

**DIVERSITY ASSESSMENT OF GASTROPOD, PULMONATE: *ONCHIDIUM SPECIES* AT URAN SEA COAST OF ARABIAN SEA**

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**ABSTRACT**

The phylum Mollusca, to which slug and snails belong, is the largest phylum after Arthropod. Mollusca provide unique ecosystem services including recycling of nutrients and they provide a prey base for small mammals, birds, snakes and other reptiles. In India, till today, 5070 species of Mollusca have been recorded of which, 3370 species are from marine habitats. However, meagre data on documented on slug and snails, compared to any other taxa. Geographically, Uran city (Latitude 18° 50' 20" N and Longitude 72° 57' 5" E) is located on the coast of Arabian Sea, along the eastern shore of Mumbai harbour of Maharashtra. Population of *Onchidium species* was observed at rocky shore covered with mud near, marshy areas of mangroves. But only basic information is known about their taxonomy and little is known of their population biology, ecology and their conservation status. Survey showed three species of *Onchidium*. *Onchidium verruculatum*, *Onchidium peronii*, *Platevindex species*. The basic plan of morphological characters includes presence of mantle, foot, hyponotum, mouth, genital opening, body colour, Skin, radula, is found to be uniform in all three species of *Onchidium*.

**KEYWORDS:** Mollusca, *Onchidium verruculatum*, *Onchidium peronii*, *Platevindex species*, Uran.

**INTRODUCTION**

Census of Marine Life ([www.coml.org](http://www.coml.org)) programme proved that oceans have great diversity of life. 33 out of 34 major phyla are represented in the ocean, whereas only 15 phyla's are presented on the land. CoML created the OBIS the world's largest online repository of geo-referenced data that nations can use to develop national and regional assessments. NaGISA (<http://nagisa.cbm.usb.ve>) the program for assessing diversity of near shore has executed many projects to assess diversity of intertidal zones. Maharashtra has a coastline of 720 km having all types of shores. Reports are available on macrobenthos diversity on coast of Maharashtra. Among these reports of Chhapgar (1958) Zingde (1999), (Jaiswar and Kulkarni 2001), Balli *et.al.* (2011) are worth to mention here. Most of the available reports pertains to diversity of macrobenthos on coast of Maharashtra mainly focus on diversity of mollusc like gastropod and pelecypoda. However, meagre data is available on diversity of Pulmonata gastropod on coast of Maharashtra. (Awati and karandikar, 1948). In recent years urbanization and industrialization in coastal belt of Arabian sea has resulted into modifications of topography of the area. The present work on assessing diversity of *Onchidium species* on coast of Uran has been undertaken, to create a data base with respect to present circumstances of human settlement on coast of Uran.

**SYSTEMATIC**

<b>Phylum:</b>	<b>Mollusca</b>
Class:	Gastropoda
Subclass	Orthogastropoda
Superorder	Heterobranchia
Order	Pulmonata
Suborder:	Stylostomatophora
Superfamily:	Onchidioidea
Family:	Onchidiidae
<b>I</b>	Genus: <i>Onchidium</i>
	Species: <i>verruculatum</i>
<b>II</b>	Genus: <i>Onchidium</i>
	Species: <i>peronii</i>
<b>III</b>	Genus: <i>Platevindex</i>
	Species: -----

## MATERIAL AND METHODS

The selected site visited during low tide for collection of the *Onchidium species*. The animals collected manually from site and washed with sea water and brought to the laboratory for taxonomical studies. The identification of *Onchidium species* was done as per reports of Fretter (1943); Awati and Karandikar (1948) and Dayrat (2009).

## RESULTS AND DISCUSSION

Geographically, Uran city (Lat. 18° 50' 20" N and Long. 72° 57' 5" E) is located on the coast of Arabian Sea along the eastern shore of Mumbai harbour opposite to Colaba. Total length of Uran coast is ~16 km and it is marked by rocky, muddy and sandy substratum (Figure 1 and 2).

**Figure No.1 Uran coast of Arabian sea**



**Figure No. 2 Rocky, Muddy and Sandy substratum of Uran coast**



**SPECIES DIVERSITY:** During present survey three species of *Onchidium* were collected during low tide. Among the three species *O. verruculatum* was abundantly found, where most of the area is marshy and of loamy substratum. It was observed that *O. peronii* camouflage with the substratum present near the mangroves. (Figure 3). Since dorsal eyes are absent in *Platevindex species* is not prominently seen against the background of muddy substratum. (Figure 4).

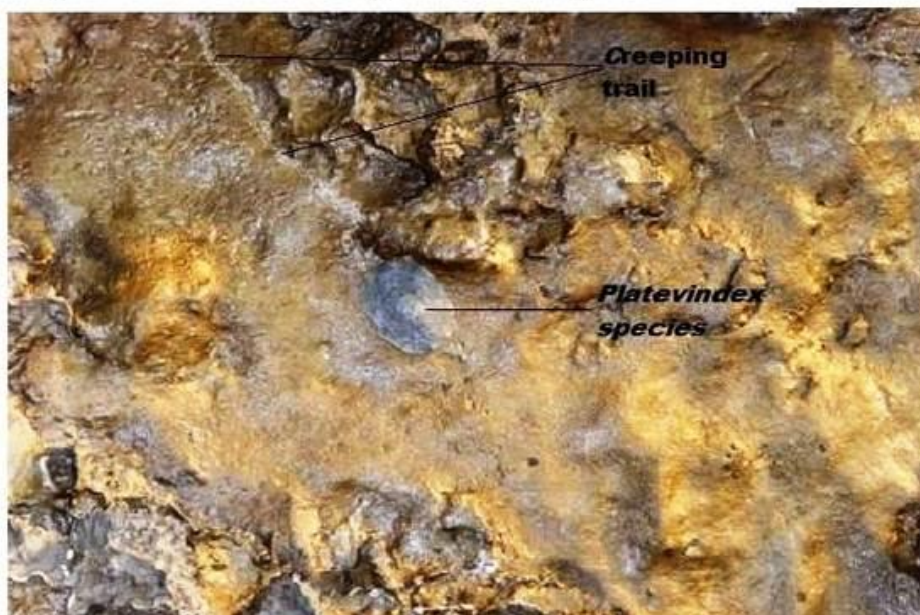


**MORPHOLOGY:** The basic plan of morphology includes presence of mantle on the dorsal surface is found to be uniform in all three species of *Onchidium*. However, variations in certain morphological characters were noticed in all three species of *Onchidium*. (Figure 5,6,7,8,9,10). The mantle is thickly covered with tubercles or body warts. The fleshy elongated foot present on the ventral side of the body.

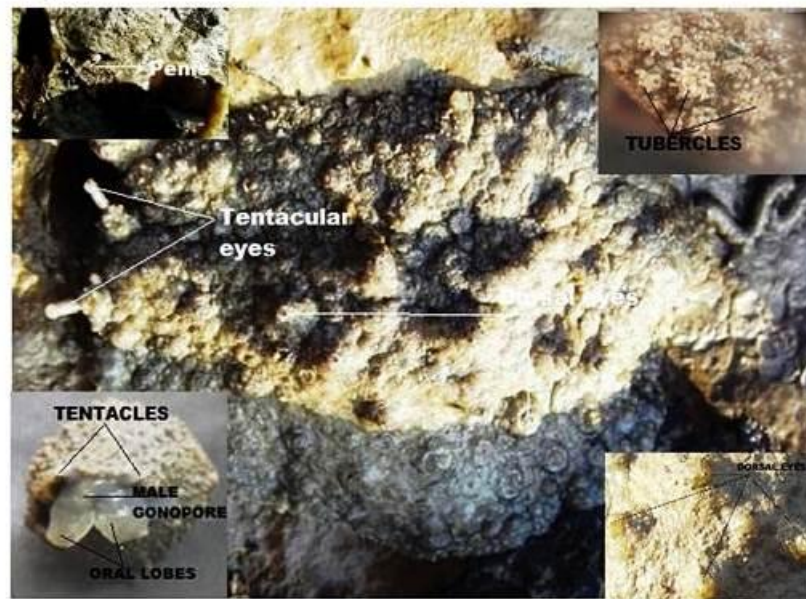
**Figure No. 3 *Onchidium peronii* near mangroves**



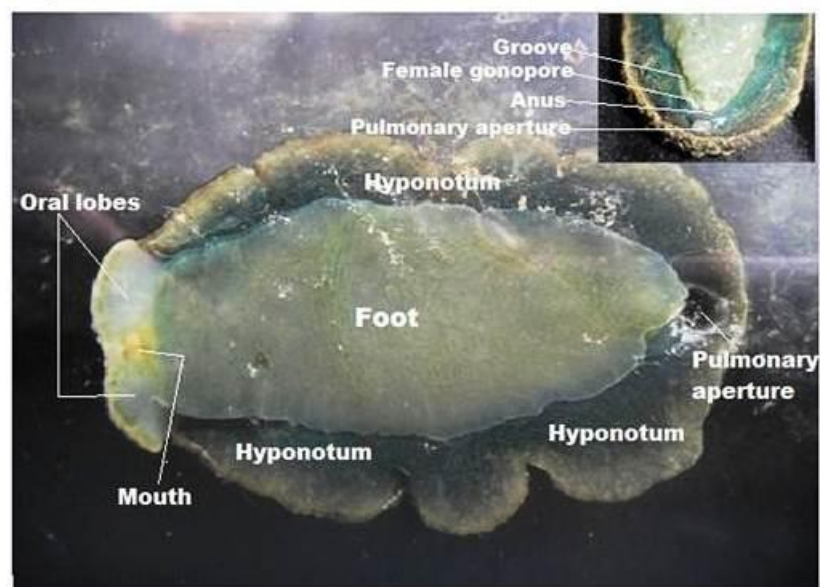
**Figure No. 4 *Platevindex* species at muddy substratum**



**Figure No. 5 Dorsal view : *Onchidium verruculatum***



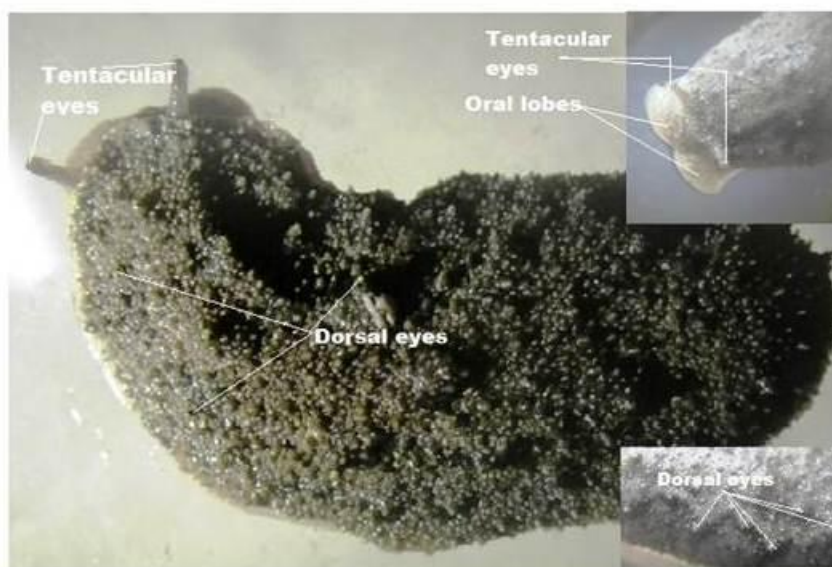
**Figure No. 6 Ventral view : *Onchidium verruculatum***



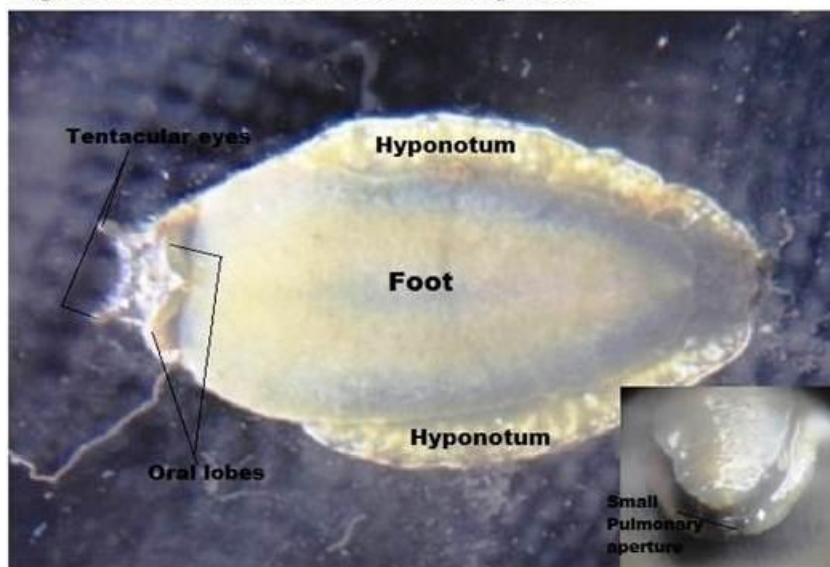
The foot is surrounded by all the sides by peripheral extension of the mantle known as hyponotum. The mouth is situated ventrally at anterior end of body between foot and front hyponotum and surrounded laterally by fleshy lobes called as labial palp. A pair of conical retractile tentacles carrying cephalic eyes at the tips is present in the antero-lateral corners of the labial palp. The male genital opening of the slug is located on right side between tentacle and labial palp. Between the foot and hyponotum three apertures are situated at the hind end of ventral side of the body. One aperture called as anus is placed in the median line and the female genital aperture lies right of the anal opening continuous to peripodial groove, the third aperture which is as large slit is located posterior to the anus and it leads the pulmonary chamber of the slug.



**Figure No. 7 Dorsal view: *Onchidium peronii***



**Figure No. 8 Ventral view : *Onchidium peronii***

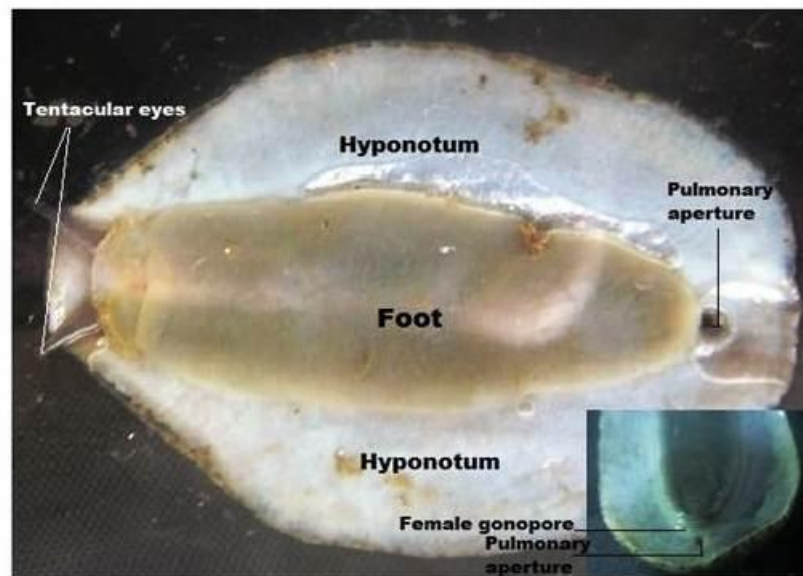


SKIN: Skin of *Onchidium species* is generally thick muscular with dorsal tubercles scattered all over of it as mentioned in morphology characteristics. When skin layer was observed (Fig.No.11), under the compound microscope it shows presence of various types of pores (100X) In *O. verruculatum* two types of pores are seen. A pore through which dorsal eye protrude is wide with conical opening, (Figure 12) whereas other pores are long and cylinder with the triangular opening. (Figure 13) Similar types of pores are also seen on the skin of *O. peronii*. (Figure 14), whereas minute pores are observed in *Platevindex species*. (Figure15)

**Figure No. 9 Dorsal view : *Platevindex species***

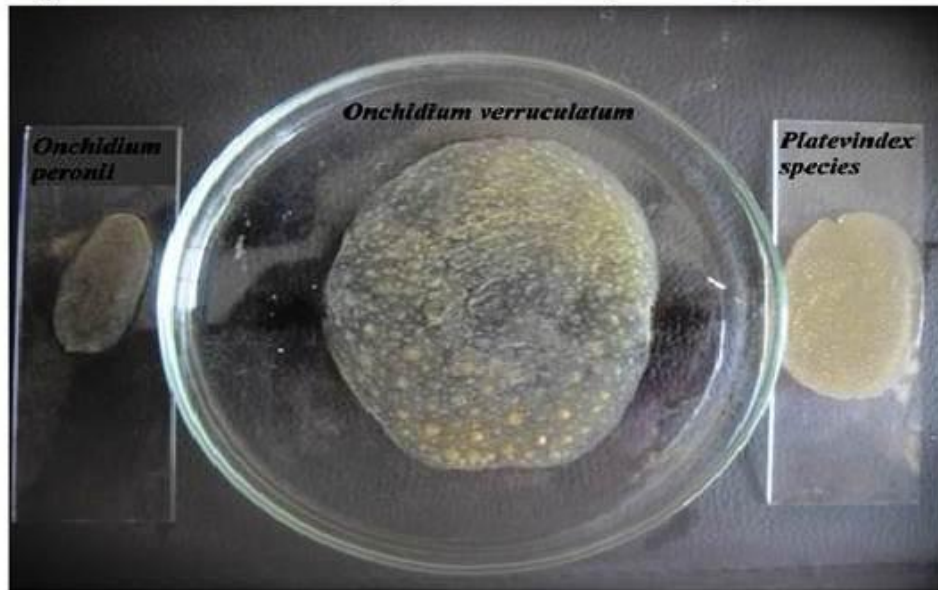


**Figure No. 10 Ventral view : *Platevindex species***



**RADULA:** The distinctive features of *Onchidium sp.* is presence of radula in the buccal mass as of other gastropods . After dissecting out the radula it is clearly noticed that the radula varies with respect to structure, size and shape in all three species of *Onchidium*. In case of *O. verruculatum* centre of radula is pointed, anterior sides are semicircular and posterior sides are curved. (Figure 16) In case of *O. peronii* centre of radula is pointed, anterior sides are slanting downwards and posterior sides are conical (Figure 17). In *Platevindex species* radula is acutely pointed, anterior side are markedly slope downward and posterior sides are cuboidal (Figure18).

**Figure No. 11 *Onchidium* species : Skin layers with pores**



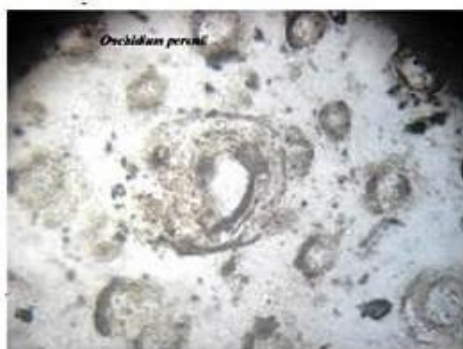
**Figure No. 12 *O. verruculatum* : skin pore**



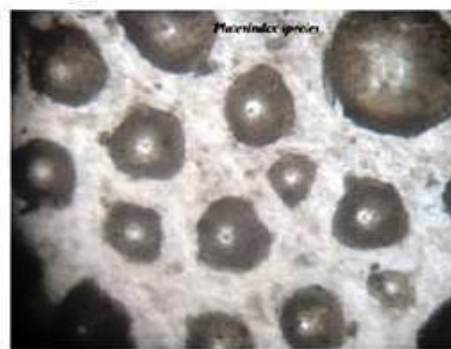
**Figure No. 13 *O. verruculatum* : skin pore**



**Figure No. 14 *O. peronii* : skin pore**

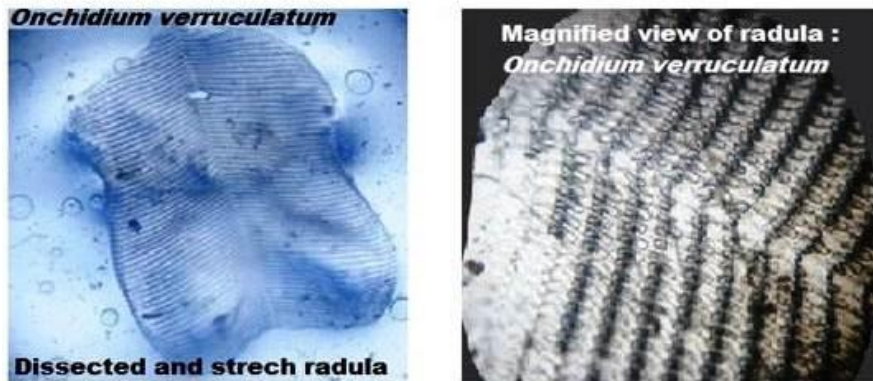


**Figure No. 15 *Platevindex sp.* : skin pore**

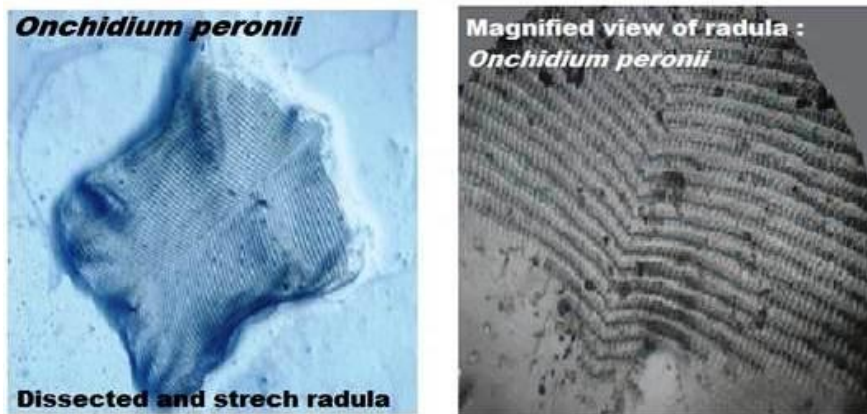




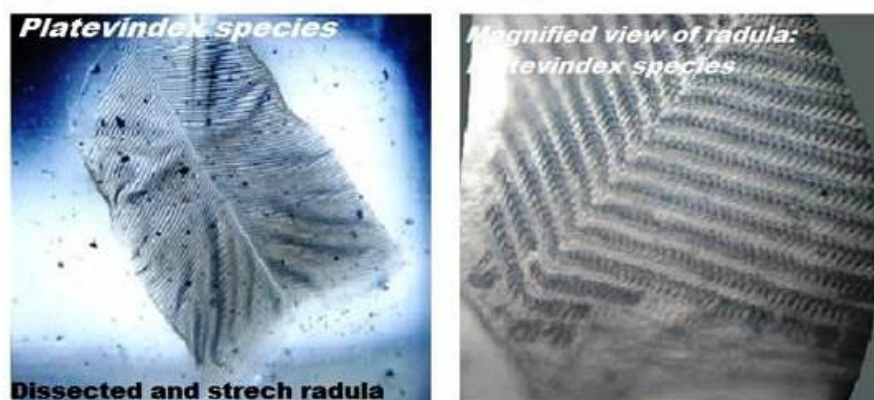
**Figure No. 16 Radula of *Onchidium verruculatum***



**Figure No. 17 Radula of *Onchidium peronii***



**Figure No. 18 Radula of *Platevindex species***



## CONCLUSION

Onchidiidae is a poorly known taxon in many regards. Anatomical studies of Onchidiids are also not reported adequately. Most of the literature on Onchidiids was published before 1940's. Few studies have been published since then (e.g Fretter 1943, Awati and karandikar 1948, Marcus 1978, 1979, Tiller 1983, Britton 1984, Hyman 1999, Weiss Wagele 1998, Dayrat 2009) who have reviewed systematics of Onchidiidae with a checklist of nominal species. World



Register of Marine Species has described 143 species of *Onchidium*. Which includes *O. verruculatum*, *O. peronii* and *Platevindex species*. Among the three species recorded at Uran coast are *Platevindex species*, *O. verruculatum* and *O. peronii*.

#### ACKNOWLEDGMENT

I express deep sense of gratitude to Prof. Dr. B. G. Kulkarni, Director, The Institute of Science Mumbai, for encouragement, support and healthy cooperation.

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