

## Ants of British Columbia (Hymenoptera: Formicidae)

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British Columbia is Canada's westernmost province comprising about ten percent of the land mass of Canada at approximately 950,000 square kilometres. As British Columbia includes two major mountain ranges that each dominate the western coastal and eastern interior borders, there are a series of moisture regimes one encounters travelling east-west. This in combination with the fact that British Columbia spans 11 degrees of latitude (49-60° N) creates a great number of distinct ecosystems.

Despite the great diversity of habitats and the abundance of ants in many areas, surveys of the ant fauna in British Columbia have been quite rare. To our knowledge, none have been done within the province above 54 N° latitude. Fortunately, what sparse literature does exist with respect to ant species, geography, and ecology was summarized by Naumann *et al.* 1999<sup>1</sup>.

Species diversity is expectedly higher in the south. Heron (2001)<sup>2</sup> working in the dry-warm southern grasslands of the Okanagan found 31 species of 13 genera using pitfall trapping. Higgins and Lindgren (unpub)<sup>5</sup> working in the cold-moist spruce forests of the west-central interior identified a total of 16 species of 7 genera using pitfall trapping, ground surveys and mini-Winkler soil sampling. Ants in this latter habitat are largely found in post-logging sites where the canopy has been opened. Non-logged sites rarely yielded ants although the occasional colony of *Myrmica alaskensis* or *Camponotus herculeanus* might be found where small scale natural disturbances have opened small gaps in the forest canopy.

One notable ecological characteristic of the ants of British Columbia, especially those of the interior, is a dependence upon woody material as a nesting resource. Of the ants collected in the cold-moist spruce forests of the west-central interior only one species, *Myrmica fracticornis* was never associated with woody debris (Higgins and Lindgren 2004)<sup>3</sup>

### Species list

Taxonomy follows Bolton *et al.* (2005)<sup>6</sup> except where noted

#### Species list for ants confirmed as occurring in province (91 species)

Family Formicidae

Subfamily Amblyoponinae

*Stigmatomma oregonensis* (Wheeler, W.M.) <sup>1, 15</sup>

Subfamily Formicinae

*Brachymyrmex depilis* Emery <sup>1</sup>

*Camponotus* (*Camponotus*) *herculeanus* (Linnaeus) <sup>1,3,4</sup>

*Camponotus (Camponotus) laevigatus* (Smith, F.)<sup>1</sup>  
*Camponotus (Camponotus) modoc* Wheeler, W.M.<sup>1,4</sup>  
*Camponotus (Camponotus) novaeboracensis* (Fitch)<sup>1</sup>  
*Camponotus (Myrmentoma) near hyatti* Emery<sup>1</sup>  
*Camponotus (Myrmentoma) nearcticus* Emery<sup>1,2</sup>  
*Camponotus (Tanaemyrmex) semitestaceus* Snelling<sup>10</sup>  
*Camponotus (Tanaemyrmex) vicinus* Mayr<sup>1,2</sup>  
*Formica*

Note: Bolton (2005) does not recognize *Formica* species groups.

However, they are in common usage.

*Formica fusca* group

*Formica accreta* Francoeur<sup>1,3</sup>  
*Formica aerata* Francoeur<sup>1</sup>  
*Formica argentea* W.M. Wheeler<sup>1,2,4</sup>  
*Formica fusca* Linnaeus<sup>1,4</sup>  
*Formica hewitti* Wheeler, W.M.<sup>1,4</sup>  
*Formica montana* Wheeler, W.M.<sup>1</sup>  
*Formica neoclara* Emery<sup>1,2</sup>  
*Formica neorufibarbis* Emery<sup>1,3,4</sup>  
*Formica pacifica* Francoeur<sup>1</sup>  
*Formica podzolica* Francoeur<sup>1</sup>  
*Formica subpolita* Mayr<sup>1,2</sup>  
*Formica transmontanis* Francoeur<sup>1, 18</sup>  
*Formica xerophila* Smith, M.R.<sup>1</sup>

*Formica neogagates* group

*Formica lasioides* Emery<sup>1,2,4</sup>  
*Formica manni* Wheeler, W.M.<sup>1</sup>  
*Formica neogagates* Emery<sup>1,2</sup>  
*Formica vinculans* Wheeler, W.M.<sup>2,9</sup>

*Formica rufa* + *microgyna* groups

*Formica adamsi whymperi* Wheeler, W.M.<sup>1</sup>  
*Formica dakotensis* Emery<sup>5</sup>  
*Formica densiventris* Viereck<sup>1</sup>  
*Formica integroides* Wheeler, W.M.<sup>1,2</sup>  
*Formica microgyna* W.M. Wheeler<sup>1,2</sup>  
*Formica near nepticula* W.M. Wheeler<sup>2</sup>  
*Formica obscuripes* Forel<sup>1,2,4</sup>  
*Formica obscuriventris* Mayr<sup>1,3,4</sup>  
*Formica oreas* Wheeler, W.M.<sup>1</sup>  
*Formica planipilis* Creighton<sup>2</sup>  
*Formica propinqua* Creighton<sup>2</sup>  
*Formica ravida* (jr. synonym *haemorrhoidalis*) Creighton<sup>1,2</sup>  
*Formica spatulata* Buren<sup>1</sup>  
*Formica subnitens* Creighton<sup>1</sup>

*Formica sanguinea* group

*Formica aserva* (jr. synonym *subnuda*) Forel<sup>1,3,4</sup>

*Formica curiosa* Creighton <sup>1,2</sup>  
*Formica obtusopilosa* Emery <sup>1</sup>  
*Formica puberula* Emery <sup>11</sup>

*Lasius (Acanthomyops) coloradensis* Wheeler, W.M. <sup>1</sup>  
*Lasius (Acanthomyops) interjectus* Mayr <sup>1</sup>  
*Lasius (Acanthomyops) latipes* (Walsh) <sup>1</sup>  
*Lasius (Acanthomyops) occidentalis* Wheeler, W.M. <sup>1</sup>  
*Lasius (Cautolasius) fallax* Wilson <sup>1</sup>  
*Lasius (Cautolasius) flavus* (Fabricius) <sup>1</sup>  
*Lasius (Chthonolasius) subumbratus* Viereck <sup>1,4</sup>  
*Lasius (Chthonolasius) vestitus* Wheeler, W.M. <sup>1</sup>  
*Lasius (Lasius) alienus* (Foerster) <sup>1</sup>  
*Lasius (Lasius) crypticus* Wilson <sup>1,2</sup>  
*Lasius (Lasius) neoniger* Emery <sup>1,2</sup>  
*Lasius (Lasius) pallitarsis* (Provancher) <sup>1,4</sup>  
*Myrmecocystus testaceus* Emery <sup>1,2</sup>  
*Polyergus breviceps* Emery <sup>1,2,3</sup>

#### Subfamily Dolichoderinae

*Liometopum luctuosum* W.M. Wheeler <sup>2</sup>  
*Tapinoma sessile* (Say) <sup>1,2,4</sup>  
*Linepithema humile* (Mayr) <sup>16</sup>

#### Subfamily Myrmicinae

*Aphaenogaster occidentalis* (Emery) <sup>1</sup> Note: recorded as  
*A. subterranea* by Heron (2001)  
*Aphaenogaster boulderensis* <sup>13</sup>  
*Formicoxenus quebecensis* Francoeur <sup>1</sup>  
*Leptothorax muscorum* (jr. synonym *L. canadensis*) (Nylander) <sup>1,3,4</sup>  
*Manica hunteri* (Wheeler, W.M.) <sup>1</sup>  
*Manica invidia* Bolton <sup>1,4</sup>  
*Monomorium pharaonis* (Linnaeus) <sup>1</sup>  
*Myrmica* sp. A <sup>23</sup>  
*Myrmica alaskensis* Wheeler, W.M. <sup>3,4</sup>  
*Myrmica brevispinosa* Wheeler, W.M. <sup>1,4</sup>  
*Myrmica crassirugis* Francoeur <sup>2,5,7</sup>  
*Myrmica detritinodis* Emery <sup>19</sup>  
*Myrmica fracticornis* Forel <sup>3,4</sup>  
*Myrmica glacialis* Emery <sup>20</sup>  
*Myrmica incompleta* Provancher <sup>1,3,4</sup>  
*Myrmica latifrons* Stärcke <sup>1</sup>  
*Myrmica lobifrons* Pergande <sup>1</sup>  
*Myrmica nasta* manuscript name <sup>21</sup>  
*Myrmica nearctica* Weber <sup>2</sup>  
*Myrmica specioides* Bondroit <sup>22</sup>

*Myrmica rubra* (Linnaeus)<sup>14</sup>  
*Pheidole californica* Mayr<sup>1,2</sup>  
*Pogonomyrmex salinas* Olsen<sup>1</sup> (jr. synonym *P. owyheeii*)  
*Solenopsis molesta* Say<sup>1,2</sup>  
*Stenamma snellingi* Bolton<sup>1</sup> (jr. synonym *occidentale*)  
*Stenamma diecki* Emery<sup>1</sup>  
*Temnothorax rugatulus* (Emery)<sup>1</sup>  
*Temnothorax nevadensis* (Wheeler, W.M.)<sup>1,2</sup>  
*Temnothorax nitens* (Emery)<sup>2</sup>  
*Tetramorium caespitum* (Linnaeus)<sup>17</sup>

Subfamily Ponerinae  
*Hypoponera punctatissima*<sup>12</sup>

**Species list for ants suspected as present in the province but not confirmed (14 species)**

Family Formicidae  
Subfamily Formicinae

*Formica exsecta* group  
*Formica ulkei* Emery<sup>1</sup>  
*Formica fusca* group  
*Formica gagatoides* Ruzky<sup>8</sup>  
*Formica neogagates* group  
*Formica bradleyi* Wheeler, W.M.<sup>1</sup>  
*Formica sanguinea* group  
*Formica subintegra* Wheeler, W.M.<sup>1</sup>  
*Lasius (Chthonolasius) umbratus* (Nylander)<sup>1</sup>  
*Lasius (Lasius) nigra* (Linnaeus)<sup>1</sup> (original comb. *L. niger*)  
Subfamily Myrmicinae  
*Formicoxenus diversipilosus* (Smith, M.R.)<sup>1</sup>  
*Formicoxenus provancheri* (Emery)<sup>1</sup>  
*Leptothorax acervorum* (Fabricius)<sup>1</sup>  
*Leptothorax faberi* Buschinger<sup>1</sup>  
*Leptothorax retractus* Francoeur<sup>1</sup>  
*Monomorium minimum* (Buckley)<sup>1</sup>

**Species list for ants reported in province that may have arisen from misidentification (2 species)**

Subfamily Formicinae  
*Lasius (Acanthomyops) claviger* (Roger)<sup>1</sup>  
Subfamily Dolichoderinae  
*Liometopum apiculatum* Mayr<sup>1</sup>

**Ant species reported in province that might represent isolated transport of a single individual (1 species)**

Subfamily Formicinae

*Formica rufa* + *microgyna* groups

*Formica laeviceps* Creighton <sup>1</sup>

## References

1. Naumann K, Preston WB, Ayre GL. 1999. An annotated checklist of the ants (Hymenoptera: Formicidae) of British Columbia. *Journal of the Entomological Society of British Columbia*. 96:29-68.
2. Heron JM. 2001. [M.Sc. Thesis]. The effects of grazing on ant (Hymenoptera: Formicidae) diversity in the south Okanagan grasslands. University of British Columbia: 98 p.
3. Higgins RJ, Lindgren BS. 2006. The fine scale physical attributes of coarse woody debris and effects of surrounding stand structure on its utilization by ants (Hymenoptera: Formicidae) in British Columbia, Canada. In: Grove SJ, Hanula JL, eds. *Insect biodiversity and dead wood. Proceedings of a symposium for the 22nd International Congress of Entomology; 2004 Aug. 15-21; Brisbane, Australia; Southern Research Station, Forest Service; USDA. Gen. Tech. Rep. SRS-93: p. 67-74.*
4. Lindgren BS and MacIsaac AM. 2002. A preliminary study of ant diversity and of ant dependence on dead wood in central interior British Columbia. USDA Forest Service Gen. Tech. Rep. PSW-GTR-181:111-119.
5. Higgins and Lindgren unpublished
6. Bolton B, Alpert G, Ward PS, Naskrecki P. 2005. [CD-ROM] *Bolton's Catalogue of the Ants of the World*. Harvard University Press.
7. Francoeur A. 2007. The *Myrmica punctiventris* and *M. crassirugis* species groups in the Nearctic region. In Snelling RR, Fisher BL, Ward PS, eds. *Advances in ant systematics (Hymenoptera: Formicidae): homage to E. O. Wilson – 50 years of contributions*. *Memoirs of the American Entomological Institute*, 80. pp 153-145.
8. Francoeur A. 1997. Ants (Hymenoptera: Formicidae) of the Yukon. In Danks HV, Downes JA, eds. *Insects of the Yukon. Biological Survey of Canada (Terrestrial Arthropods)*. Ottawa. pp 901-910.
9. Blades DCA, Maier CW. 1996. A survey of grassland and montane arthropods collected in the southern Okanagan region of British Columbia. *Journal of the Entomological Society of British Columbia*. 93:49-73.
10. Higgins RJ, Lindgren BS. 2008. Inventory of arboreal-foraging ant communities within Williamson's Sapsucker nest areas in the east Kootenays. Report to Tembec Industries (Contribution agreement RC08-1569).14 p.
11. Higgins RJ. 2009. Identification of ants collected by M.Sc student, Eleanor Bassett (TRU) at Lac du Bois Park, Kamloops, BC.
12. Higgins RJ. 2011. Identification of ants received via RBCM (Rob Cannings) from Duncan, BC (home pest). Specimens returned to RBCM. Also identified in specimen

from UBC Spencer Museum collected from Rectory of Rev. J. Brown in Burnaby, 1964. Additional specimens of the 1964 collection in Burnaby found in alcohol at Spencer Museum and some now in collection of R. Higgins.

13. Higgins RJ. 2011. Identification of single specimen received from UBC Spencer Museum (Karen Needham). Collected in pitfall trap in Haynes Ecological Reserve in 1986 near Osoyoos, BC. Specimen returned to Spencer Museum.

14. Higgins RJ. 2011. Identification of specimens received via Agriculture Canada (Hume Douglas) from Deep Cove, North Vancouver. Now known in several BC southwestern municipalities with moderate temp (>6 °C MAT; >1000mm precipitation annually).

15. Jack Longino has identified these ants on Cortes Island just southeast of Whaletown.

16. Higgins RJ. 2013. Collected and identified from specimens in a Garden Centre in Feb 2013. Pest control operators indicate clear above ground activity during the summer months over the previous 3 years. Area affected at least 140 x 40m.

17. Higgins RJ. 2013. Collected and identified from a home in Tsawwassen in Feb 2013.

18. Higgins RJ. 2013. Collected 16 June 2013 on Duffy Lake road. 10U 0535146E 5579624N. Elevation 1207m. Det. A. Francoeur.

19. Awaiting formal raising from synonymy by A. Francoeur (currently a junior synonym of *M. fracticornis*). Specimens from central British Columbia (Prince George, Houston, Williams Lake).

20. Higgins RJ. Specimens collected within 100 km of Houston BC during PhD work (R. Higgins) and originally identified as *Myrmica fracticornis*.

21. Manuscript name. Unpublished undescribed species in the collection of A. Francoeur at the Université du Québec à Chicoutimi. All specimens arise from a collection in Lynn Canyon in 1941 (and one additional specimen from Oregon in 1966).

22. Higgins RJ. Collected from residents in the greater Vancouver (first record in 2011) and Victoria areas, as well as scrub parkland in Richmond. Residents were reporting being stung. Personal observations by R. Higgins of live colony indicated that they were not as quick to recruit to disturbance or as aggressive as *Myrmica rubra* (European fire ant), but none-the-less occasionally attacking residents. A European invasive species.

23. Higgins RJ. 2013. New undescribed species located in samples of *Mymica* spp. ants collected in the Houston BC area between 2003 and 2005. These specimens found at Fenton Creek, approximately 50km southwest of Houston.