Scarus vetula (Queen Parrotfish)

Family: Scaridae (Parrotfish)
Order: Perciformes (Perch and Allied Fish)
Class: Actinopterygii (Ray-finned Fish)

Fig. 1. Queen parrotfish, *Scarus vetula.*

[http://www.panoramio.com/photo/48465432, downloaded 30 January 2015]

TRAITS. Bilaterally symmetrical fish commonly around 30 cm in length but have been recorded to 120cm. *Scarus vetula* have distinctive teeth that create a beak-like formation with plates resembling those of parrots hence their name. The lower plate is mostly hidden by the top plate when the mouth of the fish closes. The species exhibits sexual dimorphism, where males are greenish or blue, with yellow, orange or a mixture of lines, with colours at the centre of scales and lines along its mouth to its eyes (Wheeler, 1975). Females are blueish brown with a pale band running along the lower side (Fig. 2). Not strong swimmers due to movement with pectoral fins (Lythgoe, 1992), mostly active during at day.

DISTRIBUTION. Native species are spread close to shores and coral reefs from the West Indies to Florida (Fig. 3). Found along and around the shorelines Bermuda (Boschung, 1983).

HABITAT AND ACTIVITY. *Scarus vetula* are usually found in the tropics parading along coral reefs within and around the Caribbean basin, but are limited only to relatively low water depth due their inability to cope with extremely strong currents (Boschung, 1983), also because this is where the stay amongst their food source. They are mostly active diurnal grazers.

FOOD AND FEEDING. *Scarus vetula* normally spend up to 90 percent of their day feeding. Using their unique beak they scape algae from rocks preferably turf algae and feed on coral from coral reefs. *S. vetula* has also been known to ingest sea sponges. The mixture of coral and algae is digested and the indigestible sand is excreted, a single parrotfish may produce up to 100kg a year.

POPULATION ECOLOGY. Commonly located in the Caribbean in small permanent groups consists of 4-5 individuals with 3-4 females and a supermale ((dominant male). They may sometimes congregate forming large schools of approximately 40 individuals where dominant males fight for dominance within the school. Being sequential hermaphrodites this species start as females (primary phase) and then transforming into males (terminal phase), to ensure that population size remains stable and reproduction continues if the supermale or dominant male is lost. In the wild they tend to have a lifespan of 7 years.

REPRODUCTION. Breeding all through the year occurs mostly in the mornings. They have both an egg and larval stage along with the initial and terminal stages of life where they change sex and physical characteristics (Lowe-McConnell, 1987). Mating begins when a supermale starts to encircle a single female from the harem, as the circle tightens getting smaller and smaller the female then joins in spawning. After this step she releases her gametes into the water where the male fertilises them. Sexual reproduction by fertilisation is done externally.

BEHAVIOUR. Juveniles tend to stay in large groups with the dominant male and several females until they leave the group to separate into more permanent harems. All juveniles are brownish-blue in colour until maturation. Adult males maintain harems where if the dominant male dies a female may change gender and colour to become the dominant male. During the night they secrete mucous envelopes around themselves for protection usually in crevices away from predators (Wheeler, 1975). The cocoon (Fig. 4) is presumed to hide the scent that is used by predators like the Moray eel. Individuals maintain interactions by use of chemical and physical signals.

APPLIED ECOLOGY. Currently listed by the IUCN as of least concerned due to large numbers commonly found in their native geographic range. In a study done by 90 experts by the ICUN's Global Coral Reef Monitoring Network from 1970 research have shown coral reefs have been halved in numbers since 1970 and an increase in algal growth along with proof that only reefs that currently have parrotfish tend to be more healthy and more productive. This was due to the overfishing of parrotfish and sea urchins (another key herbivore) in Caribbean waters. Research also showed that overfishing was the primary cause of coral health and not climate change. Parrotfish eat algae and coral thereby allowing growth and expansion of new coral and

controlling algae populations. Large quantities of algae hinder coral growth and with the overfishing of parrotfish there becomes a less resilient and far less productive ecosystem.

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Fig. 2. Female parrotfish (before transformation).

[http://www.wetwebmedia.com/ParrotFishPIX/Scarus/Scarus%20vetula%20COZ%20init.jpg downloaded 27 March 2015]

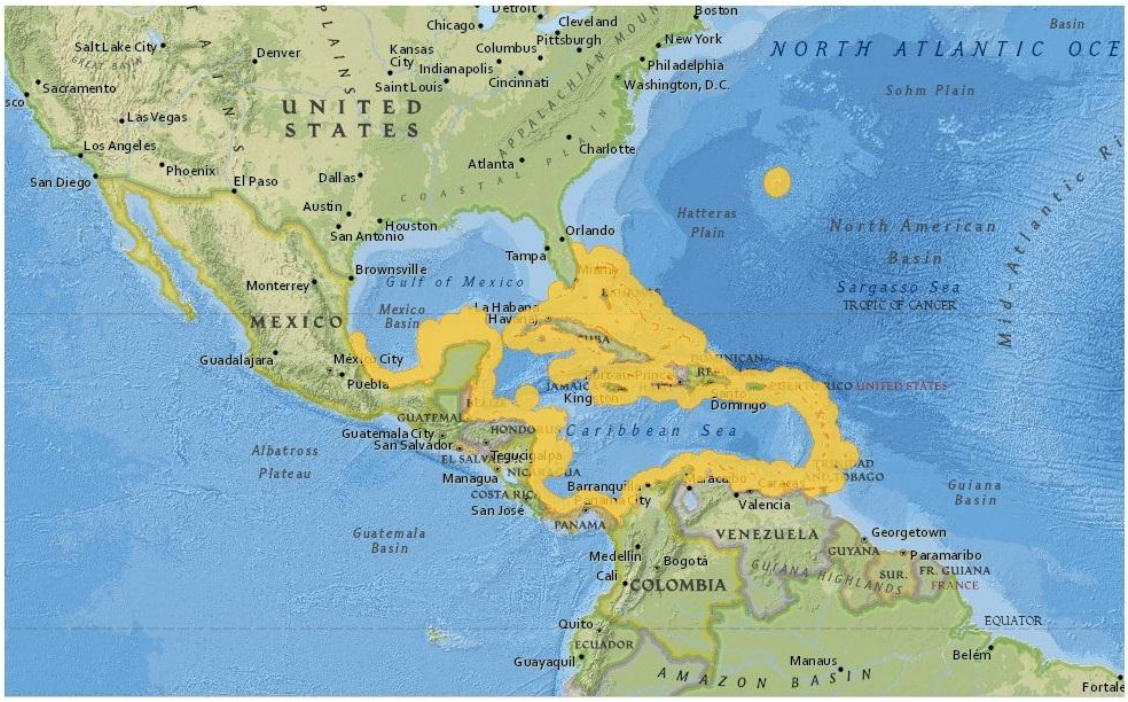

Fig. 3. Species distribution.

[http://maps.iucnredlist.org/map.html?id=190698, downloaded 15 February 2015]

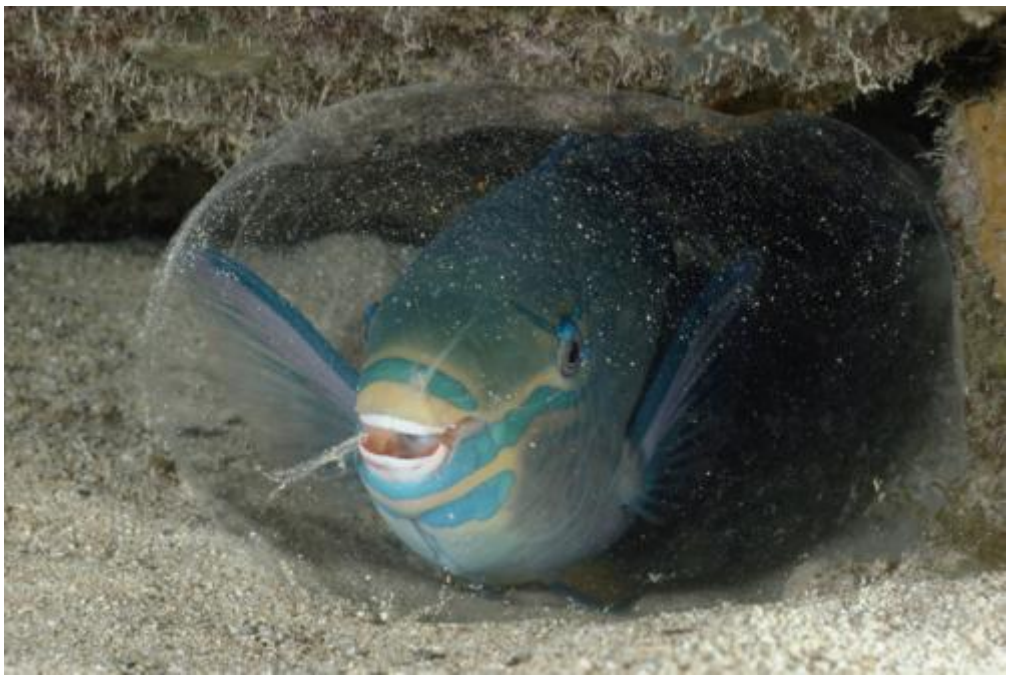

Fig. 4. Sleeping mucus bag made by parrotfish, and the beak-like structure.

[http://oceans4-11.wikispaces.com/Queen+Parrotfish downloaded 27 March 2015]