



Revaluation of some desmid taxa and the description of *Staurastrum bicudo* sp. nov.
(Desmidiaceae, Zygnematophyceae)

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“*Staurastrum pseudozonatum* var. *minutissimum* Kurt Förster” was described by Förster (1969: 91, pl. 40: figs 2-3) from material collected in State of Pará, Brazil. This is an invalid designation as the author did not designate a type at that time (ICN Art. 40.1, Shenzhen Code, Turland & al. 2018), and because it was not based on a single gathering (ICN Art. 40.2, Shenzhen Code, Turland & al. 2018), but on two locations as follow: habitat 11 (“Igarapé Mapiri”, collected on 19.11.1940) and habitat 25 (“Lago Jurucuí”, collected on 13.4.1946), both collected in Santarém Municipality, Pará State. Förster (1981: 233) chose figure 2 of Förster (1969) as holotype (as “ikonotype”), intended to validate it at the varietal level.

Förster (1969: 91) cited as synonyms of *Staurastrum pseudozonatum* var. *minutissimum*, some morphologically similar taxa: “*Staurastrum Donellii* Kurt Förster” (Förster 1963: 83, pl. 6: figs 11-12), that included two taxonomic forms (“forma” – pl. 6: fig. 11 and “forma *minuta*” – pl. 6: fig. 12) from material collected in Serra da Lua, State of Roraima, Brazil. “*Staurastrum pseudozonatum* var. *minutum* f. *rectum* Kurt Förster & Eckert” was described by Förster (1964: 426, pl. 29: fig. 12) from material collected in Rio das Femmeas, State of Tocantins, Brazil. The new variety, “*Staurastrum Donnellii* Wolle var. *simplex* Croasdale & Scott” was proposed by Scott & al. (1965: 52, pl. 13: figs 184-185) from material collected in Vigia Municipality, State of Pará, Brazil.

However, *Staurastrum pseudozonatum* var. *minutissimum* Kurt Förster is morphologically distinct from *Staurastrum pseudozonatum* Borge (1899: 30, pl. 2: fig. 47); from *Staurastrum pseudozonatum* var. *sumatranum* Willi Krieger, described by Krieger (1932: 205, pl. XVI [16]: fig. 4); and from *Staurastrum pseudozonatum* var. *minutum* A.M.Scott & Prescott (1961: 104, pl. 59: fig. 13, type from Indonesia) described by Förster (1964) from Brazil as “forma *rectum*”. Also, the taxon described here is morphologically distinct from *Staurastrum donellii* Wolle (Scott & al. 1965).

A new species *Staurastrum bicudo* is proposed here with a formal description, and a newly selected type from material collected using a 20-µm mesh plankton net, in a small pond covered to a large extent with *Sphagnum* sp., located in the “Reserva Experimental de Itirapina”, Itirapina Municipality, São Paulo State, southeast Brazil. Besides that, here are linked the taxa that represents this species based on the material studied by Kurt Förster (Förster 1963, 1964, 1969, 1981), and Grönblad & Croasdale (Scott & al. 1965), their published illustrations, their measurements, and their comments, as well as the distributions described for Brazil.

***Staurastrum bicudo* C.B.Araújo, sp. nov.**

Description: Cells as long as broad; semicells with divergent and step processes; the processes run towards the base out into parallel sides with three concentric rows of widely spaced granules, terminating in five small spines; apex visible and triradiate; sinus shallow and open; isthmus with a single or two rows of sharp granules; the ornamentation consists of fine thorns; vertical view triradiate; membrane hyaline. Cells 21–30 µm long (with processes), 15–20 µm (without processes), 14–18.5 µm wide (with processes), 7.0–9.5 µm (without processes), 5.0–6.5 µm isthmus width.

Holotype: Material numbered (SP428487) [other organisms present], a formaldehyde-fixed sample



deposited in the Herbário Científico do Estado ‘Maria Eneyda P. Kauffmann Fidalgo – SP’, at the Instituto de Pesquisas Ambientais, São Paulo, São Paulo State, Brazil. Population partially illustrated here from light microscopy (Figs 1–4).

Type locality: Brazil. São Paulo: Itirapina Municipality, a small pond covered by *Sphagnum* sp., located in the “Reserva Experimental de Itirapina”, Lat. 22°13.836’S, Long. 47°49.165’W, 22 May 2017, C.B. Araújo (SP428487).

PhycoBank Registration: <http://phycobank.org/103632>

Habitat: This new species was found in the study area associated to *Sphagnum* sp.; Electrical conductivity (EC): 0.012 mS/cm, pH: 4.39, Oxygen dissolved (OD): 12.69 mg/L, Water temperature (WT): 22.51°C.

Etymology: The epithet honours the eminent Brazilian phycologist Dr Carlos Eduardo de Mattos Bicudo, for his inestimable contribution to the dissemination of knowledge of phycology, especially desmids, in Brazil and America.

Distribution in Brazil: This species was noted in the Amazon region as *Staurostrum donellii* Kurt Förster (Förster 1963: Serra da Lua, Roraima State, fig. 5); *Staurostrum pseudozonatum* [var. *minutum*] f. *rectum* Kurt Förster & Eckert (Förster 1964: Rio das Femmeas, Tocantins State, fig. 6); *Staurostrum donnellii* var. *simplex* Croasdale & A.M.Scott (Scott & al. 1965: Vigia Municipality, Pará State, fig. 7); *Staurostrum pseudozonatum* var. *minutissimum* Kurt Förster (Förster 1969: “Igarapé Mapiri” and “Lago Jurucuí”, Santarém Municipality, Pará State, fig. 8) and the present study (Itirapina Municipality, São Paulo State, figs 1–4).

The author is grateful to Michael Guiry and the reviewers for their valuable comments.

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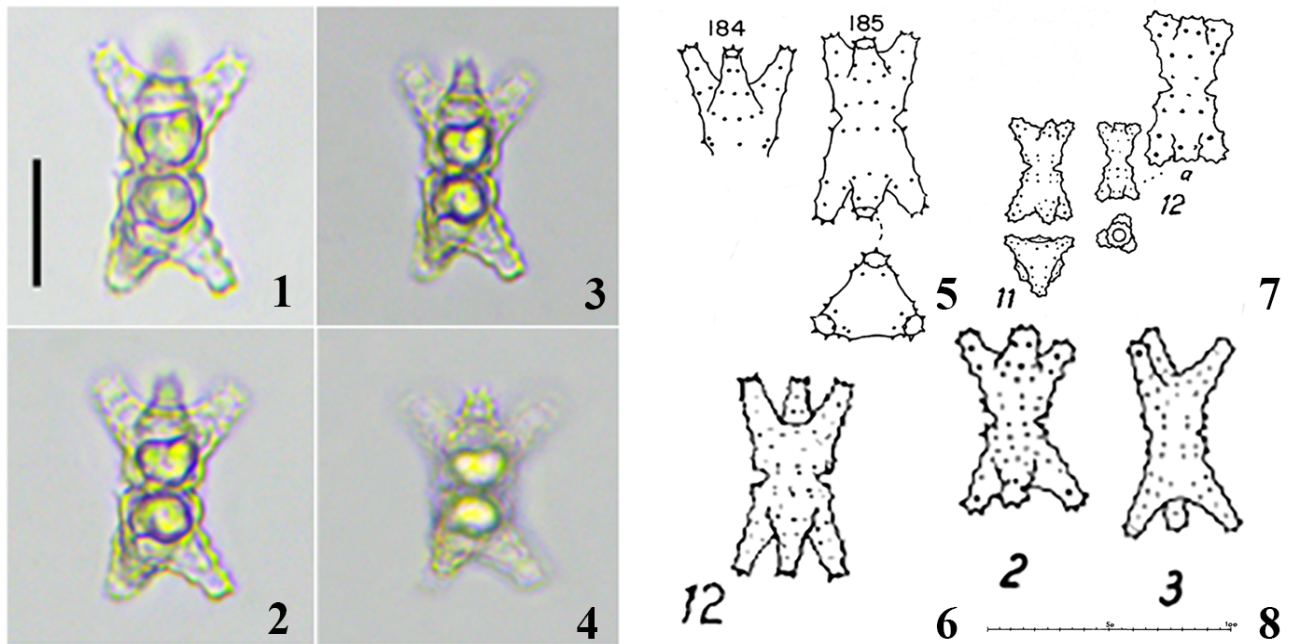
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Figs 1–8. *Staurastrum bicudo* sp. nov. **Figs 1–4.** Representative type material collected in a small pond located in the “Reserva Experimental de Itirapina”, Itirapina Municipality, São Paulo State, southeast Brazil, scale bar = 10 µm. **Figs 5–8.** Published illustrations from literature. **Fig. 5.** Original illustration of “*Staurastrum Donellii*” Kurt Förster (Förster 1963: 83, pl. 6: figs 11–12). **Fig. 6.** Original illustration of “*Staurastrum pseudozonatum* [var. *minutum*] f. *rectum*” Kurt Förster & Eckert (Förster 1964: 426, pl. 29: fig. 12). **Fig. 7.** Original illustration of “*Staurastrum donnellii* Wolle var. *simplex*” Croasdale & Scott (Scott & al. 1965: 52, pl. 13: figs 184–185). **Fig. 8.** Original illustration of *Staurastrum pseudozonatum* var. *minutissimum* Kurt Förster (Förster 1969: 91, pl. 40: figs 2–3, scale bar = 100 µm).