

## ECOREGION STOCK

### Widely Distributed and Migratory Stocks

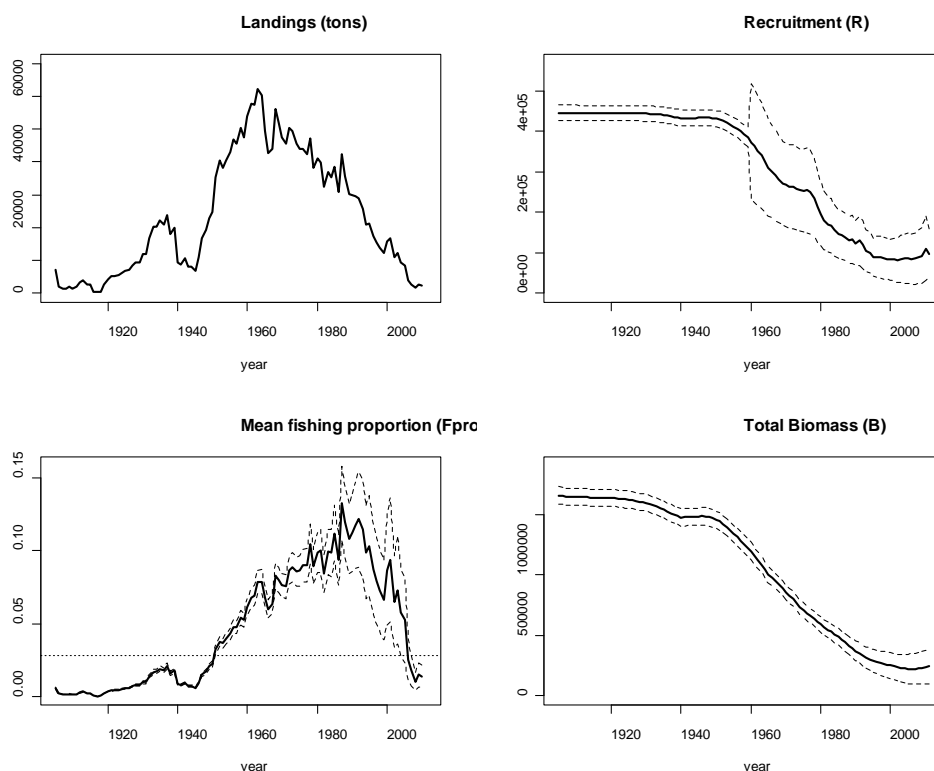
### Spurdog in the Northeast Atlantic

#### Advice for 2012

ICES advises on the basis of the precautionary approach that there should be no targeted fishery and that catches in mixed fisheries should be reduced to the lowest possible level. A rebuilding plan should be developed for this stock.

#### Stock status

F (Fishing Mortality)				
	2008	2009	2010	
MSY Exploitation Ratio	✓	✓	✓	Below target
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	?	?	Undefined
SSB (Spawning-stock Biomass)				
	2009	2010	2011	
MSY ( $B_{trigger}$ )	?	?	?	Undefined
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	?	?	Undefined
Qualitative evaluation	→	→	✗	Below poss. reference points



**Figure 9.4.6.1** Spurdog in the Northeast Atlantic. Long-term trends in landings (tonnes), recruitment (number of pups), mean exploitation ratio (average ages 5–30, dotted horizontal line = MSY exploitation ratio) and total biomass (tonnes). Dashed lines reflect estimates of precision ( $\pm 2$  standard deviations).

The stock has suffered a historical high fishing mortality for more than four decades. The spawning biomass and recruitment have declined substantially over the past decades and are currently the lowest observed while exploitation is estimated to be below the MSY exploitation ratio.

## Management plans

No management plans are currently in place.

## Biology

Spurdog is a long-lived, slow-growing, and late-maturing species, and is therefore particularly vulnerable to exploitation. Population productivity is low, with low fecundity and a protracted gestation period. Spurdogs form size- and sex-specific shoals and therefore aggregations of large fish (i.e. mature females) are easily targeted by longline and gillnet fisheries.

## Environmental influence on the stock

The effect of changes in the environment on spurdog populations is not known.

## The fisheries

As the TAC was set at zero, there were no directed fisheries in EC waters in 2010. An unquantified amount of discarding took place from mixed demersal trawl and mixed gillnet fisheries operating in EC waters.

<b>Catch by fleet</b>	Total landings in 2010 were 1045 t, mainly from Norway and France. There are no estimates of total (dead) discards, although these are likely to have increased from 2010.
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## Effects of the fisheries on the ecosystem

Spurdog are largely taken in mixed demersal and gillnet fisheries. There are currently no known ecosystem impacts specific to the catching of spurdog.

## Quality considerations

There are concerns over the quality of the catch data (including total catch and length compositions of the landings). Trends in survey catch rates are also uncertain. Discarding rates since the zero TAC was introduced are uncertain, as is the survivorship of the discards. See supporting information for more details.

## Scientific basis

<b>Assessment type</b>	Age-length and sex-structured model (Punt and Walker, 1998).
<b>Input data</b>	GLM standardized Scottish survey index, Scottish survey length–frequency data (ScoGFS-WIBTS-Q1, ScoGFS-WIBTS-Q4, Sco-IBTS-Q1, Sco-IBTS-Q3), total landings, and UK (E & W) and UK (Scotland) landings length frequencies.
<b>Discards and bycatch</b>	Discards are not included in the assessment.
<b>Indicators</b>	Other survey trends: UK (E & W) Celtic Seas groundfish survey (EngW-WIBTS-Q4), UK (Northern Ireland) groundfish surveys (NIGFS-WIBTS-Q1 and NIGFS-WIBTS-Q4), Irish Celtic Seas survey (IGFS-WIBTS-Q4), and North Sea IBTS (IBTS).
<b>Other information</b>	An inter-benchmark assessment was carried out in summer 2011.
<b>Working group report</b>	<a href="#">WGEF 2011</a>

**ECOREGION**      **Widely Distributed and Migratory Stocks**  
**STOCK**            **Spurdog in the Northeast Atlantic**

**Reference points**

	Type	Value	Technical basis
MSY Approach	MSY $B_{\text{trigger}}$	Not defined.	
	MSY exploitation ratio	0.029	Catch as a proportion of the total biomass, assuming average selection over the last three years, reflecting a non-target selection pattern.
Precautionary Approach	$B_{\text{lim}}$	Not defined.	
	$B_{\text{pa}}$	Not defined.	
	$F_{\text{lim}}$	Not defined.	
	$F_{\text{pa}}$	Not defined.	

**Outlook for 2012**

No short-term forecast is presented for this stock.

***Management plans***

There are no management plans in place for this stock.

***MSY approach***

Fishing mortality appears to have reduced below the MSY exploitation ratio in recent years. However, given the very low spawning biomass, recruitment, and productivity of the species it is not possible to identify any non-zero catch which would be compatible with the MSY approach.

***PA approach***

Given that spurdog spawning biomass and recruitment are currently the lowest observed and that spurdog is a long-lived, slow-growing, and late-maturing species and therefore particularly vulnerable to fishing mortality, ICES advises on the basis of the precautionary approach that there should be no targeted fishery in 2012 and that catches in mixed fisheries should be reduced to the lowest possible level.

The stock currently appears stable at a low level, but the recent period of stability is short compared to the longevity of the species. Given this longevity, stock recovery will be slow.

**Additional considerations**

Historically, spurdogs were subjected to large targeted fisheries but were also taken as a bycatch in mixed trawl fisheries. In the latter fisheries, measures to reduce overall demersal fishing effort should be applied to benefit spurdog recovery. Discarding of spurdogs has increased with increasingly restrictive TACs; some individuals do survive after discarding although the proportion surviving varies considerably depending on a number of factors (e.g. size of catch, catching method, time on deck, etc.).

A rebuilding plan is needed for this stock. Rebuilding measures should incorporate biomass targets and rebuilding timelines. Enhanced data collection schemes should be developed in the form of science-industry collaborations.

***Regulations and their effects***

In 2009, a maximum landing length (100 cm) was introduced, and this deterred many of the fisheries targeting spurdog. In theory, the maximum landing length of 100 cm will restrict fisheries targeting mature females, but will not impede females being discarded if they are harvested together with smaller individuals (< 100 cm). As the mortality rate of discarded spurdogs is unknown, the maximum landing length alone does not afford complete protection of mature females.

The introduction of the U.K. “Buyers and Sellers” regulation and Irish “Sales Note” regulation means that unreported landings are expected to have reduced since 2006.

### *Information from the fishing industry*

Anecdotal reports suggest that the restrictive TAC in 2010 and the zero TAC in 2011 have increased the discards of spurdogs in mixed fisheries.

### *Revisions in data and methodologies*

The data are consistent with last year. The assessment methodology has been updated, subject to a benchmark in 2011.

### *Uncertainties in assessment and advice*

Because of the number of assumptions made within the assessment model, uncertainty is likely to be underestimated. Estimates of total landings of Northeast Atlantic spurdog have been used, together with UK length–frequency distributions. However, there are still concerns over the quality of the data as a consequence of (a) uncertainty in the historical level of catches because of misreporting and generic landings categories; (b) lack of commercial length–frequency information for countries other than the UK; and (c) lack of discard information. In addition, survey data examined should be extended to cover the whole stock. Future assessments require updated and validated growth parameters (particularly for larger individuals) and better estimates of natural mortality.

### *Comparison with previous assessment and advice*

The basis for the advice is the same as in 2010, i.e., the precautionary approach.

### **Sources**

- ICES. 2011. Report of the Working Group on Elasmobranch Fishes, ICES Headquarters, 20–24 June 2011. ICES CM 2011/ACOM:19.
- Punt, A. E., and Walker, T. I. 1998. Stock assessment and risk analysis for the school shark (*Galeorhinus galeus*) off southern Australia. *Marine and Freshwater Research*, 49(7): 719–731.

**Table 9.4.6.1**

Spurdog in the Northeast Atlantic. ICES advice, management, and landings.

Year	ICES Advice	Predicted catch corresp. to advice	Agreed TAC	ICES Landings <sup>(4)</sup>
1991				29.7
1992	None			29.2
1993	None			25.7
1994	None			21.0
1995	None			21.5
1996	None			17.3
1997	None			15.4
1998	None			13.9
1999	None		8.9 <sup>(1)</sup>	12.2
2000	None		8.9 <sup>(1)</sup>	15.9
2001	None		8.9 <sup>(1)</sup>	16.6
2002	None		7.1 <sup>(1)</sup>	11.0
2003	None		5.6 <sup>(1)</sup>	12.2
2004	None		4.5 <sup>(1)</sup>	9.4
2005	None		1.1 <sup>(1)</sup>	8.4
2006	F=0	0	1.1 <sup>(1)</sup>	4.1
2007		0	3.7 <sup>(2)</sup>	2.8
2008	F=0	0	2.6 <sup>(3)</sup>	1.7
2009	no fishery	0	1.4	1.5
2010		0	0.142 <sup>(5)</sup>	1.0
2011	F=0	0	0	-
2012	F=0	0		

Weights in '000 tonnes.

(1) TAC for ICES Subarea IV and Division IIa (EC).

(2) Combined TAC for ICES Subarea IV and Division IIa (EC) and for ICES Division and Subareas IIIa, I, V, VI, VII, VIII, XII, and XIV (EU and international waters).

(3) Combined TAC for ICES Subarea IV and Division IIa (EC) and for ICES Subareas I, V, VI, VII, VIII, XII, and XIV (EU and international waters).

(4) Landings for total stock area: Subareas I–IX.

(5) Landing of bycatch permitted up to 10% of the 2009 quota.

**Table 9.4.6.2** Spurdog in the Northeast Atlantic. Landings (tonnes) by country (1980–2010).

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgium	1097	1085	1110	1072	1139	920	1048	979	657	750	582	393	447	335	396
Denmark	1404	1418	1282	1533	1217	1628	1008	1395	1495	1086	1364	1246	799	486	212
Faroe Islands	0	22	0	0	0	0	0	0	0	6	2	3	25	137	203
France	17514	19067	12430	12641	8356	8867	7022	11174	7872	5993	4570	4370	4908	4831	3329
Germany	43	42	39	25	8	22	41	48	27	24	26	6	55	8	21
Iceland	36	22	14	25	5	9	7	5	4	17	15	53	185	108	97
Ireland	108	476	1268	4658	6930	8791	5012	8706	5612	3063	1543	1036	1150	2167	3624
Netherlands	217	268	183	315	0	0	0	0	0	0	0	0	0	0	0
Norway	5925	3941	3992	4659	4279	3487	2986	3614	4139	5329	8104	9633	7113	6945	4546
Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portugal	2	0	0	0	0	0	1	5	3	2	128	188	250	323	190
Russia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	0	0	8	653	0	0	0	0	0	0	0	0	0	0	0
Sweden	399	308	398	300	256	360	471	702	733	613	390	333	230	188	95
UK (E&W)	9229	9342	8024	6794	8046	7841	7047	7684	6952	5371	5414	3770	4207	3494	3462
UK (Sc)	4994	3970	3654	4371	4957	6749	6267	8043	8075	8024	7768	8531	9677	6614	4676
Total	40968	39961	32402	37046	35193	38674	30910	42355	35569	30278	29906	29562	29046	25636	20851

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Belgium	391	430	443	382	354	400	410	23	11	13	20	17	0	0	7	1
Denmark	146	142	196	126	131	146	156	107	232	219	82	68	0	0	0	15
Faroe Islands	310	51	218	362	486	368	613	340	224	295	225	271	241	122	462	0
France	1978	1607	1555	1286	998	4342	4304	2569	1705	1062	2426	715	453	366	577	348
Germany	100	38	21	31	54	194	304	121	98	138	144	6	0	0	1	0
Iceland	166	156	106	80	57	107	199	276	200	142	71	75	36	52	102	62
Ireland	3056	2305	2214	1164	904	905	1227	1214	1416	1076	940	614	558	163	214	26
Netherlands	0	0	0	0	0	28	39	27	10	25	41	34	28	26	5	7
Norway	3940	2748	1567	1293	1461	1643	1424	1091	1119	1054	1010	790	616	711	543	512
Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portugal	256	120	100	46	21	2	3	4	4	9	6	10	9	4	2	2
Russia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	0	0	0	28	95	372	363	306	135	17	71	106	16	15	29	4
Sweden	104	154	196	140	114	123	238	0	275	244	170	148	95	9	80	5
UK (E&W)	2354	2670	3066	4480	4461	3654	4516	2823	3109	1729	1887	434	386	91	194	8
UK (Sc)	8517	6873	5665	4501	3248	3606	2897	2120	3708	3342	1263	766	415	178	345	56
Total	21318	17294	15347	13919	12384	15890	16693	11020	12246	9365	8356	4054	2853	1737	2561	1045

\*2010 data are preliminary.  
No discard data are included.