On the occurrence of testate amoebae (Protozoa, Rhizopoda) in Brazilian inland waters. V. Families Hyalospheniidae, Plagiopyxidae, Microcoryciidae, Cryptodifflugiidae, Phryganelidae, Euglyphidae, Trinematiidae and Cyphoderiidae

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ABSTRACT. This paper intends to be a contribution on the occurrence and geographical distribution of testate amoebae (Protozoa, Amoebozoa, Rhizopoda) in Brazilian inland waters, specifically the families Hyalospheniidae, Plagiopyxidae, Microcoryciidae, Cryptodifflugiidae, Phryganelidae, Euglyphidae, Trinematiidae and Cyphoderiidae. Fifty-four infra-generic taxa have been recorded. The genera with the greatest number of taxa are *Nebela* (Hyalospheniidae), with 17 taxa, and *Euglypha* (Euglyphidae), with 14 taxa. *Euglypha acantophora* (Ehrenberg), *E. cristata* Leidy, *E. laevis* (Ehrenberg), *E. strigosa* (Ehrenberg), *Trinema enchelys* (Ehrenberg), *T. lineare* Pénard and *Cyphoderia ampulla* (Ehrenberg) are the species with the greatest number of records in Brazil. Some taxonomic information is also provided.

Key words: aquatic protozoa, testate amoebae, geographical distribution, Brazil.

RESUMO. Ocorrência de tecamebas (Protozoa, Rhizopoda) em águas continentais brasileiras. V. Famílias Hyalospheniidae, Plagiopyxidae, Microcoryciidae, Cryptodifflugiidae, Phryganelidae, Euglyphidae, Trinematiidae e Cyphoderiidae. Este trabalho tem o objetivo de contribuir para o conhecimento sobre a ocorrência e distribuição geográfica de tecamebas (Protozoa, Amoebozoa, Rhizopoda) em ambientes aquáticos continentais brasileiros, especificamente das famílias Hyalospheniidae, Plagiopyxidae, Microcoryciidae, Cryptodifflugiidae, Phryganelidae, Euglyphidae, Trinematiidae e Cyphoderiidae. Foi registrado um total de 54 táxons infragenéricos. Os gêneros com maior número de táxons são *Nebela* (Hyalospheniidae), com 17 táxons, e *Euglypha* (Euglyphidae), com 14 táxons. *Euglypha acantophora* (Ehrenberg), *E. cristata* Leidy, *E. laevis* (Ehrenberg), *E. strigosa* (Ehrenberg), *Trinema enchelys* (Ehrenberg), *T. lineare* Pénard e *Cyphoderia ampulla* (Ehrenberg) são as espécies com maior número de registros no Brasil. Algumas informações taxonômicas são fornecidas.

Palavras-chave: protozoários aquáticos, tecamebas, distribuição geográfica, Brasil.

This is the 5th paper in a serie of studies that intends to contribute towards the knowledge on the occurrence and distribution of testate amoebae species in Brazilian inland waters (Lansac-Tôha *et al.* 2000a, 2001; Velho *et al.,* 2000, 2001). Prior to this, the only review on this Protozoan group in Brazil was that of Pinto (1925), based on the works of Ehrenberg (1841), Prowazek (1910), Wailes (1913) and Cunha (1913, 1916).

In Brazil most taxonomical or ecological papers on testate amoebae comprise the families Difflugiidae, Arcellidae e Centropyxidae (Velho *et al*., 1999). In fact, the greatest richness of species within the studied region belong to these families. According to Chardez (1968), the morphological types (axial, acrostome and plagiostome) within these families are characteristic of the aquatic environments they live in.

Since, as a rule, the families analyzed in this research are rarely represented in testate amoebae studies, there is scanty information on their occurrence and on their geographic distribution in Brazil. This scarcity may be a result of the intensity in which the habitats (plankton, macrophytes, sediments, moss and others) and the sampling

methods employed were studied due to the fact that these species usually have reduced body size.

In the present work we have summarized the current knowledge on the distribution and occurrence of species belonging to the families Hyalospheniidae, Microcoryciidae, Cryptodifflugiidae, Phryganelidae, Euglyphidae, Trinematiidae and Cyphoderiidae in Brazilian inland waters. We have also given complementary information on the family Plagiopyxidae from Velho *et al.* (2000).

Material and methods

Concerning previous registers on the occurrence and on the geographical distribution of Hyalospheniidae, Plagiopyxidae (complement), Microcoryciidae, Cryptodifflugiidae, Phryganelidae, Euglyphidae, Trinematiidae and Cyphoderiidae we reported only those found in scientific publications, dissertations and theses.

We have listed most, if not all, taxonomic references for each species, and thus provided an update on the distribution of the species in Brazil. The taxonomic classification was basically that proposed by Loeblich and Tappan (1964) and adopted by Ogden and Hedley (1980).

Results

Family Hyalospheniidae Schulze, 1877

***Awerintzewia cyclostoma* (Pénard, 1901)**

Wailes, 1912: 143; Hoogenraad and Groot, 1951: 357-358, fig. 11; Kudo, 1975: 452.

Comments: The only records on this species in Brazil were made by Wailes (1913) in moss and sphagnum samples from the state of Rio de Janeiro; by Hoogenraad and Groot (1951) in moss samples from the state of Paraná; and by Hardoim and Heckman (1996) in aquatic macrophyte samples from the Pantanal do Poconé, state of Mato Grosso (Figure 1).

***Certesella murrayi* (Wailes, 1913)**

Wailes, 1913: 216, pl. XV, figs. 18-19 (as *Nebela murrayi*); Deflandre, 1936: 280-281, figs. 150-151 (as *Nebela murrayi*); Jung, 1942a: 381, fig. 54 (as *Penardiella murrayi*); Vucetich, 1978: 312.

Comments: Species was originally described from samples of moss and sphagnum collected in the state of Rio de Janeiro (Wailes, 1913, as *Nebela murrayi*). It is the only record for Brazil (Figure 1).

***Heleopera petricola* Leidy, 1879**

Leidy, 1879: 165, pl. XXVI, figs. 12-20; Pénard, 1890: 167, pl. VII, figs. 56-58; 1903: 257-258; Chardez, 1967, pl. VI, fig. 43; Kudo, 1975: 452, fig. 207 e-f; Ogden and Hedley, 1980: 76, pl. XXVII, figs. A-C; Ogden, 1984a: 255; Hennuyi and Chardez, 1988: 184, fig. 7.

Comments: The species has been registered only in moss or sphagnum samples from the states of Minas Gerais, Paraná (Hoogenraad and Groot, 1951) and Rio Grande do Sul (Rhoden and Pitoni, 1999); and in plankton samples from the state of Goiás (Lansac-Tôha *et al*., 1999, 2000b; misspelled *H. pectrea*) (Figure 1).

***Heleopera sordida* Pénard, 1910**

Wailes, 1912: 156.

Comments: The species has been registered only in the state of Rio de Janeiro from moss and sphagnum samples (Wailes, 1913) (Figure 1).

***Heleopera sphagni* (Leidy, 1874)**

Ogden and Hedley, 1980: 80, pl. XXIX, figs. A-D (misspelled *H. sphangi*); Scott and Medioli, 1983: 819, fig. 9e; Medioli and Scott, 1983: 37-38, pl. VI, figs. 15-18; 1985: 32-33, fig. 9.

Comments: The species has only been found in bottom samples from the Guaratuba Estuary, in the state of Paraná (Barbosa, 1995) (Figure 1).

***Heleopera sylvatica* Pénard, 1890**

Pénard, 1890: 168, pl. VII, figs. 79-94; Oye, 1956: 29, figs. 24-25; Chardez, 1967, pl. VI, fig. 46; Lüftenegger and Foissner, 1991:6-7, figs. 24-32.

Comments: The species has been recorded only by Wailes (1913) in moss and sphagnum samples, in the state of Rio de Janeiro (Figure 1).

***Hyalosphenia subflava* Cash and Hopkinson, 1909**

Grospietsch, 1954, pl. II, fig. 9; 1965: 236-237, figs. 61-65 and pl. I, fig. H; Chardez, 1967, pl. VI, fig. 14; Hoogenraad and Groot, 1979: 160, fig. 2; Ogden and Hedley, 1980; 74, pl. XXVI, figs. A-C; Lüftenegger *et al*., 1988: 163-164, fig. 7; Hardoim, 1997: 200, fig. 63.

Comments: The species has been found only in moss samples, in the state of Paraná (Hoogenraad and Groot, 1951), and in aquatic macrophytes samples from the Pantanal do Poconé, in the state of Mato Grosso (Hardoim, 1997) (Figure 1).

***Hyalosphenia papilio* Leidy, 1875**

Leidy, 1879: 31, pl. XXI; Pénard, 1890: 165, pl. VII, figs. 23-35; 1902: 337, textfigs. 1-4; Franken, 1933: 197, pl. VII, fig. 2; Grospietsch, 1954, pl. I, fig. 8; 1965: 230, figs. 39-43 and pl. II, figs. i-l; Chardez, 1967, pl. VI, fig. 15; Kudo, 1975: 446, fig. 204h;

Ogden and Hedley, 1980: 72, pl. XXV, figs. A-E; Bobrov *et al.*, 1995: 123, figs. 2g-h and 8.

Comments: The only record of this species in Brazil is from the state of Rio de Janeiro in moss and sphagnum samples (Wailes, 1913) (Figure 2).

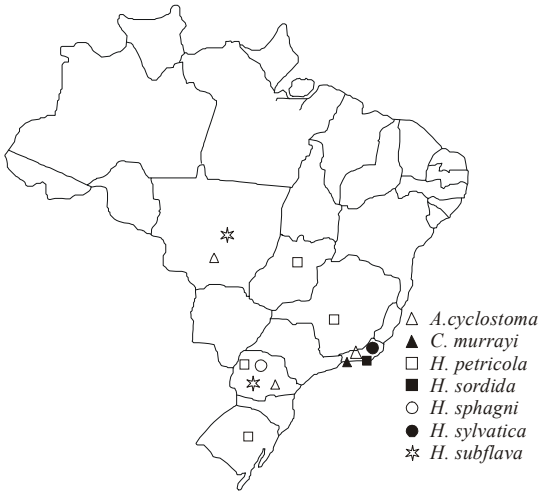

Figure 1. Geographic distribution of the *Awerintzewia cyclostoma, Certesella murrayi, Heleoptera petricola, H. sordida, H. sphagni, H. sylvatica* and *H. subflava* in Brazilian inland waters

***Nebela americana* Taránek, 1882**

Wailes, 1912: 134-135; Deflandre, 1936: 281-282, figs. 154-55; Hoogenraad and Groot, 1937: 119-120, fig. 23, a, c-d; 1951, fig. 17.

Comments: The species has been described only from sphagnum samples in the state of Minas Gerais (Hoogenraad and Groot, 1951) (Figure 2).

***Nebela carinata* (Archer, 1867)**

Leidy, 1879, pl. XXIV, figs. 1-5 and 9-10; Pénard, 1890: 160-161, pl. VI, figs. 69-77; Deflandre, 1936: 274, figs. 122-127 and pl. XXV, figs. 12-15; Gauthier-Lièvre, 1953: 357; Hoogenraad and Groot, 1979, fig. 1c; Ogden and Hedley, 1980: 92, pl. XXXV, figs. A-D.

Comments: The species has been found only in bottom samples from the estuary of the Itanhaém river, in the state of São Paulo (Oliveira, 1999) (Figure 2).

***Nebela caudata* Leidy, 1879**

Leidy, 1879: 160, pl. XXVI, figs. 21-24; Wailes, 1912: 135-136; 1913: 215, pl. XV, fig. 17; Playfair, 1917: 659, pl. XXXIX, fig. 4; Deflandre, 1936: 244, figs. 46-48 and 52-53; Jung, 1942a: 375, fig. 26 (as *Deflandria caudata*); Gauthier-Lièvre, 1953: 339, fig. 6; Oye, 1956: 20-21, figs. 3-4; Vucetich, 1974: 29, pl. II, fig. 3; Hoogenraad and Groot, 1979: 160, fig. 9; Rhoden and Pitoni, 1999: 98, fig. 11.

Comments: *N. caudata* has been registered in the state of Rio de Janeiro in moss and sphagnum samples (Wailes, 1913); in the state of Minas Gerais, in sphagnum samples (Hoogenraad and Groot, 1951); and in the state of Rio Grande do Sul, in sphagnum samples (Rhoden and Pitoni, 1999) (Figure 2).

***Nebela collaris* (Ehrenberg, 1848)**

Pénard, 1890: 157-158, pl. VI, figs. 21-44; 1902: 347, text figs. 1-2; Hoogenraad and Groot, 1937, fig. 7 a-d; Jung, 1942a: 377, fig. 42; Rampi, 1947, fig. 8; Gauthier-Lièvre, 1953: 343-344, fig. 9; Heal, 1961: 373; Chardez, 1967, pl. VI, fig. 19; 1968, pl. I, fig. 2; Grospietsch, 1967, fig. 2; Ogden and Hedley, 1980: 94, pl. XXXVI, figs. A-E; Hardoim, 1997: 230-231, fig. 77; Todorov, 1998, fig. 2; Rhoden and Pitoni, 1999: 99, fig. 12; Oliveira, 1999, pl. V, fig. 2.

Comments: This species has been registered in the state of Rio de Janeiro in moss, sphagnum and plankton samples (Wailes, 1913; Cunha, 1916); in the state of São Paulo in bottom samples (Oliveira, 1999); in the state of Mato Grosso, in aquatic macrophytes samples (Hardoim, 1997); and in the state of Rio Grande do Sul, in sphagnum samples (Rhoden and Pitoni, 1999) (Figure 2).

***Nebela galeata* f. *minor* Hoogenraad and Groot, 1937**

Hoogenraad and Groot, 1937: 118-119, fig. 12; 1951: 364, fig. 18.

Comments: Only Hoogenraad and Groot (1951) have registered this taxon, from sphagnum samples in the state of Minas Gerais (Figure 2).

***Nebela griseola* Pénard, 1911**

Pénard, 1911, pl. XXIII, fig. 8; Wailes, 1912: 138; Franken, 1913: 197, pl. VII, Deflandre, 1936: 235-236, figs. 20-24 and pl. XII, figs. 1-6; Jung, 1942a: 370-371, fig. 9 (as *Physochila griseola*); Hoogenraad and Groot, 1951, fig. 16; Ogden and Hedley, 1980: 102, pl. XL, figs. A-D.

Comments: The species has been found only in the state of Minas Gerais, in sphagnum samples (Hoogenraad and Groot, 1951) (Figure 2).

***Nebela lageniformis* Pénard, 1890**

Pénard, 1890: 158-159, pl VI, fis. 50-61; 1902: 356, textfigs. 1-2; Deflandre, 1936: 262-263, figs. 98-99, 102 and pl. XXII, figs. 1-5; Hoogenraad and Groot, 1937: 120, fig. 24d; Jung, 1942a: 379, fig. 45 (as *Schaudinnia lageniformis*); Rampi, 1947, fig. 13;

Gauthier-Lièvre, 1953: 351-352, fig. 14; Chardez, 1967, pl. VI, fig. 23; Laminger, 1973, fig. 32 b-c; Vucetich, 1973b, fig. 9; Meisterfeld, 1979: 256-257, pl. III, fig. 14; Hoogenraad and Groot, 1979: 160, fig. 8; Ogden, 1984a: 256, figs. 43-47; Rhoden and Pitoni, 1999: 100, fig. 14.

Comments: Records of this species in Brazil hail from the state of Rio de Janeiro, in moss and sphagnum samples (Wailes, 1913); from the states of São Paulo and Minas Gerais, in plankton samples (Rolla *et al*., 1992); and from the state of Rio Grande do Sul, in sphagnum samples (Rhoden and Pitoni, 1999) (Figure 2).

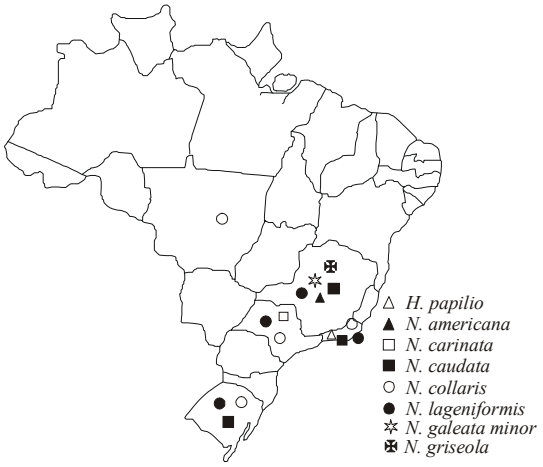

Figure 2. Geographic distribution of the *Hyalosphenia papilio, Nebela americana, N. carinata, N. caudata, N. colaris, N. lageniformis, N. galeata minor* and *N. griseola* in Brazilian inland waters

***Nebela dentistoma* Pénard, 1890**

Pénard, 1890: 162-163 and pl. VI, figs. 98-100, pl. VII, figs 1-5; Deflandre, 1936: 238-240, figs. 30-32, pl XII, figs. 7-15, pl. XIII, figs. 1-3 and 6-13; Hoogenraad and Groot, 1937: 120, fig. 25 d-e; Jung, 1942a: 372, fig. 14 (as *Argynnia dentistoma*); Gauthier-Lièvre, 1953: 334, fig. 4B-C; Chardez, 1967, pl. VI, fig. 28; Grospietsch, 1971: 415, fig. 89 i; Vucetich, 1973a: 63, fig. 4; Laminger, 1973, fig. 32m; Ogden and Hedley, 1980: 96, pl. XXXVII, figs. A-E; Todorov, 1998: fig. 7; Rhoden and Pitoni, 1999: 99-100, fig. 13.

Comments: The species has been registered in mos or sphagnum samples from the states of Rio de Janeiro (Wailes, 1913) and Rio Grande do Sul (Rhoden and Pitoni, 1999) (Figure 3).

***Nebela dentistoma* var. *hesperia* Wailes, 1913**

Wailes, 1913: 215-216, pl. XV, fig. 13; Deflandre, 1936: 240-241, fig. 34; Gauthier-Lièvre, 1953, fig. 4F; Laminger, 1973, fig. 32 n-o; Vucetich, 1974: 30, pl. II, fig. 1.

Comments: The original description of this variety of *N. dentistoma* was provided by Wailes (1913) from sphagnum samples collected in the state of Rio de Janeiro. It is the only record in Brazil (Figure 3).

***Nebela gracilis* Pénard, 1910**

Wailes, 1912: 138; Deflandre, 1936: 270-271, figs. 114-117 and pl. XXIV, figs. 8 and 11, pl. XXV, figs. 1-3; Jung, 1942a: 382, fig. 57 (as *Umbonaria gracilis*).

Comments: The species has been recorded only in the state of Rio de Janeiro (Wailes, 1913), in moss samples (Figure 3).

***Nebela militaris* Pénard, 1890**

Pénard, 1890: 164, pl. VII, figs. 16-22; 1902: 368, textfigs. 1-4; Deflandre, 1936: 253-254, figs. 76-78 and pl. XVI, figs. 9-13; Hoogenraad and Groot, 1937, fig. 25 f-g; Jung, 1942a: 377, fig. 34; Gauthier-Lièvre, 1953: 346, fig. 11A-B;Grospietsch, 1954, pl. I, fig. 6; 1958: 320; Oye, 1956: 24, fig. 14; Chardez, 1967, pl. VI, fig. 26; Ogden and Hedley, 1980: 104, pl. XLI, figs. A-D; Bobrov *et al*., 1995: 122, figs. 2 e-f

Comments: The species has been registered only in the state of Rio de Janeiro, in moss and sphagnum samples (Wailes, 1913) (Figure 3).

***Nebela penardiana* Deflandre, 1936**

Deflandre, 1936: 257-258, figs. 87-89 and pl. XIX, figs. 1-9, pl. XX, figs. 1-2, 4-5 and 7; Hoogenraad and Groot, 1948: 39, fig. 15; Gauthier-Lièvre, 1953: 349-350, fig. 13A-H; Schönborn, 1966: 539, fig. 6 i-k; Godeanu, 1970, fig. 2d; Vucetich, 1973b, fig. 16; Ogden and Hedley, 1980: 106, pl. XLII, figs. A-D; Rhoden and Pitoni, 1999: 101, fig. 16.

Comments: The species has been found only in sphagnum samples in the state of Rio Grande do Sul (Rhoden and Pitoni, 1999) (Figure 3).

***Nebela tubulosa* Pénard, 1890**

Pénard, 1890: 159-160; 1902: 354, text figs. 1-3; Wailes, 1912: 141; Deflandre, 1936: 260, figs. 90-92 and pl. XXI, figs. 1-11, pl. XXVII, fig. 4; Hoogenraad and Groot, 1937: 121, fig. 24 a-c; Jung, 1942a: 377, fig. 35; Gauthier-Lièvre, 1953: 351, fig. 13I; Hoogenraad and Groot, 1979, fig. 1a;Ogden and Hedley, 1980: 110, pl. XLIV, figs. A-D; Rhoden and Pitoni, 1999: 101-102, fig. 17.

Comments: The species has been registered only in sphagnum samples from the São Francisco de

Paula county, in the state of Rio Grande do Sul (Rhoden and Pitoni, 1999) (Figure 3).

Figure 3. Geographic distribution of *Nebela dentistoma, N. dentistoma hesperia, N. gracilis, N. militaris, N. penardiana* and *N. tubulosa* in Brazilian inland waters

***Nebela parvula* Cash, 1908**

Deflandre, 1936: 253, figs. 74-75 and pl. XVI, figs. 6-8; Jung, 1942: 377, fig. 40; Gauthier-Lièvre, 1953: 346, fig. 10D-E; Lüftnegger *et al*., 1988: 166-167, fig. 8; Rhoden and Pitoni, 1999: 100-101, fig. 15.

Comments: N. parvula has been registered only in moss and sphagnum samples from the states of Rio de Janeiro (Wailes, 1913) and Rio Grande do Sul (Rhoden and Pitoni, 1999) (Figure 4).

***Nebela tincta* (Leidy, 1879)**

Leidy, 1879, pl. XX, figs. 11-17 (as *Hyalosphenia tincta*); Deflandre, 1936: 255, figs. 79-81 and pl. XVII, figs. 1-10, pl. XVIII, figs. 1-4; Hoogenraad and Groot, 1937: 116-117, fig. 17; Gauthier-Lièvre, 1953: 347-348, fig. 11C; Chardez, 1967, pl. VI, fig. 37; Vucetich, 1975: 12, fig. 4; Ogden and Hedley, 1980: 108, pl. XLIII, figs. A-D; Lüftenegger *et al*.; 1988: 166-167, figs. 9 and 26-6; Todorov, 1988, fig. 8.

Comments: *N. tincta* has been registered by Wailes (1913) in moss and sphagnum samples in the state of Rio de Janeiro (Figure 4).

***Nebela vas* Carter, 1889**

Pénard, 1911, pl. XXIII, fig. 10; Wailes, 1913: 217; Deflandre, 1936: 267-268, figs. 109-111; Jung, 1942a: 380, fig. 50 (as *Apoderia vas*); Hoogenraad and Groot, 1948, fig. 12; 1951: 354-355, fig. 7; Gauthier-Lièvre, 1953: 356, fig. 18; Oye, 1956: 26, figs. 18-20; Grospietsch, 1971: 416, fig. 89 d; Boltovskoy and Lena, 1971, pl. I, figs. 1-3; Vucetich, 1973b: 7, fig. 11; Hoogenraad and Groot, 1979, fig. 4; Rhoden and Pitoni, 1999: 102, fig. 18; Oliveira, 1999, pl. V, fig. 1 (as *Apoderia vas*).

Comments: Records of this species in Brazil come from the state of Rio de Janeiro, in moss and sphagnum samples (Wailes, 1913); from the state of São Paulo, in bottom samples (Oliveira, 1999; as *Apoderia vas*); and from the state of Rio Grande do Sul, in sphagnum samples (Rhoden and Pitoni, 1999) (Figure 4).

***Nebela vitraea* Pénard, 1899**

Wailes, 1912: 141, pl. XII, figs. 15-17; Deflandre, 1936: 242-243, figs. 39-44 and pl. XXVII, fig. 7; Gauthier-Lièvre, 1953: 337; Ogden and Hedley, 1980: 144, pl. XLVI, figs. A-D.

Comments: The species has been registered only in the state of Rio de Janeiro in moss samples (Wailes, 1913) (Figure 4).

Figure 4. Geographic distribution of *Nebela parvula, N. tincta, N. vas* and *N. vitraea* in Brazilian inland waters

Family Microcoryciidae Saedeler, 1934
***Mycrochlamys patella* (Claparide and Lachman, 1858).**

Pénard, 1890: 192, pl. XI, figs. 73-79 (as *Pseudochlamys patella*); Franken, 1933, pl. I, fig. 7 (as *P. patella*); Deflandre, 1953, fig. 88a-b; Chardez, 1967, pl. I, fig. 1; Kudo, 1975: 444, fig. 204c (as *P. patella*); Golemansky and Todorov, 1999, fig. 5.

Comments: The species has been registered only in the state of Rio de Janeiro in moss and sphagnum samples (Wailes, 1913) (Figure 5).

***Microcorycia aculeata* (Greeff, 1888)**

Wailes, 1913: 214 (as *Corycia aculeata*)

Comments: The only register of this species in Brazil occurred in the state of Rio de Janeiro in moss and sphagnum samples (Wailes, 1913) (Figure 5).

***Microcorycia coronata* (Pénard, 1902)**

Pénard, 1902: 179 (as *Corycia coronata* var. *simplex*); Wailes, 1913: 214-215 (as *C. flava* var. *coronata*); Todorov, 1998, fig. 11.

Comments: The species has been found only in moss and sphagnum samples in the state of Rio de Janeiro (Wailes, 1913) (Figure 5).

***Microcorycia flava* (Greef, 1866)**

Pénard, 1902: 173 (as *Corycia flava*); Wailes, 1913: 214 (as *C. flava*); Deflandre, 1953, fig. 87d; Chardez, 1967, pl. I, fig. 4.

Comments: *M. flava* has been registered only in the state of Rio de Janeiro in moss and sphagnum samples (Wailes, 1913) (Figure 5).

***Penardochlamys arcelloides* (Pénard, 1904)**

Deflandre, 1953: 126, fig. 88c; Chardez, 1967, pl. I, fig. 2; Hardoim, 1997: 204, fig. 65.

Comments: The species has been registered only in aquatic macrophytes samples from the Pantanal do Poconé, in the state of Mato Grosso (Hardoim, 1997) (Figure 5).

Family Cryptodifflugiidae Jung, 1942

***Difflugiella crenulata* (Playfair, 1917)**

Playfair, 1917: 657, pl. XXXVIII, figs. 17-18 (as *Cryptodifflugia crenulata*); Grospietsch, 1964: 245-246, figs. 2-3 (comb. nov.); Schönborn, 1965: 315-316, fig. 1; Hardoim, 1997: 252, fig. 87.

Comments: The only register of *D. crenulata* in Brazil are in the state of Mato Grosso in bottom and aquatic macrophytes samples from the Pantanal do Poconé (Hardoim, 1997) (Figure 5).

Family Plagiopyxidae Bonnet, 1959

***Plagiopyxis callida* Pénard, 1910**

Pénard, 1910: 936, pl. VIII, figs. 8-10; Grospietsch, 1958: 321; Thomaz, 1958: 202-205, figs. 1-18; Chardez, 1967, pl. II, fig. 13; Vucetich, 1973c: 323, pl. IX, fig. 68; Kudo, 1975: 450, fig. 207a.

Comments: The only record of the species in Brazil was made by Wailes (1913) in the state of Rio de Janeiro in moss and sphagnum samples (Figure 6).

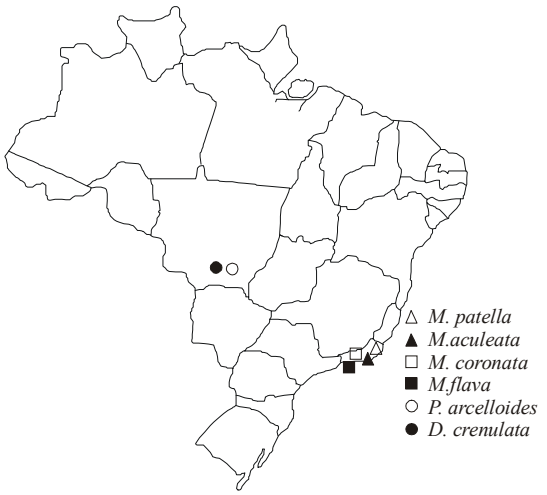

Figure 5. Geographic distribution of *Mycrochlamys patella, Microcorycia aculeata, M. coronata, M. flava, Penardochlamys arcelloides* and *Difflugiella crenulata* in Brazilian inland waters

***Plagiopyxis labiata* Pénard, 1910**

Pénard, 1910: 252, fig. 1; Thomaz, 1958: 206-207, figs. 21-30; Schönborn, 1964: 111, pl. I, figs. 12-16; Chardez, 1967, pl. II, fig. 14; Vucetich, 1973c: 323, pl. IX, fig. 69; Opravilová, 1989, fig. 2a.

Comments: This species has been registered only in the state of Rio de Janeiro in moss and sphagnum samples (Wailes, 1913) (Figure 6).

Family Phryganelidae Jung, 1942

***Phryganella acropodia* (Hertwig and Lesser, 1874)**

Pénard, 1902: 421, textfigs. 1-5 (as *P. hemisphaerica*); Playfair, 1917, pl. XXXVIII, fig. 5; Franken, 1933: 201, pl. V, fig. 3 (as *P. hemisphaerica*); Chardez, 1967, pl. V, fig. 27; 1969: 316, figs. 1 and 13; 1972, pl. III, fig. 66; Vucetich, 1973c: 325, pl. X, fig. 73 (as *P. hemisphaerica*).

Comments: The species has been registered by Wailes (1913) in mos and sphagnum samples, in the state of Rio de Janeiro; Hoogenraad and Groot (1951) in moss and sphagnum samples, in the states of Paraná and Minas Gerais; and by Green (1975) in plankton samples, in the state of Mato Grosso. These authors called this species *P. hemispherica* (Figure 6).

***Phryganella nidulus* Pénard, 1902**

Franken, 1933: 202, pl. V, fig. 4; Deflandre, 1953, fig. 93 a-c; Chardez, 1969: 320, fig. 7; Ogden and Hedley, 1980: 168, pl. LXXIII, figs. A-D.

Comments: *P. nidulus* has been registered in samples of moss and sphagnum samples from the state of Rio de Janeiro (Wailes, 1913) (Figure 6).

Family Euglyphidae Wallich, 1864
***Assulina muscorum* Greeff, 1888**

Hoogenraad and Groot, 1937, fig. 1c-d; Grospietsch, 1954, pl. I, fig. 2; Chardez, 1967, pl. VII, fig. 46, 1990: 148-149; Ogden and Hedley, 1980: 192, pl. LXXXV, figs. A-D; Ogden, 1984a: 242, figs. 1-2; Chardez, 1990: 148-149; Lüftenegger and Foissner, 1991: 10, figs. 51-56; Rhoden and Pitoni, 1999: 104, fig. 22.

Comments: The species has been registered in the state of Rio de Janeiro, in moss and sphagnum samples (Wailes, 1913); in the state of Minas Gerais, in sphagnum samples (Hoogenraad and Groot, 1951); in the state of Paraná, in moss and sphagnum samples (Hoogenraad and Groot, 1951); and in the state of Rio Grande do Sul, in sphagnum samples (Rhoden and Pitoni, 1999) (Figure 6).

***Assulina seminulum* (Ehrenberg, 1848)**

Pénard, 1890: 175-176, pl. VIII, figs. 68-90; Hoogenraad and Groot, 1937, fig. a-b; Rampi, 1947, fig. 4; Deflandre, 1953, fig. 94 d-e; Chardez, 1967, pl. VII, fig. 47; Lüftenegger *et al*.,1988: 171, fig. 12; Ogden and Hedley, 1980: 196, pl. LXXXVII, figs. A-E; Rhoden and Pitoni, 1999: 104-105, fig. 23.

Comments: The species has been recorded only by Hoogenraad and Groot (1951), in the state of Paraná, and by Rhoden and Pitoni (1999), in the state of Rio de Grande do Sul, both in sphagnum samples (Figure 6).

***Euglypha crenulata* Wailes, 1912**

Wailes, 1912: 147, pl. XII, figs. 34-37; Decloitre, 1962: 62-63, figs. 19-21; Chardez, 1967, pl. VII, fig. 6; Dioni, 1970: 226, pl. VI, fig. 54; Lena and Zaidenwerg, 1975, pl. I, fig. 20; Hardoim, 1997: 267, fig. 94.

Comments: The species has been registered only in bottom samples from the Pantanal do Poconé, in the state of Mato Grosso (Hardoim, 1997) (Figure 6).

***Euglypha filifera* Pénard, 1890**

Pénard, 1890: 179-180, pl. IX, figs. 69-73; Wailes, 1912: 148; Franken, 1933: 510, pl. IX, fig. 1; Grospietsch, 1958: 320; Decloitre, 1962: 76, figs 54-55; Chardez, 1967, pl. VII, fig. 1; Ogden and Hedley, 1980: 182, pl. LXXX, figs. A-D; Hardoim, 1997: 271, fig. 96.

Comments: The only registers of the species in Brazil were made in the states of Mato Grosso (Green, 1975; Hardoim and Heckman, 1996; Hardoim, 1997); and Minas Gerais (Dabés and Velho, 2001) (Figure 6).

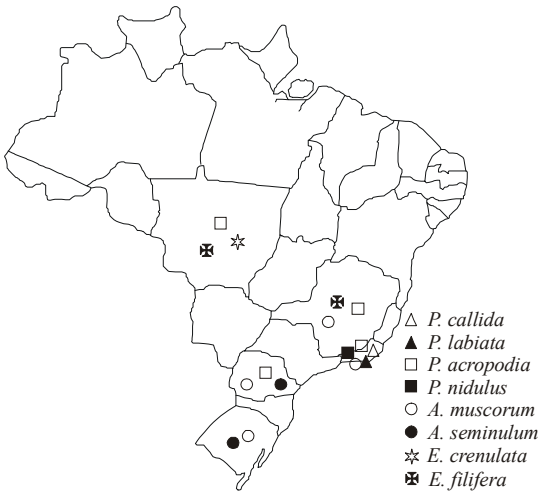

Figure 6. Geographic distribution of *Plagiopyxis callida, P. labiata, Pyxidicula acropodia, P. nidulus, Assulina muscorum, A. seminulum, Euglypha crenulata* and *E. filifera* in Brazilian inland waters

***Euglypha brachiata* Leidy, 1879**

Leidy, 1879: 220, pl. XXXVII, figs. 5-6 and 8-10; Wailes, 1912: 146, pl. XII, figs. 28 and 30; Franken, 1933: 199, pl. IX, fig. 3; Decloitre, 1962: 61, figs. 16-17; Chardez, 1967, pl. VII, fig. 10; Grospietsch, 1972: 22, fig. 40.

Comments: The only records of the species in Brazil came from the states of São Paulo (Prowazek, 1910) and Rio de Janeiro (Cunha, 1913, 1916), both in plankton samples (Figure 7).

***Euglypha ciliata* (Ehrenberg, 1848)**

Pénard, 1890: 178, pl. IX, figs. 41-57; Franken, 1933: 199, pl. IX, fig. 2; Rampi, 1947, fig. 12; Grospietsch, 1954, pl. I, fig. 3; 1972: 22, fig. 41; Decloitre, 1962: 83-84, figs. 70-72; Chardez, 1962: 270, fig. 4; 1967, pl. VII, fig. 29.

Comments: The species has been registered only in moss or sphagnum samples, in the states of Rio de Janeiro (Wailes, 1913) and Minas Gerais (Hoogenraad and Groot, 1951) (Figure 7).

***Euglypha compressa* Carter, 1864**

Pénard, 1890: 181, pl. IX, figs. 80-84; 1903: 269-271, fig. 11; Franken, 1933, pl. IX, fig. 7; Oye, 1956, fig. 27; Decloitre, 1962: 87, figs. 75-78; Chardez, 1967, pl. VII, fig. 17; Vucetich, 1973b, fig. 4; Ogden and Hedley, 1980: 178, pl. LXXVIII, figs. A-E; Lüftenegger and Foissner, 1991, figs. 63-68.

Comments: The species has been registered only in moss and sphagnum samples in the state of Rio de Janeiro (Wailes, 1913) (Figure 7).

***Euglypha cristata* Leidy, 1874**

Wailes, 1912: 146; Franken, 1933: 198; Decloitre, 1962: 65, figs. 24-26; Chardez, 1967, pl. VII, fig. 11; Godeanu, 1970, fig. 2l; Vucetich, 1973b: 5, figs. 2-3; Kudo, 1975, fig. 208a; Ogden and Hedley, 1980: 180, pl. LXXIX, figs. A-D; Ogden, 1984a: 254, figs. 37-38; Lüftenegger *et al*., 1988: 172-173, figs. 15 and 26.12; Hardoim, 1997: 269, fig. 95; Torres, 1998: 550-551, fig. 12; Rhoden and Pitoni, 1999: 105, fig. 24.

Comments: *E. cristata* has been found in the states of Minas Gerais in sphagnum samples (Hoogenraad and Groot, 1951); Rio de Janeiro in plankton samples (Cunha, 1916); Rio Grande do Sul in aquatic macrophytes and sphagnum samples (Torres, 1996, 1998; Rhoden and Pitoni, 1999), and Mato Grosso in bottom samples (Hardoim, 1997) (Figure 7).

***Euglypha denticulata* Brown, 1912**

Wailes, 1913: 207-208; Franken, 1933: 55, pl. IX, fig. 6; Decloitre, 1962: 88, figs. 80-81; Vucetich, 1975: 15, fig. 6.

Comments: The species has been registered in moss and sphagnum samples, in the state of Rio de Janeiro (Wailes, 1913) and in aquatic macrophytes samples from a marginal lake of the São Francisco river basin, state of Minas Gerais (Dabés and Velho, 2001) (Figure 7).

***Euglypha rotunda* Wailes and Pénard, 1911**

Decloitre, 1962: 79, figs. 60-63; Chardez, 1967, pl. VI, fig. 14; 1972, pl. III, fig. 75; Vucetich, 1972: 126, fig. 1; Ogden and Hedley, 1980: 186, pl. LXXXII, figs. A-D; Hennuy and Chardez, 1988: 184, fig. 8; Lüftenegger *et al*., 1988: 174, figs. 16 and 26.3; Torres and Schwarzbold, 2000: 140-141, fig. 1.

Comments: *E. rotunda* has been registered in aquatic macrophytes samples in a reservoir in Porto Alegre, in the state of Rio Grande do Sul, (Torres, 1996; Torres and Schwarzbold, 2000) (Figure 7).

***Euglypha tuberculata* Dujardin, 1841**

Decloitre, 1962: 70-71, figs. 45-48; Chardez, 1967, pl. VII, fig. 28; Vucetich, 1973c: 326-327, pl. X, fig. 74; Lena and Zaidenwerg, pl. I, fig. 12; Ogden and Hedley, 1980: 190, pl. LXXXIV, figs. A-E; Hardoim, 1997: 277, fig. 99; Rhoden and Pitoni, 1999: 106, fig. 26.

Comments: The species has been found in the states of Mato Grosso in samples of plankton (Green, 1975) and aquatic macrophytes (Hardoim, 1997); Rio Grande do Sul in sphagnum samples (Rhoden and Pitoni, 1999), and Minas Gerais in aquatic macrophytes samples (Dabés and Velho, 2001) (Figure 7).

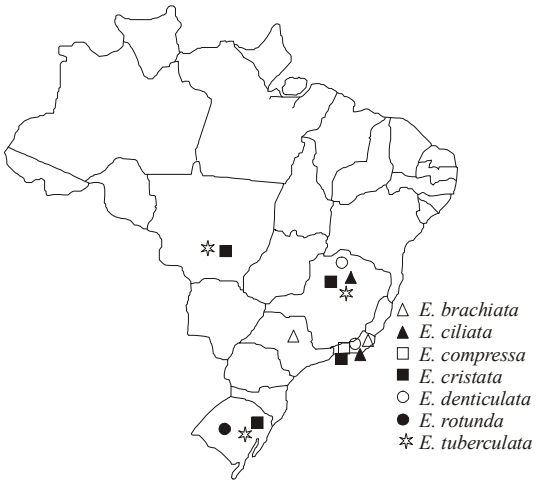

Figure 7. Geographic distribution of *Euglypha brachiata, E. ciliata, E. compressa, E. cristata, E. denticulata, E. rotunda* and *E. tuberculata* in Brazilian inland waters

***Euglypha acantophora* (Ehrenberg, 1841)**

Pénard, 1890: 177-178, pl. IX, figs. 26-40 (as. *E. alveolata*); Wailes, 1912: 145 (as *E. alveolata*); Deflandre, 1926, fig. 23; Rampi, 1947, fig. 11 (as *E. alveolata*); Hoogenraad and Groot, 1951, fig. 9; Decloitre, 1962: 52-53, figs. 1-3; Chardez, 1967, pl. VII, fig. 20; Dioni, 1971, fig. 6b; Grospietsch, 1972: 21, fig. 39; Vucetich, 1973c: 326-327, pl. X, fig. 76; Hedley *et al.*, 1974: 106-107, fig. 1a-b; Kudo, 1975: 453; Ogden and Hedley, 1980: 176, pl. LXXVII, figs. A-D; Hardoim, 1997: 264, fig. 93.

Comments: Ehrenberg (1841) made the first citation of the species (as *E. alveolata*) in Brazil, without any description of collection site. Other authors also found the species in different localities: in the states of Piauí, in plankton samples (Cunha, 1916; as *E. alveolata*); Rio de Janeiro, in moss and sphagnum samples (Wailes, 1913; as *E. alveolata*), and in plankton samples (Cunha, 1913, 1916; as *E. alveolata*); São Paulo, in plankton samples (Rolla *et al*., 1992; as *E. alveolata*); Minas Gerais, in plankton samples (Rolla *et al*., 1992; as *E. alveolata*; Dabés, 1995; Landa, 1997; Landa and Mourgués-Schurter, 2000a and b), and in aquatic macrophytes samples (Dabés and Velho, 2001); Goiás, in plankton samples (Lansac-Tôha *et al*., 2000); Mato Grosso, in bottom samples (Hardoim, 1997), in aquatic macrophytes samples (Hardoim and Heckman, 1996) and in plankton samples (Green, 1975); Paraná, in moss samples (Hoogenraad and Groot,

1951); Mato Grosso do Sul and Paraná, in plankton samples (Lansac-Tôha *et al*., 1997); and Rio Grande do Sul, in bottom samples (Closs and Medeiros, 1965, 1967; as *E. alveolata*) (Figure 8).

***Euglypha laevis* (Ehrenberg, 1845)**

Pénard, 1890: 181, pl. IX, figs. 93-96; 1902: 512, textfig. 1; Playfair, 1917: 665, pl. XL, figs. 14-16; Franken, 1933: 198, pl. IX, fig. 5; Decloitre, 1962: 88-90, figs. 82-83; Chardez, 1967, pl. VII, fig. 62; Hardoim, 1997: 273, fig. 97.

Comments: The registers of this species in Brazil have been made in the states of Rio de Janeiro (Wailes, 1913); Minas Gerais (Hoogenraad and Groot, 1951; Landa and Mourgués-Schurter, 1999; 2000a and b); Mato Grosso (Green, 1975; Hardoim and Heckman, 1996; Hardoim, 1997) (Figure 8).

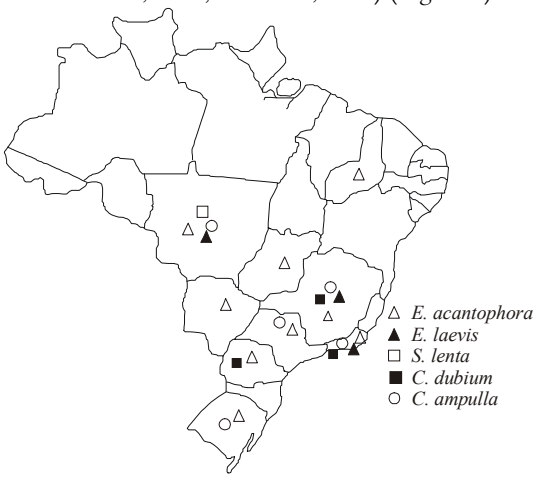

Figure 8. Geographic distribution of *Euglypha acantophora, E. laevis, Sphenoderia lenta, Corythion dubium* and *Cyphoderia ampulla* in Brazilian inland waters

***Euglypha strigosa* (Ehrenberg, 1872)**

Pénard, 1890: 179, pl. IX, figs. 58-68; Franken, 1933: 199, pl. IX, fig. 9; Rampi, 1947, fig. 6; Deflandre, 1953, fig. 94 a; Decloitre, 1962,: 81-82, figs. 65-66; Chardez, 1967, pl. VII, fig. 2; 1990: 149; Grospietsch, 1972: 22, fig. 42; Vucetich, 1973c: 328, pl. X, fig. 80; Hedley *et al.*, 1974: 107-108, fig. 1c; Ogden and Hedley, 1980: 188, pl. LXXXIII, figs. A-D; Lüftenegger *et al.*, 1988: 174 and 177-178, figs. 17 and 26.11; Hardoim, 1997: 275, fig. 98; Torres, 1998: 550, fig. 11; Rhoden and Pitoni, 1999: 106, fig. 25.

Comments: *E. strigosa* has been registered only in aquatic macrophytes, moss or sphagnum samples: in the states of Rio de Janeiro (Wailes, 1913); Minas Gerais (Hoogenraad and Groot, 1951); Rio Grande do Sul (Torres, 1996, 1998; Rhoden and Pitoni, 1999); and Mato Grosso (Hardoim, 1997) (Figure 9).

***Euglypha strigosa* f. *glabra* Wailes, 1913**

Oye, 1956: 32, fig. 30; Decloitre, 1962: 82, fig. 67; Chardez, 1967, pl. VII, fig. 15.

Comments: The taxon has been found only in moss samples in the state of Rio de Janeiro (Wailes, 1913) (Figure 9).

***Euglypha strigosa* f. *heterospina* Wailes, 1913**

Pénard, 1890: 180, pl. IX, figs. 74-79 (as *E. heterospina*, spec. nov.); Wailes, 1913: 208 (f. nov.); Decloitre, 1962: 82-83, fig. 68; Chardez, 1967, pl. VII, fig. 4; Vucetich, 1973b, fig. 6.

Comments: The taxon has been registered only by Wailes (1913) in moss and sphagnum samples, in the state of Rio de Janeiro (Figure 9).

Euglypha strigosa var.* muscorum *Wailes and Pénard, 1911

Wailes and Pénard, 1911: 42; Wailes, 1912: 150; Decloitre, 1962: 83, fig. 69; Chardez, 1967, pl. VII, fig. 16.

Comments: The only record of the taxon in Brazil hailed from the state of Rio de Janeiro in moss and sphagnum samples (Wailes, 1913) (Figure 9).

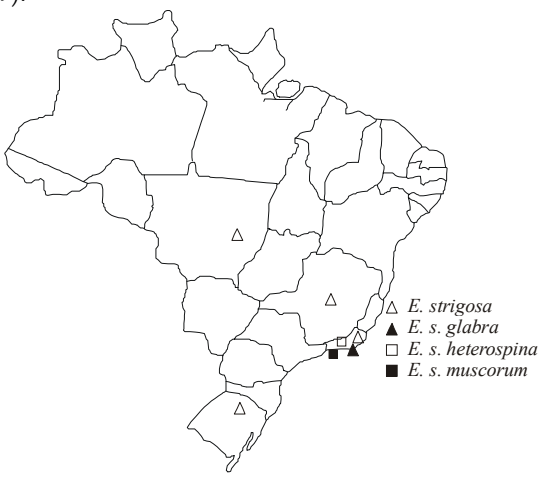

Figure 9. Geographic distribution of *Euglypha strigosa, E. strigosa glabra, E. strigosa heterospina* and *E. strigosa muscorum* in Brazilian inland waters

***Sphenoderia lenta* Schlumberger, 1845**

Pénard, 1890: 183-184, pl. X, figs. 25-29; Deflandre, 1953, fig. 94 f; Chardez, 1967, pl. VII, fig. 58; Ogden and Hedley, 1980: 200, pl. LXXXIX, figs. A-D; Ogden, 1984b: 254, figs. 50-54.

Comments: *S. lenta* has been found only in plankton samples from lakes of the Suia Missu river basin, state of Mato Grosso (Green, 1975) (Figure 8).

Family Trinematiidae Hoogenraad and Groot, 1940

***Corythion dubium* Taranek, 1881**

Pénard, 1890: 188, pl. XI, figs. 18-26; Rampi, 1947, fig. 2; Deflandre, 1953, fig. 94 l; Chardez, 1967, pl. VII, fig. 40; Laminger, 1973, fig. 8 z; Ogden and Hedley, 1980: 208, pl. XCIII, figs. A-D; Lüftenegger *et al*., 1988: 171, fig. 13.

Comments: The species has been registered only in the states of Rio de Janeiro, in moss and sphagnum samples (Wailes, 1913); Minas Gerais in sphagnum samples (Hoogenraad and Groot, 1951) and Paraná, in moss samples (Hoogenraad and Groot, 1951) (Figure 8).

***Trinema complanatum* Pénard, 1890**

Pénard, 1890: 187, pl. XI, figs. 1-4; Franken, 1933: 200, pl. VIII, fig. 8; Rampi, 1947, fig. 14; Chardez, 1967, pl. VII , fig. 34; 1972, pl. IV, fig. 92; Vucetich, 1973c: 329, pl. X, fig. 82; Decloitre, 1973: 17, fig. 13; 1981: 195-196, fig. 6; Lüftnegger *et al*., 1988: 180-181, figs. 21 and 26.2; Rhoden and Pitoni, 1999: 107, fig. 27.

Comments: Records of this species in Brazil come from the states of Rio de Janeiro, in moss and sphagnum samples (Wailes, 1913); Minas Gerais, in sphagnum samples (Hoogenraad and Groot, 1951); Paraná, in mosses samples (Hoogenraad and Groot, 1951); and Rio Grande do Sul, in sphagnum samples (Rhoden and Pitoni, 1999) (Figure 10).

***Trinema enchelys* (Ehrenberg, 1838)**

Pénard, 1890: 185-186, pl. X, figs. 51-60; Franken, 1933: 200, pl. VIII, fig. 3; Rampi, 1947, fig. 10; Deflandre, 1953, fig. 94 j-k; Stépanek, 1967, fig. 21; Chardez, 1967, pl. VII, fig. 30; Dioni, 1970: 227, pl. V, fig. 53; 1971, fig. 10; Vucetich, 1973c: 328-329, pl. X, fig. 81; Kudo, 1975: 454, fig. 209a; Lena and Zaidenwerg, 1975, pl. II, fig. 18; Ogden and Hedley, 1980: 204, pl. XCI, figs. A-D; Decloitre, 1981: 201, fig. 18; Hennuyi and Chardez, 1988: 185, fig. 10; Lüftenegger *et al*., 1988: 181-182, fig. 22; Lüftenegger and Foissner, 1991: 13-15, figs. 76-83; Vucetich and Lopretto, 1995, fig. 29; Hardoim, 1997: 280, fig. 200; Rhoden and Pitoni, 1999: 107-108, fig. 28.

Comments: Ehrenberg (1841) registered this species in Brazil, without any description of collection site. Other authors also found the species in different localities: in the states of São Paulo (Prowazek, 1910); Rio de Janeiro (Cunha, 1913, 1916); Bahia (Cunha, 1916); Minas Gerais (Hoogenraad and Groot, 1951; Landa and Mourgués-Schurter, 2000a; Dabés and Velho, 2001); Mato Grosso (Daday, 1905; Green, 1975; Hardoim and Heckman, 1996; Hardoim, 1997); Paraná (Hoogenraad and Groot, 1951); Rio Grande do Sul (Rhoden and Pitoni, 1999) (Figure 10).

***Trinema galeata* (Pénard, 1890)**

Pénard, 1890: 186, pl. X, figs. 61-66 (as *T. enchelys* var. *galeata*); Wailes, 1913: 208 (as *T. enchelys* var. *galeata*); Jung, 1942b: 325, fig. 70 (comb. nov.); Vucetich, 1980: 400, fig. 7; Decloitre, 1981: 204, fig. 23.

Comments: The species has been registered only by Wailes (1913) in moss and sphagnum samples, in the state of Rio de Janeiro (as *T. enchelys* var. *galeata*) (Figure 10).

***Trinema lineare* Pénard, 1890**

Pénard, 1890: 187-188, pl. XI, figs. 5-7; Franken, 1933: 200, pl. VIII, fig. 4; Rampi, 1947, fig. 5; Chardez, 1967, pl. VII, fig. 36; 1970: 1, fig. 1; 1972, pl. IV, fig. 90; Grospietsch, 1972: 22; Vucetich, 1973c: 329, pl. X, fig. 83; Hedley and Ogden, 1974: 191-192, pl. I-VII; Meisterfeld, 1979, pl. IV, figs. 21-22; Ogden and Hedley, 1980: 206, pl. XCII, figs. A-D; Decloitre, 1981: 207, fig. 27; Hennuyi and Chardez, 1988: 185, fig. 11; Lüftenegger *et al*., 1988: 183, figs. 23 and 26.9; Foissner, 1994, fig. 1 a; Vucetich and Lopretto, 1995, fig. 28; Torres and Schwarzbold, 2000: 141-142, fig. 2; Rhoden and Pitoni, 1999: 108, fig. 29.

Comments: Records of this species hail from the states of São Paulo, in plankton samples (Prowazek, 1910); Rio de Janeiro, in moss, sphagnum and plankton samples (Wailes, 1913; Cunha, 1916); Paraná, in moss and sphagnum samples (Hoogenraad and Groot, 1951); Rio Grande do Sul, in aquatic macrophytes and sphagnum samples (Torres, 1996; Rhoden and Pitoni, 1999; Torres and Schwarzbold, 2000); and Minas Gerais, in sphagnum and aquatic macrophyte samples (Hoogenraad and Groot, 1951; Dabés and Velho, 2001) (Figure 10).

Family Cyphoderiidae Saedeler, 1934

***Cyphoderia ampulla* (Ehrenberg, 1840)**

Wailes and Pénard, 1911, fig. 6; Wailes, 1912: 151; Deflandre, 1953, fig. 95 a-h; Chardez, 1967, pl. VI, fig. 40; Grospietsch, 1972: 23, fig. 12; Decloitre, 1973: 16, fig. 10; Godeanu, 1973, pl. I, fig. 1; Kudo, 1975: 454, fig. 208d; Lena and Zaidenwerg, 1975, pl.

I, fig. 15; Ogden and Hedley, 1980: 210, pl. XCIV, figs. A-D; Hardoim, 1997: 283, fig. 101; Rhoden and Pitoni, 1999: 108-109, fig. 30.

Comments: The species has been registered in plankton samples in the states of Rio de Janeiro (Cunha, 1913, 1916), Minas Gerais (Rolla *et al*., 1990; Landa and Ferreira, 1995; Bonecker *et al*., 1996; Landa, 1997; Dabés, 1999; Landa and Mourgués-Schurter, 2000a and b), and São Paulo (Rolla *et al*., 1990); in aquatic macrophytes samples in Mato Grosso (Hardoim, 1997); in sphagnum samples in Rio Grande do Sul (Rhoden and Pitoni, 1999); and in sewage water samples, in Mato Grosso (Hardoim and Heckman, 1996) (Figure 8).

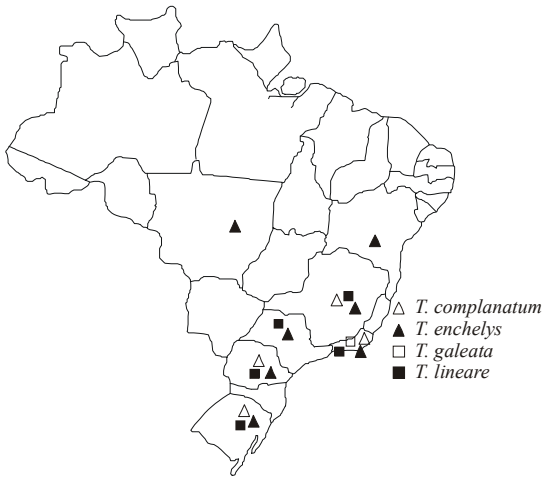

Figure 10. Geographic distribution of *Trinema complanatum, T. enchelys, T. galeata* and *T. lineare* in Brazilian inland waters

Discussion

Since the families Arcellidae, Difflugiidae and Centropyxidae are the most frequent species, they have high species richness in samples from plankton, sediment and aquatic macrophytes associated fauna (Lansac-Tôha *et al.*, 2000a, 2001; Velho *et al.,* 2000, 2001). On the other hand, the families analyzed are, in general, very frequent and present greater richness in samples from moss and sphagnum. Thus, the scanty studies on testate amoebae in particular types of Brazilian habitats (Wailes, 1913; Hoogenraad and Groot, 1951; Rhoden e Pitoni, 1999) may probably be explained by the restricted distribution and the low occurrence of these families of testate amoebae in Brazil.

Jung (1942a) described new genera, such as *Apoderia*, *Deflandria* and *Argynnia*, originally allocated to *Nebela*. However, the majority of testate amoebae specialists do not take such modifications into account. According to Vucetich (1978), this may be due to the fact that the new genera proposed by Jung (1942a) are based on fragile morphologic characteristics which do not satisfactorily distinguish them from those of *Nebela* s.str.

Neverthless, some *Nebela* species were excluded from this genus and included by Loeblich and Tappan (1961) in the genus *Certesella*. These author favor this interpretation because of a pair of symmetric openings in the test and a group of denticules on the internal part of the test. According to Vucetich (1978), these typical morphological characteristics are strong enough to separate the integrated groups of *C. martiali, C. certesi, C. australis* and *C. murrayi* from the other species included in the genus *Nebela.*

Acknowledgements

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References

BARBOSA, C.F. Foraminifera e Arcellacea ("thecamoebia") recentes do estuário de Guaratuba, Paraná, Brasil. *An. Acad. Bras. Cienc.*, Rio de Janeiro, v.67, no.4, p.465-492, 1995.

BOBROV, A. A. *et al*. Taxonomic and ecological implications of shell morphology of Three Testaceas (Protozoa: Rhizopoda) in Russia and Canada. *Arch. Protistenkd.*, Jena, v. 145, p.119-126, 1995.

BOLTOVSKOY, E; LENA, H. Tecamebas de Isla de Los States (Argentina). *Rev. Esp. Micropaleontol*., Madrid, v.3, no.2. p.129-140, 1971b.

BONECKER, C.C. *et al*. Zooplankton composition under the influence of liquid wastes from a pulp mill in Middle Doce River (Belo Oriente/MG – Brazil). *Arq. Biol. Tecnol*., Curitiba, v.39, no.4, p.893-901, 1996.

CHARDEZ, D. Sur les Thécamoebiens des sols forestiers du Sart-Tilman (Liège). *Bull. Inst. Agron. Stat. Rech. Gembloux*, Gembloux, v.30, no.3/4. p.263-272, 1962.

CHARDEZ, D. *Histoire naturelle des protozoaires thécamoebiens*. Bruxelles: Les Naturalistes Belges, 1967.

CHARDEZ, D. Études statistiques sur l'écologie et la morphologie des thecamoebiens (Protozoa, Rhizopoda Testacea). *Hydrobiologia*, The Hague, v.32, p.271-287, 1968.

CHARDEZ, D. Le genre *Phryganella* Pénard (Protozoa, Rhizopoda Testacea). *Bull. Rech. Agron. Gembloux*, Gembloux, v.4, no.3-4, p.315-322, 1969.

CHARDEZ, D. Sur *Trinema lineare* Pénard 1890 (Protozoa, Rhizopoda Testacea). *Rev. Verv. Hist. Nat.*, v. 27, p.1-3, 1970.

CHARDEZ, D. Thécamoebiens terricoles. *Rev. Verv. Hist. Nat.*, v.29, p.1-20, 1972.

CHARDEZ, D. Thecamoebiens (Rhizopoda, Testacea) des millieux aniso-oligohydriques mousses et lichens. *Acta Protozool*., v.29, no.2, p. 147-152, 1990.

CLOSS, D.; MEDEIROS, U.M.F. New observations on the ecological subdivision of the Patos Lagoon in Southern Brazil. *Bol. Inst. Cienc. Nat*., Porto Alegre, v.24, p.1-35, 1965.

CLOSS, D.; MEDEIROS, U.M.F. Thecamoebina and Foraminefera from the Mirim Lagoon, Southern Brazil. *Iheringia,* ser. zool., Porto Alegre, v.35, p.75-88, 1967.

CUNHA, A.M. Contribuição para o conhecimento da fauna de protozoários do Brasil. *Mem. Inst. Oswaldo Cruz*, Rio de Janeiro, v.5, p.101-122, 1913.

CUNHA, A.M. Contribuição para o conhecimento da fauna de protozoários do Brasil. *Mem. Inst. Oswaldo Cruz*, Rio de Janeiro, v.8, p.66-73, 1916.

DABÉS, M.B.G.S. Composição e descrição do zooplâncton de 5 (cinco) lagoas marginais do rio São Francisco, Pirapora, Três Marias, Minas Gerais - Brasil. *Rev. Brasil. Biol*., Rio de Janeiro, v.55, no.4, p. 831-845, 1995.

DABÉS, M.B.G.S. Microfauna aquática no rio Peruaçu, na gruta do Jamelão, A.P.A. Cavernas do Peruaçu, Minas Gerais. *Informativo SBE* (Sociedade Brasileira de Espeleologia), v.77, p.6-7, 1999.

DABÉS, M.B.G.S.; VELHO, L.F.M. Testate amoebae (Protozoa, Rhizopoda) associated to littoral aquatic macrophytes in a marginal lake of the São Francisco River, MG, Brazil. *Acta Scientiarum,*Maringá, v.23, no. 2, p.299-304, 2001.

DADAY, E. Untersuchungen über die Süsswasser Mikrofauna Paraguaya. *Zoologica*, Stuttgart, v.18, no.44, p. 1-342, 1905.

DECLOITRE, L. Le genre *Euglypha* Dujardin. *Arch. Protistenkd*., Jena, v.106, p.51-100, 1962.

DECLOITRE, L. Thecamoebiens des Iles Galapagos. *Cienc. Nat.*, Quito, v.14, no.1, p.11-19, 1973.

DECLOITRE, L. Le genre *Trinema* Dujardin, 1841. Révision à jour au 31. XII. 1979. *Arch. Protistenkd.*, Jena, v.124, p.193-218, 1981.

DEFLANDRE, G. Notes sur quelques rhizopodes et héliozoaires du Venezuela. *Bull. Soc. Zool. France*, Paris, v.51, p.515-530, 1926.

DEFLANDRE, G. Etude monographique du genre *Nebela*. *Ann. Protistol.*, v.5, p.201-286, 1936.

DEFLANDRE, G. Thécamoebiens. In: GRASSÉ, P.P. (Ed.). *Traité de Zoologie*. Paris: Masson Edit., 1953. p. 97-149.

DIONI, W. Taxocenos de tecamebianos en cuencas isleñas del Parana medio. I. Los tecamebianos de la vegetacion flotante en el madrejon Don Felipe. *Acta Zool. Lilloana*, Buenos Aires, v.27, p.200-239, 1970.

DIONI, W. Clave de generos y lista de tecamebianos registrados en el madrejón Don Felipe. *Asoc. Cien. Nat. Lit*., Santo Tomé,v.2, p.19-26, 1971.

EHRENBERG, C.G. Verbreitung und Einfluss des mikroskopischen Lebens in Süd-und Nord Amerika. *Abh. K. Akad. Wiss. Berlin*, Berlin, p.291-446, 1841.

FOISSNER, W. Wiebaut man billig ein haus? *Mikorkosmos*, v. no. 1, p. 41-44, 1994.

FRANKEN, W. Die beschalten Wurzelfüßler (Rhizopoda Testacea) der Kipshagener Teiche. *Ber. Natwiss. Ver. Bielef. Umgeg.,* Bielefeld, v.6, p.189-226, 1933.

GAUTHIER-LIÈVRE, L. Les genres *Nebela, Paraquadrula* et *Pseudonebela* (Rhizopodes testacés) en Afrique. *Bull. Soc. Hist. Nat. Afr. Nord.*, Nigers, v.44, no.7-8, p.324-366, 1953.

GODEANU, S.G. Testaceele tinovului lăptici. *St. Cerc. Biol*., ser. zool., Bucarest, v.22, no.5, p.399-411, 1970.

GODEANU, S. G. Studiul comparativ al asociatillor de testaceedin mlastinile de la Harman si Poiana Tapului. *St. Cerc. Biol.*, ser. zool., Bucarest, v.25, no.1, p.3-8, 1973.

GOLEMANSKY, V.G.; TODOROV, M.T. First report of the interstidial testate amoebae (Protozoa: Testacea) in the marine supralittoral of the Livingston Island (the Antarctic). *Bulgarian Antarctic Research Life Sciences,* Sofia, v. 2, p. 43-47, 1999.

GREEN, J. Freshwater ecology in the Mato Grosso, Central Brazil. IV. Associations of Testate Rhizopoda. *J. Nat. Hist.,* London, v.9, p.545-560, 1975.

GROSPIETSCH, T. Die testaceen Rhizopoden der Hochmoore und ihre Bedeutung für die Moorforschung.. *Gew. Abw.*, v.6, p.5-19, 1954.

GROSPIETSCH, T. Beiträge zur Rhizopodenfauna Deutschlands. I. Die The Kaniöben der Rhön. *Hydrobiologia,* The Hague, v.10, p.305-322, 1958.

GROSPIETSCH, T. Die Gattungen *Cryptodifflugia* und *Difflugiela* (Rhizopoda Testacea). *Zool. Anz.*, v.172, no.4, p. 243-257, 1964.

GROSPIETSCH, T. Monographische Studie der Gattung *Hyalosphenia* Stein (Rhizopoda, Testacea). *Hydrobiologia*, The Hague, v.26, no.1-2, p.211-241, 1965.

GROSPIETSCH, T. Die Rhizopodenanalyse der Moore und Ihre Anwendungsmöglichkeit. In: TÜXEN, R. (Ed.). *Pflanzensoziologie und Palynologie.* Verlag: Dr. W. Junk, 1967. p. 181-192 (Bericht über das Internationale Symposium in Stolzenau/ Weser, 1962).

GROSPIETSCH, T. Rhizopoda Beitrag zur ökologia der Testaceen Rhizopoden von Marion Island. In: ZINDEREN BAKKER, E.M. *et al*. (Ed.), *Marian and Price Edward Islands: Zoologie.* Cape Town: A.A. Balkema, 1971. p.411-424.

GROSPIETSCH, T. Protozoa. Testacea und Heliozoa. In: BICK, H. *et al.* (Ed). *Das Zooplankton der Binnengewasser*. Stuttgart: E. Schweizerbart'sche Verlagsbuchhandlung, 1972. p. 1-30. (Die Binnengewasser, v. 26).

HARDOIM, E.L. *Taxonomia e ecologia de Testacea (Protista, Rhizopoda) do Pantanal do Poconé – rio Bento Gomes e vazante Birici, Mato Grosso, Brasil.* 1997. Tese (Doutorado) – Universidade Federal de São Carlos, São Carlos, 1997.

HARDOIM, E.L.; HECKMAN, C.W. The seasonal succession of biotic communities in Wetlands of the

tropical wet and dry climatic zone: IV. Free living Sarcodines and Ciliates of the Pantanal of Mato Grosso, Brasil. *Int. Revue ges. Hydrobiol.,* Berlin, v.81, no.3, p.367-384, 1996.

HEAL, O.W. The Distribution of testate amoebae (Rhizopoda: Testacea) in some Fens and bogs in Northern England. *J. Linn. Soc. Zool.*, New York, v.44, p.369-382, 1961.

HEDLEY, R.H.; OGDEN, C.G. Observations on *Trinema lineare* Pénard (Testacea: Protozoa). *Bull. Br. Mus. Nat. Hist.*, ser. zool., London, v.26, no.3, p.187-204, 1974.

HEDLEY, R. H. *et al*. Observation on clonal cultures of *Euglypha acantophora* and *Euglypha strigosa* (Testacea: Protozoa). *Bull. Br. Mus. Nat. Hist.*, ser. zool., London, v.27, p.103-115, 1974.

HENNUYI, B.; CHARDEZ, D. Description de 12 thecamoebiens dún compost de L'Ile Maurice. *Mauritius Inst. Bull.*, Port Louis, v.10, no.2, p.182-187, 1988.

HOOGENRAAD, H.R.; GROOT, A.A. Biometrische Untersuchungen an Süsswasserrhizopoden (Rhizopoden und Heliozoen aus dem Süsswasser der Niederlande VI). *Arch. Hydrobiol*., Stuttgart, v.31, p.101-132, 1937.

HOOGENRAAD, H. R.; GROOT, A. A. Thekamoebe Moosrhizopoden aus Südamerika. *Arch. Hydrobiol.*, Stuttgart, v.45, p.346-366, 1948.

HOOGENRAAD, H. R.; GROOT, A. A. Thecamoebans Moss-Rhizopods from New Zeland. *Hydrobiologia*, The Hague, v.1, p.28-43, 1951.

HOOGENRAAD, H.R.; GROOT, A.A. Die geographische Verbreitung der Süsswasser-Rhizopoden. *Hydrobiol. Bull.*, Nieuwersluis, v.13, no.2/3, p.152-171, 1979.

KUDO, R.R. Ordem 4. Testacida Schultze. In: *Protozoologia*. México: Compañia Editorial Continental S.A., 1975, p. 439-453.

JUNG, W. Illustrierte Thekamöben-Bestimmungstabellen. I. Die Systematik der Nebelinen. *Arch. Protistenkd*.,Jena, v. 95, p.357-390, 1942a.

JUNG, W. Südchilenische Thekamöben. *Arch. Protistenkd.*, Jena, v.95, p.253-256, 1942b.

LAMINGER, V.H. Die Testaceenfauna (Protozoa, Rhizopoda) in der Umgebung von Obertauern (Salzburg). *Arch. Protistenkd.*, Jena, v.115, p.253-270, 1973.

LANDA, G.G. Contribuição ao estudo da comunidade zooplanctônica em uma área sob influência de mineração na bacia do rio Jequitinhonha-MG. *Bios*, Belo Horizonte, v.5, no.5, p. 69-80, 1997.

LANDA, G.G.; FERREIRA, H.L.M. Composição quali-quantitativa do potamozooplâncton da sub-bacia do rio Araçuaí - MG. *Bios,* Belo Horizonte, v.2, no.3, p.15-26, 1995.

LANDA, G.G.; MOURGUÉS-SCHURTER, L.R. Composição e abundância do zooplâncton em um sistema artificial raso (Represa Pomar) no Campus da Universidade Federal de Lavras-Minas Gerais, *Bios*, Belo Horizonte, v.7, no.7, p. 21-31, 1999.

LANDA, G.G.; MOURGUÉS-SCHURTER, L.R. Composição e abundância do zooplâncton de duas represas do campus da Universidade Federal de Lavras-MG. *Acta Limnologica Brasiliensia,* Botucatu, v. 12, no. 2, p.29-43, 2000a.

LANDA, G. G.; MOURGUÉS-SCHURTER, L. R. Caracterização da comunidade zooplanctônica de um sistema artificial (represa zootecnia), no campus da Universidade Federal de Lavras-MG. *Acta Limnologica Brasiliensia,* v.12, no. 2, p.63-68, 2000b.

LANSAC-TÔHA, F.A. *et al*. Composição, distribuição e abundância da comunidade zooplanctônica. In VAZZOLER, A.E.A.M. *et al*. (Ed.). *A planície de inundação do alto rio Paraná*: aspectos físicos, químicos, biológicos e socioeconômicos. Maringá: Editora da Universidade Estadual de Maringá, 1997, cap. II.2., p. 117-155.

LANSAC-TÔHA, F.A. *et al*. Estrutura da comunidade zooplanctônica antes e após a formação do reservatório de Corumbá – GO. In: HENRY, R. (Ed.), *Ecologia de reservatórios*: e*strutura, função e aspectos sociais.* Botucatu: Universidade Estadual Paulista, 1999, cap. 12, p. 347-374.

LANSAC-TÔHA, F.A. *et al*. On the occurrence of testate amoebae (Protozoa, Rhizopoda) in Brazilian inland waters. I. Family Arcellidae. *Acta Scientiarum*, Maringá, v.22, no.2, p. 355-363, 2000a.

LANSAC-TÔHA, F.A. *et al*. Horizontal distribution patterns of testate amoebae (Protozoa, Rhizopoda) in plankton samples of Corumbá Reservoir area, state of Goiás, Brazil. *Acta Scientiarum*, v.22, no.2, p. 347-353, 2000b.

LANSAC-TÔHA, F.A. *et al*. On the occurrence of testate amoebae (Protozoa, Rhizopoda) in Brazilian inland waters. III. Family Difflugiidae: genus *Difflugia*. *Acta Scientiarum*, Maringá, v. 23, no. 2, p.305-321, 2001.

LEIDY, J. Freshwater Rhizopods of North America. *U. S. Geol. Surv. Terr.*, Washington, v.12, p.1-324, 1879.

LENA, H.; ZAIDENWERG, S.J. Tecamebas del delta del Paraná (Argentina). *Rev. Esp. Micropaleont*., Madrid, v.7, no.3, p.519-537, 1975.

LOEBLICH, A. R.; TAPPAN, H. Remarks on the Systematics of the Sarcodina (Protozoa), renamed homonyms and new and validated ggenera. *Proc. Biol. Soc. Washington*, Washington, v.74, p.213-234, 1961.

LÜFTNEGGER, G. *et al*. Morphologic and biometric characterization of twenty-four Soil testate amoebae (Protozoa, Rhizopoda). *Arch. Protistenkd,* Jena, v.136, p.153-189, 1988.

LÜFTENEGGER, G.; FOISSNER, W. Morphology and biometry of twelve soil testate amoebae (Protozoa, Rhizopoda) from Australia, Africa and Austria. *Bull. Br. Mus. Nat. Hist.*, ser. zool., London, v.57, no.1, p.1-16, 1991.

MEDIOLI, F. S.; SCOTT, D. B. Holocene Arcellacea (Thecamoebians) from Eastern Canada. *Cushman Found. Foram. Res. Spec. Publ.*, Washington, v.21, p.1-63, 1983.

MEDIOLI, F. S.; SCOTT, D. B. Designation of types for One Genus and Nine Species of Arcellaceans (Thecamoebians), with additional original reference

material for four other species. *J. Foram. Res.*, Cambridge, v.15, no.1, p.24-37, 1985.

MEISTERFELD, R. Zur Systematik der Testaceen (Rhizopoda, Testacea) in *Sphagnum.* Eine REM-Untersuchung. *Arch. Protistenkd.*, Jena, v.121, p.246-269, 1979.

OGDEN, C. G. Notes on testate amoebae (Protozoa: Rhizopoda) from Lake Vlasina, Yugoslavia. *Bull. Br. Mus. Nat. Hist.* ser. zool., London, v.47, no.5, p.241-263, 1984a.

OGDEN, C. G. Shell Structure of some Testate Amoebae from Britain (Protozoa: Rhizopoda). *J. Nat. Hist.*, London, v.18, p. 341-361, 1984b.

OGDEN, C. G.; HEDLEY, R. H. *An atlas of freshwater testate amoebae*. Oxford: University Press, 1980.

OLIVEIRA, D. *Análise ambiental dos canais da bacia hidrográfica do rio Itanhaém – SP, Brasil, com base em tecamebas e foraminíferos.* 1999 Dissertação (Mestrado) - Universidade Estadual Paulista, Rio Claro, 1999.

OPRAVILOVÁ, V. Some information on testate amoebae from Spitzbergen. *Fauna Norv.*, ser. A, Oslo, v.10, p. 33-37, 1989.

OYE, P. VAN. On the thecamoeban fauna of New Zealand with description of four new species and biogeographical discussion. *Hydrobiologia*, The Hague, v.8, p.16-37, 1956.

PÉNARD, E. Études sur les Rhizopodes d'eau douce. *Mém. Soc. Phys. Hist. Nat. Genéve*, Genéve, v.31, p.1-230, 1890.

PÉNARD, E. *Faune rhizopodique du bassin du Léman.* Genéve: Kundlg, 1902.

PÉNARD, E. Notices sur les Rhizopodes du Spitzberg. *Arch. Protistenkd*., Jena, v.2, p.238-282, 1903.

PÉNARD, E. Rhizopodes nouveaux. *Rev. Suisse Zool.*, Genéve, v.18, p. 929-940, 1910.

PÉNARD, E. Rhizopodes d'eau douce. *British Antact. Exped,* Cambridge, v.1*,* Part VI, p.203-257, 1911.

PINTO, C. Protozoários observados no Brasil. *Mem. Inst. Oswaldo Cruz*, Rio de Janeiro, v.18, p. 211-302, 1925.

PLAYFAIR, G. Rhizopods of Sydney and Lismore. *Proc. Linn. Soc. N. S. Wales,* Sydney, v.28, p.633-675, 1917.

PROWAZEK, S. von. Contribuição para o conhecimento da fauna de protozoários do Brasil. *Mem. Inst. Oswaldo Cruz*, Rio de Janeiro, v.2, no.2, p.149-158, 1910.

RAMPI, L. Fauna di Romagna (Collez. Zaugheri). Rizopodi Testacei-I[a] Contribuzione. *Atti. Soc. Ital. Sci. Nat.*, Milan, v.86, p. 71-77, 1947.

RHODEN, R.; PITONI, V.L.L. Amebas testaceas (Protista, Sarcomastigophora, Rhizopoda) em *Sphagnum recurvo* P. Beauev e *Sphagnum perichartiale* Hampe (turfeira), no Município de São Francisco de Paula, Rio Grande do Sul, Brasil. *Biociências*, Poerto Alegre, v.7, no.1, p.91-120, 1999.

ROLLA, M.E. *et al*. Aspectos limnológicos do reservatório de Volta Grande, Minas Gerais / São Paulo. *Acta Limnol. Brasil*., São Paulo, v.3, p.219-244, 1990.

ROLLA, M.E. *et al*. Inventário limnológico do rio Grande na área de influência da futura usina hidrelétrica (UHE) de Igarapava. *Acta Limnol. Brasil*., São paulo, v.4, p.139-162, 1992.

SCHÖNBORN, W. Bodenbewohnende Testaceen aus Deutschland. I. Untersuchungen im Naturschutzgebiet Serrahn (Mecklenburg). *Limnologica*, Berlin, v.2, no.1, p.105-122, 1964.

SCHÖNBORN, W. Studien über die Gattung *Difflugiella* Cash (Rhizopoda, Testacea). *Limnologica*, Berlin, v.3, no.3, p.315-328, 1965.

SCHÖNBORN, W. Untersuchungen über die Testaceen Schwedisch-Lapplands ein Beitrag zur Systematik und Ökologie der beschalten Rhizopoden. *Limnologica*, Berlin, v.4, no.3, p.517-559, 1966.

SCOTT, D. B.; MEDIOLI, F. S. Agglutinated rhizopods in Lake Erie: Modern Distribution and Stratigraphic Implications. *J. Paleontol.*, Lawrence, v.57, no.4, p. 809-820, 1983.

STEPÁNEK, M. Testacea des benthos der Talsperre Vranov am Thayafluss. *Hydrobiologia*, The Hague, v.29, p.1-66, 1967.

THOMAZ, R. Le genre *Plagiopyxis* Pénard. *Hydrobiologia*, The Hague, v.10, p.198-214, 1958.

TODOROV, M. Observation on the soil and moss testate amoebae (Protozoa: Rhizopoda) from Pirin Mountain (Bulgaria). *Acta Zool. Bulg.*, v.50, no.2/3, p.19-29, 1998.

TORRES, V.S. *Amebas testáceas (Protista, Rhizopoda) associadas à rizosfera de Eichhornia crassipes (Martius) Solomons na represa Lomba do Sabão, Porto Alegre, RS.* 1996. Dissertação (Mestrado) - Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, 1996.

TORRES, V. S. Amebas testáceas ocorrentes na região de Porto Alegre, Rio Grande do Sul. II. Novos registros para a região. *Rev. Bras. Zool.*, Curitiba, v.15, no.2, p.545-552, 1998.

TORRES, V.S.; SCHWARZBOLD, A. Amebas testáceas ocorrentes na região de Porto Alegre, RS; III. Novos registros de Testaceafilosea (Protoctista: Rhizopoda). *Comm. Mus. Cienc. Tecnol. PUCRS*, ser. zool., Porto Alegre, v.13, no.2, p.139-146, 2000.

VELHO, L. F. M. *et al*. On the occurrence of testate amoebae (Protozoa, Rhizopoda) in Brazilian inland waters. II. Families Centropyxidae, Trigonopyxidae and Plagiopyxidae. *Acta Scientiarum*, Maringá, v.22, no.2, p.365-374, 2000.

VELHO, L. F. M. *et al*. On the occurrence of testate amoebae (Protozoa, Rhizopoda) in Brazilian Inland Waters. IV. Families Difflugiidae (genera *Cucurbitella, Lagenodifflugia, Pentagonia*, *Pontigulasia, Protocucurbitella, Suiadifflugia*) and Lesquereusiidae (genera *Lesquerensia, Quadrulella, Netzelia*). *Acta Scientiarum*, Maringá, v.23, no. 2 p.323-332, 2001.

VUCETICH, M. C. Tres nuevas tecamebas muscicolas para la Argentina. *Neotropica*, La Plata, v.18, no.57, p.126-128, 1972.

VUCETICH, M. C. Tecamebas muscicolas de la selva marginal de Punta Lara (Provincia de Buenos Aires, Argentina). *Physis*, Buenos Aires, sec. B, v.32, no.84, p. 61-66, 1973a.

VUCETICH, M. C. Tecamebianos de los lagos General Vintter y Puelo (Chubut, Argentina). *Neotropica*, La Plata, v.19, no.58, p. 1-10, 1973b.

VUCETICH, M. C. Estudio de tecamebianos argentinos, en especial los del dominio pampasico. *Rev. Mus.La Plata*, ser. zool., La Plata, v.11, no.108, p.287-332, 1973c.

VUCETICH, M. C. Tecamebianos de turberas de Tierra del Fuego. *Neotropica,* La Plata, v.20, no.61, p.27-35, 1974.

VUCETICH, M. C. Tecamebianos muscicolas y esfagnicolas de Islas Malvinas (Argentina). *Neotropica*, La Plata, v.21, no.4, p.11-16, 1975.

VUCETICH, M. C. Comentarios sobre el genero *Certesella* Loeblich & Tappan, 1961 y estudio de la estereo ultraestructura tecal de tres especies austroamericanas (Rhizopoda Testaceolobosa). *Obra del Centenario del Museo* de la Plata, ser. zool., La Plata, v.6, p.305-313, 1978.

VUCETICH, M. C. Tecamebianos de las Cumbres Calchaquies, Tucuman, Argentina (Rhizopoda Testacea). *Limnobios*, La Plata, v.1, no.10, p. 397-402, 1980.

VUCETICH, M. C.; LOPRETTO, E. C. Rhizopoda (Testaceos). In: LOPRETTO, E. C.; TELL, G. (Ed.). *Ecossistemas de águas continentales:* metodologia para su estudio. La Plata: Ediciones Sur, t.2, 1995. p. 541-555.

WAILES, G.H. Freshwater Rhizopoda and Heliozoa from the states of New York, New Jersey and Georgia, USA, with Supplemental Note on Seychelles Species.*J. Linn. Soc. Zool.*, New York, v.32, p.121-161, 1912.

WAILES, G.H. Freshwater Rhizopoda from North and South America. *J. Linn. Soc. Zool*., New York, v.32, p.201-218, 1913.

WAILES, G. H.; PÉNARD, E. Clare Island Survey: Part 65. Rhizopoda. *Proc. Roy. Irish. Acad.*, Dublin, v.31, p.1-64 and plates, 1911.

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