



On some testacids (Protozoa) of Melghat Wildlife Sanctuary, Maharashtra, India

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Melghat Wildlife Sanctuary located in Amaravathi District of Maharashtra State is spread over an area of 788.75km². Melghat literally means the meeting point of hills and this large compact block of hills is endowed with diverse flora and fauna. There is a dearth of information on protozoa of Melghat Wildlife Sanctuary and hence collections were made from three spots, viz., Semodah, Makhala and Kolkaz. Of the ten species of testacids (freeliving protozoa) reported here, nine species are new records to Maharashtra and one species is reported for the first time from India.

Systematic account

Phylum: Sarcomastigophora

Class: Lobosea

Order: Arcellinida

Three families are dealt under this order.

Family: Microcoryciidae

Genus: *Amphizonella* Greeff

Diagnosis: Test membranous with a double marginal contour; inner membrane smooth, well defined; outer serrulate, aperture inverted, a single nucleus; pseudopodia

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blunt, digitate and divergent.

1. *Amphizonella violacea* Greeff

1959. *Amphizonella violacea* Greeff; Deflandre, Rhizopoda and Actinopoda (In: *Freshwater Biology*, Chapter 9: 235 ed. Edmondson.)

Material examined: 22.ix.2007, 1 ex. Semodah, coll. L. Bindu.

Diagnosis: Protoplasm violet-tinted with chlorophyllous corpuscles and grains; one nucleus; test patelliform.

Remarks: First report from India.

Family: Arcellidae

Genus: *Pyxidicula* Ehrenberg

Diagnosis: Test patelliform; rigid, transparent, punctuate; aperture circular, almost the entire diameter of the test; cytoplasm similar to that of *Arcella*; a single nucleus; one or more contractile vacuoles.

2. *Pyxidicula operculata* (Agardh) Ehrenberg

1919. *Pyxidicula operculata*: Cash and Wailes, The British freshwater Rhizopoda and Heliozoa. 4, p.18, figs. 164-168.

Material examined: 22.ix.2007, 2 exs. Kolkaz, freshwater, coll. L. Bindu.

Diagnosis: Test smooth, brown; a single vesicular nucleus; pseudopodia short.

Distribution: India: West Bengal

Remarks: First report from Maharashtra.

Family: Centropyxidae

Genus: *Centropyxis* Stein

1859. *Centropyxis* Stein, Abh. K. Bohm. Gesellsch. Wiss., 10: 43.

1929. *Centropyxis* Deflandre : *Arch. Protistenkd.*, 67: 322.

Diagnosis: Test dorsoventrally flattened, spheroidal at posterior portion and tapering towards apertural region; oral aperture eccentric or ventral, typically invaginated without a raised rim.

3. *Centropyxis ecornis* (Ehrenberg, 1841) Leidy, 1879

1841. *Arcella ecornis* Ehrenberg, Abh. Akad. Wiss. Berlin, P.368.

1879. *Centropyxis ecornis* Leidy, Freshwater Rhizopods of North America, pl. 30. figs. 20-24.

1929. *Centropyxis ecornis*, Deflandre, *Arch. Protistenkd.*, 67, P.359.

Material examined: 22.ix.2007, 4 exs., Makhala, freshwater, coll. L. Bindu.

Diagnosis: In ventral view test discoidal or largely elliptical, sometimes irregular in outline, without any spine and covered with quartz grains; in lateral view dorsal surface slightly arched and slightly more elevated

at posterior part, aperture usually circular, sometimes irregularly lobed and much eccentric.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand and West Bengal.

Remarks: First report from Maharashtra.

4. *Centropyxis spinosa* (Cash & Hopkinson, 1905) Deflandre, 1929.

1905. *Centropyxis aculeate* var. *Spinosa* Cash and Hopkinson, The British Freshwater Rhizopoda and Heliozoa, 1, P. 135.

1905. *Centropyxis spinosa* (Cash and Hopkinson) Deflandre, *Arch. Protistenkd.*, 67. p. 353.

Material examined: 22.ix.2007, 3exs., Makhala, freshwater, coll. L. Bindu.

Diagnosis: Test brownish, more or less circular and considerably flat and furnished with variable number of spines, usually 6-8; spines frequently curved and distributed irregularly on dorsal disc; aperture eccentric, lobate or circular with irregular border; test chitinous with quartz crystals.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand and West Bengal.

Remarks: First report from Maharashtra.

5. *Centropyxis orbicularis* Deflandre, 1929

1929. *Centropyxis orbicularis* Deflandre, *Arch. Protistenkd.*, 67, P. 334.

Material examined: 22.ix.2007, 1ex. Semodah, freshwater, coll. L. Bindu.

Diagnosis: Test brownish, almost circular in ventral view, ventral surface flat; in lateral view test semicircular, displaying considerable invagination towards the oral aperture; oral aperture nearly semi-circular, plagiostomic; test encrusted with large stony particles on its dorsal border.

Distribution: India: Andhra Pradesh and Uttarakhand.

Remarks: First report from Maharashtra.

Genus *Cyclopyxis* Deflandre, 1929.

1929. *Centropyxis* (*Cyclopyxis*) Deflandre, *Arch. Protistenkd.*, 67, pp. 330, 337.

Diagnosis: Test irregularly arched, oral aperture centrally located.

6. *Cyclopyxis eurystoma* (Deflandre, 1929)

1929. *Centropyxis* (*Cyclopyxis*) *eurystoma* Deflandre, *Arch. Protistenkd.*, 67, p. 371.

Material examined: 22.ix.2007, 1ex., Kolkaz, freshwater. coll. L. Bindu.

Diagnosis: Test hemispherical in lateral view, circular or elliptical in ventral view, brownish, aperture central,

circular and slightly invaginated with regular smooth edge and half or little more than half the diameter of the test; test encrusted with quartz particles.

Distribution: India: Arunachal Pradesh.

Remarks: First report from Maharashtra.

Class: Filosea

Order: Gromiida

Family: Euglyphidae

Genus: *Assulina* Ehrenberg, 1872

1848. *Diffflugia* (Partim) Ehrenberg, *Ber. Akad. Berlin*, p. 379.

1871 (1872). *Assulina* (Partim) Ehrenberg, *Ber. Akad. Berlin*, p. 226.

1879. *Assulina*: Leidy, *Freshwater Rhizopods of North America*, p. 224.

Diagnosis: Test brown or colourless, ovoid, compressed, formed of elliptical, imbricated siliceous platelets, arranged more or less regularly in diagonal rows, aperture oval, terminal, truncate or with a short neck bordered by a thin chitinous dentate membrane.

7. *Assulina muscorum* Greef, 1888.

1879. *Assulina seminulum* (Partim) Leidy, *Freshwater Rhizopods of North America*, pl. 37. figs.15,16,26.

1915. *Assulina muscorum*. Cash, Wailes and Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, 3, p. 55.

Material examined: 22.ix.2007, 2exs. Kolkaz, freshwater, coll. L. Bindu.

Diagnosis: Test small, yellowish to dark brown and sometimes colourless, oviform, compressed, truncate anteriorly, aperture composed of imbricated oval or elliptical platelets, usually arranged in alternating diagonal rows, sometimes irregularly; aperture terminal, elliptical, bordered by a thin chitinous membrane with undulate or irregularly dentate margin, aperture with pronounced and distinctly lobed collar of organic cement.

Distribution: India: Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Mizoram, Sikkim, Tripura and West Bengal.

Remarks: First report from Maharashtra.

8. *Assulina seminulum* (Ehrenberg, 1848) Leidy, 1879.

1848. *Diffflugia seminulum* Ehrenberg, *Ber. Akad. Berlin*, p.379.

1879. *Assulina seminulum* (Partim) Leidy, *Freshwater Rhizopods of North America*, p. 225.

Material examined: 22.ix.2007, 1ex. Kolkaz, freshwater, coll. L. Bindu.

Diagnosis: Test about one-and-half times larger in size than that of *A. muscorum*, yellowish to dark brown, pyriform or ovoid in broad view, compressed, composed of imbricated oval or elliptical siliceous platelets, aperture terminal, oval, surrounded by a thin chitinous membrane

Key to the families

1. Test semirigid, flexible near the aperture Family Microcoryciidae
- Test rigid2
2. Test membranous and rigid, having a distinct oral aperture..... Family Arcellidae
- Test with minerals or organic particles and with an oral aperture.....3
3. Symmetry of test dorso-ventral, oral aperture at one side of the test (eccentric) or Ventral Family Centropyxidae

Key to the species of *Centropyxis*

1. Test beset with spines..... 2
- Test without any spine.....3
2. Test furnished with variable number of spines frequently curved and distributed irregularly on dorsal side, aperture lobate or circular with irregular border.....*C. spinosa*.
3. Test comparatively large, discoidal, largely elliptical, usually irregular in outline, oral aperture circular or round*C. ecornis*
- Test circular or nearly circular in ventral view.....4
4. Test almost circular in ventral view, encrusted with large stony particles on its dorsal border, oral aperture nearly semi-circular.....*C. orbicularis*.

Key to the genera of the family Euglyphidae

1. Test brown or colourless, aperture elliptical, elongate or oval in oral view, aperture terminal and bordered by very thin and finely dentate membraneGenus *Assulina*.
2. Test hyaline without any collar, scales of various shape imbricated and arranged in longitudinal rows, aperture terminal and bordered with regularly arranged serrated or denticulated plateletsGenus *Euglypha*.

with irregularly dentate or undulate margin.

Distribution: India: Andhra Pradesh, Assam, Manipur, Nagaland, Sikkim and West Bengal

Remarks: First report from Maharashtra.

Genus: *Euglypha* Dujardin, 1841.

1915. *Euglypha*: Cash, Wailes and Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, 3 p. 3.

1962. *Euglypha*: Decloitre, Arch. Protistenkd., 106, p. 51.

Diagnosis: Test hyaline, ovoid or elongated, formed of circular, oval or scutiform siliceous, imbricated platelets, arranged in alternating longitudinal rows, aperture terminal, circular or elliptic, bordered by serrated or denticulate platelets.

9. *Euglypha acanthophora* (Ehrenberg, 1842), Perty, 1849.

1915. *Euglypha acanthophora* Cash, Wailes & Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, 3, p.8.

Material examined: 5exs., Makhala, 22.ix.2007, freshwater, coll. L. Bindu.

Diagnosis: Test ovoid or slightly elongated towards aperture, not compressed, aperture circular, bordered by one or occasionally two rows of finely serrated apertural platelets; test platelets elliptical, some platelets of posterior half and at the base of fundus prolonged into spines, spines usually 4-7 in number.

Distribution: India: Andhra Pradesh, Manipur,

Meghalaya, Nagaland and West Bengal.

Remarks: First report from Maharashtra.

10. *Euglypha tuberculata* Dujardin, 1841.

1915. *Euglypha tuberculata* Cash, Wailes and Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, 3, p. 13. pl. 33, figs. 6-7, pl. 35, figs.3-5, text figs. 112-114.

Material examined: 22.ix.2007, 4exs., Makhala, freshwater, coll. L. Bindu.

Diagnosis: Test elongate-oviform, not compressed, test platelets round or broadly oval, imbricating, giving a regular hexagonal design, aperture circular, bordered by 8-12 finely serrated platelets, arranged in a single row.

Distribution: India: Assam, Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Uttarakhand and West Bengal.

Remarks: First report from Maharashtra.

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