

***Chaetoleon pusillus* (Neuroptera: Myrmeleontidae: Brachynemurini), a new genus and species of antlion for Canada**

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Nine species of antlions (Neuroptera: Myrmeleontidae), excluding ascalaphids, are recorded in Canada (Blades 2019). Five of these occur in British Columbia, and all are known from the province's Southern Interior Ecoprovince (Scudder and Cannings 2009). The Okanagan Valley is at the heart of this ecoprovince, and antlion larval pits made by *Myrmeleon exitialis* Walker are a common sight in the dry soil of the valley's grasslands and open ponderosa pine (*Pinus ponderosa* Douglas ex C. Lawson) and Douglas-fir (*Pseudotsuga menziesii* (Mirbel) Franco) woodlands. Here, we report a sixth species from the province, the tenth from Canada.

Chaetoleon pusillus (Currie, 1899) was discovered by RJC at his home on the West Bench of Penticton (49.490372° N, 119.627595° W; elevation 420 m) at the edge of grasslands of the Penticton Indian Reserve. This *Festuca* grassland was described by Cannings (1989). At that time, although somewhat disturbed, it was dominated by *Festuca campestris* Rydberg (Poaceae); today, it is significantly degraded, characterised largely by *Hesperostipa comata* (Trinius and Ruprecht) Barkworth (Poaceae) and many invasive alien species.

RJC observed and photographed the species at a porch light (compact fluorescent bulb), but it was never seen at an ultraviolet light 30 m away at the edge of the grassland. A male was photographed on 11 July 2023 (iNaturalist 172461395; <https://inaturalist.ca/>). The photograph was seen on iNaturalist by LGMT, who recognised the species and identified it. Another male was photographed on 14 July (iNaturalist 172880719; Figs. 1, 2) and, to confirm the earlier identification, was collected. The specimen was preserved in ethanol and deposited in the Royal British Columbia Museum (RBCM) collection (ENT023-001742). A year later, on 19 July 2024, RJC photographed a female at the same place (iNaturalist 230372685). This strongly suggests that a breeding population exists at this location, and that the observations are not incidental occurrences. There are no recorded instances of migratory behavior within the Myrmeleontidae, further supporting the likelihood of an established population at this site.

This paper, describing a significant range extension and new national record, is an excellent example of the usefulness of iNaturalist observations and, especially, of the value of contributing as an identifier (see <https://doi.org/10.1371/journal.pbio.3001843>).

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Figure 1. *Chaetoleon pusillus* male, dorsal view. Penticton, B.C., 14 July 2023 (iNaturalist 172880719). Photo by Richard J. Cannings.

Chaetoleon can be diagnosed by the presence of clavate setae on the forefemur, by short setae that project over the eye, by scraping setae on the female posterior gonapophysis, by the absence of postventral lobes on the male ectoproct, and by a short hind wing CuA that ends near the origin of the MP fork (Stange 1994). Although the latter is a plesiomorphic character among Brachynemurini genera (Stange 1994; Tavares *et al.* 2023), it is a useful

character that readily distinguishes *Chaetoleon* from similar species such as *Brachynemurus pulchellus* (Banks). Additionally, the absence of postventral lobes on the male ectoproct, albeit widespread in other Brachynemurini species, is unique to *Chaetoleon* among other Canadian genera of the tribe. All characters (except for those of the female) are visible in the photographs of the two males posted on iNaturalist. The only other Nearctic genus with similar characters is *Peruveleon* Miller and Stange, but these species have a southern distribution ranging from the United States of America (Texas) to Argentina, bear postventral lobes on the male ectoproct, and have a longer abdomen and shorter legs than *Chaetoleon* (Miller and Stange 2011).



Figure 2. *Chaetoleon pusillus* male, lateral view, with scale. Penticton, B.C., 14 July 2023 (iNaturalist 172880719). Photo by Richard J. Cannings.

Chaetoleon contains four species. *Chaetoleon pumilis* (Burmeister) ranges from North Carolina south to Florida, United States of America; *C. tripunctatus* (Banks) is found in Arizona, United States of America and Sonora, Mexico; and *C. variabilis* Banks occurs in California, United States of America and Baja California, Mexico (Penny *et al.* 1997; Oswald 2023). *Chaetoleon pusillus* is widespread in the western United States of America, ranging from Texas, New Mexico, Arizona, and California north to Colorado, Utah, Nevada (Penny *et al.*

1997), Kansas, and Wyoming (iNaturalist), as well as from southern to northwestern Mexico (Baja California, Chihuahua; Oswald 2023). Records are mostly from deserts, dry grasslands, and various types of dry shrublands (<https://inaturalist.ca/>), so the habitat of this Canadian record is not unusual. This site is approximately 1270 km northwest of the most northerly reported United States' locality in Sweetwater County, Wyoming (iNaturalist 173258110). There is no good reason why *C. pusillus* should not occur in the intervening region; it probably does live in Idaho, Washington, and Oregon but has not yet been observed there. Its apparent absence in the northwestern United States may be the result of a combination of collector bias and low populations, similar to the situation reported for another Nearctic neuropteran, *Polystoechotes punctata* (Fabricius) (Neuroptera: Ithonidae) (Skvarla and Fisher 2022).

Chaetoleon pusillus may be separated from its congeners by having bladelikey setae on the mesonotum (Fig. 2), its characteristic thoracic pattern (Fig. 1; illustration in Stange 1970), and the unique male postmentum pouch under the head (Fig. 2), a structure that is not present in any other Nearctic or Neotropical antlion species (Stange 1970).

This antlion is also noticeable because of its small size (emphasised in the original description by Currie 1899), about 16–17 mm long, excluding the antennae (Fig. 2). The two other antlion species identified at the location, *Brachynemurus abdominalis* (Say) and *Myrmeleon exitialis* Walker, are usually between 30 and 40 mm long (measured by RAC in the RBCM collection).

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REFERENCES

- Blades, D.C.A. 2019. Neuroptera of Canada. In *The Biota of Canada: A Biodiversity Assessment. Part 1: The Terrestrial Arthropods*. Edited by D.W. Langor and C.S. Sheffield. *ZooKeys*, **819**: 387–392. <https://doi.org/10.3897/zookeys.819.26683>.
- Cannings, R.A. 1989. The robber flies (Diptera: Asilidae) of a *Festuca* grassland in the Okanagan Valley, British Columbia. *Journal of the Entomological Society of British Columbia*, **86**: 14–26.
- Currie, 1899. New species of North American Myrmeleonidae. *The Canadian Entomologist*, **31**: 361–365. <https://doi.org/10.4039/Ent31361-12>.
- Miller, R.B. and Stange, L.A. 2011. Antlions of Hispaniola (Neuroptera: Myrmeleontidae). *Insecta Mundi*, **182**: 1–28.
- Oswald, J.D. 2023. Neuropterida species of the World. Lacewing Digital Library, Research Publication No. 1. Available from <http://lacewing.tamu.edu/SpeciesCatalog/Main> [accessed 2 August 2023].
- Penny, N.D., Adams, P.A., and Stange, L.A. 1997. Species catalog of the Neuroptera, Megaloptera, and Raphidioptera of America North of Mexico. *Proceedings of the California Academy of Sciences*, **50**: 39–114.
- Scudder, G.G.E. and Cannings, R.A. 2009. A checklist of the Neuropterid insects of British Columbia (Insecta: Megaloptera, Neuroptera and Raphidioptera) with a summary of their geographic distribution. *Journal of the Entomological Society of British Columbia*, **106**: 17–23.
- Skvarla, M.J. and Fisher, J.R. 2022. Rediscovery of *Polystoechotes punctata* (Fabricius, 1793) (Neuroptera: Ithonidae) in eastern North America. *Proceedings*

- of the Entomological Society of Washington, **124**: 332–345. <https://doi.org/10.4289/0013-8797.124.2.332>.
- Stange, L.A. 1970. Revision of the ant-lion tribe Brachynemurini of North America (Neuroptera: Myrmeleontidae). University of California Publications in Entomology, **25**: 1–192.
- Stange, L.A. 1994. Reclassification of the New World antlion genera formerly included in the tribe Brachynemurini (Myrmeleontidae). Insecta Mundi, **8**: 67–119.
- Tavares, L.G.M., Machado, R.J.P., and Calor, A.R. 2023. The Neotropical antlion genus *Ameromyia* Banks, 1913 (Neuroptera: Myrmeleontidae), systematics and redefinition under a phylogenetic approach. Arthropod Systematics and Phylogeny, **81**: 499–553. <https://doi.org/10.3897/asp.81.e89641>.