

1-1-2017

# Fishes of the Northern Mid-Atlantic Ridge Collected During the MAR-ECO Cruise in June- July 2004: An Annotated Checklist

Filipe M. Porteiro  
*University of the Azores*


Tracey Sutton  
*Nova Southeastern University, [tsutton1@nova.edu](mailto:tsutton1@nova.edu)*

Ingvar Byrkjedal  
*University of Bergen*

Alexy M. Orlov  
*Russian Federal Research Institute of Fishery and Oceanography*

Mikko Heino  
*Institute of Marine Research and Hjort Centre for Marine Ecosystem Dynamics; University of Bergen*

*See next page for additional authors*

Follow this and additional works at: [http://nsuworks.nova.edu/occ\\_facreports](http://nsuworks.nova.edu/occ_facreports)  
Find out more information about Nova Southeastern University and the Palm Beach College of Natural Sciences  
 Part of the [Marine Biology Commons](#), and the [Oceanography and Atmospheric Sciences and Meteorology Commons](#)

---

## NSUWorks Citation

Filipe M. Porteiro, Tracey Sutton, Ingvar Byrkjedal, Alexy M. Orlov, Mikko Heino, Gui Menezes, and Odd Aksel Bergstad. 2017.  
Fishes of the Northern Mid-Atlantic Ridge Collected During the MAR-ECO Cruise in June-July 2004: An Annotated Checklist  
.Arquipelago : 126 pp. . [https://nsuworks.nova.edu/occ\\_facreports/102](https://nsuworks.nova.edu/occ_facreports/102).

This Report is brought to you for free and open access by the Department of Marine and Environmental Sciences at NSUWorks. It has been accepted for inclusion in Marine & Environmental Sciences Faculty Reports by an authorized administrator of NSUWorks. For more information, please contact [nsuworks@nova.edu](mailto:nsuworks@nova.edu).

---

**Authors**

Filipe M. Porteiro, Tracey Sutton, Ingvar Byrkjedal, Alexy M. Orlov, Mikko Heino, Gui Menezes, and Odd Aksel Bergstad

Supplement 10 - 2017

ISBN 978-989-99834-0-3

# ARQUIPELAGO

LIFE AND MARINE SCIENCES

Supplement 10

Fishes of the Northern Mid-Atlantic Ridge  
collected during the MAR-ECO cruise  
in June-July 2004

An annotated checklist

Filipe Porteiro, Tracey Sutton, Ingvar Byrkjedal, Alexei Orlov,  
Mikko Heino, Gui Menezes & Odd Aksel Bergstad



# **ARQUIPELAGO**

Life and Marine Sciences

## **SCOPE**

*ARQUIPELAGO* - Life and Marine Sciences, publishes annually original scientific articles, short communications and reviews on the terrestrial and marine environment of Atlantic oceanic islands and seamounts.

## **PUBLISHER**

University of the Azores  
Rua da Mãe de Deus, 13A  
PT – 9501-801 Ponta Delgada, Azores, Portugal.

## **EDITOR**

Helen Rost Martins  
Phone: + 351 292 200 400 / 428 - Fax: +351 292 200 411  
E-mail: helen.r.martins@uac.pt

## **GUEST EDITOR FOR SUPPLEMENT 10**

Odd Aksel Bergstad  
E-mail: odd.aksel.bergstad@imr.no

## **INTERNET RESOURCES**

<http://www.arquipelago.info>  
Journal information, instructions to authors; free access to all papers.

## **FINANCIAL SUPPORT**

The Census of Marine Life project MAR-ECO, 2001-2010

## **EDITORIAL SECRETARIAT**

Helen R. Martins, Ruth Higgins, José Gomes Pereira, Paula Lourinho, Emmanuel Arand.

## **EDITORIAL COMMITTEE**

Paulo A.V. Borges, Angra do Heroísmo; José M.N. Azevedo, Ponta Delgada; João M. Gonçalves, Horta.

## **ADVISORY BOARD**

Miguel A. Alcaraz, Barcelona, Spain; Alan B. Bolten, Florida, USA; António B. de Sousa, Lisboa, Portugal; Richard D.M. Nash, Bergen, Norway; Erik Sjögren, Uppsala, Sweden; Charles H.J.M. Fransen, Leiden, Netherlands; George R. Sedberry, Georgia, USA; Hanno Schäfer, Munich, Germany; Tony Pitcher, Vancouver, Canada; João Canning Clode, Funchal, Portugal; Louise Allcock, Ireland.

## **Indexed in:**

*Aquatic Sciences and Fisheries Abstracts (ASFA), BIOSIS Previews, Zoological Record, Directory of Open Access Journals (DOAJ), Web of Science.*

Cover design: Emmanuel Arand. Photo: *Anoplogaster cornuta* – David Shale.

Fishes of the Northern Mid-Atlantic Ridge collected  
during the MAR-ECO cruise in June-July 2004

An Annotated Checklist

Filipe Porteiro, Tracey Sutton, Ingvar Byrkjedal, Alexei Orlov, Mikko Heino,  
Gui Menezes & Odd Aksel Bergstad



## Contents

Abstract .....	1
Introduction.....	2
Material and Methods .....	4
Checklist of Fishes from the Northern Mid-Atlantic Ridge .....	10
Chondrichthyes .....	10
Chimaeriformes .....	10
Chimaeridae .....	10
Rhinochimaeridae .....	11
Carcharhiniformes .....	11
Pseudotriakidae .....	11
Pentanchidae .....	11
Carcharhinidae .....	12
Squaliformes .....	13
Centrophoridae.....	13
Somniosidae.....	13
Etmopteridae.....	15
Rajiformes.....	15
Rajidae .....	15
Arhynchobatidae .....	16
Actinopterygii .....	17
Notacanthiformes .....	17
Halosauridae .....	17
Notacanthidae .....	17
Anguilliformes .....	18
Synphobranchidae .....	18
Derichthyidae.....	19
Nemichthyidae .....	20
Serrivomeridae .....	21
Saccopharyngiformes.....	22
Eurypharyngidae .....	22
Saccopharyngidae .....	22
Osmeriformes.....	23
Bathylagidae .....	23
Microstomatidae .....	24
Opisthoproctidae .....	25
Alepocephalidae.....	26
Leptochilichthyidae .....	33
Platyroctidae .....	33
Stomiiformes.....	36

Checklist of Fishes from the Northern Mid-Atlantic Ridge

Gonostomatidae .....	36
Phosichthyidae.....	39
Sternoptychidae .....	40
Stomiidae.....	43
Aulopiformes .....	50
Scopelarchidae.....	50
Notosudidae .....	51
Anotopteridae .....	52
Paralepididae .....	52
Evermannellidae .....	54
Alepisauridae .....	54
Omosudidae .....	55
Bathysauridae .....	55
Ipnopidae .....	56
Myctophiformes .....	57
Myctophidae .....	57
Ophidiiformes .....	70
Ophidiidae .....	70
Bythitidae .....	72
Aphyonidae.....	72
Gadiformes .....	72
Macrouridae.....	72
Merluccidae .....	78
Moridae.....	78
Melanonidae .....	80
Lotidae .....	81
Phycidae .....	81
Lophiiformes .....	82
Lophiidae.....	82
Melanocetidae.....	82
Oneirodidae .....	82
Ceratiidae.....	85
Linophrynidae.....	86
Gigantactinidae .....	86
Stephanoberyciformes .....	86
Melamphaidae .....	86
Stephanoberycidae.....	90
Cetomimidae.....	90
Rondeletiidae .....	91
Beryciformes .....	92
Anoplogastridae.....	92



Diretmidae .....	92
Trachichthyidae .....	93
Zeiformes .....	93
Oreosomatidae .....	93
Gasterosteiformes .....	94
Syngnathidae.....	94
Scorpaeniformes .....	94
Psychrolutidae.....	94
Sebastidae .....	94
Liparidae .....	95
Perciformes .....	96
Howellidae .....	96
Polyprionidae .....	96
Epigonidae .....	96
Caproidae .....	97
Carangidae .....	97
Caristiidae .....	98
Zoarcidae .....	98
Chiasmodontidae .....	99
Gempylidae.....	101
Trichiuridae.....	101
Centrolophidae.....	102
Nomeidae .....	103
Tetragonuridae .....	103
Anarhichadidae .....	103
Tetraodontiformes.....	104
Balistidae .....	104
Molidae .....	104
Pleuronectiformes .....	104
Bothidae .....	104
Acknowledgements.....	105
References.....	105
APPENDIX I .....	114



# Fishes of the Northern Mid-Atlantic Ridge collected during the MAR-ECO cruise in June-July 2004: an annotated checklist

FILIPPE M. PORTEIRO, T.T. SUTTON, I. BYRKJEDAL, A.M. ORLOV, M. HEINO, G. MENEZES & O.A. BERGSTAD



Porteiro F.M., T.T. Sutton, I. Byrkjedal, A.M. Orlov, M. Heino, G. Menezes & O.A. Bergstad 2017. Fishes of the Northern Mid-Atlantic Ridge collected during the MAR-ECO cruise in June-July 2004: an annotated checklist. *Arquipelago*. Life and Marine Sciences. Supplement 10: iii +125 pp.

Records of the fishes from the northern Mid-Atlantic Ridge (MAR) (41°N - 60°N) sampled during two research cruises conducted in summer 2004 on the R/V *G.O. Sars* and M/S *Loran* are presented. The cruises were major sampling efforts carried out for the MAR-ECO project, i.e. the Census of Marine Life field project entitled “Patterns and Processes of the Ecosystems of the Northern Mid-Atlantic”. The investigation included sampling with several midwater nets, bottom trawl and longlines from surface waters to about 4000 m. The list comprises around 300 species of fishes from 82 families. Many records were new to the northern mid-Atlantic area, and the list also comprises three recently described species and some additional specimens to date only identified to genus.

Key words: fishes, mid-Atlantic, ridge, seamounts, mesopelagic, bathypelagic, benthic

*Porteiro, Filipe M., Department of Oceanography and Fisheries, University of the Azores, Rua Prof. Dr. Frederico Machado, PT-9901-862 Horta, Portugal; Tracey T. Sutton, Department of Marine and Environmental Sciences, Halmos College of Natural Sciences and Oceanography, Nova Southeastern University, 8000 North Ocean Drive, Dania Beach FL 33004, USA; Ingvar Byrkjedal, University Museum of Bergen, University of Bergen, PO Box 7800, NO -5020 Bergen, Norway; Alexei M. Orlov, Russian Federal Research Institute of Fisheries and Oceanography, 17, V. Krasnoselskaya, 107140, Moscow, Russia, A.N. Severtsov, Institute of Ecology and Evolution of the Russian Academy of Sciences, 33, Leninsky Prospekt, Moscow, 119071, Russia, Dagestan State University, 43-a, Gadzhiev Street, Makhachkala, 367000, Russia and Tomsk State University, 36, Lenin Avenue, Tomsk, 634050, Russia.; Mikko Heino, Department of Biology and Hjort Centre for Marine Ecosystem Dynamics, University of Bergen, PO Box 7800, NO -5020 Bergen, Norway; Gui Menezes, MARE – Marine and Environmental Sciences Centre, Department of Oceanography and Fisheries, University of the Azores, Rua Prof. Dr. Frederico Machado, PT-9901-862 Horta, Portugal; Odd Aksel Bergstad (e-mail: [odd.aksel.bergstad@imr.no](mailto:odd.aksel.bergstad@imr.no)), Institute of Marine Research, P.O. Box 1870 Nordnes, NO -5817 Bergen, Norway.*

## INTRODUCTION

This checklist presents records of the fishes from the northern Mid-Atlantic Ridge (MAR) (41°N - 60°N) sampled during two research cruises conducted in summer 2004 on the R/V *G.O. Sars* and M/S *Loran*. The cruises were major sampling efforts carried out for the MAR-ECO project, i.e. the Census of Marine Life field project entitled “Patterns and Processes of the Ecosystems of the Northern Mid-Atlantic” (Bergstad & Godø 2003; Bergstad & Falkenhaus 2005). MAR-ECO aimed to describe and understand patterns of distribution, assemblage structure and ecology of mesopelagic, bathypelagic and demersal nekton (fish, cephalopods, crustaceans a.o.) and plankton as well as identify and model ecological processes that cause variability in these patterns.

Major initial contributions resulting from the project were published in four special journal issues, two issues of Deep-Sea Research II (Gordon, Bergstad & Falkenhaus [Eds] 2008; Priede et al. 2013), and two of Marine Biology Research (Gebruk [Ed.] 2008; Gebruk & Priede 2013), the last being dedicated to invertebrate faunas. Sutton et al. (2008) and Bergstad et al. (2008a) described the structure and the vertical distribution and abundance of the deep-pelagic and demersal fishes sampled during the R/V *G.O. Sars* survey, respectively. Fossen et al. (2008) studied the fish assemblage composition caught by longlines by the MS *Loran*. Other MAR-ECO fish studies included: the distribution and reproductive biology of *Antimora rostrata* and *Halosaurus macrochir* (Fossen & Bergstad 2006; Bergstad et al. 2012) and of some deepwater skates (Orlov et al. 2006, 2010; Orlov & Cotton 2011, 2013, 2015; Orlov 2011); the trophic ecology of *Coryphaenoides rupestris* (Bergstad et al. 2010), *Bathylagus euryops* (Sweetman et al. 2013), Myctophidae (Hudson et al. 2014), and Stomiiformes (Carmo et al. 2015); a comprehensive paper on the occurrence and distribution of Macrouridae (Bergstad et al. 2008b); the descriptions of new species (Byrkjedal & Orlov 2007; Chernova & Møller 2008; Byrkjedal et al. 2011); the identification of *Synaphobranchus* eels (Svendsen & Byrkjedal 2013); the restoration of species relegated to synonymy (Uiblein et al. 2008); new distribution ranges of rare species (Iwamoto & Orlov 2006, 2008); the vertical distribution and behaviour of fishes attracted to landers (King et al. 2006); the biological significance of pelagic fishes size structure (Heino et al. 2008a, b); parasitological investigations of various deepwater fishes (Kritsky & Klimpel 2007; Moravec & Klimpel 2007; Klimpel et al. 2007, 2008; Busch et al. 2008; Kellermanns et al. 2009); the structure and distribution of midwater fishes associated with the Subpolar front (Cook et al. 2013; Sutton et al. 2013), and selectivity of the pelagic gears used during the main MAR-ECO survey (Heino et al. 2011).

Even with the output of the MAR-ECO project, the fish faunas from the northern MAR are still relatively less studied than those from the adjacent east and west continental margins and adjacent regions. Exploring the MAR is costly, time consuming, and technologically demanding, requiring large and well-equipped scientific vessels. The scarcity of historical information about fishes from the northern MAR is reflected in the distribution maps of Northeast Atlantic fishes in Whitehead et al. (1984-86) and from the absence of MAR data in Haedrich & Merrett's (1988) atlas of deep-living demersal fishes in the North Atlantic basin.

### MIDWATER FISH SURVEYS ON NORTHERN MAR

The Norwegian R/V *Michael Sars* North Atlantic Deep-sea Expedition of 1910 sampled the northern MAR at around 46°N. Murray & Hjort (1912) noted that the “Dolphin Rise” has “... a richer pelagic life generally to be found just over the ridge, in the same way that we always find a richer plankton over the slope of the coast banks.” The information about the fishes caught is presented in a number of papers in the series “Report on the Scientific Results of the *Michael Sars* North Atlantic Deep Sea Expedition 1910” published by the Bergen Museum (e.g., Koefoed [1932] as the most extensive of these papers).

Twenty years later the “*Dana II Expedition, 1931*” sampled the MAR mesopelagic waters at 13 stations (41°N - 52°N; Tåning 1944) with ring nets. The seventy-five fish species caught were described in various “*Dana Reports*” resulted from the Danish oceanographic cruises (e.g. Ege 1948; Ebeling 1962).

World War II prevented oceanic surveys in the 1940s-50s, and only after the late 1960s midwater research became once again attractive for many nations. The pelagic domain of northern MAR (42°N - 52°N) was crossed during the 1970s by the transoceanic American program Pelagic Zoogeography (Backus et al. 1977), which sampled to 850 m and caught about 80 fish species including 29 myctophids reported in the comprehensive review of Nafpaktitis et al. (1977).

In 1982, the German Mittelatlantischer Rücken survey, the first aimed to study the MAR ecosystem, on the R/V *Walther Herwig II* focused its attention on the deep-water micronekton living over MAR (43°N and 49°N) to 3200 m, using a large pelagic net (EMT1600) (Post 1987). The ecology of the fishes caught was retrospectively studied by Fock et al. (2004, 2010), comparing the structure of deep-sea fish assemblages, the vertical distribution of biomass and their relationship to the environment over the ridge, with other off-ridge regions in the Northeast Atlantic.

The Amsterdam Mid-North Atlantic Plankton Expeditions (Van der Spoel 1981, 1985; Van der Spoel & Meering 1983) also sampled over the ridge waters but the fish assemblages caught were not studied (except the works by van Utrecht et al. 1987, and van Utrecht & van Utrecht 1987, on growth of *Chauliodus* spp. and distribution of *Serrivomer beanii*). At the same time the Polish R/V *Professor Siedlecki* surveyed the MAR (48°N - 54°N) to evaluate the exploitation potential of *Maurolicus muelleri* (Lipinsky & Janusz 2003), using acoustic methods and pelagic trawls. The catches included about 70 species of midwater fish and the abundances of *M. muelleri* were found to be too low to support a commercial fishery.

More recently, the R/V *Heincke H135* survey in 2000 studied the midwater fish fauna of the Twins pinnacle (404-586 m; ca. 44°N, 28°W) in the southern MAR-ECO box just north of the Azores (Pusch et al. 2004). It aimed to investigate the interactions of midwater fishes with topographic structures along the northeast Atlantic. The 40 hauls caught 102 species, dominated by myctophids. Differences between the pinnacle summit and the slope and oceanic stations were reported. The Twins at northern MAR had higher biogeographic affinities with the Azores and south of the Azores sub-tropical seamounts than to the Porcupine Bank.

#### EXPLORATORY AND COMMERCIAL DEMERSAL FISHING ON NORTHERN MAR

In early 1970s the Soviet Union started an intensive exploratory trawling program targeting the fishes aggregating on MAR ridge summits and seamounts (Trojanovsky & Lisovsky 1995; Shibanov et al. 2002). The exploration of fishes associated with the ridge resulted on commercial fishing activities (Trojanovsky & Lisovsky 1995; Vinnichenko 1998; Clarke et al. 2007). Shibanov et al. (2002) refer to 76 research and exploratory expeditions made between 1973 and 2001 on the area. Gushchin & Kukuev (1981) listed the pelagic and demersal fishes recorded as by-catches in exploratory fisheries, and Kukuev et al. (2000) reanalysed the material. Kukuev (2004) presented a comparative analysis of MAR demersal fish fauna with others from adjacent oceanic regions and seamounts.

The demersal fish resources of the region (43°N - 61°N) were explored later by Hareide & Garnes (2001) using bottom trawls and long-lines down to 2000 m depth. The composition of the catches and the dominant species was found to vary with depth, latitude, and type of gear used. Several species that aggregate on the ridge and seamount summits dominated the captures and were considered to be commercially exploitable, despite the failures of previous fisheries. The by-catch of those fishing operations included about 56 species.

The exploratory fishing surveys and commercial fishing activities along the northern MAR attracted the attention of other commercial fleets. Between the 1980s and the 2000s fishing vessels from Poland, Faroe Islands, Iceland, Norway, Ireland, United Kingdom, France, Spain and Portugal also operated in the northern MAR with trawls and long-lines.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

### CONTRIBUTIONS FROM MAR-ECO

The geomorphologic, oceanographic, biogeographic, and ecological complexity of the northern MAR, including the water column, generates a mosaic of benthic and pelagic biotopes, characterised by specific faunal assemblages. The variety of the existing habitats and niches accommodates a high diversity of species living and interacting in the region. This checklist of fishes from the northern MAR reflects that diversity. The MAR-ECO program sampled intensively most of the pelagic and benthic habitats that form that ecological medley, using a range of samplers (nets, long-lines, imagery from ROV and benthic landers) with different selectivities and operational capabilities (Wenneck et al. 2008). This work contributes to improve information on the biodiversity and biogeography of fishes of the deep North Atlantic. It also provides new data for concerted international actions on marine biodiversity and geography (e.g. ERMS; Species 2000; OBIS) and for FishBase (Froese and Pauly 2014).

## MATERIAL AND METHODS

### R/V *G.O. Sars* 2004 SURVEY

Data on the 2004 MAR-ECO expedition on R/V *G.O. Sars* were provided by Wenneck et al. (2008). The authors describe in detail the sampling strategies, the technology used, the operation methods adopted, the sampling gears employed per sampling locations, and the processing and storage of the data acquired. The expedition sampled the northern MAR between Iceland and the Azores and comprised two legs. Leg 1 was dedicated to sampling the pelagic environment and organisms and Leg 2 focused on benthic and benthopelagic organisms. The wide range of technologies and sampling gears available provided a more comprehensive sampling of the pelagic and benthic macro- and megafauna as well as data relating to abiotic conditions.

### SAMPLING EQUIPMENT

Three midwater trawl nets were used to target pelagic micronektonic and nektonic organisms (see below). A double-warp otter trawl was used to sample demersal nekton. Full gear descriptions were presented in Wenneck et al. (2008).

### SAMPLING STRATEGY

Three types of sampling strategies were adopted: 1) continuous sampling along the ship's track with acoustic methods for biological backscattering and physical oceanography data; 2) comprehensive point sampling in pre-determined locations where pre-defined samplers and equipment were used to characterize the hydrography and the composition, abundance and biomass of the fauna; and 3) opportunistic sampling by non-regular samplers to target specific acoustic features of interest.

Primary pre-determined sampling locations were referred to as superstations (SS), (see Fig.1 and location lists in Wenneck et al. 2008 and Fossen et al. 2008). Within a SS a several sampling activities was made (e.g., trawling with different nets, a CTD cast and various other operations). A SS on Leg 2 was defined as a seabed area of ca. 4.6 x 4.6 km<sup>2</sup> within which a range of demersal samplers were deployed.

Each activity within a given SS was coded as a local station (LS), and samples collected during each LS were identified by a unique serial number. In some cases when more than one sample was collected during a sampling event (e.g. multiple samples from a net haul equipped with a multi sampler device; see below) there were more than one serial number per LS, otherwise when a sampling event corresponded to one sample, a LS had only one serial number.

## SAMPLING NORTHERN MAR FISHES

R/V *G.O. Sars* LEG 1 (pelagic micronekton and the nekton)

During Leg 1 the R/V *G.O. Sars* sailed from Bergen, Norway to Horta, Azores, between 60°N and 41°N. Throughout three weeks, two double-warp multi-codend midwatersamplers (Åkratrawl and Macrozooplankton trawl, see Wenneck et al. (2008) for descriptions) were used regularly at 18 SS's (Fig. 1). Sampling was concentrated on the Southern Reykjanes Ridges, around the Charlie-Gibbs Fracture Zone (CGFZ), and just north of the Azores region (northern, middle and southern MAR-ECO boxes, respectively). Additionally, in four SS's a large Egersund midwatertrawl was used opportunistically to sample the larger size fraction of the fauna.

The bathymetry of the sampled region was monitored by the multi-beam echosounder Simrad EM300, recording to an Olex data management and navigation system.

### **Norwegian Åkratrawl: medium to large-sized pelagic otter trawl**

Vertical net opening: 20–35 m;

Mouth opening: ca. 680 m<sup>2</sup>;

Mesh size (graded): from 3200 mm (forenet) to 22 mm stretched (codend);

Total net length: 134.16 m + 24.24 m

Door-spread: 110 m;

Equipment: remotely or timer-operated multi-sampler with three open-closing 30-m long codends to sample three discrete depth strata consecutively during one haul; a metal-box sampler fitted on codend 2 or 3 collected delicate midwateranimals alive. Depth was recorded with SCANMAR sensors.

#### *Sampling strategy*

Net trajectory: oblique from ca. 3000 m to the surface, while codends were opened and closed at pre-defined depths on command from the ship.

Trawling speed (mean): 2.8 knots.

Comments: no accurate water volume filtered can be calculated for this gear because the graded meshes have different selectivity for non-herding fishes like the deep-water species sampled (Heino et al. 2010). This net caught large and medium-sized deep-pelagic fishes and it recorded the highest catches and the highest species numbers (Sutton et al. 2008). The manufacturer's diagram is provided in Wenneck et al. (2008).

### **Macrozooplankton or krill midwater otter trawl (double warp)**

Mouth opening: square-shaped 6 x 6 m (approx. 36 m<sup>2</sup>);

Mesh size: 3 x 3 mm opening diamond shaped (6 mm stretched) from the fornet to the codend; codend: 8 mm mesh size;

Total net length: 45 m;

Equipment: remotely or timer-operated multi-sampler with five open-closing 30-m long codends to sample discrete depth strata consecutively during one haul; codends equipped with a 7-L collection bucket to reduce damage of animals. Net mounted SCANMAR sensors provided data on codend number, geographical position, time and depth.

#### *Sampling strategy*

Net trajectory: oblique from ca. 3000 m to the surface, while codends were opened and closed at pre-defined depths and times.

Trawling speed (mean): 2.2 knots;

Retrieved speed: 25 m/min;

Tow duration: 10–40 min (per depth stratum);

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

Volume of water filtered:  $20 \times 10^3 - 120 \times 10^3 \text{ m}^3$  per depth stratum (assuming a constant speed along the trajectory).

Comments: In order to avoid variation in door-spread, a restrictive rope (strapping) was attached some distance in front of the doors. The manufacturer's diagram was provided by Wenneck et al. (2008).

### **Norwegian Egersundtrawl (very large double warp midwatertrawl)**

Vertical opening: 90–180 m;

Door-spread: 150 m;

Mouth area: ca.  $10000 \text{ m}^2$

Mesh size: graded, 50 mm stretched (codend liner).

#### *Sampling strategy*

Net trajectory: oblique

Trawling speed (mean): 2.9 knots.

Comments: This trawl was only used to sample acoustic targets opportunistically

### **RV *G.O Sars* LEG 2 (Demersal fishes)**

Bottom trawling was conducted during the second leg the R/V *G.O. Sars* 2004 north of the Azores region (southern box) and around the CGFZ (middle box), at around  $42^\circ\text{N}$  and  $52^\circ\text{N}$ , respectively (Fig. 1). Seven pre-determined SS's were sampled within the southern box, while 13 SS's were sampled within the middle box. Two trawls fished the shallow grounds on Faraday (SS 53) and Hecate (SS 65) Seamounts. Before trawling, a bathymetric survey identified grounds suitable to be fished by a bottom trawl.

### **Double-warp Campelen 1800 shrimp trawl (e.g. Engås 1991).**

Horizontal opening (between upper bridles at wing tips): 17 m (at 50-m door-spread);

Vertical opening: 4.5 m (at 50-m door-spread);

Distance between Danlenos at the tips of the ground gear: 12 m;

Mesh size: graded, 40-mm stretched (codend; with a liner of 22-mm knotless mesh);

Trawl doors (otter boards): standard Steinshamn W9 bottom V doors (area:  $6.7 \text{ m}^2$ ; weight: 2250 kg);

Other equipment: plastic encapsulated glass floats along headrope; ground-gear of rockhopper type; SCANMAR wireless sensors to monitor the trawl geometry.

#### *Sampling strategy*

Sampling depth: from 800 m to 3500 m.

Trawling speed: ca. 2 knots;

Tow duration: depending on bottom roughness.

Comments: the seabed areas selected for demersal sampling were surveyed by a multi-beam bottom profiling sounder (Simrad EM 300) to produce data for detailed 3-D bathymetric maps of each superstation.

### **M/S *LORAN* LONGLINER (DEMERSAL FISHES)**

The chartered Norwegian longliner M/S *Loran* conducted complementary sampling with baited longlines during Leg 2 of the 2004 R/V *G.O. Sars* cruise. The fishing vessel deployed 58 (36 bottom and 22 vertical) commercial long-lines sets (87,500 hooks) at depths between 450 and 4300 m, primarily in locations too rugged to be trawled. In a few stations, traps or bottom gill-nets were also deployed. The



*Loran* operated on the seamounts north of the Azores (18 sets) and on northern and southern sections of the CGFZ (41 sets), i.e. in the southern and middle MAR-ECO boxes. Sampling strategies, methods and equipment used are presented in detail in Fossen et al. (2008).

#### PROCESSING OF PELAGIC MICRONEKTON AND DEMERSAL NEKTON TRAWL SAMPLES ON BOARD

(see also Sutton et al. 2008; Bergstad et al. 2008b; Fossen et al. 2008).

Following trawl retrieval, catches from each net deployment (or from individual codends for trawls equipped with the multisamplers) were kept separate and identified by a unique serial number. Organisms entangled on the forenet were picked out and coded with a default serial number.

The catches from trawls equipped with multisamplers were processed on the vessel laboratory one at a time to prevent potential mixing of specimens from different depth strata. The sample from the deepest codend was sorted first, while the others were stored temporarily in a cold room to minimize sample degradation. The total wet weight of each sample was recorded prior to sorting using a motion-compensating scale. Then the entire catch was sorted by major taxonomic group (gelata, crustaceans, cephalopods, fishes a.o.). Fishes were sorted by major taxon and identified to species by the attending taxonomic specialists. Species lots were then enumerated and weighed on a motion-compensating scale ( $\pm 0.1$  g) before further handling. The regular preservation procedure was to freeze (at  $-30^{\circ}\text{C}$ ) the pelagic fishes by species, within plastic bags with an appropriate volume of seawater. In cases of rarity or taxonomic uncertainty the fishes were preserved in formaldehyde. Before formaldehyde preservation of these specimens, a tissue sample for molecular analysis was taken and preserved in 95% ethanol. In some cases specimens were frozen or preserved in lots by family or taxon, with species determination pending further examination at the University Museum of Bergen (former Bergen Museum), the repository for all 2004 MAR-ECO expedition fish specimens. Digital photographs were taken of the freshly collected animals. Data were recorded in the biotic database prepared for this survey.

During the *Loran* cruise most fishes were identified to species or to the lowest possible taxonomic level after the gear retrieval. They were weighed, measured (total length or other standard measurements for chimaerids and macrourids) and the sex and maturity stage were determined for a proportion of the most abundant species. Most of the fishes that were readily identified were not preserved. Voucher specimens were preserved for species that could not be identified on board and needed to be examined by specialists. These were frozen and transferred to the University Museum of Bergen or to the Virginia Institute of Marine Sciences (VIMS) fish collections. Additional samples from some species were collected for age and growth studies, genetic analyses, reproductive studies and diet analyses. They were preserved dry, in 95% ethanol, 10% formalin, or frozen. Most fish species caught were photographed. Detailed sample processing can be found in Dyb & Bergstad (2004).

#### MAR-ECO BIOTIC DATABASES

The biological data obtained from both legs of the 2004 *G.O. Sars* expedition were stored in a biotic database, following the database structure used at the Norwegian Institute of Marine Research (IMR; Mjanger et al. 2006) with additional MAR-ECO-specific fields. The database was updated following taxonomic revisions made by specialists during several identification workshops at the University Museum of Bergen.

#### FISH TREATMENT AT THE UNIVERSITY MUSEUM OF BERGEN

The majority of the samples from the 2004 surveys was curated by and deposited in the University Museum of Bergen, Norway. Surplus material, mainly frozen samples of abundant species for biological investigations were kept by the Institute of Marine Research in Bergen. Samples frozen at sea were transferred to the University Museum of Bergen, where they were thawed in suitable portions for final preservation. Small specimens were directly transferred to 70% ethanol, while larger specimens were fixed in 10% formalin for 1-4 weeks, according to size, rinsed for 24 h in running fresh water, and

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

transferred to 70% ethanol for permanent storage. During the preservation process, specimens were re-counted, and the samples weighed if necessary.

The samples were labelled during the cruise with pre-printed and pre-numbered MAR-ECO labels. When finally preserved, the samples were catalogued using the catalogue numbering of the University Museum of Bergen. These numbers, referred to with the acronym ZMUB (cf. Eschmeyer, 1998), were used in subsequent publications.

### IDENTIFICATION

Identification was done at-sea as much as possible, chiefly by F. Porteiro and T. Sutton (Leg 1), and I. Byrkjedal, A. Dolgov, J. Galbraith, N. King, S. Klimpel, G. Menezes, A. Orlov, R.S. Santos, and F. Uiblein (Leg 2). Remaining species identifications as well as revisions were done in post-cruise examination, partly during taxonomic workshops, partly by loans to taxonomic specialists. All or some of the species in the following families were given a post-cruise taxonomic examination (taxonomists in parentheses):

Acropomatidae (J. Nielsen); Alepisauridae (J. Nielsen, T. Sutton); Alepocephalidae (M. Biscoito, I. Byrkjedal, A.V. Dolgov, J. Galbraith, T. Johnsen, S. Klimpel, G. Menezes, A. M. Orlov, F. Porteiro, J.Y. Poulsen, F. Uiblein); Anarhichadidae (I. Byrkjedal, P.R. Møller); Anoplogasteridae (I. Byrkjedal); Anotopteridae (I. Byrkjedal); Aphyonidae (P.R. Møller, J. Nielsen, F. Uiblein); Arhynchobatidae (I. Byrkjedal, C. Cotton, A.M. Orlov); Bothidae (J. Nielsen); Bythitidae (P.R. Møller, J. Nielsen, F. Uiblein); Carcharinidae (C. Cotton); Caristiidae (P.R. Møller); Centrolophidae (F. Uiblein); Centrophoridae (C. Cotton); Ceratiidae (T. Pietsch); Cetomimidae (J. Nielsen, J. Paxton, T. Sutton); Chiasmodontidae (M. Melo, F. Porteiro, T. Sutton); Chimaeridae (C. Cotton, P.R. Møller); Diretmidae (I. Byrkjedal); Epigonidae (O. Gon); Etmopteridae (C. Cotton); Eurypharyngidae (A.V. Dolgov, J. Nielsen, A. M. Orlov); Gempylidae (T. Sutton); Gigantactinidae (T. Pietsch); Gonostomatidae (I. Byrkjedal, G. Menezes, F. Porteiro, T. Sutton); Halosauridae (F. Uiblein); Ipnopidae (P.R. Møller, J. Nielsen); Leptochilichthyidae (J. Galbraith, J.Y. Poulsen); Liparidae (N. Chernova, P.R. Møller); Lophiidae (S. Kaartvedt, F. Porteiro); Lotidae (M. Biscoito, R.S. Santos); Macrouridae (E. Anderson, I. Byrkjedal, J. Galbraith, G. Gjelsvik, O. Gon, T. Iwamoto, N. King, A.M. Orlov, F. Porteiro, F. Uiblein); Megalomycteridae (T. Sutton); Melamphidae (I. Byrkjedal, F. Porteiro, R.S. Santos, T. Sutton); Melanocetidae (T.W. Pietsch); Melanonidae (I. Byrkjedal, P.R. Møller, J. Nielsen, F. Uiblein); Merluccidae (F. Uiblein); Bathylagidae and Microstomatidae (O. Bjelland, I. Byrkjedal, O. Gon, T. Sutton; D. Rees); Moridae (C. Cotton, P.R. Møller, F. Uiblein); Myctophidae (I. Byrkjedal, A. Dolgov, A. M. Orlov, F. Porteiro, J.Y. Poulsen, T. Sutton); Nemichthyidae (A.V. Dolgov, A.M. Orlov, F. Porteiro); Nomeidae (F. Uiblein); Notacanthidae (I. Byrkjedal, F. Uiblein); Notosudidae (J. Nielsen, F. Porteiro, T. Sutton); Omosudidae (J. Nielsen); Oneirodidae (T.W. Pietsch, D. Rees, T. Sutton); Ophidiidae (C. Cotton, P.R. Møller, J. Nielsen, F. Uiblein); Opisthoproctidae (F. Porteiro, T. Sutton); Oreosomatidae (F. Uiblein); Paralepididae (F. Porteiro, T. Sutton); Phosichthyidae (I. Byrkjedal, V. Carmo, F. Porteiro, D. Rees); Platyroctidae (Z. Baldwin, M. Biscoito, V. Carmo, K.E. Hartel, G. Menezes, F. Porteiro, J.Y. Poulsen, D. Rees, T. Sutton); Pseudotriakidae (C. Cotton); Psychrolutidae (I. Byrkjedal, A.M. Orlov); Rajidae (I. Byrkjedal, C. Cotton, A.M. Orlov); Rhinochimaeridae (P.R. Møller); Rondeletiidae (J. Nielsen); Saccopharyngidae (J. Nielsen, T. Sutton); Scyliorhinidae (C. Cotton, K. Nakaya); Sebastidae (C. Cotton, O. Bjelland); Serrivomeridae (I. Byrkjedal, A.V. Dolgov, F. Porteiro); Somniosidae (C. Cotton); Sternoptychidae (V. Carmo, G. Menezes, F. Porteiro, T. Sutton); Stomiidae (I. Byrkjedal, S. Klimpel, F. Porteiro, T. Sutton); Synphobranchidae (M. Biscoito, I. Byrkjedal, F. Porteiro, R.S. Santos, F.M. Svendsen, F. Uiblein); Syngnathidae (I. Byrkjedal, S. Santos); Synodontidae (I. Byrkjedal, P.R. Møller, J. Nielsen, F. Uiblein); Tetragonuridae (F. Uiblein); Trachichthyidae (F. Uiblein); Trichiuridae (T. Sutton); Zoarcidae (P.R. Møller).

## SAMPLES

Tissue samples, primarily as a source of DNA, were taken from 1475 specimens, representing 176 species. Database connections were retained between tissue samples and voucher specimens. Small specimens preserved directly in ethanol were not sampled for tissue, as the specimens themselves could be considered a future source of DNA. Altogether 197 species (457 specimens) were genetically barcoded by sequencing the mitochondrial gene cytochrome oxidase subunit I (CO1). This task was partly done by the University of Guelph, Canada, and partly by the University of Bergen; for methods see Ward et al. (2005) and Ward et al. (2008) for use of MAR-ECO data.

Skeletons were prepared from 336 specimens of 82 species by chemical maceration, following a slightly modified version of the method described by Berland (1985). After being gutted, the fishes were immersed in a maceration fluid consisting of a solution of 3 g  $\text{Na}^+(\text{HOCH}_2\text{SO}_2)^-$  per litre of water. The specimens were kept in this solution for a period ranging from two days (small fishes) to three weeks (large fishes) at a temperature of 37°C. The bones were then rinsed in fresh water and left to dry at room temperature for a few days. This method produced skeletons with all bones detached, thus enabling access also to the joints of the bones.

Additionally, 426 lots comprising 12672 specimens of 66 species were kept frozen for studies of life cycles, age and growth, trophic relationships, ecotoxicology, etc.

## STRUCTURE OF THE CHECKLIST

The following checklist was organised by class, order and family following Nelson (2006), Fricke & Eschmeyer (2014), and Froese & Pauly (2014). Within each family genus and species are organised alphabetically.

## INFORMATION PER SPECIES

Species name, authority and year

Common names: FishBase (English);

**Sample information:** SS (gear): MAR-ECO Super Station code and gear used;

Depth: range and average depth;

No. lots / spec: number of lots (i.e. number of samples in which a species occurred) / number of specimens caught, per sampling gear (PT: pelagic trawl; BT: bottom trawl); or vessel and sampling gear if caught by M/S *Loran*; LL: horizontal long-lines; LL\*: vertical long-lines; GN: gill nets);

Rel. Abund.: % of samples containing this species / % of all specimens represented by this species.

Sz (n: range): number of fishes measured and size range, maximum and minimum (standard length or total length for M/S *Loran* species; and other standard measurements for skates, chimaerids and macrourids).

BW [avg (range)] (g): average total body weight and range in grams per gear and/or vessel.

ZMUB, VIMS cat no: catalogue numbers of lots deposited at the University Museum of Bergen (ZMUB) and/or in Virginia Institute of Marine Sciences (VIMS); ZMUB (ost.): codes for skeletons processed and deposited at the University Museum of Bergen (ZMUB); ZMUB (gen.): catalogue numbers of specimen lots that were barcoded by the University of Guelph, Canada, and by the University of Bergen;

Geographical distribution: North Atlantic and broad geographical distribution.

Comments: relevant information about the species and/or about MAR-ECO fish specimens.

References: references that noted the occurrence of the species in northern MAR and adjacent areas.

## CHECKLIST OF FISHES FROM THE NORTHERN MID-ATLANTIC RIDGE

### CHONDRICHTHYES

#### CHIMAERIFORMES

##### Chimaeridae

*Chimaera monstrosa* Linnaeus, 1758

Rabbit fish

**Sample information:** SS (gear): 14 (GN); Depth (m): 1929; No. lots / spec: 1 / 1; Rel. Abund.: 1.6 / 0.0 (*Loran*); Sz (n): 1: 740 mm PSDL; BW (g): 3840.

**Geographical distribution:** In Northeast Atlantic from about 20°N on African coast northward to about 71°N in the Barents Sea, Iceland and eastern Greenland, including the Mediterranean Sea. Also in the Azores and MAR at about 42°N.

**Comments:** The specimen was not preserved.

**References:** MAR: Hareide & Garnes (2001); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Hydrolagus affinis* (de Brito Capello, 1868)

Smalleyed rabbitfish

**Sample information:** SS (gear): 60; 62; 68; 72 (BT); 1-2; 5-6; 12-13; 28; 32-34; 38-40; 43; 46-47; 63 (LL); Depth (m): 948-3055 (1660-2086); No. lots / spec: 4 / 4 BT; 17 / 122 (*Loran*); Rel. Abund.: 18.2 / 0.1 (BT); 27.0 / 1.5 (*Loran*); Sz (n: range): 120: 580 - 1280 mm PSDL; BW [avg (range)] (g): BT: 11259 (675.5 - 16360); *Loran*: 11727 (1930 - 21190); ZMUB (cat. no.): 16539-44; VIMS (cat. no.): 11742. **Figure 1 g.**

**Geographical distribution:** In the North Atlantic from eastern and western Greenland and southern Iceland to about 40°N in the northwest Atlantic, along northern MAR to the Azores and to southern Morocco at the Northeastern Atlantic continental slopes. Also recorded off Southwest and Southeast Atlantic, off Argentina and South Africa slopes, respectively.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Cousins et al. (2013); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Hydrolagus pallidus* Hardy & Stehmann, 1990

**Sample information:** SS (gear): 6; 10-15; 33-40; 43; 46; 63 (LL); 14 (GN); Depth (m): 883-2675 (1400-1754); No. lots / spec: 16 / 63 (LL: 93,8% / 98,4%); Rel. Abund.: 25.4 / 0.8 (*Loran*); Sz (n: range): 61: 580 - 1200 mm PSDL; BW [avg (range)] (g): 9002.1 (1840 - 17390); ZMUB (cat. no.): 16545.

**Geographical distribution:** In Northeast Atlantic from Iceland to Bay of Biscay. Also in the Azores Region. Few records off western Greenland and in the Northwest Atlantic at about 40°N.

**References:** MAR: Kukuev (2004); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003).

## Rhinochimaeridae

*Harriotta haeckeli* Karrer, 1972

Smallspine spookfish

**Sample information:** SS (gear): 66-68; 72-74 (BT); Depth (m): 2306-3071 (2678-2728); No. lots / spec: 4 / 13; Rel. Abund.: 18.2 / 0.2 (BT); Sz: N/A; BW [avg (range)] (g): 510.9 (38.2 - 1307.5); ZMUB (cat. no.): 19333; 19349; 23495; 23496; ZMUB (gen): 19333. **Figure 1 a.**

**Geographical distribution:** In North Atlantic at Labrador Sea and Southwest Greenland (rare), at Northwest Atlantic between 35°N and 45°N and also off Scotland and Ireland and off Canaries and along African coast to 30°N. Scattered records in Indian and Southwest Pacific Ocean.

**Comments:** First northern MAR record.

**References:** Greenland: Møller et al. (2010); Northwest Atlantic: Moore et al. (2003).

## CARCHARHINIFORMES

### Pseudotriakidae

*Pseudotriakis microdon* de Brito Capello, 1868

False catshark

**Sample information:** SS (gear): 10-11 (LL); Depth (m): 883-1358 (1045-1305); No. lots / spec: 2 / 4; Rel. Abund.: 3.2 / 0.0 (*Loran*); Sz (n: range): 4: 2040 - 2620 mm TL; BW: N/A; ZMUB (cat. no.): 16532-33;

**Geographical distribution:** In the North Atlantic from Iceland to about 10°N along European and African slopes and off North America at about 40°N. Also reported off Cuba and Brazil. Southwest and Southeast Indian Ocean. Southwest, Northwest and central (Hawaii) Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Iceland: Jónsson and Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### Pentanchidae

*Apristurus manis* (Springer, 1979)

Ghost catshark

**Sample information:** SS (gear): 53; 60-62 (BT); 58-59 (LL); 48-50; 53; 55; 61-62 (LL\*); Depth (m): 966-1959 (1152-1199); No. lots / spec: 4 / 30; Rel. Abund.: 6.3 / 0.4 (*Loran*); Sz: N/A; BW [avg (range)] (g): 650.9 (5.1 - 2091.7); ZMUB (cat. no.): 16500-09; VIMS (cat. no.): 11855-56; ZMUB (gen): 16505; 16508-09. **Figure 1 d.**

**Geographical distribution:** Northwest Atlantic slopes between about 40°N and 45°N, occurring also at northern MAR, and off west Ireland.

**References:** MAR: Kukuev (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Kukuev (2004).

*Apristurus microps* (Gilchrist, 1922)

Smalleye catshark

**Sample information:** SS (gear): 34 (LL); depth (m): 1208-1592; No. lots / spec: 1 / 2; Rel. Abund.: 1.6 / 0.0 (*Loran*);

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

Sz (n: range): 2: 760 - 800 mm TL; BW [avg (range)] (g): 1745 (1670 - 1820).

**Geographical distribution:** In North Atlantic from Iceland to Gulf of Biscay and from Labrador Sea to about 40°N along the Northwest Atlantic slopes. Also northern MAR. Also off Namibia and South Africa.

**References:** Northwest Atlantic: Moore et al. (2003).

*Apristurus profundorum* (Goode & Bean, 1896)

Deepwater catshark

**Sample information:** SS (gear): 42; 44; 56 (BT); Depth (m): 1702-2107 (1879-1941); No. lots / spec: 3 / 7; Rel. Abund.: 13.6 / 0.1 (BT); Sz: N/A; BW [avg (range)] (g): 977.7 (363.0 - 1440.0); ZMUB (cat. no.): 16510-13; VIMS (cat. no.): 11753; 11853.

**Geographical distribution:** In Northwest Atlantic from the Labrador Sea to about 40°N. Northern MAR between 52°N and 43°N. Southern Iceland to northern Bay of Biscay. Scattered records off Morocco, Gulf of Mexico and Southeast Caribbean Sea.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Iceland: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Kukuev (2004).

*Galeus murinus* (Collett, 1904)

Mouse catshark

**Sample information:** SS (gear): 10; 21 (LL); Depth (m): 944-1358 (1061-1261); No. lots / spec: 2 / 4; Rel. Abund.: 3.2 / 0.0 (*Loran*); Sz (n: range): 4: 470 - 510 mm TL; BW: N/A; ZMUB (cat. no.): 16529-31.

**Geographical distribution:** In Northeast Atlantic around Iceland and Faeroes Islands and British Isles. Also along northern MAR south to the Azores.

**References:** MAR: Hareide & Garnes (2001); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

## Carcharhinidae

*Prionace glauca* (Linnaeus, 1758)

Blue shark

**Sample information:** SS (gear): near station 17 of FV *Loran*; southern MAR-ECO box (gaff); Depth (m): surface; No. lots / spec: 1 / 1 (*Loran*); Rel. Abund. : N/A; Sz (n): 620 mm TL; BW (g): 700.

**Geographic distribution:** Widely distributed in tropical and temperate waters in all oceans.

**Comments:** The specimen was a juvenile female shark caught at surface.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## SQUALIFORMES

### Centrophoridae

*Centrophorus squamosus* (Bonnaterre, 1788)

Leafscale gulper shark

**Sample information:** SS (gear): 1-12; 15-16; 21 (LL); 18-22 (LL\*); 17 (GN); Depth (m): 883-3366 (1265-1293); No. lots / spec: 16 / 84 (LL: 75% / 66,7%); Rel. Abund.: 25.4 / 1.0 (*Loran*); Sz (n: range): 84: 1000 - 1190 mm TL; BW [avg (range)] (g): 7149.9 (5260 - 10650); ZMUB (cat. no.): 16534.

**Geographical distribution:** Eastern Atlantic from Iceland to South Africa, including MAR and Azores. Also around Madeira and Canaries. Scatter records in Southwest and Northwest Indian Ocean. Indo-Pacific and Southwest Pacific Ocean.

**References:** MAR: Whitehead et al. (1984-86); Hareide & Garnes (2001); Kukuev (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Deania calcea* (Lowe, 1839)

Birdbeak dogfish

**Sample information:** SS (gear): 10-11; 21 (LL); 19 (LL\*); Depth (m): 883-1358 (932-1087); No. lots / spec: 4 / 19 (LL: 75% / 78,9%); Rel. Abund.: 6.3 / 0.2 (*Loran*); Sz (n: range): 19: 810 - 1020 mm TL; BW [avg (range)] (g): 3132.4 (1920 - 4710); ZMUB (cat. no.): 16535-38.

**Geographical distribution:** In the North Atlantic from southern Iceland to Senegal, along European continental slopes, and along northern MAR to the Azores. Also in Namibia and South Africa. Northwest, Southwest and Southeast Pacific.

**Comments:** *Deania hystricosa* (Garman, 1906) is a junior synonym of *D. calcea*. Genetic (pers. comm. S. Stefanni and P. Ribeiro) and morphological (pers. comm. M. Freitas) examinations find no reason to retain these as two species.

**References:** MAR: Hareide & Garnes (2001); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

### Somniosidae

*Centroscymnus coelolepis* Barbosa du Bocage & de Brito Capello, 1864

Portuguese dogfish

**Sample information:** SS (gear): 42 (BT); 6-12; 21 (LL); 19 (LL\*); 14 (GN); Depth (m): 883-2340 (1168-1474); No. lots / spec: 1 / 1 BT; 8 / 64 (LL: 75% / 92.2%) (*Loran*); Rel. Abund.: 4.5 / 0.0 (BT); 12.7 / 0.8 (*Loran*); Sz (n: range): 64: 810 - 1210 mm TL; BW [avg (range)] (g): BT: 5695.0; *Loran*: 9405.6 (3580 - 16150); ZMUB (cat. no.): 16514-17. **Figure 1 b.**

**Geographical distribution:** In the North Atlantic from Greenland-Iceland ridge to about 5°N, including the Mediterranean Sea, and from about 50°N in the Labrador slope to northeast Brazil at about 10°S. At northern MAR between 45°N and 10°N, including the Azores and South of the Azores Seamounts. Also along Namibia and South Africa coast, extending to sub-antarctic waters and Southwest and South Indian Ocean to southern Australia and New Zealand in the Southwest Pacific and off Japan in Northwest Pacific Ocean.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Kukuev (2004); Northeast Atlantic: Whitehead et al. (1984-86).

*Centroscymnus owstonii* Garman, 1906

Roughskin dogfish

**Sample information:** SS (gear): 11; 21 (LL); 19 (LL\*); Depth (m): 883-1149 (937-987); No. lots / spec: 3 / 12 (LL: 66,7% / 75%); Rel. Abund.: 4.8 / 0.1 (*Loran*); Sz (n: range): 12: 780 - 910 mm TL; BW [avg (range)] (g): 2995 (2320 - 3740); ZMUB (cat. no.): 16518-20.

**Geographical distribution:** In Northwest Atlantic slopes from about 40°N to 30°N, including the Gulf of Mexico. Along northern MAR between 43°N and the Azores. Also off Madeira, Canaries and Senegal. Recorded from off southern Brazil and Argentina and South Africa slopes. Southwest and Northwest Pacific Ocean and Southeast Pacific ridges.

**References:** MAR: Kukuev (2004).

*Centroselachus crepidater* (Barbosa du Bocage & de Brito Capello, 1864)

Longnose velvet dogfish

**Sample information:** SS (gear): 8-11; 21 (LL); 19-22 (LL\*); Depth (m): 883-1892 (1030-1238); No. lots / spec: 7 / 117 (LL: 57,1% / 84,6%); Rel. Abund.: 11.1 / 1.4 (*Loran*); Sz (n: range): 117: 380 - 990 mm TL; BW [avg (range)] (g): 2215.8 (1040 - 3510); ZMUB (cat. no.): 16521.

**Geographical distribution:** In the Northeast Atlantic from Greenland-Iceland Ridge to South Africa and in northern MAR between 43°N and the Azores. Also in West Indian Ocean, Southwest, Northwest and Southeast Pacific Ocean.

**References:** MAR: Hareide & Garnes (2001); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Somniosus microcephalus* (Bloch & Schneider, 1801)

Greenland shark

**Sample information:** SS (gear): 2; 6 (LL); 53 (LL\*); Depth (m): 1572-2992 (2240-1948); No. lots / spec: 3 / 3 (LL: 66,7% / 66,67%); Rel. Abund.: 4.8 / 0.0 (*Loran*); Sz (n: range): 3: 1028 - 4410 mm TL; BW (g): 16000; ZMUB (cat. no.): 16527-28.

**Geographical distribution:** In the North Atlantic from Arctic Ocean, Norwegian Sea, Iceland and Greenland to about 40°N in both margins. Along northern MAR from 53°N to the Azores.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Somniosus rostratus* (Risso, 1827)

Little sleeper shark

**Sample information:** No station data; No. lots / spec: 1 / 1; no size data; BW (g): 3870; ZMUB (cat. no.): 16735.

**Geographical distribution:** In the Northeast Atlantic from Gulf of Biscay to Morocco. Extends to Mediterranean Sea. Northern MAR to the Azores. Southwest and Northwest Pacific Ocean.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Kukuev & Trunov (2002); Northwest Atlantic: Kukuev (2004); Northeast Atlantic: Whitehead et al. (1984-86).



## Etmopteridae

*Etmopterus princeps* Collett, 1904

Great lanternshark

**Sample information:** SS (gear): 44; 53; 60 (BT); 2; 5-13; 21; 34-39; 44; 51-60 (LL); 20-37; 49; 52-57 (LL\*); 14 (GN); Depth (m): 450-2992 (1106-1242); No. lots / spec: 3 / 199 BT; 35 / 4440 (LL: **Sample information:** 51.4% / 75.9%) (*Loran*); Rel. Abund.: 13.6 / 2.3 (BT); 55.6 / 53.0 (*Loran*); Sz (n: range): 4440: 270 - 960 mm TL; BW [avg (range)] (g): BT: 508.3 (48.0 - 997.5); *Loran*: 1560.7 (1000 - 2730); ZMUB (cat. no.): 16522-26; VIMS (cat. no.): 11754; 11823; ZMUB (gen): 16524-25. **Figure 1 c.**

**Geographical distribution:** In the Northeast Atlantic from eastern Greenland and Iceland southward to about 5°N off Liberia. In the Northwest Atlantic between about 30°N and 45°N. Along MAR between 50°N and the Azores.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## RAJIFORMES

## Rajidae

*Amblyraja jenseni* (Bigelow & Schroeder, 1950)

Jensen's skate

**Sample information:** SS (gear): 72 (BT); 32; 35; 38; 40; 47; 63 (LL); Depth (m): 888-2567 (1692-2144); No. lots / spec: 1 / 1 BT; 6 / 13 (*Loran*); Rel. Abund.: 4.5 / 0.0 (BT); 9.5 / 0.2 (*Loran*); Sz (n: range): 13: 710 - 1120 mm TL; 692 - 510 mm DL; BW [avg (range)] (g): BT: 2795.0; *Loran*: 8011.5 (2790 - 12190); ZMUB (cat. no.): 19462-63; 19529; VIMS (cat. no): 11757.

**Geographical distribution:** In the Northwest Atlantic from western Greenland to about 40°N. Also in northern MAR, off Iceland and to the northwest of the British Isles

**Comments:** Species studied by Orlov et al. (2006, 2010) and Orlov & Cotton (2011, 2015). Three of the specimens (ZMUB 19462, 19463, 19529), for which DNA samples were available from ethanol-preserved tissue, were subsequently sequenced for the mitochondrial gene COI. The haplotypes fell within the variation found for *Amblyraja hyperborea* (Collett, 1879) (Byrkjedal & Schrøder-Nielsen, unpublished), in agreement with Coulson et al. (2011) who sequenced a number of skate species from Canadian waters. However, before a taxonomic conclusion with possible synonymization of these two species is made, further molecular comparisons are advised, using more rapidly evolving markers than COI (Coulson et al. 2011).

**References:** MAR: Cousins et al. (2013); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Gordon & Duncan (1987, 1989); Quero et al. (2000); George & Zidowitz (2006); Johnston et al. (2010); Silva et al. (2012).

Checklist of Fishes from the Northern Mid-Atlantic Ridge

*Rajella bigelowi* (Stehmann, 1978)

Bigelow's ray

**Sample information:** SS (gear): 53 (BT); Depth (m): 966-1019 (973-1011); No. lots / spec: 1 / 2; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 19.1 (15.1 - 23.0); ZMUB (cat. no.): 18405-06; ZMUB (gen): 18405-06.

**Geographical distribution:** In North Atlantic from Norwegian Sea, Iceland and Greenland to the Gulf of Mexico and to 5°N along European and African slopes. Also in the Azores and northern MAR at about 50°N.

**Comments:** See Orlov et al. (2006, 2010), Orlov & Cotton (2011).

**References:** Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

Arhynchobatidae

*Bathyraja pallida* (Forster, 1967)

Pale ray

**Sample information:** SS (gear): 3; 16; 43 (LL); Depth (m): 2582-3366 (2827-2915); No. lots / spec: 3 / 3; Rel. Abund.: 4.8 / 0.0 (*Loran*); Sz (n: range): 3: 640 - 1520 mm TL; 823 - 400 mm DL; BW (g): 1410; ZMUB (cat. no.): 19465; VIMS 11577; 11758. **Figure 1 e.**

**Geographical distribution:** Scattered records in Northeast Atlantic, off Ireland, Gulf of Biscay and northern MAR.

**Comments:** Rare, known only from a few records (Orlov et al. 2006, 2010; Orlov & Cotton, 2011, 2013).

**References:** MAR: Hareide & Garnes (2001); Fossen et al. (2008); Cousins et al. (2013); Northeast Atlantic: Whitehead et al. (1984-86); Gordon & Duncan (1987, 1989); Clarke (2000).

*Bathyraja richardsoni* (Garrick, 1961)

Richardson's ray

**Sample information:** SS (gear): 42; 62; 68; 72 (BT); 2-3; 5-6; 13-15; 28; 32; 40; 43; 47 (LL); Depth (m): 1572-3055 (2096-2409); No. lots / spec: 4 / 11 BT; 11 / 142 (*Loran*); Rel. Abund.: 18.2 / 0.1 (BT); 17.5 / 1.7 (*Loran*); Sz (n: range): 134: 430 - 1680 mm TL; 642 - 300 mm DL; BW [avg (range)] (g): BT: 6238.1 (144.0 - 23030.0); *Loran*: 7706.7 (1270 - 20500); ZMUB (cat. no.): 17600; 19364; 19446; 19448; 19464; 19476; 19514; 19522; 19528; 19535; ZMUB (gen): 19448. **Figure 1 f.**

**Geographical distribution:** Across the North Atlantic between 55°N and 40°N. Scattered records off Arctic Canada and Mauritania Region. Also known from Southwest Pacific.

**Comments:** See Orlov et al. (2006, 2010); Orlov & Cotton (2011); Orlov (2011).

**References:** MAR: Hareide & Garnes (2001); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## ACTINOPTERYGII

### NOTACANTHIFORMES

#### Halosauridae

*Aldrovandia phalacra* (Vaillant, 1888)

Hawaiian halosaurid fish

**Sample information:** SS (gear): 44; 53; 62 (BT); Depth (m): 981-1959 (1659-1729); No. lots / spec: 3 / 43; Rel. Abund.: 13.6 / 0.5 (BT); Sz: N/A; BW [avg (range)] (g): 114.4 (9.0 - 375.6); ZMUB (cat. no.): 15970-72; ZMUB (gen): 15971. **Figure 2 a.**

**Geographical distribution:** On continental slopes and seamounts, in North Atlantic from about 50°N at Nova Scotia, MAR, and Gulf of Biscay, to Brazil and South Africa. Rare off southwest Greenland. Widely distributed in Indian and Pacific Oceans.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Halosauropsis macrochir* (Günther, 1878)

Abyssal halosaur

**Sample information:** SS (gear): 40-46; 50-56; 62-72 (BT); Depth (m): 1630-3527 (2457-2494); No. lots / spec: 15 / 642; Rel. Abund.: 68.2 / 7.5 (BT); Sz (n: range): 34: 413-647 mm SL; BW [avg (range)] (g): 112.4 (1.5 - 323.4); ZMUB (cat. no.): 16842-44; 17958-74; 19246; 19249; 19251-53; 19256-57; 19343; 19348; 19480; 19483; 19501; ZMUB (gen): 16842-44.

**Geographical distribution:** From about 55°N to about 20°N in the northwest Atlantic and to 15°N along northwest African slopes. Scattered records off southern Brazil and South Africa. West and South Indian Ocean and West Pacific Ocean from New Zealand to Japan.

**References:** MAR: Whitehead et al. (1984-86); Bergstad et al. (2012); Cousins et al. (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

#### Notacanthidae

*Notacanthus bonaparte* Risso, 1840

Shortfin spiny eel

**Sample information:** SS (gear): 44; 53 (BT); Depth (m): 966-1767 (1077-1119); No. lots / spec: 2 / 32; Rel. Abund.: 9.1 / 0.4 (BT); Sz: N/A; BW [avg (range)] (g): 94.6 (18.9 - 200.0); ZMUB (cat. no.): 18383; 18385; 19125; 19128; 19136; 19300; 19304; ZMUB (gen): 18383; 18385. **Figure 2 b.**

**Geographical distribution:** In the Northeast Atlantic from Iceland south to Senegal, including the Mediterranean Sea. In northern MAR between 42°N and 50°N. Few records off Northwest Atlantic slopes.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Northwest Atlantic: Hartel et al. (2008); Northeast Atlantic: Whitehead et al. (1984-86); Iceland: Jónsson & Pálsson (2013).

*Notacanthus chemnitzii* Bloch, 1788

Spiny eel

**Sample information:** SS (gear): 50; 53 (BT); Depth (m): 966-2607 (1513-1543); No. lots / spec: 2 / 4; Rel. Abund.: 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 1167.3 (67.0 - 2435.0); ZMUB (cat. no.): 18384; 19497; 19500; ZMUB (gen): 18384.

**Geographical distribution:** In North Atlantic from Greenland and Iceland and along west and east continental margins to southern Caribbean Sea and to Senegal at about 15°N. In northern MAR between 42°N and 50°N. Also scattered records in South Indian Ocean and throughout the Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Polyacanthonotus challenger* (Vaillant, 1888)

Longnose tapirfish

**Sample information:** SS (gear): 40-42; 46; 50-52; 54; 66; 72 (BT); Depth (m): 2063-3527 (2778-2787); No. lots / spec: 8 / 24; Rel. Abund.: 36.4 / 0.3 (BT); Sz: N/A; BW [avg (range)] (g): 56.6 (1.6 - 128.4); ZMUB (cat. no.): 18390-92; 19058-61; 19075; 19105; 19113; 19138; 19184; ZMUB (gen): 18390-92.

**Geographical distribution:** In the North Atlantic from Iceland, Scotland, northern MAR and Flemish Cap to about 40°N in the northwest Atlantic and to Azores, Madeira, Canaries and Morocco in the northeast sector. Also in North Pacific Ocean. Scattered records off Atlantic South Africa, southern Indian Ocean and Southwest Pacific.

**References:** Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Polyacanthonotus rissoanus* (De Filippi & Verany, 1857)

Smallmouth spiny eel

**Sample information:** SS (gear): 42-44; 50; 53-56; 60; 64; 72 (BT); Depth (m): 966-3527 (2340-2369); No. lots / spec: 10 / 34; Rel. Abund.: 45.5 / 0.4 (BT); Sz: N/A; BW [avg (range)] (g): 74.7 (16.2 - 292.0); ZMUB (cat. no.): 18393-94; 18450-51; 19087; 19115; 19129; 19134; 19137; 19143; 19145; 19150; 19185; ZMUB (ost.): O.1628; ZMUB (gen): 18393-94; 18450.

**Geographical distribution:** In the North Atlantic from western Greenland and Iceland to about 35°N in both sides of the basin and along northern MAR. Extends to the Mediterranean Sea.

**References:** Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2006); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## ANGUILLIFORMES

### Synphobranchidae

*Histiobranchus bathybius* (Günther, 1877)

Deepwater arrowtooth eel

**Sample information:** SS (gear): 40; 42; 50; 52; 54; 64; 66; 68 (BT); 1-11; 16; 28-29; 33; 39; 43 (LL); Depth (m): 883-3527 (2489-2655); No. lots / spec: 8 / 46 BT; 14 / 52 (*Loran*); Rel. Abund.: 36.4 / 0.5 (BT); 22.2 / 0.6 (*Loran*); Sz (n: range): 52: 370 - 930 mm TL; BW [avg (range)] (g):

BT: 363.7 (32.9 - 885.5); *Loran*: 1251.4 (1010 - 1560); ZMUB (cat. no.): 16845-47; 17977-80; 19259; 19283; 19305; 19320; 19445; 19473; 19491; 19518; ZMUB (gen): 16845-47. **Figure 2 d.**  
**Geographical distribution:** In the Northeast Atlantic from Iceland to Mauritania, including Madeira and Canaries. In northern MAR from about 52°N to the Azores Region to about 35°N. In western Greenland and along the American slope between 45°N and 25°N. Along African coast from 5°S to South Africa. Southwest Indian Ocean. West and North Pacific Ocean.  
**References:** MAR: Whitehead et al. (1984-86); Cousins et al. (2013); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Ilyophis brunneus* Gilbert, 1891

Muddy arrowtooth eel

**Sample information:** SS (gear): 40-44; 52 (BT); Depth (m): 1702-2979 (2411-2438); No. lots / spec: 4 / 6; Rel. Abund.: 18.2 / 0.1 (BT); Sz: N/A; BW [avg (range)] (g): 27.5 (25.0 - 30.0); ZMUB (cat. no.): 16872-74; 18011-12; ZMUB (gen): 16872-74. **Figure 2 f.**  
**Geographical distribution:** In the Northeast Atlantic from off Scotland at about 60°N to Mauritania, including Madeira and Canaries. In the Azores and adjacent northern MAR between 43°N and about 35°N. In northwestern Atlantic off American slope between 25°N and 45°N, including the Gulf of Mexico. Off Angola and South Africa. Also in Southwest Atlantic and Southwest Indian Ocean. Scattered distributed in Pacific Ocean.  
**References:** Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Synaphobranchus kaupii* Johnson, 1862

Kaup's arrowtooth eel

**Sample information:** SS (gear): 42; 44; 53; 54; 60 (BT); 12; 21; 34-35 (LL) Depth (m): 888-1964 (1590-1745); No. lots / spec: 7 / 147 BT; 4 / 17 (*Loran*); Rel. Abund.: 26.5 / 1.7 (BT); 6.3 / 0.2 (*Loran*); Sz (n: range): 35: 215 - 840 mm TL; BW [avg (range)] (g): BT: 153.1 (17.8 - 373.2); ZMUB (cat. no.): 16725-34; 16737-16744; 20267-70; 20837; ZMUB (ost.): O.1782-86.  
**Geographical distribution:** Widely distributed in the North Atlantic from Greenland and Iceland to central equatorial waters, but rare or absent in southern Caribbean Sea and northeastern Brazil. Off Brazil at about 20°S and also along Africa coast from 0°N to South Africa. Southwest and Southeast Indian Ocean. West and Central Pacific Ocean.  
**Comments:** Molecular and morphological study of the MAR-ECO specimens in relation to possible *Synaphobranchus affinis* Günther, 1877 identified all as *S. kaupii* (Svendsen & Byrkjedal 2013).  
**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Cousins et al. (2013); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

**Derichthyidae**

*Nessorhamphus ingolfianus* (Schmidt, 1912)

Duckbill oceanic eel

**Sample information:** SS (gear): 4; 28; 34 (PT); Depth (m): 200-1800 (632-1474); No. lots / spec: 4 / 5; Rel. Abund.: 2.9 / 0.0 (PT); Sz (n: range): 2: 554 - 576 mm SL; BW [avg (range)] (g): 50.6 (7.2 - 143.0); ZMUB (cat. no.): 18377-79; 18535; ZMUB (gen): 18377-79.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Geographical distribution:** In North Atlantic from southern Iceland to about 20°N and to Cape Verde Islands in eastern tropical Atlantic. Western and central Indian Ocean. Southwest and central tropical South Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Iceland: Jónsson & Pálsson (2013); Kukuev & Trunov (2002); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Derichthys serpentinus* Gill, 1884

Narrownecked oceanic eel

**Sample information:** SS (gear): 4; 8; 22-24; 28-30; 32-36 (PT); 44 (BT); Depth (m): 188-2400 (717-1342); No. lots / spec: 13 / 17 (PT: 92.3% / 94.1%); Rel. Abund.: 8.6 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 29.5 (2.1 - 84.3); BT: 70.9; ZMUB (cat. no.): 16812-14; 17874-83; ZMUB (ost.): O.1519-20; ZMUB (gen): 17480.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia (rare), southwest of Iceland, the Azores and Madeira to equatorial waters. Found associated with African slope, from Mauritania to Angola. Extends to central South Atlantic waters to about 35°S, but rare along South America coast. West and Northeast Indian Ocean. Indo-Pacific. Widely distributed in Pacific Ocean but absent in eastern central and southeastern sectors.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Kukuev & Trunov (2002); Iceland: Jónsson and Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Nemichthyidae

*Avocettina infans* (Günther, 1878)

Avocet snipe eel

**Sample information:** SS (gear): 24 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 32.8; ZMUB (cat. no.): 17580.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia (rare), the Azores and Madeira to equatorial waters. Found associated with African slope, from Mauritania to Angola. Extends to central South Atlantic waters to about 35°S, but rare along South American coast. West and Northeast Indian Ocean. Indo-Pacific. Widely distributed in Pacific Ocean but absent in eastern central and southeastern sectors.

**Comments:** First northern MAR record

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Nemichthys scolopaceus* Richardson, 1848

Slender snipe eel

**Sample information:** SS (gear): 4; 7-8; 24-28; 36 (PT); 53-56; 60; 64 (BT); Depth (m): 0-3527 (1234-1492); No. lots / spec: 13 / 32 (BT: 46.2% / 71.9%); Rel. Abund.: 5.0 / 0.0 (PT); 27.3 / 0.3 (BT); Sz: N/A; BW [avg (range)] (g): PT: 54.1 (29.0 - 134.2); BT: 36.8 (17.5 - 100.0); ZMUB (cat. no.): 18374-75; 18539; 18564; 18581; 19024; 19130; 19133; 19135; 19141; 19144; ZMUB (gen): 18374-75. **Figure 2 e.**

**Geographical distribution:** Widely distributed in North Atlantic from Slope Water, Nova Scotia, Flemish Cap, MAR at about 50°N and southeast Iceland to equatorial waters. Also western Mediterranean Sea. Found in Skagerrak and on eastern Greenland slopes. Rare in Gulf of Mexico. Extends southward to about 35°S, to South Atlantic Subtropical Convergence. Widely distributed in Indian and Pacific Oceans but apparently rare or absent in the southeastern sectors of both oceans.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al., 2004; Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Kukuev (2002); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## Serrivomeridae

*Serrivomer beanii* Gill & Ryder, 1883

Bean's sawtoothed eel

**Sample information:** SS (gear): 2-36 (PT); 40-46; 50-56; 60-74 (BT); Depth (m): 0-3527 (987-1501); No. lots / spec: 91 / 1179 (PT: 79.1% / 90.1%); Rel. Abund.: 51.4 / 1.9 (PT); 86.4 / 1.4 (BT); Sz (n: range): 10: 348 - 615 mm SL; BW [avg (range)] (g): PT: 62.1 (1.0 - 194.5); BT: 66.0 (1.1 - 217.2); ZMUB (cat. no.): 18428-30; 18505; 18511; 18541; 18545; 18547; 18557; 18565; 18569; 18574; 18576; 18596-97; 18604; 18610; 18616; 18620; 18624; 18627; 18630; 18636; 18640; 18642; 18648; 18658; 18670; 18678; 18681; 18709; 18716; 18718; 18731; 18737; 18744; 18747; 18761-62; 18766; 18768; 18770; 18775; 18779; 18785; 18788; 18802; 18820; 18827; 18833-34; 18836; 18845; 18924; 18950; 18968; 18982; 18993; 18999; 19019; 19033; 19036; 19056; 19067; 19073-74; 19079; 19084; 19111; 19117; 19123; 19127; 19139; 19142; 19146; 19149; 19154; 19169; 19174; 19186; 19199; 19200; 19202; 19371; ZMUB (ost.): O.1499; O.1552-53; O.1597; O.1709-10; ZMUB (gen): 18428-30. **Figure 2 c.**

**Geographical distribution:** Widely distributed in North Atlantic from Greenland and Iceland to the equator. Rare or absent in the Caribbean Sea, Gulf of Mexico and Gulf of Guinea. In South Atlantic between 25°S to about 35°S. West and central Indian Ocean. West Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al., 2004; Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Serrivomer lanceolatoides* (Schmidt, 1916)

Short-tooth sawpalate

**Sample information:** SS (gear): 28-30; 32-36 (PT); 44 (BT); Depth (m): 0-2308 (644-1357); No. lots / spec: 8 / 10 (PT: 7.5% / 80.0%); Rel. Abund.: 5.0 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 65.8 (2.4 - 148.1); BT: 82.5; ZMUB (cat. no.): 18431-33; 18847; 18852; 18925; 18966; 19025; 19093; ZMUB (gen): 18431-33. **Figure 2 c.**

**Geographical distribution:** North Atlantic (endemic): mainly in the West Atlantic from about 45°N to equatorial waters but extending eastward to northern MAR, the Azores and Canaries. From about 52°N to Bermuda in the Northwest Atlantic, between the Azores and 25°N on central Atlantic and Madeira to about 10°N, along the eastern boundary.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** MAR: Gushchin & Kukuev (1981); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### SACCOPHARYNGIFORMES

#### Eurypharyngidae

*Eurypharynx pelecánoides* Vaillant, 1882

Pelican eel

**Sample information:** SS (gear): 6-10; 15-26; 30-36 (PT); 42-46; 50-56; 60-62; 66-72 (BT); Depth (m): 0-3527 (1538-1963); No. lots / spec: 46 / 126 (PT: 69.6% / 75.4%); Rel. Abund.: 22.9 / 0.2 (PT); 63.6 / 0.4 (BT);

Sz (n: range): 6: 405 - 596 mm SL; BW [avg (range)] (g): PT: 86.2 (8.4 - 219.2); BT: 81.3 (9.0 - 166.8); ZMUB (cat. no.): 16448--91; 16698-16700; 16836; 17938; ZMUB (ost.): O.1555; O.1649-50; O.1706-08; ZMUB (gen): 16451; 16475; 16836.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to equatorial waters. Rare or absent in Caribbean Sea, and central tropical waters. Extends southeastward to South Africa, and across the basin associated with the Subtropical Convergence. Widely distributed in Indian Ocean, Indo-Pacific and Southwest and central North Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

#### Saccopharyngidae

*Saccopharynx ampullaceus* (Harwood, 1827)

Gulper eel

**Sample information:** SS (gear): 15; 20; 26 (PT); 54; 60 (BT); Depth (m): 1000-3527 (1959-2162); No. lots / spec: 6 / 6 (PT: 66.7% / 66.7%); Rel. Abund.: 2.9 / 0.0 (PT); 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 259.1 (134.3 - 399.0); BT: 9.0; ZMUB (cat. no.): 16492-97; 18607; ZMUB (gen): 16492-97.

**Geographical distribution:** In East Atlantic from Iceland to about 10°N south of Cape Verde Islands. Scattered records in western subtropical Atlantic, from New England Seamounts to Bermuda.

**Comments:** MAR may be the western boundary to the distribution of this species; apparently rare in the West Atlantic; See Nielsen & Bertelsen (1985) for a revision of this genus.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).



## OSMERIFORMES

### Bathylagidae

#### *Bathylagichthys greyae* (Cohen, 1958)

Grey's deep-sea smelt

**Sample information:** SS (gear): 24-30; 32-36 (PT); Depth (m): 0-1800 (429-1240); No. lots / spec: 15 / 100; Rel. Abund.: 10.7 / 0.2 (PT); Sz (n: range): 18: 50 - 114 mm SL; BW [avg (range)] (g): 7.0 (0.8 - 24.7);

ZMUB (cat. no.): 17226-35; 20714; 20726; 20732; 20740; 20751; ZMUB (ost.): O.1633; O.1679-83. **Figure 3 a.**

**Geographical distribution:** In North Atlantic between southern Flemish Cap to 30°N in the Western Atlantic and from about 60°N off Scotland and MAR at 50°N southward to Cape Verde Islands along West Africa coast. Also in Southeast Pacific Ocean, off Chile.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

#### *Bathylagus euryops* Goode & Bean, 1896

Goiter blacksmelt

**Sample information:** SS (gear): 2-36 (PT); 40-42; 50-56; 60-74 (BT); Depth (m): 0-3527 (1181-1728); No. lots / spec: 118 / 4893 (PT: 85.6% / 92.8%); Rel. Abund.: 72.1 / 8.0 (PT); 77.3 / 4.1 (BT); Sz (n: range): 438: 45 - 223 mm SL; BW [avg (range)] (g): PT: 37.0 (0.3 - 148.9); BT: 30.9 (6.0 - 89.3); ZMUB (cat. no.): 16590-16609; 16611-97; 19370; 19374; 20015; 20016; 20310-14; 20655; 20672; 20674-75; 20680-81; 20683; 20685; 20687; 20691; 20695; 20697-98; 20702; 20710; 20720-21; 20730; 20733; 20746-47; 20774; 20779; 20833; 21213; 21253; ZMUB (ost.): O.1476; O.1500-05; O.1546; O.1564-65; O.1700; ZMUB (gen): 16665; 16673-74; 20016; 20310-14; **Figure 3 b.**

**Geographical distribution:** In the North Atlantic from Greenland and Iceland to about 35°N at Cape Hatteras and the Azores. Extends along Iberian Peninsula to the northern Mauritanian Upwelling Region. On both sides of South Atlantic. Also in Atlantic section of Southern Ocean.

**Comments:** Biomass-dominant pelagic fish of the 2004 *G.O. Sars* MAR-ECO Expedition (Sutton et al. 2008; Sweetman et al. 2013).

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

#### *Dolicholagus longirostris* (Maul, 1948)

Longsnout blacksmelt

**Sample information:** SS (gear): 30; 34 (PT); Depth (m): 800-1800; No. lots / spec: 2 / 4; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW: N/A; ZMUB (cat.no.): 20829; 20832.

**Geographical distribution:** In North Atlantic from about 50°N to equatorial waters. Rare or absent in the central tropical waters and in Gulf of Guinea. Across central Southeast Atlantic to South Africa. Scattered records in the Southwest Atlantic and West Indian Ocean. Also in the western tropical and Northeast Pacific Ocean.

**References:** MAR: Pusch et al. (2004); Kobylansky et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

### *Melanolagus bericoides* (Borodin, 1929)

Bigscale deepsea smelt

**Sample information:** SS (gear): 16; 30; 32-36 (PT); 42; 70; 74 (BT); Depth (m): 0-3065 (1180-1715); No. lots / spec: 14 / 32 (PT: 71.4% / 46.9%); Rel. Abund.: 7.1 / 0.0 (PT); 18.2 / 0.2 (BT); Sz (n: range): 16: 63 - 216 mm SL; BW [avg (range)] (g): PT: 23.1 (4.6 - 57.0); BT: 15.5 (2.1 - 29.9); ZMUB (cat. no.): 20689; 20739; 20749; 20756-57; 20760; 20765; 20781; 20834; 20836.

#### **Figure 3 g.**

**Geographical distribution:** In North Atlantic from about 60°N, MAR at 45°N and Slope Water, Nova Scotia, to equatorial waters along the eastern boundary. Rare or absent in central tropical waters, Caribbean Sea and Gulf of Guinea. Across central Southeast Atlantic to South Africa and to Southwest Atlantic at about 35°S 40°S. West Indian Ocean. Widely distributed in Southwest and East Pacific Ocean.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Microstomatidae

### *Microstoma microstoma* (Risso, 1810)

Slender argentine

**Sample information:** SS (gear): 32 (PT); 42 (BT); Depth (m): 2063-2107; No. lots / spec: 2 / 2 (PT: 50.0% / 50.0%); Rel. Abund.: 0.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 41.0; ZMUB (cat. no.): 9268. **Figure 3 e.**

**Geographical distribution:** In North Atlantic around Cape Verde Islands to about 10°S. Aggregations around the Azores and Bermuda. Scattered records off Great Banks, Ireland slopes and Gulf of Mexico. Also in the Mediterranean Sea. Scattered records along eastern South Atlantic to South Africa. Southwest Indian Ocean and Central and Northeast Pacific.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

### *Nansenia atlantica* Blache & Rossignol, 1962

**Sample information:** SS (gear): 30; 34 (PT); Depth (m): 800-1800; No. lots / spec: 2 / 4; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW: N/A; ZMUB (cat. no.): 20830-31.

**Geographical distribution:** Scatter aggregations in East Atlantic at about 40-45°N, on seamounts south of the Azores, around Cape Verde Islands and off Gabon.

**Comments:** New northern MAR record.

**References:** Kawaguchi & Butler (1984); Cohen (1990).

### *Nansenia groenlandica* (Reinhardt, 1840)

Greenland argentine

**Sample information:** SS (gear): 2; 4; 7 (PT); Depth (m): 200-1530 (732-1165); No. lots / spec: 3 / 9; Rel. Abund.: 2.1 / 0.0 (PT); Sz (n: range): 9: 110 - 178 mm SL; BW [avg (range)] (g): 23.4 (14.5 - 34.0); ZMUB (cat. no.): 20273-75; 21252; ZMUB (ost.): O.1655; ZMUB (gen): 20274-75.

**Geographical distribution:** In the North Atlantic from Greenland and Iceland, to about 40°N in both margins and along MAR.

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Nansenia oblita* (Facciola, 1887)

**Sample information:** SS (gear): 11; 14 (PT); Depth (m): 1000-2015 (1400-1732); No. lots / spec: 2 / 3; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 198.5 (180 - 217); ZMUB (cat. no.): 19228.

**Geographical distribution:** In the North Atlantic off North Africa, southwest Ireland, southern Iceland and northern MAR. Also in Slope Water, Nova Scotia and throughout the Mediterranean Sea.

**References:** Greenland: Møller et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Nansenia tenera* Kawaguchi & Butler, 1984

**Sample information:** SS (gear): 22; 32 (PT); Depth (m): 0-800 (25-790); No. lots / spec: 2 / 3; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 9.0; ZMUB (cat. no.): 20709; 20743.

**Geographical distribution:** Scattered records in North Atlantic at about 55°N and northern MAR in the Northeast Atlantic and around Cape Verde Islands. Off Namibia and South Africa slopes and in Southwest Atlantic off Brazil and Argentina. Southwest Indian Ocean.

**Comments:** New record for the area. The taxonomy of this genus needs revision (O. Gon, pers. comm.).

**References:** Kawaguchi & Butler (1984); Cohen (1990).

## Opisthoproctidae

*Bathylchnops exilis* Cohen, 1958

Javelin spookfish

**Sample information:** SS (gear): 20; 32 (PT); Depth (m): 50-1502 (367-1151); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n): range: 1: 210 mm SL; BW [avg (range)] (g): 44.3 (5.0 - 83.6); ZMUB (cat. no.): 16764; 17599; ZMUB (gen): 16764; **Figure 3 f**.

**Geographical distribution:** In North Atlantic off the Azores and on MAR at about 50°N. Northwest and Northeast Pacific Ocean.

**References:** Northeast Atlantic: Whitehead et al. (1984-86).

*Dolichopteryx longipes* (Vaillant, 1888)

Brownsnout spookfish

**Sample information:** SS (gear): 4 (PT); Depth (m): 850-1260; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 100 mm SL; BW (g): 7.0; ZMUB (cat. no.): 16831.

**Geographical distribution:** In North Atlantic at Reykjanes Ridge, Flemish Cap and MAR at about 45°N, extending from off Ireland to Canaries and Morocco along the eastern boundary. Scattered records in eastern central equatorial waters and off South Africa in the Southeast Atlantic. South Indian Ocean. Indo-Pacific. Northeast Pacific Ocean.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** Reykjanes Ridge: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

### *Monacoa grimaldii* (Zugmayer, 1911)

Mirrorbelly

**Sample information:** SS (gear): 30; 34 (PT); Depth (m): 0-795 (102-739); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 0.9 (0.8 - 1.0); ZMUB (cat. no.): 18926; 18977; ZMUB (gen): 18926; 18977. **Figure 3 d.**

**Geographical distribution:** In North Atlantic from about 45°N to equatorial waters. Spread in South Atlantic from 10°S to 35°S. South and Northeast Indian Ocean. Southwest and central South Pacific.

**Comment:** Mitogenomic phylogeny (Poulsen et al 2016) suggests that the species, historically placed in *Opisthoproctus*, belongs to the resurrected genus *Monacoa*, i.e. *Monacoa grimaldii* (Zugmayer, 1911).

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Opisthoproctus soleatus* Vaillant, 1888

Barrel-eye

**Sample information:** SS (gear): 22; 30; 32 (PT); Depth (m): 0-800 (16-791); No. lots / spec: 3 / 3; Rel. Abund.: 2.1 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 6.6 (1.0 - 11.7); ZMUB (cat. no.): 18767; 18927; 18952; ZMUB (gen): 18952. **Figure 3 c.**

**Geographical distribution:** From 60°N in the Northeast Atlantic, and about 35°N in the western boundary, to equatorial waters. More common in East Atlantic. Rare in the central tropical waters, including the northeast coast of Brazil, to 10°N. Spread to 35°S in central South Atlantic waters, but rare or absent in both sides of the basin south of 25°S. West and central Indian Ocean. West, Southeast and central North Pacific Ocean.

**Comments:** Mainly at the eastern subtropical-temperate sector; MAR may act as the western boundary in the temperate region.

**References:** MAR: Gushchin & Kukuev (1981); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Alepocephalidae

### *Alepocephalus agassizii* Goode & Bean, 1883

Agassiz's slickhead

**Sample information:** SS (gear): 40; 42; 44; 50; 53; 56; 60; 62; 66; 68; 70; 72 (BT); 33 (LL); Depth (m): 966-3071 (1971-2028); No. lots / spec: 13 / 133 BT; 1 / 1 (*Loran*); Rel. Abund.: 59.1 / 1.5 (BT); 1.6 / 0.0 (*Loran*);

Sz (n: range): 110: 75 - 750 mm TL; BW [avg (range)] (g): BT: 852.8 (14.0 - 3185.0); *Loran*: 4660 (4660 - 4660); ZMUB (cat. no.): 16547-69; ZMUB (ost.): O.1762-66.

**Geographical distribution:** In North Atlantic mainly from Greenland and Iceland to Cape Hatteras in the Northwest Atlantic and to the Azores, and Gulf of Biscay along northern MAR and European slopes. Scattered records in Gulf of Mexico and Caribbean Sea and to Mauritania along western and eastern North Atlantic margins.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Alepocephalus australis* Barnard, 1923

Small scaled brown slickhead

**Sample information:** SS (gear): 44; 52; 56; 68; 72 (BT); 33 (LL); Depth (m): 1327-2979 (1943-2020); No. lots / spec: 5 / 17 BT; 1 / 1 (*Loran*); Rel. Abund.: 22.7 / 0.2 (BT); 1.6 / 0.0 (*Loran*); Sz (n: range): 4: 103 - 504 mm TL; BW [avg (range)] (g): BT: 514.2 (4.0 - 1475.0); *Loran*: 1030 (1030 - 1030); ZMUB (cat. no.): 16570-79. **Figure 4 b.**

**Geographical distribution:** In the Northeast Atlantic along northern MAR between 50°N and the Azores and along western European slopes, from off Ireland to western Iberia. Also along the Mauritania Upwelling Region. Scattered records at the subtropical Northwest Atlantic and southwestern Caribbean Sea. Southeast and Southwest Atlantic slopes from 25°S to 35°S. Also West Indian Ocean and Southwest Pacific, around southern Australia and New Zealand.

**Comments:** Probably not conspecific with *A. australis* from south hemisphere (Moore et al. 2003).

**References:** Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Alepocephalus productus* Gill, 1883

Smalleye smooth-head

**Sample information:** SS (gear): 40-42; 46; 50-52; 68 (BT); Depth (m): 2063-3050 (2503-2536); No. lots / spec: 6 / 40; Rel. Abund.: 27.3 / 0.5 (BT); Sz (n: range): 7: 212 - 477 mm SL; BW [avg (range)] (g): 426.7 (16.7 - 974.5); ZMUB (cat. no.): 16580-89.

**Geographical distribution:** Northeast Atlantic from Rockall to Morocco and along MAR between 50°N and the Azores. Scattered records in Northwest Atlantic at around 40°N and in Gulf of Mexico.

**Comments:** The geographical distribution of this species is not well established.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bajacalifornia megalops* (Lütken, 1898)

Bigeye smooth-head

**Sample information:** SS (gear): 2-4; 7; 10; 15; 18-20; 26; 30 (PT); 56; 70 (BT); Depth (m): 805-2600 (1353-1824);

No. lots / spec: 12 / 50 (PT: 83.3% / 70.0%); Rel. Abund.: 7.1 / 0.1 (PT); 9.1 / 0.2 (BT); Sz (n: range): 13: 60 - 365 mm SL; BW [avg (range)] (g): PT: 72.2 (2.3 - 468.0); BT: 301.1 (11.5 - 1120.0); ZMUB (cat. no.): 16761-63; 17581-89; 19219; 19508; ZMUB (ost.): O.1567; ZMUB (gen): 16761-63. **Figure 4 a.**

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 40°N on MAR and Northeast Atlantic. Also between slope waters of Nova Scotia and Bermuda west of 60°W. Scattered records at Southwest and Southeast Indian Ocean and at West and Southeast Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Jónsson & Pálsson (2013); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

Checklist of Fishes from the Northern Mid-Atlantic Ridge

*Bathylaco nigricans* Goode & Bean, 1896

Black warrior

**Sample information:** SS (gear): 34-36 (PT); Depth (m): 1800-2400 (1800-2233); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 295 mm SL; BW [avg (range)] (g): 144.9 (60.0 - 239.9); ZMUB (cat. no.): 17597; 17598; 18461.

**Geographical distribution:** In Northeast Atlantic from about 52°N off Ireland to the Azores and seamounts south of the Azores, Canaries and south to central waters at about 20°S and off northeastern Brazil. Extends across the tropical Northwest Atlantic to outer Caribbean slopes and Gulf of Mexico. Also in West and North Indian Ocean and Northeast Pacific Ocean.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathypriion danae* Marshall, 1966

Fangtooth smooth-head

**Sample information:** SS (gear): 28-30 (PT); Depth (m): 1480-2400 (1645-2341); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 59.5 (54.0 - 65.0); ZMUB (cat. no.): 15983-84.

**Geographical distribution:** In the Northeast Atlantic from about 55°N to Madeira at 32°N. In northern MAR at about 42°N and off the Azores. Also off Namibia. Scattered records from Northwest Atlantic at about 40°N and southern Caribbean Sea. Southwest Pacific.

**References:** Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathytroctes macrolepis* Günther, 1887

Koefoed's smooth-head

**Sample information:** SS (gear): 26 (PT); 40; 46; 50-54; 64 (BT); Depth (m): 1800-3527 (2817-2871); No. lots / spec: 7 / 51 (BT: 85.7% / 98.0%); Rel. Abund.: 0.7 / 0.0 (PT); 27.3 / 0.6 (BT); Sz (n: range): 17: 140 - 374 mm SL; BW [avg (range)] (g): PT: 33.0; BT: 135.6 (1.0 - 717.0); ZMUB (cat. no.): 15991-16002; 16768; 19254; 19502; 20645; ZMUB (ost.): O.1635; O.1723-24; O.1749-51; ZMUB (gen): 15992; 15999; 16768.

**Geographical distribution:** Mainly in the Northeast Atlantic between 50°N and the Meteor Seamount at northern MAR and along northeastern slopes to Cape Verde Islands, at about 15°N. Scattered records in southern Caribbean Sea, Southwest Indian Ocean, Indo-Pacific and eastern tropical Pacific.

**Comments:** northern MAR may be a western boundary for the species.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathytroctes michaelisarsii* Koefoed, 1927

Michael Sars smooth-head

**Sample information:** SS (gear): 40; 54 (BT); Depth (m): 2660-3527 (2941-2955); No. lots / spec: 2 / 5; Rel. Abund.: 9.1 / 0.1 (BT); Sz (n: range): 1: 318 mm SL; BW [avg (range)] (g): 498.7 (408.2 - 628.0); ZMUB (cat. no.): 16003; 19472; 20649.

**Geographical distribution:** In the Northeast Atlantic along northern MAR between 50°N and Meteor Seamount and along European slopes from 60°N to northern Iberia. Scattered records off

Northwest Atlantic margin between 35°N and 45°N, in southern Caribbean Sea, Mauritanian Upwelling Region and off Angola.

**References:** Northeast Atlantic: Whitehead et al. (1984-86).

***Bathytroctes microlepis*** Günther, 1878

Smallscale smooth-head

**Sample information:** SS (gear): 16; 24; 28-30; 34; 36 (PT); 40-42; 52; 56; 62 (BT); Depth (m): 1496-2979 (2030-2279);

No. lots / spec: 12 / 26 (BT: 41.7% / 69.2%); Rel. Abund.: 5.0 / 0.0 (PT); 22.7 / 0.2 (BT); Sz (n: range): 1: 240 mm SL; BW [avg (range)] (g): PT: 129.1 (9.8 - 181.0); BT: 365.7 (32.0 - 1630.0); ZMUB (cat. no.): 16004-14; 17606; ZMUB (ost.): O.1776-80; ZMUB (gen): 16004-05; 16014.

**Geographical distribution:** In the Northeast Atlantic along northern MAR between 50°N and Meteor Seamount, and along western European slopes from 65°N to Senegal at about 15°N. Scattered records off Northwest Atlantic margin between 35 and 45°N, Gulf of Mexico, southern Caribbean Sea and central equatorial and South Atlantic tropical waters. Also in Northeast Indian Ocean, North Indo-Pacific waters and Southeast Pacific Ocean, off Chile.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

***Conocara macropteron*** (Vaillant, 1888)

Longfin smooth-head

**Sample information:** SS (gear): 44 (BT); Depth (m): 1702-1767; No. lots / spec: 1 / 10; Rel. Abund.: 4.5 / 0.1 (BT); Sz: N/A; BW [avg (range)] (g): 131.7 (67.1 - 262.0); ZMUB (cat. no.): 16787; 17758; 18357; 18498; ZMUB (ost.): O.1714; ZMUB (gen): 16787; 18357.

**Geographical distribution:** In Eastern Atlantic from off southern Ireland to Senegal and south to Namibia at about 30°S. Gulf of Mexico and Caribbean Sea. Also off Brazil at about 20°S.

**Comments:** First MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

***Conocara murrayi*** (Koefoed, 1927)

Murray's smooth-head

**Sample information:** SS (gear): 40-46; 50-52 (BT); Depth (m): 1702-3050 (2450-2475); No. lots / spec: 6 / 41; Rel. Abund.: 27.3 / 0.5 (BT); Sz (n: range): 16: 130 - 367 mm SL; BW [avg (range)] (g): 169.9 (1.5 - 630.0); ZMUB (cat. no.): 16788-90; 17759-62; 18499; 19245; 19248; 19250; 19255; 19258; 19260-61; 19267; 19284; 19357; 19489; 20651; ZMUB (gen): 16788-90.

**Geographical distribution:** Along the Northeast Atlantic continental slopes from about 55°N to Mauritania Upwelling Region to about 20°N. Scattered records in the Gulf of Mexico, Caribbean Sea, Southwest Indian Ocean off Madagascar and Southwest Pacific.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

***Einara macrolepis*** (Koefoed, 1927)

Loosescale smoothhead

**Sample information:** SS (gear): 32 (PT); Depth (m): 800-1800; No. lots / spec: 1 / 2; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 81.0; ZMUB (cat. no.): 20641.

**Geographical distribution:** Across the North Atlantic between 45°N and 30°N, extending along African coast to central equatorial waters and to Angola. Also in Northwest Indian Ocean and Southwest and Southeast Pacific Ocean.

**Comments:** First MAR record.

Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Kukuev (2004); Hartel et al. (2008); Northeast Atlantic: Whitehead et al. (1984-86).

*Herwigia krefftii* (Nielsen & Larsen, 1970)

Krefft's smooth-head

**Sample information:** SS (gear): 28; 32-34 (PT); Depth (m): 800-2308 (1218-2052); No. lots / spec: 4 / 5; Rel. Abund.: 2.9 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 276.8 (32.0 - 506.0); ZMUB (cat. no.): 17975-76; 18502; 20650.

**Geographical distribution:** In Northeast Atlantic from about 55°N off Ireland to the Azores, Canaries, Cape Verde Islands and southeastward to South Africa. Scattered records in Gulf of Mexico, outer Caribbean arc and Southwest Atlantic off Uruguay at about 35°S. Also in Central Pacific Ocean off Hawaii, Southwest Pacific, and Indian Ocean.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Leptoderma macrophthalmum* Byrkjedal, Poulsen & Galbraith, 2011

**Sample information:** SS (gear): 42 (BT); Depth (m): 2063-2107; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 16.0; ZMUB (cat. no.): 19686. **Figure 4 e.**

**Geographical distribution:** MAR.

**Comments:** Species described from the MAR-ECO specimen. Known only from holotype.

**References:** MAR: Byrkjedal et al. 2011.

*Mirognathus normani* Parr, 1951

Norman's smooth-head

**Sample information:** SS (gear): 16; 20 (PT); Depth (m): 1850-3008 (2044-2897); No. lots / spec: 2 / 3; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 19.0 (16.8 - 21.3); ZMUB (cat. no.): 18287; 20642. **Figure 4 f.**

**Geographical distribution:** In the Northeast Atlantic from southwest of Iceland to northern MAR and northwestern Iberia. Also reported from Southwest Atlantic between 30°S and 50°S and Southwest Pacific Ocean.

**Comments:** A very rare species known from only few specimens (Sazonov & Last 2000).

**References:** Iceland and Irminger Sea: Jónsson & Pálsson (2006); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Narcetes erimelas* Acock, 1890

**Sample information:** SS (gear): 46; 52; 56 (BT); 1 (LL); Depth (m): 1872-3050 (2792-2856); No. lots / spec: 3 / 13 BT; 1 / 3 (*Loran*); Rel. Abund.: 13.6 / 0.2 (BT); 1.6 / 0.0 (*Loran*); Sz (n: range): 5: 275 - 880 mm TL; BW [avg (range)] (g): BT: 2193.8 (273.1 - 5767.5); *Loran*: 5580 (4730 - 6760); ZMUB (cat. no.): 19442-43; 19487; 19494; 19506; 20644; 20646.

**Geographical distribution:** Along the northern MAR between 45°N and the Azores. Also off northeast Morocco and Gulf of Guinea. Known from West Indian Ocean.

**Comments:** First MAR record. Geographic distribution not well established.

**References:** Whitehead et al. (1984-86).



*Narcetes stomias* (Gilbert, 1890)

Blackhead salmon

**Sample information:** SS (gear): 42; 62; 68-72 (BT); Depth (m): 1630-2567 (1981-2041); No. lots / spec: 5 / 47; Rel. Abund.: 22.7 / 0.5 (BT); Sz (n: range): 34: 386 - 594 mm SL; BW [avg (range)] (g): 1157.2 (620.0 - 1708.1); ZMUB (cat. no.): 18500; 19478; 19523; 19527; 19534; ZMUB (ost.): O.1757-61.

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR at 50°N and European slopes off Ireland to about 30°N in both margins and the Azores. Also in Northeast Indian Ocean, Southwest Pacific and along the East Pacific Slopes from Canada to Chile.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Photostylus pycnopterus* Beebe, 1933

Starry smooth-head

**Sample information:** SS (gear): 4 (PT); 50 (BT); Depth (m): 850-2607 (850-1933); No. lots / spec: 2 / 3 (PT: 50.0% / 66.7%); Rel. Abund.: 0.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 2: 103 - 110 mm SL; BW [avg (range)] (g): PT: 9.0; BT: 6.0; ZMUB (cat. no.): 20639; 20643.

**Geographical distribution:** In the North Atlantic from Greenland and Iceland to the Azores and south to about 10°N. Also between Slope Water, Nova Scotia, and Bermuda west of 60°W. Northwestern equatorial waters of Indian Ocean. Indo-Pacific. Southwest, central tropical and Southeast Pacific Ocean.

**Comments:** Associated with continental, islands, ridges and seamounts slopes.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Rinoctes nasutus* (Koefoed, 1927)

Abyssal smooth-head

**Sample information:** SS (gear): 40; 46; 52; 54-56 (BT); Depth (m): 1872-3527 (2836-2871); No. lots / spec: 5 / 7; Rel. Abund.: 22.7 / 0.1 (BT); Sz (n: range): 4: 105 - 204 mm SL; BW [avg (range)] (g): 15.4 (4.0 - 56.5); ZMUB (cat. no.): 18407-09; 18501; 19275; 19372; ZMUB (gen): 18407-09.

**Geographical distribution:** Along northern MAR between 50°N and the Azores. Also off Ireland and Mauritania. Scattered records in Northwest Atlantic off Canada, Gulf of Mexico, and Southwest Indian Ocean.

**References:** Northeast Atlantic: Whitehead et al. (1984-86).

*Rouleina attrita* (Vaillant, 1888)

Softskin smooth-head

**Sample information:** SS (gear): 7 (PT); 42-44; 56; 62; 70 (BT); Depth (m): 1180-2107 (1785-1857); No. lots / spec: 6 / 255 (BT: 83.3% / 99.6%); Rel. Abund.: 0.7 / 0.0 (PT); 22.7 / 3.0 (BT); Sz (n: range): 4: 190 - 370 mm SL; BW: N/A; ZMUB (cat. no.): 18413-15; 18558; 19069; 19071-72; 19077; 19089; 19091; 19153; 19266; 19271; 19475; 19486; 20647; ZMUB (ost.): O.1752-56; ZMUB (gen): 18413-15 **Figure 4 d.**

**Geographical distribution:** In North Atlantic along continental slopes from Greenland and southern Iceland to southern Caribbean Sea and Senegal extending to South Africa. Along northern MAR from about 55°N to about 30°N. Widely distributed in Indian and Pacific Oceans.

**Comments:** First northern MAR record.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Rouleina maderensis* Maul, 1948

Madeiran smooth-head

**Sample information:** SS (gear): 32 (PT); Depth (m): 652-1523; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 9.8; ZMUB (cat. no.): 18961.

**Geographical distribution:** In Northeast Atlantic from off Scotland to Mauritania and westward to the Azores, Gulf of Mexico and Caribbean Sea; scattered records in the Northwest Atlantic around 40°N. Also in West and South Indian Ocean and Southwest and Southeast Pacific Ocean.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Talismania mekistonema* Sulak, 1975

Threadfin smooth-head

**Sample information:** SS (gear): 40 (BT); Depth (m): 2660-2670; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 9.0; ZMUB (cat. no.): 19247.

**Geographical distribution:** Scattered records off southern Ireland, around the Azores, Caribbean Sea and along slopes of Mauritanian Upwelling Region. Also Southwest Atlantic and Indian Ocean.

**Comments:** First northern MAR record

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Xenodermichthys copei* (Gill, 1884)

Bluntnout smooth-head

**Sample information:** SS (gear): 2-8; 20; 26-30; 32-36 (PT); 53; 64; 72 (BT); Depth (m): 0-3465 (567-1118); No. lots / spec: 20 / 46 (PT: 85.0% / 93.5%); Rel. Abund.: 12.1 / 0.1 (PT); 13.6 / 0.0 (BT); Sz (n; range): 16: 57 - 180 mm SL; BW [avg (range)] (g): PT: 23.7 (1.0 - 48.5); BT: 8.1 (5.5 - 9.9); ZMUB (cat. no.): 18447-49; 18452; 18510; 18530; 18548; 18593; 18599; 18732; 18824; 18859; 18878; 18891; 18914; 18922; 18944; 19023; 19055; 19160; 19183; ZMUB (ost.): O.1526-27; O.1580-81; ZMUB (gen): 18447-49. **Figure 4 c.**

**Geographical distribution:** In the North Atlantic off Greenland and Iceland to about 30°N across the basin and extending to southern Caribbean Sea, in the western boundary and along the African slope to Angola. Also Southwest Atlantic off southern Brazil, West and Southeast Indian Ocean, and Southwest Pacific Ocean.

**Comments:** A distant-neritic amphiatlantic species. Associates with continental, island, ridge, and seamount slopes.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002, 2004); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## Leptochilichthyidae

### *Leptochilichthys agassizii* Garman, 1899

Agassiz's smooth-head

**Sample information:** SS (gear): 54 (BT); Depth (m): 3505-3527; No. lots / spec: 1 / 2; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 138.6 (31.2 - 246.0); ZMUB (cat. no.): 18460; 20640.

**Geographical distribution:** In the Northeast Atlantic from off Ireland to Madeira at about 32°N and off Mauritania and Senegal. Northern MAR at around 50°N. Reported from the Indian Ocean and East Pacific Ocean.

**References:** Northeast Atlantic: Whitehead et al. (1984-86).

## Platytroctidae

### *Holtbyrnia anomala* Krefft, 1980

Bighead searsid

**Sample information:** SS (gear): 2-4; 7-12; 15; 18-20; 24; 28; 30-36 (PT); 42-44; 54; 70 (BT); Depth (m): 0-3527 (1071-1577); No. lots / spec: 33 / 288 (PT: 87.9% / 98.3%); Rel. Abund.: 20.7 / 0.5 (PT); 18.2 / 0.1 (BT);

Sz (n: range): 22: 51 - 275 mm SL; BW [avg (range)] (g): PT: 46.2 (0.4 - 138.6); BT: 4.8 (4.0 - 7.0);

ZMUB (cat. no.): 16848-50; 18517; 18524; 18531; 18534; 18561; 18566; 18570; 18585; 18588; 18600; 18625; 18645; 18652; 18696; 18700; 18704; 18723-24; 18736; 18769; 18777; 18801; 18876; 18884; 18899; 18933; 18939; 18964; 18978; 18984; 18988; 19018; 19092; 19140; 19173; 19193; 19195; 22377-79; ZMUB (ost.): O.1711-12; ZMUB (gen): 16848-50.

**Geographical distribution:** In North Atlantic from Greenland and Iceland, along northern MAR to the Azores. Few records in Slope Water, Nova Scotia. Scattered records in Mauritania and Namibia Upwelling Regions and central South Atlantic at about 50°S.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### *Holtbyrnia macrops* Maul, 1957

Bigeye searsid

**Sample information:** SS (gear): 2-8; 12-14; 18-20; 30-32 (PT); Depth (m): 0-1800 (348-945); No. lots / spec: 13 / 32; Rel. Abund.: 9.3 / 0.1 (PT); Sz (n: range): 1: 74 mm SL; BW [avg (range)] (g): 7.3 (1.0 - 10.6); ZMUB (cat. no.): 16851-53; 18513; 18532; 18559; 18584; 18590; 18631; 18685; 18707; 18760; 18804; 18916; 18947; 19192; 19353; ZMUB (gen): 16851-53.

**Geographical distribution:** In North Atlantic from Greenland, Iceland and off Scotland to the Azores, Gulf of Biscay and Madeira in the Northeast Atlantic. Scattered records in the Northwest Atlantic, off Mauritania and in the central South Atlantic about 50°S. Also found in West Indian and East Pacific Oceans.

**Comments:** MAR may be the western boundary for the species.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

## *Maulisia argipalla* Matsui & Rosenblatt, 1979

Palegold searsid

**Sample information:** SS (gear): 24; 31 (PT); 50 (BT); Depth (m): 200-2607 (1396-1728); No. lots / spec: 3 / 3 (PT: 6.7% / 66.7%); Rel. Abund.: 1.4 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 1: 190 mm SL; BW [avg range] (g): 70.0; ZMUB (cat. no.): 18269; 18359; ZMUB (gen): 18269; 18359.

**Geographical distribution:** In Northeast Atlantic from Reykjanes Ridge to the Azores along MAR and also in the adjacent Northeast Atlantic waters. Also in eastern and central equatorial waters. Central North and Northeast Pacific Ocean.

**Comments:** Rare. Mainly associated with the northern MAR and North Atlantic Drift. The Northeast Atlantic and the equatorial populations are apparently separated.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## *Maulisia maui* Parr, 1960

Maul's searsid

**Sample information:** SS (gear): 4; 36 (PT); Depth (m): 0-1800 (758-1453); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 6: 39 - 156 mm SL; BW [avg (range)] (g): 25.2 (8.0 - 39.3); ZMUB (cat. no.): 18270-72; 18274.

**Geographical distribution:** In Northeast Atlantic from Greenland, Iceland and northern MAR, to the Azores, and along continental slopes to about 10°N south of Cape Verde Islands. Scattered records elsewhere in Indian and Pacific Oceans.

**Comments:** MAR seems to be a western boundary for the Northeast Atlantic population. Matsui & Rosenblatt (1987) questioned the validity of several records especially those from Southeast Atlantic, Indian Ocean and Northeast Pacific.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Jónsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

## *Maulisia microlepis* Sazonov & Golovan, 1976

Smallscale searsid

**Sample information:** SS (gear): 2-4; 7-10; 15; 18; 20-36 (PT); 44; 56; 62-70; 74 (BT); Depth (m): 702-3465 (1491-1956); No. lots / spec: 38 / 954 (PT: 76.3% / 97.6%); Rel. Abund.: 20.7 / 1.6 (PT); 40.9 / 0.3 (BT); Sz (n: range): 82: 128 - 271 mm SL; BW [avg (range)] (g): PT: 84.9 (3.1 - 163.5); BT: 64.9 (13.0 - 169.0); ZMUB (cat. no.): 17506-46; 17686-87; 18273; 18275-76; 18506; 19225; 19230; 19232; 19244; 19351; 22376; ZMUB (gen): 17541.

**Geographical distribution:** In North Atlantic from Greenland and Iceland along northern MAR to the Azores. Reported from slopes off Newfoundland. Also along the continental slope of West Africa. Scattered records in Indian Ocean.

**Comments:** Most records from northern MAR and Greenland slopes; few records outside this area.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## *Normichthys operosus* Parr, 1951

Multipore searsid

**Sample information:** SS (gear): 2-4; 7-8; 12-36 (PT); 44; 48; 66-74 (BT); Depth (m): 0-3071 (859-1451); No. lots / spec: 36 / 280 (PT: 80.6% / 93.2%); Rel. Abund.: 20.7 / 0.5 (PT); 31.8 / 0.2 (BT); Sz (n: range): 39: 53 - 193 mm SL; BW [avg (range)] (g): PT: 20.1 (7.2 - 49.0); BT: 9.2 (2.5 - 22.1); ZMUB (cat. no.): 18380-82; 18462; 18515; 18519; 18525; 18529; 18533; 18563; 18586; 18591; 18621; 18629; 18649; 18657; 18661; 18671; 18690-91; 18705; 18708; 18734; 18772; 18794; 18812; 18822; 18829; 18868; 18874; 18909; 18948; 18976; 18996; 19041; 19099; 19168; 19188; 19190; 19328; 19350; 22373-75; ZMUB (ost.): O.1640-42; ZMUB (gen): 18380-82.

**Geographical distribution:** In North Atlantic from Greenland and Iceland southward to about 35°N, along the slope of North America, the Azores and northern Iberia. Scattered records over Meteor Seamount, off Canaries, Mauritania, Senegal and in central tropical Atlantic in both hemispheres. Also in Southwest Indian Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Lipinsky & Janusz (2003); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Sagamichthys schnakenbecki* (Krefft, 1953)

Schnakenbeck's searsid

**Sample information:** SS (gear): 24-26 (PT); Depth (m): 0-825 (300-812); No. lots / spec: 3 / 4; Rel. Abund.: 2.1 / 0.0 (PT); Sz (n: range): 1: 160 mm SL; BW [avg (range)] (g): 15.5 (4.5 - 26.5); ZMUB (cat. no.): 18805; 18832; 19201; 21712.

**Geographical distribution:** In Northeast Atlantic from Greenland and Iceland through northern MAR and Azores, south to 10°N. Scattered records in eastern South Atlantic along western Africa to about 25°S.

**Comments:** MAR may be the western boundary for the North Atlantic population. Moore et al. (2003) reported several records of *Sagamichthys* sp. in the Northwest Atlantic, which are probably *S. schnakenbecki*, the only species of this genus known from the Atlantic. Records for Southeast Atlantic need confirmation (Matsui & Rosenblatt 1982).

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Pusch et al. (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Kukuev (2004); Northeast Atlantic: Whitehead et al. (1984-86).

*Searsia koefoedi* Parr, 1937

Koefoed's searsid

**Sample information:** SS (gear): 2; 7-8; 12; 18; 28; 32-34 (PT); 52; 74 (BT); Depth (m): 0-3065 (1172-1735); No. lots / spec: 10 / 12 (PT: 80.0% / 83.3%); Rel. Abund.: 5.7 / 0.0 (PT); 9.1 / 0.0 (BT); Sz (n: range): 3: 60 - 142 mm SL; BW [avg (range)] (g): PT: 1.0; BT: 0.3; ZMUB (cat. no.): 18426-27; 18567; 18592; 18626; 18703; 18943; 18995; 19124; ZMUB (gen): 18426-27.

**Geographical distribution:** In Northeast Atlantic from Iceland and Greenland to 10°N, westward to MAR and the Azores. Also in western Greenland and Northwest Atlantic to Bermuda. Scattered records in the Gulf of Mexico and Caribbean Sea. North Indian Ocean. Indo-Pacific. Eastern Tropical Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## STOMIIFORMES

### Gonostomatidae

*Bonapartia pedaliota* Goode & Bean, 1896

Longray fangjaw

**Sample information:** SS (gear): 12; 26-36 (PT); 48 (BT); Depth (m): 0-1072 (171-799); No. lots / spec: 9 / 72 (PT: 88.9% / 98.6%); Rel. Abund.: 5.7 / 0.1 (PT); 4.5 / 0.0 (BT); Sz (n: range): 2: 61 - 66 mm SL; BW [avg (range)] (g): PT: 1.8 (1.1 - 2.5); BT: 1.0; ZMUB (cat. no.): 16772-74; 17690-95; ZMUB (ost.): O.1508-09; O.1727-29; ZMUB (gen): 16772-74.

**Geographical distribution:** Widely distributed in North Atlantic from Rockall Plateau, MAR at about 50°N and Flemish Cap to equatorial waters. Extends to Angola and South Africa, but rare or absent in Gulf of Guinea and Namibia Upwelling Region. Also in Northwest Indian Ocean.

**References:** MAR: Lipinsky & Janusz (2003); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Cyclothone braueri* Jespersen & Tåning, 1926

Garrick

**Sample information:** SS (gear): 6; 8; 12-14; 16; 22-24; 28-30; 32-36 (PT); Depth (m): 0-1523 (197-680); No. lots / spec: 22 / 82; Rel. Abund.: 15.7 / 0.1 (PT); Sz: N/A; BW [avg (range)] (g): 0.6 (0.2 - 2.2); ZMUB (cat. no.): 16296-16310; ZMUB (gen): 16298; 16305.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 15°N, in Caribbean Sea and Cape Verde Islands, including the Mediterranean Sea. Rare in central tropical waters. Also from Southeast Atlantic equatorial waters to South Africa, West Indian Ocean, and Southwest and Southeast Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Cyclothone microdon* (Günther, 1878)

Veiled anglemouth

**Sample information:** SS (gear): 2-6; 8-30; 32-36 (PT); 44-46; 50-53; 68-70 (BT); Depth (m): 0-3050 (982-1502); No. lots / spec: 110 / 7523 (PT: 93.6% / 98.8%); Rel. Abund.: 73.6 / 13.1 (PT); 31.8 / 1.1 (BT); Sz (n: range): 7: 50 - 65 mm SL; BW [avg (range)] (g): PT: 0.8 (0.2 - 3.0); BT: 1.0 (0.5 - 1.8); ZMUB (cat. no.): 16182-16295; 16610; ZMUB (ost.): O.1532; O.1556-58; ZMUB (gen): 16258; 16270; 6290. **Figure 5 a.**

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 10°N along eastern Atlantic boundary. Rare or absent in Gulf of Mexico and central tropical waters, including the region between southern Caribbean Sea and the equator, along Guiana and northeast Brazil coast. In both sides of South Atlantic from about 10°N to Subtropical Convergence. Circumglobal in southern Atlantic, Indian, Pacific and Southern Oceans. Also in central North and Northeast Pacific Ocean.

**Comments:** Dominant in the bathypelagic layers. At the MAR latitude it has a much wider vertical distribution living on upper oceanic layers, which is not reported for other regions.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Cyclothone pallida* Brauer, 1902

Tan bristlemouth

**Sample information:** SS (gear): 4; 8; 12-14; 16-18; 24-36 (PT); 44 (BT); Depth (m): 0-1800 (577-1206); No. lots / spec: 22 / 55 (PT: 95.5% / 96.4%); Rel. Abund.: 15.0 / 0.1 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 0.7 (0.3 - 2.2); BT: 0.8; ZMUB (cat. no.): 16311-32; ZMUB (gen): 16322; 16331.

**Geographical distribution:** In North Atlantic from Iceland to equatorial waters. Rare in central tropical waters. Not in the Mediterranean. Extends to South Africa. Widely distributed in West Indian Ocean and throughout tropical and temperate Pacific Ocean.

**Comments:** Rare in western temperate-polar waters. The distribution of this species is very similar to *C. pseudopallida*.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Cyclothone pseudopallida* Mukhacheva, 1964

Slender bristlemouth

**Sample information:** SS (gear): 2-4; 34-36 (PT); Depth (m): 180-2042 (826-1277); No. lots / spec: 4 / 10; Rel. Abund.: 2.9 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 0.4 (0.1 - 0.9); ZMUB (cat. no.): 16333-36.

**Geographical distribution:** In North Atlantic from Iceland to equatorial waters. Rare or absent in temperate and polar Northwest Atlantic and in tropical and subtropical central waters, Mediterranean and Gulf of Guinea. Scattered records in Southwest and Southeast Atlantic, West Indian Ocean, and tropical and temperate Pacific Ocean, but not in the Eastern Tropical Pacific.

**Comments:** Absent in western temperate-polar waters. The distribution of this species is very similar to *C. pallida*.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Gonostoma denudatum* Rafinesque, 1810

**Sample information:** SS (gear): 36 (PT); 42 (BT); Depth (m): 0-2107 (687-1029); No. lots / spec: 3 / 19 (PT: 66.7% / 94.7%); Rel. Abund.: 1.4 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 6.2 (0.3 - 12.2); BT: 3.9; ZMUB (cat. no.): 17955-57; 21189-91; ZMUB (gen): 17956.

**Geographical distribution:** In Northeast Atlantic from northern MAR and the Azores to Iberia. Also in the Mediterranean Sea. Extends into the Northwest Atlantic in a narrow band to the Grand Banks. Found across South Atlantic. Probably in West Indian Ocean.

**Comments:** Peculiar distribution pattern: a narrow belt across the Atlantic along the Azores Current; otherwise East Atlantic and Mediterranean Sea; New northern MAR record.

**References:** MAR: Whitehead et al. (1984-86); Kukuev (2004); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

*Margrethia obtusirostra* Jespersen & Tåning, 1919

Bighead portholefish

**Sample information:** SS (gear): 28-30; 32-36 (PT); 48 (BT); Depth (m): 0-1072 (125-756); No. lots / spec: 7 / 34 (PT: 85.7% / 97.1%); Rel. Abund.: 4.3 / 0.1 (PT); 4.5 / 0.0 (BT); Sz (n: range): 1: 45 mm SL; BW [avg (range)] (g): PT: 2.3 (1.0 - 3.7); BT: 1.0; ZMUB (cat. no.): 18261-68; 21255; 21259; 21260; ZMUB (ost.): O.1621-22; ZMUB (gen): 18265. **Figure 5 c.**

**Geographical distribution:** In North Atlantic throughout West Atlantic from Slope Water, Nova Scotia, to the equator. In East Atlantic from MAR north of the Azores, Madeira and Canaries to Cape Verde Islands. Along both sides of South Atlantic to about 35°S and across the Subtropical Convergence. Also in West Indian Ocean and West and Central Pacific Ocean.

**References:** MAR: Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Sigmops bathyphilus* (Vaillant, 1884)

Spark anglemouth

**Sample information:** SS (gear): 2-6; 8-30; 32-36 (PT); 40-44; 48-56; 60-74 (BT); Depth (m): 0-3527 (1548-2037);

No. lots / spec: 71 / 769 (PT: 76.1% / 73.3%); Rel. Abund.: 38.6 / 1.0 (PT); 77.3 / 2.4 (BT); Sz (n: range): 212: 59 - 198 mm SL; BW [avg (range)] (g): PT: 17.9 (1.0 - 70.9); BT: 15.4; ZMUB (cat. no.): 17067-17112; 18320-47; 18349; 21254; ZMUB (ost.): O.1595-96; O.1676-78; ZMUB (gen): 7096; 17102; 17338.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to 30°N in the western sector and in equatorial waters along the eastern boundary. Absent or rare in Labrador Sea, Gulf of Mexico, Caribbean Sea and central tropical waters. Extends southward to off Argentina and South Africa. Found in South Atlantic, Indian Ocean and Southeast Pacific Ocean.

**References:** MAR: Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Sigmops elongatus* Günther, 1878

Elongated bristlemouth

**Sample information:** SS (gear): 8; 26-36 (PT); 40-52 (BT); Depth (m): 0-3050 (997-1387); No. lots / spec: 22 / 137 (PT: 68.2% / 81.8%); Rel. Abund.: 10.7 / 0.2 (PT); 31.8 / 0.3 (BT); Sz (n: range): 11: 81 - 200 mm SL; BW [avg (range)] (g): PT: 19.8 (2.4 - 171.0); BT: 21.1 (5.0 - 53.6); ZMUB (cat. no.): 17216-25; 17383-98; 18358; ZMUB (ost.): O.1616-20; O.1632; O.1634; O.1645-46; ZMUB (gen): 17394; 17396; 18358.

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR and Iceland to southern Caribbean Sea in the west and to central equatorial waters along the eastern boundary. Absent from central tropical waters, including the region between southern Caribbean Sea and the equator, along Guiana and Northern Brazil coasts. From central equatorial waters to Southwest and Southeast Atlantic to about 40°S. In tropical and temperate waters in Pacific Ocean and West and South Indian Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).



## Phosichthyidae

### *Ichthyococcus ovatus* (Cocco, 1838)

Lightfish

**Sample information:** SS (gear): 24; 28; 30; 34-36 (PT); Depth (m): 0-800 (59-762); No. lots / spec: 6 / 13; Rel. Abund.: 4.3 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 1.2 (0.5 - 2.0); ZMUB (cat. no.): 16869-71; 18008-10; ZMUB (ost.): O.1611; ZMUB (gen): 16869-71.

**Geographical distribution:** Widely distributed in North Atlantic from about 45°N, off Flemish Cap and northern MAR to equatorial waters. Across the South Atlantic from about 10°S off Angola to 30°S off Brazil. Also in the Mediterranean Sea, West and South Indian Ocean, and Southwest, Central and Southeast Pacific.

**References:** MAR: Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982), 2002; Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Pollichthys maui* (Poll, 1953)

Stareye lightfish

**Sample information:** SS (gear): 24; 28 (PT); Depth (m): 27-691 (89-451); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 44 mm SL; BW [avg (range)] (g): 0.3 (0.2 - 0.4); ZMUB (cat. no.): 18789; 18855; ZMUB (gen): 18789; 18855.

**Geographical distribution:** Mainly in Northwest Atlantic, between Flemish Cap and 10°N eastward to 50°W. Scattered records in the Northeast Atlantic and northern MAR to Iceland. Along the African shelf, between Mauritania and Angola. Also off Brazil between 20°S and 40°S, Northwest Indian Ocean, Indo-Pacific and Northwest Pacific Ocean.

**Comments:** Rare at this longitude. More abundant in the tropical-subtropical western Atlantic.

**References:** MAR: Pusch et al. (2004); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Vinciguerria attenuata* (Cocco, 1838)

Slender lightfish

**Sample information:** SS (gear): 24; 28; 30; 32; 34; 36 (PT); Depth (m): 0-1800 (101-581); No. lots / spec: 20 / 238; Rel. Abund.: 14.3 / 0.4 (PT); Sz: N/A; BW [avg (range)] (g): 0.7 (0.5 - 1.0); ZMUB (cat. no.): 17180-81; 17185; 17187; 17190; 17382; 21184-85; ZMUB (ost.): O.1559-60; ZMUB (gen): (cat. no.): 17182; 17187.

**Geographical distribution:** In North Atlantic from about 50°N to 30°N on the western side, including Gulf of Mexico and Mediterranean. Extends to Gulf of Guinea, along the eastern boundary. Rare or absent in central West Atlantic tropical waters. Scattered records off southern Iceland. Associated with the South Atlantic Subtropical Convergence. Also in West Indian and Pacific Oceans.

**Comments:** General distribution patterns of both *V. poweriae* and *V. attenuata* are very similar.

**References:** MAR: Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Vinnichenko (1997); Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Vinciguerria poweriae* (Cocco, 1838)

Power's deep-water bristlemouth

**Sample information:** SS (gear): 24; 28; 30; 32; 34; 36 (PT); Depth (m): 0-2042 (180-769); No. lots / spec: 20 / 50; Rel. Abund.: 14.3 / 0.1 (PT); Sz (n: range): 4: 25 - 42 mm SL; BW [avg (range)]

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

(g): 0.6 (0.5 - 1.0); ZMUB (cat. no.): 17182-84; 17186; 19188-89; 17379-81; 21261; ZMUB (ost.): O.1735; O.1742-46. **Figure 5 d.**

**Geographical distribution:** Widely distributed in the North Atlantic from Flemish Cap, northern MAR and Northeast Atlantic at about 45°N to central equatorial waters. Associated with South Atlantic Subtropical Convergence, extending northward to 20°S along South America and to 0° along Africa, but not in Namibia Upwelling Region. Also in Mediterranean Sea, Southwest Indian Ocean, Southwest, Southeast and Central Northeast Pacific.

**Comments:** General distribution patterns of both *V. poweriae* and *V. attenuata* are very similar.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Sternoptychidae

*Argyropelecus aculeatus* Valenciennes, 1850

Lovely hatchetfish

**Sample information:** SS (gear): 2; 4; 10; 24; 28; 30; 32-36 (PT); 42-52 (BT); Depth (m): 0-3050 (766-1252); No. lots / spec: 22 / 139 (PT: 72.7% / 83.5%); Rel. Abund.: 11.4 / 0.2 (PT); 27.3 / 0.3 (BT); Sz (n: range): 3; 41 - 47 mm SL; BW [avg (range)] (g): PT: 3.9 (0.6 - 20.0); BT: 4.0 (1.0 - 8.0); ZMUB (cat. no.): 16751-53; 17256-65; 17399-17406; 21059; ZMUB (ost.): O.1670-74; ZMUB (gen): 16751-53.

**Geographical distribution:** North Atlantic: Widely distributed from Flemish Cap, MAR at about 65°N, and the northeast Atlantic at about 50°N to 15°N in the eastern tropical boundary and to equatorial waters in the western basin. Extends southwestward along South America to Argentina and then across Subtropical Convergence at 35°S to South Africa tip and northward to Namibia Upwelling Region. Widely distributed in Indian and Pacific Oceans.

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Argyropelecus gigas* Norman, 1930

Hatchetfish

**Sample information:** SS (gear): 30 (PT); 53 (BT); Depth (m): 0-1019 (483-907); No. lots / spec: 2 / 2 (PT: 50.0% / 50.0%); Rel. Abund.: 0.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 2.3; BT: 11.0; ZMUB (cat. no.): 16760; 17462; ZMUB (gen): 16760; 17462.

**Geographical distribution:** In Northeast Atlantic, from MAR at about 50°N and Portugal to eastern and central equatorial waters. Recorded in the Northwest Atlantic mainly off Slope Water, Nova Scotia. Scattered records in Gulf of Mexico, off Florida, western Greenland and southeastern Iceland. Absent or rare in central and western tropical waters, including Caribbean Sea. Throughout the South Atlantic to 35°S. West and South Indian Ocean. Indo-Pacific. South Pacific Ocean.

**Comments:** Mainly associated with continental slopes, seamounts and ridges.

**References:** MAR: Pusch et al. (2004); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2006); Northwest Atlantic: Kukuev (1982); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Argyropelecus hemigymnus* Cocco, 1829

Half-naked hatchetfish

**Sample information:** SS (gear): 2; 4; 8; 12-14; 18-30; 32-36 (PT); 40-52; 60; 68; 74 (BT); Depth (m): 0-3065 (825-1292); No. lots / spec: 50 / 355 (PT: 78.0% / 92.7%); Rel. Abund.: 27.9 / 0.6 (PT); 50.0 / 0.3 (BT);

Sz (n: range): 20: 22 - 40 mm SL; BW [avg (range)] (g): PT: 0.9 (0.1 - 2.0); BT: 0.9 (0.5 - 1.3); ZMUB (cat. no.): 16754-56; 17266-77; 17407-42; ZMUB (ost.): O.1690-94; ZMUB (gen): 16754-56. **Figure 5e.**

**Geographical distribution:** North Atlantic from Flemish Cap, eastern Greenland, Iceland and Faroe Islands to about 20°N, extending to the equatorial along the eastern boundary. Rare or absent in central and western tropical waters, including Guiana- Brazil region and the Caribbean Sea. Also in Mediterranean Sea. Spread in South Atlantic to 40°S and to 50°S off South America. Widely distributed in Indian and Pacific Oceans.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Iceland: Jónsson & Pálsson (2013); Northwest Atlantic: Vinnichenko (1997); Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Argyropelecus olfersii* (Cuvier, 1829)

Silver hatchetfish

**Sample information:** SS (gear): 2; 7-8; 12-14; 18; 22 (PT); 70 (BT); Depth (m): 0-2800 (464-905); No. lots / spec: 9 / 27 (PT: 88.9% / 92.6%); Rel. Abund.: 5.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 10: 35 - 47 mm SL; BW [avg (range)] (g): PT: 4.4 (1.0 - 15.4); BT: 2.6; ZMUB (cat. no.): 16757-59; 17463-69; ZMUB (ost.): O.1494-97; ZMUB (gen): 16757-59. **Figure 5h.**

**Geographical distribution:** In Northeastern Atlantic from Madeira, Canaries and the Azores to about 60°N off the southern Norwegian coast, Faroe Islands and westward to MAR at about 55°N. Scattered records in the western Atlantic from Newfoundland to Florida. Reported from South African tip. Along South Pacific Subtropical Convergence and in the Eastern Tropical Pacific Ocean.

**Comments:** Mainly in the Eastern Atlantic. Moore et al. (2003) does not record this species for the Northwest Atlantic.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Maurollicus muelleri* (Gmelin, 1789)

Pearlside

**Sample information:** SS (gear): 2-6; 8-14; 16-30; 34-36 (PT); 52-56; 60-62; 72-74 (BT); Depth (m): 0-3527 (529-1017);

No. lots / spec: 54 / 3396 (PT: 87.0% / 99.5%); Rel. Abund.: 33.6 / 5.9 (PT); 31.8 / 0.2 (BT); Sz (n: range): 10: 38 - 59 mm SL; BW [avg (range)] (g): PT: 1.1 (0.1 - 2.1); BT: 1.6 (0.5 - 3.7); ZMUB (cat. no.): 17113-41; 18360-62; 22991-23006; ZMUB (ost.): O.1684-85; O.1730-32; ZMUB (gen): 18360-62.

**Geographical distribution:** In Northeast Atlantic from Greenland, northern MAR, Iceland and Norwegian waters, to the Azores and Senegal, including the western Mediterranean.

**Comments:** See the revision of this species group in Parin & Kobylansky (1993, 1996). *M. muelleri* occur only in the Northeast Atlantic and *M. amethystinopunctatus* occur only in the

Checklist of Fishes from the Northern Mid-Atlantic Ridge

Mediterranean and surrounding Atlantic. In Northeast Atlantic the species seems to live both associated to bottom structures and also in the epi-mesopelagial. From DNA sequencing and morphological analysis, Rees et al. (2016) suggest *M. amethystinopunctatus* to be synonymized with *M. muelleri*.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Lipinsky & Janusz (2003); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86); Rees et al. (2016)

*Polyipnus polli* Schultz, 1961

Round hatchetfish

**Sample information:** SS (gear): 68 (BT); Depth (m): 2306-2374; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz (n): 44 mm SL; BW (g): 2.7; ZMUB (cat. no.): 19172; ZMUB (gen): 19172. **Figure 5f.**

**Geographical distribution:** In North Atlantic mainly around Cape Verde Islands, Senegal and Mauritania, extending to the central eastern equatorial waters and off Africa between Gabon and Angola. Also scattered records at MAR north of the Azores, southwestern Iceland, Rockall Trough and Northwest Atlantic off Cape Hatteras.

**Comments:** A pseudoceanic species associated with bottom structures. Several scattered records of this species throughout temperate and cold North Atlantic.

**References:** MAR: Lipinsky & Janusz (2003); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Sternoptyx diaphana* Hermann, 1781

Diaphanous hatchetfish

**Sample information:** SS (gear): 14-15; 18; 22-30; 32-36 (PT); 42-53; 56; 62; 68 (BT); Depth (m): 0-3050 (787-1301); No. lots / spec: 34 / 274 (PT: 70.6% / 95.3%); Rel. Abund.: 17.1 / 0.5 (PT); 45.5 / 0.2 (BT); Sz (n: range): 10: 16 - 42 mm SL; BW [avg (range)] (g): PT: 2.0 (0.2 - 4.0); BT: 1.10.43.3; ZMUB (cat. no.): 17236-55; 17443-54; ZMUB (ost): 1747-48; ZMUB (gen): 17238; 17241; 17444.

**Geographical distribution:** Widely distributed in North Atlantic from 55°N to about 10°S. Scattered records off southwestern Iceland. Extends southward to Argentina and South Africa along western and eastern boundaries. Rare or absent in central South Atlantic waters. Widely distributed in Indian and Pacific Oceans.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Sternoptyx pseudobscura* Baird, 1971

Highlight hatchetfish

**Sample information:** SS (gear): 8; 14; 24; 28-30; 32-34 (PT); Depth (m): 0-2300 (672-1377); No. lots / spec: 10 / 14; Rel. Abund.: 7.1 / 0.0 (PT); Sz (n: range): 1: 39 mm SL; BW [avg (range)] (g): 3.0 (0.7 - 9.5); ZMUB (cat. no.): 17455-61; 21055-56; 21284; ZMUB (gen): 17455; 17461. **Figure 5g.**

**Geographical distribution:** North Atlantic: from Flemish Cap, MAR at about 55°N, Iceland and Rockall Trough to western and central equatorial waters. Rare or absent in the tropical central waters and along the western Africa coast between 0° and the South Africa. Extends in South Atlantic along western and central eastern boundaries to about 35°S and across the Subtropical Convergence. Also in western Indian Ocean, and Indo-Pacific. Widely distributed in Pacific Ocean.

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Valenciennellus tripunctulatus* (Esmark, 1871)

Constellationfish

**Sample information:** SS (gear): 28-30 (PT); Depth (m): 36-691 (120-491); No. lots / spec: 3 / 6; Rel. Abund.: 2.1 / 0.0 (PT); Sz (n: range): 1: 23 mm SL; BW [avg (range)] (g): 0.1 (0.1 - 0.2); ZMUB (cat. no.): 18854; 18894; 18898. **Figure 5 b.**

**Geographical distribution:** Widely distributed in North Atlantic from about 55°N to the equator. Also recorded west of Iceland. Extends southward to Argentina and South Africa along western and eastern boundaries to about 35°S and across the Subtropical Convergence. Rare in South Atlantic central tropical waters. Also in West Indian Ocean. Widely distributed in Pacific Ocean.

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Stomiidae

*Aristostomias tittmanni* Welsh, 1923

Loosejaw

**Sample information:** SS (gear): 32 (PT); Depth (m): 50-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 104 mm SL; BW (g): 9.0; ZMUB (cat. no.): 17575; ZMUB (gen): 17575.

**Geographical distribution:** North Atlantic: mainly in Northwest Atlantic between Slope Water, Nova Scotia to about 30°N, west of 50°W, including the Gulf of Mexico. Scattered records off Flemish Cap and in the Northeast Atlantic from northern MAR at about 45°N and Rockall Trough to the Azores and Madeira. Also at MAR at about 30°N, off Cape Verde Islands and western equatorial waters. Scattered records at Indian Ocean and in Central and Southeast Pacific.

**Comments:** Another *Aristostomias* specimen caught could not be identified to species level (head only).

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Astronesthes gemmifer* Goode & Bean, 1896

Snaggletooth

**Sample information:** SS (gear): 28 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 125 mm SL; BW (g): 12.2; ZMUB (cat. no.): 17576.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, Iceland, MAR at about 50°N and Scotland to about 30°N, extending to central equatorial waters along the eastern boundary. Also south of Iceland. Rare or absent at central and western tropical waters, the

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

Caribbean Sea and the Guiana - Brazil region. Scattered records in southern South Atlantic, West Indian and Southwest and Central Pacific Oceans.

**Comments:** Known mainly from the North Atlantic.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Astronesthes niger* Richardson, 1845

Snaggletooth

**Sample information:** SS (gear): 28-32 (PT); 53 (BT); Depth (m): 0-1019 (254-853); No. lots / spec: 4 / 5 (PT: 75.0% / 80.0%); Rel. Abund.: 2.1 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 1: 97 mm SL; BW [avg (range)] (g): PT: 8.0 (6.5 - 9.6); BT: 22.0; ZMUB (cat. no.): 17577-79.

**Geographical distribution:** North Atlantic

**Comments:** Parin & Borodulina (2002) split *A. niger* into eight species, seven of which occur in the North Atlantic and one in the Indian Ocean.

**References:** MAR: Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Sutton & Hopkins (1996); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathophilus digitatus* (Welsh, 1923)

Scaleless black dragonfish

**Sample information:** SS (gear): 42 (BT); Depth (m): 2063-2107; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 9.0; ZMUB (cat. no.): 17590.

**Geographical distribution:** In North Atlantic from about 40°N in the Northwest Atlantic, MAR north of the Azores and Gibraltar to 10°S at western equatorial waters and to Cape Verde Islands at the eastern boundary. Scattered records in eastern South Atlantic, Indian and West and Central Pacific Oceans.

**Comments:** If the specimen was not caught while hauling the bottom trawl along the water column this represents a new depth record for the species. New record for northern MAR.

**References:** Northwest Atlantic: Sutton & Hopkins (1996); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathophilus longipinnis* (Pappenheim, 1912)

Longfin dragonfish

**Sample information:** SS (gear): 34 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 57 mm SL; BW (g): 3.0; ZMUB (cat. no.): 17591; ZMUB (gen): 17591.

**Geographical distribution:** North Atlantic: from slope waters off Nova Scotia, MAR north of the Azores and Gibraltar to about 20°N. Between 10°S and 35°S in Southeast Atlantic and off Brazil at about 30°S. Scattered records in Southwest Indian Ocean and throughout the Pacific Ocean.

**References:** MAR: Pusch et al. (2004); Northwest Atlantic: Sutton & Hopkins (1996); Moore et al. (2003).

*Bathophilus nigerrimus* Giglioli, 1882

Scaleless dragonfish

**Sample information:** SS (gear): 52 (BT); Depth (m): 2973-2979; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 10.0; ZMUB (cat. no.): 17592.

**Geographical distribution:** North Atlantic: mainly in East Atlantic from about 50°N off Ireland and MAR to the north of the Azores, southward to equatorial waters and to Angola. Also in Mediterranean Sea and in central western tropical waters from about 35°N to 20°N. Rare or absent in Gulf of Mexico, Caribbean Sea and along the Guiana-Brazil region. Scattered records at about 35°S off Argentina and South Africa. Also in West and Northeast Indian Ocean and West and Central Pacific.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86); Sutton & Hopkins (1996).

***Bathophilus vaillanti*** (Zugmayer, 1911)

Scaleless dragonfish

**Sample information:** SS (gear): 36 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 3.0; ZMUB (cat. no.): 17593.

**Geographical distribution:** North Atlantic (endemic): Across the basin from about 45°N to 25°N.

**Comments:** Records outside the North Atlantic (i.e from South Atlantic and Southwest Pacific, New Zealand) need confirmation.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Sutton & Hopkins (1996); Whitehead et al. (1984-86).

***Borostomias antarcticus*** (Lönnberg, 1905)

Large-eye snaggletooth

**Sample information:** SS (gear): 2-26; 32 (PT); 53-56; 60-64; 68-70; 74 (BT); Depth (m): 0-3527 (1055-1510); No. lots / spec: 41 / 159 (PT: 73.2% / 87.4%); Rel. Abund.: 21.4 / 0.2 (PT); 50.0 / 0.2 (BT); Sz (n: range): 66: 81 - 360 mm SL; BW [avg (range)] (g): PT: 80.7 (3.1 - 265.0); BT: 46.2 (9.0 - 209.5); ZMUB (cat. no.): 16775-77; 17191-17204; 17360-78; 19216; 19235; 19241; 19344; ZMUB (ost.): O.1542-45; O.1651-52; ZMUB (gen): 16775-77.

**Geographical distribution:** In North Atlantic from Greenland and Iceland southward to about 42°N and to Cape Haterras, along North America slope. Also in Northwest Mediterranean Sea. Circumglobal in Southern Ocean, extending northward along slopes of South America and Western South Africa.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

***Chauliodus sloani*** Bloch & Schneider, 1801

Sloane's viperfish

**Sample information:** SS (gear): 2-36 (PT); 40-44; 48-56; 60-74 (BT); Depth (m): 0-3527 (856-1336); No. lots / spec: 93 / 1023 (PT: 79.6% / 87.7%); Rel. Abund.: 52.9 / 1.6 (PT); 86.4 / 1.5 (BT); Sz (n: range): 87: 98 - 335 mm SL; BW [avg (range)] (g): PT: 21.2 (0.4 - 118.0); BT: 20.0 (1.5 - 43.8); ZMUB (cat. no.): 16784-86; 17029-66; 17205-15; 17282; 17299; 17300-31; 19021; 21290; ZMUB (ost.): O.1554; O.1562-63; O.1638; O.1720; ZMUB (gen): 16784-86. **Figure 6 c.**

**Geographical distribution:** Widely distributed in North Atlantic from Greenland and Iceland to equatorial waters, including the Mediterranean Sea. Extends southward to about 35°S. Rare or absent in central tropical waters in South Atlantic. Widely distributed in Indian and Pacific Oceans, but absent in the northeastern sectors of both oceans.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## *Chirostomias pliopterus* Regan & Trewavas, 1930

**Sample information:** SS (gear): 36 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 1.4; ZMUB (cat. no.): 17757.

**Geographical distribution:** Atlantic north to 45°N and south to Mauritania.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86); Scott & Scott (1988).

## *Eustomias obscurus* Vaillant, 1884

Scaleless dragonfish

**Sample information:** SS (gear): 48 (BT); Depth (m): 1072-1072; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 3.0; ZMUB (cat. no.): 17939. **Figure 6 a.**

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, MAR north of the Azores and Gibraltar to about 20°N, and to central equatorial waters along the eastern boundary. Extends southward to about 30°S along both sides of South Atlantic. Rare or absent in western and central tropical waters, including the Gulf of Mexico, Caribbean Sea and the region between Guiana and northeast Brazil.

**Comments:** First record on northern MAR.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Flagellostomias boureei* (Zugmayer, 1913)

Longbarb dragonfish

**Sample information:** SS (gear): 12; 20; 26; 32 (PT); 53 (BT); Depth (m): 0-1800 (536-1046); No. lots / spec: 5 / 5 (PT: 80.0% / 80.0%); Rel. Abund.: 2.9 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 1: 145 mm SL; BW [avg (range)] (g): PT: 33.5 (6.3 - 70.0); BT: 15.0; ZMUB (cat. no.): 17945-48; 19223; ZMUB (gen): 17944; 17946-47; 19223.

**Geographical distribution:** In Northeast Atlantic from southern Iceland southward along MAR to the Azores and Meteor Seamount and to equatorial waters along the eastern boundary. In Northwest Atlantic from Slope Water, Nova Scotia, to about 30°N, including the Gulf of Mexico. Rare or absent in central tropical waters, Caribbean Sea and region between Guiana and northeastern Brazil. Extends along central eastern South Atlantic to South Africa, Brazil and Argentina; associated with Subtropical Convergence at about 35°S. Also in Southwest Indian Ocean. Scattered records in central West, central tropical and Northeast Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).



*Leptostomias* sp.

**Sample information:** SS (gear): 26; 36 (PT); Depth (m): 0-825 (300-812); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 163 mm SL; BW [avg (range)] (g): 32.1 (6.1 - 58.0); ZMUB (cat. no.): 18207-08.

**Comments:** No barbel; not possible to identify species.

*Malacosteus niger* Ayres, 1848

Stoplight loosejaw

**Sample information:** SS (gear): 2-4; 6-36 (PT); 40; 46; 50-56; 60-62; 66; 70; 74 (BT); Depth (m): 0-3527 (889-1452);

No. lots / spec: 60 / 264 (PT: 78.3% / 89.0%); Rel. Abund.: 33.6 / 0.4 (PT); 59.1 / 0.3 (BT); Sz (n: range): 51: 125 - 236 mm SL; BW [avg (range)] (g): PT: 42.9 (4.5 - 440.4); BT: 34.0 (5.2 - 82.5); ZMUB (cat. no.): 16995-17028; 17278-81; 17283-98; 19233; 19352; 21051; 21060-21182; ZMUB (ost.): O.1638; O.1647-48; O.1721-22; ZMUB (gen): 17279; 17288; 17293. **Figure 6 d.**

**Geographical distribution:** In North Atlantic from Greenland and Iceland to equatorial waters. Extends to South Africa along Southeast Atlantic and to Argentina across the Subtropical Convergence at about 35°S. Rare in central and southwestern tropical water. Widely distributed in Indian and Pacific Oceans.

**Comments:** South Atlantic specimens may belong to an undescribed species (Goodyear 1980).

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Melanostomias bartonbeani* Parr, 1927

Scaleless black dragonfish

**Sample information:** SS (gear): 22-26; 32-36 (PT); 42 (BT); Depth (m): 0-2107 (565-1213); No. lots / spec: 9 / 12 (PT: 88.9% / 91.7%); Rel. Abund.: 5.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 33.0 (15.0 - 67.2); BT: 1.0; ZMUB (cat. no.): 18277-84; 18348; 21258; ZMUB (gen): 18281; 18283.

**Geographical distribution:** In North Atlantic from Iceland, MAR at about 50°N and northern Scotland to about 25°N, extending to 15°N around Cape Verde Islands. In South Atlantic between 20°S and 40°S. Also in South Indian Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002, 2004); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Melanostomias macrophotus* Regan & Trewavas, 1930

**Sample information:** SS (gear): 36 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 12.0; ZMUB (cat. no.): 18285; ZMUB (gen): 18285.

**Geographical distribution:** North Atlantic: Eastern Atlantic: off Portugal and Spain south to Western Sahara. Western Central Atlantic: Gulf of Mexico and Caribbean Sea. Indo-West Pacific: Indonesia

Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Comments:** First northern MAR record.

**References:** Gibbs & Barnett (1990).

*Neonesthes capensis* (Gilchrist & von Bonde, 1924)

Cape snaggletooth

**Sample information:** SS (gear): 8; 28; 32 (PT); Depth (m): 0-1770 (419-1105); No. lots / spec: 4 / 4; Rel. Abund.: 2.9 / 0.0 (PT); Sz (n: range): 1: 146 mm SL; BW [avg (range)] (g): 16.2 (9.6 - 21.0); ZMUB (cat. no.): 18583; 18870; 18879; 18949; ZMUB (gen): 18583; 18879.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, MAR north of the Azores and Rockall Trough to about 25°N in the Northwestern Atlantic and to central equatorial waters along the eastern boundary. Off South Africa and in Southwestern Atlantic off Argentina and Brazil between 25°S and 35°S. Also in Southwest and Northwest Indian Ocean, and in West, central North and Northeast Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Pachystomias microdon* (Günther, 1878)

Smalltooth dragonfish

**Sample information:** SS (gear): 26; 31-34 (PT); 44 (BT); Depth (m): 600-1800 (1067-1525); No. lots / spec: 5 / 6 (PT: 80.0% / 83.3%); Rel. Abund.: 2.9 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 1: 122 mm SL; BW [avg (range)] (g): PT: 36.7 (11.5 - 80.0); BT: 59.1; ZMUB (cat. no.): 18830; 18940; 18991; 19088; 19196; 21257; ZMUB (gen): ÷ 18940; 19196.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia and MAR at about 50°N, to 30°N. Also along eastern boundary between 20°N and equatorial central waters, extending along central eastern South Atlantic to South Africa. Scattered records off Iceland, off European slopes and the southeastern Caribbean Sea. Also in West Indian Ocean and West and Central Pacific Ocean.

**Comments:** MAR may be the eastern boundary for this species at high latitudes.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Photonectes braueri* (Zugmayer, 1913)

Brauer's dragonfish

**Sample information:** SS (gear): 44 (BT); Depth (m): 1702-1767; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 26.6; ZMUB (cat. no.): 19090; ZMUB (gen): 19090.

**Geographical distribution:** Across the North Atlantic from Slope Water, MAR north of the Azores and Madeira to about 20°N. In South Atlantic between Argentina and South Africa, extending northward to about 20°S at the eastern boundary. Also in West Indian Ocean and Southwest Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Photonectes margarita* (Goode & Bean, 1896)

**Sample information:** SS (gear): 34 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 185 mm SL; BW (g): 40.0; ZMUB (cat. no.): 19004.

**Geographical distribution:** North Atlantic: From Flemish Cap, MAR at about 45°N, the Azores and Morocco, extending to about 15°N along Caribbean slopes and Mauritanian Upwelling Region. Scattered records at central and western equatorial waters. Also in central eastern South Atlantic, West and Northeast Indian Ocean, the Indo-Pacific, and Southwest, central tropical, and Northeast Pacific Ocean.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003).

*Photostomias guernei* Collett, 1889

Loosejaw

**Sample information:** SS (gear): 30; 32-36 (PT); 46-50; 64 (BT); Depth (m): 0-3465 (1334-1826); No. lots / spec: 8 / 13 (PT: 50.0% / 61.5%); Rel. Abund.: 2.9 / 0.0 (PT); 18.2 / 0.1 (BT); Sz: N/A; BW [avg (range)] (g): PT: 4.7 (3.0 - 5.7); BT: 5.2 (3.0 - 8.0); ZMUB (cat. no.): 18923; 18946; 19000; 19048; 19096; 19101; 19106; 19112; 19157; ZMUB (gen): 19000; 19048; 19157; 21282.

**Figure 6 e.**

**Geographical distribution:** In North Atlantic from about 45°N to about 30°N, extending to Florida and Gulf of Mexico in the Northwest Atlantic and to equatorial waters along the eastern boundary.

**Comments:** Kenaley & Hartel (2005) and Kenaley (2009) made a systematic revision of the genus and increased the number of *Photostomias* species to 6. Two of the three species reported for the North Atlantic occur around the Azores (i.e. *P. guernei* and *P. goodyeari*). According to the authors *P. guernei* is restricted to temperate and subtropical North Atlantic. This occurrence is one of the northernmost of *Photostomias* spp. in the basin.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Sutton & Hopkins (1996); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Stomias boa* Reinhardt, 1842

Boa dragonfish

**Sample information:** SS (gear): 2-36 (PT); 40; 53-56; 60-74 (BT); Depth (m): 0-3527 (741-1257); No. lots / spec: 72 / 319 (PT: 80.6% / 80.3%); Rel. Abund.: 41.4 / 0.5 (PT); 63.6 / 0.7 (BT); Sz (n: range): 23: 53 - 308 mm SL; BW [avg (range)] (g): PT: 22.2 (0.2 - 94.0); BT: 17.4 (3.2 - 62.0); ZMUB (cat. no.): 17142-79; 17332-59; ZMUB (ost.): O.1575-78; O.1657-59; O.1739; ZMUB (gen): 17338; 17341; 17354; 17358-59. **Figure 6 b.**

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 30°N in the Northwest Atlantic and to 35°N in the northeastern sector. Rare in Labrador Sea.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Trigonalampa miriceps* Regan & Trewavas, 1930

Threelight dragonfish

**Sample information:** SS (gear): 7 (PT); Depth (m): 1180-1530; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 408 mm SL; BW (g): 393.0; ZMUB (cat. no.): 19218.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Geographical distribution:** In North Atlantic from Greenland (rare), Iceland and about 60°N off Scotland to about 35°N in the Northwest Atlantic slopes and to about 40°N in the Northeast Atlantic. Scattered records in Mauritania Upwelling Region. Circumglobal in South Atlantic, Indian and Pacific Oceans.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2006); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## AULOPIFORMES

### Scopelarchidae

*Benthalbella infans* Zugmayer, 1911

Zugmayer's pearleye

**Sample information:** SS (gear): 22; 28; 34 (PT); Depth (m): 0-1770 (501-1348); No. lots / spec: 3 / 4; Rel. Abund.: 2.1 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 9.2 (2.0 - 20.5); ZMUB (cat. no.): 17607-09; 21268; ZMUB (gen): 17608 (2 specimens).

**Geographical distribution:** In North Atlantic from about 60°N off Scotland and southern Iceland, MAR at about 50°N, southwest Greenland and 40°N in the Northwestern Atlantic to 10°N. Rare or absent in Gulf of Mexico and Caribbean Sea. In Southeast Atlantic from about 20°S to South Africa and across the basin to off Brazil at 30°S. Also in West Indian Ocean, the Indo-Pacific, and across Pacific Ocean, but absent from the East Tropical Pacific.

**References:** MAR: Whitehead et al. (1984-86); Kobylansky et al. (2010); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Hartel et al. (2008); Northeast Atlantic: Whitehead et al. (1984-86).

*Scopelarchus analis* (Brauer, 1902)

Short-fin pearleye

**Sample information:** SS (gear): 36 (PT); Depth (m): 800-1800; No. lots / spec: 1 / 2; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 4.3; ZMUB (cat. no.): 19044; 21283; ZMUB (gen): 19044.

**Geographical distribution:** Widely distributed in the North Atlantic from south of Flemish Cap, the Azores and Iberia to equatorial waters and southward to South Atlantic Subtropical Convergence, at about 35°S. Widely distributed along West and East Indian Ocean, Indo-Pacific and Pacific.

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Scopelarchus guentheri* Alcock, 1896

Staring pearleye

**Sample information:** SS (gear): 30 (PT); Depth (m): 810-1800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 4.0; ZMUB (cat. no.): 18905; ZMUB (gen): 18905. **Figure 7 a.**

**Geographical distribution:** In North Atlantic equatorial and tropical waters to about 15°N. Extends northwestward to Cuba and Florida. Along eastern central South Atlantic to about 25°S. Widely distributed in Indian and Pacific Oceans.

**Comments:** New northern record. This species is reported to be truly equatorial-tropical (no records for the sub-tropical belt in the North Atlantic).

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Notosudidae

### *Ahliesaurus berryi* Bertelsen, Krefft & Marshall, 1976

**Sample information:** SS (gear): 28; 30 (PT); Depth (m): 0-1800 (405-1300); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 100 mm SL; BW [avg (range)] (g): 15.1 (2.1 - 28.0); ZMUB (cat. no.): 17552; 18912; ZMUB (gen): 17552; 18912.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, MAR at about 45°N and Gibraltar, to 30°N, extending along Mauritania Upwelling Region to Cape Verde Islands. Scattered records at central equatorial waters southward to 35°S off Argentina and 30°S off Africa. Rare or absent in Gulf of Guinea and along the southwestern African coast. Scattered records at Southwest Indian Ocean and at Southwest and central South Pacific.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Scopelosaurus lepidus* (Krefft & Maul, 1955)

Blackfin waryfish

**Sample information:** SS (gear): 7; 10; 15; 18; 36 (PT); 50; 70 (BT); Depth (m): 0-2607 (1286-1603); No. lots / spec: 7 / 8 (PT: 71.4% / 75.0%); Rel. Abund.: 3.6 / 0.0 (PT); 9.1 / 0.0 (BT); Sz (n: range): 4: 162 - 246 mm SL; BW [avg (range)] (g): PT: 65.1 (1.7 - 202.0); BT: 12.0 (7.0 - 17.0); ZMUB (cat. no.): 18609; 18693; 19029; 19110; 19178; 19220; 19229; ZMUB (gen): 19029; 19110; 19229. **Figure 7 b.**

**Geographical distribution:** In North Atlantic from eastern and western Greenland, Iceland and Faroe-Iceland Ridge to Florida, Grand Meteor Seamount and Mauritanian Upwelling Region to about 15°N. Scattered records in central equatorial waters.

**Comments:** In the Northwest Atlantic, MAR and along Africa coast associates mainly to continental and ridge slopes, seamounts and oceanic islands.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Scopelosaurus smithii* Bean, 1925

**Sample information:** SS (gear): 36 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 2.5; ZMUB (cat. no.): 19047; ZMUB (gen): 19047.

**Geographical distribution:** In North Atlantic mainly in western tropical waters; extends from Slope Water, Nova Scotia, to northern Brazil at about 5°N, including the Caribbean Sea and Gulf

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

of Mexico. Extends eastward in central tropical waters to south of the Azores seamounts and Madeira. Also recorded at the Gulf of Guinea, off Angola and off Brazil between 10°S and 20°S. Southwest and Northeast Indian Ocean. Indo-Pacific. West and central tropical, subtropical Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Kobylansky et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### Anotopteridae

*Anotopterus pharao* Zugmayer, 1911

Daggertooth

**Sample information:** SS (gear): 10-12; 15; 34 (PT); 50 (BT); Depth (m): 0-2607 (1365-1644); No. lots / spec: 7 / 28 (PT: 85.7% / 96.4%); Rel. Abund.: 4.3 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 272.2 (29.5 - 848.0); BT: 18.9; ZMUB (cat. no.): 15964-65; 17553; 19536; ZMUB (gen): 15964.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to 32°N, including MAR and the Azores. Extends along the Mauritanian Upwelling Region to Cape Verde Islands.

**Comments:** Mainly at the western Atlantic at higher latitudes. The South Atlantic and Pacific daggertooth are considered to belong to other species (Kukuev 1998).

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### Paralepididae

*Arctozenus risso* (Bonaparte, 1840)

Ribbon barracudina

**Sample information:** SS (gear): 2; 7-15; 18-28; 32; 34 (PT); 52-53; 60; 64-66; 70 (BT); Depth (m): 0-3465 (940-1398); No. lots / spec: 25 / 76 (PT: 76.0% / 85.5%); Rel. Abund.: 13.6 / 0.1 (PT); 27.3 / 0.1 (BT); Sz (n: range): 14: 91 - 211 mm SL; BW [avg (range)] (g): PT: 13.5 (0.7 - 31.1); BT: 8.0 (0.2 - 21.5); ZMUB (cat. no.): 16745-47; 17554-73; 17689; ZMUB (ost.): O.1529-31; ZMUB (gen): 16745-47.

**Geographical distribution:** In North Atlantic from Greenland, Iceland, Norwegian Sea, western Barents Sea and about 80°N at Spitsbergen to about 30°N, including the Mediterranean Sea. Rare or absent in central tropical waters, Gulf of Mexico and Caribbean Sea. Equatorial waters to about 0°. Associated to South Atlantic Subtropical Convergence, from South Africa to Argentina, extending to 50°S in the Southwest Atlantic. South Indian Ocean (Kerguelen Islands). West, Northeast and Southeast Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Lestidiops jayakari* (Boulenger, 1889)

Pacific barracudina

**Sample information:** SS (gear): 22; 32; 34 (PT); Depth (m): 0-800 (12-645); No. lots / spec: 4 / 14; Rel. Abund.: 2.9 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 2.0; ZMUB (cat. no.): 18209-12.

**Figure 7 d.**

**Geographical distribution:** In North Atlantic along a narrow belt between 45°N and 30°N from Eastern Mediterranean Sea westward to Bermuda.

**Comments:** Two subspecies are recognized (*L. j. jayakari* and *L. j. pseudosphyraenoides*) and both are reported for North Atlantic. The second is endemic of Eastern Atlantic.

**References:** MAR: Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lestidiops sphyrenoides* (Risso, 1820)

Barracudina

**Sample information:** SS (gear): 24; 28 (PT); Depth (m): 0-800 (3-469); No. lots / spec: 2 / 81; Rel. Abund.: 1.4 / 0.1 (PT); Sz: N/A; BW [avg (range)] (g): 1.5; ZMUB (cat. no.): 18214-15;

**Geographical distribution:** In North Atlantic around the Azores Islands to 45°N, eastward to Gulf of Biscay Madeira and Mauritania, entering the Mediterranean Sea.

**Comments:** Northwest Africa records are associated with the continental slope. Mainly Mediterranean and Mediterranean Outflow, around the Azores, Madeira and Canaries.

**References:** MAR: Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Magnisudis atlantica* (Krøyer, 1868)

Duckbill barracudina

**Sample information:** SS (gear): 26-30; 32-34 (PT); Depth (m): 600-2308 (864-1666); No. lots / spec: 6 / 8; Rel. Abund.: 4.3 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 6.1 (1.0 - 19.0); ZMUB (cat. no.): 18255-60; 21275; ZMUB (gen): 18258.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to central equatorial waters. Rare or absent in central tropical waters and western Caribbean Sea. In South Atlantic mainly between 25°S and 35°S. Widely distributed in Indian and Pacific Oceans.

**Comments:** Associated with MAR.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Paralepis brevirostris* (Parr, 1928)

Sharpchin barracudina

**Sample information:** SS (gear): 34-36 (PT); Depth (m): 800-1800; No. lots / spec: 2 / 5; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 0.4; ZMUB (cat. no.): 19043; 20748; ZMUB (gen): 19043.

**Geographical distribution:** In North Atlantic at the western basin from Slope Water, Nova Scotia, at about 45°N, to 20°N. Around the Azores, Meteor Seamount, Madeira and Canaries. Also scattered records at central and western equatorial waters. Central Western Indian Ocean. Indo-Pacific.

**Comments:** New Northern MAR record.

**References:** Northeast Atlantic: Whitehead et al. (1984-86).

*Paralepis coregonoides* Risso, 1820

Sharpchin barracudina

**Sample information:** SS (gear): 4; 34 (PT); Depth (m): 200-1800 (500-1325); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 140 mm SL; BW [avg (range)] (g): 8.9; ZMUB (cat. no.): 18538; 20750; ZMUB (gen): 18538.

**Geographical distribution:** In North Atlantic from Greenland, Iceland and northern North Sea to about 30°N, including the Mediterranean Sea. Rare in Gulf of Mexico and Caribbean Sea.

**Comments:** In the Eastern tropical Atlantic associated only with Africa slope.

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

**Evermannellidae**

*Evermannella balbo* (Risso, 1820)

Balbo sabretooth

**Sample information:** SS (gear): 2-4; 14; 22; 26 (PT); Depth (m): 0-900 (285-825); No. lots / spec: 5 / 11; Rel. Abund.: 3.6 / 0.0 (PT); Sz (n: range): 6: 84 - 122 mm SL; BW [avg (range)] (g): 8.0 (1.5 - 14.5); ZMUB (cat. no.): 17940-44; 21265; ZMUB (ost.): O.1737-38; ZMUB (gen): 17944.

**Geographical distribution:** In North Atlantic from southern Iceland to about 30°N and along the East Atlantic to equatorial waters. Mediterranean Sea. Rare in Caribbean Sea. Associated with Subtropical Convergence in South Atlantic, Indian and Pacific Oceans.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

**Alepisauridae**

*Alepisaurus brevirostris* Gibbs, 1960

Shortnose lancetfish

**Sample information:** SS (gear): 22-28; 32-36 (PT); 50 (BT); Depth (m): 0-2607 (946-1765); No. lots / spec: 8 / 9 (PT: 87.5% / 88.9%); Rel. Abund.: 5.0 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 19.2 (1.8 - 60.0); BT: 5.2; ZMUB (cat. no.): 15973-80.

**Geographical distribution:** In North Atlantic from about 35°N in Northwest Atlantic eastward to the Azores, MAR and north to southern Greenland and Iceland. Also off Cape Verde Islands. Southwest and Southeast Atlantic. Southwest Indian Ocean and across South Pacific.

**Comments:** MAR seems to be the eastern boundary; common at southern MAR.

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002)



## Omosudidae

*Omosudis lowii* Günther, 1887

Hammerjaw

**Sample information:** SS (gear): 28 (PT); Depth (m): 829-1770; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 15.0; ZMUB (cat. no.): 18866; ZMUB (gen): 18866.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, the Azores and Madeira to equatorial waters. Extends southeastward across the central Southeast Atlantic. Rare or absent along southwestern African coast. South Indian Ocean. Indo-Pacific. Widely distributed in Pacific Ocean, but not in the central and northeastern sector.

**Comments:** First record on northern MAR.

**References:** MAR: Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Bathysauridae

*Bathysaurus ferox* Günther, 1878

Deep-sea lizardfish

**Sample information:** SS (gear): 40-44; 50-52; 54-56; 60-72 (BT); Depth (m): 1237-3527 (2220-2270); No. lots / spec: 14 / 59; Rel. Abund.: 63.6 / 0.7 (BT); Sz (n: range): 26: 215 - 608 mm SL; BW [avg (range)] (g): 534.0 (31.0 - 1780.0); ZMUB (cat. no.): 16765-67; 17601-05; 19270; 19276; 19285-86; 19310; 19345; 19360; 19479; 19484-85; 19488; 19509; 19515; 19533; ZMUB (gen): 16765-67.

**Geographical distribution:** In the North Atlantic from about 60°N off Canada and southern Iceland, to 35°N off North America slopes and to Mauritania at about 15°N. Also at northern MAR between about 52°N and the Azores. Circumglobal at the southern hemisphere: Southwest and Southeast Atlantic, Indian and Pacific Oceans.

**References:** MAR: Whitehead et al. (1984-86); Cousins et al. (2013); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathysaurus mollis* Günther, 1878

Highfin lizardfish

**Sample information:** SS (gear): 40 (BT); Depth (m): 2660-2670; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 4660.0; ZMUB (cat. no.): 19474. **Figure 7 i.**

**Geographical distribution:** In the Northeast Atlantic from about 60°N off Scotland to Azores and Cape Verde Islands at about 15°N (with some occurrences south to the equator). Scattered records off North America slopes at about 40°N and Gulf of Mexico. Also Southwest Indian Ocean, northwestern Indo-Pacific, Southwest and Northeast Pacific Ocean.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Ipnopidae

*Bathypterois dubius* Vaillant, 1888

Mediterranean spiderfish

**Sample information:** SS (gear): 44; 60; 70 (BT); Depth (m): 1237-1767 (1567-1625); No. lots / spec: 3 / 12; Rel. Abund.: 13.6 / 0.1 (BT); Sz (n: range): 3: 101 - 254 mm SL; BW [avg (range)] (g): 63.9 (37.2 - 106.3); ZMUB (cat. no.): 15985-87; ZMUB (ost.): O.1656; ZMUB (gen): 15985, 15987.

**Geographical distribution:** In the Northeast Atlantic from about 60°N to about 5°N along European and North African slopes, including the Mediterranean Sea. Also in northern MAR between 52°N and the south of Azores Seamounts. Occurs also on the Northwest Atlantic slopes, between 40°N and 45°N.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathypterois grallator* (Goode & Bean, 1886)

Tripodfish

**Sample information:** SS (gear): 42; 46 (BT); Depth (m): 2063-3050 (2534-2578); No. lots / spec: 2 / 9; Rel. Abund.: 9.1 / 0.1 (BT); Sz (n: range): 8: 291 - 367 mm SL; BW [avg (range)] (g): 664.5 (275.0 - 1054.0); ZMUB (cat. no.): 15988-89.

**Geographical distribution:** In the Northeast Atlantic from about 50°N southward along the continental slopes and rises to equatorial waters off Congo. Western Mediterranean Sea. Northern MAR at about 42°N and south to the Azores Region at about 35°N. Along the Northwest Atlantic continental margin from about 42°N to southern Caribbean Sea, including the Gulf of Mexico. Also at Southwest Atlantic off Brazil, Southwest Indian and Pacific Oceans and central North Pacific off Hawaii.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathypterois phenax* Parr, 1928

Blackfin spiderfish

**Sample information:** SS (gear): 44; 70 (BT); Depth (m): 1630-1767 (1666-1718); No. lots / spec: 2 / 21; Rel. Abund.: 9.1 / 0.2 (BT); Sz: N/A; BW [avg (range)] (g): 49.6; ZMUB (cat. no.): 15990; ZMUB (gen): 15990.

**Geographical distribution:** In the northwestern continental margin from Slope Water, Nova Scotia, to about 20°N on the Caribbean Sea, including Gulf of Mexico. On northern MAR between 52°N and the seamounts south of the Azores. Also along northwestern African Slope to about 3°N off Liberia. Occurs off Central Brazil and Atlantic South Africa slopes.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## MYCTOPHIFORMES

### Myctophidae

#### *Benthosema glaciale* (Reinhardt, 1837)

Glacier lanternfish

**Sample information:** SS (gear): 2-36 (PT); 44; 52; 64-74 (BT); Depth (m): 0-3465 (632-1143); No. lots / spec: 82 / 16718 (PT: 89.0% / 99.5%); Rel. Abund.: 52.1 / 29.3 (PT); 40.9 / 0.9 (BT); Sz (n: range): 144: 24 - 71 mm SL; BW [avg (range)] (g): PT: 1.7 (0.2 - 5.0); BT: 2.8 (1.8 - 4.2); ZMUB (cat. no.): 16769-71; 17611-85; 19118; 19361; 20656; 20718; 20775; ZMUB (ost.): O.1582-84; O.1598-1602; ZMUB (gen): 16769-71.

**Geographical distribution:** In North Atlantic from David Strait, Greenland and Spitsbergen to about 35°N. Also at the Mauritanian Upwelling Region to Cape Verde Islands. Mediterranean Sea.

**Comments:** One of the few species that is common in the Norwegian Sea.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

#### *Benthosema suborbitale* (Gilbert, 1913)

Smallfin lanternfish

**Sample information:** SS (gear): 30 (PT); Depth (m): 175-598; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT);

Sz: N/A; BW: N/A; ZMUB (cat. no.): 17610; ZMUB (gen): 17610.

**Geographical distribution:** Widely distributed in North Atlantic from about 45°N to equatorial waters. Rare in the Gulf of Guinea. Extends along central Southeast Atlantic to South Africa. Western Indian Ocean. Widely distributed in Pacific Ocean but not in central equatorial waters.

**References:** MAR: Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

#### *Bolinichthys indicus* (Nafpaktitis & Nafpaktitis, 1969)

Smoothcheek lanternfish

**Sample information:** SS (gear): 28-36 (PT); Depth (m): 0-1476 (74-751); No. lots / spec: 9 / 52; Rel. Abund.: 6.4 / 0.1 (PT); Sz: N/A; BW [avg (range)] (g): 1.9 (0.6 - 7.9); ZMUB (cat. no.): 16399-16410; ZMUB (ost.): O.1653-54; ZMUB (gen): 16399; 16401; 16404.

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR at about 50°N and northern Iberia to about 20°N in the western sector and to equatorial waters in the eastern boundary. Rare or absent in the Gulf of Mexico, Caribbean Sea and western tropical Atlantic. Extends to Southwest and Southeast Atlantic to 35° - 40° S, and across the basin associated to Subtropical Convergence. Southwest Indian Ocean, but scattered records elsewhere in the basin and around Australia.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bolinichthys supralateralis* (Parr, 1928)

Stubby lanternfish

**Sample information:** SS (gear): 7-8; 28-36 (PT); 40-44 (BT); Depth (m): 0-2670 (766-1385); No. lots / spec: 14 / 37 (PT: 78.6% / 91.9%); Rel. Abund.: 7.9 / 0.1 (PT); 13.6 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 5.5 (1.0 - 16.0); ZMUB (cat. no.): 16385-98; 19054; ZMUB (gen): 16385; 16390; 16393.

**Geographical distribution:** In the North Atlantic from about 45°N to equatorial waters. Scattered records at northern MAR and off Ireland and Iceland. More abundant in the West Atlantic from Nova Scotia to northern Brazil. Absent from Gulf of Guinea. Extends southwestward to off Argentina. Also around South Africa and West Indian Ocean. West and tropical central North Pacific.

**References:** MAR: Pusch et al. (2004); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Ceratoscopelus maderensis* (Lowe, 1839)

Madeira lanternfish

**Sample information:** SS (gear): 26-36 (PT); Depth (m): 0-1800 (222-1013); No. lots / spec: 9 / 102; Rel. Abund.: 6.4 / 0.2 (PT); Sz: N/A; BW [avg (range)] (g): 2.6 (1.2 - 4.0); ZMUB (cat. no.): 16781-83; 17702-07; ZMUB (ost.): O.1467-69; O.1486-87; ZMUB (gen): 16781-83. **Figure 7 h.**

**Geographical distribution:** In North Atlantic from about 50° to 30°N, entering the Mediterranean Sea and extending along the Mauritanian Upwelling Region to Cape Verde Islands. Scattered records to the north and south of the main distribution range.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Gushchin & Kukuev (1981); Lipinsky & Janusz (2003); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Northwest Atlantic: Kukuev (1982, 2002); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Ceratoscopelus warmingii* (Lütken, 1892)

Warming's lanternfish

**Sample information:** SS (gear): 34 (PT); Depth (m): 0-203; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 1.0; ZMUB (cat. no.): 17708.

**Geographical distribution:** In North Atlantic from Flemish Cape, the Azores and Gibraltar to equatorial waters. More common in the western tropical-subtropical sector. Widely distributed in Indian and Pacific Oceans.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Diaphus bertelseni* Nafpaktitis, 1966

Bertelsen's lanternfish

**Sample information:** SS (gear): 28 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 93 mm SL; BW (g): 13.6; ZMUB (cat. no.): 16815; ZMUB (gen): 16815.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, to about 10°N in the western sector including the Gulf of Mexico and Caribbean Sea. Some records at MAR, southern Iberia and from Madeira to Cape Verde Islands. Extends from equatorial central waters

to South Africa and to Argentina, at about 35°S, along both sides of South Atlantic. May occur in Western Pacific

**Comments:** Relatively rare. New record at northern MAR.

**References:** Northeast Atlantic: Whitehead et al. (1984-86).

*Diaphus effulgens* (Goode & Bean, 1896)

Headlightfish

**Sample information:** SS (gear): 24; 28-32 (PT); Depth (m): 0-1434 (207-853); No. lots / spec: 6 / 18; Rel. Abund.: 4.3 / 0.0 (PT); Sz (n: range): 1: 75 mm SL; BW [avg (range)] (g): 15.2 (0.6 - 43.3); ZMUB (cat. no.): 16816-18; 17884-87; ZMUB (ost.): O.1478; ZMUB (gen): 16816-18.

**Geographical distribution:** In North Atlantic from about 15°N to Flemish Cap, MAR at about 50°N and south of Iceland at the Northeast Atlantic. Also in South Atlantic between 20°S and 35°S, associated to Subtropical Convergence. Southwest and South Indian Ocean. Indo-Pacific. West, Central and Southeast Pacific Ocean.

**References:** MAR: Nafpaktitis et al. (1977); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Diaphus holti* Tåning, 1918

Small lanternfish

**Sample information:** SS (gear): 28-30; 32-36 (PT); Depth (m): 0-800 (5-799); No. lots / spec: 5 / 281; Rel. Abund.: 3.6 / 0.5 (PT); Sz: N/A; BW [avg (range)] (g): 1.7 (1.3 - 2.3); ZMUB (cat. no.): 16819-21; 17888-92; ZMUB (ost.): O.1470-74; O.1733-34; ZMUB (gen): 16819-21.

**Geographical distribution:** In Northeast Atlantic from 55°N to Azores and southward to the equator, including the Mediterranean Sea. Occurs also in a narrow belt into the northwestern sector between 40°N and 50°N. Extends southeastward along African coast to South Africa, but not in Benguela Upwelling Region. Also associated to South Atlantic Subtropical Convergence at 35°S. West and East Indian Ocean. Indo-Pacific. Southwest and central North Pacific.

**Comments:** Peculiar pattern; extends westward along a narrow belt across the Atlantic following the Azores Current. Northern MAR is the western boundary at that latitude for the species.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Gushchin & Kukuev (1981); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Diaphus metopoclampus* (Cocco, 1829)

Spothead lanternfish

**Sample information:** SS (gear): 28-30; 32-36 (PT); Depth (m): 0-1800 (128-899); No. lots / spec: 7 / 28; Rel. Abund.: 5.0 / 0.0 (PT); Sz (n: range): 1: 53 mm SL; BW [avg (range)] (g): 3.9 (0.9 - 7.0); ZMUB (cat. no.): 16822-24; 17893-96; ZMUB (ost.): O.1630-31; ZMUB (gen): 16822; 16823.

**Geographical distribution:** In North Atlantic from 50°N to about 30°N, extending to Cape Verde Islands along the Eastern Tropical boundary. Also in the Mediterranean Sea. Associated to South Atlantic Subtropical Convergence at about 35°S. Around South Africa into Southwest Indian Ocean. West Pacific.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

## *Diaphus mollis* Tåning, 1928

Soft lanternfish

**Sample information:** SS (gear): 34-36 (PT); Depth (m): 0-800 (163-746); No. lots / spec: 2 / 5; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 1.2; ZMUB (cat. no.): 16825-27; 17897; ZMUB (gen): 16825-27.

**Geographical distribution:** Broadly distributed in North Atlantic from Flemish Cap, the Azores and Gibraltar to the equator. Across the central Southeast Atlantic and South America coast to off South Africa and Argentina. Rare or absent in the Gulf of Guinea and along African coast. Widely distributed in Indian and Pacific Oceans but not in East Tropical Pacific.

**References:** MAR: Nafpaktitis et al. (1977); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Diaphus rafinesquii* (Cocco, 1838)

White-spotted lanternfish

**Sample information:** SS (gear): 24-30; 32-36 (PT); 42-44; 48-52 (BT); Depth (m): 0-2979 (416-1018); No. lots / spec: 21 / 327 (PT: 76.2% / 96.3%); Rel. Abund.: 11.4 / 0.6 (PT); 22.7 / 0.1 (BT); Sz (n: range): 9: 33 - 50 mm SL; BW [avg (range)] (g): PT: 2.2 (0.8 - 5.3); BT: 2.4 (2.0 - 2.9); ZMUB (cat. no.): 16828-30; 17898-17917; 20737; 20742; 20762; ZMUB (ost.): O.1506-07; O.1592-94; ZMUB (gen): 16828-30.

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR at about 50°N, and Iceland to about 15°N. Also Mediterranean Sea. Scattered records at southern Caribbean Sea, central equatorial waters, Namibia Upwelling Region and off South Africa. Southwestern Indian Ocean. Northeast Pacific.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Gushchin & Kukuev (1981); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Diogenichthys atlanticus* (Tåning, 1928)

Longfin lanternfish

**Sample information:** SS (gear): 30 (PT); Depth (m): 175-598; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW: N/A; ZMUB (cat. no.): 17918; ZMUB (gen): 17918.

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR about 50°N and Iberia at 40°N to equatorial waters. Rare in central tropical waters. Extends southeastward to South Africa and along the Subtropical Convergence to off Argentina at about 35°S. West and South Indian Ocean. Widely distributed in Pacific Oceans but absent in Eastern Tropical Pacific.

**Comments:** MAR is the western boundary at the temperate Northeast Atlantic.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Electrona risso* (Cocco, 1829)

Chubby flashlightfish

**Sample information:** SS (gear): 2; 22-36 (PT); 42; 52 (BT); Depth (m): 0-2979 (351-958); No. lots / spec: 17 / 241 (PT: 88.2% / 98.3%); Rel. Abund.: 10.7 / 0.4 (PT); 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 3.2 (0.3 - 8.1); BT: 4.7 (4.0 - 5.0); ZMUB (cat. no.): 16833-35; 17922-37; 20708; 20715; 20719; 20723; 20738; 20744; 20753-54; 20758-59; 20766; ZMUB (ost.): O.1460-63; O.1515-18; O.1528; O.1665-69; ZMUB (gen): 16833-35. **Figure 7 f.**

**Geographical distribution:** In Northeast Atlantic from 60°N to the Azores and southward to about 30°N, including the Mediterranean Sea. Few records from northern MAR to Slope Water, Nova Scotia. Absent from the Mauritanian Upwelling Region but occurs off Senegal and Cape Verde Islands, extending southwestward to about 40°W. Southeastern equatorial waters and along the South Atlantic Subtropical Convergence. West and South Indian Ocean. Widely distributed in Pacific Ocean.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Gushchin & Kukuev (1981); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Gonichthys cocco* (Cocco, 1829)

**Sample information:** SS (gear): 28-30; 32-36 (PT); Depth (m): 0-1500 (287-860); No. lots / spec: 9 / 13; Rel. Abund.: 6.4 / 0.0 (PT); Sz (n: range): 1: 32 mm SL; BW [avg (range)] (g): 0.9 (0.1 - 1.5); ZMUB (cat. no.): 16838-40; 17950-54; ZMUB (gen): 16838-40.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, the Azores and southern Iberia to 25°N in the western and central sectors, extending to central equatorial waters along the eastern boundary. Also in the Mediterranean Sea. Rare or absent at the western tropical-equatorial waters, including the Caribbean Sea and Gulf of Mexico and the region between Guiana and northeast Brazil. In South Atlantic to 35°S.

**Comments:** Records in Indian and Pacific Oceans need revision.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Hygophum benoiti* (Cocco, 1838)

Benoit's lanternfish

**Sample information:** SS (gear): 28-30; 32-36 (PT); 48 (BT); Depth (m): 0-1072 (93-720); No. lots / spec: 8 / 215 (PT: 87.5% / 99.5%); Rel. Abund.: 5.0 / 0.4 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 1.4 (1.0 - 1.7); BT: 1.0; ZMUB (cat. no.): 16860-62; 17991-95; 17997-98; ZMUB (ost.): O.1510-14; ZMUB (gen): 16860-62.

**Geographical distribution:** Across the North Atlantic between 50°N and 25°N in the West Atlantic and to 15°N along the Mauritanian Upwelling Region. Also in the Mediterranean Sea.

**Comments:** *H. benoiti* and *H. hygomii* have almost the same distribution pattern.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Gushchin & Kukuev (1981); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Hygophum hygomii* (Lütken, 1892)

Bermuda lanternfish

**Sample information:** SS (gear): 28-30; 32-36 (PT); 44 (BT); Depth (m): 0-1767 (119-776); No. lots / spec: 10 / 310 (PT: 90.0% / 99.7%); Rel. Abund.: 6.4 / 0.5 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 1.9 (1.0 - 3.0); ZMUB (cat. no.): 16863-65; 17999-18005; 20729; 20745; 20761; ZMUB (ost.): O.1585-86; O.1695-99; ZMUB): 16863-65.

**Geographical distribution:** Across the North Atlantic from Flemish Cap, the Azores and southern Iberia to the Strait of Florida and Gulf of Mexico and Cape Verde Islands, in West and East Atlantic, respectively. Occurs in the Mediterranean Sea. In South Atlantic from 20°S to 35°S. Circumglobal at southern Subtropical Convergence of Atlantic, Indian and Pacific Oceans.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Comments:** *H. benoiti* and *H. hygomii* have a very similar distribution patterns.

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Hygophum reinhardtii* (Lütken, 1892)

Reinhardt's lanternfish

**Sample information:** SS (gear): 28; 32-36 (PT); Depth (m): 0-1981 (713-1306); No. lots / spec: 5 / 9; Rel. Abund.: 3.6 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 1.1 (0.3 - 2.0); ZMUB (cat. no.): 16866-68; 18006-07; ZMUB (gen): 16866-68.

**Geographical distribution:** Widely distributed in North Atlantic from Slope Water, Nova Scotia, the Azores and Gibraltar to equatorial waters. In South Atlantic between about 5°S to 35°S, but absent from off South Africa. Scattered records across Indian Ocean. Widely distributed in Pacific Ocean.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lampadena anomala* Parr, 1928

Anomalous lanternfish

**Sample information:** SS (gear): 30-36 (PT); 44; 48 (BT); Depth (m): 800-2390 (1311-1790); No. lots / spec: 10 / 32 (PT: 80.0% / 93.8%); Rel. Abund.: 5.7 / 0.1 (PT); 9.1 / 0.0 (BT); Sz (n: range): 4: 146 - 167 mm SL; BW [avg (range)] (g): 24.1 (2.0 - 44.9); ZMUB (cat. no.): 16876-78; 18014-20; 18985; ZMUB (ost.): O.1736; ZMUB (gen): 16876-78.

**Geographical distribution:** In North Atlantic from Nova Scotia to about 32°N in the Northwest Atlantic. From MAR, the Azores and Madeira to the equator along the eastern boundary, extending southeastward to 15°S. Some records from off Venezuela in southern Caribbean Sea and also off Argentina. Across North Indian Ocean, Indo-Pacific and central tropical waters in Pacific Ocean.

**Comments:** New record for northern MAR?

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003);

*Lampadena chavesi* Collett, 1905

Chaves' lanternfish

**Sample information:** SS (gear): 34 (PT); Depth (m): 0-800; No. lots / spec: 1 / 7; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 4.0 (3.1 - 4.2); ZMUB (cat. no.): 16879-81; 18021; ZMUB (ost.): O.1475; ZMUB (gen): 16879-81. **Figure 7 e.**

**Geographical distribution:** In a narrow band across the North Atlantic from Slope Water, Nova Scotia, the Azores and Iberia to about 30°N. In South Atlantic from 20°S to 35°S, but not at Subtropical Convergence off Argentina. South Indian and Pacific Oceans.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

*Lampadena speculigera* Goode & Bean, 1896

Mirror lanternfish

**Sample information:** SS (gear): 2-7; 10-15; 18-22; 26-36 (PT); 54-56; 60-62 (BT); Depth (m): 0-3527 (912-1424);

No. lots / spec: 29 / 105 (PT: 86.2% / 89.5%); Rel. Abund.: 17.9 / 0.2 (PT); 18.2 / 0.1 (BT);



Sz (n: range): 29: 51 - 153 mm SL; BW [avg (range)] (g): PT: 19.1 (0.2 - 60.0); BT: 22.7 (6.3 - 46.0); ZMUB (cat. no.): 16886-88; 18022-46; 18698; 19052; 21049; ZMUB (gen): 16886-88.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 30°N in the western sector, the Azores, and to Cape Verde Islands at the eastern boundary. Associated with Subtropical Convergence in South Atlantic, Indian and Pacific Oceans. Scattered records off India and South China Sea.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

***Lampadena atlantica*** Maul, 1969

**Sample information:** SS (gear): 26-31; 34-36 (PT); Depth (m): 0-1434 (245-850); No. lots / spec: 7 / 14; Rel. Abund.: 5.0 / 0.0 (PT); Sz (n: range): 3: 45 - 109 mm SL; BW [avg (range)] (g): 19.7 (0.9 - 48.0); ZMUB (cat. no.): 16882-84; 18047-52; 21046; ZMUB (gen): 16882-84; 18052.

**Geographical distribution:** Few agglomerations in North Atlantic around Bermuda, between MAR north of the Azores and Ireland slopes and at Mauritanian Upwelling Region, from Madeira to Canaries.

**Comments:** May have three disjunct populations.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

***Lampanyctus crocodilus*** (Risso, 1810)

Jewel lanternfish

**Sample information:** SS (gear): 2; 22-36 (PT); 42 (BT); Depth (m): 0-2300 (544-1158); No. lots / spec: 19 / 125 (PT: 94.7% / 99.2%); Rel. Abund.: 12.9 / 0.2 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 7.4 (0.1 - 37.4); ZMUB (cat. no.): 18053-71; 18896; 19354; 21266; ZMUB (ost.): O.1477; ZMUB (gen): 18071.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 30°N, extending to about 15°N along the eastern boundary. Also in the Mediterranean Sea.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

***Lampanyctus festivus*** Tåning, 1928

Festive lanternfish

**Sample information:** SS (gear): 28-30; 34-36 (PT); 48 (BT); Depth (m): 0-1800 (383-1123); No. lots / spec: 7 / 12 (PT: 85.7% / 83.3%); Rel. Abund.: 4.3 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 5.5 (2.0 - 12.0); ZMUB (cat. no.): 18072-78; 21274; ZMUB (gen): 18075-76.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, the Azores and Madeira to about 25°N in the west and to 15°N in the eastern boundary. Scattered records to the north and southwest of the range. Rare or absent in Gulf of Mexico, Caribbean Sea and central tropical waters. Extends in Southeast Atlantic from the equator to South Africa and across the

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

Subtropical Convergence to off Argentina at 35°S. West and Sout Indian Ocean. Widely distributed in South Pacific Ocean but also scattered records from elsewhere.

**References:** MAR: Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Lampanyctus intricarius* Tåning, 1928

Diamond-cheek lanternfish

**Sample information:** SS (gear): 2; 24-36 (PT); 42-44 (BT); Depth (m): 0-2300 (812-1416); No. lots / spec: 14 / 36 (PT: 85.7% / 94.4%); Rel. Abund.: 8.6 / 0.1 (PT); 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 10.2 (2.0 - 37.5); ZMUB (cat. no.): 18079-93; 18786; 21286; ZMUB (gen): (cat. no.): 18080; 18087.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 32°N, extending to Cape Verde Islands, along Mauritanian Upwelling Region. More common in the Northeast Atlantic. Associated to South Atlantic Subtropical Convergence, from off Argentina to South Africa, extending into Namibia Upwelling Region. Circumglobal along Subtropical Convergence in South Atlantic, Indian and Pacific Oceans.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Lampanyctus macdonaldi* (Goode & Bean, 1896)

Rakery beaconlamp

**Sample information:** SS (gear): 2-26; 31-32; 34 (PT); 54; 60-74 (BT); Depth (m): 0-3527 (1023-1590); No. lots / spec: 69 / 4169 (PT: 85.5% / 98.2%); Rel. Abund.: 42.1 / 7.2 (PT); 45.5 / 0.9 (BT); Sz (n: range): 144: 47 - 176 mm SL; BW [avg (range)] (g): PT: 16.7 (0.3 - 40.0); BT: 17.8 (1.1 - 34.6); ZMUB (cat. no.): 18094-18181; 19215; 19231; 19362; 20671; 20690; 20712; 21269; 21281; ZMUB (ost.): O.1534-37; O.1612; ZMUB (gen): 18165-66; 18175.

**Geographical distribution:** In North Atlantic from Greenland, Iceland and southern Norwegian Sea to about 32°N, off South Carolina slope, the southern boundary of Gulf Stream, the Azores and Bay of Biscay. Also associated with Subtropical Convergence along South Atlantic, Indian and Pacific Ocean. Also in Southern Ocean.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Lipinsky & Janusz (2003); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### *Lampanyctus photonotus* Parr, 1928

**Sample information:** SS (gear): 2; 30; 34-36 (PT); Depth (m): 0-2390 (348-1054); No. lots / spec: 8 / 15; Rel. Abund.: 5.7 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 4.5 (1.0 - 10.3); ZMUB (cat. no.): 18182-89; 21262; ZMUB (gen): 18185.

**Geographical distribution:** Widely distributed in North Atlantic from Flemish Cap, MAR to the north of the Azores and Biscay Bay to the central equatorial waters. Rare or absent in Gulf of Mexico and Caribbean Sea. Extends southward to about 35°S. Few records from West Pacific Ocean.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lampanyctus pusillus* (Johnson, 1890)

Pygmy lanternfish

**Sample information:** SS (gear): 28-36 (PT); 42 (BT); Depth (m): 0-2308 (383-928); No. lots / spec: 13 / 33 (PT: 92.3% / 97.0%); Rel. Abund.: 8.6 / 0.1 (PT); 4.5 / 0.0 (BT); Sz (n: range): 8: 33 - 38 mm SL; BW [avg (range)] (g): 1.3 (0.4 - 7.9); ZMUB (cat. no.): 18190-18200; 18840; 19365; 19367; 21263-64; ZMUB (gen): 18193.

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR at 50°N and Rockall Trough to about 25°N. Extends to Cape Verde Islands along the Mauritanian Upwelling Region. Occurs in the Mediterranean Sea. Circumglobal along the Subtropical Convergence in South Atlantic, Indian and Pacific Oceans.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lepidophanes gaussi* (Brauer, 1906)

**Sample information:** SS (gear): 30 (PT); Depth (m): 0-795; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 3.5; ZMUB (cat. no.): 18919; ZMUB (gen): 18919.

**Geographical distribution:** In North Atlantic mainly in tropical central waters from about 35°N to 15°N, but also northward to Slope Water, Nova Scotia. Rare or absent at Gulf of Mexico and Caribbean Sea. In the eastern Atlantic along 35°N and from southern Iberia to Cape Verde Islands. Some off Flemish Cap and at MAR north of the Azores. South Atlantic between 10°S and 35°S.

**References:** MAR: Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lepidophanes guentheri* (Goode & Bean, 1896)

Günther's lanternfish

**Sample information:** SS (gear): 30; 34 (PT); Depth (m): 0-2383 (1132-1591); No. lots / spec: 2 / 4; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 1.3 (1.0 - 1.7); ZMUB (cat. no.): 18205-06; 21272-73; ZMUB (gen): 18206.

**Geographical distribution:** Mainly in the Northwest Atlantic from Flemish Cap, eastward to the Azores, and south to the equator and to about 45°S off Argentina. At the eastern boundary from Madeira, and Cape Verde Islands, south to Angola.

**Comments:** MAR is probably the northeastern boundary at sub-tropical-temperate latitudes.

**References:** MAR: Nafpaktitis et al. (1977); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lobianchia dofleini* (Zugmayer, 1911)

Dofleini's lanternfish

**Sample information:** SS (gear): 24-36 (PT); Depth (m): 0-1746 (105-717); No. lots / spec: 17 / 406; Rel. Abund.: 12.1 / 0.7 (PT); Sz (n: range): 19: 20 - 39 mm SL; BW [avg (range)] (g): 0.8 (0.2 - 1.3); ZMUB (cat. no.): 18217-35; 20725; 20734; 20752; ZMUB (ost.): O.1566; O.1547-50; O.1660-64; ZMUB (gen): 18221; 18228; 18232.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, Flemish Cap, MAR and Northeast Atlantic at about 50°N, to 25°N. Occurs also at the Mediterranean Sea. Extends to equator and to South Africa, along the eastern boundary. Circumglobal associated with Subtropical Convergence in South Atlantic, Indian and Pacific Oceans.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lobianchia gemellarii* (Cocco, 1838)

Cocco's lanternfish

**Sample information:** SS (gear): 24-36 (PT); 40; 50 (BT); Depth (m): 0-2670 (652-1232); No. lots / spec: 17 / 221 (PT: 88.2% / 97.7%); Rel. Abund.: 10.7 / 0.4 (PT); 9.1 / 0.1 (BT); Sz: N/A; BW [avg (range)] (g): PT: 9.8 (3.8 - 16.0); BT: 1.4; ZMUB (cat. no.): 18236-50; 18872; 19369; ZMUB (ost.): O.1613-15; O.1725-26; ZMUB (gen): 18242-43; 18872.

**Geographical distribution:** Widely distributed in North Atlantic from Slope Water, Nova Scotia, Flemish Cap, MAR at 50°N, off Scotland, to the equator in the western basin, and about 10°N in the Eastern Atlantic. Occurs in the Mediterranean Sea. Extends southwestward to about 35°S off Argentina. Also in central Southeast waters from 30°S to South Africa, but not in Gulf of Guinea. West and Southeast Indian Ocean. Widely distributed in Pacific Ocean but not in Northeast sector.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Loweina interrupta* (Tåning, 1928)

**Sample information:** SS (gear): 30 (PT); Depth (m): 604-1500; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT);

Sz: N/A; BW: N/A; ZMUB (cat. no.): 18253; ZMUB (gen): 18253.

**Geographical distribution:** In North Atlantic between 45°N and 35°N, from the Azores to Iberia. Also at Bermuda and off USA at about 35-40°N. Scattered records in South Atlantic, Indian and Pacific Oceans.

**Comments:** More common in the eastern Atlantic.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Myctophum punctatum* Rafinesque, 1810

Spotted lanternfish

**Sample information:** SS (gear): 2-4; 7-8; 12-30; 32-36 (PT); 64-66; 74 (BT); Depth (m): 0-3465 (455-979); No. lots / spec: 34 / 2426 (PT: 91.2% / 99.7%); Rel. Abund.: 22.1 / 4.3 (PT); 13.6 / 0.1 (BT); Sz (n: range): 31: 27 - 86 mm SL; BW [avg (range)] (g): PT: 5.2 (0.1 - 48.9); BT: 5.6 (5.3 - 5.8); ZMUB (cat. no.): 18288-318; 18366; 18687; 20653; 20676; 20711; 21043; 21048; 21287-89; ZMUB (ost.): O.1701-05; ZMUB (gen): 18299; 18366. **Figure 7c.**

**Geographical distribution:** In North Atlantic from Bermuda, the Azores and Gibraltar, northward to Greenland and Iceland. Occurs also at the Mediterranean Sea and extends along the Mauritanian Upwelling Region to Cape Verde Islands.

**References:** MAR: Nafpaktitis et al. (1977); Whitehead et al. (1984-86); Gushchin & Kukuev (1981); Lipinsky & Janusz (2003); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores:

Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Nannobrachium atrum* (Tåning, 1928)

Dusky lanternfish

**Sample information:** SS (gear): 4; 8; 12; 16-18; 22-36 (PT); 40-44; 48; 56; 66-68; 72 (BT); Depth (m): 0-3071 (878-1450); No. lots / spec: 33 / 159 (PT: 75.8% / 87.4%); Rel. Abund.: 17.9 / 0.2 (PT); 36.4 / 0.2 (BT); Sz (n: range): 7: 81 - 121 mm SL; BW [avg (range)] (g): PT: 6.9 (0.3 - 37.4); BT: 7.7 (2.7 - 24.0); ZMUB (cat. no.): 18319; 18368-70; 18523; 18587; 18601; 18628; 18672; 18699; 18771; 18796; 18831; 18865; 18880; 18885; 18889; 18907; 18915; 18920; 18932; 18960; 18975; 18994; 19020; 19022; 19032; 19037; 19049-50; 19053; 19068; 19085-86; 19095; 19197; ZMUB (ost.): O.1479-80; O.1483-85; O.1675; ZMUB (gen): 18368-70.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, Flemish Cap and 60°N at the Northeast Atlantic to about 30°N. Extends to Gulf of Mexico and to Cape Verde Islands, on the western and eastern side, respectively. In South Atlantic from about 15°S to Subtropical Convergence, with scattered records further south. Southwest and South Indian Ocean. South Pacific Ocean but not at the eastern Pacific.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Nannobrachium cuprarium* (Tåning, 1928)

**Sample information:** SS (gear): 36 (PT); Depth (m): 0-180; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 0.6; ZMUB (cat. no.): 18371; ZMUB (gen): 18371.

**Geographical distribution:** In the North Atlantic between 45°N at Northwest Atlantic and northern MAR, and 40°N off Iberia, to about 15°N in both sides of the basin. Also in South Atlantic central equatorial waters to about 30°S. Rare or absent at the northeast South Atlantic.

**Comments:** First northern MAR record.

**References:** Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Nannobrachium lineatum* (Tåning, 1928)

**Sample information:** SS (gear): 30; 36 (PT); Depth (m): 800-1800; No. lots / spec: 2 / 3; Rel. Abund.: 1.4 / 0.0 (PT);

Sz: N/A; BW [avg (range)] (g): 7.4 (7.2 - 7.6); ZMUB (cat. no.): 18372-73; ZMUB (gen): 18372-73.

**Geographical distribution:** Widely distributed in North Atlantic from Flemish Cap, the Azores (rare), Gibraltar and Madeira to the equatorial waters. Extends southeastward along central Southeast Atlantic to South Africa. Absent in the Gulf of Guinea and along Africa coast to Namibia. West Indian Ocean. Indo-Pacific. Southwest and equatorial central waters in Pacific Ocean.

**Comments:** First northern MAR record.

**References:** Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Notolychnus valdiviae* (Brauer, 1904)

Topside lampfish

**Sample information:** SS (gear): 24; 28 (PT); Depth (m): 151-691 (181-678); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 21 mm SL; BW [avg (range)] (g): 0.1; ZMUB (cat. no.): 18782; 18857; ZMUB (gen): 18782.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, MAR at about 50°N and southern Iceland to about 20°N in the Northwest Atlantic and to 10°N along the eastern boundary. Rare in the Gulf of Mexico and Caribbean Sea. Absent from central tropical waters including the region between Guiana and northeast Brazil. From equatorial waters to South Africa and to about 25°S in the Southwest Atlantic. Widely distributed in tropical and subtropical Indian and Pacific Oceans, but absent at the Northeast Pacific.

**References:** MAR: Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Notoscopelus bolini* Nafpaktitis, 1975

**Sample information:** SS (gear): 22-36 (PT); 48 (BT); Depth (m): 0-2008 (467-1135); No. lots / spec: 22 / 148 (PT: 95.5% / 98.0%); Rel. Abund.: 15.0 / 0.3 (PT); 4.5 / 0.0 (BT); Sz (n: range): 14: 28 - 109 mm SL; BW [avg (range)] (g): 4.4 (0.2 - 17.2); ZMUB (cat. no.): 18386; 18632; 18803; 18809; 18814; 18819; 18823; 18825; 18835; 18849; 18853; 18863; 18895; 18913; 18941; 18954; 18962; 18965; 18969; 18979; 19002; 19005; 19028; 19042; 19094; 19198; 19239; 19368; 21057-58; 21285; ZMUB (ost.): O.1587-89; O.1771-75; ZMUB (gen): 18386; 18941; 18954.

**Geographical distribution:** In Northeast Atlantic central waters, around the Azores and MAR, between 32°N and 50°N to about 50°W. Also in the Mediterranean Sea and from Iberia southward to about 20°N, along the Mauritanian Upwelling Region.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Notoscopelus kroyeri* (Malm, 1861)

Lancet fish

**Sample information:** SS (gear): 2-4; 7-26; 30 (PT); 66-72 (BT); Depth (m): 0-3071 (645-1107); No. lots / spec: 37 / 3650 (PT: 89.2% / 99.5%); Rel. Abund.: 23.6 / 6.4 (PT); 18.2 / 0.2 (BT); Sz (n: range): 106: 51 - 155 mm SL; BW [avg (range)] (g): PT: 15.9 (0.6 - 61.0); BT: 11.3 (6.2 - 26.7); ZMUB (cat. no.): 18387-88; 18512; 18514; 18522; 18526; 18536; 18542; 18549; 18562; 18598; 18623; 18634; 18646; 18654; 18659; 18660; 18675; 18695; 18706; 18719; 18720; 18726; 18738; 18746; 18750; 18757; 18799; 18810-11; 18837; 19165; 19170; 19175; 19182; 19224; 19238; 20654; 20660; 20776; ZMUB (ost.): O.1538-41; O.1629; ZMUB (gen): 18387-88; 18646.

**Geographical distribution:** In North Atlantic from western and eastern Greenland, Iceland and northern North Sea to Slope Water, Nova Scotia, the Azores and Iberia at about 40°N. Also in the Mediterranean Sea. Rare at the eastern tropical Atlantic at about 15°N.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Protomyctophum arcticum* (Lütken, 1892)

Arctic telescope

**Sample information:** SS (gear): 2-6; 8-14; 16-26 (PT); 64; 74 (BT); Depth (m): 0-3465 (444-912); No. lots / spec: 44 / 1295 (PT: 95.5% / 99.5%); Rel. Abund.: 30.0 / 2.3 (PT); 9.1 / 0.1 (BT); Sz (n: range): 70: 27 - 43 mm SL; BW [avg (range)] (g): PT: 1.0 (0.4 - 5.3); BT: 1.1; ZMUB (cat. no.): 18402-04; 18508; 18521; 18540; 18543; 18550; 18555; 18571-72; 18575; 18578-79; 18589; 18605; 18614; 18618-19; 18633; 18641; 18643; 18655; 18666; 18673; 18683; 18686; 18688; 18702; 18714; 18717; 18721; 18733; 18745; 18752; 18765; 18783; 18806; 18817; 20659; 20664; 20667-70; 20673; 20677-78; 20682; 20688; 20693; 20704-05; 20713; ZMUB (ost.): O.1521-23; ZMUB (gen): 18402-04.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to North America slope at about 40°N, Slope Water, Nova Scotia, the Azores and Gulf of Biscay.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Symbolophorus veranyi* (Moreau, 1888)

Largescale lanternfish

**Sample information:** SS (gear): 22-36 (PT); 44 (BT); Depth (m): 0-2308 (305-978); No. lots / spec: 17 / 193 (PT: 94.1% / 99.0%); Rel. Abund.: 11.4 / 0.3 (PT); 4.5 / 0.0 (BT); Sz (n: range): 4: 30 - 75 mm SL; BW [avg (range)] (g): 5.8 (0.4 - 20.0); ZMUB (cat. no.): 18437-39; 18773; 18808; 18821; 18828; 18838; 18841; 18856; 18881-82; 18897; 18910; 18921; 18942; 18945; 18998; 19051; 20727; 20736; 20741; ZMUB (ost.): O.1488-91; ZMUB (gen): 18437-39. **Figure 7 g.**

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR at about 50°N and off Ireland at about 55°N to about 32°N. Extends along the Mauritanian Upwelling Region to about 20°N. Occurs in the Mediterranean Sea. Scattered records off southern Iceland and also in Southwest Atlantic off Brazil at 35°S. Southeast Atlantic between 10°N and South Africa, but not in the Namibia Upwelling Region.

**References:** MAR: Nafpaktitis et al. (1977); Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (2002); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Taaningichthys bathyphilus* (Tåning, 1928)

Deepwater lanternfish

**Sample information:** SS (gear): 14; 20; 30 (PT); Depth (m): 36-1502 (462-1055); No. lots / spec: 3 / 3; Rel. Abund.: 2.1 / 0.0 (PT); Sz (n: range): 1: 37 mm SL; BW [avg (range)] (g): 2.4 (0.4 - 5.0); ZMUB (cat. no.): 18444-46; ZMUB (gen): 18444-46.

**Geographical distribution:** Widely distributed in North Atlantic from about 50°N to central and western equatorial waters. Rare or absent in the Gulf of Mexico, Caribbean Sea, Gulf of Guinea and along Africa coast to Namibia. Extends southwestward along South America coast to about 40°S and across the central Southeast Atlantic to South Africa. West Indian Ocean. Indo-Pacific. Southwest and central tropical Pacific waters.

**References:** MAR: Nafpaktitis et al. (1977); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

Checklist of Fishes from the Northern Mid-Atlantic Ridge

*Taaningichthys minimus* (Tåning, 1928)

Waistcoat lanternfish

**Sample information:** SS (gear): 30 (PT); Depth (m): 0-795 (175-598); No. lots / spec: 2 / 3; Rel. Abund.: 1.4/0.0 (PT); BW [avg (range)] (g): 1.0 (0.9 - 2.1); ZMUB (cat. no.) 18048-49.

**Geographical distribution:** Bisubtropical; Atlantic Ocean between 40°N and 30°S; also Indian Ocean and central and eastern North Pacific.

**References:** Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

OPHIDIIFORMES

Ophidiidae

*Brotulotaenia crassa* Parr, 1934

Violet cuskeel

**Sample information:** SS (gear): 32; 36 (PT); Depth (m): 725-1800 (762-1646); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 610 mm SL; BW [avg (range)] (g): 457.0 (34.0 - 880.0); ZMUB (cat. no.): 17696; 18350; ZMUB (gen): 17696. **Figure 8 a.**

**Geographical distribution:** Scattered records in the Northeast Atlantic, from Iceland, the Azores, off Ireland, Portugal, Madeira, Canary Islands and Cape Verde Islands. Also reported from off Atlantic South Africa, across South Indian Ocean and in Southwest Pacific Ocean.

**Comments:** The Ophidiidae are predominately benthic or benthopelagic fishes and a meso-bathypelagic genus like *Brotulotaenia* is unusual among the members of this family.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982; 2004); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Holcomycteropus squamosus* (Roule, 1916)

**Sample information:** SS (gear): 46; 54; 64 (BT); Depth (m): 3005-3527 (3350-3347); No. lots / spec: 3 / 4; Rel. Abund.: 13.6 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 142.7 (15.0 - 374.0); ZMUB (cat. no.): 19102; 19306; 19318.

**Geographical distribution:** Scattered records in the Northeast Atlantic from Iceland, northern MAR, the Azores and Canaries. In the Northwest Atlantic reported from Bahamas, Mid-Atlantic Bight and Caribbean Sea. Also from off tropical Brazil.

**Comments:** First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Lamprogrammus niger* Alcock, 1891

**Sample information:** SS (gear): 40 (BT); Depth (m): 2660-2670; No. lots / spec: 1 / 2; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 17.5; ZMUB (cat. no.): 19064; 21192; ZMUB (gen): 19064.

**Geographical distribution:** Scattered distributed in Caribbean Sea and North Brazil, off Africa at about 5°N, at MAR about 42°N and Bay of Biscay. Also off South Africa and across Southwest



and equatorial Indian Ocean entering the Indo-Pacific seas. Northeast and Eastern Tropical Pacific Ocean.

**Comments:** Apparently rare in the North Atlantic. First northern MAR record.

**References:** MAR: Kobylansky et al. (2010); Northwest Atlantic: Moore et al. (2003).

*Penopus microphthalmus* (Vaillant, 1888)

**Sample information:** SS (gear): 42 (BT); Depth (m): 2063-2107; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 6.7; ZMUB (cat. no.): 19076; ZMUB (gen): 19076.

**Geographical distribution:** In the Northwest Atlantic from about 40°N to 30°N, including the Gulf of Mexico. Also in northern MAR, off Morocco, Cape Verde Islands, Brazil, Angola and South Africa.

**Comments:** First MAR record.

**References:** Northwest Atlantic: Moore et al. (2003).

*Porogadus miles* Goode & Bean, 1885

Slender cuskeel

**Sample information:** SS (gear): 46 (BT); Depth (m): 3005-3050; No. lots / spec: 1 / 2; Rel. Abund.: 4.5 / 0.0 (BT);

Sz: N/A; BW [avg (range)] (g): 47.5; ZMUB (cat. no.): 19100.

**Geographical distribution:** In the Northwest Atlantic from about 40°N to 30°N, including the Gulf of Mexico. Also in northern MAR, off Morocco, eastern central Atlantic, Brazil at about 10°N, and along Africa margin from the equator to South Africa. Southwest and Northwest Pacific Ocean.

**Comments:** First northern MAR record.

**References:** Northwest Atlantic: Moore et al. (2003).

*Spectrunculus grandis* (Günther, 1877)

Pudgy cuskeel

**Sample information:** SS (gear): 42; 46; 50; 52; 56; 62; 68 (BT); 1-6; 13-15; 17; 28-29; 40 (LL); 30 (GN); Depth (m): 1572-3366 (2367-2636); No. lots / spec: 7 / 30 BT; 12 / 308 (LL: 91.7% / 99.7%) (*Loran*); Rel. Abund.: 31.8 / 0.3 (BT); 19.0 / 3.7 (*Loran*); Sz (n: range): 311: 233 - 1310 mm TL; BW [avg (range)] (g): BT: 3628.3 (1116.3 - 6210.0); *Loran*: 6712 (1030 - 15900); ZMUB (cat. no.): 18463-64; 18466-94; 19505; VIMS (cat. No.): 11770; 11931-32.

**Geographical distribution:** In the Northeast Atlantic from about 55°N off Scotland to South Africa, extending westward to northern MAR, Azores, and west of Cape Verde Islands. Also in Northwest Atlantic at around 40°N. Southwest Indian Ocean. Widely distributed in Pacific Ocean.

**Comments:** *S. crassus*, a former synonym of this species, was recently re-erected to valid species based on MAR-ECO specimens (Uiblein et al. 2008). Thus, the actual geographical distribution of this species may be masked by information relating to *S. crassus*. Northern MAR is the western boundary for this species at temperate North Atlantic.

**References:** MAR: Whitehead et al. (1984-86), Cousins et al. (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Spectrunculus crassus* (Vaillant, 1888)

**Sample information:** SS (gear): 40; 52; 54; 68; 72 (BT); 5-6; 12-15; 17; 32; 43; 47; 63 (LL); 14 (GN); Depth (m): 2306-3527 (2799-2823); No. lots / spec: 5 / 9 BT; 11 / 55 (LL: 90.9% / 98.2%)

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

(*Loran*); Rel. Abund.: 22.7 / 0.1 (BT); 17.5 / 0.7 (*Loran*); Sz (n: range): 62: 370 - 934 mm TL; BW [avg (range)] (g): BT: 178.0 (63.5 - 650.0); *Loran*: 1218.7 (1030 - 2180); ZMUB (cat. no.): 18351-56; 18465; VIMS 11863; 11938-39; ZMUB (gen): 18351; 18353.

**Geographical distribution:** So far only known from the North Atlantic.

**Comments:** See Uiblein et al. (2008) and notes under the previous species.

**References:** MAR: Uiblein et al. (2008), Cousins et al. (2013).

## Bythitidae

### *Cataetyx laticeps* Koefoed, 1927

**Sample information:** SS (gear): 44; 70 (BT); Depth (m): 1630-1767 (1666-1718); No. lots / spec: 2 / 4; Rel. Abund.: 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 1648.3 (1485.0 - 1811.7); ZMUB (cat. no.): 19481; 19526.

**Geographical distribution:** In the Northeast Atlantic from southern Iceland to South Africa, including the Mediterranean Sea. Also on MAR from about 52°N to the Azores and south to about 10°N. Scattered records off Newfoundland and in Gulf of Mexico.

**Comments:** First record for northern MAR. Often seen by submersibles around hydrothermal vents of the Lucky Strike field (Biscoito et al., 2002). More common in the East Atlantic.

**References:** Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## Aphyonidae

### *Aphyonus gelatinosus* Günther, 1878

Gelatinous blindfish

**Sample information:** SS (gear): 44-46 (BT); Depth (m): 1702-3050 (2353-2408); No. lots / spec: 2 / 2; Rel. Abund.: 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 25.7 (21.3 - 30.0); ZMUB (cat. no.): 15981-82. **Figure 8 b.**

**Geographical distribution:** Scattered records around the Azores, northern MAR at about 45°N, Canaries and in Northwest Atlantic at about 35°N, Gulf of Mexico and Caribbean Sea. Southwest Indian and Pacific Oceans.

**Comments:** First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## GADIFORMES

## Macrouridae

### *Asthenomacrus victoris* Sazonov & Shcherbachev, 1982

Victory whiptail

**Sample information:** SS (gear): 46 (BT); Depth (m): 3005-3050; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz (n): 230 mm SL; BW (g): 19; ZMUB (cat. no.): 19710; ZMUB (gen): 19710. **Figure 8 c.**

**Geographical distribution:** In the Atlantic only known from northern MAR at about 52°N. Reported from West and Southeast Indian Ocean and from Northwest (Japan) and Southwest Pacific Ocean.

**Comments:** First Atlantic record (Iwamoto & Orlov 2008).

**References:** Sazonov & Shcherbachev 1982).

*Bathygadus favosus* Goode & Bean, 1886

**Sample information:** SS (gear): 44 (BT); Depth (m): 1702-1767; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW: N/A; ZMUB (cat. no.): 17594; ZMUB (gen): 17594.

**Geographical distribution:** In East Atlantic from MAR at about 42°N and along the continental and insular slopes from southern Portugal to Angola at about 10°S. Also in Gulf of Mexico and Caribbean Sea with scattered records off Florida and North America slope, at about 40°N. Occurs off Namibia and South Africa.

**Comments:** Often confused with *B. melanobranchus*, which has a very similar distribution pattern. First northern MAR record.

**References:** MAR: Bergstad et al. (2008a); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Bathygadus melanobranchus* Vaillant, 1888

Vaillant's grenadier

**Sample information:** SS (gear): 28 (PT); Depth (m): 829-2308 (1151-2039); No. lots / spec: 2 / 3; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 1.6 (0.7 - 2.5); ZMUB (cat. no.): 17595-96; ZMUB (gen): 17596.

**Geographical distribution:** In East Atlantic from MAR and the Azores between 42°N and 35°N and along the continental and insular slopes from off Ireland and Bay of Biscay to South Africa. Also in Gulf of Mexico and Caribbean Sea.

**Comments:** Often confused with *B. favosus* which has a very similar distribution pattern. First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Coelorinchus labiatus* (Koehler, 1896)

**Sample information:** SS (gear): 44; 53; 60 (BT); Depth (m): 966-1767 (1202-1245); No. lots / spec: 4 / 35; Rel. Abund.: 13.6 / 0.4 (BT); Sz: N/A; BW [avg (range)] (g): 121.1 (3.0 - 391.6); ZMUB (cat. no.): 16778-80; 17697-17700; 19269; 19272; 19292; 19303; 19312; 19359; ZMUB (ost.): O.1713; ZMUB (gen): 16778-80. **Figure 8 f.**

**Geographical distribution:** In Northeast Atlantic along continental slopes of Europe and North Africa from about 60°N to 15°N. Also at MAR from about 50°N to the Azores. Western Mediterranean Sea.

**Comments:** Often confused with *C. occa* a Northwest Atlantic species. MAR is the western boundary for this species.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004), Bergstad et al. (2008a), Orlov (2012); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

## *Coryphaenoides armatus* (Hector, 1875)

Abyssal grenadier

**Sample information:** SS (gear): 40; 42; 50; 52; 54; 56; 62; 64; 66; 68; 70; 72; 74 (BT); 1-3; 6; 15; 18; 28-29; 32; 39; 41-43; 47; 64 (LL); 4; 17; 30 (GN); Depth (m): 1528-4300 (2810-2945); No. lots / spec: 13 / 207 BT; 18 / 599 (LL: 83.3% / 98.7%) (*Loran*); Rel. Abund.: 59.1 / 2.4 (BT); 28.6 / 7.2 (*Loran*); Sz (n: range): 708: 121 - 720 mm TL; BW [avg (range)] (g): BT: 367.1 (1.9 - 1610.0); *Loran*: 1701.2 (1000 - 5280); ZMUB (cat. no.): 16791-93; 17763-86; 19167; 19279-82; 19289; 19321-27; 19330-32; 19334-36; 19339-41; 19449; 19460-61; 19477; 19490; 19492-93; 19524; 20841; ZMUB (ost.): O.1790; O.1794; ZMUB (gen): 16791-93.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 15°N on both sides of the basin. Rare in the Caribbean Sea and central equatorial waters. Also off South Africa and in Southwest Atlantic off Argentina to about 60°S, and across Indian and Pacific sectors of the Southern Ocean. Throughout the East Pacific slopes, from Bering Sea to Chile.

**References:** MAR: Whitehead et al. 1984-86, Bergstad et al. (2008a), Orlov (2012); Cousins et al. (2013); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Coryphaenoides brevibarbis* (Goode & Bean, 1896)

Shortbeard grenadier

**Sample information:** SS (gear): 42; 46; 56; 62-74 (BT); Depth (m): 1630-3465 (2362-2418); No. lots / spec: 10 / 1460; Rel. Abund.: 45.5 / 17.0 (BT); Sz: N/A; BW [avg (range)] (g): 71.5 (4.5 - 329.5); ZMUB (cat. no.): 16794-96; 17787-17810; 19329; 19373; ZMUB (gen): 16794-96.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 35°N, in Northwest Atlantic, along northern MAR to the Azores, and to 32°N off Madeira.

**Comments:** White et al. (2010) described the genetic structure of this species in the North Atlantic, and “identified a putative barrier to gene flow between samples from either side of the Charlie-Gibbs Fracture Zone, which marks the location where the sub-polar front crosses the Mid-Atlantic Ridge”.

**References:** MAR: Whitehead et al. 1984-86, Bergstad et al. (2008a), Orlov (2012); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Coryphaenoides carapinus* Goode & Bean, 1883

Carapine grenadier

**Sample information:** SS (gear): 40; 46; 50-52; 54-56; 62; 66-68; 72 (BT); Depth (m): 1872-3527 (2698-2733); No. lots / spec: 10 / 139; Rel. Abund.: 45.5 / 1.6 (BT); Sz: N/A; BW [avg (range)] (g): 55.7 (1.0 - 166.7); ZMUB (cat. no.): 16797-99; 17811-26; 19262; ZMUB (ost.): O.1767-68; ZMUB (gen): 16797-99.

**Geographical distribution:** In North Atlantic from about 52°N at MAR and off Ireland to about 10°N and on North America slope between 35°N and 45°N. Scattered records off Greenland and southern Caribbean Sea. Also off South Africa and across the South Indian Ocean.

**References:** MAR: Whitehead et al. (1984-86); Bergstad et al. (2008a); Orlov (2012); Cousins et al. (2013); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2006); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Coryphaenoides guentheri* (Vaillant, 1888)

Günther's grenadier

**Sample information:** SS (gear): 42; 44; 56; 62; 68; 70; 72 (BT); 2 (LL); Depth (m): 1630-2992 (1922-1984); No. lots / spec: 7 / 58 BT; 1 / 1 (*Loran*); Rel. Abund.: 31.8 / 0.7 (BT); 1.6 / 0.0 (*Loran*); Sz (n): 1: 160 mm TL; BW [avg (range)] (g): BT: 158.7 (12.0 - 273.6); ZMUB (cat. no.): 16800-02; 17827-31; 19263-64; 19273; 19309; 19316-17; 19337; 19347; 19447; 19504; ZMUB (gen): 16800-02.

**Geographical distribution:** In Northeast Atlantic from Greenland and Iceland to about 15°N and along the northern MAR to the Azores. Western Mediterranean Sea. Also off western Greenland. Scattered records in the Northwest Atlantic continental margin at around 40°N.

**References:** MAR: Whitehead et al. (1984-86); Bergstad et al. (2008a); Orlov (2012); Kukuev (2004); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Coryphaenoides leptolepis* Günther, 1877

Ghostly grenadier

**Sample information:** SS (gear): 40; 44; 52; 54; 64; 66; 68; 72 (BT); 1; 2 (LL); Depth (m): 1702-3527 (2879-2913); No. lots / spec: 8 / 70 BT; 2 / 2 (*Loran*); Rel. Abund.: 36.4 / 0.8 (BT); 3.2 / 0.0 (*Loran*);

Sz (n: range): 2: 190 - 195 mm TL; BW [avg (range)] (g): BT: 200.1 (2.5 - 1050.0); ZMUB (cat. no.): 16803-05; 17832-45; 19287-88; 19319; 19338; 19444; 19450; 19517; 19530; ZMUB (ost.): O.1791-93; ZMUB (gen): 16803-05. **Figure 8 d.**

**Geographical distribution:** In Northeast Atlantic from southern Iceland to Mauritania and along northern MAR from about 52°N to the Azores. Also off Northwest Atlantic margin between 45°N and 30°N. Northeast Pacific Ocean.

**Comments:** First northern MAR record. Note the high level of isolation between the North Atlantic and Northeast Pacific populations; probably there are two sister species involved.

**References:** MAR: Bergstad et al. (2008a), Orlov (2012); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Coryphaenoides mediterraneus* (Giglioli, 1893)

Mediterranean grenadier

**Sample information:** SS (gear): 42; 44; 50; 54; 56; 62; 66; 68; 70; 72 (BT); 3; 5; 12 (LL); Depth (m): 1580-3527 (2033-2122); No. lots / spec: 10 / 178 BT; 3 / 3 (*Loran*); Rel. Abund.: 45.5 / 2.1 (BT); 4.8 / 0.0 (*Loran*); Sz (n: range): 3: 175 - 175 mm TL; BW [avg (range)] (g): BT: 220.1 (2.0 - 1015.0); *Loran*: 1340 (1340 - 1340); ZMUB (cat. no.): 16806-08; 17787; 17846-58; 19274; 19277-78; 19346; 19451-52; 19459; 19507; 19510; 19520; 19531; 20809; ZMUB (ost.): O.1643-44; ZMUB (gen): 16806-08.

**Geographical distribution:** Along Northeast Atlantic continental slopes from southern Iceland to about 10°N, including the Mediterranean Sea and northern MAR to the Azores. Scattered records off western Greenland and in the Gulf of Mexico.

**Comments:** Kellermanns et al. (2009) studied the parasites on some specimens. Northern MAR is a western boundary for this species. DNA sequencing of 38 specimens (COI) indicated that some small individuals (pre-anal fin distance c. 2-5 cm) had been misidentified (Diana Catarino, pers. comm.). Compared with sequences available in GenBank, 14 specimens (not preserved for museum collection) from SS 54 gave a best match with sequences of *Coryphaenoides leptolepis*, 9 of 10 specimens (ZMUB cat. no. 17787) from SS 42 matched best *C. carapinus*, and 2 specimens

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

(ZMUB cat. no. 17853) from SS 62 gave a best match with *C. brevibarbis*. Further study of the preserved specimens is needed.

**References:** MAR: Whitehead et al. 1984-86, Bergstad et al. (2008a), Orlov (2012); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## *Coryphaenoides profundicolus* (Nybelin, 1957)

Deepwater grenadier

**Sample information:** SS (gear): 54 (BT); Depth (m): 3505-3527; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT);

Sz: N/A; BW (g): 6685.0; ZMUB (cat. no.): 19503.

**Geographical distribution:** In Northeast Atlantic from eastern Greenland to Mauritania on seamounts, continental and insular rises. Also in northern MAR at about 52°N and scattered records off Newfoundland.

**Comments:** First northern MAR record

**References:** MAR: Bergstad et al. (2008a); Northeast Atlantic: Whitehead et al. (1984-86).

## *Coryphaenoides rupestris* Gunnerus, 1765

Roundnose grenadier

**Sample information:** SS (gear): 4; 8-15; 18-20 (PT); 53; 54; 60; 62; 68; 70; 74 (BT); 44; 46 (LL); 23-24; 26 (LL\*); Depth (m): 0-3527 (1132-1040); No. lots / spec: 20 / 2072 (BT: 40% / 99.4%); 5 / 38 (LL\*: 60% / 81.6%) (*Loran*); Rel. Abund.: 8.6 / 0.0 (PT); 36.4 / 23.9 (BT); 7.9 / 0.5 (*Loran*); Sz (n: range): 29: 150 - 225 mm PCL; BW [avg (range)] (g): PT: 7.4 (1.0 - 20.0); BT: 363.3 (12.2 - 986.5); *Loran*: 1282.7 (1010 - 1830); ZMUB (cat. no.): 16809-11; 17859-70; 17872; 19221; 19314; 19495; 19513; 19519; ZMUB (gen): 16809-11.

**Geographical distribution:** In North Atlantic from Greenland to Bahamas along the western margin and from Iceland and Norway to southern Portugal and Madeira, at about 32°N along European coasts. Reported also from northern MAR to about the Azores and in the Mauritanian Upwelling Region.

**Comments:** Commercially exploited along northern MAR by international oceanic fishing fleets (e.g. Troyanovskyi and Lisovsky 1995). Knutsen et al. (2012) reported population genetic structure.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Bergstad et al. (2008a), Orlov (2012); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Iceland: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## *Macrourus berglax* Lacepède, 1801

Onion-eye grenadier

**Sample information:** SS (gear): 53; 60; 70 (BT); 31; 33-39; 44-46; 60; 63 (LL); Depth (m): 549-2106 (1147-1468);

No. lots / spec: 4 / 11 BT; 10 / 281 (*Loran*); Rel. Abund.: 18.2 / 0.1 (BT); 15.9 / 3.4 (*Loran*);

Sz (n: range): 278: 145 - 490 mm PCL; BW [avg (range)] (g): BT: 768.8 (10.9 - 1176.7); *Loran*: 3231.3 (1000 - 11270); ZMUB (cat. no.): 18254; 19498-99; 19511; 19525; ZMUB (ost.): O.1781; ZMUB (gen): 19498.

**Geographical distribution:** In North Atlantic from Greenland to about 35°N along the western margin and from the Barents Sea, Spitsbergen and Iceland to about 45°N along the continental margin and the northern MAR. Scattered records off southern Portugal, Madeira and Canaries.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Bergstad et al. (2008a); Orlov (2012); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Nezumia sclerorhynchus* (Valenciennes, 1838)

Roughtip grenadier

**Sample information:** SS (gear): 60 (BT); Depth (m): 1237-1296; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 145.0; ZMUB (cat. no.): 19313. **Figure 8 i.**

**Geographical distribution:** In the Northwest Atlantic from about 45°N to Cuba and from Southern Iceland to about 10°S along Africa coast. Mediterranean Sea.

**Comments:** First northern MAR record.

**References:** MAR: Bergstad et al. (2008a); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Odontomacrus murrayi* Norman, 1939

Roundhead grenadier

**Sample information:** SS (gear): 30 (PT); Depth (m): 0-795; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 4.2; ZMUB (cat. no.): 18389; ZMUB (gen): 18389.

**Geographical distribution:** In the Northeast Atlantic from about 45°N and the Azores to central equatorial waters and southward to about 35°S, off South Africa and Brazil, but not in central tropical waters. Southwest and South Indian Ocean, Indo-Pacific and Southwest Pacific Ocean.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

*Paracetonurus flagellicauda* (Koefoed, 1927)

**Sample information:** SS (gear): 40-42; 46; 52 (BT); Depth (m): 2063-3050 (2809-2829); No. lots / spec: 4 / 40; Rel. Abund.: 18.2 / 0.5 (BT); Sz: N/A; BW [avg (range)] (g): 64.7 (26.0 - 148.0); ZMUB (cat. no.): 16353-60; ZMUB (ost.): O.1787-89; ZMUB (gen): 16353; 16357. **Figure 8 e.**

**Geographical distribution:** In Northeast Atlantic off Ireland at about 50°N, northern MAR between 42°N and 45°N and off southern Portugal. A specimen from Southwest Indian Ocean.

**Comments:** This is the fourth record of this rare species. See Iwamoto & Orlov (2006). First northern MAR record.

**References:** MAR: Bergstad et al. (2008a), Orlov (2012); Northeast Atlantic: Merrett et al. (1991).

*Sphagemacrus hirundo* (Collett, 1896)

Swallow grenadier

**Sample information:** SS (gear): 44 (BT); Depth (m): 1702-1767; No. lots / spec: 1 / 30; Rel. Abund.: 4.5 / 0.3 (BT); Sz: N/A; BW [avg (range)] (g): 8.4; ZMUB (cat. no.): 18434-35; 19711; ZMUB (gen): 18434-35.

**Geographical distribution:** In Northeast Atlantic off the Azores and adjacent northern MAR, Madeira, Canaries and northwestern Morocco slope.

**References:** MAR: Kukuev (2004); Bergstad et al. (2008a); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

Checklist of Fishes from the Northern Mid-Atlantic Ridge

*Squalogadus modificatus* Gilbert & Hubbs, 1916

Tadpole whiptail

**Sample information:** SS (gear): 42 (BT); Depth (m): 2063-2107; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 34.8; ZMUB (cat. no.): 18436; ZMUB (gen): 18436.

**Figure 8 h.**

**Geographical distribution:** In North Atlantic only known from Gulf of Mexico, northern MAR and southern Iceland. Also across the equatorial waters, off central Brazil and central Southeast Atlantic. In Northwest Pacific and across the Pacific Ocean at about 30°S.

**Comments:** First northern MAR record.

**References:** Pacific: Hoese et al. (2006); MAR: Bergstad et al. (2008a).

*Trachyrincus murrayi* Günther, 1887

Roughnose grenadier

**Sample information:** SS (gear): 60 (BT); Depth (m): 1237-1296; No. lots / spec: 1 / 3; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 380.0; ZMUB (cat. no.): 19311. **Figure 8 g.**

**Geographical distribution:** In North Atlantic from Greenland to about 45°N at the western continental margin and from eastern Greenland and Iceland to off southern Ireland. Northern MAR at 52°N.

**Comments:** First northern MAR record.

**References:** MAR: Bergstad et al. (2008a); Greenland: Møller et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

**Merluccidae**

*Lyconus brachycolus* Holt & Byrne, 1906

**Sample information:** SS (gear): 36 (PT); Depth (m): 800-1800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 61.6; ZMUB (cat. no.): 16885; ZMUB (gen): 16885.

**Geographical distribution:** In North Atlantic from about 60°N of Scotland to about 10°N. Also off Namibia.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Northeast Atlantic: Whitehead et al. (1984-86).

**Moridae**

*Antimora rostrata* (Günther, 1878)

Blue antimora

**Sample information:** SS (gear): 53; 56; 60; 62; 68; 70; 72 (BT); 1; 3; 5-6; 12-15; 28-40; 43-47; 63 (LL); 14; 30 (GN); Depth (m): 848-3090 (1744-2086); No. lots / spec: 8 / 219 BT; 24 / 1110 (LL: 91.7% / 99.8%) (*Loran*); Rel. Abund.: 36.4 / 2.5 (BT); 38.1 / 13.3 (*Loran*); Sz (n: range): 1288; 249 - 760 mm TL; BW [avg (range)] (g): BT: 751.0 (48.5 - 1469.1); *Loran*: 1818.9 (1000 - 4910); ZMUB (cat. no.): 15966-68; 19307; 19342; 19512; 19516; 19521; 19532; 20309; 20562; 20684; 20701; ZMUB (gen): 15967.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 30°N on western and eastern continental margins. Along northern MAR to the Azores. On both sides of



the South Atlantic from about 20°S to about 55°S. Also Southwest and South Indian Ocean. Widely distributed in Pacific, excluding the Northern part north of 10°N.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Fossen & Bergstad (2008); Cousins et al (2013); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

***Halargyreus johnsonii*** Günther, 1862

Slender codling

**Sample information:** SS (gear): 14 (PT); 42; 44; 53 (BT); Depth (m): 665-2107 (1406-1580); No. lots / spec: 5 / 10 (BT: 80.0% / 90.0%); Rel. Abund.: 0.7 / 0.0 (PT); 18.2 / 0.1 (BT); Sz (n: range): 2: 420 - 490 mm SL; BW [avg (range)] (g): PT: 35.2; BT: 676.7 (315.0 - 1060.0); ZMUB (cat. no.): 16841; 19265; 19293; 19301; 19482; ZMUB (gen): 16841; 19482.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 35°N along western and eastern continental margins and seamounts and along northern MAR to the Azores. On both sides of the South Atlantic, off Argentina between 40°S and 55°S and off South Africa. Also from Southwest Indian Ocean to Southeast Pacific Ocean slopes, extending to Southern Ocean. Both sides of North Pacific continental, ridges, islands and seamounts slopes from about 40°N to the Bering Sea.

**References:** MAR: Kukuev (2004); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

***Guttigadus latifrons*** (Holt & Byrne, 1908)

**Sample information:** SS (gear): 53 (BT); Depth (m): 981-1003; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 5.5; ZMUB (cat. no.): 16875.

**Geographical distribution:** In Northeast Atlantic from eastern Greenland and Iceland to about 45°N. Also in the western Mediterranean Sea. Scattered records off Newfoundland, off Argentina, Southwest Atlantic and West Indian Ocean.

**Comments:** First northern MAR record.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

***Lepidion eques*** (Günther, 1887)

North Atlantic codling

**Sample information:** SS (gear): 53; 60 (BT); 10-11; 33-38; 44; 60 (LL); Depth (m): 549-1592 (910-1092); No. lots / spec: 3 / 201 BT; 8 / 25 (*Loran*); Rel. Abund.: 13.6 / 2.3 (BT); 12.7 / 0.3 (*Loran*); Sz (n: range): 31: 218 - 470 mm TL; BW [avg (range)] (g): BT: 218.0 (155.6 - 320.0); ZMUB (cat. no.): 19294; 19302; 19315; VIMS (cat. No.): 11800. **Figure 9 b.**

**Geographical distribution:** In North Atlantic from western Greenland to Flemish Cap, along northern MAR between 50°N and the Azores and from eastern Greenland, Iceland and British Isles to Bay of Biscay at about 45°N. Scattered records in Northwest Atlantic around 40°N.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

Checklist of Fishes from the Northern Mid-Atlantic Ridge

*Lepidion guentheri* (Giglioli, 1880)

Morid cod

**Sample information:** SS (gear): 6-11; 21 (LL); Depth (m): 883-2340 (1225-1617); No. lots / spec: 5 / 19; Rel. Abund.: 7.9 / 0.2 (*Loran*); Sz (n: range): 19: 470 - 790 mm TL; BW [avg (range)] (g): 2286 (1280 - 3810); ZMUB (cat. no.): 19453-55; 19457.

**Geographical distribution:** Scattered records on the Northeast Atlantic slopes, from Iceland to the Azores along northern MAR, and off Madeira. Also in western Mediterranean Sea.

**Comments:** First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Lepidion schmidtii* Svetovidov, 1936

Schmidt's cod

**Sample information:** SS (gear): 62 (BT); 6; 12; 33; 39-40; 63 (LL); Depth (m): 1327-2404 (1518-2025); No. lots / spec: 1 / 1 BT; 6 / 47 (*Loran*); Rel. Abund.: 4.5 / 0.0 (BT); 9.5 / 0.6 (*Loran*); Sz (n: range): 47: 460 - 1380 mm TL; BW [avg (range)] (g): BT: 9490.0; *Loran*: 7745.9 (1370 - 26340); ZMUB (cat. no.): 19456; 20561; VIMS (cat. no.): 11731. **Figure 9 a.**

**Geographical distribution:** In Northeast Atlantic south of Iceland, off Ireland, and at ridges and seamounts of the Azores. Southwest Indian Ocean and Southwest and Northwest Pacific Oceans.

**References:** MAR: Hareide & Garnes (2001); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2006); Northeast Atlantic: Whitehead et al. (1984-86).

*Mora moro* (Risso, 1810)

Common mora

**Sample information:** SS (gear): 11 (LL); Depth (m): 883-1149; No. lots / spec: 1 / 4; Rel. Abund.: 1.6 / 0.0 (*Loran*); Sz (n: range): 4: 590 - 760 mm TL; BW [avg (range)] (g): 3173.3 (2170 - 4960); ZMUB (cat. no.): 19458.

**Geographical distribution:** In Northeast Atlantic slopes from Iceland to Mauritania, including the Mediterranean Sea, Madeira and Canaries. On seamounts and ridges around the Azores Region, extending northward along MAR at about 43°N. Also from Southwest Indian to southern Australia and Southeast Pacific Oceans.

**References:** MAR: Hareide & Garnes (2001); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Physiculus* sp.

**Sample information:** SS (gear): 28 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 1.6; ZMUB (cat. no.): 20724.

**Comments:** Juvenile; not possible to identify.

Melanonidae

*Melanonus zugmayeri* Norman, 1930

Arrowtail

**Sample information:** SS (gear): 26-28; 32-36 (PT); 42; 50 (BT); Depth (m): 0-2607 (836-1701); No. lots / spec: 8 / 14 (PT: 75.0% / 85.7%); Rel. Abund.: 4.3 / 0.0 (PT); 9.1 / 0.0 (BT); Sz: N/A;

BW [avg (range)] (g): PT: 4.9 (1.6 - 12.5); BT: 13.3 (1.5 - 25.0); ZMUB (cat. no.): 18363-65; 18826; 18934; 18986; 19003; 19070; ZMUB (ost.): O.1623; ZMUB (gen): 18363-65. **Figure 9 d.**

**Geographical distribution:** In Northeast Atlantic from about 60°N and MAR at about 50°N to central equatorial waters. From Nova Scotia, to Gulf of Mexico. Rare or absent in central tropical waters and central Caribbean Sea. Extends southeastward to South Africa and across the Subtropical Convergence to Southwest Atlantic at about 35-40°S.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Lotidae

*Brosme brosme* (Ascanius, 1772)

Tusk

**Sample information:** SS (gear): 44; 51; 58-60 (LL); 23; 25-26; 49-50; 53-55; 61-62 (LL\*); Depth (m): 450-1050 (514-567); No. lots / spec: 15 / 628 (LL: 33,3% / 89,9%); Rel. Abund.: 23.8 / 7.5 (*Loran*); Sz (n: range): 628: 290 - 1100 mm TL; BW [avg (range)] (g): 3962.7 (1000 - 16620).

**Geographical distribution:** From southern Barents Sea, Norwegian waters, northern North Sea, northern British waters to Iceland, Greenland and slopes off Newfoundland.

**Comments:** Knutsen et al. (2009) found specimens from MAR genetically differentiated from adjacent areas.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

*Gaidropsarus* sp.

**Sample information:** SS (gear): 70 (BT); Depth (m): 1630-1670; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 4.0; ZMUB (cat. no.): 20778.

**Comments:** juvenile

## Phycidae

*Phycis blennoides* (Brünnich, 1768)

Greater forkbeard

**Sample information:** SS (gear): 51; 58-59 (LL); Depth (m): 450-540 (510-530); No. lots / spec: 3 / 12; Rel. Abund.: 4.8 / 0.1 (*Loran*); Sz (n: range): 12: 620 - 760 mm TL; BW [avg (range)] (g): 3195 (2410 - 3990).

**Geographical distribution:** In Northeast Atlantic from Norway and Iceland to Canaries and Morocco at about 30°N, including the Mediterranean Sea. Azores and adjacent northern MAR.

**References:** MAR: Hareide & Garnes (2001); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## LOPHIIFORMES

### Lophiidae

*Lophius piscatorius* Linnaeus, 1758

Angler

**Sample information:** SS (gear): 2 (PT); Depth (m): 11-174; No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 73 mm SL; BW [avg (range)] (g): 26.2 (19.4 - 33); ZMUB (cat. no.): 18251; 21188; ZMUB (gen): 18251.

**Geographical distribution:** In Northeast Atlantic, along continental slopes from southern Barents Sea to Ghana, including the Mediterranean. Also around the Azores and northward along MAR. Reported from Greenland.

**Comments:** Pelagic juvenile.

**References:** MAR: Hareide & Garnes (2001); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

### Melanocetidae

*Melanocetus johnsonii* Günther, 1864

Humpback anglerfish

**Sample information:** SS (gear): 14; 20; 26 (PT); 40; 74 (BT); Depth (m): 665-3063 (1798-2329); No. lots / spec: 5 / 5 (PT: 60.0% / 60.0%); Rel. Abund.: 2.1 / 0.0 (PT); 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 111.1 (63.3 - 168.0); BT: 309.0 (207.9 - 410.0); ZMUB (cat. no.): 16701-05; ZMUB (gen): 16703; 16705. **Figure 9 g.**

**Geographical distribution:** In North Atlantic from slopes of Iceland to equatorial waters. Rare to the north of 40°N, in tropical central waters and in Gulf of Mexico and Caribbean Sea. Widely distributed in Indian Ocean and Indo-Pacific Seas. Across South and Central Pacific, extending to northeastern sector off Canada. Recently found in Ross Sea, Antarctica.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### Oneirodidae

*Chaenophryne draco* Beebe, 1932

Smooth dreamer

**Sample information:** SS (gear): 10 (PT); Depth (m): 1000-1450; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT);

Sz (n): 115 mm SL; BW (g): 225.0; ZMUB (cat. no.): 17710. **Figure 9 i.**

**Geographical distribution:** Scattered records in North Atlantic, off southern Iceland, MAR between 55°N and on seamounts south of the Azores, and adjacent Northeast Atlantic. Reported from off Bermuda. In Cape Verde Islands and central equatorial waters. South Africa. Scattered records in the Northwest and Central Indian Ocean and in the Pacific Ocean, but not in the southern central and southeastern sectors.

Porteiro et al.

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Chaenophryne longiceps* Regan, 1925

Can-opener smoothdream

**Sample information:** SS (gear): 53 (BT); Depth (m): 981-1003; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 3.5; ZMUB (cat. no.): 19126; ZMUB (gen): 19126.

**Geographical distribution:** In Northeast Atlantic from southern Greenland and Iceland, along western slopes of British Isles, southern Portugal, to northwestern Africa. Rare records off Newfoundland.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Danaphryne nigrifilis* (Regan & Trewavas, 1932)

**Sample information:** SS (gear): 7 (PT); Depth (m): 1180-1530; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 86 mm SL; BW (g): 54.0; ZMUB (cat. no.): 16706.

**Geographical distribution:** Scattered records in North Atlantic in northwestern tropical and subtropical waters, at 60°N around northern MAR and in the Mauritania Upwelling Region, off Cape Verde Islands. Scattered records in West Pacific Ocean.

**Comments:** Rare. Known from few specimens. First northern MAR record.

**References:** Greenland: Møller et al. (2010); Northwest Atlantic: Moore et al. (2003).

*Dolopichthys karsteni* Leipertz & Pietsch, 1987

**Sample information:** SS (gear): 62 (BT); Depth (m): 1872-1959; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 19.6; ZMUB (cat. no.): 16707; ZMUB (gen): 16707.

**Geographical distribution:** Known only from the holotype in Northwest Atlantic and from northern MAR.

**Comments:** First occurrence on northern MAR. This is the second record of this species.

**References:** Northwest Atlantic: Moore et al. (2003).

*Dolopichthys longicornis* Parr, 1927

**Sample information:** SS (gear): 34 (PT); Depth (m): 1490-1887; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 4.0; ZMUB (cat. no.): 16708.

**Geographical distribution:** Scattered records in North Atlantic at MAR and Northeast Atlantic between 45°N and 50°N, at Slope Water, Nova Scotia, off Cape Hatteras, Bermuda, Gulf of Mexico and Florida and from Cape Verde Islands to the equatorial waters. Central and Southeast Atlantic at about 35°S, associated to Subtropical Convergence. Few records in Northwest and Northeast Pacific Ocean.

**Comments:** Known from very few specimens. First occurrence on northern MAR.

**References:** Greenland: Møller et al. (2010); Northwest Atlantic: Hartel et al. (2008); Northeast Atlantic: Whitehead et al. (1984-86).

*Leptacanthichthys gracilispinis* (Regan, 1925)

Plainchin dreamarm

**Sample information:** SS (gear): 20-22; 36 (PT); Depth (m): 725-2370 (1001-1860); No. lots / spec: 4 / 4; Rel. Abund.: 2.9 / 0.0 (PT); Sz (n: range): 1: 58 mm SL; BW [avg (range)] (g): 5.9 (4.0 - 8.0); ZMUB (cat. no.): 16709-13.

**Geographical distribution:** In North Atlantic from Bermuda to Slope Water, Nova Scotia, and at MAR from the Azores to about 50°N. Scattered records in Indo-Pacific and Eastern Tropical Pacific.

**Comments:** First record for northern MAR

**References:** Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Lophodolos acanthognathus* Regan, 1925

Whalehead dreamer

**Sample information:** SS (gear): 2; 8; 12; 15; 26-30; 34-36 (PT); 72 (BT); Depth (m): 725-2600 (1287-1900); No. lots / spec: 11 / 11 (PT: 90.9% / 90.9%); Rel. Abund.: 7.1 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 2: 57 - 67 mm SL; BW [avg (range)] (g): PT: 9.8 (0.3 - 24.4); BT: 2.7; ZMUB (cat. no.): 16714-20; 19015; 19046; 19181; ZMUB (gen): 16719. **Figure 9 f.**

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 30°N, but not off Iberia, Madeira and Canaries. Extends into the Gulf of Mexico and Caribbean Sea and along the eastern boundary from Cape Verde Islands to Angola. Some records in Southwest Atlantic off Brazil. West Indian Ocean. Indo-Pacific. Central tropical Pacific Ocean.

**References:** MAR: Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Microlophichthys microlophus* (Regan, 1925)

Short-rod anglerfish

**Sample information:** SS (gear): 20; 30 (PT); Depth (m): 820-2390 (1310-2113); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 43.5 (17.0 - 70.0); ZMUB (cat. no.): 16724; 18902; ZMUB (gen): 16724; 18902.

**Geographical distribution:** In North Atlantic from Flemish Cap, MAR about 50°N to about 30°N. Extends along Mauritanian Upwelling Region to equatorial waters. Rare or absent in central tropical waters, Gulf of Mexico and Caribbean Sea. Scattered records off southwest South Africa. Western and North Indian Ocean. Indo-Pacific and equatorial waters across Pacific Ocean.

**Comments:** First record for northern MAR.

**References:** Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Oneirodes* sp.

**Sample information:** SS (gear): 15 (PT); Depth (m): 1800-2015; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 156; ZMUB (cat. no.): 18663. **Figure 9 c.**

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 30°N, extending along the Mauritanian Upwelling Region to Cape Verde Islands. Rare or absent in central tropical waters, Gulf of Mexico and Caribbean Sea. Southeast Atlantic from 10°S to about 25°S and associated with Subtropical Convergence at 35°S. Northwest Indian Ocean. Indo-Pacific. East Pacific Ocean from about 60°N to 35°S off western America.

**Comments:** damaged; not possible to identify.

**References:** (for *Oneiroides eschrichtii* Lütken, 1871): MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

***Oneiroides macrosteus* Pietsch, 1974**

**Sample information:** SS (gear): 36 (PT); Depth (m): 800-1800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 24.3; ZMUB (cat. no.): 16721. **Figure 9 h.**

**Geographical distribution:** Scattered records In North Atlantic from off Greenland, Iceland, Flemish Cap, Northwest Atlantic, Bermuda, the Azores and off Ireland. Also south of Cape Verde Islands and central equatorial 10°S.

**Comments:** First northern MAR record.

**References:** Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

***Phyllorhinichthys micractis* Pietsch, 1969**

**Sample information:** SS (gear): 32 (PT); 56 (BT); Depth (m): 1800-2300 (1836-2125); No. lots / spec: 2 / 2 (PT: 50.0% / 50.0%); Rel. Abund.: 0.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 50.0; ZMUB (cat. no.): 16722-23.

**Geographical distribution:** In North Atlantic mainly along MAR and adjacent Northeast Atlantic from about 55°N to the Azores. Also scattered records at western Greenland, Slope Water, and southeast Caribbean Sea. Equatorial West Indian Ocean. Northwest and Northeast Pacific Ocean.

**Comments:** Rare, known from very few specimens, most in the NE Atlantic; The species *P. balushkini* occurs also in the region; see Pietsch, 2004. First northern MAR record.

**References:** Greenland: Møller et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

**Ceratiidae**

***Ceratias holboelli* Krøyer, 1845**

Krøyer's deep-sea anglerfish

**Sample information:** SS (gear): 12; 30 (PT); Depth (m): 0-795 (103-727); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 1: 163 mm SL; BW [avg (range)] (g): 48.8 (1.9 - 95.6); ZMUB (cat. no.): 15962-63.

**Geographical distribution:** In North Atlantic from Greenland and Iceland to about 20°N and to equatorial waters along the eastern Boundary. Absent or rare in Caribbean Sea, central tropical waters and Gulf of Guinea. Extends to South Africa along central and eastern South Atlantic waters. West and North Indian Ocean. Indo-Pacific. West Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

***Cryptopsaras couesii* Gill, 1883**

Triplewart seadevil

**Sample information:** SS (gear): 24 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 99.3; ZMUB (cat. no.): 17873; ZMUB (gen): 17873.

Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Geographical distribution:** In North Atlantic from Greenland and Iceland to equatorial waters. Rare or absent in central tropical waters and southern Caribbean Sea. Extends southeastward to South Africa. Scattered records at Subtropical Convergence. Widely distributed in Indian Ocean, Indo-Pacific and Pacific Oceans.

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

**Linophryinidae**

*Linophryne macrodon* Regan, 1925

**Sample information:** SS (gear): 32 (PT); Depth (m): 800-1800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW: N/A; ZMUB (cat. no.): 18216.

**Geographical distribution:** In North Atlantic temperate and subtropical waters in the West Atlantic, including Gulf of Mexico. MAR at about 43°N. East Tropical Pacific.

**Comments:** First northern MAR record.

**References:** Northwest Atlantic: Hartel et al. (2008).

**Gigantactinidae**

*Gigantactis vanhoeffeni* Brauer, 1902

**Sample information:** SS (gear): 26 (PT); 40 (BT); Depth (m): 800-2670 (1730-2208); No. lots / spec: 2 / 2 (PT: 50% / 50%); Rel. Abund.: 0.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 2: 235 - 255 mm SL; BW [avg (range)] (g): PT: 166.4; BT: 176.0; ZMUB (cat. no.): 16837; 17949; ZMUB (gen): 16837. **Figure 9 e.**

**Geographical distribution:** Scattered records in North Atlantic from off Iceland, Greenland and Newfoundland to the Gulf of Mexico and Caribbean Sea. Also in central equatorial Atlantic from Cape Verde to about 10°S. Scattered records at South Africa and West Indian Ocean. Northeast Pacific.

**Comments:** First northern MAR record. Probably MAR is the eastern boundary for this species. Associated with continental, ridge and seamounts slopes.

**References:** Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

**STEPHANOBERYCIFORMES**

**Melamphaidae**

*Melamphaes microps* (Günther, 1878)

**Sample information:** SS (gear): 2-4; 7-12; 15-26; 32 (PT); 56; 70-72 (BT); Depth (m): 236-2600 (1168-1753); No. lots / spec: 27 / 259 (PT: 88.9% / 98.5%); Rel. Abund.: 17.1 / 0.4 (PT); 13.6 /



0.0 (BT); Sz (n: range): 33: 50 - 116 mm SL; BW [avg (range)] (g): PT: 18.5 (0.8 - 38.0); BT: 20.3 (20.0 - 20.5); ZMUB (cat. no.): 17470-95; 20707; 21267; ZMUB (gen): 17477; 17491-92.

**Geographical distribution:** In Northeast Atlantic, from Greenland and Iceland to the Azores. Scattered records in the Northwest Atlantic, East Tropical Atlantic and Gulf of Guinea. South Atlantic. Indian Ocean. Pacific Ocean.

**Comments:** Kotlyar (2011) noted that northern Atlantic records of *M. microps* are doubtful and belongs to other undescribed species and limits distribution of *M. microps* by notal Indian Ocean and the subtropical southeastern Atlantic only.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Melamphaes suborbitalis* (Gill, 1883)

Shoulderspine bigscale

**Sample information:** SS (gear): 2; 24-28; 31; 36 (PT); Depth (m): 370-1800 (846-1510); No. lots / spec: 6 / 7; Rel. Abund.: 4.3 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 15.1 (6.3 - 24.4); ZMUB (cat. no.): 17496-500; ZMUB (gen): : 17497; 17499-500.

**Geographical distribution:** North Atlantic: West subtropical-temperate Atlantic and temperate Northeast Atlantic. Also East tropical Atlantic. In the Indian Ocean, the species is known from the southwestern part (coast of Africa, Madagascar and Mozambique ridges). In the Pacific Ocean the species has been known from the Tasman Sea, off the eastern coast of Australia, and northeast of the Ogasawara Islands (Bonin).

**References:** MAR: Kukuev (2004); Lipinsky & Janusz (2003); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Moore et al. (2003); Kotlyar (2012); Northeast Atlantic: Whitehead et al. (1984-86); Kotlyar (2012).

*Melamphaes typhlops* (Lowe, 1843)

**Sample information:** SS (gear): 34 (PT); 44 (BT); Depth (m): 0-1767 (851-1283); No. lots / spec: 2 / 2 (PT: 50% / 50%); Rel. Abund.: 0.7 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 1.0; BT: 14.0; ZMUB (cat. no.): 17502-03; ZMUB (gen): 17502-03.

**Geographical distribution:** North Atlantic: south of 45°N to the equator. Rare in Caribbean Sea and absent in Gulf of Guinea.

**References:** MAR: Whitehead et al. (1984-86); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Kotlyar (2016); Northeast Atlantic: Whitehead et al. (1984-86); Kotlyar (2016).

*Poromitra capito* Goode & Bean, 1883

Ridgehead

**Sample information:** SS (gear): 24-36 (PT); 50-52 (BT); Depth (m): 188-2979 (1308-2003); No. lots / spec: 12 / 63 (PT: 83.3% / 92.1%); Rel. Abund.: 7.1 / 0.1 (PT); 9.1 / 0.1 (BT); Sz (n: range): 2: 79 - 86 mm SL; BW [avg (range)] (g): PT: 11.5 (1.0 - 19.2); BT: 36.8 (18.0 - 65.9); ZMUB (cat. no.): 18395-97; 18843; 18864; 18908; 18936; 18963; 18970; 18989; 19039; 19121; 19194; ZMUB (ost.): O.1627; O.1716-19; ZMUB (gen): (cat. no.): 18395-96.

**Geographical distribution:** In North Atlantic from Greenland to about 30°N, extending to 15°N in the East tropical Atlantic.

**Comments:** The genus was revised by Kotlyar (2008a,b, 2009a,b,c, 2010) who recognized 5 groups and 22 species of *Poromitra*. *P. capito* was found to be restricted to North Atlantic Ocean, with some doubtful records in the Southwest Atlantic.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Poromitra nigriceps* (Zugmayer, 1911)

Crested bigscale

**Sample information:** SS (gear): 4-6; 8-15; 18-36 (PT); 40; 44; 50; 56; 64; 68; 72 (BT); Depth (m): 0-3465 (1389-1971); No. lots / spec: 47 / 228 (PT: 85.1% / 94.3%); Rel. Abund.: 28.6 / 0.4 (PT); 31.8 / 0.2 (BT); Sz (n: range): 26: 29 - 147 mm SL; BW [avg (range)] (g): PT: 46.6 (0.4 - 533.0); BT: 34.4 (10.0 - 61.5); ZMUB (cat. no.): 18397-98; 18528; 18553; 18568; 18577; 18602; 18606; 18608; 18613; 18622; 18639; 18647; 18662; 18677; 18692; 18711; 18727; 18729; 18739; 18741; 18755-56; 18776; 18792; 18795; 18813; 18839; 18842; 18861; 18867; 18901; 18918; 18937; 18957; 18972; 18983; 18987; 18992; 19012; 19038; 19063; 19082; 19109; 19148; 19162; 19171; 19187; ZMUB (ost.): O.1561; O.1573; O.1686-89; O.1769-70; ZMUB (gen): 18397-98.

**Geographical distribution:** In the North Atlantic from Greenland to about 35°N.

**Comments:** See comments under *P. capito*. The former accepted *P. crassiceps* was splitted in 16 species (Kotlyar, 2008a,b, 2009a,b) and *P. nigriceps* was found to be the only species of this group dwelling in the North Atlantic Ocean, from Greenland to the Azores.

**References:** MAR: Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2006); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## *Poromitra megalops* (Lütken, 1878)

**Sample information:** SS (gear): 4; 8; 14-15; 18-24; 28-36 (PT); 40; 44-48; 52; 56; 64-66; 70; 74 (BT); Depth (m): 0-3465 (1127-1656); No. lots / spec: 43 / 117 (PT: 76.7% / 70.1%); Rel. Abund.: 23.6 / 0.1 (PT); 45.5 / 0.4 (BT); Sz (n: range): 3: 58 - 63 mm SL; BW [avg (range)] (g): PT: 3.7 (0.3 - 8.0); BT: 7.4 (1.0 - 28.5); ZMUB (cat. no.): 18399-401; 18537; 18580; 18594; 18651; 18653; 18664; 18679; 18684; 18694; 18701; 18712; 18728; 18735; 18742; 18749; 18764; 18787; 18798; 18807; 18850; 18869; 18887; 18892; 18906; 18931; 18951; 18955; 18967; 18990; 19010; 19016; 19035; 19057; 19078; 19080; 19098; 19104; 19119; 19147; 19161; 19166; 19177; 19179; 19363; ZMUB (ost.): O.1492-93; O.1624-26; O.1740-41; ZMUB (gen): 18399-401. **Figure 10 a.**

**Geographical distribution:** In North Atlantic from northern MAR at about 60°N to 35°N on both sides of the basin, extending along the East tropical Atlantic and equatorial waters to South Africa.

**Comments:** See comments under *P. capito*. Accordind to Kotlyar (2010) *P. megalops* is resctricted to the Atlantic basin while the specimens from Indian and Pacific Oceans considered previously to pertain to this species belong to *P. macrophthalma* and *P. jucunda*.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## *Scopeloberyx opisthopterus* (Parr, 1933)

**Sample information:** SS (gear): 16; 28; 32-36 (PT); 44 (BT); Depth (m): 236-2308 (1215-1702); No. lots / spec: 8 / 12 (PT: 87.5% / 91.7%); Rel. Abund.: 5.0 / 0.0 (PT); 4.5 / 0.0 (BT); Sz: N/A;

BW [avg (range)] (g): PT: 0.7 (0.5 - 1.0); BT: 0.5; ZMUB (cat. no.): 18416-18; 18956; 18974; 19006; 19008; 19013; 19081; ZMUB (gen): 18416-18.

**Geographical distribution:** North Atlantic

**Comments:** First northern MAR record. According to Kotlyar (2004) this species inhabits tropical waters of all oceans at depths below 500–600 m.

**Comments:** First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Scopeloberyx robustus* (Günther, 1887)

Longjaw bigscale

**Sample information:** SS (gear): 2; 6; 10; 14-36 (PT); 46; 50-52; 64; 72 (BT); Depth (m): 0-3465 (1579-2171); No. lots / spec: 49 / 251 (PT: 89.8% / 95.2%); Rel. Abund.: 31.4 / 0.4 (PT); 22.7 / 0.1 (BT); Sz (n: range): 9: 55 - 220 mm SL; BW [avg (range)] (g): PT: 4.6 (0.3 - 22.0); BT: 7.4 (7.0 - 8.0); ZMUB (cat. no.): 18419-21; 18503; 18516; 18551; 18635; 18637; 18650; 18667-68; 18676; 18682; 18689; 18710; 18713; 18722; 18725; 18740; 18753; 18774; 18778; 18781; 18790; 18844; 18862; 18877; 18888; 18893; 18903-04; 18929; 18938; 18953; 18959; 18971; 18973; 18981; 18997; 19009; 19011; 19014; 19030; 19034; 19040; 19103; 19108; 19120; 19156; 19180; ZMUB (ost.): O.1481-82; O.1608-10; ZMUB (gen): 18419-21.

**Geographical distribution:** North Atlantic: from Greenland to the equator. Rare or absent in the central tropical Atlantic.

**Comments:** According to Kotlyar (2004) this species inhabits tropical and temperate zones of all oceans at depths below 500–600 m. The species was revised by Kotlyar (2003) who split in two groups several species and sub-species: *S. robustus* (Atlantic, Indian and W Pacific Ocean); *S. maxillaris* (E Pacific); *S. rossicus* (N Pacific), and *S. rubriventer* S Azores); *S. malayanus malayanus* in the Indian Ocean and W tropical Pacific; *S. malayanus balushkini* (in the S and E Australia); *S. pequenoi* (from E Pacific); and *S. bannikovi* (W Atlantic).

**References:** MAR: Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Scopelogadus beanii* (Günther, 1887)

Bean's bigscale

**Sample information:** SS (gear): 2-34 (PT); 40; 44; 50-56; 62-66; 70-74 (BT); Depth (m): 0-3527 (1094-1615); No. lots / spec: 68 / 2257 (PT: 79.4% / 95.3%); Rel. Abund.: 38.6 / 3.8 (PT); 63.6 / 1.2 (BT); Sz (n: range): 362: 24 - 126 mm SL; BW [avg (range)] (g): PT: 17.5 (0.5 - 38.0); BT: 18.5 (1.0 - 36.0); ZMUB (cat. no.): 18422-24; 18504; 18507; 18509; 18518; 18520; 18527; 18544; 18546; 18552; 18554; 18556; 18573; 18582; 18595; 18603; 18611-12; 18615; 18617; 18638; 18644; 18669; 18680; 18697; 18715; 18730; 18743; 18748; 18751; 18754; 18758-59; 18780; 18784; 18793; 18800; 18816; 18846; 18848; 18851; 18883; 18890; 18917; 18958; 18980; 19062; 19083; 19107; 19114; 19116; 19122; 19155; 19163; 19164; 19176; 19189; 19191; 19227; 20652; 20658; 20696; 20703; 20717; 20772; ZMUB (ost.): O.1603-07; ZMUB (gen): 18422-24. **Figure 10 b.**

**Geographical distribution:** In North Atlantic from Greenland to Bermuda, Iceland, the Azores and Bay of Biscay. Also in East tropical Atlantic, between Morocco and Cape Verde Islands and to central equatorial waters. Extends southward to Namibia and South Africa. Also in Southwest Atlantic off Brazil and Argentina. Circumglobal, associated with Subtropical Convergence in South Atlantic, Indian and Pacific Oceans.

**Comments:** More than one species might be involved.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Lipinsky & Janusz (2003); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### *Scopelogadus mizolepis* (Günther, 1878)

Ragged bigscale

**Sample information:** SS (gear): 40 (BT); Depth (m): 0-2670 (871-1537); No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 2.0; ZMUB (cat. no.): 18425; 18453; 18454; 19001; 19007; 19017; 19027; 19066; ZMUB (ost.): O.1568-72; ZMUB (gen): 18425; 18453.

**Geographical distribution:** In North Atlantic in western tropical and subtropical central waters, with scattered records in Caribbean Sea and Gulf of Mexico. Along the eastern boundary from Canaries, to Cape Verde Islands and across equatorial waters. Some records in temperate Northeast Atlantic from about 42°N to 60°N and MAR.

**Comments:** The Northeastern Atlantic population isolated from the others. More than one species might be involved.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003).

## Stephanoberycidae

### *Acanthochaenus luetkenii* Gill, 1884

Pricklefish

**Sample information:** SS (gear): 40-42; 50-52 (BT); Depth (m): 2063-2979 (2619-2630); No. lots / spec: 4 / 9; Rel. Abund.: 18.2 / 0.1 (BT); Sz: N/A; BW [avg (range)] (g): 20.7 (13.0 - 33.0); ZMUB (cat. no.): 16748-50; 17547-51; ZMUB (gen): 16748-50.

**Geographical distribution:** In Northwest Atlantic between 30°N and 45°N. The Azores and adjacent northern MAR. Off Madeira, Canaries and North Africa slopes to 25°N. Southwest Indian Ocean. Northwest Indo-Pacific, Southwest and Southeast Pacific Ocean.

**Comments:** First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Cetomimidae

### *Ataxolepis* sp.

**Sample information:** SS (gear): 34 (PT); Depth (m): 674-1494; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 0.4; ZMUB (cat. no.): 16546.

**Comments:** This genus was previously included in its own family (Megalomycteridae) but Johnson et al. (2009) discovered that fishes from that family are males of the cetomimid fishes which are the females of the group. Moore et al. (2003) refer to *Ataxolepis apus* Myers & Freihof, 1966, from the Northwest Atlantic.

**References:** Johnson et al. (2009).

*Cetomimus* sp.

**Sample information:** SS (gear): 4; 20 (PT); Depth (m): 744-1837 (789-1637); No. lots / spec: 3/3; Rel. Abund.: 1.4 / 0.0 (PT); Sz (n: range): 2: 92 - 204 mm SL; BW [avg (range)] (g): 47.8 (6.7 - 94.0); ZMUB (cat. no.): 20662; 20694; 20699.

**Comments:** specimens damaged beyond species recognition.

**References:** Johnson et al. (2009).

*Cetostoma regani* Zugmayer, 1914

Pink flabby whalefish

**Sample information:** SS (gear): 28 (PT); Depth (m): 829-1770; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 15.0; ZMUB (cat. no.): 17709; ZMUB (gen): 17709.

**Geographical distribution:** In North Atlantic, from Slope Water, Nova Scotia, and Rockall Trough to Caribbean Sea, the Azores and adjacent northern MAR, extending along Africa coast to central equatorial waters. Also in central eastern South Atlantic and associated to Subtropical Convergence at about 35°S. Scattered records in western and central East Indian Ocean. Indo-Pacific. Northwest, Central tropical and Northeast Pacific Ocean.

**Comments:** More frequent in the subtropical and temperate Northwest Atlantic. MAR may be the eastern boundary at these latitudes. First northern MAR record. Associated with slopes.

**References:** Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Gyrinomimus myersi* Parr, 1934

**Sample information:** SS (gear): 18; 36 (PT); Depth (m): 1800-2400; No. lots / spec: 3 / 3; Rel. Abund.: 2.1 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 108.4 (26.8 - 190.0); ZMUB (cat. no.): 19722-23; Tissue samples: 2.

**Geographical distribution:** Few records in the North Atlantic at Iceland, MAR, Gulf of Mexico and Caribbean Sea. Also reported in central tropical Pacific Ocean.

**References:** Greenland: Møller et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2006); Northwest Atlantic: Moore et al. (2003).

*Procetichthys krefftii* Paxton, 1989

**Sample information:** SS (gear): 26 (PT); Depth (m): 0-2600; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 206 mm SL; BW (g): 72.9; ZMUB (cat. no.): 19724.

**Geographical distribution:** Southeast Atlantic and northern MAR.

**Comments:** First northern MAR record. Known previously only from one specimen.

**References:** Paxton et al. (2011).

**Rondeletiidae**

*Rondeletia loricata* Abe & Hotta, 1963

Redmouth whalefish

**Sample information:** SS (gear): 15; 24; 28-30; 36 (PT); 60; 64; 70; 74 (BT); Depth (m): 0-3465 (1739-2081); No. lots / spec: 9 / 9 (PT: 55.6% / 55.6%); Rel. Abund.: 3.6 / 0.0 (PT); 18.2 / 0.0 (BT); Sz (n: range): 1: 90 mm SL; BW [avg (range)] (g): PT: 16.8 (1.8 - 28.0); BT: 13.5 (6.0 - 22.0); ZMUB (cat. no.): 18410-12; 18665; 18886; 18900; 19151; 19158; 19356; ZMUB (gen): 18410-12.

**Geographical distribution:** Scattered records in North Atlantic from Greenland to the equator and south to South Atlantic Subtropical Convergence. Rare or absent in Gulf of Mexico, Caribbean Sea and Gulf of Guinea. Widely distributed in Indian Ocean and West and Central Pacific Ocean.

**Comments:** Comparison of *R. loricata* from different regions showed that this species is represented by several (no less than four) subspecies (Kotlyar 1996). First northern MAR record.

**References:** Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## BERYCIFORMES

### Anoplogastridae

*Anoplogaster cornuta* (Valenciennes, 1833)

Common fangtooth

**Sample information:** SS (gear): 4; 7; 10-16; 20; 24; 28; 31-32; 36 (PT); 40; 60; 66; 70 (BT); Depth (m): 0-3071 (1134-1709); No. lots / spec: 21 / 32 (PT: 81.0% / 81.3%); Rel. Abund.: 12.1 / 0.0 (PT); 18.2 / 0.1 (BT); Sz (n: range): 20: 104 - 164 mm SL; BW [avg (range)] (g): PT: 108.3 (63.4 - 160.0); BT: 79.9 (45.4 - 115.0); ZMUB (cat. no.): 15941-59; 17501; 21053; ZMUB (ost.): O.1574; O.1590-91; ZMUB (gen): 15943; 15953; 15957. Cover photo.

**Geographical distribution:** In North Atlantic from Greenland (rare) and Iceland to the equatorial waters. Rare or absent in the central tropical Atlantic and off northeastern South America. Extends to Namibia and South Africa across the central eastern South Atlantic but apparently absent in the Gulf of Guinea. Also at Southwest Atlantic off Brazil and Argentina. Widely distributed in Indian and Pacific Oceans.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### Diretmidae

*Diretmus argenteus* Johnson, 1864

Silver spinyfin

**Sample information:** SS (gear): 24; 30-31; 34 (PT); 50 (BT); Depth (m): 0-2607 (326-1091); No. lots / spec: 8 / 10 (PT: 87.5% / 90.0%); Rel. Abund.: 5.0 / 0.0 (PT); 4.5 / 0.0 (BT); Sz (n: range): 1: 86 mm SL; BW [avg (range)] (g): PT: 23.6 (4.0 - 44.0); BT: 5.5; ZMUB (cat. no.): 16411-18; 21278-79; ZMUB (gen): 16412; 16414; 16416.

**Geographical distribution:** In North Atlantic from southeast Iceland and Flemish Cap to the equator. Extends southeastward to South Africa and across the basin associated with Subtropical Convergence at 35°S. Widely distributed in Indian Ocean, Indo-Pacific and Southwest and central Pacific Ocean.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Kobylansky et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al.

(2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## Trachichthyidae

*Hoplostethus atlanticus* Collett, 1889

Orange roughy

**Sample information:** SS (gear): 53 (BT); Other; Depth (m): 966-1019 (976-940); No. lots / spec: 2 / 25 BT; 1 / 3 (*Loran*); Rel. Abund.: 9.1 / 0.3 (BT); 1.6 / 0.0 (*Loran*); Sz (n: range): 28: 46 - 560 mm TL; BW [avg (range)] (g): BT: 1470.4 (5.0 - 5650); *Loran*: 3250 (3250 - 3250); ZMUB (cat. no.): 16854-56; 17981-82; 19291; 19295-99; 19358; 19496; 21052; ZMUB (ost.): O.1853-56; ZMUB (gen): 16854-56. **Figure 10 c.**

**Geographical distribution:** In North Atlantic along MAR from Greenland and Iceland to the Azores and from the Bay of Biscay to Morocco along the continental slopes. Also along Africa slope between about 10°N to South Africa. Few records off Nova Scotia, Canada. South Indian Ocean and South Pacific, from Australia and New Zealand to Chile.

**Comments:** Adults benthopelagic, juveniles pelagic, both stages caught by different gears. In the North Atlantic mainly in the eastern temperate Atlantic; the fish found at Canadian and American waters were considered to be "a western fringe component of the northeast Atlantic population" (Kulka et al. 2001).

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Vinnichenko (1997); Moore et al. (2003); Faroes: Thomsen (1998); Northeast Atlantic: Whitehead et al. (1984-86).

## ZEIFORMES

## Oreosomatidae

*Neocyttus helgae* (Holt & Byrne, 1908)

False boarfish

**Sample information:** SS (gear): 53 (BT); Depth (m): 966-1019 (979-1005); No. lots / spec: 2 / 10; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 38.7 (25.0 - 95.7); ZMUB (cat. no.): 18376; 18455-59; 21054; ZMUB (gen): 18376; 18455-56. **Figure 10 e.**

**Geographical distribution:** In the Northeast Atlantic from Iceland to Bay of Biscay, northern MAR and the Azores Region and Madeira.

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

**GASTEROSTEIFORMES**

**Syngnathidae**

*Entelurus aequoreus* (Linnaeus, 1758)

Snake pipefish

**Sample information:** SS (gear): 2-6; 8-14; 16-24 (PT); 54; 60; 64-74 (BT); Depth (m): 0-3527 (1152-1332); No. lots / spec: 24 / 184 (PT: 66.7% / 87.0%); Rel. Abund.: 11.4 / 0.3 (PT); 36.4 / 0.3 (BT); Sz: N/A; BW [avg (range)] (g): PT: 3.9 (0.5 - 15.7); BT: 2.2 (1.0 - 4.5); ZMUB (cat. no.): 16419-47; 16498-99; ZMUB (gen): 16436-38.

**Geographical distribution:** In Northeast Atlantic from Baltic Sea westward to MAR between 50°N and 60°N. Scattered records at the Azores.

**Comments:** northern MAR is the western boundary for this species; Associated with coastal habitats in northern Europe; recently found on open ocean; tentatively identified as a new species but genetic analysis shows the MAR specimens are identical to coastal specimens from Norwegian waters (I. Byrkjedal, unpublished). Specimens from bottom trawl were caught while hauling the net to surface. Massive spread from MAR via Norwegian and Barents Seas into Arctic waters in years subsequent to MAR-ECO cruises apparently associated with temporary northward influx of warm water (Fleischer et al 2007, Rusyaev et al. 2007); these occurrences disappeared by 2009 (Wienerroither et al 2011).

**References:** Greenland: Møller et al. (2010); Iceland: Jónsson & Pálsson (2013); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

**SCORPAENIFORMES**

**Psychrolutidae**

*Cottunculus tubulosus* Byrkjedal & Orlov, 2007

**Sample information:** SS (gear): 56 (BT); Depth (m): 1872-1950; No. lots / spec: 1 / 1; Rel. Abund.: 4.5 / 0.0 (BT); Sz: N/A; BW (g): 3.7; ZMUB (cat. no.): 16361. **Figure 10 h.**

**Geographical distribution:** So far known only from northern MAR.

**Comments:** a new species described by Byrkjedal & Orlov (2007) based on this MAR-ECO specimen.

**References:** Byrkjedal & Orlov (2007)

**Sebastidae**

*Sebastes norvegicus* (Ascanius, 1772)

**Sample information:** SS (gear): 58-59 (LL); 48-50; 53; 55; 61-62 (LL\*); Depth (m): 450-680 (499-505); No. lots / spec: 9 / 39; Rel. Abund.: 14.3 / 0.5 (*Loran*); Sz (n: range): 39: 340 - 760 mm TL; BW [avg (range)] (g): 1827.9 (1010 - 7090); VIMS (cat. no.): VIMS 11934.

**Geographical distribution:** In the North Atlantic from Barents Sea, Norwegian waters, northern North Sea westwards to Iceland and Greenland and to about 40°N off North American slope.



**Comments:** Ishida (1994), Imamura (2004) and others recognised several families within the traditionally accepted family Scorpaenidae.

**References:** Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

*Sebastes mentella* Travin, 1951

Deepwater redfish

**Sample information:** SS (gear): 7-8, 10-11 (PT); Depth (m): 7-1530 (744-1091); No. lots / spec: 6 / 8; Rel. Abund.: 4.3 / 0.0 (PT); Sz (n: range): 2: 370 - 387 mm SL; BW: N/A; ZMUB (cat. no.): 19467-71.

**Geographical distribution:** In North Atlantic in Norwegian Sea, western Barents Sea, Iceland-Faroe Ridge, Iceland, Reykjanes Ridge and Greenland. Extends from Baffin Bay to Nova Scotia, Canada. More common on the eastern sector.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

## Liparidae

*Paraliparis nigellus* Chernova & Møller, 2008

**Sample information:** SS (gear): 42; 56 (BT); Depth (m): 1872-2107 (1999-2054); No. lots / spec: 2 / 3; Rel. Abund.: 9.1 / 0.0 (BT); Sz (n: range): 1: 145 mm SL; BW [avg (range)] (g): 15.0 (4.0 - 28.0); ZMUB (cat. no.): 20387 (holotype); 20763-64 (syntypes). **Figure 10 f.**

**Geographical distribution:** So far known only from northern MAR.

**Comments:** The species was described from the three MAR-ECO specimens and so far remains known only from these specimens. In the published description (Chernova & Møller 2008) the MAR-ECO field numbers were erroneously given as ZMUB catalogue numbers. The correct catalogue numbers are given above.

**References:** Chernova & Møller (2008).

*Pseudnos groenlandicus* Chernova, 2001

Greenland dwarf snailfish

**Sample information:** SS (gear): 15 (PT); 53; 60 (BT); Depth (m): 981-2015 (1339-1438); No. lots / spec: 3 / 3 (BT: 66.6% / 66.7%); Rel. Abund.: 0.7 / 0.0 (PT); 9.1 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): PT: 1.0; BT: 0.8 (0.5 - 1.0); ZMUB (cat. no.): 20686; 20767; 20773.

**Geographical distribution:** West Greenland and northern MAR.

**Comments:** First northern MAR record

**References:** Greenland: Møller et al. (2010).

## PERCIFORMES

### Howellidae

*Howella atlantica* Post & Quéro, 1991

Pelagic basslet

**Sample information:** SS (gear): 22-30; 34-36 (PT); 53; 60 (BT); Depth (m): 0-1800 (449-1012); No. lots / spec: 11 / 21 (PT: 81.8% / 85.7%); Rel. Abund.: 6.4 / 0.0 (PT); 9.1 / 0.0 (BT); Sz (n: range): 1: 39 mm SL; BW [avg (range)] (g): PT: 7.9 (1.2 - 17.0); BT: 8.0 (7.0 - 9.0); ZMUB (cat. no.): 16857-59; 17983-90; ZMUB (ost.): O.1498; ZMUB (gen): 16857-59.

**Geographical distribution:** In North Atlantic from the equator to Slope Water, Flemish Cap northeastward to about 60°N off Scotland and southeast Iceland.

**Comments:** In the North Atlantic 2 species are recognised as valid: *H. atlantica* and *H. sherborni*. The subspecies *H. brodiei atlantica* was synonymised to *H. atlantica* (Eschmeyer et al. (2016)). *H. atlantica* is not included in FishBase (even as synonym). Post & Quéro (1991) refer to *H. brodiei atlantica* in the the North Atlantic and to *H. sheborni* associated to South Atlantic Subtropical Convergence. Moore et al. (2003) consider the Northwest Atlantic specimens as *H. brodiei*, but Hartel et al. (2008) recognised *H. atlantica* as the species that live in the Northwest Atlantic.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2002); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

### Polyprionidae

*Polyprion americanus* (Bloch & Schneider, 1801)

Wreckfish

**Sample information:** SS (gear): no station; southern MAR-ECO box (dip net); Depth (m): surface; No. lots / spec: 1 / 3 (*Loran*); Rel. Abund. : N/A; Sz (n): N/A; BW (g): N/A.

**Geographic distribution:** In both sides of the Atlantic; from Norway and Iceland to South Africa and between 30° N and 50°N and 30°S and 50°S in the western Atlantic. Occurs also in the Mediterranean Sea and around the oceanic Atlantic islands. Across South Indian Ocean and Southwest Pacific slopes.

**Comments:** Juveniles caught underneath a drifting buoy, at surface.

**References:** MAR: Hareide & Garnes (2001); Kukuev (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Vinnichenko (1997); Kukuev (1982); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### Epigonidae

*Epigonus constanciae* (Giglioli, 1880)

**Sample information:** SS (gear): 28 (PT); Depth (m): 0-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 1.1; ZMUB (cat. no.): 20728.

**Geographical distribution:** In Northeast Atlantic associated to MAR, Azores and Mediterranean Sea. Along African continental slopes from Senegal to Angola.

**Comments:** This is the northern record for the species; a juvenile expatriate. Recorded in shallow (ca. 200 m) seamounts in the Azores region. Lives on shelf and slope off Cape Verde and central northwestern Africa.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Microichthys coccoi* Rüppell, 1852

**Sample information:** SS (gear): 30 (PT); Depth (m): 0-795; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 0.3; ZMUB (cat. no.): 20735.

**Geographical distribution:** In Northeast Atlantic at MAR, Azores and Mediterranean Sea.

**Comments:** First record for northern MAR.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

**Caproidae**

*Capros aper* (Linnaeus, 1758)

Boarfish

**Sample information:** SS (gear): 32 (PT); Depth (m): 50-800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 2.0; ZMUB (cat. no.): 17701; ZMUB (gen): 17701.

**Geographical distribution:** In Northeast Atlantic from southwestern Norway (rare), Scotland and Ireland to Senegal, including the Azores and surrounding MAR and seamounts, Madeira and Canaries. Extends into the Mediterranean Sea.

**Comments:** First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

**Carangidae**

*Seriola dumerili* (Risso, 1810)

Greater amberjack

**Sample information:** SS (gear): Other; Surface; No. lots / spec: 1 / 1; Rel. Abund.: N/A; Sz: N/A; BW: N/A; ZMUB (cat. no.): 19466.

**Geographical distribution:** In North Atlantic from Slope Water, Nova Scotia, to Gulf of Mexico and Caribbean Sea at about 25°N in Western Atlantic. Azores, Madeira and Canaries and along African coast from Mauritania to Congo. Southwest Atlantic, off Brazil around 20°N and at South Africa. Southeast Indian Ocean. Indo-Pacific. West and central tropical Pacific Ocean.

**Comments:** Mainly in coastal areas. Migrates across the North Atlantic seasonally. In the Azores occurs during the summer.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

*Trachurus picturatus* (Bowdich, 1825)

Blue jack mackerel

**Sample information:** SS (gear): 30 (PT); Depth (m): 36-186; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 113 mm SL; BW (g): 16.4; ZMUB (cat. no.): 18443; ZMUB (gen): 18443.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Geographical distribution:** In Northeast Atlantic around the Azores, Madeira, Canaries and Cape Verde Islands and offshore seamounts. Also from Bay of Biscay to Morocco. Western Mediterranean Sea. Reported from Tristan de Cunha and Gough Islands in South Atlantic.

**Comments:** Associated to Northeast Atlantic continental and oceanic islands slopes and shallow seamounts. First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## Caristiidae

### *Paracaristius maderensis* (Maul, 1949)

**Remarks:** SS (gear): 26 (PT); Depth (m): 600-825; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 34.0; ZMUB (cat. no.): 15969; ZMUB (gen): 15969.

**Geographical distribution:** Atlantic Ocean: in the northwestern and northeastern parts, the Gulf of Guinea, and Walvis Ridge, Namibia, around Greenland and Cape Verde Islands. West tropical Pacific and Southern Indian Ocean.

**Comments:** New Northern MAR record; the taxonomy and the distribution patterns of Caristiidae species were recently extensively revised (Trunov et al., 2006; Stevenson & Kenaley, 2011; Kukuev et al., 2012, 2013).

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Trunov et al. (2006); Hartel et al. (2008); Stevenson & Kenaley, 2011; Northeast Atlantic: Whitehead et al. (1984-86); Trunov et al. (2006); Stevenson & Kenaley, 2011.

### *Platyberyx opalescens* Zugmayer, 1911

**Remarks:** SS (gear): 20 (PT); Depth (m): 0-806; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 319.2; ZMUB (cat. no.): 19234.

**Geographical distribution:** In Northeastern Atlantic from Greenland, Iceland, and off Rockall Plateau, to Iberian Peninsula, the Azores, Madeira, Canaries and northern Mauritania.

**Comments:** First northern MAR record. MAR is the western boundary for this species.

**References:** Azores: Santos et al. (1997); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2006); Northeast Atlantic: Whitehead et al. (1984-86); Kukuev et al. (2012).

## Zoarcidae

### *Lycodonus* sp.

**Sample information:** SS (gear): 56; 68; 72 (BT); Depth (m): 1872-2567 (2233-2297); No. lots / spec: 3 / 4; Rel. Abund.: 13.6 / 0.0 (BT); Sz: N/A; BW [avg (range)] (g): 5.2 (3.6 - 8.0); ZMUB (cat. no.): 20771; 20777; 20780.

**Comments:** First northern MAR record that may be undescribed species.

*Melanostigma atlanticum* Koefoed, 1952

Atlantic soft pout

**Sample information:** SS (gear): 4; 8; 14; 20 (PT); Depth (m): 0-2284 (792-1290); No. lots / spec: 5 / 5; Rel. Abund.: 3.6 / 0.0 (PT); Sz (n: range): 1: 195 mm SL; BW [avg (range)] (g): 3.6 (2.0 - 5.1); ZMUB (cat. no.): 20661; 20663; 20666; 20679; 20700.

**Geographical distribution:** North Atlantic (endemic): from Greenland and Iceland to Cape Hatteras at 35°N in the Northwest Atlantic, including the Gulf of St. Lawrence, to MAR at 55°N and to about 45°N and Northeast Atlantic. Also off Africa between 35°N and 20°N and in the northwest sector of the Mediterranean Sea.

**Comments:** Associated to continental, ridges and seamounts slopes. Pelagic forms in the Northeast Atlantic.

**References:** MAR: Gushchin & Kukuev (1981); Greenland: Møller et al. (2010); Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

**Chiasmodontidae**

*Chiasmodon niger* Johnson, 1864

Black swallower

**Sample information:** SS (gear): 2-10; 14-15; 18-36 (PT); 50; 62 (BT); Depth (m): 0-2731 (877-1476); No. lots / spec: 45 / 96 (PT: 95.6% / 94.8%); Rel. Abund.: 30.7 / 0.2 (PT); 9.1 / 0.1 (BT); Sz (n: range): 19: 55 - 232 mm SL; BW [avg (range)] (g): PT: 20.8 (0.8 - 100.0); BT: 3.5 (1.6 - 5.0); ZMUB (cat. no.): 17711-56; 18560; 18791; 19355; 21256; ZMUB (ost.): O.1466; O.1551; O.1579; ZMUB (gen): 17720-22. **Figure 10 d.**

**Geographical distribution:** In North Atlantic from Iceland to the equator. Rare or absent at central tropical waters from off northeast Brazil coast to about 0°. South Atlantic. Indian and Pacific Oceans.

**Comments:** Genus has undergone recent revisions (Prokofiev & Kukuev 2006a, 2009); individual species need validation.

**References:** MAR: Gushchin & Kukuev (1981); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86); Melo (2009).

*Dysalotus alcocki* MacGilchrist, 1905

**Sample information:** SS (gear): 10; 15; 30 (PT); Depth (m): 1000-2390 (1429-1945); No. lots / spec: 4 / 4; Rel. Abund.: 2.9 / 0.0 (PT); Sz (n: range): 2: 139 - 166 mm SL; BW [avg (range)] (g): 29.7 (10.9 - 82.0); ZMUB (cat. no.): 16832; 17919; 17920-21; ZMUB (gen): 16832. **Figure 10 g.**

**Geographical distribution:** North and South Atlantic, Indian Ocean, Pacific Ocean.

**Comments:** New northern MAR record.

**References:** Northwest Atlantic: Moore et al. (2003).

*Kali indica* Lloyd, 1909

**Sample information:** SS (gear): 15; 24-26 (PT); 54-56 (BT); Depth (m): 1800-3527 (2155-2464); No. lots / spec: 5 / 6 (PT: 60.0% / 66.7%); Rel. Abund.: 2.1 / 0.0 (PT); 9.1 / 0.0 (BT); Sz (n: range):

Checklist of Fishes from the Northern Mid-Atlantic Ridge

4: 220 - 255 mm SL; BW [avg (range)] (g): PT: 70.8 (58.0 - 89.8); BT: 61.5 (29.0 - 94.0); ZMUB (cat. no.): 16362-66; ZMUB (gen): 16364-66.

**Geographical distribution:** Scattered records at the western tropical-subtropical North Atlantic and in Central Equatorial Waters. Also northern MAR, South Atlantic, Indian and Pacific Oceans.

**Comments:** See the revision of the genus by Melo 2008; new record for northern MAR.

**References:** Northwest Atlantic: Moore et al. (2003).

*Kali macrodon* (Norman, 1929)

**Sample information:** SS (gear): 31-34 (PT); Depth (m): 800-2300 (1466-2033); No. lots / spec: 4 / 5; Rel. Abund.: 2.9 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 82.5 (68.6 - 95.9); ZMUB (cat. no.): 16367-70; 21280; ZMUB (gen): 16368.

**Geographical distribution:** North Atlantic: from off Ireland to Tropical-Subtropical Western Atlantic, and to Cape Verde in the East Atlantic. Rare in Gulf of Mexico and central tropical North Atlantic. No records from the equatorial waters, but occurs in South Atlantic, Indian Ocean, and Pacific Ocean.

**Comments:** See the revision of the genus by Melo (2008); new record for northern MAR.

**References:** Northwest Atlantic: Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Kali macrura* (Parr, 1933)

**Sample information:** SS (gear): 24; 30 (PT); Depth (m): 1480-2283 (1640-2256); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 106.9 (89.8 - 124.0); ZMUB (cat. no.): 16371-72; ZMUB (gen): 16371.

**Geographical distribution:** North Atlantic: From off Ireland and Mid-Atlantic Ridge to tropical West and East Atlantic. South Atlantic. Indian Ocean. Pacific Ocean.

**Comments:** See the revision of the genus by Melo (2008); new record for northern MAR.

**References:** Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

*Pseudoscopelus altipinnis* Parr, 1933

SS (gear): 28; 30; 34 (PT); Depth (m): 0-1800 (608-1534); No. lots / spec: 5 / 9; Rel. Abund.: 3.6 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 28.2 (8.0 - 41.0); ZMUB (cat. no.): 16373-77; ZMUB (gen): 16374; 16377.

**Geographical distribution:** In North Atlantic from Reykjanes Ridge and off Ireland to equatorial waters. Rare or absent in Caribbean Sea, central tropical Atlantic and Gulf of Guinea. South Atlantic, Indian and Pacific Oceans.

**Comments:** See the revision of the genus by Prokofiev & Kukuev (2005, 2006b, 2007) and Melo (2010).

**References:** MAR: Gushchin & Kukuev (1981); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2006); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Northeast Atlantic: Whitehead et al. (1984-86).

*Pseudoscopelus obtusifrons* (Fowler, 1934)

**Remarks:** SS (gear): 32 (PT); Depth (m): 800-1800 (814-1785); No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 68.0 (25.0 - 111.0); ZMUB (cat. no.): 16379.

**Geographical distribution:** North Atlantic: Northeast Atlantic at about 45° and from Madeira to central equatorial waters. Scattered records in western tropical Atlantic. South Atlantic. Indian Ocean. Pacific Ocean.

**Comments:** See the revision of the genus by Prokofiev & Kukuev (2005, 2006b, 2007) and Melo (2010); new record for northern MAR.

**References:** Melo (2010).

*Pseudoscopelus pierbartus* Spitz, Quéro & Vayne, 2007

**Remarks:** SS (gear): 28 (PT); Depth (m): 829 - 1770; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 111; ZMUB (cat. no.): 16378.

**Geographical distribution:** So far known from Northeast Atlantic and northern MAR.

**Comments:** First northern MAR record. Prokofiev (2011) considered this species to be a synonym of *P. obtusifrons* (Fowler, 1934). Here we retain *P. pierbartus* pending further investigation.

**References:** Melo (2010); Prokofiev (2011).

*Pseudoscopelus scutatus* Krefft, 1971

**Remarks:** SS (gear): 32 (PT); Depth (m): 800-1800; No. lots / spec: 1 / 2; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 17.5; ZMUB (cat. no.): 16380.

**Geographical distribution:** Central Atlantic, but not well described.

**Comments:** See the revision of the genus by Melo (2010); new record for region, largest known specimen.

**References:** Northwest Atlantic: Moore et al. (2003).

## Gempylidae

*Diplospinus multistriatus* Maul, 1948

Striped escolar

**Remarks:** SS (gear): 30 (PT); Depth (m): 0-795; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 3.8; ZMUB (cat. no.): 16383; ZMUB (gen): 16383.

**Geographical distribution:** In North Atlantic from Nova Scotia, the Azores and Madeira to the equatorial waters in the West Atlantic and to Cape Verde Islands in the eastern boundary. Central equatorial waters to southern Brazil and to South Africa. Absent or rare in Gulf of Guinea to Angola and central South Atlantic. Scattered records in Central and North Indian Ocean. West, Central and Southeast Pacific Ocean.

**Comments:** First record from northern MAR.

**References:** Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Trichiuridae

*Aphanopus carbo* Lowe, 1839

Black scabbardfish

**Sample information:** SS (gear): 53 (BT); 26 (LL); Depth (m): 966-1019 (971-956); No. lots / spec: 2 / 5 BT; 1 / 1 (*Loran*); Rel. Abund.: 9.1 / 0.1 (BT); 1.6 / 0.0 (*Loran*); Sz (n: range): 6: 893 - 1020 mm TL; BW [avg (range)] (g): BT: 1318.3 (1085.0 - 1590.0); ZMUB (ost.): O.1795-7.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Geographical distribution:** In North Atlantic from Greenland and Iceland to Madeira and Canaries; in northern MAR to the Azores and southern Azores seamounts; along the Northwest Atlantic margin from about 55°N at Labrador Sea to about 30°N off Florida.

**Comments:** Morphologically this species is very similar to *A. intermedius* and therefore many records of *A. carbo* may indeed refer to *A. intermedius*. Both species occur sympatrically in the Azores (Stefanni & Knutsen 2007; Stefanni et al. 2009).

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### *Benthodesmus elongatus* (Clarke, 1879)

Elongate frostfish

**Sample information:** SS (gear): 26 (PT); Depth (m): 600-825; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT);

Sz: N/A; BW (g): 13.0; ZMUB (cat. no.): 16384; ZMUB (gen): 16384.

**Geographical distribution:** Northwest Atlantic: from about 30°N to Flemish Cap, mainly associated with continental slopes. Also, scattered records at MAR, the Azores, Madeira and Canaries. South Atlantic: from Brazil to Argentina between 25°N and 40°N and off South Africa tip.

**Comments:** This specimen probably belongs to *B. simonyi* (North Atlantic: off Newfoundland, Bermuda, New England, Middle Atlantic Ridges, Iceland, Norway, Portugal, Madeira, and Canary Islands). *B. elongatus* is not reported for the North Atlantic in Fishbase (Froese & Pauly 2014).

**References:** MAR: Gushchin & Kukuev (1981); Kukuev (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Northwest Atlantic: Kukuev (1982, 2004); Northeast Atlantic: Whitehead et al. (1984-86).

### *Lepidopus caudatus* (Euphrasen, 1788)

Silver scabbardfish

**Sample information:** SS (gear): 30 (PT); Depth (m): 0-795; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz: N/A; BW (g): 3.8; ZMUB (cat. no.): 16382.

**Geographical distribution:** In Northeast Atlantic from Ireland to Senegal, including western Mediterranean and the Azores, Madeira and Canaries. Southeast Atlantic. On continental and seamount slopes along South Indian and South Pacific Oceans.

**Comments:** First northern MAR record.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Jónsson & Pálsson (2013); Northeast Atlantic: Whitehead et al. (1984-86).

## Centrolophidae

### *Schedophilus medusophagus* (Cocco, 1839)

Cornish blackfish

**Sample information:** SS (gear): 24 (PT); Depth (m): 800-1800; No. lots / spec: 1 / 1; Rel. Abund.: 0.7 / 0.0 (PT); Sz (n): 330 mm SL; BW (g): 638.5; ZMUB (cat. no.): 19242.

**Geographical distribution:** In North Atlantic from Iceland to about 35°N, including Mediterranean. Extends westward between Slope Water, Nova Scotia to 40°N.



**Comments:** Associate with slopes of islands, continents and seamounts. Fock et al. (2004) found that this species was dominant in northern MAR, which was not confirmed during the MAR-ECO survey.

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Kukuev (2004); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Iceland and Irminger Sea: Kukuev & Trunov (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Kukuev (1982, 2004); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Nomeidae

### *Cubiceps gracilis* (Lowe, 1843)

Driftfish

**Sample information:** SS (gear): 26-36 (PT); Depth (m): 0-2300 (393-991); No. lots / spec: 17 / 99; Rel. Abund.: 12.1 / 0.2 (PT); Sz (n: range): 8: 38 - 86 mm SL; BW [avg (range)] (g): 13.6 (1.0 - 46.0); ZMUB (cat. no.): 16337-52; ZMUB (ost.): O.1524; O.1636-37; O.1715; ZMUB (gen): 16339; 16343; 16346.

**Geographical distribution:** In North Atlantic between 50°N and 30° N across the basin, extending into the western Mediterranean Sea. Also along the Mauritanian Upwelling Region to Cape Verde Islands.

**References:** MAR: Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northwest Atlantic: Kukuev (1982); Vinnichenko (1997); Moore et al. (2003); Northeast Atlantic: Whitehead et al. (1984-86).

## Tetragonuridae

### *Tetragonurus cuvieri* Risso, 1810

Smalleye squaretail

**Sample information:** SS (gear): 28-30; 32; 36 (PT); Depth (m): 0-1800 (552-1392); No. lots / spec: 6 / 9; Rel. Abund.: 4.3 / 0.0 (PT); Sz (n: range): 3: 37 - 148 mm SL; BW [avg (range)] (g): 18.6 (8.5 - 36.9); ZMUB (cat. no.): 18440-42; 18858; 18873; 18911; ZMUB (gen): 18440-42.

**Geographical distribution:** In the Northeast Atlantic from the Azores and Bay of Biscay to Cape Verde Islands. Also in the western Mediterranean Sea. Southeast Atlantic at Namibia Upwelling Region, extending westward to 20°W. South Indian Ocean. South and North subtropical-temperate Pacific Ocean (antitropical).

**References:** MAR: Gushchin & Kukuev (1981); Whitehead et al. (1984-86); Pusch et al. (2004); Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## Anarhichadidae

### *Anarhichas denticulatus* Krøyer, 1845

Northern wolffish

**Sample information:** SS (gear): 20 (PT); 44; 51; 58; 59 (LL); Depth (m): 188-1050 (615-716); No. lots / spec: 1 / 1 PT; 4 / 29 (*Loran*); Rel. Abund.: 6.3 / 0.3 (*Loran*); Sz (n: range): 29: 590 - 1260 mm TL; BW (g): 9262.1 (2740 - 24920); ZMUB (cat. no.): 18495-97; ZMUB (ost.): O.1798; ZMUB (gen): 15953; 15957.

## Checklist of Fishes from the Northern Mid-Atlantic Ridge

**Geographical distribution:** In North Atlantic from Barents Sea and Spitsbergen, Norwegian coast, Iceland and Greenland, to Nova Scotia and to western British Isles, and North Sea.

**References:** MAR: Gushchin & Kukuev (1981); Hareide & Garnes (2001); Kukuev (2004); Greenland: Møller et al. (2010); Iceland and Irminger Sea: Sigurðsson et al. (2002); Jónsson & Pálsson (2013); Northwest Atlantic: Moore et al. (2003); Flemish Cap: Alpoim et al. (2002); Northeast Atlantic: Whitehead et al. (1984-86).

### TETRAODONTIFORMES

#### Balistidae

*Balistes capriscus* Gmelin, 1789

Grey triggerfish

**Sample information:** SS (gear): no station; southern MAR-ECO box (trolling line); Depth (m): surface; No. lots / spec: 1 / 1 (*Loran*); Rel. Abund. : N/A; Sz (n): N/A; BW (g): N/A.

**Geographic distribution:** On both sides of the Atlantic from Scotland to Angola and from Newfoundland waters to Argentina, including the Atlantic oceanic islands.

**Comments:** Caught opportunistically at surface.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

#### Molidae

*Mola mola* (Linnaeus, 1758)

Ocean sunfish

**Sample information:** SS (gear): no station; between stations 6 and 18 of MS *LORAN*; Depth (m): surface; No. lots / spec: 1 / 1 (*Loran*); Rel. Abund. : N/A; Sz (n): N/A; BW (g): 26700.

**Geographic distribution:** Widely distributed in tropical and temperate waters in all oceans.

**Comments:** Caught opportunistically at surface.

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

### PLEURONECTIFORMES

#### Bothidae

*Bothus podas* (Delaroche, 1809)

Wide-eyed flounder

**Sample information:** SS (gear): 34; 36 (PT); Depth (m): 0-203 (0-191); No. lots / spec: 2 / 2; Rel. Abund.: 1.4 / 0.0 (PT); Sz: N/A; BW [avg (range)] (g): 1.0; ZMUB (cat. no.): 15960-61.

**Geographical distribution:** Eastern Atlantic: Mediterranean and the Adriatic Sea, Madeira, Cape Verde and the Canary Islands, Mauritania to Angola,

**Comments:** Larvae

**References:** Azores: Santos et al. (1997); Porteiro et al. (2010); Northeast Atlantic: Whitehead et al. (1984-86).

## ACKNOWLEDGEMENTS

MAR-ECO was as a field project under the Census of Marine Life programme part-funded by the Alfred P. Sloan Foundation. Contribution of A.M. Orlov to this publication is partially supported by the Russian Fund of Basic Research (project No. 16-04-00516). We gratefully acknowledge the efforts of many colleagues who contributed to the work on fishes during and following the cruises. All images used were selected from the MAR-ECO Image Database, and most were taken by the co-authors and in addition John Galbraith, David Shale, Andrey Dolgov and Thomas de Lange Wenneck. We are also very grateful to Ms Lacey Malarky for great assistance during the final stages of preparation of the check-list.

## REFERENCES

- Alpoim, R., A. Ávila de Melo, R. Banon et al. 2002. Distribution and main characteristic of fish species on Flemish Cap based on the 1988-2002 EU-Surveys in July // *NAFO SCR Doc.* 02/72. Serial No. N4685. Dartmouth: NAFO Headquarters, 73 pp.
- Backus, R.H., J.E. Craddock, R.L., Haedrich & B.H. Robison 1977. Atlantic mesopelagic zoogeography. *Memoirs of the Sears Foundation for Marine Research* 1 (7): 266–286.
- Bergstad, O. A. & O. R. Godø 2003. The pilot project “Patterns and processes of the ecosystems of the Northern Mid-Atlantic”: aims, strategy and status. *Oceanologica Acta* 25:219-226.
- Bergstad, O.A. & T. Falkenhaus 2005. Patterns and processes of the ecosystems of the Northern Mid-Atlantic (MAR-ECO project) - an international census of Marine Life project on deep-sea biodiversity. Pp. 130-136 in: Shotton, R. (Ed.). Deep Sea 2003: Conference on the Governance and Management of Deep-Sea Fisheries. Part 1: Conference Reports. *FAO Fisheries Proceedings* No. 3/1, FAO, Rome.
- Bergstad, O.A., G. Menezes & Å. S. Høines 2008a. Demersal fish on a mid-ocean ridge: Distribution patterns and structuring factors. *Deep-Sea Research II* 55: 185–202.
- Bergstad, O.A., Å.S. Høines, A. Orlov, T. Iwamoto, J. Galbraith, I. Byrkjedal & F. Üiblein 2008b. Species composition and abundance patterns of grenadiers on the Mid-Atlantic Ridge between Iceland and the Azores. Pp. 65-80 in: Orlov, A. & T. Iwamoto (Eds). *American Fisheries Society Symposium* 63.
- Bergstad, O.A., G. Gjelsvik, C. Schander & Å. S. Høines 2010. Feeding Ecology of *Coryphaenoides rupestris* from the Mid-Atlantic Ridge. *PLoS ONE* 5(5): e10453. doi: 10.1371/journal.pone.0010453
- Bergstad, O.A., L. Clark, H. Ø. Hansen & N. Cousins 2012. Distribution, population biology, and trophic ecology of the deepwater demersal fish *Halosaurus macrochir* (Pisces: Halosauridae) on the Mid-Atlantic Ridge. *PLoS ONE* 7(2): e31493. Doi:10.1371/journal.pone.0031493.
- Berland, B. 1985. Chemical maceration and other practical methods. *Fauna* 38: 146-151.[in Norwegian with English summary].
- Biscoito, M., M. Segonzac, A. Almeida, D. Desbruyeres, P. Geistdoerfer, M. Turnipseed & C. van Dover 2002. Fishes from hydrothermal fields and cold seeps – an update. *Cahiers de Biologie Marine* 43: 359-362.
- Busch, M.W., S. Klimpel, T. Sutton & U. Piatkowski 2008. Parasites of the deep-sea smelt *Bathylagus euryops* (Argentiniformes: Microstomatidae) from the Charlie-Gibbs Fracture Zone (CGFZ). *Marine Biology Research* 4: 313-317.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

- Byrkjedal, I. & A.M. Orlov 2007. A new species of *Cottunculus* (Teleostei: Psychrolutidae) from the Mid Atlantic Ridge. *Zootaxa* 1580: 63–68.
- Byrkjedal, I., J. Y. Poulsen & J. Galbraith 2011. *Leptoderma macrophthalmum* n.sp., a new species of smooth-head (Otocephala: Alepocephalidae) from the Mid Atlantic Ridge. *Zootaxa* 2876: 49-56.
- Carmo, V., T.T. Sutton, G.M. Menezes, T. Falkenhaus & O.A. Bergstad 2015. Feeding ecology of the Stomiformes (Pisces) of the northern Mid-Atlantic Ridge. 1. The Sternoptychidae & Phosichthyidae. *Progress in Oceanography* 130: 172-187.
- Chernova, N.V. & P.R. Møller 2008. A new snailfish, *Paraliparis nigellus* sp. nov. (Scorpaeniformes, Liparidae), from the northern Mid-Atlantic Ridge – with notes on occurrence of Psednos in the area. *Marine Biology Research* 4: 369-375.
- Clarke, A.D., A. Lewis, K.H. Telmer & J.M. Shrimpton 2007. Life history & age at maturity of an anadromous smelt, the eulachon *Thaleichthys pacificus* (Richardson). *Journal of Fish Biology* 71:1479-1493.
- Clarke, M.W. 2000. Records of deep water chondrichthyan fish caught on long-line in the Rockall Trough. *Journal of Marine Biology Association of the United Kingdom* 80: 377-378.
- Cohen, D.M. 1990. Argentinidae. Pp. 235-238 in: J.C. Quero, J.C. Hureau, C. Karrer, A. Post & L. Saldanha (Ed.) *Check-list of the fishes of the eastern tropical Atlantic* (CLOFETA). JNICT, Lisbon; SEI, Paris; and UNESCO, Paris. Vol. 1. 519 p.
- Cook, A. B., T. T. Sutton, J. K. Galbraith & M. Vecchione 2013. Deep-pelagic (0-3000 m) fish assemblage structure over the Mid-Atlantic Ridge in the area of the Charlie-Gibbs Fracture Zone. *Deep Sea Research Part II: Topical Studies in Oceanography* 98: 279-291.
- Coulson, M.W., D. Denti, L. Van Guelpen, C. Miri, E. Kenchington & P. Bentzen 2011. DNA barcoding of Canada's skates. *Molecular Ecology Resources* 11(6):968-78.
- Cousins, N.J., T.D. Linley, A.J. Jamieson, P.M. Bagley, H. Blades, T. Box, R. Chambers, A. Ford, M.A. Shields & I.G. Priede 2013. Bathyal demersal fishes of Charlie-Gibbs Fracture Zone region (49-54°N) of the Mid-Atlantic Ridge: II. Baited camera lander observations. *Deep-Sea Research II* 98: 397-406.
- Dyb, J.E. & O.A. Bergstad 2004. MAR-ECO, The cruise with MS *Loran*, summer 2004. *Møreforsking, Rapport* 98pp.
- Ebeling, A.W. 1962. Melamphidae I. Systematics and zoogeography of the species in the bathypelagic fish genus *Melamphaes* Günther. *Dana Report* 58:1-164.
- Ege, V. 1948. *Chauliodus* Schn., bathypelagic genus of fishes. A systematic, phylogenetic and geographic study. *Dana Report*. 31: 148 pp.
- Engås, A. 1991. *The effects of trawl performance and fish behaviour on the catching efficiency of sampling trawls*. Thesis, Department of Fisheries and Marine Biology University of Bergen, Norway, 99pp.
- Eschmeyer, W.N. (Ed.) 1998. *Catalog of fishes*. California Academy of Sciences, San Fransisco. 2905 pp.
- Eschmeyer, W.N., R. Fricke & R. van der Laan (Eds) 2016. Catalog of fishes: genera, species, references. (<http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>). Electronic version accessed.
- Fleischer, D., M. Schaber & D. Piepenburg 2007. Atlantic snake pipefish (*Entelurus aequoreus*) extends its northward distribution range to Svalbard (Arctic Ocean). *Polar Biology* 30: 1359–1362.
- Fock, H. O. & S. Ehrich 2010. Deep-sea pelagic nekton biomass estimates in the North Atlantic: horizontal & vertical resolution of revised data from 1982 and 1983. *Journal of Applied Ichthyology* 26: 85–101.
- Fock, H. O., C. Pusch et al. & S. Ehrich 2004. Structure of deep-sea pelagic fish assemblages in relation to the Mid-Atlantic Ridge (45°–50°N). *Deep Sea Research I: Oceanographic Research Papers* 51(7): 953–978.

- Fossen, I. & O.A. Bergstad 2006. Distribution and biology of blue hake, *Antimora rostrata* (Pisces: Moridae), along the mid-Atlantic Ridge and off Greenland. *Fisheries Research* 82: 19-29.
- Fossen, I., C.F. Cotton, O.A. Bergstad & J.E. Dyb 2008. Species composition and distribution patterns of fishes captured by longlines on the mid-Atlantic Ridge. *Deep-Sea Research II* 55: 203-217.
- Fricke, R. & W.N. Eschmeyer 2013. *Guide to fish collections*. Available from: <http://research.calacademy.org/research/ichthyology/catalog/collections.asp>. (accessed 24 November 2014).
- Froese, R. & D. Pauly 2014. *FishBase*. Version (11/2014). World Wide Web electronic publication. Available at: <http://www.fishbase.org>
- Gebruk, A.V. (Ed.) 2008. Benthic fauna of the northern Mid-Atlantic Ridge: results of the MAR-ECO expedition. *A. Marine Biology Research* 4: 1- 163.
- Gebruk, A.V & I. G. Priede 2013. Benthos of the Sub-Polar Front Area on the Mid-Atlantic Ridge: Results of the ECOMAR Project. *Marine Biology Research* 9: 441-442.
- George M.R. & H. Zidowitz 2006. Checkliste der europäischen Knorpelfisharten mit wissenschaftlichen und deutschen Namen. *Zeitschrift für Fischkunde* 8: 71-81 (In German).
- Gibbs, R.H. & M.A. Barnett 1990. Melanostomiidae. Pp. 308-337 in: J.C. Quero, J.C. Hureau, C. Karrer, A. Post & L. Saldanha (Eds). *Check-list of the fishes of the eastern tropical Atlantic (CLOFETA)*. JNICT, Lisbon; SEI, Paris; & UNESCO, Paris. Vol. 1. XXXII, 519 pp.
- Goodyear, R.H. 1990. Malacosteidae. Pp. 338-340 in: Quero, J.C., C. Karrer, A. Post & L. Saldanha (Eds). *Check-list of the fishes of the eastern tropical Atlantic (CLOFETA)*. JNICT, Lisbon; SEI, Paris; & UNESCO, Paris, Vol. 1.XXXII, 519 pp.
- Gordon J.D.M. & J.A.R. Duncan 1987. Deep-sea bottom-living fishes at two repeat stations at 2200 and 2900 m in the Rockall Trough, northeastern Atlantic Ocean. *Marine Biology* 96: 309–325.
- Gordon J.D.M. & J.A.R. Duncan 1989. A note on distribution and diet of deep-water rays (Rajidae) in an area of the Rockall Trough. *Journal of Marine Biology Association of the United Kingdom* 69: 655–658.
- Gordon, J.D.M., O.A. Bergstad & T. Falkenhaus (Eds) 2008. Mid-Atlantic Ridge Habitats and Biodiversity. *Deep Sea Research II* 55: 1-268.
- Gushchin, A.V. & E.I. Kukuev 1981. On the composition of the ichthyofauna in the northern part of the Mid-Atlantic-Ridge. Pp. 36-40 in: Parin, N.V. (Ed.), *Fishes of the Open Ocean*, IOAN, Moscow (translated).
- Haedrich, R.L. & N.R. Merrett 1988. Summary atlas of deep-living demersal fishes in the North Atlantic Basin. *Journal of Natural History* 22: 1325-1362.
- Hareide, N.-R. & G. Garnes 2001. The distribution and catch rates of deep water fish along the Mid-Atlantic ridge from 43 to 61°N. *Fisheries Research* 51(2-3): 297-310.
- Hartel, K.E., C.P. Kenaley, J.K. Galbraith & T.T. Sutton 2008. Additional records of deep-sea fishes from off Greater New England. *Northeastern Naturalist* 15(3): 317-334.
- Heino, M., D.S. Boukal, T. Falkenhaus, U. Piatkowski, F.M. Porteiro & T.T. Sutton 2008a. Size structure, age-size dynamics and life history variation. *International Council for the Exploration of the Sea* CM 2008/F: 13 pp.
- Heino, M., D.S. Boukal, T. Falkenhaus, U. Piatkowski, F.M. Porteiro & T.T. Sutton 2008b. Length structure of deep-pelagic fishes sheds new light to their life histories. *International Council for the Exploration of the Sea* CM 2008/C: 14, 6pp.
- Heino, M., F.M. Porteiro, T.T. Sutton, T. Falkenhaus, O.R. Godø, & U. Piatkowski 2011. Catchability of pelagic trawls for sampling deep-living nekton in the mid-North Atlantic. *ICES Journal of Marine Science* 68: 377-389.
- Hoese, D.F., D.J. Bray, J.R. Paxton & G.R. Allen 2006. Fishes. in: Beasley, O.L. & A. Wells (Eds). *Zoological Catalogue of Australia*. Volume 35.2 Australia: ABRS & CSIRO Publishing. 1472 pp.
- Hudson, J.M., D.K. Steinberg, T.T. Sutton, J.E. Graves & R.J. Latour 2014. Myctophid feeding ecology and carbon transport along the northern Mid-Atlantic ridge. *Deep-Sea Research I* 93: 104-116.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

- Imamura, H. 2004. Phylogenetic relationships and new classification of the superfamily Scorpaenoidea (Actinopterygii: Perciformes). *Species Diversity* 9: 1–36.
- Ishida, M. 1994. Phylogeny of the suborder Scorpaenoidei (Pisces: Scorpaeniformes). *Bulletin of the Nansei Regional Fisheries Research Laboratory* 27: 1-112.
- Iwamoto, T. & A. Orlov 2006. *Paracetonurus flagellicauda* (Koefoed, 1927) (Macrouridae, Gadiformes, Teleostei), new records from the Mid-Atlantic Ridge and Madagascar Plateau. *Proceedings of the California Academy of Science* 57(11): 379-386.
- Iwamoto, T. & A. Orlov 2008. First Atlantic record of *Asthenomacrus victoris* Sazonov & Shcherbachev (Macrouridae, Gadiformes, Teleostei). *Proceedings of the California Academy of Sciences* 59 (4): 125-131.
- Jónsson, G. & Pálsson, J. 2013. *Íslenskir fiskar. Mál og menning*, Reykjavik, 494 pp. [In Icelandic]
- Johnson, G.D, J.R. Paxton, T.T. Sutton, T.P. Satoh, T. Sado, M. Nishida & M. Miya 2009. Deep-sea mystery solved: astonishing larval transformations and extreme sexual dimorphism unite three fish families. *Biological Letters* 5(2):235-239.
- Johnston G., B. O’Hea & L. Dransfeld 2010. Fish species recorded during deepwater trawl survey on the continental shelf and the Porcupine Bank, 2006-2008. *Irish Naturalists’ Journal* 31: 130-134.
- Kawaguchi, K. & J.L. Butler 1984. Fishes of the genus *Nansenia* (Microsomatidae) with descriptions of seven new species. *Los Angeles County Museum Contributions in Science* 352:1-22.
- Kellermanns, E., S. Klimpel & H.W. Palm 2009. Parasite fauna of the Mediterranean grenadier *Coryphaenoides mediterraneus* (Giglioli, 1893) from the Mid-Atlantic Ridge (MAR) *Acta Parasitologica* 54 (2): 158-164
- Kenaley, C.P. 2009. Revision of Indo-Pacific species of the Loosejaw Dragonfish Genus *Photostomias* (Teleostei: Stomiidae: Malacosteinae). *Copeia* 2009 (1): 175–189.
- Kenaley, C.P. & K.E. Hartel 2005. A revision of Atlantic species of *Photostomias* (Teleostei: Stomiidae: Malacosteinae), with a description of a new species. *Ichthyology Research* 52: 251–263.
- King, N., P.M. Bagley & I.G. Priede 2006. Depth zonation and latitudinal distribution of deep sea scavenging demersal fishes of the Mid-Atlantic Ridge, 42°-53°N. *Marine Ecology Progress Series* 319: 263-274.
- Klimpel, S., E. Kellermanns & H.W. Palm 2008. The role of pelagic swarm fish (Myctophidae: Teleostei) in the oceanic life cycle of *Anisakis* sibling species at the Mid-Atlantic Ridge, Central Atlantic. *Parasitology Research* 104:43–53
- Klimpel, S., E. Kellermanns, H.W. Palm & F. Moravec 2007. Zoogeography of fish parasites of the pearlside (*Maurolicus muelleri*), with genetic evidence of *Anisakis simplex* (s.s.) from the Mid-Atlantic Ridge. *Marine Biology* 152:725–732
- Knutsen, H., P.E. Jorde, O.A. Bergstad & M. Skogen 2012. Population genetic structure in a deepwater fish *Coryphaenoides rupestris*: patterns and processes. *Marine Ecology Progress Series* 460:233–246.
- Knutsen, H., P.E. Jorde, H. Sannæs, A. R.Hoelzel, O.A. Bergstad, S. Stefanni, T. Johansen & N.C. Stenseth 2009. Bathymetric barriers promoting genetic structure in the deepwater demersal fish tusk (*Brosme brosme*). *Molecular Ecology* 18: 3151–3162.
- Koefoed, E.L. 1932. *Fishes from the Sea-bottom from the "Michael Sars" North Atlantic Deep-Sea Expedition 1910*. Bergen Museum, Bergen. 148 pp.
- Kobyliansky, S.G. & A.M Orlov 2015. First record of rare cusk-eel *Lamprogrammus niger* (Ophidiidae) in the central part of the Mid-Atlantic Ridge. *Journal of Ichthyology* 55 (1): 16-21.
- Kobyliansky, S.G., A.M. Orlov & N.V. Gordeeva 2010. Composition of deepsea pelagic ichthyofaunas of the Southern Atlantic, from waters of the range of the Mid-Atlantic and Walvis Ridges. *Journal of Ichthyology* 50 (10): 932-949.
- Kotlyar, A.N. 2003. Family Anoplogastridae Gill 1893 - fangtooths. California Academy of Science. *Annotated Checklists of Fishes* (20): 3.pp.

- Kotlyar, A.N. 2004. Family Melamphaidae Gill 1893 – bigscales. *California Academy of Sciences Checklist of Fishes* 29: 1-11.
- Kotlyar, A.N. 1996. *Beryciform fishes of the world ocean*. Moscow, VNIRO Publishing. 368 pp.
- Kotlyar, A.N. 2008a. Revision of the genus *Poromitra* (Melamphaidae): Part 1. Species of the group *P. crassiceps*. *Journal of Ichthyology* 48: 479–492.
- Kotlyar, A.N. 2008b. Revision of the genus *Poromitra* (Melamphaidae): Part 2. New species of the group *P. crassiceps*. *Journal of Ichthyology* 48: 553–564.
- Kotlyar, A.N. 2009a. Revision of the genus *Poromitra* (Melamphaidae): Part. 3. Species of group *P. cristiceps*: *P. cristiceps*, *P. nigrofulva*, *P. frontosa*, *P. nigriceps*. *Journal of Ichthyology* 49 (6): 421–434.
- Kotlyar, A.N. 2009b. Revision of the genus *Poromitra* (Melamphaidae): Part 4. Species of *P. cristiceps* group: *P. atlantica*, *P. oscitans*, *P. agafonovae* Kotlyar, sp. nov. *Journal of Ichthyology* 49 (8): 563–574.
- Kotlyar, A.N. 2009c. Revision of the genus *Poromitra* (Melamphaidae): Part. 5. Species of groups *P. capito* & *P. crassa*. *Journal of Ichthyology* 49 (6): 732–744.
- Kotlyar, A.N. 2010. Revision of the genus *Poromitra* (Melamphaidae): Part 6. Species of the *P. megalops* group. *Journal of Ichthyology* 50 (3): 231–245.
- Kotlyar A.N. 2011. Revision of Genus *Melamphaes* (Melamphaidae). I. Multi-Raker Species: *M. lugubris*, *M. xestochidus* sp. nova, *M. microps*, *M. manifestus* sp. nova. *Journal of Ichthyology* 51:557-568.
- Kotlyar A.N. 2012. Revision of the Genus *Melamphaes* (Melamphaidae): Part 3. Multirakered Species: *M. suborbitalis*, *M. parini*, and *M. acanthomus*. *Journal of Ichthyology* 52:137-148.
- Kotlyar A.N. 2016. Revision of the Genus *Melamphaes* (Melamphaidae). 5. Oligo-Raker Species: *M. indicus*, *M. eurous*, and *M. typhlops*. *Journal of Ichthyology* 56:19-30.
- Kritsky D.C. & S. Klimpel. 2007. *Cyclocotyloides bergstadi* n. sp. (Monogeneoidea: Diclidophoridae: Diclidophoropsinae) from the gills of grenadier, *Coryphaenoides brevibarbis* (Teleostei: Macrouridae), in the Northeast Atlantic Ocean. *Comparative Parasitology* 74 (1): 23-30.
- Kukuev, E.I. 1982. Fish fauna of the Corner submarine mountains and New England submarine ridge in the western North Atlantic. *Unsufficiently studied fishes of the open ocean*. Moscow, P.P. Shirshov Institute of Oceanology. Pp. 92-109.
- Kukuev, E.I. 1998. Systematics and distribution in the world ocean of daggertooth fishes of the genus *Anotopterus* (Anotopteridae, Aulopiformes). *Journal of Ichthyology* 38(9):716-729.
- Kukuev, E.I. 2002. Ichthyofauna research on underwater mountain within the North Atlantic ridge and adjacent areas. ICES - *International Council for the Exploitation of the Sea* CM 2002/M:05. 19pp.
- Kukuev, E.I. 2004. Twenty years of ichthyofauna research on seamounts of the North Atlantic Ridge and adjacent areas. A review. *Archives of Fisheries and Marine Research* 51(1-3): 215-232.
- Kukuev E.I. & Trunov, I.A. 2002. Composition of the meso- and bathypelagic fish fauna from the Irminger Current zone and adjacent areas. *Voprosy Ikhtiologii*, 42 (3): 322-329 (In Russian).
- Kukuev, E.I., E.I. Karaseva & V.N. Feldman 2000. On the mesopelagic ichthyofauna of the boreal zone of the Northeastern Atlantic. *Journal of Ichthyology* 40: 389–394.
- Kukuev, E.I., N.V. Parin, & I.A. Trunov 2013. Materials for the revision of the family Caristiidae (Perciformes): 3. Manefishes (Genus *Caristius*) from moderate warm waters of the Pacific and Atlantic Oceans with a description of three new species from the Southeast Atlantic (*C. barsukovi* sp.n., *C. litvinovi* sp.n., *C. walvisensis* sp. n.). *Journal of Ichthyology* 53:541-561.
- Kukuev, E.I., N.V. Parin, & I.A. Trunov 2012. Materials for the revision of the family Caristiidae (Perciformes). 2. Manefishes from the East Atlantic (Redescription of *Platyberyx opalescens* Zugmayer and description of two new species *Platyberyx mauli* sp. n. and *Caristius andriashevi* sp. n.). *Journal of Ichthyology* 52:185-199.
- Kulka, D.W., D.E. Themelis & R.G. Halliday 2001. Distribution & biology of orange roughy (*Hoplostethus atlanticus* Collett, 1889) in the Northwest Atlantic. *NAFO SCR Doc.* 01/84; 23pp.

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

- Lipinsky, M.R. & J. Janusz 2003. New records of fish and squids on the Mid-Atlantic Ridge in 1985. 35 or from the first author. 40pp.
- Melo, M.R.S. 2008. The genus *Kali* Lloyd (Chiasmodontidae: Teleostei) with description of new two species, and the revalidation of *K. kerberti* Weber. *Zootaxa* 1747:1-33.
- Melo, M.R.S. 2009. Revision of the genus *Chiasmodon* (Acanthomorpha: Chiasmodontidae), with description of two new species. *Copeia* 2009(3): 583-608.
- Melo, M.R.S. 2010. A revision of the genus *Pseudoscopelus* Lütken (Chiasmodontidae: Acanthomorpha) with descriptions of three new species. *Zootaxa* 2710: 1-78.
- Merrett, N.R., R.L. Haedrich, J.D.M. Gordon & M. Stehmann 1991. Deep demersal fish assemblage structure in the Porcupine Seabight (eastern North Atlantic): results of single warp trawling at lower slope to abyssal soundings. *Journal of the Marine Biological Association of the United Kingdom* 71: 359-373.
- Mjanger, H., K. Hestenes, E. Olsen, B.V. Svendsen & T. Wenneck 2006. *Manual for sampling of fish and crustaceans* Version 3.15. Institute of Marine Research, Bergen, Norway, 162 pp.
- Moore, J.A., K.E. Hartel, J.E. Craddock & J.K. Galbraith 2003. An annotated list of deepwater fishes from off the New England region, with new area records. *Northeastern Naturalist* 10(2): 159-248.
- Moravec, F. & S. Klimpel 2007. A new species of *Comephoronema* (nematode: Cystidicolidae) from the stomach of the abyssal halosaur *Halosaurus macrochir* (Teleostei) from the Mid-Atlantic Ridge. *Journal of Parasitology* 93(4): 901-906.
- Murray, J. & J. Hjort 1912. *The Depths of the Ocean*. London, Macmillan. 886 pp.
- Møller, P.R., J.G. Nielsen, S.W. Knudsen, J.Y. Poulsen, K. Sünksen & O.A. Jørgensen 2010. A checklist of the fish fauna of Greenland waters. *Zootaxa* 2378: 1-84.
- Nafpaktitis, B.G., R.H. Backus, J.E. Craddock, R.L. Haedrich, B.H. Robison & C. Karnella 1977. Family Myctophidae. Pp. 13-265 in: B.G. Nafpaktitis et al. Fishes of the western North Atlantic. *Memoirs of the Sears Foundation for Marine Research* 1(7): 299 pp.
- Nelson, J.S. 2006. *Fishes of the World*. 4th ed. Hoboken (New Jersey, USA): John Wiley & Sons. xix+601 pp.
- Orlov, A.M. 2011. Record of tailless Richardson's ray *Bathyraja richardsoni* (Garrick, 1961) (Rajiformes: Arhynchobatidae) caught off the Mid-Atlantic ridge. *Pan-American Journal of Aquatic Sciences* 6(3): 232-236.
- Orlov, A.M. 2012. Analysis of variations of basic morphometric characters in the species of grenadier (Macrouridae, Gadiformes) from the waters of the northern part of the Mid-Atlantic Ridge. *Journal of Ichthyology* 52(10): 800-808.
- Orlov, A., C. Cotton & I. Byrkjedal 2006. Deepwater skates (Rajidae) collected during the 2004 cruises of RV *G.O. Sars* and MS *Loran* in the Mid-Atlantic Ridge area. *Cybium* 30 (Suppl. 4): 35-48.
- Orlov, A.M., C. F. Cotton & D. A. Shevernitisky 2010. Sexual dimorphism of external morphological characters in some deepwater skates (Rajidae, Rajiformes, Chondrichthyes) of the North Atlantic. *Moscow University Biological Sciences Bulletin* 65(1): 40-44.
- Orlov A.M. & C. F. Cotton 2011. Sexually dimorphic morphological characters in five North Atlantic deepwater skates (Chondrichthyes: Rajiformes). *Journal of Marine Biology* Vol. 2011. Article ID 842821. 18 p. doi:10.1155/2011/842821.
- Orlov A.M. & C. F. Cotton 2013. New data on rare deepwater North Atlantic skate *Bathyraja pallida* (Forster, 1967) (Arhynchobatidae, Rajiformes). *Journal of Ichthyology* 53(7): 465-477.
- Orlov A.M. & C. F. Cotton 2015. New data on the rare deep-sea skate *Amblyraja jenseni* (Rajidae) from the North Atlantic Ocean. *Journal of Ichthyology* 55(4): 478-496.
- Parin N.V. & O.D. Borodulina 2002. Preliminary review of species group *Astronesthes niger* (Astronesthidae, Stomiiformes) with a description of six new species from the Atlantic and Indian Oceans. *Journal of Ichthyology* 42(7): 495-515.



- Parin, N.V. & S.G. Kobylansky 1993. Review of the genus *Maurolicus* (Sternoptychidae, Stomiiformes), with re-establishing validity of five species considered junior synonyms of *M. muelleri* and descriptions of nine new species. *Russian Academy of Sciences* 128: 69-107.
- Parin, N.V. & S.G. Kobylansky 1996. Diagnoses and distribution of fifteen species recognized in genus *Maurolicus* Cocco (Sternoptychidae, Stomiiformes) with a key to their identification. *Cybiurn* 20(2): 185-195.
- Paxton, J.R., G.D. Johnson & T. Trnski 2001. Larvae and juveniles of the deepsea "whalefishes" *Barbourisia* and *Rondeletia* (Stephanobercyiformes: Barbourisiidae, Rondeletiidae), with comments on family relationships. *Records of the Australian Museum* 53: 407-425.
- Porteiro, F.M., G.M. Menezes, P. Afonso, J.G. Monteiro & R.S. Santos 2010. Peixes Marinhos / Marine Fishes (Chondrichthyes, Actinopterygii). Pp. 331-344 in: Borges, P.A.V., A. Costa, R. Cunha, R. Gabriel, V. Gonçalves, A.F. Martins, I. Melo, M. Parente, P. Raposeiro, P. Rodrigues, R.S. Santos, L. Silva, P. Vieira & V. Vieira (Eds). *A list of the terrestrial and marine biota from the Azores*. Príncipe, Cascais. 432 pp.
- Post, A. 1987. Results of the research cruises of FRV "Walther Herwig" to South America. LXVII. Revision of the subfamily Paralepidinae (Pisces, Aulopiformes, Alepisautoidei, Paralepididae). I. Taxonomy, morphology and geographical distribution. *Archiv für Fischereiwissenschaft* 38(1/2): 75-131.
- Post A. & J.-C. Quéro. 1991. Distribution et taxonomie des Howella (Perciformes, Percichthyidae) de l'Atlantique. *Cybiurn* 15(2):111-128.
- Poulsen, J.Y., T. Sado, C. Hahn, I. Byrkjedal, M. Moku & M. Miya 2016. Preservation obscures pelagic deep-sea fish diversity: doubling the number of sole-bearing opisthoproctids and resurrection of the genus *Monacoa* (Opisthoproctidae, Argentiniformes). *PLoS ONE* 11(8): e0159762, doi:10.1371.
- Priede, I.G., O.A. Bergstad , P.I. Miller, M.Vecchione, A. Gebruk, T. Falkenhang, D.S.M. Billett, J. Craig, A.C. Dale, M.A. Shields, G.H. Tilstone, T.T. Sutton, A.J. Gooday, M.E. Inall, D.O.B. Jones, V. Martinez-Vicente, G.M. Menezes, T. Niedzielski P.Sigurðsson, N. Rothe, A. Rogacheva, C.H.S. Alt, T. Brand, R. Abell, A.S. Brierley, N.J. Cousins, D. Crookard, A.R. Hoelzel, Å. Høines, T.B. Letessier, J.F. Read, T. Shimmield, M.J. Cox, J.K. Galbraith, J.D.M. Gordon, T. Horton, F. Neat & P. Lorange 2013. Does presence of a Mid Ocean Ridge enhance biomass and biodiversity? *PLoS ONE* 8(5): e61550. doi:10.1371/journal.pone.0061550.
- Prokofiev, A. M. 2011. Swallowerfishes (Chiasmodontidae) from the northwestern part of the Pacific Ocean and adjacent waters. *Journal of Ichthyology* 51: 695-716.
- Prokofiev A.M. & E.I. Kukuev 2005. Preliminary review of linebellies of the genus *Pseudoscopus* from the Atlantic Ocean, with remarks on the species composition of the genus in the World's fauna (Perciformes: Chiasmodontidae): I. *Journal of Ichthyology* 45:712-729.
- Prokofiev A.M. & E.I. Kukuev 2006a. Preliminary review of linebellies of the genus *Pseudoscopus* from the Atlantic Ocean, with remarks on the species composition of the genus in the world's fauna (Perciformes: Chiasmodontidae): II. *Journal of Ichthyology* 46: 212-233.
- Prokofiev A.M. & E.I. Kukuev 2006b. Two new species of linebellies (Genus *Pseudoscopus*) with a revised key of species (Perciformes: Chiasmodontidae). *Journal of Ichthyology* 46: S21-S37.
- Prokofiev A.M. & E.I. Kukuev 2007. Systematics and distribution of the swallowerfishes of the genus *Pseudoscopus*(Chiasmodontidae). KMK Scientific Press Ltd., Moscow, 162 pp. (In Russian).
- Prokofiev A.M. & E.I. Kukuev 2009. Systematics and distribution of black swallows of the genus *Chiasmodon* (Perciformes: Chiasmodontidae). *Journal of Ichthyology* 49: 899-939.
- Pusch, C., Hulley, P.A. & K.-H. Kock 2004. Community structure and feeding ecology of mesopelagic fishes in the slope waters of King George Island (South Shetland Islands, Antarctica). *Deep Sea Research Part I: Oceanographic Research Papers* 51(11):1685-1708.
- Quero, J.-C., P. Lorange & E. Tardy 2000. Observations ichtyologiques effectuées en 1999 a bord du navire de recherche "Thalassa". *Annales de la Société des sciences naturelles de la Charente-Maritime* 8: 1047-1058 (In French).

# Checklist of Fishes from the Northern Mid-Atlantic Ridge

- Rees, D.J., I. Byrkjedal & T.T. Sutton 2016. Pruning the Pearlsides: Reconciling morphology and molecules in mesopelagic fishes (*Maurollicus*: Sternoptychidae). *Deep-Sea Research II*. <http://dx.doi.org/10.1016/j.dsr2.2016.04.024>.
- Rusyaev, S.M., A.V. Dolgov & O.V. Karamushko 2007. Captures of snake pipefish *Entelurus aequoreus* in the Barents and Greenland Seas. *Journal of Ichthyology* 47: 544–546.
- Santos, R. Serrão, F.M. Porteiro & J.P. Barreiros 1997. Marine Fishes of the Azores. Annotated Checklist and Bibliography. *Arquipelago*. Life and Marine Sciences. Supplement 1:xxvii + 244 pp.
- Sazonov, Y.I. & P.R. Last 2000. Redescription of the rare slickhead *Mirognathus normani* (Salmoniformes: Alepocephalidae) with the first record from the western South Pacific. *New Zealand Journal of Marine and Freshwater Research* 34:385–389.
- Sazonov, Y.I. & Y.N. Shcherbachev 1982. A preliminary review of grenadiers related to the genus *Cetonurus* Günther (Gadiformes, Macrouridae). Descriptions of new taxa related to the genera *Cetonurus* Günther and *Kumba* Marshall. *Journal of Ichthyology* 22(5):1–15.
- Scott, W.B. & M.G. Scott 1988. Atlantic fishes of Canada. *Canadian Bulletin of Fisheries and Aquatic Science* 219:731 pp.
- Shibanov, V. N., V.I. Vinnichenko & A.P. Pedchenko 2002. Prospects of fisheries on seamounts. Russian investigation and fishing in the northern part of the Mid-Atlantic Ridge. *International Council for the Exploration of the Sea (ICES) CM 2002/L:35*. Poster.
- Sigurðsson, T., G. Jónsson & J. Pálsson 2002. Deep scattering layer over Reykjanes Ridge and in the Irminger Sea. *International Council for the Exploraton of the Sea (ICES) CM. M*: 1–22.
- Silva, J.F., J.R. Ellis & T.L. Catchpole 2012. Species composition of skates (Rajidae) in commercial fisheries around the British Isles and their discarding patterns. *Journal of Fish Biology* 80: 1678–1703.
- Stefanni S & H. Knutsen 2007. Phylogeography and demographic history of the deep-sea fish *Aphanopus carbo* (Lowe, 1839) in the NE Atlantic: Vicariance followed by secondary contact or speciation? *Molecular Phylogenetics and Evolution* 4: 38–46.
- Stefanni, S., R. Bettencourt, H. Knutsen & G. Menezes 2009. Rapid PCR-RFLP method for discrimination of the two Atlantic cryptic deep-sea species of scabbardfish. *Molecular Ecology Resources* 9: 528–530. doi: 10.1111/j.1755-0998.2008.02470.
- Stevenson, D.E. & C.P. Kenaley 2011. Revision of the manefish genus *Paracaristius* (Teleostei: Percomorpha: Caristiidae), with descriptions of a new genus and three new species. *Copeia* 3: 385–399.
- Sutton, T.T., F.M. Porteiro, M. Heino, I. Byrkjedal, G. Langhelle, C.I.H. Anderson, J. Horne, H. Sjøiland, T. Falkenhaug, O.R. Godø & O.A. Bergstad 2008. Vertical structure, biomass & topographic association of deep-pelagic fishes in relation to a mid-ocean ridge system. *Deep-Sea Research II* 55: 161–184
- Sutton, T.T. & T.L. Hopkins 1996. Trophic ecology of the stomiid (Pisces, Stomiidae) assemblage of the eastern Gulf of Mexico: strategies, selectivity and impact of a mesopelagic top predator group. *Marine Biology* 127: 179–192.
- Sutton, T.T., T. Letessier & B. Bardarson 2013. Midwater fishes collected in the vicinity of the Sub-Polar Front, mid-North Atlantic Ocean, during ECOMAR sampling. *Deep-Sea Research II. Topical Studies in Oceanography* 98: 292–300.
- Svendsen, F.M. & I. Byrkjedal 2013. Morphological and molecular variation in *Synaphobranchus* eels (Anguilliformes: Synaphobranchidae) of the Mid-Atlantic Ridge in relation to species diagnostics. *Marine Biodiversity* 43(4): 407–420.
- Sweetman, C.J., T.T. Sutton, M. Vecchione & R.J. Latour 2013. Distribution of the biomass-dominant fish, *Bathylagus euryops* (Argentiniformes: Microstomatidae) along the northern Mid-Atlantic Ridge. *Deep-Sea Research I* 78: 16–23.

- Tempelman, W. 1973. First records, description, distribution, and notes on the biology of *Bathyraja richardsoni* (Garrick) from the Northwest Atlantic. *Journal of Fisheries Research Board of Canada* 30: 1831-1840.
- Troyanovsky, F.M. & S.F. Lisovsky 1995. Russian (USSR) Fisheries Research in deep waters (below 500 m) in the North Atlantic. Pp. 357-366 in: Hopper, A.G. (Ed.). Deep-water fisheries of the North-Atlantic oceanic slope. *NATO ASI Series, Series E. Applied Sciences*, Kluwer Academic Publishers, Netherlands 296: 357-366.
- Trunov, I.A. E.I. Kukuev & N.V. Parin 2006. Materials for the revision of the family Caristiidae (Perciformes): 1. Description of *Paracaristius heemstrai* gen. et sp. nov. *Journal of Ichthyology* 46: 441-446.
- Uiblein, F., J.G. Nielsen & P.R. Møller 2008. Systematics of the Ophidiid genus *Spectrunculus* (Teleostei: Ophidiiformes) with resurrection of *S. crassus*. *Copeia* 2008: 542-551.
- Van der Spoel, S. 1981. List of discrete depth samples and open net hauls of the Amsterdam Mid North Atlantic Plankton Expedition 1980 (Project 101A). *Bulletin of the Zoological Museum of the University of Amsterdam* 8:1-10.
- Van der Spoel, S. 1985. List of discrete depth samples and open net hauls of the Amsterdam Mid North Atlantic plankton expedition 1982 and 1983 (Project 101A). *Bulletin of the Zoological Museum of the University of Amsterdam* 10:129-137.
- Van der Spoel, S. & A.G.H.A. Meerding 1983. List of discrete depth samples and open net hauls of the Amsterdam Mid North Atlantic Plankton Expedition 1981 (Project 101 A). *Bulletin of the Zoological Museum of the University of Amsterdam* 9:77-91.
- van Utrecht, W.L., C.N. van Utrecht-Cock & A.M.J. Graaf 1987. Growth and seasonal variations in distribution of *Chauliodus sloani* and *C. danae* (pisces) from the mid north Atlantic. *Bijdragen tot de Dierkunde* 57(2): 164-182
- van Utrecht, W.L. & C.N. van Utrecht-Cock 1987. *Serrivomer beanii* Gill & Ryder, 1884 (Pisces, Anguilliformes, Serrivomeridae): some aspects of seasonal variation in numbers and distribution in the mid North Atlantic. *Bijdragen tot de Dierkunde* 57(1): 53-58
- Vinnichenko, V.I. 1997. Russian investigations and deep water fishery on the Corner rising seamount in subarea 6. *NAFO Scientific Council Studies* 30:41-49.
- Vinnichenko, V.I. 1998. Alfonsino (*Beryx splendens*) Biology and fishery on the seamounts in the open North Atlantic. *International Council for the Exploration of the Sea (ICES) CM* 1998/O: 13. Theme Session on Deepwater Fish and Fisheries.
- Wenneck, T. de Lange, T. Falkenhaus & O.A. Bergstad. 2008. Strategies, methods, and technologies adopted on the RV *G.O. Sars* MAR-ECO expedition to the mid-Atlantic Ridge in 2004. *Deep-Sea Research II* 55: 6-28.
- Ward, R.D., T.S. Zemlak, B.H. Innes, P. R. Last & P.D. Hebert 2005. DNA Barcoding of Australia's fish species. *Philosophical Transactions of the Royal Society B*. 360: 1847-1857.
- Ward, R. D., F.O. Costa, B.H. Holmes & D. Steinke 2008. DNA barcoding shared fish species from the North Atlantic and Australasia: minimal divergence for most taxa but a likely two species for both *Zeus faber* and *Lepidopus caudatus*. *Aquatic Biology* 3:71-78.
- Wienerroither, R., E. Johannesen, A. Dolgov, I. Byrkjedal, O. Bjelland, K. Drevetnyak, K.B. Eriksen, Å. Høines, G. Langhelle, H. Langøy, T. Prokhorova, T., D. Prozorkevich, & T. de L. Wenneck 2011. *Atlas of the Barents Sea Fishes*. IMR/PINRO Joint Report Series 1-2011, ISSN 1502-8828.
- White, T.A. J. Stamford & A.R. Hoelzel 2010. Local selection and population structure in a deep-sea fish, the roundnose grenadier (*Coryphaenoides rupestris*). *Molecular Ecology* 19 (2): 216-226.
- Whitehead, P.J.P., M.-L. Bauchot, J.-C. Hureau, J. Nielsen & E. Tortonese 1984-86. *Fishes of the North-eastern Atlantic and the Mediterranean* (FNAM). Vol I, II, III. Unesco, Paris. 1473 pp.

## APPENDIX I

### OTHER NORTHERN MAR FISHES NOT CAUGHT DURING THE MAR-ECO SURVEYS.

Another 111 fish species were also reported for northern MAR by several authors (i.e. Nafpaktitis et al. 1977; Gushchin & Kukuev 1981; FNAME (1984-86; on maps); Hareide & Garnes 2001; Kukuev 2004; Pusch et al. 2004). It is difficult to attest the validity of the identification, but probably most are valid records. From those seventy-two species were also reported for the Azores (Porteiro et al. (2010)), northwest Atlantic (Moore et al. 2003), Iceland (Jónsson & Pálsson (2006)) and/or Greenland (Møller et al. 2010). Twenty-three are members of the upper epipelagic community, which was not comprehensively sampled during the MAR-ECO surveys, and probably many occur only seasonally in the region: *Carcharhinus longimanus* (Poey, 1861); *Isurus oxyrinchus* Rafinesque, 1810; *Alepisaurus ferox* Lowe, 1833; *Coryphaena hippurus* Linnaeus, 1758; *Histrio histrio* (Linnaeus, 1758); *Lamna nasus* (Bonnaterre, 1788); *Lampris guttatus* (Brünnich, 1788); *Macroramphosus scolopax* (Linnaeus, 1758); *Makaira nigricans* Lacepède, 1802; *Naucratus ductor* (Linnaeus, 1758); *Ranzania laevis* (Pennant, 1776); *Regalecus glesne* Ascanius, 1772; *Remora remora* (Linnaeus, 1758); *Scomberesox saurus* (Walbaum, 1792); *Scomberesox simulans* (Hubbs & Wisner, 1980); *Katsuwonus pelamis* (Linnaeus, 1758); *Thunnus alalunga* (Bonnaterre, 1788); *Thunnus albacares* (Bonnaterre, 1788); *Thunnus obesus* (Lowe, 1839); *Thunnus thynnus* (Linnaeus, 1758); *Trachipterus arcticus* (Brünnich, 1771); *Xiphias gladius* Linnaeus, 1758; *Istiophorus albicans* (Latreille, 1804); *Sphyrna lewini* (Griffith & Smith, 1834). Others: lower epipelagic / upper mesopelagic species such as bramiids *Brama brama* (Bonnaterre, 1788), *Pterycombus brama* Fries, 1837, *Taractes asper* Lowe, 1843 and the blue-whiting *Micromesistius poutassou* (Risso, 1827) were also reported from the northern MAR.

Moreover the authors refer to the following meso and bathypelagic fish species: *Nemichthys curvirostris* (Stromman, 1896); *Saccopharynx harrisoni* Beebe, 1932; *Macroparalepis affinis* Ege, 1933; *Lampanyctus tenuiformis* (Brauer, 1906); *Notolychnus valdiviae* (Brauer, 1904); *Taaningichthys minimus* (Tåning, 1928); *Chauliodus danae* Regan & Trewavas, 1929; *Eustomias achirus* Parin & Pokhil'skaya, 1974; *Grammatostomias flagellibarba* Holt & Byrne, 1910; *Idiacanthus fasciola* Peters, 1877; *Melanostomias macrophotus* Regan & Trewavas, 1930; *Melanostomias valdiviae* Brauer, 1902; *Photonectes caeruleus* Regan & Trewavas, 1930; *Photonectes mirabilis* Parr, 1927; *Rhadinesthes decimus* (Zugmayer, 1911); *Cyclothone alba* Brauer, 1906; *Cyclothone acclinideus* Garman, 1899; *Vinciguerrina nimbaria* (Jordan & Williams, 1895); *Polymetme corythaeola* (Alcock, 1898); *Melamphaes simus* Ebeling, 1962; *Halassobathia pelagica* Cohen, 1963; *Parabrotula plagiophthalma* Zugmayer, 1911; *Stylephorus chordatus* Shaw, 1791; *Caristius macropus* (Bellotti, 1903); *Himantolophus groenlandicus* Reinhardt, 1837; *Caulophryne polynema* Regan, 1903; *Himantolophus albinare* Maul, 1961; *Linophryne algibarbata* Waterman, 1939; *Linophryne lucifer* Collett, 1886;

Among the benthic and/or benthopelagic the following species were recorded by the above mentioned authors: *Hydrolagus mirabilis* (Collett, 1904); *Harriotta raleighana* Goode & Bean, 1895; *Rajella kukujevi* (Dolganov, 1985); *Rajella fyllae* Lütken, 1887; *Centrophorus granulosus* (Bloch & Schneider, 1801); *Centroscyllium fabricii* (Reinhardt, 1825); *Cetorhinus maximus* (Gunnerus, 1765); *Chlamydoselachus anguineus* Garman, 1884; *Apristurus laurussonii* (Saemundsson, 1922); *Dalatias licha* (Bonnaterre, 1788); *Deania profundorum* (Smith & Ratcliffe, 1912); *Scymnodalatias garricki* Kukuev & Konovalenko, 1988; *Heptranchias perlo* (Bonnaterre, 1788); *Hexanchus griseus* (Bonnaterre, 1788); *Etmopterus spinax* (Linnaeus, 1758); *Scymnodon ringens* Bocage & Capello, 1864; *Oxynotus paradoxus* Frade, 1929; *Galeus melastomus* Rafinesque, 1810; *Alepocephalus bairdii* Goode & Bean, 1879; *Alepocephalus rostratus* Risso, 1820; *Einara edentula* (Alcock, 1892); *Barbantus curvifrons* (Roule & Angel, 1931); *Sudis hyalina* Rafinesque, 1810; *Cetonurus globiceps* (Vaillant, 1884); *Coelorinchus caelorhincus* (Risso, 1810); *Echinomacurus mollis* Roule, 1916; *Trachonurus villosus* (Günther, 1877); *Facciolella oxyrhyncha* (Bellotti, 1883); *Hoplostethus mediterraneus* Cuvier, 1829;

*Diplospinus multistriatus* Maul, 1948; *Nesiarchus nasutus* Johnson, 1862; *Promethichthys prometheus* (Cuvier, 1832); *Physiculus dalwigki* Kaup, 1858; *Allocyttus verrucosus* (Gilchrist, 1906); *Argentina silus* (Ascanius, 1775); *Cyclopterus lumpus* Linnaeus, 1758; *Diretmoides pauciradiatus* (Woods, 1973); *Ectreposebastes imus* Garman, 1899 ; *Epigonus denticulatus* Dieuzeide, 1950; *Lycodes esmarkii* Collett, 1875; *Centrolophus niger* (Gmelin, 1789);

Among the benthopelagic species known to occur in densities high enough to support an international commercial exploitation the MAR-ECO surveys failed to sample: *Beryx decadactylus* Cuvier, 1829; *Beryx splendens* Lowe, 1834; *Helicolenus dactylopterus dactylopterus* (Delaroche, 1809); *Conger conger* ([Artedi, 1738] Linnaeus, 1758); *Epigonus telescopus* (Risso, 1810); *Molva macrophthalma* (Rafinesque, 1810); *Hippoglossus hippoglossus* (Linnaeus, 1758); *Reinhardtius hippoglossoides* (Walbaum, 1792); *Sebastes viviparus* Krøyer, 1845; and *Pagellus bogaraveo* (Brünnich, 1768). Larvae of *Anguilla anguilla* (Linnaeus, 1758) and *Eutrigla gurnardus* (Linnaeus, 1758) were also reported.

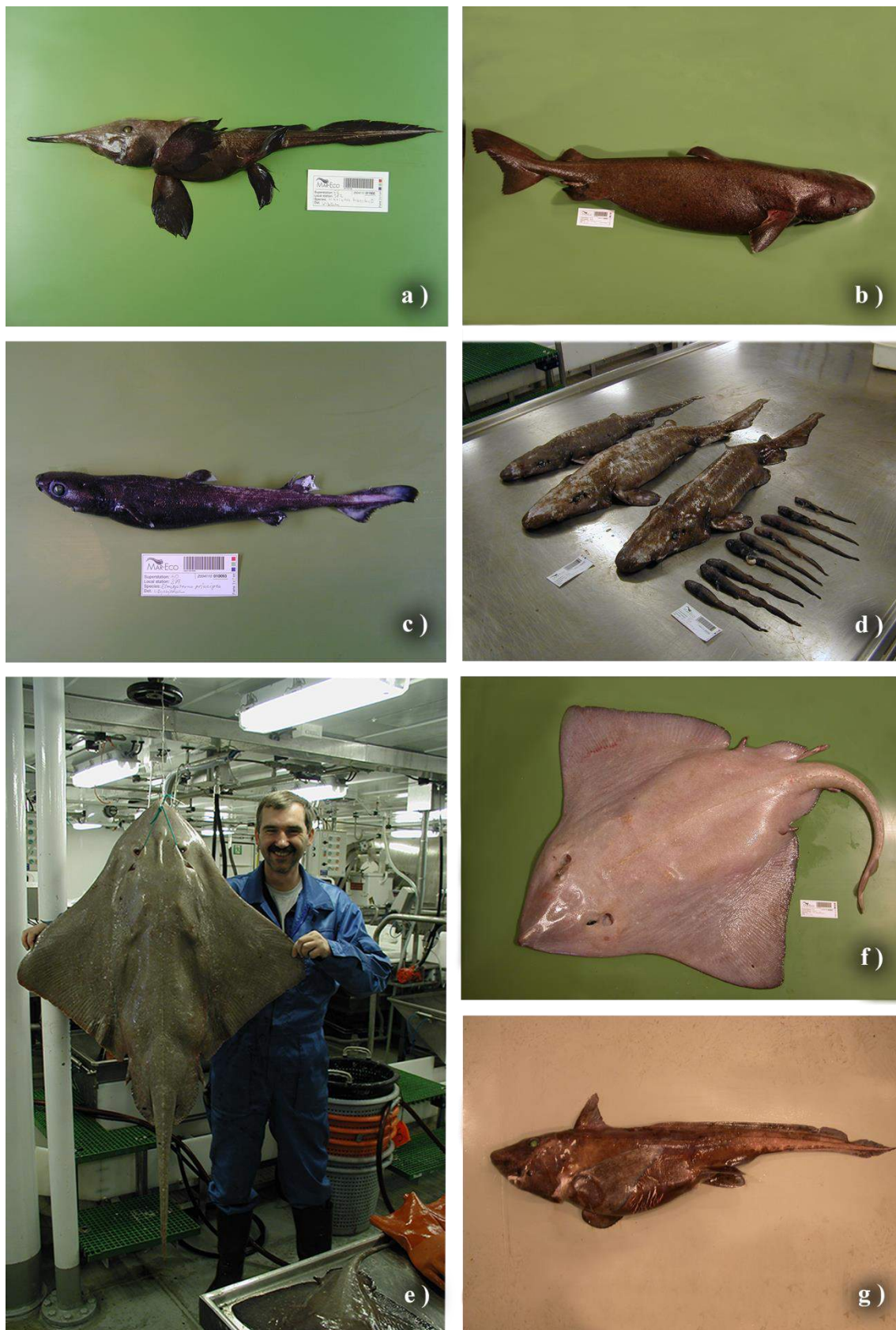


Fig. 1. a) *Harricotta haeckeli*; b) *Centroscymnus coelolepis*; c) *Etmopterus princeps*; d) *Apristurus manis*; e) *Bathyraja pallida*; f) *Bathyraja richardsoni*; g) *Hydrolagus affinis*. (Photo credits: a) Menezes; b) and e) Wenneck; c) and d) Byrkjedal; f) and g) Orlov). (MAR-ECO labels are 4 x 8 cm).





Fig. 2. a) *Aldrovandia phalacra*; b) *Notachanthus bonaparte*; c) *Serrivomer beanii* (upper) and *S. lanceolatooides* (lower); d) *Histiobranchus bathybius*; e) *Nemichthys scolopaceus*; f) *Ilyophis brunneus*. (Photo credits: a) Byrkjedal; b), c), d) and f) Menezes; e) Wenneck). (MAR-ECO labels are 4 x 8 cm).



Fig. 3. a) *Bathylagichthys greyae*; b) *Bathylagus euryops*; c) *Ophisthoproctus soleatus*; d) *Monacoa grimaldii*; e) *Microstoma microstoma*; f) *Bathylychnops exilis*; g) *Melanolagus bericoides*. (Photo credits: a) and c) Sutton; b) and e) Porteiro; d), f) and g) Byrkjedal). (MAR-ECO labels are 4 x 8 cm).





Fig. 4. a) *Bajacalifornia megalops*; b) *Alepocephalus australis*; c) *Xenodermichthys copei*; d) *Rouleina attrita*; e) *Leptoderma macrophthalmum*; f) *Mirognathus normani*. (Photo credits: a), b) and d) Galbraith; c) and f) Porteiro; e) Wenneck). (MAR-ECO labels are 4 x 8 cm).

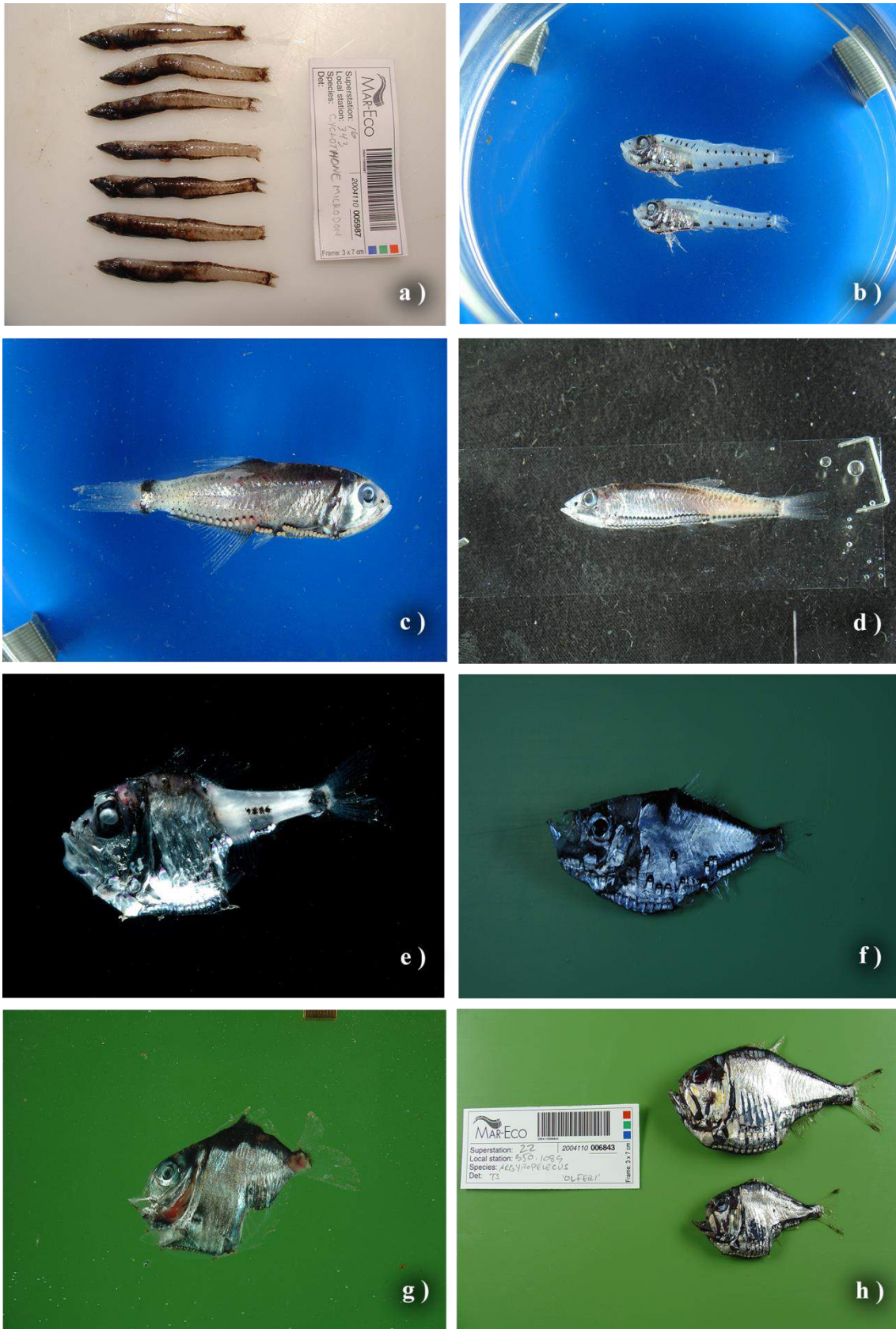


Fig. 5. a) *Cyclathone microdon*; b) *Valenciennellus tripunctulatus*; c) *Margrethia obtusirostra*; d) *Vinciguerria poweriae*; e) *Argyropelecus hemigymnus*; f) *Polyipnus polli*; g) *Sternoptyx pseudobscura*; h) *Argyropelecus olfersii*. (Photo credits: a), b), c), d), g) and h) Porteiro; e) Shale; f) Dolgov). (MAR-ECO labels are 4 x 8 cm).



Fig. 6. a) *Eustomias obscurus*; b) *Stomias boa*; c) *Chauliodus sloani*; d) *Malacosteus niger*; e) *Photostomias guernei*. (Photo credits: a) Menezes; b) Shale; c) and d) Sutton; e) Orlov). (MAR-ECO labels are 4 x 8 cm).



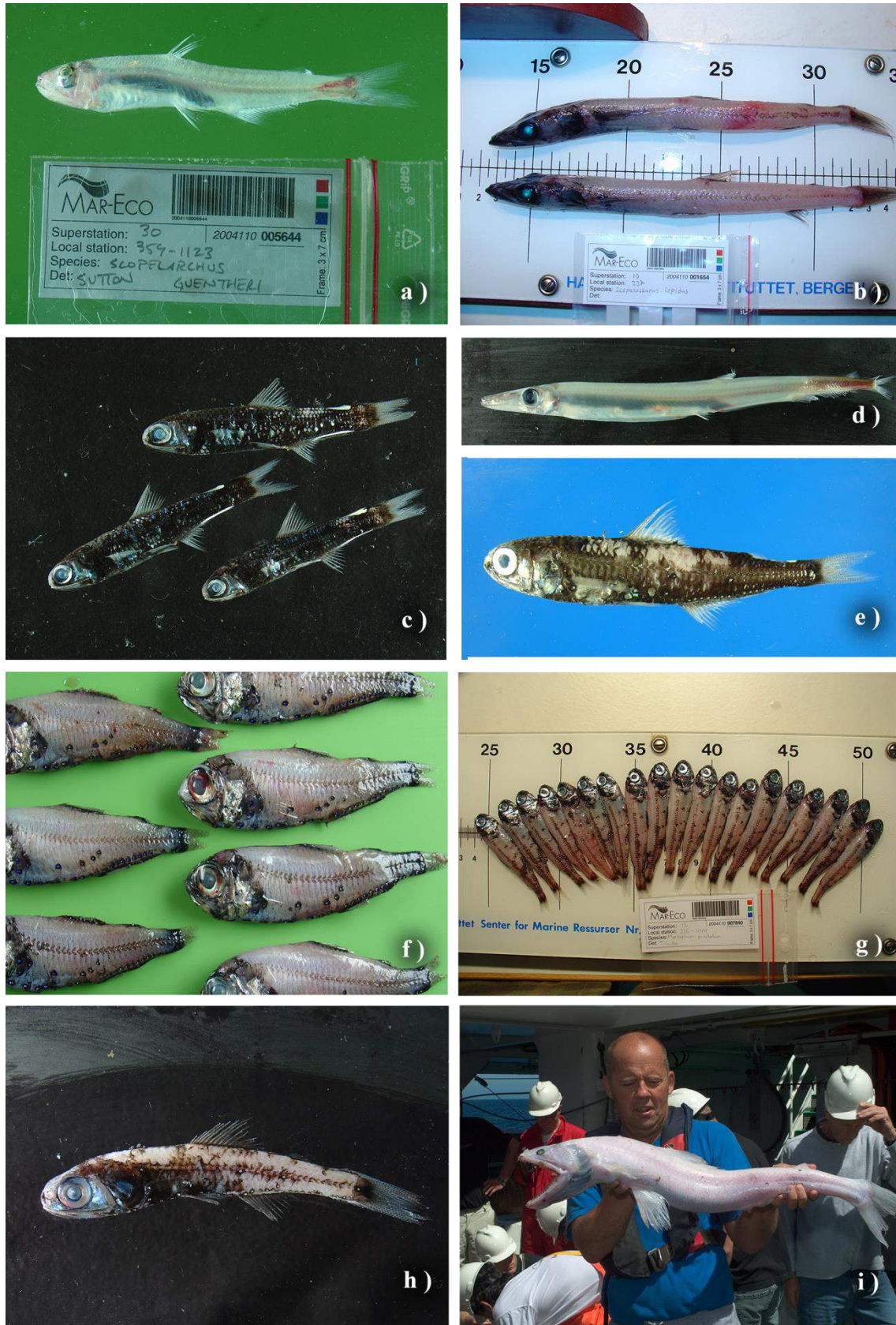


Fig. 7. a) *Scopelarchus guentheri*; b) *Scopelosaurus lepidus*; c) *Myctophum punctatum*; d) *Lestidiops jayakari*; e) *Lampadena chavesi*; f) *Electrona risso*; g) *Symbolophorus veranyi*; h) *Ceratoscopelus maderensis*; i) *Bathysaurus mollis*. (Photo credits: a), b), c), d), e), f), g) and h) Porteiro; i) Shale). (MAR-ECO labels are 4 x 8 cm).

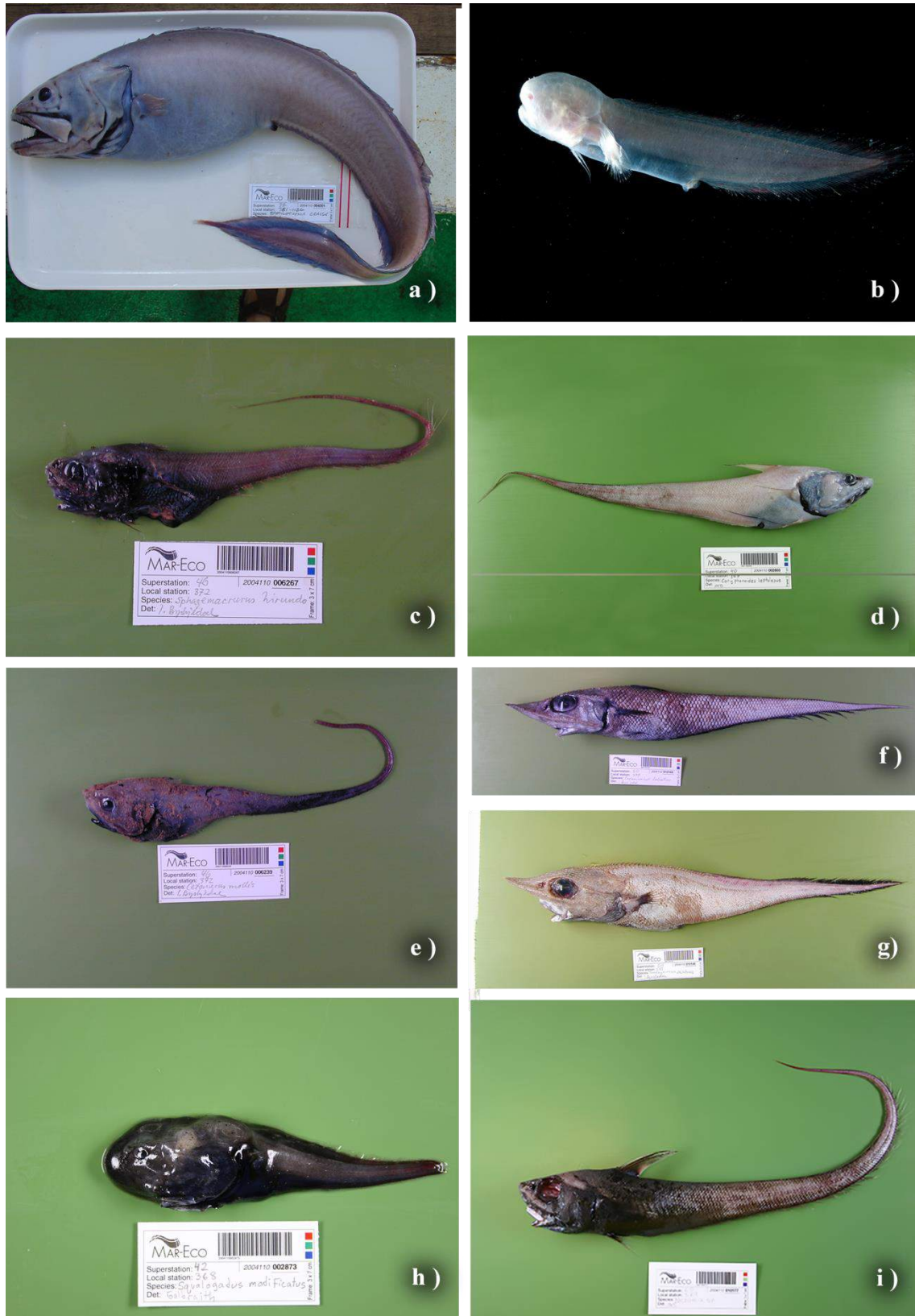


Fig. 8. a) *Brotulotaenia crassa*; b) *Aphyonus gelatinosus*; c) *Asthenomacurus victoris*; d) *Coryphaenoides leptolepis*; e) *Paracetonurus flagellicauda*; f) *Coelorhynchus labiatus*; g) *Trachyrhynchus murrayi*; h) *Squalogadus modificatus*; i) *Nezumia sclerorhynchus*. (Photo credits: a) Porteiro; b) Shale; c), e), f) and g) Byrkjedal; d), h) and i) Galbraith). (MAR-ECO labels are 4 x 8 cm).





Fig. 9. a) *Lepidion schmidtii*; b) *Lepidion eques*; c) *Oneirodes* sp.; d) *Melanonus zugmayeri*; e) *Gigantactis vanhoeffeni*; f) *Lophodolos acanthognathus*; g) *Melanocetus johnsonii*; h) *Oneirodes macrosteus*; i) *Chaenophryne draco*. (Photo credits: a) and b) Orlov; c) and i) Sutton; d) Byrkjedal; e), g) and h) Porteiro; f) Shale. (MAR-ECO labels are 4 x 8 cm).



Fig. 10. a) *Poromitra megalops*; b) *Scopelogadus beanii*; c) *Hoplostethus atlanticus*; d) *Chiasmodon niger*; e) *Neocyttus helgae*; f) *Paraliparis nigellus*; g) *Dysalotus alcocki*; h) *Cottunculus tubulosus*. (Photo credits: a) and b) Porteiro; c) Menezes; d) and g) Sutton; e) Wenneck; f) Byrkjedal; h) Orlov). (MAR-ECO labels are 4 x 8 cm).





## OPEN ACCESS

Free of charge for authors and readers

[www.arquipelago.info](http://www.arquipelago.info)

## EXCHANGE

The journal is distributed to libraries on exchange basis through the publisher

## PURCHASE

Hard copies can be purchased from the publisher.

## OFFPRINTS

Authors receive PDF files of their papers. Orders of paper copies can be sent with the proofs if desired.

## INSTRUCTIONS TO AUTHORS

**General.** MSS should be submitted to the editor by e-mail: [helen.r.martins@uac.pt](mailto:helen.r.martins@uac.pt).

The text, in English, should be ready to go online and carefully checked for all errors, including linguistic ones, before submission. Choose Font Times New Roman, size 12, double spaced paragraph and insert page numbers. MSS that are not in accordance with the instructions will be returned for revision. All MSS will be peer-reviewed by two referees prior to their acceptance by the Editor.

**Style.** 1) Title and 2) Author's name, followed by 3) Abstract (not exceeding 200 words), up to five key words, and (4) the author's name and professional postal address; 5) The main text; 6) Acknowledgements; 7) References; 8) Appendices; 9) Tables with legends; and 10) List of figures with legends.

For research articles the text (5) must be organized as follows: Introduction; Material and methods; Results; Discussion. The Abstract (3) should convey the scope of the paper, emphasizing the results and conclusions, not merely describing its contents. Limit the authors' professional address (4) to official filiations only.

**References.** (6) Should correspond with the examples given below:

a) Reference to a book:

Etgen, W.M. & P.M. Reaves 1978. *Dairy Cattle Feeding and Management* (6th edition). John Wiley & Sons Inc. New York. 638 pp.

b) Chapter from a book:

O'Dor, R., H. O. Pörtner & R. E. Shadwick 1990. Squid as elite athletes: locomotory, respiratory, and circulatory integration. Pp. 481-503 in: Gilbert, D.L., W.J. Adelman & J.M. Arnold (Eds). *Squid As Experimental Animals*. Plenum Press, New York-London. 516 pp.

c) Article from a journal:

Bentley, M.G., P.J.W. Olive, P.R. Garwood & N.H. Wright 1984. The spawning and spawning mechanism of *Nephtys caeca* (Fabricius, 1780) and *Nephtys homebergi* Savigny, 1818 (Annelida: Polychaeta). *Sarsia* 69: 63-68.

d) Electronic article, from online-only Journal:

Woo, K.L. 2006. Testing Visual Sensitivity to the Speed and Direction of Motion in Lizards. *Journal of Visualized Experiments* [Internet]. Available from: <http://www.jove.com/index/details.stp?id=127> (cited 18 February 2007).

Use ampersand (&) for all joint authorships in the reference list and for double authorships in the text. Use "et al." in the text for references with three or more authors, and in the reference list for more than seven authors. Avoid multiple citations in the text, preferably including the earliest and the most recent work. The reference list should be ordered alphabetically by author's name and year of publication, followed by increasing number of co-authors. *Journal titles should be written in full.*

**Figures and Tables.** All figures and large tables should be presented using Font Times New Roman, and separately. Photographs should be clear, have high contrast, and in digital format (tiff or jpg) with 300 dpi and at least 15x15 cm. No original figures should be submitted before the MS has been accepted.

**E-mail Attachment.** All text and images files formats are accepted. Attachments must be identified with the author's last name followed by the file name and extension (e.g. Bianchi\_text.doc, Bianchi\_fig1.tif, Bianchi\_tab1.xls)



UNIVERSIDADE  
DOS AÇORES

Centro UI & D - Okeanos



  
**Governo dos Açores**  
Secretaria Regional do Mar, Ciência e Tecnologia

ISBN: 978-989-99834-0-3  
ISSN: 0873-4704