

New additions to the holothurian fauna of Pakistan: *Holothuria verrucosa*, *Holothuria cinerascens* and *Ohshimella ehrenbergii*

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Abstract

During coastal monitoring of Buleji and Sunehri beaches of Karachi coast, Pakistan from January to December 2014, 234 specimens of sea cucumber were collected from the intertidal zone. The specimens are deposited in the repository of the Marine Reference Collection and Resource Centre, University of Karachi. *Holothuria* (*Lessonothuria*) *verrucosa* (Selenka, 1867) and *Holothuria* (*Semperothuria*) *cinerascens* (Brandt, 1835) are new records from the coastal areas of Pakistan, while *Ohshimella ehrenbergii* (Selenka, 1868) is rediscovered after 43 years (earlier recorded by Clark and Rowe in 1971). The paper contains morphological descriptions of the specimens collected and information on habitat characteristics.

Introduction

From January to December 2014 sea cucumbers were collected off the beaches of Buleji and Sunehri, along Karachi coast, Pakistan (northern Arabian Sea) (Fig. 1). Among the 234 specimens of sea cucumbers collected, two species of Holothuriidae – *Holothuria* (*Lessonothuria*) *verrucosa* (Selenka 1867) and *H. (Semperothuria) cinerascens* (Brandt 1835) – were recorded for the first time from the coastal areas of Pakistan, while one species of Sclerodactylidae – *Ohshimella ehrenbergii* (Selenka 1868) – was “rediscovered” for the first time in 43 years, as the previous recording of this species had been by Clarke and Rowe in 1971. The family Holothuriidae includes 5 genera

and 185 species (Kerr et al. 2005) of which the genus *Holothuria* is the most diverse. The family Sclerodactylidae is represented by 27 genera and 139 species. A detailed description of the collected specimens of *H. verrucosa*, *H. cinerascens* and *O. ehrenbergii*, and their habitat, is presented here.

Material and methods

Sea cucumber specimens were collected from the intertidal zones during low tide. The specimens, after relaxation, were preserved in 5% neutralised formaldehyde and later transferred to 70% ethyl alcohol. For taxonomic studies and identification, morphological features were examined and

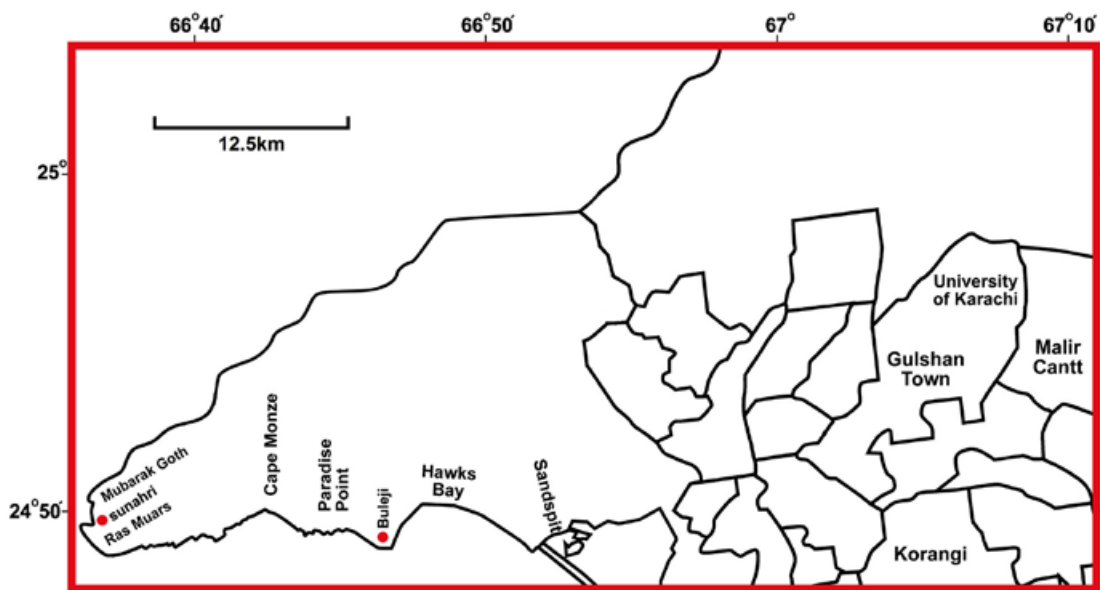


Figure 1. The two study areas (red dots).

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microscopic studies were conducted. Ossicles were taken from three positions (dorsal and ventral body walls, and tentacles); wet mounts were prepared by placing a small piece of skin tissue on a slide and adding a few drops of 3.5% bleach, and the slides were then rinsed with drops of distilled water. The slides were examined under a microscope at 10×10 magnification. Microphotography was also performed using a digital camera (Fujifilm 16 MP).

Results and discussion

Holothuria verrucosa

Order Aspidochirotida; family Holothuriidae; genus *Holothuria* (*Lessonothuria*); species *verrucosa*.

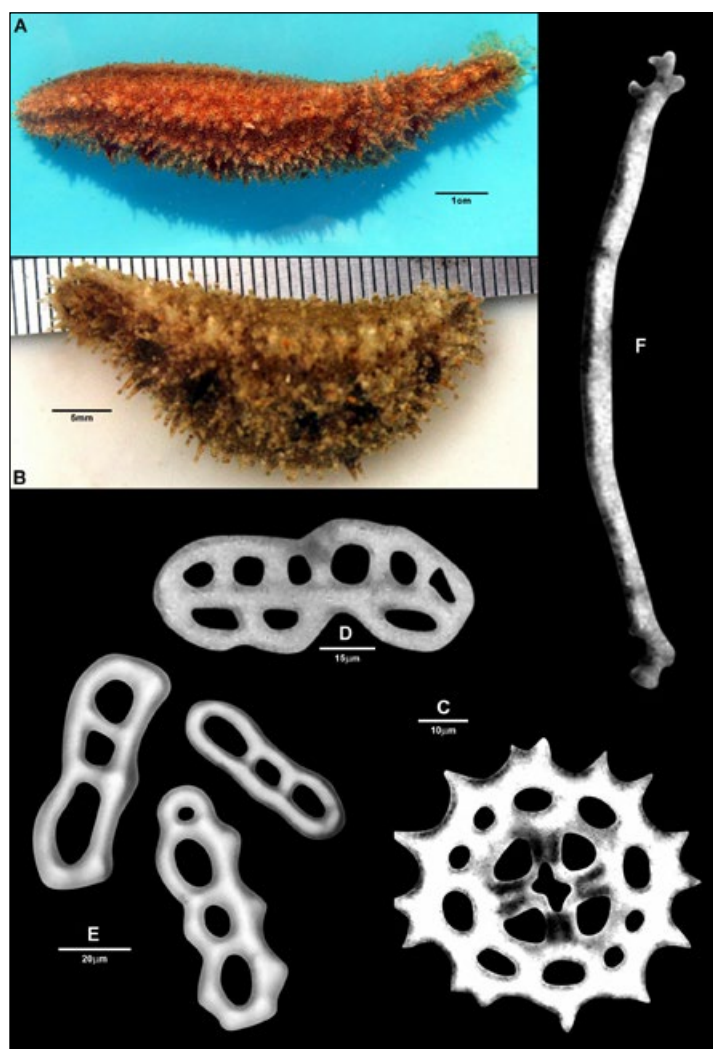


Figure 2. *Holothuria verrucosa*.
A: Dorsal view; B: ventral view;
C: Turret of dorso-ventral tegument;
D: buttons of dorsal body wall;
E: pseudo-buttons of podia;
F: tentacle rods.

This species is benthic, lives inshore, and is a deposit feeder. It is a cryptic species that is found buried in sand, sea grasses and rubble. It buries itself with its cloaca, and part of its upper surface exposed.

Material examined

Two specimens of *H. verrucosa* were collected from Buleji (24.8389°N, 66.8253°E) on 19 May 2014 and from Sunehri beach (24.8797°N, 66.6858°E) on 18 June 2014. They were collected from crevices within the intertidal area on rocky shores during low tides. The length of the specimens ranged from 80 to 130 mm and weight from 13 to 18 g. Colouration of fresh specimens was burnt sienna (Fig. 2A) and papillae were light brown (Fig. 2B). The body was roughly cylindrical, tapering towards the posterior end and enlarged at the anterior end. The thick tegument of the ventral mouth contained 28 shield-shaped tentacles. The tube feet were very clear in rows on the ventral side. The dorso-ventral spicules were table-, button- and rod-shaped with a spiny disc and irregular buttons (Figs. 2C, 2D and 2E). Spicules of the tentacles were rod-shaped (Fig. 2F).

Remarks

The specimens from the current collections as well as those described by Qaseem Tahera and Quddusi B. Kazmi (2005) were collected from intertidal areas. The specimens are almost identical to the specimen described by Samyn et al. (2006), which was cylindrical, measuring 45 cm, and with maroon colouration; the present specimens were burnt sienna, roughly cylindrical and tapering towards the posterior end. *H. verrucosa* is a new addition to the coastal fauna of Pakistan. The specimens are now deposited in the repository of the Marine Reference Collection and Resource Centre, University of Karachi, Cat. No. Holo. 13 and 14.

Holothuria cinerascens

Order Aspidochirotida; family Holothuriidae; genus *Holothuria* (*Semperothuria*); species *cinerascens*.

This species is benthic, lives inshore, and is a detritus feeder (Rowe and Gates 1995). It can be found on rocky bottoms in crevices with strong wave action where it suspension-feeds on organic particles from the water column (Purcell et al. 2012).

Material examined

One specimen of *H. cinerascens* was collected from Sunehri beach (24.8797°N, 66.6858°E) on 23 October 2014. It was collected from a rocky bottom in a crevice of the intertidal area during low tide.

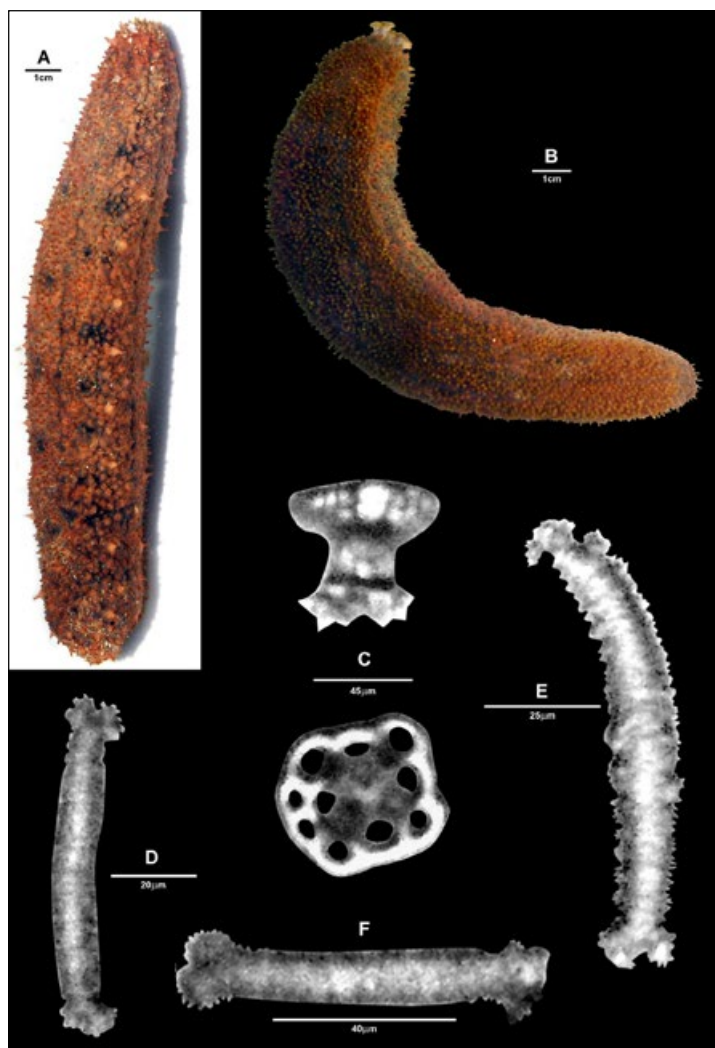


Figure 3. *Holothuria cinerascens*.

A: Dorsal view; B: ventral view; C: tables of dorsal body wall; D: rods of dorsal body wall; E: rods of tentacle; F: rods of podia.

The specimen measured 280 mm and weighed 248 g. Colouration of the fresh specimen was rusty brown and papillae were orangeish (Fig. 3A). The body was cylindrical with relatively long podia on the ventral side (Fig. 3B). The dorso-ventral skin was thin. The terminal mouth was surrounded by 20 dendro-peltate retractile tentacles. Large, clearly tube feet were present on the ventral side. The anus was terminal with three small papillae. Dorso-ventral spicules were similar to tables and rods (Figs. 3C, 3D and 3F). Tables were more numerous on the dorsal side than on the ventral body wall. Tentacle spicules were rod shaped (Fig. 3E).

Remarks

This species is commonly known as Ashy sea cucumber. The specimen observed resembles the specimens described by Samyn et al. (2006) and Purcell et al. (2012).

H. cinerascens is a new addition to the coastal fauna of Pakistan. The specimen is deposited in the repository of the Marine Reference Collection and Resource Centre, University of Karachi. Cat. No. Holo. 15.

Ohshimella ehrenbergii

Order: Dendrochirotida Grube, 1840; family: Sclero-dactylidae Panning, 1949; subfamily: Cladolabinae Heding & Panning, 1954; genus: *Ohshimella* Heding & Panning, 1954; species: *ehrenbergii* Selenka, 1868.

Material examined

Four specimens of *O. ehrenbergii* were collected from Sunehri beach (24.8797°N, 66.6858°E); one on 24 April 2014, one on 22 May 2014 and two on 8 September 2014. All were collected from crevices in the rocky bottom in the intertidal area during low tide.

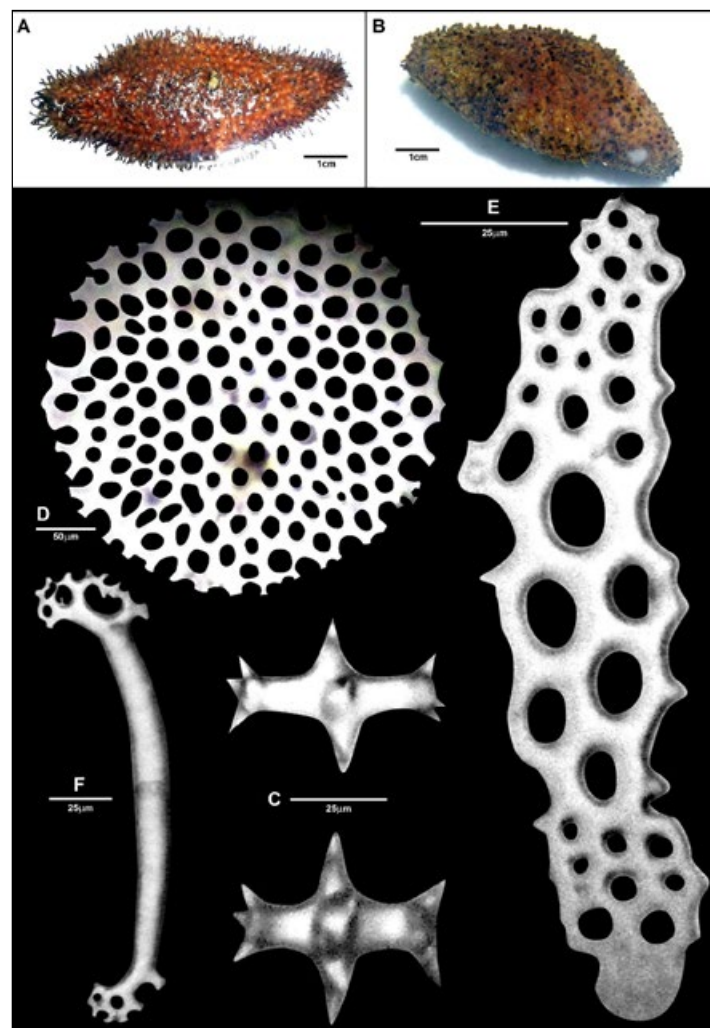


Figure 4. *Ohshimella ehrenbergii*.

A: Dorsal view; B: ventral view; C: sticks of teguments; D: plaques of ventral podia; E: plaquette terminale of ventral podia; F: tentacle rods.

Length range of the specimens was 40–100 mm and weight was 6–19 g. Colouration of the fresh specimens was deep orange on the dorsal and ventral sides, and the papillae were brown (Figs. 4A and 4B). The body was cylindrical and slightly pointed or tapering from mouth to anus. The skin was thin. The ventral mouth contained 12 branched tentacles. Numerous tube feet were present on the ventral side. The anus was terminal. Ossicles from the dorsal body wall were rod-shaped and cruciform with well-developed spines (Fig. 4C); those from terminal and ventral podia were plaque-shaped (Figs. 4D and 4E); those from the ventral surface wall were stick- and plaque-shaped; while those from the tentacles were rod-shaped (Fig. 4F).

Remarks

The specimens found in 2014 are identical to those described by Massin (1999) and Samyn et al. (2006), with a deep orange colouration and a cylindrical body tapered at both ends. Rosettes were absent in all specimens found in 2014 and in specimens described by Samyn et al. (2006), but they were present in the specimens described by Massin (1999).

O. ehrenbergii has been rediscovered in Pakistan 43 years after it was first recorded by Clark and Rowe (1971). The specimens are deposited in the repository of the Marine Reference Collection and Resource Centre, University of Karachi. Cat. No. Holo. 16, 17 and 18.

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