
SCIENTIFIC NOTE

MANDIBULAR CHIRALITY IN TIGER BEETLES (CARABIDAE: CICINDELINAE)

The mandibles are arguably one of the most distinctive features of tiger beetles. These prominent, sickle-like features serve as formidable tools for defense, prey capture, and—in the case of males—as secondary sexual organs allowing the males to secure themselves to the female during copulation. Mandibular chord length, the linear distance from the point of articulation to the distal tip of the mandible, is a commonly used feature in studies of morphological variation and ecological competition in tiger beetles (Pearson and Mury 1979; Pearson 1980; Kritsky and Simon 1995). The available literature either explicitly mentions that the left mandible was measured or fails to indicate which mandible or proportion of right to left mandibles was measured. With the possibility of one mandible crossing over the other, there exists chirality in position, wherein the left mandible crosses dorsal to the right or the reverse, with the right crossing dorsal to the left.

As part of a larger study on morphological variation between the syntopic species *Omus audouini* Reiche, 1838 (*n* = 173) and *Omus dejeanii* Reiche, 1838 (*n* = 93), a single individual, a male *O. audouini* (specimen ID: AM148.09), displayed the right-superior condition (Fig. 1). This individual was captured during 7–20 July 2009 via pitfall trap in the forested region of Powell Butte, a city–run nature park in Portland, Oregon. The individual has a body length of 14.0 mm as measured by dial caliper to the nearest 0.5 mm, and both right and left mandibles have a mandibular chord length of 3.10 mm as measured by dial caliper to the nearest 0.05 mm.

Freitag (1974) described the presence of species-specific coupling sulci on the mesepisternum of females in many genera of tiger beetles. It is believed that these sulci allow the males to gain a more secure hold to facilitate both the copulatory (insemination) and non-copulatory (mate–guarding) stages of amplexus, while also acting as a barrier to interspecific copulation where the mandibles of males that are not conspecific fail to properly fit into the sulci, potentially allowing that male to be more readily unseated. As a heritable trait with variation, the fit of male mandibles into female coupling sulci would be subject to positive selection towards an increasingly complementary and secure coupling.

![Fig. 1. Dorsal (left) and ventral (right) view of a male *Omus audouini* (specimen ID: AM148.09) showing right-superior mandibular chirality. Scale in photo is numbered in mm.](image-url)