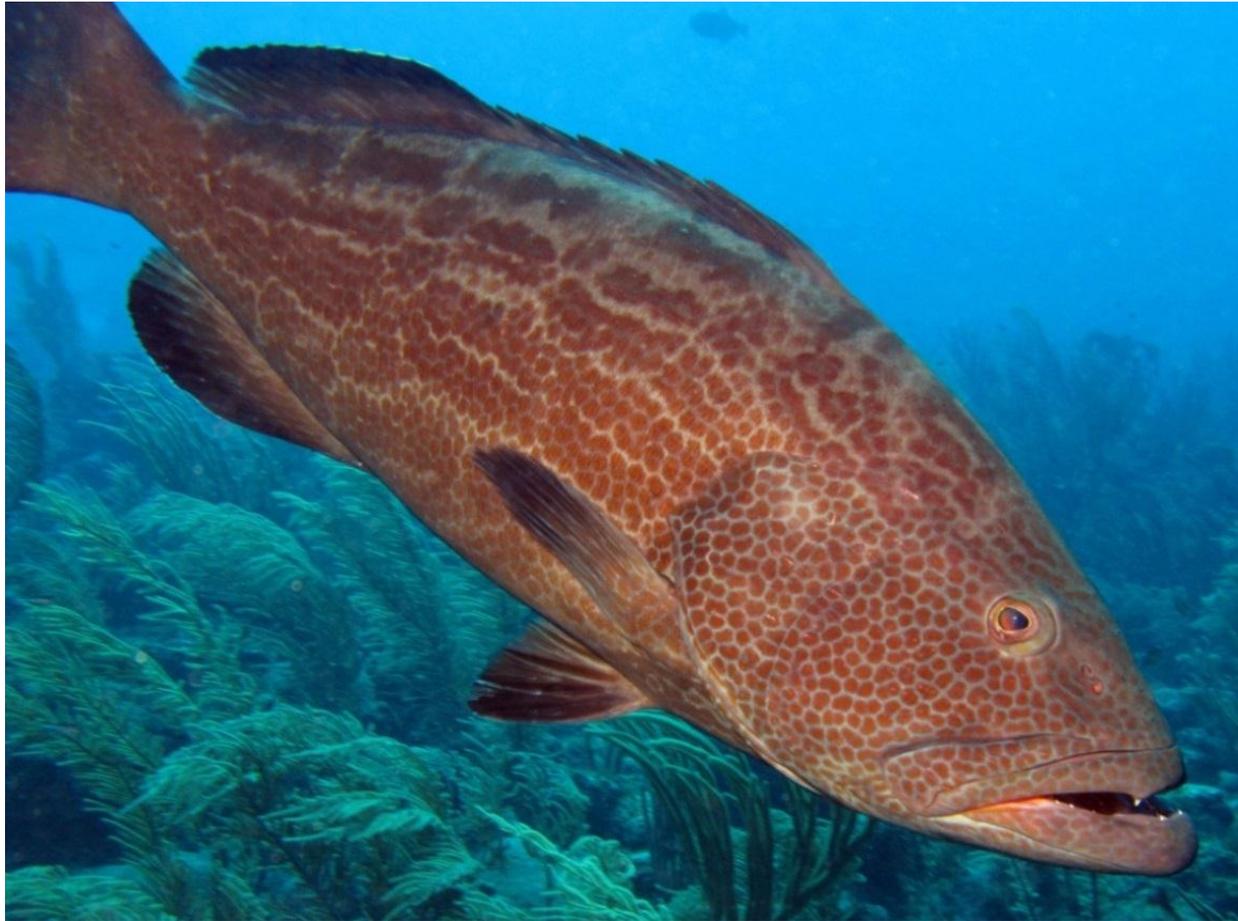


## *Mycteroperca bonaci* (Black Grouper)

Family: Serranidae (Groupers and Sea Basses)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



**Fig. 1.** Black grouper, *Mycteroperca bonaci*.

[<http://reefguide.org/carib/blackgrouper.html>, downloaded 2 April 2015]

**TRAITS.** The black grouper or marbled rockfish is a solitary marine fish which grows up to 150cm in length and 100kg in weight. The adults have a yellow or very pale orange margin across the pectoral fin and hexagonal pattern of brown spots on the head and along the ventral side of the body, which can vary from light tan to reddish black (Heemstra et al., 2002). The dorsal caudal and anal fins all have black or dark blue bands with white margins. The juveniles can be distinguished from the adults by lighter markings and blotches. *Mycteroperca bonaci* also frequently changes from light phase to dark phase such that sometimes the lower half of the body is covered with brownish spots and sometimes the spots disappear and the fish appears completely black (Grace and Rademacher, 1994). *Mycteroperca bonaci* is the largest fish in the

*Mycteroperca* genus. *Mycteroperca bonaci* is a protogynous hermaphrodite, the young are female but as they mature they transform into male (Teixeira et al., 2004).

**DISTRIBUTION.** Central Atlantic, from Bermuda to Brazil, including the West Indies and Gulf of Mexico. Most prevalent in Belize (Grace and Rademacher, 1994).

**HABITAT AND ACTIVITY.** This fish is usually found in coral reefs at anywhere from 20-100m deep. They are also sometimes seen in mangrove swamps and rocky bottoms. The adults usually occupy reefs, ledges, caves and crevices, while the juveniles can be found in shallower water and estuaries. They are also found in large numbers on inshore patch reefs where sea grass is dominant (Brule et al., 2005). They do not usually form packs or schools, but gather only during the reproductive season. Small *Mycteroperca bonaci* can change their colour to hide from predators such as eels, sharks, and barracudas. They can also move into small areas that are inaccessible by large predators (Teixeira et al., 2004).

**FOOD AND FEEDING.** The adults feed on octopus, and smaller reef fishes such as snapper and herring, but the juveniles have been known to feed on plant material, fishes and also both swimming and crawling decapods such as shrimp and crab (Brule et al., 2005). They prefer to forage for food at both dawn and dusk and since they are considered opportunistic feeders they use their environment to their advantage. *Mycteroperca bonaci* is not a long distance swimmer; it prefers to lie in wait and quickly ambush its prey, using their mouth and operculum as a vacuum to suck their prey into their mouth. In this regard *Mycteroperca bonaci* is dependent on their habitat for food since they are slow swimmers and they cannot pursue prey over long distances (Koch, 2011).

**POPULATION ECOLOGY.** *Mycteroperca bonaci* remains solitary for most of the year, except during the reproductive season, December to March. Black groupers are very common in commercial fisheries in the Gulf of Mexico, Bermuda, Brazil and Cuba. In a study done at a South Florida Coral Reef the black grouper was found to be the most common grouper on the inshore reefs. Twenty-six individuals were tagged and 14 were recaptured at least once (Koch, 2011). The black grouper is one of the most heavily exploited fishes in the southern Gulf of Mexico (Brule et al., 2005). Other factors which contribute to their decline are slow growth, delayed, hermaphroditic reproduction and reduced spawning periods (Koch, 2011).

**REPRODUCTION.** Spawning occurs from December to March. The males show a white head phase and spawn with dark phase females usually from the full moon to several days after the new moon. They form small groups and spawn in pairs closer to the surface of the water at dusk. After spawning they return to the larger group. Since black groupers are generally solitary fish this is the only time they aggregate during the year. They undergo various colour and pattern changes during this mating period. The males would have a white head and a blotched dark brown pattern across the body. During mating the males would flash their white heads and tails while hovering vertically in the water (Koch et al., 2010). A white head male would slowly approach a dark phase female and nudge the vent area at the posterior of the abdomen. If the female was not yet ready to spawn the male would swim away. Another example of courtship behaviour is for a male to position himself parallel to a nearby female and they would both swim vertically for 3-7m and then they would rapidly shake their bodies to release the eggs and sperm. They would then return to the larger group below. The white head males usually pursue the females but if they are ignored, they revert to a darker colour (Paz et al., 2007).

**BEHAVIOUR.** In a 2006 to 2007 study tracking grouper movements, the tagged black groupers were detected within one core habitat. Occasionally some of the groupers were detected at other locations, but the general trend seen was that the *Mycteroperca bonaci* didn't make large or frequent movements. Instead they remained within a particular habitat (Farmer and Ault, 2011). As mentioned before the black grouper is very solitary, it doesn't travel in a school of fishes and only aggregates during its reproductive season from December to March once it has reached sexual maturity.

**APPLIED ECOLOGY.** The black grouper population is declining due to overfishing by the fisheries of Brazil, Cuba and Mexico, and it has been categorized as near threatened by the International Union for Conservation of Nature (IUCN).

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Posted online: 2015