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DECAPOD CRUSTACEANS WITH DESCRIPTIONS OF THREE NEW SPECIES

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ABSTRACT

The decapod crustacean fauna of the Bau Limestone Area comprises of six species of prawns and 10 species of crabs. Of these, three species of crabs of the genera *Ibanum*, *Coccusa* and *Geosersama* are described as new to science. While most of the fauna are not obligate karst species, the discovery of the new species as well as numerous new records and re-discoveries after a long lapse in the sites suggests the Bau Limestone Area is still species-rich and merits conservation in part or whole.

Keywords: Taxonomy, *Ibanum*, *Coccusa*, *Geosersama*

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INTRODUCTION

The extensive limestone areas of Sarawak have been subjected to numerous studies over the years, with most of the work on decapod crustaceans centred in and around the massive karst formations of Gunung Mulu and Niah (see Holthuis, 1979, 1986; Collins, 1980; Chapman, 1984). The Bau area was, however, one of the first such habitats scientifically surveyed; the first decapod reported from there being the cave crab *Stygothelphusa bidiensis* by Lanchester (1900a). Subsequently, *L. cognetii* was reported from there by Colosi (1920). In recent years, Ng (1987) described *Isolapotamon bauense* from the Bau area. The recent survey of the Bau Limestone Area by staff of the Sarawak Biodiversity Centre over a two-year period has not only obtained these species but several others, including three new ones. This paper reports on the new and interesting taxa collected during the course of this survey.

The Bau Limestone is one of the six limestone biodistricts that have been recognized in Sarawak (SBC, 2000), and is between 1°21'N to 1°24'N and 110°2'E to 110°11'E. It is of Upper Jurassic to Cretaceous age and has rocks which are pale, massive, fined-grained, poorly bedded, jointed and of high

purity (Wilford, 1964). The Sarawak Biodiversity Centre's 30-month Bau Limestone Inventory Project was initiated to obtain baseline data on the biodiversity and economic activities of the area. The information derived from the project would form the basis for recommendations to totally protect some of the hills.

Collection of crabs and prawns were carried out at 19 limestone streams, inside caves and cave passages. The characteristics of the streams surveyed have been described in Jongkar and Lim (2004). Surveys also included possible habitats for terrestrial crabs such as limestone wall cleavages, underneath rocks and among plants. These shaded and filled-water microhabitats are common in the Bau Limestone Area.

Specimens examined are deposited in the Sarawak Museum (SM), Kuching; Sarawak Biodiversity Centre (SBC), Kuching; Museum Zoologicum Bogoriense (MZB), Cibinong, Indonesia; Zoological Reference Collection (ZRC) of the Raffles Museum, National University of Singapore; Zoological Museum of the University of Turin (MUT), Italy; and Basel Museum (MBA), Basel, Switzerland.

Only diagnoses of the new taxa are presented as they are all similar to species which have been described in detail in the past to avoid being repetitious. As such, only key distinguishing characters have been presented. We have not discussed the taxonomy of all the species found in the Bau area as many of them have been revised previously by other works; these have been referred to whenever possible. When there are useful taxonomic comments to be made, these species are discussed in the main text. Only when new species are described is the material examined specifically stated. For the new species named, only diagnoses are provided as they are deemed sufficient to distinguish them. The terminology used essentially follows Ng (1988). The abbreviations G1 and G2 are used for the male first and second pleopods (= gonopods) respectively. Measurements provided are of the carapace width and length respectively.

TAXONOMY

PRAWNS (CARIDEA)

Three families of freshwater prawns are known from Sarawak (Wowor *et al.*, in press), viz. Alpheidae, Atyidae and Palaemonidae, with a total of 26 recognised species. These are Alpheidae: *Alpheus cyanoteles* Yeo & Ng, 1997; Atyidae: *Atyopsis moluccensis* (De Haan, 1849), *Caridina bakoensis* Ng, 1995, *C. bruneiana* Choy, 1992, *C. gracilipes* De Man, 1892, *C.*

gracilirostris De Man, 1892, *C. peninsularis* Kemp, 1918, *C. sumatrensis* De Man, 1892, *C. tonkinensis* Bouvier, 1919, *C. typus* H. Milne Edwards, 1837, *C. thambipilaii* Johnson, 1961; Palaemonidae: *Macrobrachium callirrhoe* (De Man, 1898), *M. clymene* (De Man, 1902), *M. dacqueti* (Sunier, 1925) (= *M. rosenbergii* of other authors), *M. equidens* Dana, 1852, *M. idae* (Heller, 1862), *M. lanchesteri* (De Man, 1911), *M. lar* (Fabricius, 1798), *M. latidactylus* (Thallwitz, 1891), *M. malayanum* (Roux, 1934), *M. mirabile* (Kemp, 1917), *M. neglectum* (De Man, 1905), *M. pilimanus* De Man, 1879, *M. rhodochir* Ng, 1995, *M. scabriculum* (Heller, 1862), and *M. trompii* (De Man, 1898).

In the survey, the following species were collected: *Atyopsis moluccensis*, *Caridina tonkinensis*, *Macrobrachium malayanum*, *M. neglectum*, *M. pilimanus* and *M. trompii* (see Table 1).

Family Palaemonidae

Macrobrachium malayanum (Roux, 1934)

Material examined: See Table 1.

Remarks: This common lowland species in Peninsular Malaysia, Singapore, Riau Islands and Sumatra has been widely reported (see Chong and Khoo, 1987; Ng and Choy, 1990; Ng, 1992), its presence in Sarawak being first reported by Chong and Khoo (1987). The structure of the rostrum varies a bit, although in the present series of Sarawak material, many tend to have relatively longer rostrums. In all other aspects, however, they agree with *M. malayanum* as defined by Chong and Khoo (1987). See Chong and Khoo (1987) for synonymy.

Macrobrachium neglectum (De Man, 1905)

Remarks: Ng (1990) and Ng and Choy (1990) regarded *M. neglectum* (De Man, 1905) as a species distinct from *M. javanicum* (Heller, 1862) but did not elaborate. It was only much later that Wowor and Choy (2001) gave a detailed account on why both species are distinct and provided good figures and detailed descriptions. See Wowor and Choy (2001) for complete synonymy.

Family Atyidae

Caridina tonkinensis Bouvier, 1919

Material examined: See Table 1.

Remarks: This species was first recorded from Southeast Asia proper by Johnson (1961) (from Singapore) and Ng and Choy (1990) later recorded it from Endau-Rompin. The present specimens represent the first record from Borneo. Ongoing work by Cai Yixiong (unpublished data), who is revising the species allied to *C. tonkinensis* indicates that what is currently called this species from Southeast Asia may need to be referred to a separate species. This, however, will only be done at a later date as part of a larger revision of the genus.

Table 1: Material examined.

Taxon	Cat. No.	No. Spec	Date	Locality	Collector (s)
ATYIDAE					
<i>Atyopsis moluccensis</i>	SBC.C.00050	1	15-Apr-02	Gunung Tongga	G. Jongkar <i>et al.</i>
<i>Caridina tonkinensis</i>	SBC.C.00059	6	16-Apr-02	Gunung Podam	G. Jongkar <i>et al.</i>
<i>Cocculina cristicervix</i>	SBC.C.00130	1	02-Oct-02	Gunung Doya	A. Denis <i>et al.</i>
GECARCINUCIDAE					
<i>Syngathelphusa bidiensis</i>	SBC.C.00013	1	13-Nov-01	Gunung Tai Ton	G. Jongkar <i>et al.</i>
	SBC.C.00106	1	13-Jun-02	Gunung Doya	B.S. Raymond <i>et al.</i>
	SBC.C.00134	1	09-Oct-02	Gunung Tai Ton	G. Jongkar & B.S. Raymond
PALAEMONIDAE					
<i>Macrobrachium lancesteri</i>	SBC.C.00031	3	19-Feb-02	Gunung Batu	B.S. Raymond & J.J. Stephen
<i>Macrobrachium malayanum</i>	SBC.C.00003	8	22-Sep-01	Gunung Meraja	G. Jongkar <i>et al.</i>
	SBC.C.00004	4	22-Sep-01	Gunung Kawa	G. Jongkar <i>et al.</i>
	SBC.C.00006	5	09-Oct-01	Gunung Aup	G. Jongkar <i>et al.</i>
	SBC.C.00008	12	16-Oct-01	Gunung Podam	G. Jongkar <i>et al.</i>
	SBC.C.00011	1	06-Nov-01	Gunung Apin	B.S. Raymond & J.J. Stephen
	SBC.C.00016	1	13-Nov-01	Gunung Tai Ton	G. Jongkar <i>et al.</i>
	SBC.C.00020	3	20-Nov-01	Gunung Krian	B.S. Raymond & J.J. Stephen
	SBC.C.00028	2	12-Dec-01	Gunung Ropih	B.S. Raymond & J.J. Stephen
	SBC.C.00033	1	27-Feb-02	Gunung Doya	N. Margarita <i>et al.</i>
	SBC.C.00060	48	16-Apr-02	Gunung Podam	G. Jongkar <i>et al.</i>
	SBC.C.00066	6	06-May-02	Gunung Meraja	G. Jongkar <i>et al.</i>
	SBC.C.00071	13	07-May-02	Gunung Kawa	G. Jongkar <i>et al.</i>
	SBC.C.00075	16	08-May-02	Gunung Ropih	G. Jongkar <i>et al.</i>
	SBC.C.00077	6	13-May-02	Gunung Poing	G. Jongkar <i>et al.</i>
	SBC.C.00080	9	14-May-02	Gunung Aup	G. Jongkar <i>et al.</i>
	SBC.C.00084	27	16-May-02	Gunung Stulang	G. Jongkar <i>et al.</i>
	SBC.C.00085	24	16-May-02	Gunung Stulang	G. Jongkar <i>et al.</i>
	SBC.C.00109	1	13-Jun-02	Gunung Doya	B.S. Raymond <i>et al.</i>
	SBC.C.00117	3	25-Jun-02	Gunung Ropih	A. Denis <i>et al.</i>
	SBC.C.00124	1	10-Jul-02	Gunung Aup	A. Denis <i>et al.</i>
	SBC.C.00133	3	02-Oct-02	Gunung Doya	A. Denis <i>et al.</i>
	SBC.C.00142	1	28-Nov-02	Gunung Podam	B.S. Raymond
	SBC.C.00143	2	12-Nov-02	Gunung Kawa	B.S. Raymond
	SBC.C.00148	1	28-Dec-02	Gunung Tongga	G. Jongkar
<i>Macrobrachium neglectum</i>	SBC.C.00009	2	16-Oct-01	Kg Bogag	B.S. Raymond & J.J. Stephen