



A new *Wagnerinus* (Coleoptera: Curculionidae) from northern Japan: Description including a DNA barcode

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Abstract

Wagnerinus frugivorus sp. nov. (Ceutorhynchinae: Ceutorhynchini) is described from Hokkaido, northern Japan, based on morphological and biological characters. Morphologically, this new species closely resembles *Wagnerinus carinulatus* (Faust) from the Russian Far East and *W. costatus* (Hustache) from Japan and Korea in having an emarginate anterior margin of the rostrum, sternite VIII diminished to a pair of small sclerites, and longitudinal rows of endophallic sclerites. However, it is distinctive enough to be distinguished from *W. carinulatus* and *W. costatus* mainly by the more conspicuous mucrones of mid and hind tibiae, deeper concavities of ventrites I and II, and larger paired prominences of ventrite V. Also, *W. frugivorus* clearly differs from *W. costatus* in terms of host plant utilization, the former feeds on the seed capsules of *Weigela middendorffiana* (Caprifoliaceae) as larvae, while the latter utilizes midge galls on the axillary buds of *Weigela* species. In addition to general taxonomic information, we provide a 1366-bp fragment of the mitochondrial cytochrome oxidase subunit I gene from the holotype as a DNA barcode of *W. frugivorus* and discuss the importance of DNA barcoding combined with species descriptions.

Key words: DNA barcoding, host plant, new species, seed capsule, *Wagnerinus*, *Weigela middendorffiana*

Introduction

The weevil genus *Wagnerinus* Korotyaev, 1980, in the tribe Ceutorhynchini, subfamily Ceutorhynchinae (Colonnelli 1984, 2004), is defined by the slender rostrum, seven-segmented antennal funicle, and sparse vestiture and minute granules on the elytral intervals (Korotyaev 1980). Presently, this genus comprises four species from Northeast Asia: *Wagnerinus carinulatus* (Faust, 1887), *W. costatus* (Hustache, 1916), *W. harmandi* (Hustache, 1916), and *W. shikotanus* Korotyaev, 1981 (Korotyaev 1981, Colonnelli 2004). As Kato *et al.* (2006) suggested, not a few number of undescribed species of *Wagnerinus* occur primarily in Japan. However, species delimitation based only on morphology is often very difficult in this genus due to the presence of morphologically similar species.

Wagnerinus costatus is associated exclusively with galls on the axillary buds of *Weigela hortensis* (Caprifoliaceae) induced by the gall midge *Asphondylia baca* Monzen, 1937 (Diptera: Cecidomyiidae) (Sugiura *et al.* 2004). Obligatory cecidophages (specialist galleaters) are rarely found among herbivorous insects, such as Lepidoptera and Coleoptera. The Ceutorhynchinae is a diverse taxon in terms of host plant utilization, but no other cecidophages than *W. costatus* have been reported from the subfamily. Therefore, *Wagnerinus* is a good target to study the evolution of this unique habit, but no ecological information has hitherto been available for *Wagnerinus* weevils except *W. costatus*.

Through field surveys in Hokkaido, northern Japan, we found an undescribed *Wagnerinus* species, which is distinctive enough not to be confused with any other congeners. This species shows a remarkable difference