

Thunnus atlanticus (Blackfin Tuna)

Family: Scombridae (Mackerel, Tunas and Bonitos)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)

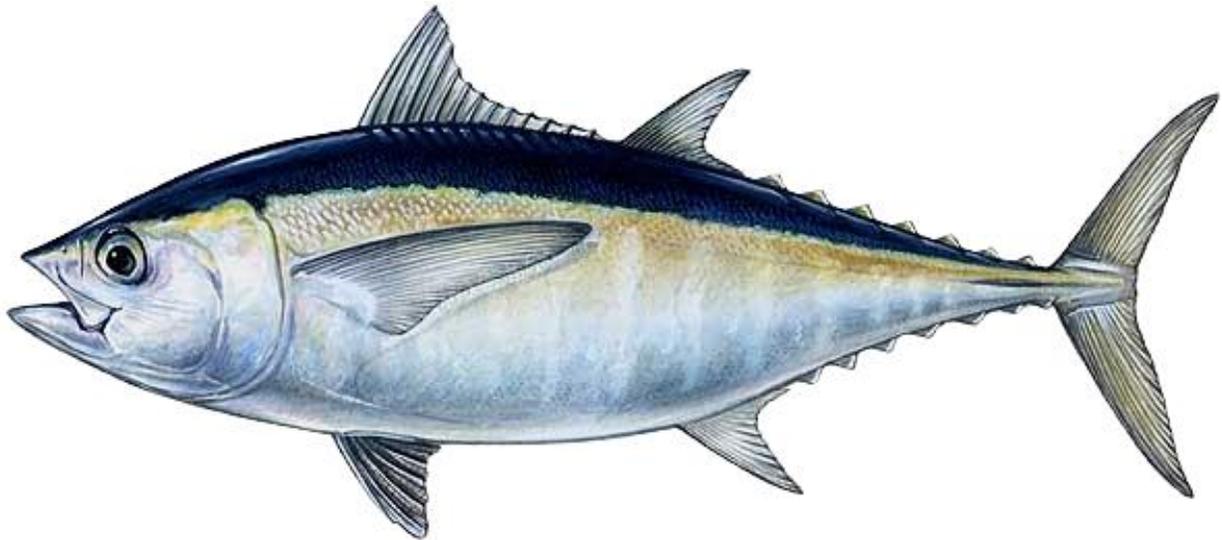


Fig. 1. Blackfin tuna, *Thunnus atlanticus*.

[http://en.wikipedia.org/wiki/Blackfin_tuna#/media/File:Blackfin_tuna_Duane_Raver_Jr.jpg, downloaded 20 March 2015]

TRAITS. The blackfin tuna or albacore sports bluish-black back, grey and silver sides and a white belly (Fig. 1). The upper portion of the eye has a broad, brown stripe. A prominent yellow to golden-colored lateral band is situated on the sides, which gradually fades upon death. On the abdomen, there are small iridescent areas of silver which is sometimes marked with vertical rows of pale dots interlined with elongated spots between these rows. The dorsal finlets are dusky and the ventral finlets are grey. Since these finlets lack yellow, it can be used as a distinguishing feature for the blackfin tuna, although the dorsal finlets fade to yellow upon death (Gardieff, 2015). Its wide mouth consists of small conical teeth in jaws, about 30-40 above on each side and 32-41 on each side on the underside, and bands of very small sand-like, granular teeth on the vomer and palatine bones. The whole body has scales which are small and compact, but absent on the head. There are 10-13 dorsal fin rays (the last ray a connected finlet) with the dorsal spines becoming progressively shorter after the second one. There are 10-12 anal fin rays (Idyll and De Selva, 1963). This is the smallest tuna species; from a study done on a population in northeast Brazil, females weight ranged from 1-5 kg whilst the males had a range of 1.5-8.4 kg. In the same study, average male lengths were found to be 47-87cm whilst the females had a length which ranged from 46-74 cm (Vieira et al., 2005).

DISTRIBUTION. *Thunnus atlanticus* can be found only in the western Atlantic, from Massachusetts south to 26°S in Brazil, also including the wider Caribbean and Gulf of Mexico. They are highly migratory, only being found in coastal waters at temperatures above 20°C. Blackfins occur in angler's catches throughout the year off Miami with peaks in November and December, and April and May (Colette and Nauen, 1983; Hazin, 1998).

HABITAT AND ACTIVITY. *Thunnus atlanticus* is an epipelagic (open-water) species which is mainly found over reefs, bays and offshore in coastal waters with temperatures above 20°C. It prefers clean water usually seaward from the continental shelf. At times, it can be found forming large schools with other tuna species. The schools of fish often undergo a migration to temperate waters of 21°C during summer months. During autumn, winter and spring, they are very abundant off Florida's coast (Gardieff, 2015). Idyll and De selva (1963) also state that the blackfin tuna travel in schools in the Gulf of Mexico, the eastern Bahamas around Cuba and in the Lesser Antilles when the surface is calm.

FOOD AND FEEDING. Idyll and De Selva (1963) describe how *Thunnus atlanticus* feeds mainly on deep sea organisms which comprise of squids, amphipods, crabs, shrimps and stomatopod (crustacean) larvae. In Cuban waters, a study done found that their stomachs consisted of 60% fish (which included *Balistes* and *Monacanthus* species, and serranids and holocentrids), 24% squids, 9% stomatopod larvae, 3% decapod crab larvae, and approximately 5% other crustaceans. Diet is related to the size of the individual (Headley et al., 2009).

POPULATION ECOLOGY. Idyll and De Selva (1963) state that in Miami, Florida there are almost twice as many males as females in the population. The same ratio can be found for fishes found in northeastern Brazil (Freire, 2009) and the northern Atlantic (Coll, 1987). This is due to female predation during spawning, hostile male courtship behaviours and death by fishing gear. *Thunnus atlanticus* had a catch per unit effort (CPUE) of 0.32 fish/100 hooks making it the most abundant fish situated in the northeast Brazil pelagic fishery (Hazin, 1998).

REPRODUCTION. Bezzera et al. (2013) describes the reproduction of the blackfin tuna at the Saint Peter and Saint Paul Archipelago. This study took place between the periods of December 2008 to July 2010 and analyzed the gonads of 361 (247 males and 114 females) male and female samples both macro and microscopically. The males were more common than the females with a ratio of 2.2:1, and of larger size. A possible reason for this growth pattern may be due to the high energy cost of somatic and gonad growth for females (Brill, 1996). Size at first maturity was found to be 48cm for females and 55cm for males. Most of the specimens were reproductively active during all months of the year (80% of total). Fecundity amongst females of sizes 56cm and 68cm ranged from 272,025 to 1,140,584 oocytes (eggs). The pattern of spawning and oocyte development suggests a multiple spawning behaviour (Bezzera et al., 2013). Stages of development include: pre-larva, larva, post-larva and juvenile (Idyll and De Selva, 1963).

BEHAVIOUR. When the surface is calm, the blackfin tuna can be observed travelling in schools in the Gulf of Mexico, Florida, Bahamas, around Cuba, and in the Lesser Antilles. Larvae and juveniles may be found offshore in the clear, calm waters of Florida and the Lesser Antilles. Movement is brought about by actions of the caudal fin and its body (Idyll and De Selva, 1963). Spawning seasons are as follows: from April to November in Florida, June to

September in the Gulf of Mexico and in the second half of the year in Brazil (Vieira et al., 2005). During courtship, males tend to exhibit hostile behaviour which may harm the females even to the point of death (Garcia Coll et al., 1984). They may be found feeding mixed with schools of skipjack tuna and compete with them for prey or might be preyed upon by them (Gardieff, 2015).

APPLIED ECOLOGY. This species may be caught as bycatch in yellowfin tuna fisheries (Gonzales-Ania et al., 2001), but it forms an important fishery in Cuba. In Florida and the Bahamas, they catch this fish as a sport. During the second half of the year, there is a great concentration of this species off Brazil, which attracts scores of artisanal fishers (Vieira et al., 2005). There are no conservation measures in place for *Thunnus atlanticus*. Conservation proposals include a suggested capture-release study for Caribbean and Brazilian waters to better understand migratory patterns (Freire, 2009).

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