

Scientific Note

First attraction record of *Trox plicatus* Robinson, 1940 (Coleoptera: Trogidae) to feces of bobcat *Lynx rufus* Schreber, 1777 (Carnivora: Felidae)

Primer registro de atracción de *Trox plicatus* Robinson, 1940 (Coleoptera: Trogidae) a las heces del lince rojo *Lynx rufus* Schreber, 1777 (Carnivora: Felidae)

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Abstract. The first record of the presence of the keratinophagous beetle *Trox plicatus* Robinson with the feces of the bobcat *Lynx rufus* Schreber is presented herein. The environmental conditions under which the *Trox* specimens were collected are mentioned. In addition, the known aspects on the natural history and distribution of *T. plicatus* in Mexico are summarized and commented.

Key words: Keratinophagous; necrophagous.

Resumen. Se presenta el primer registro de presencia del escarabajo queratínofago *Trox plicatus* Robinson en las heces del lince rojo *Lynx rufus* Schreber. Se mencionan las condiciones ambientales bajo las cuales se recolectaron los especímenes de *Trox*. Además, se resumen y comentan los aspectos conocidos sobre la historia natural y distribución de *T. plicatus* en México.

Palabras clave: Queratinófago; necrófago.

The almost cosmopolitan genus *Trox* Fabricius, 1775 (Coleoptera: Trogidae) includes at least 71 species in the world (Vaurie 1962; Schoolmeesters 2022), while 25 species are recognized to occur in the Americas (Zídek 2013). Species of *Trox* are typical elements of temperate and subtropical regions, mainly occurring in arid and semi-arid habitats, where both adults and larvae are recognized to be keratinophagous beetles (Strümpher *et al.* 2015), by feeding on dry carcasses or bones and fur found within nests and burrows of birds and mammals, dung, decayed fish, or fungi (Vaurie 1955, 1962). Furthermore, several species are recognized to be attracted to lights, chicken feathers, or malt (Vaurie 1955, 1962). Taking into account the temporal segregation of necrophagous insects, *Trox* species are considered among the last visitors of carcasses (Vaurie 1955). Despite some general aspects of the biology of *Trox* are recognized, several details of the natural history of its species remain unknown as a consequence of their secretive and elusive habits (Vaurie 1955; Strümpher *et al.* 2015). Consequently, works that help to understand the species-specific habits of *Trox* are needed. The aim of this work is to report the attraction of *Trox plicatus* Robinson, 1940 to carnivorous feces.

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Figure 1. Dorsal habitus of *Trox plicatus* Robinson. Scale barr: 5 mm. / Hábito dorsal de *Trox plicatus*. Escala: 5 mm.

Trox plicatus is recognized to be a habitat generalist, being able to exploit conserved temperate forests, and open areas of arid and semi-arid conditions (Moctezuma *et al.* 2016). Previous works have suggested that *T. plicatus* feeds on the pellets of the owl *Strix occidentalis* Xantus de Vesey, 1860 (Vaurie 1955); while *T. plicatus* is considered to be nocturnal and several specimens have been attracted to lights at night (Baker 1968; Morón and Deloya 1991; Minor and Morón 2016). Baker (1968) commented that larvae of *T. plicatus* were reared under a fawn carcass. Some studies have suggested that this species is attracted to squid (Morón and Deloya 1991; Moctezuma *et al.* 2016; Hernández *et al.* 2022; Rodríguez-Castillo *et al.* 2022). The first record of *T. plicatus* (Fig. 1) associated to feces of bobcat *Lynx rufus* Schreber, 1777 (Fig. 2) is reported herein. Ten unsexed adults were collected under the feces (Fig. 3) in the temperate forest of Las Derrumbadas, Puebla, Mexico (Figs. 4-5), at an elevation of 2695 m ($19^{\circ}16'58.5''N$, $97^{\circ}27'37.3''W$) in June 2013. The specimens of *T. plicatus* were determined by following Vaurie (1955), while feces and footprints (Figs. 2-3) of the bobcat were identified with the work of Aranda (2000). The bobcats are medium-sized carnivorous and their feces contain remains of fur, teeth, claws and bones (Aranda 2000). Consequently, the feces of bobcat represent a suitable source of keratin to be exploited by *T. plicatus*.

Finally, the known distribution to date of *T. plicatus* includes the Mexican states of Aguascalientes, Chihuahua, Durango, Guanajuato, Hidalgo, Mexico City, Jalisco, Mexico State, Michoacán, Morelos, Puebla, Sonora, Tlaxcala, Veracruz y Zacatecas (García de Jesús *et al.* 2013; Hernández *et al.* 2022). Nevertheless, a doubtful record of this trogid beetle was reported for the state of Campeche (Morón-Ríos and Morón 2016). It is not likely that *T. plicatus* occurs in Campeche because this state is characterized by tropical and humid ecosystems, which is not consistent with the current knowledge of the natural history of this trogid species.



Figure 2. Footprint of the bobcat *Lynx rufus* Schreber. / Huella de lince rojo *Lynx rufus* Schreber.



Figure 3. Presence of *Trox plicatus* (yellow circles) to feces of bobcat *Lynx rufus*. The specimens were located between the feces and the soil surface. / *Trox plicatus* (círculos amarillos) asociado a heces del lince rojo *Lynx rufus*. Los especímenes se ubicaron entre las heces y la superficie del suelo.



Figure 4. Study region (Las Derrumbadas, Puebla, Mexico) encompassed by a couple of volcanic domes. / Región de estudio (Las Derrumbadas, Puebla, México) conformada por un par de domos volcánicos.



Figure 5. Temperate forest where the specimens of *Trox plicatus* were found. / Bosque templado donde se encontraron los ejemplares de *Trox plicatus*.

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