

5.3.3 Anglerfish (*Lophius piscatorius* and *L. budegassa*) in subareas 4 and 6 and Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)

ICES stock advice

ICES advises that when the precautionary approach is applied, catches in 2017 should be no more than 22 007 tonnes. If discard rates do not change from the average of the last three years (2013–2015), this implies landings of no more than 21 171 tonnes.

Stock development over time

The stock size indicator shows an increase in the last three years (2014–2016). The relative harvest rate has been declining since 2012.

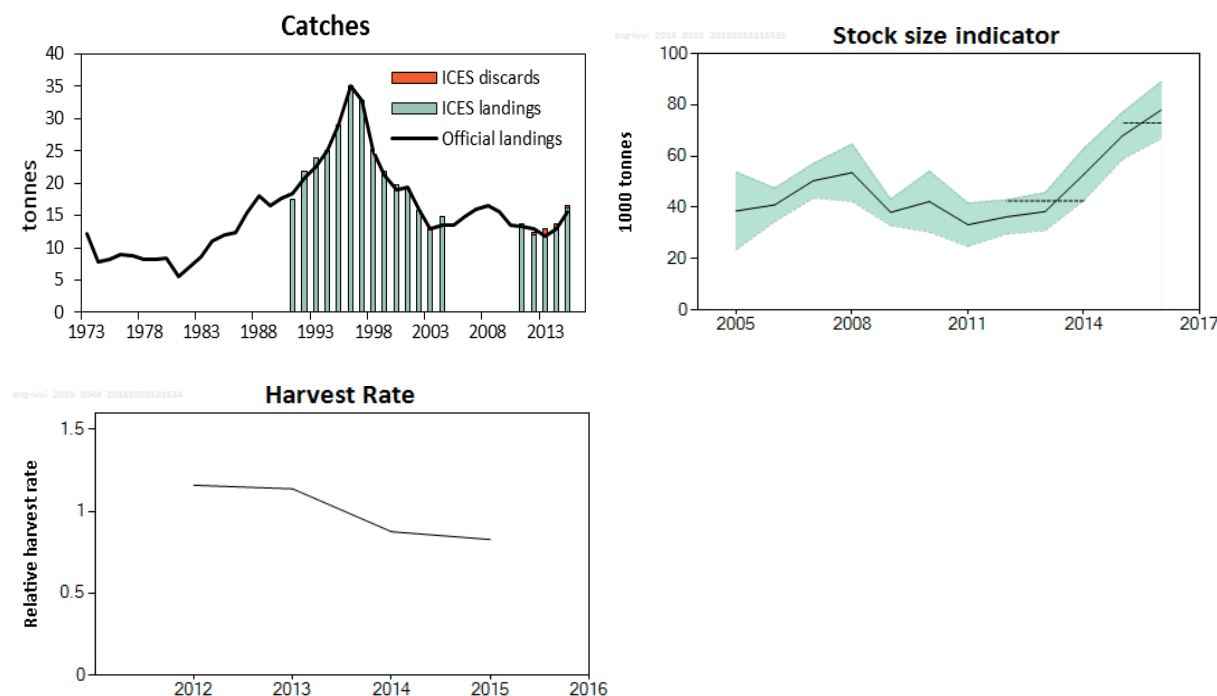


Figure 5.3.1 Anglerfish in subareas 4 and 6 and Division 3.a. Left: Official and ICES landings, and ICES discards (thousand tonnes). Right: Stock biomass (thousand tonnes) from SCO-IV-VI-AMISS-Q2. The dashed horizontal lines indicate the average of the respective year range. The shaded area represents the 95% confidence interval. Bottom: Relative harvest rate (total catch/stock size indicator).

Stock and exploitation status

Table 5.3.1 Anglerfish in subareas 4 and 6 and Division 3.a. State of the stock and fishery relative to reference points.

| | | Fishing pressure | | | Stock size | | | | |
|---------------------------|----------------------|------------------|------|------|----------------------|------|------|---|------------------------|
| | | 2013 | 2014 | 2015 | 2014 | 2015 | 2016 | | |
| Maximum sustainable yield | F_{MSY} | ? | ? | ? | MSY | ? | ? | ? | Undefined |
| Precautionary approach | F_{pa} , F_{lim} | ? | ? | ? | B_{pa} , B_{lim} | ? | ? | ? | Undefined |
| Management plan | F_{MGT} | - | - | - | SSB_{MGT} | - | - | - | Not applicable |
| Qualitative evaluation | - | ↘ | ↘ | ↘ | - | ↗ | ↗ | ↗ | Declining / Increasing |

Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The SCO-IV-VI-AMISS-Q2 survey was used as the index of stock development. The advice is based on a comparison of the two latest index values (index A) with the three preceding values (index B), multiplied by the recent advised landings.

The index is estimated to have increased by more than 20% and thus the uncertainty cap was applied. The stock status relative to candidate reference points is unknown. The index ratio has increased by more than 50%; therefore, no additional precautionary buffer was applied.

Table 5.3.3.2 Anglerfish in subareas 4 and 6 and Division 3.a. For stocks in ICES data categories 3–6, one catch option is possible.

| | | |
|--|-------------|---------|
| Index A (2015, 2016) | | 72930 t |
| Index B (2012, 2013, 2014) | | 42427 t |
| Index ratio (A/B) | | 1.719 |
| Uncertainty cap | Applied | 1.2 |
| Recent advised landings for 2016 | | 17642 t |
| Discard rate (average 2013–2015) | | 3.8% |
| Precautionary buffer | Not applied | - |
| Catch advice* | | 22007 t |
| Landings corresponding to the catch advice | | 21171 t |

* $[(\text{recent advised landings}) \times (\text{uncertainty cap})] / (1 - \text{discard rate})$.

Basis of the advice

Table 5.3.3.3 Anglerfish in subareas 4 and 6 and Division 3.a. The basis of the advice.

| | |
|-----------------|--|
| Advice basis | Precautionary approach |
| Management plan | There is no management plan for anglerfish in this area. |

Quality of the assessment

Discard data are available for most of the fleets except the gillnet fishery, which is not adequately sampled. This fishery accounts for 18% of the landings. The SCO-AMISS-IV-VI survey does not cover divisions 3.a, 4.b, and 4.c; collectively these areas account for approximately 9% of landings in the North Sea and Skagerrak. It is uncertain to what extent these landings affect the quality of the assessment.

Issues relevant for the advice

The assessment unit and the two TAC areas do not match. The first TAC area covers Subarea 4 and Division 2.a (EC); the second TAC area covers Division 5.b (EC) and subareas 6, 12, and 14. There is no TAC for Division 3.a. Because of this mismatch, there is a potential for catches to exceed the advice.

Reference points

No reference points are defined for this stock. MSY proxies were examined (ICES, 2016a) but no reliable proxy could be identified for this stock.

Basis of the assessment

Table 5.3.3.4 Anglerfish in subareas 4 and 6 and Division 3.a. The basis of the assessment.

| | |
|--------------------------|---|
| ICES stock data category | 3 (ICES, 2016b). |
| Assessment type | Survey trends (ICES, 2016c). |
| Input data | International catch and dedicated anglerfish surveys in Subarea 6 and Division 4.a (Scotland/Ireland SCO-IV-VI-AMISS-Q2). |
| Discards and bycatch | Discard estimates are available from 2012 and on. |
| Indicators | Length distribution from survey. |
| Other information | Last benchmarked in 2013 (WKROUND; ICES, 2013), which did not result in a revision of the assessment method. |
| Working group | Working Group for the Celtic Seas Ecoregion (WGCSE). |

Information from stakeholders

There is no available information.

History of the advice, catch, and management

Table 5.3.3.5 Anglerfish in subareas 4 and 6 and Division 3.a. History of ICES advice, the agreed TAC, and ICES estimates of landings.

| Year | ICES advice | Predicted landings corresp. to advice | Predicted catch corresp. to advice | Predicted catch corresp. to advice for Division 3.a and Subarea 4 | Predicted catch corresp. to advice for Subarea 6 | Agreed TAC* | Official landings | ICES landings |
|------|--|---|--|--|---|----------------|----------------------|------------------|
| 1990 | Not assessed | - | - | - | - | 8.6 | 17.6 | |
| 1991 | Not assessed | - | - | - | - | 8.6 | 18.4 | 16.8 |
| 1992 | Not assessed | - | - | - | - | 8.6 | 20.8 | 20.9 |
| 1993 | No long-term gain in increased F** | - | - | - | - | 8.6 | 22.6 | 23.1 |
| 1994 | No long-term gain in increased F** | - | - | - | - | 8.6 | 25.0 | 24.2 |
| 1995 | A precautionary TAC not exceeding recent catch levels** | - | - | - | - | 8.6 | 28.9 | 28.1 |
| 1996 | A precautionary TAC not exceeding recent catch levels** | - | - | - | - | 8.6 | 35.0 | 34.4 |
| 1997 | Reduction in fishing effort** | - | - | - | - | 8.6 | 32.8 | 32.0 |
| 1998 | Reduction in fishing effort** | - | - | - | - | 30.7 | 25.1 | 24.7 |
| 1999 | Reduce fishing effort, effective implementation of the TAC** | - | - | - | - | 30.7 | 21.2 | 21.1 |
| 2000 | 40% reduction in catches | - | - | < 9.7 | < 7.4 | 25.7 | 19.0 | 19.1 |
| 2001 | 2/3 of the catches in 1973–1990 | - | - | 5.7 | 4.3 | 20.5 | 19.3 | 18.5 |
| 2002 | 2/3 of the catches in 1973–1990 | - | - | 5.7 | 4.3 | 15.3 | 16.0 | 15.2 |
| 2003 | Reduce F below F _{pa} | < 6.7*** | - | - | - | 10.2 | 13.0 | 12.5 |
| 2004 | Reduce F below F _{pa} | < 8.8 | - | - | - | 10.2 | 13.5 | 14.2 |
| 2005 | No effort increase | - | - | - | - | 15.0 | 13.6 | na |
| 2006 | No effort increase | - | - | - | - | 15.0 | 15.2 | na |
| 2007 | No effort increase | - | - | - | - | 16.5 | 16.4 | na |
| 2008 | No effort increase | - | - | - | - | 16.5 | 16.9 | na |
| 2009 | Same advice as last year | - | - | - | - | 16.9 | 16.0 | na |
| 2010 | No effort increase | - | - | - | - | 16.9 | 13.9 | na |
| 2011 | Decrease effort | - | - | - | - | 15.1^ | 13.7 | 13.8. |
| 2012 | Reduce catch | - | - | - | - | 14.344^ | 12.3. | 11.9 |
| 2013 | Decrease catches by 20% | - | - | - | - | 13.627^ | 12.1 | 12.1 |
| 2014 | Decrease catches by 20% | 10.231 | - | - | - | 12.265^ | 13.3 | 13.2 |

| Year | ICES advice | Predicted landings corresp. to advice | Predicted catch corresp. to advice | Predicted catch corresp. to advice for Division 3.a and Subarea 4 | Predicted catch corresp. to advice for Subarea 6 | Agreed TAC* | Official landings | ICES landings |
|------|--|---------------------------------------|------------------------------------|---|--|-------------|-------------------|---------------|
| 2015 | Increase landings by 20% | 14.702 | | - | - | 16.203^ | 16.0^^ | 16.1^^ |
| 2016 | Precautionary approach (increase recent advised catch by no more than 20%) | 17.642 | ≤ 18.435 | - | - | 19.142^ | | |
| 2017 | Precautionary approach | | ≤ 22.007 | - | - | | | |

Weights in thousand tonnes.

* TAC for Subarea 4 and Division 2.a (EC) plus TAC for Division 5.b (EC) and subareas 6, 12, and 14. Prior to 1998 TAC covered only Division 5.b (EC) and subareas 6, 12, and 14.

** For Subarea 6.

*** Advice for Division 3.a, Subarea 4, and Division 6.a.

^ An additional quota of 1500 tonnes is also available for EU vessels fishing in the Norwegian zone of Subarea 4.

^^ Preliminary.

na = not available.

History of catch and landings

Table 5.3.3.6 Anglerfish in subareas 4 and 6 and Division 3.a. Catch distribution by fleet in 2015 as estimated by ICES.

| Total catch (2015) | Landings | | | | | | | | Discards |
|--------------------|----------------------------|----------|------------------------|------------------------------|-----------------|----------|------------------------|------------------------------|----------|
| | Division 3.a and Subarea 4 | | | | Subarea 6 | | | | |
| | Demersal trawls | Gillnets | <i>Nephrops</i> trawls | Other gears or not specified | Demersal trawls | Gillnets | <i>Nephrops</i> trawls | Other gears or not specified | |
| 16552 t | 71% | 18% | 7% | 4% | 68% | 18% | 7% | 11% | 420 t |
| | 11220 t | | | | 4912 t | | | | |
| | 16132 t | | | | | | | | |

Table 5.3.3.7 Anglerfish in subareas 4 and 6 and Division 3.a. Official landings by ICES area and ICES estimates of landings and discards.

| Year | 3.a | 4.a | 4.b | 4.c | 6.a | 6.b | 4 | 6 | Total (3.a, 4, 6) | ICES landings | ICES discards |
|-------|-----|-------|------|-----|------|------|-------|------|----------------------|------------------|------------------|
| 1973 | 140 | 2085 | 575 | 41 | 9221 | 127 | 2701 | 9348 | 12189 | na | |
| 1974 | 202 | 2737 | 1171 | 39 | 3217 | 435 | 3947 | 3652 | 7801 | na | |
| 1975 | 291 | 2887 | 1864 | 59 | 3122 | 76 | 4810 | 3198 | 8299 | na | |
| 1976 | 641 | 3624 | 1252 | 49 | 3383 | 72 | 4925 | 3455 | 9021 | na | |
| 1977 | 643 | 3264 | 1278 | 54 | 3457 | 78 | 4596 | 3535 | 8774 | na | |
| 1978 | 509 | 3111 | 1260 | 72 | 3117 | 103 | 4443 | 3220 | 8172 | na | |
| 1979 | 687 | 2972 | 1578 | 112 | 2745 | 29 | 4662 | 2774 | 8123 | na | |
| 1980 | 652 | 3450 | 1374 | 175 | 2634 | 200 | 4999 | 2834 | 8485 | na | |
| 1981 | 549 | 2472 | 752 | 132 | 1387 | 331 | 3356 | 1718 | 5623 | na | |
| 1982 | 529 | 2214 | 654 | 99 | 3154 | 454 | 2967 | 3608 | 7104 | na | |
| 1983 | 506 | 2465 | 1540 | 181 | 3417 | 433 | 4186 | 3850 | 8542 | na | |
| 1984 | 568 | 3874 | 1803 | 188 | 3935 | 707 | 5865 | 4642 | 11075 | na | |
| 1985 | 578 | 4569 | 1798 | 77 | 4043 | 1013 | 6444 | 5056 | 12078 | na | |
| 1986 | 524 | 5594 | 1762 | 47 | 3090 | 1326 | 7403 | 4416 | 12343 | na | |
| 1987 | 589 | 7705 | 1768 | 66 | 3955 | 1294 | 9539 | 5249 | 15377 | na | |
| 1988 | 347 | 7737 | 2061 | 95 | 6003 | 1730 | 9893 | 7733 | 17973 | na | |
| 1989 | 334 | 7868 | 2121 | 86 | 5729 | 313 | 10075 | 6042 | 16451 | na | |
| 1990 | 570 | 8387 | 2177 | 34 | 5615 | 822 | 10598 | 6437 | 17605 | na | |
| 1991 | 595 | 9235 | 2522 | 26 | 5061 | 923 | 11783 | 5984 | 18362 | 16846 | |
| 1992 | 938 | 10209 | 3053 | 39 | 5479 | 1089 | 13301 | 6568 | 20807 | 20934 | |
| 1993 | 843 | 12309 | 3144 | 66 | 5553 | 681 | 15519 | 6234 | 22596 | 23128 | |
| 1994 | 811 | 14505 | 3445 | 210 | 5273 | 777 | 18160 | 6050 | 25021 | 24246 | |
| 1995 | 823 | 17891 | 2627 | 402 | 6354 | 830 | 20920 | 7184 | 28927 | 28090 | |
| 1996 | 702 | 25176 | 1847 | 304 | 6408 | 602 | 27327 | 7010 | 35039 | 34398 | |
| 1997 | 776 | 23425 | 2172 | 160 | 5330 | 899 | 25757 | 6229 | 32762 | 31952 | |
| 1998 | 626 | 16860 | 2088 | 78 | 4506 | 900 | 19026 | 5406 | 25058 | 24667 | |
| 1999 | 660 | 13344 | 1517 | 24 | 4284 | 1401 | 14885 | 5685 | 21230 | 21194 | |
| 2000 | 602 | 12338 | 1617 | 31 | 3311 | 1074 | 13986 | 4385 | 18973 | 19080 | |
| 2001 | 621 | 12861 | 1832 | 21 | 2660 | 1309 | 14714 | 3969 | 19304 | 18536 | |
| 2002 | 667 | 11048 | 1244 | 21 | 2280 | 718 | 12313 | 2998 | 15978 | 15167 | |
| 2003 | 478 | 8523 | 847 | 20 | 2493 | 643 | 9390 | 3136 | 13004 | 12539 | |
| 2004 | 519 | 8987 | 851 | 15 | 2453 | 671 | 9853 | 3124 | 13496 | 14210 | |
| 2005 | 458 | 8424 | 688 | 5 | 3019 | 958 | 9117 | 3977 | 13552 | na | |
| 2006 | 425 | 10339 | 683 | 3 | 2785 | 915 | 11026 | 3699 | 15150 | na | |
| 2007 | 433 | 10632 | 748 | 4 | 3353 | 1261 | 11385 | 4613 | 16431 | na | |
| 2008 | 486 | 11038 | 769 | 5 | 3373 | 1247 | 11813 | 4619 | 16918 | na | |
| 2009 | 479 | 10067 | 652 | 9 | 2983 | 1821 | 10727 | 4804 | 16011 | na | |
| 2010 | 434 | 8190 | 614 | 11 | 3041 | 1606 | 8816 | 4646 | 13896 | na | |
| 2011 | 406 | 7759 | 764 | 9 | 2871 | 1871 | 8532 | 4741 | 13680 | 13770 | |
| 2012 | 422 | 6460 | 714 | 3 | 2835 | 1831 | 7177 | 4666 | 12265 | 11894 | 498 |
| 2013 | 407 | 6392 | 546 | 4 | 2666 | 2124 | 6943 | 4789 | 12139 | 12062 | 787 |
| 2014 | 439 | 7629 | 823 | 27 | 2610 | 1755 | 8479 | 4366 | 13283 | 13211 | 416 |
| 2015* | 480 | 9669 | 960 | 9 | 3365 | 1559 | 10639 | 4924 | 16042 | 16132 | 420 |

* Preliminary.

na = not available.

Summary of the assessment

Table 5.3.3.8 Anglerfish in subareas 4 and 6 and Division 3.a. Assessment summary (weights in tonnes).

| Year | Official landings | ICES landings | ICES discards | Survey index | Survey index, High | Survey index, Low |
|------|-------------------|---------------|---------------|--------------|--------------------|-------------------|
| 1973 | 12189 | na | | | | |
| 1974 | 7801 | na | | | | |
| 1975 | 8299 | na | | | | |
| 1976 | 9021 | na | | | | |
| 1977 | 8774 | na | | | | |
| 1978 | 8172 | na | | | | |
| 1979 | 8123 | na | | | | |
| 1980 | 8485 | na | | | | |
| 1981 | 5623 | na | | | | |
| 1982 | 7104 | na | | | | |
| 1983 | 8542 | na | | | | |
| 1984 | 11075 | na | | | | |
| 1985 | 12078 | na | | | | |
| 1986 | 12343 | na | | | | |
| 1987 | 15377 | na | | | | |
| 1988 | 17973 | na | | | | |
| 1989 | 16451 | na | | | | |
| 1990 | 17605 | na | | | | |
| 1991 | 18362 | 16846 | | | | |
| 1992 | 20807 | 20934 | | | | |
| 1993 | 22596 | 23128 | | | | |
| 1994 | 25021 | 24246 | | | | |
| 1995 | 28927 | 28090 | | | | |
| 1996 | 35039 | 34398 | | | | |
| 1997 | 32762 | 31952 | | | | |
| 1998 | 25058 | 24667 | | | | |
| 1999 | 21230 | 21194 | | | | |
| 2000 | 18973 | 19080 | | | | |
| 2001 | 19304 | 18536 | | | | |
| 2002 | 15978 | 15167 | | | | |
| 2003 | 13004 | 12539 | | | | |
| 2004 | 13496 | 14210 | | | | |
| 2005 | 13552 | na | | 38617 | 23479 | 53755 |
| 2006 | 15150 | na | | 40985 | 34478 | 47492 |
| 2007 | 16431 | na | | 50392 | 43676 | 57108 |
| 2008 | 16918 | na | | 53546 | 42421 | 64671 |
| 2009 | 16011 | na | | 3806 | 32987 | 43133 |
| 2010 | 13896 | na | | 42279 | 30429 | 54129 |
| 2011 | 13680 | 13770 | | 33254 | 24846 | 41662 |
| 2012 | 12265 | 11894 | 498 | 36325 | 29704 | 42946 |
| 2013 | 12139 | 12062 | 787 | 38395 | 3102 | 4577 |
| 2014 | 13283 | 13211 | 416 | 52884 | 42769 | 62999 |
| 2015 | 16042* | 16132* | 420* | 67915 | 58782 | 77047 |
| 2016 | | | | 77946 | 66831 | 89060 |

* Preliminary.
na = not available.

Sources and references

- ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM 68. 42 pp.
- ICES. 2013. Report of the Benchmark Workshop on Roundfish Stocks (WKROUND), 4–8 February 2013, Aberdeen, Scotland, UK. ICES CM 2013/ACOM:47. 213 pp.
- ICES. 2016a. Report of the Workshop to consider MSY proxies for stocks in ICES category 3 and 4 stocks in Western Waters (WKProxy), 3–6 November 2015, ICES Headquarters, Copenhagen. ICES CM 2015/ACOM:61. 183 pp.
- ICES. 2016b. General context of ICES advice. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.
- ICES. 2016c. Report of the Working Group for the Celtic Seas Ecoregion (WGCSE), 4–13 May 2016, ICES Headquarters, Copenhagen, Denmark. ICES CM 2016/ACOM:13. 1031 pp.