

***IRMENGARDIA DIDACTA*, A NEW FRESHWATER CRAB
(CRUSTACEA: DECAPODA: BRACHYURA:
PARATHELPHUSIDAE) FROM JOHOR,
PENINSULAR MALAYSIA**

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ABSTRACT. - A new species of parathelphusid freshwater crab, *Irmengardia didacta*, is described from acid waters in Johor, Peninsular Malaysia. This is the first record of the genus from the state. *Irmengardia didacta* differs from the related *I. pilosimana* (Roux) in having a more swollen, smooth carapace, reduced epigastric cristae, no postorbital cristae and the inner proximal edge of the subterminal segment of the male first pleopod not produced, with the terminal segment gently curving outwards.

INTRODUCTION

The freshwater crab genus *Irmengardia* Bott, 1969 is represented by only two species in Peninsular Malaysia and Singapore (see Ng, 1988). The type species, *I. pilosimana* (Roux, 1936) is known only from Pahang and Trengganu; whereas *I. johnsoni* Ng & Yang, 1985 is endemic to Singapore. A Sumatran species, *Liotelphusa wirzi* Roux, 1931, referred to *Irmengardia* by Bott (1970) has been transferred to a new genus (Ng, in press).

Recently, the first author collected several specimens from shallow acid water streams near Sungei Mupor in southern Johor which proved to belong to *Irmengardia*. This is the first record of the genus from Johor. The specimens, although close to *I. pilosimana*, differ in several characters, notably in the form of the carapace and male first pleopod. It is for this reason the authors feel that a new taxon, here named *I. didacta*, is warranted.

The description of the new species forms the text of the present note. The abbreviations G1 and G2 are used for the male first and second pleopods respectively. Terms used essentially follow those by Ng (1988). All measurements are in millimetres, and are of the carapace width and length respectively. Specimens are deposited in the Zoological Reference Collection (ZRC), Department of Zoology, National University of Singapore.

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FAMILY PARATHELPHUSIDAE ALCOCK, 1910

Genus *Irmengardia* Bott, 1969

Irmengardia didacta, new species

(Pl. 1; Fig. 1A-F)

Material examined. - Holotype - male (14.5 by 13.4 mm) (ZRC), acid water, shallow well shaded streams, mud and leaf litter substrate, Sungei Mupor, Johor, Peninsular Malaysia, leg. P. K. L. Ng, 22.i.1991.

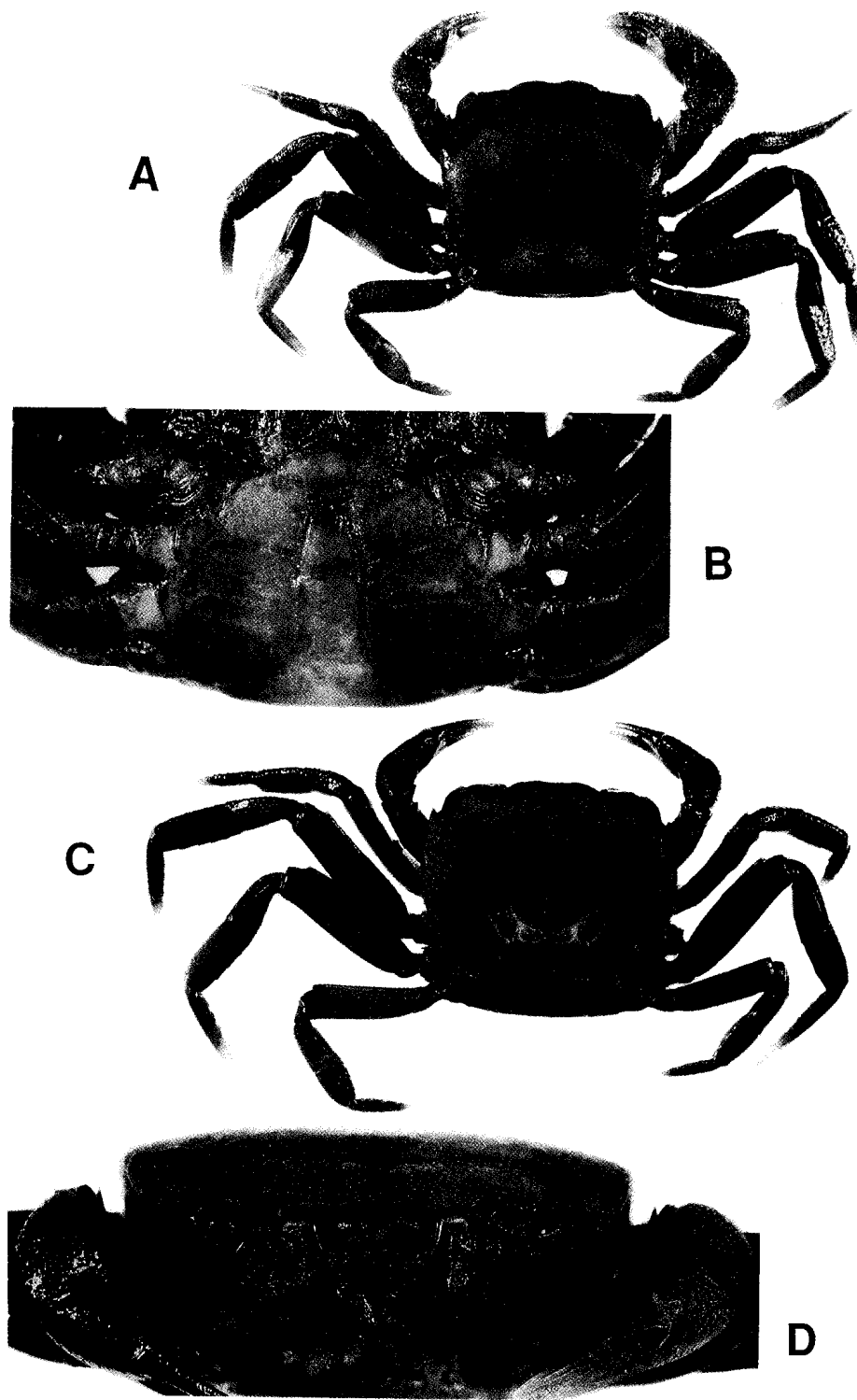
Paratypes - 7 males (two young), 3 females (1 young) (largest 16.1 by 14.7 mm) (ZRC), same data as holotype.

Diagnosis. - Carapace squarish, appears swollen, dorsal surface smooth, convex, postorbital regions smooth, without any striae; frontal regions with numerous or scattered small hairs, cervical groove not evident, epigastric cristae rugose, low, short, not sharp; postorbital cristae absent. Third maxilliped exopod with long flagellum. Inner proximal edge of G1 subterminal segment not produced (from ventral view); terminal segment gently curved, not straight, surfaces near tip with numerous scale-like structures.

Etymology. - The specific name is derived from the Greek “didaktos” for learned; alluding to the scholarly gentleman this new species honours - Associate Professor D. H. “Paddy” Murphy. In his 31 years in the university, “Paddy” Murphy has made immeasurable contributions to zoology and has also had an immense influence on the authors.

Remarks. - The large number of specimens of *I. pilosimana* in the ZRC from Pahang permit a good understanding of variation within the species and allows for an accurate comparison with *I. didacta*, new species. The main differences between the two taxa are enumerated in Table 1. The differences are generally consistent for all the specimens of *pilosimana* and *didacta* examined, including small and large males. The convexity and more swollen appearance of the carapace is not always reliable in females. A few of the larger females of *I. pilosimana* from Pahang we have examined strongly resemble *I. didacta* with regards to this feature. None of the males of *I. pilosimana* we have examined from Pahang however, have carapaces as swollen. The surface of the postorbital region in *I. didacta* is smooth, without granules or striae. In *I. pilosimana* however, this region is covered with well developed striae and appears very rugose, so much so that a low postorbital cristae can be discerned. The extent of the short hairs on the frontal regions present in *I. didacta* varies somewhat among the specimens, but is absent in *I. pilosimana*. It is very distinctive in the holotype male of *I. didacta*, but is more sparse in the paratype females. The differences in the G1 are distinct particularly in the shape of the subterminal and terminal segments (compare that of *I. didacta*: Fig. 1B, D, E with *I. pilosimana*: Fig. 1G, H, I respectively).

The authors have also examined specimens from Selangor (in the ZRC) which appear to be attributable to *I. pilosimana*, extending the known range of this species. Most of them are rather small, the single adult male having a carapace physiognomy generally similar to that of *I. didacta*. Its affinities however, are closer to *I. pilosimana*, its G1 agreeing very well with that of the Pahang ones (Fig. 2A-D) and its postorbital region is also rugose.



Pl. 1. *Irmengardia didacta*, new species. A, B, Holotype male, 14.5 by 13.4 mm (ZRC); C, D, Paratype female, 16.1 by 14.7 mm (ZRC).

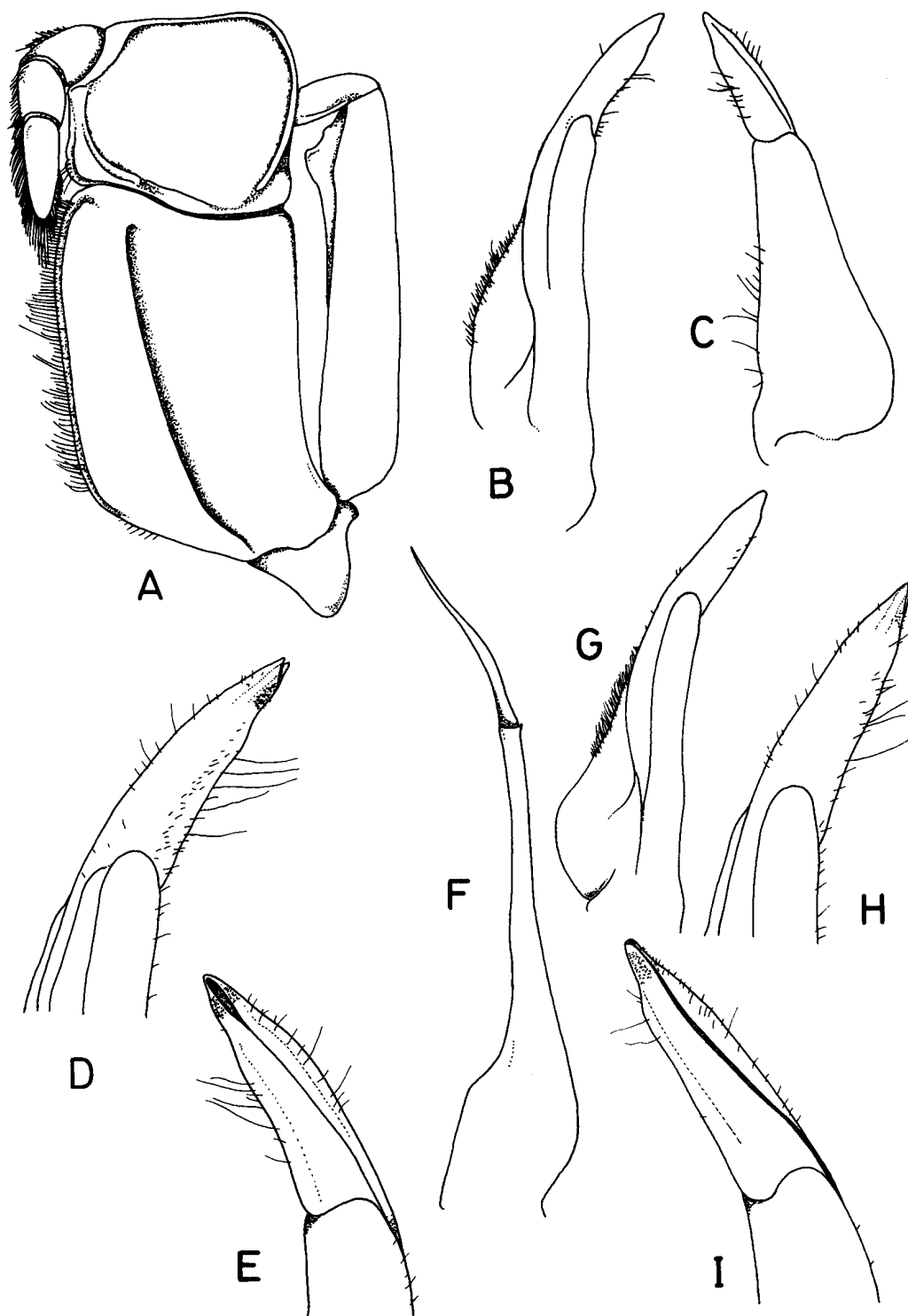


Fig. 1. A-F, *Irmengardia didacta*, new species, holotype male, 14.5 by 13.4 mm (ZRC). G-I, *Irmengardia pilosimana*, male, 13.2 by 12.3 mm, Kuala Tahan, Pahang (ZRC). A, left third maxilliped; B-E, G-I, left G1; F, G2. B, G, D, H, ventral view; C, E, I, dorsal view. D, E, H, I, G1 terminal segments.

Table 1

	<i>I. pilosimana</i>	<i>I. didacta</i>
dorsal surface of carapace	flat to gently convex, rarely swollen, branchial regions almost flat	appears swollen, branchial regions distinctly convex
cervical grooves	broad, distinct	indistinct
epigastric cristae	strong, sharp	short, rugose
postorbital cristae	weak, barely discernible, marked by rugosities	absent
postorbital region	rough, rugose	smooth, without rough surfaces
frontal region	without hairs	with scattered or numerous very short hairs
frontal margin	straight, occasionally gently sinuous	gently to strongly sinuous
G1 subterminal segment	inner proximal edge distinctly produced	inner proximal edge not produced
G1 terminal segment	straight, uniformly cone-shaped, proximal margins almost straight	gently curved, upper margin convex, lower margin concave

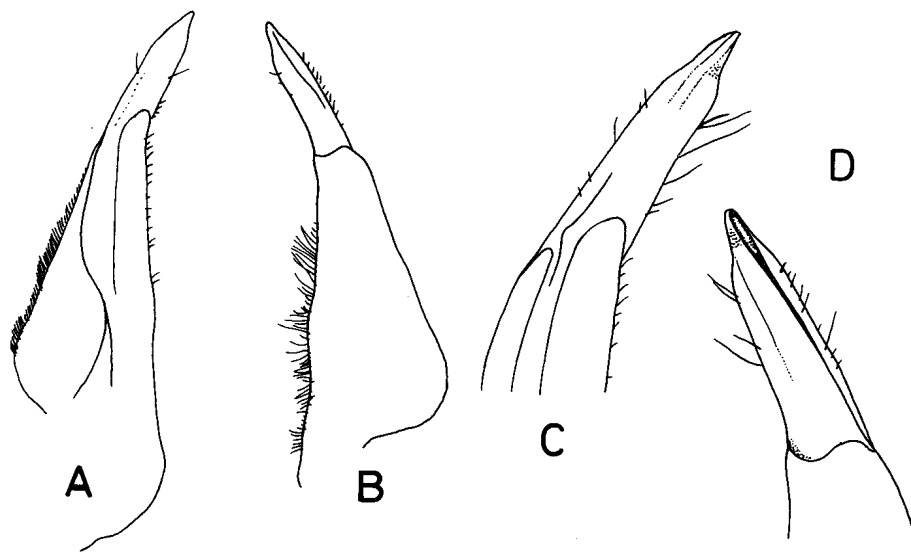


Fig. 2. *Irmengardia pilosimana*, male, 12.3 by 11.3 mm, Selangor (ZRC). Left G1. A, C, ventral view; B, D, dorsal view. C, D, G1 terminal segment.

The key by Ng (1988: 91) for the genus is now revised to accomodate the new species -

1. Epibranchial tooth weak, occasionally appearing confluent with external orbital angle. Ambulatory merus with weak subterminal tooth. Larger male chela flattened, almost smooth, almost glabrous (Singapore) *johnsoni*
- Epibranchial tooth distinct, sharp. Ambulatory merus with strong subterminal tooth. Larger male chela flattened, covered with numerous small granules, lined with numerous long, soft hairs (Peninsular Malaysia) 2
2. Carapace almost always flat, not usually swollen, epigastric cristae strong, distinct; postorbital and frontal regions with distinct striae, appears rugose; frontal region without hair; postorbital cristae low but discernible. Inner proximal edge of subterminal segment distinctly produced, terminal segment uniformly cone-shaped, lateral margins almost straight *pilosimana*
- Carapace appears swollen, epigastric cristae short; postorbital and frontal regions smooth, without granules or striae; frontal region with scattered or numerous very short hairs; postorbital cristae completely absent. Inner proximal edge of subterminal segment not produced, terminal segment gently curving outwards, not straight and uniformly cone-shaped *didacta*

Ecology. - The specimens of *I. didacta* were all collected from very shallow acidic water (less than 20 cm deep) with soft mud and dense leaf litter substrates. The streams are well shaded, with large amounts of organic debris. The water is tea-coloured, with a pH of about 5. Other organisms caught in these streams included fishes like *Channa gachua*, *C. lucius*, *C. melasoma*, *Puntius johorensis*, *Rasbora einthovenii*, *R. bankanensis*, *R. pauciperforata*, *Parakysis verrucosus*, *Nemacheilus selangoricus*, *Lepidocephalichthys* sp., *Pangio semicincta*, *P. muraeniformis*, *Luciocephalus pulcher*; and the prawns *Macrobrachium malayanum* and *M. trompii*.

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LITERATURE CITED

- Bott, R., 1970. Die Süßwasserkrabben von Europa, Asien, Australien und ihre Stammesgeschichte. Eine Revision der Potamoidea und Parathelphusoidea (Crustacea, Decapoda). *Abhand. Sencken. Naturf. Ges.*, Frankfurt, **526**: 1-338, Pls. 1-58.
- Ng, P. K. L., 1988. *The Freshwater Crabs of Peninsular Malaysia and Singapore*. Department of Zoology, National University of Singapore, Shinglee Press, Singapore, pp. i-viii, 1-156, Figs. 1-63, 4 colour plates.
- Ng, P. K. L., in press. Redescription of *Liotelphusa wirzi* Roux, 1931 and definition of a new parathelphusid genus (Crustacea: Decapoda: Brachyura) from the Nias Islands, Western Sumatra. *Verh. Naturhist. Gesell. Basel*.