SKATES AND RAYS: COMMERCIAL FISHERIES AND MARKET SAMPLING

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Introduction

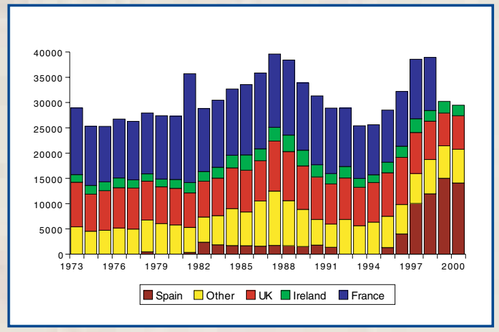
Skates and rays (Rajformes) are cartilaginous fishes related to sharks and dogfish. There are over 230 species worldwide, the majority in the Family Rajidae. Within the UK, species with an extended rostral cartilage (i.e. long-snouted species) are typically called skates and species with shorter snouts termed rays. Approximately 30 species occur in the North-East Atlantic, including about a dozen around the British Isles.

Skates and rays are a relatively important group of commercial species. They are usually landed from trawlers in mixed demersal fisheries, although there are some local fisheries that target them at certain times of the year, usually with set nets. They are also important in recreational fisheries. There is increasing concern about the conservation status of certain species, for example the common skate (*Dipturus batis*) is now rarely caught in the inshore waters of England and Wales and is subject to a Biodiversity Action Plan.

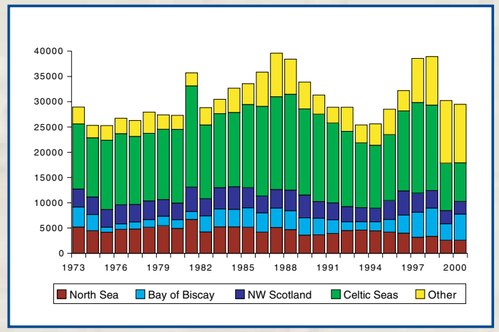
Commercial landings

From 1973-2000, the overall landings of skates and rays, as reported to ICES, has remained relatively constant at approximately 30,000 tonnes per year. North Sea landings of skates and rays (as a proportion of the total skate and ray landings reported to ICES) has declined from 18% in the early 1970s to <10% in recent years. The English Channel, Irish Sea and Celtic Sea (ICES area VII) is currently the most important region for skate and ray fisheries and accounts for approximately half of the total landed. Commercial landings from France, Ireland, Spain and the UK account for approximately 80% of the total landings.

Most commercially landed skates and rays are not separated to species level, and so accurate landing statistics, which are important for stock assessment, are unavailable. More than 80% of landings is unspecified, with only France and Iceland providing some species-specific landings information. An improved knowledge of the species composition, sex ratio and size composition of commercially landed skates and rays will clearly provide some of the information that can assist in fisheries management.



Landings of skates and rays (tonnes) by country, as reported to ICES (1973-2000).

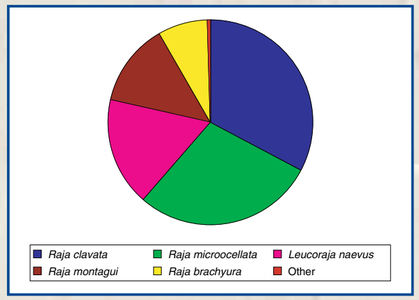


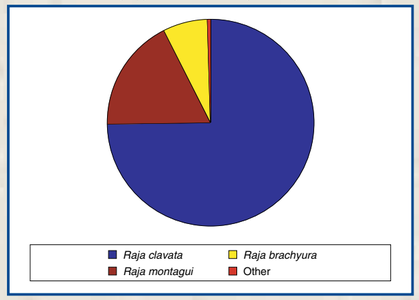
Landings of skates and rays (tonnes) by region, as reported to ICES (1973-2000)

Market Sampling

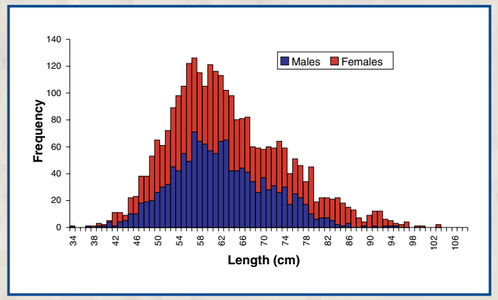
Skates and rays are sold at market in a number of ways. French vessels landing into Milford Haven split their catches by species before transporting the catch to France. In contrast, British fisheries often separate out the large thornback rays, but mix spotted, thornback and blonde rays, particularly at the smaller size grades. Although some fisheries land them whole, albeit gutted, several boats 'wing' the catch. i.e. the pectoral fins are landed and the backs are either landed separately (for bait) or discarded. The identification of wings and assessing the size of fish 'winged' at sea is a challenge. Furthermore, although market sampling of rays can provide information on the size at maturity of male fish (using the size of the claspers), it is not possible to determine the maturity of female fish.

Since July 2001, commercially landed skates and rays have been examined at two UK ports (Lowestoft and Milford Haven) and data on the species composition, length frequency and sex ratio collected. Landings at Lowestoft were dominated by thornback ray, with spotted and blonde rays of moderate importance. In contrast, the commercial catches at Milford Haven were more diverse, and five species (thornback, smalleyed, cuckoo, spotted and blonde rays) landed in significant quantities.

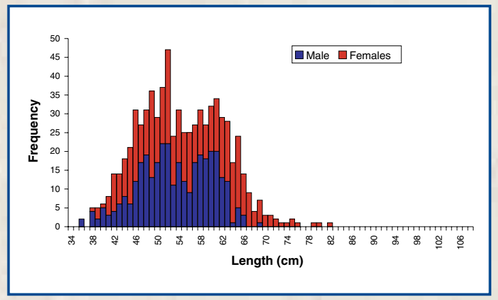




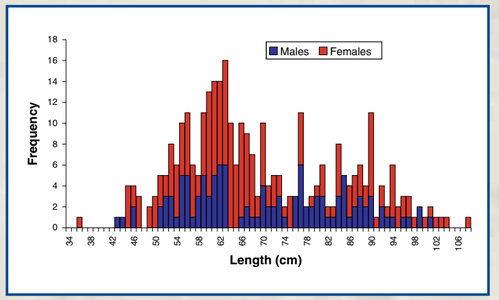
Species composition of skates and rays landed at Milford Haven (top) and Lowestoft (bottom).



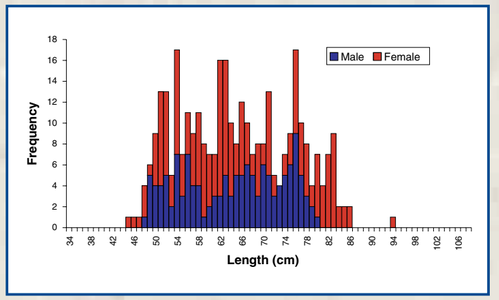
a) Length-frequency of commercially caught Thornback ray (Raja clavata)



b) Length-frequency of commercially caught Spotted ray (*Raja montagui*)



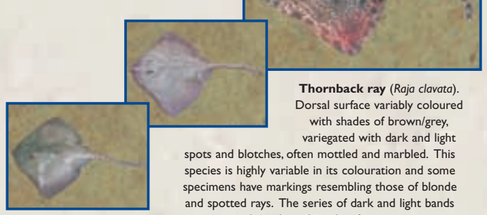
c) Length-frequency of commercially caught Blonde ray (*Raja brachyura*)



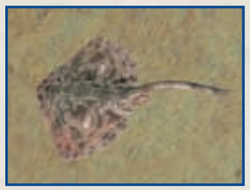
d) Length-frequency of commercially caught Small eyed ray (*Raja microocellata*)

Species identification

Smalleyed ray (*Raja microocellata*). Dorsal surface yellow/light brown with a characteristic pattern of light blotches and long whitish stripes parallel to front and rear margins of disc. Underside white. Most common in the Bristol Channel.



Thornback ray (*Raja clavata*). Dorsal surface variably coloured with shades of brown/grey, variegated with dark and light spots and blotches, often mottled and marbled. This species is highly variable in its colouration and some specimens have markings resembling those of blonde and spotted rays. The series of dark and light bands along the tail is a key feature.



Undulate ray (*Raja undulata*). Dorsal surface yellow/brown with a characteristic pattern of undulating dark stripes all edged with small white spots. Underside white. Most common in the English Channel.

Blonde ray (*Raja brachyura*). Dorsal surface light brown with numerous small, black spots extending to the very outer edges of disc. 60–90 rows of teeth in the upper jaw (cf. <60 tooth rows in *R. clavata* and *R. montagui*).

Starry ray (*Amblyraja radiata*) is a relatively plain coloured species characterised by prominent thorns with ribbed bases on its dorsal surface. This boreo-arctic species is common in the central and northern North Sea.

Spotted ray (*Raja montagui*). Dorsal surface brown usually with numerous black spots that do not extend to the extreme margins of disc. Occasionally with a pale blotch encircled by black spots on dorsal surface giving the appearance of an eye-spot.

Common skate (*Dipturus batis*) Snout long and pointed. An imaginary line from the tip of the snout to the tip of the wing would not touch the front of the disc. The dorsal surface is grey or brown, with a variable pattern of spots and blotches, and the ventral surface grey. 12–28 thorns run down the tail. Other long-snouted species (e.g. *D. oxyrinchus* and *D. nidarosiensis*) vary in the number of thorns on the tail.

Cuckoo ray (*Leucoraja naevus*). Disc tips broadly rounded. Upper side brown with faint light and dark spots. Distinct black eye-spot, marbled with irregular yellowish spots on each wing.

White skate (*Rostroraja alba*) has a long and pointed snout and pectoral fins with concave front margins. It is white underneath with dark margins. This rare species may occur in the south-west.

Shagreen ray (*Leucoraja fullonica*) The snout is pointed and the rough (spinulose) dorsal surface plain coloured, although there are some markings on juvenile specimens. This is an offshore species.

Sandy ray (*Leucoraja circularis*) This offshore species has a half ring of thorns on eye rims and a triangular patch of thorns over the shoulder region. The dorsal surface is brownish with a conspicuous pattern of 4–6 small creamy spots that are symmetrical on each wing.

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