Stenopus hispidus (Red-banded Coral Shrimp)

Order: Decapoda (Crabs, Lobsters and Shrimps)
Class: Malacostraca (Crustaceans: Crabs, Sand-hoppers and Woodlice)
Phylum: Arthropoda (Arthropods)

Fig. 1. Red-banded coral shrimp, *Stenopus hispidus.*

[http://joseflitt.com/miracles_photographed/maldives#h31c2cccc, downloaded 22 February 2016]

TRAITS. *Stenopus hispidus* or the red-banded coral shrimp is the largest known species of cleaner shrimp, it can grow larger than 7.5cm and in some cases up to 9cm (GBRI, 2016). *Stenopus hispidus* is a brightly coloured red and white-banded shrimp (Fig. 1) with two pairs of long white hair-like antennae as well as a pair of claws or pincers (ADW, 2016). These antennae are considerably longer than the body of the shrimp. The larger chelipeds and body of the shrimp are covered in spines (GBRI, 2016). There is a red spot located on the anterior surface of the carapace and the bases of the legs in adults are blue. Sexual dimorphism; female are larger than males and this is the major characteristic used in identifying the sexes in this species.

DISTRIBUTION. *Stenopus hispidus* is found throughout the tropics (Fig. 2): in the Indo-Pacific from South Africa and the Red Sea all the way to Hawaii and Australia. They can also be found in the western Atlantic from the north coast of South America and southern Florida to Bermuda and are quite common in the Caribbean (GBRI, 2016).

HABITAT AND ACTIVITY. *Stenopus hispidus* is associated with coral reefs where it spends most of its time offering cleaning services to fish that come into the reef looking for them at particular locations called cleaning stations. They live in small shaded coral spaces or caves and are often observed on the ceiling of the caves where it can find fish and other marine animals to remove parasites, dead tissue and scraps of food. They are also less frequently found in in undercut mats of turtle grass. In areas where there is little protection, they do not inhabit shallow or turbulent waters and live comfortably within depths of 2-4m in calm waters. They inhabit a relatively small space about one square metre and occasionally change position over a matter of months or sometimes years.

FOOD AND FEEDING. *Stenopus hispidus* is highly dependent on its role as a cleaner of other organisms on the reef for feeding itself but is also capable of feeding on dead organic matter and detritus if it needs to. It prefers to clean organisms of parasites, scraps of leftover food and dead tissues. The red-banded coral shrimp is also known to feed on small fish, crustaceans, worms and snails. These shrimps are nocturnal, resting during the day and becoming active at dusk where the sit on the roofs of their home or close to their home waiting for potential client fish to pass by (Fig. 3) (WAZA, 2016).

POPULATION ECOLOGY. Male *Stenopus hispidus* are highly territorial and occupy an area of about 2m in diameter with their mate. This means that large numbers of reproducing adults can be found in pairs occupying the reef while juveniles usually inhabit areas further away from the reef in less protected areas as much as 10m away to avoid the much larger and territorial adults (Treatise on Zoology, 2016).

REPRODUCTION. *Stenopus hispidus* is a monogamous species of shrimp meaning it has one mate for life (Fig. 4). During mating, which occurs immediately after the female moults, the male attracts the female by performing a courtship dance and transfers a packet of sperm to the female which she uses to fertilize her eggs (Zhang et al., 1998). The eggs are blue-green in colour and are stuck to her abdominal region (swimmerets) subsequently hatching after about 16 days. After hatching the young shrimp larvae cling to their mother's exoskeleton for as much as 6 weeks after which they are free floating as plankton sized organisms. They float freely for several weeks where they undergo several exoskeletal moults before they take up residence on a nearby reef (WAZA, 2016). Juveniles spend most of their time before adulthood on the fringes of the reef to avoid territorial adults (Treatise on Zoology, 2016).

BEHAVIOUR. Cleaning behaviour: *Stenopus hispidus* is highly dependent on cleaning behaviour for feeding (Fig. 5). They are also scavengers but depend highly on cleaning client fish of parasites, dead tissue and left behind scraps of food (Limbaugh et al., 1961). To achieve contact with a potential client, the cleaner shrimp has to make itself more visible and does so by placing itself in a conspicuous spot near its home and waving its antennae while walking from side to side (GBRI, 2016). This dancing behavior shows nearby fish that the shrimp are ready and eager to clean.

Mating behaviour: mating is initiated in a ritualized fashion, it begins with the contact of both partners antennules where the male approaches the female slowly making antennular contact after which both partners display their claws by waving. The female then raises her body exposing her abdomen to which the male responds by also raising its abdomen and caressing the female against him. The male them rotates his body maintaining abdominal contact with his head now

facing her tail. Mating occurs when the male transfers a packet of sperm to the female which she uses to fertilize her eggs. The male then leaves her to begin the spawning process.

APPLIED ECOLOGY. *Stenopus hispidus* has become highly sought after in the marine pet trade for their beauty and the functions they perform as they feed on decaying food material in the community tank, also they remove parasites and clean the other organisms living in a community tank.

REFERENCES

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Author: Shivan Kurban
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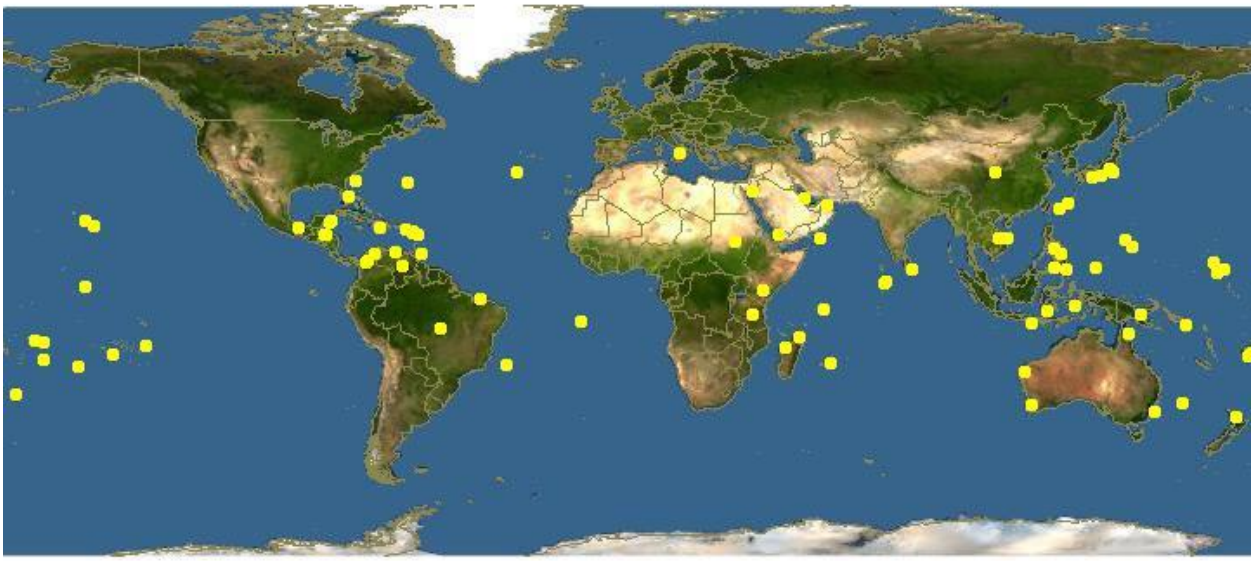

Fig. 2. The distribution of *Stenopus hispidus* (red-banded coral shrimp).

[http://www.discoverlife.org/mp/20m?map=Stenopus+hispidus, downloaded 1 March 2016]

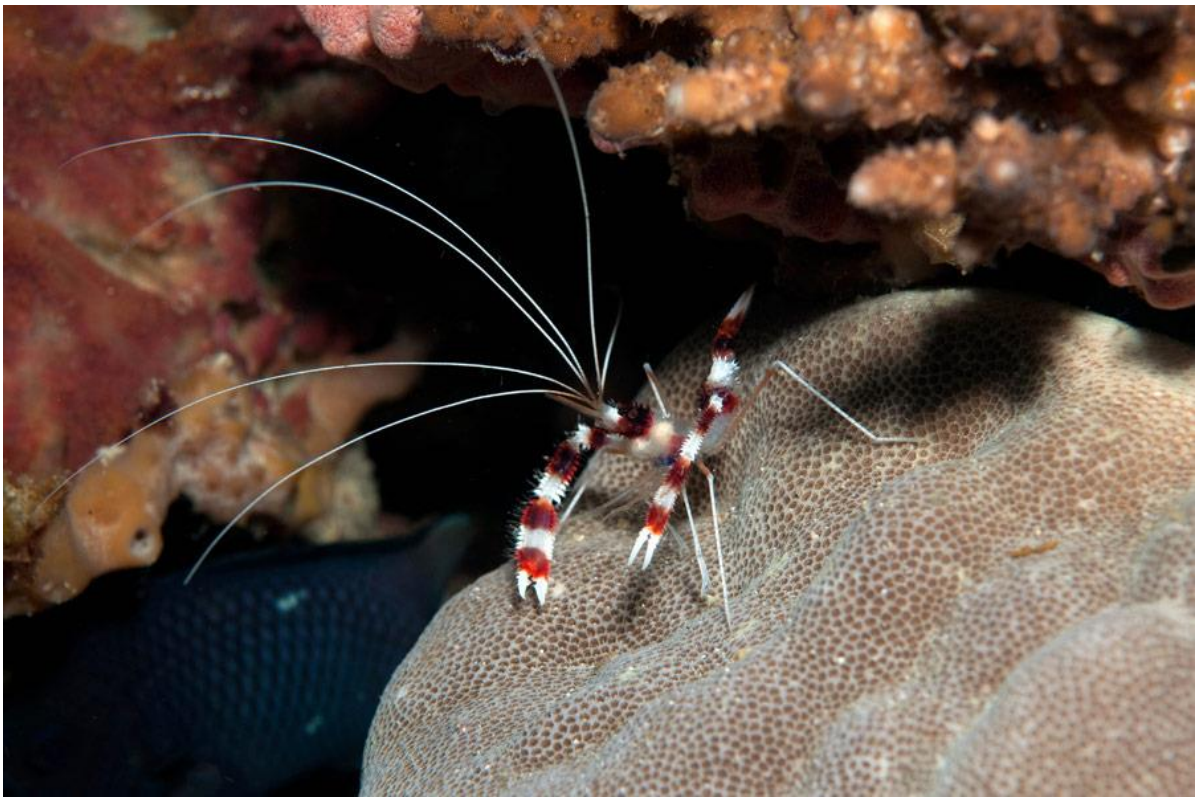

Fig. 3. *Stenopus hispidus* waiting at a cleaning station for potential client species.

[http://museum.wa.gov.au/sites/default/files/Stenopus4-resize.jpg, downloaded 3 March 2016]

Fig. 4. A pair of *Stenopus hispidus* protecting their eggs (under the female's abdomen).

[http://joseflitt.com/img/s7/v161/p965364597-3.jpg, downloaded 1 March 2016]

Fig. 5. Mutualistic cleaning relationship between *Stenopus hispidus* and a client (moray eel).

[http://cdn.c.photoshelter.com/img-get/I0000sDMCwF0ANVA/s/860/860/10563C254.jpg, downloaded 2 March 2016]