

## EU request to provide estimates of the likely catches in 2019 of specific bycatch/non-targeted stocks with zero or low catch advice, assuming ICES advice for target stocks is followed

### Service summary

ICES has provided estimates of the likely catches for a number of stocks under the assumption that the TACs for other stocks in their area are set in line with ICES advice.

For cod (*Gadus morhua*) in divisions 7.e–k and whiting (*Merlangius merlangus*) in divisions 7.b–c and 7.e–k, it is possible to use ICES 2018 Celtic Sea mixed-fisheries advice as the basis. If catches of haddock in 2019 correspond to the ICES advice (haddock scenario), this would result in 2019 catches of:

- 1717 t for cod in divisions 7.e–k;
- 10 036 t for whiting in divisions 7.b–c and 7.e–k.

For plaice (*Pleuronectes platessa*) in divisions 7.h–k and whiting in Division 6.b, it can be assumed that catches will approximate to recent landings, topped up using recent discard rates. This would approximate to catches in 2019 of:

- 156 t for plaice in divisions 7.h–k;
- 54 t whiting in Division 6.b.

For whiting in Division 7.a, cod in Division 6.a, and whiting in Division 6.a, the *status quo* fishing mortality scenario provides the best estimates of catches. This would correspond to catches in 2019 of:

- 1171 t for whiting in Division 6.a.

There is currently no updated 2019 forecast for whiting in Division 7.a and cod in Division 6.a.

- Revised advice is planned for whiting in Division 7.a.
- Last year's advice forecasted catches in 2018 of 1826 t for cod in Division 6.a.

### Request

EU DGMARE has asked ICES to evaluate the following:

*Given the 0 TAC or very low advice for:*

*cod in divisions 7.e–k*

*cod in Division 6a*

*whiting in Division 6a*

*whiting in Division 6b*

*whiting in Division 7a*

*whiting in divisions 7.b–c and 7.e–k*

*plaice in divisions 7.h–k*

#### **ICES is requested to:**

- Estimate for each of the TAC/stocks above the amount in tonnes that is likely to be caught by operators who fish for other species in these areas (bycatch/non-targeted).

- assume that the other TACs in the same area are set based on the latest ICES advice [2018].

## Basis of the service

This technical service was completed using the results of mixed-fisheries analysis, where they were available (ICES, 2018a). For stocks without mixed-fisheries analysis, the relative change in mortality implied by advice for the main target species in an area, together with expert knowledge of the technical interactions, was taken into account to determine whether there could be a basis to use a fishing mortality other than the *status quo* fishing mortality scenario. For the two data-limited stocks (i.e. those without forecasts), recent landings topped up with recent discards were used to estimate catches.

## Results

### Cod in divisions 7.e–k

Cod in this area is landed as a bycatch species by many métiers in the Celtic Sea. The percentage of cod in the total landings is less than 7% for most of the main métiers. The majority of the catch is in mixed fisheries using bottom trawls targeting other gadoids (haddock and whiting), as well as slope species such as hake, monkfish, and megrim (Table 1). There are also catches in fisheries targeting *Nephrops* and flatfish. Therefore, with a zero TAC, cod will become a choke species for these fisheries-targeted species. Discards of cod in this area are generally around 10%, but have been higher in the early 2000s when TACs were restrictive and bycatches continued in the mixed fisheries.

**Table 1** Cod in divisions 7.e–k. Catch distribution by fleet in 2017 as estimated by ICES.

Catch (2017)	Landings					Discards
	Otter trawl	Beam trawl	Gillnet	Seine	Other	
2354 tonnes	81.60%	6.8%	5.60%	4.90%	0.80%	117 tonnes
2237 tonnes						

The mixed-fisheries advice indicates that cod is the most restrictive of the three stocks included in the analysis (ICES, 2018a). Under a *status quo* effort scenario catches of cod would be around 2453 t. However, for several other stocks, the ICES single-stock advice overlaps with that for cod in the Celtic Sea, implying large fishing mortality, harvest rate, or catch reductions (Table 2).

**Table 2** Percentage change in fishing mortality, harvest rate, or advised catch between 2018 and 2019, as implied by ICES advice for the main demersal stocks in the Celtic Sea.

Species	Corresponding EC TAC area	ICES stock code	F <sub>2018</sub>	Advised F 2019	Change*
Cod ( <i>Gadus morhua</i> )	7.b, 7.c, 7.e–k, 8, 9, and 10; Union waters of CECAF 34.1.1	cod.27.7e–k	0.612	0	–100%
Plaice ( <i>Pleuronectes platessa</i> )	7.h, 7.j, and 7.k	ple.27.7h–k	NA	NA	–100%
Haddock ( <i>Melanogrammus aeglefinus</i> )	7.b–k, 8, 9, and 10; Union waters of CECAF 34.1.1	had.27.7b–k	0.66	0.4	–39%
Common sole ( <i>Solea solea</i> )	7.f and 7.g	sol.27.7fg	0.36	0.27	–25%
Norway lobster ( <i>Nephrops norvegicus</i> )	7	nep.fu.19	4.4**	3.8	–14%
Megrim ( <i>Lepidorhombus spp.</i> )	7	meg.27.7b–k8abd	0.22	0.191	–13%
Norway lobster ( <i>Nephrops norvegicus</i> )	7	nep.fu.22	12.1* *	11.3	–7%
Whiting ( <i>Merlangius merlangus</i> )	7.b, 7.c, 7.d, 7.e, 7.f, 7.g, 7.h, 7.j, and 7.k	whg.27.7b–ce–k	0.54	0.52	–4%
Anglerfish ( <i>Lophiidae spp.</i> )	7	mon.27.78abd	0.28	0.28	0%
Anglerfish ( <i>Lophiidae spp.</i> )	7	ank.27.78abd	NA	NA	0%
Common sole ( <i>Solea solea</i> )	7.h, 7.j, and 7.k	sol.27.7h–k	NA	NA	16%
Plaice ( <i>Pleuronectes platessa</i> )	7.f and 7.g	ple.27.7fg	NA	NA	20%
Hake ( <i>Merluccius merluccius</i> )	6 and 7; Union and international waters of 5.b; international waters of 12 and 14	hke.27.3a46–8abd	0.23	0.28	22%
Common sole ( <i>Solea solea</i> )	7.e	sol.27.7e	0.22	0.29	32%
Norway lobster ( <i>Nephrops norvegicus</i> )	7	nep.fu2021	1.7**	6	253%

\* % change in fishing mortality, harvest rate, or catch advised by ICES for 2019 relative to 2018.

\*\* Fishing mortality or harvest rate in 2017.

While zero catch is also advised for plaice in divisions 7.h, 7.j, and 7.k, this stock is a very minor bycatch and is not a key driver in mixed-demersal fisheries. The next most restrictive advice for a species targeted in the mixed-fishery is for haddock.

The mixed-fishery analysis of the main stocks (cod, haddock and whiting; ICES 2018) indicates that if catches of haddock in 2019 correspond to the ICES advice (haddock scenario), then cod catches would be expected to be 1717 t in 2019. This would result in a cod SSB in 2020 of 5043 t. This is 31% below B<sub>lim</sub> but 39% higher than the 2019 SSB estimate (see Table 2 and 4 in ICES, 2018).

### Whiting in divisions 7.b–c and 7.e–k

Whiting in this area is landed as both a target and bycatch species by many métiers in the Celtic Sea. The percentage of whiting in the total landings can be high: 18–43% for the top three whiting catching métiers. Otter trawls account for the majority of landings and discards (Table 3).

**Table 3** Whiting in divisions 7.b–c and 7.e–k. Catch distribution by fleet in 2017 as estimated by ICES.

Catch	Landings					Discards				
	Otter trawls	Seine nets	Beam trawls	Midwater	Other gears	Otter trawls	Seine nets	Beam trawls	Midwater	Other gears
16198 t	77%	14%	2%	1%	6%	61%	21%	5%	1%	12%
	11693 t					4505 t				

As for cod, the results from the mixed-fisheries advice have been used (ICES, 2018a). After cod, the next most restrictive advice for a species targeted in the mixed-fishery is for haddock, which is often bycaught in the same fisheries as whiting. If catches of haddock in 2019 correspond to the ICES advice (haddock scenario), whiting catches would be expected to be 10 036 t in 2019 (see Table 2 of ICES, 2018a).

#### Plaice in divisions 7.h–k

Plaice is not a target species of any fishery operating within ICES divisions 7.h–k. Plaice represents a very minor proportion of the catches. The majority of the landings are taken in otter trawl fisheries, with beam trawl fisheries also being important (Table 4). Although annual discard estimates cannot be estimated due to insufficient sampling information, discards are in the order of 30% and may be increasing.

**Table 4** Plaice in divisions 7.h–k. Catch distribution by fleet in 2017 as estimated by ICES.

Catch	Landings			Discards
Unknown	Otter trawl 75%	Beam trawl 17%	Other gears 8%	Discards in Division 7.h are unknown. Discards in divisions 7.j–k are in the order of 30% of the catch for otter trawls (average 2007–2017).
	115 tonnes			

ICES has never provided catch advice for this stock because of the uncertain discard rates. Recent landings have been in the order of 110 tonnes (ICES, 2018c). In Division 7.j, plaice catches are mainly restricted to trawl fisheries in inshore areas, whereas catches in Division 7.h are more often linked to fisheries for sole. It is difficult to identify a target species in the mixed-fishery that can be closely linked with plaice. There is no quantitative basis to forecast catch advice, but it is reasonable to assume that catches will be in line with the sum of recent landings plus and discards which would approximate to 156 tonnes.

#### Cod in Division 6.a

The highest catches of cod are taken in the demersal finfish-directed otter trawl fisheries in Division 6.a (Table 5). Cod are a very minor bycatch (< 2%) in these fisheries which primarily target anglerfish or haddock.

**Table 5** Cod in Division 6.a. Catch distribution by fleet in 2016 as estimated by ICES.

Catch	Landings				Discards		
1745 tonnes	Demersal finfish trawl 95%	<i>Nephrops</i> fleet 0.95%	Gillnet 3.1%	Other 0.67%	Demersal finfish trawl 63%	<i>Nephrops</i> fleet 31%	Other 5.9%
	893 tonnes				852 tonnes		

ICES advice for the main target species in demersal trawl fisheries in Division 6.a implies a 14% reduction in fishing mortality on haddock and a 20% increase in catches of anglerfish (Table 6). Both of these stocks overlap and are linked with cod in Division 6.a, but they also extend into the North Sea. Assuming that the TACs in Division 6.a are set in line with the advice for haddock and anglerfish, the most reasonable assumption is that fishing mortality in cod will continue at around recent values.

**Table 6** Percentage change in fishing mortality, harvest rate, or advised catch between 2018 and 2019, as implied by ICES advice for the main demersal stocks in the West of Scotland and Rockall.

Species	Corresponding EC TAC area	ICES stock code	F <sub>2018</sub>	Advised F 2019	Change *
Cod ( <i>Gadus morhua</i> )	6a; Union and international waters of 5b east of 12°00'W	cod.27.6a	0.79**	0	-100%
Whiting ( <i>Merlangius merlangus</i> )	6; Union and international waters of 5b; international waters of 12 and 14	Whg.27.7a	0.053	0	-100%
Norway lobster ( <i>Nephrops norvegicus</i> )	6; Union and international waters of 5b	nep.fu.13	17.6**	15.1	-14%
Haddock ( <i>Melanogrammus aeglefinus</i> )	Union and international waters of 5b and 6a	had.27.46a20	0.226	0.194	-14%
Haddock ( <i>Melanogrammus aeglefinus</i> )	Union and international waters of 6b, 12, and 14	had.27.6b	0.195	0.2	3%
Norway lobster ( <i>Nephrops norvegicus</i> )	6; Union and international waters of 5b	nep.fu.11	9.3**	10.8	16%
Norway lobster ( <i>Nephrops norvegicus</i> )	6; Union and international waters of 5b	nep.fu.12	9.9**	11.7	18%
Anglerfish ( <i>Lophiidae spp.</i> )	6; Union and international waters of 5b; international waters of 12 and 14	anf.27.3a46	NA	NA	20%
Saithe ( <i>Pollachius virens</i> )	6; Union and international waters of 5b, 12, and 14	pok.27.3a46	0.258	0.36	40%

\* % change in fishing mortality, harvest rate, or catch advised by ICES for 2019 relative to 2018.

\*\* Fishing mortality or harvest rate in 2017.

Recent catch estimates used in the assessment are adjusted to account for area misreporting and include estimates of discards. The misreporting adjustments, together with official and ICES landings estimates are presented in the latest advice (Table 7 in ICES, 2017). ICES has not updated the assessment and catch forecast for this stock in 2018. The most advice provided in 2017 suggests that catches in 2018 corresponding to a *status quo* fishing mortality would be 1826 tonnes, of which 590 tonnes would be landed and 1236 tonnes would be discarded. This is the best estimate available for catches of this stock in 2019.

### Whiting in Division 6.a

Whiting are a relatively low-value species. There has been no targeted fishery for whiting in Division 6.a since the early 2000s. Currently most catches of whiting in Division 6.a (86% by weight; average 2015–2017) are discarded, mainly in the *Nephrops*-directed trawl fisheries (Table 7). The majority of the landings and some discards also occur in the finfish-directed trawl fisheries.

**Table 7** Whiting in Division 6.a. Catch distribution by fleet in 2017 as estimated by ICES.

Catch (2017)	Landings			Discards*		
	Finfish-directed otter trawl	<i>Nephrops</i> -directed otter trawl	Other gear	Finfish-directed otter trawl	<i>Nephrops</i> -directed otter trawl	Other gear
1723 tonnes	78%	3%	19%	12%	69%	19%
	176 tonnes			1547 tonnes		

ICES advice for *Nephrops* stocks varies, from a 14% decrease in FU 13 to a 18% increase in FU 12 (Table 6). Current TAC management for *Nephrops* is at the scale of Subarea 6. While it is likely that the highest discards of whiting occur in FU 13 it is currently not possible to partition the discards or relative fishing mortality on whiting to individual functional units. The most realistic assumption is that catches in 2019 would correspond to a *status quo* fishing mortality. This implies total catches of 1171 tonnes, wanted catches of 441 tonnes, and an SSB of 22 939 tonnes in 2020 (28% below B<sub>lim</sub>).

## Whiting in Division 7.a

There has been no targeted whiting fishery in the Irish Sea since the 1980s. The majority of whiting are caught in the *Nephrops*-directed trawl fishery; nearly all of these catches are discarded since they are below the minimum landing size (27 cm). Despite the introduction of several technical measures to reduce finfish catch and discards in the *Nephrops* fishery, the estimated total discards remain high (Table 8), largely due to the *Nephrops* fishery in FU 15 occurring in the same area where many juvenile whiting are distributed. These fish are too small to escape from *Nephrops* trawl gears. Whiting catches are sporadic; a small number of hauls are responsible for the majority of whiting catches.

**Table 8** Whiting in Division 7.a. Catch distribution by fleet in 2016 as estimated by ICES.

Catch	Landings			Discards	
	Finfish-directed otter trawls	<i>Nephrops</i> -directed otter trawls	Other gears	<i>Nephrops</i> -directed otter trawls	Other gears
780 t	58%	31%	11%	78%	22%
	15 t			765 t	

ICES has not updated the catch forecast for this stock in 2018. The UK has requested ICES to update the assessment and advice for this stock. ICES advice for most stocks in the Irish Sea implies increased fishing mortality or harvest rates (Table 9). The advice for the most closely linked stock, *Nephrops* in FU 15, implies a 72% increase in harvest rate compared to 2018 levels. Current TAC management for *Nephrops* is at the scale of Subarea 7 and fishing mortality in FU 15 has recently been below the advised  $F_{MSY}$  levels. It is probably more realistic to assume that catches corresponding to a *status quo* fishing mortality would be taken in 2019. This catch scenario will be available once the update assessment and advice is released.

**Table 9** Percentage change in fishing mortality, harvest rate, or advised catch between 2018 and 2019, as implied by ICES advice for the main stocks in the Irish Sea.

Species	Corresponding EC TAC area	Stock code	F <sub>2018</sub>	Advised F (2019)	% Change*
Whiting ( <i>Merlangius merlangus</i> )	7a	whg.27.7a	NA	NA	-100%
Haddock ( <i>Melanogrammus aeglefinus</i> )	7a	had.27.7a	0.18	0.28	56%
Cod ( <i>Gadus morhua</i> )	7a	cod.27.7a	0.25	0.41	64%
Norway lobster ( <i>Nephrops norvegicus</i> )	7	nep.fu15	10.6**	18.2	72%
Plaice ( <i>Pleuronectes platessa</i> )	7a	ple.27.7a	0.06	0.169	182%
Norway lobster ( <i>Nephrops norvegicus</i> )	7	nep.fu14	2.9**	11	279%
Common sole ( <i>Solea solea</i> )	7a	sol.27.7a	0.0165	0.154	833%

\* % change in fishing mortality, harvest rate, or catch advised by ICES for 2019 relative to 2018.

\*\* Fishing mortality or harvest rate in 2017.

## Whiting in Division 6.b

Whiting in Division 6.b (Rockall) are mainly taken in trawl fisheries targeting haddock. Reported landings have been very low and variable over time. Annual landings in the last three years have been around 42 tonnes. ICES has no estimates of annual discards although recent estimates suggest that discards are around 23% by weight (average 2015–2017; ICES, 2018b). The advice for haddock, which is the main target stock, implies a 3% increase in fishing mortality for 2019 (Table 6). There is no quantitative basis to forecast catch advice in line with the advised 3% increase in fishing mortality for haddock. It is reasonable to assume that catches will be in line with recent landings plus the recent discards of approximately 54 tonnes.

## Sources and references

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