

5 Horse Mackerel in the Northeast Atlantic

5.1 Fisheries in 2017

The total international catches of horse mackerel in the North East Atlantic are shown in Table 5.1.1 and Figure 5.4.1. The southern horse mackerel stock is currently assessed by ICES WGHANSA. The total catch from all areas in 2017 for the Western and North Sea stock was 97,540 tons which is 16611 tons less than in 2016 (and 12% lower than in 2015). France and the Netherlands have a directed trawl fishery and Norway and France a directed purse-seine fishery for horse mackerel. Spain has directed and mixed trawl and purse-seine fisheries. In earlier years most of the catches were used for meal and oil while in later years most of the catches have been used for human consumption.

The quarterly catches of North Sea and western horse mackerel by Division and Sub-division in 2017 are given in Table 5.1.2 and the distributions of the fisheries are given in Figure 5.1.1.a–d. The maps are based on data provided by Belgium, Faroe Islands, France, Germany, Ireland, Netherlands, Norway, Sweden, Spain and UK (Engl. And Wales) representing 99% of the total catches. The distribution of the fishery is similar to the later years.

The Dutch, Danish, Irish and German fleets operated mainly in the North and West of Ireland and the Western waters off Scotland. The French fleet were in the Bay of Biscay and West Scotland whereas the Norwegian fleet fished in the North-eastern part of the North Sea. The Spanish fleet operated mainly in waters of Cantabrian Sea and Bay of Biscay.

First quarter: The fishing season with most of the catches 39,251 tons (47% of the total catches). The fishery was mainly carried out west of Scotland and West and North of Ireland and along the Spanish coast (Figure 5.1.1.a).

Second quarter: 7,377 tons. As usual, catches were significantly lower than in the first quarter as the second quarter is the main spawning period. Most of the catches were taken West of Ireland and along the Spanish coast. (Figure 5.1.1.b)

Third quarter: 12,921 tons. Most of the catches were taken in Spanish waters and at the Norwegian coast. Also some smaller catches were reported in the Southern part of the North Sea (Figure 5.1.1.c).

Fourth quarter: Catches were 23,381 tons. The catches were distributed in four main areas (Figure 5.1.1.d):

- Spanish waters,
- Northern Irish waters and West of Scotland
- Norwegian coast
- East part of Channel

5.2 Stock Units

For many years the Working Group has considered the horse mackerel in the Northeast Atlantic as separated into three stocks: the North Sea, the Southern and the Western stocks (ICES 1990, ICES 1991). For further information see Stock Annex Western Horse Mackerel and to the WD document on horse mackerel stock structure (WD Brunel et al., 2016). The boundaries for the different stocks are given in Figure 5.2.1.

To improve on the understanding of the stock structure, horse mackerel samples for genetic analysis have been collected in the central and Northern North Sea, Channel, West of Ireland, the Bay of Biscay, Cantabrian Sea and in the waters around Morocco and Mauritania (as out-group). Samples have been collected mostly during spawning time in the years 2015 to 2017. It is foreseen that the genetic analysis will be carried out in 2018 leading to potential results before the next WGWIDE in 2019.

5.3 WG Catch Estimates

In 2017, a review of catch statistics for North Sea and Western horse mackerel stocks was carried out. The results of this report have been reported in previous Working Groups reports. (Costas, 2017)

As a result of this review catches and catch-at-ages of reported historical data of both North Sea and Western stocks of horse mackerel were updated. Catch statistics were reviewed since 1990 onward for Western stock and since 2000 onward for North Sea stock. Main mismatches between the catch statistics in working group reports and these reviewed data were originated by several reasons such as late availability of some data for the report or the availability of only official catch figures.

5.4 Allocation of Catches to Stocks

The distribution areas for the three stocks are given in the Stock Annex for the Western Horse Mackerel. The catches in 2017 were allocated to the three stocks as follows:

Western stock: 3 and 4 quarter: Divisions 3.a and 4.a. 1-4 quarter: 2.a, 5.b, 6.a, 7.a-c, e-k and 8.a-e.

North Sea stock: 1 and 2 quarter: Divisions 3.a and 4.a 1-4 quarter: Divisions 4.b, 4.c and 7.d.

Southern stock: Division 9.a. All catches from these areas were allocated to the southern stock. This stock is now dealt with by another working group (ICES WGHANSA).

The catches by stock are given in Table 5.4.1 and Figure 5.4.1. The catches by ICES sub-Area and division for the Western and North Sea stocks for period 1992-2017 are shown in Figures 5.4.2-3. The catches by stock and countries for the period 1997-2017 are given in Table 5.4.2-5.4.3.

5.5 Estimates of discards

Over the years only Netherlands had provided data on discards and in some few years also Germany and Spain. For 2017 almost all of countries provided such data. The provided discard rate is less than 5.3 % in weight for the combined Horse mackerel stocks. The discard rate for the North Sea stock is estimated to be 8.3% and for the Western stock 4.7% in 2017.

5.6 *Trachurus* Species Mixing

Three species of genus *Trachurus*: *T. trachurus*, *T. mediterraneus* and *T. picturatus* are found together and are commercially exploited in NE Atlantic waters. Following the Working Group recommendation (ICES 2002/ACFM: 06) special care was taken to ensure that catch and length distributions and numbers-at-age of *T. trachurus* supplied to the Working Group did not include *T. mediterraneus* and/or *T. picturatus*.

T. mediterraneus fishery takes mainly place in the eastern part of ICES Division 8.c. There is not a clear trend in *T. mediterraneus* catches in this area but in the last year's

show a low level (Table 5.6.1). Information of *T. picturatus* fishery is available in the WGHANSA Report (Working Group on Horse Mackerel, Anchovy and Sardine).

Taking into account that the assessment is only made for *T. trachurus*, the Working Group recommends that the TACs and any other management regulations which might be established in the future should be related only to *T. trachurus* and not to *Trachurus* spp. More information is needed about the *Trachurus* spp. before the fishery and the stock can be evaluated.

5.7 Length Distribution by Fleet and by Country:

Ireland, Germany, Netherlands, Norway, France, Scotland and Spain provided length distributions for their catches in 2017. The length distributions are covering app. 97% of the total landings of the Western and North Sea horse mackerel catches and are shown in Table 5.7.1.

5.8 Comparing trends between areas and stocks

Horse mackerel (*Trachurus trachurus*) in the northeast Atlantic is assumed to be separate into three stocks:

- North Sea (4a part of the year, 4b, 4c and 7d)
- Western (4a part of the year, 5b, 6a, 7a-c,e-k, 8a-d)
- Southern (9a)

Catches in biomass between 2000 and 2017 are shown in figure 5.8.1 indicated an overall decline in the catches of horse mackerel, but with a relative increase in southern horse mackerel in the recent years.

The catch in numbers by age groups 0-3 (juveniles), 4-10 (adults), 11-15 (seniors) are shown in figure 5.8.2. The values are indicating an increase in the catches of juveniles in the Western and North Sea stocks in recent years. This could be an indication of a stronger recruitment of horse mackerel which has been reported by surveys and fishermen. However, it is also an alarming signal if a larger proportion of the catch consists of juveniles.

The relative catch in numbers by stock, age, year and cohort are shown in figure 5.8.3. This type of display allows the cohorts to be followed through the ages and years. The strong 2001 year class clearly stands out alone in the Western stock whereas in the North Sea stock the same year class and the surrounding year classes seem to be relatively strong. Year classes in the Southern area are less clearly identified which could be due to the fishery concentrating on the younger year classes.

The relative catch in numbers by stock/area, age, year and cohort are shown in figure 5.8.4. The strong 2001 year class is most noticeable in area 6 and 7 and for the younger ages in area 8. The 2001 year class is not very apparent in the western stock in 4a. For the North Sea stock, the cohort signal is only apparent in area 7 and not in area 4.

The catch in number by area and age from sampled catches is shown in figure 5.8.5. There appears to be a very limited sampling for horse mackerel in area 8a in the recent year even though there are sizeable catches in that area, predominantly believed to be of younger ages. Also in area 7.h there has been no sampling in 2016. An important signal to be derived from these plots is that there appears to be an increase in the catches of juveniles in the most recent years, mostly in area 7.d and to a lesser extend

also in area 7e. Measures to protect the incoming year classes of these species should be considered.

5.9 Quality and Adequacy of fishery and sampling data

Table 5.9.1 shows a summary of the overall sampling intensity on horse mackerel catches in recent years in all areas 1992–2017 and in the Western and North Sea stock areas for the following years. Since 2009 the Southern horse mackerel is dealt with by ICES WGHANSA.

Countries that usually carried out sampling were Ireland, the Netherlands, Germany, Norway and Spain and they covered 42–100% of their respective catches. In 2017 Denmark, France, Germany, Ireland, the Netherlands, England, Scotland and Spain provided samples and length distributions and Germany, Ireland, the Netherlands, and Spain provided also age distributions. However, the lack of age distribution data for relatively large portions of the horse mackerel catches continues to have a serious effect on the accuracy and reliability of the assessment and the Working Group remain especially concerned about the low number of fish which are aged.

Table 5.9.2 shows the sampling intensity for the Western stock in 2017, table 5.9.3 shows the sampling intensity for the North Sea stock in 2017

An analysis on the sampling intensity was carried out for the was made analyzing sampling intensity in period 2000-2017 for both the North Sea and the Western stock in last WIDE meeting (Costas, 2017b). Sampling intensity in fisheries can be defined as the ratio of sampled catch to the total catch. The precision and accuracy of sampled catch are considerable importance to obtain a reliable estimate of the commercial catch. Sampled catch is used to extrapolate to total catch in order to obtain a catch-at-age (length) and weight at age which are often used as inputs for the stock assessment models. In addition, in case of horse mackerel the impact of temporal (quarter) and spatial (area by ICES division) factors have to be taken in account in order to obtain a reliable estimate of the commercial catches.

Figure 5.9.1 shows the proportion of sampled catches by division for the North Sea stock. In general all ICES divisions show low levels of sampling especially in the last years. The sampling intensity in relation to the length composition of catch was 62% but in relation to age composition around 39 % in 2017 (Figure 5.9.2). In addition, divisions that are usually not sampled can be affect the precision and accuracy of total catch-at-age and weight at age. Figures 5.9.3 show ratio of numbers of individuals and otoliths taken to characterize the length and age composition by 1000 t of the commercial horse mackerel catches from the North Sea. These estimates can be biased, however, since samples are usually less than the recommended 100 fish/sample. (Table 5.9.1)

The proportion of the sampled catches by region for the Western stock are showed in figure 5.9.5. Most of the regions present an adequate level of sampling although the Biscay and Channel regions show low levels of sampling in the last years. The general index of sampling intensity is around 63 %, although divisions (regions) that are not sampled can affect the precision and accuracy of total catch-at-age and weight at age (Figure 9.5.6). Figures 5.9.7-8 show the ratio of numbers of individuals and otoliths taken to characterize the length and age composition by 1000 t of the commercial catches. These estimates can be biased, however, since samples are usually less than the recommended 100 fish/sample. (Table 5.9.1). It has been a significant increase in

number of measured individuals per 1000 t in 2016 and 2017 produced by large increase of number of sampled individuals in division 8.b.

Length distributions were supplied by a number of countries. However, as some countries only deliver catch-at-age distributions and others only length distributions of the catch, the obtained catch-at-age and length distributions are not reflecting the total catch especially in case of North Sea horse mackerel. Furthermore, some of the length distributions are only taken from discards of non-horse mackerel targeting fleets omitting the horse mackerel targeting fleet. This lack of coverage might also have a serious effect on the accuracy and reliability of the assessment and is a matter of concern for the Working Group.

5.10 References

- Brunel, T., 2017. Revision of the Maturity Ogive for the Western Spawning Component of NEA Mackerel. Working document to WKWIDE, 6pp.
- Costas, G. 2017. Review of Horse Mackerel catch data . North Sea and Western Stocks. WD to WGWIDE 2017. 11 pp.
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5.11 Tables

Table 5.1.1 HORSE MACKEREL general. Catches (t) by Sub-area. Data as submitted by Working Group members. Data of limited discard information are only available for some years.

SUBAREA	1979	1980	1981	1982	1983	1984	1985	1986
2	2	-	+	-	412	23	79	214
4 + 3.a	1,412	2,151	7,245	2,788	4,420	25,987	24,238	20,746
6	7,791	8,724	11,134	6,283	24,881	31,716	33,025	20,455
7	43,525	45,697	34,749	33,478	40,526	42,952	39,034	77,628
8	47,155	37,495	40,073	22,683	28,223	25,629	27,740	43,405
9	37,619	36,903	35,873	39,726	48,733	23,178	20,237	31,159
Total	137,504	130,970	129,074	104,958	147,195	149,485	144,353	193,607
SUBAREA	1987	1988	1989	1990	1991	1992	1993	1994
2	3,311	6,818	4,809	11,414	3200	13457	0	759
4 + 3.a	20,895	62,892	112,047	145,062	71,195	120,054	145,965	111,899
6	35,157	45,842	34,870	20,904	29,726	39,061	65,397	69,616
7	100,734	90,253	138,890	192,196	150,575	183,458	202,083	196,192
8	37,703	34,177	38,686	46,302	42,840	54,172	44,726	35,501
9	24,540	29,763	29,231	24,023	34,992	27,858	31,521	28,442
Disc					5,440	2,220	9,530	4,565
Total	222,340	269,745	358,533	439,901	337,968	440,280	499,222	446,974
SUBAREA	1995	1996	1997	1998	1999	2000	2001	2002
2	13151	3366	2601	2544	2557	919	310	1324
4 + 3.a	100,916	25,998	79,761	34,917	58,745	31,435	18,513	52,337
6	83,568	81,311	40,145	35,073	40,381	20,735	24,839	14,843
7	328,995	263,465	326,469	300,723	186,622	140,190	138,428	98,677
8	28,707	48,360	40,806	38,571	48,350	54,197	75,067	55,897
9	25,147	20,400	29,491	41,574	27,733	26,160	24,912	23,665
Disc	2,076	17,082	168	996	0	385	254	307
Total	582,560	459,982	519,441	454,398	364,388	274,022	282,323	247,049
SUBAREA	2003	2004	2005	2006	2007	2008	2009	2010
2	36	42	176	27	366.34	572	1847	1667
4 + 3.a	34,095	30,736	40,594	37,583	16,226	15,628	78,064	13,600
6	23,772	22,177	22,053	15,722	25,949	25,867	17,775	23,199
7	123,428	115,739	106,671	101,183	93,013	102,755	96,915	148,701
8	41,711	24,126	41,491	34,121	28,396	33,756	33,580	39,659
9	19,570	23,581	23,111	24,557	23,423	23,596	26,496	27,217
Disc	842	2,356	1,864	1,431	509	474	1,483	434
Total	243,455	218,758	235,961	214,624	187,882	202,649	256,161	254,478
SUBAREA	2011	2012	2013	2014	2015	2016	2017 ¹	
2	647.588	66.02912	30	424.291	10	45.276	5	
4 + 3.a	25,158	5,234	8,183	17,270	10,560	11,565	12,609	
6	39,496	44,971	43,266	32,444	24,153	32,186	28,170	
7	120,340	120,476	100,859	66,853	49,644	46,901	33,297	

8	35,245	17,209	26,983	30,844	19,822	17,511	18,307
9 ³	22,575	25,316	29,382	29,205	33,179	41,081	37,080
Disc	430	3,279	4,582	1,904	6,232	5,944	5,488 ²
Total	243,892	216,552	213,285	178,945	143,600	155,232	134,956

¹ Preliminary. ² includes BMS of 11 tonnes

³ Southern Horse Mackerel (ICES Division 9) is assessed by ICES WGHANSA since 2011

Table 5.1.2 HORSE MACKEREL Western and North Sea Stock combined. Quarterly catches (1000 t) by Division and Subdivision in 2017.

DIVISION	1Q	2Q	3Q	4Q	TOTAL
2.a+5.b	3	0	0	2	5
3	+	0	703	9	712
4.a	29	28	7275	2129	9461
4.bc	68	274	116	2119	2577
7.d	2851	528	848	7719	11946
6.a,b	17914	222	20	10061	28355*
7.a-c,e-k	17909	2162	632	2638	23340
8.a-e	3425	4954	4292	8543	21213
Sum	42199	8167	13886	33219	97540

+ less than 50 t, * for the total 69t were added which were only declared as yearly catch

Table 5.4.1 HORSE MACKEREL general. Landings and discards (t) by year and Division, for the North Sea, Western, and Southern horse mackerel stocks.
(Data submitted by Working Group members.)

YEAR	3.A	4.A	4.B,C	7.D	DISC	NS STOCK	2.A 5.B	3.A	4.A	6.A,B	7.A-C, E-K	8.A-E	DISC	WESTERN STOCK	W + NS STOCK	SOUTHERN STOCK(9.A) ^x	ALL STOCKS
1982	2,788*		-	1,247		4,035	-		-	6,283	32,231	3,073	-	61,197	65,232	39,726	104,958
1983	4,420*		-	3,600		8,020	412		-	24,881	36,926	28,223	-	90,442	98,462	48,733	147,195
1984	25,893*		-	3,585		29,478	23		94	31,716	38,782	25,629	500	96,744	126,222	23,178	149,400
1985	-		22,897	2,715		26,750	79		203	33,025	35,296	27,740	7,500	103,843	129,455	20,237	150,830
1986	-		19,496	4,756		24,648	214		776	20,343	72,761	43,405	8,500	145,999	170,251	31,159	201,806
1987	1,138		9,477	1,721		11,634	3,311		11,185	35,197	99,942	37,703	-	187,338	199,674	24,540	223,512
1988	396		18,290	3,120		23,671	6,818		42,174	45,842	81,978	34,177	3,740	214,729	236,535	29,763	268,163
1989	436		25,830	6,522		33,265	4,809		85304**	34,870	131,218	38,686	1,150	296,037	328,825	29,231	358,533
1990	2,261		17,437	1,325		18,762	11,414	14,878	112753**	20,794	182,580	46,302	9,930	398,645	419,668	24,023	441,430
1991	913	0	11,400	600	0	12,913	3,200	2,725	56,157	29,726	149,975	42,840	5,440	290,063	302,976	34,992	337,968
1992	0	0	13,955	688	400	15,043	13,457	2,374	103,725	39,061	182,770	54,172	1,820	397,379	412,422	27,858	440,280
1993	0	0	3,895	8,792	930	13,617	0	850	141,220	65,397	193,291	44,726	8,600	454,084	467,701	31,521	499,222
1994	0	0	2,496	2,503	630	5,629	759	2,492	106,911	69,616	193,689	35,501	3,935	412,903	418,532	28,442	446,974
1995	112	0	7,948	8,666	30	16,756	13,151	128	92,728	83,568	320,329	28,707	2,046	540,657	557,413	25,147	582,560
1996	1,657	0	7,558	9,416	212	18,843	3,366	0	16,783	81,311	254,049	48,360	16,870	420,739	439,582	20,400	459,982
1997	0	0	14,078	5,452	10	19,540	2,601	2,037	63,646	40,145	321,017	40,806	158	470,410	489,950	29,491	519,441
1998	3,693	0	10,530	16,194	83	30,500	2,544	3,693	17,001	35,073	284,529	38,571	913	382,324	412,824	41,574	454,398
1999	0	0	9,335	27,889	0	37,224	2,557	2,095	47,315	40,381	158,733	48,350	0	299,431	336,655	27,733	364,388
2000	0	176	25,931	19,019	4	45,130	919	1,014	4,314	20,735	121,171	54,197	382	202,732	247,862	26,160	274,022
2001	43	212	6,686	21,390	0	28,331	310	134	11,438	24,839	117,038	75,067	254	229,081	257,411	24,912	282,323
2002	0	639	15,303	11,323	0	27,264	1,324	174	36,221	14,843	87,354	55,897	307	196,120	223,384	23,665	247,049
2003	49	622	10,309	21,049	0	32,028	36	1,843	21,272	23,772	102,379	41,711	842	191,856	223,885	19,570	243,455
2004	303	133	18,544	16,455	0	35,435	42	48	11,708	22,177	99,284	24,126	2,356	159,742	195,177	23,581	218,758
2005	0	1,331	13,995	15,460	62	30,848	176	284	24,983	22,053	91,211	41,491	1,802	182,001	212,850	23,111	235,961
2006	185	2,192	7,996	23,789	78	34,240	27	58	27,152	15,722	77,394	34,121	1,353	155,827	190,067	24,557	214,624
2007	11	2,051	9,114	29,789	139	41,103	366	110	4,940	25,949	63,224	28,396	370	123,356	164,459	23,423	187,882
2008	27	910	2,582	32,185	0	35,704	572	3	12,107	25,867	70,570	33,756	474	143,349	179,053	23,596	202,649
2009	21	314	18,975	25,537	1,036	45,883	1,847	17	58,738	17,775	71,378	33,580	447	183,782	229,665	26,496	256,161
2010	0	100	1,969	22,077	2	24,149	1,667	88	11,442	23,199	126,624	39,659	432	203,112	227,261	27,217	254,478
2011	0	0	10,435	17,184	0	27,619	648	0	14,723	39,496	103,156	35,245	430	193,698	221,317	22,575	243,892
2012	0	355	1,559	19,464	0	21,378	66	9	3,311	44,971	101,012	17,209	3,279	169,858	191,236	25,316	216,552
2013	0	17	1,453	17,175	0	18,645	30	10	6,702	43,266	83,684	26,983	4,582	165,258	183,903	29,382	213,285
2014	1	2	2,597	10,772	7	13,380	424	4,096	10,573	32,444	56,081	30,844	1,896	136,360	149,740	29,205	178,945

YEAR	3.A	4.A	4.B,C	7.D	DISC	NS STOCK	2.A 5.B	3.A	4.A	6.A,B	7.A-C, E-K	8.A-E	DISC	WESTERN STOCK	W + NS STOCK	SOUTHERN STOCK(9.A) ^x	ALL STOCKS
2015	3	644	770	8,581	2,004	12,002	10	65	9,078	24,153	41,063	19,822	4,228	98,419	110,421	33,179	143,600
2016	2	1,628	975	11,209	1,527	15,341	45	0	8,960	32,186	35,692	17,511	4,417	98,811	114,151	41,081	155,232
2017	0	22	2,557	10,787	1,213	145,79	5	697	9,332	28,170	22,510	18,307	3,939	82,961	97,540	37,088	134,956

*Divisions 3.a and 4.b,c combined since 2011

**Norwegian catches in 4.b included in Western horse mackerel

^x Southern Horse Mackerel is assessed by ICES WGHANSA

Table 5.4.2 National catches of the Western Horse mackerel stock.

COUNTRY	1997	1998	1999	2000	2001	2002	2003	2004	2005
<i>Belgium</i>	18	19	21	0	-	-	-	-	-
<i>Denmark</i>	62,897	31,023	26,040	16,385	21,254	10,147	11340	11,667	10,155
<i>Estonia</i>	78	22	-	0	-	-	-	3,826	3,695
<i>Faroe Islands</i>	1,095	216	1,040	24	800	671	4	8,056	10,690
<i>France</i>	39,188	26,667	25,141	20,457	15,145	18,951	10,381	17,744	16,364
<i>Germany, Fed.Rep.</i>	28,533	33,716	23,549	13,014	11,491	12,658	15,696	26,432	34,607
<i>Ireland</i>	74,250	73,672	57,983	55,229	51,874	36,422	35,857	-	-
<i>Lithuania</i>	-	-	-	-	-	-	-	40986	41,057
<i>Netherlands</i>	82,885	103,246	83,450	57,261	73,440	44,997	48,924	10729	24,909
<i>Norway</i>	45,058	13,363	46,648	1,982	7,956	36,164	20,371	16,272	16,636
<i>Russia</i>	554	345	121	80	16	3	2	567	216
<i>Spain</i>	31,087	43,829	39,831	24,204	23,537	24,763	24,599	4,617	3,560
<i>Sweden</i>	1,761	3411	1,957	1009	68	561	1,002	458	210
<i>UK (Engl. + Wales)</i>	19,778	13,068	9,268	4,554	7,096	5,970	4,438	1,522	143
<i>UK (N. Ireland)</i>	-	1,158	-	625	1140	1129	914	14,506	17,962
<i>UK (Scotland)</i>	32,865	18,283	11,197	10,283	8,026	2,905	721	2356	1802
<i>Unallocated</i>	17,158	15,262	23,763	-2757	6,978	472	16,765	159,737	182,006
<i>Discard</i>	158	913	-	382	254	307	842	-	-
<i>Total</i>	437,363	378,213	350,009	202,732	229,075	196,120	191,856	11,667	10,155

COUNTRY	2006	2007	2008	2009	2010	2011	2012	2013
<i>Belgium</i>	-	-	-	-	19	2	0.2	14
<i>Denmark</i>	8,411	7,617	5,261	6,027	5,940	6,108	4,002	6,820
<i>Faroe Islands</i>	-	478	841	-	377	349	-	-
<i>France</i>	11,031	12,748	12,626	-	260	8,271	1,797	3,595
<i>Germany, Fed.Rep.</i>	10,862	5,784	11,801	15,122	17,688	21,114	17,063	24,835
<i>Ireland</i>	26,779	29,759	35,332	40,754	44,488	38,466	45,239	35,791
<i>Lithuania</i>	6,828	5,467	5,548	-	-	-	-	-
<i>Netherlands</i>	37,130	29,462	43,648	39,453	61,504	55,690	66,396	53,697
<i>Norway</i>	27,114	4,182	12,223	59,764	11,978	13,755	3,251	6,596
<i>Spain</i>	13,877	14,277	19,851	21,077	38,745	34,581	13560	22,541
<i>Sweden</i>	-	76	8	258	2	90	-	1
<i>UK (Engl. + Wales)</i>	3,574	5,482	3,365	6,482	12,714	11,716	12,122	3,959
<i>UK (N. Ireland)</i>	103	-	-	-	59	198	-	2,325
<i>UK (Scotland)</i>	468	776	1,077	1,412	2,349	2,928	1,335	504
<i>Unallocated</i>	8,292	6,878	-8,703	-7,014	6,556	-	1815	-
<i>Discard</i>	1353	370	474	447	432	430	3,280	4,582
<i>Total</i>	155,822	123,356	143,352	183,782	203,111	193,698	169,860	165,260

COUNTRY	2014	2015	2016	2017 ¹
Belgium				
Denmark	5,945	4,556	321	4,541
Faroe Islands	68	-	-	180
France	3,428	3,247	2,797	3,923
Germany, Fed.Rep.	17,161	9,417	11,414	7,172
Ireland	32,667	21,654	27,605	23,560
Lithuania	-	-	2,596	-
Netherlands	25,053	24,958	23,792	14,269
Norway	14,353	8,897	9,438	9,885
Spain	19,442	13,071	14,235	14,901
Sweden	0	10	-	41
UK (Engl. + Wales)	4,832	2,063	842	549
UK (N. Ireland)	1,579	1,204	-	
UK (Scotland)	1,389	738	970	-
Unallocated	8,545	4,377	1,010	3,994
Discard	1,896	4,228	4,417	3,928
Total	136,360	98,419	98,810	82,950

¹Preliminary

Table 5.4.3. National catches of the North Sea Horse mackerel stock.

COUNTRY	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Belgium	-	19	21			30	5	4	4	-
Denmark	180	1,481	3,377	4,403	885	2,315	3,301	8,690	3,987	8,353
Faroe Islands	-	-	135	-	-	28	804	21	-	-
France	3,246	2,399	-	-		1,246	2,326	231	5,236	1,205
Germany, Fed.Rep.	7,847	5,844	5,920	3,728	974	6,532	2,936	5,194	2,725	11,034
Ireland	-	2,861	27	201	338	61	-	1	753	10,863
Lithuania	-	10,711	-	-	-	-	-	-	-	26,779
Netherlands	36,855	-	8,117	8,697	13,867	12,209	24,119	26,303	27,730	6,829
Norway	-	-	238	105	36	525	144	22	204	37,130
Sweden	-	3,401	5	40	46	16	72	98	4	27,114
UK (Engl. + Wales)	269	907	11	1,585	3,425	2,322	1,966	5,633	3,859	-
UK (Scotland)	29	-	-	421	-	2	1	2	-	13,878
Unallocated	- 28,896	2,794	19,373	25,944	8,805	1,981	-3,645	- 13,064	- 13,719	-
Discard	10	83	-	4	-		-	-	62	3,583
Total	19,540	30,500	37,224	45,128	28,376	27,267	32,029	33,135	30,845	155,094

COUNTRY	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium				4	16		46	51,077	74
Denmark	1,283	252	57	72	15	142	1514	1,020	552
Faroe Islands	-	-	-	-	-	-	0		
France	4,380	5,349	2,247	-	813	273	1,047	1,010	1,742
Germany, Fed.Rep.	1,125	65	1,081	1,539	3,794	3,461	5,356	2,941	1,619
Ireland	2,077		887	25	-	-	0		0
Lithuania	1,999	297	-	-	-	-	0		0
Netherlands	27,285	31,153	19,439	22,546	17,093	16,289	12,157	8,725	4,925
Norway	113	1,243	21	12,855	526	7,359	129	377	0
Sweden	9	21	36	401	-	-	0		1
UK (Engl. + Wales)	595	6921	1,061	1,435	1,890		935	4,401	4,198
UK (Scotland)	300	625	7	4	111	93	240	172	262
Unallocated	-5,004	-4,960	10,869	5,964	-116	0	0	0	
Discard	78	139	-	1,036	2	0	0	0	7
Total	34,240	41,105	35,705	45,881	24,144	27,617	21,424	18,696	13,380

COUNTRY	2015	2016	2017 ¹
Belgium	63	51	67
Denmark	800	268	294
Faroe Islands	0	0	4
France	934	1,322	1,863
Germany, Fed.Rep.	644	1,879	949
Ireland	0	0	0
Netherlands	3,305	3,892	5,638
Norway	662	1,701	5
Sweden	9	0	0
UK (Engl. + Wales)	3,581	4,697	4,546
UK (Scotland)	0	0	0
Unallocated	0	0	0
Discard	2,004	1,527	1,213
Total	12,002	15,337	14,579

¹Preliminary

Table 5.6.1. Catches (t) of *Trachurus mediterraneus* in Divisions 8.ab, 8.c and Sub-Area 7

	7	8.AB	8.C EAST	8.C WEST	TOTAL
1989	0	23	3903		3926
1990	0	298	2943		3241
1991	0	2122	5020		7142
1992	0	1123	4804		5927
1993	0	649	5576		6225
1994	0	1573	3344		4917
1995	0	2271	4585		6856
1996	0	1175	3443		4618
1997	0	557	3264		3821
1998	0	740	3755		4495
1999	0	1100	1592		2692
2000	59	988	808		1854
2001	1	525	1293		1820
2002	1	525	1198		1724
2003	0	340	1699		2039
2004	0	53	841		894
2005	1	155	1005		1162
2006	1	168	794		963
2007	0	126	326		452
2008	0	82	405		487
2009	0	42	1082		1124
2010	0	97	370		467
2011	0	119	1096		1225
2012	0	186	667	116	969
2013	0	52	238	0	290
2014	0	130	1160	0	1290
2015	0	8	890	0	899
2016	0	5	471	0	476
2017	0	18	684	0	702

Table 5.7.1 Horse mackerel general. Length distributions (%) Catches by fleet and country in 2017. (0%= <0.5%)

	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Germany	Germany	Germany	France	Ireland	UK (Scotland)	UK (Scotland)	Spain	Spain	Spain	Spain
	4a	4c	6a	7b	7c	7d	7e	7h	7j	6a	7b	7e	7d	all	4a	6a	8bc	8bc	8bc	8bc
cm	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	OTM_SPF_32 69_0_0_all	all - discards	HM-All	Demersal discards	Demersal discards	Trawl landings	Trawl discards	Artisanal	Purse
5																				
6																				
7																		0		
8													0					2		
9												0	0					30		
10												2	0		0	0		31		
11												7	1		0	0		10		
12												8	1		1	0		4		0
13												7	0		1	1	4	3		1
14												2	1		1	1	12	5		5
15												7	2		1	3	10	5		4
16							1					16	3		1	4	9	3		3
17		1				1	6	2				9	8	0	1	4	7	2		3
18		3				9	10	4		1		7	10	0	1	4	3	1		3
19		3	0	0		10	6	9		3	0	9	8	0	1	3	2	1		5
20		4	1	1		3	10	14		10	1	3	10	2	1	4	2	0		4
21		16	4	1		9	18	16		14	1	4	17	3	2	2	1	0		2
22		28	7	1		18	25	11		11	1	6	16	5	5	4	2	0		2
23		21	12	1		19	15	12		6	1	6	10	5	10	5	7	0		1
24		16	22	0		9	6	6		3	0	4	4	5	12	12	8	0		1
25		4	19	0		7	1	4		4	0	1	3	4	17	20	5	0	5	2
26		3	5	0		5	1	4		4	1	1	3	3	14	11	4	0	5	3
27	1		1	4		5		3		4	1	0	2	3	12	9	4	0	13	4
28	2	1	1	9		2		3		4	4		1	4	9	6	2	0	13	4
29	5		1	15	2	2		2		5	7		1	7	5	3	2	0	13	5
30	5		4	19	14	1		2		5	13		0	11	2	2	1	0	14	4
31	7		5	26	10	0		1	8	5	16		0	12	1	2	2	0	13	5
32	19		4	12	24	0		2	8	6	19		0	12	1	2	2	0	9	6
33	21		5	5	16			2	20	6	14		0	10	0	0	2	0	4	7
34	21		5	4	14			0	40	4	10		0	8	0		2	0	4	8
35	7		3	0	6			1	16	2	5		0	5		1	2	0	3	7
36	4		1	0	6			0	4	1	2		0	2			1	0		5
37	4		0	0	6			0	4	1	2		0	1			1	0		4
38	3		0	0				0		0	1		0	0			1			2
39	2									0	0			0			0	0		1
40	0		0		2					0	0			0						0
41			0							0	0		0				0		1	0
42+				0						0	0			0			0			0

Table5.9.1. Summary of the overall sampling intensity on horse mackerel catches in recent years in all areas 1992 – 2017

YEAR	TOTAL CATCH (ICES ESTIMATE)	% CATCH COVERED BY SAMPLING PROGRAMME*	No. SAMPLES	No. MEASURED	No. AGED
1992	436 500	45	1 803	158447	5797
1993	504190	75	1178	158954	7476
1994	447153	61	1453	134269	6571
1995	580000	48	2041	177803	5885
1996	460200	63	2498	208416	4719
1997	518900	75	2572	247207	6391
1998	399700	62	2539	245220	6416
1999	363033	51	2158	208387	7954
2000	247862	50	378	33317	4126
2001	257411	61	467	46885	7141
2002	223384	68	540	79103	6831
2003	223885	77	434	59241	8044
2004	195177	62	518	62720	9273
2005	212850	76	573	67898	8840
2006	190067	75	602	57701	9905
2007	164459	58	397	41046	8061
2008	179053	72	488	46768	8870
2009	229665	84	902	57505	10575
2010	227261	82	710	49307	14159
2011	221317	71	502	40492	7484
2012	191236	69	501	41148	8220
2013	183903	75	686	87300	9776
2014	149740	83	650	53945	8085
2015	110421	68	825	39415	7034
2016	114151	76	1033	93853	6675
2017	97539	63	1113	116722	8221

*Percentage related to catch (catch-at-age) acc. to ICES estimation

Table 5.9.2. Horse mackerel sampling intensity for the Western stock in 2017.

COUNTRY	CATCH	% CATCH SAMPLED*	NO. SAMPLES	NO. MEASURED	NO. AGED
Denmark	4580	0	0	0	0
Faroe Islands	180	0	0	0	0
France**, ***	5645	0	440	4383	0
Germany	7183	68	41	13730	875
Ireland	23560	95	32	5782	1797
Netherlands	14269	89	50	7158	1236
Norway	9885	0	0	0	0
Spain	16929	95	960	83820	3545
Sweden	43				
UK (England)***	612	0	90	624	0
UK(Scotland)***	70	0	53	668	0
Total	82961	69	1226****	116165	7453

*Percentage based on ICES estimate - ** based on length samples from discards in non-targeting horse mackerel fisheries

provided only length distributions * based on age sampling

Table 5.9.3. Horse mackerel sampling intensity for the North Sea stock in 2017

COUNTRY	CATCH	% CATCH SAMPLED*	NO. SAMPLES	NO. MEASURED	NO. AGED
Belgium	67	0	0	0	0
Denmark	340	88	1	111	44
Faroe Islands	4	0	0	0	0
France**	3023	0	250	3118	0
Germany	949	0	0	0	0
Netherlands	5637	93	29	6121	724
Norway	5	0	0	0	0
UK (England)	4578	0	0	0	0
Total	14579	46	30***	9350	768

*Percentage based on ICES estimate. **provided only length distributions

*** based on age sampling

5.12 Figures

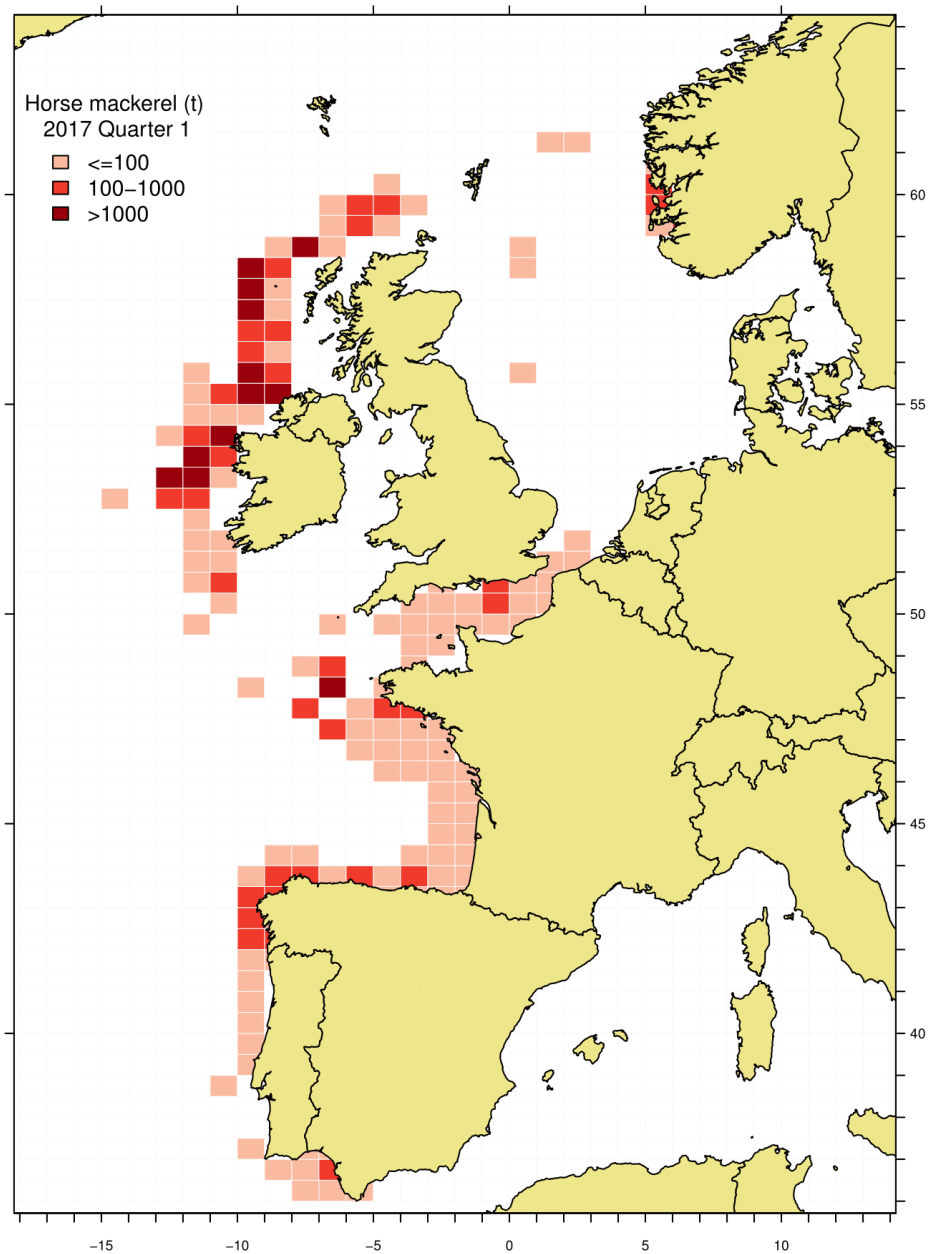


Figure 5.1.1a. Horse mackerel catches 1st quarter 2017.

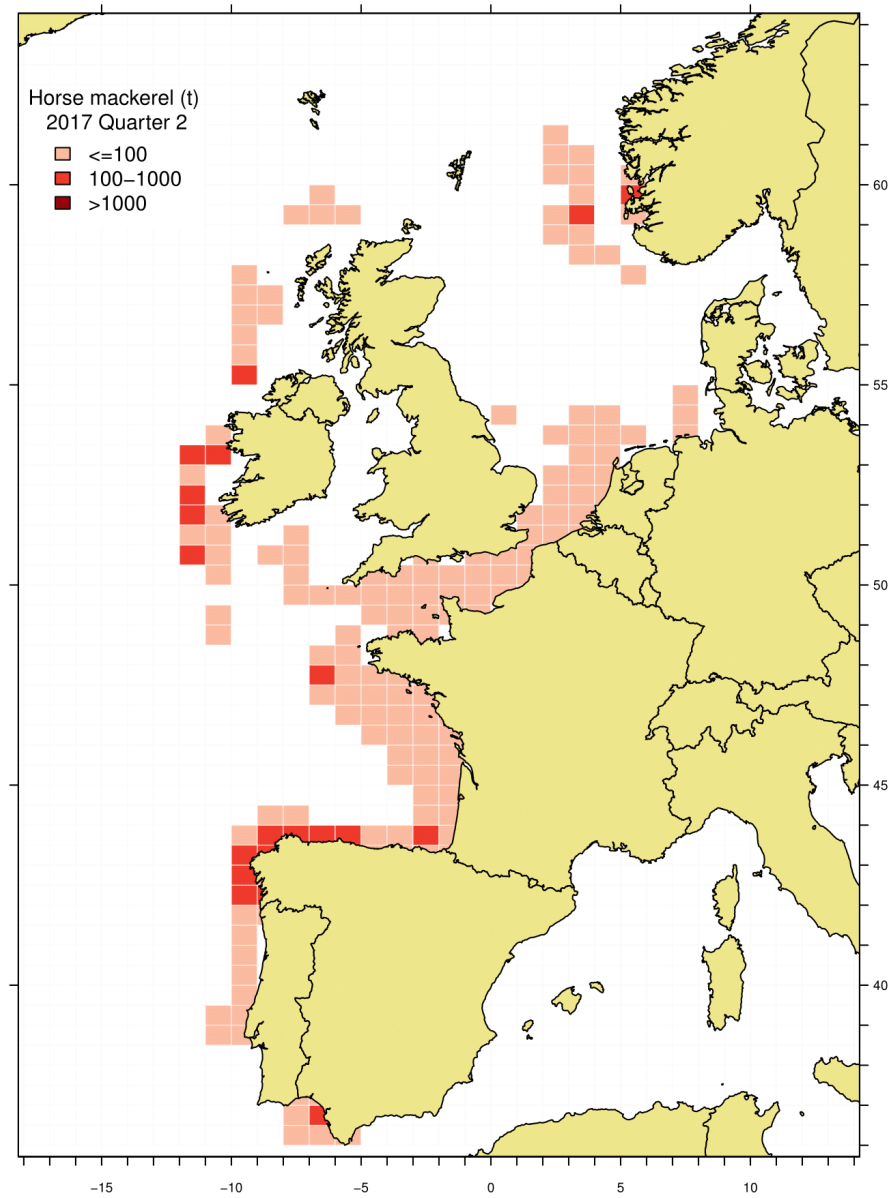


Figure 5.1.1b. Horse mackerel catches 2nd quarter 2017.

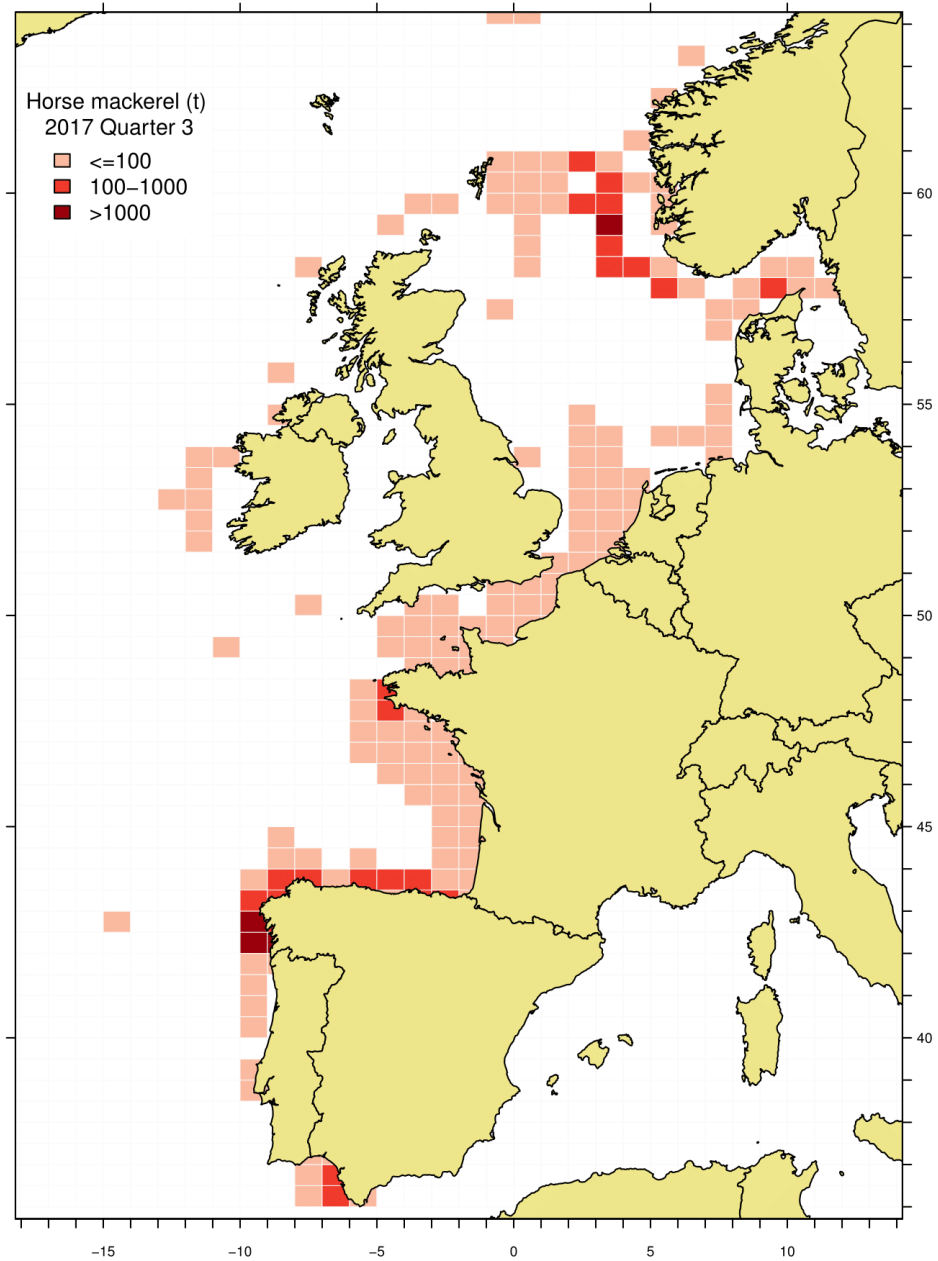


Figure 5.1.1c. Horse mackerel catches 3rd quarter 2017.

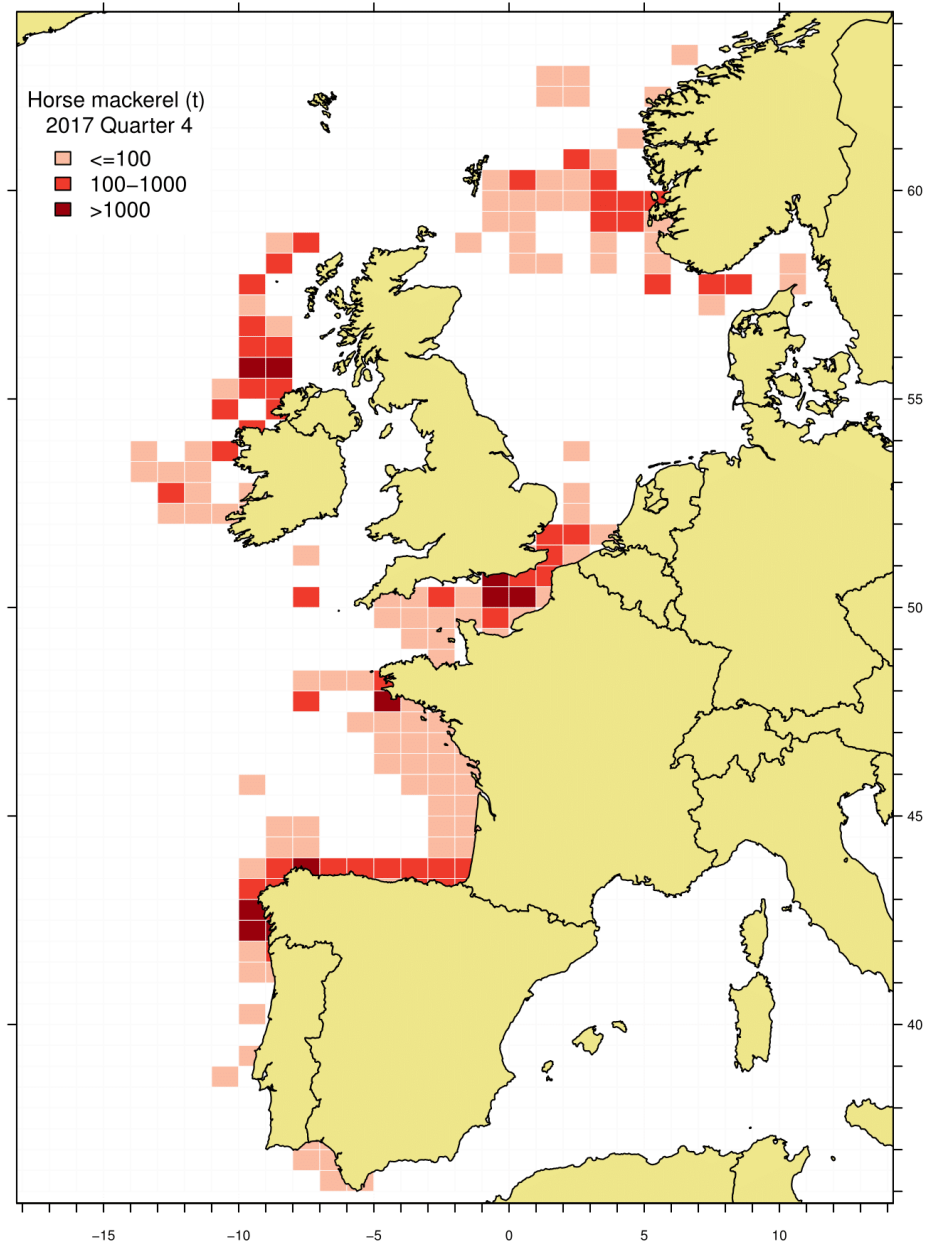


Figure 5.1.1d. Horse mackerel catches 4th quarter 2017.

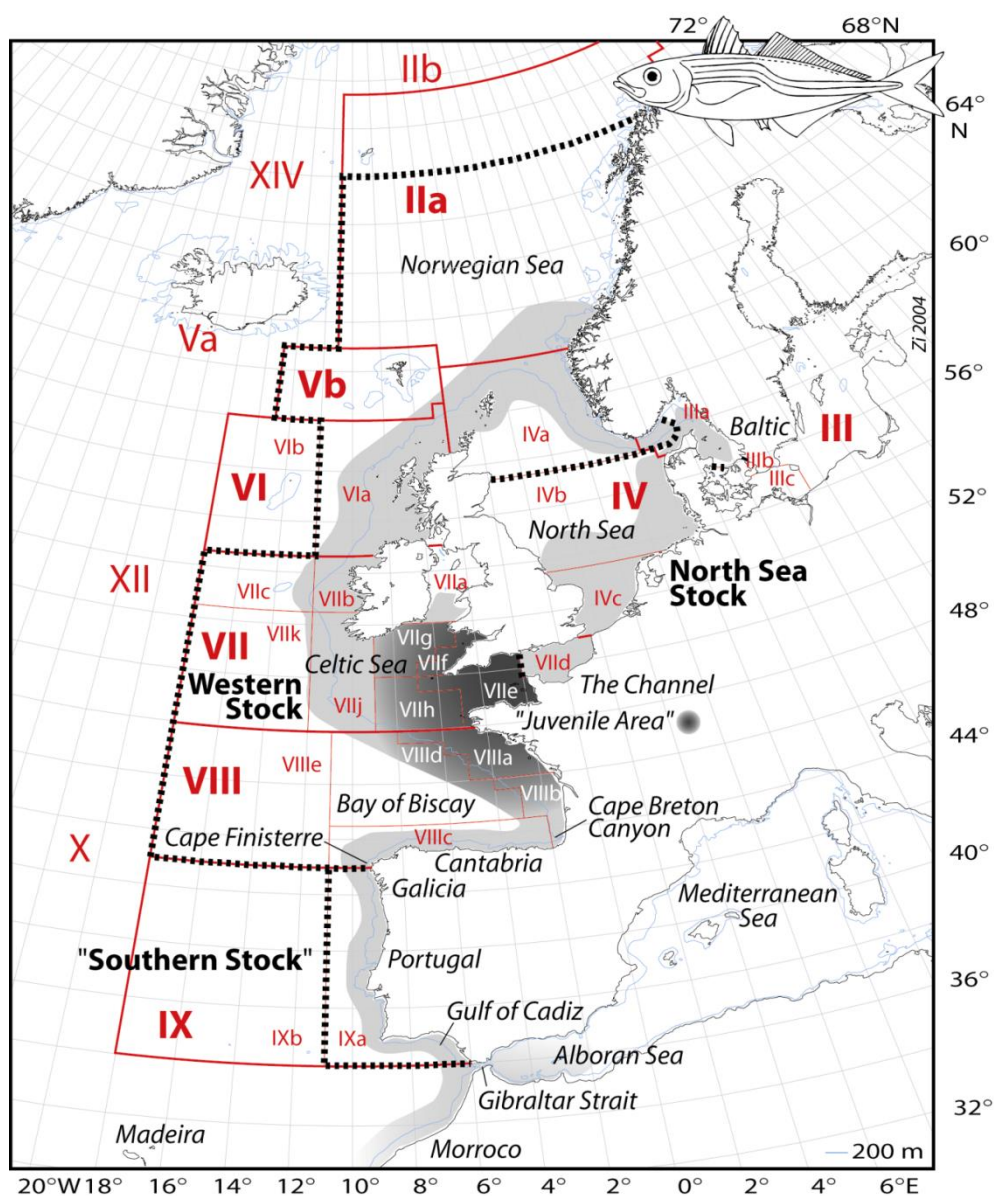


Figure 5.2.1: Distribution of Horse Mackerel in the Northeast-Atlantic: Stock definitions as used by the 2004 WG MHSA. Note that the "Juvenile Area" is currently only defined for the Western Stock distribution area – juveniles do also occur in other areas (like in Div. 7.d). Map source: GEBCO, polar projection, 200 m depth contour drawn.

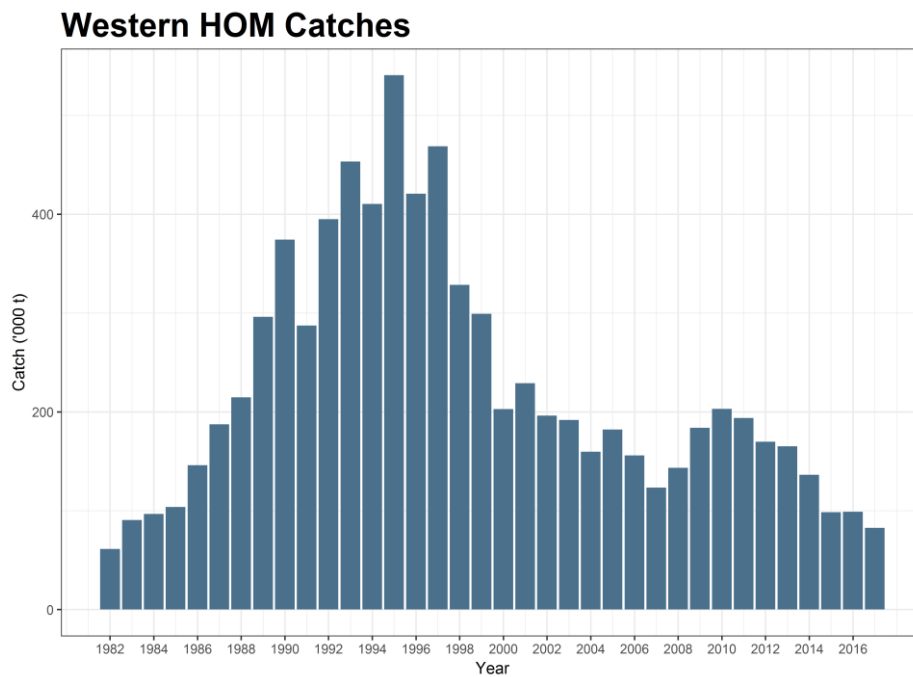


Figure 5.3.1. Total catch for Western Horse Mackerel stock, period 1982–2017.

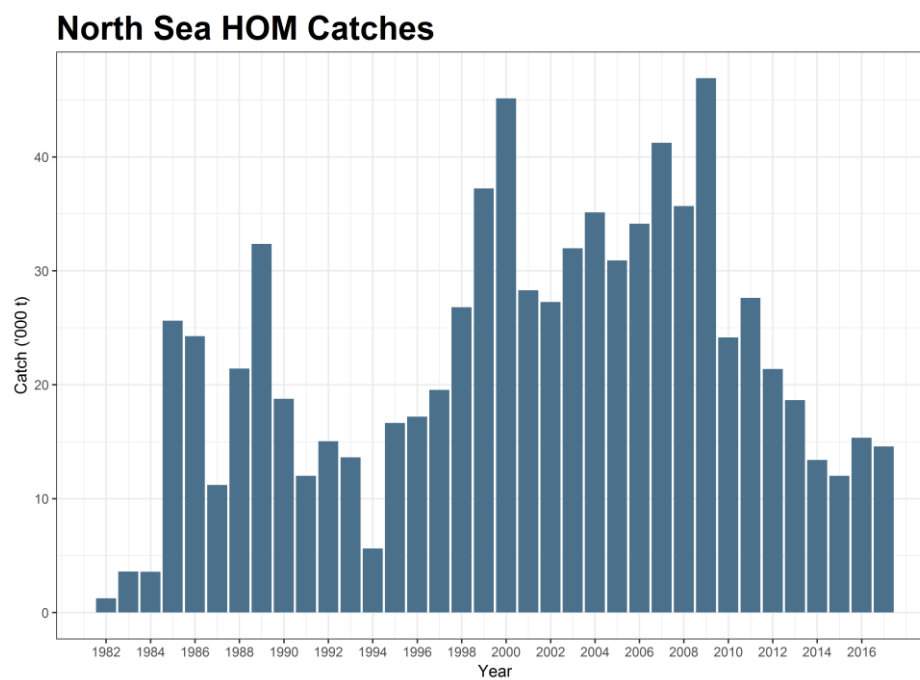


Figure 5.3.4. Total catch for North Sea Horse Mackerel stock, period 1982-2017

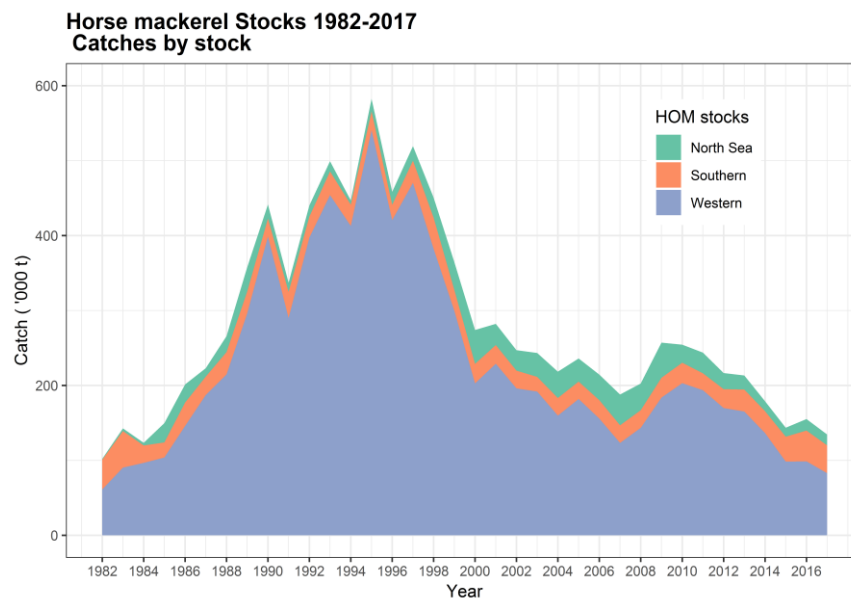


Figure 5.4.1 Horse mackerel general. Total catches in the northeast Atlantic during the period 1982–2017. The catches taken from the southern, western and North Sea horse mackerel stocks are shown in relation to the total catches in the northeast Atlantic. Catches from Div. 8.c were transferred from southern stock to western stock from 1982 onwards. Southern horse mackerel is assessed by ICES WGHANSA since 2011.

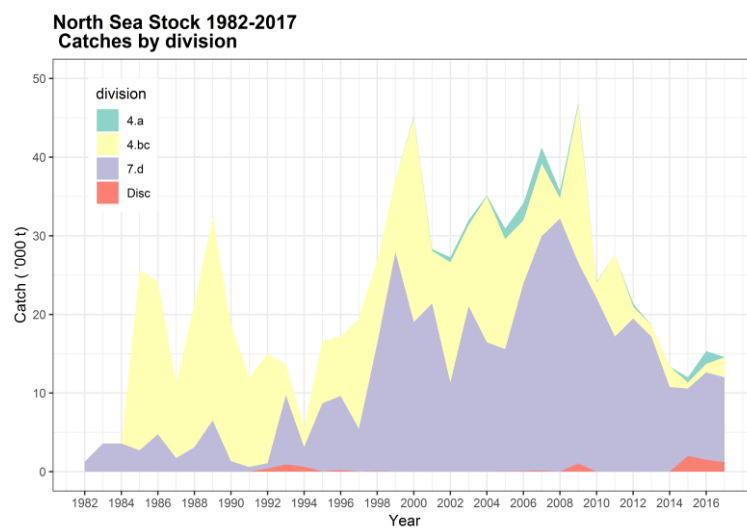


Figure 5.4.2. North Sea horse mackerel stock. Total catches by Division during the period 1982-2017.

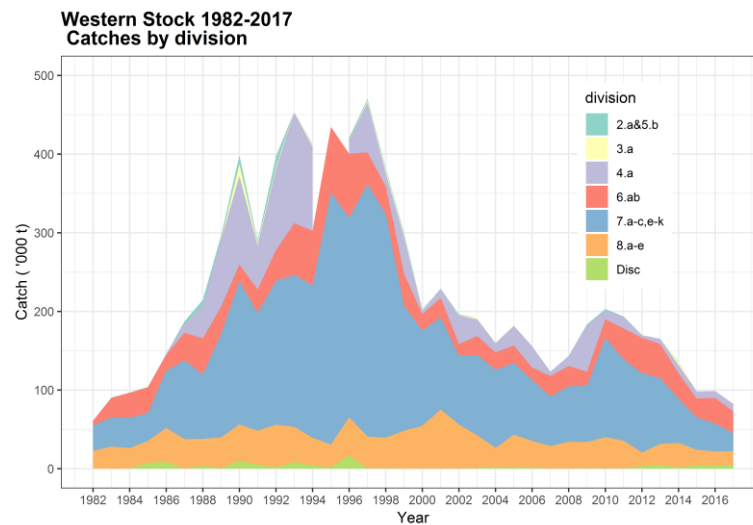


Figure 5.4.3. Western horse mackerel stock. Total catches by Sub-Area during the period 1982–2017.

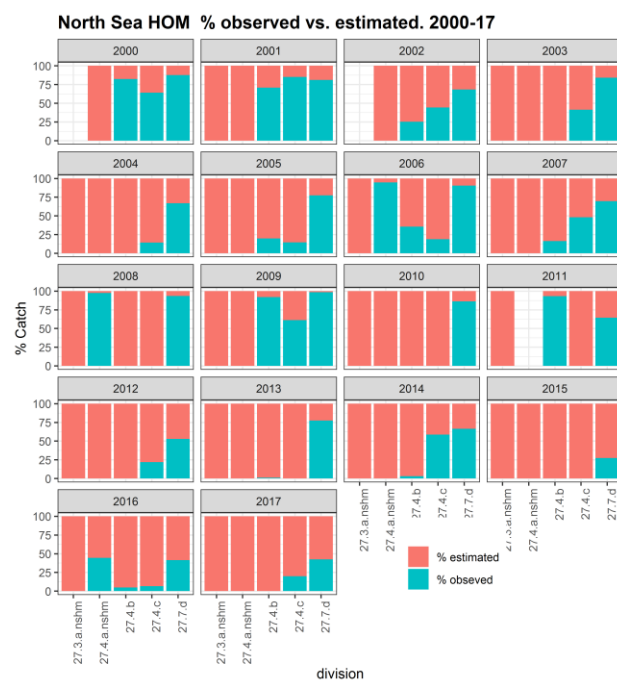


Figure 5.9.1 North Sea horse mackerel stock. Percentage sampled catch (blue) vs. unsampled catch (red) by division and year. Period 2000–2017.

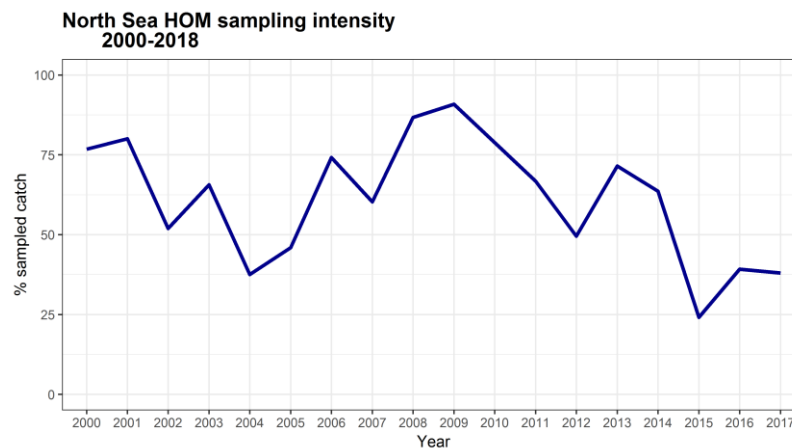


Figure 5.9.2. North Sea horse mackerel stock. Sampling intensity index as percentage sampled catch in total catch by year. Period 2000–2017.

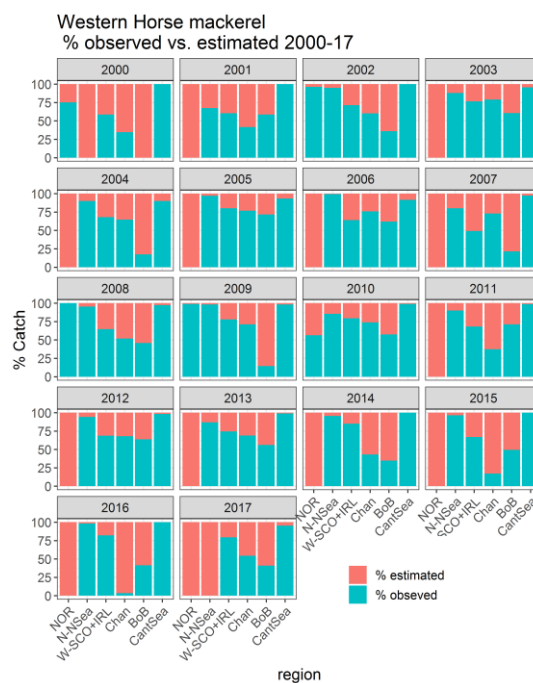


Figure 5.9.5. Western horse mackerel stock. Percentage sampled catch (blue) vs. unsampled catch (red) by division and year. Period 2000-2017. Area of distribution of Western stock was divided into different regions. Chan: (7.e,f,h); W- SCO+IRL (7.a-c, 7.j-k and 6.a); BoB (8.a,b,d); CanSea(8.c); N-Nsea (3.a and 4.a); NOR (2.a and 5.a).

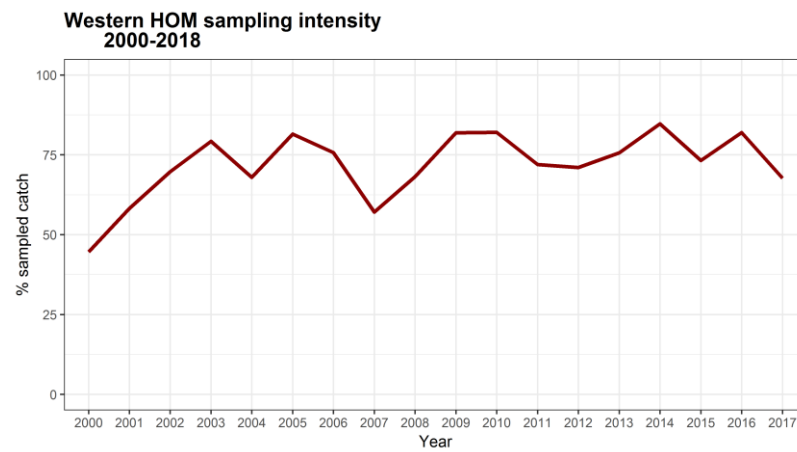


Figure 9.5.6. Western horse mackerel stock. Sampling intensity index as percentage sampled catch in total catch by year. Period 2000–2017.