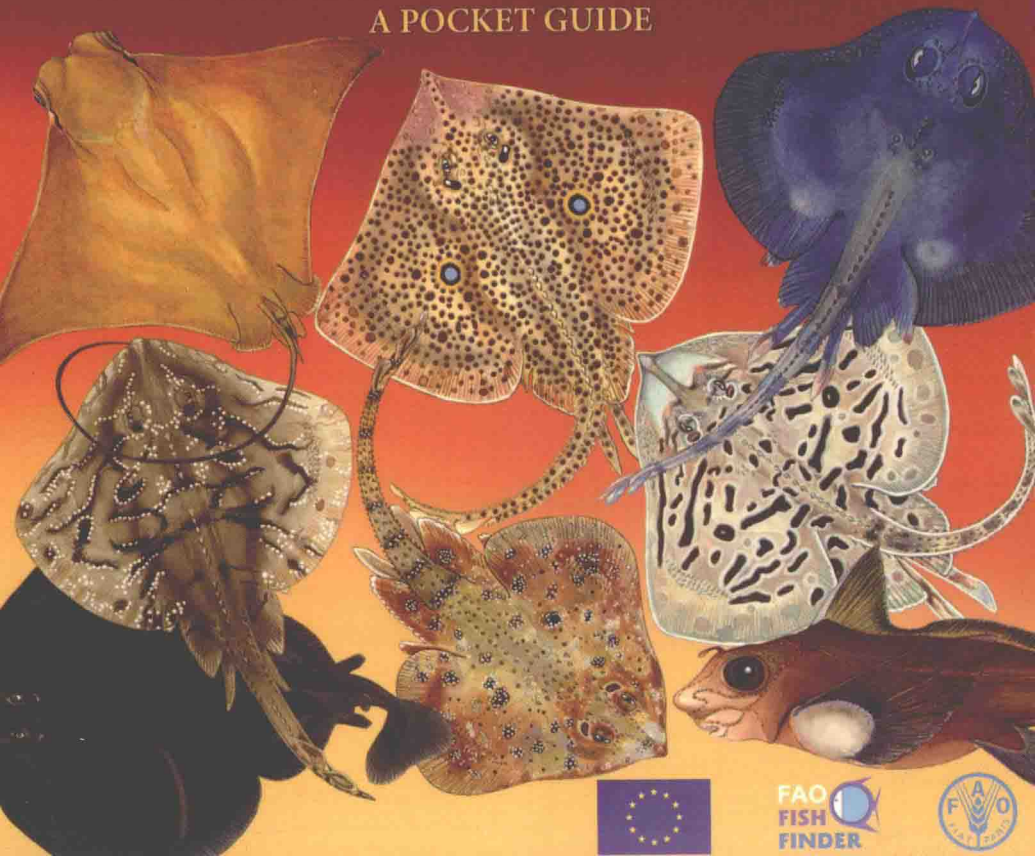
NORTH ATLANTIC BATOIDS AND CHIMAERAS RELEVANT TO FISHERIES MANAGEMENT

A POCKET GUIDE



FAO FISH FINDER

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INTRODUCTION

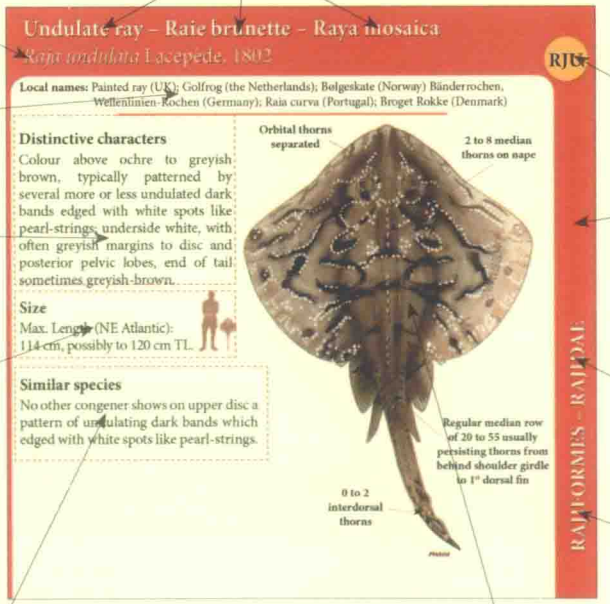
This Pocket Guide presents a fully illustrated identification guide to a selection of batoid and chimaera species of the North Atlantic. It encompasses FAO fishing area 27 (Eastern North Atlantic) extending essentially from the North Pole to latitude 36°N in the central Atlantic, bordered on the west by the coast of eastern Greenland and longitude 40°W in the Central North Atlantic, and area 21 (Western North Atlantic) from Eastern Greenland westwards to the Arctic waters of northern Canada at 120°W, and from northern Arctic waters about 78° 10' N southwards to Cape Hatteras at 35°N.

The North Atlantic batoid fauna is currently represented by fifty-six species, thirty-three of which occur in area 27, seven in area 21, while sixteen species are widespread throughout both areas. Of the total of eight chimaera species known to occur in the North Atlantic, six are distributed throughout both areas, with two species occurring only in area 27.

This pocket guide includes thirty-three species of batoids and three chimaeras selected as being most relevant to commercial fisheries, vulnerable to exploitation due to their life history characteristics, or taken in large numbers as discarded by-catch. Each species is described, illustrated and its distribution mapped. Key distinguishing features of similar-looking species occurring in the same area are highlighted allowing for easy and accurate identification in the field.

Chimaeras are of very limited commercial interest only due to their deepwater habitat and rarity of most species. On the other hand, most batoid fishes are appreciated fishery subjects in many regions of their worldwide occurrence but share the same biological peculiarities as sharks, i.e. slow growth, late maturity, low reproductive rate, and can easily become overfished. Towards this direction, the EU, non-EU countries and Regional Fisheries Management Organizations (RFMOs) have adopted conservation and management measures to reduce the impact of fisheries on elasmobranchs in the North Atlantic. Correct identification is of primary importance in marine resource management. Therefore, this pocket guide is aimed at fishery workers for the specific purpose of improving data collection at the species level for North Atlantic batoids and chimaeras.

HOW TO USE THIS GUIDE



FAO Names (English - French - Spanish)

Scientific Name

Local names used in countries bordering on the region

Additional diagnostic features

Size given as Total length or Disc width

FAO 3-alpha code

A different colour for each Order

Family

Order

Main distinctive characters of similar species occurring in the area

Colour illustration and main field marks

Photo of a specimen immediately after capture

EU, non-EU countries and RFMOs that have regulations in force in 2012

Information on fisheries and commercial importance

Known (dark green) and uncertain (light green) geographic distribution

Regulations in force in 2012 (meant to alert the user and thereby encourage him to have a closer look at the subject and increase awareness about the vulnerability of batoids and chimaeras)

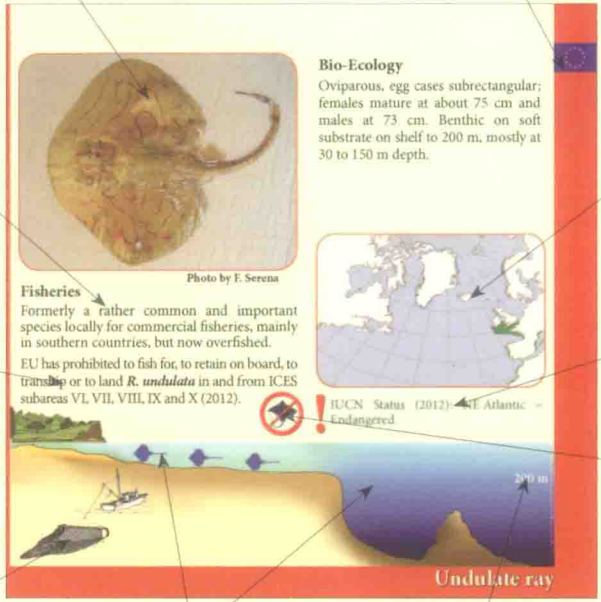
Conservation status

Prohibited species (2012)

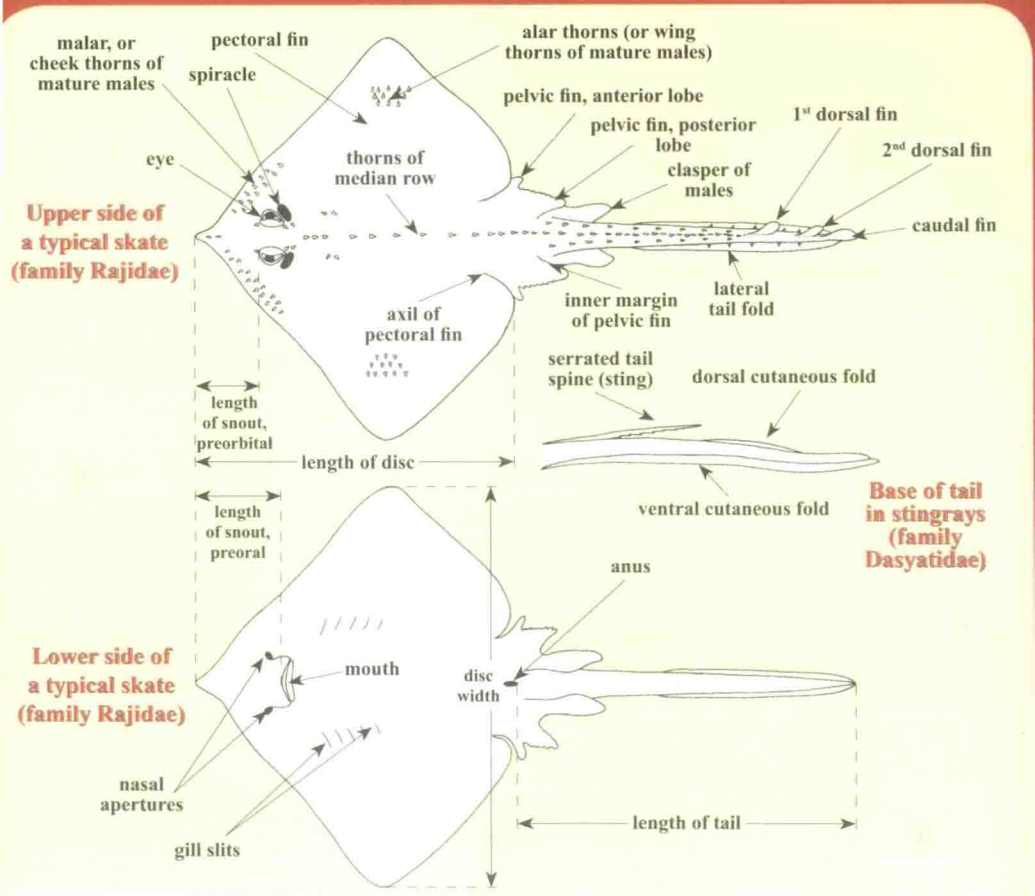
Fishing Methods

Zones of occurrence (neritic, epipelagic etc.)

Maximum depth of commonly caught specimens

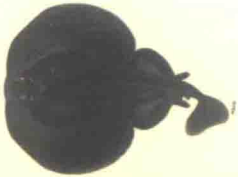


PICTURE GUIDE OF EXTERNAL TERMINOLOGY OF BATOIDS



Batoids

Pectoral fins forming a large oval disc; uni-lobed pelvic fins; tail massive, with two large dorsals and a large caudal fin; large electric organ on each side of head



TORPEDINIFORMES

Except Guitarfishes, pectoral fins fused with head and trunk to form mostly subrhombic disc; pelvic fins bilobed; tail rather slender, with two small dorsals and rudimentary caudal fin

RAJIFORMES

Disc subrhombic to lozenge-shaped; pelvic fins uni-lobed; tail thin, mostly long and whip-like, often with serrated sting on root

MYLIOBATIFORMES

Chimaeras

Single gill opening; large eyes; long spine at origin of 1st dorsal fin; rubbery skin devoid of denticles

CHIMAERIFORMES

GUIDE TO NORTH ATLANTIC BATOIDS AND CHIMAERAS
ORDERS INCLUDED IN THE POCKET GUIDE

Photographing and preserving specimens for identification

by M. Stehmann and D. Ebert

Experience over many years has shown that the identification of cartilaginous fish species can be problematic; however, people interested in identifying unusual species that they may encounter while on board fishing vessels, at landing places, ports, fish markets, on angling tours, in souvenir shops, and underwater, can take digital images and send them to a local expert for possible identification. Sometimes rare species may be encountered, and if possible these specimens in addition to being photographed fresh, should be saved and forwarded to experts for possible identification. This can benefit both the scientist, most of whom are interested in these observations, and the public who is interested in having their specimen identified.

Taking photographs for easing identification:

If possible try and place a ruler or other measuring scale alongside the specimen; if no ruler is available, then some other object that may serve as a size reference, a lens cap, pencil or some object to show a size relationship. A handwritten label that includes a number, the date, location, and other relevant capture information, and may include the person's name. Plain coloured or an artificial background contrasting the specimen's colour is fine.

Rays, skates, guitar- and sawfishes: Take photographs in total upper and lower views. Add close-ups of details, such as upper and lower side of head, the saw of sawfish both sides, mouth-nasal region, dorsal and caudal fins (if present), serrated tail spine(s) in stingrays, details of scale coverage (mainly in saw- and guitarfish) and obvious thorn pattern on upper side of disc and tail, colour pattern details like eye-spots.

Photos of *Leucoraja naevus* by M. Stehmann

Chimaeras: Take photographs in total lateral, dorsal and ventral views, if possible with fins erected and spread. Add close-ups of details catching your eye, e.g. lateral and ventral view of head to gill slits or to origin of pectoral fins, mouth-nasal region, the jaws with dentition details, details of head canal and pore system, individual fins, colour marks.

Photo of *Harriotta raleighana* by M. Stehmann

Preservation of unknown, rare or strange specimens and where to send these:

Beyond, of course, taking photographs first of the fresh specimen, preserving and forwarding such individuals may be very important for science. These may document, e.g. first geographical records, first records of small young or fully grown adults in a given location, or you may have found even a species so far unknown to science.

On board a fishing or angling tour vessel, preservation by deep-freezing, on ice, or in a refrigerator will be given options. At other occasions, it may become difficult, and preserving in 4% formaldehyde (caution: dangerous to skin, eyes and when inhaled!) will be the best. Use thick, water- and leakage-proof plastic bag or box for storage. Dilute concentrated formalin 1:9 with water and add the liquid to the specimen in the bag or box to be closed firmly – the liquid and its gas are caustic! If possible, inject before formalin into the belly cavity, or cut a small slit through belly to allow penetration of formalin to the innards to prevent from disintegration. Specimens need one to several days for being preserved, depending on their size and thickness. Then pour out liquid formalin, rinse specimen under water, wrap it in moist cloths or paper to prevent it from drying up and keep in plastic bag or box.

Make contact with the nearest marine or fishery institute, zoological institute or museum and bring the specimen there, or post it in leakage-proof packing. Internet search may help to find an appropriate addressee nearby. Public zoos and aquaria may also provide advice.

Electric ray – Torpille noire – Tremolina negra

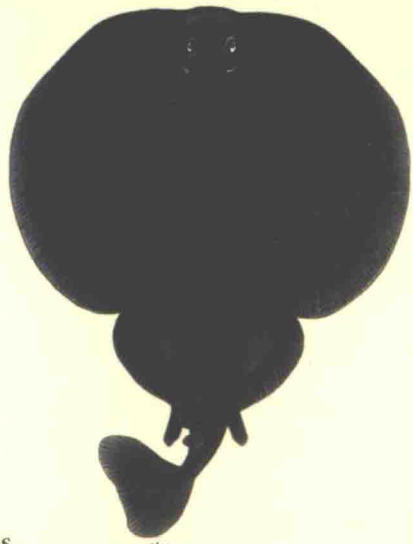
Torpedo (Tetronarce) nobiliana Bonaparte, 1835

TTO

Local names: Svart el-rokke (Norway); Schwarzer Zitterrochen (Germany); Tremelga negra (Portugal)

Eye and spiracle

Margins of spiracles smooth, without tentacles or knobs



Distinctive characters

Front margin of thick, fleshy, subcircular disc broadly truncate. Tail section stout and massive, with two large, separated dorsal fins of which the first one about twice as large as second one; a large paddle-like caudal fin. Uniformly plain dark violet-brown above.

Size

Max. Length (N. Atlantic): about 180 cm TL.

Similar species

Torpedo (Torpedo) marmorata
Dorsal coloration variably mottled light on dark background.

Eye and spiracle

Margins of spiracles rimmed with knobs or tentacles

Torpedo (Torpedo) torpedo
Brown above with five or fewer large blue eye-spots encircled by orange inner and black outer ring.

Margins of spiracles rimmed with knobs or tentacles

Eye and spiracle

TORPEDINIFORMES – TORPEDINIDAE

Photo by L. Sion

Fisheries

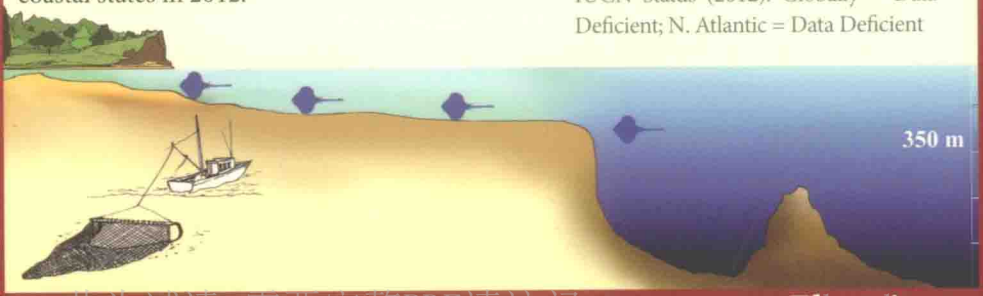
Electric rays are not used for human consumption or other purposes. Bycatch in bottom and pelagic fisheries but usually discarded. Fishermen should handle these rays with respect, and avoid their powerful electric shocks.

No catch limitations imposed by EU and other coastal states in 2012.

Bio-Ecology

Juveniles living mainly benthic on the continental shelf soft bottoms from 10 to 150 m, with a few records down to 350 m. Adults may be pelagic or semi-pelagic regularly swimming singly and reported migrating over long distances and found also in deeper waters.

IUCN Status (2012): Globally = Data Deficient; N. Atlantic = Data Deficient



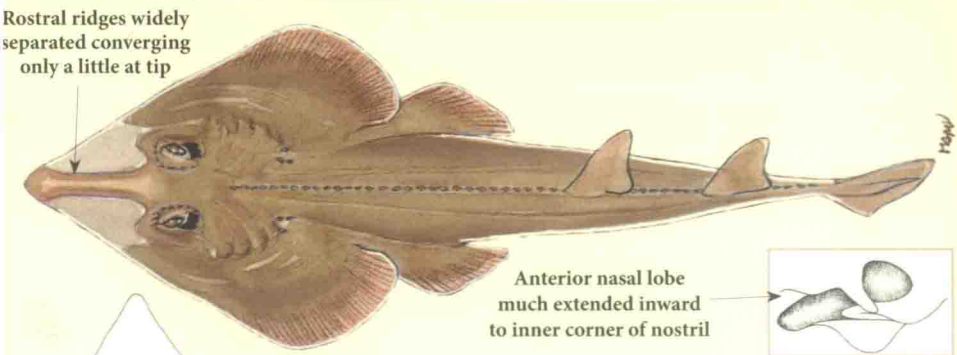
Electric ray

Common guitarfish – Guitare de mer commune – Guitarra común

Rhinobatos (Rhinobatos) rhinobatos (Linnaeus, 1758)

RBX

Local names: Gewöhnlicher Geigenrochen (Germany); Viola (Portugal)



Underside of head

Distinctive characters

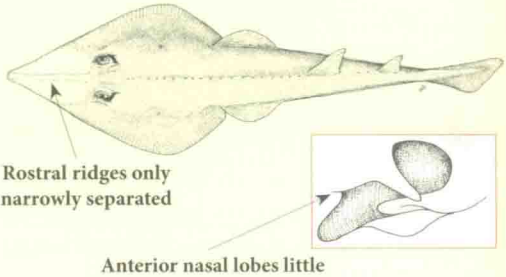
Shark-like appearance, with long, massive tail section bearing two large, widely separated dorsal fins and a large, oval caudal fin without marked lower lobe.

Size

Max. Length (N. Atlantic): about 140 to 160 cm TL.

Similar species

Rhinobatos (Glaucostegus) cemiculus



©RV DR Fridtjof Nansen

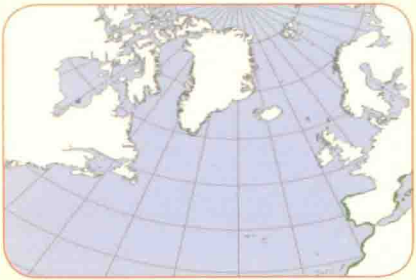
Bio-Ecology

Males mature at about 75 cm and females at about 85 cm in length. Size at birth about 30 cm. Lives on the bottom, partly buried in the substrate, or slowly swimming over sandy and muddy bottoms searching for prey. Occurs from shallow inshore waters to about 180 m depth.

Fisheries

Rarely found nowadays. Probably not targeted in fisheries but artisanal fisheries may take considerable numbers, as this species is easily taken in shallow waters by simple gear.

The EU has prohibited the fishing for, retaining on board, transhipments or to land guitarfishes in and from EU waters of ICES subareas from I to XII (2012).



IUCN Status (2012): Globally = Endangered; NE Atlantic = Endangered.

Common guitarfish

Richardson's ray– Raie de Richardson – Raya de Richardson

Bathyraja richardsoni (Garrick, 1961)

BYQ

Local names: Richardsons Tiefenrochen (Germany)

Distinctive characters

Adults with heavy body, trunk thick and massive. Upper surface almost entirely set with coarse dermal denticles. Upper side usually dark brown-greyish; underside ground colour generally as dark as upper side.

Size

Max. Length (N. Atlantic): at least 175 cm TL.

Similar species

Bathyraja pallida

A thorn between dorsal fins. Upper side greyish to pale white, underside brown with irregular white patches along midbody.

Bathyraja spinicauda

Midrow on tail with 21 to 26 thorns. A thorn between dorsal fins. Upper side medium grey and almost completely covered with coarse dermal denticles, underside white with at most greyish margin to disc.

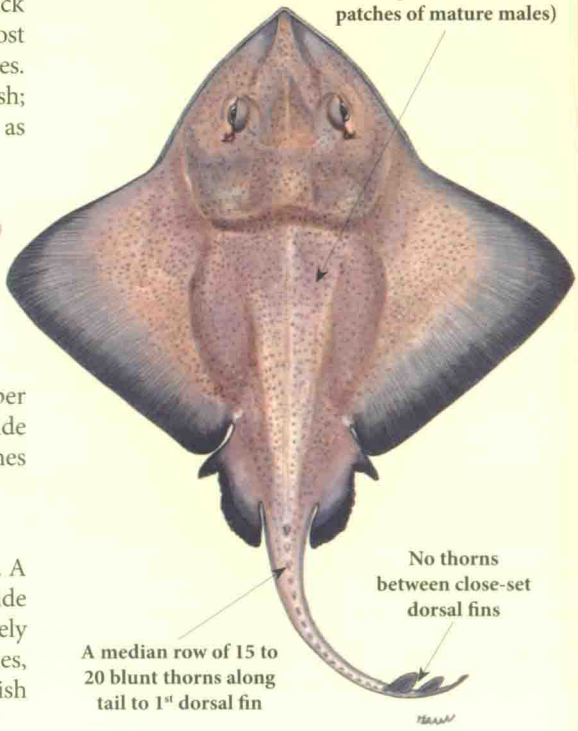


Photo Courtesy of the Irish Marine Institute

Fisheries

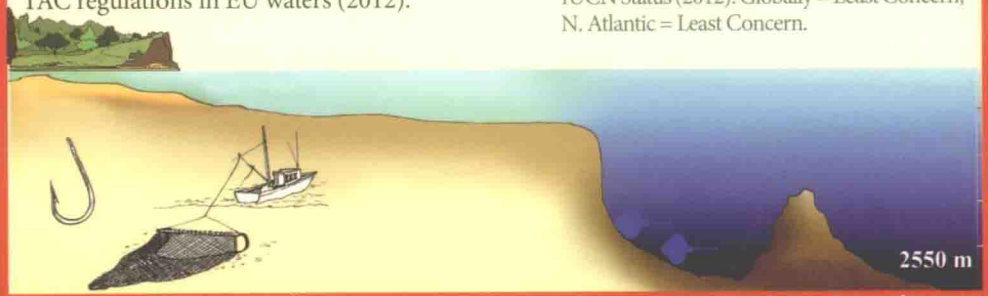
Mainly taken singly or in small numbers as bycatch by deepwater trawlers and bottom longliners. Its known very wide distribution in deep water may prevent much impact by fisheries, however the total population is supposedly not very large.

Species of the Order ***Rajiformes*** are subject to TAC regulations in EU waters (2012).

Bio-Ecology

Size at hatching is from 18.2 to 24.5 cm TL. Benthic to benthopelagic in deepwater along lower continental slopes, on adjacent deep-sea abyssal plains and along submarine rises between mostly 1,370 and 2,550 m depth.

IUCN Status (2012): Globally = Least Concern; N. Atlantic = Least Concern.



Richardson's ray

Spinetail ray – Raie à queue épineuse

Bathyraja spinicauda (Jensen, 1914)

RJQ

Local names: Gråskate (Norway); Maríuskata (Iceland); Tornhalet rokke (Denmark, Greenland)

Distinctive characters

Adults with heavy body, trunk thick and massive. Snout moderately long and pointed, soft and flexible vertically. Upper side medium grey; underside white with at most greyish margin to disc.

Size

Max. Length (N. Atlantic): 170 to 180 cm TL.

Similar species

Bathyraja pallida

Midrow on tail with 16 to 21 thorns. A thorn between dorsal fins. Upper side greyish to pale white, underside brown with irregular white patches along midbody.

Bathyraja richardsoni

Midrow on tail with 15 to 20 thorns; no thorns between dorsal fins. Upper side usually dark brown-greyish, but intensity may vary; underside similar but always with irregular whitish markings along midbody, in pelvic region and on tail.

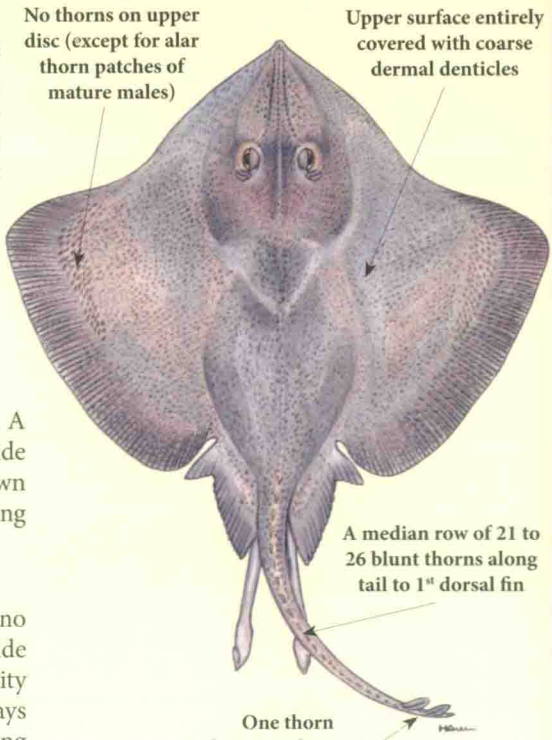


Photo of a juvenile male by M. Stehmann

Fisheries

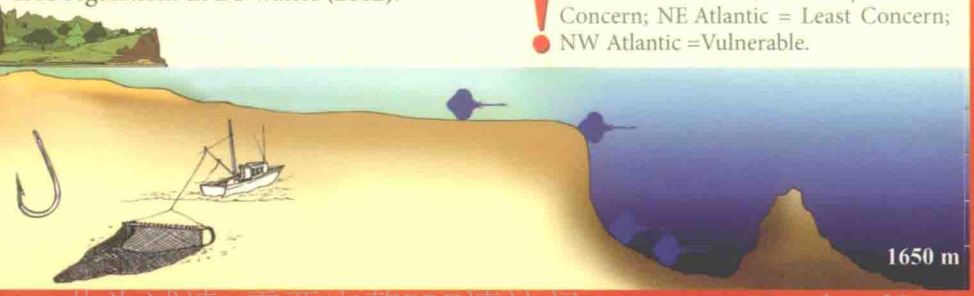
A regular bycatch in bottom trawl and bottom longline fisheries at high latitudes in the North Atlantic. Large specimens are landed in small numbers.

Species of the Order ***Rajiformes*** are subject to TAC regulations in EU waters (2012).

Bio-Ecology

Oviparous, with large egg capsules. Moderately common in Arctic and boreal latitudes in about 140 to 800 m depth in the Eastern North Atlantic, but to 1,650 m depth in the Western North Atlantic. Occurs along continental shelves down the slopes in deepwater.

IUCN Status (2012): Globally = Least Concern; NE Atlantic = Least Concern; NW Atlantic =Vulnerable.



Spinetail ray