

Species Identification of Thai Rice-field Crab using Stereomicroscope and Scanning Electron Microscope

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Summary

Stereomicroscope and scanning electron microscope (SEM) were used to classify Thai rice-field crabs from the lower north-eastern region of Thailand. Morphological aspects based on the dorsal surface of carapace, and the male first gonopod were investigated by stereomicroscopy. Six species (sp.I, sp.II, sp.III, sp.VII, sp.XII, and sp.XIII) belonging to the genus *Esanthelphusa* could be recorded. Although, the same crab species were found using both stereomicroscope and SEM, however, the difficulty of identification was found using stereomicroscope. SEM could be helped to clarify uncertain crab species.

Keyword: rice-field crab, *Esanthelphusa*, identification, SEM

Two genera of Thai rice-field crabs, *Sayamia* and *Esanthelphusa* have been reported [1]. The genus *Esanthelphusa* was previously described as *Somanniathelphusa*. The taxonomy of *Esanthelphusa* has been categorized into 11 species [1], of which six species, *Esanthelphusa* sp.I, E. sp.II, E. sp.III, E.sp. VII, E. sp.XII, and E. sp.XIII were also previously detected in the lower north-eastern region of Thailand [2]. However, these species were classified based on the dorsal surface of carapace (post-orbital crests, epigastric crests, cervical groove and H-groove), and the shape of the male first gonopods using stereomicroscope. Results were similar among species leading to the difficulty of identification. To identify to species, more techniques are needed. Scanning electron microscopy, which has precise focusing, automatic brightness and contrast would be appropriated.

Mature rice-field crabs (240 males) with a mean width carapace of 3-5 cm were collected all year round from eight provinces (Chaiyaphum, Nakhon Ratchasima, Buriram, Surin, Sisaket, Ubon Ratchatani, Yasothon and Amnat Charoen) in the lower north-eastern region of Thailand. The samples were cleaned and preserved in 70% ethyl alcohol. Morphological aspects, which based on the dorsal surface of carapace and the male first gonopod were investigated using stereomicroscope. The crab classification was carried out following the previous studies [1-5]. The male first gonopod from each species (three replications per sample) was also prepared for SEM study using the method of Pramual [3] to compare with the results from stereomicroscope.

Both stereomicroscope and SEM were used to classify the rice-field crabs collected from eight provinces in the lower north-eastern region of Thailand. Six species (sp.I, sp.II, sp.III, sp.VII, sp.XII, and sp.XIII) belonging to the genus *Esanthelphusa* were found. The dorsal surface of carapace was strongly convex, epigastric crest was prominent and short and post orbital crest was low and short ending before the beginning of cervical grooves were similar among species resulting in a difficult identification using stereomicroscope alone. However, E.sp.VII, which had a big black v-shaped on the dorsal surface (Fig.1). The male first gonopod, distal segments were hook-shaped, strongly hook-shaped, and straight (Fig. 2). Distal parts were gently sharpened outward, sharpened upright, and sharpened inward were different among species making it easier to classify using SEM (Fig 2). Although, the same species were found using SEM and stereomicroscope, this study recommends the use of SEM could be helped to clarify uncertain crab species.

References

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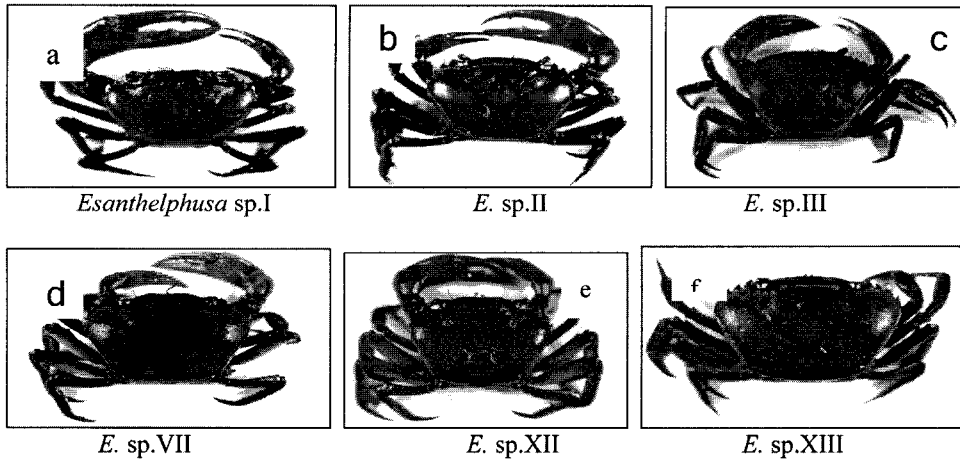


Figure 1. Dorsal surface of carapace strongly convex and epigastric crest were prominent and short (a, b, d, f). Post orbital crest was low and short ending before the beginning of cervical grooves (a-f) were similar among species, using stereomicroscope.

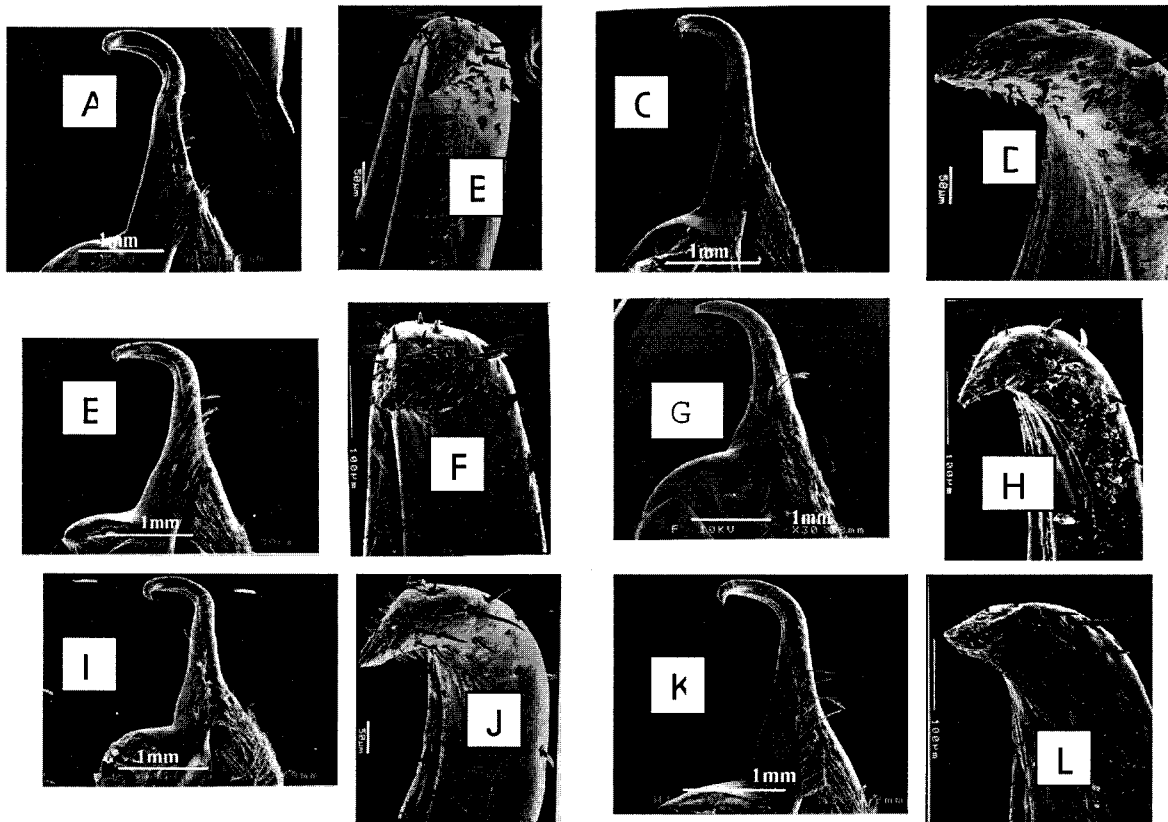


Figure 2. *Esanthelphusa* sp.I (A, B), *E. sp.II* (C, D), *E. sp.III* (E, F), *E. sp.VII* (G, H), *E. sp. XII* (I, J), and *E.sp.XIII* (K, L). The male first gonopod, distal segments were strongly hook-shaped (A, C, I) hook-shaped (E, K), and straight (G). Distal parts were gently sharpened outward (F), sharpened upright (D, L) and sharpened inward (B, H, J) using SEM.