

Bathygobius soporator (Frillfin Goby)

Family: Gobiidae (Gobies)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



Fig. 1. Frillfin goby, *Bathygobius soporator*.

[http://www.sms.si.edu/irlspec/Bathyg_sopora.htm, downloaded 9 March 2016]

TRAITS. The frillfin goby is also called the molly miller, and was previously known as *Gobius soporator*. They have robust plump bodies with average length of 7.3cm for females and 7.8cm for males. Their heads are broad with a plump rounded snout, a wide mouth, and big eyes fixed very close together (Tavolga, 1950) (Fig. 1). Their two dorsal fins are separated and the pelvic fins consist of a single spine and five rays that are joined by a disk-shaped membrane known as the frenum to form a ventral sucker (Robins et al., 1986). There are 6 spines in the first dorsal fin, 18-21 in the pectoral fin rays, and approximately 37-40 lateral line scales (Robins et al., 1986). The caudal (tail) fin has a big dark mark at the base. Frillfin gobies are mostly shades of green, brown, cream or black (Tavolga, 1950). Most are dark brown with a sequence of five dark saddles across the back, the widest one beneath the first dorsal fin. These fish obtained their

common name because of the separated, frill-like form of the pectoral fins rays (Robins et al., 1986).

DISTRIBUTION. Eastern Atlantic from Angola to Senegal, western Atlantic from south east USA, Bermuda, Bahamas to Santa Cruz, Brazil, (Fig. 2). This fish is native to Trinidad and Tobago (IUCN, 2016).

HABITAT AND ACTIVITY. Found in marine, fresh and warm briny water (FishBase, 2016). They populate stony tide pools, lagoons, mangrove wetlands and streams and can survive in water of different salt concentrations. They are found swimming close to the bottom (Tavolga, 1950).

FOOD AND FEEDING. They are omnivorous and feed on bottom-dwelling algae and invertebrates, small crabs, small fish, fish eggs, snails and sometimes broken rock particles. Feeding is conditional on prey mass and how full the frillfin gobies' stomachs are. When their stomachs are not full, the prey which they eat will be big in size and mass to satisfy their needs, when their stomachs are more full they will target smaller organisms such as small fish. Frillfin gobies are predated by bigger fish, crabs and sometimes birds (Tominda et al., 2012).

POPULATION ECOLOGY. They live close to the shore. These fish do not migrate, are plentiful in their range and are the most plentiful coastal fish in West Africa. Lifespan is dependent on their accessibility to food and favourable environmental conditions. They are fairly cautious, choosing homes where they can inhabit and reproduce securely (Tavolga, 1950).

REPRODUCTION. Reproduction involves separate males and females. Females lay their eggs inside vacant shells for protection where they form a mass of 800-1000 eggs. Twenty minutes after being laid, the chorion lengthens and enlarges around the egg and the embryo will position itself so the head faces down to assist breaking the egg shells. If the eggs are placed incorrectly, the embryo dies because they cannot emerge through the membrane of the egg. Suitable temperatures are 27-29°C, this allows the embryos to develop in four days. The larvae are 2.6-2.7 mm in length and will feed on different protists (single-celled organisms). The larvae then settle near to the parent frillfin goby to continue developing (Tavolga, 1950).

BEHAVIOUR. Frillfin gobies will remove themselves from predator's proximity by hopping from one pool to another. The frillfin goby are known for their jumping behaviour from one pool to the next by memorizing the geographical features when tide levels rises to precisely jump to adjacent pools (Smith, 2006). This also eradicates the problem of them becoming dry when they jump onto rocks to get away from predators. If another predator is present in the next pool, it will jump again, hence they are capable of carrying out a sequence of jumps to escape to safety (Smith, 2006). Furthermore, the frillfin goby will select areas that are favourable to live. Such that they are able to swim short distances for food and return without putting themselves in danger or crossing other territories. This is considered to be homing behaviour (Kennedy and Pitcher, 1975). Furthermore, male frillfin gobies that are ready to reproduce, react to scents from females that are ready to court and have her eggs fertilized. Additionally, the males will also react to visual incentives. When the males begin to respond to signals or produce signals of their own, the female frillfin gobies will increase the intensity of her signals and actions to initiate

fertilization. After the eggs are laid, the males are very defensive and will chase after any predators or other organisms that are too close to the eggs (Tavolga, 1950).

APPLIED ECOLOGY. Frillfin gobies populations in coastal areas in West Africa are decreasing because water pollution is destroying their habitats and natural materials that make up their homes are being used to manufacture different merchandise. Although their populations are decreasing there is little concern of extinction or major threats. These fish are important food sources for other organisms (IUCN, 2016).

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Fig. 2. Frillfin goby geographic distribution.

[<http://maps.iucnredlist.org/map.html?id=183177>, downloaded 10 March 2016]

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