



## Resurrection of *Crypturgus subcribrosus* Eggers 1933 stat. n., and its close phylogenetic relationship to Nearctic *Crypturgus* (Coleoptera, Scolytinae)

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### Abstract

*Crypturgus subcribrosus* Eggers is removed from synonymy under *C. cinereus* (Herbst) and reinstated as a valid species based on evidence from DNA sequence data and morphological features. Phylogenetic analyses of *Elongation Factor 1a* and *Cytochrome Oxidase I* sequences in conjunction with morphological characters revealed a sister relationship between *C. subcribrosus* and two Nearctic species of *Crypturgus*, with *C. cinereus* unrelated to any of these taxa. Type material of *C. cinereus* has been located and lectotype with paralectotypes are designated. Amended diagnoses that include DNA barcodes are presented for *C. subcribrosus* and *C. cinereus* together with an identification key to the Fennoscandian species of *Crypturgus*.

**Key words:** Cytochrome Oxidase I, Coleoptera, *Crypturgus*, Curculionidae, DNA barcodes, Elongation Factor 1a, phylogeny, Scolytinae

### Introduction

Species of the bark beetle genus *Crypturgus* Erichson breed in conifers throughout the Holarctic region. Fifteen species are currently recognised, but a long and troubled history of disputed synonymies (e.g. Wood & Bright, 1992; Pfeffer, 1995) indicates that this number is perhaps rather approximate. Many *Crypturgus* species are difficult to distinguish morphologically and ecologically from their closest relatives, lacking readily observed diagnostic characters (Fig. 1). These problems are further exaggerated by their small adult body size that ranges between 0.9 to 1.5 mm in length and the weakly sclerotised body which often results in deformation of pinned museum specimens.

Most taxonomic problems in northern Europe and Scandinavia surround the species validity of *C. subcribrosus* Eggers, a current synonym (Schedl, 1946) of *C. cinereus* (Herbst). Although recent classifications and some faunal reports agree on the synonymous status (Pfeffer, 1995; Mandelshtam & Popovichev, 2000; Bright & Skidmore, 2002), several other entomological sources present *C. subcribrosus* as a valid species (e.g. Hansen, 1956; Lekander *et al.* 1977; Silfverberg 1992; Lundberg 1995; Voolma *et al.*, 2000; Ehnström & Axelsson, 2002; Knížek 2004). This taxon was originally described as different from *C. cinereus* by the longer tuft of hairlike setae on the female elytral declivity, and by the less deeply impressed striae punctures and finely shagrinated cuticular surface of the interstriae (Eggers, 1933; see also Fig. 1). However, these characters vary within species and are difficult to transform into diagnostic characters. Morphological characters alone are therefore not always sufficient for species delimitation.

To test the taxonomic status of *C. subcribrosus*, we sequenced DNA from one mitochondrial and one nuclear gene fragment and compared these data to adult morphology. We furthermore analysed several other