

14 Roughsnout grenadier (*Trachyrincus scabrus*) in the Northeast Atlantic

14.1 Stock description and management units

There are taxonomic issues with this stock. The roughsnout grenadier (*Trachyrincus scabrus*) was formerly *Trachyrincus trachyrincus*, with various spellings. The roughnose grenadier (*Trachyrincus murrayi*) is a closely related species that is abundant throughout the north of Northeast Atlantic (Jonsson, 1992). The scientific names and common name of these species changed over time. The similarity of the English names (roughsnout grenadier and roughnose grenadier) can increase the confusion.

Along the slope to the west of Scotland in ICES Division 6.a, only *Trachyrincus murrayi* was caught in surveys spanning depths from 500–2000 m and that took place in the 1970s and 1980s (Gordon and Duncan, 1984). In recent years, *Trachyrincus murrayi* was caught by the Marine Scotland deep-water research surveys in sufficient numbers to allow the estimation of population indicators (Neat and Burns, 2010).

In the published literature, there is no report of the occurrence of *Trachyrincus scabrus* at significant level in northern areas of the Northeast Atlantic. In particular, there are no records of the species in surveys held along the Mid-Atlantic Ridge (Fossen *et al.*, 2008). *Trachyrincus scabrus* is not caught in Icelandic surveys where *Trachyrincus murrayi* is caught in large numbers. Similarly, to the East of Greenland (Division 14.a and 14.b.2) only *Trachyrincus murrayi* is caught in scientific surveys.

T. scabrus has been reported in the Porcupine Seabight (ICES Division 7.j,k) at depths 500–1300 m. The species was also recorded further south in the Cantabrian Sea (ICES Division 8.c). In the latter area, *T. scabrus* was reported to occur at a high abundance on the Le Danois Bank (ICES Division 8.b) at depths from 500–800 m (Sanchez *et al.*, 2008).

Unlike in the Atlantic Ocean, *Trachyrincus scabrus* occurs in most of the Mediterranean Sea, along the Spanish slope to the Ionian Sea (D'Onghia *et al.*, 2004; Moranta *et al.*, 2006). In the Mediterranean Sea high abundances were reported at depths ranging from 800–1300 m. In the Mediterranean Sea, *T. scabrus* reaches larger sizes than the other macrourid species occurring at the same depth range.

Therefore, *T. scabrus* is a species occurring in the Mediterranean Sea and in the Atlantic and does not seem to occur at levels susceptible to support commercial fisheries in most areas north of 52°N.

The other *Trachyrincus* species (*T. murrayi*) occurs in Subareas 5, 6 and 12. There is no known fishery for it. *T. murrayi* does not reach sufficient sizes to be of commercial interest. It is only a bycatch of deep-water fisheries in Subareas 5, 6, 7, 12 and 14.

As *T. scabrus* and *T. murrayi* can be misidentified in fisheries catches this chapter addresses the two species.

Landings of *T. scabrus* were reported for ICES subareas 6, 12 and 14. In these areas the species is considered to be at the most a minor bycatch. The occurrence of the species is not confirmed in subareas 12 and 14. It may be that only *T. murrayi*, occurs in these subareas. Therefore, the species identity of commercial landings reported as *T. scabrus* needs to be confirmed. WGDEEP considered that the reporting of 0 landings in response to the data call for landings and discards in 2016

to 2019, confirms that landings reported before 2016 were misreporting, misidentification or coding errors.

14.2 Landings trends

Landings of 57 and 649 tonnes were reported in 2012 and 2014 respectively. In 2014, these came mainly from divisions 12.b and 14.b. (Table 14.1a)

In 2006–2008, Lithuania reported significant landings for subareas 6 and 12 (Table 14.1b, source ICES catch statistics 2006–2015). Landings reported by Spain in 2012–14 are not included in ICES catch statistics 2006–2017 (downloaded from the ICES website on 24.04.2020). No landings have been reported neither in preliminary catch statistics nor InterCatch from 2014 to 2020.

14.3 ICES Advice

The ICES advice for the years 2021–2025 is that *"when the precautionary approach is applied, there should be no directed fisheries for roughsnout grenadier and bycatch should be minimized for each of the years 2021 to 2025."*

The previous advice, for the years 2016–2020 further added *"and bycatch should be counted against the TAC for roundnose grenadier to minimize the potential for species misreporting."*

14.4 Management

There is no current species-specific management measure for the roughsnout grenadier. Despite the advice for years 2016–2020, the EU regulation for TACs of deep-water species in 2017–2018 and 2019–2020 made no mention of the roughsnout grenadier (Council regulation (EU) 2016/2285 and 2018/2025). There is no regulation for this species in other countries (Norway, Iceland, Faroe Islands) where these species should be landed when caught.

The EU regulation 2016/2336 establishing specific conditions for fishing for deep-sea stocks, does not mention *Trachyrincus* species.

14.5 Data availability

14.5.1 Landings and discards

Landings data are presented in Table 14.1a and 14.1b.

T. murrayi is discarded by the French deep-water fishery. Both *T. murrayi* and *T. scabrus* are recorded in on-board observation but the identification of these species may be uncertain. The total catch of the two combined have a few percent of the total catch of roundnose grenadier (Table 14.2). Then, *T. scabrus* and *T. murrayi* have a minor contribution to the total catch in weight in ICES divisions 5.b and 6.a and Subarea 7, where the French fishery operates. These species have never been landed by the French fishery.

Discards of *Trachyrincus* spp. are expected to occur in all deep-water fisheries and also in the other fisheries along the upper slope such as fisheries targeting hake, monkfish and megrims, which may operate down to 800 m.

The stock was included in the data call for 2017 and data were delivered to WGDEEP through InterCatch and file provided by members. France, Spain and Portugal reported through InterCatch and no landings and discards were uploaded. The absence of landings matches expert

knowledge that the species is not commercial. The absence of discards from InterCatch may come from the absence of landings so the standard raising variable being absent discards were raised to 0. Faroe Islands, Iceland and Norway, reported landings of deep-water species on the WGDEEP SharePoint and there were no landings of *Trachyrincus* spp. included. As the fisheries from these countries make no discards, there was no catch of roughsnout grenadier or these catches were not identified at species level.

Discards quantities for 2018 were reported to InterCatch by France, Portugal and Spain. The estimated raised discards were 91 kg from France, 651 kg from Spain and 0 from Portugal.

14.6 Length compositions

No length data are available. No length distribution was reported to InterCatch for 2016-2019.

In the Icelandic autumn survey specimens of *T. murrayi* with sizes up to 40 cm total length have been recorded. Nevertheless, the bulk of the catch is made of specimens with a length range from 5 to 20 cm.

T. murrayi of 45 cm total length would weigh less than 300 g using the following weight–length relationship estimated for *T. murrayi*: $W=0.00129 LT^{3.232}$ (Borges *et al.*, 2003).

14.6.1 Age compositions and longevity

No age composition is available. There are however, some studies on growth and longevity.

In the Mediterranean *T. scabrus* has a maximum age of eleven years (Massutti *et al.*, 1995).

Swan and Gordon (2001) analysed otoliths from 218 specimens of *T. murrayi*, with head length ranging from 2.1–11.7 cm and found up to nine growth bands on otolith. Converting the head length (HL) to total length (TL) by using the conversion estimated by the Swan and Gordon (2001): $HL=3.630*TL+0.402$ ($n=488$), the largest fish in the sample had 42 cm total length, which seems to be at or close to the maximum length of the species in the area.

It can be concluded that the two *Trachyrincus* species appear to have similar longevity, of around ten years. Similar lifespans have been estimated for other small macrourids (Coggan *et al.*, 1999).

14.6.2 Weight-at-age

No weight-at-age data are available.

14.6.3 Maturity and natural mortality

No data were available.

14.6.4 Catch, effort and research vessel data

Population indicators of *T. murrayi* were estimated from data collected during deep-water research surveys held by the Marine Scotland. The abundance and length distribution varied along the period under analysis (2000–2008) and no trend was observed (Neat and Burns, 2008). As for *T. scabrus*, the species occurs at a too low level in the area covered by the survey to calculate indicators.

14.7 Data analyses

Available data on *T. murrayi* suggest that the species is too small to have commercial interest. In fact, the weight of the largest specimen caught in Icelandic survey (45 cm TL) was not more than 500 g. Available data on *T. scabrus* suggest that the species occurs at too low level in the Northeast Atlantic to support any commercial fishery.

14.7.1 Biological reference points

Not applicable.

14.8 Comments on assessment

Not applicable.

14.9 Management considerations

The roughsnout and roughnose grenadiers are small bycatch in some deep-water fisheries (see example in Table 14.2).

Owing to the smaller size and shorter longevity of *T. murrayi* and *T. scabrus* compared to the target species of deep-water fisheries, levels of fishing mortality that are sustainable to the target species are most likely to be also sustainable for these smaller species.

The only management that can be suggested is to include minor landings of any macrourid species in the TAC of the main grenadier species, the roundnose grenadier. This should not imply any increase of the TAC of roundnose grenadier, because the standing biomass of *Trachyrincus* spp. and all other macrourids are small compared to that of the roundnose grenadier in all ICES divisions. As these other macrourid species are of much smaller size than the roundnose grenadier, and therefore are not much retained by commercial trawls, the catch can only be minor compared to that of roundnose grenadier, when the latter is targeted. At depth shallower than the core depth range of the roundnose grenadier, the situation may be different with a much higher ratio of small macrourid to roundnose grenadier. As a consequence of the ban of fishing deeper than 800 m the core depth range of the roundnose grenadier is no longer accessible to trawler so the ratio of small macrourids to roundnose grenadier in on-board observations has increased, although the absolute quantity of small macrourids has not (see analyse of data for years 2004-2019 in Table 14.2).

14.10 References

- Coggan, R. A., J. D. M. Gordon, and N. R. Merrett. 1999. Aspects of the biology of *Nezumiaaequalis* from the continental slope west of the British Isles. *Journal of Fish Biology* 54:152–170.
- D'Onghia, G., C. Y. Politou, A. Bozzano, D. Lloris, G. Rotllant, L. Sion, and F. Mastrototaro. 2004. Deep-water fish assemblages in the Mediterranean Sea. *Scientia Marina* (Barcelona) 68:87–99.
- Fossen, I., C. F. Cotton, O. A. Bergstad, and J. E. Dyb. 2008. Species composition and distribution patterns of fish captured by longlines on the Mid-Atlantic Ridge. *Deep-Sea Research Part II-Topical Studies in Oceanography* 55:203–217.
- Gordon, J. D. M., and J. A. R. Duncan. 1985. The ecology of deep-sea benthic and benthopelagic fish on the slopes of the Rockall Trough, Northeastern Atlantic. *Progress in Oceanography* 15:37–69.
- Jonsson, G. 1992. *Islenskírfiskar*. Fiolvi, Reykjavik, 568 pp.

- Neat, F., and F. Burns. 2010. Stable abundance, but changing size structure in grenadier fish (Macrouridae) over a decade (1998–2008) in which deepwater fisheries became regulated. *Deep-Sea Research Part I-Oceanographic Research Papers* 57:434–440.
- Massuti, E., B. Morales-Nin and C. Stefanescu. 1995. Distribution and biology of five grenadier fish (Pisces: Macrouridae) from the upper and middle slope of the northwestern Mediterranean. *Deep-Sea Research* 42(3):307–330.
- Moranta, J., E. Massuti, M. Palmer, and J. D. M. Gordon. 2006. Geographic and bathymetric trends in abundance, biomass and body size of four grenadier fish along the Iberian coast in the western Mediterranean. *Progress in Oceanography* 72:63–83.
- Sanchez, F., A. Serrano, S. Parra, M. Ballesteros, and J. E. Cartes. 2008. Habitat characteristics as determinant of the structure and spatial distribution of epibenthic and demersal communities of Le Danois Bank (Cantabrian Sea, N. Spain). *Journal of Marine Systems* 72:64–86.

14.11 Tables

Table 14.1a. Official landings of roughsnout grenadier by ICES Subarea reported by Spain in 2012-2014.

Year	6.b	12.a	12.b	14.b	Total
2012		54		3	57
2013					0
2014	42	4	155	448	649

Table 14.1b. Official landings of roughsnout grenadier by ICES Subarea reported by Lithuania.

Year	6	12	Total
2006	506	67	573
2007	442	101	543
2008	49	50	99

Table 14.2. Catch (discards and landings combined) in kg of macrourid species observed in on-board observations of the French deep-water trawl fishery. Data limited to hauls where the landings and discards were fully sampled. Ratio of TSU (considered as the combination of the two *Trachyrincus* species) to RNG and ratio of the total catch of other macrourid species to RNG. No data in 2007. Raw observations, i.e. cumulated catch in observed haul, no raising to fleet level.

Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RNG (<i>C. rupestris</i>)	243828	109136	31252		34938	130306	81899	78024	65339	45530	55508	18157	12714	3971	10917	5350
<i>Coelorinchus caelorhincus</i>		1	20		1230	3186	2970	2212	2035	2279	1225	1119	952	981	836	1121
<i>Coelorinchus caudani</i>	1				242											
<i>Coelorinchus labiatus</i>	5352	1744	1257		194	345	212	48	116	128	39	52	8			
<i>Coryphaenoides guentheri</i>	667	27				1062	33	6	2							
<i>Coryphaenoides mediterraneus</i>	62	123	42					76		1						
<i>Hymenocephalus italicus</i>									69		22	0				
<i>Macrourus berglax</i>	37	6614			1042	331	3562	23	775	677	616	71	188	165	665	335
<i>Malacocephalus laevis</i>	1	26	37		2196	2089	626	330	104	390	857	1262	298	124	266	928
<i>Nezumia aequalis</i>	176	40	114		397	740	237	423	414	303	280	189	224	214	207	153
<i>Nezumia sclerorhynchus</i>					27				72	6	1	83	116	219	157	66
TSU (<i>Trachyrincus murrayi</i>)	7304	4299	1783		1	697	61	304		229	306	70	3			116
TSU (<i>Trachyrincus scabrus</i>)	82		167		2	49	1066	134	1183	558	215	86	218	102	41	334
All species (except <i>C. Rupestris</i>)	6296	8575	1470		5328	7753	20784	3118	3587	3784	3040	2776	1786	1703	2131	2603
RatioTSU to RNG	0.030	0.039	0.062		0.000	0.006	0.014	0.006	0.018	0.017	0.009	0.009	0.017	0.026	0.004	0.084
Ratio all species to RNG	0.056	0.118	0.109		0.153	0.065	0.319	0.046	0.073	0.100	0.064	0.161	0.158	0.455	0.199	0.571