

## Phylogenetic studies of the subgenus *Petrophilus* Chaudoir (Coleoptera: Carabidae: *Pterostichus*), with description of a new species sympatric with *P. thunbergi* Morawitz

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### Abstract

Based on the structures of the male genitalia, the subgenus *Petrophilus* Chaudoir is redefined, and five subgenera, viz., *Euryperis* Motschulsky, *Morphnosoma* Lutshnik, *Euferonia* Casey, *Feroperis* Lafer, and *Moritapterus* Berlov, are synonymized with *Petrophilus*. Phylogenetic analyses based on eighteen morphological characters revealed that the subgenus *Petrophilus* is monophyletic, whereas most traditional subgenera synonymized with *Petrophilus* are non-monophyletic. *Pterostichus* (*Petrophilus*) *tuberifer* Sasakawa, **sp. nov.**, a sympatric species with *P. thunbergi* Morawitz, is described from Japan.

**Key words:** endophallic structures, new synonymy, *Petrophilus*, morphological phylogeny, *Pterostichus tuberifer* sp. nov.

### Introduction

The subgenus *Petrophilus* (s. str.) Chaudoir and related subgenera (Coleoptera: Carabidae: genus *Pterostichus*) are assemblages of medium- to large-sized, black, and externally inconspicuous species (Jedlička 1962; Lafer 1979; Bousquet 1999). They include about 80 species and are distributed throughout the Holarctic Region (Bousquet 1999, 2003). The general lack of distinctive morphology results in considerable incongruence in taxonomy at the subgenus level. Jedlička (1962) recognized the validity of both *Petrophilus* and *Euryperis* Motschulsky. Kryzhanovskij *et al.* (1995) regarded *Euryperis* and *Feroperis* Lafer as consubgeneric with *Petrophilus*, and Hůrka (1996) followed this assessment. Bousquet (2003) recognized the synonymy of *Euryperis* with *Petrophilus* and treated *Petrophilus* and *Feroperis* as distinct subgenera.