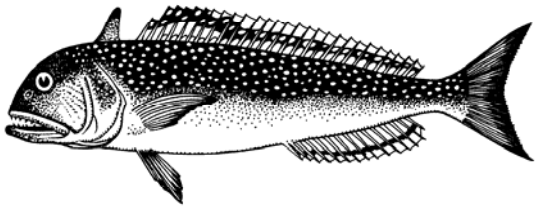
Species Spotlight: Golden tilefish (*Lopholatilus chamaeleonticeps*)

(A.K.A. Great Northern Tilefish, Golden Bass, Gunnet (Barbados), Conejo Amarillo (Mexico), Blanquill, Golden Snapper)

Tilefish

drawing by Richard Ellis



Class: Actinopterygii (ray-finned fishes)

Order: Perciformes (perch-like fishes)

Family: Malacanthidae (tilefishes) ("many-thorns")

Subfamily: Latilinae

Genus: Lopholatilus

Species: chamaeleonticeps

This month's species summary focuses upon another fish endemic to our Northwestern Atlantic waters—the golden tilefish (*Lopholatilus chamaeleonticeps*). This species is the largest and longest lived of the tilefishes of the family (Malacanthidae). It can reach a weight of 66 lbs., can grow to a length 44 inches, and can live to the ripe old age of 45 years or more. Other related tilefish genera are: *Branchiostegus, Caulolatilus, Hoplolatilus* and *Malacanthus*.

The tilefish was unknown until May 1879, when Captain William H. Kerby of the schooner *William V. Hutchins* caught the first specimen south of Nantucket Lightship in 150 fathoms of water while working cod lines. When his crew found that the plentiful fishes made a tasty meal, some of the specimens were salted down and taken to Gloucester where a portion of the catch was smoked. This discovery started a new and productive tilefish commercial fishery for the surrounding area.

A specimen of this unknown fish was sent to the U.S. National Museum where it was declared a new species belonging to a tropical family inhabiting the Gulf of Mexico. It was given the name of *Lopholatilus chamaeleonticeps*, which means "the crested tilus with a head like a chameleon." Fishermen understandably shortened its name to tilefish.

Increased catches of this new fish prompted the U.S. Bureau of Fisheries to send research vessels and scientists to study the habits and habitat of the tilefish. What they discovered was that the tilefish occupied a very specific part of the ocean—a narrow band of real estate along the outer edge of the continental shelf where the sea floor is bathed by warm water from the Gulf Stream. The temperature of the water here ranges from 47 - 50 degrees F., with little variation from season to season. As far as is known, the tilefish never leaves this limited strip of the coast to venture into the cooler water of the landward shoals or the frigid depths of the Atlantic abyss.

It appears that it was this inability to tolerate changes in its environment that brought near-annihilation to the tilefish just three years after its discovery due to an apparent Easterly shift in the flow of the Gulf Stream. On March 3, 1882, Captain Lawrence of the bark

Plymouth sailing from Nova Scotia to New York reported sailing from six o'clock in the morning until five o'clock in the evening through 69 miles of dead and floating tilefish. One week later the brig *Rachel Cooney* sighted the dead fishes 75 miles south-southwest of the lightship on the south shoal of Nantucket, and sailed through dead tilefish for 40 miles. Other ships in the area reported, "Dead and dying fish as far as the eye could see."

Tabulating all of the accounts, the Bureau of Fisheries found the range of destruction to extend over an area 170 miles long and 26 miles wide, covering at least 4000 square miles. It was estimated that almost 1.5 billion tilefish perished in the incident.

Scientists offered this explanation: tilefish are bottom dwellers in about 100 fathoms of water. In 1882, the Gulf Stream, near the edge of which the tilefish live, moved farther out to sea, leaving them in cold water. They could not follow the shifting stream, as the bottom of the ocean drops off abruptly near the 100-fathom line. Consequently, almost the entire population, unable to remain in Gulf Stream water, was killed.

For ten years tilefish were completely absent from the decks of New England fishing boats, and it was thought that the species had gone extinct. Then, in 1892 they were found again. Slowly the number of landings increased, and in the period from July 1915 to July 1918, 11.5 million pounds of tilefish were commercially landed. The tilefish has been doing relatively well in its delicately balanced, watery niche ever since; but no one can predict when a wandering Gulf Stream will wreak havoc upon the golden tilefish again.

Description: The tilefish has a fleshy, finlike flap on the nape of the neck in front of the dorsal fin, close behind the eyes. The tilefish's large head is strongly convex when viewed from above but nearly flat in profile from below. Both of its jaws are armed with an outer row of large conical teeth and inner rows of smaller teeth. The trunk (moderately flattened sidewise) is deepest close behind the head, tapering backward to the tail. The dorsal fin extends back from above the gill opening almost to the base of the tail fin, with the anal fin about half as long as the dorsal fin.

Color: The golden tilefish is a colorful species when live and swimming free (unlike the ones we are used to seeing iced down and pale at the local fish market), described as being colored a vibrant bluish or olive green on the back and on the upper part of the sides, changing to yellow or rose lower down on the sides with its belly possessing a rose tint and a white midline. The head is tinged reddish on the sides; pure white below. The back and sides above the level of the pectoral fins are heavily dotted with small yellow spots. The dorsal fin is dusky and marked with similar but larger brilliant yellow spots with the soft-rayed portion being pale edged.

Size: Tilefish average between 15 and 25 lbs. and are generally found 2 to 4 ft. long. Larger individuals near 50 lbs have been reported. A New Jersey state record golden tilefish was recently caught at Tom's Canyon on September 9, 2008 by Keith Karl, a recreational angler from Brick Township, NJ who caught a 55 pound, 4 ounce golden tilefish that weighed only 4 ounces (!!!) more than the previous record taken from Washington Canyon in 2005.

Range: Tilefish have been found from Nova Scotia down to the Gulf of Mexico, although they are most abundant in water from 50 to 80 fathoms deep (300 to 480 ft.) from Nantucket Island, Massachusetts, south to Cape May, New Jersey. Due to their stringent ecological habitat requirements for water depth, fine or

semi-consolidated sediment substrate for constructing and supporting their burrows, and narrow temperature range tolerances, their distribution throughout this range may be discontinuous and generally concentrated around the edges and slopes of submarine canyons adjacent to the outer continental shelf. They are absent from the Carribean. A closely related species (*Lopholatilus villarii*), occurs in the South Atlantic from Brazil to Argentina; and their range does not overlap with their Northern cousin. Two distinct stocks of golden tilefish (*L. chamaeleonticeps*) are recognized from observed morphological differences. The Northern stock is distributed south to Cape Hatteras, and the southern stock, possessing smaller individuals, occurs from south of Cape Hatteras to at least the Yucatan peninsula.

Habits: The depth range of the tilefish off our Atlantic coast is a very narrow one, with none ever being taken shallower than about 45 fathoms and very few ever being encountered much deeper than 100 fathoms. The deepest recorded tilefish was observed at a depth of 170 fathoms, and with the best fishing reliably being found at 60-90 fathoms. The temperature range that the tilefish will tolerate is very narrow also, with the temperature of the bottom water along the areas inhabited by it varying between about 47° and about 53°, in most years, summer or winter. The tilefish appears to be very vulnerable to chilling, this having been the probable cause of the mass destruction described above. It is not known whether the tilefish is equally sensitive to high temperatures. In any case it could escape such by descending to a greater depth.

Tilefish are shelter-seeking fish (presumably to avoid predators), and adults have been observed using rocks, ledges, and shipwrecks, along with horizontal and vertical burrows in the clay and silt substrates (with these colonial structures commonly referred to as “pueblo” dwellings) of the upper slopes and flanks of offshore submarine canyons like the well known Hudson Canyon.

Fisheries biologist Churchill Grimes estimated in 1986 that tilefish burrow density near the Hudson Canyon was at about 2,500 burrows/km^2. It was hypothesized by ichthyologist Dr. Ken Able that tilefish are important modifiers or creators of habitat on the outer continental shelf. The Irregular hummocky topography, observed on deep-dive explorations that extending for miles on either side of the Hudson Canyon, is thought to be the product of tilefish burrowing activity and integral to the unique ecology of the area., thus classifying the tilefish as a keystone species within its ecological niche.

Tilefish live in burrows which may be as large as 15 ft across, and may sometimes congregate in pods or small groups at depths ranging from 200 to more than 1,400 feet. As tilefish become larger they tend to live at greater depths. They do not school, but group in clusters near the heads and sides of submarine canyons along the outer continental shelf.

Feeding: Tilefish predominately feed upon bottom-dwelling invertebrates such as crabs, and lobsters. The list of possible prey items also includes: squid, shrimp, shelled mollusks, annelid worms, sea urchins, sea cucumbers, and sea anemones. Occasionally they catch other fish. Two spiny dogfish, for instance, were found in one, and an eel (probably a conger or a slime eel) and unidentified fish bones in others.

Reproduction: Golden tilefish are relatively slow growing and long-lived with a maximum observed age and length for females of 46 years and 43.3 in., and 39 years and 44.1 in. for males. At lengths exceeding 27.6 inches, the predorsal adipose flap, characteristic of the species, is larger in males and can be used to distinguish the sexes. Golden tilefish of both sexes are mature at ages of 5 to 7 years. Females are smaller than males and sexual maturity is reached when fish are about 27 inches long and weigh about 9 pounds. Spawning occurs from March to September, and females lay from 2 to 8 million pelagic eggs.

Commercial/Consumer Data: During the late 1970s and early 1980s Barnegat, NJ was the principal Golden tilefish port; more recently Montauk, NY has accounted for most of the commercial landings. Since the 1980s, over 85% of the commercial landings of golden tilefish have been taken in the longline fishery. The average tilefish marketed in 2008 weighs on average 4-8 lbs.

Tilefish has firm, pinkish white flesh that provides a lobster or crab-like taste. Once cooked, the meat is mild-flavored and succulent. The meat remains very moist after cooking; therefore, it is often baked or broiled. Tilefish is also often used in seafood stews or chowders. It also makes a good smoked fish, and its swim bladder can be used for making isinglass. A common marketing phrase heard in reference to tilefish is, "If you love lobster, you"ll like tilefish." The Environmental Defense Fund has issued a health advisory for tilefish due to high levels of mercury found in tested specimens.

Conservation status: The Monterey Bay Aquarium Sea Food Watch states that golden tilefish populations in the Mid-Atlantic are beginning to recover from being overfished while other populations remain in trouble.

References:

This article draws freely from Henry Bigelow and William Schroeder's classic "Fishes of the Gulf of Maine", fishery bulletin 74, Vol. 53 1953, and its 3rd edition edited by Bruce Collete and Grace Klien-MacPhee (2002) and from Bernard Ludwig Gordon"s, "The Secret Lives Of Fishes" 1977 Grosset and Dunlap publishers, New York, NY, three books that any fish lover must have on their bookshelf. Another source is the NOAA U.S. Dept. of Commerce, Essential Fish Habitat Document: Tilefish, Lopholatilus chamaeleonticeps, Life History and Habitat Characteristics. Steimle, F., et.al. Sept 1999

NOAA Technical Memorandum NMFS-NE-152.

Lopholatilus Links:

http://www.fishbase.org/Summary/SpeciesSummary.php?id=362

http://www.nefsc.noaa.gov/sos/spsyn/og/tile/

http://www.nefsc.noaa.gov/sos/spsyn/og/tile/arc http://www.nefsc.noaa.gov/nefsc/publications/tm/tm152/

hives/21_Tilefish_2006.pdf

http://edocket.access.gpo.gov/2006/pdf/E6-18187.pdf

http://www.youtube.com/watch?v=WgCTD6bYKw8

http://www.youtube.com/watch?v=PNQ4mfYtsuQ

http://www.youtube.com/watch?v=tFzSmlH5Kdo&feature=related