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Source: The Bulletin of Zoological Nomenclature, 78(1) : 17-25

Published By: International Commission on Zoological Nomenclature

URL: https://doi.org/10.21805/bzn.v78.a006

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Case 3826 – *Propappus* Michaelsen, 1905 and PROPAPPIDAE Coates, 1986 (Annelida, Clitellata): proposed conservation by suppression of *Propappus* Seeley, 1888 (Vertebrata, Reptilia)

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http://zoobank.org/urn:lsid:zoobank.org:pub:DE6EF080-40A1-4478-80C2-525F71547159
http://dx.doi.org/10.21805/bzn.v78.a006

Abstract. The purpose of this application, under Article 23.9.3 of the Code, is to conserve the well-used names *Propappus* Michaelsen, 1905 and PROPAPPIDAE Coates, 1986 (Annelida) by suppression of the senior homonym *Propappus* Seeley, 1888 (Reptilia), a junior subjective synonym of *Pareiasaurus* Owen, 1876.

Keywords. Nomenclature; taxonomy; homonymy; Annelida; Clitellata; Oligochaeta; PROPAPPIDAE; *Propappus* Michaelsen; Palaearctic; Vertebrata; Reptilia; Pareiasauria; *Propappus* Seeley; Southern Africa; Permian.

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1. The genus-group name *Propappus* Seeley, 1888 was established for a Permian pareiasaurian reptile, *Propappus omocratus* Seeley, 1888, collected at Brak River, Fort Beaufort, South Africa. According to Watson (1914), the holotype specimen of this pareiasaur in the Natural History Museum in London (BMNH R4064; A.G. Bain collection) consists of a sacrum, an os innominatum, a femur, a tibia, a part of a humerus, and caudal vertebrae. However, the original description, given in a brief abstract (Seeley, 1888), was based on a single fossilized bone (from the above-mentioned specimen), first mistaken by the author for a humerus but later re-interpreted as a femur (Seeley, 1892, figs. 10–11; Broom, 1908). Seeley's main reason for establishing a new genus was that he considered the bone to indicate an intermediate stage between reptiles and early mammals. Lee (1997), who reviewed this case in detail, noted that Seeley had intended to write a full paper on his new taxon but soon realized that he had been on the wrong track. Seeley (1892: 354) suggested that *Propappus* was a junior synonym of *Pareiasaurus* Owen, 1876, yet he retained the name *Propappus*, by suggesting that "until other parts of the skeleton justify the revival of the name *Propappus*, that type may be referred to as *Pareiasaurus* (*Propappus*) *minor*"; although the impression of subgeneric rank for *Propappus* was possibly unintentional. His new nominal species *Pareiasaurus* (*Propappus*) *minor* was thus an objective junior synonym of *Propappus omocratus*. Lee (1997: 268) commented, "This (illegitimate) change was proposed in a brief sentence buried in the detailed description of '*Pareiasaurus baini*' and has either been overlooked or disregarded by most subsequent workers." Also, to be noted is that Seeley himself (1891: 519), while discussing the characters that distinguish *Anthodon* Owen, 1876 from *Pareiasaurus*, had earlier stated "that the genus *Propappus* apparently has no existence, being founded on a femur." Despite all this, two additional taxa of fossil reptiles were subsequently described by other authors as separate species of *Propappus*, *Pr. rogersi* Broom, 1912 and *Pr. parvus* Haughton, 1913.

2. Lee (1997: 233) summed up most 20th-century authors' work on pareiasaurs by stating, "The plethora of invalid names and constant, illegitimate reshuffling of taxa has caused the existing literature on pareiasaurs to be almost impenetrable to the uninitiated." During the 1900s, *Propappus* Seeley, 1888 was mentioned repeatedly in the paleontological literature but over the years was increasingly regarded as a junior synonym of *Pareiasaurus* Owen, 1876. Some of the earlier authors (e.g., Broom, 1908, 1912; Haughton, 1913; Watson, 1914) evidently regarded *Propappus* as valid (see para. 1 above), although Broom (1936), in a late phase of his career, was prepared to synonymize Seeley's *Pr. omocratus* with Owen's *Pareiasaurus serridens* (see Findlay, 1970). Early revisions of pareiasaurian taxonomy (Haughton & Boonstra, 1929; Boonstra, 1934) retained the genus *Propappus*, and as late as 1963, Young & Yeh (1963: 212) did "not think it is all right to consider the genus *Propappus* as a synonym of *Pareiasaurus*", but their discussion dealt only with *Propappus rogersi*, without mentioning the type species *Propappus omocratus*. The comparison by Young & Yeh (1963) of a Chinese fossil with *Propappus* and other South African pareiasaurian genera was referred to by Benton (2016), but without any further comment. In more recent taxonomic revisions of pareiasaurs, *Propappus* came to be explicitly regarded as a junior synonym of *Pareiasaurus* (Kuhn, 1969; Kitching, 1977; Ivakhnenko, 1987; Lee, 1997). Lee (1997: 265, table 1) regarded *Propappus omocratus, Pareiasaurus* (*Propappus*) *minor* and *Propappus rogersi* as junior synonyms of the type species of *Pareiasaurus (Pa. serridens* Owen, 1876), whereas Kuhn (1969) and Ivakhnenko (1987) regarded *Pa. omocratus* as a species separate from

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Pa. serridens. *Propappus parvus* was regarded as a distinct species of *Pareiasaurus* by Kuhn (1969) and Ivakhnenko (1987), as a junior synonym of *Pa. serridens* by Kitching (1977) and as a junior synonym to *Anthodon serrarius* Owen, 1876 by Lee (1997). In short, pareiasaurian taxonomy has been in a state of confusion and instability for at least a century, but now it seems that *Propappus* Seeley, 1888 finally has become a redundant name, returning to the status given it by the original author about 130 years ago (Seeley, 1891; see para. 1).

3. The genus-group name *Propappus* Michaelsen, 1905 (for a genus of Eurasian worms in Annelida, Clitellata/Oligochaeta), with *Propappus glandulosus* Michaelsen, 1905 as the type species, is a junior homonym of *Propappus* Seeley, 1888. *Propappus* Michaelsen and the more recently established family name PROPAPPIDAE Coates, 1986 have both been in continuous use in the taxonomic literature of Clitellata (or Oligochaeta) up until the present day. We have recognized about 200 scientific publications (mostly journal articles, some textbooks) dealing with *Propappus* in one way or another. Over 80 different first authors are involved, and in the Appendix we list 50 references as representative examples of the wealth of such studies during a period of more than 100 years.

4. Michaelsen (1916) described a second species of *Propappus*, *P. volki* Michaelsen, 1916, which subsequently has been recorded from several parts of Eurasia and possibly also from Canada (see Torii, 2006: 359). Most of the literature on Michaelsen's *Propappus* quoted above deals with this taxon, and there is molecular evidence that it refers to a species complex rather than a single panmictic metapopulation (Erséus et al., unpublished data). Michaelsen (1916: 52) mentioned that earlier in 1916 he had reported this taxon as a member of another (and new) genus: "*Palpenchytraeus volki,* n. gen., n. sp." He was referring to a brief report of the annual meeting of the "Naturwissenschaftlicher Verein zu Hamburg" held on 26 January 1916, which was published in a newspaper ("Hamburger Nachrichten"; Anonymous, 1916) on 30 January 1916. Unfortunately, the exact publication date of Michaelsen's description of *Propappus volki* is unknown. His paper was included in a volume that served as the annual report of Naturwissenschaftlicher Verein zu Hamburg for 1915, published in 1916, and the conclusion must be that it was distributed after 30 January. By courtesy of the State Archives of Belgium, we obtained a copy of the newspaper report (Anonymous, 1916), which gives a brief account of Michaelsen's presentation of the new taxon named *Palpenchytraeus volki*, describing it as a "winzig kleinen Wurm, dessen Kopflappen zum Unterschiede von seinen Verwandten zu einem Rüssel ausgebildet ist" [our translation: tiny little worm that, unlike its relatives, has its head lobe formed into a trunk]. Although Michaelsen (1916) had changed his mind about using the name *Palpenchytraeus volki* when he gave his more comprehensive description of *Propappus volki*, we find the former to be an available name in the meaning of the Code. Under Article 8.1 of the Code, the publication establishing the name "must be obtainable, when first issued, free of charge or by purchase", and "in an edition containing simultaneously obtainable copies by a method that assures numerous identical and durable copies". Moreover, the description of *Palpenchytraeus volki* complies with Art. 12.1, requiring the name to "be accompanied by a description or a definition of the taxon that it denotes". In this case, the newspaper report was not signed, but Art. 50.2 states that "if the name of a taxon is made available by publication in a report or minutes of a meeting, the person responsible for the name, not the Secretary or other reporter of the meeting, is the author of the name". Regardless of all this, we have only found

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two works mentioning the name *Palpenchytraeus* in the taxonomic literature after 1916. Welch (1920) merely reiterated Michaelsen's (1916) own account concerning this name, while Coates (1986) regarded *Palpenchytraeus volki* as a *nomen nudum*, assuming that it lacked a formal description (Coates, pers. comm.).

5. We thus conclude that *Palpenchytraeus* Michaelsen, 1916 is a junior synonym of *Propappus* Michaelsen, 1905, and therefore eligible to be proposed as a replacement name for the junior homonymy *Propappus* Michaelsen, 1905. We argue, however, that if this name is adopted, its etymology, which suggests an affinity to *Enchytraeus* and ENCHYTRAEIDAE (PROPAPPIDAE would be replaced by "PALPENCHYTRAEIDAE" [see para. 9 below]) may unnecessarily add to confusion surrounding the taxonomy of these taxa.

6. *Propappus* Michaelsen has a unique position within Clitellata, although it comprises a mere handful of known species. It was originally included in the family ENCHYTRAEIDAE, but on morphological grounds Coates (1986) elevated its status, making it the type genus of a separate family within Clitellata, PROPAPPIDAE Coates, 1986. This separation from ENCHYTRAEIDAE has been reinforced by recent ultrastructural and molecular studies, but while the evidence from a genome-level analysis of transcriptomic data supports a sister-group relationship between PROPAPPIDAE and ENCHYTRAEIDAE (Erséus et al., 2020), the exact systematic position of PROPAPPIDAE among other clitellates is less resolved in other phylogenetic studies (Gustavsson et al., 2008; Marotta et al., 2008; Gorgoń et al., 2015). Thus, the systematics of PROPAPPIDAE as a worm family is highly relevant to more general questions of clitellate evolutionary history.

7. We argue that maintaining the precedence of the senior homonym of *Propappus* would serve no purpose for stability in the taxonomy of pareiasaurian reptiles. Given the taxonomic history of *Propappus* Seeley, 1888, the probability that this name might be subsequently revalidated in pareiasaur taxonomy is low. As was noted in para. 1 above, even the original author soon realized that the name was redundant (Seeley, 1891, 1892). Moreover, applying the Principle of Priority would cause confusion and instability in the well-established taxonomy associated with the junior homonym, the worm genus *Propappus* Michaelsen, 1905. This name is in wide use and the genus is unambiguously defined, not being associated with issues of synonymy or splitting/lumping other than those possibly engendered by cryptic speciation (Erséus et al., unpublished work in progress). Moreover, both this genus and the family-group name PROPAPPIDAE are today well-established in the classificatory infrastructure of Clitellata (or Oligochaeta), e.g., in web-based databases, such as WoRMS, GBIF, Encyclopedia of Life, Catalogue of Life and Wikipedia.

8. For reversal of precedence without an appeal to the International Commission on Zoological Nomenclature, two conditions must be fulfilled according to Art. 23.9. First, the senior homonym must not have been used as a valid name after 1899 (Art. 23.9.1.1), and second, the junior homonym must have been used for a particular taxon, as its presumed valid name, in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of no less than 10 years. In the present case, the second condition applies to the junior homonym (para. 3). However, the senior homonym has been regarded as valid after 1899 (e.g., *Propappus rogersi* and *Pr. parvus* were both described after 1899; see para. 1). Thus, the conditions for reversal of precedence stipulated by Art. 23.9.1.1 are only partly fulfilled.

9. Conservation of *Propappus* Michaelsen, 1905 is clearly desirable, also with respect to the family-group name based on it. The long-term prevailing usage of both

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names suggests that complete suppression of the senior homonym *Propappus* Seeley, 1888 is both desirable and necessary.

10. The International Commission on Zoological Nomenclature is accordingly asked:
    (1) to use its plenary power to rule that the generic name *Propappus* Seeley, 1888 be suppressed for the purposes of both the Principle of Priority and the Principle of Homonymy;
    (2) to place on the Official List of Generic Names in Zoology the name *Propappus* Michaelsen, 1905 (gender: masculine), type species: *Propappus glandulosus* by original designation by Michaelsen, 1905 (Annelida, Clitellata); and
    (3) to place on the Official Index of Rejected and Invalid Generic Names in Zoology the name *Propappus* Seeley, 1888 (Vertebrata, Reptilia), as suppressed in (1) above.

Acknowledgements

We thank Marc Van den Brandt, University of the Witwatersrand, Johannesburg, South Africa, for invaluable input about the history of *Propappus* Seeley; Kathryn A. Coates, Research Associate of the Department of Natural History, Royal Ontario Museum, Toronto, Canada, for informal information on her previous research; Pierre-Alain Tallier and Els Herrebout at State Archives of Belgium, for obtaining an old copy of "Hamburger Nachrichten"; and Thomas Pape, Natural History Museum of Denmark, for advice and constructive criticism on an early version of the manuscript.

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Acknowledgement of receipt of this application was published in BZN 77: 78.

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Appendix

The following references are significant evidence of the prevailing usage of *Propappus* Michaelsen. The papers span a period of over a century, from 1916 to the present day. Most publications are articles in scientific journals whereas those with an asterisk (*) are identification keys and those with two asterisks (**) are textbooks or large monographs.

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