

Actinopyga agassizi (West Indian Sea Cucumber)

Order: Aspidochirotida (Sea Cucumbers)

Class: Holothuroidea (Sea Cucumbers)

Phylum: Echinodermata (Starfish, Sea Urchins and Sea Cucumbers)



Fig. 1. West Indian sea cucumber, *Actinopyga agassizi*.

[<http://www8.nos.noaa.gov/onms/Park/Parks/SpeciesCard.aspx?refID=4&CreatureID=1331&pID=9>, downloaded 10 March 2016]

TRAITS. The ground colour of the West Indian sea cucumber is white, with yellow-brown spots (Fig. 1). The tegument (skin) is thick and leathery, with papillae (small projections) on the dorsal surface while the ventral surface is flat with broad, knobby podia (tube feet) (Hasbun and Lawrence, 2002). The dorsal surface is rounded and the podia on the ventral surface have suckers at their tips. They also have five calcareous teeth, which gives it another common name, the five-toothed sea cucumber (NOAA, 2016). The species is known to have a maximum length of approximately 35cm (Sea Life Base, 2012).

DISTRIBUTION. *Actinopyga agassizi* has a wide geographic distribution in tropical climates (Sea Life Base, 2012). Its range spans from the western Atlantic and the Gulf of Mexico to the Caribbean Sea, Bermuda, the Bahamas and Florida, to the northern coast of South America including Trinidad and Tobago (Fig. 2) (IUCN, 2013; NOAA, 2016).

HABITAT AND ACTIVITY. There is little information on the activity of the species since they are nocturnal. They are found mostly at relatively deep sea depths, within a range of approximately

40-60m, according to two different sources (IUCN, 2013; NOAA, 2016). *A. agassizi* is benthic (bottom-living) and inhabits areas in coral reefs, seagrass beds and rocky bottoms (Sea Life Base, 2012). They feed at night, on algal turf, seagrass meadows and rubble or sand covered areas (Sea Life Base, 2012).

FOOD AND FEEDING. There is very little information on the feeding habits of *A. agassizi*, but they are known to be surface dwellers (Hoskin, 1963) that utilize organic particles and detritus as their food (NOAA, 2016). These organisms are non-selective feeders with respect to particle size taken for food, as compared to other species.

POPULATION ECOLOGY. This species usually occurs at low densities; at about 0.03 individuals per m² in Costa Rica (IUCN, 2013). However, in 1975, a quadrat survey was done in the region of the Bimini Lagoon in Bahamas in which 99.4% of the individuals found were of *A. agassizi* (Smith et al., 1981). The species is nocturnal and thus moves around at night in an attempt to find food. Their movement is slow, approximately 3m in 24 hours. Movement tends to be random, however it not uncommon that groups of holothurians will move in the same direction. This can happen for periods of weeks and they can move together for up to approximately 100m (Smith et al., 1981). During the day, they appear almost motionless and are lodged in cracks under rock ledges or around corals.

REPRODUCTION. In Bimini in the Bahamas, *A. agassizi* are mostly found as large individuals while smaller individuals were rarely observed. This therefore implies their life cycles may be long and their turnover rates are possibly low (Smith et al., 1981). The species is gonochoric and therefore an individual is either male or female. *A. agassizi* has external spawning and fertilization. Their life cycle consists of embryos that later develop into auricularia larvae and subsequently develop into doliolaria larvae, a barrel-shaped stage, and then they metamorphose into juveniles.

BEHAVIOUR. *A. agassizi* are nocturnal and therefore carry out their feeding activities and move mostly at night. As a result of their nocturnal behaviour, they are generally not seen or observed during the day time. However, if observed during the day, they are almost motionless and prefer to stay hidden in crevices in rock ledges or around corals. They produce rounded excretory boluses resembling a string of beads.

APPLIED ECOLOGY. According to a report by (Toral-Granda et al., 2008), *Actinopyga agassizi* is under exploitation in Panama and Venezuela for purposes of sale and trade. However, exploitation is less directed at the species in Cuba, since it occurs here at much lower densities. It is relevant to note *A. agassizi* does play important ecological roles in nutrient recycling where the process allows for organic matter, which is the detritus that they ingest for food, to get back into the aquatic environment for use by other organisms. They act as hosts for the pearlfish *Carapus bermudensis*, one of the closest associations of a vertebrate and an invertebrate host (Smith et al., 1981).

REFERENCES

- Hasbún, C.R., and Lawrence, A.J. (2002). An Annotated Description of Shallow Water Holothurians (Echinodermata: Holothuroidea) from Cayos Cochinos, Honduras. *Revista de Biología Tropical*, 50(2), 669-678.
- Hoskin, C. M. (1963). Recent carbonate sedimentation of Alacran Reef, Yucatan, Mexico. Washington: National Academy of Sciences-National Research Council.
- IUCN. (2013). *Actinopyga agassizi*. The IUCN Red List of Threatened Species 2013: e.T180353A1619093. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180353A1619093.en>.
- NOAA. (2016). Encyclopaedia of the Sanctuaries. Five toothed Sea Cucumber. <http://www8.nos.noaa.gov/onms/Park/Parks/SpeciesCard.aspx?refID=4>.
- Paulay, G. (2015). *Actinopyga agassizi*. <http://www.marinespecies.org/aphia.php?p=taxdetails&id=241768>.
- Sea Life Base. (2012) *Actinopyga agassizi*, five toothed sea cucumber. <http://www.sealifebase.org/summary/Actinopyga-agassizi.html>.
- Smith, C.L., Tyler, J.C. and Feinberg, M.N. Population Ecology and Biology of the Pearlfish (*Carapus bermudensis*) in the Lagoon at Bimini, Bahamas (1981).
- Toral-Granda, V., Lovatelli, A., and Vasconcellos, M. (eds) (2008). Population status, fisheries and trade of sea cucumbers in Latin America and the Caribbean. A global review of fisheries and trade. FAO Fisheries and Aquaculture. Technical Paper. No. 516. Rome, FAO. pp. 213–229.

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Fig. 2. West-Indian sea cucumber geographic distribution.

[\[http://maps.iucnredlist.org/map.html?id=180353\]](http://maps.iucnredlist.org/map.html?id=180353), downloaded 11 March 2016]

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