Blonde Ray and Plaice Landings and Stock Assessment Report for Skerries Bank

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1. Introduction

Devon and Severn Inshore Fisheries and Conservation Authority (D&S IFCA) is committed to the development of the Recreational Sea Angling (RSA) sector. The D&S IFCA's Angling Strategy (2014–2016) identified spatial management to protect important areas for sea angling from conflicts with other gears as a potential contributor to such development. Three sites were chosen to pilot this approach after informal discussions with local anglers; the Skerries Bank, the Emmstrom wreck and Burnham, Berrow and Brean beaches.

The Skerries Bank is a 6.5km sand and shell bank running underwater in a north east direction from Start Point in South Devon. Skerries Bank lies within an area which was designated as the Skerries Bank and Surrounds MCZ in 2013, for various intertidal and sublittoral rock and sediment habitats as well as spiny lobster, *Palinurus elephas*, and the pink sea fan, *Eunicella verrucosa*. The Skerries Bank also sits adjacent to the South Devon Inshore Potting Agreement area, which introduced voluntary closures to trawling from 1978 (Blyth *et al*. 2002), and management through legislation was introduced in the late 1990s. The Skerries Bank itself lies within an area that was closed to trawling under a Devon Sea Fisheries Committee Byelaw, which existed for much of the 20th Century. The Skerries Bank / Start Bay closure to mobile demersal gear is still in place today under D&S IFCA's Mobile Fishing Permit Byelaw.

The Skerries Bank is popular for plaice, *Pleuronectes platessa*, and blonde ray, *Raja brachyura,* which utilise the sand bank features of this area. These are the primary species targeted by commercial, charter and recreational fishers utilising the area. The 2019 baseline report on the temporal and spatial use of the Skerries Bank Angling Zone by different fisheries' user groups (Curtin & West, 2019) highlighted the importance of the site to all three user groups and confirmed that there is spatial and temporal overlap in their use of the site.

Anecdotal information, provided by fishers at the Angling Zone workshops and during interviews carried out during site surveys, suggests an increase in commercial activity targeting rays on the site, and a decrease in plaice within the Angling Zone. Anglers expressed concern that these changes may negatively impact upon their angling opportunities. In order to supplement this previous information, detect whether there has been a more regional change in ray and plaice landings, and further elucidate the nature of potential conflict between the user groups, this report reviews the wider context of trends in ray and plaice stocks, and provides an assessment of local landings. This report should be read in conjunction with the 2019 baseline report on temporal and spatial use of the Skerries Bank Angling Zone by different fishers' user groups.

2. Methodology

Landings data for all UK ports for plaice and blonde ray for the period 2009-2019 were obtained from the Marine Management Organisation (MMO). Landings data for Lemon sole, *Microstomus kitt* and Sole*, Soleidae*, were also obtained as ICES advise that plaice is primarily caught as bycatch in these fisheries (ICES, 2019a).

Although the Skerries Bank is a popular fishing destination, not all vessels will target the area. Therefore, only ports between Salcombe and Exmouth (i.e. those local to the Skerries Bank area) have been included in the analysis: Beesands, Brixham, Dartmouth, Exmouth, Kingsbridge, Kingswear, Paignton, River Dart, Salcombe, Teignmouth and Torquay. It is not possible to confirm that plaice and blonde ray landed to these ports were caught in the vicinity of Skerries Bank, or even solely within the D&S IFCA's District. Data on landings may therefore include catches from outside the D&S IFCA's District, including catches from stocks outside of the Western English Channel.

The landings data were then split into two groups: (i) 10m and under vessels, and (ii) over 10m vessels. The live weight data were compared between years and sectors in order to identify any temporal trends. As stated above, it cannot be confirmed that landings into these ports are from within the D&S IFCA's District only and therefore the results may not be representative of local catches; this uncertainty should be considered when interpreting the results of this report.

The International Council for the Exploration of Seas (ICES) stock assessments for blonde ray, plaice and sole for the Western English Channel (Division VII.e) were also interrogated. These annual assessments are used to inform fisheries managers on future management options such as Total Allowable Catch (TAC) and their consequences for the stock. These data are not specific to the ports local to the Skerries Bank area (between Salcombe and Exmouth), but cover a larger area including the southern part of the D&S IFCA's District. These data, presented in Appendices 1 and 2, were interrogated in order to identify any trends across a broader geographic scale.

3. Results

3.1 Plaice

Combined landings of plaice by all vessels from ports between Salcombe and Exmouth remained fairly consistent from 2009 to 2011, ranging from 588 tonnes in 2009 to 562 tonnes in 2011. This increased in 2013 to 733 tonnes before decreasing in 2014 (660 tonnes) and 2015 (611 tonnes). Landings sharply increased in 2016 (1,080 tonnes), peaking at 1,129 tonnes in 2017 before declining slightly over 2018–2019 (Figure 1).

The patterns observed in the landings data are driven by the over 10 metre vessels, which account for 92% of plaice landings over the study period (2009–2019). For example, landings for this group increased from 578 tonnes in 2015 (94.6% of the 2015 total) to 1,027 tonnes in 2017 (91.0% of the 2017 total), before declining through to 2019 (Figure 1). Although the 10 metre and under vessels comprise a small proportion of overall plaice landings, they follow a similar trend to the over 10-metre vessels (Figure 1). The decrease in landings over 2018 and 2019 coincides with a decrease in the Total Allowable Catch (TAC) for the Western and Eastern English Channel during this period, as outlined below.

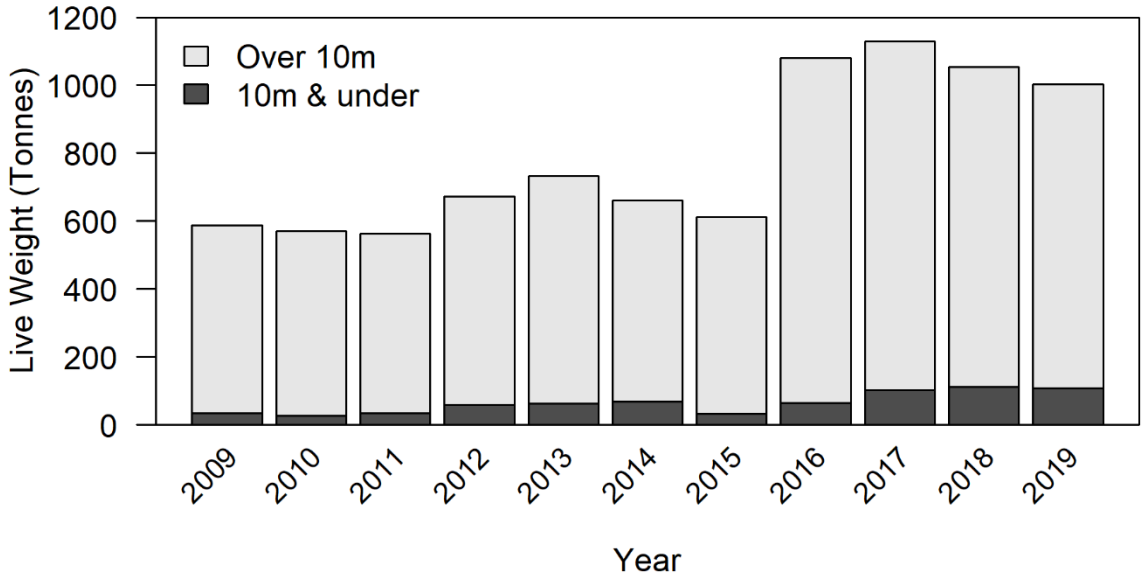

Figure 1. Live weight (tonnes) of plaice landed by all vessels (split by vessel length) to ports between Salcombe and Exmouth, during the period 2009-2019.

A single Total Allowable Catch (TAC) for plaice covers both the Western and Eastern English Channel. The TAC for plaice increased from 4,646 tonnes in 2009 to 12,446 tonnes in 2016, declining to 10,354 tonnes in 2019 (Appendix 1). Official landings of plaice from the Western English Channel ICES Division increased from 975 tonnes in 2009, peaking at 1,911 tonnes in 2017 (ICES, 2019a) (Appendix 1). Landings then decreased in 2018 to 1,644 tonnes; 93% of landings were caught using beam or otter trawls, with the remaining 7% caught using fixed nets and “other” gear. Discards of plaice from fixed nets and “other” gear types are estimated at <3% of the total discards (Appendix 1). Spawning Stock Biomass (SSB) has increased substantially since 2008 and is above the Maximum Sustainable Yield biomass trigger reference point, but has been declining since 2016. In the last three years, recruitment has also been below the long-term average trend. This, coupled with the decline in SSB, could affect stock levels in the broader geographical area.

ICES have advised that plaice in Division VII.e is considered primarily to be a bycatch in the sole fishery, with substantial discards, and so changes in effort in the directed sole fishery will impact fishing mortality on plaice (ICES, 2019a) indicating that changes in effort in the sole fishery may impact fishing mortality of plaice and in turn landings. Effort data for the sole fishery were not available for this report, but landings of sole for all vessels from ports analysed (between Salcombe and Exmouth) varied during the 2009–2019 period, and have been higher in recent years than in 2009–2011 (Figure 2).

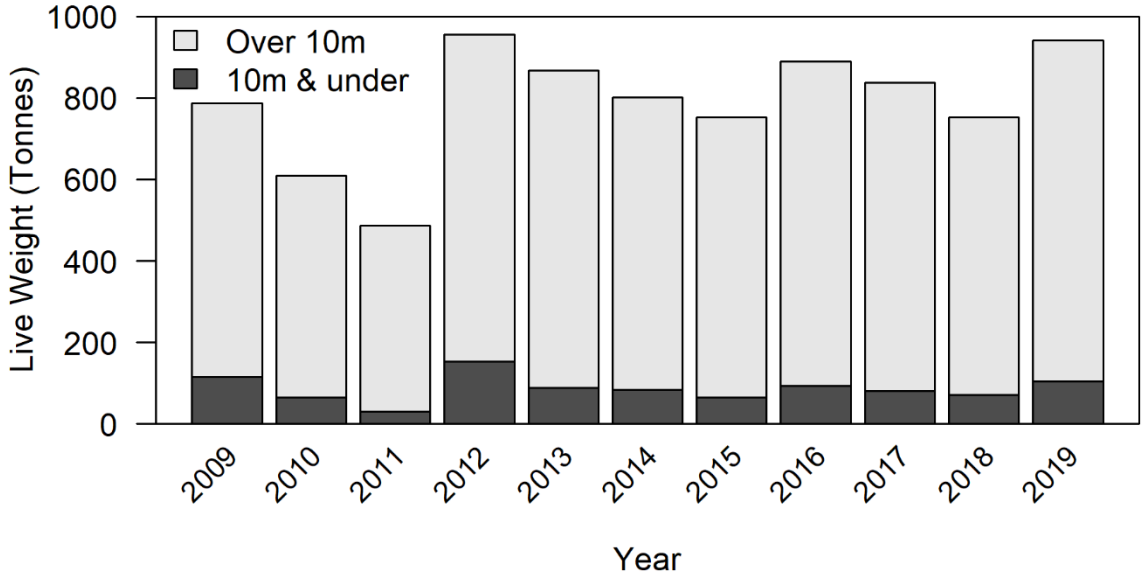

Figure 2. Live weight (tonnes) of sole landed by all vessels (split by vessel length) to ports between Salcombe and Exmouth, during the period 2009-2019.

3.2 Blonde ray

Notwithstanding some interannual variability, landings of blonde ray to ports between Salcombe and Exmouth have shown a generally increasing trend over the 2009–2019 period, peaking at 177 tonnes in 2019 (Figure 3). Vessels over 10 metres account for the majority (74%) of total blonde ray landings over this period.

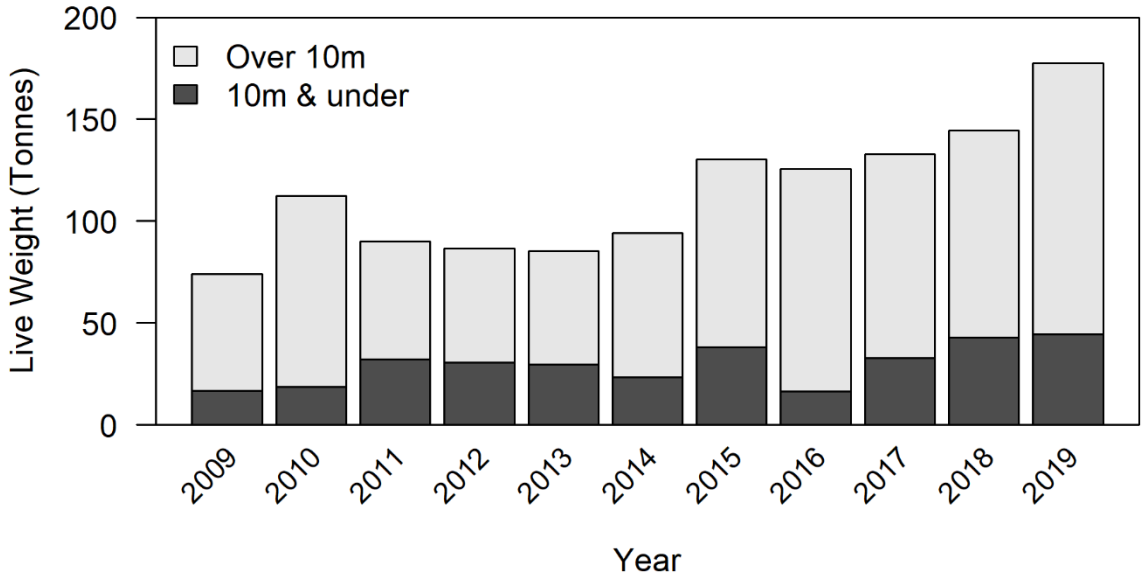

Figure 3. Live weight (tonnes) of blonde ray landed by all vessels (split by vessel length) to ports between Salcombe and Exmouth, during the period 2009–2019.

No quantitative stock assessments for blonde ray have been undertaken for the Western English Channel and therefore ICES cannot advise on the stock's exploitation status relative to Maximum Sustainable Yield (MSY). The data available from ICES indicate an increase in the estimated reported landings from 414 tonnes in 2011 to 708 tonnes in 2015. Estimated landings then decreased through 2016 and 2017 (Appendix 2). Of the 492 tonnes landed in 2017, ICES estimate that fixed nets and other gear accounted for 51% of the landings, with the rest being made up of landings from beam and bottom trawls (Appendix 2). Discards are unquantified for this stock, so total catch is unknown (ICES 2019b).

There is no species-specific TAC for blonde ray. Fishing opportunities are managed through an overall TAC by management unit, which includes all species of skates and rays (ICES, 2019b). Therefore, ICES provide advice on the landings for this species for the Western English Channel (Division VII.e), which increased from 310 tonnes in 2015 to 333 tonnes in 2018 and declined to 266 tonnes in 2019 (Appendix 2). No advice data are available prior to 2015.

4. Discussion

Recreational and commercial fisheries are complex social-ecological systems that are constantly adapting due to fishers' priorities and behaviours (Brownscombe *et al*., 2019, Matsumura *et al*., 2019). These stakeholder groups play an equally important role in inshore coastal environments (Kearney *et al*., 2002). However, conflict between the commercial and recreational sector over shared resources, spatial access and different management measures is a persistent issue for the majority of developed countries (Brownscombe *et al*., 2019, Kearney *et al*., 2002). The 2019 Skerries Bank Baseline Report (Curtin & West, 2019) highlighted that there is spatial overlap between all user groups, with conflict over shared resources, particularly blonde ray and plaice. These existing conflicts within and between user groups must be acknowledged and addressed in order for fisheries management to be successful (Arlinghaus *et al*., 2019).

Although plaice is an important species for fishers in the Skerries Bank, ICES suggest that it is primarily caught as bycatch in the targeted sole fishery in the Western English Channel, with substantial discards (ICES, 2019a). Results from the Skerries Bank Baseline Report (Curtin & West, 2019) indicate that during the summer months commercial fishing for sole does take place within the Skerries Bank Angling Zone. Consequently, changes in effort in the sole fishery may impact fishing mortality of plaice and in turn landings. For example, the increase seen in sole landings over the 2009–2019 period could be attributed to the decline seen in plaice landings for the same period, due to discards associated with the sole fishery. However, it cannot be confirmed that landings of sole (or plaice or blonde ray) into the ports analysed are from within the D&S IFCA's District only and therefore the results may not be representative of local catches.

Blonde ray is an important commercial species and accounts for around one third of the skate landings in the Western English Channel (ICES, 2019b). It is a bycatch in demersal fisheries but may be targeted in areas of high local abundance such as sandbank habitats due to its high market value. Restrictions in fishing for undulate ray, *Raja undulata,* from 2009 onwards may have displaced fishing effort to this species (ICES, 2019b), which coincides with the increase seen in landings from 2009 to 2010 and onwards (Figure 3).

The D&S IFCA's Voluntary Code Of Conduct discourages commercial fishers from targeting plaice within the Angling Zone. The baseline report highlighted that plaice were not being targeted within the Angling Zone (Curtin & West, 2019), suggesting that the commercial sector adhere to the Voluntary Code of Conduct. However, awareness of the code of conduct is relatively low. The monitoring surveys presented in the baseline report (Curtin & West, 2019) were conducted during 2015–2016, which coincides with an increase in landings for plaice and blonde ray from 2014–2015 (Figure 1 and 3) and an increase in TAC for plaice. This may indicate an increase in commercial effort for these species outside of the Skerries Bank Angling Zone.

Anecdotal reports from recreational sea anglers, obtained during interviews conducted during the local monitoring surveys (Curtin & West, 2019), suggested that there has been a decline of fish within the Skerries Bank Angling Zone, which could be the result of increased commercial effort with the broader geographic area. For example, an increase in plaice catches occurring outside of the Skerries Bank area may have a detrimental impact on recreational catches within the Angling Zone. This is particularly the case if individuals move between areas, or if juveniles are being removed from the population prior to spawning (which occurs January to March); individuals are more vulnerable to fishing pressure during this period (Seafish, 2018), and removal of individuals that have not spawned prevents them contributing to subsequent recruitment. Two main areas in the Central Western Channel, south of Start Point and Portland Bill, have previously been recognised as important spawning grounds (Pawson, 1995). Though tagging studies of juvenile plaice in the Irish Sea and North Sea suggest that individuals remain in the nursery areas to which they recruited for up to two years, previous reports on plaice have highlighted that there is connectivity between the Eastern English Channel and Western English Channel populations (Hunter *et al*., 2004; Kell *et al*., 2004; Burt *et al*., 2006; ICES, 2019c). The lack of information surrounding the connectivity of blonde ray stocks, coupled with a lack of data on spawning, nursery grounds and length of maturity limit the knowledge on stock structure and recruitment for this species (Seafish, 2019).

It is important to note that, within this report, it was not possible to determine whether landings into the ports analysed were of fish caught within the Skerries Bank area, the wider D&S IFCA's District, or further afield in the Western English Channel. The follow-up engagement workshops recommended in the 2019 baseline report will help to establish the current perceptions of all user groups of the level of commercial plaice and ray fishing effort within the Angling Zone, the level of conflict between the different sectors, and how these have changed over recent years and in relation to landings data.

5.References

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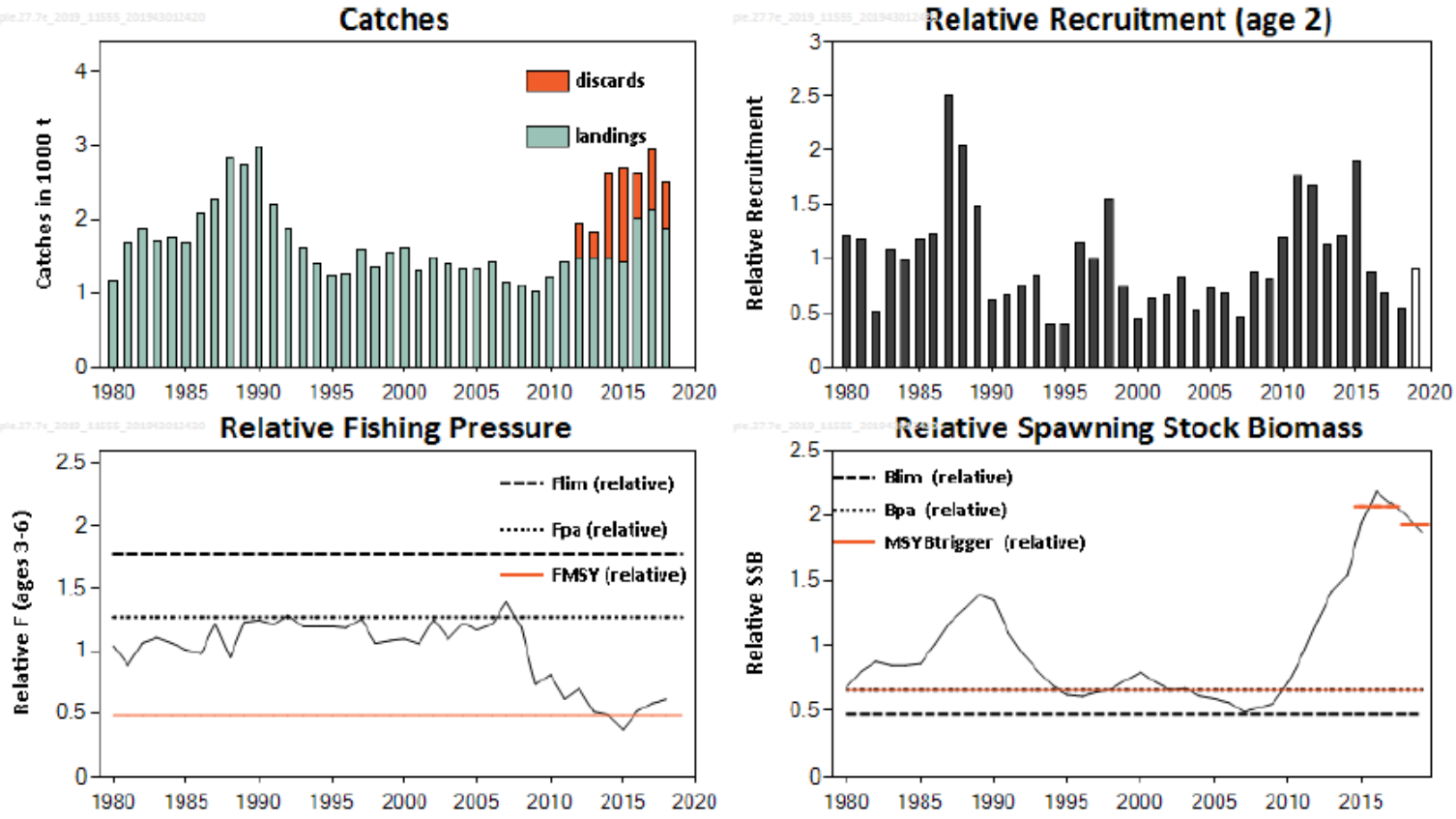
Appendix 1. ICES Historical Advice, Catch and Management of Plaice, from ICES (2019a).



Year	ICES advice	Catch corresponding to advice 7.e stock	Landings corresponding to advice 7.e stock	Catch corres-ponding to advice 7.e area	Landings corresponding to advice 7.e area	Agreed TAC 7.d + 7.e	Official landings in 7.e	ICES discard estimates in 7.e	ICES landings 7.e plaice stock
2009	Same advice as last year		-			4646	975	-	1024
2010	Substantial reduction in catch		-			4274	1123	-	1207
2011	See scenarios		-			4665	1354	-	1417
2012	MSY Framework (F_{MSY})		< 1440			5062	1363	380	1492
2013	MSY Framework (F_{MSY})		-		< 2100	6400	1360	291	1472
2014	MSY transition		-		< 1397	5322	1340	1006	1490
2015	MSY Framework (F_{MSY})	< 1885	< 1546		< 1318	6223	1249	1172	1424
2016	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 2262	≤ 1697	≤ 1944	≤ 1458	12446	1779	500	2013
2017	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 2714	≤ 1391	≤ 2454	≤ 1258	10022	1911	593	2128
2018	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 3257	≤ 2239	≤ 2946	≤ 2025	10360	1640*	490	1880
2019	Precautionary approach	≤ 3648		≤ 3283		10354			
2020	Precautionary approach	≤ 2721		≤ 2456					

* Preliminary.

History of the catch and landings

Table 7 Plaice in Division 7.e. Catch distribution of plaice in 7.e by fleet in 2018 as estimated by ICES.*

Catch	Landings				Discards			
	Beam trawl	Otter trawl	Fixed nets	Other gear	Beam trawl	Otter trawl	Fixed nets	Other gear
2134 t	70%	23%	5%	2%	74%	24%	< 1%	2%
	1644 t				490 t			

*Catch and the catch contribution by fleet correspond to the amount taken in Division 7.e and do not include the catch taken in Division 7.d.

Appendix 2. ICES historical advice catch and management of blonde ray, from ICES (2019b)

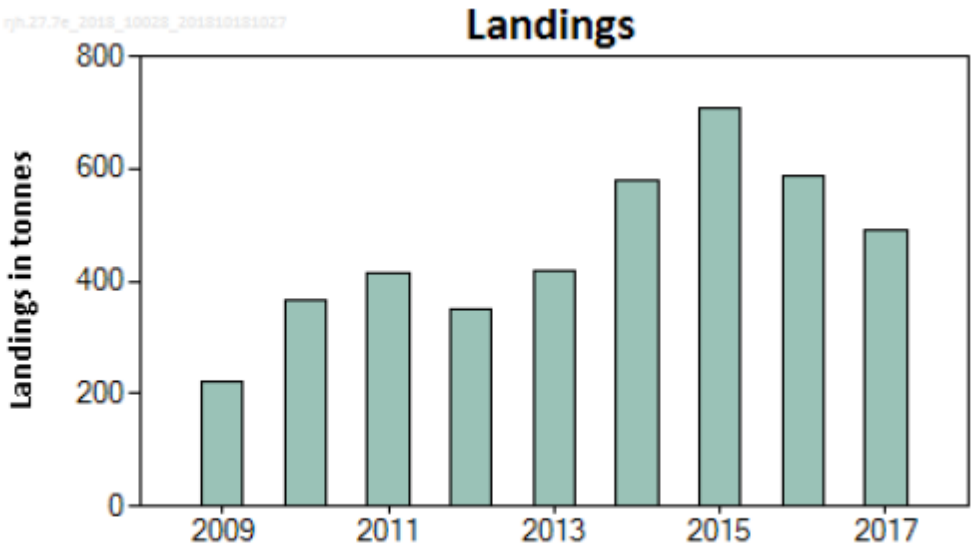


Figure 1 Blonde ray in Division 7.e. ICES estimated landings (in tonnes).

History of the advice, catch, and management

Table 5 Blonde ray in Division 7.e. History of ICES advice and ICES estimates of landings.* All weights are in tonnes.

Year	ICES advice	Landings corresp. to advice	ICES species-specific landings: minimum estimate based on reported landings**
2011	No specific advice		414
2012	No specific advice		349
2013	No TAC, species-specific measures needed, catch to decrease by at least 20%	-	419
2014	No new advice, same as 2013	-	579
2015	*Status quo* for skate TAC	310	708
2016	No new advice, same as 2015	310	587
2017	Precautionary approach	≤ 333	492
2018	Precautionary approach (same value as advised catches for 2017)	≤ 333	
2019	Precautionary approach	≤ 266	
2020	Precautionary approach	≤ 266	

* There is no specific TAC for this stock. Fishing opportunities are managed through an overall TAC by management unit, which includes all species of skates and rays.

** Revised in 2018 (ICES, 2018).

History of the catch and landings

The distribution of this stock does not extend into the NEAFC regulatory area.

Table 6 Blonde ray in Division 7.e. Catch distribution by fleet in 2017 as estimated by ICES.

Catch (2017)	Landings				Discards
	beam trawl	bottom trawls	fixed-nets	other gear	
Unknown	17%	32%	43%	8%	Unquantified
	492 tonnes				