Tubastraea coccinea (Orange Cup Coral)

Order: Scleractinia (Stony Corals)
Class: Anthozoa (Corals and Sea Anemones)
Phylum: Cnidaria (Corals, Sea Anemones and Jellyfish)

Fig. 1. Orange cup coral, *Tubastraea coccinea*.

[https://commons.wikimedia.org/wiki/File:Tubastrea_coccinea_3648x2736.png, downloaded 10 March 2016]

TRAITS. The orange cup coral, *Tubastraea coccinea*, is a coral where the tissues that cover the skeleton are deep red, orange or red-orange in colour and the tentacles are usually bright orange to yellow (Fig. 1). *Tubastraea coccinea* are non-reef-building corals which grow in rounded clumps, sometimes growing on top of each other, and can reach a maximum diameter of 14cm. During the evening hours and at night, the polyps of the orange cup coral extend, giving the appearance of the alternative common name, sun coral (Wikipedia, 2016). The tentacles retract during the day, but will open if there is food present.

DISTRIBUTION. *Tubastraea coccinea* is native to the Indo-Pacific region of the world. However, it was introduced to the Caribbean, North, Central and South America, Asia and African regions (Fig. 2) and is an invasive species (IUCN, 2007).

HABITAT AND ACTIVITY. *Tubastraea coccinea* inhabit areas which hare vertical, shaded surfaces as well as caverns which have a high nutrient content and a strong water flow. They are also found in areas which are not occupied by other corals, for example wrecks. Orange cup corals are mostly found in deep areas, up to 130m deep, with cold water. They can, however, also be found in shallow areas of the subtidal zone, at depths of 0-3m, in coastal areas of Brazil (Creed, 2007). *Tubastraea coccinea* are active at night, the polyps extending their tentacles to feed (Fig. 3). At night the tentacles and polyps are retracted (Fig. 4).

FOOD AND FEEDING. Like other corals, the orange cup coral feeds on zooplankton which it captures as food using stinging cells on the tentacles (Creed, 2007). Unlike most other corals, they do not have zooxanthellae (symbiotic single-celled algae) in their tissues, (Wikipedia, 2016), so do not need sunlight and can therefore occupy deep waters.

POPULATION ECOLOGY. *Tubastraea coccinea* are corals which grow in clumps which are round in shape. However, the orange cup corals would sometimes grow on top of each other when the communities would become larger. Therefore, *Tubastraea coccinea* are not solitary organisms as they grow as a related group. The number of individuals are large as they grow on top of one another, supported by the older corals. They are known to live long, however, this species also begins reproduction at a young age.

REPRODUCTION. *Tubastraea coccinea* reproduces sexually and asexually and are hermaphrodites which means that male and female are within the same organism. When they produce sexually they release sperm and eggs where it becomes a fertilized egg. From this product, a planula larva is developed which is flat and free swimming (McBirney, 2015). The planula larva would then settle and forms a tiny polyp which would grow into a coral eventually. Orange cup coral can also reproduce asexually by the process of budding of new polyps. The reproductive age of *Tubastraea coccinea* is at around 1.5 years, and it grows an average of $3cm^2$ per year (Creed, 2007). *Tubastraea coccinea* larvae usually live for up to 14 days and most of them settle close to the adults.

APPLIED ECOLOGY. This species is not listed on the IUCN (2007) list for endangered species, however, it is listed on the Convention on International Trade in Endangered Species. It is also an invasive species as it competes with native species and benthic invertebrates for a habitat or substratum space. Some of the native species which are at risk are sponges and native corals where extinction and removal of the native species may occur.

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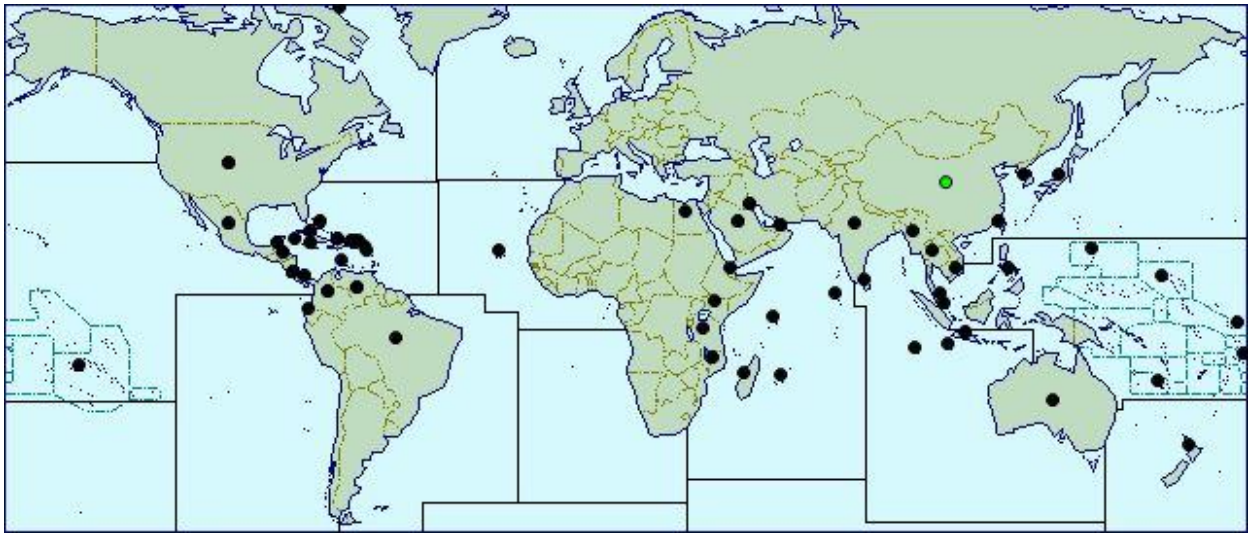

Fig. 2. Orange cup coral geographic distribution.

[http://www.cabi.org/isc/datasheet/109218, downloaded 10 March 2016]

Fig. 3. Orange cup coral (*Tubastraea coccinea*) with open tentacles.

[http://www.fishchannel.com/fish-species/coral-inverts-profiles/orange-cup-coral-2.aspx, downloaded 9 March 2016]

Fig. 4. Tentacles of the orange cup coral closed at night.

[https://en.wikipedia.org/wiki/Orange_cup_coral, downloaded 10 March 2016]