

By Declan T. Quigley

SWORDFISH

Gladiators of the Sea

THE swordfish (*Xiphias gladius*) is widely distributed in tropical, temperate and sometimes cold waters of all oceans, including the Mediterranean & Black Seas. The species normally inhabits offshore oceanic waters from the surface (meso-pelagic zone) down to depths of about 800m (meso-pelagic zone) and rarely occurs in inshore waters (i.e. within the 200m bathymetric limit). The swordfish has the greatest temperature tolerance (from 5 to 27°C) of all billfishes, a small group of fishes (12 species) which includes the Atlantic sailfish *Istiophorus albicans*, Atlantic blue marlin *Makaira nigricans* and the Atlantic white marlin *Tetrapturus albidus*. Although it is primarily a warm-water species, its migrations in the NE Atlantic consist of movements along the edge of the continental shelf toward temperate or cold waters as far north as Iceland and Norway for feeding in summer and back to warm waters in autumn for spawning and over-wintering. Swordfish are usually very solitary creatures, and only congregate in larger numbers in certain areas (e.g. Straits of Messina, near Sicily) for spawning from June - September.

Although the swordfish is regarded as rare in Irish inshore waters (only 8 specimens have been recorded since 1786, see Table 1), it is has only recently been discovered that the species is more frequent in its occurrence in offshore waters (outside the 200m bathymetric limit). Since the late 1980's, relatively large numbers of swordfish have been taken as a bye-catch in the newly developed albacore tuna (*Thunnus alalunga*) fishery off the W and SW coast. Most of these swordfish were taken in pelagic drift nets and long-lines well offshore (between 46-49°N & 10-17°W), during late summer and autumn, particularly in September and October.

The swordfish is highly prized both as an excellent food fish as well as a hard fighting big game fish by anglers. The species is heavily exploited and supports important commercial fisheries in several areas of the Atlantic, Indian and Pacific oceans; the annual world catch is estimated at around 40,000 tonnes. The most important fisheries in the NW Atlantic are from the Grand and George's Banks (featured in the recently released film "Perfect Storm")



KEEL STRAND, ACHILL ISLAND, Co. MAYO: A 2.56m 47kg Swordfish caught in 1996.

to the Gulf of Mexico and in the NE Atlantic, in the Gulf of Guinea and the Mediterranean Sea. The discovery of mercury in swordfish flesh in the

1970's led to controls being placed on its sale in the USA and this had a major impact on the fishery. However, recent studies have shown that

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high levels of mercury in its flesh are not necessarily connected with industrial pollution; high levels have been found in museum specimens collected many years ago

Major sport fisheries are located in the NW Atlantic from New York to Texas, in the N and S Pacific from California to Ecuador, Peru and Northern Chile, and off the E coast of Australia and around New Zealand. The largest authenticated specimen (536kg or 1182 lb) captured on rod and line was taken off Iquique, Chile in 1953. However, specimens weighing in excess of 1500 lb (679kg) have been reported from the Pacific.

Adult swordfish are opportunistic feeders, known to forage on a wide variety of fish species and cephalopods (squid & cuttlefish) from the surface to the bottom over a wide depth range. Swordfish are so active that, other than man, only certain large sharks and cetaceans (whales & dolphins) can prey on them. A swordfish, weighing 55kg (120 lb), complete with its sword, was found in the stomach of a Shortfin mako shark (*Isurus oxyrinchus*) weighing about 330kg (730 lb) off the Bahamas. It is thought that the swordfish uses its sword to kill some of its prey, particularly cephalopods, as is shown by the slashes on the

bodies of prey found in their stomachs; swordfish have no teeth. The swordfish has been reported to charge upon shoals of smaller fish, striking right to left with its sword and then turning to pick up the dead and disabled fish.

Much has been written about the swordfish's reputed habit of ramming wooden ships and leaving part of its sword embedded in the planking. Although such unprovoked attacks are part of the mythology of the seas, there are several reported cases in 19th century literature and a number of authenticated examples of ships timbers embedded with bills (derived from various species of billfishes, including swordfish) on display in museums throughout the world. For example, the following story was published in the *Caledonian Mercury* in October 1843:

"Extraordinary Circumstance - The brig Lord Byron, of Limekilns, when on her voyage, at the end of last month, from the West Indies to Liverpool, suddenly sprung a leak, without any apparent cause. It was considered advisable to return to Jamaica, and on the cargo being taken out and the vessel examined, it was found that the damage was occasioned by a swordfish. The sword or bill of the fish had passed through the copper sheathing, then through the planking, in a slanting direction, to the extent of five inches, and also about eight or ten inches into the dead wood of the keel; leaving an opening in the planking in each side sufficient to admit the hand of a boy. A piece of the sword retained by the Captain is six inches long and one and a half inches thick, of solid bone; but a longer piece remains in the keel. The strength of the swordfish must have been very great, and it may have been the cause of the loss of several vessels. The vessel referred to was carried into port with very great difficulty."

Although, such reports are rare today, probably because most ships are no longer made from wood, it is interesting to note that a swordfish recently attacked the *Woods Hole Oceanographic Institute's* submersible *Alvin* at 600m. The swordfish apparently wedged its sword so tightly into a seam that it could not withdraw it.

Xiphias gladius, on guard, touche!

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Date	Location	Method	T.L. (cm)	Wt (kg)	Reference
1788	Wexford	net			Thompson (1858)
June 1950	Bantry Bay	draft-net	240	59.10	Went (1950)
1977	SW coast	scallop dredge	bill only		Minchin & Molloy (1981)
August 1979	112km S Valentia	long-line	425	182.00	Minchin & Molloy (1981)
18.07.1982	Achill Island	drift net	394	206.50	Quigley et al (1984)
29.08.1987	NW Brandon Head	pelagic dog-fish net	140	8.75	Quigley & Flannery (1989)
24.07.1991	Lough Foyle	surface gill-net		19.50	Minchin (pers com)
05.12.1996	Keel Strand, Achill	stranded	256	47.00	Quigley et al. (In press)

Table 1. Swordfish records from Irish inshore waters (within the 200m bathymetric limit)

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