

N° 1
2025

NORTHERN HORIZONS

EMPOWERING YOUTH THROUGH
ENTOMOLOGY AND KNOWLEDGE

Les
sentinelles
du Nunavik
Nunavik **Sentinels**
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vie montréal

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Nunavik Sentinels Science Magazine

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Amélie Grégoire Taillefer, Maxim Larrivée & Élisabeth Guillet-Beaulieu

THE FIRST EDITION OF THE NUNAVIK SENTINELS SCIENCE MAGAZINE

IT'S BEEN QUITE A JOURNEY, BUT HERE WE ARE! WE ARE PROUD TO PRESENT THE FIRST EDITION OF *NORTHERN HORIZONS*, THE NUNAVIK SENTINELS MAGAZINE. THIS PARTICIPATORY SCIENCE PROGRAM FROM THE MONTREAL INSECTARIUM IS IMPLEMENTED IN COLLABORATION WITH VARIOUS NORTHERN COMMUNITIES.

We're delighted to offer you a unique product that will reveal all the fascinating aspects of the program since its inception, with content that's both accessible and enriching. With this magazine, we aim to highlight the involvement of young people, showcase their scientific discoveries within the program and propel you into the fascinating world of insects.

The goal of the Nunavik Sentinels magazine is to make science accessible to everyone. It brings together popular science articles written by various people directly involved in or collaborating with the program.

In these pages, we also address current concerns related to climate change that you are facing on your territory. The effects of climate change felt here are three to four times more intense than elsewhere. It's therefore essential to discuss it, as it's crucial to support and empower young people through tradition, science and discovery.

Happy reading, and feel free to share your comments or questions with us!

There's a wealth of information on insects available on the *Espace pour la vie* website:
espacepouurlavie.ca/insectes-et-autres-arthropodes

To learn more about the *Nunavik Sentinels* program:
espacepouurlavie.ca/en/nunavik-sentinels
facebook.com/SentinellesNunavikSentinels

We are also here for you. Feel free to write to us:
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EDUCATIONAL
ACTIVITIES
AT KILUUTAQ
SCHOOL,
UMIUJJAQ, 2024.

Photo: Anne Gagné



DID YOU KNOW?

When insects land on flowers, a powder called “pollen” sometimes sticks to their bodies. The insects then carry the tiny pollen grains from one flower to another. A flower that receives a pollen grain from another flower turns into a fruit. It’s what’s known as pollination!

WHAT IS AN INSECT, ACTUALLY?

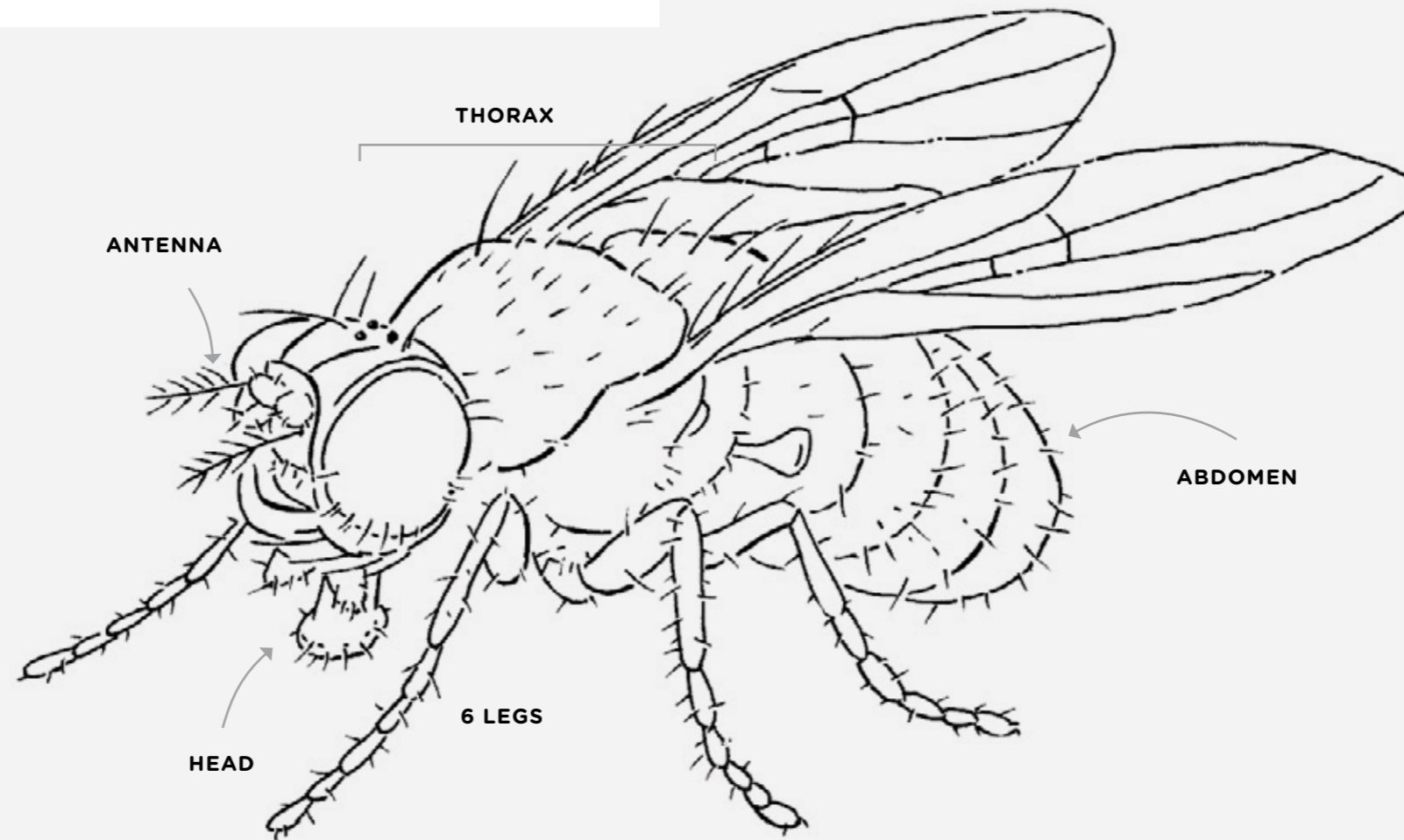
INSECTS ARE A PARTICULARLY ABUNDANT AND DIVERSIFIED GROUP OF ARTHROPODS, ALONG WITH SPIDERS, MILLIPEDES AND CRUSTACEANS, BECAUSE THEY ALL HAVE JOINTED LEGS AND AN EXOSKELETON OR EXTERNAL SKELETON, A HARD OUTER SHELL THAT PROVIDES PROTECTION AND SUPPORT. INSECTS CAN BE DISTINGUISHED FROM OTHER ARTHROPODS BY THE FACT THAT THEY HAVE SIX LEGS, AND THEIR BODIES HAVE THREE PARTS: HEAD, THORAX AND ABDOMEN. THEY ALSO HAVE COMPOUND EYES AND ONE PAIR OF ANTENNAE. THEY ARE THE MOST DIVERSE GROUP OF ANIMALS ON EARTH, WITH OVER A MILLION DESCRIBED SPECIES AND MANY MORE YET TO BE DISCOVERED.

HERE ARE SOME KEY CHARACTERISTICS OF INSECTS:

- 1. BODY STRUCTURE:** Their bodies are divided into three main parts: the head (which houses the brain, eyes and mouthparts), the thorax (which bears the six legs and wings), and the abdomen (which contains the digestive and reproductive organs).
- 2. METAMORPHOSIS:** Insects grow and develop through different stages. When juveniles look like the adults, their metamorphosis is referred to as incomplete and includes stages such as egg, nymph and adults (e.g., crickets, true bugs). When juveniles or larvae do not look like the adults, their metamorphosis is referred to as complete and includes stages such as egg, larva (or nymph), pupa, and adult (e.g., butterflies, moths, flies, beetles, dragonflies).
- 3. DIVERSE HABITATS:** Insects can be found in nearly every environment on Earth, from the coldest regions to the highest mountains. Only a small number of insects inhabit saltwater environments. Among them, the most prevalent are halobates, also known as sea skaters, which resemble water striders and “surf” the ocean waves!

INSECTS CAN BE DISTINGUISHED FROM OTHER ARTHROPODS BY THE FACT THAT THEY HAVE SIX LEGS, AND THEIR BODIES HAVE THREE PARTS: HEAD, THORAX AND ABDOMEN.

Insects play crucial roles in ecosystems, including pollinating plants, decomposing organic matter so we aren’t buried under mounds of carcasses and waste, and controlling the population of insect pests, serving as a food source for other animals like birds and fish. ■

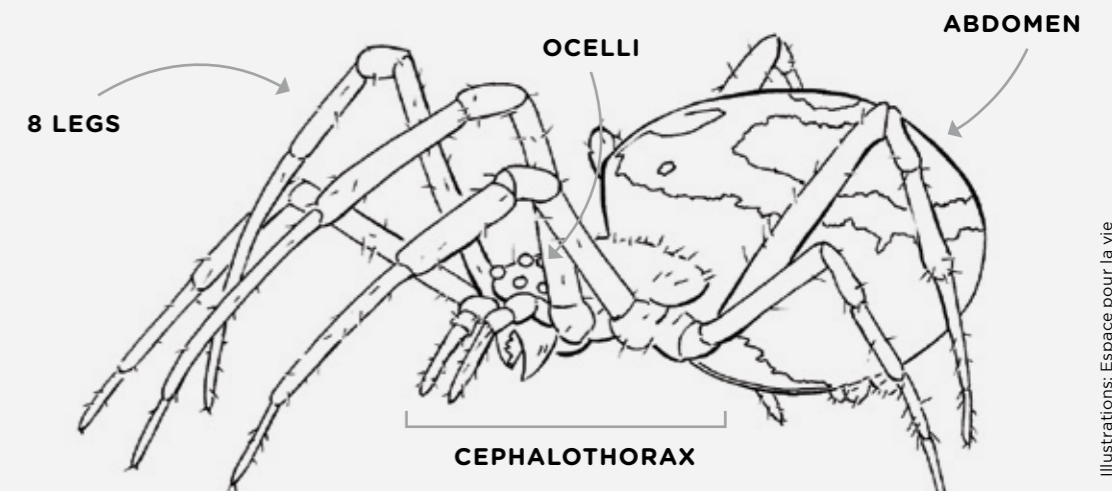


BUT WHAT ABOUT SPIDERS?

A SPIDER IS AN ARACHNID, WHICH IS A TYPE OF ARTHROPOD THAT’S DISTINCT FROM INSECTS.

HERE ARE SOME KEY CHARACTERISTICS OF SPIDERS:

- 1. BODY STRUCTURE:** Spiders have two main body segments: the cephalothorax (which combines the head and thorax) and the abdomen.
- 2. LEGS:** They have eight legs, unlike insects which have six.
- 3. EYES:** Most spiders have multiple simple eyes—usually eight, but the number can vary. Insects have two compound eyes.
- 4. SILK PRODUCTION:** Spiders produce silk from specialized glands called spinnerets located at the rear of their abdomen. They use silk to build webs, create egg sacs, and sometimes capture prey.
- 5. VENOM:** Many spiders have venomous fangs used to immobilize or kill their prey. However, most spider venom is harmless to humans.
- 6. DIET:** Spiders are primarily carnivorous, feeding on insects and other small animals. ■



Spiders play important roles in ecosystems by controlling insect populations and serving as prey for other animals. Some common examples of spiders found up North include wolf spiders, crab spiders and ground-dwelling spiders.

THE SENTINELS' MISSION

LEARNING TO PROTECT

PROTECTING BIODIVERSITY IS CRUCIAL TO THE FUTURE OF OUR SOCIETIES. YET THERE ARE AS MANY SPECIES STILL TO BE DISCOVERED AS THERE ARE SPECIES ALREADY KNOWN. THE FIRST STEP IN PREVENTING BIODIVERSITY LOSS IS TO RECORD THE VARIOUS SPECIES LIVING IN DIFFERENT ECOSYSTEMS, AS WELL AS THEIR DISTRIBUTION AND CONSERVATION STATUS.

Biodiversity refers to all the species and ecosystems on Earth, and the ecological processes they support. This means that all these organisms and their habitats—which play a variety of essential ecological roles—enable humans to exist on Earth. In fact, both pesky flies and fragile wetlands have indisputably vital roles to play. Biodiversity is under threat from habitat destruction, the introduction of exotic species, pollution, unbridled exploitation, and climate change, at a time when little is known about it. Canada boasts an incredible biodiversity that must be conserved and protected by everyone working together. Science and nature enthusiasts can take part in government and citizen science initiatives on a wide range of topics aimed at improving knowledge, raising awareness, educating, and participating in conservation activities.



A butterfly, a bumble bee and a flower fly found in northern environments. © Espace pour la vie (Maxim Larrivée)

NUNAVIK SENTINELS

This research and education program, developed by the *Montreal Insectarium - Espace pour la vie*, aims to lay the foundations of knowledge about the entomological fauna of the North, determine the distribution of species and the possible presence of new species, as well as identify environmental phenomena associated with changes in entomological biodiversity in the face of climate change. The program promotes access to the territory by introducing youth in northern communities to the insects and spiders of their ancestral lands, and leading expeditions into unexplored habitats. Local youth are involved in data collection through four pillars. This program, which now extends into Nunavik, Eeyou Itstchee Baie-James and Labrador, is leading to some interesting finds. So far, the focus has been on pollinators, and with the youth's help, some important discoveries have been made.

MONITORING AND COLLABORATION TO FIND THE BEST SOLUTIONS

To enable the various stakeholders to make informed choices for the sustainable development of our society and to fully understand the impact of human activities, we need to understand the role of each of the species that ensure the balance of ecosystems. This can be achieved by making biodiversity monitoring data accessible and encouraging collaboration between the public and the various stakeholders and specialists involved in effective, standardized biodiversity monitoring. Together, we can better define the actions needed to prepare Canada's northernmost territory for future climate change. ■



Participants and the public can also now share observations of the local entomological fauna with the program via the SIKU app. This mobile app (and web platform) created by Indigenous stakeholders provides tools and services for preserving the native language and sharing ice and weather conditions, plant and wildlife observations, and hunting stories. © siku.org

EDUCATIONAL ACTIVITIES

- Turnkey kit for schools and camps
- Promote environmental education and ignite scientific curiosity

SUMMER EMPLOYMENT

- Participate in the long-term monitoring of insects
- Paid opportunity allowing a first field work experience

RESEARCH

- Collect and analyze data on insect diversity
- Help demystify the impacts of climate change

TRAINING LAND CAMP

- One week on the land introduction to insect observation and capture
- Discovery of the important role insects play in the ecosystem



Training land camp in Parc national Kuururjuaq in 2018 in collaboration with Nunavik Parks. © Espace pour la vie (Maxim Larrivée)

THE FOUR PILLARS OF THE PROGRAM

FLUTTERING WONDERS: NEW SPECIES AND RECORDS SINCE 2014



PINGUALUIT'S HIDDEN TREASURES: STAUDINGER'S DARK DART MOTH AND FRITILLARIES

We'd also like to mention the first collection in Quebec—and only the fifth in the scientific world—of *Staudinger's dark dart moth* (*Xestia staudingeri*) in the family Noctuidae, along the Puvirnituk River in Parc national des Pingualuit by youth participants at the camp in 2016. Not much is known about the biology of this moth, which has been recorded in Siberia (Russia) and eastern North America, more specifically Quebec and Labrador, Canada, and New Hampshire, USA.

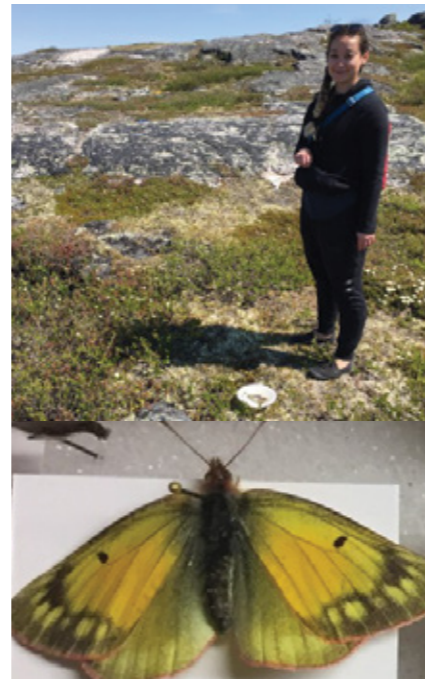
It was collected along with the *Tarquin's fritillary* (*Boloria freija tarquinius*), in the Nymphalidae family. This butterfly was not known to be present in the province of Quebec. The caterpillar of this butterfly feasts on cloudberry (aqpiq), blueberry, rosebay, and cranberry plants. It hibernates twice, meaning adults are found once every two years. This butterfly is the earliest flyer of the fritillaries, normally emerging from its chrysalis and fluttering around in bogs and tundra in early spring.

The inventory taken in the park in 2016 also revealed the presence of the *arctic fritillary* (*Boloria chariclea arctica*), in the Nymphalidae family, a butterfly very rarely observed in Quebec. It is also found in bogs every other year. Caterpillars feed on violets, willows and blueberries.

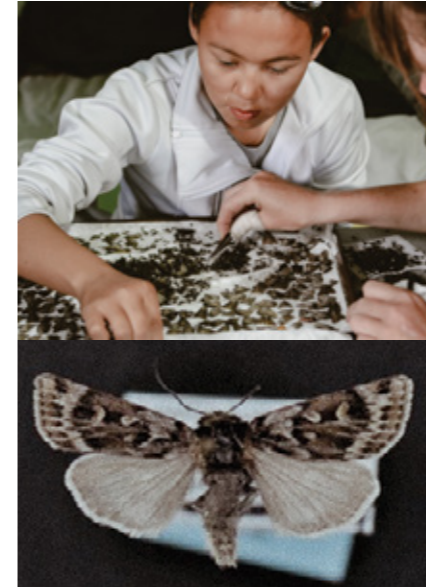
OVER THE PAST FEW YEARS, OUR DEDICATED PARTICIPANTS HAVE EMBARKED ON AN EXCITING JOURNEY, FOCUSING THEIR EFFORTS ON COLLECTING LEPIDOPTERA—THOSE ENCHANTING BUTTERFLIES AND MOTHS—AS WELL AS OTHER VITAL POLLINATORS SUCH AS FLOWER FLIES AND BUMBLE BEES. THIS TARGETED APPROACH HAS LED TO A TREASURE TROVE OF SCIENTIFIC DISCOVERIES, PREDOMINANTLY WITHIN THESE FASCINATING GROUPS, BUT OTHER FORTUITOUS DISCOVERIES WERE MADE IN OTHER INSECT GROUPS AS WELL. WHAT MAKES THESE FINDINGS EVEN MORE REMARKABLE IS THE INVALUABLE COLLABORATION WITH THE INUIT AND CREE COMMUNITIES, WHOSE TRADITIONAL KNOWLEDGE AND KEEN OBSERVATIONS HAVE BEEN INSTRUMENTAL IN UNCOVERING THESE HIDDEN GEMS OF THE NATURAL WORLD.

THE BOOTH'S SULPHUR: EXPANDING BOUNDARIES AND A NEW DISCOVERY

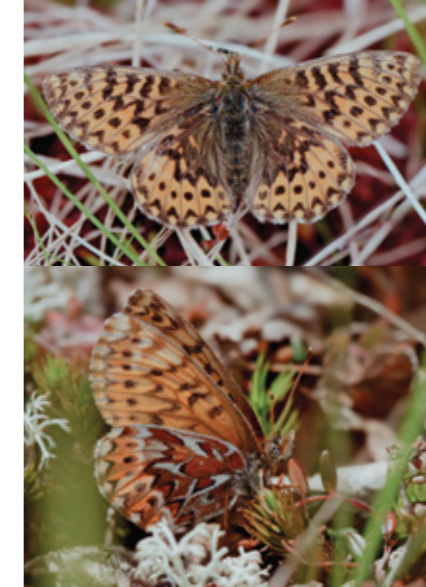
The discovery of the first population of *Booth's sulphur* (*Colias boothii*), a butterfly in the family Pieridae, in Kuujuaq is of particular interest because it represents a 2,000 km extension of its range and the first record in the Canadian Arctic east of Hudson Bay. The closest population of this butterfly was reported from Bathurst Island, Nunavut, Canada. *Colias boothii*, previously treated as a synonym of *Colias tyche* — as first conveyed in the CBC News article ¹ *An Inuk identifies new subspecies of butterfly while working with Montreal Insectarium* — is now recognized as a full species. This Kuujuaq discovery also led to the description of a new subspecies, *Colias boothii siaja*, named after our first Sentinel, Siaja Parcaud-May, who collected the first specimen in June 2019 on a large glacial till ridge at the end of Ippialuk Road. Since then, it's also been observed in Tasiujaq and Kangirsuk!



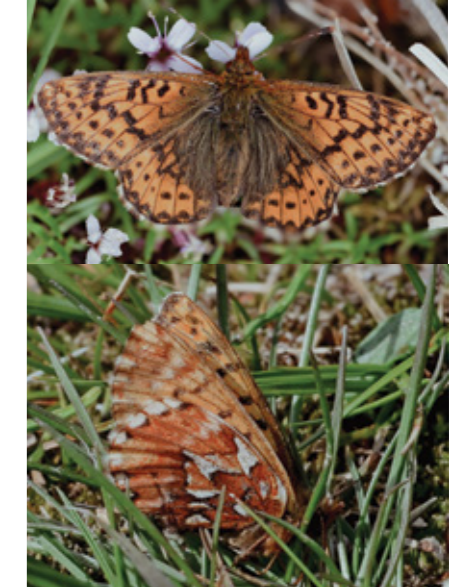
Siaja Parcaud-May and *Colias boothii siaja*, Kuujuaq 2019.
© Espace pour la vie (Maxim Larrivée)



Xestia staudingeri moth and camp participants sorting the moths caught in the light trap the night before.
© The Canadian National Collection of Insects, Arachnids and Nematodes (CNC) of Agriculture & Agri-Food Canada and Espace pour la vie (Maxim Larrivée)



The Tarquin's fritillary is a bog specialist and thus may be affected by habitat alteration due to drainage and climate change.
© Espace pour la vie (Maxim Larrivée)



The arctic fritillary can be distinguished from the Tarquin's fritillary by its thick black wing margin with triangular black spot on the upper side of its wings. The Tarquin's fritillary has an alternating black and orange wing margin.
© Espace pour la vie (Maxim Larrivée)

HUNDREDS OF KILOMETRES APART: REMARKABLE FINDS IN PARC NATIONAL KUURURJUAQ

Butterflies known as the **arctic skipper** (*Carterocephalus palaemon*), in the family Hesperidae, and the **Dorcas's copper** (*Tharsalea dorcas*), in the family Pieridae, were found in Parc national Kuururjuaq, increasing their known northern distribution area by more than 400 km.



The arctic skipper is found in open, often damp areas with grasses on which the caterpillar feeds. Skippers usually hold their wings flat or half-opened when perched, as opposed to other butterflies, who hold their wings together above the body.



The Dorcas's copper is found in peatlands from July to August. The caterpillar feeds on shrubby cinquefoil. This species overwinters as an egg.

“SKIPPERS USUALLY HOLD THEIR WINGS FLAT OR HALF-OPENED WHEN PERCHED”

The collection of the **uniform quaker moth** (*Lasionycta uniformis*) in the family Noctuidae, in Parc national Kuururjuaq is only the second in eastern North America and is about 1,000 km from the nearest known population, located in the Gaspé region, and likely represents a new subspecies for science.



The distinctive ochre colouration of *Lasionycta uniformis* blends in with the sand and lichens of its dune habitat. This moth predominantly flies during the night and is attracted to light, but females are often active during the day. Nothing is known about the caterpillar.



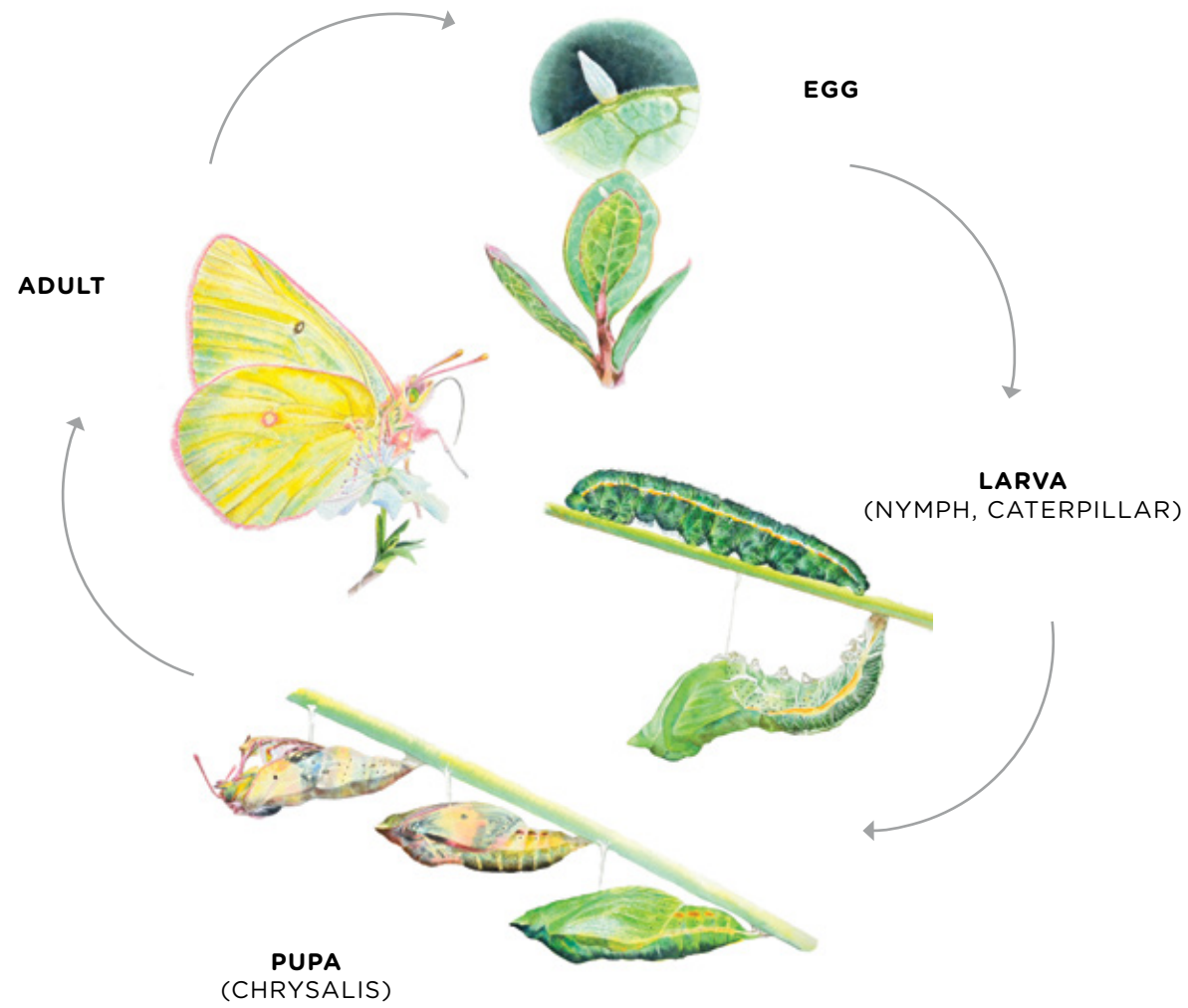
UNCHARTED TERRITORY: DISCOVERING NEW LIMITS FOR A MIGRATORY BUTTERFLY

The **painted lady butterfly** (*Vanessa cardui*), in the family Nymphalidae, a migratory species, was collected by Sentinel Allison St-Cyr, in Inukjuak in 2023. The first record so far north in Nunavik! The painted lady is one of the most widespread butterflies because it's extremely adaptable and can live in many types of environments. This important pollinator feeds over 100 different kinds of plants, including thistle, aster and red clover. Each year, this butterfly makes mass migrations up to 15,000 km long to avoid extreme hot or cold temperatures. ■



Painted lady butterfly seen from under and above collected by Allison St-Cyr in Inukjuak.

COMPLETE METAMORPHOSIS CYCLE



OTHER FASCINATING NORTHERN INSECTS AND



SPIDERS WORTH GETTING TO KNOW!

THE ALPINE ODYSSEY: THE TWO-YEAR JOURNEY OF THE CATERPILLAR OF THE OPULENT TIGER MOTH



The caterpillars of the opulent tiger moth (*Arctia opulenta*), belonging to the Erebidae family, embark on a two-year journey of growth and metamorphosis. These resilient creatures were frequently spotted as caterpillars amid the tundra's sparse vegetation in Parc national Tursujuq and Parc national Kuururjuaq. They diligently feed on willows and *Dryas* to gather the energy required for their transformation. Over a span of two years, these caterpillars slowly accumulate the necessary resources to enter the chrysalis stage. This prolonged development period is a special adaptation to the challenging alpine conditions that's also seen in other moths and butterflies.

The adult moths are a rare sight. They emerge in alternating years, soaring high and fast above the shrubs and tundra during daylight hours. Their elusive nature adds an element of mystery to their existence, making each sighting a special event.



Frontier College day camp in Inukjuak in 2024.



Marralik-Ungunniavik camp in 2022.



The frigid bumble bee observed by youth at Frontier College day camp, Inukjuak, in 2024.

THE FRIGID BUMBLE BEE: NATURE'S ARCTIC SURVIVOR

The **frigid bumble bee** (*Bombus frigidus*) in the order Hymenoptera, thrives in the cold, high latitude regions of North America. These resilient bees can withstand freezing temperatures and are often found at high elevations, pollinating flowers like fireweed and fleabane.

In 2022, the youth attending the Marralik-Ungunniavik camp caught numerous workers and queens on the Ungava Bay side. A few years earlier, in 2016, youth participating in the camp organized at Parc national des Pingualuit had also caught some, and an inventory conducted at Parc national Kuururjuaq that year also collected them. More recently, youth at Frontier College day camp in Inukjuak in 2024 observed these remarkable bees on the Hudson Bay side, highlighting their unique adaptations and importance to the ecosystem.

THE UNDERGROUND WORLD OF THE RED WASP

Meet the **red wasp** (*Vespula rufa*), a cousin of bees and ants, also in the order Hymenoptera. A fascinating insect collected in Kuujuaq in 2024 by our very first Sentinel, Siaja Parceaud-May. This social wasp is easily recognizable by the striking rusty-red markings on its abdomen. Found in the northern reaches of Canada, as well as in northern and central Europe and parts of Asia, the red wasp is a true northern adventurer.

These wasps primarily feed on nectar and live insects, which they skillfully hunt to nourish their larvae. They prefer to build their nests underground, often choosing dry banks or abandoned rodent burrows as their cozy homes.

In the fall, new queens are produced and hibernate in new locations. When spring arrives, these queens emerge and begin the search for the perfect nesting cavity. Once settled, they start the cycle afresh, producing workers who will feed and care for the larvae, ensuring the survival of their colony.



Vespula rufa. © Siaja Parceaud-May

WARBLE FLY DEMYSTIFIED: INTRIGUING PARASITES

In 2019, a group of young explorers made some significant catches in the remote and pristine landscapes of Parc national des Pingualuit. They collected numerous warble flies, or bot flies, of the species known as the **caribou warble fly** (*Hypoderma tarandi*), which belong to the Oestridae family. These flies, with their striking resemblance to big-eyed bumble bees, are a common yet rarely documented presence in Nunavik.

What makes these insects particularly intriguing is their life cycle. The larvae of warble flies are internal parasites of mammals, often found in the flesh of caribou. This parasitic relationship is a hidden drama of survival and adaptation playing out on the tundra.

The collection of these flies in such large numbers has shed light on an often-overlooked aspect of the northern ecosystem. It has highlighted the intricate and sometimes unsettling connections between species that sustain the delicate balance of life in this harsh environment.



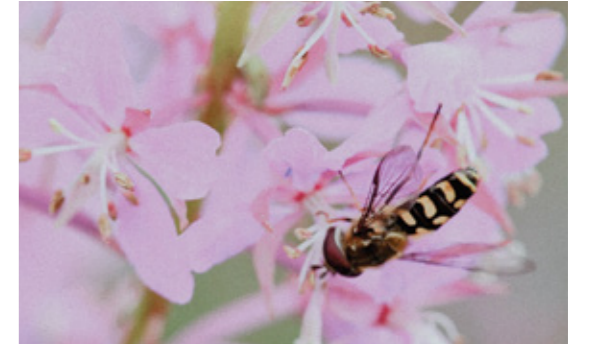
Reindeer warble fly, *Hypoderma tarandi*.
© Espace pour la vie (Maxim Larrivière)

FROM APHID HUNTERS TO POLLINATORS: A FLOWER FLY STORY

Flower flies, also known as hover flies, in the family Syrphidae, are remarkable insects that play a crucial role in northern ecosystems. These agile fliers are often mistaken for bees or wasps due to their striking mimicry, which helps protect them from predators. However, unlike their lookalikes, flower flies are harmless and cannot sting. They are captivating to watch, as they can hover in place like a hummingbird and zoom around in all directions.

One of the most fascinating aspects of flower flies is their migration. Recent studies have shown that during the spring, some flower flies migrate north, orienting themselves with remarkable precision. They are often observed travelling in large groups on sunny days, suggesting that the sun likely plays a crucial role in navigation.

One-third of all flower fly larvae are voracious predators of aphids, making them valuable allies in pest control. Others are important decomposers and recyclers of detritus, bacterial filter feeders in sap or under barks, predators of ant eggs and larvae, aquatic filter feeders, or plant feeders. If you're now thinking that flower flies can do a whole lot as larvae, you're right! As adults, they feed on the nectar and pollen of many different plants, contributing significantly to pollination alongside bees, butterflies and moths. Their presence in northern regions highlights their adaptability and the important ecological role they play.



Common loopwing aphideater (*Lapposyrphus lapponicus*), a migratory species, mostly found in forests but also in wetlands and the tundra. Larvae feed on aphids.
© Espace pour la vie (Maxim Larrivière)



The **yellow-margined marsh fly** (*Helophilus lapponicus*), a common species found in boreal and tundra wetlands. The larvae are unknown. © Denis Doucet



Drone flower fly (*Eristalis tenax*), an introduced species that is now common. It's a migratory species that hibernates as an adult. The larva is called the rat-tailed maggot because of the long tube that acts like a snorkel to breathe in stagnant waters and dung. Photographed in Parc national des Pingualuit. © Espace pour la vie (Maxim Larrivière)

PREDATORS OF THE TUNDRA: THE LIVES OF GROUND BEETLES

In the vast, untamed wilderness of the North, a hidden world thrives beneath our feet. Among the myriad creatures that call this land home, the ground beetles of the Carabidae family stand out with their hard, protective wings and chewing mouthparts. With around 2,000 species in North America alone, these beetles are a diverse and fascinating group.

Most ground beetles are fierce predators, hunting relentlessly as both larvae and adults. However, some have adapted to a more varied diet, feasting on plants or a mix of both animal and plant matter. Among the many species that inhabit the northern regions, two particular beetles capture the imagination: the **Chamisso's ground beetle** (*Carabus chamissonis*) and **pine forest ground beetle** (*Carabus taedatus agassii*).

At first glance, these two beetles might seem quite similar with their matte dark-coloured body. However, a closer look reveals the subtle differences. The shape of their bodies, the patterns on their exoskeletons, and their adaptations to their respective environments all tell a story of evolution and survival in the diverse landscapes of North America.

The **Chamisso's ground beetle** is a denizen of the tundra. This smaller beetle is built for survival in the cold. Its black exoskeleton glistens under the sunlight, and its legs are strong and adapted for traversing the uneven terrain of its icy home.

In contrast, the **pine forest ground beetle** prefers the sandy silt found across northern North America. Though it may not be the fastest runner, this beetle is a master burrower, using its powerful legs to dig into the soft ground. Its body is larger and more elongated than that of its cousin, with reddish hardened wings and prominent posterior angles on the thorax, all contributing to its unique appearance.



The **Chamisso's ground beetle** was collected in Kuujuaq behind the sandpit by Destiny Watkin. © Robert Weeden



The **pine forest ground beetle** was collected in Kuujuaq behind the sandpit by Destiny Watkin and in Kuujuaapik by Sivanau Tooktoo. © Espace pour la vie (Amélie Grégoire Taillefer)

HIDDEN HUNTERS: THE HOLARCTIC WOLF SPIDER

In the tundra, a biome dominated by wolf spiders, one particular species stands out from its peers—the **holarctic wolf spider** (*Alopecosa pictilis*) from the family Lycosidae. Measuring up to 12.8 mm, this spider is notable for its striking appearance, with a complex pattern of white, orange, brown, and black hues covering its entire body. It's one of Quebec's most impressive and easily recognizable species.

With a circumpolar distribution, the holarctic wolf spider is found almost exclusively in the northern regions of North America and Russia, thriving among mosses and low shrubs. Its specialized adaptations allow it to tolerate very cold temperatures and remain active year-round, even hunting insects beneath the snow during winter.

The holarctic wolf spider's impressive appearance, endemism to northern regions and unique environmental adaptations make it a true representative of the beauty and biodiversity of northern fauna. ■



A holarctic wolf spider crawling among colourful pebbles in Parc national Kuururjuaq. © Espace pour la vie (Maxim Larrivé)

VOICES OF THE NORTH: INSPIRING TESTIMONIALS FROM OUR SENTINELS

TESTIMONIAL FROM HAYLEE PETAWABANO, SENTINEL IN THE CREE NATION OF CHISASIBI, EYYOU ISTCHEE IN 2022

My role in this project was to collect insect samples in Eeyou Istchee, track my trips through SIKU, label and store each insect sample. I also became familiar with recognizing various species within my hometown. I was also given the opportunity to visit the Waapinichikush elementary school to teach students about the distinct species and show them different sampling techniques. It was a wonderful opportunity to show the youth about the unique job opportunities there are in Eeyou Istchee. I was pleased to see the students come out of their shell and show interest in this field of study.

What I took away from this is the importance of centering Indigenous voices by preserving and using our traditional ecological knowledge, while also enquiring about scientific knowledge and our role in environmental sustainability. It creates a space that encourages a collective responsibility to effectively respond to climate change. I also want to acknowledge that I don't have all the traditional teachings of an Elder or a Knowledge Keeper, but I do believe that I play a role as intermediary of both distinct understandings.

Being a biology technician in my community encouraged me to reconnect with my traditional understanding of the environment of Eeyou Istchee, which I believe is important when conducting any study within the scientific field. I was always taught to set my intentions and thank both animate and inanimate objects, whether I was engaging in cultural activities or, in this case, gathering insects for science. Every insect I collected, I recognized as an important component of the surrounding ecosystems.

I began to understand my role as an environmental activist and as an Indigenous woman. The importance of using our traditional ecological knowledge to collaborate with western scientific knowledge helps to combat or adapt to these inevitable environmental changes, which is crucial for our future. Acknowledging and including Indigenous peoples who occupy the territory is not only essential, but a key factor in revitalizing the role we as Indigenous nations have always cherished as caretakers of our homelands. ■



Photos: Espace pour la vie / Amélie Grégoire Taillefer & Haylee Petawabano

EMPOWERING NORTHERN YOUTH: HIGHLIGHTING ACTIVITIES SINCE 2014 THROUGH TRADITION, SCIENCE AND DISCOVERY

THE GENESIS OF THE PROGRAM

2014

The great adventure began when Elise Rioux-Paquette from the Kativik Regional Government reached out to Maxim Larrivée at the Montreal Insectarium, Espace pour la vie to team up for a project. Their mission? To embark on an incredible journey to inventory the diverse insect species in Nunavik Parks.

2015-2018

Training camps in Nunavik Parks: Hosted annual training camps for about a dozen youth in Nunavik's national parks (Kuuruurjuaq, Pingualuit, Tursujuq) in collaboration with Nunavik Parks.

2019

The program is officially launched with the hiring of Amélie Grégoire Taillefer, entomologist, as program coordinator. Through the four educational and research pillars, this participatory science program works in close collaboration with youth and other community members.

LAUNCHING THE PROGRAM AND EVOLVING THE FOUR PILLARS



SUMMER EMPLOYMENT

2019-2024

- Insect collection training: Trained 21 young people across 8 communities in insect collection.

- Sentinels: 17 Sentinels in 7 communities across 3 northern regions continued their summer jobs in Kuujuaq (5), Kuujuaaraapik (1), Inukjuak (4), Umiujaq (1), Chisasibi (3), Ivujivik (1), and Makkovik (2).

2025

- Sentinels: 14 Sentinels in 7 communities will be hired.

EDUCATIONAL ACTIVITIES

2021

- Launch: Initiated the educational pillar at the request of teachers Krishna Rodriguez (Waapinichikush Elementary School, Cree School Board) in Chisasibi and Gabriel Besner (Innalik School, Kativik Ilisarniliriniq School Board) in Inukjuak.

- Testing: 6 classes (90 students) in Inukjuak and 1 class (17 students) in Chisasibi tested the educational kit.

2022

- Expansion: Visit of the coordinator to introduce 36 students from 3 classes in Chisasibi and 10 children with 3 young educators at the Frontier College day camp in Kuujuaq to the insect world.

2023

- Growth: Engaged 70 students from 7 classes in Salluit and 20 students from 2 classes in Inukjuak during a visit by the coordinator.

2024

- Widespread engagement: Introduced youth to the wonders of insects with visits to: 6 classes at Nuvviti school in Ivujivik; 5 classes at Tukisiniarvik school in Akulivik; 3 classes at Kiluutaq school in Umiujaq; and 7 classes at Asimauttaq school in Kuujuaaraapik. Plus, 40 youth from the Frontier College day camp in Inukjuak and 5 youth from the Pirutsaivik group home in Kuujuaaraapik were introduced to insects. Also, an insect collection was included in the Nunavik Parks educational kit, travelling to all communities.

2025

- Continue introducing youth to insect wonders with visits to 4 new schools.

RESEARCH

- Monitoring systems: Installed or reinstalled 5 automated monitoring systems (AMI) in Kuujuaq, Kangiqsujuaq, Umiujaq, Inukjuak, and Chisasibi.

- Discoveries: Documented new butterfly species and rarely seen species, and expanded knowledge of species of concern. Found new populations far from known locations, extending geographical ranges.

- Data collection: Over 800 butterfly envelopes and 300 bee bowl vials filled with diverse insects.

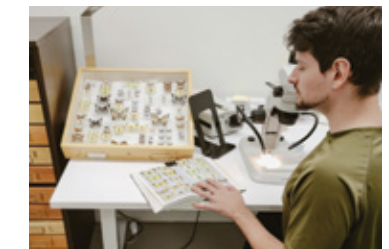
- SIKU platform: More than 800 posts on wildlife observations, trips and insect traps.

- Collaborations: Engaged with over 45 scientific and local collaborators and partners.

- Scientific publications: Released over 15 awareness-raising, scientific and activity report publications.

- Outreach: Held over 15 kiosks, presentations and media interviews to raise awareness.

- Ongoing identification: Sorting, mounting, labelling and identification of thousands of insect species by specialists.



Technician Dominic Ouellette identifying insects caught up north.

TRAINING LAND CAMP

2019

- Pilot camp in Parc national des Pingualuit

2020-2021

- COVID pause: Activities were paused due to the pandemic.

2022

- Science land camp: Organizers from Université du Québec à Trois-Rivières and Kangiqsuallujuaq held the Imalirijit Nunami Sukuijainiq Science Land Camp and added an insect component using our tools and materials.

- Marralik-Ungunniavik camp: Participated in the first week of the Marralik-Ungunniavik camp with Kuujuaq youth.

- Pye Centre camp: Participated in the camp at the Pye Centre for Northern Boreal Food Systems in Happy Valley-Goose Bay, Labrador.

- Chisasibi Research Centre (CERRI): Visit by Insectarium members and introduction to insect research.

2023

- Chisasibi camp: Organized a training camp with the CERRI so youth and employees could learn about insect collection, preparation and identification.

- Pye Centre camp: Participated in a second year of the camp.

2024

- Imalirijit camp: Joined the Imalirijit/Nunami Sukuijainiq Science Land Camp in Kangiqsuallujuaq, introducing 12 youth to insects and traditional knowledge. The camp included 4 elders, 8 scientists, and 17 locals.

- Tursujuq camp: Hosted a camp for 7 youth from Umiujaq in collaboration with Nunavik Parks, focusing on insects and traditional knowledge. The camp included 3 wardens, 1 intern, 3 Nunavik Parks employees, 1 local guide, and 1 cook.

2025

- Imalirijit camp: Join Imalirijit/Nunami Sukuijainiq Science Land Camp in Kangiqsuallujuaq.

- Tursujuq camp: Host a camp for 8 youth from Kuujuaaraapik and Whapmagoostui in collaboration with Nunavik Parks, focusing on insects and traditional knowledge.

Photo: Espace pour la vie / Maxim Larrivée. • Illustration: Adobe Stock

THE SENTINELS' VOICES RESONATE IN OTHER INSPIRING INITIATIVES

Immerse yourself in the inspirational video featuring Tobi Nashak from Kuujjuaq and Amélie Grégoire Taillefer, the Nunavik Sentinels coordinator. This meaningful encounter is part of the permanent exhibition, *Indigenous Voices of Today: Knowledge, Trauma, Resilience*, at the McCord Stewart Museum in Montreal. An opportunity to witness compelling stories and insights.



© McCord Stewart Museum Tobi Nashak

Siaja Parceaud-May took centre stage at the 2023 Kwe! festival in Quebec City, celebrating the theme of biodiversity. Alongside Maxim Larrivée, Director of the Montreal Insectarium, they captivated the audience with their presentation, "The Butterfly Effect of Climate Change." Throughout the weekend, under a beautifully domed tent, they highlighted the critical need to document the fauna of the North and expand our understanding of its biodiversity, particularly focusing on pollinators. Siaja's inspiring words resonated deeply: "Having this data accessible to all Nunavimmiut is essential for our path towards self-determination, the empowerment of our people, and the recognition of our traditional knowledge." ■

© Makivik (Miriam Dewar)



NATURE'S RESILIENCE:

INSECTS' STRATEGIES TO SURVIVE WINTER

INSECTS IN NORTHERN REGIONS HAVE DEVELOPED FASCINATING ADAPTATIONS TO SURVIVE HARSH WINTER CONDITIONS:

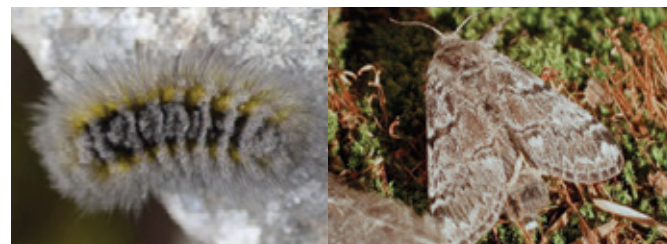
- **DIAPAUSE:** Entering a hibernation-like state to conserve energy.
- **ANTIFREEZE PROTEINS:** Producing proteins in their bodies to prevent ice formation.
- **WATER REMOVAL:** Removing water from their bodies to avoid ice formation.
- **SUPERCOOLING:** Lowering the freezing point of their bodies by eliminating ice nucleation.
- **SHELTERING:** Seeking protected environments like under tree bark or in soil.
- **LIFE CYCLE ADJUSTMENTS:** Timing life cycles to avoid the harshest conditions.
- **BEHAVIOURAL CHANGES:** Migrating to warmer areas.

THE ROSS'S TUSOCK MOTH: A WINTER SURVIVOR

A prime example is the **Ross's tussock moth (*Gynaephora rossii*)**, which is found up North. This moth spends most of its life as a caterpillar, enduring 7 to 11 years of freezing winters by producing antifreeze before turning into a moth. They can freeze solid at temperatures as low as -70 °C and come back to life as soon as they thaw out! During short summers, the caterpillar raises its body temperature by basking in the sun and munches on saxifrages (or rockfoils) along the way. After reaching its maximum size, it forms a cocoon and transforms into an adult moth, living only two weeks to reproduce. Females can even lay fertile eggs without a male, showcasing their incredible adaptability.

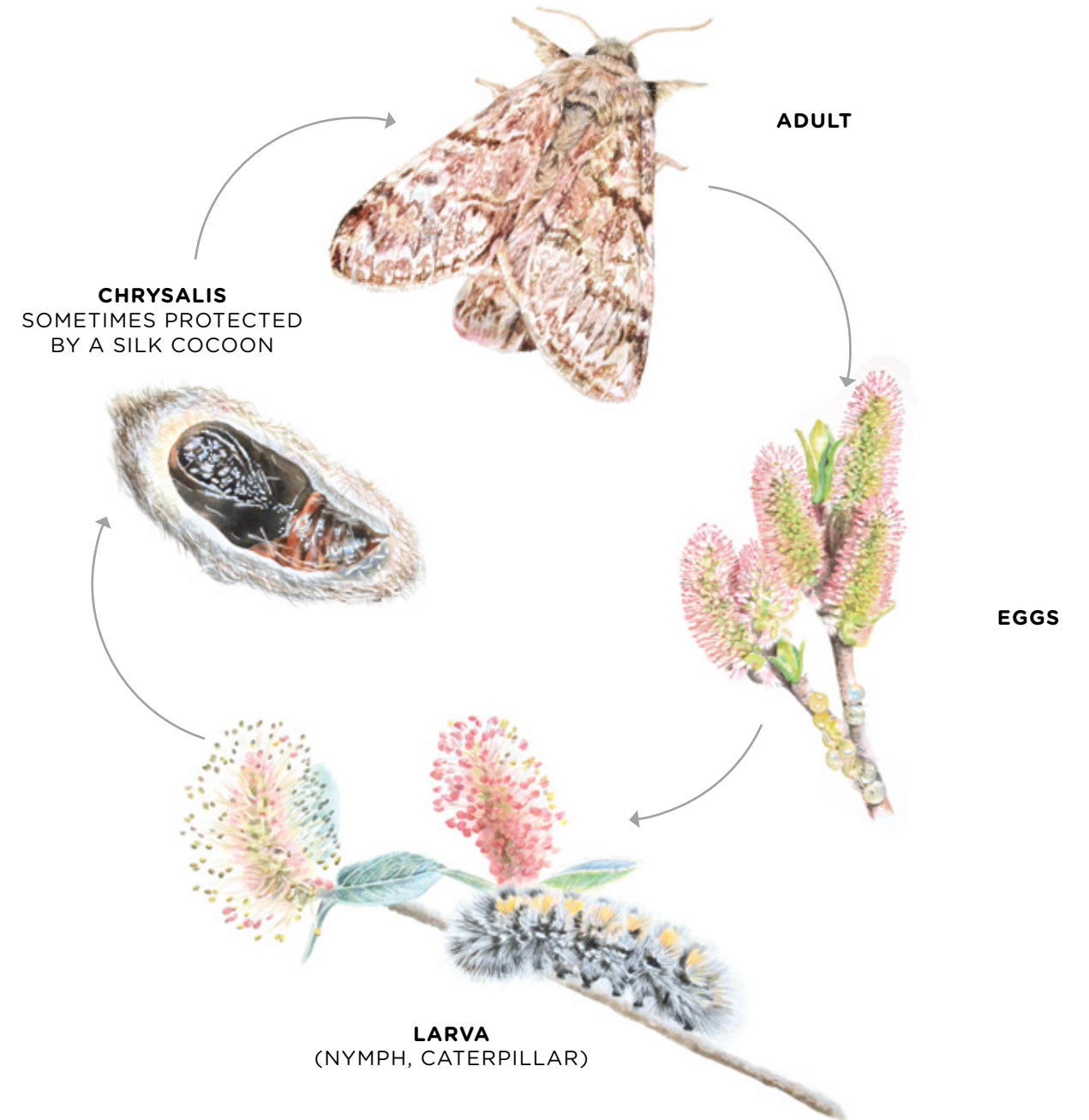
Youth discover a marvel of nature

Imagine stumbling upon this fascinating creature! The Ross's tussock moth has now been collected by young camp participants in Parc national des Pingualuit and Parc national Kuururjuaq, marking the third and fourth known locations in Quebec. This discovery highlights the importance of engaging the next generation in nature exploration and conservation. ■



Ross's tussock moth (caterpillar and moth). © Espace pour la vie (Maxim Larrivée) & Doug Macaulay

LIFE CYCLE OF THE ROSS'S TUSOCK MOTH (*GYNAEPHORA ROSSII*)



DISCOVERING NATURE'S SECRETS: YOUTH UNCOVER A VULNERABLE LADYBUG

By Amélie Grégoire Taillefer, entomologist and Nunavik Sentinels coordinator, and Jennifer De Almeida, entomologist



PARC NATIONAL
KUURURJUAQ,
2018.

Photo: Espace pour la vie / Maxim Larrivé

IN JULY 2018, A TEAM MADE UP OF MEMBERS FROM THE MONTREAL INSECTARIUM, THE CANADIAN NATIONAL COLLECTION OF INSECTS, ARACHNIDS AND NEMATODES, AND NUNAVIK PARKS, ALONG WITH EIGHT INUIT YOUTH, CONDUCTED AN INVENTORY OF BUTTERFLIES AND MOTHS IN PARC NATIONAL KUURURJUAQ. WHILE SURVEYING THE PARK FOR THE SECOND TIME SINCE 2015, THEY DISCOVERED AN UNEXPECTED SPECIMEN OF LADY BEETLE NEAR THE KOROC RIVER CAMP, THE NORTHERN MOST DOCUMENTED RANGE EVER KNOWN FOR THIS SPECIES.

Fast forward four years to a sunny day in Chisasibi, where grade 5 and 6 students from Waapinichikush Elementary School were enthusiastically exploring their surroundings with nets and magnifying glasses. Among their discoveries was a striking ladybug—a surprising find indeed! This lady beetle, later identified as the **transverse lady beetle (*Coccinella transversoguttata*)**, is a species of special concern.

A species of special concern is any species that doesn't meet the criteria for an endangered or threatened species but is particularly vulnerable. It could be because of the destruction of its habitat, the introduction of exotic species or an organism that causes disease, the use of pesticide, or many other reasons.

The transverse lady beetle is recognized by its solid black band and the two elongated black spots on each side of its orange-red elytra. It controls pests on plants by consuming a large variety of aphid species and other insects. While it's a habitat generalist, thriving in diverse environments across Canada, its population has declined significantly. Once common, this ladybug is now rare in Quebec, with only a few sightings reported in recent years. In fact, there have been only three known findings in the last 10 years (in 2013, 2018¹ and 2022), where the last observation in Eeyou Istchee dates back to between 1996 and 2005¹.

This discovery highlights the broader issue facing ladybug species in Quebec, where eight species have disappeared, and 67 others are in sharp decline. We still don't know much about the distribution of ladybug species, especially in the North. For example, the **mountain lady beetle (*Coccinella monticola*)** was reported in Nunavik—once again accidentally—for the first time in 2022, at Marralik-Ungunniavik camp, and again in 2024, in Kuujuaq.

To aid in conservation efforts, individuals can contribute by reporting ladybug sightings to platforms like SIKU (siku.org) and iNaturalist (inaturalist.org), providing essential data through photographs and specific location information. Additionally, participating in wildlife surveys and local conservation programs, such as the Nunavik Sentinels, can help address losses in biodiversity and protect these important insects. ■



Transverse lady beetle, Chisasibi, 2022.
© Krishna Rodriguez and Espace pour la vie (Amélie Grégoire Taillefer)



Mountain lady beetle, caught at Marralik-Ungunniavik camp in 2022 and Kuujuaq in 2024.
© Sijaia Parceaud-May & Espace pour la vie (Amélie Grégoire Taillefer)

1. COSEWIC. 2016. COSEWIC assessment and status report on the transverse lady beetle *Coccinella transversoguttata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 57 pp.

USING ARTIFICIAL INTELLIGENCE TO MONITOR INSECTS

By Amélie Grégoire Taillefer, entomologist and Nunavik Sentinels coordinator; Maxim Larrivé, entomologist and director of the Montreal Insectarium; Santiago Betancour and Jean-François Gélinas, audiovisual technicians at the Montreal Insectarium

WITH AN ASTONISHING 1.4 BILLION INSECTS FOR EVERY HUMAN ON EARTH, SCIENTISTS AT THE MONTREAL INSECTARIUM ARE UTILIZING AI-BASED INSECT MONITORING. THIS GROUNDBREAKING APPROACH, DEVELOPED IN COLLABORATION WITH EXPERTS FROM MILA - QUEBEC ARTIFICIAL INTELLIGENCE INSTITUTE, IS SET TO FAST-TRACK THE DISCOVERY AND DESCRIPTION OF HUNDREDS OF NEW INSECT SPECIES IN THE COMING YEARS.

Over the past two summers, the team has deployed the Automated Insect Monitoring tool, or AMI, across the North. Acting like a sophisticated light trap, AMI attracts nocturnal insects and captures their images without causing them any harm. This non-lethal method has been successfully used for a second year in Kuujjuaq and Kangiqsujuaq, and for the first time in Chisasibi, Umiujaq and Inukjuak.

In Kuujjuaq, the machine is monitored by Nunavik Parks and in Kangiqsujuaq by the Pingualuit Interpretation Centre's team. In Chisasibi, our technician Dominic Ouellette, with the remote assistance of our audiovisual technician Santiago Betancour, deployed the AMI. It was then monitored by Isaiah Coonishish and the CERRI. In Umiujaq, the machine was set up for the first time by our audiovisual technician Jean-François Gélinas, with valuable help from Kayleah Kasudluak. The monitoring was then carried out by Parc national Tursujuq's team. Jean-François also installed a machine in Inukjuak, where he was assisted by our dedicated Sentinel of two years, Tony Anautak, who monitored the machine all summer.

Once the data was received by the Insectarium at the end of the summer it was uploaded on the ANTENNA platform (<https://antenna-home.netlify.app/>), where the AI analyzed the thousands of images caught every night from June to September, enabling the discovery of new species, the monitoring of moth presence, and the gaining of insights into the effects of climate change on the land and its biodiversity.

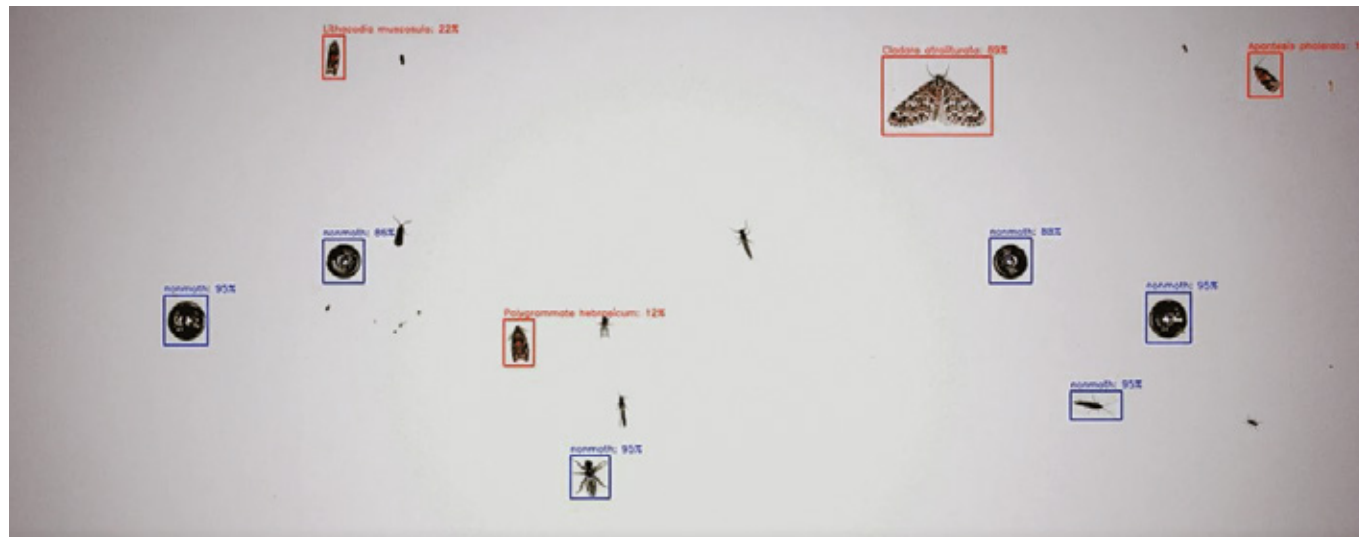
This innovative use of AI not only enhances our understanding of insect life in the North, but also plays a crucial role in assessing the impacts of climate change on these vital species. Together, we're paving the way for a better-prepared future for northern regions.



DID YOU KNOW?

The Nunavik Sentinels program is harnessing the power of cutting-edge artificial intelligence (AI) to transform how we identify insect biodiversity in the North.

Amélie Grégoire Taillefer in Kuujuaq; Jean-François Gélinas and Kayleah Kasudluak in Umiujaq; and Tony Anautak in Inukjuak, preparing and installing the AMI machine in 2024. © Siaja Parceaud-May and Espace pour la vie (Amélie Grégoire Taillefer & Jean-François Gélinas)



The AI identifying the insects photographed by the AMI machine. © Espace pour la vie



Photo: Espace pour la vie / Jean-François Gélinas

DISCOVERING INSECTS AND SPIDERS: FUN AND EASY TECHNIQUES

EXPLORE THE WORLD OF ARTHROPODS. DISCOVERING ARTHROPODS CAN BE EDUCATIONAL AND A GOOD WAY TO CONNECT TO THE LAND. WITH SIMPLE, LOW-COST TOOLS AND THE SIKU APP, YOU CAN LEARN ABOUT NORTHERN INSECTS AND SPIDERS, DOCUMENT YOUR FINDINGS AND SHARE THEM WITH YOUR COMMUNITY. HERE ARE SOME ENGAGING METHODS TO OBSERVE AND COLLECT INSECTS AND SPIDERS.

1. PHOTOGRAPHY

Perfect for all insects and spiders. Use your smartphone or camera to capture insects and spiders in their natural habitats without disturbing them. High-quality photos help with identification and sharing on SIKU. Take shots from multiple angles, starting from a distance to avoid scaring them, then move in for close-ups.

2. NET

Ideal for butterflies, flies, beetles, and more. A net with a lightweight mesh is versatile for catching various insects. Sweep through vegetation or catch them mid-air. For insects on the ground, keep the net on the ground and lift the tip skyward to trap them. Transfer your catch to a transparent container for observation.

3. BEE BOWL

Great for bees, wasps, flies, and spiders. Bee bowls are colourful plastic bowls filled with soapy water, attracting pollinators and ground insects. Place them on the ground, secured with a rock. For longer traps, use a mix of water and propylene glycol or salt water. Always add a few drops of soap.

4. LIGHT TRAP

Best for moths and nocturnal insects. Light traps attract moths and other night insects. Set up a white surface with a UV light or use panels above a collection container. Collect insects gently or take stunning photos. Some may stay until morning for further observation.

HAPPY ARTHROPOD HUNTING!

1



2



3



4



INSECT MONITORING IN NUNAVIK

By the Arctic Eider Society

SIKU: THE INDIGENOUS KNOWLEDGE APP WAS CREATED BY AND FOR INDIGENOUS COMMUNITIES. SIKU USERS CAN DOCUMENT AND SHARE THEIR OBSERVATIONS WHILE THEY'RE OUT ON THE LAND. SIKU ALSO SUPPORTS MULTIPLE INDIGENOUS LANGUAGES AND DIALECTS.

SIKU'S INSECT FEATURE AND THE NUNAVIK SENTINELS PROGRAM

In collaboration with the Nunavik Sentinels program, SIKU has built a suite of insect monitoring tools to help track and share insect observations in the North. These tools are designed to support the monitoring techniques used by the Nunavik Sentinels and other community-based entomology programs, including observations and both passive and active collection methods.

SIKU's insect tools also support communities in creating their own insect records, which can serve as educational tools and contribute to long-term environmental monitoring. ■

BY SUPPORTING THE CREATION OF THESE TOOLS, THE NUNAVIK SENTINELS PROGRAM IS HELPING MAKE COMMUNITY-BASED INSECT MONITORING ACCESSIBLE TO COMMUNITIES ACROSS THE NORTH!



What users can do with the SIKU Insect feature:

- **DOCUMENT INSECT OBSERVATIONS:** Users can log details of insects observed, including geotagged and time-stamped photos and information about collection methods using Indigenous environmental terminology.
- **COLLABORATE ACROSS COMMUNITIES:** Through SIKU's project framework, project members from many communities can simultaneously contribute to insect monitoring, facilitating knowledge sharing and regional monitoring.
- **EXPORT AND MANAGE DATA:** Users can easily export data for further analysis, ensuring efficient data management and a broader distribution of findings.



RENEWING A WINNING COLLABORATION

TESTIMONY FROM THE CONSERVATION AND
EDUCATION TEAM OF NUNAVIK PARKS

Last summer, we spent five days and four nights in Parc national Tursujuq with eight youth from the community of Umiujaq. Our aim was to collect and learn about insects as part of a renewed collaboration between Nunavik Parks and the Montreal Insectarium. The Insectarium already runs the *Nunavik Sentinels* project every summer in the region's communities. Welcoming the Insectarium to the parks through the *Nunavik Sentinels* program was a way of introducing young people to entomology, the science of insects, while being outdoors and connecting with the land and the people who live there.

The youth enthusiastically hunted bumble bees and butterflies, took part in excursions, learned to make bannock and, in the process, all exceeded their own limits. There's nothing better than being outside and feeling nature all around you.

FABULOUS NEWS FOR 2025!

The experience will be repeated this summer for youth from Whapmagoostui and Kuujuaaraapik in Parc Tursujuq.

Join us for an unforgettable adventure!



JOIN US FOR A 5-DAY CAMP THIS JULY!

- YOU ARE FROM KUJUAARAAPIK OR WHAPMAGOOSTUI AND BETWEEN 14 AND 21 YEARS OLD?
- YOU WANT TO HAVE FUN ON THE LAND?
- YOU LOVE SCIENCE AND WANT TO LEARN MORE ABOUT INSECTS AND SCIENTIFIC TECHNIQUES?

This camp will offer you scientific experience in the field on insects as part of the Insectarium's Nunavik Sentinels program and land-based learning opportunities while exploring Parc national Tursujuq.

- 8 spaces available
- Each participant will be granted a certificate of completion
- Financial support available to cover babysitting



**THIS
TRAINING'S
FOR YOU!**

LOCATION:
Wiyáshákimí camp at Parc national Tursujuq

WHEN:
July 28 to August 2, 2025

REGISTRATION AND INFORMATION:
Amélie Grégoire Taillefer
nunaviksentinels@gmail.com
438-867-3738
or
Jeannie Calvin
jcalvin@krg.ca
Park office 819-929-3778

@SentinellesNunavikSentinels



APPLY HERE:



forms.gle/sut8LPVy55gy2NXJ9

Northern pollinating insects: A new research project

BY ÉLISABETH GUILLET-BEAULIEU,
DOCTORAL STUDENT AT THE INSECTARIUM
AND UNIVERSITÉ DE MONTRÉAL

INSECTS ARE VITAL TO OUR ECOSYSTEMS, ESPECIALLY AS POLLINATORS. HOWEVER, OUR KNOWLEDGE OF ARCTIC AND SUB-ARCTIC POLLINATORS IS LIMITED. CLIMATE CHANGE IS IMPACTING THE NORTHERN REGIONS OF THE WORLD AT AN ALARMINGLY RAPID RATE. THIS MEANS THAT THE NEXT FEW YEARS WILL BE CRITICAL TO BETTER UNDERSTANDING ARCTIC INSECTS AS THEY, TOO, EXPERIENCE UNPRECEDENTED CHANGES. WITHOUT POLLINATORS, MANY FRUIT-BEARING PLANTS WOULD NOT PRODUCE ANY FRUIT.

I, Élisabeth Guillet-Beaulieu, a new graduate student, aim to study how pollinating insect communities change from south to north and how climate change impacts them. Are they bigger? Smaller? More or less abundant? Not where they're usually found? Do they follow the seasons as they always have, or has that changed, too? There are lots of questions to be answered! We'll also sample insects visiting fruit-bearing plants using traps, automated cameras and environmental DNA (eDNA) analyses. In situ observations may also be used. I'll also sample flowers from these plants and analyze them in the Montreal Insectarium labs. In these flower samples, I'll look for eDNA—pieces of DNA that pollinating insects left on the flowers when they visited them. Combining all these techniques should allow us to create a complete picture.

I plan to collect samples in the North during the summers of 2025 and 2026, focusing on the eastern coast of **Hudson Bay** near four of the following communities: Chisasibi, Kuujuaaraapik, Umiujaq, Inukjuak, Puvirnituk, Akulivik, and Ivujivik. Other communities are welcome to join!

This project is about more than science—it's about empowering communities with the knowledge and tools to protect natural sites. One of the tools developed during this project will be an illustrated guide to Nunavik's pollinating insects. On top of that, all data and results generated by the project will be made available to all, at all times. ■

INTERESTED?
Contact me at eg-b@outlook.com
I'm looking forward to your valuable input!

YOUR INVOLVEMENT IS CRITICAL TO:

ENGAGE YOUTH: YOUTH CAN JOIN THE SAMPLING CAMPAIGN OR EDUCATIONAL ACTIVITIES THROUGH THE NUNAVIK SENTINELS PROGRAM.

IDENTIFY IMPORTANT BERRY PLANTS: ARE YOU PREOCCUPIED ABOUT THE BERRY PRODUCTION OF A CERTAIN PLANT? WORK WITH US IN SELECTING THE PLANTS!

SHARE OBSERVATIONS: PARTICIPATE IN INTERVIEWS ABOUT CHANGES IN POLLINATING INSECTS OVER THE LAST DECADE.





IDENTIFY SAMPLING SITES: ARE YOU AWARE OF AREAS THAT ARE RICH IN INSECTS AND BERRY PLANTS? LET US KNOW!

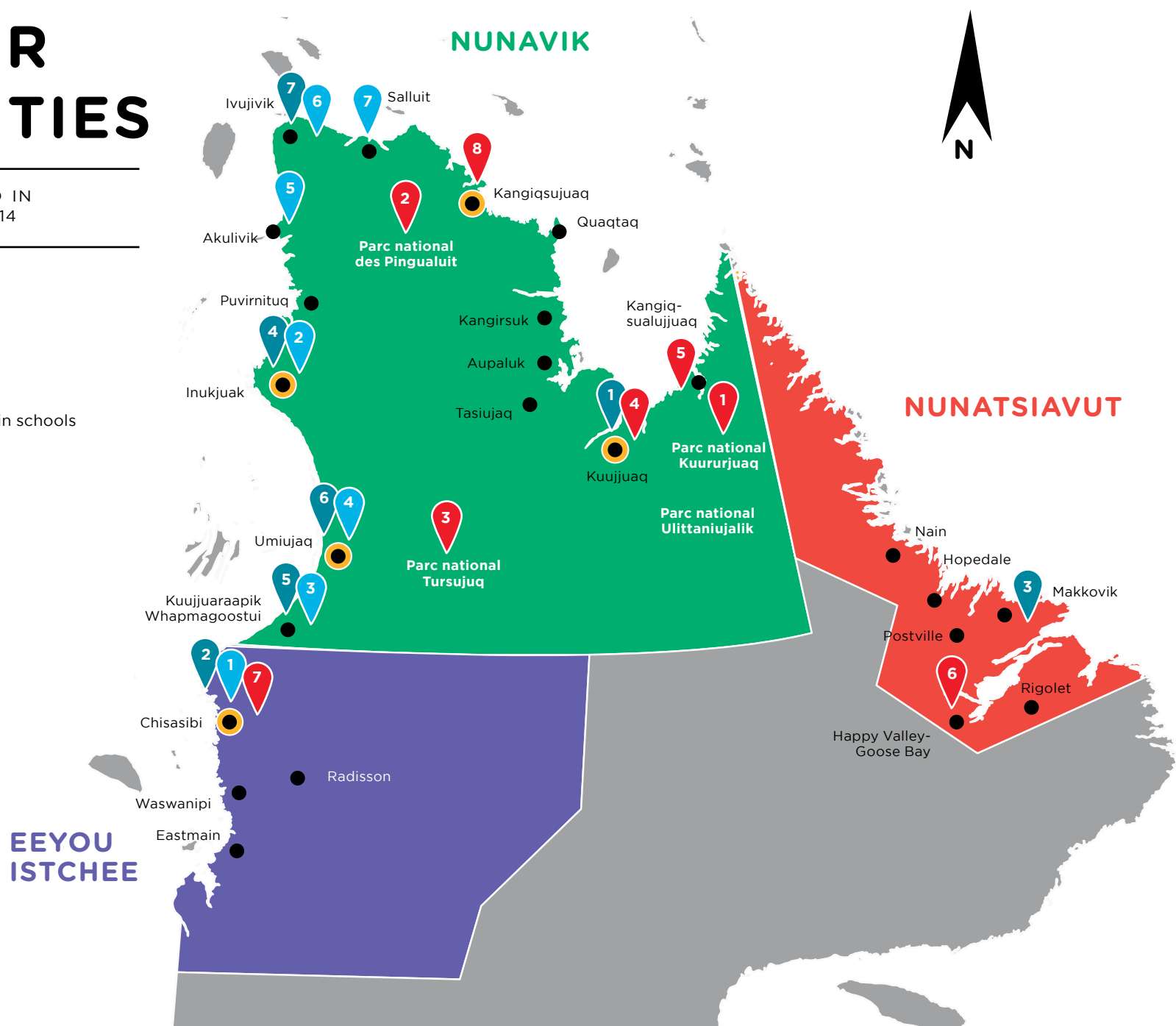
Photos: Espace pour la vie / Amélie Grégoire Taillefer & Maxim Larrivière



SPOTLIGHT ON OUR ACTIVITIES

ACTIVITIES DEPLOYED IN COMMUNITIES SINCE 2014


-  Sentinel/s
-  Camp
-  Educational activities in schools
-  AMI machine



2015




© Espace pour la vie (Maxim Larrivée)

 Parc national Kuururjuaq Camp

2016



© Espace pour la vie (Maxim Larrivée)

 Parc national des Pingualuit Camp

2017



© Espace pour la vie (Maxim Larrivée)

3 Parc national Tursujuq Camp

2018



© Espace pour la vie (Maxim Larrivée)

1 Parc national Kuururjuaq Camp

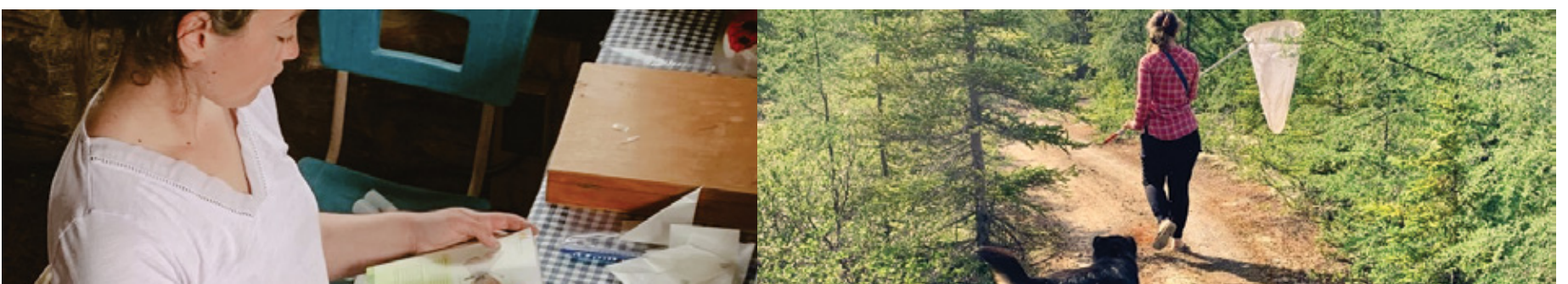
2019



© Espace pour la vie (Maxim Larrivée & Amélie Grégoire Taillefer)

2 Parc national des Pingualuit Camp

2019-2020



© Peter May

1 Kuujuaq Siaja Parceaud-May, Sentinelle/Sentinel

2020-2021



© Sean Nashak & Aputi Unatweenuk

1 Kuujuaq

Tobi Nashak & Aputi Unatweenuk, Sentinelles/Sentinels

2021



© Krishna Rodriguez

1 Chisasibi

École primaire Waapinishikush, avec Krishna Rodriguez
Waapinishikush Elementary School, led by Krishna Rodriguez

Un bourdon et des mouches (dans la famille des Muscidae) pollinisant, un bombyle (dans la famille des Bombyliidae), un longicorne (dans la famille des Cerambycidae) et la chenille du sphinx du gaillet (*Hyles gallii* dans la famille des Sphingidae)

A bumble bee and flies pollinating (in the family Muscidae), a bee fly (in the family Bombyliidae), a longhorn beetle (in the family Cerambycidae) and a bedstraw hawk moth caterpillar (*Hyles gallii* in the family Sphingidae)



© Gabriel Besner

2 Inukjuak

École Innalik, avec Gabriel Besner
Innalik School, led by Gabriel Besner



© CERRI

2 Chisasibi

Haylee Petawabano, Sentinelle/Sentinel
© Espace pour la vie (Amélie Grégoire Taillefer)

Visite du CERRI
CERRI visited

2022



© Espace pour la vie (Amélie Grégoire Taillefer)

2 Inukjuak

Camp de jour du collège Frontière
Frontier College day camp



1 Chisasibi

École primaire Waapinishikush
Waapinishikush Elementary School
© Espace pour la vie (Amélie Grégoire Taillefer)

1 Kuujuaq

Robert Munick, Sentinelle/Sentinel
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© Anguivigaq

4 Kuujuaq

Camp de Marralik-Ungunniavik
Marralik-Ungunniavik Camp

2022-2023



© Labrador Lands & Waters Science Camp 2022-2023

6 Happy Valley-Goose Bay

Camps du Pye Centre for Northern Boreal Food System - Volet insectes en collaboration avec Agriculture Canada
Pye Centre for Northern Boreal Food System's camps - Insect component in collaboration with Agriculture Canada

2023



7 Chisasibi

Camp d'entraînement d'une semaine. Organisé par le CERRI et Les sentinelles du Nunavik
Week-long training land camp. Organised by CERRI and Nunavik Sentinels



1 Kuujuaq

Destiny Watkin,
Sentinelle/Sentinel
© Destiny Watkin

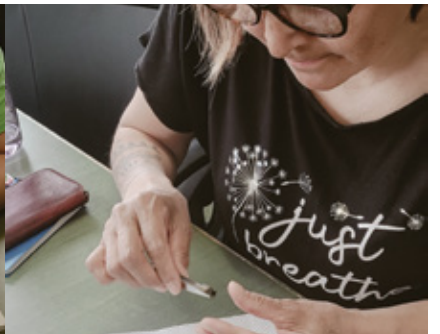
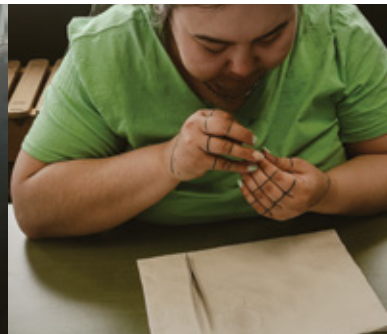
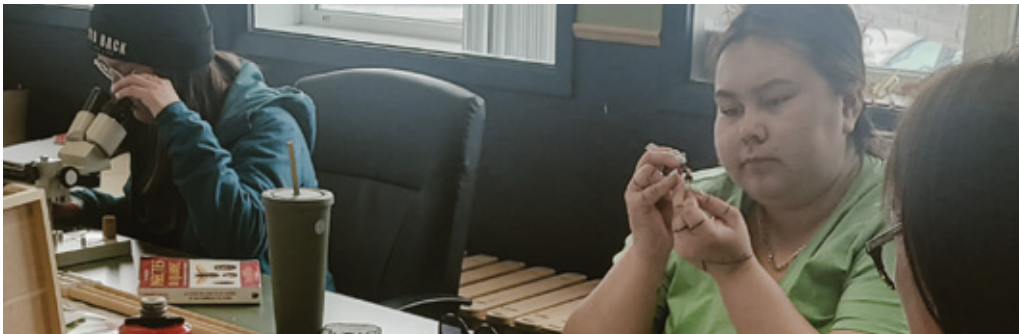
7 Salluit

École Ikusik
Ikusik school



3 Makkovik,
Nunatsiavut

Olsen Nochasak-Ford & Robert Andersen, Sentinelles/Sentinels



5 Kangiqsujaq

Entraîner l'équipe du centre d'interprétation des Pingualuit
Training the Pingualuit Interpretation Centre's team

2023-2024



4 Inukjuak

Tony Anautak, Allison St-Cyr 2023-2024, Emma Echalook 2024 & Paulusie Kasudluak 2024, Sentinelles/Sentinels



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3 Parc national Tursujuq

Camp organisé par Les sentinelles du Nunavik et Parcs Nunavik
Camp organised by the Nunavik Sentinels and Nunavik Parks



5 Kuujjuaraapik

Sivanau Tooktoo, Sentinelle/Sentinel



6 Umiujaq

Léna-Maël Faber-Sosa, Sentinelle/Sentinel

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2 Chisasibi

Isaiah Coonishish & Colby Hodder, Sentinelles/Sentinels
© Espace pour la vie (Dominic Ouellette)



7 Ivujivik

Lizzie Angiou, Sentinelle/Sentinel
© Espace pour la vie (Amélie Grégoire Taillefer)



5 Akulivik

École Tukisinarvik
Tukisinarvik school
© Espace pour la vie (Amélie Grégoire Taillefer)



6 Ivujivik

École Nuvviti
Nuvviti school
© Espace pour la vie (Amélie Grégoire Taillefer)



2 Inukjuak

École Uqutaq
Uqutaq school
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3 Kuujjuaraapik

École Asimauttaq & foyer de groupe Pirutsaivik
Asimauttaq school & Pirutsaivik group home
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4 Umiujaq

École Kiluutaq
Kiluutaq school
© Anne Gagné



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