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## WORKING GROUP FOR THE BAY OF BISCAY AND THE IBERIAN WATERS ECOREGION (WGBIE)

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## 18 Whiting in Subarea 8 and Division 9.a (Bay of Biscay and Atlantic Iberian waters)

### *Merlangius merlangus* – whg.27.89a

#### **Type of assessment in 2021**

Length-based indicator method (LBI) as fishing pressure indicator (ICES, 2017; ICES, 2018a; ICES, 2018b).

#### **Data revision in 2021**

InterCatch data were compiled for 2020.

### **18.1 General**

ICES advises that when the precautionary approach is applied, catches should not be more than 2276 t in each of the years 2022 and 2023. The rationale for catch option was the following:

The ICES framework for category 5 stocks was applied (ICES, 2012; ICES, 2021). For stocks without information on abundance or exploitation, ICES considers that a precautionary reduction of catches should be implemented unless there is ancillary information clearly indicating that the current level of exploitation is appropriate to the stock. The precautionary buffer was applied in 2015 and was applied again in 2018 as the stock size was unknown in relation to the reference points.

The COVID-19 pandemic affected onboard sampling and discard estimates. Discard and length structures were raised on a six-month basis in order to mitigate low sampling levels. Low sampling levels and the larger time-scale used to raise discards might be the reason for the lowest estimated discard rate of the time-series [ $DR_{2020} = 0.21$ ,  $average_{2016-2019} = 0.29$ ,  $max_{2016-2019} = 0.32$ ].

Discards estimates were, however, considered relevant to provide the advice and the discard rate in the catch option table was computed over 2016–2020.

### **18.2 Data**

Whiting (*Merlangius merlangus*) are caught in mixed demersal fisheries primarily by France and Spain (Table 18.1 and Figure 18.1). There are concerns about the reliability of the French data from 2008–2009 which appear to be incomplete. There is some misidentification of whiting in the Portuguese markets with pollack due to the common names used for both stocks. This resulted in most pollack landings being recorded as whiting from 2004 onwards. Based on this information, pollack landings were deducted from the whiting landings during this period and were then considered as unallocated (Table 18.1). Sampling data since 2012 indicate that Portuguese landings of whiting and pollack from Division 9.a consisted of 2% whiting and 98% pollack (EC, 2015). Whiting landed by Portuguese vessels makes up an insignificant proportion of the total whiting landings in this area.

#### **18.2.1 Commercial catches and discards**

InterCatch data from 2016–2018 were processed in 2019 to compute discards estimates (ICES, 2019). In 2021, 2020 InterCatch data were processed to compute landings and discards estimates.

The standard procedure to estimate discards is to use the discard data provided for the different combinations of countries/gears/seasons/areas (“strata”) and to raise the available discard data to the total landings for the strata with limited available data.

However, in 2020 COVID-19 affected onboard samplings and discards estimates. Fewer strata (i.e. countries/gears/seasons/areas) were sampled compared to previous years (see Table 18.2). This low sampling level induced some changes in the raising procedures from merging quarters to semesters (merging quarters 1 and 2, and 3 and 4).

In 2020, the estimated discard rate is the lowest of the time-series (see Table 18.3) [ $DR_{2020} = 0.21$ ,  $average_{2016-2019} = 0.29$ ,  $max_{2016-2019} = 0.33$ ]. Low sampling levels and the larger time-scale used to raise discards might be the reason for the lowest estimated rate. Landing Obligation (LO) might also have affected the discard rate even if there is currently no real evidence of this impact. However, the small number of observations and the change in the raising method for discards increased the uncertainty around these estimates and raised the question of whether it should be considered relevant to provide advice. It is not possible to derive any conclusion from the decrease of the discard rate in 2020.

### 18.2.2 Length structure of commercial catches

For landings, 51, 41, 46, 44, and 63% of the landings (in volume) had a length structure associated in 2020, 2019, 2018, 2017, and 2016, respectively.

For discards, the percentage of the total discards (after raising) with a length distribution provided are 17, 30, 44, 43, and 60% in 2020, 2019, 2018, 2017, and 2016, respectively. See Table 18.4 through Table 18.8 for details.

Length distribution of landings and discards before and after raising are shown in Figure 18.2 through Figure 18.6. Final distributions (pink dots) are similar to the sampled (provided) distribution, showing the limited impact of the raising procedures on length compositions. Due to the low sampling level in 2020, the discard length structure is much noisier than in the previous years. However, landings length structures are of similar quality compared to previous years. Given the structure of the number at length mostly driven by landings, the uncertainty of the discard length structure should not affect the conclusion of the LBI.

The length distributions of the landings are truncated below 27 cm due to the Minimum Conservation Reference Size set at 27 cm in this area.

### 18.2.3 Survey data and commercial cpues

Whiting is present in the French survey (EVHOE-WIBTS-Q4 (G9527) from the Bay of Biscay. In 2017, WGBIE investigated if this survey could provide an index of recruitment and/or biomass (ICES, 2017). The survey regularly catches whiting on inshore stations but the catch rates are highly variable, resulting in very wide confidence limits. WGBIE does not propose to use these as a basis for the advice.

This species is at the southern extent of its range in the Bay of Biscay and Iberian Peninsula (Figure 18.7). It is not clear whether this is a separate stock from a biological point of view.

Two commercial cpue indices were identified which were provided by the ROMELIGO project carried out by Ifremer (France) and are described in the working document by Léauté *et al.* (2018) in the WGBIE 2018 report (ICES, 2018c). These cpues, estimated based on two trawler fleets in the south and north of the Bay of Biscay, were updated this year.

None of these cues was used to provide advice as they were not assessed during a benchmark and will need further development. However, none of them showed any clear trends (Figure 18.8).

### 18.2.4 Length-based indicators

Whiting length samples (sex combined) from commercial catches were provided in InterCatch format for the years 2016–2020. Length structures of the catches were estimated from these samples and were used for the analyses of MSY proxies applying the LBI method (ICES, 2017; 2018a; 2018b). The length distributions were binned to 40 mm length classes (Figure 18.9). The method also requires growth and maturity parameters which were taken from FishBase (Frøese and Pauly, 2020; Table 18.9).

The results of the LBI method showed that all indicators except  $L_c/L_{mat}$  in 2019 are above the reference points (Table 18.10. and Figure 18.10–Figure 18.12).

From these results, it was concluded that whiting is currently exploited below  $F_{MSY}$  as  $L_{mean}/L_F = M$  is above 1 from 2016 onwards.

## 18.3 Issues list

Issue	Problems/Aims	Work needed / possible direction of a solution	Data needed to be able to do this. Are these available/ where should these come from?	External expertise needed at benchmark  Type of expertise needed/ proposed names
Data to be considered and/or quantified	Time-series of catch data.	5 years of data have been consolidated in InterCatch. A longer time-series needs to be consolidated.	France, Spain and Portugal need to consolidate their Inter-Catch data provision to get a longer time-series as possible.	
	Time-series of length structures. Samplings may not be sufficient in all areas.	Assess the representativeness of the samplings in Subarea 8 and evaluate the possibilities for use to raise data in Division 9 where very few samples are available.	Raw sampling data.	
	Time-series of age structures. Samplings may not be sufficient in all areas.	Assess the representativeness of the sampling in Subarea 8 and evaluate the possibilities for use to raise data in Division 9 where very few samples are available.	Raw sampling data.	
Data to be produced				

Issue	Problems/Aims	Work needed / possible direction of a solution	Data needed to be able to do this. Are these available/ where should these come from?	External expertise needed at benchmark  Type of expertise needed/ proposed names
Tuning series	Commercial cpues. A short time-series using French otter trawls already exists.	The time-series needs to be consolidated and/or use a statistical model to provide commercial cpues (GLM-GAM).	Data are available but need processing.	
Discards	Time-series of discards has to be consolidated.	5 years of data have been raised in Inter-Catch. A longer time-series needs to be consolidated.	France, Spain and Portugal need to consolidate their Inter-Catch data provision to get a longer time-series as possible.	
Stock ID	This species is at the southern extent of its range in the Bay of Biscay and Iberian Peninsula. It is not clear whether this is a separate stock from a biological point of view.	Review of literature.		
Biological parameters	Maturity.	Little information about maturity is currently available for assessment but some information should have been collected during scientific surveys and DCF collections in France, Spain and Portugal.	France, Spain and Portugal should provide all individual biological data to assess if some maturity ogive can be derived for this stock.	
Assessment method	SPiCT (Pedersen and Berg, 2017) is the priority as no age/length data are currently available. However, some ongoing works exist which aim to provide these data. If so, an a4a model can be envisaged.			
Biological reference points				

- No discard information is provided for Subarea 8.c and Division 9.a.
- Very little information is available about stock distribution.
- Surveys should be investigated further to check for data availability.



## 18.4 References

- EC. 2005. Audit Mission Report PT-2015-C2-07-A, Executive Summary.
- Fröese, R. and Pauly D. 2020. FishBase. URL: <https://www.fishbase.de/>
- ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM 68, 42 pp.
- ICES. 2017. Report of the Working Group for the Bay of Biscay and Iberian waters Ecoregion (WGBIE), 4–11 May 2017, Cádiz, Spain. ICES CM 2017/ACOM: 12., 552 pp.
- ICES. 2018a. ICES reference points for stocks in categories 3 and 4. ICES Technical Guidelines. <https://doi.org/10.17895/ices.pub.4128>.
- ICES. 2018b. ICES reference points for stocks in categories 3 and 4. *In* Report of the ICES Advisory Committee, 2018. ICES Advice 2018, Book 16, Section 16.4.3.2. 50 pp. <https://doi.org/10.17895/ices.pub.4128>.
- ICES. 2018c. Report of the Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE), 3–10 May 2018, ICES HQ, Copenhagen, Denmark. ICES CM 2018/ACOM:12. 569 pp.
- ICES. 2019. Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE). ICES Scientific Reports. 1:31. 692 pp. <http://doi.org/10.17895/ices.pub.5299>.
- ICES. 2021. Advice on fishing opportunities. *In* Report of the ICES Advisory Committee, 2021. ICES Advice 2021, Section 1.1.1. <https://doi.org/10.17895/ices.advice.7720>.
- Léauté, J-P, Caill-Milly, N. and Lissardy, M. 2018. ROMELIGO: Improvement of the fishery knowledge of striped red mullet, whiting and pollack of the Bay of Biscay, p 532. *In* ICES. 2018. Report of the Working Group for the Bay of Biscay and Iberian Waters Ecoregion (WGBIE).
- Pedersen, M.W. and Berg, C.W. 2017. A stochastic surplus production model in continuous time. *Fish and Fisheries*, 18: 226–243.

## 18.5 Tables and figures

**Table 18.1. Whiting in Subarea 8 and Division 9.a. Official landings in tonnes (2020 provisional). ICES estimates are based on a correction of mixed species (whiting and pollack) landings records in the Portuguese landings from Division 9.a.**

Year	Belgium	France	Portugal	Spain	Total	Unallocated *	ICES estimates
1994		3496	15	136	<b>3647</b>	0	<b>3647</b>
1995		2645	2	1	<b>2648</b>	0	<b>2648</b>
1996		1544	4	13	<b>1561</b>	0	<b>1561</b>
1997		1895	3	47	<b>1945</b>	0	<b>1945</b>
1998		1750	3	105	<b>1858</b>	0	<b>1858</b>
1999			1	211	<b>212</b>	0	<b>212</b>
2000	2	1106	2	338	<b>1448</b>	0	<b>1448</b>
2001	3	1989	1	288	<b>2281</b>	0	<b>2281</b>
2002	3	1970	1	230	<b>2204</b>	0	<b>2204</b>
2003	1	2275	4	171	<b>2451</b>	0	<b>2451</b>
2004		1965	77	249	<b>2291</b>	-70	<b>2221</b>
2005	3	1662	2	416	<b>2083</b>	-2	<b>2081</b>
2006	2	1420	7	433	<b>1862</b>	-6	<b>1856</b>
2007	4	1617	107	296	<b>2024</b>	-104	<b>1920</b>
2008	1	772	98	187	<b>1058</b>	-93	<b>965</b>
2009	2	1303	114	54	<b>1473</b>	-111	<b>1362</b>
2010	3	2234	114	101	<b>2452</b>	-110	<b>2342</b>
2011	1	2029	105	108	<b>2243</b>	-102	<b>2141</b>
2012	3	1791	90	110	<b>1994</b>	-87	<b>1907</b>
2013	1	1943	95	55	<b>2094</b>	-93	<b>2001</b>
2014	1	1579	65	55	<b>1700</b>	-49	<b>1651</b>
2015	2	2138	38	56	<b>2234</b>	-35	<b>2199</b>
2016	1	2441	20	40	<b>2502</b>	23	<b>2525</b>
2017	0	1871	18	20	<b>1909</b>	16	<b>1925</b>
2018	2	1524	15	26	<b>1565</b>	0	<b>1565</b>
2019	1	1348		13	<b>1362</b>	34	<b>1396</b>
2020	1	1094		1	<b>1096</b>	25	<b>1121</b>

\*Unallocated are mostly coming from landings taken off from pollock.89a.

**Table 18.2. Whiting landings with associated discards (same strata) submitted to InterCatch (in percent).**

Year	Landings with associated discards*
2016	88%
2017	72%
2018	70%
2019	49%
2020	33%

\*Similar combinations of countries/gears/seasons/areas.

**Table 18.3. Whiting landings and discards after raising procedures (in tonnes).**

Year	Landings (imported)	Discards (imported)	Discards (raised)	Total Discards	Overall Discard Rate
2016	2525.00	828.40	98.38	<b>926.78</b>	<b>0.268</b>
2017	1925.00	617.60	320.20	<b>937.80</b>	<b>0.328</b>
2018	1565.00	376.00	279.50	<b>655.50</b>	<b>0.295</b>
2019	1396.00	243.90	291.20	<b>535.10</b>	<b>0.280</b>
2020	1122.00	92.50	206.20	<b>298.70</b>	<b>0.210</b>

**Table 18.4. Whiting in Subarea 8 and Division 9.a. Summary of the structures provided in 2020 (Imported\_Data refers to data imported to InterCatch, Raised\_Discards refers to discard raised based on observed data for other strata, Sampled\_Distribution refers to landings or discards with length structures provided, Estimated\_Distribution refers to length distribution estimated from the provided strata).**

CatchCategory	RaisedOrImported	SampledOrEstimated	CATON	perc
Landings	Imported_Data	Estimated_Distribution	577.3	51
Landings	Imported_Data	Sampled_Distribution	544.2	49
Discards	Raised_Discards	Estimated_Distribution	206.2	69
Discards	Imported_Data	Sampled_Distribution	50.84	17
Discards	Imported_Data	Estimated_Distribution	41.66	14

**Table 18.5. Whiting in Subarea 8 and Division 9.a. Summary of the structures provided in 2019 (Imported\_Data refers to data imported to InterCatch, Raised\_Discards refers to discard raised based on observed data for other strata, Sampled\_Distribution refers to landings or discards with length structures provided, Estimated\_Distribution refers to length distribution estimated from the provided strata).**

CatchCategory	RaisedOrImported	SampledOrEstimated	CATON	perc
Landings	Imported_Data	Estimated_Distribution	826	59
Landings	Imported_Data	Sampled_Distribution	570.1	41
Discards	Raised_Discards	Estimated_Distribution	291.2	54
Discards	Imported_Data	Sampled_Distribution	163.2	30
Discards	Imported_Data	Estimated_Distribution	80.77	15

**Table 18.6.** Whiting in Subarea 8 and Division 9.a. Summary of the structures provided in 2018 (Imported\_Data refers to data imported to InterCatch, Raised\_Discards refers to discard raised based on observed data for other strata, Sampled\_Distribution refers to landings or discards with length structures provided, Estimated\_Distribution refers to length distribution estimated from the provided strata).

CatchCategory	RaisedOrImported	SampledOrEstimated	CATON	perc
Landings	Imported_Data	Estimated_Distribution	846.2	54
Landings	Imported_Data	Sampled_Distribution	718.6	46
Discards	Imported_Data	Sampled_Distribution	290.5	44
Discards	Raised_Discards	Estimated_Distribution	279.5	43
Discards	Imported_Data	Estimated_Distribution	85.51	13

**Table 18.7.** Whiting in Subarea 8 and Division 9.a. Summary of the structures provided in 2017 (Imported\_Data refers to data imported to InterCatch, Raised\_Discards refers to discard raised based on observed data for other strata, Sampled\_Distribution refers to landings or discards with length structures provided, Estimated\_Distribution refers to length distribution estimated from the provided strata).

CatchCategory	RaisedOrImported	SampledOrEstimated	CATON	perc
Landings	Imported_Data	Estimated_Distribution	1080	56
Landings	Imported_Data	Sampled_Distribution	844.4	44
Discards	Imported_Data	Sampled_Distribution	404.7	43
Discards	Raised_Discards	Estimated_Distribution	320.2	34
Discards	Imported_Data	Estimated_Distribution	212.9	23

**Table 18.8.** Whiting in Subarea 8 and Division 9.a. Summary of the structures provided in 2016 (Imported\_Data refers to data imported to InterCatch, Raised\_Discards refers to discard raised based on observed data for other strata, Sampled\_Distribution refers to landings or discards with length structures provided, Estimated\_Distribution refers to length distribution estimated from the provided strata).

CatchCategory	RaisedOrImported	SampledOrEstimated	CATON	perc
Landings	Imported_Data	Sampled_Distribution	1585	63
Landings	Imported_Data	Estimated_Distribution	939.9	37
Discards	Imported_Data	Sampled_Distribution	553.1	60
Discards	Imported_Data	Estimated_Distribution	275.2	30
Discards	Raised_Discards	Estimated_Distribution	98.38	11

**Table 18.9.** Whiting in Subarea 8 and Division 9.a. Parameters used as input for the LBI method.

Table 1: Table continues below	
Data Type	Value/Year
Length at maturit	261 261 261
von Bertalanffy growth parameter	443 443 443
Catch at length by year	2014 2020
Length-weight relationship parameters for landings and discards	2014 2020
Source	
<a href="https://www.fishbase.in/Reproduction/MaturityList.php?ID=29">https://www.fishbase.in/Reproduction/MaturityList.php?ID=29</a>	
<a href="https://www.fishbase.in/Reproduction/MaturityList.php?ID=29">https://www.fishbase.in/Reproduction/MaturityList.php?ID=29</a>	
Length data from IC	
Mean weight at length from IC	

**Table 18.10. Whiting in Subarea 8 and Division 9.a. Results from LBI method and reference values for each indicator.**

Year	Lc_Lmat	L25_Lmat	Lmax5_Linf	Pmega	Lmean_Lopt	Lmean_LFeM
2016	<b>1.15</b>	<b>1.07</b>	<b>1.15</b>	0.55	<b>1.25</b>	<b>1.1</b>
2017	1	<b>1.03</b>	<b>1.18</b>	0.52	<b>1.22</b>	<b>1.18</b>
2018	<b>1.15</b>	<b>1.15</b>	<b>1.11</b>	0.53	<b>1.2</b>	<b>1.05</b>
2019	0.84	<b>1.03</b>	<b>1.17</b>	0.49	<b>1.13</b>	<b>1.21</b>
2020	1	<b>1.11</b>	<b>1.18</b>	0.49	<b>1.18</b>	<b>1.14</b>

Table 3: Refs

Lc/Lmat	L25%/Lmat	Lmax5%/Linf	Pmega	Lmean/Lopt	Lmean/Lf=m
>1	>1	>0.8	>30%	~1 (>0.9)	>=1

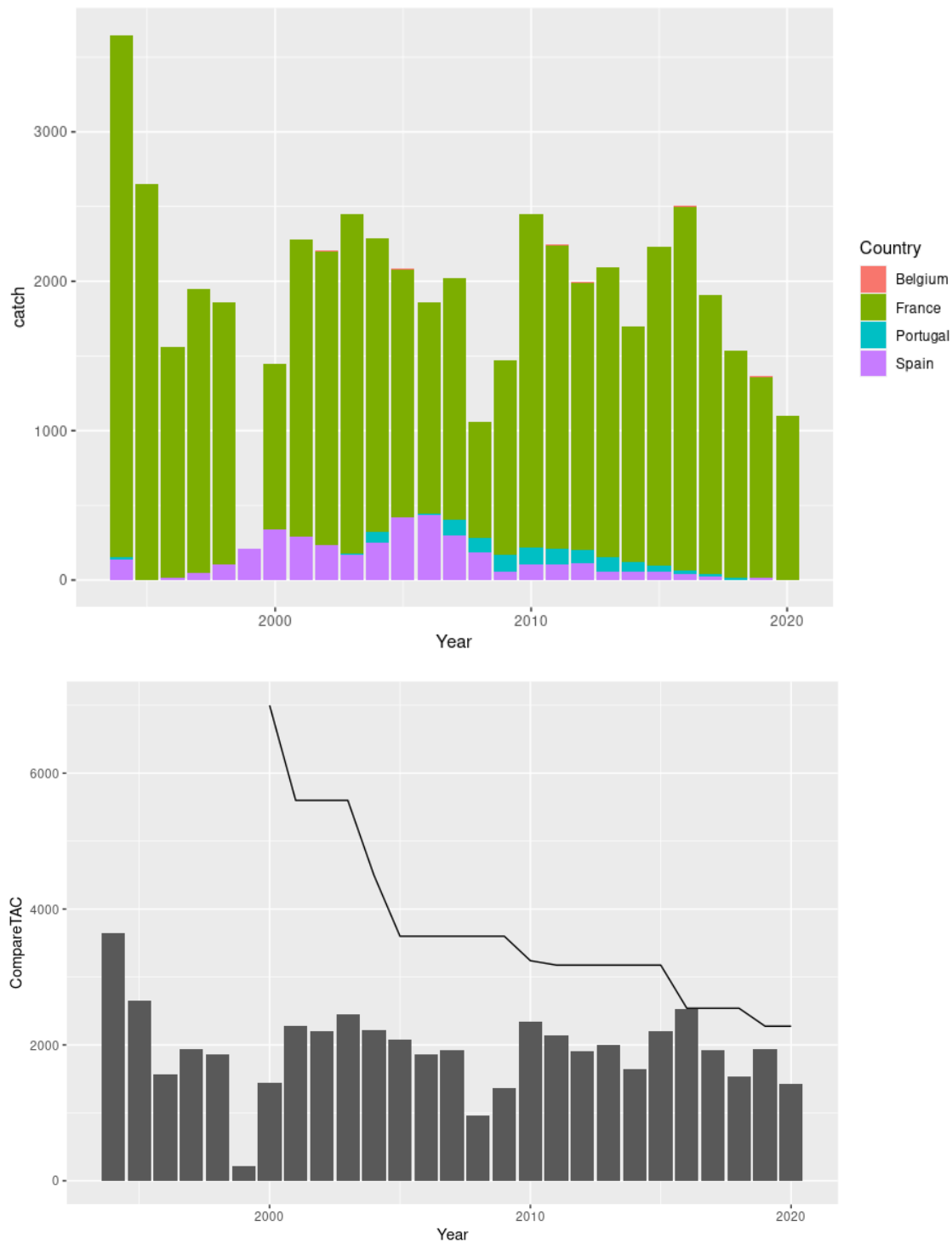


Figure 18.1. Landings per country (upper panel), landings before 2019 (lower panel), and catches after 2019 compared to TAC (solid line).

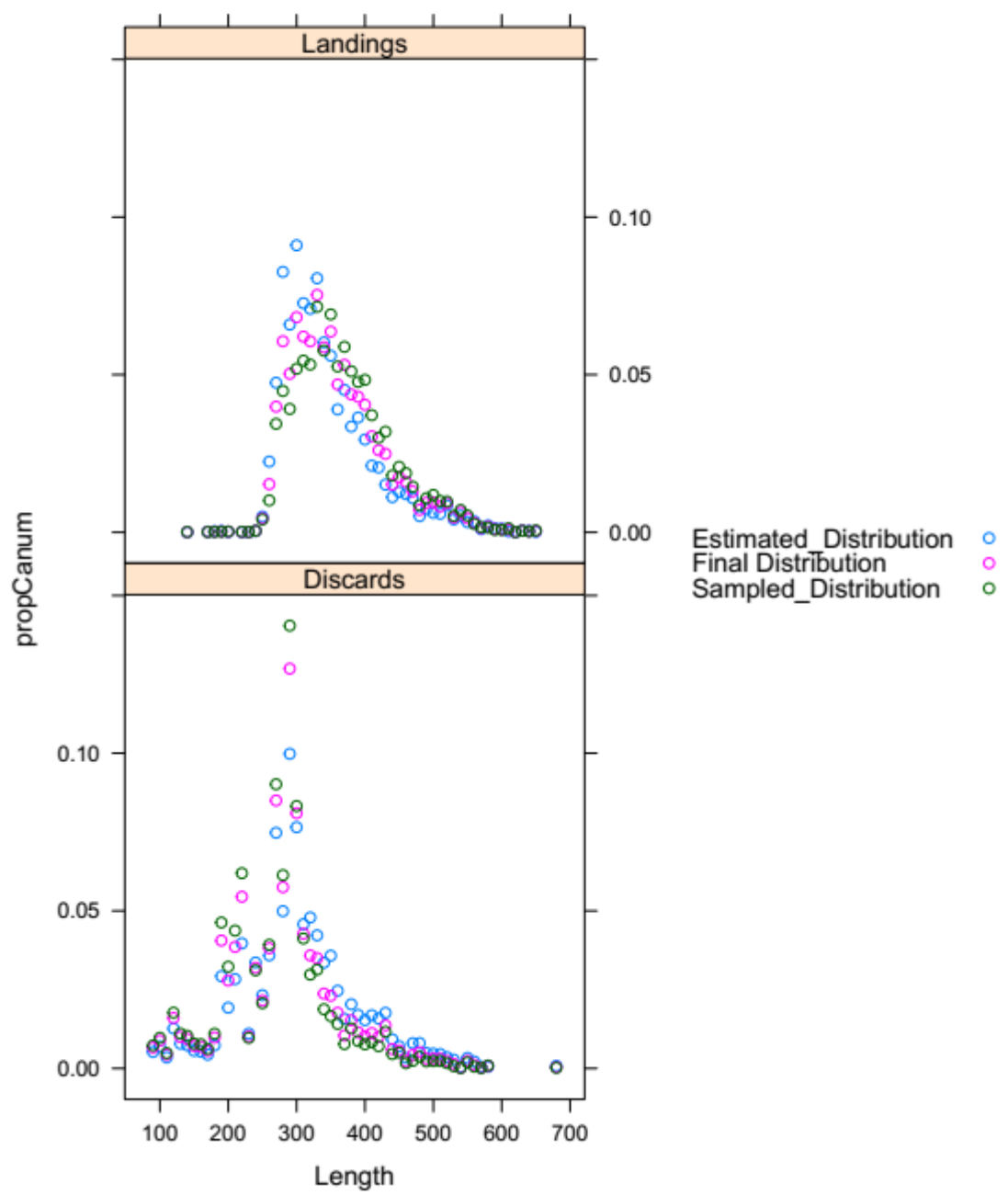


Figure 18.2. Length distribution of landings (top) and discards (bottom) for 2016.

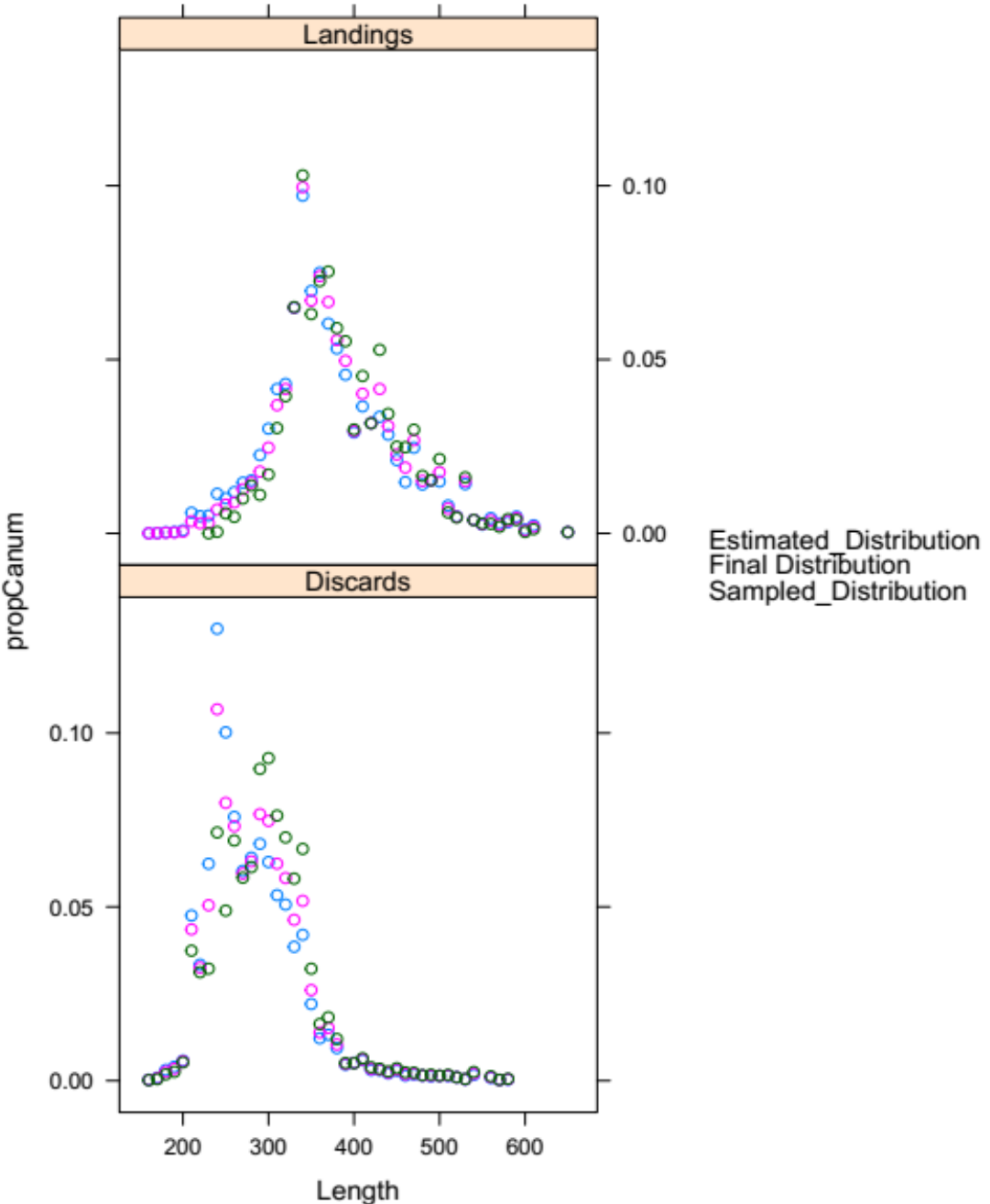


Figure 18.3. Length distribution of landings (top) and discards (bottom) for 2017.



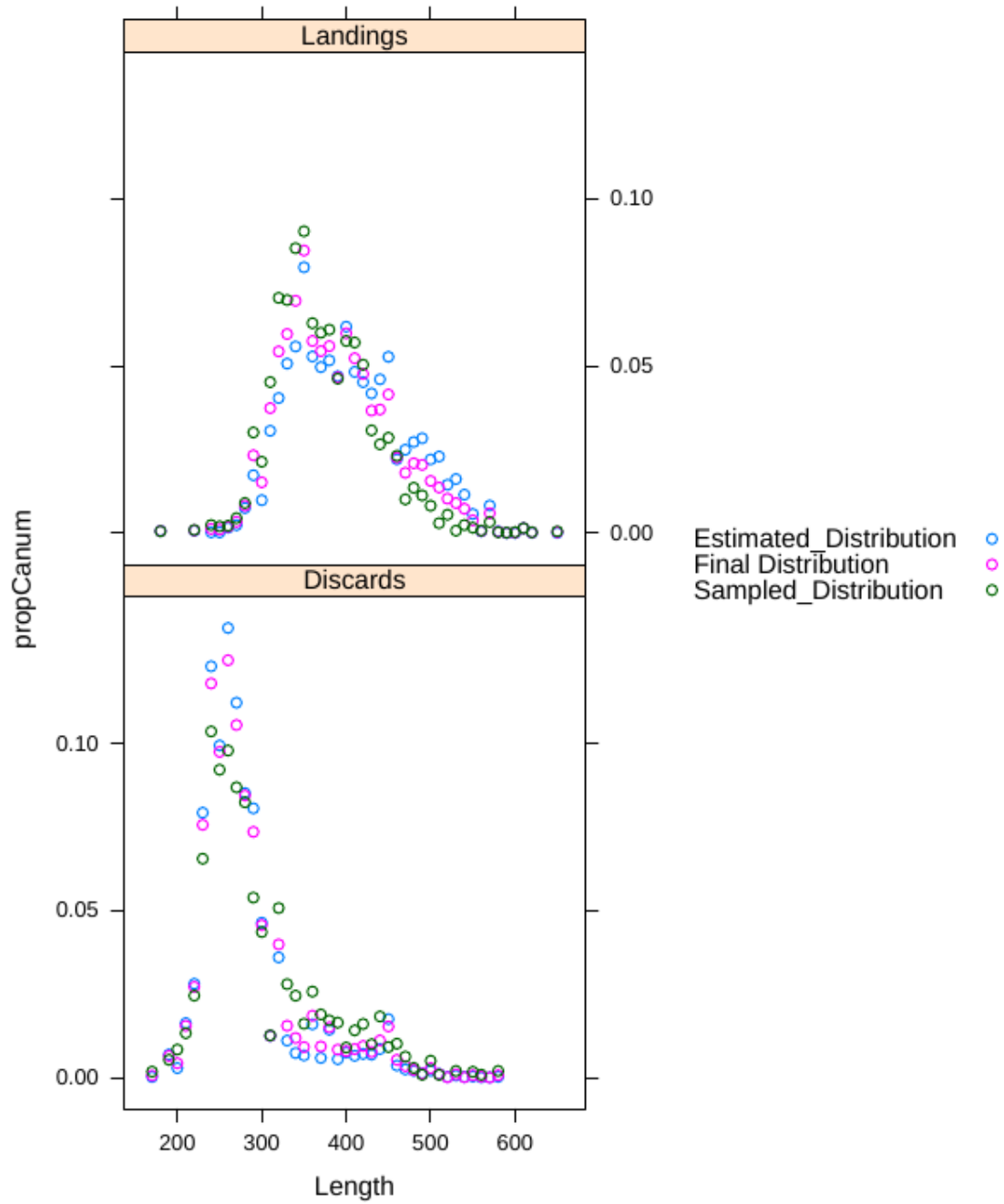


Figure 18.4. Length distribution of landings (top) and discards (bottom) for 2018.

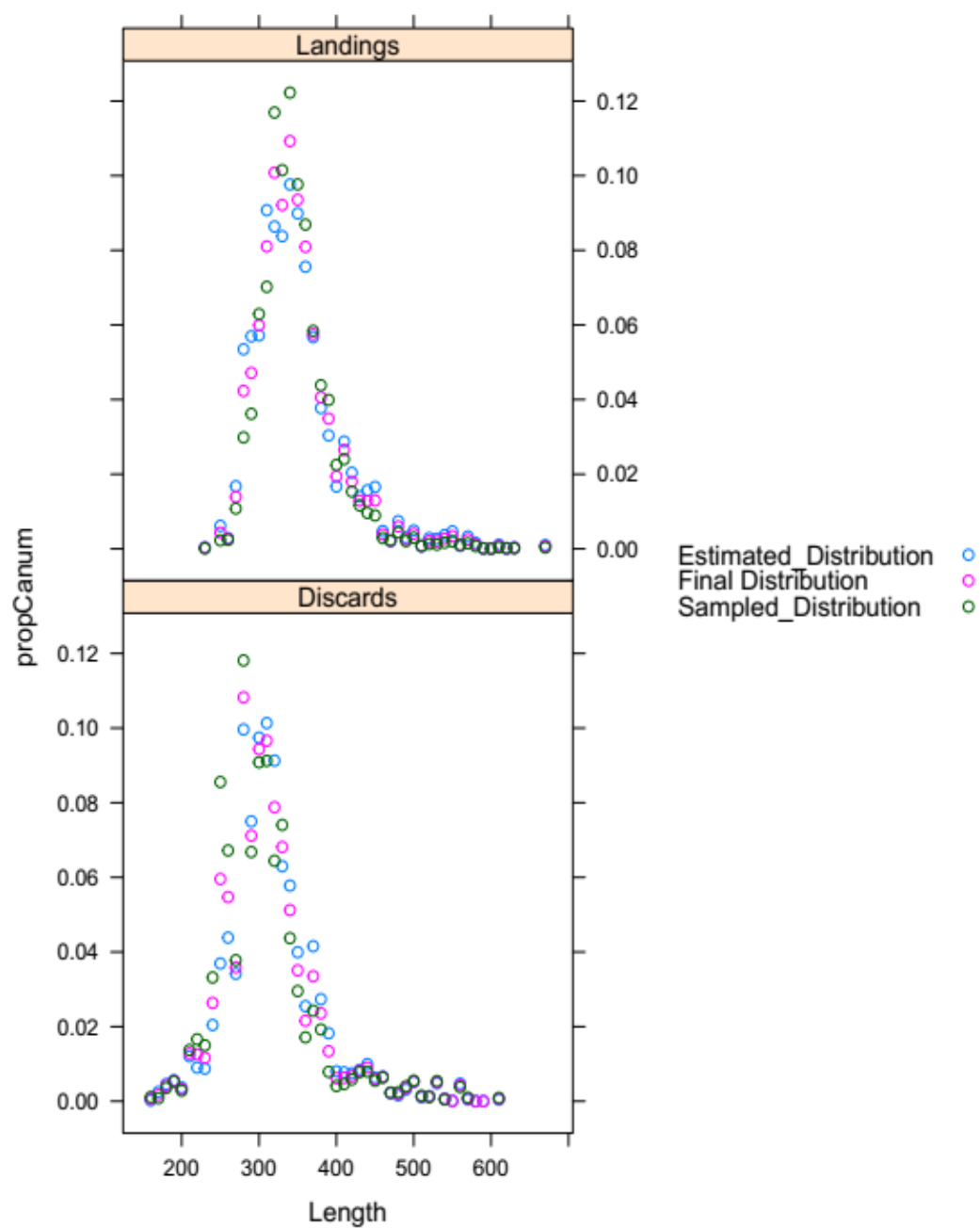


Figure 18.5. Length distribution of landings (top) and discards (bottom) for 2019.

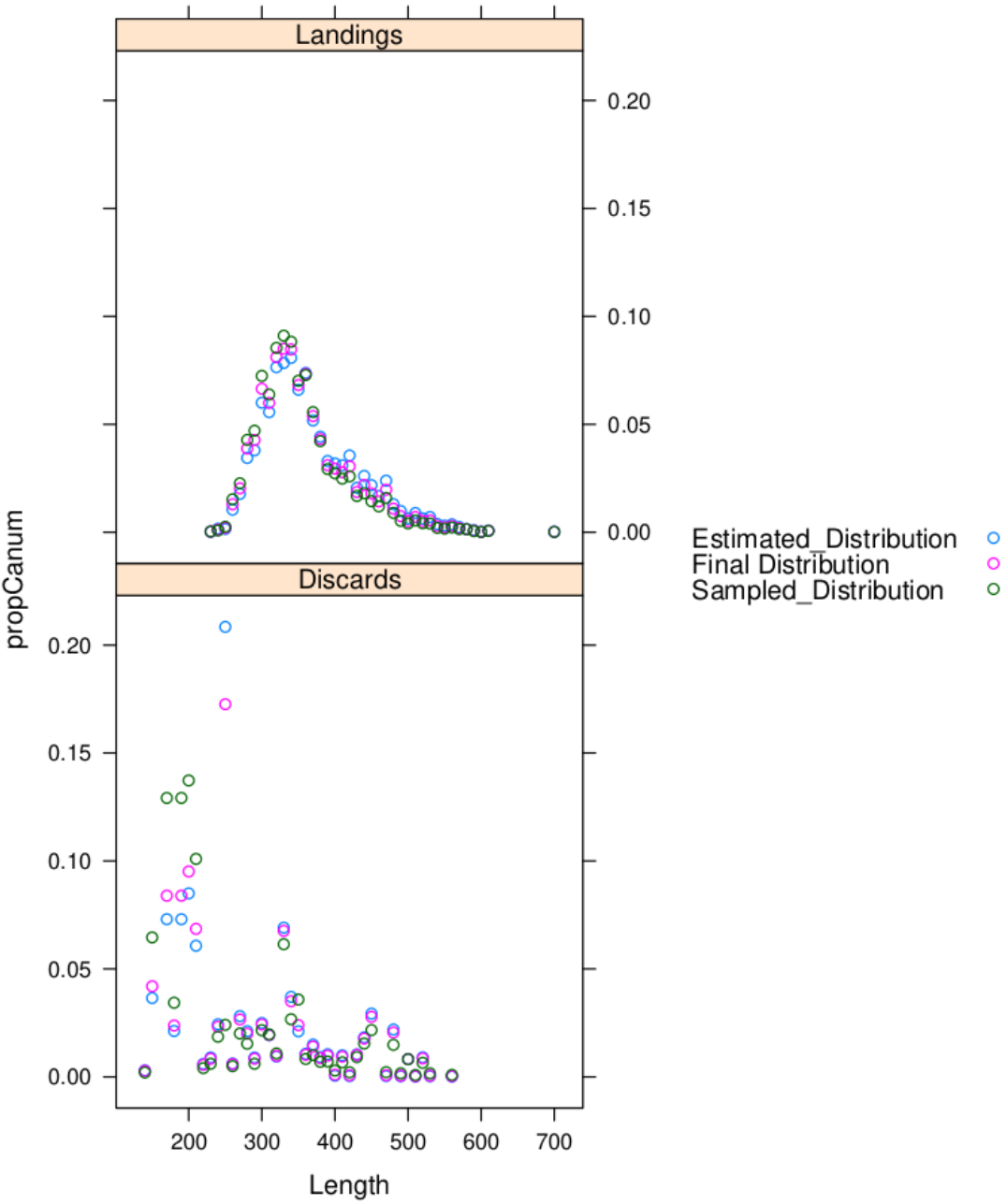


Figure 18.6. Length distribution of landings (top) and discards (bottom) for 2020.

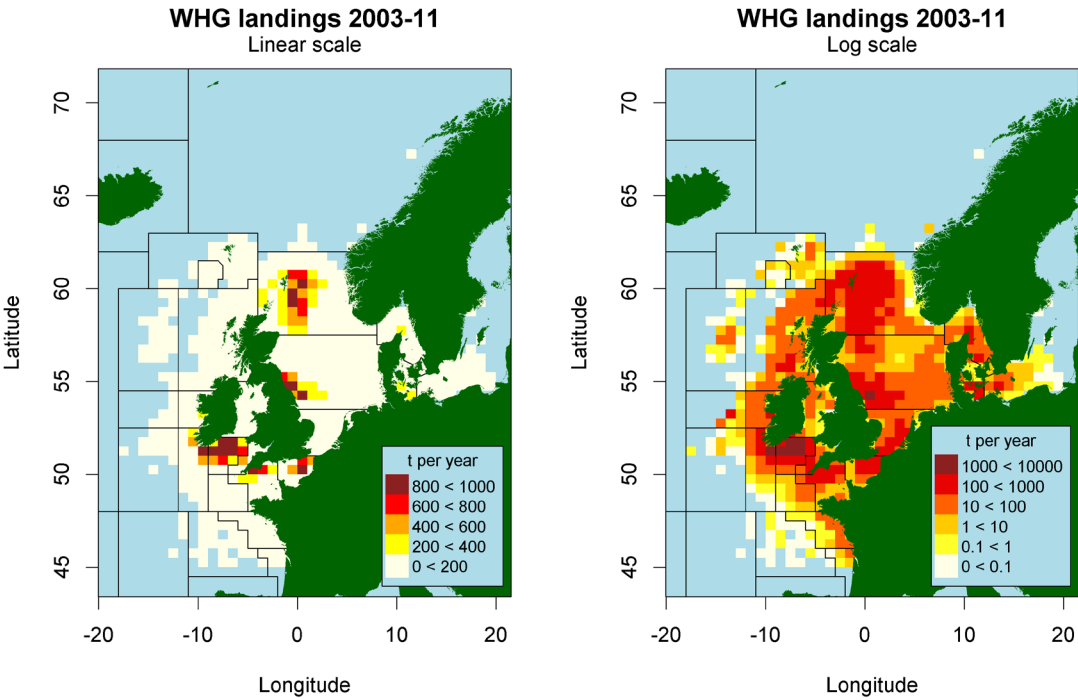


Figure 18.7. Spatial distribution of whiting landings.

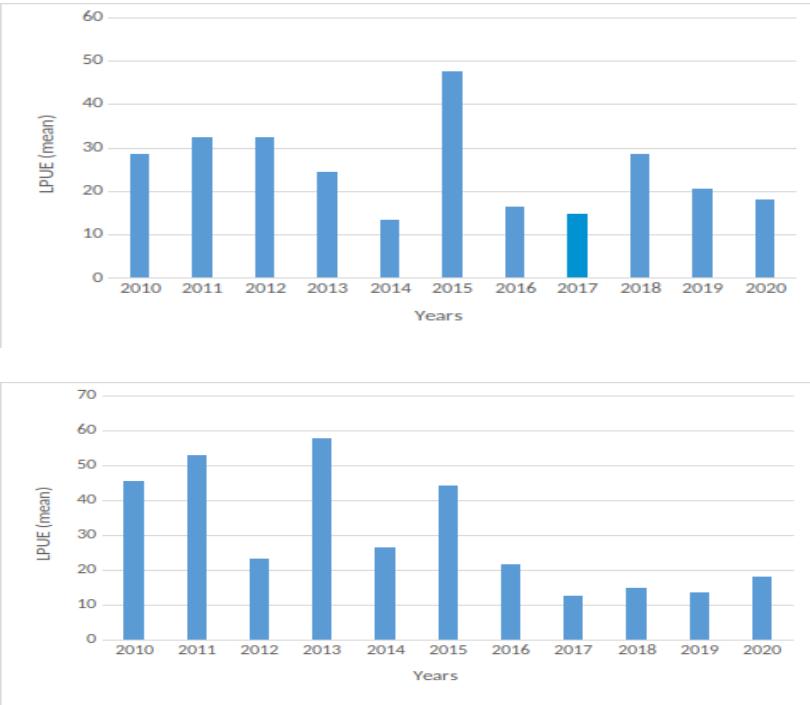


Figure 18.8. Time-series of whiting landings per unit of effort (LPUEs in kg/day) for two otter trawl fleets fishing in divisions 8.a, 8.b, and 8.d in the period 2010–2020. Otter trawl fleet fishing in the south (upper panel) and otter trawl fleet fishing in the north (bottom panel).

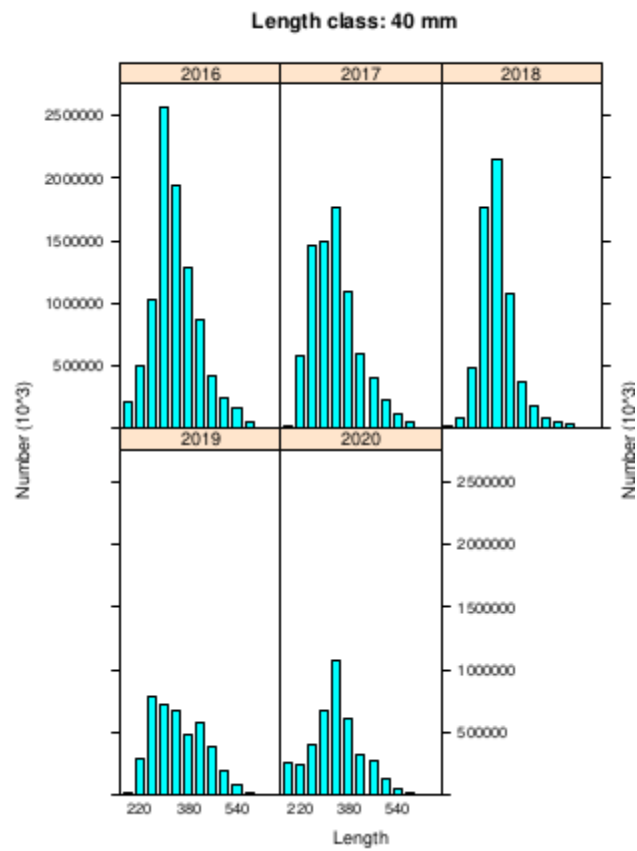


Figure 18.9. Length composition of whiting catches binned at 40 mm.

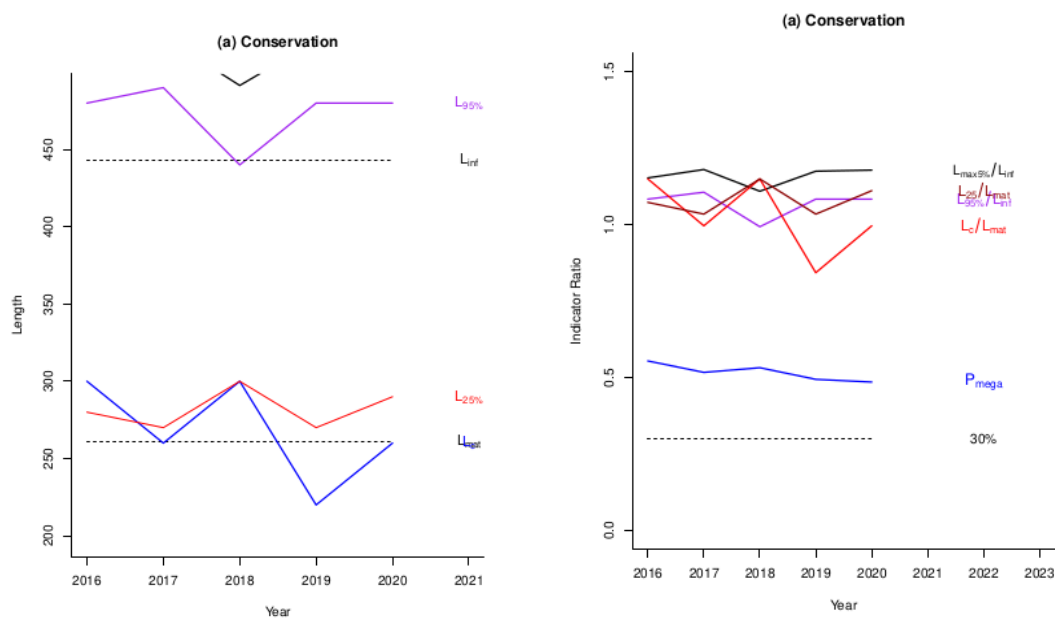


Figure 18.10. Conservation results from the LBI analyses.

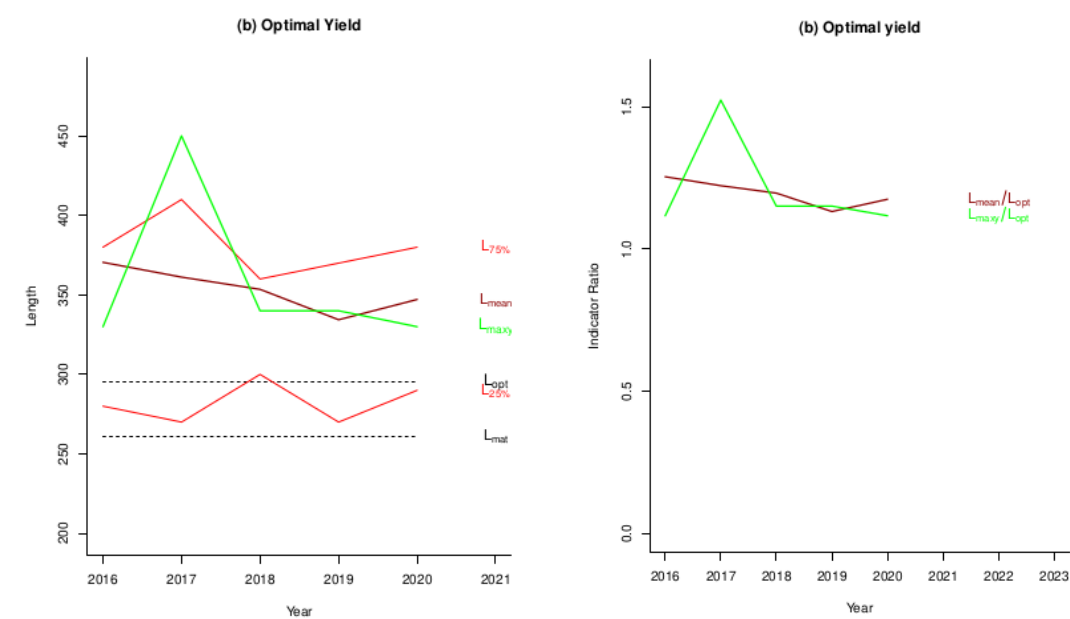


Figure 18.11. Optimal yield results from LBI analyses.

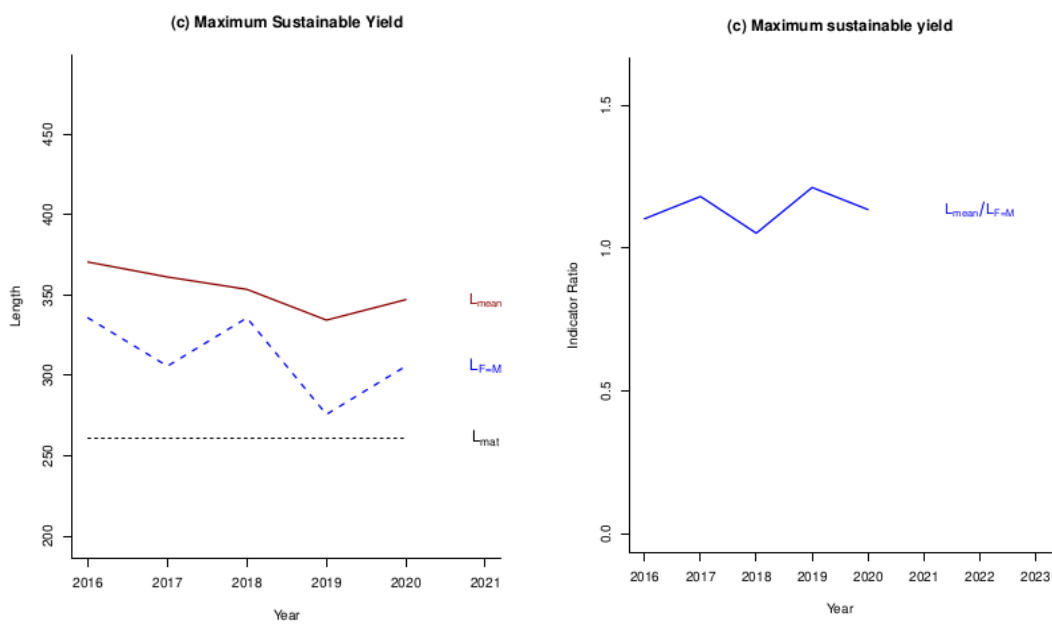


Figure 18.12. Maximum yield results from LBI analyses.