

## NOTES ON THE SEA CUCUMBER, *AFROCUCUMIS AFRICANA* (SEMPER, 1868) (HOLOTHUROIDEA: DENDROCHIROTIDA: SCLERODACTYLIDAE) IN SINGAPORE

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### INTRODUCTION

*Afrocucumis africana* (Semper, 1868) is a widespread and common holothuroid that inhabits shallow tropical waters at the intertidal zone. Examination of holothuroid specimens in the Zoological Reference Collection (ZRC), Raffles Museum of Biodiversity Research (RMBR), National University of Singapore showed that it had been previously identified. However, no published record of its identity exists in Singapore, although it has been featured in a publication and an online guide (Tan & Yeo, 2003; Tan, 2009). In this regard, the diagnostic and ecological features of *Afrocucumis africana* (Semper, 1868) are discussed to aid in future research.

### MATERIAL AND METHODS

The species was sighted on 12 Nov.2009 at approximately 1400 hours at the north-eastern intertidal shore of Pulau Sakijang Pelepah (Lazarus Island; 1°13'20"N 103°51'27"E), south of Singapore Island. A total of five individuals were seen—a solitary individual, as well as an aggregation of four—under rocks. Two specimens were collected and preserved in 75% ethanol. They were then deposited in the ZRC (ZRC: ECH 95).

The ossicles of the specimens were examined in order to verify the species' identity. Owing to the small size of the specimens, it was difficult to excise sufficient pieces of the integument without extracting the podia. Hence, both portions were extracted together. The tissues were left to stand in 2.0 ml of household bleach (NaOCl) until they had completely dissolved, with only the ossicles remaining as white sediment. These were then examined under the microscope and identified using keys (Clark & Rowe, 1971; Cannon & Silver, 1986; Massin, 1996; Liao, 1997; Samyn et al., 2006).

### RESULTS AND DISCUSSION

**Specimen details.** – Each specimen is cylindrical, tapering slightly towards ends, and approximately 40 mm long and 6 mm wide (Fig. 1a). The tegument is purplish-black and the mouth and anus are located terminally. Twenty dentritic tentacles are located at the oral region (Fig. 1b), whereby fifteen large tentacles are situated at the outer whorl while five shorter ones are arranged at the inner rim. The podia are arranged penta-radially in two rows at each ambulacrum.

**Ossicle examination.** – The prominent form is a lightly perforated lenticulate plate which is generally circular in shape (Fig. 2).

**Distribution.** – *Afrocucumis africana* is one of the most widespread of the dendrochirote sea cucumbers in the tropical Indo-West Pacific (Massin, 1996). It has previously been recorded in East Africa, India, parts of Southeast Asia, Australia and, the South and West Pacific Islands, China, Taiwan and Japan (Clark & Rowe, 1971; Rowe & Doty, 1977; Liao, 1997; Marsh & Morrison, 2004; Samyn et al., 2006). Massin (1999) provided a detailed description of the specific localities as well as a global distribution map for this species.

In Singapore, this species has been recorded at Changi Beach (R. K. H. Yeo, pers. comm.), Chek Jawa (east of Pulau Ubin; R. K. H. Yeo & R. Tan, pers. comm.), Pulau Sakijang Bendera (Saint John's Island; R. K. H. Yeo & R. Tan, pers. comm.), Pulau Sakijang Pelepah (Lazarus Island), Pulau Satumu (R. K. H. Yeo, pers. comm.), Pulau Semakau (R. K. H. Yeo, pers. comm.), Sentosa (R. K. H. Yeo & R. Tan, pers. comm.), and Sultan Shoal (R. K. H. Yeo & K. S. Loh, pers. comm.). The earliest record was five specimens from Pulau Satumu, collected on 1 Nov.1898 (ZRC: 1976.5.4.8–12).

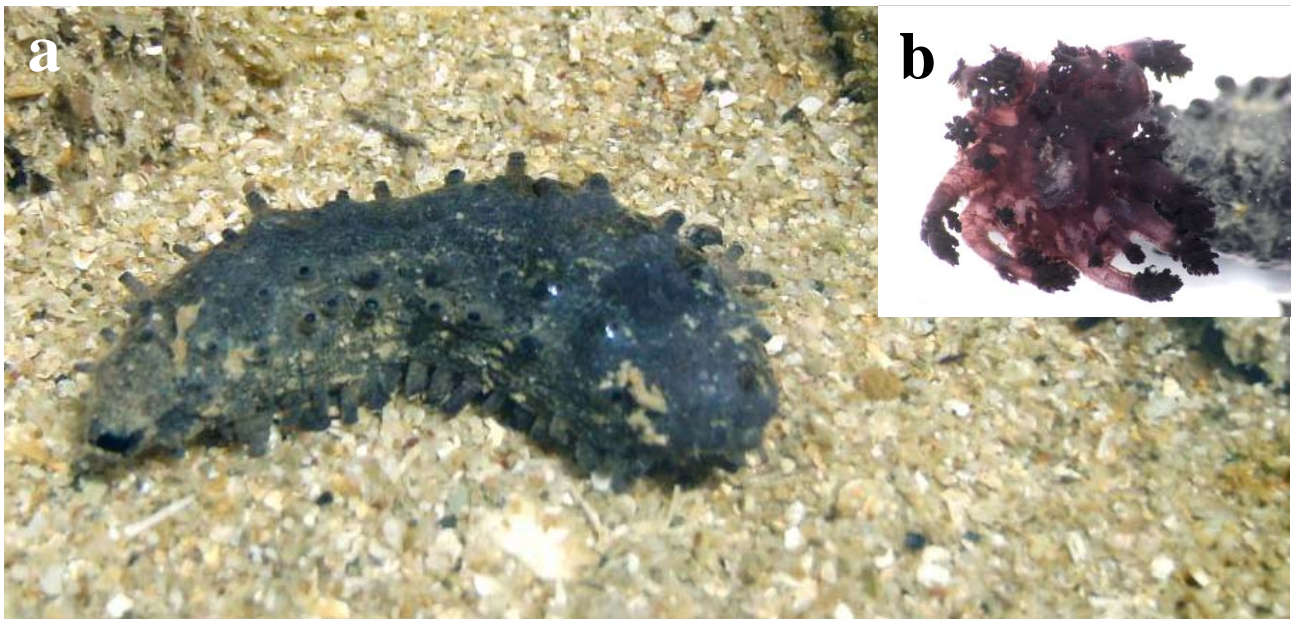


Fig. 1. (a) *Afrocucumis africana* sighted at Pulau Sakijang Pelepah (Lazarus Island). Specimen length = 35 mm. (Photograph by: Alvin Francis Lok Siew Loon). (b) The same specimen after preservation, with oral tentacles extended. (Photograph by: Suen Si Min).

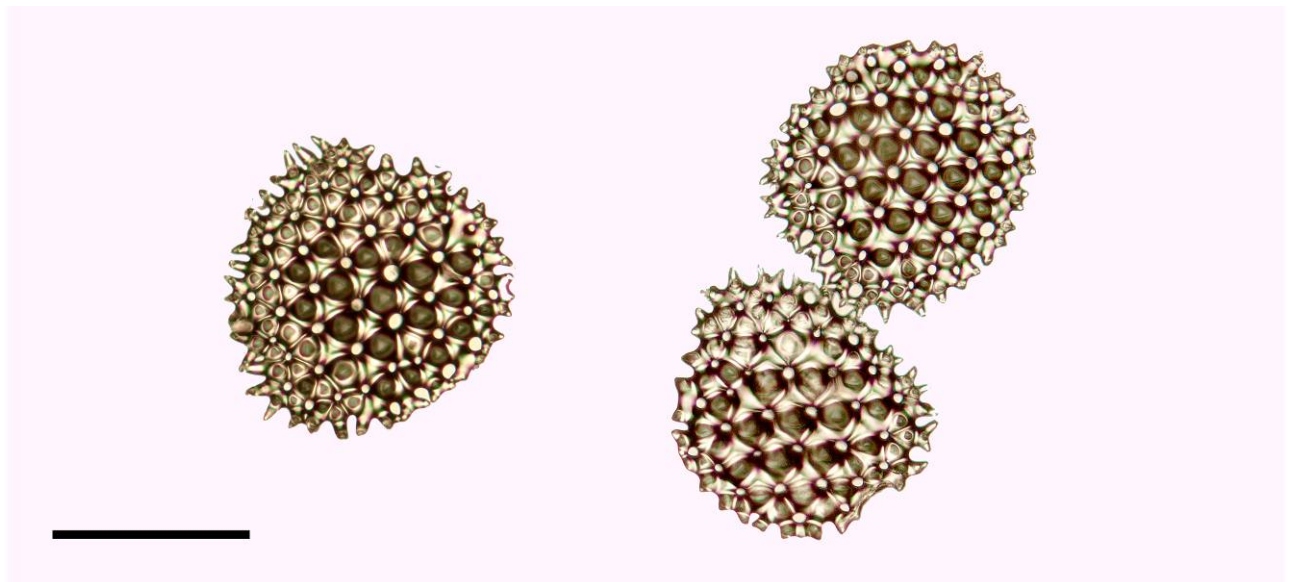


Fig. 2. Lenticulate plates. Scale bars = 0.1 mm. (Photograph by: Teo Siyang).

**Observations.** – An intertidal species, *Afrocucumis africana* is commonly found under loose rocks or coral rubble. It clusters under rocks, using its podia to cling onto such surfaces (Fig. 3). Some have also been seen to have various forms of small debris adhering to their dorsal teguments (Fig. 4).

**Discussion.** – The presence of distinctive lenticular plates is proof enough that these specimens belong to the genus *Afrocucumis* (see Liao, 1997). The smaller lenticular plates are characteristic to *Afrocucumis africana* in comparison with another similar species, *Afrocucumis stracki*, which has significantly larger ones (310–400  $\mu\text{m}$ ) (Massin, 1996).

*Afrocucumis africana* is largely fissiparous, although they still undergo sexual reproduction (Sloan, 1979). Chao et al. (1995) found that the aggregation of *Afrocucumis africana* under rocks might be a result of transverse fission activity, as they are predominantly sedentary and thus are unlikely to migrate much. This might account for the similarities in behaviour in Singapore (Fig. 3). Owing to its inconspicuous habitat and small size, *Afrocucumis africana* tends to be overlooked. However, the frequent sightings by nature enthusiasts suggest that it is a common species which should be present in many other localities in Singapore.



Fig. 3. Aggregation of individuals on the underside of a rock at the intertidal area of Pulau Sakijang Bendera (St. John's Island). (Photograph by: Ria Tan).



Fig. 4. Coarse sand grains and bivalve shells attached on the tegument of an individual at Changi Beach Park. (Photograph by: Ria Tan).

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