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## First record and five new species of Xylographellini (Coleoptera: Ciidae) from China, with online DNA barcode library of the family

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### Abstract

We report the first record of the beetle tribe Xylographellini (Ciidae) from the continental Palearctic Region, represented by five new species discovered in Yunnan and Sichuan provinces, China: *Scolytocis danae* sp. nov., *Syncosmetus euryale* sp. nov., *Sync. medusa* sp. nov., *Sync. perseus* sp. nov. and *Sync. stheno* sp. nov. Illustrations and identification keys are provided for these new species, and in order to facilitate further research of Ciidae we present an open-access DNA barcode library ([dx.doi.org/10.5883/DS-SYNCOSM](http://dx.doi.org/10.5883/DS-SYNCOSM)) containing 114 records (of 44 species in 14 genera), 15 of which belong to the newly described species. A phylogenetic analysis based on the barcode fragment of the *cytochrome oxidase I* gene did not recover much tree structure within Ciidae, however both *Xylographus* Mellié and *Syncosmetus* Sharp were recovered as clades, with a single *Scolytocis* Blair being the sister to the latter.

**Key words:** Minute tree-fungus beetles, Xylographellina, Syncosmetina, Asia, Palearctic region

### Introduction

Ciidae is a nearly worldwide family of obligate fungivore beetles containing about 650 described species in 42 genera (Lawrence & Lopes-Andrade 2010; Antunes-Carvalho *et al.* 2012; Oliveira *et al.* 2013). Hundreds of unnamed species and a few unnamed genera are known in collections. Larvae and adults usually live in or around a polypore basidiome and are entirely dependent on the fungus for all life aspects such as food, shelter and breeding (Orledge & Reynolds 2005; Graf-Peters *et al.* 2011). Two subfamilies are recognized, of which Sphindociinae contains a single species (*Sphindocis denticollis* Fall) from coastal California (Lawrence 1974). Ciinae is further subdivided into three tribes, namely Ciini, Orophiiini and Xylographellini, a tribal classification sometimes not used by authors (*e.g.* Thayer & Lawrence 2002). The only phylogenetic analysis of the family (Buder *et al.* 2008) was based on molecular data of Ciini and Orophiiini, which provided no evidence of their reciprocal monophyly.

The tribe Xylographellini, the focus of the present paper, was originally proposed for *Xylographella punctata* Miyatake from Japan, based on distinct antennal and male genitalia characters (Kawanabe & Miyatake 1996). These authors pointed out that *Scolytocis samoensis* Blair has similar antennae and, therefore, likely belongs to the tribe. The tribe, however, consisted of a single species until Lopes-Andrade (2008) markedly enlarged it and subdivided it into two subtribes: Syncosmetina and Xylographellina. The former consists of two genera: *Syncosmetus* Sharp (two micropterous species from Japan) and *Tropicis* Scott (four macropterous leaf litter species from the Seychelles, Mauritius, Réunion and other islands of the western Indian Ocean, possibly including Madagascar). Xylographellina includes two genera: *Xylographella* Miyatake (two species from Japan and the Philippines) and *Scolytocis* (19 species from Neotropical, Oriental and Neozelandic regions *sensu* Morrone 2002). Although morphologically well-defined, neither the tribe Xylographellini nor its two subtribes have been tested phylogenetically.

This project was triggered by the discovery of representatives of two Xylographellini genera in samples of