

BOOK REVIEW

Sakai, K. 2005. *Callianassoidea of the world (Decapoda, Thalassinidea)*. Crustaceana Monographs 4, i-vi, 285 pp., 44 textfigs. Koninklijke Brill, NV, Leiden, The Netherlands, ISBN 90 04 14211 8, hardcover, €89/U.S.\$120.

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Callianassoidea are, among Thalassinidea, the most speciose group. Due to their burrowing life style, specimens are difficult to obtain, especially from deeper sedimentary bottoms. This has led to description of numerous species based on single and/or incomplete specimens, which renders their taxonomy and systematic notoriously difficult.

Katsushi Sakai is without doubt the most experienced contemporary researcher on the taxonomy of thalassinideans. He has been active in this field since 1967 and has described about one quarter of the more than 200 species currently recognised within the Callianassoidea. His new review of the superfamily starts with a short preface (1 p.) followed by an introduction (2 pp.). The systematic account starts with a tabular overview of families, subfamilies, genera, and numbers of species, and continues with the diagnosis of the superfamily Callianassoidea in its new sense (2 pp.). This is followed by a key to the subfamilies and genera recognised by Sakai (2 pp.). The systematic part continues with the family Callianassidae and its first subfamily Callianassinae. Here, Sakai argues at length (17 pp.) why all the previously erected 12 genera have to be synonymised with *Callianassa*. Within the genus, species are arranged according to broad geographical regions and alphabetically within each region. For each species, an extensive synonymy is given, a brief “Diagnosis” (sometimes under the heading “Remarks,” basically restricted to the shape of maxilliped 3, the margins of its merus, male and female pleopod 1, and the shape of the telson), type locality, distribution, and for some species true “Remarks.” The new species and some new material are described in detail and are illustrated in one to three figures. This continues through the subfamilies Callichirinae, Eucalliicinae, Calliapagurinae, Anacalliicinae, the new subfamily Lipkecallianassinae, Bathycalliicinae, the new subfamily Paracalliicinae, and finally the families Gourretiidae (with the subfamilies Gourretiinae, Callianopsinae, and the new subfamily Pseudogourretiinae) and the family Ctenochelidae (in which is included only one subfamily Ctenochelinae and genus, *Ctenocheles*). After the acknowledgements (1 p.) follows a one-page “note added in proof” on the genus *Dawsonius*, and 27 pages of references. A taxonomic index (10 pp.) allows easy access to every taxon mentioned in the book.

Generally, this monograph is a merger of several of Sakai’s previous papers, based mainly on his 1999 “Synopsis” of the Callianassidae (Sakai, 1999b) and later papers on the callianassids of the Andaman Sea and the

Plante collection (Sakai, 2002, 2004). The concept is the same; synonymising many genera erected previously within the Callianassinae with one large single genus *Callianassa*. In doing so, he dismisses the views of authors such as Manning and Felder (1991), Poore (1994), and Tudge et al. (2000). Although I can understand this action up to a point, especially as alternatives are neither free of errors nor convincing, it goes too far within the Callichirinae when synonymising *Corallianassa* with *Glypturus*. Sakai for the first time recognises the subfamily Callichirinae. What’s really new are 13 species and additional material from the collections of the Zoological Museum of the University of Copenhagen, which comprise samples from the Galathea Expedition 1950-1952, Dr. Th. Mortensen’s expeditions, including the Java-South African Expedition 1929-1930, and Dr. G. Thorson’s Persian Expedition.

The book is quite up-to-date, albeit selectively. It considers all work of Sakai up to 2005, which is understandable since these data were readily available to him, and those of other workers up to 2003 (Ngoc-Ho, Felder). Some papers from that year, however, were ignored or overlooked, including two further new species (*Biffarius pacificus* Guzman and Thatje, 2003; *Callianassa aqabaensis* Dworschak, 2003). Many earlier papers dealing with species from the Atlantic have been overlooked, e.g., Blanco-Rambla (1995, 1998, 2000), Vargas and Cortés (1999), Abed-Navandi (2000) as well as others from the Sea of Japan (Komai et al., 2002), which therefore result in incomplete distribution accounts for the species in question. In several cases, Sakai missed data he published himself.

“The Devil is in the detail.” . . . this applies especially to this book. There are so many major and minor errors, that listing them all would go beyond the space allocated for this review. A reviewer should have spotted many of these with little difficulty. A few are mentioned below.

It begins already in the preface (p. 1) with “Two genera, *Necallianassa* and . . . are synonymized with *Callianassa*. *Corallichirus bayeri* is recognized as a junior synonym of *Gourretia assimilis*.” Actually, *Necallianassa* was already synonymised in Sakai (1999b: 128) and *Corallichirus bayeri* is synonymised with *Glypturus assimilis* on p. 138.

The key to the subfamilies and genera (pp. 7-8) contains several errors: couplet 14 states “uropodal exopod with lateral notch . . . *Calliax*”. In the definition of the genus (p. 196), however, one reads “Uropodal . . . exopod without lateral notch”. There is actually only one species within *Calliax* (sensu Sakai) that shows a lateral notch on the uropodal exopod, i.e., the type species *C. lobata* as stated later (p. 197). The genera *Paragourretia* and *Laurentgourretia* are not included at all in the key. Curiously, the subfamilies do not group within their respective families in the key.

In the diagnoses of the (sub)families, e.g., pp. 9 and 11, the shape of the third maxilliped is characterised as “pediform, subpediform, suboperculiform, or operculiform”. There is, however, no definition given for these

different shapes. Later, in the diagnoses of the species, the terms “subquadrate”, “subsquare”, “subovoid”, “oval”, “broad”, “narrow” are also used for the shape of its ischium-merus. This is especially confusing when comparing the diagnoses with his previous papers, e.g., both *C. bouvieri* (p. 78) and *C. brevirostris* (p. 79) have “suboperculiform” maxilliped 3 here, although they have been described as “operculiform” in Sakai (1999b) and Sakai (2002), respectively. For *C. tyrrhena* he mentions a “subpediform” maxilliped 3 referring to the figure in Ngoc-Ho (2003) who classified it as “operculiform”.

Sakai mentions some non-existent genera, e.g., “*Pseudotrypaea*” (p. 17) and “*Eucallichirus*” (p. 236); he gives an incorrect type species for the genus *Lepidophthalmus* (p. 144; *Callianassa bocourti* A. Milne-Edwards, 1870 instead of *Lepidophthalmus eiseni* Holmes, 1904); and he gives a wrong type locality for *Callianassa candida* (p. 31: Alupka, Black Sea) although Olivi (1792) described this species from around Venice, Adriatic Sea, and Sakai (1999b: 16) designated a neotype from Rovinj, Adriatic Sea, which he does not even mention here. It is not clear why the type locality of *C. whitei* (p. 43) is given as “Mediterranean” and the distribution as “Mediterranean, rarely found in Adriatic Sea” when the holotype and most of the material came from Rovinj, Adriatic Sea.

For the new material investigated, the ZMUC inventory numbers given in the “Material” do not correspond with those given in the figure legends (e.g., p. 58 vs Fig. 11). In places, he confuses genera, e.g., on p. 19 “... though all of those genera except *Calliax* (removed to the subfamily Callichirinae) were synonymized with *Callianassa* ...” [it was actually *Corallianassa* that was removed to Callichirinae, not *Calliax*] and species, e.g., on p. 44 referring to *C. bififormis* he states “... without a spine on posterior margin (Holthuis, 1991, fig. 443)” [the figure referred to is of *C. biffari*, not *C. bififormis*].

Sakai’s arguments are often hard to follow, especially when they are circular (see p. 122): “In *G. acanthochirus*, the dorsal spine [actually 3 spines] of the propodus is observed as in the definition [of the genus by Manning and Felder, 1991], but in the other species of *Glypturus* [in the sense of Sakai, not Manning & Felder!] no such spines are present.”

What is inexcusable is that two of the thirteen new species, *Glypturus rabalaisae* (p. 135) and *Gourretia loeuffintesi* (p. 221) are described without fixation of a holotype and are thus invalid according to Art. 72.3. of the ICZN!

Another taxonomic issue is the priority of one family group name. Sakai (1999a) erected Gourretiinae for *Gourretia* and *Dawsonius*, placing *Paracalliax* in Ctenochelinae. Later, Sakai (2004) elevated the subfamily to family rank adding *Callianopsis*, *Laurentgourretia*, and *Paragourretia* and placing *Paracalliax* this time in Callianassidae. If this taxonomic arrangement is followed, Callianopsinae Manning and Felder, 1991 has precedence as a family level name over Gourretiidae [I thank Gary Poore, Melbourne, for drawing this to my attention].

Very annoying is that Sakai refers incorrectly to the work of others. One example (p. 150) is the following: “Felder (2003) separated *Lepidophthalmus bocourti* and *L. eiseni* by the morphological differences of the ventral abdominal

sclerite. However, it is difficult to separate these two species by the shape of the sclerite, due to the variation in this formation, which is affected by the locality and by its unknown function, as that author mentions that small, immature specimens lack the structure in either *L. bocourti* or *L. eiseni* (cf. Felder, 2003: 434).” This is not correct. First, Felder (2003: 438) mentioned more characters than the ventral sclerites alone to separate the two species. Second, Sakai’s interpretation “that small, immature specimens lack the structure in either *L. bocourti* or *L. eiseni*” is wrong. Felder’s (2003: 434) detailed observations of small specimens refer to neither species. With respect to the ventral plating in *Lepidophthalmus*, one statement of Sakai (p. 147) is given here without comment – it speaks for itself: “... it is very difficult to differentiate *L. manningi* from *L. louisianensis*: this can be done by specialized techniques for species discrimination, involving allozymic analysis of the sclerites”.

The second example (p. 197) is more damning when Sakai misrepresents others arguments in order to support his own views: “The genus *Calliaxina* Ngoc-Ho, 2003 was established for *Calliax punica* ... Ngoc-Ho (2003) compared with *Paraglypturus calderus* Türkay and Sakai, a species of a different genus, and mentioned that *Calliax punica* is different from *P. calderus* in its features. However, the type species of the genus *Calliax* is *Calliax lobata* (De Gaillande & Lagardère, 1966) so her comparison is not relevant to justify a new genus *Calliaxina*: therefore, *Calliaxina* is not accepted.” This is simply not correct. The original wording in Ngoc-Ho (2003: 493) is as follows:

“Differences between the genera *Calliax*, *Calliaxina* n. gen. and *Paraglypturus*, based on their type species *Calliax lobata*, *Calliaxina punica* n. comb. and *Paraglypturus calderus* Türkay & Sakai, 1995 are presented in Table 1. De Saint Laurent and Manning (1982) stated that *Calliax lobata* and *Calliaxina punica* n. comb., ... were significantly different. They actually differ, as listed above [in Table 1] by many characters, the most important of which concern the morphology of the Mxp3, the P1, and also the male and female Plp1, Plp2”.

Only in the next paragraph does Ngoc-Ho continue with a more detailed comparison of *Calliaxina* and *Paraglypturus*.

For someone working with this group the book is a must but at a very high price for getting some new species descriptions and what can best be described as a controversial and retrograde classification. With a price of EURO 89, this monograph is not a bargain. For someone not familiar with this group, the book is of little value. It provides only a key to subfamilies and genera (incomplete even if the taxonomic arrangement is accepted), but none to species. The very short species diagnoses given (some almost identical, none given at all for others) are insufficient to differentiate between species. There are 54 named species of *Callianassa* (sensu Sakai) listed for the Indo-West Pacific, but with the aid of this monograph one would have difficulty recognising many.

In summary, this monograph is very disappointing. The editors failed to ensure that this book is one of the “Good quality contributions” that they intend Crustaceana Mono-

graphs to be (according to the blurb on the back cover). Their statement about this volume that the book might be of interest for ecologists and environmental biologists is misleading. I can only hope that the author and editors of this series will put more scrutiny into the forthcoming monograph by K. Sakai on Upogebiidae announced on the inside title page of this one.

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