

Thornback ray (*Raja clavata*) in Subarea 4 and in divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat, and eastern English Channel)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, landings should be no more than 2237 tonnes in each of the years 2020 and 2021. ICES cannot quantify the corresponding catches.

Stock development over time

The stock size indicator has increased from a low level in the 1990s and has leveled off in recent years.

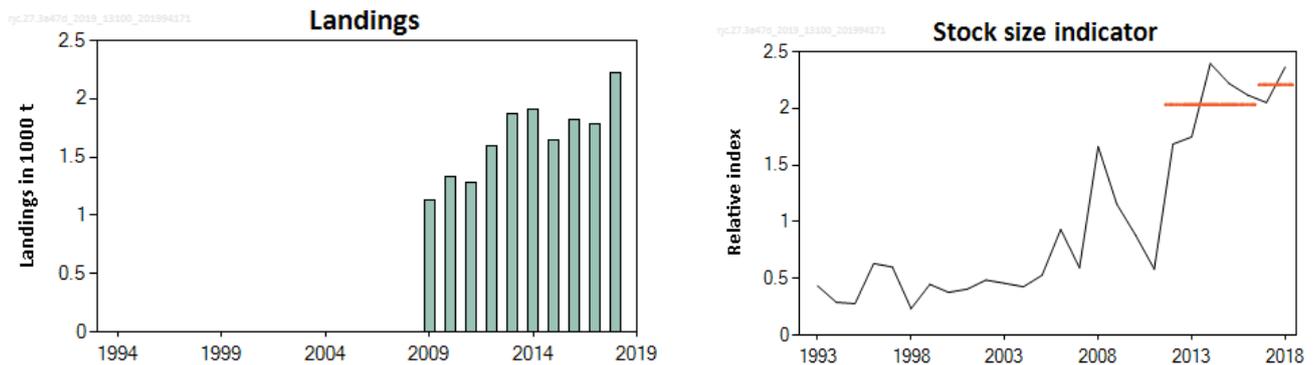


Figure 1 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. Summary of the stock assessment. Left: ICES estimates of landings of thornback ray since 2009. Right: Stock size indicator of exploitable biomass (the annual mean of four surveys (NS-IBTS-Q1, NS-IBTS-Q3, BTS-Eng-Q3, and CGFS-Q4) after results from each survey had been normalized by their long-term means, and based on individuals of ≥ 50 cm total length). The horizontal lines show the mean stock indicators for 2017–2018 and 2012–2016.

Stock and exploitation status

ICES cannot assess the stock and exploitation status relative to the maximum sustainable yield (MSY) and precautionary approach (PA) reference points because the reference points are undefined.

Table 1 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. State of the stock and fishery relative to reference points.

| | | Fishing pressure | | | Stock size | | | | | |
|---------------------------|-------------------|------------------|------|------|----------------|-------------------|------|---|---|----------------|
| | | 2016 | 2017 | 2018 | 2016 | 2017 | 2018 | | | |
| Maximum sustainable yield | F_{MSY} | ? | ? | ? | Unknown | $MSY B_{trigger}$ | ? | ? | ? | Unknown |
| Precautionary approach | F_{pa}, F_{lim} | ? | ? | ? | Unknown | B_{pa}, B_{lim} | ? | ? | ? | Unknown |
| Management plan | F_{MGT} | — | — | — | Not applicable | B_{MGT} | — | — | — | Not applicable |
| Qualitative evaluation | - | ? | ? | ? | Unknown | - | ↘ | ↘ | ↗ | Increasing |

Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). Biomass indices derived from four surveys (IBTS-Q1, IBTS-Q3, BTS-Eng-Q3, and CGFS-Q4) were used to provide a stock size indicator. The advice is based on a comparison of the two latest index values (index A) with the five preceding values (index B), multiplied by the recent landings advice.

The index is estimated to have increased by less than 20% and thus the uncertainty cap was not applied. The precautionary buffer has not been applied in the past. While the stock has increased prior to 2014, it appears to have stabilized in recent years. Because the stock size relative to candidate reference points is unknown, the precautionary buffer was therefore applied in 2019.

Discarding is known to take place, but ICES cannot quantify the corresponding catch. In addition, discard survival, which is known to occur, has not been estimated for all métiers.

Table 2 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. The basis for the catch scenarios.*

| | | |
|---|-------------|-------------|
| Index A (2017–2018) | | 2.2 |
| Index B (2012–2016) | | 2.03 |
| Index ratio (A/B) | | 1.09 |
| Uncertainty cap | Not applied | |
| Advised landings for 2018 and 2019 (issued in 2017) | | 2574 tonnes |
| Discard rate | | Unknown |
| Precautionary buffer | Applied | 0.8 |
| Landings advice ** | | 2237 tonnes |
| % Advice change *** | | -13% |

* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

** [Advised landings for 2018 and 2019] × [index ratio] × [precautionary buffer].

*** Advice value for 2020 and 2021 relative to the advice value for 2018 and 2019.

The advised landings are lower than advised for 2018 and 2019 because the precautionary buffer was applied.

Basis of the advice

Table 3 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. The basis of the advice.

| | |
|-----------------|---|
| Advice basis | Precautionary approach. |
| Management plan | ICES is not aware of any agreed precautionary management plan for thornback ray in this area. |

Quality of the assessment

Species-specific landings data are incomplete prior to 2009.

Fishery-independent trawl surveys provide the longest time-series of species-specific information and cover most of the stock area. A duplication of data discovered in the ICES survey database (DATRAS) has now been corrected.

Issues relevant for the advice

Thornback ray is the main commercial skate species in the North Sea and eastern English Channel, straddling two TAC management units.

Available onboard observer data indicate that discarding rates are increasing, due to restrictive quota and increasing stock size (ICES, 2017).

Catchpole *et al.* (2017) estimated discard survival to be 96% for thornback ray caught in trammelnets. Data are more limited for other métiers in the stock area.

Thornback ray is also taken in recreational fisheries, but the retained catches are unquantified.

Reference points

Reference points are not defined for this stock.

Basis of the assessment

Table 4 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. Basis of the assessment and advice.

| | |
|--------------------------|--|
| ICES stock data category | 3 (ICES, 2018). |
| Assessment type | Survey-based trends (ICES, 2019). |
| Input data | NS-IBTS-Q1, NS-IBTS-Q3, BTS-Eng-Q3, and CGFS-Q4. |
| Discards and bycatch | Unknown. |
| Indicators | None. |
| Other information | None. |
| Working group | Working Group on Elasmobranch Fishes (WGEF). |

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 5 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. History of ICES advice, agreed TAC, and ICES estimates of landings. All weights are in tonnes.

| Year | ICES advice | Landings corresp. to advice | Agreed TAC* | | | ICES landings |
|------|--|-----------------------------|-------------|--------|--------|---------------|
| | | | 2.a and 4 | 7.d | 3.a** | |
| 2006 | Zero catch | 0 | 2737 | No TAC | No TAC | |
| 2007 | Zero catch | 0 | 2190 | No TAC | No TAC | |
| 2008 | No new advice, same as 2007 | 0 | 1643 | No TAC | No TAC | |
| 2009 | Status quo catch | | 1643 | 1044 | 68 | 1129 |
| 2010 | No new advice, same as 2009 | | 1397 | 887 | 58 | 1336 |
| 2011 | Status quo catch | | 1397 | 887 | 58 | 1282 |
| 2012 | No new advice, same as 2011 | | 1395 | 887 | 58 | 1589 |
| 2013 | No TAC, species-specific measures needed, catch could increase by max. 20% | - | 1256 | 798 | 52 | 1868 |
| 2014 | No new advice, same as 2013 | - | 1256 | 798 | 47 | 1905 |
| 2015 | No new advice, same as 2014 | - | 1382 | 798 | 47 | 1645 |
| 2016 | Precautionary approach | 2110 | 1313 | 966 | 47 | 1826 |
| 2017 | Biennial | 2110 | 1378 | 1063 | 47 | 1789 |
| 2018 | Precautionary approach | ≤ 2574 | 1654 | 1276 | 47 | 2219 |
| 2019 | Precautionary approach (same advice as for 2018) | ≤ 2574 | 1654 | 1404 | 47 | |
| 2020 | Precautionary approach | ≤ 2237 | | | | |
| 2021 | Same advice as in 2020 | ≤ 2237 | | | | |

* EU combined TAC for skates and rays.

** Since 2013 fishing vessels have not been allowed to retain this species in Division 3.a.

History of the catch and landings

The distribution of this stock does not extend into the NEAFC Regulatory Area.

Table 6 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. Landings distribution by fleet in 2018 as estimated by ICES.

| Catch (2018) | Landings | | | Discards |
|--------------|------------------------|-------------|-------------|----------|
| | Bottom and beam trawls | Bottom nets | Other gears | |
| Unknown | 70% | 22% | 8% | Unknown |
| | 2219 tonnes | | | |

Table 7 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. ICES estimates of landings by country (in tonnes). Blank = no data reported; + = data less than 0.5 t.

| Year | Belgium | Germany | Denmark | France | UK | Netherlands | Norway | Sweden | Total* |
|------|---------|---------|---------|--------|-----|-------------|--------|--------|--------|
| 2009 | 154 | | | 462 | 335 | 178 | | | 1129 |
| 2010 | 176 | | 1 | 541 | 409 | 203 | 6 | | 1336 |
| 2011 | 164 | | 1 | 534 | 485 | 97 | + | + | 1282 |
| 2012 | 154 | | | 769 | 478 | 186 | 2 | + | 1589 |
| 2013 | 201 | | 2 | 940 | 573 | 149 | 3 | | 1868 |
| 2014 | 206 | | 8 | 989 | 571 | 131 | 1 | | 1905 |
| 2015 | 219 | | 4 | 814 | 447 | 161 | | | 1645 |
| 2016 | 196 | 34 | 4 | 890 | 518 | 185 | | + | 1825 |
| 2017 | 173 | 27 | 3 | 829 | 596 | 163 | | | 1789 |
| 2018 | 192 | 33 | | 1117 | 664 | 211 | | + | 2219 |

* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

Summary of the assessment

Table 8 Thornback ray in Subarea 4 and in divisions 3.a and 7.d. Assessment summary. Biomass indices for exploitable biomass (individuals ≥ 50 cm) derived from four trawl surveys (NS-IBTS-Q1, NS-IBTS-Q3, CGFS-Q4, and BTS-ENG-Q3 (for 7d); indices for North Sea IBTS and UK-BTS in kg h^{-1} , for CGFS in kg km^{-2} normalized by their long-term means). The stock size indicator is the annual mean of the normalized survey indices.

| Year | NS-IBTS-Q1 | NS-IBTS-Q3 | CGFS-Q4 | BTS-ENG-Q3 | Stock size indicator |
|------|------------|------------|---------|------------|----------------------|
| 1993 | 0.56 | 0.57 | 0.185 | 0.43 | 0.44 |
| 1994 | 0.151 | 0.072 | 0.51 | 0.43 | 0.29 |
| 1995 | 0.152 | 0.18 | 0.36 | 0.42 | 0.28 |
| 1996 | 0.36 | 1.52 | 0.034 | 0.62 | 0.63 |
| 1997 | 0.87 | 0.56 | 0.45 | 0.52 | 0.60 |
| 1998 | 0.00 | 0.00 | 0.51 | 0.43 | 0.23 |
| 1999 | 0.097 | 0.46 | 0.39 | 0.85 | 0.45 |
| 2000 | 0.24 | 0.099 | 0.51 | 0.66 | 0.38 |
| 2001 | 0.31 | 0.21 | 0.44 | 0.67 | 0.41 |
| 2002 | 0.33 | 0.69 | 0.54 | 0.38 | 0.49 |
| 2003 | 0.53 | 0.104 | 0.38 | 0.82 | 0.46 |
| 2004 | 0.158 | 0.084 | 0.33 | 1.14 | 0.43 |
| 2005 | 0.66 | 0.090 | 0.92 | 0.44 | 0.53 |
| 2006 | 1.73 | 0.62 | 0.75 | 0.64 | 0.93 |
| 2007 | 0.31 | 0.023 | 1.03 | 1.01 | 0.59 |
| 2008 | 3.6 | 0.65 | 1.01 | 1.42 | 1.66 |
| 2009 | 2.1 | 0.50 | 0.98 | 1.08 | 1.16 |
| 2010 | 0.51 | 0.39 | 1.02 | 1.62 | 0.88 |
| 2011 | 0.087 | 0.59 | 0.70 | 0.96 | 0.58 |
| 2012 | 3.7 | 0.33 | 1.33 | 1.37 | 1.69 |
| 2013 | 0.93 | 3.1 | 2.2 | 0.78 | 1.75 |
| 2014 | 1.55 | 3.56 | 2.3 | 2.15 | 2.4 |
| 2015 | 1.77 | 2.9 | 2.1 | 2.08 | 2.2 |
| 2016 | 0.74 | 3.6 | 2.6 | 1.50 | 2.1 |
| 2017 | 3.6 | 1.44 | 1.54 | 1.63 | 2.0 |
| 2018 | 0.99 | 3.7 | 2.8 | 1.97 | 2.4 |

Sources and references

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