

## Note

### First records of the ant genus *Dolichoderus* (Hymenoptera: Formicidae) from Saskatchewan, Canada

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Glasier, J.R.N., and M. Rudy. 2023. First records of the ant genus *Dolichoderus* (Hymenoptera: Formicidae) from Saskatchewan, Canada. *Canadian Field-Naturalist* 137(3): 272–275. <https://doi.org/10.22621/cfn.v137i3.2957>

#### Abstract

We report the first provincial records of the genus *Dolichoderus* in Saskatchewan, represented by two species: Taschenberg's Long-necked Ant (*Dolichoderus taschenbergi*) and Mary's Long-necked Ant (*Dolichoderus mariae*). These species are previously known from eastern Canada and the eastern United States. The new discoveries fill in the range for *D. taschenbergi*, which has previously been found in Alberta and Manitoba, but has not been reported from Saskatchewan, and they represent a significant westerly range expansion of *D. mariae*, which has previously been reported in southeastern Manitoba and Ontario.

Key words: *Dolichoderus*; Saskatchewan; Canadian Formicidae; Taschenberg's Long-necked Ant; *Dolichoderus taschenbergi*; Mary's Long-necked Ant; *Dolichoderus mariae*

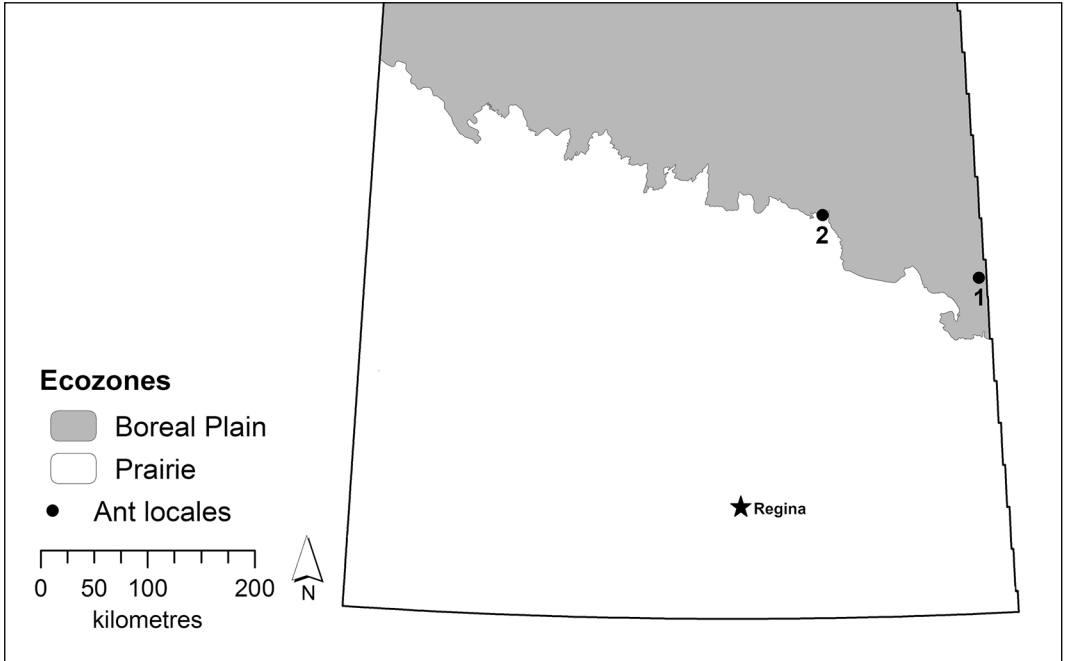
*Dolichoderus* is the most speciose ant genus in the subfamily Dolichoderinae, with over 200 species worldwide (Ellison *et al.* 2012). However, only four species are found in temperate North America (Johnson 1989): Mary's Long-necked Ant (*Dolichoderus mariae* Forel, 1885), Mottled Long-necked Ant (*Dolichoderus plagiatus* Mayr, 1870), Bog Long-necked Ant (*Dolichoderus pustulatus* Mayr, 1866), and Taschenberg's Long-necked Ant (*Dolichoderus taschenbergi* Mayr, 1866). (Note: We continue with scientific names, which are shorter and more widely used than common names.) All four temperate North American *Dolichoderus* species are from the Hypoclinea group and exhibit a distinct cleft in the back of the thorax (Mackay 1993; Ellison *et al.* 2012). Although they occupy different habitats, they have similar feeding behaviours, feeding on insects and plant nectar, and farming aphids for their honey dew (Johnson 1989; Ellison *et al.* 2012). Moreover, they share similar physical and behavioural characteristics, although Johnson (1989) describes their differences and how to identify them.

In Canada, all four species have been reported from Manitoba, Ontario, Quebec, and the Maritimes (Ellison 2012). West of Manitoba, *D. plagiatus* and *D. taschenbergi* have been reported from Alberta

(Glasier *et al.* 2016), but there are no records of *Dolichoderus* in Saskatchewan (Glasier *et al.* 2016). In Alberta, *D. taschenbergi* is an uncommon ant, found in Jack Pine (*Pinus banksiana* Lambert) sand hills along the transition zone between the parkland and boreal forest natural regions of central Alberta (Glasier *et al.* 2013, 2019). *Dolichoderus plagiatus* is common in eastern Canada, and in Alberta a single female alate was reported near Mildred Lake (Specimen label: "57°03'N, 111°35'W malaise trap, 19–25 VIII.1979", J. Ryan & G. Hiltchie, Canadian National Collection 2020; no unique identifier number). More recently, *D. plagiatus* was collected from the Edmonton River Valley (53.503°N, 113.588°W, 5 July 2021, Hand Collection, JRNG.0140 in Glasier Collection 2023), but it is relatively rare in Alberta. For both species, these are the most northern and most western records in North America.

The first record of a *D. mariae* colony in Saskatchewan was found on 26 June 2020, by M.R. in an unusual cluster of wetlands that was being surveyed for rare plants, ~70 km ENE of Hudson Bay, Saskatchewan (52.927559°N, 101.786666°W; Figure 1). The wetlands occur as a complex of long gramminoid fen bands alternating with elevated and sandy aspen-dominated ridges. The colony was constructed

A contribution towards the cost of this publication has been provided by the Thomas Manning Memorial Fund of the Ottawa Field-Naturalists' Club.



**FIGURE 1.** Map of southern Saskatchewan showing the two new *Dolichoderus* records. 1. First record of Mary's Long-necked Ant (*Dolichoderus mariae*) near Hudson Bay. 2. Record of Taschenberg's Long-necked Ant (*Dolichoderus taschenbergi*) near Carrot River. Ecozones are according to Ecological Stratification Working Group (1996).

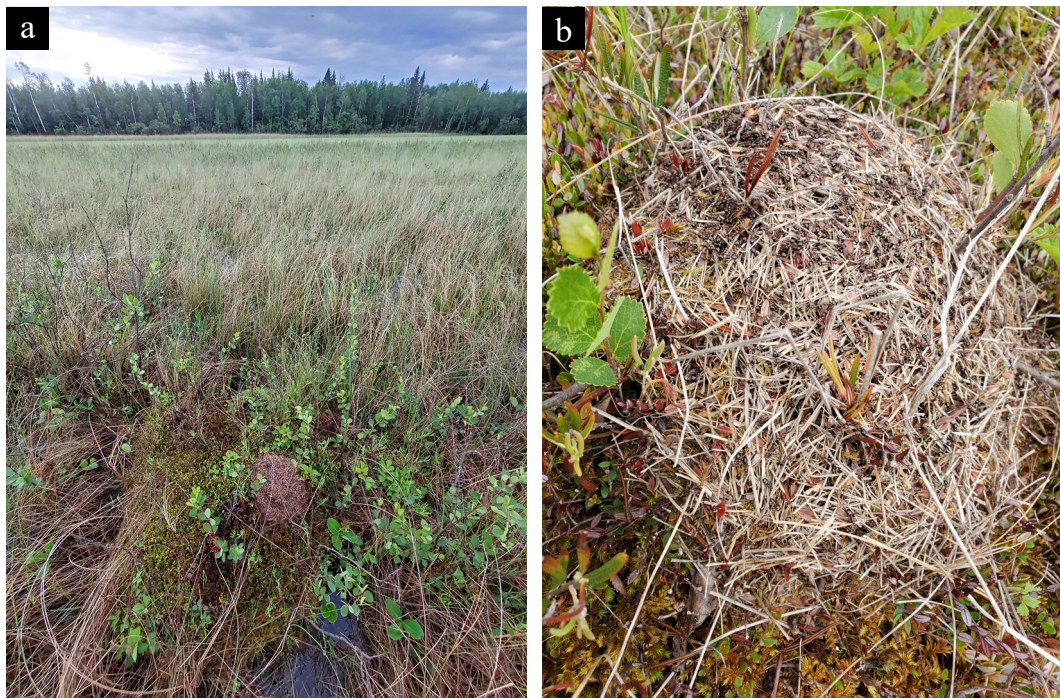
atop a small mound of moss surrounded by pools of water and wetland vegetation, including Bog Cranberry (*Vaccinium oxycoccos* L.), dwarf birches (*Betula* spp.), Bog Rosemary (*Andromeda polifolia* L.), and sedges (*Carex* spp.). The mound seemed to be constructed of material from the surrounding vegetation, mainly sedge leaves/stems and Bog Cranberry leaves (Figure 2). On 11 July 2020, the colony was revisited to collect a sample, which was confirmed by J.R.N.G. and accessioned at the Royal Alberta Museum and J.R.N.G.'s personal research collection (see Voucher specimens, below, for accession numbers). This record is a northern and western extension of the range of *D. mariae* of over 600 km.

The first record of *D. taschenbergi* for Saskatchewan was identified in the Northern Forestry Centre entomology collection by J.R.N.G. (no accession numbers assigned in this ant collection). Two specimens from Carrot River, Saskatchewan (Figure 1) were collected in Jack Pine forest, on 6 June 1958. The collector was not recorded, and no other records for this species have been reported from Saskatchewan.

The pattern of "eastern" insect species ranges expanding westward is seen in Lepidoptera (Pohl and Acorn pers. comm. 2022) and Corixidae (Lapierre *et al.* 2021) and has also been reported for other ant species, including Canadian Robber Ant (*Harpagoxenus*

*canadensis* Smith, 1939; Glasier *et al.* 2016), the obligate dulotic ant (*Polyergus bicolor* Wasmann, 1901; Sosiak *et al.* 2019), and beetles, such as the ant-associated Ulke's Sap Beetle (*Amphotis ulkei* LeConte, 1866; Glasier and Acorn 2013). However, it is still uncertain whether these reports represent actual range expansions or a lack of survey effort. In the case of *D. taschenbergi*, the species has obviously been in Saskatchewan for more than 60 years (and further west in Alberta); however, only through more surveys will we understand its range. In contrast, *D. mariae* is often cited as being a more southerly species (Ellison *et al.* 2012), and its two recent records in Manitoba from iNaturalist (Matties 2021; Pratt 2021), and now our record in Saskatchewan, may indicate an actual expansion of its range, as these reports are rather new.

Studies of ant species in the prairie provinces, especially in Saskatchewan, are lacking (Glasier *et al.* 2016). As *Dolichoderus* is relatively uncommon in Alberta (J.R.N.G. pers. obs.) and is rarely posted on community science sites, such as iNaturalist for Canada (only 80 research-grade observations in Canada as of March 2023), these records are important contributions to our understanding of ant species distributions. With these two new records, the total number of known ant species in Saskatchewan increases



**FIGURE 2.** A Mary's Long-necked Ant (*Dolichoderus mariae*) mound near Hudson Bay, Saskatchewan, showing a. its setting atop a mossy hummock in a graminoid fen, and b. a closeup of the mound. Photos: Michael Rudy.

to at least 78 (Glasier *et al.* 2016; Janicki *et al.* 2016; Guénard *et al.* 2017; AntMaps 2022). Future surveys of ants should focus on ant ranges in Saskatchewan, in western Manitoba, and even near the eastern border of Alberta, which may reveal additional records for *Dolichoderus*.

#### *Voucher specimens*

#### *Dolichoderus mariae* (Figure 3a)

CANADA, SASKATCHEWAN: Hudson Bay, Hummock Boreal Fen, 52.927°N, 101.786°W, 25 June 2020, Hand Collection, collector Michael Rudy, determiner J.R.N. Glasier. Unique identifiers: JRNG.0128–132. J.R.N. Glasier Collection. Pinned specimens. Specimens available on request.

Specimens JRNG.0133, JRNG.0134, and JRNG.0135 were deposited in the Royal Alberta Museum under the codes: pmae.iz00167125, pmae.iz00167124, and pmae.iz00167123.

#### *Dolichoderus taschenbergi* (Figure 3b)

CANADA, SASKATCHEWAN: Carrot River, Jack Pine, WS8-860, 6 June 1958, 53.292°N, 103.557°W, determiner J.R.N. Glasier. Northern Forestry Entomology Collection. Unique identifier: JRNG.0139

#### **Author Contributions**

Writing – Original Draft: J.R.N.G. and M.R.; Writ-

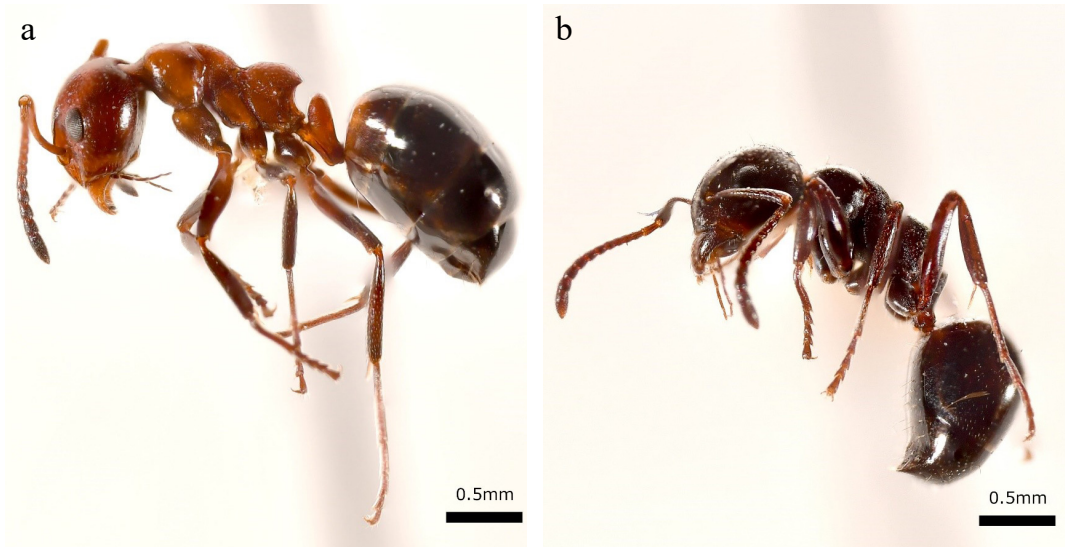
ing – Review & Editing: J.R.N.G. and M.R.; Investigation: M.R.

#### **Acknowledgements**

We thank the Saskatchewan Conservation Data Centre in its entirety, Jeff Keith for funding M.R.'s position and facilitating/encouraging his explorations, and Nature Saskatchewan for helping to fund M.R.'s position. We also thank John Acorn (University of Alberta) for help with specimen photos and his communication on eastern insects being found in Alberta, Greg Pohl (Northern Forestry Centre) for comments on westward extensions of eastern insects, and Dr. Scott Nielsen (University of Alberta) for help with the map templates. We thank Dr. Matthias Buck (Royal Alberta Museum) for pointing us to the *Dolichoderus plagiatus* locality in Edmonton. We also thank the reviewers who greatly helped improve this manuscript.

#### **Literature Cited**

- Antmaps.** 2022. Global ant biodiversity informatics project overall species richness map. Accessed 1 February 2022. <http://antmaps.org/>.
- Ecological Stratification Working Group.** 1996. A National Ecological Framework for Canada. Catalogue no. A42-65/1996E. Ministry of Supply and Services, Ottawa, Ontario, Canada. Accessed 9 October 2023.



**FIGURE 3.** a. Mary's Long-necked Ant (*Dolichoderus mariae*) specimen JRNG.0129 from Hudson Bay, Saskatchewan. b. Taschenberg's Long-necked Ant (*Dolichoderus taschenbergi*) specimen, JRNG.0139, from Carrot River, Saskatchewan. Photos: John Acorn.

- <https://sis.agr.gc.ca/cansis/publications/manuals/1996/A42-65-1996-national-ecological-framework.pdf>.
- Ellison, A.M., N.J. Gotelli, E.J. Farnsworth, and G.D. Alpert.** 2012. A Field Guide to the Ants of New England. Yale University Press, New Haven, Connecticut, USA.
- Glasier, J.R.N., and J.H. Acorn.** 2013. First record of the Myrmecophilous Sap Beetle *Amphotis ulkei* Leconte (Coleoptera: Nitidulidae) in Canada. *Coleopterists Bulletin* 67: 188–189. <https://doi.org/10.1649/0010-065x-67.2.188>
- Glasier, J.R.N., J.H. Acorn, S.E. Nielsen, and H. Proctor.** 2013. Ants (Hymenoptera: Formicidae) of Alberta: a key to species based primarily on the worker caste. *Canadian Journal of Arthropod Identification* 22: 1–104. <https://doi.org/10.3752/cjai.2013.22>
- Glasier, J.R.N., S. Nielsen, J.H. Acorn, L.H. Borysenko, and T. Radtke.** 2016. A checklist of ants (Hymenoptera: Formicidae) of Saskatchewan. *Canadian Field-Naturalist* 130: 40–48. <https://doi.org/10.22621/cfn.v130i1.1791>
- Glasier, J.R.N., S.E. Nielsen, J. Acorn, and J. Pinzon.** 2019. Boreal sand hills are areas of high diversity for boreal ants (Hymenoptera: Formicidae). *Diversity* 11: 1–12. <https://doi.org/10.3390/d11020022>
- Guénard, B., M.D. Weiser, K. Gomez, N. Narula, and E.P. Economo.** 2017. The Global Ant Biodiversity Informatics (GABI) database: synthesizing data on the geographic distribution of ant species. *Myrmecological News* 24: 83–89. Accessed 9 October 2023. <https://core.ac.uk/download/pdf/234764595.pdf>.
- Janicki, J., N. Narula, M. Ziegler, B. Guénard, and E.P. Economo.** 2016. Visualizing and interacting with large-volume biodiversity data using client-server web-mapping applications: the design and implementation of antmaps.org. *Ecological Informatics* 32: 185–193. <https://doi.org/10.1016/j.ecoinf.2016.02.006>
- Johnson, C.** 1989. Identification and nesting sites of North American species of *Dolichoderus* Lund (Hymenoptera: Formicidae). *Insecta Mundi* 3: 1–9. Accessed 9 October 2023. <https://digitalcommons.unl.edu/insectamundi/464>.
- Lapierre, A., R. Hinchliffe, C. Tebby, and T. Cobb.** 2021. New water boatman records from Alberta, Canada (Hemiptera: Corixidae). *Entomological News* 129: 522–528. <https://doi.org/10.3157/021.129.0506>
- Mackay, W.P.** 1993. A review of the New World ants of the genus *Dolichoderus* (Hymenoptera: Formicidae). *Sociobiology* 22: 1–148.
- Matties, Z.** 2021. *Dolichoderus mariae*. Photograph. iNaturalist research-grade observation. Accessed 23 February 2022. <https://www.inaturalist.org/observations/92395383>.
- Pratt, A.** 2021. *Dolichoderus mariae*. Photograph. iNaturalist research-grade observation. Accessed 23 February 2022. <https://www.inaturalist.org/observations/79965734>.
- Sosiak, C.E., M. West, and J.R.N. Glasier.** 2019. First record and new host record of the obligate dulotic ant, *Polyergus bicolor* (Hymenoptera: Formicidae), in Alberta, Canada. *Canadian Field-Naturalist* 133: 309–312. <https://doi.org/10.22621/cfn.v133i4.2381>

Received 24 February 2022

Accepted 3 October 2023

Associate Editor: J.H. Skevington