



## **New records of testate amoebae (Protozoa: Rhizopoda) of the genera *Arcella* and *Diffflugia* from India**

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### **ABSTRACT**

Two species of testate amoebae viz., *Arcella excavata* Cunningham, 1919 and *Diffflugia geosphaira* Ogden, 1991 are reported from Marakkanam and Coleron estuaries in Tamil Nadu and *D. geosphaira* also from Himachal Pradesh which are new records from India.

**Key Words:** Testate amoebae, *Arcella excavata*, *Diffflugia geosphaira*, Marakkanam estuary, Coleron estuary, Himachal Pradesh.

### **INTRODUCTION**

Testate amoebae are a group of free-living protozoans with a predominately anemochorous way of dispersion. Most testacean species are cosmopolitan. *Arcella* and *Diffflugia* are the genera of testate amoebae of the class Lobosea and the order Arcellinida.

*Arcella* is a genus of testate amoebae and one of the largest and most common testacean genera. This genus was erected by Ehrenberg (1832) and the type species is *Arcella vulgaris*. Over 130 species and subspecies of the genus have been described worldwide.

*Diffflugia* genus was erected by Leclere, 1815 and the type species is *Diffflugia proteiformis*. *Diffflugia* is the oldest and most species rich genus of testate amoebae with more than 300 species and a lot of subspecies and varieties.

Perusal of literature shows that 19 species under *Arcella* and 36 species under *Diffflugia* genus have

already been reported from various states of India (Nair & Mukherjee, 1968; Mahajan, 1971; Das *et al.*, 1993, 1995, 2000a, 2000b, 2003; Mishra *et al.*, 1997; Bindu, 2013; Bindu *et al.*, 2013; Bindu *et al.*, 2014) and *Arcella excavata* and *Diffflugia geosphaira* are new records to India. These have been recorded from estuarine habitats of Tamil Nadu and *D. geosphaira* is also recorded from moss habitat of Himachal Pradesh.

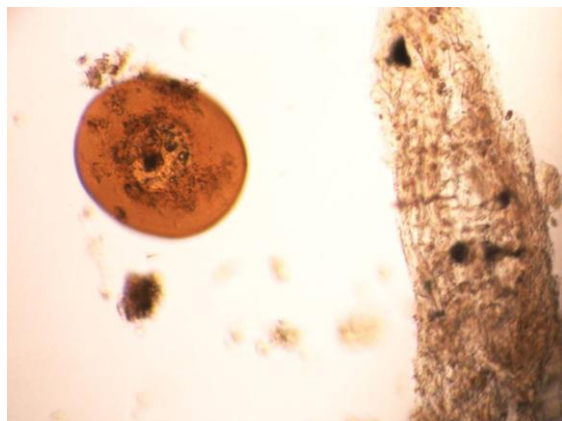
### **RESULTS**

A total of 8 exs. of *Arcella excavata* were collected from Marakkanam and Coleron estuaries of Tamil Nadu and 2 exs. of *Diffflugia geosphaira* were collected from Coleron estuary and *D. geosphaira* is also collected from moss samples of Kinnaur district, Himachal Pradesh.

***Arcella excavata* Cunningham, 1919 (Fig.1)**

**Diagnosis:** Shell yellowish to brown in colour; oval or circular in apertural view and croissant-like in lateral view; large axis of the shell usually in perpendicular direction to the shell's protuberances, when the shape of the shell in apertural view is not circular. Aperture bordered by a small lip; aboral hemispherical region smooth or with regular depressions; shell wall composed of numerous alveoli. Shell surface smooth or irregular with numerous small pores; usually 3-4 nuclei.

**Dimension:** Diameter of the test: 51  $\mu\text{m}$  (mean)



**Fig. 1.** *Arcella excavata*

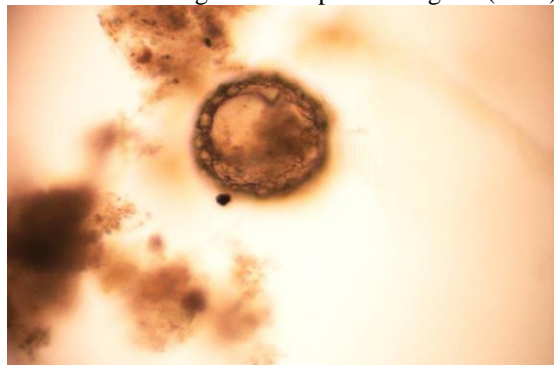
***Diffflugia geosphaira* Ogden, 1991(Fig.2a & b)**

**Diagnosis:** Shell ovoid, circular in cross section with a well defined apertural rim; walls constructed of an organic matrix with siliceous particles added, aperture large, circular; nucleus with many peripheral nuclei, two or three contractile vacuoles.

**Dimension:** Length of test: 61  $\mu\text{m}$  (Coleron estuary); 60.53  $\mu\text{m}$  (Himachal Pradesh).

**DISCUSSION**

The specimens of *D. geosphaira* collected from two entirely different habitats do not differ much in their size. The original description of Ogden (1991)



**Fig. 2a.** *Diffflugia geosphaira* from Tamil Nadu



**Fig.2b.** *Diffflugia geosphaira* from Himachal Pradesh

reported the size range of 45-62  $\mu\text{m}$  and the mean length of specimens of this study do not show much difference (61  $\mu\text{m}$  and 60.3  $\mu\text{m}$ ). For *Arcella excavata* the original description of Cunningham (1919) reports a length of 55  $\mu\text{m}$  and later Deflandre (1928) also reported a mean length of 55  $\mu\text{m}$ . The values in this study are slightly smaller (51  $\mu\text{m}$ ) than that of Cunningham (1919) and Deflandre (1928).

***Arcella excavata***

**Distribution:** India, Tamil Nadu (Marakkanam and Coleron estuaries); present record.

***Diffflugia geosphaira***

**Distribution:** India, Himachal Pradesh (Kinnaur) and Tamil Nadu (Coleron estuary); present record.

**SUMMARY**

The species *Arcella excavata* under the family Arcellidae and *Diffflugia geosphaira* under the family Difflogiidae have been reported herewith for the first time from India. Both the species are recorded from estuaries of Tamil Nadu and *D. geosphaira* also recorded from soil moss habitats of Himachal Pradesh.

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