Case 3262

Nautilus spengleri Gmelin, 1791 (currently *Calcarina spengleri*) and *C. hispida* Brady, 1876 (Foraminiferida): proposed conservation of usage of the specific names by the designation of a replacement neotype for *C. spengleri*

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Abstract. The purpose of this application, under Article 75.6 of the Code, is the designation of a replacement neotype for *Nautilus spengleri* Gmelin, 1791, the type species of the prominent reef foraminiferan genus *Calcarina* d'Orbigny, 1826 (family CALCARINIDAE). In 1981, H.J. Hansen designated a neotype for *N. spengleri*, but this is a specimen of *C. hispida* Brady, 1876. The prevailing usage of both *C. spengleri* and *C. hispida* will be conserved by the designation of a replacement neotype.

Keywords. Nomenclature; taxonomy; Foraminiferida; CALCARINIDAE; *Calcarina spengleri*; *Calcarina hispida*; *Calcarina gaudichaudii*; foraminifera.

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1. Foraminifera of the genus *Calcarina* d'Orbigny, 1826 (p. 276) are important carbonate producers in shallow tropical seas. The type species of *Calcarina* is the Indo-Pacific *Nautilus spengleri* Gmelin, 1791 (p. 3371) by designation by Parker & Jones (1859, p. 482); the original material of *N. spengleri* is lost but in 1981 one of a number of topotypic specimens was designated as neotype (Hansen, 1981, p. 198). Hansen assumed this specimen, with prominent sharp spikes (the term hispid denotes the possession of spikes), to be a juvenile example conspecific with larger 'adult' non-hispid specimens with smooth blunt spines. Blunt-spined specimens had been figured by Spengler (1781, p. 379, pl. 2, figs. 9a-c) and Fichtel & Moll (1798, pls. 14, 15), and have been illustrated by modern authors (e.g. Hottinger & Leutenegger, 1980, pl. 6; Rögl & Hansen, 1984, pls. 20, 21). Rögl & Hansen (1984, p. 59) noted that 'the neotype is a young form while the material of Fichtel & Moll compares well with the adult specimens figured by Hottinger & Leutenegger'.

2. It is now clear (see Lobegeier, 2002, p. 204; Renema & Hohenegger, 2005) that the 'juvenile' hispid and 'adult' non-hispid specimens discussed by Rögl & Hansen (1984) belong to two different taxonomic species rather than to different developmental stages. The 'juvenile' specimens (including Hansen's neotype of *Nautilus spengleri*) are conspecific with *Calcarina hispida* Brady, 1876 (p. 589) while the 'adult' specimens are conspecific with *C. gaudichaudii* d'Orbigny, 1840 (p. 131). The name

C. hispida has been applied only to the small hispid taxon (e.g. Cushman, 1919, p. 365, pl. 44) and it is desirable to maintain this consistent usage of more than a century. The name *C. spengleri* has referred in most cases to the non-hispid species only, but has also been used in a composite sense by authors (e.g. Hottinger & Leutenegger, 1980; Rögl & Hansen, 1984) who were unaware that more than one taxon was involved.

3. Lobegeier (2002, p. 204) noted '*Calcarina spengleri*, as represented by the neotype [of Hansen, 1981] . . . is conspecific with *C. hispida* . . . The name *spengleri* has priority'. In accordance with this, she applied the name *C. spengleri* to the small hispid taxon known in general usage (see para. 2 above) as *C. hispida*. The larger non-hispid species illustrated as *spengleri* by Fichtel & Moll (1798) and Rögl & Hansen (1984) and which was described as *C. gaudichaudii* by d'Orbigny in 1840 is restricted to the northern part of the West Pacific; it does not occur at the Great Barrier Reef locality studied by Lobegeier and so was not considered by her.

4. According to current taxonomy there is a group of at least four taxonomic species of *Calcarina* relevant to the present issue. These are (A) *C. spengleri* (Gmelin, 1791) (in the non-hispid sense of most authors), (B) *C. gaudichaudii* (d'Orbigny, 1840), (C) *C. hispida* Brady, 1876 (= *C. spengleri* in the taxonomic sense of Hansen's neotype and hence of Lobegeier (2002)) and (D) *C. mayori* Cushman, 1924 (p. 44). Due partly to high intraspecific variability, the differences between the species have not always been clear, but they are clarified by Lobegeier (2002; species C and D) and Renema & Hohenegger (2005; species A, B, C and D). Species A has thick, blunt spines; the test shows some tubercles but has no spikes in either adults or juveniles. Species C is about half the size of species A and has long spikes on the test and short spines, while species D has relatively shorter spikes and longer spines. Apart from Lobegeier (2002), all publications have used the name *C. hispida* for species C, of which *C. mayori* has sometimes been regarded as a 'form' (in doing this in his unpublished thesis Baccaert (1987) used the name *C. spengleri* for the species).

5. Retaining the unfortunate choice of neotype of *Nautilus spengleri* Gmelin, 1791 by Hansen (1981; MGUH 15076, Copenhagen) would increase confusion, since the name *spengleri* would be transferred from species A to species B (as already done by Lobegeier), displacing the name *hispida* consistently used for the latter taxon. *C. hispida* has been described and figured in at least 20 publications. In contrast to the consistent use of *hispida*, the name *spengleri* has been applied to species A, B, C and D. Until 1980, usage of the name for species A was consistent, while since then that taxon has been called both *C. spengleri* and *C. gaudichaudii*. The name *spengleri* has also been used for species D due to misidentification. Renema & Hohenegger (2005) give the full synonymy of these names.

6. We propose in the interests of stability that the 'juvenile' hispid neotype of *Nautilus spengleri* should be set aside and that the blunt-spined non-hispid specimen figured by Fichtel & Moll (1798) and by Rögl & Hansen (1984, pl. 21, fig. 1) as *N. spengleri* var. γ should be designated as replacement. This specimen is preserved in the Fichtel and Moll collection in the Naturhistorisches Museum, Vienna, under the number NHMW Inv. Mi-541 (see Rögl & Hansen, 1984).

7. The nominal species *Tinoporus baculatus* Montford, 1808 is conspecific with *Nautilus spengleri* Gmelin, 1791, as typified by the proposed neotype (see Hansen & Rögl, 1984) and is the type species of de Montfort's genus *Tinoporus*. In order to

conserve the name *Calcarina* d'Orbigny, 1826 the generic name *Tinoporus* de Montfort was placed on the Official Index of Rejected and Invalid Generic Names in Zoology (Opinion 1569, March 1990), but the specific name *baculatus* de Montfort, 1808, as published in the binomen *Tinoporus baculatus*, was not placed on the Official Index of Rejected and Invalid Specific Names in Zoology. The presumed conspecificity of *Tinoporus baculatus* and *Nautilus spengleri* is reinstated with the proposed designation of a replacement neotype for *N. spengleri*.

8. The nominal species *Nautilus spengleri* Gmelin, 1791, was placed on the Official List of Specific Names in Zoology in 1990 (Opinion 1569).

9. The International Commission on Zoological Nomenclature is accordingly asked:

(1) to use its plenary power to set aside all type fixations for the nominal species *spengleri* Gmelin, 1791, as published in the binomen *Nautilus spengleri*, and to designate specimen NHMW Inv. Mi-541 as neotype;

(2) to emend the entry on the Official List of Specific Names in Zoology for *Nautilus spengleri* Gmelin, 1791 to record that it is to be interpreted by the neotype designated in (1) above.

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