



## SCIENTIFIC COUNCIL MEETING – JUNE 2006

Accurate Identification of Wolffish and Hake Species Harvested in the NAFO Regulatory Area

by

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Accurate reporting of all species harvested in the NAFO Regulatory Area (NRA), including those that are NOT subject to directed fishing or an assessment, is essential to the management of fish stocks and monitoring of overall ecosystem health. Of particular concern in recent years is the apparent misidentification of hake and rockling species (genus *Urophycis* and *Gaidropsarus*) and non-specific identification of wolffish species (genus *Anarhichas*) caught in the NRA. This prompted STACTIC to recommend to the Scientific Council (FC Doc. 05/15) to produce “a mechanism to assist in the accurate catch reporting of wolffish and hake (Annex 8 – STACTIC WP 05/38”.

There are three wolffish species in the NRA: the northern wolffish *A. denticulatus* **CAB**, the Spotted wolffish *A. minor* **CAS**, and the Atlantic (or striped) wolffish *A. lupus* **CAA**. However, but they are reported to NAFO under the single 3-alpha code for unspecified wolffish **CAT** for inclusion in the STATLANT21 database. Interestingly, Annex II of the NAFO Conservation and Enforce Measures omits the northern wolffish from its species list, though this is reported to have been accidentally omitted and will be included in the next update. Reported catches of wolffish in the NAFO Convention Area (NCA) and NRA (for this analysis taken as 3MN only) have ranged from 1466-14 891 mt and 376-3 306 mt, respectively, over the past 45 years (Fig. 1). Declines in catches co-occurred with a decline in abundance and this reduction prompted COSEWIC to list northern and spotted catfish as 'threatened' and Atlantic wolffish as a “special concern” (Kulka and Simpson, 2002). These two species, which straddle the 200 mile limit, have been afforded legal protection in Canadian waters under SARA (Species at Risk Act of Canada). Clearly, species-specific reporting is required to estimate mortality due to fishing for each species.

Similarly, there are problems with the identification of hake species. There is inconsistent identification of white hake *Urophycis tenuis* **HKW** and longfin hake *U. chesteri* **GPE**. Accurate recording is important for white hake as it came under quota regulation in NAFO for the first time in 2005. Additionally, three-bearded rockling *Gaidropsarus ensis* **GGU**, a significant bycatch in the Greenland halibut fishery and silver rockling *G. argentatus* **GTD** (both slope species) are reported as red hake *U. chuss* **HKR**, a species that does not occur on the Grand Banks. Correct identification of the bycatch species is essential when moving towards an ecosystem approach to monitor environmental health. For the NCA, reported catches from 1960-2003 ranged from 408-116 063 mt for red hake and 3 234-30 566 mt for white hake. For the NRA, reported catches from 1960-2003 ranged from 0-1 415 mt for red hake and 3-5 396 mt for white hake (Fig. 1).

Given the importance of ensuring that all fish harvested in the NRA are accurately reported to NAFO, it is proposed that a photo handout be developed for masters, inspectors and observers to facilitate the differentiation of hake and wolffish species. This handout should include three-alpha codes for accurate recording and requires the adoption of new codes for the identification of Northern wolffish, Longfin hake and Threebeard rockling. The draft proposed identification handout for wolffish is shown in Fig. 2 and for hakes and rocklings in Fig.3. These are designed to be water-resistant and printed in colour back-to-back on letter-size laminated paper (USD900 for 500 copies external printing and laminating) or plastic paper (quote to come).

## References

Simpson, M. R. and D. W. Kulka 2002. Status of three Wolfish species (*Anarhichus lupus*, *A. minor* and *A. denticulatus*) in Newfoundland waters (NAFO Divisions 2GHJ3KLNOP). *DFO Atl. Fish. Res. Doc.*, No. 02/078 40 p.

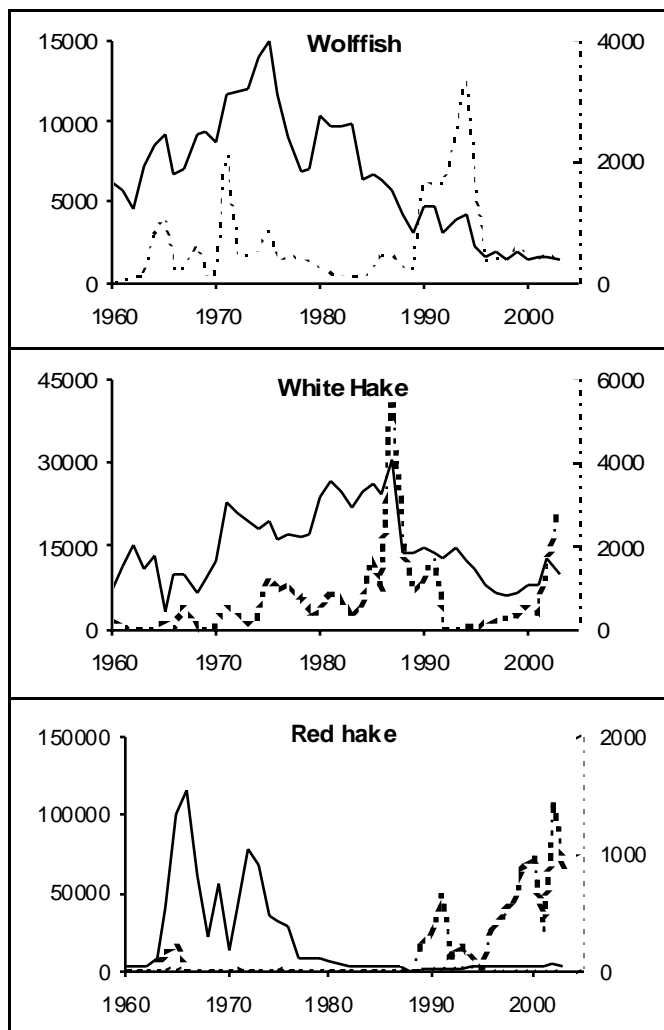


Fig. 1. Catch in metric tons of selected fish species in the NAFO Convention Area (solid line) and NAFO Regulated Area (dashed line) from 1960 to 2004.

Fig. 2 and 3 (next 2 pages). Proposed identification leaflets to be given to Masters, inspectors and observers to aid in the correct reporting of wol fish, hake and rockling.



# NAFO Wolffish Species Guide (draft)



**Northern Wolffish CAB** *Anarhichas denticulatus* Length to 144 cm Weight to 20 kg Depth range 25-500-1000-1500 m

Mouth, head / pectoral fin small relative to body

Dark grey, dark brown, purplish black.

Inside upper jaw teeth (A) diagnostic

Flesh: jelly-like

Bottom to deep pelagic

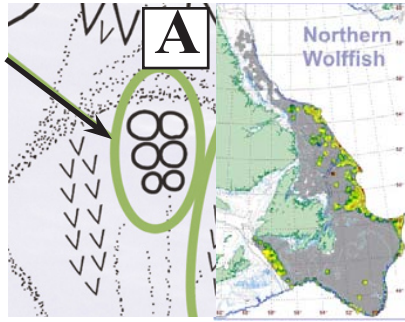
Diet: mainly fish

Offshore, most common on the slope

Common bycatch in Greenland Halibut fishery in the NRA

Threatened (SARA)

Roof of mouth showing vomerine teeth



**Spotted Wolffish CAS** *Anarhichas minor* Length to 150 cm Weight to 22 kg Depth range 25-200-750-1000 m

Mouth, head / pectoral fin large., spots on body

Juveniles greyish brown (sometimes with a purplish hue). Adults yellowish brown, greyish brown, dark brown.

Inside upper jaw teeth (B) diagnostic

Flesh firm.

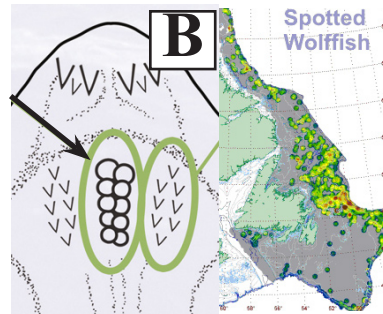
Bottom living fish of medium to deep water

Diet: mainly shellfish, urchins, starfish

Offshore, not common on Grand Bank

Occasionally taken in the NRA Greenland Halibut & skate fisheries

Threatened (SARA)



**Atlantic Wolffish CAA** *Anarhichas lupus* Length to 152 cm Weight to 22 kg Depth range 10-250-900 m

Mouth, head / pectoral fin large., stripes on body

Inside upper jaw teeth (C) diagnostic

Juveniles yellowish brown with olive green fins. Adults yellowish brown to a slate purplish blue.

Bottom living fish with wide depth range

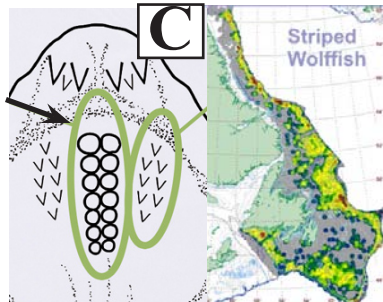
Flesh firm.

Nearshore to offshore

Diet: Mainly shellfish, urchins, starfish

Common in the NRA Greenland Halibut & skate fisheries

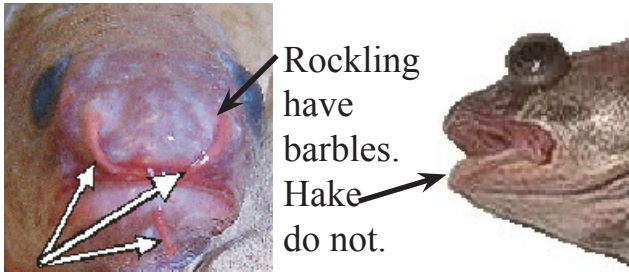
Special Concern (SARA)







# NAFO Hake and Rockling Species Guide (draft)



## Red Hake HKR *Urophycis chuss*

150-300 m depth

Looks like white hake!

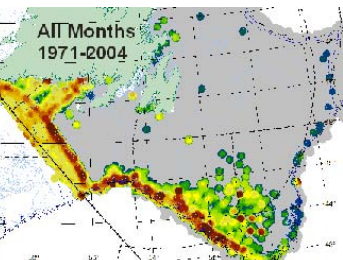
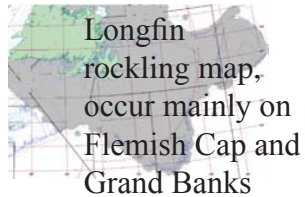
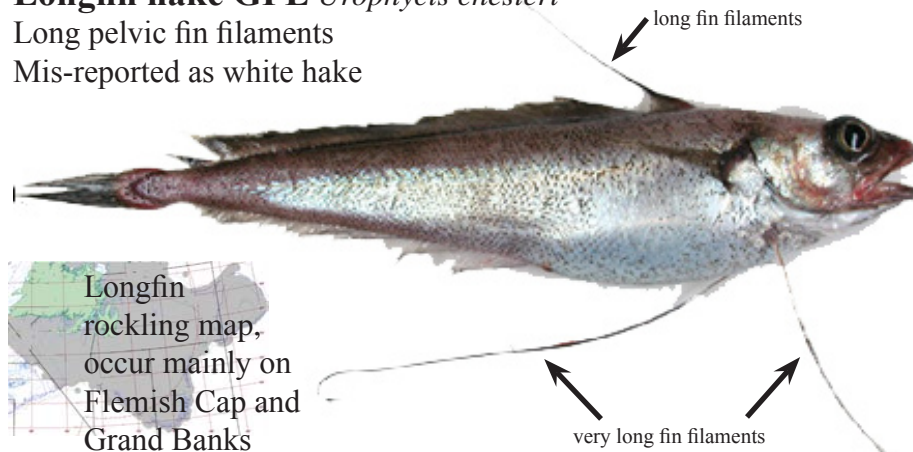
No barbels, Long pelvic fin filaments



## Longfin hake GPE *Urophycis chesteri*

Long pelvic fin filaments

Mis-reported as white hake



## White hake HKW

*Urophycis tenuis*

Looks like red hake! No barbels,

Long pelvic fin filaments

NAFO quota species

Mis-reported as longfin hake

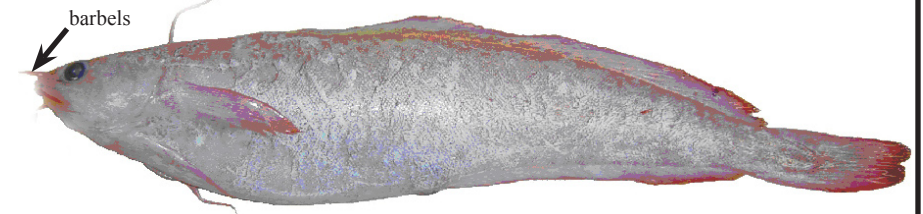
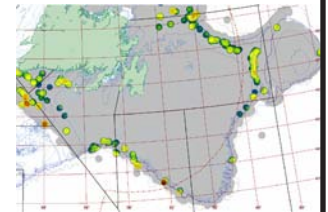
## Three bearded Rockling GGU

*Gaidropsarus ensis*

600-1500 m depth

Reddish tinge, 3 barbels on head (A)

Mis-reported as red hake



## Silver Rockling GTD

*Gaidropsarus argentatus*

>700 m depth

Mis-reported as red hake

