



Notes on nomenclature of *Sycetta* Haeckel, 1872 and reinstating the family Syconidae Poléjaeff, 1883 (Calcarea, Porifera)

KAREN SANAMYAN* & NADYA SANAMYAN

Kamchatka Branch of Pacific Geographical Institute, Far-Eastern Branch of the Russian Academy of Sciences, Partizanskaya 6, Petropavlovsk-Kamchatsky, 683000, Russia.

*Corresponding author: ascidiacea@sanamyan.com; <https://orcid.org/0000-0002-7460-3985>

In the present paper we describe nomenclatural history of several genera and families of Calcarea (in chronological order) and then discuss nomenclatural consequences which stem from previous incorrect fixation of the type species of the genus *Sycetta* Haeckel, 1872.

The genus *Sycetta* was established by Haeckel (1872) for five nominal species of calcareous sponges having elongate bodies, voluminous atrium and syconoid aquiferous system. Haeckel (1872) established three subgenera of *Sycetta*: *Sycettata*, *Sycettopa* and *Sycettusa*. Subgenus *Sycettata* included two species: *Sycetta* (*Sycettata*) *primitiva* Haeckel, 1872 and *Sycetta* (*Sycettata*) *sagittifera* Haeckel, 1872. Currently these two species are not considered congeneric, moreover, they are treated as belonging to different subclasses (see below). Type species of the genus *Sycetta* and subgenus *Sycettata* were not fixed in the original publication.

Poléjaeff (1883) established family Syconidae for *Sycon* Risso, 1827 and five other genera. Currently this family name is not used and considered *nomen oblitum* (see Borojević *et al.* 2002b: 1162). The latter statement is, however, not correct: the term *nomen oblitum* is strictly defined in the ‘Glossary’ of International Code of the Zoological Nomenclature (ICZN 1999) and may be applied only to names not used since 1899, while Syconidae was used after 1900, for example by Lundbeck (1909).

Dendy (1893) established family Sycettidae Dendy, 1893 with three included genera: *Sycetta*, *Sycon* and *Sycantha* Lendenfeld, 1891. Currently *Sycantha* is moved to its own family while *Sycetta* and *Sycon* are considered confamilial.

Dendy & Row (1913: 743) provided emended diagnosis of *Sycetta* and included three species in this genus: *Sycaltis conifera* Haeckel, 1872, *Sycetta primitiva* and *Sycetta sagittifera* and clearly stated that *Sycetta primitiva* is the “type species of the genus”. Since *Sycetta primitiva* is among the species originally included in the genus *Sycetta*, its fixation as the type species of this genus is valid (Article 67.2, ICZN 1999).

Borojević *et al.* (2000) analyzed original description and figures of *Sycetta* (*Sycettata*) *primitiva* and come to a conclusion that this species is not congeneric with other species of *Sycetta* and belongs to subclass Calcinea: it has regular, equiangular and equiradiate spicules and choanocytes are closer to the basinucleate type (as in Calcinea but not in Calcarea). According to these authors “the original description [of *Sycetta primitiva*] indicates quite clearly that this is a calcinean sponge, and should be classified as a typical member of the family Levinellidae.” They raised subgenus *Sycettata* to a genus level and transferred this species to Levinellidae (as *Sycettata primitiva*). Also, in the same paper Borojević *et al.* (2000: 218) stated that they designate another species, *Sycetta sagittifera*, as the type species of *Sycetta*: “*Sycetta sagittifera* being an originally included nominal species is designated here as the type species of *Sycetta*.” This type fixation is not valid. Article 69.1 (ICZN 1999) states: “If an author established a nominal genus [...] but did not fix its type species, the first author who subsequently designates one of the originally included nominal species validly designates the type species of that nominal genus [...], and *no later designation is valid*.” In the case of *Sycetta* the first authors who validly designated type species were Dendy & Row (1913) and this designation cannot be changed by subsequent authors. Thus, the type species of *Sycetta* is *Sycetta primitiva*, not *Sycetta sagittifera* as stated by Borojević *et al.* (2000).

Later, Borojević *et al.* (2002a: 1146) designated *Sycetta primitiva* as type species of *Sycettata*. As a result, *Sycetta* and *Sycettata* become objective synonyms because they have the same type species (*Sycetta primitiva*) (Article 61.3.3, ICZN 1999). Both names were originally established in the same work but proposed at different rank (genus and subgenus). Such cases are regulated by Article 24.1 (ICZN 1999): the name proposed at higher rank (*Sycetta*) takes precedence over the name proposed at lower rank (*Sycettata*).

To summarize: type species of *Sycetta* is *Sycetta primitiva*; *Sycettaga* is junior (=invalid) objective synonym of *Sycetta*. In other words, by transferring *Sycetta primitiva* to Levinellidae, even under different generic name, as *Sycettaga primitiva*, Borojević *et al.* (2000) transferred the genus *Sycetta* to Levinellidae because *Sycetta primitiva* is the type of *Sycetta*.

Acceptance of the opinion of Borojević *et al.* (2000) that *Sycetta primitiva* is a Calcinean species belonging to family Levinellidae will invariably lead to serious nomenclatural consequences. In particular, transferring *Sycetta* to Levinellidae makes this family invalid (because Sycettidae Dendy, 1893 is older and therefore has a priority over Levinellidae Borojević & Boury-Esnault, 1986). Further, in this case remaining Calcaronean species currently assigned to *Sycetta* will need another generic name.

The opinion of Borojević *et al.* (2000) on Calcinean nature of *Sycetta primitiva*, is, however, based only on Haeckel's (1872) original description and figures of *Sycetta primitiva*. Type material of this species is not known and it has not been recorded again. Several other species, currently assigned to *Sycetta*, clearly belong to Calcaronea. Due to these facts, it is prudent to keep *Sycetta primitiva*, and, therefore, the genus *Sycetta*, in the Calcaronea (an opinion expressed by Rob van Soest, *personal communication* 2021). In this case family Levinellidae will contain only two genera: *Burtonulla* Borojević & Boury-Esnault, 1986 (monotypic) and *Levinella* Borojević & Boury-Esnault, 1986 (two species), while *Sycetta primitiva*, assigned to this family as *Sycettaga primitiva* by Borojević *et al.* (2000), is excluded. Family name Levinellidae remains valid while *Sycetta* may be used in its current sense and scope, at least until its type species, *Sycetta primitiva*, will be rediscovered and reexamined and its true taxonomic position clarified.

On the other hand, family name Sycettidae Dendy, 1893 cannot be saved: valid family name for *Sycon* and *Sycetta* (if the latter is considered confamiliar with *Sycon*) is Syconidae Poléjaeff, 1883: as stated above Syconidae was used after 1899 as valid, it cannot be considered *nomen oblitum* (Articles 23.9.1 and 23.9.2 ICZN 1999), and has a priority over Sycettidae.

References

- Borojević, R., Boury-Esnault, N. & Vacelet, J. (2000) A revision of the supraspecific classification of the subclass Calcaronea (Porifera, class Calcarea). *Zoosystema*, 22 (2), 203–263.
- Borojević, R., Boury-Esnault, N., Manuel, M. & Vacelet, J. (2002a) Order Clathrinida Hartman, 1958. In: Hooper, J.N.A. & Van Soest, R.W.M. (Eds.), *Systema Porifera: a guide to the classification of sponges*. Kluwer Academic/Plenum, New York, New York, pp. 1141–1152.
https://doi.org/10.1007/978-1-4615-0747-5_118
- Borojević, R., Boury-Esnault, N., Manuel, M. & Vacelet, J. (2002b) Order Leucosolenida Hartman, 1958. In: Hooper, J.N.A. & Van Soest, R.W.M. (Eds.), *Systema Porifera: a guide to the classification of sponges*. Kluwer Academic/Plenum, New York, New York, pp. 1157–1184.
https://doi.org/10.1007/978-1-4615-0747-5_120
- Dendy, A. (1893) Synopsis of the Australian Calcarea Heterocola; with a proposed classification of the group and descriptions of some new genera and species. *Proceedings of the Royal Society of Victoria*, New Series, 5, 69–116.
- Dendy, A. & Row, R.W.H. (1913) The Classification and Phylogeny of the Calcareous Sponges, with a Reference List of all the described Species, systematically arranged. *Proceedings of the Zoological Society of London*, 1913 (3), 704–813.
<https://doi.org/10.1111/j.1469-7998.1913.tb06152.x>
- Haeckel, E. (1872) *Die Kalkschwämme. Eine monographie. 2. System der Kalkschwämme (Calciospongien oder Grantien)*. Verlag von Georg Reimer, Berlin, 418 pp.
<https://doi.org/10.5962/bhl.title.11323>
- ICZN [International Commission on Zoological Nomenclature] (1999) *International code of zoological nomenclature. Fourth edition*. International trust for zoological nomenclature, London, 306 pp.
<https://doi.org/10.5962/bhl.title.50608>
- Lundbeck, W. (1909) The Porifera of East Greenland. *Meddelelser om Grønland*, 29, 423–464.
- Poléjaeff, N. (1883) Report on the Calcarea dredged by H.M.S. 'Challenger', during the years 1873–1876. *Report on the Scientific Results of the Voyage of H.M.S. 'Challenger', 1873–1876*, Zoology, 8 (2), 1–76.