

## *Pseudupeneus maculatus* (Spotted Goatfish)

Family: Mullidae (Goatfishes)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



**Fig. 1.** Spotted goatfish, *Pseudupeneus maculatus*.

[[http://doris.ffessm.fr/photo\\_gde\\_taille\\_fiche2.asp?varpositionf=&varSQL=SELECT%20\\*%20FROM%20fiche\\_liste%20where%20fiche\\_numero%20=%201174&varposition=1&varSQLphoto=SELECT%20\\*%20FROM%20vue\\_photos%20where%20photo\\_fiche%20=%201174%20ORDER%20BY%20photo\\_ordre&groupe\\_numero=49&fichier=&origine=](http://doris.ffessm.fr/photo_gde_taille_fiche2.asp?varpositionf=&varSQL=SELECT%20*%20FROM%20fiche_liste%20where%20fiche_numero%20=%201174&varposition=1&varSQLphoto=SELECT%20*%20FROM%20vue_photos%20where%20photo_fiche%20=%201174%20ORDER%20BY%20photo_ordre&groupe_numero=49&fichier=&origine=), downloaded 9 March 2015]

**TRAITS.** The spotted goatfish's body has three large dark blotches on the sides, slanting blue lines on the head extending to the back and two thickset barbels beneath the chin; true tactile and taste organs also used for sediment excavation (Sutour et al., 2014) (Fig. 1). When at rest, the barbels are folded and stored in a groove in the lower jaw; dorsal fin separated into two parts (Sutour et al., 2014). The goatfish grows from 13-30cm; body is generally pale with variable colour; scales on the back either reddish or yellowish brown edges (Froese and Pauly 2014). Males are bigger, having backs arched higher and facial outlines which are more angular; females are more slender and have a slanted facial outline. These differences are more distinct as *P. maculatus* gets bigger (Munroe, 1983). Relatively large head with pointed snout, protractile mouth placed low to search to food hidden in sand; lined with small teeth (Sutour et al., 2014). The goatfish also has 8-9 dorsal spines, 8 dorsal soft rays (Froese and Pauly, 2014).

**DISTRIBUTION.** *Pseudupeneus maculatus* is found in Florida, the Bahamas, the Caribbean, the Gulf of Mexico, Bermuda and Southern Brazil (Sutour et al., 2014) (Fig. 2), and is native to Trinidad and Tobago.

**HABITAT AND ACTIVITY.** *P. maculatus* is a marine animal found in reefs across the western Atlantic, over sand, rubble, rocks and sea grass beds (Smithsonian Tropical Research Institute, 2015). It has a depth range of 0-90m, but usually 0-35m (Froese and Pauly, 2014), and is zoobenthic (found near the bottom) (Sazima et al., 2006).

**FOOD AND FEEDING.** *P. maculatus* feeds mainly over sandy or muddy bottoms, brushing the barbels through or over the sediments (Munroe, 1983). It is proposed that the fish feeds mostly during the day; it is diurnal (Bohlike and Chaplin 1968). Randall and Warmke (1967) stated that *P. maculatus* ingested crabs, shrimps and polychaetes, which comprised of most of its diet.

**POPULATION ECOLOGY.** *P. maculatus* is either solitary or stays in small or large groups (Fig. 3) (Sazima et al., 2006). If *P. maculatus* lives longer than five years, it is considered excellent; there is no direct evidence concerning its longevity (Munroe 1983). The fish also has to compete with *Mulloidichtys martinicus* or the yellow goatfish for the same food (Munroe 1983). *P. maculatus* specimens were found in the stomachs of *Fistularia tabacaria*, *Epinephelus striatus*, *C. ruber* and *Aulostomus maculatus*, which make it seem likely that it can be preyed upon by sharks and other large reef predators. The size of the fish does not vary with depth, although juveniles may prefer shallow waters where available (Munroe 1983).

**REPRODUCTION.** *P. maculatus* is a common member of tropical reef communities, and very little is known about their reproductive cycles (Colin and Clavijo 1978). Spawning was observed on a level, sandy seabed at approximately 21m deep, next to a live coral reef; water temperature was 25.8 °C (Colin and Clavijo 1978). When not breeding, *P. maculatus* rests on a sandy margin near the reef, while the young reside in sea grass beds (Munroe 1983). According to Caldwell (1962), *P. maculatus*' larvae and post-larvae are pelagic, metamorphose, and transfer to benthic habitat at sizes of 4-8cm. Fertilization is external and the fish exhibits behaviour similar to parrotfish, surgeonfish and wrasse; the fish spawn in large groups and the eggs are released after a quick upright ascent (Munroe 1983). The fish spawns in March-April and September-October, however, it is unknown whether single fishes have young twice a year or only once (Munroe 1983). The species has a doubling time of less than fifteen months (Froese and Pauly 2014).

**BEHAVIOUR.** *P. maculatus* commonly occur in diverse schools alongside grunts, wrasses, surgeonfish and other communal reef classes (Munroe 1983). It seems as though the fish does not move substantial distances away from where it originally settled during its pelagic phase. Juveniles have been seen residing in sheltered, shallow areas around the reef or on sea grass beds such as *Thalassia* and in embayments. The juveniles mix with schools of juvenile grunts and have presumably similar feeding habits to adults (Munroe 1983). *P. maculatus* interact by touching, wriggling and twisting each other's barbels (Filkovsky and Springer 2010). The spotted goatfish may be cleaned by cleaner fish (Fig. 4).

**APPLIED ECOLOGY.** *P. maculatus* is used commercially as a source of food and as aquarium pets (Froese and Pauly 2014).

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**Fig. 2.** Native range map for *Pseudupeneus maculatus*.

[<http://www.fishbase.us/summary/1094>, downloaded 31 March 2015]



**Fig. 3.** *Pseudupeneus maculatus* searching for food in a group.

[[http://doris.ffessm.fr/photo\\_gde\\_taille\\_fiche2.asp?varpositionf=&varSQL=SELECT%20\\*%20FROM%20fiche\\_liste%20where%20fiche\\_numero%20=%201174&varposition=3&varSQLphoto=SELECT%20\\*%20FROM%20vue\\_photos%20where%20photo\\_fiche%20=%201174%20ORDER%20BY%20photo\\_ordre&groupe\\_numero=49&fichier=&origine=](http://doris.ffessm.fr/photo_gde_taille_fiche2.asp?varpositionf=&varSQL=SELECT%20*%20FROM%20fiche_liste%20where%20fiche_numero%20=%201174&varposition=3&varSQLphoto=SELECT%20*%20FROM%20vue_photos%20where%20photo_fiche%20=%201174%20ORDER%20BY%20photo_ordre&groupe_numero=49&fichier=&origine=), downloaded 31 March 2015]





**Fig. 4.** *Pseudupeneus maculatus* with cleaner fish.

[[http://doris.ffessm.fr/photo\\_gde\\_taille\\_fiche2.asp?varpositionf=&varSQL=SELECT%20\\*%20FROM%20fiche\\_liste%20where%20fiche\\_numero%20=%201174&varposition=5&varSQLphoto=SELECT%20\\*%20FROM%20vue\\_photos%20where%20photo\\_fiche%20=%201174%20ORDER%20BY%20photo\\_ordre&groupe\\_numero=49&fichier=&origine=](http://doris.ffessm.fr/photo_gde_taille_fiche2.asp?varpositionf=&varSQL=SELECT%20*%20FROM%20fiche_liste%20where%20fiche_numero%20=%201174&varposition=5&varSQLphoto=SELECT%20*%20FROM%20vue_photos%20where%20photo_fiche%20=%201174%20ORDER%20BY%20photo_ordre&groupe_numero=49&fichier=&origine=), downloaded 31 March 2015]

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