

## 14 Plaice in eastern English Channel

### ple.27.7d – *Pleuronectes platessa* in Division 7.d

This stock is in category 1. This year, the assessment of plaice in Division 7.d was made following methodological information described in the Stock Annex revised during ICES WKPLE (2015) and WGNSSK in 2015. After the update of the FR CGFS Index in 2022, a new set of reference points were calculated for this stock. This calculation was carried out following the procedures set in ICES (2021a).

#### 14.1 General

##### 14.1.1 Stock definition

A summary of available information can be found in the Stock Annex.

##### 14.1.2 Ecosystem aspects

No new information on ecosystem aspects was presented at the working group in 2024. All available information on ecological aspects can be found in the Stock Annex.

##### 14.1.3 Fisheries

Plaice is mainly caught in two offshore fisheries, i.e. the beam trawl fishery for sole and the mixed demersal fishery using otter trawls. There is also a directed fishery during parts of the year by inshore trawlers and netters on the English and French coasts. All available information on the fisheries can be found in the Stock Annex.

##### 14.1.4 ICES Advice for previous years

**2022 advice:** ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 4738 tonnes. Management of plaice in divisions 7.d and 7.e under a combined area TAC prevents effective control of the single-species exploitation rates and could lead to the over-exploitation of either species. ICES advises that management should be implemented at the stock area level.

**2023 advice:** ICES advises that when the MSY approach is applied, catches in 2024 should be no more than 2 367 tonnes. The use of a combined TAC for plaice in divisions 7.d and 7.e prevents effective control of single-stock exploitation rates and could lead to the overexploitation of either stock. ICES advises that management should be implemented at the stock area level. ICES notes the existence of a precautionary management plan, developed and adopted by one of the relevant management authorities for this stock.

##### 14.1.5 Management

There are no explicit management objectives for this stock.

The TACs have been set to for the combined ICES divisions 7.d and 7.e until 2023. From 2024, a separated TAC have been defined for plaice in 7.d and 7.e in line with area-based advice provided by ICES, which takes into account migration between stocks (EU, 2024a).

The minimum landing size for plaice is 27 cm, which is not in accordance with the minimum mesh size of 80 mm, permitted for catching plaice by beam and otter trawling. Fixed nets are required to use 90 mm mesh as an absolute minimum.

Demersal fisheries in the area are mixed fisheries, with many stocks exploited together in various combinations in the various fisheries. In these cases, management advice must consider both the state of individual stocks and their simultaneous exploitation in demersal fisheries. Stocks in the poorest condition, particularly those which suffer from reduced reproductive capacity, become the overriding concern for the management of mixed fisheries, where these stocks are exploited either as a targeted species or as bycatch.

## 14.2 Data available

### 14.2.1 Catch

Landings data as reported to ICES are shown in Figure 14.2.1.1, Figure 14.2.1.2 as well as in Table 14.2.1.1 together with the total landings estimated by the Working Group. The 2023 landings of 878 tonnes are below the catch level of the past 35 years (between 1600 and 9100 tonnes). France and Belgium are the highest contributors to the total 7.d landings in 2023, contributing for 28% and 46% respectively and UK contributing for 22%. The Belgian TBB and the French OTB recorded the highest landings.

Routine discard monitoring began following the introduction of the EU data collection regulations. Based on the sampling intensity (WKPLE; ICES, 2015), a discards time-series starting in 2006 has been included in the assessment. In 2023, discards of plaice in 7.d as reported to ICES decreased from 5919 tonnes to 2934 tonnes. Following the WKFLAT (ICES, 2010) and WKPLE (ICES, 2015) conclusions, 65% of the first quarter catches were removed. These 65% were estimated during WKFLAT (ICES, 2010), based on published tagging results and some previous studies (e.g. Burt *et al.*, 2006; Hunter *et al.*, 2004; Kell *et al.*, 2004) showing that 50% of the fish caught during the first quarter are fish coming from area 4 to spawn. The same study also showed that 15% of the fish caught during the first quarter were fishes from Division 7.e. Following the WKPLE (ICES, 2015) conclusions, only mature individuals are removed, both from landings and discards. Table 14.2.1.2 shows the Quarter 1 landings and discards and the corresponding removals. Removing this part of the catches allows for assessing the stock resident biomass. All the following figures will take into account this Quarter 1 removal. Of the plaice caught in Division 7.d, 12.7% is assumed to originate in the North Sea and 3.8% from the western English Channel, which are added to the predicted values for the Division 7.d plaice stock and applies to total catch, projected landings, and projected discards. Following ICES advice basis, catches in Division 7.d will comprise 2600 tonnes coming from the ple.27.7d stock, plus 395 tonnes coming from the ple.27.420 stock and 119 tonnes from the ple.27.7e stock.

### 14.2.2 InterCatch

UK, France, the Netherlands and Belgium have been providing landings data under the ICES InterCatch format since 2011, and InterCatch was used to produce the input data. Age distributions were provided by France, Belgium and England, accounting for 76% of the landings (Figure 14.2.2.1). Belgium has not always been able to provide landings data per quarter: for 2004, 2005, 2006, 2011, catch data were provided per semester or year. Since 2013, they were provided

per year for the TBB fleet with at least quarter 1 landings data on a separate excel spreadsheet. For 2021, Belgium landings data were transmitted per quarter except for the TBB fleet which was submitted per year. Allocations to calculate age structures for the remaining landings were done per quarter, using the groups below:

Unsampled fleet*	Sampled fleet**
All nets	All nets
All OTB, OTT, TBB and Seines	All OTB, OTT, TBB and Seines
Others (MIS, OTM, DRB, FPO and LLS)	All métiers

\* Unsampled fleet are those fleets for which no age structure is known.

\*\* Sampled fleet are those fleets for which the age structure is known.

Discards data have also been provided under the ICES InterCatch format by France, Belgium, and the UK since WKPLE (ICES, 2015). In 2023, 70 % of landings had associated discards data imported to InterCatch. The discard volumes of the remaining strata have been raised annually using the grouping below (all quarters were pooled).

Unsampled fleet*	Sampled fleet**
TBB	TBB
OTB, OTT	OTB, OTT
SDN, SSC	SDN, SSC
GNS, GTR	GNS, GTR
Others (MIS, OTM, DRB, FPO and LLS)	All métiers

\* Unsampled fleet are those fleets for which no discards data have been provided.

\*\* Sampled fleet are those fleets for which the discards volumes are known.

As a result, the raised discards account for 28% of the total discards. Allocations to calculate age structures of discards were done per quarter, using the groups below:

Unsampled fleet*	Sampled fleet**
All nets	All nets
All OTB, OTT, TBB and Seines	All OTB, OTT and TBB
Others (MIS, OTM, DRB, FPO and LLS)	All métiers

\* Unsampled fleet are those fleets for which no age structure is known.

\*\* Sampled fleet are those fleets for which the age structure is known.

Age distributions were provided by France, Belgium and England, accounting for 68% of the total discards (imported + raised).

Due to a lack of samples, a different approach was used to calculate age structures for the remaining discards for the following quarters:

- Discards Q1\_GNS-GTR were raised by samples from Q1 and Q2
- Discards Q4\_GNS-CTR were raised by samples from Q4 and Q3
- Discards Q1\_OTT-OTB-TBB-Seines were raised by samples from Q1 and Q2
- Discards Q3\_OTT-OTB-TBB-Seines were raised by samples from Q3 and Q2
- Discards Q4\_OTT-OTB-TBB-Seines were raised by samples from Q3 and Q1
- Discards Q4\_Others (DRB-MIS-LLS-FPO) were raised by samples from Q4, Q1 and Q3

### 14.2.3 Age compositions

Age compositions of the landings and of the discards are presented in Table 14.2.3.1 and Figure 14.2.3.1, and Table 14.2.3.2 and Figure 14.2.3.2 respectively.

Figures 14.2.3.3 and 14.2.3.4 present the discards at age ratios (i.e. discards numbers / landings numbers) per age and through time over the sampled period 2006–2023. Since 2013, the ratio is increasing for ages 4, 5, 6 and 7. The ratio for ages 1 to 3 remains stable between 2019 and 2023.

### 14.2.4 Weight-at-age

Weights-at-age in the landings, discards and stock are presented in tables 14.2.4.1, 14.2.4.2 and 14.2.4.3, respectively and in Figure 14.2.4.1. Stock weights are assumed to be the Q2 landings weights. These weights-at-age do not show specific trends, apart from a general decrease in landing weights in 2013–2018 for ages 5, 6 and 7.

### 14.2.5 Maturity and natural mortality

The maturity ogive used in the assessment is given in the table below.

Age	1	2	3	4	5	6	7
Proportion of mature	0	0.15	0.53	0.96	1	1	1

Age-specific natural mortality rates have been estimated from Peterson and Wroblewski's relationship during the 2015 WKPLE benchmark, as detailed in the Stock Annex.

Age	1	2	3	4	5	6	7
Natural mortality	0.3531	0.3132	0.292	0.2749	0.2594	0.2474	0.2329

### 14.2.6 Surveys

The survey series used in the assessment are the French Ground Fish Survey (FR GFS) [G3425], 1993–present and the UK beam trawl survey (UK BTS) [B2453], 1989–present (Figure 14.2.6.1 and Table 14.2.6.1). They are fully described in the Stock Annex. Both time-series were re-calculated in 2016 and the impact of those changes were assessed during 2016 WGNSSK meeting (ICES, 2016). A new delta-GAM index was presented during 2022 WGNSSK meeting. The use of the new index was followed by an estimation of new reference points based on the latest selectivity and biological patterns. New reference points can be found in the updated Stock Annex.

In 2022, five stations within the 6 nm in UK waters were not sampled during the FR-GFS survey. This area is an important habitat for plaice. The effect of this issue has been investigated during 2022 WGNSSK (ICES, 2022) meeting by testing the impact of removing the missing stations in the calculation of the index and although one year of missing five sampling stations did not have

a substantial impact on the current assessment outputs, it may become a problem if the issue persists in future. In addition, there has been no UK-BTS survey in the eastern English Channel in 2022.

The consistencies between ages are good for the UK-BTS survey (Figure 14.2.6.3). However, for the FR GFS survey, the internal consistency between ages is slightly less robust compared with UK-BTS survey.

## 14.3 Assessment

The model used is the Aarts and Poos model (AAP; Aarts and Poos, 2009; for more details, please refer to the Stock Annex).

Year of assessment:	2024
Assessment model:	AAP
Assessment software	FLR/ADMB
Fleets:	
UK Beam Trawl Survey	Age range 1–6 Year range 1989 onwards
FR Ground Fish Survey	Age range 1–6 Year range 1993 onwards
Catch/Landings	
Age range:	1–7+
Landings data:	1980–2023
Discards data	2006–2023
Model settings	
Fbar:	3–6
Age from which F is constant (qplat.Fmatrix)	6
Dimension of the F matrix (Fage.knots)	4
Ftime.knots	14
Wtime.knots	5
Age from which q is constant (qplat.surveys)	5

### 14.3.1 Results

The landings and discards estimated by the model are presented in Figure 14.3.1.1 and the residuals in Figure 14.3.1.2. Given the observed trend in the discard-at-age ratio (see Section 14.2.3), the average discard-at-age ratio over 2006–2011 is used to estimate the discards prior to 2006; while the actual discard-at-age ratios are used in the assessment to estimate the discards since 2012.

The survey residuals are shown in Figure 14.3.1.2 for the two surveys. There are opposite trends in the residuals of the UK BTS and French GFS (the two surveys covering the entire geographical area of the stock) appearing in the most recent years for ages 2 to 4. Moreover, the residuals of both surveys show a strong year effect. Since 2014, the model tends to overestimate the French GFS survey for all ages, the vessel used during this survey has changed in 2015, moving from the RV Gwen Drez to the RV Thalassa. Even if the inter-calibration between the two vessels realized in 2015 showed no significant effect on plaice catches (Auber *et al.*, 2015) and no correction coefficients were applied to calculate plaice survey indices (Travers-Trolet *et al.*, 2016), further investigation is needed.

The final outputs are given in Table 14.3.1.4 (fishing mortalities) and Table 14.3.1.5 (stock numbers). A summary of the assessment results is given in Table 14.3.1.6 and trends in fishing mortality, recruitment, spawning-stock biomass and total catches are shown in Figure 14.3.1.3. Retrospective patterns for the final run are shown in Figure 14.3.1.4 with their associate Mohn's Rho value.

The 1986-year class dominated the history of this stock until the late 2000s (Figure 14.3.1.5 and 14.3.1.3). A second peak occurred with the 1997-year class, although estimated to be at 75% of the 1986-year class. The ephemeral peak of SSB in 1999 has been followed by years of stability at a low level. From 2006 onwards, a series of high recruitments occurred, reaching a maximum in 2011, which caused the biomass to increase until 2014 then stabilize and decrease in 2016–2023 (Figure 14.3.1.3). The recruitment seems decreasing since 2019.

## 14.4 Biological reference points

A new FR CGFS index is used in 2022 assessment to fix the reported issues in 2021 assessment (WGNSSK; ICES, 2021b). Following the benchmark guidelines, a new set of reference points were calculated for plaice 7.d stock and presented during WGNSSK 2022 meeting (ICES, 2022).

**Plaice in Division 7.d. Reference points, values, and their technical basis.**

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{\text{trigger}}$	37 761	$B_{\text{pa}}$ ; in tonnes.	ICES (2022)
	$F_{\text{MSY}}$	0.156	EqSim analysis based on recruitment period 1980–2020.	ICES (2022)
Precautionary approach	$B_{\text{lim}}$	27 174	Breakpoint of hockey stick stock-recruit relationship, based on recruitment period 1980–2020; in tonnes.	ICES (2022)
	$B_{\text{pa}}$	37 761	$B_{\text{lim}} \times \exp(1.645 \times \sigma) \approx 1.4 \times B_{\text{lim}}, \sigma = 0.20$ ; in tonnes.	ICES (2022)
	$F_{\text{lim}}$	0.381	The F that on average leads to $B_{\text{lim}}$ from EqSim.	ICES (2022)
	$F_{\text{pa}}$	0.238	The F that provides a 95% probability for SSB to be above $B_{\text{lim}}$ ( $F_{0.05}$ with advice rule).	ICES (2022)
EU Management plan (MAP)*	MAP MSY $B_{\text{trigger}}$	37 761	MSY $B_{\text{trigger}}$ ; in tonnes.	ICES (2022)
	MAP $B_{\text{lim}}$	27 174	$B_{\text{lim}}$ ; in tonnes.	ICES (2022)
	MAP FMSY	0.156	$F_{\text{MSY}}$	ICES (2022)
	MAP range $F_{\text{lower}}$	0.113–0.156	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY.	ICES (2022)

Framework	Reference point	Value	Technical basis	Source
	MAP range $F_{upper}$	0.156–0.224	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY.	ICES (2022)

\* EU multiannual plan (MAP) for the Western Waters (EU, 2019).

## 14.5 Short-term forecasts

Weight-at-age in the stock and in the catch were taken to be the average estimated weights over the last 3 years. The exploitation pattern, as well as the discards/landings numbers ratio, were taken to be the mean value of the last three years. Population numbers-at-age 2 and older in 2024 are AAP survivors estimates.

The advice change (+9.8%) for the Division 7.d plaice stock is the result of an upward revision in SSB in the recent years. Figures comparing with the last year's advice are illustrated in Figures 14.5.1–14.5.2.

**Comparison between the assessment and forecast carried out during WGNSSK 2023 and WGNSSK 2024 of Plaice in Division 7.d.**

	Year*	Current assessment (2024)	Previous assessment (2023)
Assumed recruitment	2023	71500	71768
	2024	71500	71768
Catch	2023	3480	3714
F	2023	0.152	0.187
Target F for TAC	2024	0.116	0.119

\* 2023 = Intermediate year in the previous assessment; 2024 = advice year in the previous assessment

### 14.5.1 Recruitment estimates

Considering the retrospective patterns observed, the recruitment is assumed to be poorly estimated. The recruitment value from the assessment for 2023 was not used in the forecast due to high uncertainty. The recruitment of 2023 and the forecasted recruitment (2024, 2025 and 2026) was calculated as the geometric mean recruitment over the period 1980–2022 (Figure 14.5.1.2). The analysis of the ratio between recruitment and SSB didn't show a regime shift to justify the use of a different period to calculate the geometric mean.

### 14.5.2 Calculation of the 7.d resident stock

This year, F for the intermediate year is set as equal to the average F for the period 2021–2023. Plaice in 7.d are under landing obligation since the 1<sup>st</sup> January 2019. To assess if the TAC in 2024 will be fully taken, we compared ICES catches of resident plaice in 7.d in 2023 to the proportion of the 2023 TAC corresponding to resident plaice in 7.d (3930 t; dark orange dot in Figure 14.5.2.1). Using first the average official landing proportion between 7.e and 7.d.e over the period 2003–2023 (Figure 14.5.2.2) we obtained the TAC in 7.d. Then the Q1 removal ratio was applied over the same period to account for migration of mature individuals of plaice from the 7.e and 4.c during Q1 (Figure 14.5.2.3). ICES catches were compared to 2023 TAC corresponding to resident plaice in 7.d by taking into account survivability exemption applied to OTB, OTT, OTM,

GTR, GTN, TBB, SSC and SDN landings (EU, 2024b). ICES catches under landings obligation are significantly lower than the TAC (Figure 14.5.2.1), leading to the decision that the fully taken TAC assumption was inappropriate.

### **14.5.3 Management options tested**

#### **14.5.3.1 Calculation of STF**

Potential TACs for 2025 were calculated using the MSY approach. In 2025, since  $SSB < MSY B_{trigger}$  a reduced  $F$  value was used for the forecast instead of  $F_{MSY}$  corresponding to  $F_{MSY} \times SSB(2025)/MSY B_{trigger}$ . Alternative options (e.g.  $F_{MSY\ lower} \times SSB(2025)/MSY B_{trigger}$ ) were also tested. Results are presented in Tables 14.5.3.1.1 and 14.5.3.1.2 for the resident stock.

Following the MSY approach catches from the Division 7.d plaice stock in 2024 should be no more than 2600 tonnes. Assuming the same proportion of the Division 7.e and Subarea 4 plaice stocks is taken in Division 7.d as during 2003–2023, this will correspond to catches of plaice in Division 7.d in 2025 of no more than 3113 tonnes.

## **14.6 Quality of the assessment**

The sampling for plaice in 7.d is considered to be at a reasonable level. The quality of the assessment is considered to have improved in 2015 following the change of assessment model and the inclusion of discards.

A fishery on the spawners takes place during the first quarter of the year, yielding an age distribution different from the rest of the year. It is unknown whether there is major interannual variability of the immigration from the North Sea to these spawning grounds, which could distort any catch-based analysis. Any migration events taking place in the first quarter cannot be represented in the surveys in the second semester.

Landings-at-age information are highly dependent on the accuracy of the spatial declaration of the fishing activity as an important component of the fisheries operates on the borderline to ICES Subdivision 4.c.

The use of FR-GFS survey during the assessment needs to be further investigated. In the recent years, this index has always been overestimated by the model.

There is uncertainty about catches of the Division 7.d plaice stock because of migrations between Division 7.d and the North Sea and the western English Channel during the spawning period. The current assessment results depend on the proportion of first quarter removals estimated from a historical tagging survey (ICES, 2010).

The recruitment value from the assessment for 2023 was not used in the forecast due to high uncertainty. Assumed recruitment in 2023 and 2024 are based on the geometric mean for 1980–2022.

There has been an upward revision in stock size due to a rescaling of the 2021 year class.

## **14.7 Status of the stock**

ICES assesses that fishing pressure on the stock is below  $F_{MSY}$ , and under  $F_{pa}$  and  $F_{lim}$ . ICES assess that the spawning-stock size is below MSY  $B_{trigger}$ ,  $B_{pa}$ , and above  $B_{lim}$  (Figure 14.3.1.3).

	Fishing pressure			Stock size		
	2022	2023	2024	2022	2023	2024
Maximum sustainable yield $F_{MSY}$	✗	✗	✓ Below	MSY $B_{trigger}$	✗	✗ Below trigger
Precautionary approach $F_{pa}, F_{lim}$	✓	✓	✓ Harvested sustainably	$B_{pa}, B_{lim}$	○	○ Increased risk
Management plan $F_{MGT}$	✗	✗	✓ Below	$B_{MGT}$	✗	✗ Below

## 14.8 Management considerations

The stock identity of plaice in the English Channel is unclear and may raise some issues.

The plaice stock in 7.d is mostly harvested in a mixed fishery with sole in 7.d.

Due to the minimum mesh size (80 mm) in the mixed beam and otter trawl fisheries, a large number of undersized plaice are discarded. The 80 mm mesh size is not matched to the minimum landing size of plaice (27 cm). Measures taken specifically to control sole fisheries will impact the plaice fisheries.

## 14.9 Issue for future benchmarks

### 14.9.1 Data

The vessel used for FR GFS survey was changed in 2014, moving from the RV Gwen Drez to the RV Thalassa. Even if the inter-calibration between the two vessels realized in 2015 showed no significant effect on plaice catches (Auber *et al.*, 2015) and no correction coefficients were applied to calculate plaice survey indices (Travers-Trolet *et al.*, 2016). Further investigations are needed to evaluate if a vessel effect is significant in the data and test the possibility of splitting the FR GFS time-series.

Ifremer has started a new young fish surveys (YFS) in the Channel since 2016 (Bay of Canche-Authie, and Bay of Seine) in addition to the YFS in the Bay of Somme used in sole.27.7d assessment. Further investigation is needed to evaluate if recruitment indices could be produced from those surveys.

Data are available from FR GFS to calculate new maturity ogive and test them. The one currently used is based on WKFLAT (ICES, 2010).

Migration data are required to update the Q1 migration proportion.

### 14.9.2 Assessment

Residual patterns in the FR GFS residuals and the year effect (from 2016) in landings residuals could be corrected by splitting the FR GFS survey index. In addition, parameters settings might improve the fitting of the model.

### 14.9.3 Short-term forecast

If FR YFS indices are available, the use of RCT3 to estimate recruitment could be investigated. New information for age 0 could be introduced from YFS.

## 14.10 References

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## 14.11 Tables and figures

Table 14.2.1.1. Plaice in Division 7.d. Nominal landings (tonnes) as officially reported to ICES, 1976–2023.

Year	BEL	FRA	UK(E+W)	Others	Total official landings	Unallocated	Total landings 7.d ^	Estimated discards 7.d ^^	Total landings reported in 7.e ^^^	Agreed TAC *
1976	147	1439	376		1962	1	1963		640	
1977	149	1714	302		2165	81	2246		702	
1978	161	1810	349		2320	156	2476		784	
1979	217	2094	278		2589	28	2617		977	
1980	435	2905	304		3644	-994	2650		1178	
1981	815	3431	489		4735	34	4769		1676	
1982	738	3504	541	22	4805	60	4865		1878	
1983	1013	3119	548		4680	363	5043		1714	
1984	947	2844	640		4431	730	5161		1758	
1985	1148	3943	866		5957	65	6022		1677	
1986	1158	3288	828		5274	1560	6834		2078	
1987	1807	4768	1292		7867	499	8366		2272	8300
1988	2165	5688	1250		9103	1317	10 420		2835	9960
1989	2019	3713	1383		7115	1643	8758		2742	11 700
1990	2149	4739	1479		8367	680	9047		2985	10 700
1991	2265	4082	1566		7913	-100	7813		2183	10 700

Year	BEL	FRA	UK(E+W)	Others	Total official landings	Unallocated	Total landings 7.d ^	Estimated discards 7.d ^^	Total landings reported in 7.e ^^^	Agreed TAC *
1992	1560	3099	1572	1	6232	105	6337		1882	9600
1993	877	2792	1102		4771	560	5331		1614	8500
1994	1418	3199	1007	9	5633	488	6121		1404	9100
1995	1157	2598	814		4569	561	5130		1247	8000
1996	1112	2630	856		4598	795	5393		1266	7530
1997	1161	3077	1078		5316	991	6307		1583	7090
1998	854	3276	700		4830	932	5762		1346	5700
1999	1306	3388	743		5437	889	6326		1543	7400
2000	1298	3183	754		5235	779	6014		1625	6500
2001	1346	2962	660		4968	298	5266		1310	6000
2002	1204	3450	841	1	5496	281	5777		1472	6700
2003	998	2893	756	3	4650	-564	4086		1387	5970
2004	954	2766	582	10	4312	438	4750		1337	6060
2005	832	2432	421	21	3706	285	3991		1319	5150
2006	1024	1935	550	16	3525	121	3646	749	1411	5151
2007	1355	2017	463	10	3845	156	4001	1252	1146	5050
2008	1386	1740	471	12	3609	255	3864	936	1112	5050
2009	1002	1892	612	16	3522	38	3560	1528	1024	4646

Year	BEL	FRA	UK(E+W)	Others	Total official landings	Unallocated	Total landings 7.d ^	Estimated discards 7.d ^^	Total landings reported in 7.e ^^^	Agreed TAC *
2010	1123	2190	517	62	3892	519	4411	2511	1208	4274
2011	1067	1994	472	60	3593	56	3649	2024	1417	4665
2012	1045	1962	542	63	3611	-112	3723	3336	1492	5062
2013	1295	2159	641	87	4182	55	4127	2955	1472	6400
2014	1389	2229	633	76	4326	6	4320	3886	1490	5322
2015	1600	1702	392	54	3749	22	3727	2821	1424	6223
2016	2247	1557	795	60	4658	20	4638	3603	2013	12 446
2017	2189	1487	814	86	4581	-32	4613	5065	2128	10 022
2018	1876	2171	832	98	4986	-13	4999	6215	1880	10 360
2019	1277	1688	628	87	3714	-7	3721	7064	1725	10 354
2020	750	1007	342	52	2123	-29	2152	2191	1373	9154
2021	663	769	284	53	1785	-13	1358	2172	1403	11 920
2022**	586	630	341	49	1606	5	1601	5919	1103	9138
2023**	403	246	193	36	877	0	878	2934	1104	6775

<sup>^</sup> As provided to ICES through InterCatch

<sup>^^</sup> Raised with InterCatch from BE, UK and FR estimated discards data.

<sup>^^^</sup> As officially reported to ICES

\* TACs for divisions 7.d and 7.e. Since 2016, a catch advice is given rather than a landing advice.

\*\* Official values are preliminary.

**Table 14.2.1.2. Plaice in Division 7.d. Nominal landings, estimated discards, and quarter 1 removals.**

Year	Total landings	Q1 remov.	Landings as used by WG *	Estimated discards	Discards Q1 remov.	Discards as used by WG*
1980	2650	427	2223			
1981	4769	760	4009			
1982	4865	825	4040			
1983	5043	950	4093			
1984	5161	912	4249			
1985	6022	1022	5000			
1986	6834	1161	5673			
1987	8366	1360	7006			
1988	10420	1635	8785			
1989	8758	1665	7093			
1990	9047	1698	7349			
1991	7813	1451	6362			
1992	6337	1118	5219			
1993	5331	852	4479			
1994	6121	1074	5047			
1995	5130	934	4196			
1996	5393	963	4430			
1997	6307	1127	5180			
1998	5762	931	4831			
1999	6326	1058	5268			
2000	6014	1494	4521			
2001	5266	886	4380			
2002	5777	931	4846			
2003	4086	476	3610			
2004	4750	544	4206			
2005	3991	506	3485			
2006	3646	421	3225	749	21	727
2007	4001	620	3381	1252	32	1220

Year	Total landings	Q1 remov.	Landings as used by WG *	Estimated discards	Discards Q1 remov.	Discards as used by WG*
2008	3864	586	3278	936	48	888
2009	3560	436	3124	1528	56	1473
2010	4411	501	3910	2511	99	2412
2011	3649	358	3291	2025	99	1926
2012	3723	544	3178	3336	293	3043
2013	4127	523	3604	2955	260	2696
2014	4320	645	3675	3886	561	3325
2015	3727	770	2956	2821	453	2368
2016	4638	1020	3617	3603	514	3090
2017	4613	924	3689	5065	990	4075
2018	4999	1024	3975	6215	1255	4959
2019	3721	885	2836	7064	854	6211
2020	2152	424	1728	2191	290	1902
2021	1358	280	1078	2172	242	1930
2022	1601	368	1233	5919	772	5147
2023	878	193	685	2934	604	2330

\* Takes into account the removal of 65% of the Quarter 1 landings or discards.

**Table 14.2.3.1. Plaice in Division 7.d. Landings in numbers (thousands) as used in the assessment, taking into account the first quarter removal.**

Year	Age						
	1	2	3	4	5	6	7+
1980	53	2598	1253	370	324	50	133
1981	16	2403	5866	1643	192	106	238
1982	265	1369	5964	2262	505	138	179
1983	92	2977	2761	4048	617	151	214
1984	350	1838	6310	1928	1242	356	312
1985	142	5614	5347	3346	274	409	300
1986	679	4799	6072	2510	965	375	247
1987	25	8350	6481	2379	833	287	512
1988	16	4923	16239	3357	741	362	561

Year	Age						
	1	2	3	4	5	6	7+
1989	826	3574	6238	6477	1770	392	497
1990	1632	2581	7550	4099	2386	535	572
1991	1542	5758	4700	3099	1614	1123	429
1992	1665	6085	3841	1183	786	697	745
1993	740	7473	3295	863	359	313	581
1994	1242	3570	6015	2131	563	280	781
1995	2592	4264	2532	2006	611	152	591
1996	1119	4762	3113	1060	951	326	585
1997	550	4168	6184	2382	724	506	722
1998	464	4323	7467	2335	360	94	289
1999	741	1737	10493	4583	696	121	223
2000	1383	6177	3432	3992	752	150	142
2001	2682	4070	3589	1385	1253	203	145
2002	902	6876	4553	1390	1144	603	288
2003	NA	3597	2103	1380	350	356	758
2004	922	2718	4573	760	400	219	527
2005	86	2602	2153	1975	449	245	508
2006	191	2801	3081	1626	987	166	379
2007	529	2986	2379	1237	534	395	274
2008	293	3844	2512	1125	584	218	258
2009	491	2975	3112	848	402	242	240
2010	530	4238	3367	1465	392	278	287
2011	93	4436	3557	964	316	59	119
2012	18	1266	3780	1845	524	195	171
2013	9	756	3666	3294	1158	247	156
2014	76	759	2015	3731	1848	468	202
2015	3	600	1523	1483	1933	940	642
2016	12	233	2115	2220	1431	1719	1028

<b>Age</b>							
<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7+</b>
2017	3	120	1370	2772	1753	987	1645
2018	18	217	1045	2852	2482	1316	2410
2019	41	233	1506	1256	1681	1462	1424
2020	14	459	499	855	768	822	1229
2021	5	113	837	641	533	516	812
2022	11	82	591	1647	712	438	415
2023	7	65	193	551	909	326	275

**Table 14.2.3.2. Plaice in Division 7.d. Discards in numbers (thousands) as used in the assessment, taking into account the first quarter removal.**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7+</b>
2006	553	2541	1826	70	10	1	0
2007	1227	5531	1776	278	0	2	0
2008	2368	2893	631	163	38	8	1
2009	2032	5679	1988	114	17	26	3
2010	2023	11797	3243	336	28	3	2
2011	2480	8872	1559	155	14	19	1
2012	1423	10296	7943	1235	52	0	0
2013	2040	5395	9367	1818	89	9	1
2014	4380	6222	8481	3445	493	79	10
2015	4420	8316	4958	1478	761	276	40
2016	1767	6524	7917	1801	589	227	27
2017	2045	7478	9758	4581	672	347	66
2018	4500	11034	12209	7137	2437	807	371
2019	8145	12050	13508	3940	2001	859	271
2020	162	7418	5098	3534	1250	512	222
2021	3413	2731	4326	3524	1820	741	269
2022	14800	9775	7465	7114	1746	840	196
2023	4277	8447	3819	2141	1959	862	194

**Table 14.2.4.1. Plaice in Division 7.d. Weights in the landings.**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7+</b>
1980	0.314	0.317	0.508	0.638	0.801	1.159	1.439
1981	0.231	0.288	0.36	0.448	0.687	0.839	1.032
1982	0.237	0.263	0.342	0.418	0.62	0.77	1.193
1983	0.254	0.282	0.333	0.401	0.517	0.784	1.178
1984	0.211	0.267	0.304	0.364	0.46	0.624	0.852
1985	0.241	0.264	0.286	0.406	0.477	0.541	0.82
1986	0.231	0.312	0.338	0.414	0.557	0.496	0.823
1987	0.25	0.281	0.359	0.475	0.575	0.78	0.967
1988	0.279	0.256	0.307	0.413	0.536	0.629	0.926
1989	0.199	0.266	0.318	0.367	0.469	0.643	1.073
1990	0.209	0.266	0.338	0.392	0.501	0.633	1.091
1991	0.223	0.275	0.309	0.387	0.451	0.552	1.009
1992	0.181	0.276	0.35	0.427	0.506	0.582	0.791
1993	0.217	0.268	0.331	0.426	0.5	0.583	0.853
1994	0.248	0.276	0.294	0.364	0.476	0.588	0.996
1995	0.215	0.267	0.309	0.385	0.478	0.678	0.932
1996	0.228	0.31	0.299	0.409	0.49	0.664	1.115
1997	0.201	0.254	0.3	0.335	0.446	0.582	1.024
1998	0.167	0.257	0.281	0.401	0.529	0.803	1.175
1999	0.204	0.253	0.243	0.316	0.477	0.776	1.133
2000	0.217	0.256	0.273	0.296	0.392	0.603	0.953
2001	0.233	0.273	0.328	0.401	0.484	0.695	1.133
2002	0.246	0.248	0.299	0.364	0.424	0.545	0.819
2003	NA	0.286	0.376	0.485	0.643	0.654	0.872
2004	0.245	0.297	0.399	0.498	0.688	0.786	0.993
2005	0.29	0.318	0.351	0.452	0.568	0.666	1.109
2006	0.261	0.279	0.306	0.364	0.447	0.557	0.85
2007	0.182	0.318	0.398	0.477	0.546	0.613	0.959
2008	0.24	0.293	0.351	0.434	0.549	0.647	0.975

Year	1	2	3	4	5	6	7+
2009	0.24	0.291	0.35	0.498	0.526	0.66	1.073
2010	0.232	0.305	0.359	0.451	0.512	0.658	0.847
2011	0.159	0.264	0.354	0.487	0.637	0.82	1.076
2012	0.204	0.297	0.358	0.452	0.559	0.715	1.062
2013	0.145	0.263	0.321	0.395	0.498	0.738	1.077
2014	0.176	0.26	0.295	0.373	0.514	0.704	0.986
2015	0.126	0.227	0.303	0.346	0.413	0.538	0.842
2016	0.203	0.317	0.319	0.356	0.415	0.46	0.673
2017	0.276	0.272	0.301	0.344	0.417	0.468	0.667
2018	0.236	0.248	0.27	0.291	0.341	0.403	0.593
2019	0.244	0.264	0.285	0.316	0.337	0.386	0.567
2020	0.223	0.260	0.267	0.294	0.340	0.388	0.521
2021	0.219	0.254	0.258	0.26	0.284	0.301	0.442
2022	0.109	0.248	0.264	0.276	0.312	0.356	0.536
2023	0.180	0.211	0.252	0.270	0.282	0.300	0.430

**Table 14.2.4.2. Plaice in Division 7.d. Weights in the discards.**

Year	1	2	3	4	5	6	7+
2006	0.100	0.138	0.166	0.206	0.259	0.566	NA
2007	0.103	0.139	0.157	0.163	0.284	0.214	NA
2008	0.118	0.153	0.188	0.222	0.219	0.383	NA
2009	0.125	0.138	0.169	0.450	0.731	1.302	0.268
2010	0.104	0.135	0.167	0.180	0.237	0.381	0.369
2011	0.096	0.155	0.174	0.216	0.215	0.228	1.352
2012	0.093	0.130	0.166	0.193	0.213	0.607	NA
2013	0.083	0.128	0.155	0.188	0.249	0.464	0.421
2014	0.090	0.123	0.137	0.232	0.247	0.302	0.385
2015	0.039	0.106	0.156	0.174	0.220	0.274	0.622
2016	0.171	0.165	0.155	0.175	0.181	0.203	0.403
2017	0.131	0.147	0.162	0.191	0.227	0.218	0.221

Year	1	2	3	4	5	6	7+
2018	0.126	0.118	0.119	0.141	0.157	0.179	0.18
2019	0.140	0.141	0.158	0.169	0.173	0.197	0.224
2020	0.113	0.08	0.107	0.125	0.143	0.155	NA
2021	0.093	0.115	0.119	0.116	0.127	0.139	0.143
2022	0.112	0.133	0.116	0.124	0.132	0.161	0.165
2023	0.113	0.096	0.105	0.117	0.123	0.127	0.138

**Table 14.2.4.3. Plaice in Division 7.d. Weights in the stock.**

Year	1	2	3	4	5	6	7+
1980	0.171	0.332	0.482	0.622	0.751	0.870	1.197
1981	0.110	0.216	0.317	0.414	0.506	0.594	0.924
1982	0.105	0.208	0.308	0.406	0.502	0.596	0.869
1983	0.097	0.192	0.286	0.379	0.470	0.560	0.854
1984	0.082	0.164	0.248	0.333	0.420	0.507	0.738
1985	0.084	0.171	0.259	0.348	0.440	0.533	0.778
1986	0.101	0.205	0.311	0.420	0.532	0.646	0.850
1987	0.122	0.242	0.361	0.479	0.596	0.712	0.929
1988	0.084	0.168	0.254	0.340	0.427	0.514	0.715
1989	0.079	0.162	0.250	0.342	0.439	0.541	0.855
1990	0.085	0.230	0.322	0.346	0.465	0.549	1.118
1991	0.143	0.219	0.275	0.335	0.375	0.472	0.958
1992	0.088	0.241	0.336	0.421	0.477	0.521	0.725
1993	0.108	0.258	0.296	0.379	0.493	0.539	0.727
1994	0.165	0.198	0.276	0.331	0.383	0.493	0.866
1995	0.124	0.257	0.286	0.354	0.442	0.707	0.855
1996	0.178	0.229	0.263	0.347	0.354	0.474	0.934
1997	0.059	0.202	0.256	0.266	0.417	0.530	0.902
1998	0.072	0.203	0.273	0.361	0.530	0.670	0.873
1999	0.072	0.172	0.213	0.351	0.429	0.644	0.904
2000	0.068	0.184	0.204	0.246	0.355	0.554	0.928

Year	1	2	3	4	5	6	7+
2001	0.093	0.206	0.274	0.338	0.404	0.624	1.104
2002	0.102	0.206	0.281	0.379	0.467	0.558	0.809
2003	NA	0.306	0.403	0.528	0.673	0.592	0.961
2004	0.280	0.366	0.508	0.571	0.701	0.788	0.861
2005	0.174	0.299	0.377	0.489	0.672	0.683	1.010
2006	0.220	0.270	0.343	0.419	0.506	0.637	0.938
2007	0.063	0.247	0.391	0.543	0.579	0.656	0.825
2008	0.121	0.245	0.301	0.368	0.448	0.462	1.005
2009	NA	0.268	0.358	0.487	0.476	0.719	1.036
2010	NA	0.280	0.354	0.415	0.455	0.561	0.719
2011	0.189	0.238	0.402	0.535	0.737	0.791	0.908
2012	NA	0.253	0.298	0.424	0.517	0.629	0.938
2013	0.174	0.252	0.277	0.479	0.454	0.886	0.995
2014	0.157	0.256	0.243	0.381	0.518	0.756	1.042
2015	0.154	0.253	0.256	0.287	0.363	0.436	0.782
2016	0.258	0.294	0.326	0.368	0.481	0.516	0.719
2017	0.256	0.253	0.28	0.319	0.387	0.434	0.619
2018	0.174	0.201	0.244	0.256	0.308	0.386	0.519
2019	0.132	0.239	0.262	0.289	0.332	0.394	0.531
2020	NA	0.296	0.292	0.351	0.407	0.450	0.597
2021	NA	0.293	0.244	0.286	0.445	0.326	0.609
2022	0.176	0.224	0.255	0.276	0.29	0.339	0.458
2023	0.152	0.243	0.248	0.269	0.292	0.365	0.517

**Table 14.2.6.1.** Plaice in Division 7.d. UK BTS tuning fleet.

UK BTS						
1989		2023				
1	1	0.5	0.75			
1	6					
1		3.8	15.8	28.9	31.7	4.0
1		9.2	9.4	11.1	11.7	12.6
1		16.8	14.5	11.5	8.7	8.6
1		22.4	21.3	6.6	6.6	7.2
1		4.6	20.2	8.0	2.8	2.9
1		9.4	8.5	10.1	6.0	2.0
1		14.5	6.2	3.8	5.7	2.2
1		22.1	17.3	1.7	1.0	2.0
1		48.2	28.6	11.0	1.3	1.6
1		30.6	37.9	12.1	5.0	0.6
1		12.8	10.7	28.8	4.6	1.6
1		19.5	30.2	18.8	20.5	5.0
1		27.9	20.3	14.1	9.8	14.8
1		37.9	25.9	12.5	5.5	2.6
1		10.6	39.7	9.8	4.4	2.3
1		52.9	22.5	20.7	4.8	1.2
1		15.6	36.2	12.8	10.0	3.2
1		30.1	28.9	16.8	5.9	4.3
1		53.1	28.9	12.2	6.2	3.2
1		39.6	40.6	10.5	4.3	3.8
1		77.7	39.5	20.9	5.9	3.2
1		64.2	64.7	17.7	9.2	3.1
1		115.1	112.2	39.6	10.3	7.0
1		24.7	81.1	56.0	18.7	4.2
1		32.3	61.0	88.2	45.0	10.2
1		145.3	156.5	50.7	62.1	26.8
1						9.0

<b>UK BTS</b>						
<b>1989 2023</b>						
<b>1 1 0.5 0.75</b>						
<b>1 6</b>						
1	38	178.7	63.2	30.2	33.4	15.7
1	12.5	101.4	102.9	37.9	21.3	23.2
1	50.1	102.1	83.2	56.0	16.6	8.4
1	25.6	97	112.2	52.4	30.3	9.3
1	117.5	81.7	55.3	37.3	18.2	11.7
1	20.7	109.1	60.2	25.1	15.1	7.6
1	17.9	72	93.1	71.6	11.8	7.9
1	NA	NA	NA	NA	NA	NA
1	10.5	66.6	41.8	28.7	25.6	15.6

**Table 14.2.6.1. (cont.) Plaice in Division 7.d. FR-CGFS tuning fleet.**

<b>FR GFS</b>						
<b>1993 2023</b>						
<b>1 1 0.75 1</b>						
<b>1 6</b>						
1	383.8355744	505.2629106	163.2810718	52.07586489	21.19325997	17.87691485
1	619.3768715	270.9953468	135.2632176	48.52923596	24.82407199	39.66156958
1	236.6732391	87.88351902	47.00914259	30.33456473	13.07852115	46.14872477
1	581.9694933	234.2509553	39.35415072	14.10934883	20.88053073	18.09101766
1	918.2077578	475.9458477	210.7257901	18.25926376	9.640042543	36.95269041
1	512.7584455	848.9058747	199.0111234	34.75239869	0	10.68452965
1	1022.180142	420.6820688	647.7584938	95.37379997	19.13878801	14.94702125
1	297.5544321	651.6468451	200.7988279	103.3548243	24.35239968	13.01904827
1	457.1577918	319.8617904	134.3763602	65.00811934	33.04250497	14.92832003
1	567.0709758	419.5870283	205.6993619	74.22470156	40.9671484	23.66381177
1	522.5503584	858.5366389	163.8124455	31.73698637	18.3156651	24.90699037
1	759.4979923	603.9760441	277.6503234	79.00038003	7.402189554	20.7772062

<b>FR GFS</b>						
<b>1993 2023</b>						
<b>1 1 0.75 1</b>						
<b>1 6</b>						
1	501.3096429	737.9928106	507.767137	131.9326893	45.58564008	23.03732273
1	553.5784763	545.0079114	243.3375248	79.64875305	37.28547057	21.19139459
1	565.6734962	495.8998099	270.3112787	75.65884526	29.92610796	15.3477688
1	447.47878	1204.899068	179.6713332	60.97092458	27.20469891	15.16557721
1	705.3261839	520.2234007	211.1485701	50.13557837	25.55148267	18.40786381
1	1932.633961	1233.50878	200.7542484	40.16641504	26.11406744	14.66785154
1	1178.336928	1901.519841	529.0841892	59.05420802	17.07898064	18.53201578
1	890.0391815	1897.133979	1292.795834	260.0495238	79.62734424	19.31706082
1	316.5723181	637.939748	878.4254631	215.0501994	62.23969238	16.5358271
1	905.6664719	761.7830181	570.0895772	769.3179871	165.4005347	21.71736567
1	307.3354882	801.4267607	783.1822484	248.6348301	267.2517901	83.97320852
1	212.3016608	542.8620095	854.3952215	323.4912556	210.87807	104.1891775
1	380.8541783	466.8713529	520.4367429	395.7254743	112.6458491	43.92878242
1	182.6725626	524.0586083	300.6919997	323.5105906	136.3035781	47.22408444
1	1300.985303	856.4709947	543.9310375	202.7088299	283.7809115	170.8047855
1	1079.175847	2447.7365	518.2506187	170.9228785	117.4789796	89.22140202
1	1221.006564	1125.964859	1145.293539	161.3032209	115.08749	48.78852155
1	768.3617661	403.607366	359.0845495	274.1135216	62.16646449	46.48162562
1	476.8806715	770.0213062	224.9993509	191.3908035	163.0540962	33.89121838

**Table 14.3.1.4. Plaice in Division 7.d. Fishing mortality (F) at age.**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7+</b>
1980	0.0104878	0.109345	0.37093	0.314126	0.181332	0.108354	0.108354
1981	0.0165841	0.142805	0.437963	0.374903	0.225495	0.139947	0.139947
1982	0.0236533	0.17877	0.509709	0.436936	0.271257	0.174934	0.174934
1983	0.027446	0.205618	0.576349	0.485608	0.305346	0.20482	0.20482
1984	0.0238266	0.209648	0.624625	0.504179	0.312867	0.218644	0.218644
1985	0.0174798	0.19593	0.645592	0.495462	0.301025	0.220136	0.220136
1986	0.0138538	0.180935	0.636489	0.476505	0.29068	0.224317	0.224317
1987	0.0151299	0.177946	0.598967	0.463569	0.300772	0.247931	0.247931
1988	0.0245039	0.193973	0.547153	0.459207	0.333425	0.295087	0.295087
1989	0.0503325	0.232648	0.504353	0.449827	0.362295	0.338569	0.338569
1990	0.110326	0.303753	0.488403	0.422109	0.350805	0.332786	0.332786
1991	0.218977	0.418035	0.508531	0.376178	0.290163	0.265472	0.265472
1992	0.343076	0.548363	0.551864	0.339756	0.232576	0.199539	0.199539
1993	0.371831	0.611622	0.598586	0.336742	0.211888	0.170817	0.170817
1994	0.253879	0.529266	0.624826	0.390571	0.250565	0.195138	0.195138
1995	0.136054	0.38998	0.624675	0.498993	0.352947	0.270331	0.270331
1996	0.0830883	0.293863	0.604988	0.621916	0.488446	0.364523	0.364523
1997	0.0829107	0.270598	0.574268	0.671755	0.550311	0.386279	0.386279
1998	0.133015	0.310557	0.543831	0.615923	0.485713	0.312784	0.312784
1999	0.222639	0.380277	0.526508	0.523052	0.381249	0.231121	0.231121
2000	0.247046	0.421548	0.534169	0.451359	0.304674	0.188065	0.188065
2001	0.144648	0.384905	0.570578	0.419312	0.270747	0.18831	0.18831
2002	0.0630653	0.314564	0.612636	0.40652	0.259246	0.213213	0.213213
2003	0.0316039	0.257083	0.626269	0.393194	0.254369	0.243286	0.243286
2004	0.0261134	0.231194	0.584745	0.36556	0.244614	0.253087	0.253087
2005	0.0319588	0.228347	0.519144	0.330894	0.228685	0.238953	0.238953
2006	0.043292	0.237927	0.471141	0.301218	0.209139	0.211653	0.211653
2007	0.0490127	0.251133	0.467743	0.284354	0.188275	0.181637	0.181637
2008	0.0431559	0.256707	0.497162	0.277227	0.167973	0.153061	0.153061

Year	1	2	3	4	5	6	7+
2009	0.0332228	0.241976	0.510694	0.269372	0.149582	0.126189	0.126189
2010	0.0253047	0.200325	0.456546	0.251501	0.133919	0.101368	0.101368
2011	0.0209273	0.146529	0.344462	0.223406	0.122052	0.0810101	0.0810101
2012	0.0193671	0.106565	0.247575	0.197426	0.115903	0.0692049	0.0692049
2013	0.0205118	0.087912	0.194907	0.18271	0.117533	0.0683286	0.0683286
2014	0.0248993	0.0905251	0.187167	0.184295	0.129418	0.0823014	0.0823014
2015	0.0312166	0.106712	0.207718	0.199103	0.151198	0.113079	0.113079
2016	0.0352325	0.124723	0.239914	0.22235	0.180855	0.159517	0.159517
2017	0.031651	0.126455	0.261063	0.247885	0.213824	0.208791	0.208791
2018	0.0244552	0.11234	0.2609	0.268893	0.242787	0.242644	0.242644
2019	0.0203685	0.0982172	0.246578	0.278515	0.258462	0.249923	0.249923
2020	0.0229585	0.0950729	0.227191	0.270417	0.251939	0.228012	0.228012
2021	0.038589	0.107777	0.208205	0.245237	0.223968	0.186615	0.186615
2022	0.0858194	0.136623	0.19033	0.212183	0.18686	0.141869	0.141869
2023	0.219538	0.183142	0.173771	0.179316	0.151031	0.103946	0.103946

**Table 14.3.1.5. Plaice in Division 7.d. Stock numbers from the assessment.**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7+</b>
1980	66059.4	29606.3	10000.5	2423.28	1994.35	618654	1840.57
1981	32700.1	45923	18644.3	4848.2	1243.46	1168.69	1550.21
1982	63957.4	22594.3	27968	8452.65	2341.06	697189	1660.6
1983	54734.6	43880.3	13274.2	11801.8	3836.05	1253.89	1390.54
1984	55462.6	37410.5	25096.9	5240.29	5101.55	1985.75	1513.67
1985	72989.4	38045.5	21310.6	9440.62	2223.53	2621.06	1975.56
1986	155979	50387.1	21971.6	7849.98	4040.87	1156.01	2591.11
1987	94367.8	108069	29538.6	8167.51	3424.33	2122.68	2103.43
1988	58604.2	65298.6	63543.4	11400.2	3609.23	1780.75	2316.95
1989	35667	40173.3	37784.4	25828.3	5059.8	1816.61	2143.07
1990	37215.1	23826.4	22364	16029.7	11571.5	2474.24	1982.77
1991	65365.6	23413	12353.5	9640.29	7383.4	5723.83	2244.74
1992	90380.1	36889.2	10828.2	5219.02	4649.1	3880.53	4292.78
1993	42498.4	45053.4	14976.1	4380.62	2610.27	2588.29	4703.16
1994	29752.7	20584.5	17169.4	5782.11	2197.56	1483.59	4317.97
1995	50138	16215.1	8517.9	6457.23	2748.62	1201.63	3353.11
1996	65231.4	30741.9	7712.64	3203.98	2754.14	1356.69	2441.81
1997	120309	42171.8	16097.5	2958.77	1208.5	1187.16	1853.33
1998	61209.8	77792.9	22602.3	6368.06	1061.75	489666	1451.56
1999	50809	37644.7	40060.6	9217.68	2416.38	458913	997438
2000	49454.6	28569.3	18080.1	16623	3838.07	1159.42	811974
2001	45232.5	27137.3	13166.6	7445.03	7435.94	1988.13	1147.49
2002	71215.3	27496.8	12973.4	5227.89	3438.84	3984.77	1824.71
2003	40716.5	46971.6	14103.2	4939.02	2445.84	1864.12	3297.54
2004	48394.9	27713.7	25517.4	5296.44	2341.69	1332.32	2843.03
2005	40060.6	33121.5	15450.4	9989.31	2581.51	1288.09	2277.35
2006	36364.8	27257.7	18517.8	6458.46	5040.58	1442.81	1972.36
2007	54045.6	24464.2	15094.1	8121.33	3357.08	2872.79	1941.53
2008	56002.8	36151.4	13369.5	6642.34	4293.23	1953.65	2820.34

Year	1	2	3	4	5	6	7+
2009	100463	37680.6	19646.7	5712.83	3536.5	2549.68	2877.78
2010	156825	68269.6	20781.6	8282.26	3065.6	2139.25	3360.81
2011	184045	107418	39253.5	9248.15	4524.53	1883.67	3491.36
2012	99539	126616	65176.5	19540.3	5196.15	2813.31	3482.17
2013	112368	68585.6	79957.1	35745.5	11267.8	3250.85	4126.9
2014	172920	77336.9	44127	46223.3	20918.1	7037.96	4840.61
2015	141088	118490	49627.6	25708.1	27006.8	12911.2	7685.49
2016	106803	96069	74814.7	28324.6	14799.6	16310.2	12922.3
2017	110313	72432.1	59575.5	41347	15931.2	8676.74	17508.1
2018	119892	75080.9	44839.7	32235.9	22669.4	9037.25	14928.8
2019	169031	82190.5	47140.2	24266.4	17306.6	12492.5	13208.9
2020	75791.9	116351	52338	25879.4	12903.2	9388.88	14062.7
2021	73133.4	52035.9	74324.4	29295.5	13872.8	7045.86	13115.9
2022	117022	49431.9	32820.6	42399.4	16104.4	7790.18	11752.6
2023	33186.2	75447.6	30291.7	19060.7	24091.3	9385.21	11913.1

**Table 14.3.1.6 Plaice in Division 7.d. Summary table (Outputs from the model). Recruitment is in thousands, all weights are in tonnes. High and Low correspond to two standard deviations.**

Year	Recruitment (Age 1)			Spawning-stock biomass			Landings	Discards*	Fishing pressure (Ages 3–6)		
	Low	R	High	Low	SSB	High			Low	F	High
1980	50223	66059	86836	5728	8278	10828	2223	369	0.149	0.24	0.34
1981	24391	32700	43828	8303	11004	13705	4009	688	0.20	0.29	0.39
1982	47846	63957	85499	10191	13225	16259	4040	788	0.25	0.35	0.45
1983	41028	54735	72984	10035	12963	15891	4093	915	0.28	0.39	0.50
1984	41981	55463	73205	9874	12668	15462	4249	1002	0.31	0.42	0.52
1985	55765	72989	95521	9786	12433	15080	5000	946	0.32	0.42	0.51
1986	121966	155979	199287	9958	12376	14794	5673	1113	0.32	0.41	0.50
1987	74216	94368	120002	12601	15137	17673	7006	1759	0.32	0.40	0.49
1988	45522	58604	75511	16744	20026	23308	8785	1851	0.33	0.41	0.49
1989	27311	35667	46581	17399	20832	24265	7093	1339	0.33	0.41	0.5
1990	27536	37215	50249	14429	17547	20665	7349	1103	0.31	0.40	0.48

Year	Recruitment (Age 1)			Spawning-stock biomass			Landings	Discards*	Fishing pressure (Ages 3–6)		
	Low	R	High	Low	SSB	High			Low	F	High
1991	45929	65366	93073	10889	13675	16461	6362	1741	0.29	0.36	0.43
1992	59271	90380	137877	8831	11316	13801	5219	3241	0.27	0.33	0.39
1993	27136	42498	66529	8365	10614	12863	4479	2629	0.27	0.33	0.39
1994	20872	29753	42441	7831	9809	11787	5047	1376	0.30	0.37	0.43
1995	37804	50138	66557	6522	8206	9891	4196	1012	0.37	0.44	0.51
1996	50336	65231	84586	5524	6972	8420	4430	1058	0.44	0.52	0.6
1997	93381	120309	155059	6045	7521	8997	5180	1654	0.45	0.55	0.64
1998	46029	61210	81388	8660	10503	12346	4831	2309	0.40	0.49	0.57
1999	35515	50809	72713	11400	13775	16150	5268	2186	0.33	0.42	0.5
2000	33921	49455	72128	11470	13927	16384	4521	1830	0.29	0.37	0.45
2001	33587	45233	60969	9733	12082	14431	4380	1279	0.28	0.36	0.44
2002	55316	71215	91599	8601	10903	13205	4846	1054	0.28	0.37	0.46
2003	32356	40717	51198	8669	11005	13341	3610	1042	0.28	0.38	0.48
2004	38928	48395	60147	9444	11942	14440	4206	886	0.27	0.36	0.46
2005	32480	40061	49396	9431	12110	14789	3485	796	0.24	0.33	0.42
2006	29664	36365	44548	9429	12224	15019	3225	727	0.21	0.30	0.38
2007	44058	54046	66353	9302	12202	15102	3381	1220	0.199	0.28	0.36
2008	45606	56003	68748	9263	12216	15169	3278	888	0.197	0.27	0.35
2009	82336	100463	122692	9908	12973	16038	3124	1473	0.188	0.26	0.34
2010	127915	156825	192313	11665	15101	18537	3910	2412	0.167	0.24	0.30
2011	149447	184045	226681	16267	20741	25215	3291	1926	0.140	0.193	0.25
2012	80709	99539	122688	24243	30812	37381	3178	3043	0.115	0.158	0.20
2013	91493	112368	138134	32115	41085	50055	3604	2696	0.102	0.141	0.180
2014	140809	172920	212530	35507	45901	56295	3675	3325	0.107	0.146	0.184
2015	114211	141088	174242	36217	46925	57633	2957	2368	0.125	0.168	0.21
2016	86535	106803	131887	37685	48811	59937	3617	3090	0.147	0.20	0.25
2017	89099	110313	136557	36340	47631	58922	3689	4075	0.169	0.23	0.30
2018	96163	119892	149373	31256	41925	52594	3975	4959	0.182	0.25	0.33
2019	134081	169031	213160	26430	36246	46062	2836	6211	0.179	0.26	0.34

Year	Recruitment (Age 1)			Spawning-stock biomass			Landings	Discards*	Fishing pressure (Ages 3–6)		
	Low	R	High	Low	SSB	High			Low	F	High
2020	57630	75792	99728	24275	33546	42817	1728	1901	0.166	0.24	0.32
2021	52214	73133	102426	23403	32400	41397	1078	1930	0.150	0.22	0.28
2022	74138	117022	184669	20794	29289	37784	1233	5147	0.128	0.183	0.24
2023	15797	71500**	69731	17227	24734	32241	685	2330	0.099	0.152	0.20
	71500***			27682							

\* Since 2006, discard estimates are raised from observer programmes. Prior to 2006, discards are reconstructed by the model.

\*\* Due to the high uncertainty, the recruitment value for 2023 is not used in the forecast and is replaced by the geometric mean 1980–2022.

\*\*\* Geometric mean 1980–2022.

**Table 14.5.3.1.1. Plaice in Division 7.d. Values in the forecast and for the interim year for Division 7.d plaice stock only.**

Variable	Value	Notes
Fages 3–6 (2024)	0.152	Average exploitation pattern (2021–2023), scaled to Fages 3–6 2023
SSB (2025)	28064	Short-term forecast (STF); in tonnes
Rage 1 (2023–2025)	71500	Geometric mean 1980–2022; in thousands
Total catch (2024)	3343	STF; in tonnes
Projected landings (2024)	1105	STF; assuming average landings ratio (2021–2023); in tonnes
Projected discards (2024)	2238	STF; assuming average discards ratio (2021–2023); in tonnes

**Table 14.5.3.1.2. Plaice in Division 7.d. Annual catch scenarios. All weights are in tonnes.**

Basic		Division 7.d plaice stock				All plaice in Division 7.d#			
Fpa	F = 0	F <sub>MSY</sub>	F <sub>MSY</sub> lower	F <sub>MSY</sub> trigger	F <sub>MSY</sub> × SSB (2025) / MSY B <sub>trigger</sub>	Total catch (2025)^\nMSY approach: F <sub>MSY</sub> × SSB (2025) / MSY B <sub>trigger</sub>	Projected landings (2025)	Projected discards* (2025)	All plaice in Division 7.d#
5079	0	3441	2537		1908	2600			
1845	0	1251	923		694	945			
3234	0	2190	1614		1214	1654			
0.238	0	0.156	0.113		0.084	0.116			
0.051	0	0.034	0.024		0.0181	0.025			
0.187	0	0.122	0.089		0.066	0.091			
24870	31047	26841	27938		28704	27861			
-11.4	10.6	-4.4	-0.45		2.3	-0.72			
115	-100	45	7.2		-19.4	9.8			
6082	0	4121	3038		2285	3113			
2209	0	1498	1105		831	1132			
3873	0	2623	1933		1454	1981			
68	-100	14.1	-15.9		-37	-13.8			
115	-100	46	7.5		-19.1	10.2			
115	-100	46	7.5		-19.1	10.2			

	Basic	Division 7.d plaice stock	All plaice in Division 7.d#
	SSB (2026) = $B_{pa} = MSY B_{trigger}$ ^^^	$F_{lim}$	
	SSB (2026) = $B_{pa} = MSY B_{trigger}$ ^^^	SSB (2026) = $B_{lim}$	
	3359	3188	7683
	1221	1159	2786
	2138	2029	4897
	0.152	0.144	0.381
	0.033	0.031	0.082
	0.119	0.113	0.30
	26941	27147	21783
	-4.0	-3.3	-22
	42	35	225
	4022	3818	9201
	1462	1388	3337
	2560	2430	5864
	11.4	5.7	155
	42	35	226
	42	35	226

<sup>\$</sup> Total advised catch of plaice stock in 2025 relative to the advice value 2024 (2367 tonnes).

<sup>^</sup> Differences between total projected catch and the sum of projected landings and discards result from rounding.

<sup>^^</sup> Projected catch of plaice caught in Division 7.d in 2025 relative to the ICES estimates of catches in 2023 (3812 tonnes).

<sup>^^^</sup>  $B_{pa}$  and MSY  $B_{trigger}$  cannot be achieved in 2026, even with zero catches.

<sup>\*</sup> All plaice caught in Division 7.d, including plaice originating in the North Sea and the western English Channel. Of the plaice caught in Division 7.d, 12.69% are assumed to originate in the North Sea and 3.81% from the western English Channel (average ratio calculated over the years 2003–2023). Both of these predicted catches are added to the predicted values for the ple.27.7d stock and applied to projected catch, projected landings, and projected discards. Following ICES advice basis, catches in Division 7.d will comprise 2600 tonnes coming from the ple.27.7d stock, plus 395 tonnes coming from the ple.27.420 stock and 119 tonnes from the ple.27.7e stock.

<sup>##</sup> Projected catch of plaice caught in Division 7.d in 2025 relative to the advice value 2024 (2826 tonnes).

<sup>###</sup> Projected catch of plaice caught in Division 7.d in 2025 relative to the TAC in 2024 (2826 tonnes).

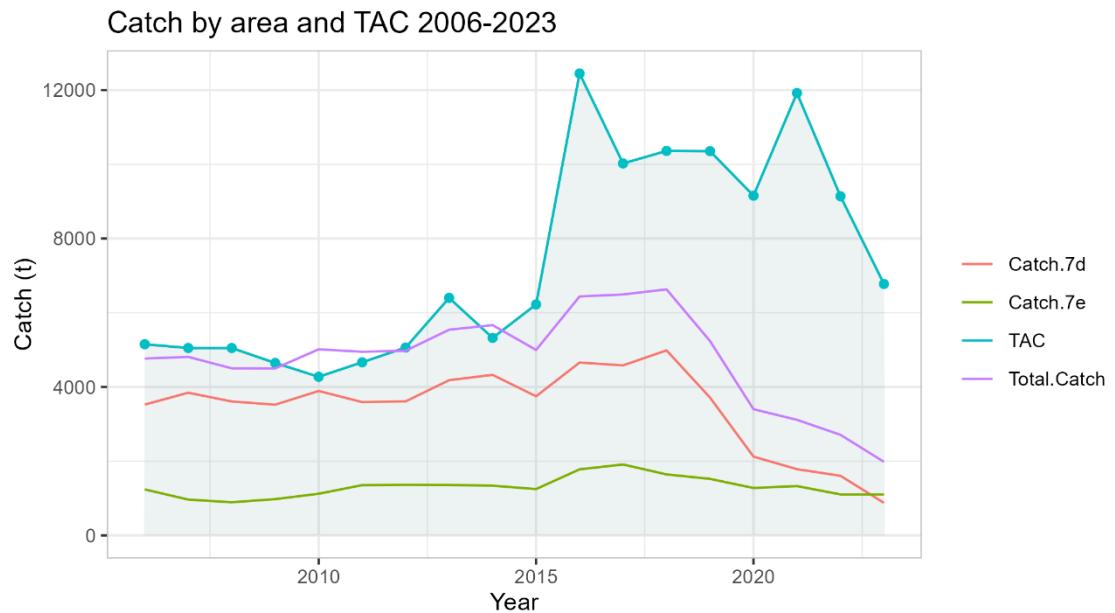


Figure 14.2.1.1. Plaice in Division 7.d. Official landings in 7.d and 7.e compared to the TAC: since 2019, the advice was given on catch rather than landings.

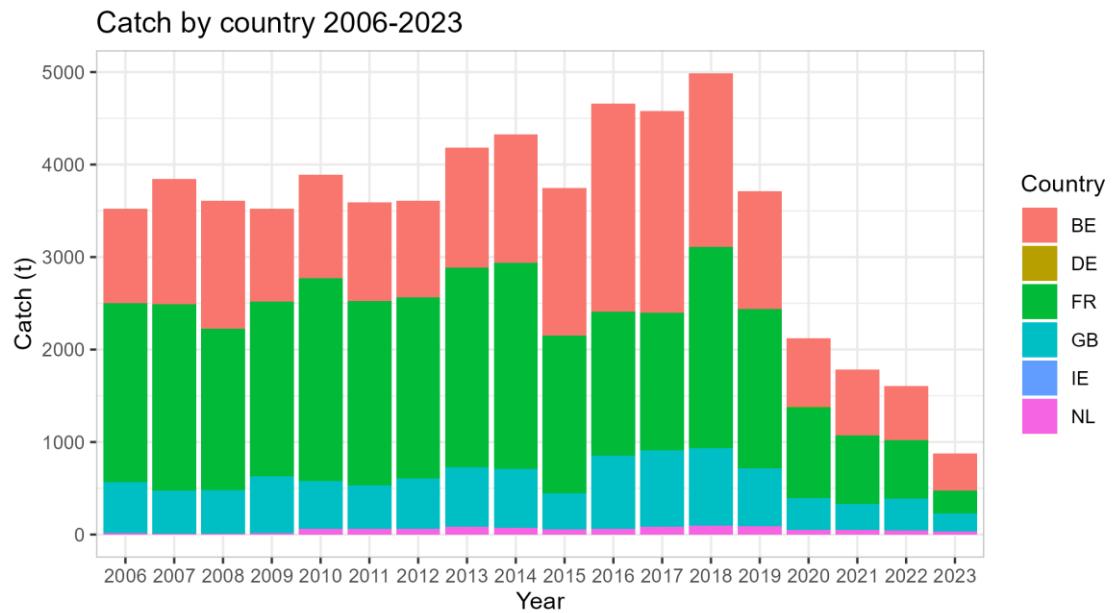
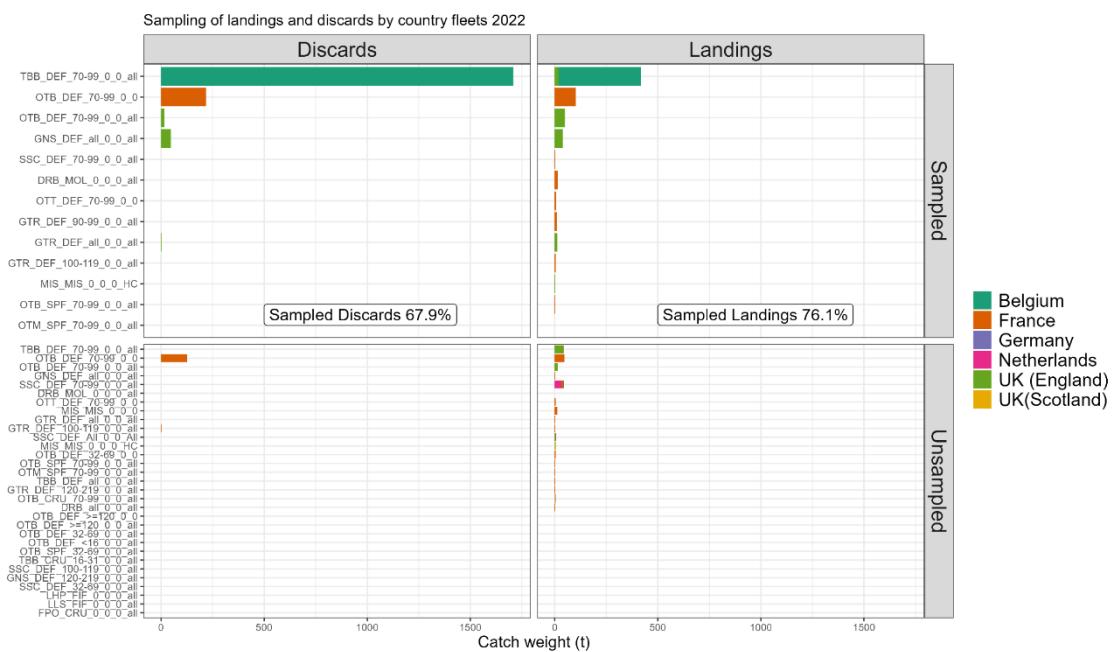
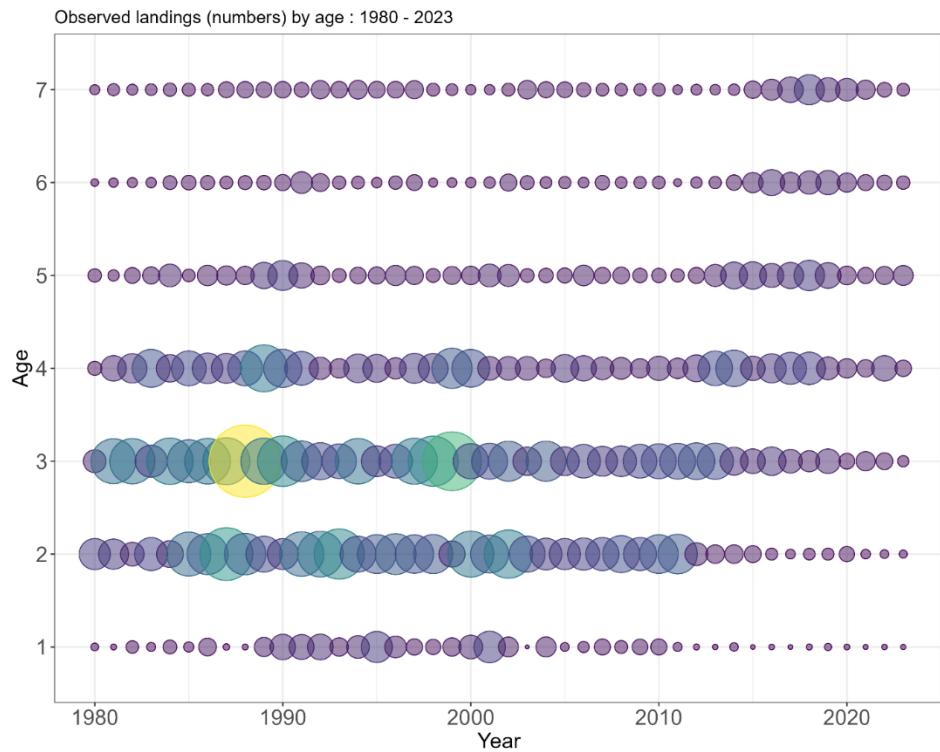


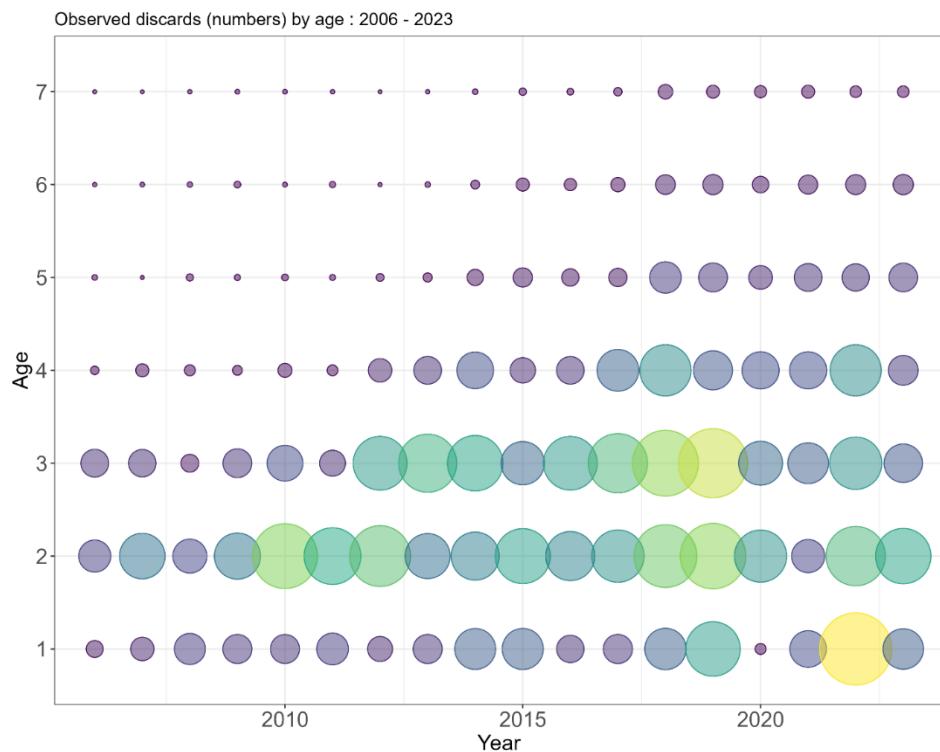
Figure 14.2.1.2. Plaice in Division 7.d. Official landings by country.



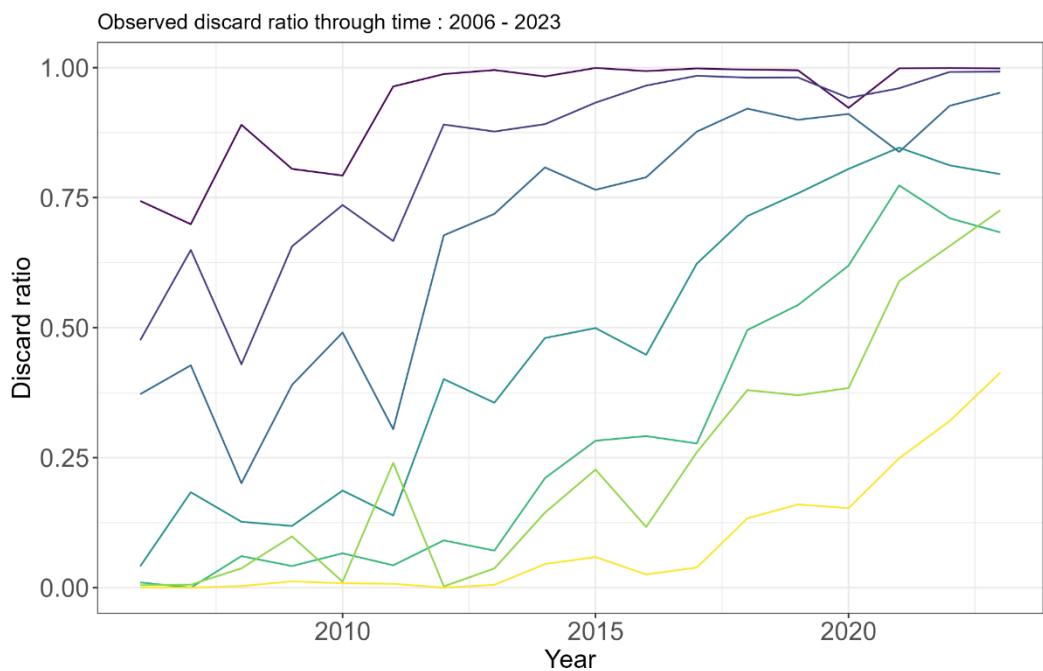
**Figure 14.2.2.1. Plaice in Division 7.d. Proportions of landings and discards per country with and without age distribution provided.**



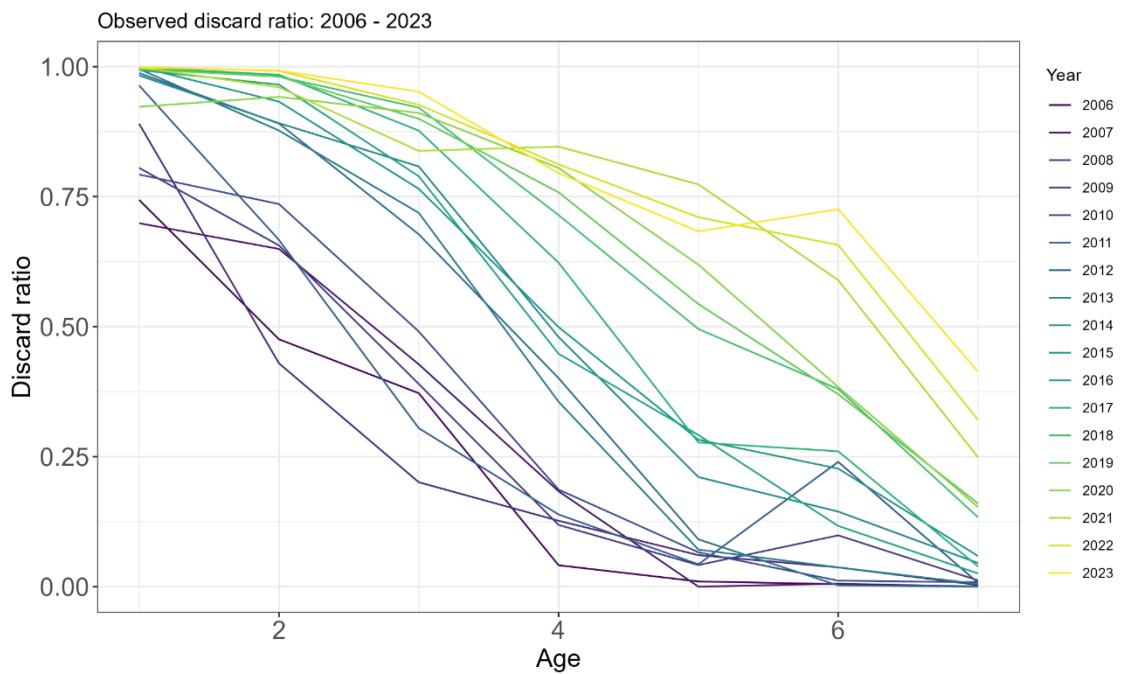
**Figure 14.2.3.1.** Plaice in Division 7.d. Age composition of the landings.



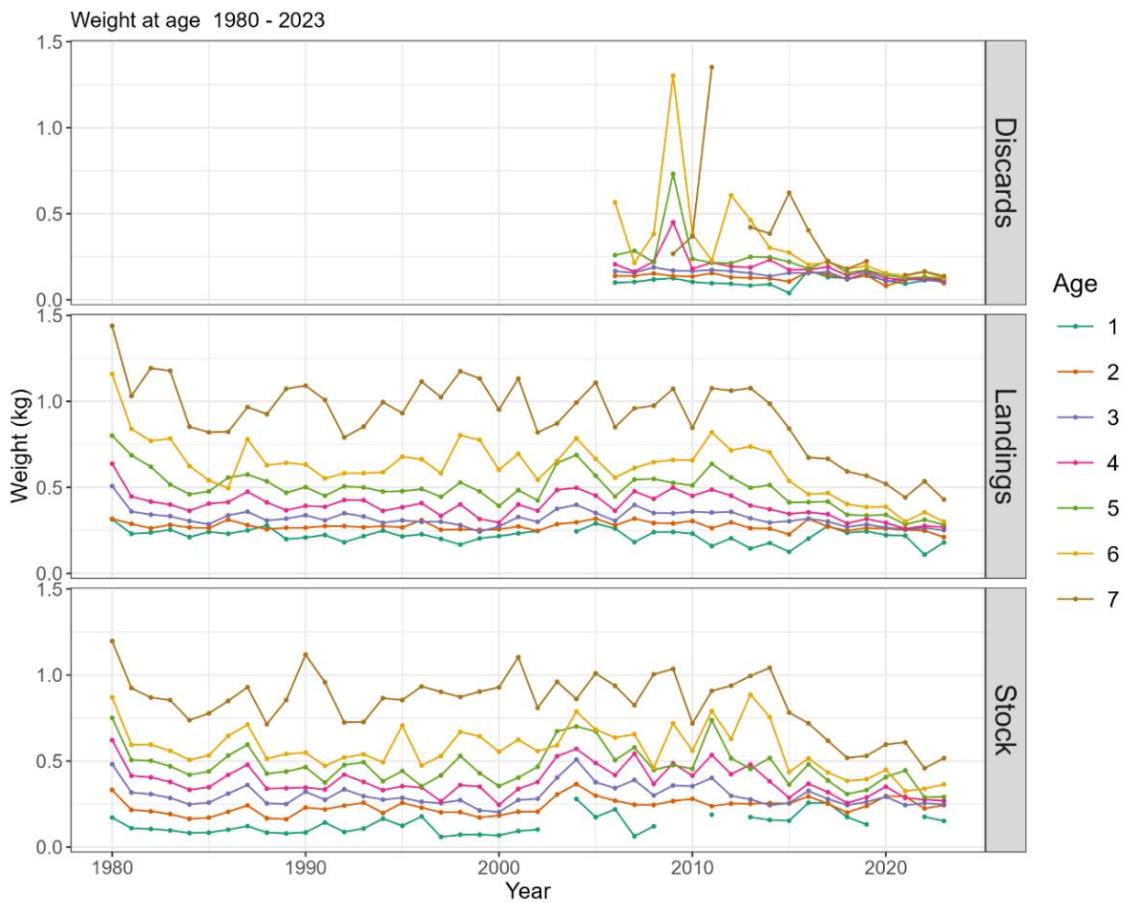
**Figure 14.2.3.2.** Plaice in Division 7.d. Age composition of the discards (data available from 2006 onward).



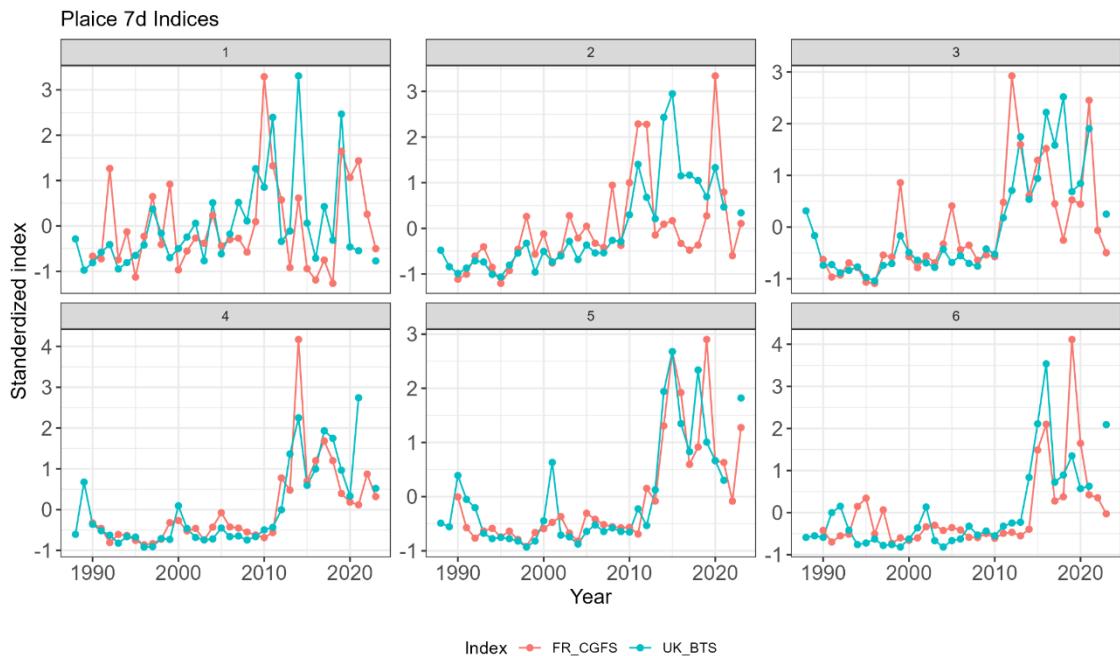
**Figure 14.2.3.3. Plaice in Division 7.d. Discards-at-age ratio (discards numbers/landings numbers) per age.**



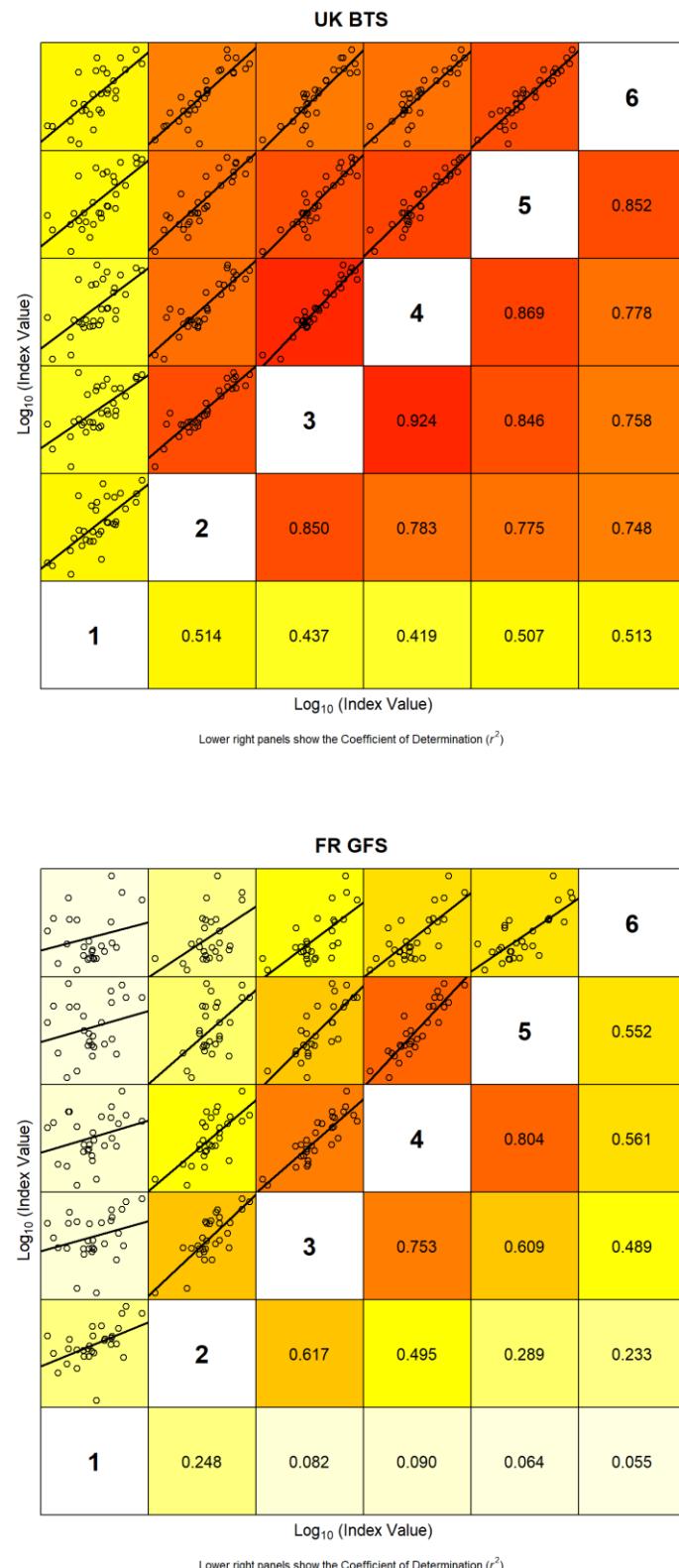
**Figure 14.2.3.4. Plaice in Division 7.d. Discards-at-age ratio (discards numbers/landings numbers) through time.**



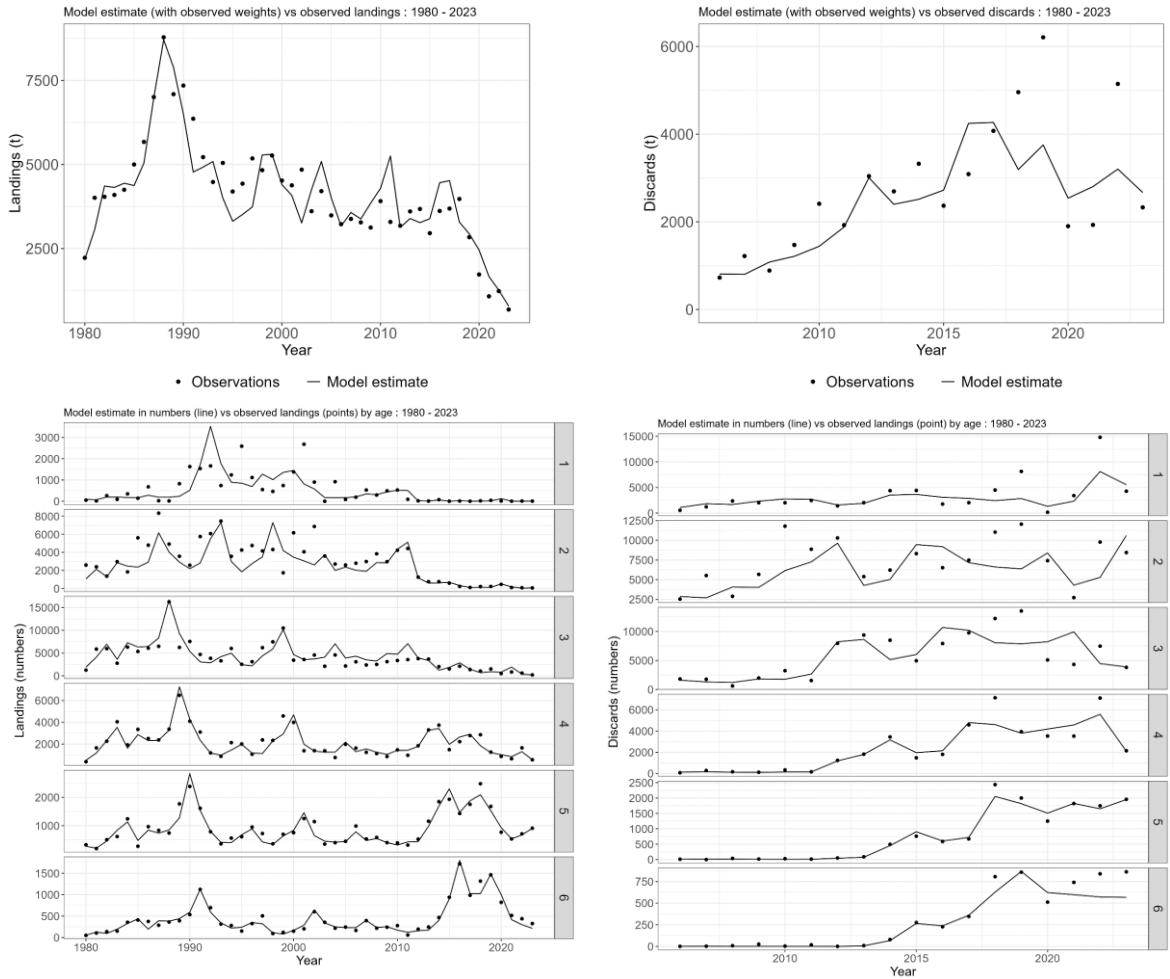
**Figure 14.2.4.1. Plaice in Division 7.d. Stock, Landing and discard weights.**



**Figure 14.2.6.1. Plaice in Division 7.d. Survey Consistency: mean standardized indices by surveys for each age.**



**Figure 14.2.6.3.** Plaice in Division 7.d. UK BTS and FR GFS indices consistencies.



**Figure 14.3.1.1.** Plaice in Division 7.d. Landings (left) and discards (right) time-series: observed (dots) vs. modelled (line), and per age (from 1 to 6: bottom panels).

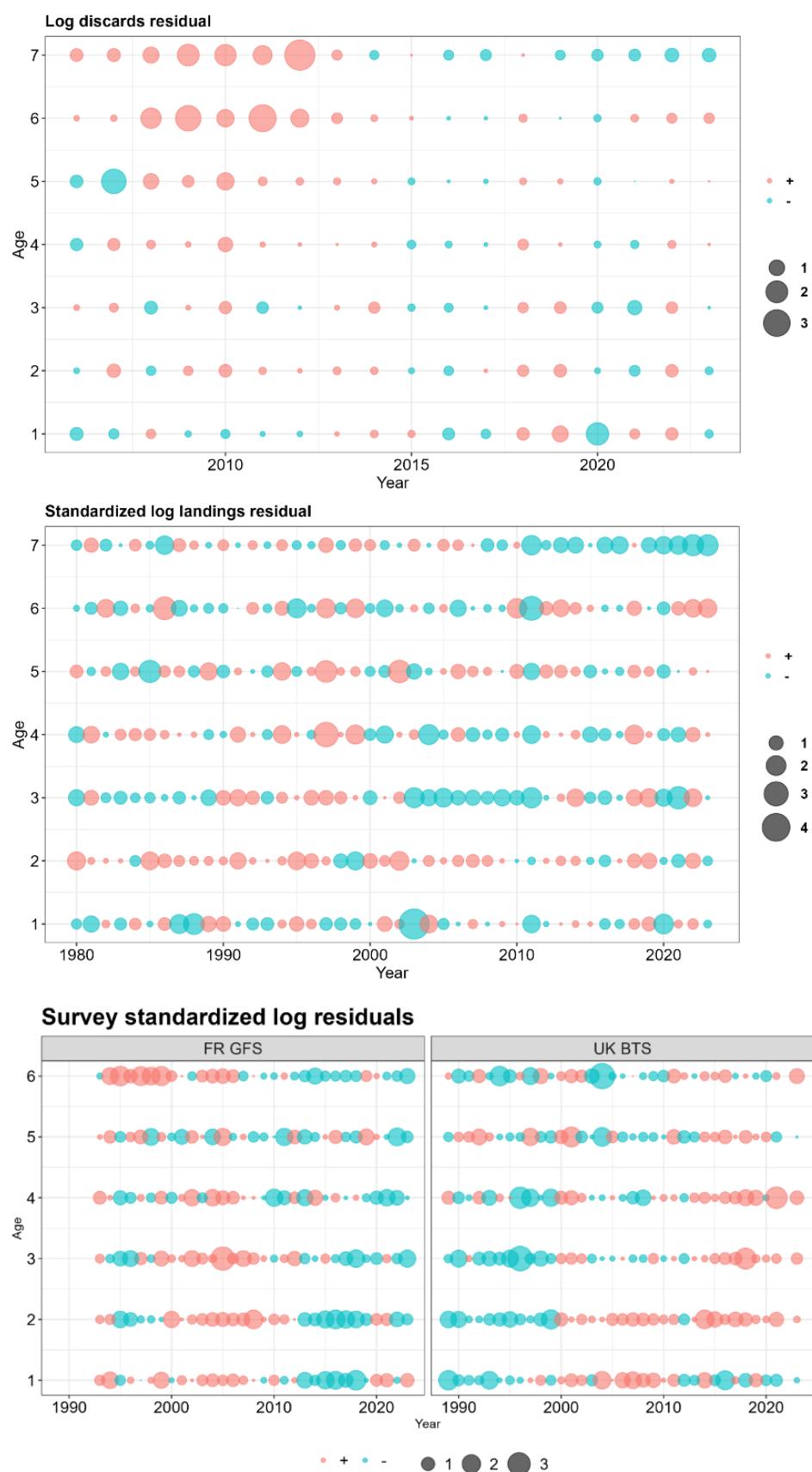


Figure 14.3.1.2. Plaice in Division 7.d. Discards, landings, and survey residuals from the AAP assessment.

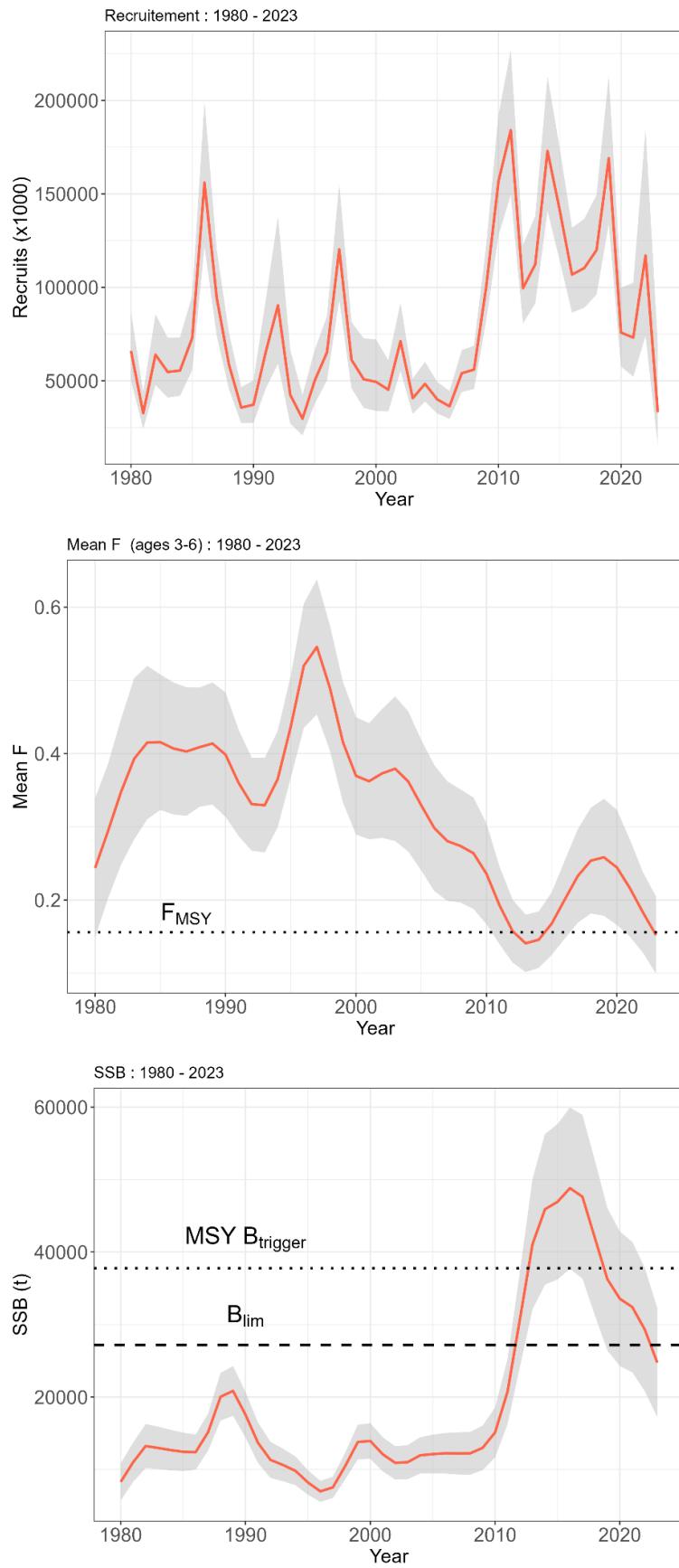


Figure 14.3.1.3. Plaice in Division 7.d. Summary of assessment results.

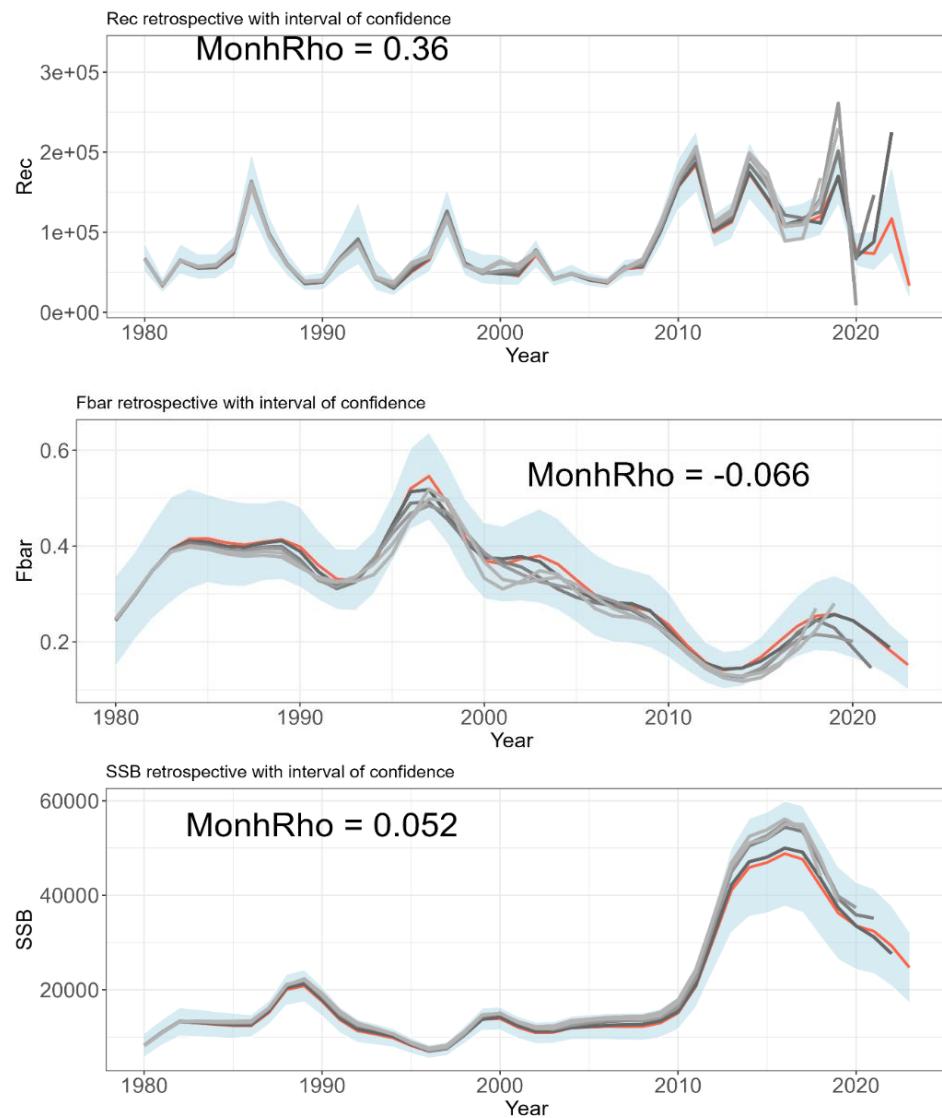


Figure 14.3.1.4. Plaice in Division 7.d. Retrospective patterns.

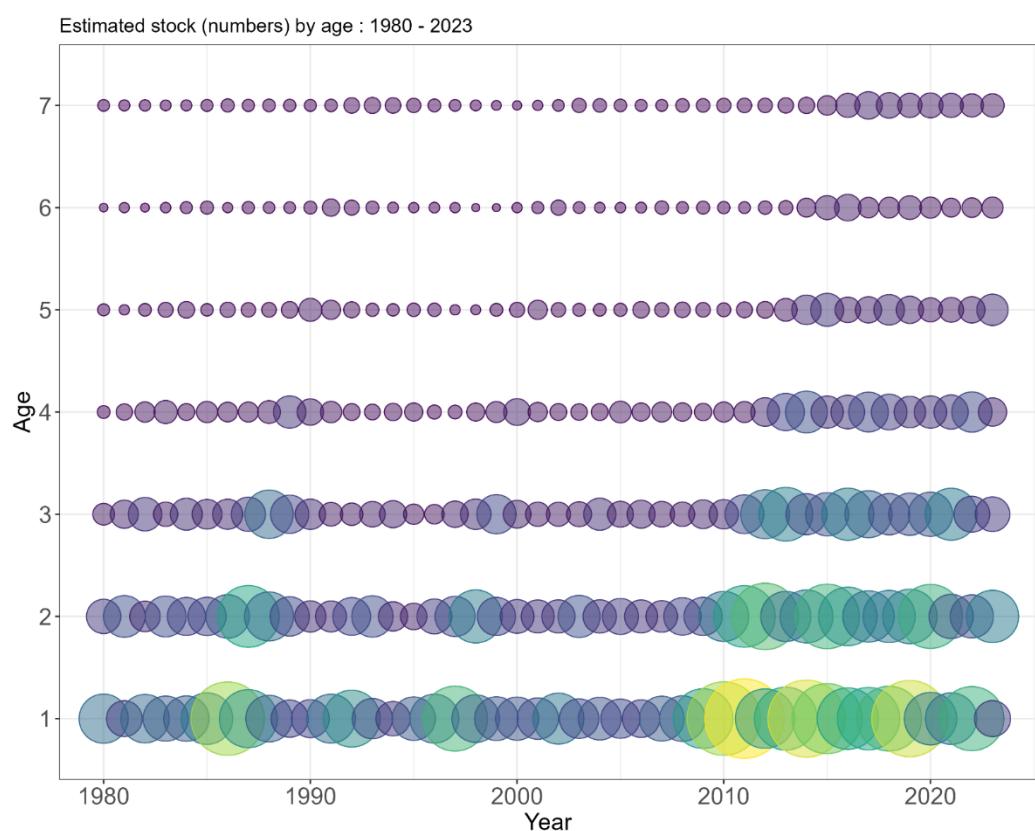
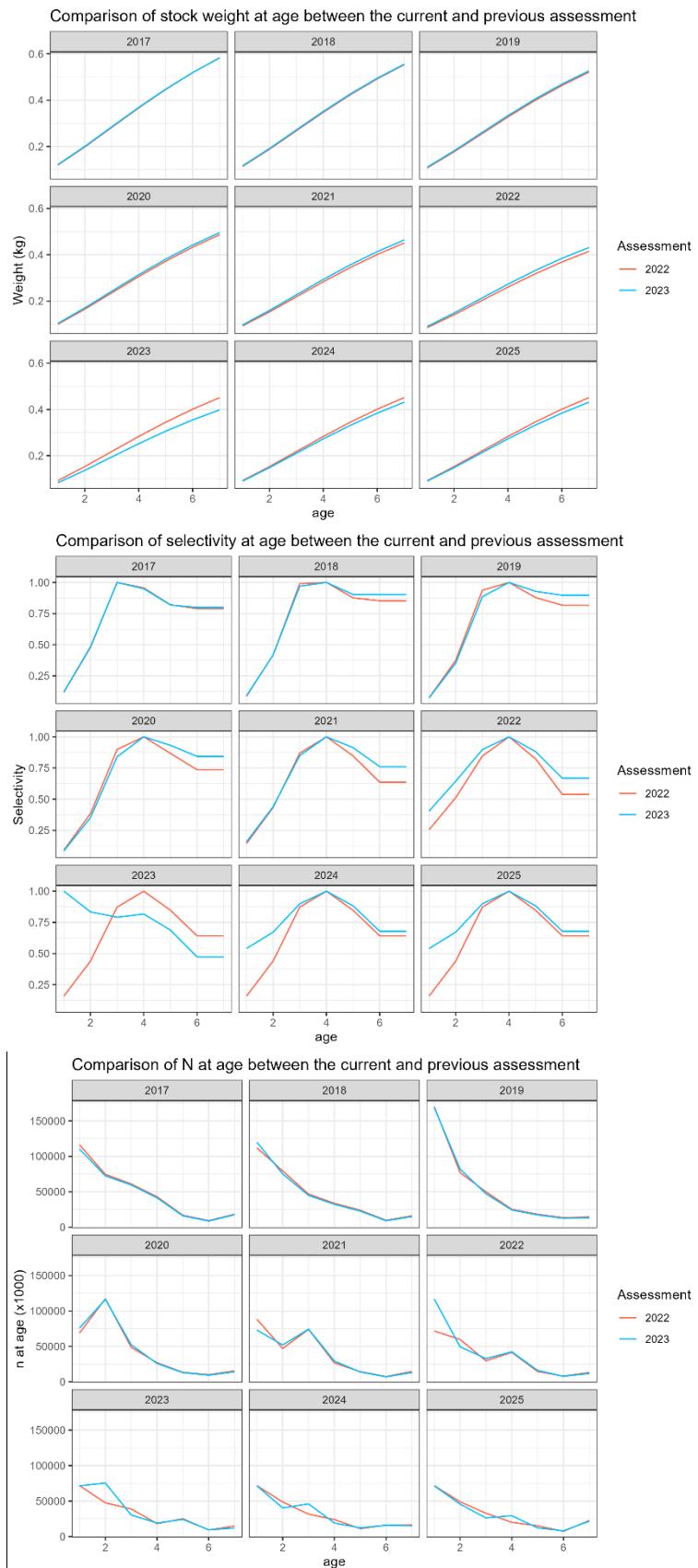


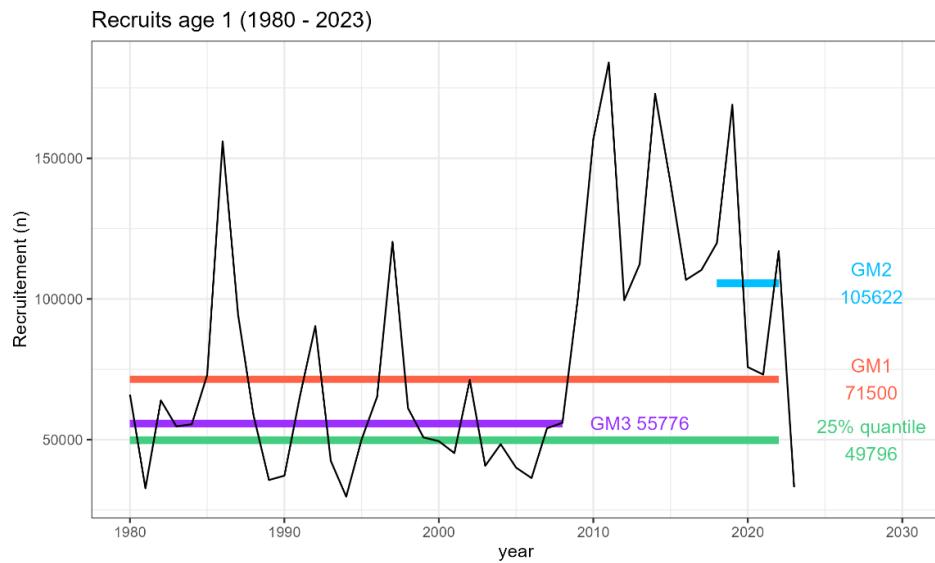
Figure 14.3.1.5. Plaice in Division 7.d. Estimated stock numbers-at-age



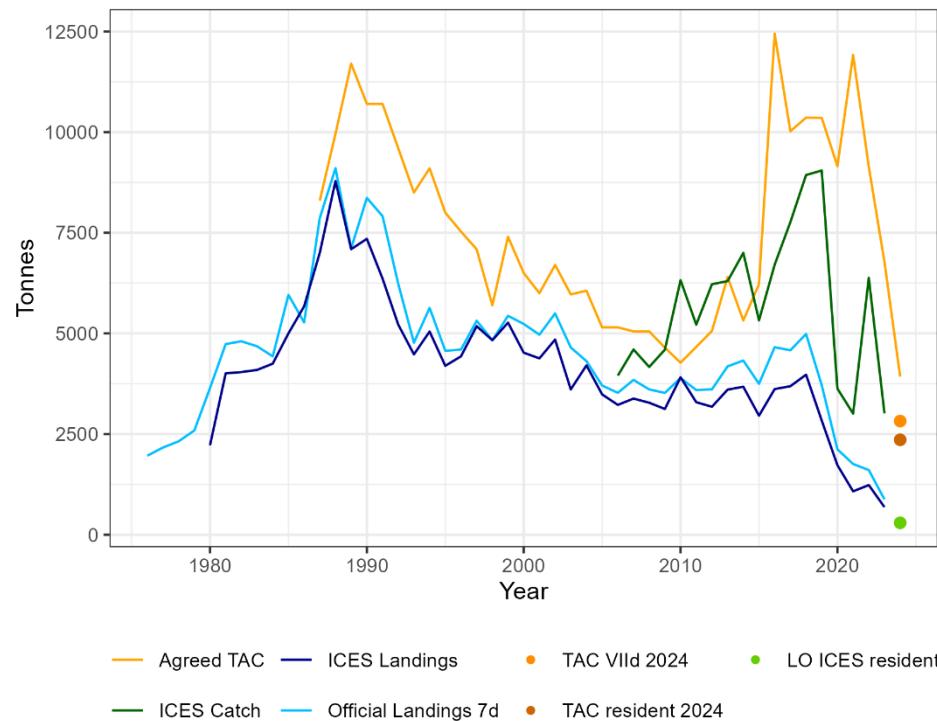
Figure 14.5.1. Plaice in Division 7.d. Comparison between the assessment and forecast carried out during WGNSSK 2023 and WGNSSK 2024. Top: ratio of biomass at age from assessment and forecast at WGNSSK 2024 / biomass at age from assessment and forecast at WGNSSK 2023; Bottom: ratio of N-at-age from assessment and forecast at WGNSSK 2024 / N-at-age from assessment and forecast at WGNSSK 2023.



**Figure 14.5.2. Plaice in Division 7.d. Forecast assumptions comparison between the assessment carried out during WGNSSK 2022 and WGNSSK 2023. Top: stock weight at age; middle: selectivity; bottom: N at age.**



**Figure 14.5.1.2.** Plaice in Division 7.d. Number of individuals of age 1 as estimated by the assessment model (black), with the geometric mean over the period 1980–2022 (red), the geometric mean over 2018–2022 (blue), the geometric mean over the period (1980–2009) (purple), and the 25<sup>th</sup> percentile over the period (1980–2022) (green).



**Figure 14.5.2.1.** Plaice in Division 7.d. Official landings in 7.d (light blue line), ICES landings of resident plaice in 7.d (dark blue line), ICES catches of resident plaice in 7.d (green line) and agreed TAC for 7.d and 7.e plaice (orange line). The orange dot corresponds to 7.d proportion of 2024 TAC, the dark orange dot is the resident plaice in 7.d proportion of 2024 TAC, and the light green dot is the landings of resident plaice in 7.d in 2024 if plaice was under landing obligation in 2024 (ICES catches 2024 minus discards from exempted fleets).

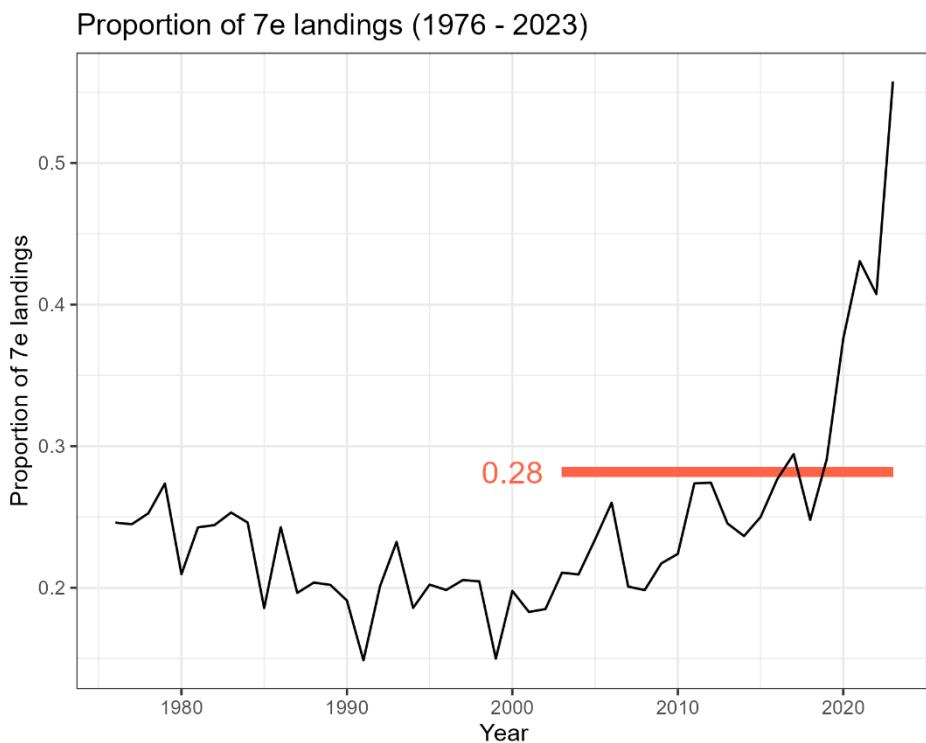


Figure 14.5.2.2. Plaice in Division 7.d. The average official plaice landing proportion between 7.e and 7.d.e over the period 2003–2023.

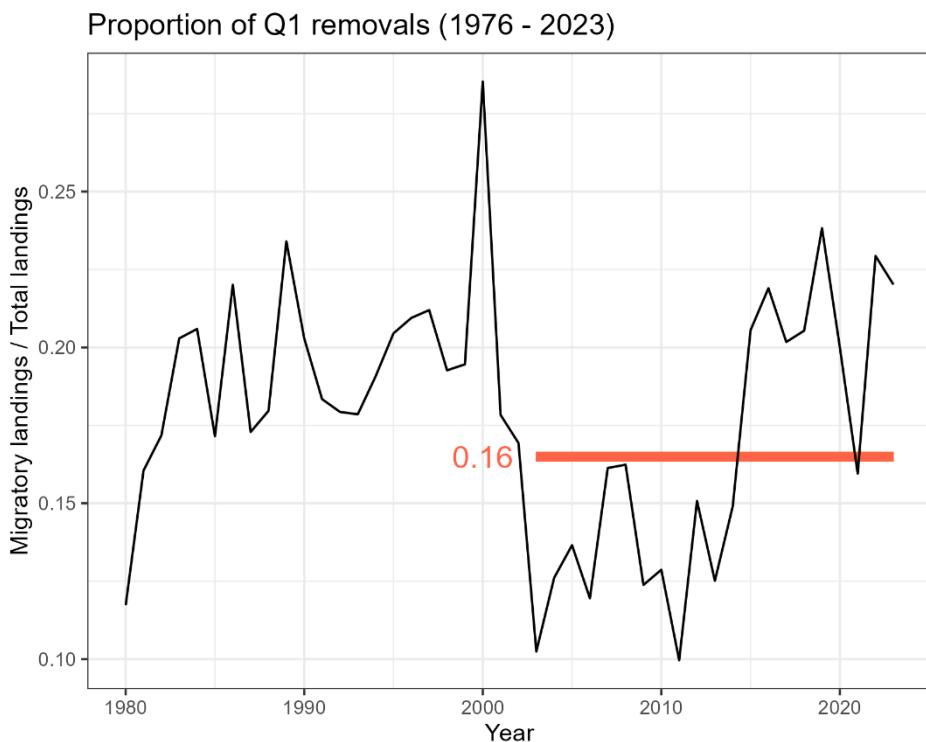


Figure 14.5.2.3. Plaice in Division 7.d. The Q1 removal ratio over the period 2003–2023 to account for migration of mature individuals of plaice from the 7.e and 4.c during Q1.

## Contents

14	Plaice in eastern English Channel .....	907
14.1	General.....	907
14.1.1	Stock definition .....	907
14.1.2	Ecosystem aspects .....	907
14.1.3	Fisheries .....	907
14.1.4	ICES Advice for previous years .....	907
14.1.5	Management.....	907
14.2	Data available .....	908
14.2.1	Catch .....	908
14.2.2	InterCatch .....	908
14.2.3	Age compositions.....	910
14.2.4	Weight-at-age .....	910
14.2.5	Maturity and natural mortality .....	910
14.2.6	Surveys.....	910
14.3	Assessment .....	911
14.3.1	Results.....	911
14.4	Biological reference points .....	912
14.5	Short-term forecasts .....	913
14.5.1	Recruitment estimates.....	913
14.5.2	Calculation of the 7.d resident stock .....	913
14.5.3	Management options tested .....	914
14.6	Quality of the assessment.....	914
14.7	Status of the stock .....	914
14.8	Management considerations .....	915
14.9	Issue for future benchmarks .....	915
14.9.1	Data.....	915
14.9.2	Assessment .....	915
14.9.3	Short-term forecast .....	915
14.10	References .....	916
14.11	Tables and figures .....	917