

Nomenclatural and taxonomic notes on desmids from Brazil. V.

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Some desmid names proposed by Förster (1969) and Thomasson (1971) from material collected in Brazil are invalid as their descriptions were based on more than one locality and types have not designated to date. Here we propose the validation and nomenclatural updates of taxa belonging to the genera *Staurastrum*, *Stauroidesmus* and *Xanthidium*.

Staurastrum boergesenii* var. *scottii Kurt Förster ex G.J.P.Ramos & C.W.N.Moura, *var. nov.*

Description: Semicells 6–7 radiate, with 6–7 bifurcated warts at the apices. Processes tipped with 2–3 long spines. One central pyrenoid per semicell. Cell wall colourless, coarsely porous. Cells 38–41 µm long (without processes), 54–70 µm long (with processes), 28–30 µm wide (without processes), 91–125 µm long (with processes), 20–21 µm isthmus wide, 37–44 µm processes long.

Holotype: Förster (1969: pl. 48: fig. 3; ICN Art. 40.5, Turland & al. 2018). Reproduced here as Fig. 1.

Type locality: Tapajós River, near Santarém Municipality, Pará State, Brazil.

Note: This taxon was first recognised by Scott & al. (1965: 50, pl. 17: fig. 223) as “*Staurastrum boergesenii* var. *depauperatum* Grönblad forma” based on a sample collected in Igarapé-Açu (as “Igarapé-Assu”), Pará State, Brazil. Förster (1969: 78, pl. 48: fig. 3) proposed this morphotype as a new variety, “*Staurastrum boergesenii* var. *scottii*”. However, this designation is invalid as it was not based on an “entire gathering” (ICN Art. 40.2, Turland & al. 2018) and a type was not designated from the two locations specified: “Hab. 5: Tapajós River in front of Santarém, between Coroa de Areia and Ponta Caieiras. Plankton from a depth of 2 m in mid-stream (February 22, 1941) (a few specimens observed)” and “Hab. 14: Tapajós River, in front of the Bay of Mapiri, near Santarém. Plankton from the open water, pH = 6.4–6.65 (November 24, 1940) (specimens more frequent)”.

Staurastrum flagriforme Kurt Förster ex G.J.P.Ramos & C.W.N.Moura, *sp. nov.*

Description: Semicells trapeziform, elongate in front view; processes long, parallel, toothed, slightly bent, with 3 spines at their ends; basal part slightly inflated with a crown of granules near isthmus, sinus open; cell triangular in apical view, margins slightly convex, tiny paired-spines towards apex; cell wall colourless; one pyrenoid per semicell. Cells 48–53 µm long (without processes), 24–28 µm wide (without processes), 114–127 µm long (with processes), 13.5–15 µm basal wide, 10–12 µm isthmus wide, 43–65 µm processes long.

Holotype: Förster (1969: pl. 40, fig. 14; ICN Art. 40.5, Turland & al. 2018). Reproduced here as Fig. 2.

Type locality: Tapajós River in front of the Bay of Mapiri near Santarém, Pará State, Brazil.

Note: Förster (1969: 82, pl. 40: fig. 14) introduced the designation “*Staurastrum flagriforme*”, but it is invalid as was not based on “entire gathering” (ICN Art. 40.2, Turland & al. 2018) and a type was not designated from the four planktonic samples collected in the Tapajós river, on four different dates: “Hab. 1 (November 18, 1940)”, “Hab. 12 (November 24, 1940)”, “Hab. 13 (November 28, 1940)”, “Hab. 14 (December 14, 1940)”.

Staurastrum johnsonii* var. *amazonense Kurt Förster ex G.J.P.Ramos & C.W.N.Moura, *var. nov.*

Description: Semicells broadly triangular in front view, processes slightly diverging with 3 ending spines, margins serrate, inflated; cell triangular in apical view, with spines arranged in 5–7 paired series, basal part roundly triangular. Cells 43–45 μm long (without processes), 68–82 μm long (with processes), 84–93 μm wide (with processes), 12 μm basal wide, 8 μm isthmus wide, 30–40 μm processes long.

Holotype: Förster (1969: pl. 40: fig. 8; ICN Art. 40.5, Turland & al. 2018). Reproduced here as Fig. 3.

Type locality: Tapajós River in front of the Bay of Mapiri near Santarém, Pará State, Brazil.

Note: “*Staurastrum johnsonii* var. *amazonense*” is an invalid name as in the protologue of the variety, a type was not designated from the two gatherings described: “Hab. 14 - Tapajós River in front of the Bay of Mapiri near Santarém (December 12, 1940)” and “Hab. 16 - Amazonas, in front of the city of Santarém (December 6, 1940)”

Staurastrum octodontum* var. *longibrachiatum Thomasson ex G.J.P.Ramos & C.W.N.Moura, *var. nov.*

Diagnosis: Differing from the nominate variety in having longer and more slender processes. Cells 11.2–13.5 μm long (without processes), 94.5–104.5 μm long (with processes), 73–85 μm wide (with processes).

Holotype: Thomasson (1971: pl. III: fig. 13; ICN Art. 40.5, Turland & al. 2018). Reproduced here as Fig. 4.

Type locality: Lago Rio Preto da Eva, “a lateral lake with black humic water located downstream from the mouth of the Rio Negro”, Manaus region, Amazonas State, Brazil.

Notes: Thomasson (1971: 47, pl. III: fig. 13; pl. VI: fig. 11) originally proposed this name based upon material from two locations: Lago Jurucui and Lago Rio Preto da Eva in the states of Pará and Amazonas, respectively, and a type was not designated. Such long-processed *Staurastrum* seem to be more frequent in tropical regions than in temperate and subtropical regions, and are commonly found in the Amazon region. This variety is quite like *Staurastrum octodontum* var. *tetodontum* A.M.Scott & Grönblad, which differs by having cells shorter (ca. with 10 μm long without processes, 36 μm long with processes, 37 μm wide with processes, 4.5 μm isthmus), and four spines at their ends.

Stauroidesmus megacanthus* var. *amazonensis G.J.P.Ramos & C.W.N.Moura, *var. nov.*

Diagnosis: Differing from the nominate variety by having subrhomboid semicells with long-divergent spines. Cells 42–52 μm long (without spines), 50–62 μm long (with processes), 37–49 μm wide (without spines), 77–102 μm wide (with spines), 10–13 μm isthmus, 24–33 μm spines long.

Holotype: Förster (1969: pl. 30: fig. 6, as “*Stauroidesmus dejectus* var. *borealis* f. *amazonensis*”; ICN Art. 40.5, Turland & al. 2018). Reproduced here as Fig. 5.

Type locality: Igarapé Mapiri, near Santarém Municipality, Pará State, Brazil.

Notes: “*Stauroidesmus dejectus* var. *borealis* f. *amazonensis*” was introduced by Förster (1969: 68, pl. 30: figs 6, 7) but is an invalid designation as it was based on two localities from the Amazon (Igarapé Mapiri and Lago Grande Curuay, Pará State, Brazil), and a type was not designated (ICN Art. 40.2, Turland & al. 2018). Analysing the main morphological features of this taxon, we noted that it is different from *Stauroidesmus dejectus* (Brébisson) Teiling, which having bowl-shaped semicells with elongate isthmus and short spines. Thus, we consider it more appropriate to propose it as new variety of *S. megacanthus*, being it an intermediate morphotype between the nominate variety and the var. *scoticus* (West & G.S. West) S.Lillieroth.

Xanthidium canadense* var. *magnum Kurt Förster ex G.J.P.Ramos & C.W.N.Moura, *var. nov.*



Diagnosis: Differing from the nominate variety in having larger cells, numerous and scattered pyrenoids in each of the 4 chromatophore lobes, wide-open sinus, convex margins, and straight apices. Cells 76–81 μm long (without spines), 115–124 μm long (with spines), 68–77 μm wide (without spines), 109–126 μm wide (with spines), 109–126 μm crass, 33–34 μm isthmus wide, 23–30 μm spines long.

Holotype: Förster (1969: pl. 22, fig. 1; ICN Art. 40.5, Turland & al. 2018). Reproduced here as Fig. 6.

Type locality: Lago Grande do Curuai, Pará State, Brazil

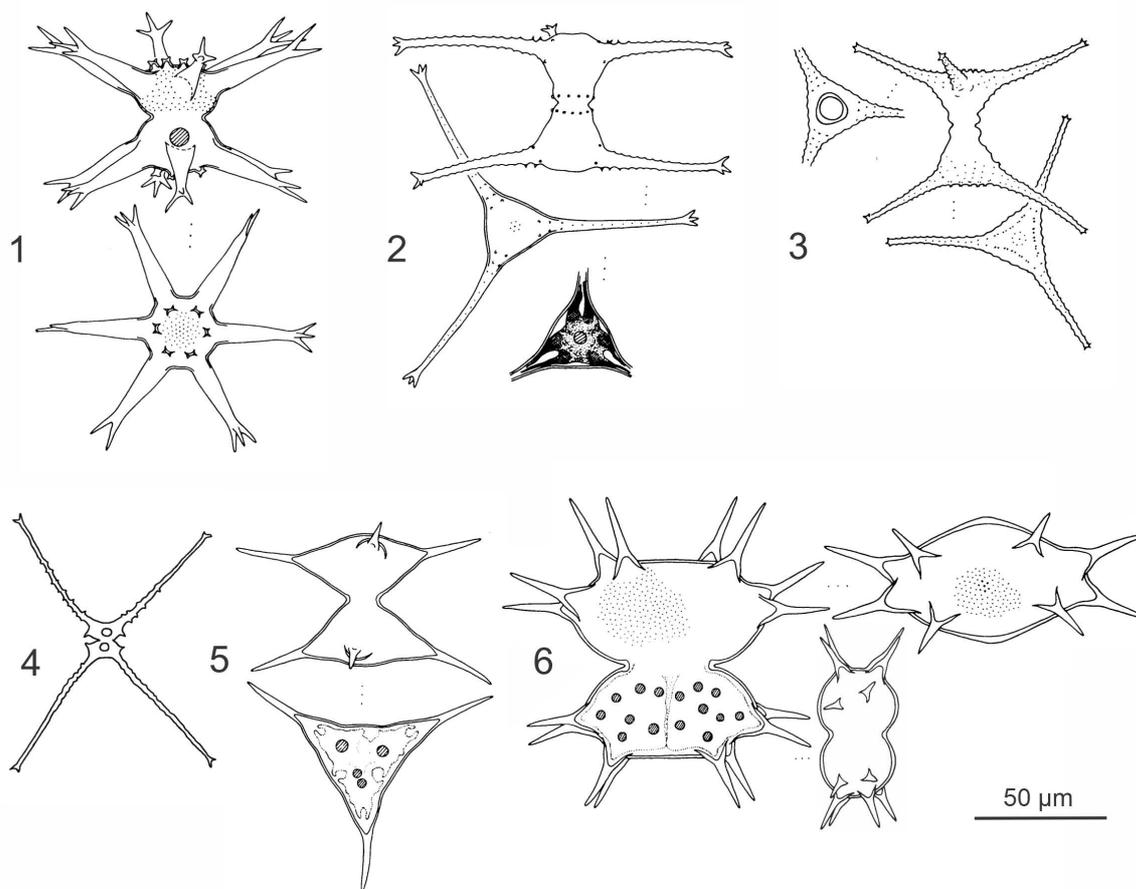
Note: “*Xanthidium canadense* var. *magnum*” was originally introduced by Förster (1969: pl. 22, fig. 1) but is invalid as it was not based on a single gathering (Art. 40.2) and a nomenclatural type was not designated at that time (ICN Art. 40.1). The designation was based on two gatherings: “Hab 15. Lago Grande do Curuai, also called Lago Grande de Villa Franca. Very large lake on the south bank of the Amazon, about south-east of the city of Óbidos in the state of Pará; at the Fazenda Nova Italia (June 7, 1946)” and “Hab. 33. Lago Grande do Curuai, in front of Caraubal (June 8, 1946)”.

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Förster, K. (1969). Amazonische Desmidiaceen, 1: Areal Santarém. *Amazoniana* 2(1–2): 5–116

Thomasson, K. (1971) Amazonian algae. *Mémoires Institut Royale des Sciences Naturelle de Belgique, Ser. 2* 86: 1–57.

Turland, N.J., Wiersema, J.H., Barrie, F.R., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Kusber, W.–H., Li, D.–Z., Marhold, K., May, T.W., McNeill, J., Monro, A.M., Prado, J., Price, M.J. & Smith, G.F., editors (2018). *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code)* adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. *Regnum Vegetabile*, Vol. 159. pp. [i]–xxxviii, 1–253.



Figs 1–6. Holotypes of desmids validated and proposed herein. **Fig. 1.** *Staurastrum boergesenii* var. *scottii* as originally illustrated by Förster (1969: pl. 48: fig. 3). **Fig. 2.** *Staurastrum flagriforme* as originally illustrated by Förster (1969: pl. 40: fig. 14). **Fig. 3.** *Staurastrum johnsonii* var. *amazonense* as originally illustrated by Förster (1969: pl. 40: fig. 8). **Fig. 4.** *Staurastrum octodontum* var. *longibrachiatum* as originally illustrated by Thomasson (1971: pl. 3: fig. 13, as “*Staurastrum octodontum* var. *longibrachiatum*”). **Fig. 5.** *Staurodesmus megacanthus* var. *amazonensis* as originally illustrated by Förster (1969: pl. 30: fig. 6, as “*Staurodesmus dejectus* var. *borealis* f. *amazonensis*”). **Fig. 6.** *Xanthidium canadense* var. *magnum* as originally illustrated by Förster (1969: pl. 22: fig. 1).