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First record of *Hexathrombium* (Acari: Microtrombidiidae) on *Tetracha (Tetracha) brasiliensis brasiliensis* (Coleoptera: Cicindelidae) in Argentina

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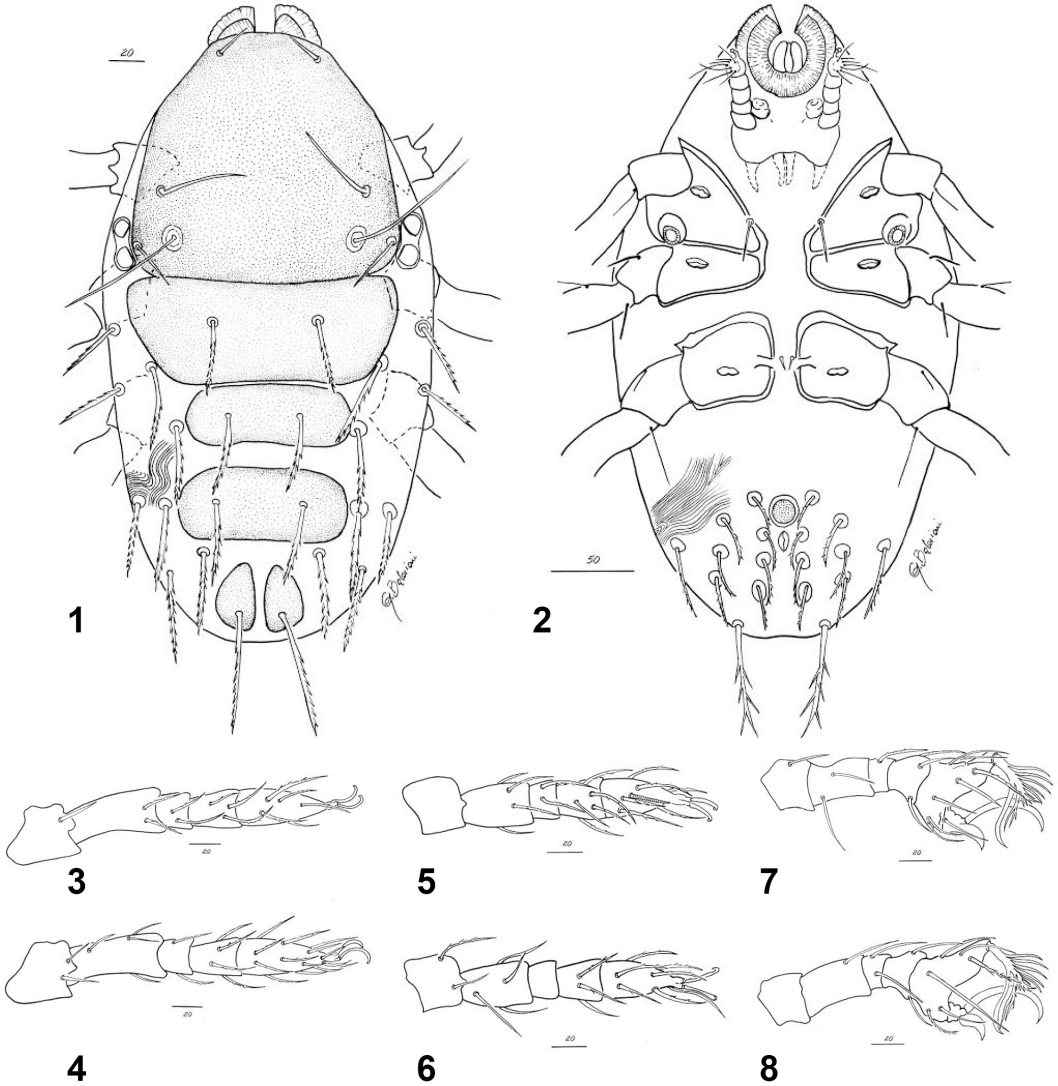
The tiger beetle, *Tetracha (Tetracha) brasiliensis brasiliensis* (Kirky) (Coleoptera: Cicindelidae), is widely distributed in South America (Wiesner & Bamdinelli 2014) and mainly in central-southern Brazil, northern Argentina, Bolivia and Paraguay (Naviaux 2007). This species is an active predator of some invertebrates and vertebrates such as amphibians (Hiroiuki Oda *et al*. 2014) in natural habitats and crops, with records reported in soybean and corn crops (Martins *et al*. 2012).

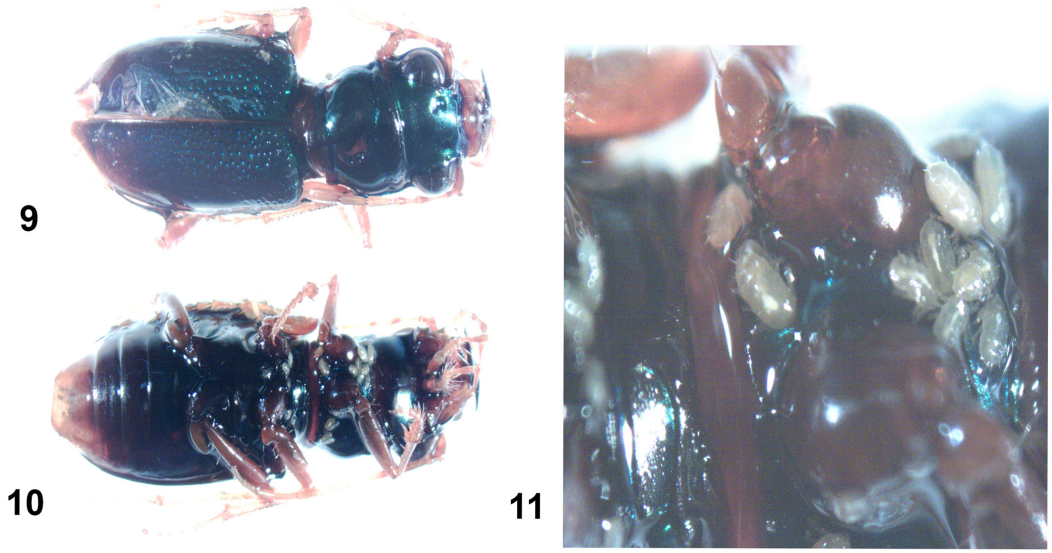
The larvae of the genus *Hexathrombium* Cooreman are ectoparasites of primarily ground dwelling Coleoptera. The genus *Hexathrombium* was created for *H. spatuliferum* from Zaire by Cooreman (1944). Three species in South America have been described: *H. abirami* Haitlinger, 1997 from Brazil on Erotylidae, *H. cicindelae* (Floch & Abonnec 1941) from French Guiana on Cicindelidae, and *H. marittae* Haitlinger 1993 from Chile on Staphylinidae (Haitlinger 1997). Nothing is known about the complete life cycles of these mites.

Material & methods: Tiger beetles was collected with pit-fall traps in the Bt cotton ground crops during March-April, 2013 at the Experimental Research Station of Agriculture (EEA-INTA) Reconquista, Santa Fe, Argentina (29°11´S; 59°52´O). Among 250 tiger beetles collected, five were ectoparasitized by *Hexathrombium* sp. (Trombidioidea, Microtrombidiidae, Eutrombidiinae) (Figure 1). Mites were removed from hosts in the laboratory under an optical stereomicroscope and all the body regions were examined. The numbers of mites collected from each body region (head, thorax, abdomen, legs) were recorded. All regions were observed in dorsal and ventral view. Mites were cleared in lactophenol and mounted on slides with Hoyer's medium for later observation with optical microscope at 400X magnification (Olympus BX51). The setae of mites were measured and identified following Southcott (1993) and Haitlinger (1997). Representative specimens of these mites were deposited in the División Entomología, Museo de La Plata, Argentina (FCNyM-UNLP). Results and discussion: In Table 1, we give some measurements of the Argentinian species and in Figs 1-8 we show details of dorsal, ventral and leg views. With the key of Haitlinger (1997) we are not able to key it to any species reported in this key. This species differs from *H. marittae* and *H. willisi* with divided pygidial plates, from *H. abirami* by the measurements of PL (>28µ), QL5 (over 78µ) and AP (over 42µ) (see Table 1), and from *H. mamerti* (Haitlinger, 1999) found on Cicindelidae host (*Megacephala humeralis*) by being larger (in *H. mamerti* body length 489 µ, body width 222 µ), having nude lophotrix (*H. mamerti* has lophotrix with setules) and shorter Ta III and Ti III. Our specimens seem to fit the illustrations given by Floch & Abonnenc (1941) of *H. cicindelae* better: both species share the lophotrix nude and have similar QL5 (~ 63 µ). However, the descriptions of Floch & Abonnenc (1941) lack many details. Until new measurements of *H. cicindelae* are published or the type specimens can be studied, we assign our species as *Hexathrombium cf. cicindelae.*

In this study, only the 2% of the *T. brasiliensis brasiliensis* were parasitized by *Hexathrombium* mites with means abundance of 34.8±17 mites/individual and the most of mites showed a preference for ventral thorax (34.6±19.03) (Figs 9–11). Perez-Espinoza & Moreno Salas (2016) recorded *H. cf. marittae* on *Ceroglossus buqueti*. The low prevalence of these mites on their hosts may be attributed to an asynchrony of life cycle with their hosts. Some trombidiid mites prefer certain parts of the host body, such as the larvae of *Allothrombium pulvinum* Ewing that prefer the thorax of aphids (Zhang 1991). Also, ventral side offers availability of space (Zhang 1998), providing a shelter that allows the parasites to avoid becoming detached when the insects are hunting (Santos-Prezoto *et al.* 2003). This is the first report of the genus *Hexathrombium* in Argentina on *Tetracha (Tetracha) brasiliensis brasiliensis.*



FIGURES 1–8. 1—Dorsal view; 2—Ventral view; 3—Leg I (dorsal); 4—Leg I (ventral); 5—Leg II (dorsal); 6—Leg II (ventral); 7—Leg III (dorsal); 8—Leg III (ventral).



FIGURES 9–11. 9—Dorsal view of *Tetracha brasiliensis brasiliensis*, 10—Ventral view, 11—Detail of ectoparasitic mites in thorax.

TABLE 1. Metric data from *Hexathrombium cf. H. cicindelae*.

Characters	Mean (range)	Characters	Mean (range)	Characters	Mean (range)
Length of body	492.5 (545–610)	*QL*	34.8 (30–40)	*Fe I*	47.5 (45–50)
Width of body	287.2 (305–370)	*PLN3*	18.4 (18–20)	*Cx II*	58 (55–60)
MA	87 (82–98)	*QL3*	38.1 (35–43)	*Ta II*	43.3 (43–45)
SB	101 (92–107)	*PNL4*	21.2 (20–23)	*Ti II*	27.5 (25–30)
AP	33.8 (30–37)	*QL4*	40.9 (38–45)	*Ge II*	15.8 (15–18)
PW	138.6 (130–147)	*PNL5*	22.5 (20–25)	*Fe II*	35
QW	50 (41–57)	*QL5*	67.2 (52–75)	*Cx III*	53.2 (43–60)
QL	34.8 (35–40)	*QW5*	31.5 (28–35)	*Ta III*	31.7 (30–33)
L	145.9 (132–150)	*L5*	34.5 (33–38)	*Ti III*	17.5 (15–20)
PL	25 (22–30)	*Cx I*	62 (50–68)	*Ge III*	13
AW	108.1 (102–113)	*Ta I*	52.5 (50–53)	*Fe III*	38.3 (35–45)
SB	90.9 (75–108)	*Ti I*	30.8 (28–35)	*QW5*	31.5 (28–35)
PLN	29.1 (28–30)	*Ge I*	18.3 (18–20)		

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