J. South Asian nat. Hist., ISSN 1022-0828. April, 1995. Vol. 1, No. 2, pp. 175-184; 5 figs.

Ceylonthelphusa scansor, a new species of tree-climbing crab from Sinharaja Forest in Sri Lanka (Crustacea: Decapoda: Brachyura: Parathelphusidae)

Peter K. L. Ng *

Abstract

An interesting new species of tree-climbing terrestrial crab, *Ceylonthelphusa scansor* (Parathelphusidae), is described from a lowland rainforest in Sinharaja, southern Sri Lanka. The species is characterised by its very long and distinctively striped ambulatory legs, strong and well produced epibranchial and external orbital teeth, rugose lateral margins and structure of the male first gonopods.

Introduction

Three species of freshwater/terrestrial crabs of the genus *Ceylonthelphusa* Bott, 1969 (Parathelphusidae) are known from Sri Lanka, viz. *C. rugosa* (Kingsley, 1880) (type species), *C. sorror* (Zehntner, 1894) and *C. inflatissima* Bott, 1970. As part of a revision of the freshwater and terrestrial crab fauna of Sri Lanka, the author, in 1992, together with Rohan Pethiyagoda of the Wildlife Heritage Trust, managed to collect specimens of all three taxa, as well as specimens of two new species of *Ceylonthelphusa*. Subsequent collections by Rohan Pethiyagoda and his associates in the Wildlife Heritage Trust obtained further specimens as well as more species.

The most interesting of these is a distinctively coloured tree-climbing species found in a rainforest in southern Sri Lanka. The species, the longest-legged member of its genus, is also the first tree-climbing terrestrial crab known from Sri Lanka. Pending an eventual complete revision of the genus, the present note serves to describe this interesting species, here named *Ceylonthelphusa scansor* sp. nov.

Materials and methods

The abbreviations G1 and G2 are used here for the male first and second gonopods respectively. The type specimens examined are deposited in the Zoological Reference Collection (ZRC), Department of Zoology, National University of Singapore.

* Department of Zoology, National University of Singapore, Kent Ridge, Singapore 0511, Republic of Singapore.

Taxonomic account

Family Parathelphusidae Alcock, 1910
Genus *Ceylonthelphusa* Bott, 1969
Ceylonthelphusa scansor sp. nov.
(Figs. 1-5)

Holotype: male, carapace width 27.0 mm, carapace length 21.7 mm (ZRC 1994.4287), under fallen log, Mulawella near Kudawa, ca. 760 m above mean sea level, Singharaja Rainforest Reserve, 6°23'N 80°26'E, Ratnapura District, Kalu River Basin, southern Sri Lanka, coll. S. Dharmasiri, 15 May 1994.

Paratypes: one male (35.4 by 26.6 mm) (ZRC 1994.4289), Koskulana, Panapola, Singharaja Rainforest Reserve, 6°25'N 80°28'E, Ratnapura District, Walawe Basin, southern Sri Lanka, coll. D. Gabadge & S. Dharmasiri, 3 November 1994. One male (35.6 by 26.4 mm) (ZRC 1994.4288), rainwater-filled tree hollow, about 1 m above ground, Walaboda, near Balangoda, ca. 960 m above mean sea level, 6°44'20"N 80°36'56"E, Ratnapura District, Walawe Basin, coll. P.B. Karunaratne & A. Laurie, 1 March 1994. One female (ZRC 1994.4455), rainwater-filled tree hollow, about 1 m above ground, proposed Walakanda Forest Reserve, ca. 780 m above mean sea level, 6°29'05"N 80°31'53"E, coll. P.B. Karunaratne & D. Raheem, 3 March 1994.

Diagnosis
Dorsal surfaces of carapace flat to gently convex. Frontal margin below imaginary line joining tips of external orbital teeth. Ambulatory legs very long, longest pair about 2.5 times carapace length; legs with transverse yellow bands on a purplish-brown background in live and freshly preserved specimens. G1 slender, terminal segment about 0.5 times length of subterminal segment.

Description
Holotype. Carapace broader than long, dorsal surfaces flat to gently convex, not inflated; regions poorly defined; cardiac region slightly raised. Suborbital region with scattered, low granules; pterygostomial region smooth; sub-branchial and subhepatic regions with low transverse striae. Postorbital cristae distinct, relatively sharp, curving outwards from cervical groove to meet epibranchial tooth, indistinctly separated from epigastric cristae; epigastric cristae anterior to postorbital cristae, low, rugose, not sharp. Cervical grooves and H-shaped central depression shallow but distinct, not confluent. Anterior part of anterolateral regions with scattered low granules; posterior part of antero- and posterolateral regions with low but distinct oblique striae. Frontal margin almost straight; margin below imaginary line joining tips of external orbital teeth; external orbital tooth triangular, outer margin distinctly longer than inner margin; epibranchial tooth low but distinct; anterolateral margin gently convex; posterolateral margin gently concave, converging towards straight posterior margin of carapace. Frontal median triangle distinct; median part downturned; upper crest very close and almost appressed to but not fused with lateral crests. Posterior margin of epistome crenulate, median lobe triangular with rounded tip; lateral margins sinuous. Ischium of third maxilliped rectangular, with deep

Figure 1. *Ceylonthelphusa scansor*, holotype male, 27.0 by 21.7 mm (ZRC 1994.4287), colours in life (photograph: Saman Liyanage).

submedian oblique sulcus; merus squarish; exopod slender, reaching to mid-length of merus, with well developed, long flagellum.

Chelipeds subequal, not distinctly elongate. Inner margin of merus lined with small granules; upper margin rough but not serrated, unarmed. Outer surface of carpus rugose, with strong spine on inner distal angle which has small, sharp sub-basal granule. Palm rugose, especially on upper half; fingers slightly longer than palm.

Ambulatory legs very long, second pair longest, ca. 2.5 times carapace length (proximal edge of merus to tip of propodus). Upper margins of meri gently serrate, without subdistal spine; ventral margins of meri bicristate, crests low but distinct in meri 1-4, low and somewhat rounded in merus 4. Ventral margin of propodus with small spines, least developed in propodus 4. Dorsal and ventral margins of dactylus with 2 rows of strong spines each, those on ventral margin stronger.

Suture between sternites 1 and 2 distinct, suture between sternites 2 and 3 undiscernible except for faint, very shallow median transverse groove. Abdomen distinctly T-shaped. Segment 1 narrow with transverse ridge; segment 2 broadly rectangular; segments 3-5 progressively more trapezoidal; segment 6 rectangular, distinctly longer than broad, lateral margins gently concave; telson triangular, lateral margins gently concave, tip rounded.

G1 slender, gently curving outwards; terminal segment ca. 0.5 times length of subterminal segment, gently tapering, tip sharp, bent obliquely. G2 with well developed distal segment, ca. 0.3 times length of basal segment.

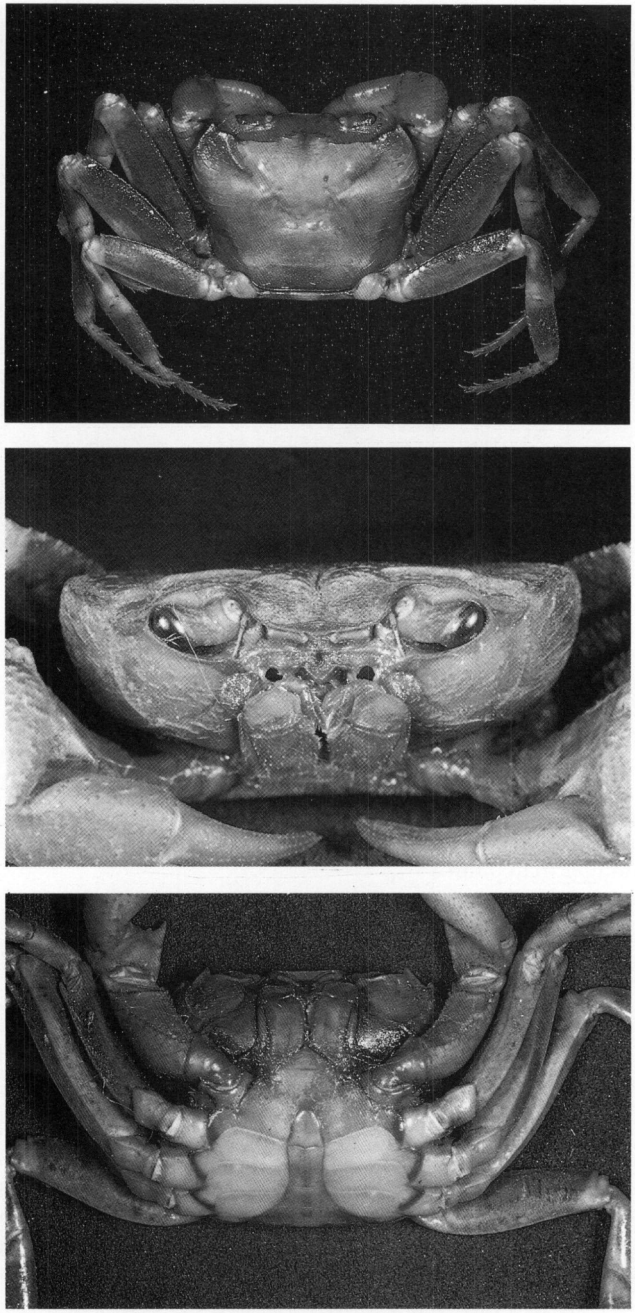

Figure 2. *Ceylonthelphusa scansor*, holotype male, 27.0 by 21.7 mm (ZRC 1994.4287): A, overall view; B, frontal view; C, ventral view.

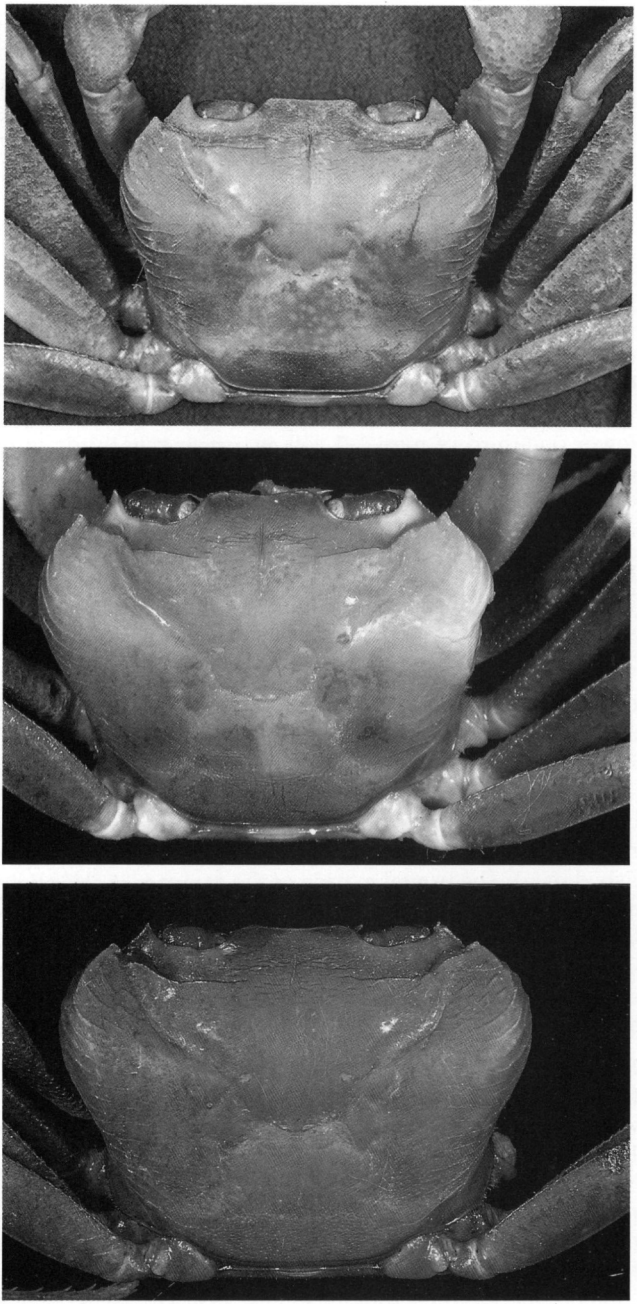

Figure 3. *Ceylonthelphusa scansor*, dorsal views of carapaces. A, holotype male, 27.0 by 21.7 mm (ZRC 1994.4287); B, paratype male, 35.4 by 26.6 mm (ZRC 1994.4289); C, paratype male, 35.6 by 26.4 mm (ZRC 1994.4288).

Paratypes. Both male paratypes are larger than the male holotype, but they agree in all important characters. The epibranchial and external orbital teeth in both these specimens however, are stronger and sharper than in the holotype male (Fig. 3). Their colour patterns are almost identical. The G1s of the two largest males (ZRC 1994.4288, ZRC 1994.4289) differ slightly. The male from Sinharaja Rainforest (ZRC 1994.4289) has a G1 (Fig. 5H) almost identical with that of the holotype (Fig. 5C, D) whereas that of the Balangoda male (ZRC 1994.4288) is more curved (Fig. 5I). In proportions and general shape however, all their G1s are very close.

Colour. Carapace brownish-purple to purple (Fig. 1). Merus and carpus of chelipeds purplish-orange; palm orange, proximal two-thirds of fingers orange, distal one-third dark brown, tip horn-coloured. Coxa, basis and ischium of ambulatory legs yellow; distal and proximal edges of merus, carpus and propodus yellow to yellowish-white, rest of carpus, propodus and merus 4 purplish-brown; lower one-third of meri 1-3 yellow, upper two-thirds purplish-brown; entire dactylus pale yellow. Sternites dirty to cream-white. Telson, as well as male abdominal segments 5 and 6 dirty white; segments 1-4 striped with 3 longitudinal bands, lateral ones purplish- brown, median one yellowish-white.

Etymology

The name is derived from the Latin for climber, referring to the crab's ability to scale trees. Used as a noun in apposition.

Taxonomic remarks

Ceylonthelphusa scansor is the longest-legged species in the genus and indeed, of any freshwater or terrestrial crab in Sri Lanka. This character alone distinguishes it easily from all known congeners (cf. Bott, 1960a, b; unpublished data). The striped colour pattern on the legs also distinguishes easily *C. scansor* from all congeners. The carapace and legs of *C. sorror* and *C. rugosa* are both a uniform reddish- to purplish-brown whilst *C. inflatissima* is brown and orange (unpublished data). The frontal margin of the carapace is also slightly posterior to imaginary line connecting the tips of the external orbital teeth. In the other *Ceylonthelphusa* species, the frontal margin is level with this imaginary line. The G1 of *C. scansor* is very different from the other three known congeners, with a terminal segment which is proportionately much longer (ca. 0.5 times length of subterminal segment against about 0.4 times for the other species).

Ecology

In freshwater and terrestrial crabs, long ambulatory legs are usually associated with cursorial or troglobitic habits (see Holthuis, 1986; Guinot, 1988; Ng et al., 1994). While the possession of long legs is advantageous in tree-climbing, it is however, not mandatory (see Sivasothi et al., 1993). Two of the paratypes of *C. scansor* (ZRC 1994.4288, 1994.4449), were collected from tree holes containing rainwater (no water bodies on the ground nearby), but it is not really possible to speculate at present if it is a completely arboreal species or merely an occasional climber. One specimen (holotype, ZRC 1994.4287) was obtained from the ground and the nearest water body was about 100 m away. A number of Asian freshwater and terrestrial crabs have arboreal tendencies. The Bornean gecarcinucid *Arachnothelphusa terrapes* Ng, 1991, is known to have some arboreal habits (Ng,

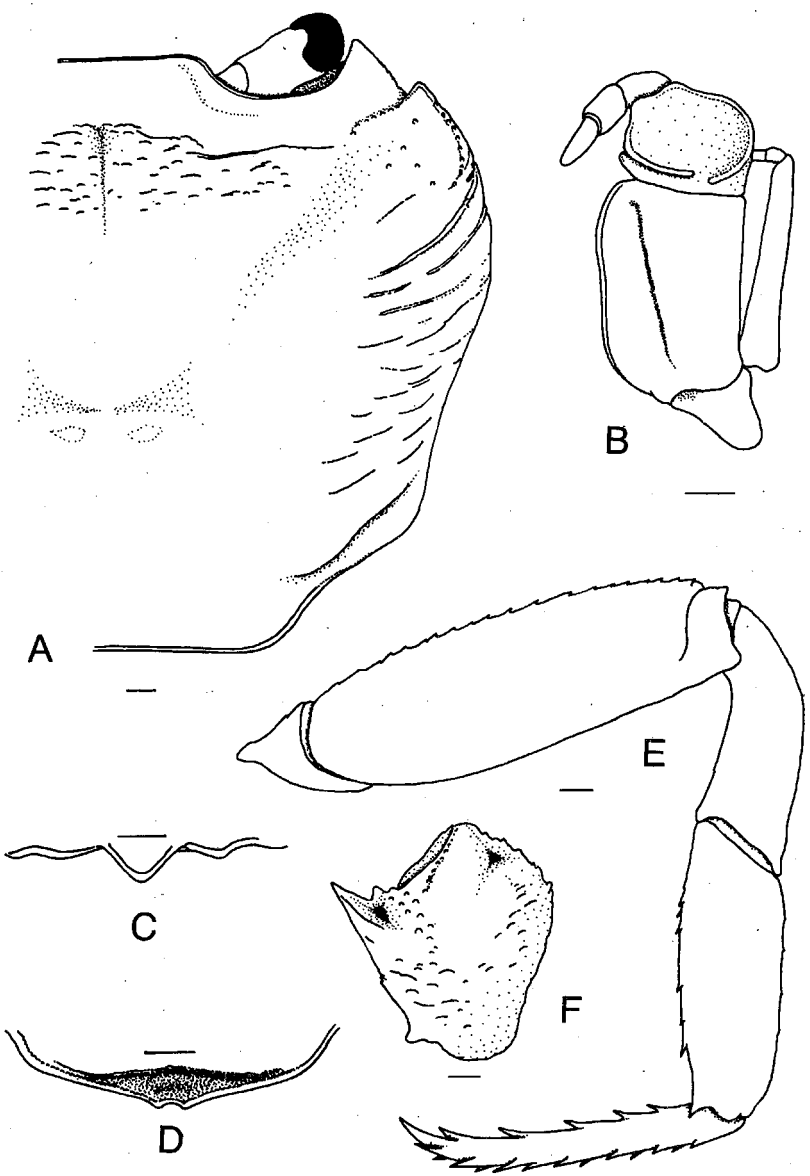

Figure 4. *Ceylonthelphusa scansor*, holotype male, 27.0 by 21.7 mm (ZRC 1994.4287): A, right side of carapace; B, left third maxilliped (setae denuded); C, posterior margin of epistome; D, frontal median triangle; E, right carpus of cheliped (dorsal view); F, right last ambulatory leg. Scales = 1.0 mm.

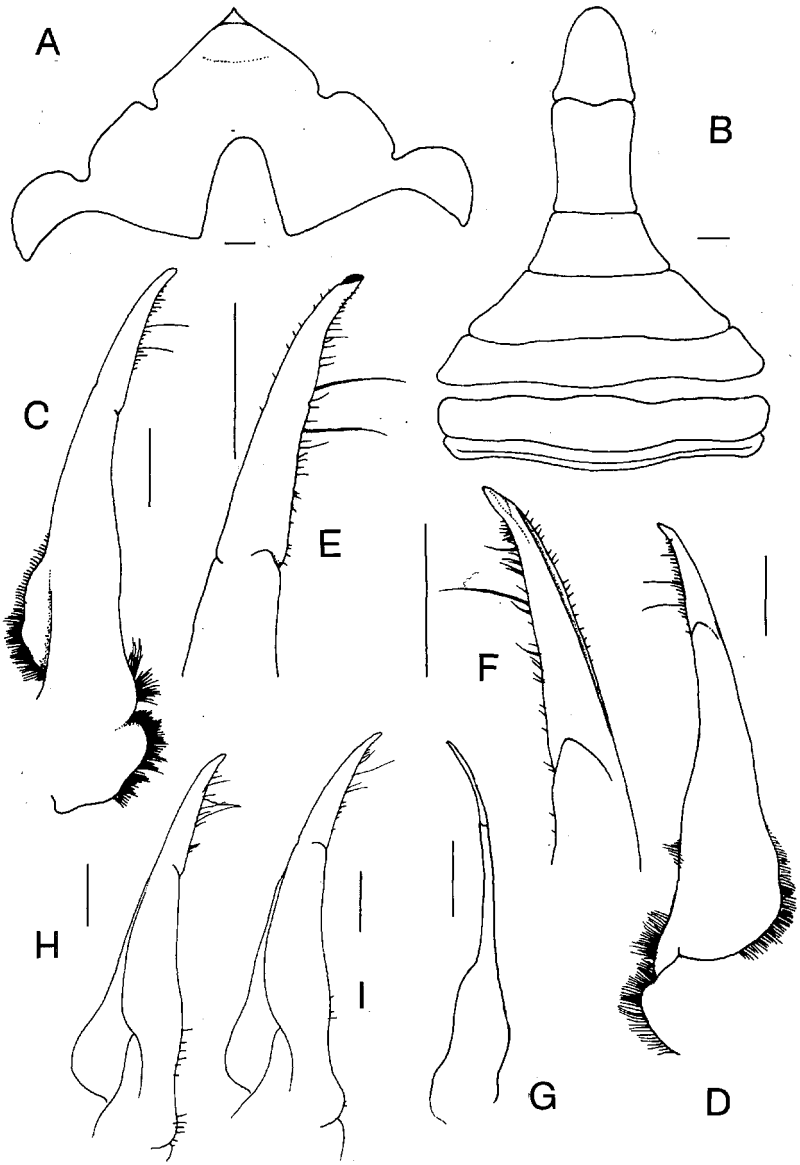

Figure 5. *Ceylonthelphusa scansor*: A-G, holotype male, 27.0 by 21.7 mm (ZRC 1994.4287); H, paratype male (35.4 by 26.6 mm) (ZRC 1994.4289); I, paratype male (35.6 by 26.4 mm) (ZRC 1994.4288). A, anterior part of sternum; B, abdomen (setae denuded); C, D, H, I, left G1s; E, F, distal part of left G1; G, left G2. C, F, H, I ventral view; D, F, dorsal view. Scales = 1.0 mm.

1991) and several species of Thai, Malayan and Bornean *Geosesarma* often climb trees and shrubs (see Ng, 1988, 1992; Ng & Naiyanetr, 1992). It seems likely that *C. scansor* is a predominantly terrestrial species with arboreal tendencies, using phytotelms as a source of fresh water, and perhaps to feed on the animals living inside (see Ng & Lim, 1987).

The conservation value of the Sinharaja lowland rainforest is very significant, with a high diversity and endemicity (see De Zoysa et al., 1988; McDermott et al., 1990). The present discovery of *Ceylonthelphusa scansor*, a very distinctive new endemic terrestrial crab in Sinharaja highlights the dearth of zoological knowledge about many of the invertebrates in the rainforests of Sri Lanka.

Acknowledgements

Thanks are due to Rohan Pethiyagoda of the Wildlife Heritage Trust for sending me this interesting species and his support of the study. The study has been partially supported by a research grant (RP 900360) from the National University of Singapore. The specimens were collected with the aid of a grant from the WWF Small Grants Programme and during field work associated with the National Conservation Review carried out by the IUCN Biodiversity Assessment Project.

Literature cited

Bott, R., 1969. Flüsskrabben aus Asien und ihre Klassifikation. (Crustacea, Decapoda). Senckenbergiana biol., 50(5/6): 359-366.

Bott, R., 1970a. Die Süsswasserkrabben von Ceylon. Ark. Zool., 22: 627-640, pls. 1-6.

Bott, R., 1970b. Die Süsswasserkrabben von Europa, Asien, Australien und ihre Stammesgeschichte. Eine Revision der Potamoidea und Parathelphusoidea (Crustacea, Decapoda). Abhand. Sencken. Naturf. Ges., 526: 1-338, pls. 1-58.

De Zoysa, N. D., Gunatilleke, C.V.S. & I. A. U. N. Gunatilleke, 1988. Diversity of understorey vegetation in the Sinharaja rainforest. Sri Lanka Forester, 18(3 & 4): 121-130.

Guinot, D., 1988. Les crabes cavernicoles du monde. Mém. Biospeol., 15: 3- 40.

Holthuis, L.B., 1986. Decapoda. In: Stygofauna Mundi. A Faunistic, Distributional, and Ecological Synthesis of the World fauna inhabiting Subterranean Waters (including the Marine Interstitial). Ed. L. Botosaneanu, Leiden, E. J. Brill, pp. 589-615.

Kingsley, J.S., 1880. Carcinological notes No. I. Proc. Acad. Nat. Sci Philadelphia, 1880: 34-37.

McDermott, M., Gunatilleke, C.V.S. & I. A. U. N. Gunatilleke, 1990. The Sinharaja rain forest: conserving both biological diversity and a way of life. Sri Lanka Forester, 19(3 & 4): 3-22.

Ng, P.K.L., 1988. The Freshwater Crabs of Peninsular Malaysia and Singapore. Dept. Zool., Natn. Univ. Singapore and Shinglee Press, Singapore, pp. i-viii, 1-156, 4 colour plates.

Ng, P.K.L., 1991. Bornean freshwater crabs of the genus *Arachnothelphusa* gen. nov. (Crustacea: Decapoda: Brachyura: Gecarcinucidae). Zool. Med., 65(1): 1-12.

Ng, P.K.L., 1992. *Geosesarma sabanus*, a new sesarmine crab (Decapoda, Brachyura, Grapsidae) from the forests of Sabah, East Malaysia, Borneo. Crustaceana, 63(2): 210-213.

Ng, P.K.L. Ng, Guinot, D. & T.M. Iliffe, 1994. *Sesarmoides ultrapes*, new species, a remarkable sesarmine crab from caves in the Solomon Islands (Decapoda: Brachyura: Grapsidae). Crust. Res., 23: 12-22.

Ng, P.K.L. & R.P. Lim, 1987. The taxonomy and biology of the nepenthiphilous sesarmine freshwater crab, *Geosesarma malayanum* Ng and Lim, 1986 (Crustacea, Decapoda, Brachyura, Grapsidae) from Peninsular Malaysia. Malay. Nat. J., 41: 393-402.

Ng, P.K.L. & P. Naiyanetr, 1992. On a new species of *Geosesarma* de Man, 1892 (Crustacea:

Decapoda: Brachyura: Grapsidae) from Chanthaburi Province, eastern Thailand. Zool. Med., 66(34): 449-452.

Sivasothi, N., Murphy, D.H. & P.K.L. Ng, 1993. Tree-climbing and herbivory of crabs in the Singapore mangroves. In: Mangrove Fisheries and Connections. ASEAN-Australia Marine Science Project: Living Resources (Malaysia), Kuala Lumpur, Malaysia. Ed. A. Sasekumar. Pp. 220-237.

Zehntner, L., 1894. Crustacés de l'Archipel Malais. Rev. Suisse Zool., 2: 135-214, Pls. 7-9.