

SCIENTIFIC NOTE

Additional Records of Adventive *Onthophagus* Latreille (Coleoptera: Scarabaeidae) in North America

Several Old World species of dung burying beetles in the genus *Onthophagus* Latreille (Coleoptera: Scarabaeidae) have been introduced into North America, either accidentally or intentionally to augment the removal of livestock feces from pastureland. E. R. Hoebeke and K. Beuke (1997. Entomological News 108:345–362) reported four of these species [*O. depressus* (Schreber), *O. gazella* (Fab.), *O. nuchicornis* (L.), and *O. taurus* Harold] as firmly established in North America, reviewed their distribution and provided brief diagnoses to aid in their identification. Some of these species have become the dominant dung beetles in areas where they have established, making it important to document their spread. New records are presented here that extend the known geographic ranges of *O. gazella*, *O. nuchicornis* and *O. taurus*. Specimens are retained by the collector(s) (our names abbreviated TCM and SRP) unless another collection is noted (R. H. Arnett, Jr., G. A. Samuelson and G. M. Nishida. 1993. Flora & Fauna Handbook No. 11, Sandhill Crane Press, Inc., Gainesville, Florida, 310 pp.).

Onthophagus gazella (Fab.). This Afro-Asian species was intentionally released in several states during the 1970s to 1980s and established quickly across the southern United States and throughout Mexico. It had been recorded as far north as northwestern Mississippi, eastern Tennessee and southwestern Kansas (Hoebeke and Beuke *loc. cit.*). This species was collected under street lamps in Pemiscot Co. in southeastern Missouri: Hayti, 26.VIII.1997, TCM and SRP, 5 ♂♂ and 6 ♀♀, and I-55 South Rest Stop, 25.VIII.2000, J. P. Uffman, 1 ♂ and 1 ♀. This locality is nearly 200 km north of the nearest recorded locality (northwestern Mississippi). The species had been recorded from southern Oklahoma, and one female was collected in northcentral Oklahoma: Pawnee Co., Hwy 412 Rest Stop, 1.6 km W of Hwy 18, 10.X.1997, TCM.

Onthophagus nuchicornis (L.). This Eurasian species was probably introduced to North America prior to the 1840s. It is well established across the northern United States and southern Canada but has not been recorded as far south as Missouri. One female was collected in northeastern Missouri: Adair Co., 16.VI.1983, A. Schreiber [TCMC]. The nearest known localities are approximately 400 km to the north (southwestern Minnesota) and east (northwestern Indiana).

Onthophagus taurus (Schreber). This Eurasian species was first detected in Florida in the 1970s, and intentional releases began shortly afterwards in California. J. R. Anderson and E. C. Loomis (1978. California Agriculture 32:31–32) reported this species overwintering in several unspecified locations in California. However, the only specific locality record in the state is in Orange Co. (Hoebeke and Beuke *loc. cit.*). The following records are from the northern Sierra Nevada in California: Placer Co., Auburn State Recreation Area, 1.6–3.2 km SE of Auburn, 4.V.1991 and 1.VI.1991, in horse dung, TCM [& UMRM], 8 ♂♂ and 15 ♀♀; Sacramento Co., American River Parkway, Goethe Park, 2.V.1992, in horse dung, TCM [UMRM], 1 ♀. These localities are approximately 600 km northwest of the southern California locality. Only five specimens had been recorded from Missouri (Reynolds Co.) (Hoebeke and Beuke *loc. cit.*). The following records indicate this species is well established throughout southern Missouri: Carter Co., Peck Ranch Conservation Area, Rogers Creek Natural Area, 0.8 km W of Road 16 on Road B, T28N R2W S26 (NE¼), 11.VII.1999, in unidentified animal dung, TCM, 6 ♂♂; Oregon Co., Mark Twain National Forest, McCormack Lake Recreation Area, T25N R4W S24 (SW¼), 11.VII.1999, in horse dung, TCM, 24 ♂♂ and 20 ♀♀; Shannon Co., Ozark Trail near Mill Mountain, T28N R2W S6 (NE¼), 15.IV.2000, in horse dung, TCM and R. S. Thoma, 9 ♂♂ and 6 ♀♀; Texas Co., Licking, Cooper Farm, 16.V.1999, in horse dung, SRP, 2 ♂♂; Washington Co., Anthonies Mill, 3 mi W of Hwy 185 on Hwy N, 7–22.IV.2000, in swimming pool, 5 ♂♂, 9.VI.2000, in dog dung, 1 ♂, and 5 mi NW Potosi on Hwy 185 at Fourche Renault Creek, 13.V.2000, in cow dung, 3 ♂♂ and 2 ♀♀, J. P. Uffman.

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***Cymbionotum* Larvae (Coleoptera: Carabidae) Are Still Unknown; a Case of Larval Misidentification**

Among carabid larvae, those of the genus *Cymbionotum* Baudi, the sole member of the tribe Cymbionotini, have long been desired for morphological study. During an expedition to Turkmenia in 1996, I collected all three species known from the region, namely *C. pictulum* Bates, *C. semeleleri* (Chaudoir) and *C. transcaspicum* Semenov. Adult beetles were placed in plastic containers with soil for subsequent rearing of larvae. About ten days later I discovered nine apparently first-instar larvae in the box containing the *C. pictulum* adults. Six larvae were transferred into ethanol, and the remaining three were kept for subsequent instars. The live larvae were provided with a wide variety of food items, however they refused to eat and soon died. Next year I went again to Turkmenia and kept two *Cymbionotum* species for larval rearing. However no larvae were obtained.

The six preserved larvae from 1996 were recently described (V. V. Grebennikov and Y. Bousquet, 1999, *Advances in Carabidology. Papers Dedicated to the Memory of Dr. Prof. O. L. Kryzhanovskij*. Krasnodar, MUIISO Publishers, pp. 109–114). While the manuscript was in press, Professor Inessa Kh. Sharova called my attention to the fact that the drawings of the larvae that we believed to be those of *Cymbionotum pictulum* resembled those of the first-instar larva of *Lebia scapularis* (Fourcroy). Immature stages of this latter species were first described by F. Silvestri (1904, *Redia* 2: 68–84) and his drawings were reproduced in Sharova's monograph (I. Kh. Sharova, 1958, *Uchenye zapiski Moskovskogo Gosudarstvennogo Pedagogicheskogo Instituta Imeni Linina* 124: pp. 1–165 (in Russian)). The more detailed drawings and description of first-instar larvae of *L. chlorocephala* (Hoffmannsegg) provided by E. Arndt (1991, *Die Larven der Käfer Mitteleuropas. Band 1: Adephega*. (B. Klausnitzer, ed.). Goecke and Evers, Krefeld, pp. 45–141) convinced me that the "*Cymbionotum pictulum*" larvae are in fact those of *Lebia* sp. An effort was made to withdraw the paper from print, but it was too late. I feel it is my duty to report this unfortunate fact as soon as possible. Apparently, *Lebia* eggs were unwittingly brought into the rearing container with the soil. It seems to be a rather rare case because during two field seasons in Turkmenia I collected about 100 *Cymbionotum* adult specimens and only two adult specimens of the genus *Lebia*. In conclusion I will repeat van Emden's words that "... even breeding may result in misidentification ..." (p. 80, F. van Emden, 1941, *Transactions of the Royal Entomological Society of London* 92: 1–99). *Cymbionotum* larvae are still unknown.

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