

Report of *Rhombognathus scutulatus* (Acari: Halacaridae) from Goa, India

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Abstract *Rhombognathus scutulatus* Bartsch is reported here from Goa, India. World distribution of this species is also provided.

Pierwsze stwierdzenie *Rhombognathus scutulatus* (Acari: Halacaridae) na Goa, Indie

Słowa kluczowe: *Rhombognathus*, wodopójki z grupy Halacaride, Goa

Streszczenie Artykuł prezentuje pierwsze stwierdzenie na Goa (zachodnie wybrzeże Indii) *Rhombognathus scutulatus* na tle rozmieszczenia gatunku na świecie.

Introduction

Halacarid mites of west coast of India were studied by the first author from Kerala (Chatterjee, Sarma, 1993; Chatterjee, 1995, 2000; Bartsch, Chatterjee, 2001), Maharashtra (Chatterjee, Chang, 2004) and Goa (Sarma, Chatterjee, 1993; Chatterjee, 2015, 2018; Chatterjee, Guru, 2011a, b; Chatterjee, Marshall, Guru, Ingole, Pesic, 2012; Chatterjee, Guru, Sorensen, 2013). In the present communication we report *Rhombognathus scutulatus* Bartsch, 1983 from rocky shore of Goa. *Rhombognathus scutulatus* was first described from Philippines (Bartsch, 1983). In India, this species was recorded earlier from Andhra Pradesh, Kanya Kumari, Kerala and Andaman & Nicobar Islands (Chatterjee, 1995).

Material and Methods

The material examined for the present study was collected from sediments of the intertidal seaweeds viz. *Sargassum*, *Ulva* and *Gracillaria* from Anjuna beach, Goa. After preliminary observation, one specimen was processed for SEM study.

Study area: Anjuna beach (Lat. 15° 34' 58" N; Long. 73° 44' 28.54" E) is located on the northern stretches of Goa state on the West Coast of India. The coast is mainly sandy and rocky shore. The rocky shore has small intertidal rock pools which are rich with diverse marine flora and fauna. The seaweed cover was seen on rocky shore and was more on seaward side represented by species of *Sargassum*, *Hypnea*, *Spatoglossum*, *Chaetomorpha*, *Sphacealria*, *Cladophora*, *Dictyota*, *Gracillaria*, *Porphyra* and *Amphiroa*. Some of the seaweeds like *Sargassum* sp. were found submerged in the water mainly in the splash zone area. The calcified genera include *Amphiroa* sp. & *Cheliosporum* sp. were found in abundance in the rook pool area. Whereas the rocky areas display large flank of *Sargassum* in rock pools & crevices. Three common seaweeds *Sargassum*, *Ulva* and *Gracillaria* were collected for the study of mites.

The following abbreviations are used in the text, table and figure legends: AE, anterior epimeral plate; PE, posterior epimeral plate; PGS, perigenital setae; SGS, subgenital setae.

Result and Discussion

Rhombognathus scutulatus Bartsch 1983

Rhombognathus scutulatus Bartsch (1983, pp. 413–415, figs. 46–57; 1993, pp. 20–21, figs. 1A–C; 1999, pp. 354–355, figs. 12F–H; 2000, p. 190; 2003, pp. 273–275, figs. 9A–D; 2006, pp. 42–43; 2009, pp. 35–36); Chatterjee (1995, pp. 284–285, figs. 15–19) Chatterjee and De Troch (2000, pp. 187–188, fig. 6); Smit (2011, p. 344); Abé and Etemadi (2014, pp. 15, 16, figs 23, 24).

Material Examined: Males and females from Goa – Anjuna beach among rocky algae – *Sargassum*, *Ulva* and *Gracillaria*.

Brief Description: All dorsal plates fused in single shield and sculptured with foveae (Figure 1A). Posterodorsal area with a pair of setae. All ventral plates fused to a ventral shield (Figure 1B). AE area with 3 pairs of ventral setae plus one pair of adjunctive marginal setae. Each PE area with 3 ventral, one dorsal plus 1 adjunctive seta. Male with 11–12 pairs plumose PGS and 2 pairs SGS (Figure 1C). Female with 5 pairs PGS and 2 pairs SGS. Gnathostoma small and compact. Palp 4-segmented. Palpal patella (P_2) and trochanter without any setae. Palpal telofemur with 1 seta and tibiotarsus with 3 setae. Telofemora I and II with 6 setae (2 ventral and 4 dorsal); telofemora III and IV devoid of any ventral seta and bearing 3 dorsal setae. Tibia I with 5 setae of which 2 ventral pectinate. Legs with carpite on tarsi and devoid of median claw. Lateral claw endoplanate with broad accessory process bearing about 13–15 teeth (Figure 1D).

Distribution: This species is widely distributed in the south-western Pacific Ocean and Indian Ocean: Philippines, Singapore, Australia, Sri Lanka, India, Iran, Kenya, Mauritius and New Guinea. Table 1 and Figure 2 show the distribution of this species.

Remarks: There are six species of *Rhombognathus* viz. *R. aspidotus* Bartsch (2006), *R. conjunctus* Bartsch (1986), *R. parvulus* Viets (1939), *R. peltatus* Viets (1939), *R. scutulatus* Bartsch and *R. similis* Bartsch (1977) in which dorsal plates fused in single shield. *R. similis* was reported from Andaman & Nicobar islands (Chatterjee, 1995) as *R. similis* may belong to other species and should be considered at present as *Rhombognathus* sp. Among *Rhombognathus* species in which dorsal plates fused in single shield, *R. scutulatus* and *Rhombognathus* sp. have been recorded from Indian Ocean.

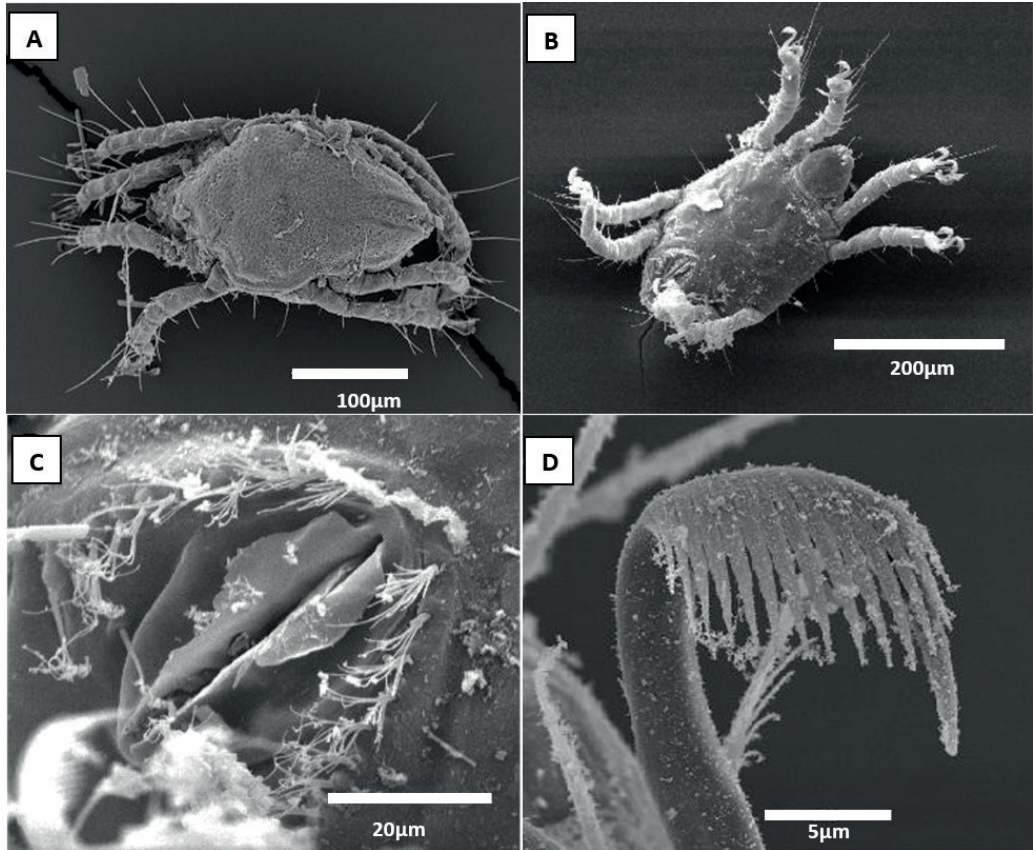


Figure 1. *Rhombognathus scutulatus* Bartsch, SEM figs. A. Dorsal view; B. Ventral view; C. Genital area of male showing PGS and SGS; D. Claw of tarsus III

Table 1. *Rhombognathus scutulatus* Bartsch: Localities with habitats

Locality	Habitat	Ocean	Reference
1	2	3	4
Philippines: Negros Island	0–3 m	PTW: Pacific Ocean, tropical west	Bartsch (1983)
Australia: Rottnest Is – Bickley point, Nancy cove, Little Armstrong Bay, western Australia	<i>Amphibolis</i> sp, <i>Caulerpa</i> sp.	ISE: Indian Ocean, south east	Bartsch (1993)
Australia: Rottnest Is – Cape Vlamingh, Fish Hook Bay western Australia	Algae: <i>Amphiroa</i> sp. <i>Cystophora</i> sp, <i>Zonaria</i> sp.	ISE: Indian Ocean, south east	Bartsch (1993)

1	2	3	4
India: Palm beach, Visakhapatnam, Andhra Pradesh	Among rocky algae	ITE: Indian Ocean, tropical east	Chatterjee (1995)
India: Kanya Kumari (=Cape comorin), Tamil Nadu	Among rocky algae	ITE: Indian Ocean, tropical east	Chatterjee (1995)
India: Kovalam, Kerala	Among rocky algae	ITE: Indian Ocean, tropical east	Chatterjee (1995)
India: Corvin cove, Andaman & Nicobar Islands	Among coralline algae	ITE: Indian Ocean, tropical east	Chatterjee (1995)
Australia: Rottnest Is – Bickley Bay, Bickley point; Nancy cove	Sea grass <i>Amphibolis</i> and various algae	ISE: Indian Ocean, south east	Bartsch (1999)
Australia: Great Barrier Reef, Cape Ferguson, AIMS beach	Algae at low tide mark	PTW: Pacific Ocean, tropical west	Bartsch (2000)
Australia: Great Barrier Reef, Magnetic Island, Alma Bay	Rocky littoral algae	PTW: Pacific Ocean, tropical west	Bartsch (2000)
Kenya: Gazi Bay	Among sea grass: <i>Thalassia hemprichii</i> , <i>Halophila ovalis</i> , <i>H. stipulacea</i> , <i>Halodule wrightii</i> , <i>Syringodium isoetifolium</i>	ITW: Indian Ocean, tropical west	Chatterjee & De Troch (2000)
Australia: Dampier, northwestern Australia	<i>Padina</i> sp. (Phaeophyta), low water edge	ITE: Indian Ocean, tropical east	Bartsch (2003)
Australia: 40 Mile Beach north of Cape Preston	brown algae <i>Padina</i> and <i>Sargassum</i>	ITE: Indian Ocean, tropical east	Bartsch (2003)
Australia: East coast of the Burrup Peninsula, Watering Cove	turf of small red algae	ITE: Indian Ocean, tropical east	Bartsch (2003)
Singapore: Strait of Singapore, Labrador park	Small brown and green rocky algae	PTW: Pacific Ocean, tropical west	Bartsch (2006)
Srilanka: Ahangama	Among <i>Halimeda</i> from a moderately exposed fringing reef flat	ITE: Indian Ocean, tropical east	Bartsch (2006)
Mauritius: South of Port Louis, Flic en Flac	Intertidal wave exposed rocky shore	ITW: Indian Ocean, tropical west	Bartsch (2009)
New Gunia: Base G beach, Jayapura	Marine littoral	PTW: Pacific Ocean, tropical west	Smit (2011)
Iran: Chababar Beach, Darya Bozorg, Gulf of Oman	<i>Sargassum</i> sp at 1m depth	ITW: Indian Ocean, tropical west	Abe & Etemadi (2014)
India: Goa	Various rocky algae	ITE: Indian Ocean, tropical east	Present report

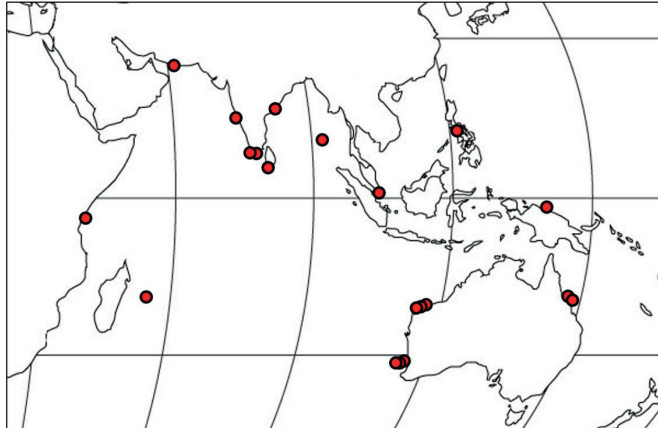


Figure 2. Distribution map of *Rhombognathus scutulatus* Bartsch

Chatterjee (1996) reported ciliate infestation on *R. Scutulatus* from Kovalam beach, Kerala.

Bartsch (2009) has given a comparative view on the variation in number of tines on the accessory process of lateral claws and length of idiosoma. This species exhibits wide variation in number of tines on the accessory process of lateral claws ranging from 10 to 28 (Bartsch, 2009; Abé, Etemadi, 2014).

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