



Comment on “Taxonomic review of living planktonic foraminifera” by Brummer and Kučera (2022)

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In their taxonomic review of living planktonic foraminifera, Brummer and Kučera (2022, pp. 32, 36, 65, 66) claimed that Fordham (1986) is a work that does not satisfy the requirement of consistent application of binominal nomenclature (ICZN, 1999, Articles 5 and 11) in order to be available for zoological nomenclature.

This claim, however, appears incorrect. The *Principle of Binominal Nomenclature*, as its title implies, is simply to use a name for a species that is composed of a generic and a specific name (adding a subspecific name for a subspecies), as outlined in the ICZN Code glossary (<https://code.iczn.org/>, last access: 5 September 2022):

Principle of Binominal Nomenclature, n. The principle that the scientific name of a species, and not of a taxon at any other rank, is a combination of two names (a binomen, q.v.); the use of a trinomen (q.v.) for the name of a subspecies and of uninominal names for taxa above the species group is in accord with the Principle. See Articles 5, 11.4.

This requirement has been directed by the ICZN at works which were still using polynomial names in the decades after 1758, before Linnaeus' new system of binominal names was firmly established (Welter-Schultes, 2013, Sect. 5.2.2). Melville and Smith (1987, pp. 317–320) and Smith (2001, pp. 91–94) listed approximately 30 works from the 1750s to the 1840s which failed this requirement.

In the context of the *Principle of Binominal Nomenclature*, Fordham's nomenclature for species was clearly standard Linnean binominal, and the monograph was added to the Zoological Record (v. 124, Accession Number ZOOR12400033837) soon after its publication. It was Fordham's reservation of the species category for lineages, com-

bined with his adaptation of the phenon of Mayr (1969) for an informal but rules-based infraspecific nomenclature for morphotypes, that was unconventional. But of course, the Codes have never intended to interfere in taxonomic considerations, as for example the fourth edition of the ICZN (International Commission on Zoological Nomenclature, 1999, pp. XIX–X, 2) makes clear in its “Principles” and “Preamble”.

In their discussion of Fordham's names, Brummer and Kučera (2022) interweaved references to both Fordham's standard nomenclature and his novel taxonomic approaches, in so doing claiming that his binominal nomenclature failed the Code's requirement of consistent application. Given the fundamental taxonomic impact of having Fordham (1986) associated with those antiquated works made unavailable for zoological nomenclature, we feel obliged to suggest a correction to that specific claim.

The taxonomic status of Fordham's new categories and names, other than with regard to the requirement of consistent application of binominal nomenclature (ICZN, 1999, Articles 5 and 11), is beyond the scope of this comment. Readers, however, could usefully note the following issues raised by Brummer and Kučera (2022), which do relate to their application of this principle.

- a. The referencing of Brummer and Kučera (2022, pp. 32, 36) to Loeblich and Tappan (1987) and Haman (1988) as authorities in regard to Fordham (1986) supposedly not following the principle of binominal nomenclature is misleading; neither of these works referred to this principle at all.
- b. Loeblich and Tappan (1987, “Cladegroups, Category Not Recognized by ICZN” chapter) and Brummer and

Kučera (2022, p. 36) appear to have been incorrect to claim that the cladegroup names proposed in Fordham (1986) were unavailable. Identifying a name as representing a cladegroup (or, for example, a superorder) is not an issue of the Code. The only ICZN regulations applicable to names above the family group (see Art. 1.2.2) lack any content that would reject the cladegroup names of Fordham (1986) as unavailable.

- c. The claim of Brummer and Kučera (2022, p. 66) that *Toddella grata compressa* Fordham, 1986, is unavailable appears to be based on an incorrect application of both Art. 11.4.2 and Art. 15.2. Contrary to Brummer and Kučera's interpretation of Art. 11.4.2, if a work does not consistently follow binominal nomenclature, then trinominal names proposed for subspecies therein would not be accepted as available because the work would fail to satisfy the provisions of the parent Art. 11.4. As for the categorization of this name also as a phenon in Fordham (1986), Art. 15.2 would not apply to this usage as it addresses only varieties and forms. An ICZN regulation not referred to by Brummer and Kučera but which could potentially determine that the name in question was made available not as a subspecies but as an infrasubspecific name is Art. 45.6.1. It, however, would require that this name was not explicitly introduced as a new subspecies, which it clearly was (Fordham, 1986, p. 63).

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