Molecular phylogeny in 'nano-weevils': description of a new subgenus Nanoacalles and two new species of Calacalles from the Macaronesian Islands (Curculionidae: Cryptorhynchinae)

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Abstract

A molecular phylogeny for the eastern Atlantic weevil genus Calacalles Peyerimhoff, 1925 is presented, using two mitochondrial genes (CO1 and 16S). Based on a phylogenetic (Bayesian) analysis, we propose the following taxonomic amendments: the new subgenus Nanoacalles subg. n. is described and two new species, Calacalles hermigua sp. n. and Calacalles nataliae sp. n., are described from the Canarian island La Gomera and distinguished from other species of the genus. Calacalles palmensis (Roudier, 1954) (formerly Acalles wollastoni palmensis Roudier, 1954), which is illustrated here for the first time (habitus and aedeagus), is not a synonym of Acalles seticollis Wollaston, 1864, but a valid taxon. Calacalles subcarinatus (Israelson, 1984) from the Azores is assigned to the subgenus Crateracalles Stüben 2004. We also present a catalogue of all known Calacalles species.

Key words: taxonomy, catalogue, new species, new subgenus, endemic species, Bayesian analysis, 16S, COI, Canary Islands, Azores, Madeira, western Palaearctic

Introduction

The genus Calacalles comprises 18 species of slender, conspicuously bristled weevils that – among the subfamily Cryptorhynchinae – are characterised by their often very small size (around 2 mm), hence the name ‘nano weevils’. Most species are endemic to the Macaronesian islands and are difficult to tell apart by their habitus. The taxon Calacalles, with the type species Acalles (Calacalles) theryi, was originally described by Peyerimhoff (1925) as a subgenus of the genus Acalles Schoenherr, 1826. In his revision, F. Bahr (2000) raised Calacalles to genus level—a step that received support from recent molecular work, where Calacalles is recovered as a distinct, monophyletic cluster among other representatives of the 'Atlantic clade', like Dichromacalles or also the 'Macaronesian clade' (Astrin & Stüben 2008; Stüben & Astrin, in press).

In addition to Calacalles s. str., Bahr (2000) also described the subgenus Saetiacalles with the type species Calacalles (Saetiacalles) seticollis (Wollaston, 1864), formerly Acalles. As a diagnostic character for the subgenus Saetiacalles he proposed an antennal funiculus with 7 antennomeres as opposed to the 6 antennomeres in Calacalles s. str. species. However, Stüben (2005) synonymised the subgenus Saetiacalles Bahr, 2000 after examining the species Calacalles moraguesi (Desbrochers, 1898), which he rediscovered on Mallorca. The minimal exoskeletal differences of Calacalles theryi (6 antennomeres) and Calacalles moraguesi (7 antennomeres) and the fact that the structures of the internal sac of the aedeagus are highly similar in their basic pattern (Figs. 9, 10) suggested a close relationship of these taxa (see Discussion).

An additional subgenus, Crateracalles, was described by Stüben (2004) from the mid-Atlantic Azores. The so far two species recognized as belonging to this taxon are large (3.5–6.6 mm not including the rostrum),