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Morphological variability and taxonomy of *Coraebus hastanus* Gory & Laporte de Castelnau, 1839 (Coleoptera: Buprestidae: Agrilinae: Coraebini: Coraebina)

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Abstract

Coraebus hastanus Gory & Laporte de Castelnau, 1839 is easily distinguished from the other species of the genus *Coraebus* Gory & Laporte de Castelnau, 1839. It was divided into three subspecies, but the main diagnostic characters were variable. In order to understand the morphological variability and taxonomy of subspecies of *C. hastanus*, shape of elytral apex, lateral margin of elytra and the aedeagi were analyzed using geometric morphometric and traditional morphometric approaches. Based on the results and distribution patterns of the three subspecies, *C. hastanus oberthueri* Lewis, 1896 is treated as synonym of *C. hastanus* Gory & Laporte de Castelnau, 1839, and *C. hastanus ephippiatus* Théry, 1938 is elevated to species rank, and these two species are also redescribed and illustrated.

Key words: Coleoptera, Buprestidae, Agrilinae, Coraebini, Coraebina, *Coraebus hastanus*, *Coraebus oberthueri*, *Coraebus ephippiatus*, taxonomy, morphological variability, Oriental region

Introduction

Morphological variability is very common in the species of the genus of *Coraebus* Gory & Laporte de Castelnau, 1839. Many morphological characters were used to distinguish species of *Coraebus*, the body shape, shape of the elytral apex, coloration and the shape of ornamentation of the dorsal surface (Kubáň, 1996), these characters are usually relatively invariable, but in some closely related species they exhibit a high degree of variability (Kubáň, 1995), which makes it difficult to use them for species differentiation.

Coraebus hastanus Gory & Laporte de Castelnau, 1839 is distinctly different from the other species of the genus of *Coraebus* and it can be easily recognized by the body shape and ornamentation (Descarpentries & Villiers, 1967). Théry (1938) divided *C. hastanus* into three subspecies: *Coraebus hastanus hastanus* Gory & Laporte de Castelnau, 1839, *C. hastanus oberthueri* Lewis, 1896 and *C. hastanus ephippiatus* Théry, 1938, based on the shape of the elytral apex and lateral margins of elytra. Kurosawa (1953) carefully examined many specimens from the Ryukyu Islands and Taiwan, noticing that among specimens from various of the Ryukyu Islands, only one specimen was closely similar in the shape of elytral apex to *C. hastanus oberthueri*, other specimens, differed from *C. hastanus hastanus* in having denticles on the sutural side of inner spine and external side of outer spines. He believed that they were morphological variability of *C. hastanus oberthueri*. Subsequently, the taxonomic ranks of the three subspecies of *C. hastanus* were generally accepted by buprestid research community. However, if *C. hastanus* is indeed represented by three distinct subspecies based on the shape of the elytral apex and lateral margins, the questions of how to identify the subspecies correctly and how to understand their morphological variability remained.

Shape analysis is one approach to understanding morphological variability. Traditionally, morphometric data

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