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4 Cod (*Gadus morhua*) in Division 6.b (Rockall)

Assessment in 2022

There is no assessment for this stock. Advice is provided on a triennial basis (last provided in 2020) according to the approach outlined below.

In 2020, the updated assessment and advice followed the agreed procedures for category 6.2.0 of ICES RGLIFE data-limited stock (DLS) advice rules (ICES, 2017a) as set out in the stock annex. For stocks without information on abundance or exploitation, ICES considers that a precautionary reduction of catches should be implemented unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

New survey information provided in 2020 indicated increased catch rates since 2018 and stable landings per unit of effort since 2016 implying that the current level of exploitation was appropriate for this stock. A precautionary buffer was therefore not applied for the advice provided in 2020.

ICES advice applicable in 2021–2023

ICES advises that when the precautionary approach is applied, catches should be no more than 14 tonnes in each of the years 2021, 2022, and 2023.

ICES advice applicable in 2018–2020

ICES advises that when the precautionary approach is applied, catches should be no more than 14 tonnes in each of the years 2018, 2019, and 2020. ICES cannot quantify the corresponding landings.

ICES advice applicable in 2016–2017

ICES advises that when the precautionary approach is applied, landings should be no more than 17 tonnes in each of the years 2016 and 2017. ICES cannot quantify the corresponding total catches.

4.1 Data

Official landings data for cod in 6.b are shown by nation in Table 4.1 and Figure 4.1. Total reported landings were 25.5 tonnes in 2021. Some updates were made to historical landings and the landings for 2018 and 2019 are now considered incomplete due to missing landings associated with national GDPR issues in some countries. In the past, official landings have shown very high interannual variation and it is not known whether these are a true reflection of removals. Official landings by subdivision are given in Table 4.2. Most landings are taken from Subdivision 6.b.2.

Landings data have been uploaded to InterCatch for 2021. In addition, some landings age compositions and discard data were also uploaded to InterCatch. In recent years, only limited discard data have been submitted to InterCatch for this stock. Discarded weight has been submitted for the Scottish demersal otter trawl fleet (OTB_DEF, the main fleet operating in the area) for the years since 2014; however, there is high interannual variability in the estimated discard rate for

this fleet (see below). Discard information has also been provided by Ireland for some years. Given the uncertainty surrounding these data, no estimates of total discards are provided.

	2017	2018	2019	2020	2021
Scottish OTB_DEF	1.96%	60.7%	2.4%	0.6%	23.4%
Irish OTB_DEF	0.63%	NA	18.3%	NA	17.8%

Commercial LPUE data

Irish and Scottish landings, effort and LPUE are presented in Figures 4.2 and 4.3 and Tables 4.3 and 4.4. Figure 4.2 shows a large decline in the Irish LPUE between 1995 and 2003 followed by relatively stable values at a level much lower than at the start of the time-series. In 2017, there was a large increase in effort for this fleet exceeding the previous time-series maximum. The recording of hours fished data in the log sheets is not mandatory for the Scottish fleet and consequently the data are incomplete. Scottish otter-trawl fleet data are therefore in units of kg/kWday. The Scottish time-series is much shorter and relatively noisier than the Irish time-series. Whilst there were marked increases in LPUE in 2015 and 2016, given the magnitude of increase it seems unlikely to be completely attributable to an increase in stock size (an almost five-fold increase over two years) and LPUE has subsequently declined.

Survey data

Two trawl surveys cover Division 6b: the Scottish Irish Anglerfish Megrim Industry–Science Survey (SIAMISS, G3745) which generally takes place in quarter 2, and the Scottish Rockall IBTS (Rock-WIBTS-Q3, G4436) which takes place in quarter 3. Neither surveys have particularly high catch rates of cod. Table 4.5 contains catch rates by age from the Rock-WIBTS-Q3 survey. The survey typically catches on a very truncated age range of fish with a complete lack of 0-group and very few fish above age 4 and therefore may not be a particularly good index for cod in Division 6b. Biomass estimates from the SIAMISS survey (Figure 4.4) are very uncertain, but the mean value shows an increase to 2018 and decrease in 2019. These estimates have not been updated since then.

4.2 References

ICES. 2017a. Advice basis. *In* Report of the ICES Advisory Committee, 2017. ICES Advice 2017, Book 1, Section 1.2.

Table 4.1. Cod in Division 6.b (Rockall). Official catch statistics.

Country	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Faroe Islands	18	-	1	-	31	5	-	-	-	1	-	-	-	-	-	-	-
France	9	17	5	7	2	-	-	-	-	-	-	-	-	-	-	-	+
Germany	-	3	-	-	3	-	-	126	2	-	-	-	10	22	3	11	1
Ireland	-	-	-	-	-	-	400	236	235	472	280	477	436	153	227	148	119
Norway	373	202	95	130	195	148	119	312	199	199	120	92	91	55	52	85	152
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-
Russia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Spain	241	1200	1219	808	1345	-	64	70	-	-	-	2	5	1	6	4	3
UK (E&W and NI)	161	114	93	69	56	131	8	23	26	103	25	90	23	20	32	22	4
UK (Scotland)	221	437	187	284	254	265	758	829	714	322	236	370	210	706	341	389	286
UK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1023	1973	1600	1298	1886	549	1349	1596	1176	1097	661	1031	775	962	661	659	572

Table 4.1. Continued. Cod in Division 6.b (Rockall). Official catch statistics.

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*	2021*
Faroe Islands	-	-	-	-	-	-	-	-	3	5	-	-	-	-	-	-	-	-	-	-	-
France	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ireland	40	18	11	7	12	23	24	41	20	6	12	1	2	6	5	15	17	**	**	14	4
Norway	89	28	25	23	7	7	12	12	25	27	49	11	3	+	18	11	3	1	5	1	-
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Russia	26	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Spain	1	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
UK (E&W and NI)	2	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UK (Scotland)	176	67	57	45	43	29	26	41	48	23	37	11	9	-	-	-	-	-	-	-	-
UK	-	-	-	-	-	-	-	-	-	-	-	-	-	10	18	37	38	49	51	27	21
Total	334	115	102	75	62	58	62	94	97	61	98	23	14	15	41	62	58	50**	56**	42	25

* Preliminary.

** Incomplete/missing due to national GDPR clauses.

+ < 0.5 tonnes.

Table 4.2. Cod in 6.b. Official landings by subdivision.

Year	Subdivision 6b.1	Subdivision 6b.2
2012	0.13	23.04
2013	0.39	13.11
2014	0.02	16.25
2015	13.23	27.77
2016	3.16	59.12
2017	2.52	54.55
2018 [^]	1.452	62.5
2019 [^]	2.4	53.8
2020 ^{^^}	0.6	14.5
2021 ^{^^}		4.1

[^] Incomplete due to national GDPR clauses.

^{^^}Incomplete as UK data only reported at division level.

Table 4.3. Cod in 6.b. Landings, effort and LPUE data from the Irish otter-trawl fleet.

Year	Landings tonnes	Effort '000s Hrs	Lpue Kg/Hr
1995	414.9	9.1	45.39
1996	402	7.2	55.68
1997	130.5	7.2	18.2
1998	207.1	7.3	28.23
1999	137.8	8.79	15.88
2000	101.1	9.9	10.23
2001	33.3	7.2	4.6
2002	16.2	2.6	6.18
2003	9.9	4.5	2.18
2004	6.9	2.2	3.08
2005	8.8	3.3	2.68
2006	22.2	5.9	3.76
2007	24.2	6.6	3.68
2008	41.6	9.9	4.21
2009	21.7	4.4	4.97
2010	7.5	3.3	2.3
2011	10.2	2.5	4.01
2012	1	3.2	0.31
2013	1.8	3.8	0.46
2014	5.6	4.2	1.34
2015	5.1	4.7	1.07
2016	16.4	6.2	2.65
2017	17.3	14.9	1.16
2018	13.3	11.8	1.13
2019	9.5	17.2	0.55
2020	13.3	15.1	0.88

Table 4.4. Cod in 6.b. Landings, effort and LPUE data from the Scottish TR1 (OTB_DEF) fleet.

Year	Inds(t)	eff(kwdays)	Lpue(kg/kwday)
2003	64.09	2504466	0.0256
2004	39.76	1842103	0.0216
2005	42.98	1217357	0.0353
2006	28.25	1011354	0.0279
2007	25.98	1060551	0.0245
2008	40.29	1124197	0.0358
2009	47.76	1631239	0.0293
2010	22.65	1744452	0.0130
2011	36.54	1565753	0.0233
2012	10.78	901552	0.0120
2013	9.09	532767	0.0171
2014	9.70	668665	0.0145
2015	19.92	563098	0.0354
2016	34.01	514486	0.0661
2017	37.71	794571	0.0475
2018	49.25	794017	0.062
2019	50.65	1078714	0.046
2020	26.736	963518	0.027
2021	21.46	919033	0.023

Table 4.5. Cod in 6.b. Survey data made available to the WG: Scottish Q3 ground fish survey ((Rock-WIBTS-Q3)). Catch rates are given as number per 10 hours.

Year	Effort (10 Hours)	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9
2011	10	0	0	0	0	0	0	0	0	0	0
2012	10	0	0	0	0	0	0	0	0	0	0
2013	10	0	0.493	0.493	0	0	0	0	0	0.403	0
2014	10	0	0.279	0.894	0	0	0	0	0	0	0
2015	10	0	0	0.922	0.307	0	0	0	0	0	0.307
2016	10	0	0	0.269	0.538	0.538	0	0	0.269	0	0
2017	10	0	0	0	0	0.922	1.062	0	0	0	0
2018	10	0	0	0.307	0.614	0.307	0.307	0	0	0	0
2019	10	0	1.249	0.453	0.969	0.094	0	0	0	0	0
2020	10	0	1.117	0.922	2.432	0.307	0	0	0	0	0
2021	10	0	0	1.203	0.896	0.614	0	0	0	0	0

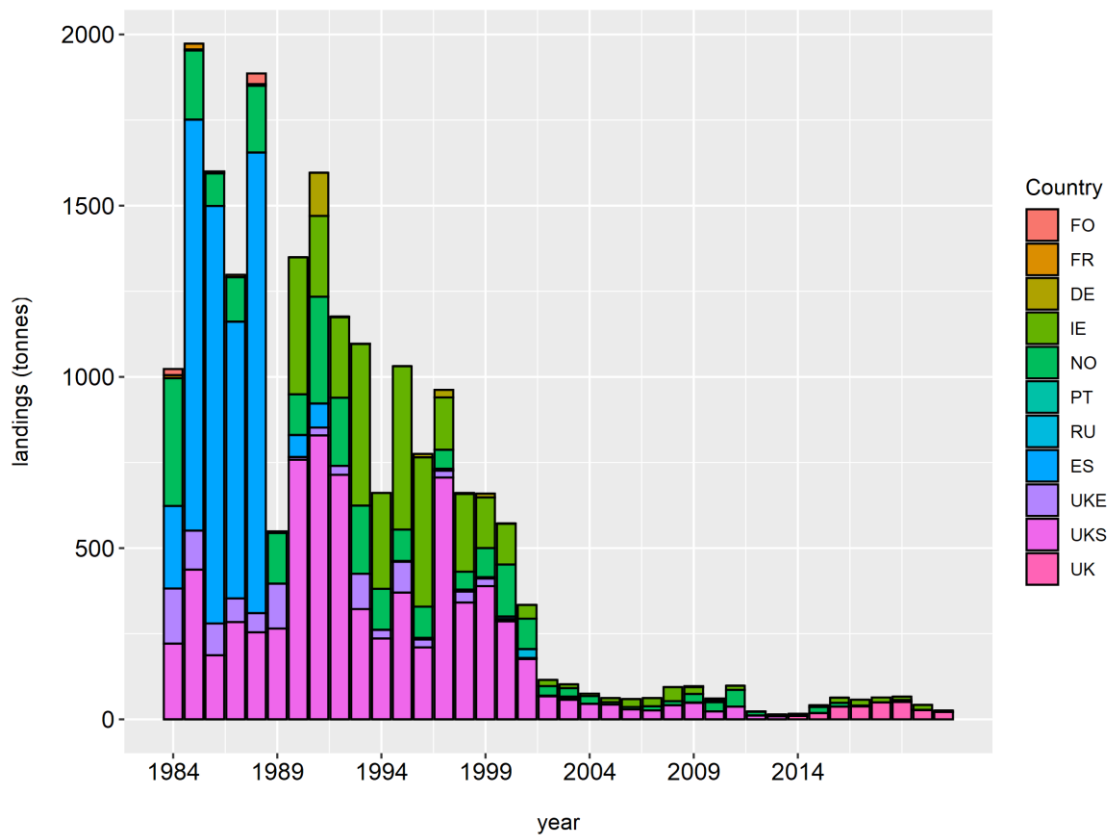


Figure 4.1. Cod in Division 6.b. Total of official landings by nation. In some cases, official landings are missing due to national GDPR clauses and in which case ICES estimates are presented here instead.

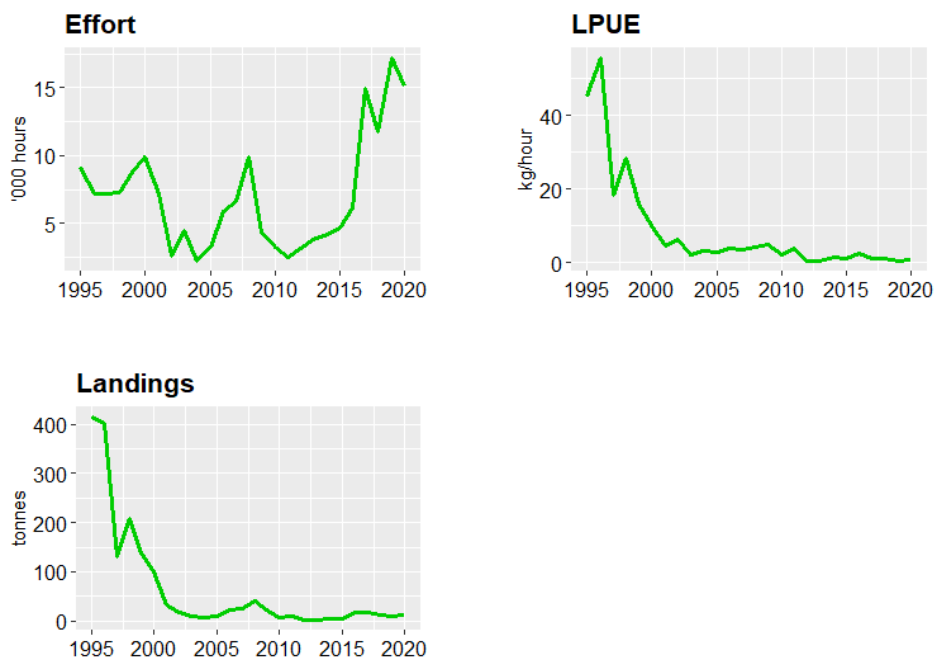


Figure 4.2. Cod in Division 6.b. Landings, effort and LPUE (kg/hr) from the Irish Otter-trawl fleet. No update for 2021.

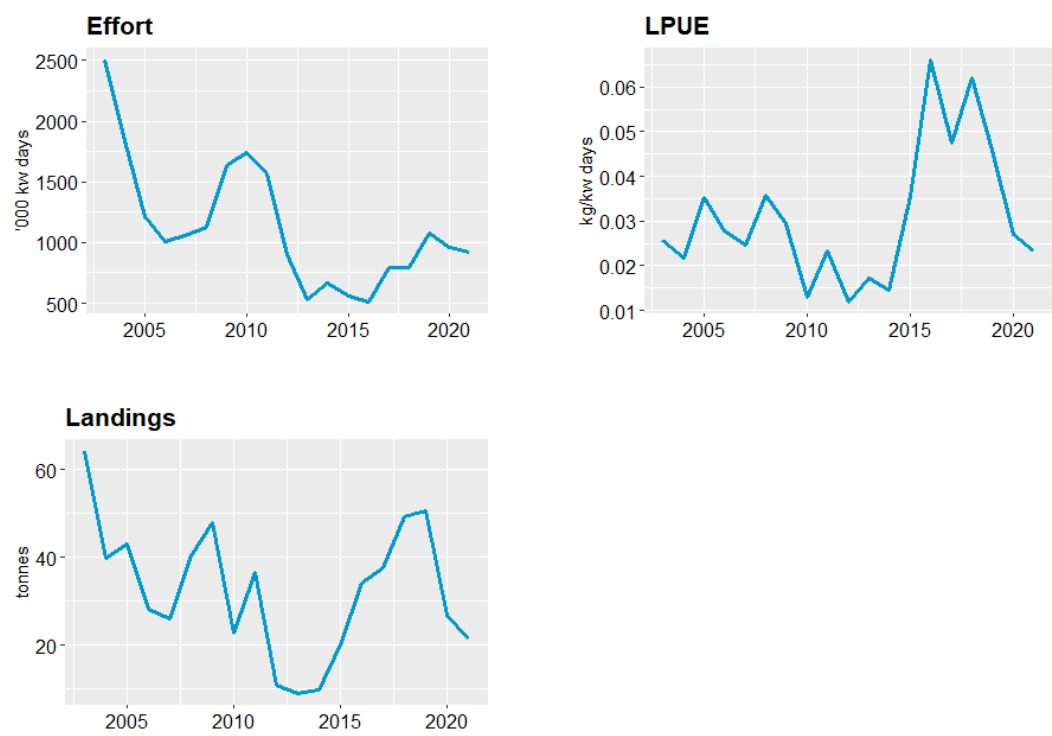


Figure 4.3. Cod in Division 6.b. Landings, effort and LPUE (Kg/kWday) from the Scottish OTB_DEF fleet.

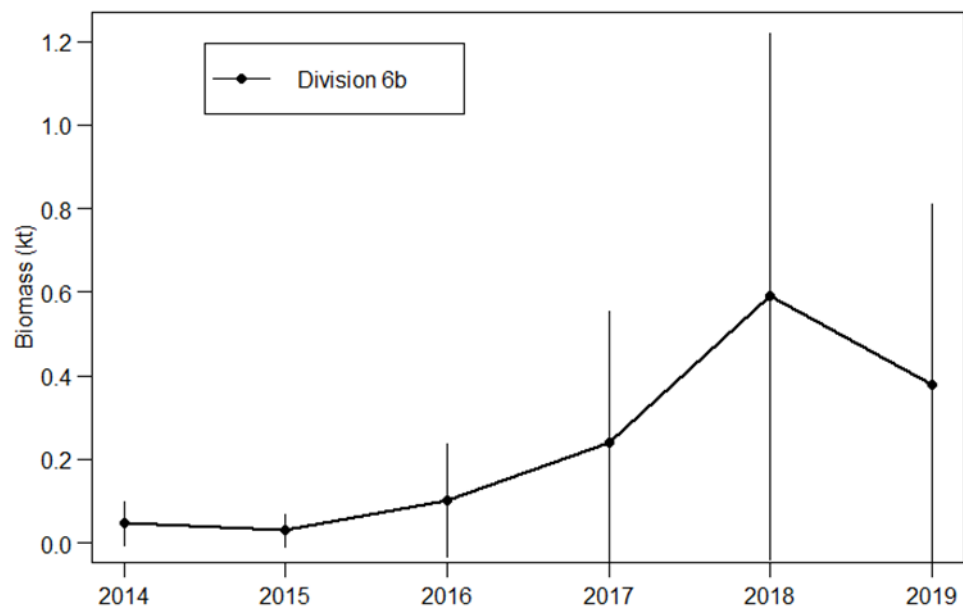


Figure 4.4. Cod in Division 6b. Estimated biomass from SIAMISS survey.