Table S1. Species list and occurrence in traps of ants in the boreal forest sites along with functional traits and shade-tolerance. Functional traits were determined using several sources, from published descriptions, field guides and previous studies [1–9]. Using the same sources, shade-tolerance was determined as either low (marked preference for open habitats), moderate (found in both open and closed habitats), high (marked preference for closed habitats), unknown (if the study was not studied enough to make a determination) and NA if it was a morphospecies.

Species	Control	Outbreak	Functional groups	Shade tolerance
Camponotus alaskensis	1		Subordinate, honeydew	Moderate
Camponotus herculeanus	18	8	Dominant, non agressive omnivore, cold tolerant	Moderate
Camponotus nearcticus	1		Subordinate, honeydew, extrafloral and gall nectar, sap fluxes, bird and reptile droppings, and occasional insect or spider prey	Moderate
Camponotus novaeboracensis	62	46	Subordinate, honeydew, extrafloral and gall nectar, sap fluxes, and occasional insect or spider prey	Moderate
Camponotus spp	4		Subordinate, general forager	Moderate
Formica aserva	1		Facultative slavemaker, honeydew	Moderate
Formica fossaceps	1	1	Cold-climate specialist, honeydew	Low
Formica girksi impexa	1	1	Cold-climate specialist, cryptic species	Unknown
Formica glacialis	2	2	Cold-climate specialist, opportunists, honeydew	Unknown
Formica integra	3	7	Opportunist, Cold-climate specialist	High
Formica neogagates	13	8	Dominant, Cold-climate specialist	Moderate
Formica neorufibarbis	16	12	Dominant, opportunists, Cold-climate specialist	Moderate
Formica pallidefulva		1	Cold-climate specialist, Honeydew	High
Formica podzolica	19	17	Cold-climate specialist, Honeydew, opportunists	Moderate
Formica rubicunda		1	Cold-climate specialist, facultative slavemakers, honeydew	Moderate
Formica spp 1	9	1	Cold-climate specialist	NA
Formica spp 2	1		Cold-climate specialist	NA
Formica subaenescens	31	24	Cold-climate specialist, predators	Moderate
Formica subintegra	1		Slave makers, honeydew	Low
Harpagoxenus canadensis	1		Cold-climate specialist, social parasite	
Lasius americanus	8	13	Omnivorous specie, seeds, live insects and carcasses of dead ones and honeydew	Low
Lasius subglaber	1		Honeydew	Low
Leptothorax retractus	5	5	Cold-climate specialist, forested habitats	High
Leptothorax sphagnicola		2	Cold-climate specialist	Moderate
Myrmica alaskensis	35	31	Cold-climate specialist, dead wood, honeydew from aphids	Moderate
Myrmica AF sub		1	Opportunists	Unknown
Myrmica detritinodis	9	1	Dominant, scavenger	High
Myrmica lobifrons		1	Opportunists, Honeydew, extrafloral	Unknown
Myrmica pinetorum	2		Opportunist	High
Myrmica quebecensis	1	1	Parasitic, Conifer forests	Moderate
Myrmica spp	19	7	Opportunist	NA

Nylanderia parvula	1		Scavengers, generalized predator	Low
Tapinoma sessile	5	3	Opportunist, scavengers, predators, and tenders of aphids and other scale insects.	Moderate
Tapinoma spp	1		Opportunist	NA
Temnothorax ambiguus	1	1	Cryptic species, honeydew, plant nectar, tiny insects	Moderate
unknown	1			

Table S2. Species list and occurrence in traps of ants in the temperate forest sites along with functional traits and shade-tolerance. Functional traits were determined using several sources, from published descriptions, field guides and previous studies [1–9]. Using the same sources, shade-tolerance was determined as either low (marked preference for open habitats), moderate (found in both open and closed habitats), high (marked preference for closed habitats), unknown (if the study was not studied enough to make a determination) and NA if it was a morphospecies.

Species	**Control**	**Outbreak**	**Functional groups**	**Shade tolerance**
Aphaenogaster picea	6	6	Opportunists, omnivorous scavenger and disperser of seeds of woodland herbs	Moderate
Camponotus herculeanus	1		Dominant, non agressive omnivore, cold tolerant	Moderate
Camponotus pennsylvanicus	3		Honeydew, extrafloral nectaries, dead insects	High
Formica rubicunda	1		Cold-climate specialist, facultative slavemakers, honeydew	Moderate
Lasius americanus	5		Omnivorous specie, seeds, live insects and carcasses of dead ones and honeydew	Low
Lasius aphidicola	1		Social parasite, honeydew	Moderate
Lasius neoniger	1		Opportunist, polyphagous, insect and nectar	Low
Lasius umbratus	1		Temporary social parasite, polyphagous, insect and nectar	Low
Leptothorax AF-can	1		Cryptic species	Unknown
Leptothorax AF-erg		1	Cryptic species	Unknown
Myrmica incompleta	1		Cold-climate specialist, honeydew	High
Myrmica punctiventris	2		Opportunists, generalist scavenger	High
Myrmica rubra	1		Opportunists, honeydew, extrafloral and gall nectar, sap and seeds.	Low
Prenolepis imparis	3	1	Cold-climate specialist, liquids (honeydew, nectar and extrafloral nectaries, the exudates of living oak-galls, the juices of dead earthworms and derived from the young tissues of plants)	Low
Stenamma diecki	3	2	Cryptic species, predates on springtails	Moderate
Stenamma impar	2	1	Cryptic species	High
Temnothorax longispinosis	2	1	Cryptic species, honeydew, plant nectar, tiny insects.	High
unknown	1	1		

Table S3. Potential predator abundance. Collected from pitfall traps.

Forest	Defoliation history	Spiders	Beetles	Flies	Wasps	True bugs
Boreal	Control	194	168	327	102	23
	Outbreak	264	182	275	117	27
Temperate	Control	210	329	485	83	17
	Outbreak	195	312	414	90	24

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