

Sicydium punctatum (Tri Tri)

Family: Gobiidae (Gobies)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



Fig. 1. Tri Tri, *Sicydium punctatum*.

[<http://www.flickriver.com/photos/nclarkii/tags/fish/>, downloaded 23 March 2015]

TRAITS. The tri tri *Sicydium punctatum* is also known as the spotted algae-eating goby. Body stout, head short and broad, snout rounded, rarely growing larger than 10cm. Two separate dorsal (back) fins; the foremost fin has 8 pliant spines, the subsequent is soft with 10 rays; 1 anal spine, 9-10 anal soft rays. Tear-dropped shaped pectoral fins; a ventral adhesive disc of fused pelvic fins; lateral line absent (Fishbase, 2013). Teeth small, sharp, conical; one to several rows in jaws. Males are smaller and more colourful with dazzling blue coloration (Fig. 2), females (Fig. 1), have brown coloration (Stankey, 2013).

DISTRIBUTION. Caribbean Islands, coast of Venezuela, Cuba, Martinique, Dominica, Panama, Puerto Rico, Guadeloupe, Jamaica, Trinidad and Tobago (Fig. 3). Neotropical - endemic, Atlantic Ocean and Caribbean Sea - native (Fishbase, 2013).

HABITAT AND ACTIVITY. Adults found in freshwater habitats. Primarily inhabits shallow tropical (22-27°C) and sub-tropical rivers, streams, lakes of volcanic islands, but juveniles invaded benthic waters ranging from shoreline to depths more than 500 m. Found from the rocky river mouths with strong current flows, to head-waters of the river basin (mountain streams at 2000m altitudes) (Stankey, 2013). *S. punctatum* are diurnal, nocturnal, crepuscular and

migratory. Territorial when few individuals of another species present; especially the males, but exhibit colonial behaviour when many present. Male *S. punctatum* are very aggressive (dominance) towards other males; social to females.

FOOD AND FEEDING. Particular feeding patterns favouring a single prey such as filamentous green algae and biofilm (autochthonous resources). Forage actively - darting rapidly for food resources. Amphidromous nature (using both fresh and salt water) as the young larvae are carried downriver to the ocean via water currents to consume food and develop, after which migrate back upstream to inland freshwater habitats (Bouchon et al., 2009).

POPULATION ECOLOGY. Due to the involvement of freshwater - where adults, eggs, larvae are predominantly found, and oceanic habitats - where larvae, post-larvae are found, the distribution is different at times. The adults are characteristically found in the rivers; ranging from the coastal zone, reaching altitudes over 300 m and up to 14 km inland. Eggs are sticky so cling to the underpart of stones, accomplished by the male digging out tunnels. The young hatch and can be swimming within 1 minute of hatching and are carried out to sea by river currents. Within 0.2 km from the sea, larvae starts to develop acquiring feeding and visual functions, growth increase. Larvae continue to grow and become post larvae (average 83.4 days), then migrate back to river mouths to metamorphose into benthic juveniles (Fig. 4). *S. punctatum* are territorial and social; usually found in groups; but adapt to pairs during mating (Bell, 1994).

REPRODUCTION. Amphidromous species has growth occurring both in the ocean (marine, saline transition) and freshwater. They spawn in freshwater; eggs are laid in freshwater and larvae migrate downstream to the ocean to grow, and back to freshwater to continue growth. Once fully mature, they spawn several times. *S. punctatum* are iteroparous with seasonal or annual breeding. Sexes separate, undergo external sexual fertilization. The female deposits 5-several hundred eggs (oviparous) on the underside of stones, rocks, crevices, after which the male fertilizes. *S. punctatum* are territorial towards other members of the same sex (especially males towards other males). A mating progression begins with the male cleaning and clearing the nest for the deposition of the eggs. The anterior or abdominal region of the female species swells in response and the male swims backwards and forward between the female and breeding ground location, giving the female a nudge with its snout leading her to the spawning site. Male can also make vigorous swimming motions by anchoring via his ventral adhesive sucking disc.

The male guards the fertilized eggs as the female seldom take part in parental care. Eggs hatch 1-5 days after fertilization and develop quickly within few days. Upon birth, the young larvae have coloured eyes, developed jaws, gastrointestinal tracts and upright median fin folds. Newly hatched young come out from the breeding area and infiltrate the river benthon (plankton), as parental care is not practiced here at all. Small transparent larvae 2-10 mm long are heavier than water, but stay afloat in the water column by swimming upwards and swimming or sinking downwards for 3-20 days; benthic existence. This allows them to drift down to seas (ocean), where they eat and undergo a post - larval growth period of 50-150 days before ascending back upstream to freshwaters (rivers). During the growth period, they develop colours permitting them to integrate within the environment and achieve full sexual development within a few months (Bell, 1994)

BEHAVIOUR. Juvenile behaviour: Migrate to marine waters first; return to rivers and ascend them as they grow. *S. punctatum* climb using substantial axial and combined locomotion of fins and body plane (Blob et al., 2012).

Antipredator behaviour: *S. punctatum* are very small and hence are very cryptic in their behaviour; rarely leaving their burrows and are aposematic to avoid predation. Display foraging and mass migration in schools as a defence mechanism; only in post-larvae as they migrate from sea back to the river. In the post-larvae period alone is schooling behaviour seen; never seen in juveniles (young larvae) or adults. They do this to avoid predators present in the water, such as *Eleotris* sp.

APPLIED ECOLOGY. In the Caribbean, they form a large portion of catch (food) during their migration upstream in freshwater and are used for trade. They are not harmful to humans, however humans construct dams which disrupt the tight marine-upland linkage and reproductive strategy of this amphidromous species. It is not on the IUCN red list.

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Fig. 2. Blue male *Sicydium punctatum*.

[https://insects.tamu.edu/dominica/student%20projects/Dominica%20Projects%20pdf%20copy/Burback_Britney_2010.pdf, downloaded 23 March 2015]

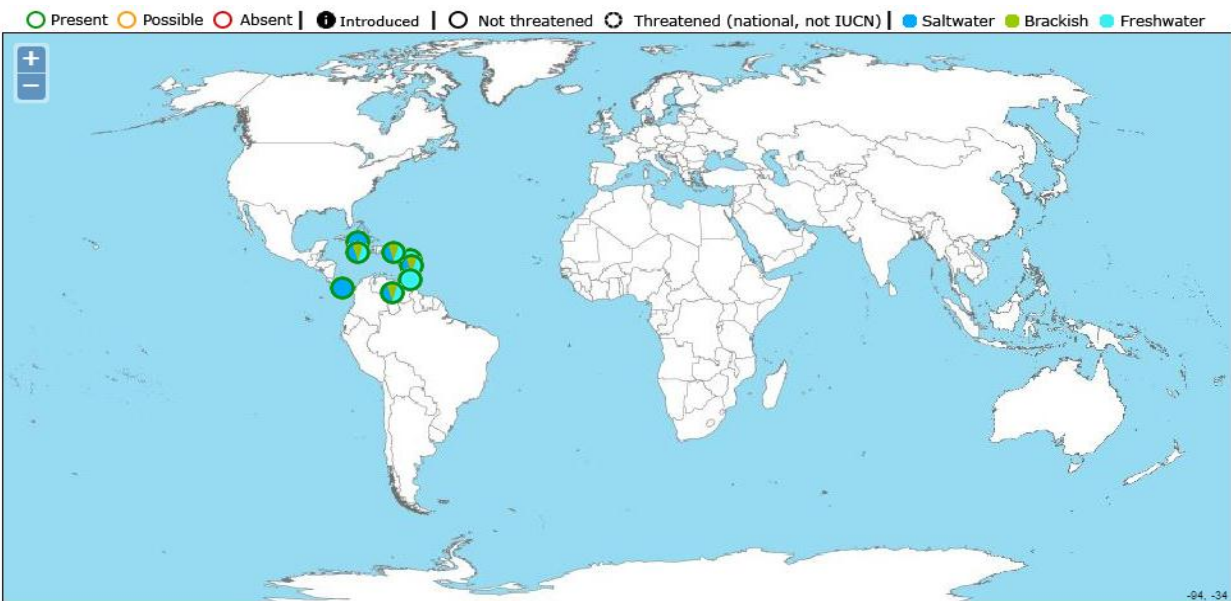


Fig. 3. Geographical distribution of *Sicydium punctatum*.

[<http://www.fishbase.org/Country/CountryList.php?ID=23400&GenusName=Sicydium&SpeciesName=punctatum>, downloaded 23 March 2015]

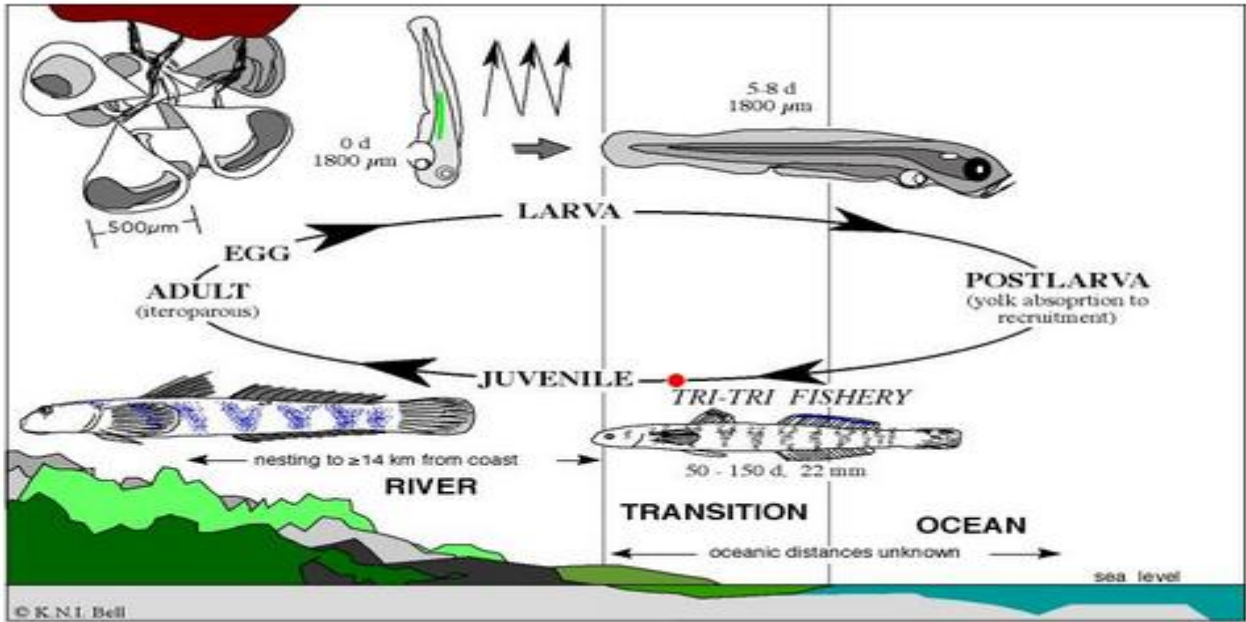


Fig. 4. Amphidromous life cycle of *Sicydium punctatum*.

[<http://lampreyhunter.blogspot.com/2013/05/what-are-migratory-fishes-work-which-i.html>, downloaded 23 March 2015]