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Full title of manuscript: Five new species of the genus *Hylaeus* (Hymenoptera: Colletidae) from China

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Abstract

Five new species, *Hylaeus (Hylaeus) wuae* **sp. nov.**, *H. (Hylaeus) napacus* **sp. nov.**, *H. (Hylaeus) neatifrons* **sp. nov.**, *H. (Hylaeus) bimaculatus* **sp. nov.** and *Hylaeus (Prosopis) ikudomei* **sp. nov.** are described and illustrated from Yunnan, China. The diagnosis of each species is provided. In addition, *Hylaeus cardioscapus* Cockerell, 1924 is recorded from China for the first time.

Key words: *Hylaeus*, Colletidae, new species, China

Introduction

Prior to the present study, seven subgenera of *Hylaeus*: *Dentigera* Popov, *Hylaeus* Fabricius s. str., *Lambdopsis* Popov, *Nesoprosopis* Perkins, *Paraprosopis* Popov, *Prosopis* Fabricius and *Laxoprosopis* Chen and Xu were recorded from China, including 29 species with 5 species from Taiwan and 24 species from mainland China (Morawitz 1890; Cockerell 1911; Wu 1965, 1982, 1993; Dathe 1986, 2005, 2010; Ikudome 1991, 1998; Wang *et al.* 1992; He 2004; Hua 2006; Chen & Xu 2009; Chen *et al.* 2010). The five new species here described are all caught from the Yunnan province, China. Yunnan is situated in southwestern China, bordering respectively Myanmar in the west and Laos and Viet Nam in the south. Climatically it belongs to the sub-tropical plateau monsoon, with exceptionally rich climatic resources and a very rich diversity of plants. We caught numerous *Hylaeus* specimens from Yunnan, and identified five new species, four belongs to subgenus *H. (Hylaeus)* and one belongs to subgenus *H. (Prosopis)*. In addition, *Hylaeus (Hylaeus) cardioscapus* Cockerell, 1924 is recorded from China for the first time. The type material will be deposited in the Entomological Museum of China Agricultural University, Beijing, China.

Males of the subgenus *Hylaeus (Hylaeus)* can be identified by the following characters: Sternum 7 has four apical lobes, apical lobes pectinate; the apical process of sternum 8 usually ends in two small lobes; outline of the two penis valves together cuneiform to spindle shaped; scape commonly conically dilated or flattened, but if slender, then sternal callosity or lateral fringe of tergum 1 absent (Dathe 2000). Contrary to this males of the subgenus *H. (Prosopis)* can be identified by the following characters: Sternum 8 rhombic, with short, rounded or truncate, hairless apical process; sternum 6 not emarginate; thorax usually finely punctate; sternum 7 with apical lobes reduced, compact, with hairs that may be short and sparse (Dathe 2000).

Material and methods

The specimens were examined and measured under a digital microscope (Keyence VHX-1000, Osaka, Japan). Images were edited in Photoshop CS5. Terminology follows Dathe (1980). The description of punctures (size, density) mainly follows Snelling (1982). Abbreviations used in the text are follows Chen and Xu (2009): BL, body length; WL, wing length; CI, clypeus index (clypeal length: distance between two anterior tentorial pits); HL, head