



Revision of the subgenus *Scymnus* (*Parapullus*) Yang from China (Coleoptera: Coccinellidae)

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Abstract

The subgenus *Scymnus* (*Parapullus*) Yang, 1978 is herein revised. Eight species of the *Parapullus* fauna are known to occur in China up to the present. The following five species are described as new to science: *Scymnus* (*Parapullus*) *aduncatus* **sp. nov.**, *S. (P.) malleatus* **sp. nov.**, *S. (P.) nanlingicus* **sp. nov.**, *S. (P.) parallelicus* **sp. nov.**, *S. (P.) solus* **sp. nov.** Diagnoses, colorized illustrations and distributions are provided for each species. A key to the Chinese species is also presented.

Key words: Coleoptera, Coccinellidae, *Scymnus* (*Parapullus*), new species, China

Introduction

The subgenus *Scymnus* (*Parapullus*) was established by Yang in 1978, with a description of *Scymnus* (*Parapullus*) *secula* as the type species. Pang and Yu (1993) considered *Parapullus* as a valid subgenus, and described another species *S. (P.) alishanensis* from Taiwan. The other Palearctic species, *Scymnus* (*Scymnus*) *abietis* (Paykull, 1798), were transferred into this subgenus from *Scymnus* (*Scymnus*) Kugelann. Additionally, another three North American species, *S. (S.) nebulosus* LeConte, *S. (S.) difficilis* Casey and *S. (S.) coosi* Hatch, were tentatively included in this group by Pang and Yu (1993). Yu *et al.* (2000) described one more species *S. (P.) tsugae* from Yunnan, China. Until now, in the fauna of *Parapullus*, only twelve species have been recognized in the world.

In the present paper, the subgenus *Scymnus* (*Parapullus*) Yang from China is revised, with five new species from the Guangdong, Gansu and Ningxia provinces described. Diagnoses, colorized illustrations and distributions are provided for each species. A key to the Chinese species is also presented.

Material and methods

The specimens were collected and preserved in 85% ethanol. External morphology was observed with a dissecting stereoscope (SteREO Discovery V20). Measurements were made with an ocular micrometer, and the following abbreviations are used: TL—Length from apical margin of clypeus to apex of elytra; TW—Width across both elytra at widest part; TH—Height at highest elytra part; HW—Head width at widest part; PL—Pronotal length at longest part; PW—Pronotal width at widest part; EL—Elytral length at longest part; EW—Elytral width across both elytra at widest part.

Male and female genitalia were dissected, cleared in 10% solution of NaOH by boiling for several minutes, and examined with an Olympus BX51 compound microscope.

Images were photographed with digital cameras (AxioCam HRc and Coolsnap-Procf & CRI Micro*Color), connected to the microscope. The software AxioVision Rel. 4.8 and Image-Pro Plus 5.1 was used to capture images from both cameras, and photos were cleaned up and laid out in plates with Adobe Photoshop CS 8.0.