

THE PROBLEMATIC *PARALBUNEA* HU AND TAO, 1996: HOMONYMY, GENERIC NOM. NOV., AND CORRECT TAXONOMIC PLACEMENT

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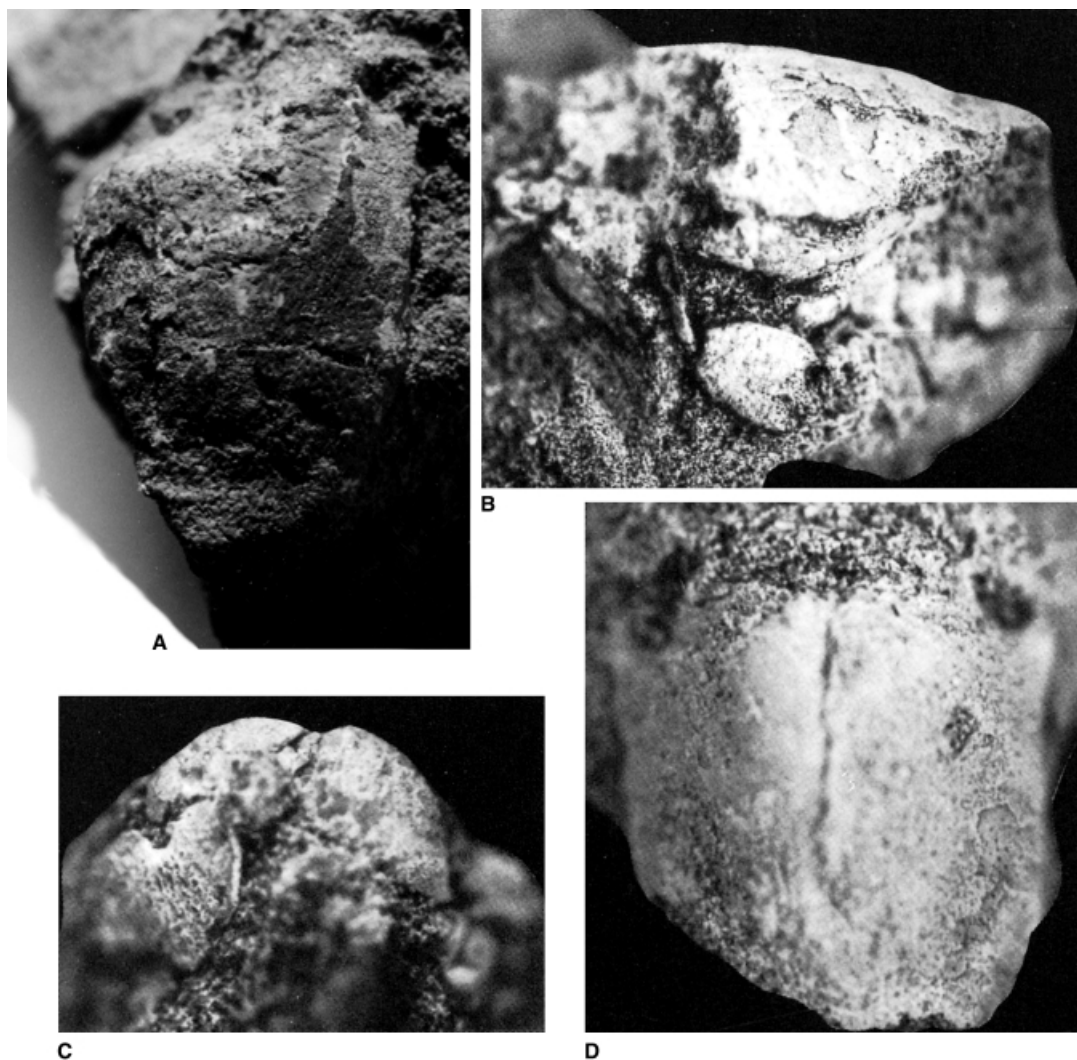
ABSTRACT. The fossil genus *Paralbunea* Hu and Tao, described as an anomuran albuneid, is a junior homonym of *Paralbunea* Serène and a possible synonym of either the brachyuran raninid *Ranilia* H. Milne Edwards, 1837, or *Cosmonotus* Adams and White, 1848. The type series of *P. taipeiensis* Hu and Tao is composed of at least two species belonging to two raninid genera and appears (in part) assignable to the genus *Ranilia* and (in part) to *Cosmonotus grayi* Adams and White, 1848. However, due to both limited availability and poor quality of the holotype of *Paralbunea taipeiensis*, and destruction of the paratypes, this taxon cannot be unequivocally synonymized with any particular raninid taxon and a new name is proposed to replace Hu and Tao's preoccupied generic name. Caution is urged when describing purported albuneid fossils, due to strong convergence with raninid crabs, which are far more common in the fossil record.

KEY WORDS: Anomura, Albuneidae, Brachyura, Raninidae, *Ranilia*, *Cosmonotus*.

HU and Tao (1996) described a new fossil genus of purported anomuran albuneid crab from the Lower Miocene of Taiwan. They named this genus *Paralbunea*, with the type species *P. taipeiensis* Hu and Tao, 1996, as its only species. Unfortunately, *Paralbunea* Hu and Tao, 1996, is preoccupied by the Recent genus *Paralbunea* Serène, 1977 (type species: *Paralbunea manihinei* Serène, 1977, by original designation, not *Albunea paradoxa* Gordon, 1938, as per Serène 1979; see Boyko 2002). The type species of *Paralbunea* Hu and Tao is a composite of two, perhaps even three, different species of raninid decapods, and contains no albuneid material. It should be noted that the erratic nature of Hu and Tao's (1996) work is not limited to this single taxon problem. Ng (1999, p. 238) has pointed out that this publication 'will cause substantial problems for many taxonomists' and that most of the species described by Hu and Tao (1996) 'can probably be referred to current genera and species.'

Although it is immediately clear from the figures and description of Hu and Tao (1996) that none of their material assigned to *Paralbunea taipeiensis* belongs to the Albuneidae, direct examination of the specimens is desirable in order to place them properly. Ng (1999, p. 238) stated that most of Hu and Tao's (1996) specimens 'are readily available for study,' but this is only partly correct because the National Museum of Natural Science, Taichung, Taiwan (NMNS) does not loan any of their type specimens (Chan, pers. comm. 1999), making direct examination more difficult. In any case, the paratypes were never deposited in NMNS, contrary to citations by Hu and Tao (1996, p. 63) of catalogue numbers for the paratypes. Unfortunately the paratypes, and perhaps all the non-holotype specimens of species cited by Hu and Tao (1996), were stored in the basement of the authors' house and destroyed by a flood in 1997 (Tao, pers. comm. via Chan, 1999). Thus, in the absence of type specimens available for examination, the true identity of *Paralbunea taipeiensis* can only be tentatively ascertained from the description and illustrations of Hu and Tao (1996). Their description of the species is not useful for identification, as it combines characters of all the specimens. It should also be noted that, while Hu and Tao (1996) stated in the plate caption on p. 152 that the specimens shown in figures 2, 3, and 6 were all 'NMNS 007607a' [*sic*], it is obvious that the specimen in figure 6 is not the same as that shown in figures 2 and 3, and it is here considered to be the specimen cited by Hu and Tao (1996, p. 63) as 'NMNS 007607b.'

The holotype ('NMNS 007607' = NMNS 002163-F007607) illustrated by Hu and Tao (1996, pl. 11, figs 2–3; Text-fig. 1A–B herein) superficially resembles an albuneid carapace, especially in figure 2 (Text-fig. 1A, herein). However, the proportions of the fossil (22 mm long × 17 mm wide) are wholly unlike species of all albuneid (*sensu lato*) genera except *Blepharipoda* Randall, 1839, and *Lophomastix* Benedict,



TEXT-FIG. 1. A–B, *Erroranilia taipeiensis* (Hu and Tao, 1996) comb. nov. A, holotype, dorsal view, NMNS 002163-F007607; $\times 3.3$ (photograph by T.-Y. Chan). B, holotype, lateral view; $\times 3$. C–D, *Cosmonotus ?grayi* Adams and White, 1848. C, paratype 1 of *Paralbunea taipeiensis*, lateral view, ‘NMNS 007607a’; $\times 4.7$. D, paratype 2 of *Paralbunea taipeiensis*, dorsal view, ‘NMNS 007607b’; $\times 5$. B–D from Hu and Tao (1996). C and D are scans from the original work of Hu and Tao because the specimens have been destroyed and these are the only photographic records of them; they are faithful reproductions of the poor-quality originals. A is a photograph of the only extant specimen.

1904 (both now placed in the Blepharipodidae; see Boyko 2002). Close examination of the fossil’s carapace grooves (CGs; see Boyko and Harvey 1999; Boyko 2002) reveals a medially straight and laterally convex transverse groove across the midline of the specimen. All species of albuneids and blepharipodids possess strong, medially concave, median carapace grooves. The only taxa that possess straight, albeit faint, carapace grooves and resemble this fossil material in all other aspects (e.g. armature, carapace proportion and texture) are certain species of the family Raninidae (Decapoda: Brachyura). Although several raninid genera bear similarities to this fossil, the lack of a strong median carina on the fossil excludes it from *Notopus* de Haan, 1841, and *Cosmonotus* Adams and White, 1848, and suggests a generic placement in the genus *Ranilia* H. Milne Edwards, 1837. If this taxon is a *Ranilia*, it may well be a

synonym of one of the Recent or fossil species (the punctations on the carapace are reminiscent of those seen on the Eocene *Ranilia punctulata* Beschin *et al.*, 1988), but it is not possible to place it in definite synonymy without examination of the type specimen, and probably not even then given the poor quality of the holotype. For the present, it is considered to be a possible *Ranilia*.

The first paratype (destroyed) (NMNS '007607a'; Hu and Tao, 1996, pl. 11, fig. 4; Text-fig. 1C herein) appears to consist of only a propodus, carpus, and merus of a first pereopod. This pereopod possesses oblique grooves on the lateral surface of the propodus (Text-fig. 1C, herein). While such grooves are present in some albuneids (e.g. *Albunea* Weber, 1795), and the overall shape of the propodus, carpus, and merus is similar to that found in albuneids, these characters are also found on the chelipeds of many raninid genera as a result of convergence. The carpus is clearly lacking a dorsodistal spine, which eliminates this specimen from *Albunea*, and the proximoventral margin of the propodus is much more strongly convex than in any species of *Paralbunea* Serène, which are the albuneid genera most closely resembling this fragment. In all aspects it more closely resembles a raninid of the genus *Cosmonotus* as represented by the second paratype discussed below.

Hu and Tao's (1996) second figured paratype ('NMNS 007607b'; destroyed; pl. 11, fig. 6; Text-fig. 1D herein) is a badly eroded carapace of a raninid that appears referable to the genus *Cosmonotus*. This can be discerned by the shape of the strong medial dorsal carina, the presence of a single anterolateral spine on each side of the carapace, the straight lateral margins of the carapace posterior to the anterolateral spine, and the finely punctate surface of the carapace (Text-fig. 1D, herein). This fossil specimen is too badly damaged to distinguish any characters that might separate it from the single Recent species of *Cosmonotus*, and this specimen is, therefore, considered probably identical to *Cosmonotus grayi* Adams and White, 1848. It is clearly not conspecific with *C. eoacaenicus* Beschin *et al.*, 1988, as the size and placement of the anterolateral spines are quite different. Since the other paratype is referred to the Raninidae, and also possesses characters linking it to the genus *Cosmonotus*, it is likely that both of Hu and Tao's (1996) paratypes belong to the same taxon.

Although both paratypes appear to be referable to *Cosmonotus grayi*, the holotype is only tentatively assignable to *Ranilia*. Because the taxon definition is based on the identity of the holotype, the true nature of *Paralbunea taipeiensis* remains in some doubt. Direct examination of the holotype may be able to clarify the situation, but even this might not be possible due to its condition and this species may have to be considered *incertae sedis*. However, as *Paralbunea* Hu and Tao is a junior primary homonym of *Paralbunea* Serène, the name of Hu and Tao's genus must be replaced. As a new name for this preoccupied taxon, I propose *Erroranilia* nom. nov., as the type species was erroneously described as an albuneid rather than a raninid. The sole species in the poorly known genus is, therefore, placed in new combination as *Erroranilia taipeiensis* (Hu and Tao, 1996) and restricted to the holotype specimen only, based on the conclusions discussed above.

Raninids are much more common than albuneids in the fossil record. In fact, only five species of fossil albuneids in three genera and one blepharipodid taxon have been reported, based on fewer than 20 specimens (Schweitzer and Boyko 2000; Boyko 2002). In contrast, 29 genera (21 exclusively fossil) of fossil raninids are known (Tucker 1998) from many hundreds of specimens. Albuneids, blepharipodids, and raninids have numerous superficially similar convergent characters, many of which are among those best preserved in fossil material. Descriptions of raninids as 'albuneids' are not the only type of taxonomic confusion that occurs with fossil material; note also the remarkable resemblance between *Porcellanoidea taiwanica* Hu and Tao (1996) (Anomura: 'Porcellanidae') and species of the raninid genus *Quasilaeviranina* Tucker (1998), which suggests that these two genera may be synonymous. Researchers are advised to compare critically their material with all raninid genera before describing new taxa of fossil albuneids and other anomurans.

To summarize: *Paralbunea* Hu and Tao, 1996, is a junior homonym of *Paralbunea* Serène, 1977; a probable synonym of *Ranilia* H. Milne Edwards, 1837 (*pars*); and a probable synonym of *Cosmonotus* Adams and White, 1848 (*pars*) (see below). The preoccupied generic name is herein replaced by *Erroranilia* nom. nov.

The holotype of *Paralbunea taipeiensis* Hu and Tao, 1996 (pp. 49, 62, 152, 225, in part; pl. 11, figs 2–3), is now *Erroranilia taipeiensis* (Hu and Tao, 1996) comb. nov., and may well be a synonym of a Recent species

of *Ranilia*. The paratypes of *Paralbunea taipeiensis* Hu and Tao, 1996 (pp. 49, 62, 152, 225, in part; pl. 11, figs 4, 6), are considered probably identical to the Recent taxon *Cosmonotus grayi* Adams and White, 1848. This synonymy also applies to the incorrect spelling *Paralbunea taipeinensis* [sic] (Hu and Tao, 1996, p. 53).

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