



## A review of the *Bembidion* (*Odontium*) *aenulum* subgroup (Coleoptera: Carabidae), with description of a new species

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### Abstract

The *Bembidion aenulum* subgroup of the subgenus *Odontium* is reviewed. This subgroup, widespread in the United States east of the Rocky Mountains, previously has been considered to consist of only one species, *Bembidion aenulum* Hayward. However, morphological studies coupled with analyses of 28S ribosomal RNA, cytochrome oxidase I, CAD, and *wingless* genes reveal that eastern members of this group belong to a new species herein named *Bembidion paraenulum* **new species**. This species ranges from New Hampshire in the northeast, through Virginia and North Carolina, south to Florida and west to Mississippi. Both species are described and illustrated.

**Key words:** Bembidiini, DNA, rDNA, morphology

### Introduction

In his 1963 revision of North American members of the subgenus *Odontium* LeConte of *Bembidion* Latreille, Carl Lindroth considered the subgenus to consist of eight species in the New World. These species in general occur on sand or silt shores of rivers and creeks (e.g., Fig. 1), and on warm days fly quickly when approached. The smallest species in the group, *Bembidion aenulum* Hayward, has been reported from Iowa, Wisconsin, Missouri, New Hampshire, Georgia, and Florida (Choate & Miliotis, 1979; Lindroth, 1963). These specimens differ from the remainder of North American *Odontium* in their small size and lack of a laterobasal carina on the pronotum. A preliminary morphological examination (Maddison, 1993) suggested that these small *Odontium* might consist of two species, with the eastern populations being distinct. In 2003 and 2004 we conducted field work in Iowa, New Hampshire, Virginia, and North Carolina to examine this question.

We report here the results of sequencing four genes [28S ribosomal DNA (28S), cytochrome oxidase I (COI), *wingless* (*wg*), and the carbamoylphosphate synthetase domain of the *rudimentary* gene (CAD)] and further morphological studies of material of the *Bembidion aenulum* subgroup that confirm the existence of a separate, eastern species, which we name *Bembidion paraenulum*.

### Materials and methods

Approximately 370 specimens of the *B. aenulum* subgroup and ca. 50 specimens representing most remaining species of *Odontium* were examined. Specimens came from or have been deposited in the collections listed below. Each collection's listing begins with the coden used in the text. The curator or collection manager of the public collections is listed in parentheses only if specimens were borrowed from that collection; if no curator or collection manager is listed, we have deposited specimens into that collection.