Yellowknife's Plan Bee

A Guide to Bumble Bees, Pollinators, and Common Native Plants

Orange-Rumped Bumble Bee on Fireweed Photo: Anthony Colangelo

POLLINATOR PARTNERSHIP CANADA

Environment and Climate Change Canada
Environnement et Changement climatique Canada

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Note: all photos included in this guide were taken by Anthony Colangelo, Plan Bee Project Lead

Yellowknife's Plan Bee Overview

Observing Bees and Pollinators in Canada's Northern Region

Aurora borealis over Yellowknife Back Bay

Yellowknife is located in Canada's beautiful Northwest Territories, known for incredible views of the Aurora borealis, rugged boreal landscape, and extremely cold winter temperatures. But what a lot of folks might not realize travelling so far north is how amazing the bee world is up here. **There are approximately 110 bee species native to the territory.** Various species of bumble bees are a common sight, as they are particularly good at surviving cooler temperatures and demonstrate their incredible resilience by hibernating for over 9 months of the year when temperatures dip down to -50 degrees Celsius.

However, there are currently **three bumble bee species at risk in the Northwest Territories** including the western bumble bee (*Bombus occidentalis*), the yellow-banded bumble bee (*Bombus terricola*), and the gypsy cuckoo bumble bee (*Bombus bohemicus*) also known as Ashton's cuckoo bumble bee (*Bombus ashtonii*). There is also a general need for more research on northern bees and pollinators. This is where Yellowknife's Plan Bee comes into play. At Pollinator Partnership Canada, our ongoing work in Yellowknife started in 2021 with federal grant funding from Environment and Climate Change Canada's Habitat Stewardship Program.

Anthony Colangelo, Plan Bee Project Lead

The goal of our project is to learn more about the native flowers bumble bees, specifically at-risk species, and other native pollinators are using around Yellowknife through community science. Our main objectives are to gain an understanding of 1) the critical food resources needed for survival by at-risk bumble bees, 2) the current local occurrences of these bee species, 3) the stewardship capacity to protect these listed species and their ecosystem services, and 4) to increase community engagement and knowledge about bees and pollinators.

One of the special aspects of this project is being able to conduct summer field work in Yellowknife. With almost 24 hours of sunlight in the summer months and the welcoming sight of the midnight sun, bees and flowers take over the landscape, maximizing their time in the warmth and abundance of light.

Junaid Khan observing bees on fireweed flowers

Field work involves observing patches of wildflowers around town, recording all bee and pollinator occurrences on those patches of flowers, and then uploading each observation to iNaturalist for species identification and location data. The great thing about our community science approach to field work is that it makes it easy for anyone to participate. Every picture uploaded to our iNaturalist page helps improve our data all while helping us better understand specific plant-pollinator interactions and the diversity of bee species each type of native flower attracts.

After two summer field seasons, we are currently up to over 900 documented bee and pollinator observations with 73 different species identified. Seen in the picture below is one of the incredible bumble bee species recorded in our project so far. Other pollinators were also observed including many species of native solitary bees, butterflies such as the striking Canadian tiger swallowtail butterfly, energetic hummingbird moths, and flower flies that act as excellent bee mimics.

Popular native flowers that attracted the most bee diversity included fireweed, prickly wild rose, shrubby cinquefoil, and common yarrow. The great thing about Yellowknife if that the city keeps large patches of wildflowers blooming around town along roads and sidewalks all summer long, and therefore almost everyone intentionally, or unintentionally, has patches of flowers on their property that provide essential resources to the local pollinator populations. Going forward, Pollinator Partnership Canada will continue with our community science work to increase the number of pollinator observations in Canada's north, as well as increasing awareness for these vital creatures and their ecosystem services. You can learn more about this project and contribute to our community science observations by clicking on the button below!

Yellowish Cuckoo Bumble Bee on Goldenrod Flower

Thank you to Environment and Climate Change Canada's Habitat Stewardship Program for funding and supporting this project. Thank you to all the community scientists around Yellowknife who contributed observations to our iNaturalist page. Thank you to the Government of the Northwest Territories for creating *A Field Guide to Bumble Bees of the Northwest Territories* which was immensely helpful during fieldwork. And thank you to the ID experts on iNaturalist for your help identifying all of the observations we uploaded!

Learn More

Meet the Pollinators of Yellowknife

Perplexing Bumble Bee

Bees are the best documented pollinators in natural landscapes. A wide range of native plants benefit from bee pollinators. Most of us are familiar with the colonies of honey bees that have been the workhorses of agricultural pollination for years in Canada, but some folks might not know that they were imported from Europe almost 400 years ago and continue to be managed by people for honey production and pollination services. There are over 800 species of native ground and twig nesting bees in Canada that have coevolved with the local landscape. Most of these bee species live a solitary life. Bees come in a variety of body shapes and sizes, and visit the widest range of flowers of any pollinator group.

Canadian Tiger Swallowtail Butterfly

Butterflies prefer open and sunny areas such as meadows and along woodland edges that provide bright flowers, water sources, and specific host plants for their caterpillars. To encourage butterflies to your garden, place flowering plants where they have full sun and are protected from the wind. They usually look for flowers that provide a good landing platform. Butterflies need open areas (e.g., bare earth, large stones) where they can bask, and moist soil from which they wick needed minerals. Butterflies eat rotten fruit and even dung, so don't clean up all the messes in your garden! By providing a safe place to eat and nest, gardeners can also support the pollination role that butterflies play in the landscape.

Orange Legged Drone Fly

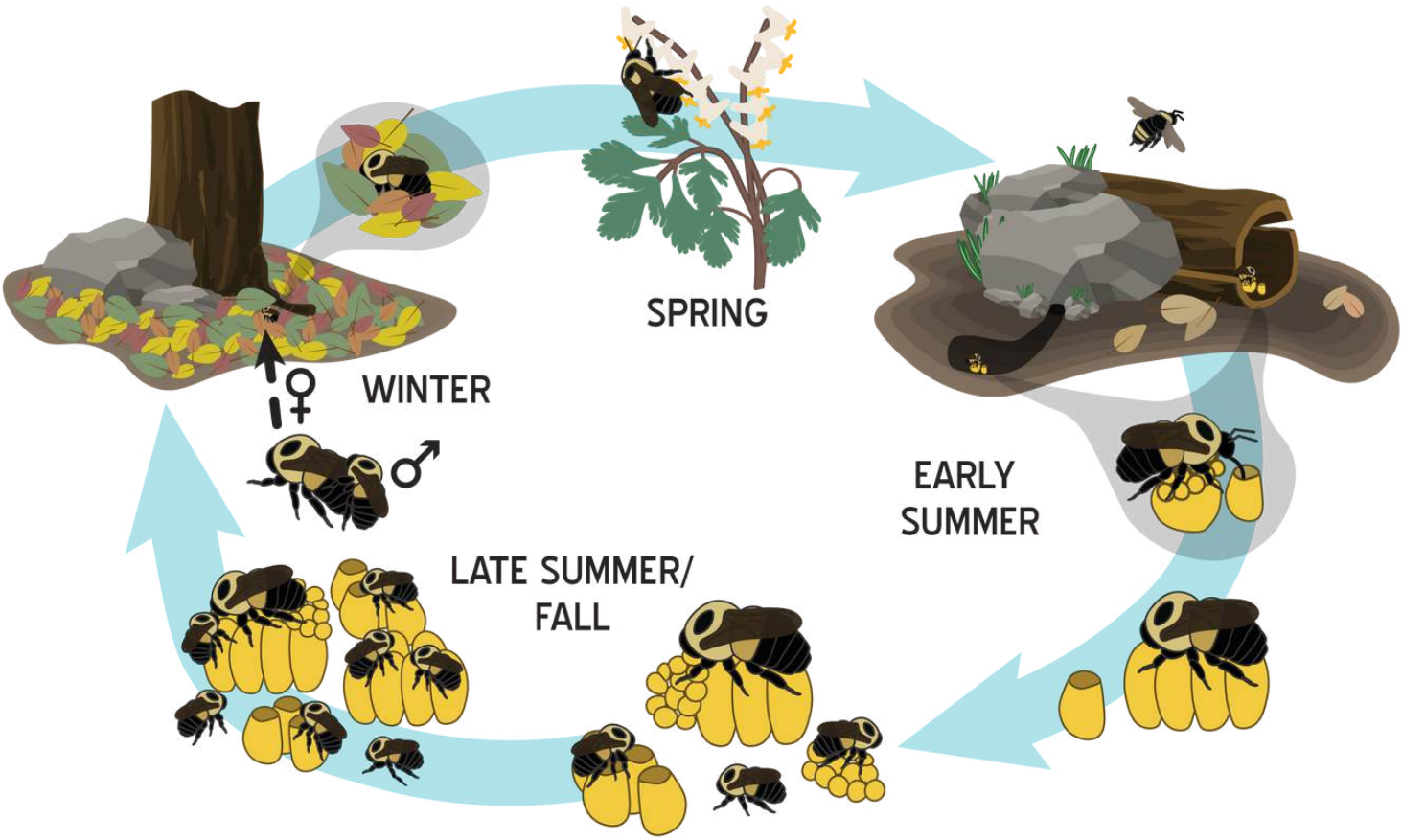
Flies are one of the most diverse group of pollinators. They include colourful flower flies and hover flies (*Syrphidae*), active bee flies (*Bombyliidae*), and tiny midges that visit many plant species. Like bees, flies are hairy and can easily transport pollen from flower to flower. Flies primarily pollinate small flowers that bloom under shade and in seasonally moist habitats. They are incredibly important pollinators, especially in northern regions since they can tolerate flying and visiting flowers in colder temperatures.

Yellow-Collared Scape Moth

Moths can be active during the day with many spcies also being active at night. They are attracted to flowers that are strongly sweet smelling, open in late afternoon or night, and are typically white or pale coloured.

Bumble Bee Lifecycle

Bumble bees (*Bombus* species) form small colonies, usually underground making use of old rodent burrows or dense thatches. They are generalists, feeding on a wide range of plant types.



The life cycle of a bumble bee © Jeremy Hemberger

Once emerged from their burrows in the spring, new queens will establish nesting sites in old logs or underground and lay a first round of eggs which will hatch into the first generation of worker bees. Worker bees will help with nest maintenance, pollen and nectar collection, and the rearing of future generations of the colony. Queen bumble bees are the only members of their colony to survive the winter since bumble bee colonies are annual, meaning that all the workers, drones, and even the previous year's queen will naturally pass before the winter season once the colony has produced new queen bees. These new queens mate, forage for food, and then find a safe place to hibernate underground for the entire winter before emerging again in the spring.

Having a variety of native plants that bloom in the spring, summer, and fall, is essential in helping support the bumble bee life cycle so that they have an abundance of pollen (protein) and nectar (carbohydrates) to maintain a healthy diet.

Bumble Bees Observed in Yellowknife's Plan Bee

Perplexing Bumble Bee
(Bombus perplexus)

Frigid Bumble Bee
(Bombus frigidus)

Yellow-Banded Bumble Bee
(*Bombus terricola*)

Cryptic Bumble Bee
(*Bombus cryptarum*)

Fuzzy-Horned Bumble Bee
(*Bombus mixtus*)

Heath Bumble Bee
(*Bombus jonellus*)

Orange-Rumped Bumble Bee
(*Bombus melanopygus*)

Yellow-Fronted Bumble Bee
(*Bombus flavifrons*)

Northern Amber Bumble Bee
(*Bombus borealis*)

Bumble Bees Observed in Yellowknife's Plan Bee

Yellowish Cuckoo Bumble Bee
(*Bombus flavidus ssp. flavidus*)

Ashton's Cuckoo Bumble Bee
(*Bombus ashtoni*)

Indiscriminate Cuckoo Bumble Bee
(*Bombus insularis*)

Golden-Belted Bumble Bee
(*Bombus kirbiellus*)

Forest Bumble Bee
(*Bombus sylvicola*)

Honey Bees Observed in Yellowknife's Plan Bee

Western Honey Bee
(*Apis mellifera*)

Note - honey bees are not native to Yellowknife or North America

Other Bees Observed in Yellowknife's Plan Bee

Clark's Mining Bee
(*Andrena clarkella)*

Long-Lipped Miner Bee
(*Andrena barbilabris*)

Sweat Bees
(Subgenus *Sphecodogastra*)

Sweat Bees
(Subgenus *Lasioglossum*)

Frigid Leafcutter Bee
(Megachile frigida)

Black-and-Gray Leafcutter Bee
(*Megachile melanophaea*)

White-Fronted Small Mason Bee
(Hoplitis albifrons ssp. albifrons)

Mason Bees
(Genus *Osmia*)

Robust-Small Mason Bee
(*Hoplitis robusta*)

Other Bees Observed in Yellowknife's Plan Bee

Cellophane Bees
(Genus *Colletes*)

Sharptail Bees
(Genus *Coelioxys*)

Orange-legged Furrow Bee
(*Halictus rubicundus)*

Bumblebee-like Digger Bee
(*Anthophora bomboides*)

Nomad Bees
(Genus *Nomada*)

Masked Bees
(Genus *Hylaeus*)

Leafcutter, Mortar, and Resin Bees
(Subgenus *Xanthosarus)*

Carder Bees
(Subgenus *Anthidium)*

Milwaukee Mining Bee
(Andrena milwaukeensis)

Other Pollinators Observed in Yellowknife's Plan Bee

Orange-Legged Drone Fly
(*Eristalis flavipes*)

Dusky Drone Fly
(Eristalis obscura)

Orange-Spined Drone Fly
(*Eristalis nemorum*)

Six-Banded Pond Fly
(*Sericomyia sexfasciata*)

Milbert's Tortoiseshell
(*Aglais milberti*)

Canadian Tiger Swallowtail
(*Papilio canadensis)*

White-striped Black
(*Trichodezia albovittata*)

Western White Admiral
(*Limenitis arthemis ssp. rubrofasciata*)

Northern Blue
(*Plebejus idas*)

Other Pollinators Observed in Yellowknife's Plan Bee

Hummingbird Clearwing Moth
(*Hemaris thysbe*)

Dartmoths
(Genus *Orthosia*)

Yellow-Collared Scape Moth
(*Cisseps fulvicollis)*

Northern Aerial Yellowjacket
(*Dolichovespula norvegicoides)*

Pollinator Profile:
Yellow-Banded Bumble Bee (*Bombus terricola*)

Yellow-Banded Bumble Bee on Prickly Wild Rose

Locations where the Yellow-Banded Bumble Bee was Observed

NWT SARC Assessment: Not At Risk
NWT List of Species at Risk: No Status
COSEWIC Assessment: Special Concern
Federal Species at Risk Act list: Special Concern
NWT General Status Rank: Sensitive

Native Plants in Yellowknife that Support the Yellow-Banded Bumble Bee

Fireweed

Prickly Wild Rose

Shrubby Cinquefoil

Common Yarrow

How Can We Help the Yellow-Banded Bumble Bee?

One of the main factors impacting pollinators and bumble bees is habitat loss and fragmentation. The connectivity of pollinator habitat from one space to the next is important when thinking about bees, particularly since they vary in the distance they can forage for pollen and nectar. Bumble bees generally like to stick closer to their colonies and can forage approximately a few kilometres away from their nest. To help bumble bees and pollinators use their energy more efficiently, it's important to plant more gardens and green spaces to create better habitat connectivity. Even small spaces, such as balcony gardens, can connect habitat and provide bumble bees and pollinators with the pollen, nectar, and nesting resources they need so that they don't have to spend all their energy trying to find food.

Plant-Pollinator Interactions

Fireweed *(Chamaenerion angustifolium)*

Frigid Bumble Bee on Fireweed

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)
Frigid Bumble Bee (*Bombus frigidus*)
Yellow-Banded Bumble Bee (*Bombus terricola*)
Cryptic Bumble Bee (*Bombus cryptarum*)
Fuzzy-Horned Bumble Bee (*Bombus mixtus*)
Heath Bumble Bee (*Bombus jonellus*)
Orange-Rumped Bumble Bee (*Bombus melanopygus*)
Yellow-Fronted Bumble Bee (*Bombus flavifrons*)
Yellowish Cuckoo Bumble Bee (*Bombus flavidus*)
Golden-Belted Bumble Bee (*Bombus kirbiellus*)

Other Bees Observed

Masked Bees (Genus *Hylaeus*)
Bumble Bee-like Digger Bee (*Anthophora bomboides*)
Leafcutter Bees (Genus *Megachile*)
Sharptail Bees (Genus *Coelioxys*)
White-fronted Small Mason Bee (*Hoplitis albifrons*)
Honey Bees (*Apis mellifera*)

Other Pollinators Observed

Orange-Legged Drone Fly (*Eristalis flavipes*)
Hummingbird Clearwing Moth (*Hemaris thysbe*)
Northern Yellowjacket (*Dolichovespula norvigesoides*)

Prickly Wild Rose (*Rosa acicularis*)

Perplexing Bumble Bee on Wild Prickly Rose

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)
Frigid Bumble Bee (*Bombus frigidus*)
Yellow-Banded Bumble Bee (*Bombus terricola*)
Cryptic Bumble Bee (*Bombus cryptarum*)
Heath Bumble Bee (Bombus jonellus)
Fuzzy-Horned Bumble Bee (*Bombus mixtus*)
Yellow-Fronted Bumble Bee (*Bombus flavifrons*)
Orange-Rumped Bumble Bee (*Bombus melanopygus*)

Other Bees Observed

Mining Bees (Genus *Andrena*)
Leafcutter Bees (Genus *Megachile*)
Cellophane Bees (Genus *Colletes*)

Other Pollinators Observed

Orange-Legged Drone Fly (*Eristalis flavipes*)
Dusky Drone Fly (*Eristalis obscura*)
Orange-Spined Drone Fly (*Eristalis nemorum*)

Plant-Pollinator Interactions

Shrubby Cinquefoil (*Dasiphora fruticosa*)

Masked Bee on Shrubby Cinquefoil

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)
Frigid Bumble Bee (*Bombus frigidus*)
Yellow-Banded Bumble Bee (*Bombus terricola*)
Cryptic Bumble Bee (*Bombus cryptarum*)
Fuzzy-Horned Bumble Bee (*Bombus mixtus*)
Heath Bumble Bee (*Bombus Jonellus*)
Orange-Rumped Bumble Bee (*Bombus melanopygus*)

Other Bees Observed

Mining Bees (Genus *Andrena*)
Long-Lipped Miner Bee (*Andrena barbilabris*)
Masked Bees (Genus Hylaeus)
Robust-Small Mason Bee (*Hoplitis robusta*)
Leafcutter Bees (Genus *Megachile*)
Sweat Bees (Subgenus *Sphecodogastra*)
Sweat Bees (Genus *Lasioglossum*)
Sharptail Bees (Genus Coelioxys)

Other Pollinators Observed

Dusky Drone Fly (*Eristalis obscura*)
Orange-Spotted Drone Fly (*Eristalis anthophorina*)

Common Yarrow (*Achillea millefolium*)

Cellophane Bee on Common Yarrow

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)
Frigid Bumble Bee (*Bombus frigidus*)
Yellow-Banded Bumble Bee (*Bombus terricola*)

Other Bees Observed

Cellophane Bees (Genus *Colletes*)
Leafcutter Bees (Genus *Megachile*)
Sharptail Bees (Genus Coelioxys)

Other Pollinators Observed

Orange-Legged Drone Fly (*Eristalis flavipes*)
Dusky Drone Fly (*Eristalis obscura*)
Orange-Spotted Drone Fly (Eristalis anthophorina)
Yellow-Collared Scape Moth (*Cisseps folvicollis*)

Plant-Pollinator Interactions

Goldenrod Species (Genus *Solidago*)

Frigid Bumble Bee on Goldenrod

Bumble Bees Observed

Frigid Bumble Bee (*Bombus frigidus*)
Forest Bumble Bee (*Bombus sylvicola*)
Yellowish Cuckoo Bumble Bee (*Bombus flavidus*)
Ashton's Cuckoo Bumble Bee (*Bombus ashtonii*)

Other Bees Observed

Leafcutter Bees (Genus *Megachile*)
Sweat Bees (Genus *Lasioglossum*)

Bog Labrador Tea (*Rhododendron groenlandicum*)

Fuzzy-Horned Bumble Bee on Labrador Tea

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)
Frigid Bumble Bee (*Bombus frigidus*)
Fuzzy-Horned Bumble Bee (*Bombus mixtus*)
Orange-Rumped Bumble Bee (*Bombus melanopygus*)

Plant-Pollinator Interactions

Willow Species (Genus *Salix*)

Cryptic Bumble Bee on Willows

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)
Frigid Bumble Bee (*Bombus frigidus*)
Fuzzy-Horned Bumble Bee (*Bombus mixtus*)
Cryptic Bumble Bee (*Bombus cryptarum*)
Orange-Rumped Bumble Bee (*Bombus melanopygus*)

Other Bees Observed

Clark's Mining Bee (*Andrena clarkella)*
Sweat Bees (Subgenus *Lasioglossum*)

Other Pollinators Observed

Moths (Genus *Orthosia*)

Showy Locoweed (*Oxytropis splendens*)

Leafcutter Bee on Showy Locoweed

Bees Observed

Leafcutter Bees (Genus *Megachile*)

Other Pollinators Observed

Northern Blue Butterfly (*Plebejus idas*)

Plant-Pollinator Interactions

Raup's Indian-Paintbrush (*Castilleja raupii*)

Perplexing Bumble Bee on Raup's Indian-Paintbrush

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)
Frigid Bumble Bee (*Bombus frigidus*)
Orange-Rumped Bumble Bee (*Bombus melanopygus*)

Lindley's Aster (*Symphyotrichum ciliolatum*)

Perplexing Bumble Bee on Lindley's Aster

Bumble Bees Observed

Perplexing Bumble Bee (*Bombus perplexus*)

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Masked Bee on Shrubby Cinquefoil Photo: Anthony Colangelo

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