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Annelida, *Oligochaeta*, Megascolecidae, *Pontodrilus litoralis* (Grupe, 1985): First Record from Pondicherry Mangroves, Southeast Coast of India

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ABSTRACT

This study reports the first record of the genus *Pontodrilus litoralis* (Grupe, 1985) in Pondicherry mangroves, southeast coast of India. Forty one adult specimens have been found in the Thengaithittu lagoon and Murungapakkam mangrove site during September 2008-March 2010. A detailed study is presented in order to clearly assign the species to the Pondicherry mangroves, in Union territory Puducherry. According to our knowledge this is the first report from Indian mangroves.

Key words: *Pontodrilus litoralis*, pondicherry mangroves, species, first record

INTRODUCTION

The coastline of India extending over 7,517 km comprises various biotopes such as estuaries, lagoons, backwaters, mangroves, salt marshes, coral reefs and creeks. Mangroves, that exist in tropical and subtropical intertidal regions of the world support rich faunal resources and play an important role in the estuarine and coastal food webs (Alongi and Christoffersen, 1992). In recent years we have conducted benthic surveys in various stations of Pondicherry mangroves, South East coast of India with discoveries of tiny new and unrecorded species (Satheeshkumar and Khan, 2011a, b). In this present study, adds one Megascolecidae, *Pontodrilus litoralis* (Grube, 1855) as the newly record from Pondicherry mangroves. It is a small, euryhaline earthworm dwelling in the intertidal zone along the shore and widely distributed in sandy beaches, salty mud or mangrove swamps of the intertidal zone. The objective of this present study was to describes the occurrence and distribution of Megascolecidae from Pondicherry mangroves.

MATERIALS AND METHODS

In nature the study area lies within the margins of latitudes 11°.90'107" N to 11°.90'703" N and longitudes 79°.80' 547" E to 79°.81'851" E. Mangrove exists as fringing vegetation over 168 ha distributed along the sides of Ariankuppam estuary which empties into the Bay of Bengal at Veerampatinam on the southeast coast of India. The present investigation was carried out in two well formed stations: 1 Thengaithittu; 2 Murungapakkam mangrove areas of Pondicherry and monthly samplings were made during September 2008 to March 2010.

Forty one adult specimens of *Pontodrilus litoralis* were collected from mangrove bottom soil samples at stations 1 and 2 and preserved in 10% neutral formalin and stained with Rose Bengal solution for easy spotting. Specimens were identified to the lowest practical taxonomic level using standard references (Blakemore, 2002; Erseus, 2009) and deposited in the Pondicherry University, Puducherry, India-University Grants Commission Major Research Project-17.

RESULTS

Synonym name: *Lumbricus litoralis* (Grube, 1855); *Pontodrilus litoralis* (Grube, 1855) (Fig. 1).

Distribution: *P. litoralis* is widely distributed in warm beaches throughout the world. Pacific and Indian Oceans and in the Red Sea, South China Sea (Blakemore, 2002; Erseus, 2009).

Habitat preferences: Marine, sandy beaches, salty mud or mangrove swamps of the intertidal zone.

Ecology: Lack of dorsal pores is more usually associated with a semi-aquatic habitat. Specimen was found less than 10 to 20 cm of mangrove soil.

Brief description of the species

External morphology: Length 50-130 mm, clitellum width 1-2 mm, segment number 81-115. Prostomium epilobous, setae lumbricine, ab absent in 18. Dorsal pore absent, clitellum 13-17, saddle-shaped, setae present. Spermathecal pores two pairs in 7/8 and 8/9, ventro-lateral, in line with seta b. Female pores paired, medio-ventral in 14, each anterior to seta a. Male pores minute, paired in 18, each on inner wall of a longitudinal depression, median to a longitudinal ridge extending the entire segment 18. Genital marking large, medio-ventral, transversely oval across 19/20 and center depressed. Preserved specimens pale, light brown around clitellum (Blakemore *et al.*, 2006; Erseus, 2009).



Fig. 1: *Pontodrilus litoralis* from Pondicherry mangroves, southeast coast of India

Internal characters: Septa 5/6-12/13 thickened. Gizzard absent, Intestine from 17 and Esophageal hearts in 7-13. Spermathecae two pairs in 8 and 9, tubular, diverticulum slender, narrower at the junction with ampulla. Accessory glands are absent. Nephridia avesculate, absent in 1-12 and 14, small in 13, larger from 15. Testis sacs two pairs in 10 and 11. Seminal vesicles paired in 11 and 12, thin, follicular. Prostate glands paired in 18, tubular, prostatic duct curved. Accessory glands are absent (Blakemore *et al.*, 2006; Erseus, 2009).

Remarks: *Pontodrilus litoralis* emerge to fit under family megascolecidae before acanthodrilidae where it had been placed by some earlier reports.

DISCUSSION

Mangrove environment supports diversified biota based on a variety of shelters, abundant sunlight and nutrient runoff from the land. Information available on *P. litoralis* of the Pondicherry mangrove site is scant. This species had previously been recorded from Kovalam (Aiyer, 1929) and Gobi *et al.* (2004) reported from Tuticorin backwaters, India. During the project study in Pondicherry mangroves we found the occurrence of *P. litoralis* which is described here. So far none of the previous studies from Indian mangroves reported any information on Megascolecidae earthworms. Pondicherry coastal area is polluted due to the discharge of industrial, domestic and agricultural wastes through small tributaries and channels into the Bay of Bengal (Ananthan *et al.*, 2004; Satheeshkumar and Khan, 2011c). In addition, the study area of Pondicherry coast has natural environmental handicaps as a result from its isolated position and several manmade stresses are considered to be mainly responsible for a decline of earthworms. In order to investigate the distributional and temporal origins and taxonomical classification of the earthworm fauna, DNA barcoding confirmation of these species is urgent required.

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REFERENCES

- Aiyer, K.S.P., 1929. An account of the oligochaeta of travancore. *Rec. Indian Museum*, 31: 13-76.
- Alongi, D.M. and P. Christoffersen, 1992. Benthic infauna and organism-sediment relations in a shallow, tropical coastal area: Influence of outwelled mangrove detritus and physical disturbance. *Mar. Ecol. Progress Ser.*, 81: 229-245.
- Ananthan, G.A., P. Sampathkumar, P. Soundarapandian and L. Kannan, 2004. Observation on environmental characteristics of Ariyankuppam estuary and Veerampattinam coast of Pondicherry, India. *J. Aquat. Boil.*, 19: 67-72.
- Blakemore, R.J., 2002. *Cosmopolitan Earthworms: An Eco-Taxonomic Guide to the Peregrine Species of the World*. 1st CD Edn., VermEcology, Australia, Pages: 419.
- Blakemore, R.J., C.H. Chang, S.C. Chuang, M.T. Ito, S.W. James and J.H. Chen, 2006. Biodiversity of earthworms in Taiwan: A species checklist with the confirmation and new records of the exotic lumbricids *Eisenia fetida* and *Eiseniella tetraedra*. *Taiwania*, 51: 226-236.

- Erseus, C., 2009. Oligochaeta. In: New Zealand Inventory of Biodiversity: Volume One: Kingdom Animalia-Radiata, Lophotrochozoa, Deuterostomia, Gordon, D.P. (Ed.). Canterbury University Press, Christchurch, New Zealand, ISBN-13: 9781877257728, pp: 548.
- Gobi, M., J. Suman, C. Ravikumar and G.S. Vijayalakshmi, 2004. New site record of an earthworm *Pontodrilus litoralis* in the Tuticorin backwater area. *Zoos Print J.*, 19: 1712-1712.
- Satheeshkumar, P. and A.B. Khan, 2011a. An Annotated checklist of Brachyuran crabs (Crustacea: Decapoda) from Pondicherry mangroves, South East Coast of India. *World. J. Zool.*, 6: 312-317.
- Satheeshkumar, P. and A.B. Khan, 2011b. Gastropoda, neogastropoda, buccinidae, *Cantharus tranquebaricus* (Gmelin, 1791): First record from Pondicherry mangroves, Southeast coast of India. *Check List*, 7: 83-84.
- Satheeshkumar, P. and A.B. Khan, 2011c. Identification of mangrove water quality by multivariate statistical analysis methods in Pondicherry coast, India. *Environ. Monit. Assess.*, (In Press). 10.1007/s10661-011-2222-4.