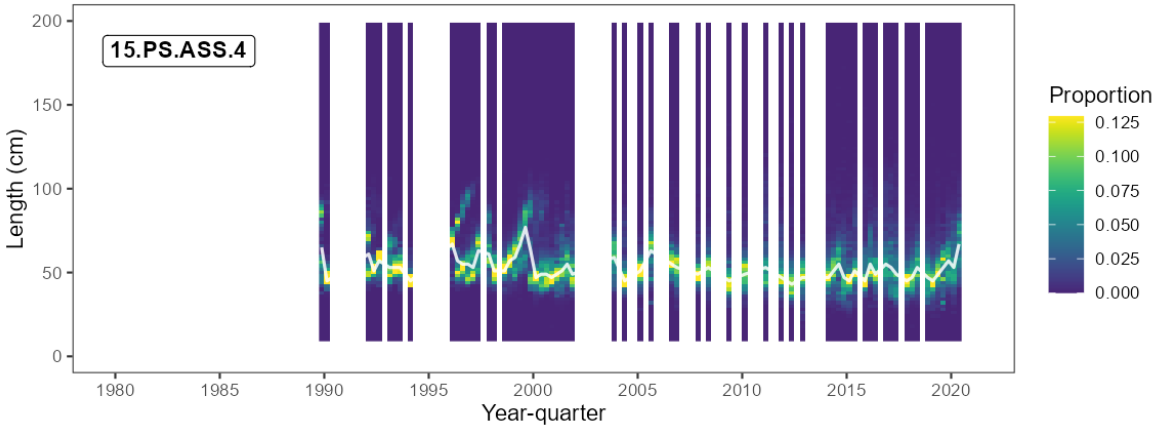


(c) 'Strongest filtering' option

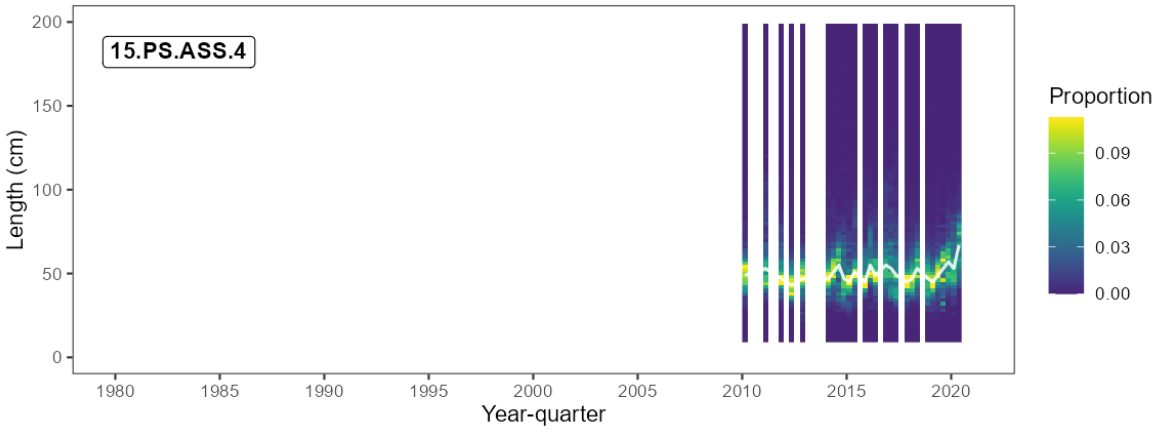
Figure E.5: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

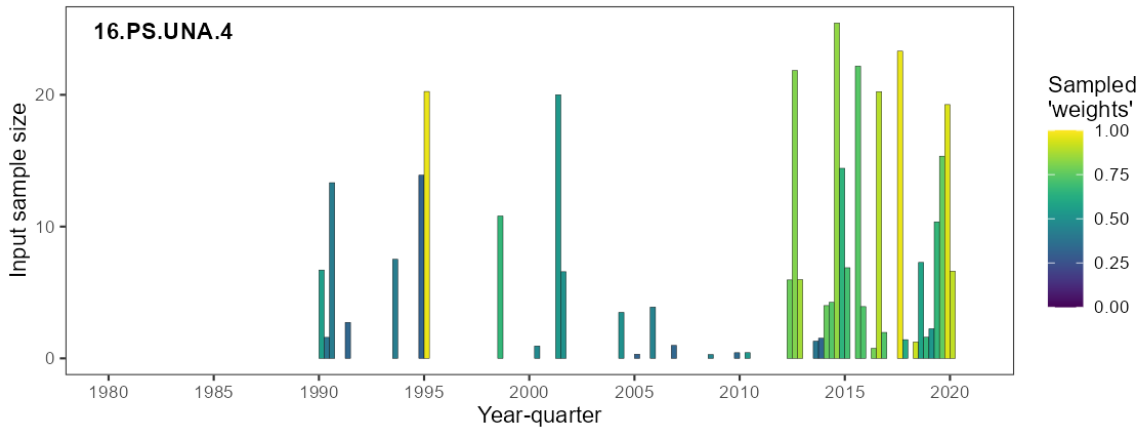


(b) 'Stronger filtering' option

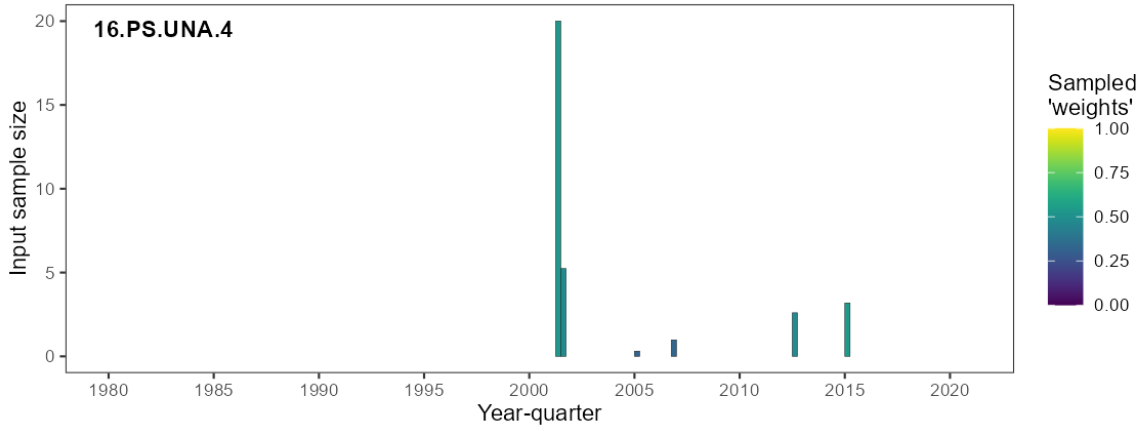


(c) 'Strongest filtering' option

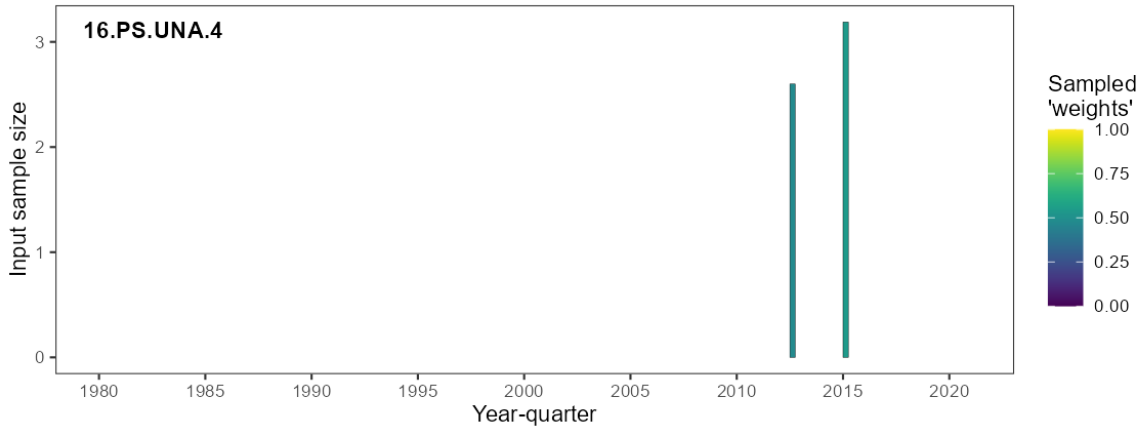
Figure E.6: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

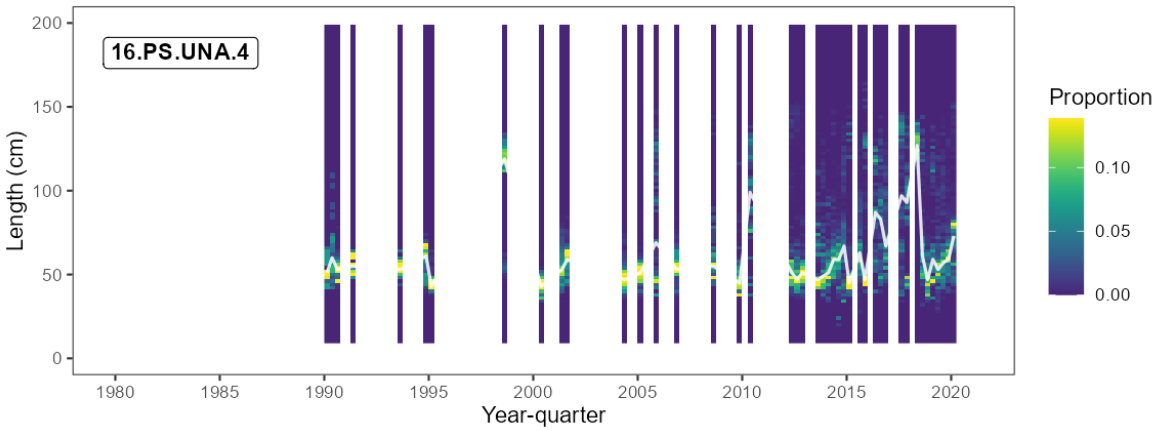


(b) 'Stronger filtering' option

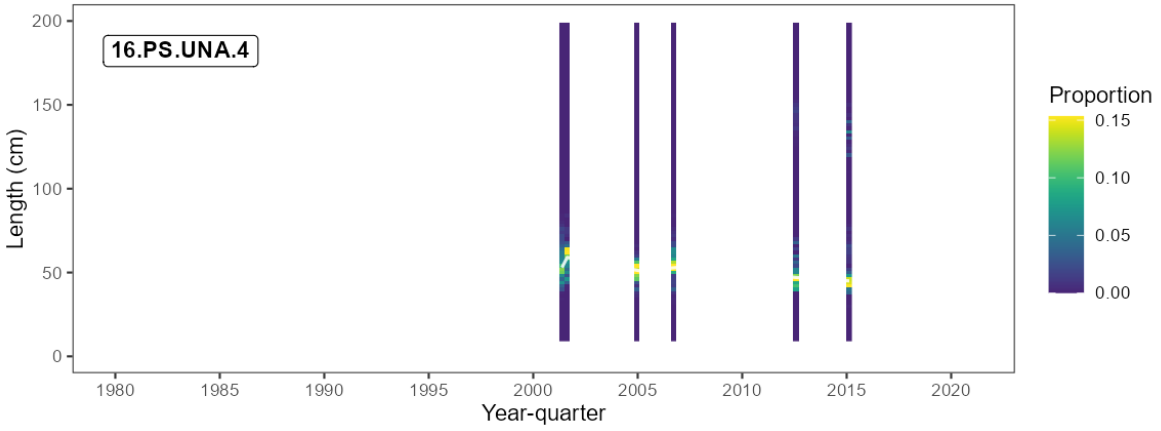


(c) 'Strongest filtering' option

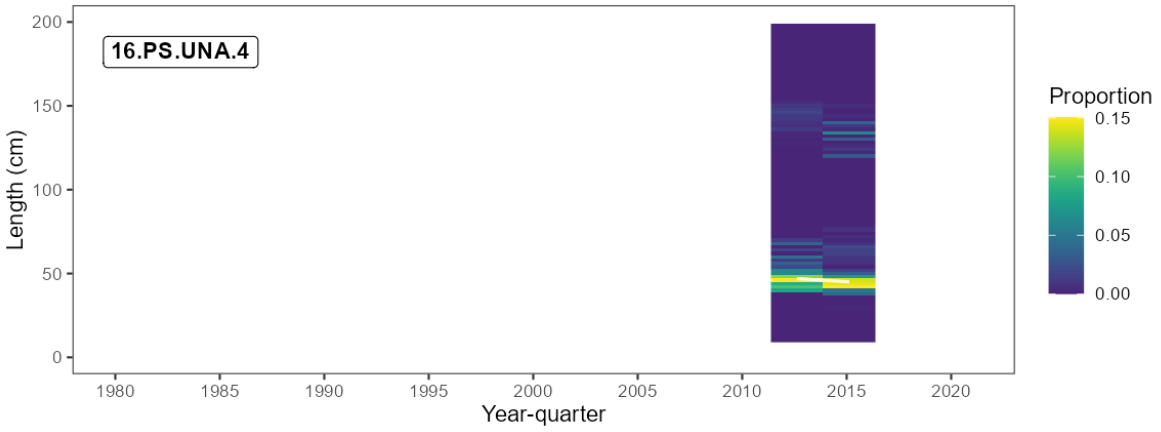
Figure E.7: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

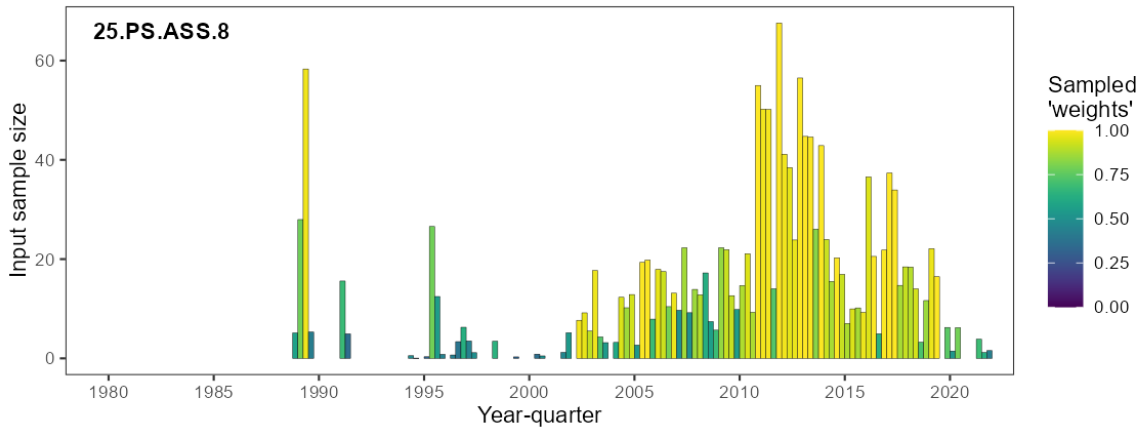


(b) 'Stronger filtering' option

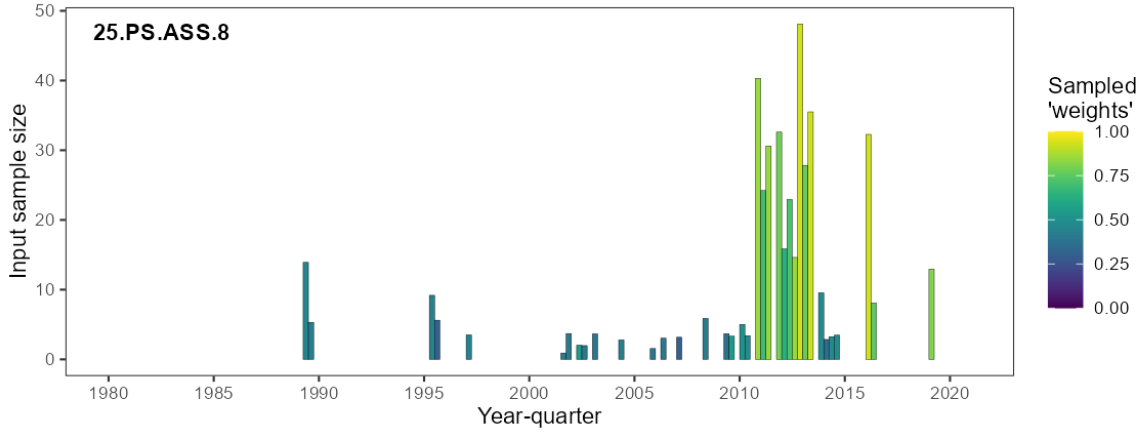


(c) 'Strongest filtering' option

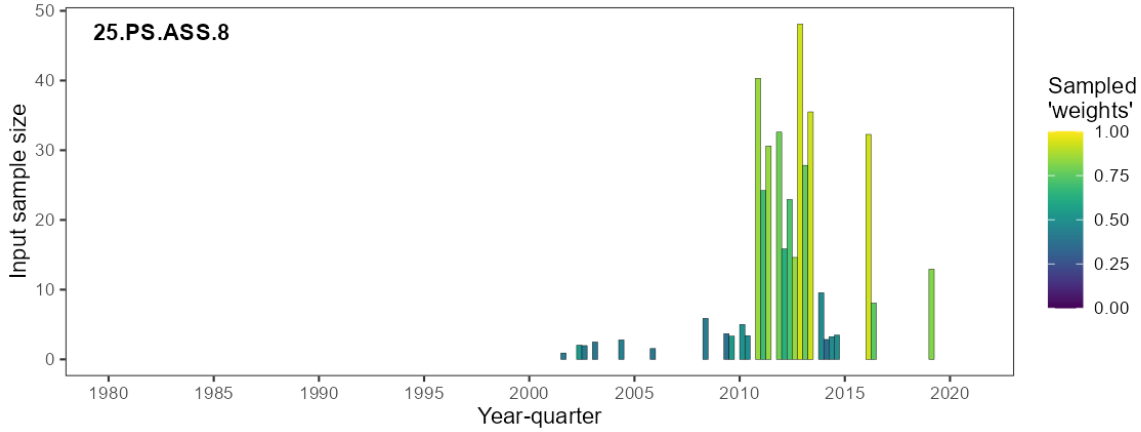
Figure E.8: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

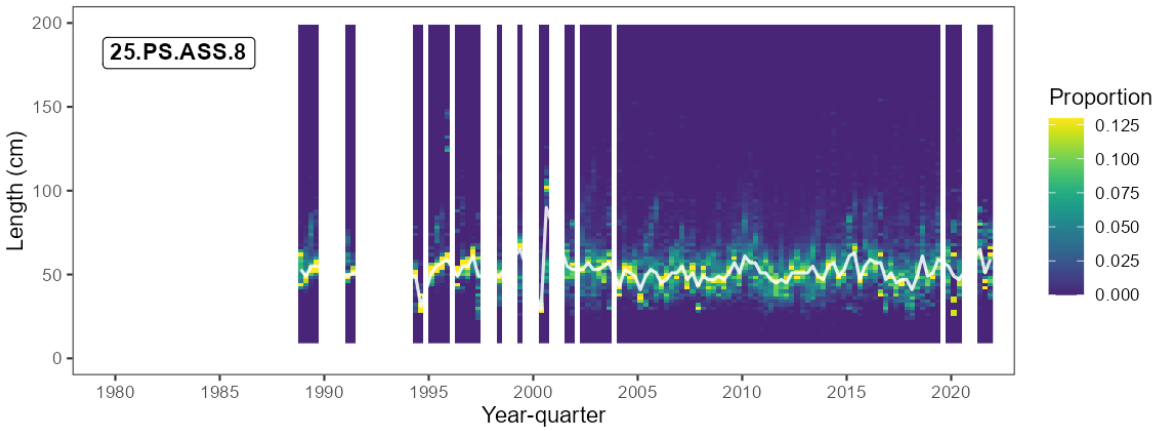


(b) 'Stronger filtering' option

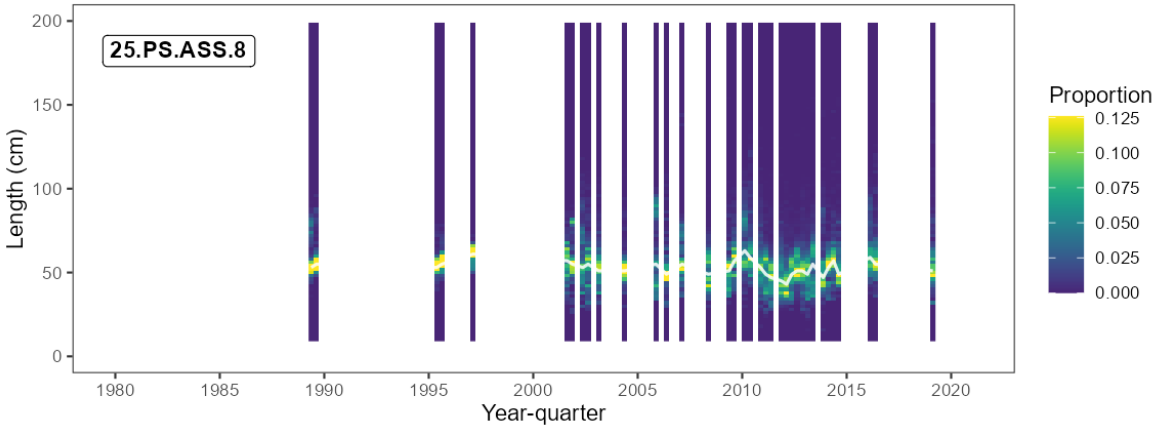


(c) 'Strongest filtering' option

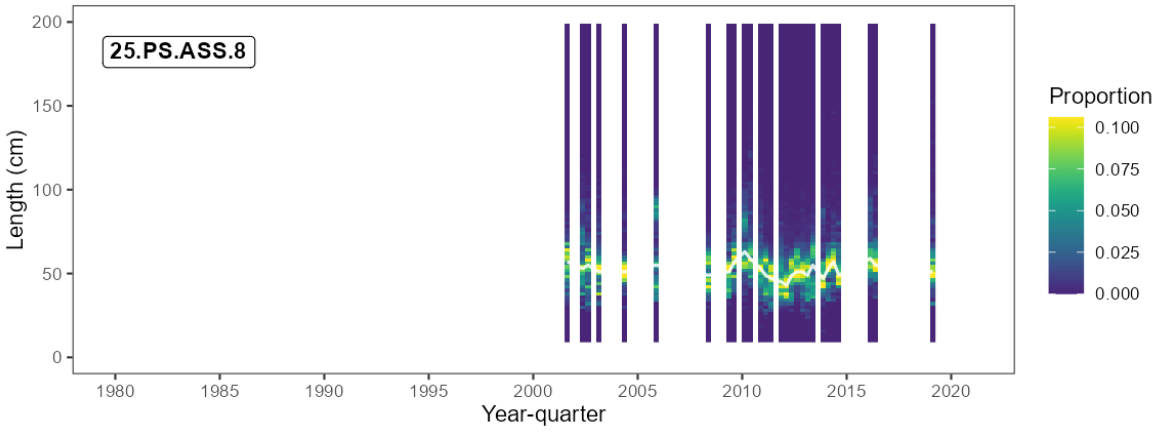
Figure E.9: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

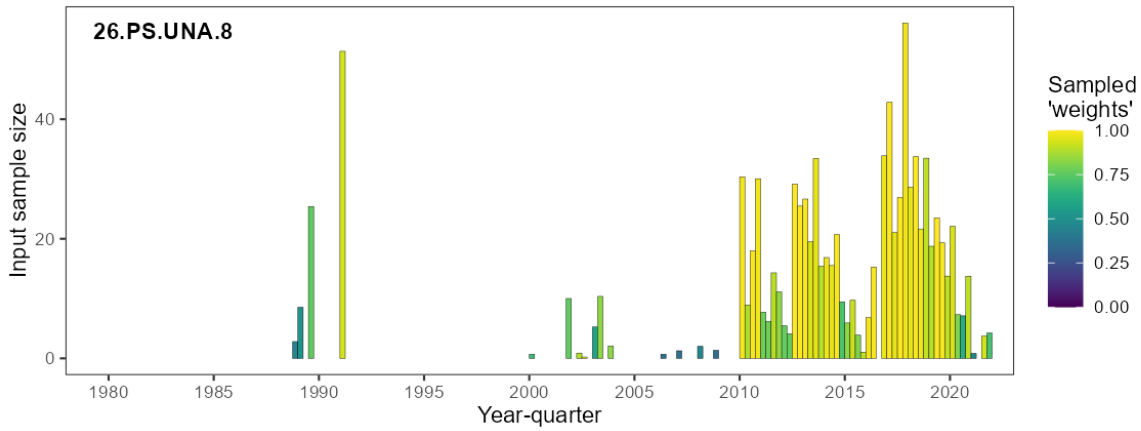


(b) 'Stronger filtering' option

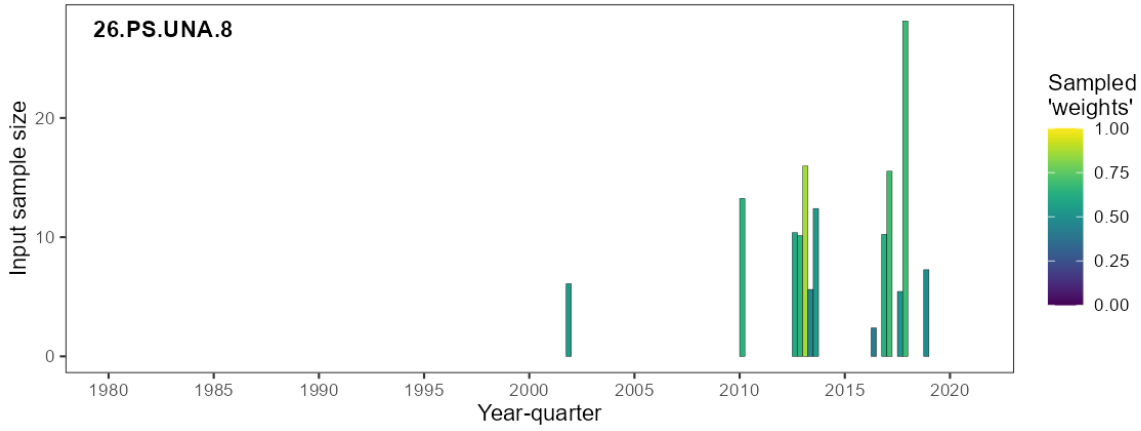


(c) 'Strongest filtering' option

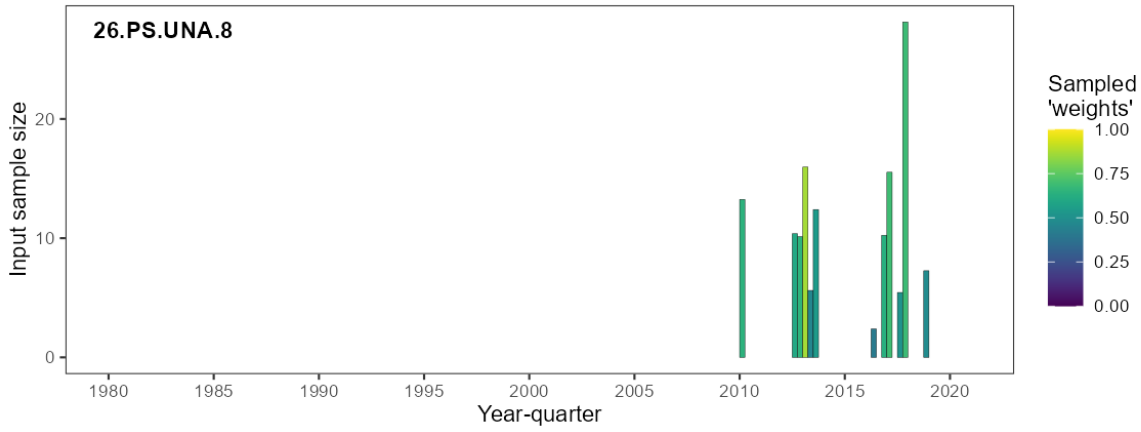
Figure E.10: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

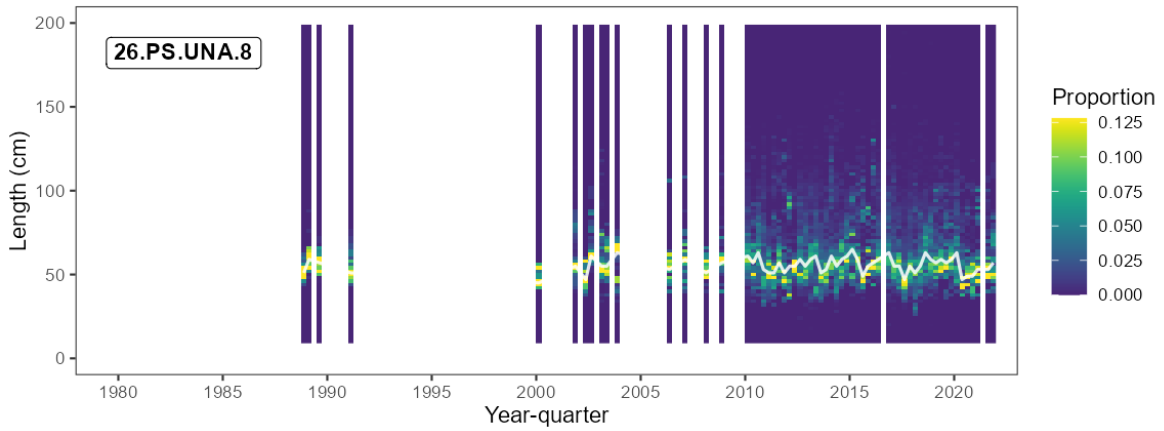


(b) 'Stronger filtering' option

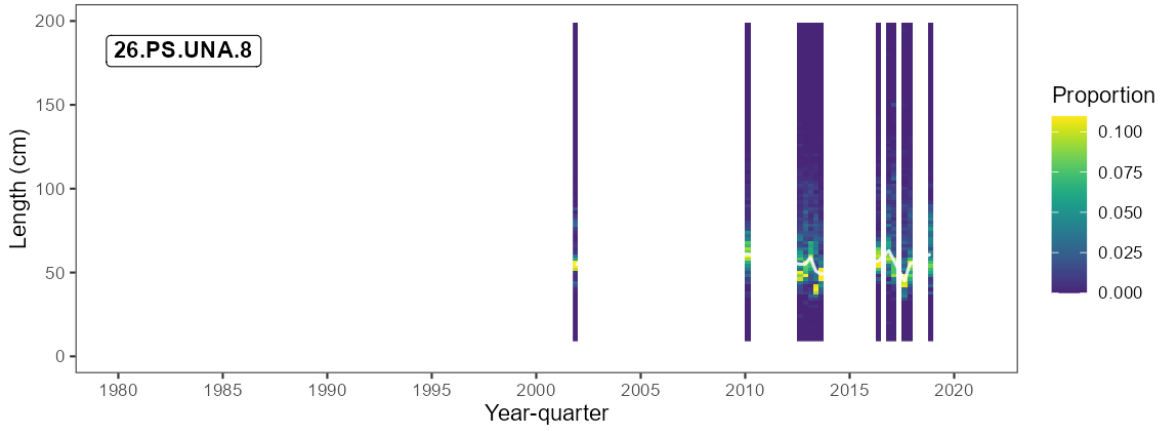


(c) 'Strongest filtering' option

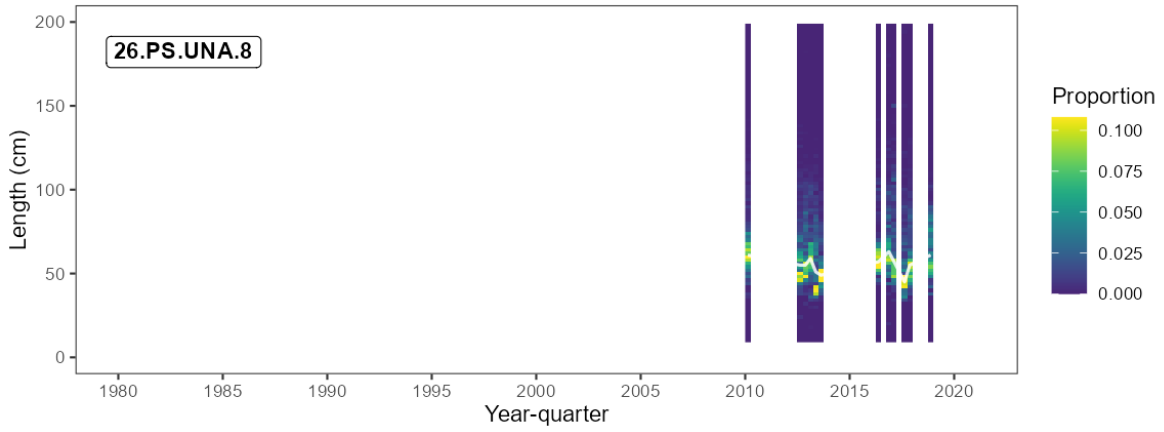
Figure E.11: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option



(b) 'Stronger filtering' option



(c) 'Strongest filtering' option

Figure E.12: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

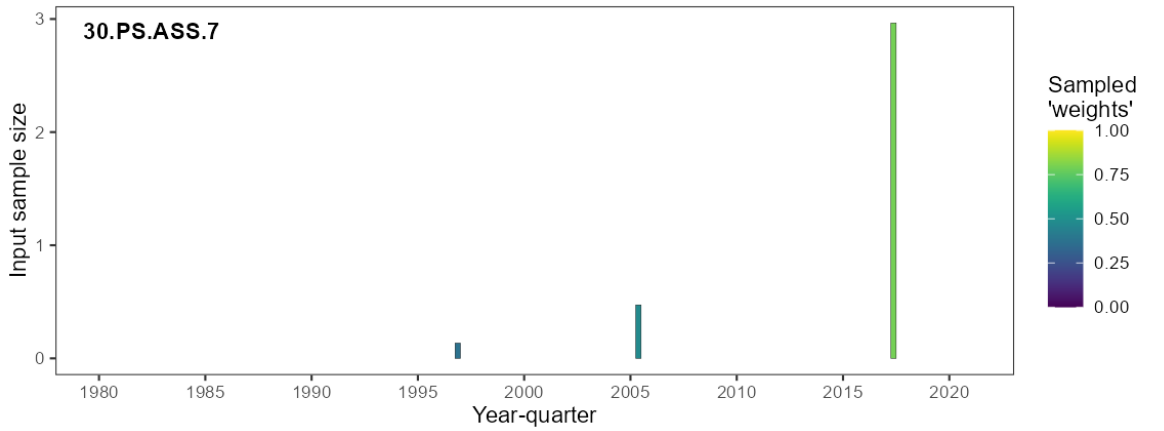


Figure E.13: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 30.PS.ASS.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.

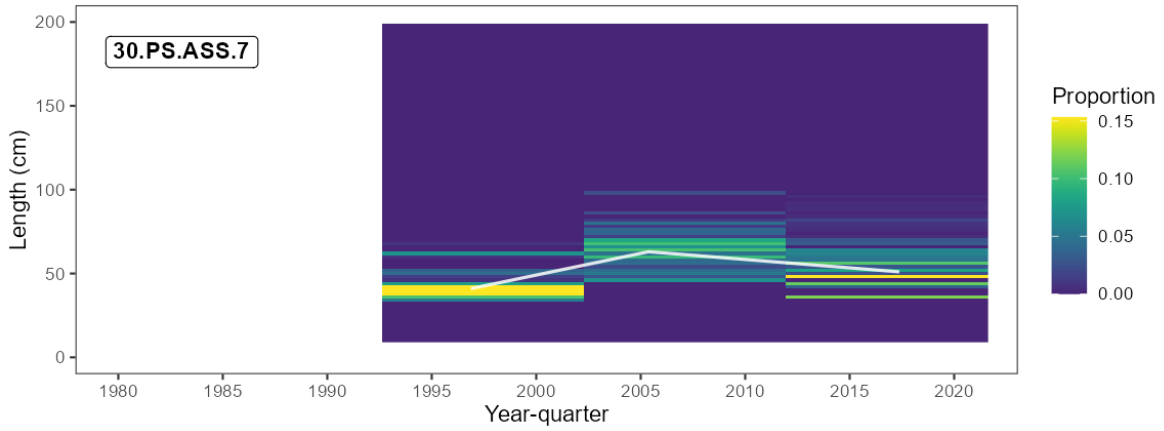


Figure E.14: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 30.PS.ASS.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.

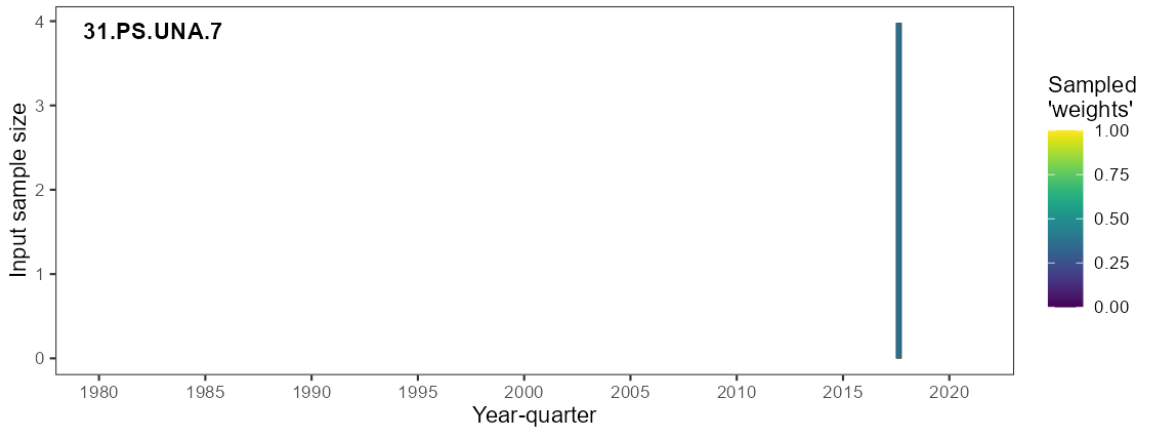


Figure E.15: (Sampled unit of trips) Input sample sizes for reweighted length compositions of bigeye for the purse seine extraction fishery 31.PS.UNA.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.

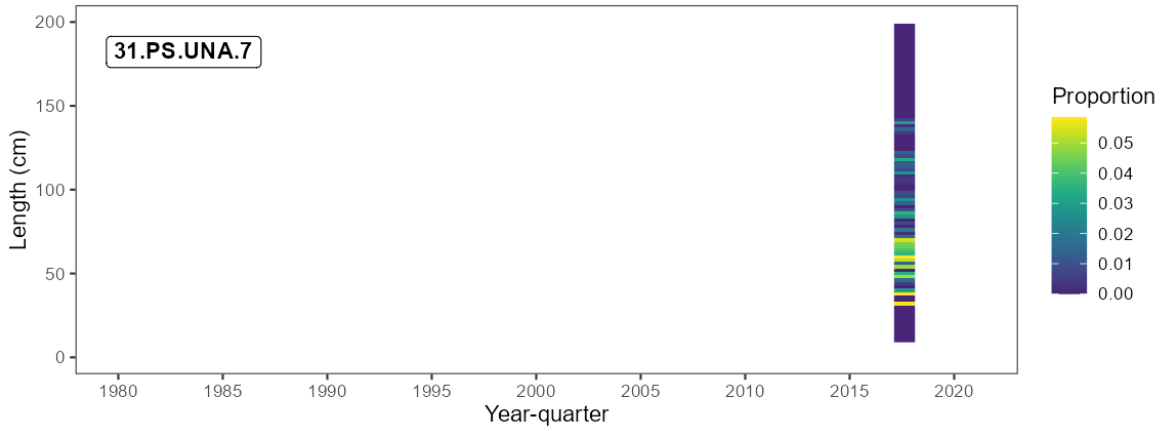
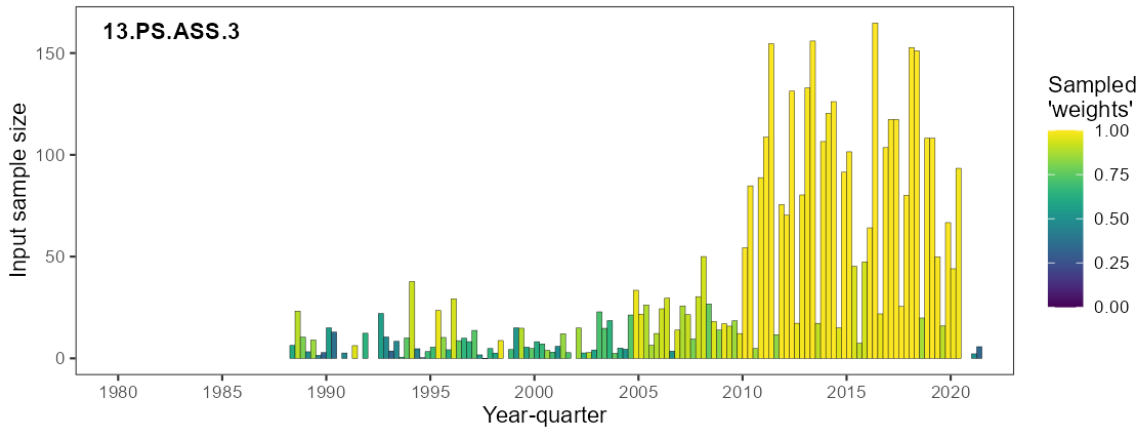
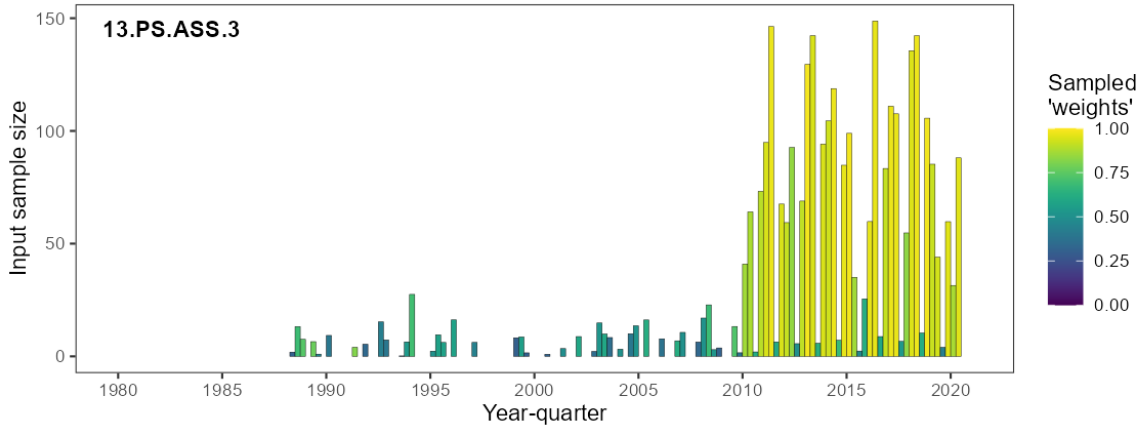


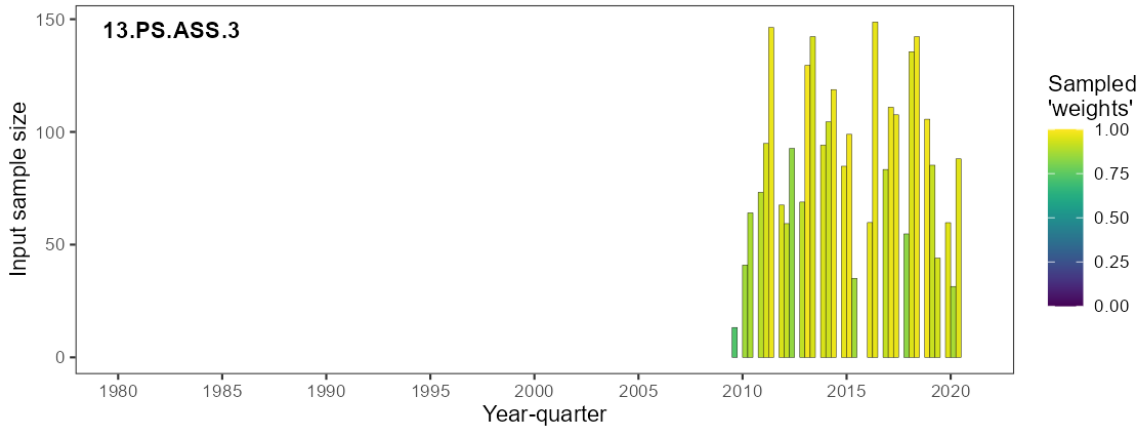
Figure E.16: (Sampled unit of trips) Reweighted length compositions of bigeye for the purse seine extraction fishery 31.PS.UNA.7 with 'weak' (F0) filtering. There were no reweighted compositions for the 'stronger' (F1) and 'strongest' (F2) filtering options. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

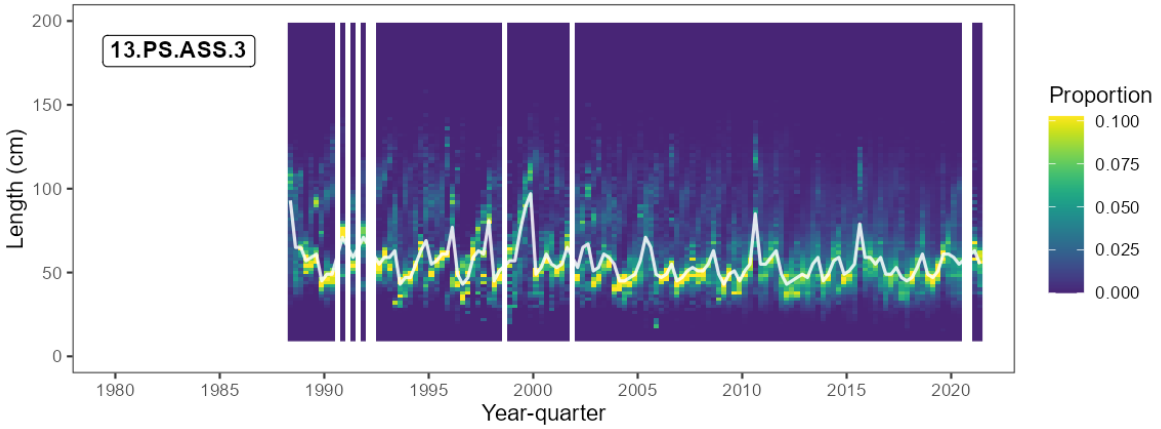


(b) 'Stronger filtering' option

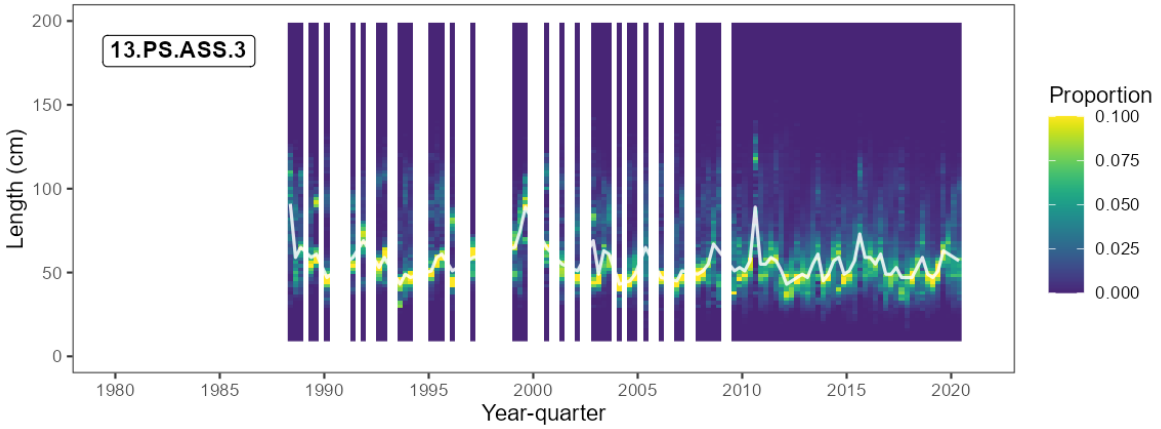


(c) 'Strongest filtering' option

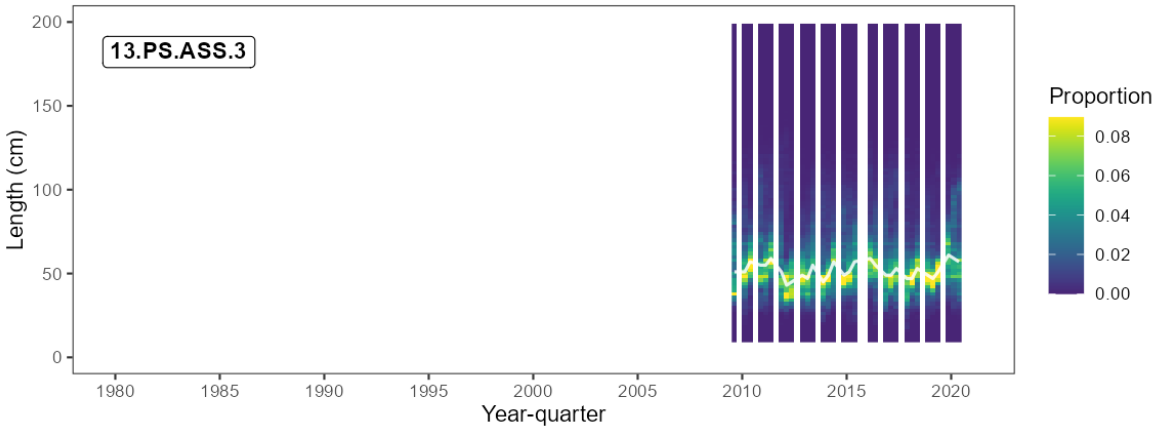
Figure E.17: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

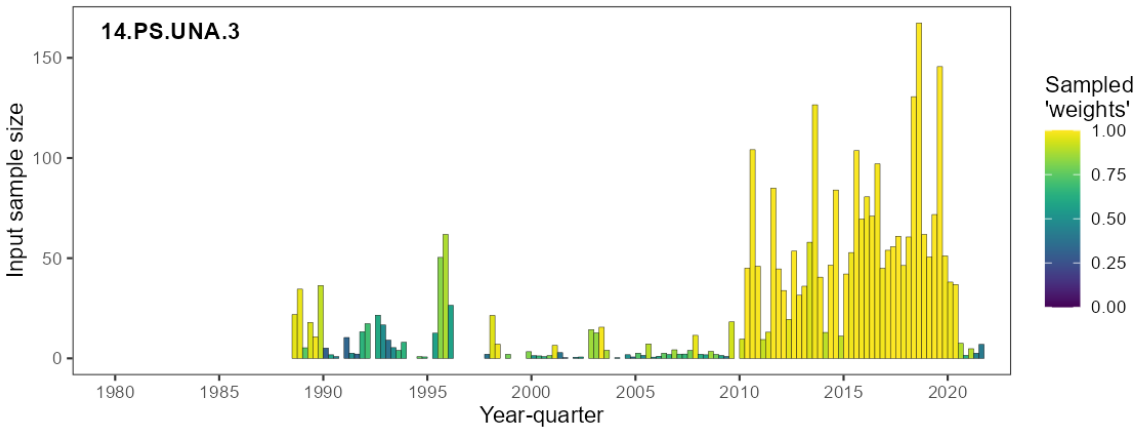


(b) 'Stronger filtering' option

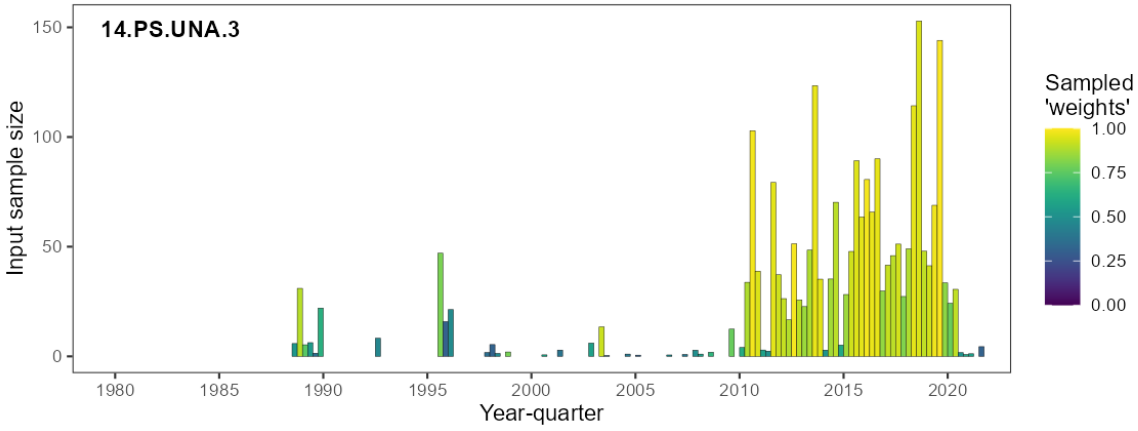


(c) 'Strongest filtering' option

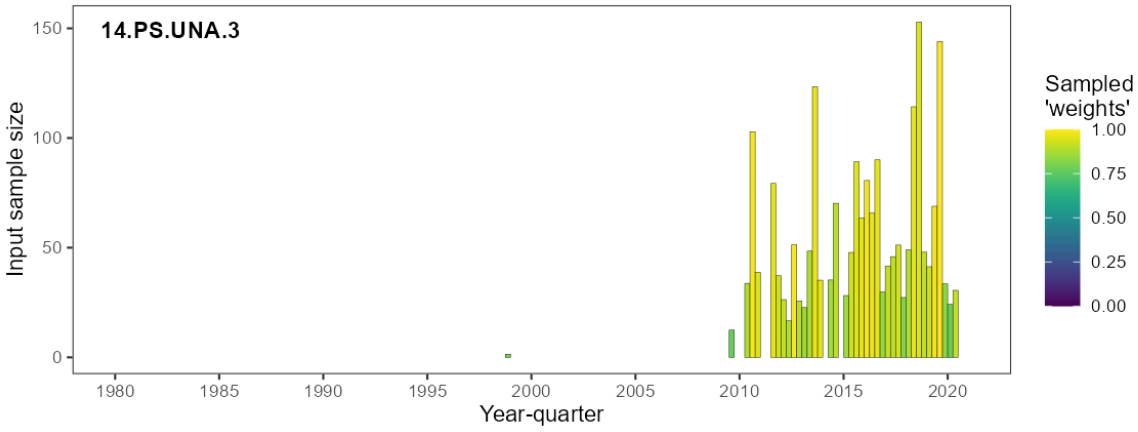
Figure E.18: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 13.PS.ASS.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

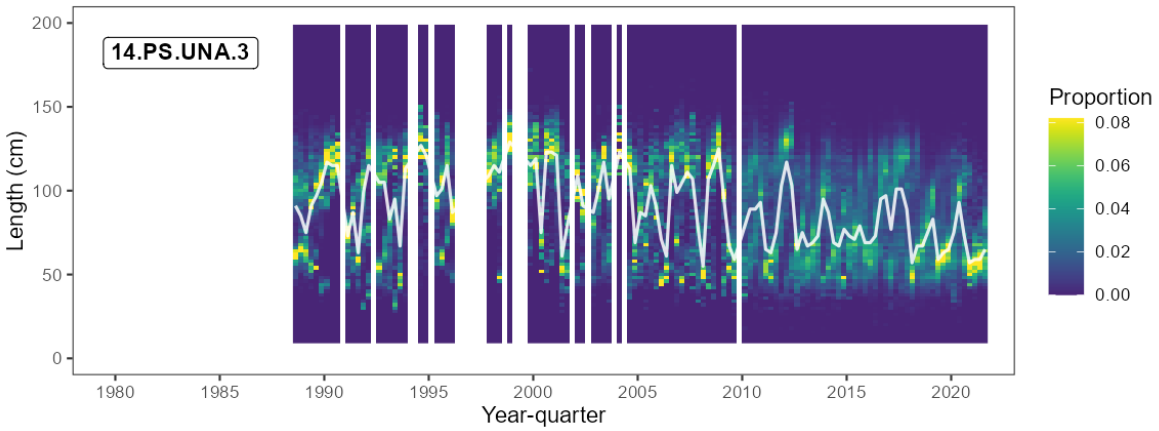


(b) 'Stronger filtering' option

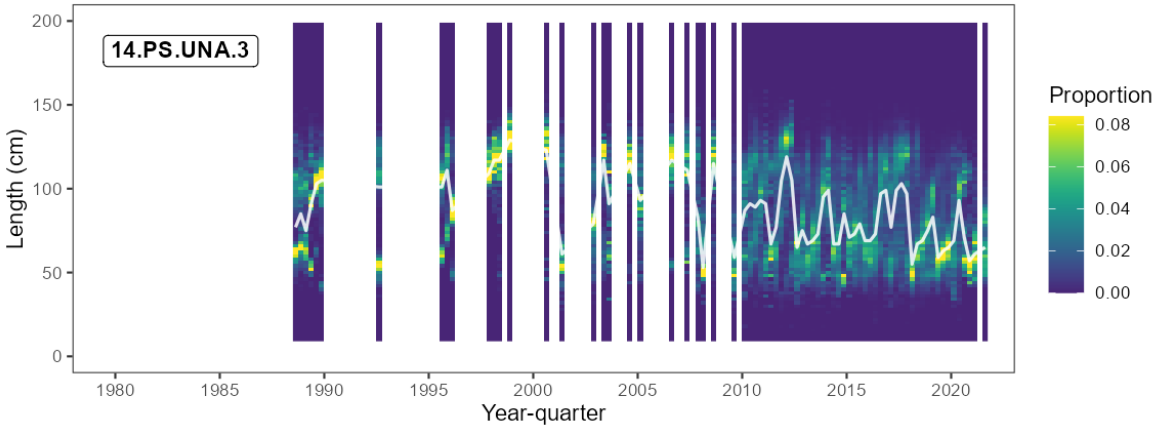


(c) 'Strongest filtering' option

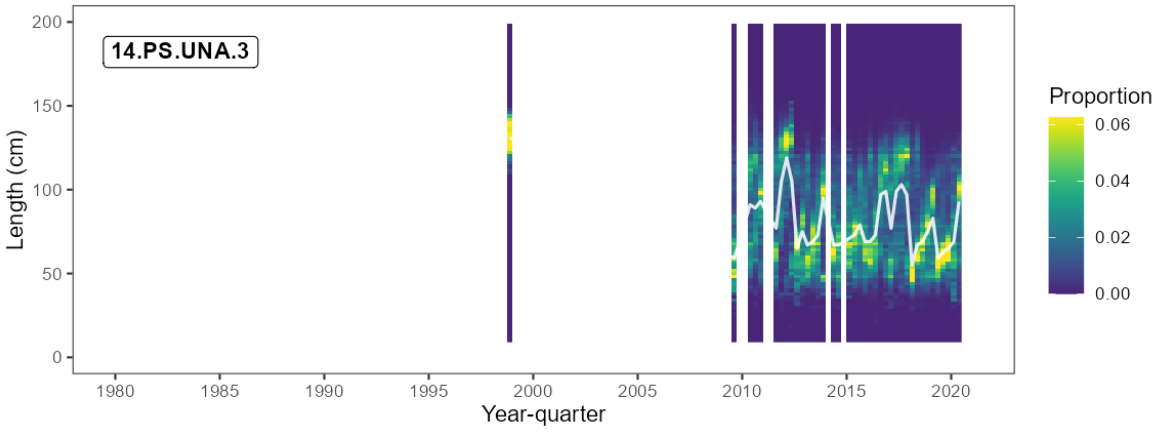
Figure E.19: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

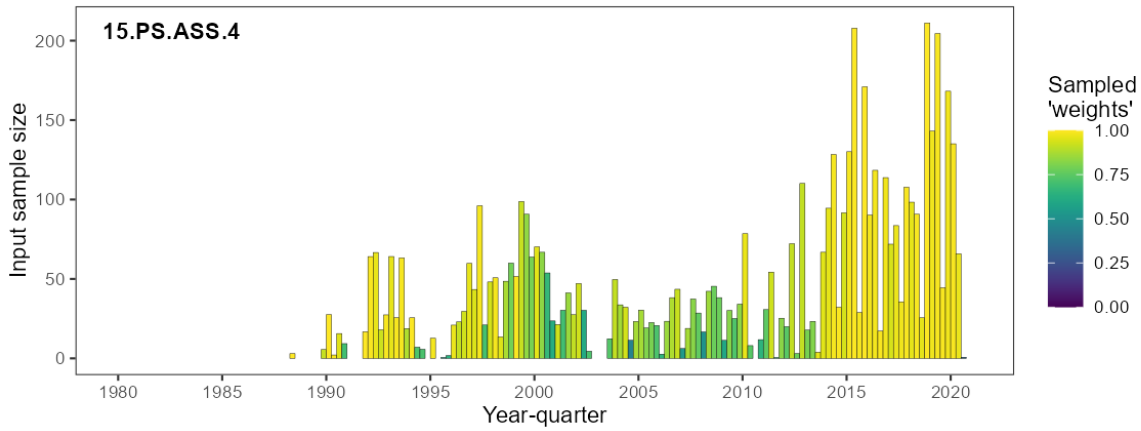


(b) 'Stronger filtering' option

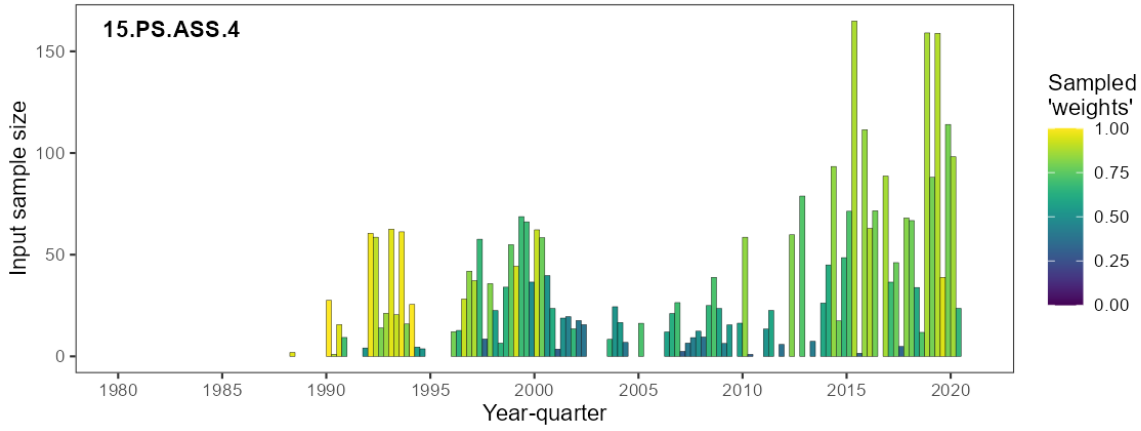


(c) 'Strongest filtering' option

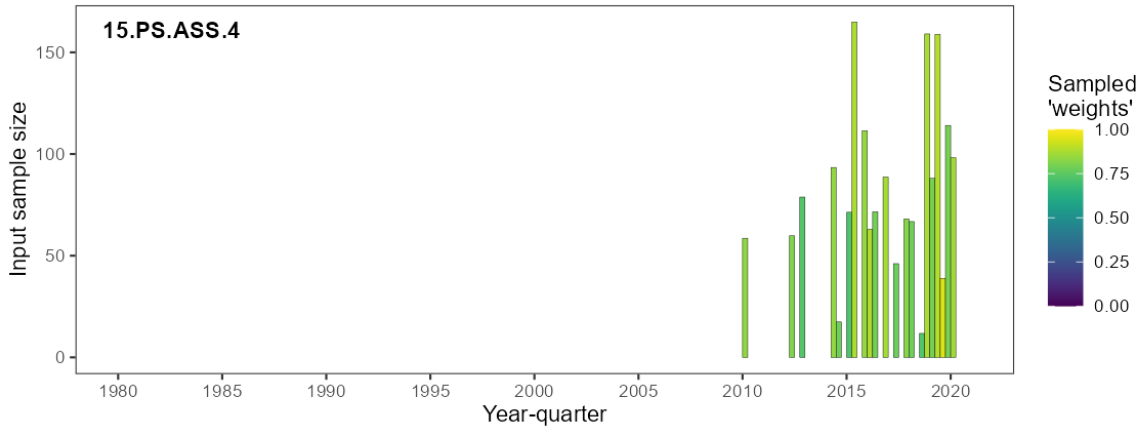
Figure E.20: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 14.PS.UNA.3 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

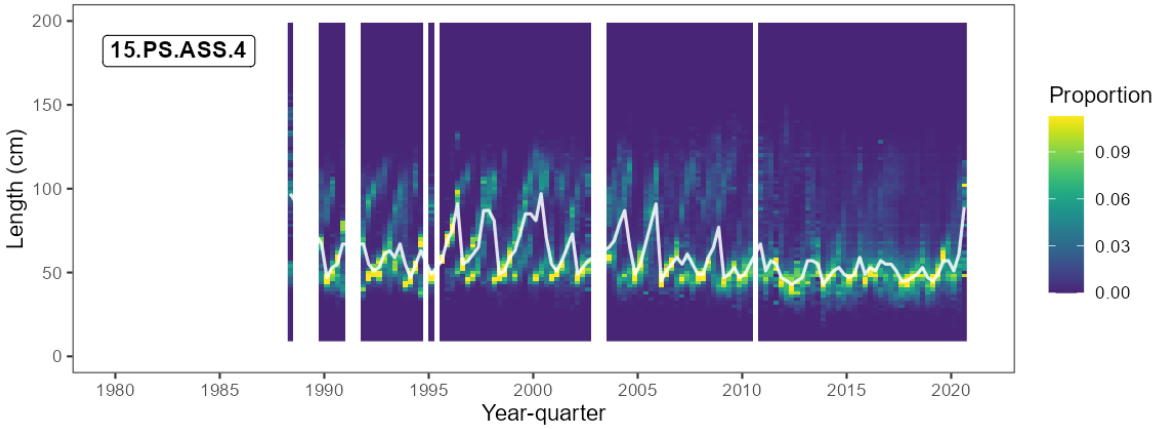


(b) 'Stronger filtering' option

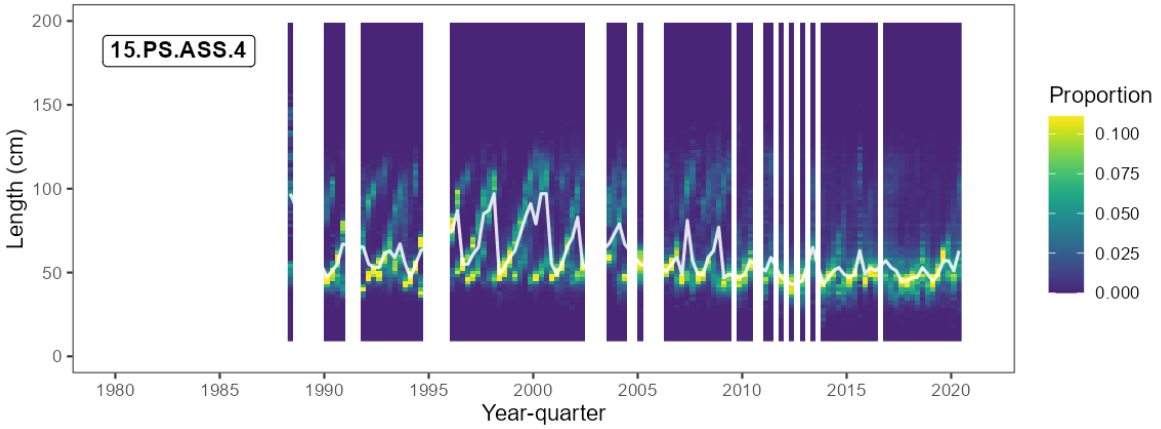


(c) 'Strongest filtering' option

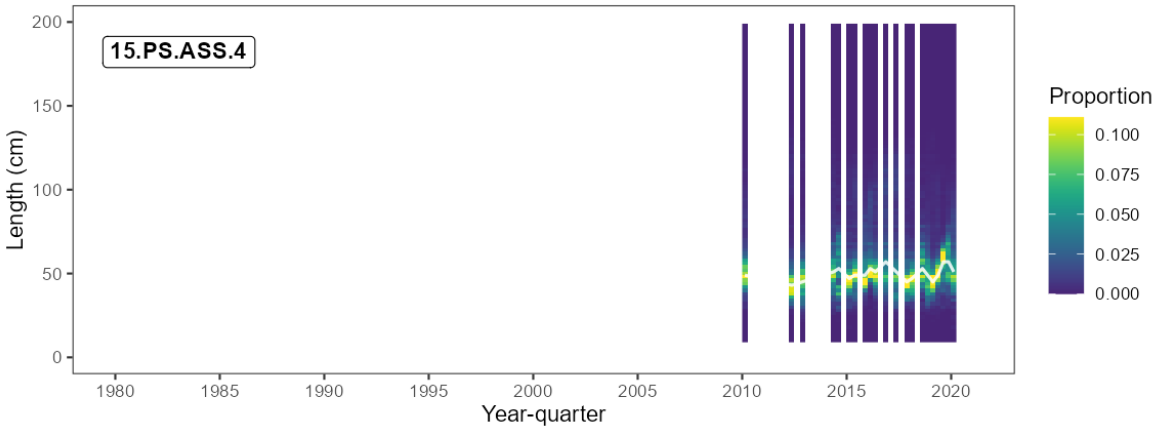
Figure E.21: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

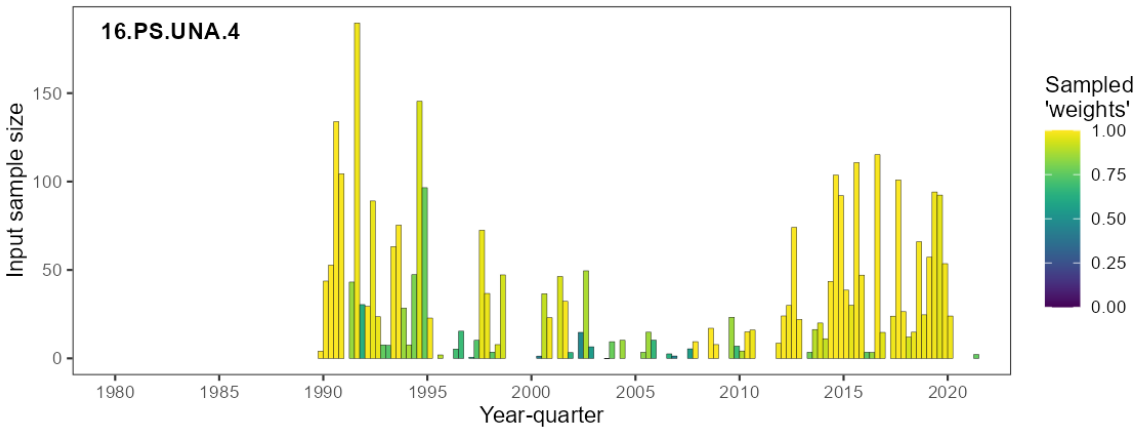


(b) 'Stronger filtering' option

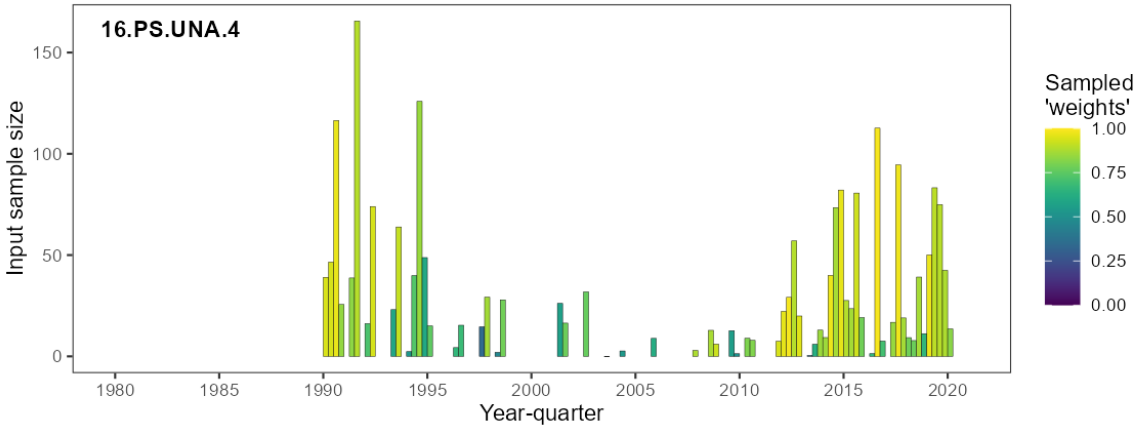


(c) 'Strongest filtering' option

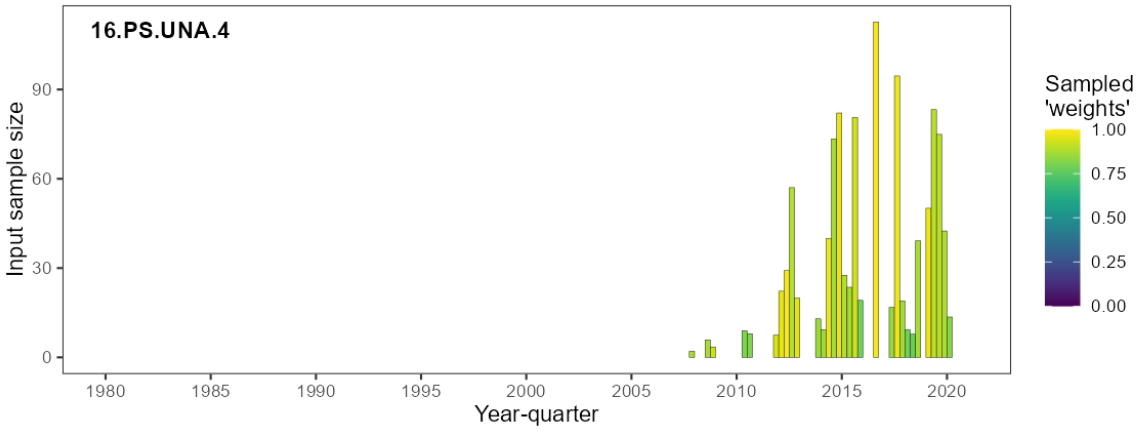
Figure E.22: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 15.PS.ASS.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

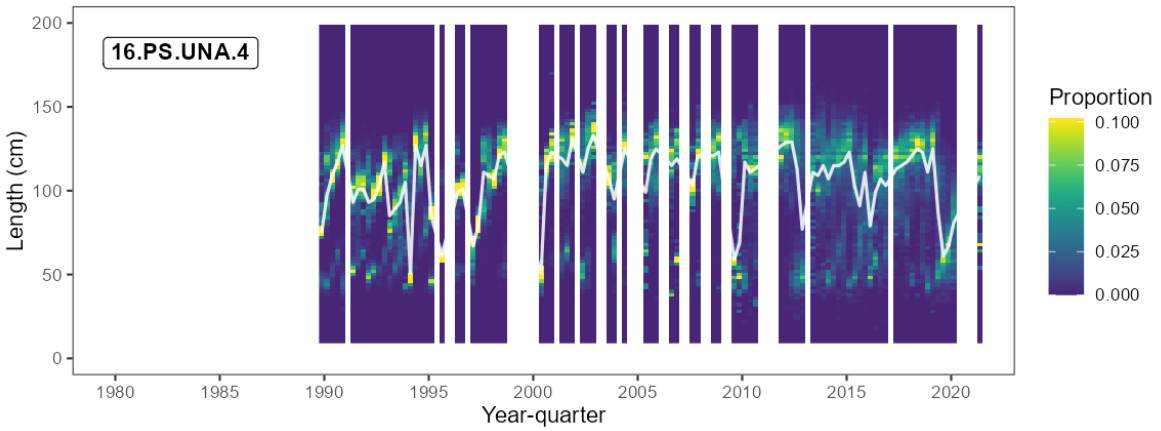


(b) 'Stronger filtering' option

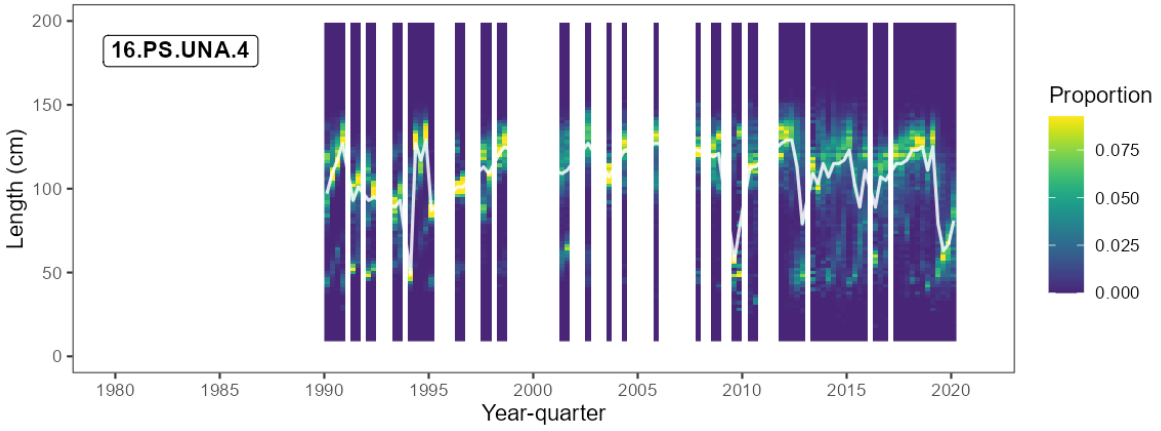


(c) 'Strongest filtering' option

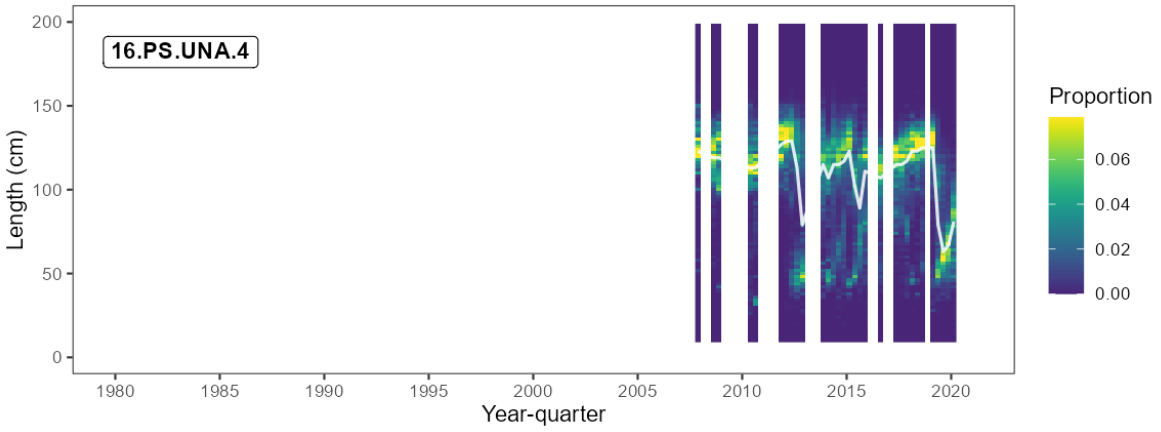
Figure E.23: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

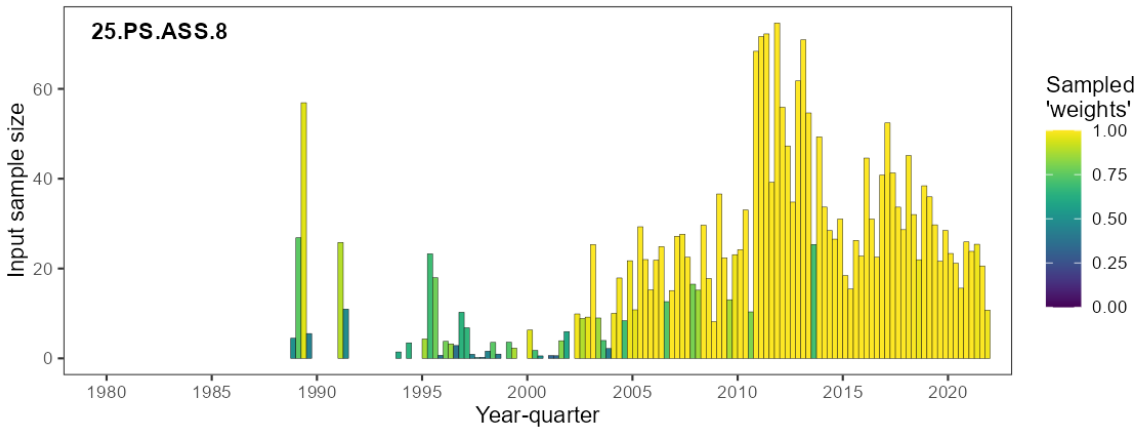


(b) 'Stronger filtering' option

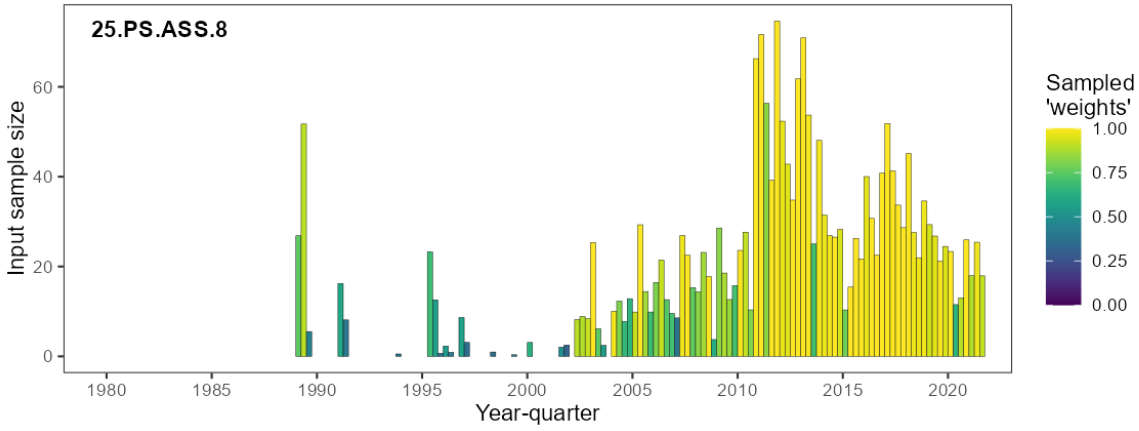


(c) 'Strongest filtering' option

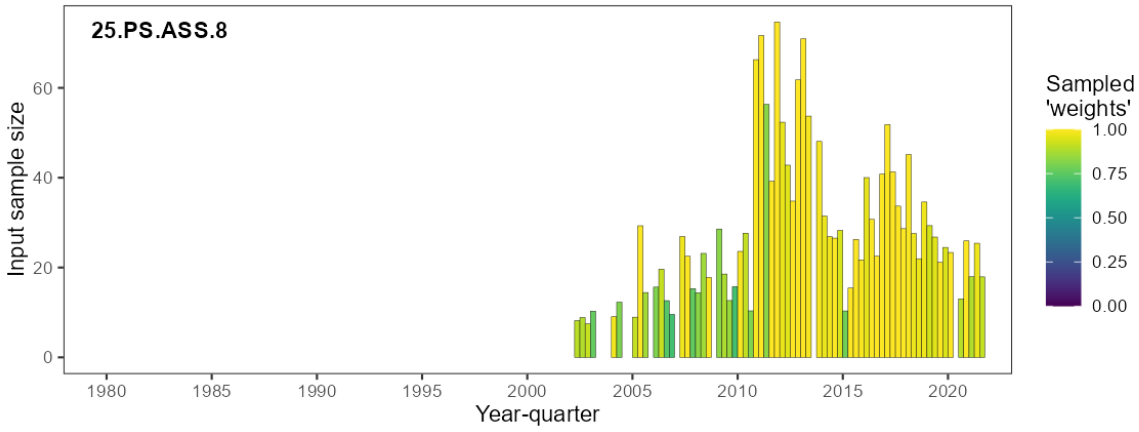
Figure E.24: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 16.PS.UNA.4 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

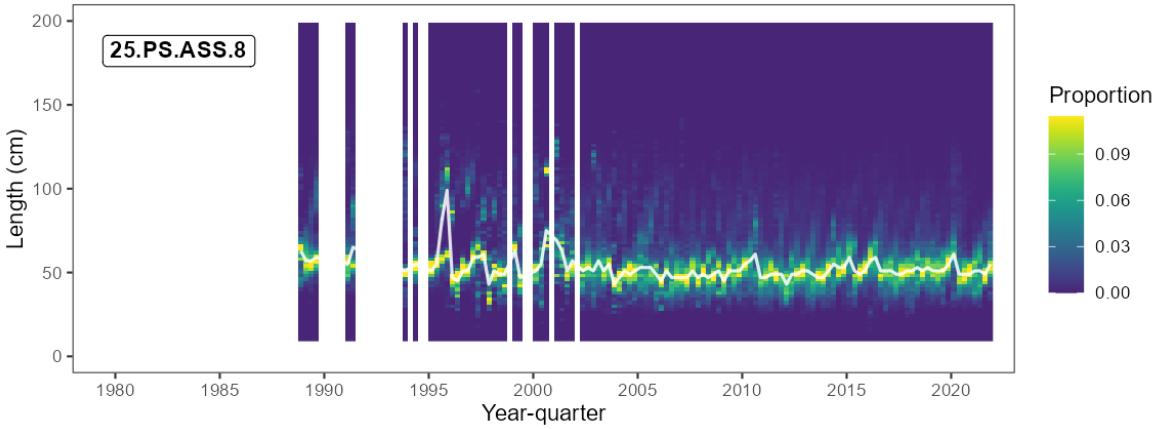


(b) 'Stronger filtering' option

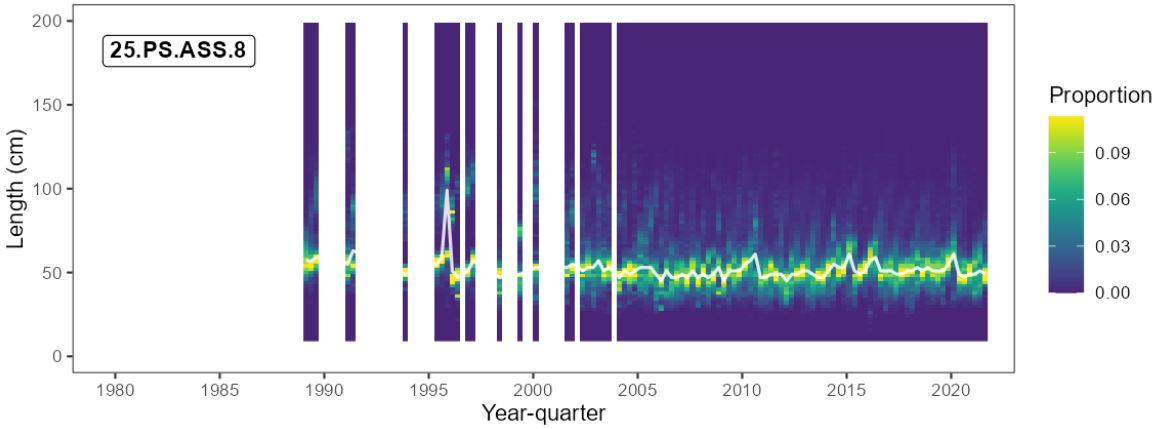


(c) 'Strongest filtering' option

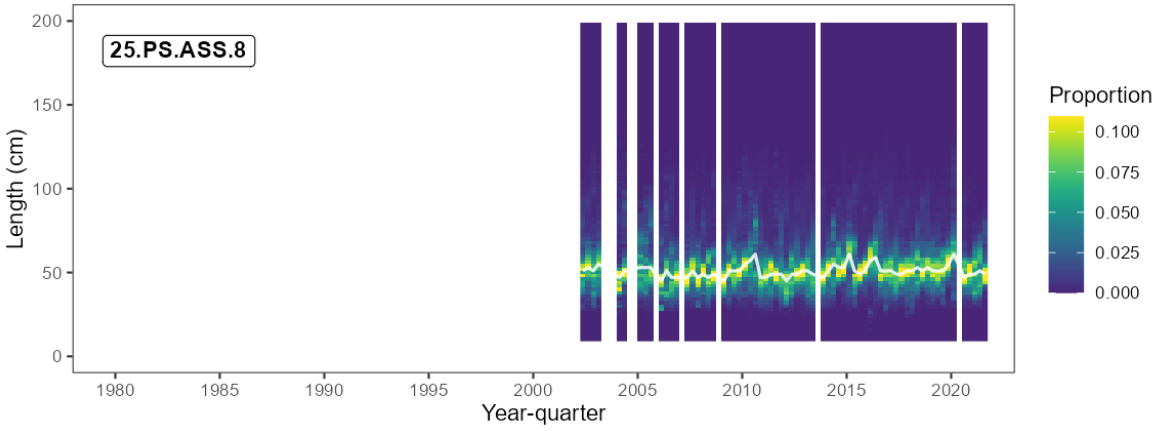
Figure E.25: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

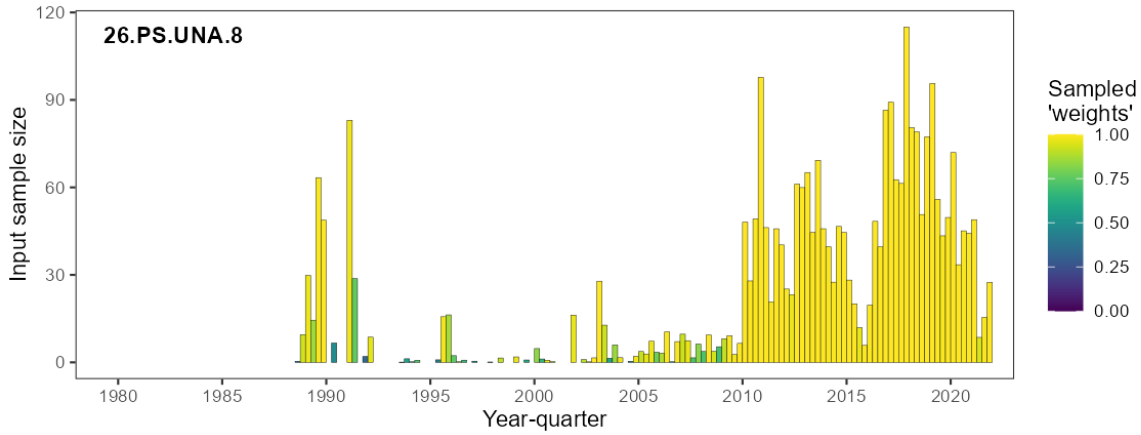


(b) 'Stronger filtering' option

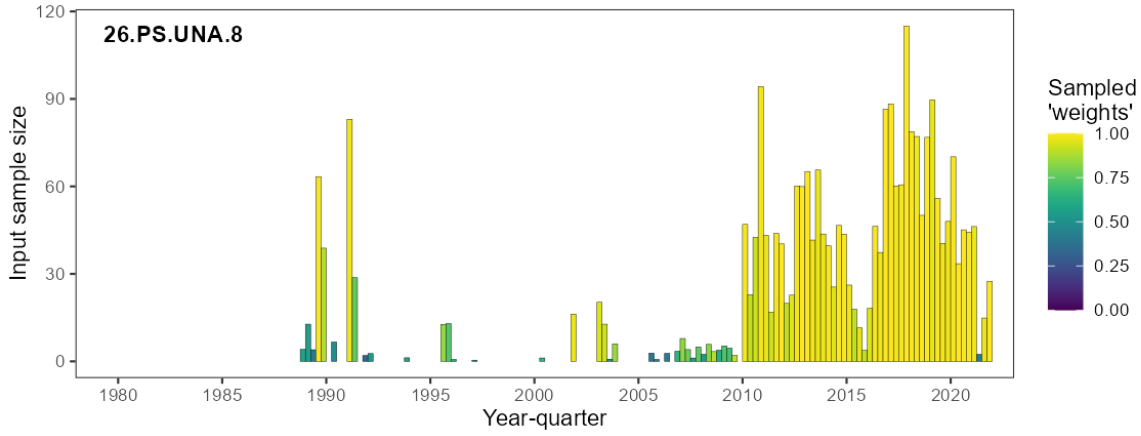


(c) 'Strongest filtering' option

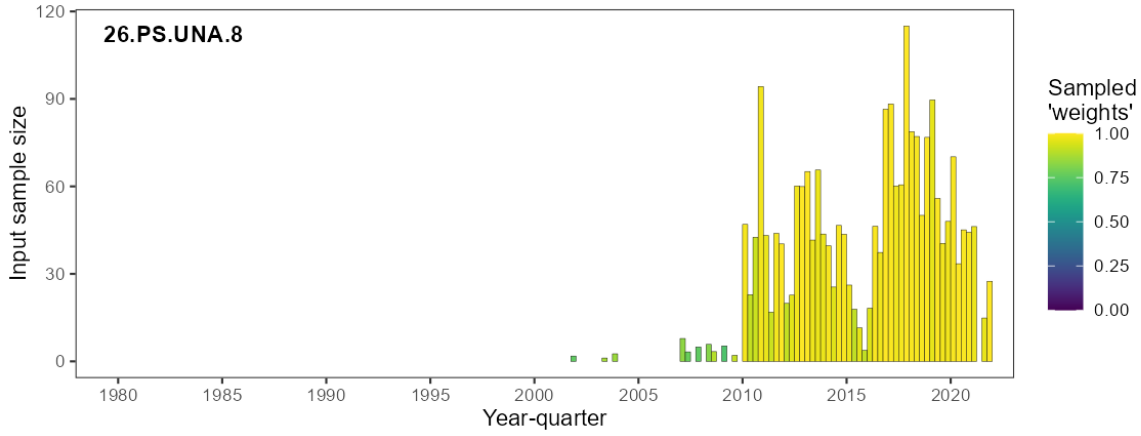
Figure E.26: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 25.PS.ASS.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

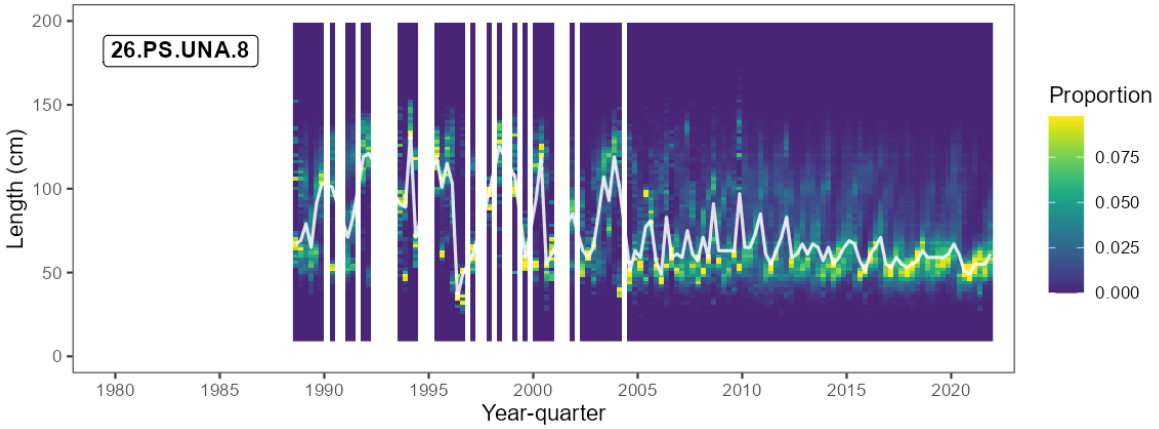


(b) 'Stronger filtering' option

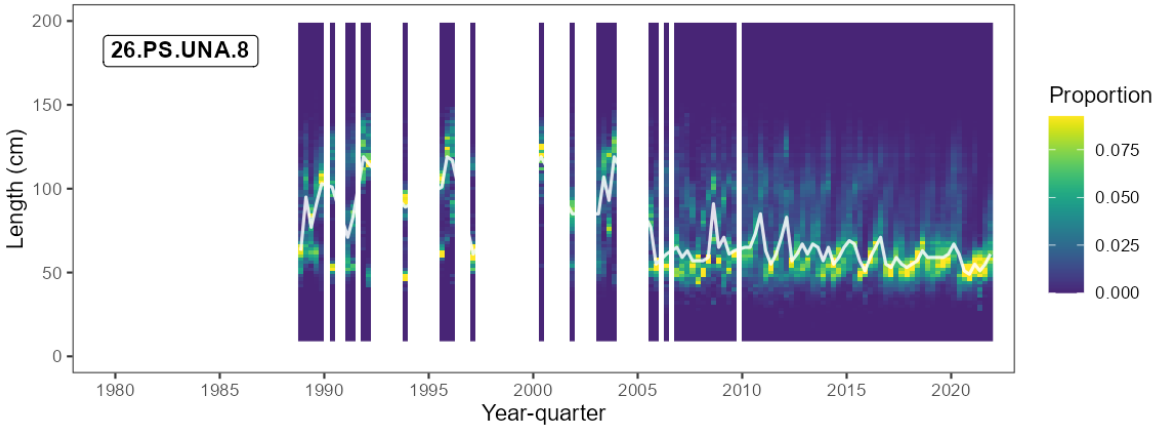


(c) 'Strongest filtering' option

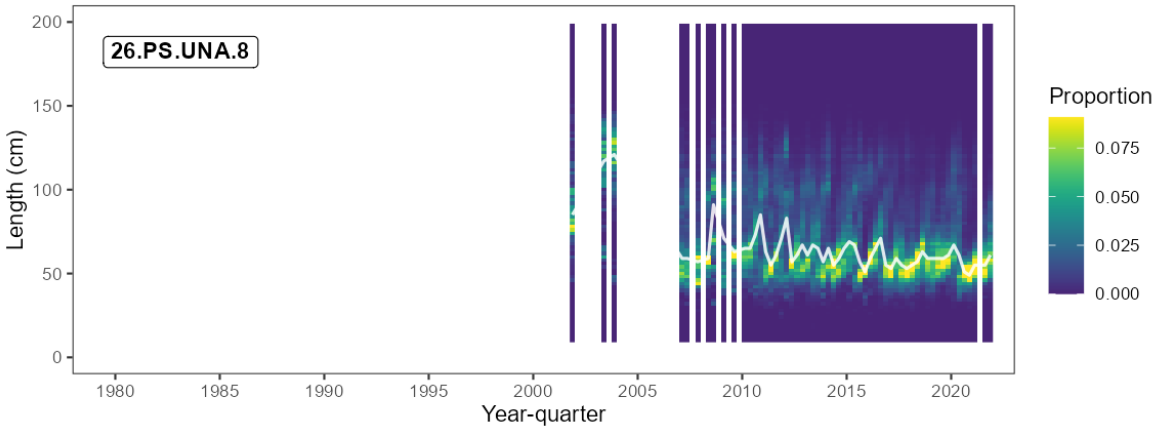
Figure E.27: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

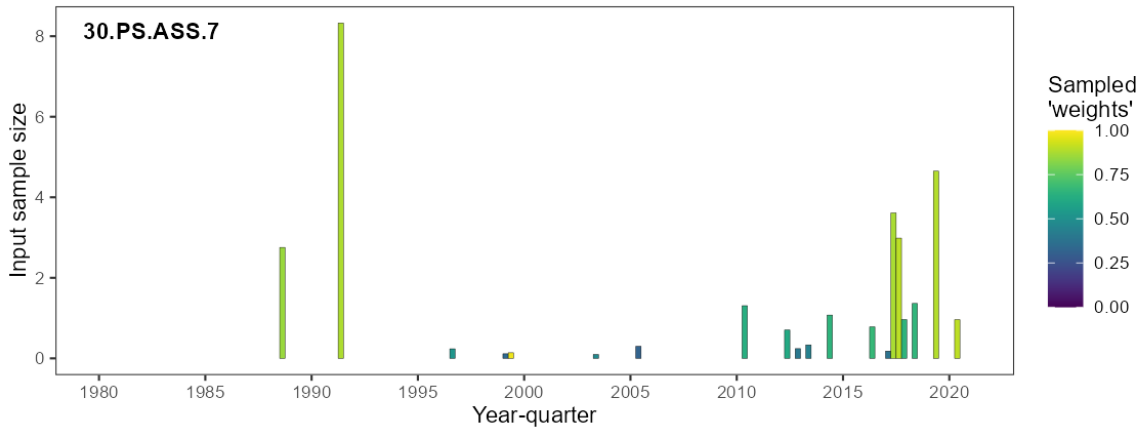


(b) 'Stronger filtering' option

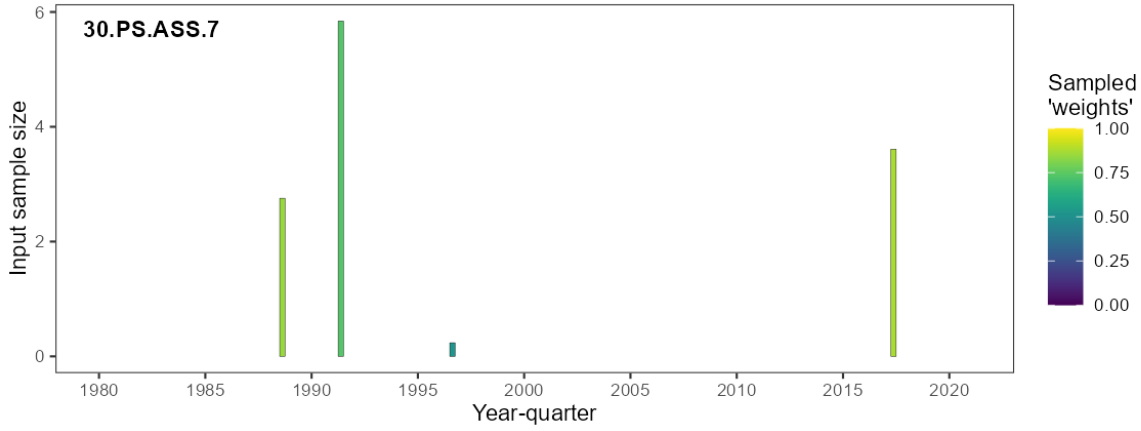


(c) 'Strongest filtering' option

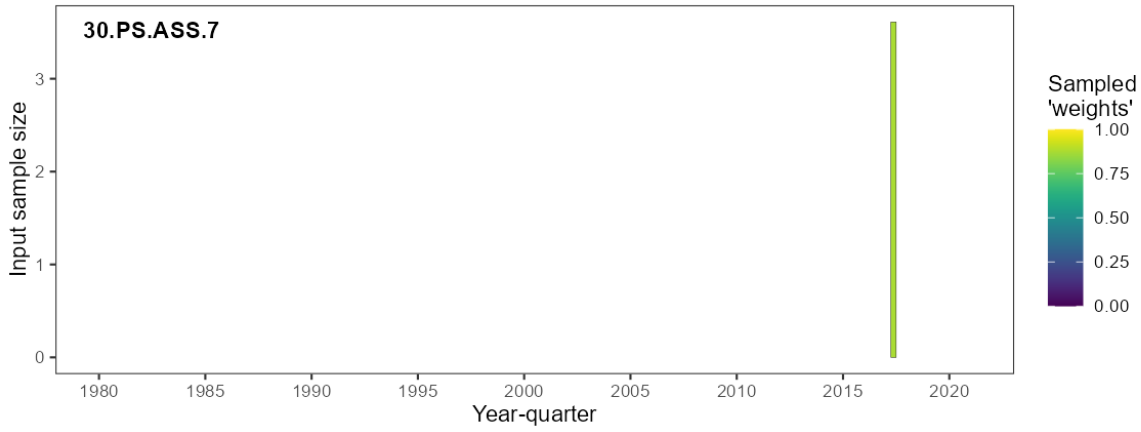
Figure E.28: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 26.PS.UNA.8 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

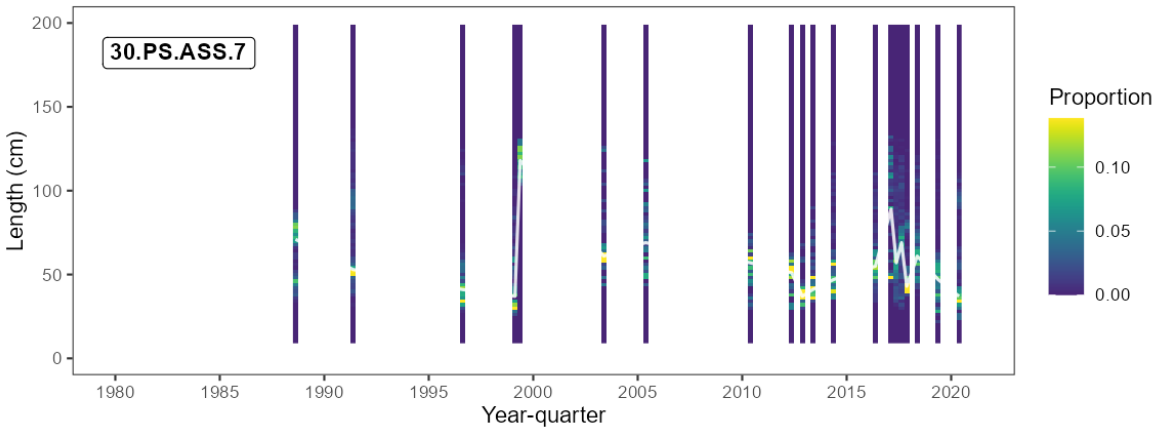


(b) 'Stronger filtering' option

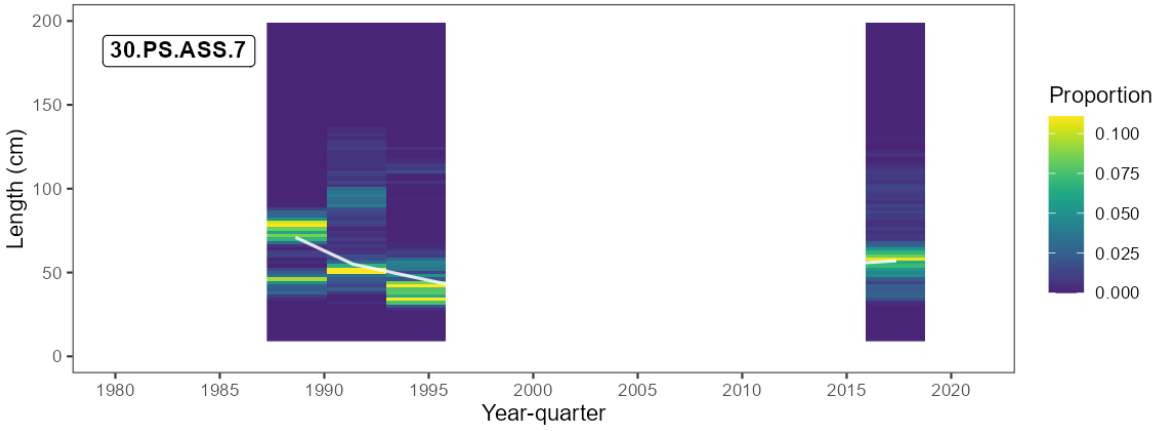


(c) 'Strongest filtering' option

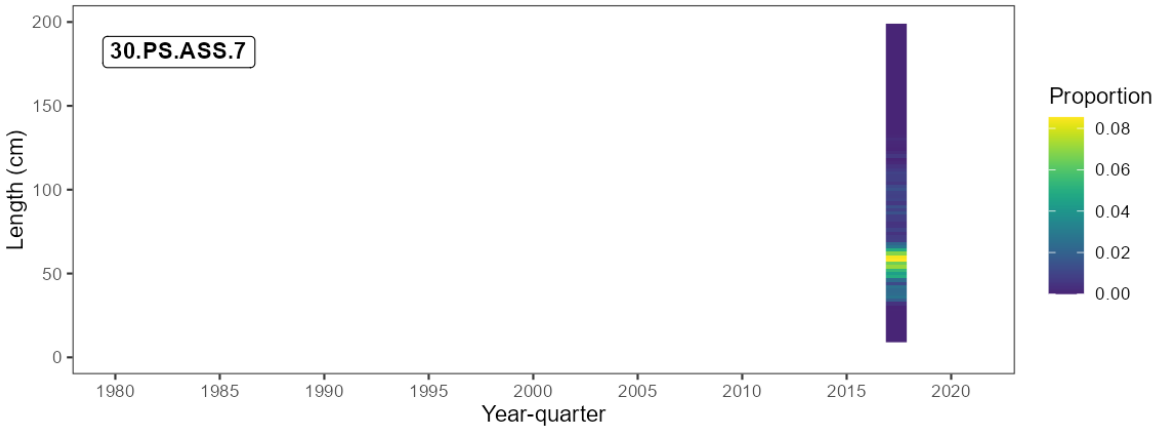
Figure E.29: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 30.PS.ASS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option

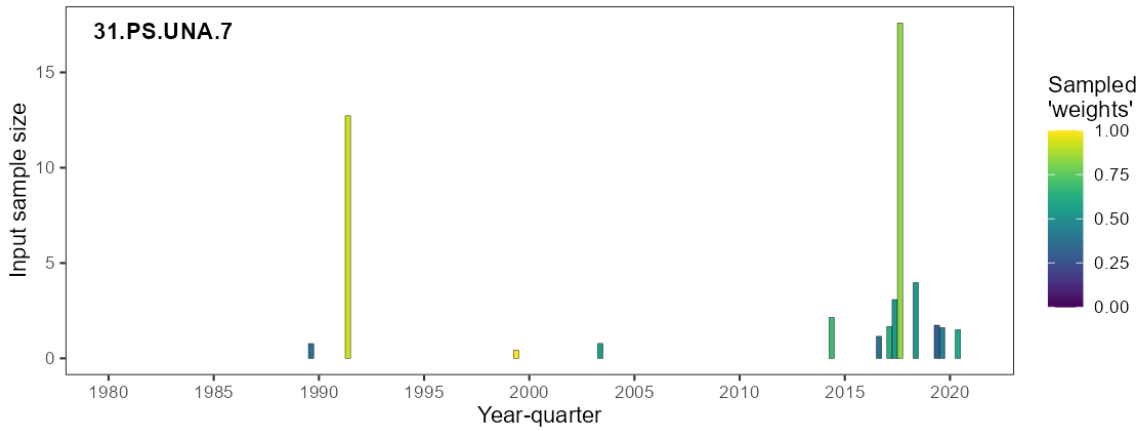


(b) 'Stronger filtering' option

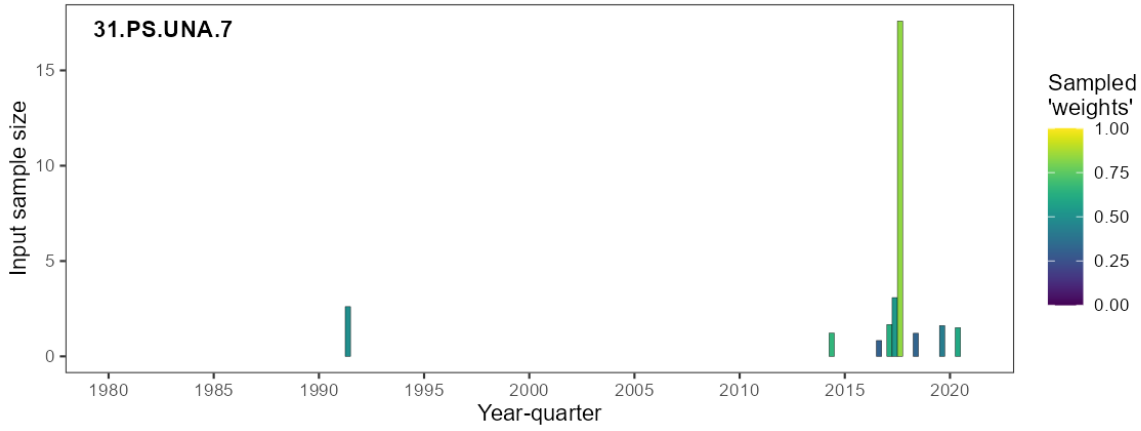


(c) 'Strongest filtering' option

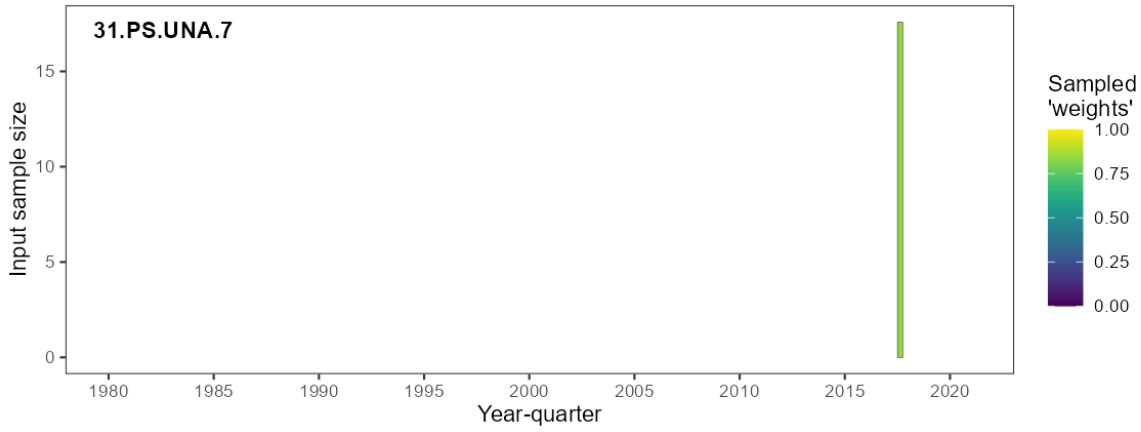
Figure E.30: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 30.PS.ASS.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.



(a) 'Weak filtering' option

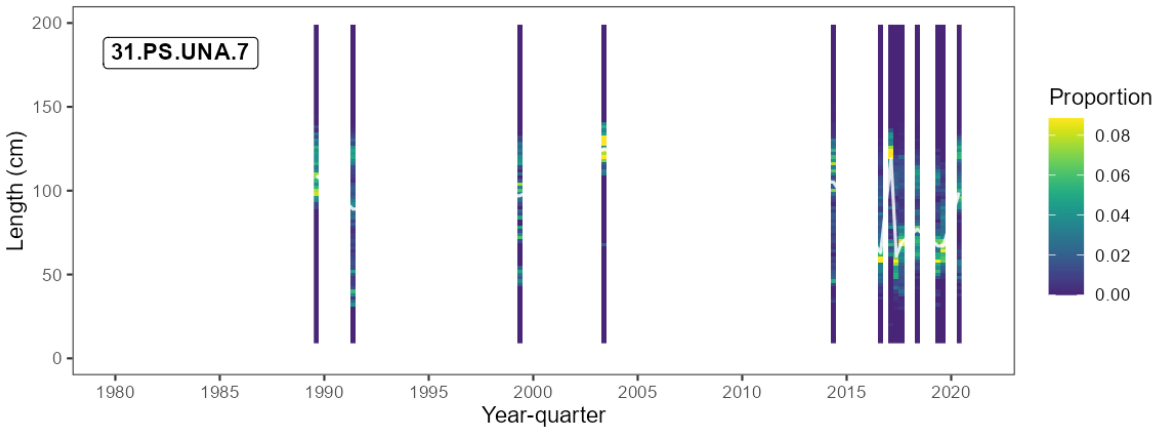


(b) 'Stronger filtering' option

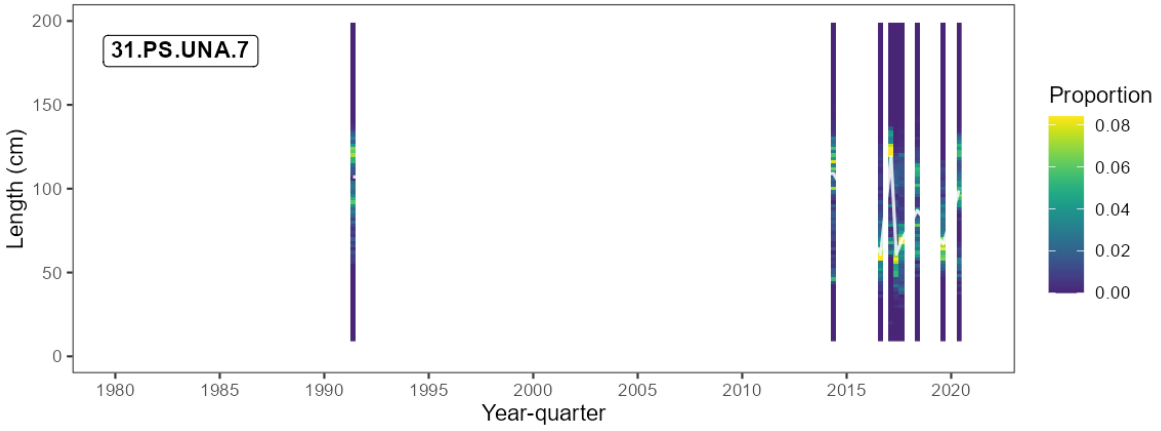


(c) 'Strongest filtering' option

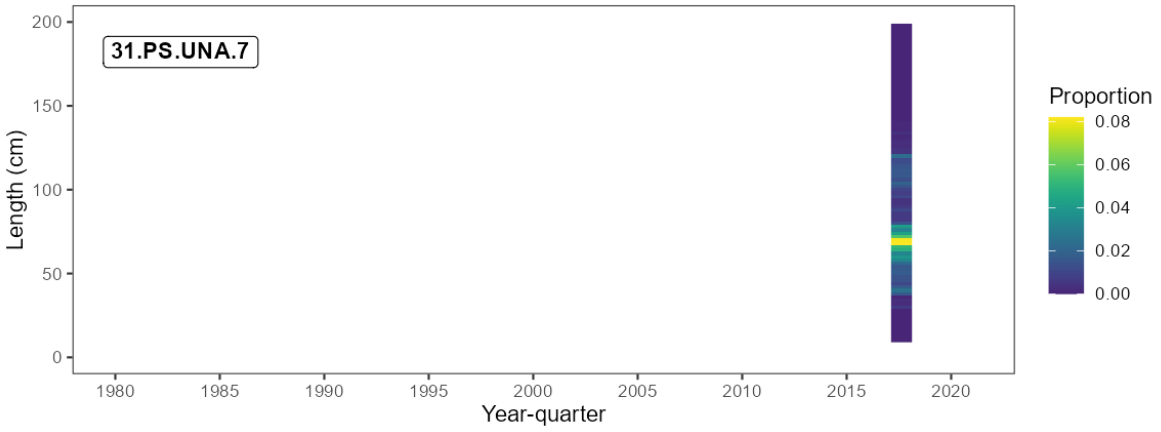
Figure E.31: (Sampled unit of trips) Input sample sizes for reweighted length compositions of yellowfin for the purse seine extraction fishery 31.PS.UNA.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of the bars provides the 'sampled weight', i.e., the sum of strata weights from sampled strata.



(a) 'Weak filtering' option



(b) 'Stronger filtering' option



(c) 'Strongest filtering' option

Figure E.32: (Sampled unit of trips) Reweighted length compositions of yellowfin for the purse seine extraction fishery 31.PS.UNA.7 with a) 'weak' (F0), b) 'stronger' (F1) and c) 'strongest' (F2) filtering. The colour of each cell gives the proportions by size class for the year-quarter, with the median size provided by the solid white line.