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Identification of Wolffish, Hake and Rockling
in the Northwest Atlantic

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Identification of Wolffish, Hake and Rockling in the Northwest Atlantic

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Abstract

Accurate reporting of all species harvested in the northwest Atlantic, including those that are not subject to an assessment, is essential to the management of fish stocks and monitoring of overall ecosystem health. Of particular concern in recent years is the non-specific identification of wolffish (*Anarhichas denticulatus*, *A. minor* and *A. lupus*) and the apparent misidentification of hake (*Urophycis chesteri* and *U. tenuis*) and rockling (*Gaidropsarus ensis* and *G. argentatus*) caught in the NAFO Regulatory Area. These species should be relatively easy to identify provided that correct criteria are used. This paper discussed the background to this problem and provides a clear identification guide for use on commercial vessels by masters, observers and inspectors.

Three species of wolffish (Family Anarhichadidae) inhabit western Atlantic waters: the northern wolffish (*Anarhichas denticulatus* CAB¹), the spotted wolffish (*A. minor* CAS), and the striped wolffish (*A. lupus* CAA). Kulka (2002) noted that they are reported under the single 3-alpha code for unspecified wolffish (*Anarhichas* spp. CAT) thus causing difficulty in evaluating species specific mortality due to fishing removals in the NAFO Regulatory Area (NRA).

Identification problems also occur in the NAFO statistics with species of hake and rockling (Family Gadidae). White hake (*Urophycis tenuis* HKW) and longfin hake (*U. chesteri* GPE) are inconsistently identified and tend to be confused. Additionally, three-bearded rockling (*Gaidropsarus ensis* GDE) and silver rockling (*G. argentatus* GTD) are common slope species and a significant bycatch in the Greenland halibut and grenadier fisheries, are reported incorrectly as red hake (*U. chuss* HKR) which does not actually occur on the Grand Banks or Flemish Cap within the NRA. *U. chuss* is common on the Scotian Shelf to the southwest and the closest record of this species to the NRA is two juvenile specimens recorded in 1971 in a scallop shell from Hermitage Cove on the the southwest coast of Newfoundland (Markle *et al.*, 1982). It is worth noting here that the English common name of three-bearded rockling is also used for *Gaidropsarus vulgaris* GCU that occurs in the north-eastern Atlantic.

Accurate identification and recording to the species level is important for several reasons. *A. denticulatus* and *A. minor* were designated by COSEWIC (the Committee on the Status of Endangered Wildlife in Canada), the Canadian jurisdictional body responsible for species at risk issues, as “threatened”, and “special concern” for *A. lupus*, due to declines in their abundance and biomass (Simpson and Kulka, 2002). All three species are widespread in Canadian waters and also inhabit the NRA adjacent to Canadian and Greenlandic waters. They form a continuous distribution and are thought to be part of the same population. Species at risk within the “threatened” category can not be harmed or targeted for capture in Canadian waters, though an exemption to this has been granted to commercial fishers by the Canadian Department of Fisheries and Oceans (DFO) to allow incidental capture, though live release is a condition of the fishing permit. Wolffish are not listed by CITES and so their capture in the NRA is still permitted, though there may be national restrictions once these fish are within national waters and taken to port.

White hake is targeted both in Canadian waters and in the NRA and came under quota regulation in NAFO for the first time in 2005, and so good catch statistics are of paramount importance for successful management. In addition, the implementation of the Ecosystem Approach to Fisheries Management means that the correct identification of the bycatch species is essential

¹The standard FAO three-letter codes follow the scientific names.

to monitor the wider aspects of environmental health.

Given the importance of ensuring that all fish harvested in the northwest Atlantic are accurately reported, a laminated colour photographic handout² has been developed for distribution to masters, inspectors and observers to facilitate the identification of wolffish, hake and rockling species. To aid in identification, the handout includes colour photograph of the species with key identification characteristics highlighted, distribution maps and three-letter codes used for recording purposes. They are designed to be water-resistant. These are reproduced on the following two pages.

References

- Kulka, D. W. 2002. Reporting wolffish by species in the NAFO Regulatory Area. *NAFO SCR Doc.*, No. 64, Serial No. N4676, 1 p.
- Simpson, M. R., and D. W. Kulka. 2002. Status of three wolffish species (*Anarhichus lupus*, *A. minor* and *A. denticulatus*) in Newfoundland waters (NAFO Divisions 2GHJ3KLNOP). *DFO Atl. Fish. Res. Doc.*, 02/078, 40 p.
- Markle, D. F., D. A. Methven, and L. J. Coates-Markle. 1982. Aspects of spatial and temporal cooccurrence in the life history stages of the sibling hakes, *Urophycis chuss* (Walbaum 1792) and *Urophycis tenuis* (Mitchill 1815) (Pisces: Gadidae). *Can. J. Zool.*, **60**: 2057–2078.

² For information on pricing and ordering laminated guides please contact Barry Crawford at info@nafo.int



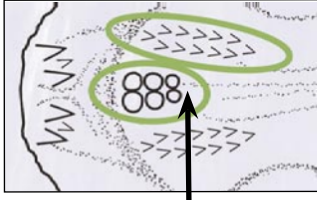
NAFO Wolffish Guide



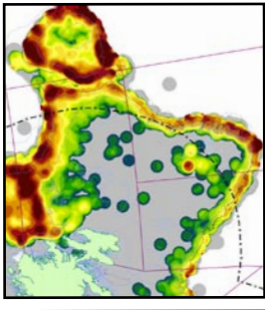
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Northern Wolffish CAB *Anarhichas denticulatus* Length to 145 cm Weight to 20 kg Depth range 500–1000 m (possibly 25–1500 m)

Large head, small mouth and pectoral fin
Dark grey, dark brown, purplish black
Inside upper jaw teeth diagnostic
Flesh jelly-like
Bottom to deep pelagic
Eats: mainly fish
Offshore, most common on the slope

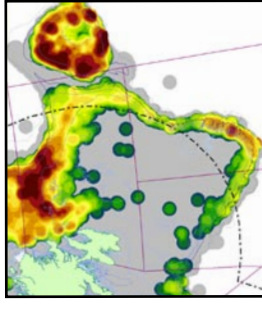


Roof of mouth showing extent of vomerine teeth (O) relative to palatine teeth (V)



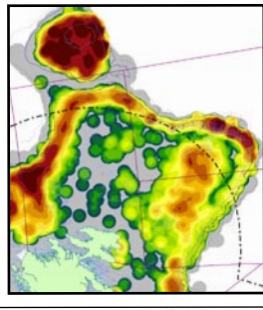
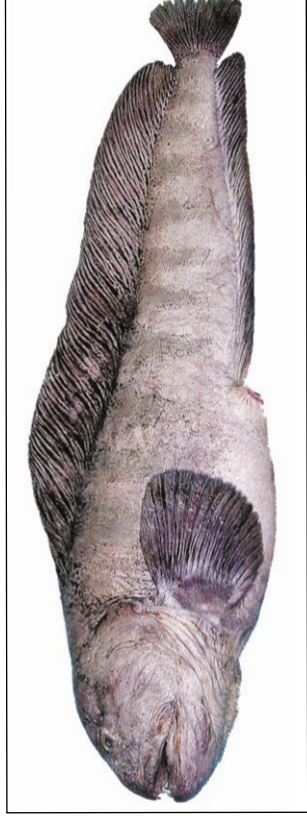
Spotted Wolffish CAS *Anarhichas minor* Length to 150 cm Weight to 23 kg Depth range 200–750 m (possibly 25–1000 m)

Large head and pectoral fins
Juveniles greyish brown (sometimes with a purplish hue), adults yellowish brown, greyish brown, dark brown. Spots on body
Inside upper jaw teeth diagnostic
Flesh firm
Bottom living fish of medium to deep water
Eats: mainly shellfish, urchins, starfish
Offshore, not common on Grand Bank



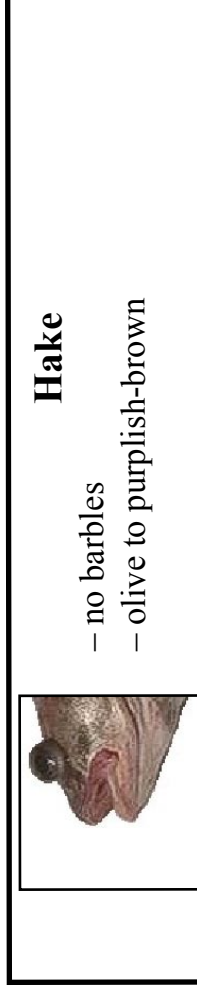
Striped Wolffish CAA *Anarhichas lupus* Length to 152 cm Weight to 20 kg Depth range 250 m (possibly 10–900 m)

Large head and pectoral fins
Juveniles yellowish brown with olive green fins, adults yellowish brown to a slate purplish blue. Stripes on body
Inside upper jaw teeth diagnostic
Flesh firm.
Bottom living fish with wide depth range
Eats: Mainly shellfish, urchins, starfish
Nearshore to offshore



NAFO Hake and Rockling Guide

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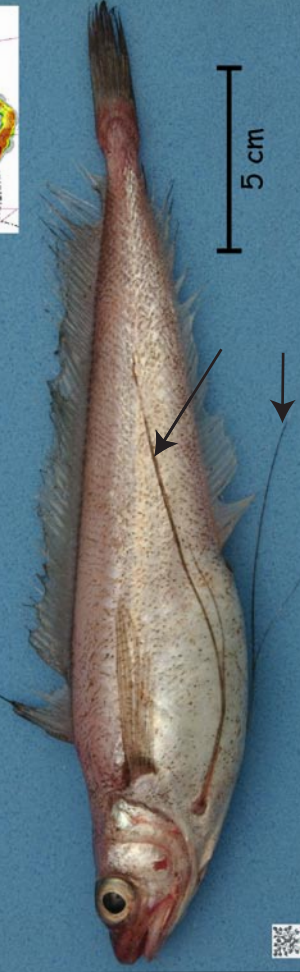
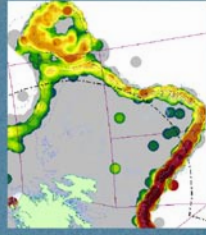


- Hake**
- no barbules
 - olive to purplish-brown

Longfin hake GPE

Urophycis chesteri

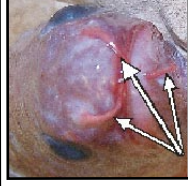
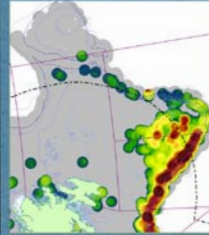
Long fin filaments
Misreported as white hake



White hake HKW

Urophycis tenuis

Short fin filaments
Misreported as longfin hake



- Rockling**
- barbules: 2 on snout, 1 on lower jaw
 - red to reddish

Threebearded (Threadfin) Rockling GDE

Gaidropsarus ensis

Deepwater 600 – 1500 m
Long 1st dorsal fin ray
Misreported as red hake



Silver (Arctic) Rockling GDT

Gaidropsarus argentatus

Deepwater 500 – 2000 m
Shorter 1st dorsal fin ray
Misreported as red hake



PLEASE NOTE THAT REDHAKE HKR DOES NOT OCCUR IN THE NRA

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