



Towards the validation of the names of four new *Tubastraea* species in the Todos-os-Santos Bay (Brazilian Northeastern Coast)

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Abstract: The description of the four new species of the genus *Tubastraea* by Serra et al. (2024), for the Southwestern Atlantic Ocean, appeared in a journal published online only. The new names did not include ZooBank registration numbers (LSID), as required for the validation of new names in electronic-only publications. The present note serves to validate the names of *Tubastraea ramosa*, *Tubastraea columnata*, *Tubastraea grandidentata*, and *Tubastraea megalostoma*, by fulfilling the ICZN conditions for nomenclatural availability. Accordingly, the date and authorship of the specific names are those of this note, not Serra et al. (2024).

Key words: Sun corals, Taxonomy, Morphology, Identification Keys, Tropical Atlantic.

Em direção à validação dos nomes de quatro novas espécies de *Tubastraea* na Baía de Todos-os-Santos (Costa Nordeste Brasileira). Resumo: A descrição das quatro novas espécies do gênero *Tubastraea* realizada por Serra et al (2024), para o Oceano Atlântico Sudoeste, foi publicado em um periódico apenas online. Os novos nomes não incluíam números de registro do ZooBank (LSID), conforme exigido para a validação de novos nomes em publicações exclusivamente eletrônicas. A presente nota serve para validar os nomes de *Tubastraea ramosa*, *Tubastraea columnata*, *Tubastraea grandidentata* e *Tubastraea megalostoma*, cumprindo as condições do ICZN para disponibilidade nomenclatural. A data e a autoria dos nomes específicos, portanto, são as desta nota, não de Serra et al. (2024).

Palavras-chave: Coral-sol, Taxonomia, Morfologia, Chave de Identificação, Atlântico Tropical.

Four new species of *Tubastraea* were described for the Bahia State (12 ° S, Southwestern Atlantic Ocean): *Tubastraea ramosa* sp. nov., *Tubastraea columnata* sp. nov., *Tubastraea grandidentata* sp. nov., and *Tubastraea megalostoma* sp. nov. The work in which the four new species were originally described was published

in an online-only journal (Serra et al., 2024), but did not include the ZooBank registration number (LSID), required for validation of the new names in electronic-only publications [vide Art. 8.5.3 of the amended Code of the International Commission on Zoological Nomenclature (ICZN, 1999, 2012)]. Although registered in the Zoobank (*T. ramosa* –

urn:lsid:zoobank.org:act:9B5CD1C1-D2B2-42FC-B77C-B44A77667F94; *T. columnata* – urn:lsid:zoobank.org:act:88603739-5BAB-482D-9D33-515AEA00FE1F; *T. grandidentata* – urn:lsid:zoobank.org:act:D74C859E-E6AA-4558-9649-EF88F4D34F8E; *T. megalostoma* – urn:lsid:zoobank.org:act:263389A4-2587-49DB-B5F2-8CD484E05578), the species are not valid as none of them appeared in the final published version of the article. Thus, lacking evidence that the registration had occurred, as regulated by Art. 8.5.3 of the amended Code of the International Commission on Zoological Nomenclature (ICZN, 1999, 2012). Therefore, the present work validates the names *Tubastraea ramosa*, *Tubastraea columnata*, *Tubastraea grandidentata*, and *Tubastraea megalostoma*, once it fulfills the ICZN conditions for nomenclatural availability with new ZooBank registration numbers for the species. The LSID links are given in the Taxonomy section below and the necessary text was modified from Serra et al. (2024).

***Tubastraea ramosa* sp. nov.**

Tubastraea tagusensis – de Paula & Creed 2004, Figure 2a,b, Sampaio et al. 2012: Figure 3, Figure 5, Mantelatto et al. 2015: Fig. 1G-L, Miranda et al. 2016a: Fig. 2a, Miranda et al. 2016b: Fig. 3.

Tubastraea ramosa – Serra, Neves & Johnsson, 2024: 118 Fig. 2a-d; 4a-c [unavailable].

Type material: Holotype (length x height): UFBA 1436, 74.2 x 56.1 mm, 37 corallites, collected at 1 meter deep, in an artificial environment. Paratypes (length x height): UFBA 1424, 63.8 x 45.5 mm, 29 corallites; UFBA 1373, 76.3 x 54.6 mm, 31 corallites; UFBA 1405, 104.6 x 55.2 mm, 90 corallites; UFBA 1434, 57.0 x 37.0 mm, 39 corallites; UFBA 1435, 59.6 x 55.5 mm, 37 corallites. **Zoobank registration:** urn:lsid:zoobank.org:act:9B5CD1C1-D2B2-42FC-B77C-B44A77667F94

Type locality: Private Terminal, Salvador Capital (12°58'S, 38°30'W), Todos-os-Santos Bay, Bahia State, Brazil.

Etymology: The specific epithet is attributed to the colonial growth pattern, with branches budding from the axial polyps. In Latin, *ramosa* = branched.

Diagnosis: Branching colonies with irregular monopodial growth; branches interspersed or in opposite distribution, with arborescent growth; dendroid corallites; extracalicular budding; coenosarc and polyps yellow to intense orange, polyps with tentacles yellow to orange; corallite cylindrical and high (up to 39.1 mm height) with circular to elliptical calices; corallites closely spaced basally and spaced distally; synapticulotheca eventually with irregular calcification near theca edge; medium to large pores (130.0–450.0 µm) along costa and intercostal grooves; septa arranged hexamerally (21–51 septa), four cycles non-exsert (S1>S2>S3>S4), S1–S3 complete, S4 rudimentary; septal faces ornamented with rounded and slightly pointed granules, septal edge regular and smooth in S1 and S2, and irregular, with lacinate projections, in S3; columella moderately developed (1.1–7.1 mm), elliptical and spongy, fossa columellar deep (4.9–12.9 mm).

***Tubastraea columnata* sp. nov.**

Tubastraea tagusensis – Luz et al. 2018: Fig. 1c; *Tubastraea* sp. – Bastos et al. 2022: Fig. 2i-l

Tubastraea columnata – Serra, Neves & Johnsson, 2024: 118 Fig. 2e-h; 4d-f [unavailable].

Type material: Holotype (length x height): UFBA 1423, yellow-orange colony, 49 x 33 mm, 28 corallites, in the artificial substrate at 1 meter deep. Paratypes (length x height): UFBA 1352, 53 x 28 mm, 28 corallites, in association with *T. coccinea*; UFBA 1354, 51 x 37 mm, 25 corallites; UFBA 1427, 51 x 35 mm, 22 corallites; UFBA 1552, 39 x 32 mm, 24 corallites. **ZooBank registration:** urn:lsid:zoobank.org:act:88603739-5BAB-482D-9D33-515AEA00FE1F

Type locality: Private Terminal, Salvador Capital (12°58'S, 38°30'W), Todos-os-Santos Bay, Bahia State, Brazil.

Etymology: The specific epithet is attributed to the colonial growth supported by elongated corallites, as the columns of classical Greek architecture. In Greek, *columnata* = columns.

Diagnosis: Massive colonies, bushy growth, flattened basis, dendroid corallites, extracalicular budding, costate coenosteum; coenosarc and polyps yellow to light orange, polyps with yellow tentacles; corallite cylindrical and high (up to 25.4 mm height) with circular to elliptical calices, corallite base

closely spaced and widely apart distally; synapticulotheca thick, small pores (80.0–138.0 µm) along the intercostal grooves; septa arranged hexamerally (23–48 septa), four cycles non-exsert ($S1 \geq S2 > S3 \geq S4$), S1–S3 complete, S4 incomplete, S3 thinner, deeply fused to S2, eventually with free axial margins, S4 rudimentary; septal faces ornamented with small slightly pointed granules, S1 and S2 with small dentate projections near to columella, S3 septal margin irregularly dentate; columella small (0.8–5.7 mm), spongy, fossa columellar deep (4.4–14.7 mm).

***Tubastraea grandidentata* sp. nov.**

Tubastraea grandidentata – Serra, Neves & Johnsson, 2024: 118 Fig. 2i-l; 4g-i [unavailable].

Type material: Holotype (length x height): UFBA 1361, colony with orange polyps, 28.5 x 23.9 mm, 7 corallites, collected at 3 meters deep in an artificial environment. Paratypes (length x height): UFBA 1360, 29.2 x 19.0 mm, 9 corallites; UFBA 1379, 40.2 x 26.6 mm, 13 corallites; UFBA 1443, 67.1 x 30.7 mm, 19 corallites; UFBA 1437, 64.1 x 45.9 mm, 33 corallites; UFBA 1438, 61.3 x 28.9 mm, 28 corallites. **ZooBank registration:** urn:lsid:zoobank.org:act:D74C859E-E6AA-4558-9649-EF88F4D34F8E

Type locality: Marina de Itaparica (12°53'S, 38°41'W), Itaparica Is., Todos-os-Santos Bay, Bahia State, Brazil.

Etymology: The epithet refers to the irregular edge of the corallite theca, which alternates deep grooves and prominent projections. Two Latin terms were used to create the specific epithet: *grandis* – large or great, and *dentata* – toothed or pointed.

Diagnosis: Massive, hemispherical to irregular encrusting colonies, plocoid corallites, extracalicular budding, non-costate coenosteum; coenosarc and polyps bright yellow, pink or orangish-pink, polyps with yellow tentacles; cylindrical and short corallites (up to 15.0 mm height), circular to elliptical calices, corallites closer basally and spaced distally; synapticulotheca thick basally and fragile at calice margins, theca margins deeply dentate; medium-sized pores (80.0–300.0 µm) along costae and intercostal grooves; septa arranged hexamerally (25–44), four cycles non-exsert ($S1 > S2 > S3 > S4$); S1–S3 complete, S4 rudimentary, S1 and S2 markedly thicker; septal

faces strongly ornamented with small and rounded granules; columella small (1.2–6.1 mm), solid to spongy, fossa columellar moderately deep (3.5–8.4 mm).

***Tubastraea megalostoma* sp. nov.**

Tubastraea megalostoma – Serra, Neves & Johnsson, 2024: 118, Fig. 2m-p; 4j-l [unavailable].

Type material: Holotype (length x height): UFBA 1348, 65.2 x 41.3 mm, 33 corallites, in the artificial substrate at 1 meter deep. Paratypes (length x height): UFBA 1358, 84.5 x 59.2 mm, 29 corallites; UFBA 1364, 84.8 x 47.3 mm, 27 corallites; UFBA 1439, 67.3 x 53.6 mm, 21 corallites; UFBA 1440, 108.1 x 55.3 mm, 73 corallites; UFBA 1441, 98.5 x 36.7 mm, 27 corallites. **ZooBank registration:** urn:lsid:zoobank.org:act:263389A4-2587-49DB-B5F2-8CD484E05578

Type locality: Private Terminal, Salvador (12°58'S, 38°30'W), Todos-os-Santos Bay, Bahia State, Brazil.

Etymology: The specific epithet is attributed to the oversized calice and columella. Two Greek terms were used to create the species name: *megalo* – big size, *stoma* – mouth.

Diagnosis: Massive to encrusting colonies, plocoid corallites; extracalicular budding; larger corallites may undergo fission, non-costate coenosteum; coenosarc and polyps dark pink to reddish, polyps with yellow-orange tentacles; corallites large, slightly conical to cylindrical (up to 15.3 mm height) with circular to elliptical calices; corallites close to moderately spaced at the base and spaced distally; synapticulotheca moderately thick and strongly granular, medium size pores (138.0–275.0 µm) along intercostal grooves; septa arranged hexamerally (32–65 septa), five cycles non-exsert ($S1 = S2 \geq S3 > S4 > S5$); S1–S3 complete, S4 rarely incomplete, S5 incomplete, S1 and S2 with thicker axial margins, S3 occasionally free; septal face heavily ornamented with small, closely spaced rounded granules, S1–S3 with regular margins and poorly ornamented, S4 with smooth axial margin, with depressions towards the theca; columella well-developed (1.2–10.1 mm), spongy, fossa columellar moderately deep (4.4–11.1 mm).

Ethical statement

Collection of biological samples were conducted following all applicable ethical regulations regarding collection of biological samples and experimentation with animals. Investigation was performed under permit Sisbio N° 15161-1, issued by Chico Mendes Institute for Biodiversity Conservation (ICMBio).

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