

Creating Habitat for Pollinators



Pollinator Steward Training
2026

Lora Morandin, PhD
Associate Director
Pollinator Partnership

Avery Roe
Program Associate
Pollinator Partnership

POLLINATOR PARTNERSHIP

Protect their lives. Preserve ours.



Creating Habitat for Pollinators

- Review: co-evolution, how bees live
- Ways of creating habitat
- Habitat elements
- Regional considerations
- Habitat options/resources





Over 4,000 Native Bee Species in North America!

Join the Conversation
about
**Native
Bees**

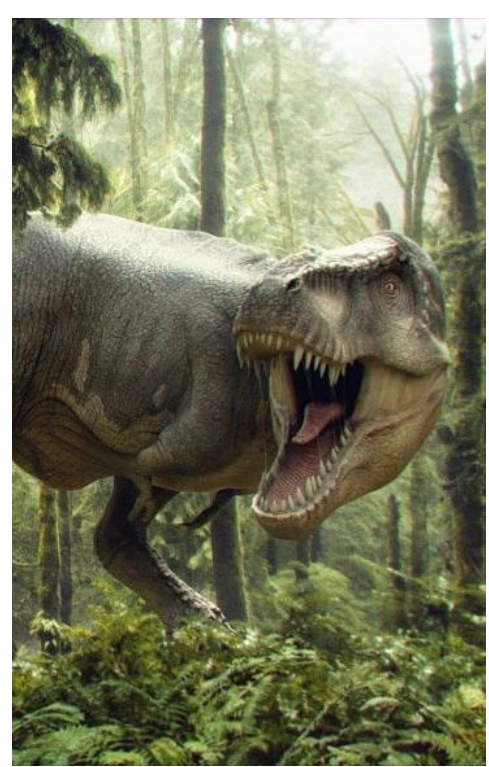


What's the buzz?

North America has over 4,400 described species of native bees* that pollinate wildflowers and crops. From the tiny *Perdita minima* to the substantial carpenter bee (*Xylocopa varipuncta*), these local pollinators are hard at work in the floral landscapes of gardens, farms, forests, grasslands and urban and wild lands. Unfortunately, several species of native bees are showing disturbing signs of decline. Learn more about

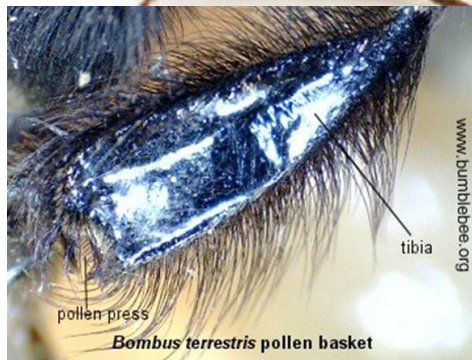
these colorful pollinators and how you can support them at www.pollinator.org

**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**

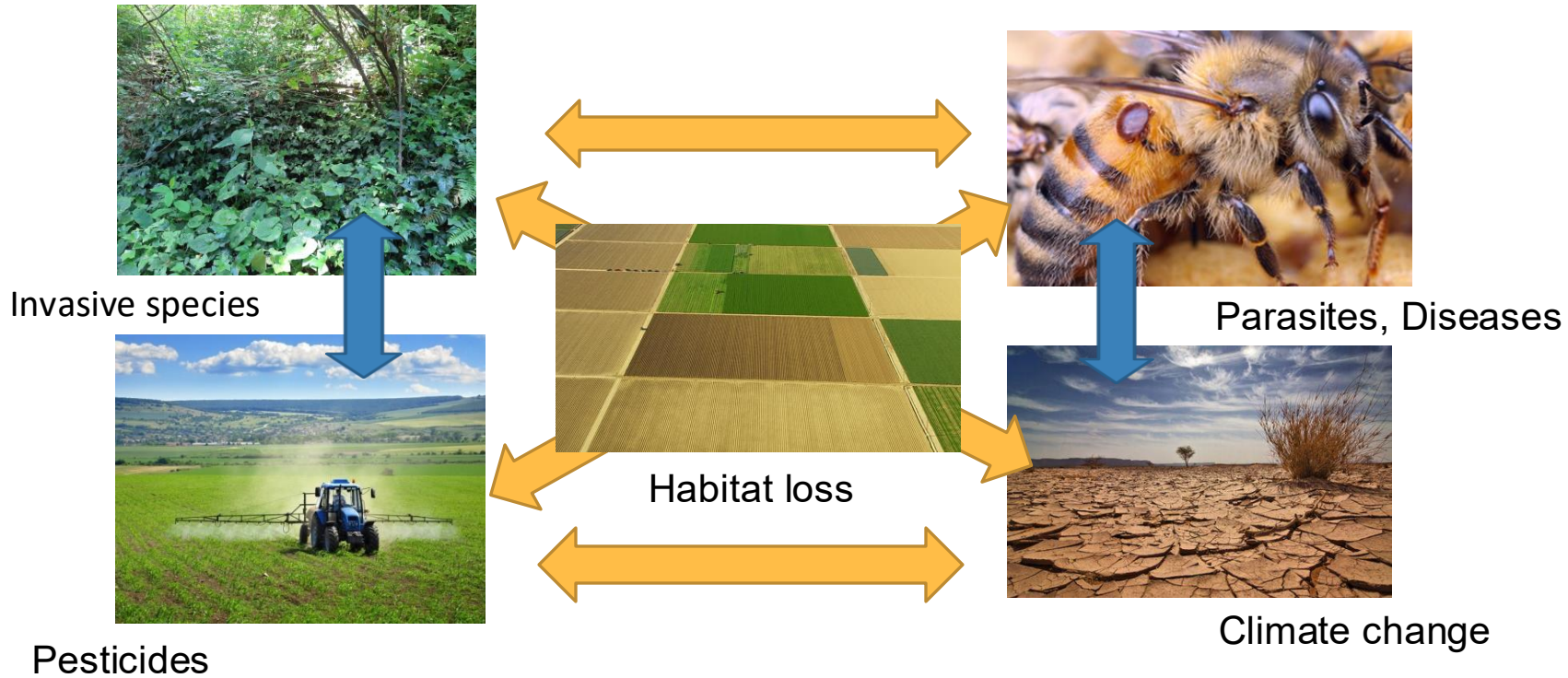
Pollen carrying hairs
Only bees have these
grocery bags!



**POLLINATOR
PARTNERSHIP**



Rabeling et al. 2013
Current Biology



So, what can you do to help?

1. Habitat!
2. Outreach/education
3. Support conservation





Solitary Bee Life Cycle



1. Egg



2. Larva



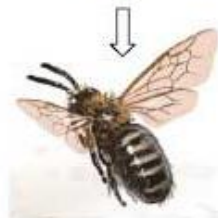
3. Pupa



6. Nest Building:
and Storing and Egg Laying



5. Foraging:
Collecting Pollen and Nectar
Pollination!



4. Adult

Illustrations: Steve Buchana
Modified by: Victoria Wojcik



Habitat for Pollinators



**POLLINATOR
PARTNERSHIP**

Habitat Elements

1. Nesting/overwinter habitat:

ground

scrubby/woody

cavity

2. Floral resources:

Native, non-invasive

Diverse

Continuous

Host

3. Pesticides:

no insecticides

limit others



Habitat Elements

1. Nesting/overwinter habitat:

ground

scrubby/woody

cavity

2. Floral resources:

Native, non-invasive

Diverse

Continuous

Host

3. Pesticides:

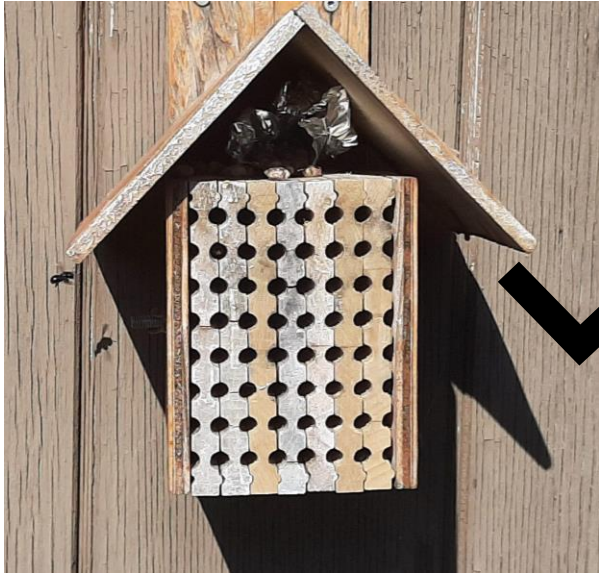
no insecticides

limit others





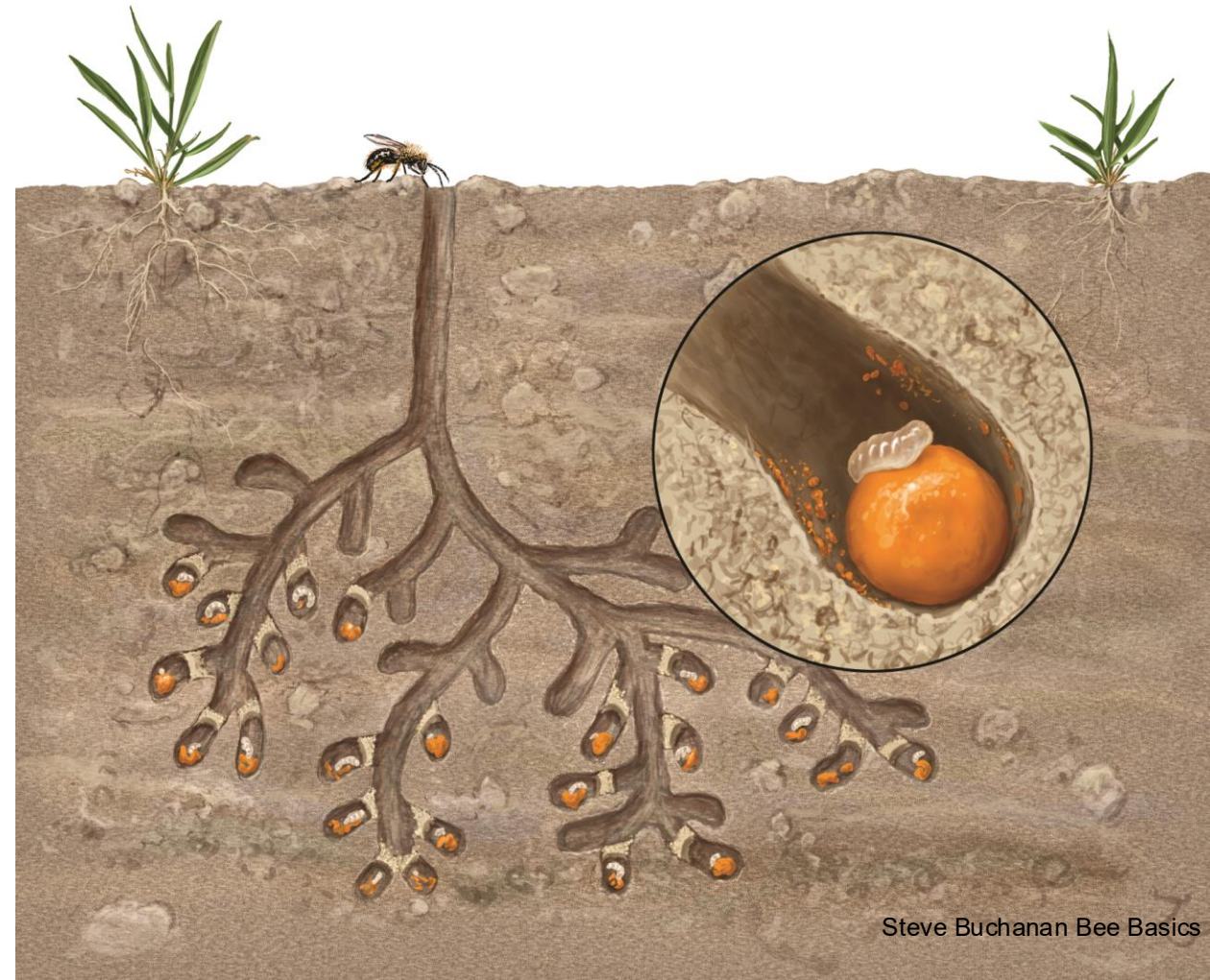




- Depth at least 15cm
- Width 8mm or less
- Secure
- CLEANABLE!



Bee Houses





**POLLINATOR
PARTNERSHIP**



Habitat Elements

Nesting/overwinter habitat:

ground

scrubby/woody

cavity

Floral resources:

Native, non-invasive

Diverse

Continuous

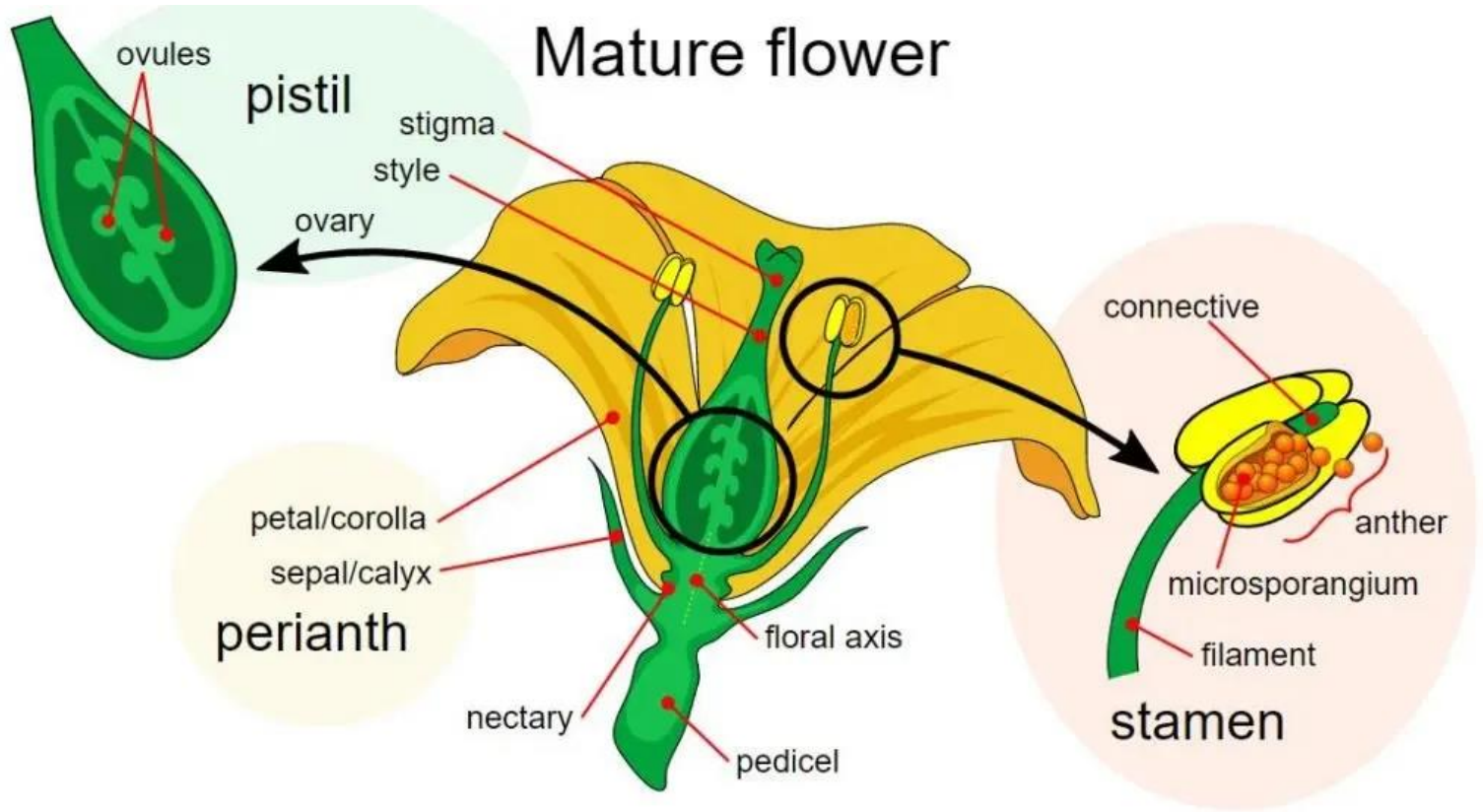
Host

Pesticides:

no insecticides

limit others







Selecting Plants to Support Pollinators

Selecting Plants to Support

Most of us enjoy the beauty of gardens in our yards and provide habitat for pollinators and other wildlife – from gardens and landscape plantings – all sizes are beneficial plants for your garden that will support pollinators and

Why Care About Pollinators?

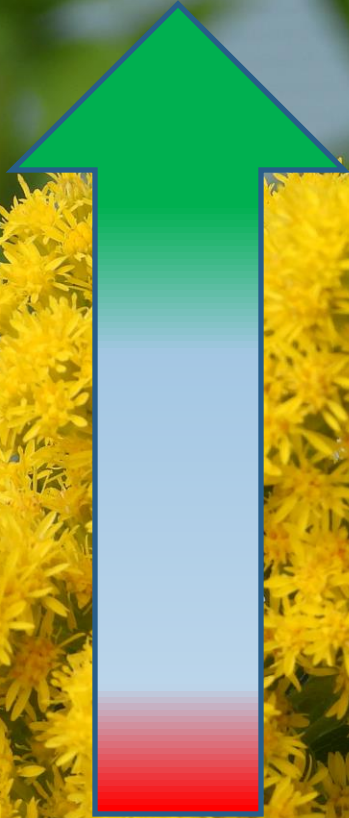
Pollination is the movement of pollen from male parts female parts of flowers to create seeds. This can be done by insects or animals. **Any animal that moves pollen from flower to flower is called a 'Pollinator'**

Over 80% of flowering plants rely on animal pollinators for reproduction. Pollinators feed on plant pollen and nectar and to raise their young, so plants and pollinators depend on each other. Seeds, nuts, fruits, and berries produced from plants are also used by a vast array of wildlife. Pollinators are affected by habitat loss – there are fewer areas for them to find flowers. About one third of the food we eat requires bees, birds, bats and other pollinators, therefore humans and other animals would suffer greatly if we lost our pollinators. But you can help! Planting plants that bees, butterflies and other pollinators need can help save pollinators and ensure a healthy environment for future generations.



**POLLINATOR
PARTNERSHIP**

Plant Selection for Pollinator Support



Native Plants

Local Natives

Natives

'Nativars'(?)

Non-native Plants

Non-invasive

Forage plants

Bred ornamentals

Invasive

Never plant invasive plants

Invasive can crowd out natives, reduce
diversity

Remove if possible

Check pollinator seed mixes

Check your local Invasive Species
Council



Never plant invasive plants

Invasive can crowd out natives, reduce
diversity

Remove if possible

Check pollinator seed mixes

Check your local Invasive Species
Council



Search online for plants that are invasive in your region (these are invasive in BC)



Common periwinkle



Bachelor's buttons



Queen Anne's lace



Butterfly bush



Oxeye daisy



Yellow archangel





Why use Native Plants?

- Help restore biological diversity (plants, wildlife etc.)
- Provide the best nutrition for native pollinators
- Promote respect for and support unique habitats in your region
- Promote respect for Indigenous Peoples and culture
- Increase effective size of surrounding habitat
- Teach us about nature
- Benefit future generations
- Reduce water usage, fertilizers, chemical pesticides, power mowers (noise, fuel, pollution)









Non-natives,
non-invasive

Photo example:
cover crops in
agriculture





Plant diversity (structural, bloom time)

Flower Traits	 Bees, wasps	 Beetles	 Butterflies	 Moths	 Flower flies	 Filth flies
Color	White, yellow, blue, ultraviolet	White, green	Bright red, purple	Red, purple, pink, white	white, yellow, ultraviolet	Pale, dark brown, purple
Nectar guides	Present	None	Present	None	Present	None
Odor	fresh, mild, pleasant	None, strongly fruity, or foul	Faint but fresh	Strong, sweet; most at night	Fresh, mild, pleasant	Putrid
Nectar	usually present	Sometimes present	Ample; deeply hidden	ample;; deeply hidden	Usually present	Usually absent
Pollen	Limited; often sticky, scented	Ample	Limited	Limited	Limited, often sticky, scented	Modest
Shape	Shallow, with landing platform; tubular	Large, bowl-shaped	Narrow tube with spur; wide landing pad	Regular; tubular without a tip	Shallow, with landing platform	Shallow, funnel-like, or complex with trap

Adapted from USDA-FS https://www.fs.fed.us/wildflowers/pollinators/What_is_pollination/syndromes.shtml

Pollination Syndromes

Succession

Successive blooms provide continuous floral resources

February

June



July

October







**POLLINATOR
PARTNERSHIP**

Plant material

ANNUALS

Whole plant dies at the end of the growing season

Reproduce from seed

Need bare ground for seed to germinate

Flower in first year from seed (stratification)

Seeds primarily, also plugs



PERENNIALS

Some vegetative parts survive and grow year to year (above ground– trees, shrubs, vines; herbaceous below ground roots, bulbs, corms)

Can reproduce from seeds too

From seed take 1-2 years min to bloom

From plugs/pots will flower right away



Plant material

SEEDS

Less expensive than plants

Cover larger areas

Full coverage areas

Filling in around plants

Timing critical



PLUGS/POTS

More expensive (increasing with size)

Immediate bloom

Precise placement options

Can take some time to fill in space

Larger planting window if water available



We are open 9am to 4pm Tuesday to Saturday!

Satinflower NURSERIES
native plants, seeds & consulting

Helping You Help Nature | We are located at 741 Hallburton Road in Stanich | Open Tuesday to Saturday 9 am to 4 pm
918.679.3439 info@satinflower.ca

home plants seeds wholesale consult about learn news contact faq

NATIVE PLANTS, SEEDS & CONSULTING
Inspiring and empowering people to connect with nature through native plants
Learn More

home plants seeds wholesale consult about learn news contact faq

Plants

Sort by: Alphabetically, A-Z

Filter Products

SEED SOWING TIME

- fall
- late summer/early fall
- spring
- winter

TYPE

- perennial
- annual
- evergreen
- partially evergreen
- deciduous

LIGHT

- shade
- partial
- sun

SOIL

- dry
- medium

Alaska Oniongrass *Milium adense*


Awl-fringed Sedge *Carex alpinus*

Baldhip Rose *Rosa greeneri*

Barestem Desert-parsley *Lomatium nudicaule*

Beach Fox *Ladyssis agnoscit*

Big-leaf Maple *Acer macrophyllum*



How do I find native pollinator plants?

- google local native nurseries
- look for native plants at regular plant stores (ask for native pollinator plants!)
- online vetted distributor (e.g. Stover Seed)

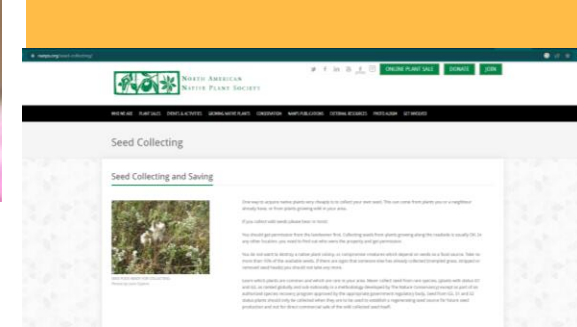


Other options

Plant/seed swap with other native plant enthusiasts from your own gardens (and communities)

Larger public/private lands: Harvest and clean seed

Salvage plants development areas



WATCH PROJECT PROTOCOL OVERVIEW WEBINAR:



Habitat Elements

1. Nesting/overwinter habitat:

ground
scrubby/woody
cavity

2. Floral resources:

Native, non-invasive
Diverse
Continuous
Host

3. Pesticides:

no insecticides
limit others







PROTECT POLLINATORS READ PESTICIDE LABELS


Four steps to reading a pesticide label to reduce risk to pollinating insects


1. OPEN THE LABEL.
STEP 1 - See if product is toxic and has more than 8 hour residual contact toxicity in the **ENVIRONMENTAL HAZARDS** statement.
STEP 2 - Look for general and crop-specific directions under **DIRECTIONS FOR USE**.

2. BEE TOXIC PESTICIDES will be indicated by the phrase **"TOXIC"** or **"HIGHLY TOXIC TO BEES"**. If toxic:

 → 
don't spray when in bloom wait until over 80% of petals fall

3. Some bee-toxic pesticides BREAK DOWN IN A FEW HOURS. Learn if these pesticides can be applied at bloom in the evening:

 **1. "FORAGING" or "VISITING"** = remains toxic for more than 8 hours. **DON'T APPLY TO FLOWERING PLANTS!**

 **2. "ACTIVELY FORAGING" or "ACTIVELY VISITING"** = remains toxic for less than 8 hours **ONLY APPLY IN THE EVENING WHEN BEES ARE NOT ACTIVE!**

ENVIRONMENTAL HAZARDS
This pesticide is toxic to mammals, birds, fish and aquatic invertebrates.

DIRECTIONS FOR USE
Protection of Pollinators
APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER POLLINATING INSECTS.

Tree Nuts (Crop Group 14-12)

Pest	(oz/acre)
Almonds	0.75-1.5 @0.023-0.047 lb/acre
San Jose scale	2.75 @0.086 lb/acre

Advisory Pollinator Statement: Notify known beekeepers within 1 mile of the treatment area 48 hours before the product is applied. The RT25 for this product is less than or equal to 3 hours.

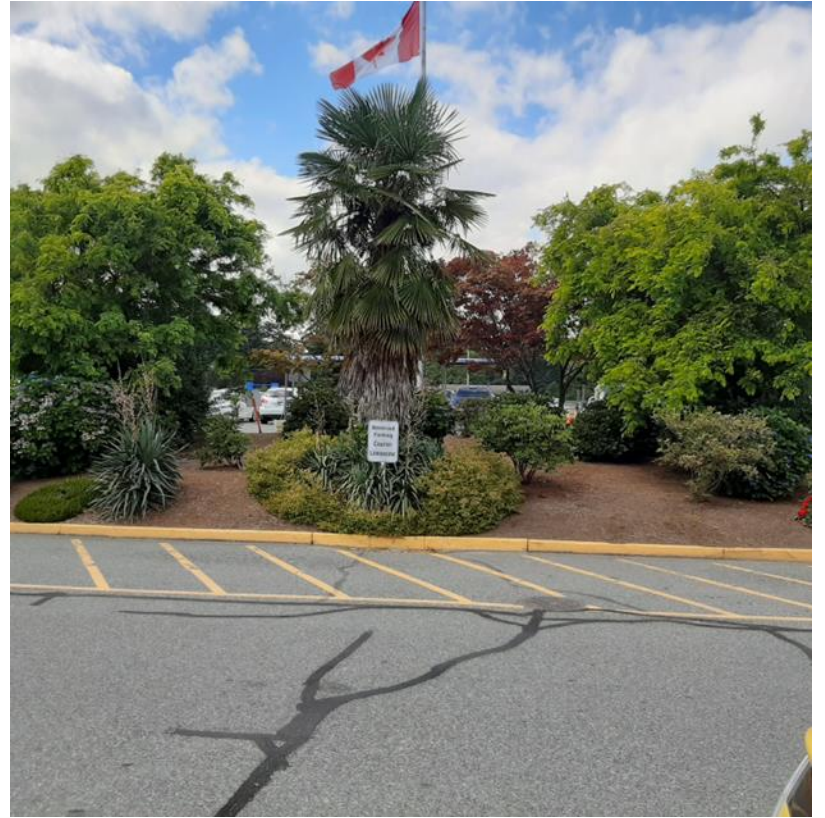
Restrictions:
Do not apply this product any time between 3 days prior to bloom and until petal fall.

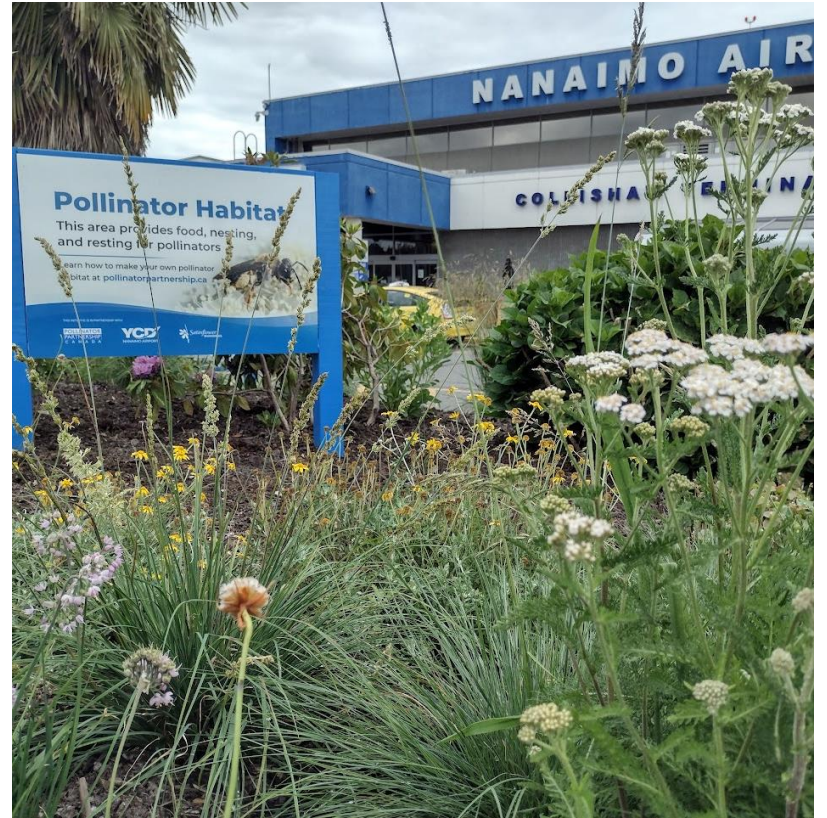
4. GENERAL AND CROP-SPECIFIC USE DIRECTIONS
Newer labels have **additional precautions** for using products around honey bees. Here you will find what practices to follow to keep bees safe and/or **restrictions around whether a pesticide can be applied around crop bloom time**. Instructions may apply to all crops, or include **crop-specific restrictions**. The label may also specify a value **RT25**, a measure of the time that field weathered residues remain toxic to bees on contact with foliage.

www.pollinator.org/pesticide-education

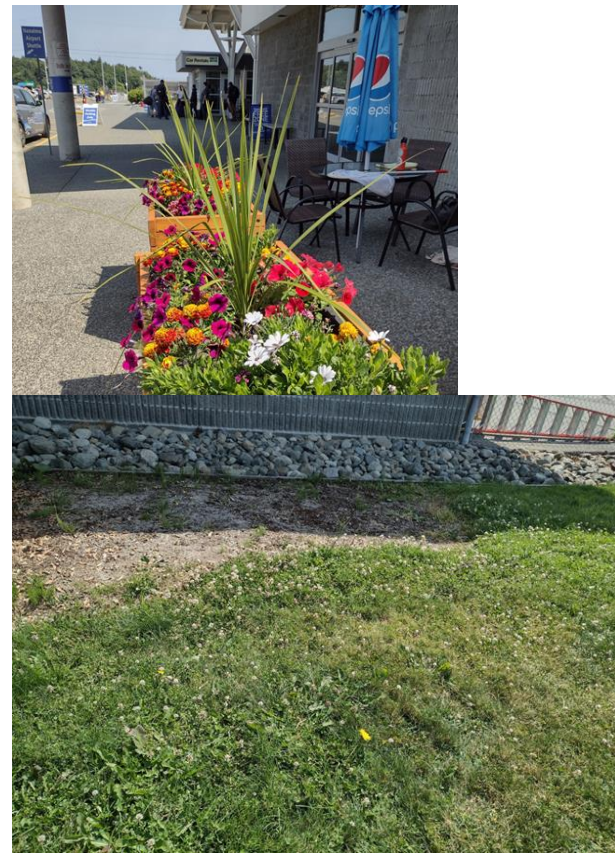
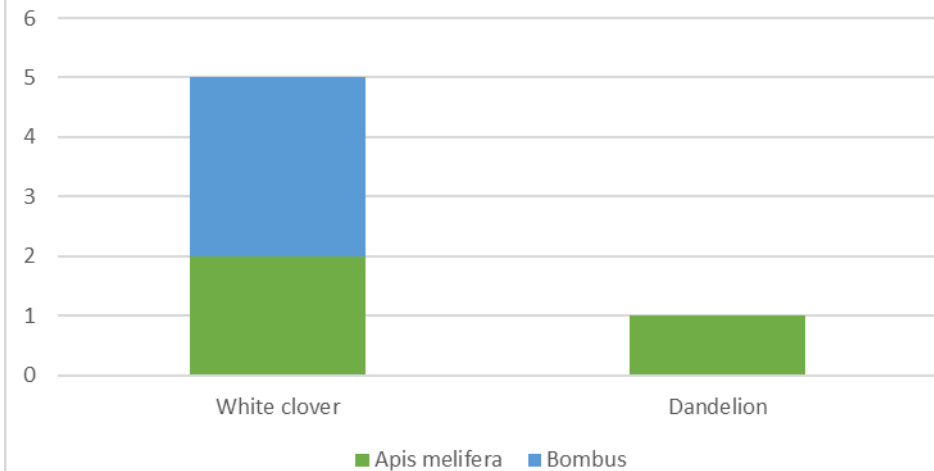
Graphic by Iris Kormann and Andony Melathopoulos - Oregon State University; Rose Kachadoorian and Gilbert Uribe - Oregon Department of Agriculture
Text on reverse of card by the NAPPC Pollinator Health Task Force

**POLLINATOR
PARTNERSHIP**

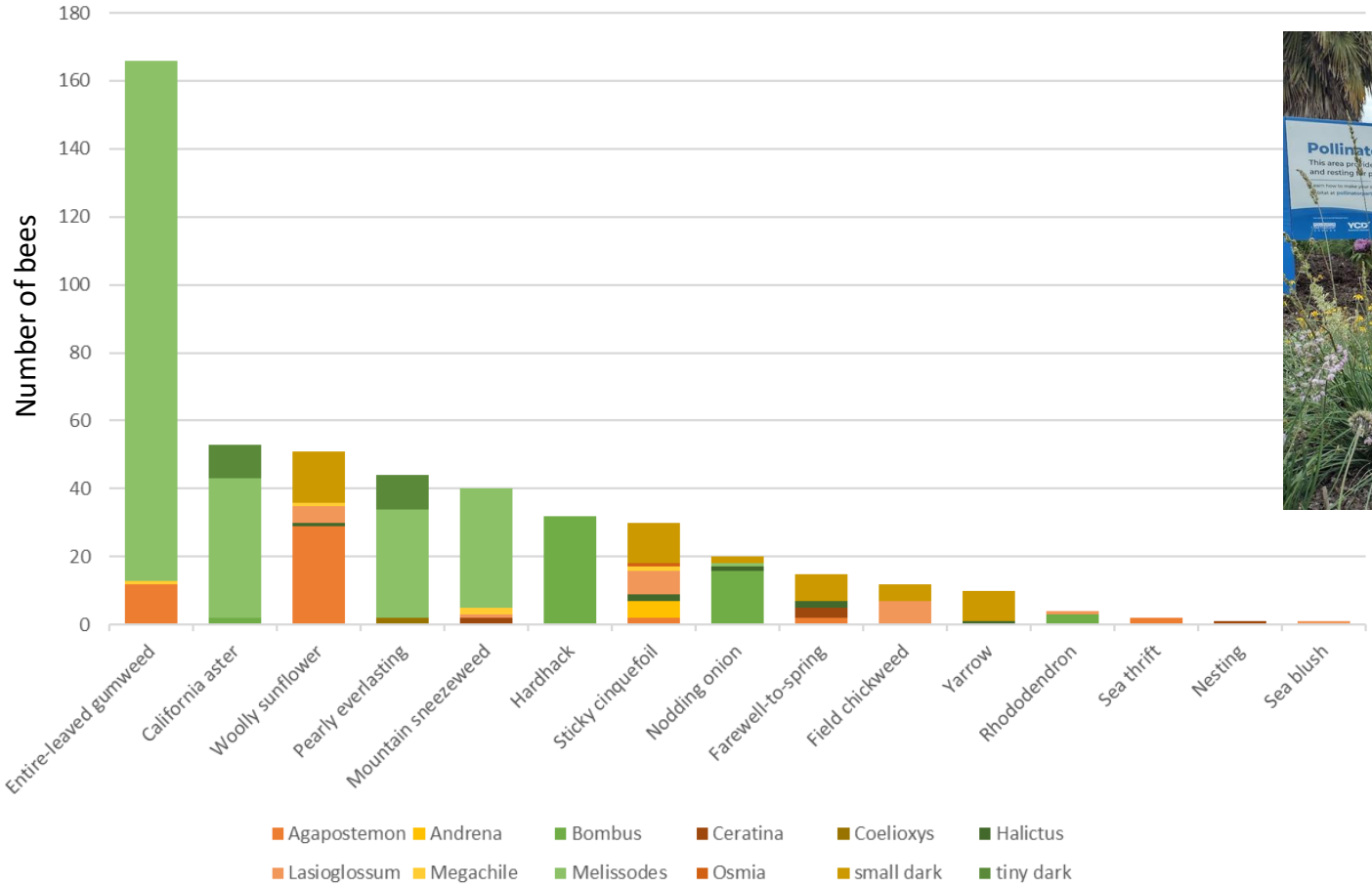




Bees Nanaimo Airport Ornamental Gardens 2023



Native Bees Nanaimo Airport Pollinator Garden 2023





Pollinators are Essential to Life on Earth

YCD Nanaimo Airport is leading the way to help
create a better world for pollinators and people

What's up with these bees?

Data

Planting Guide

Environmental Impact



THIS INITIATIVE IS IN PARTNERSHIP WITH



**POLLINATOR
PARTNERSHIP**



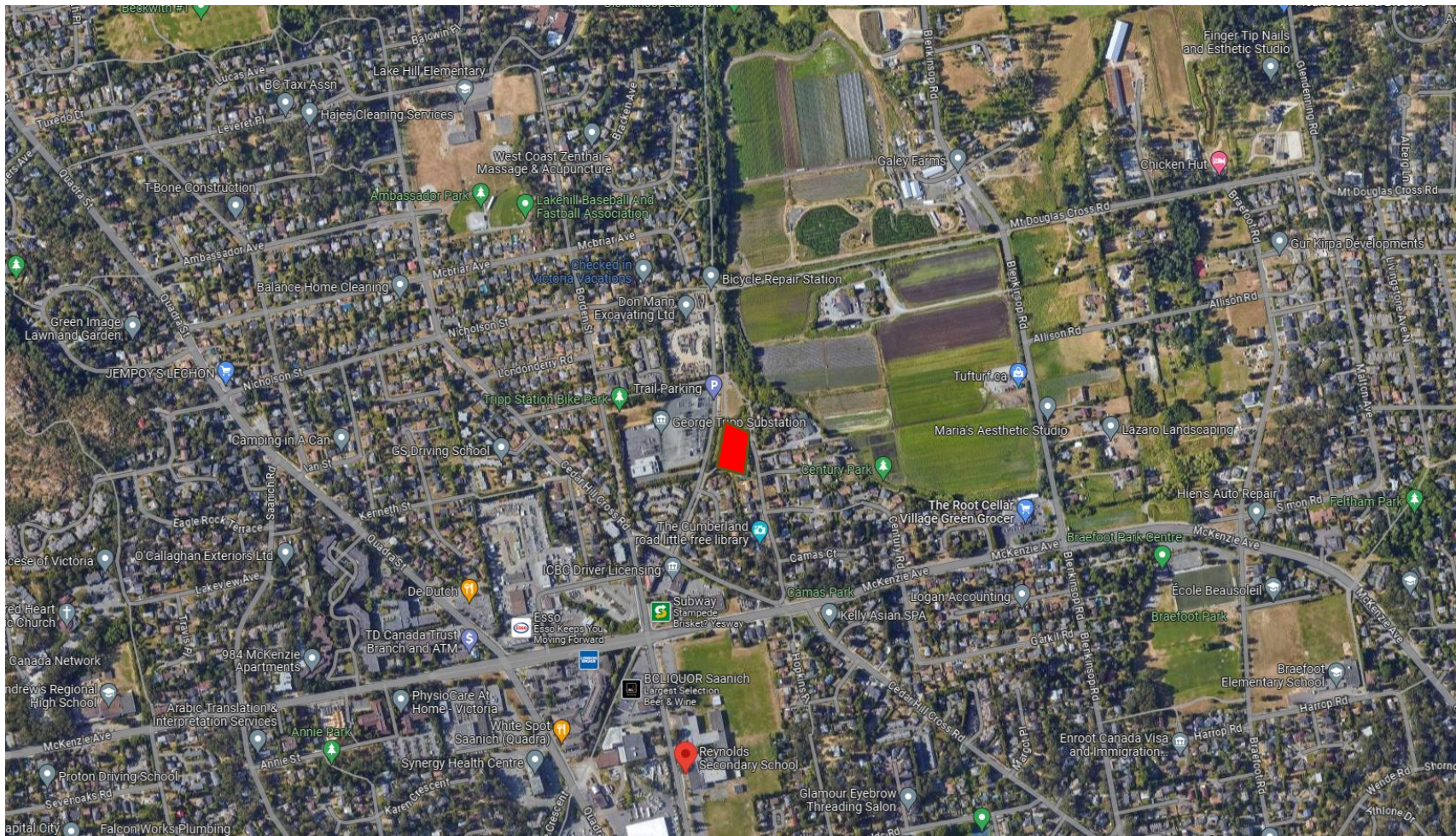
Streams
Peninsula



Satinflower
NURSERIES
native plants, seeds & consulting

**POLLINATOR
PARTNERSHIP**





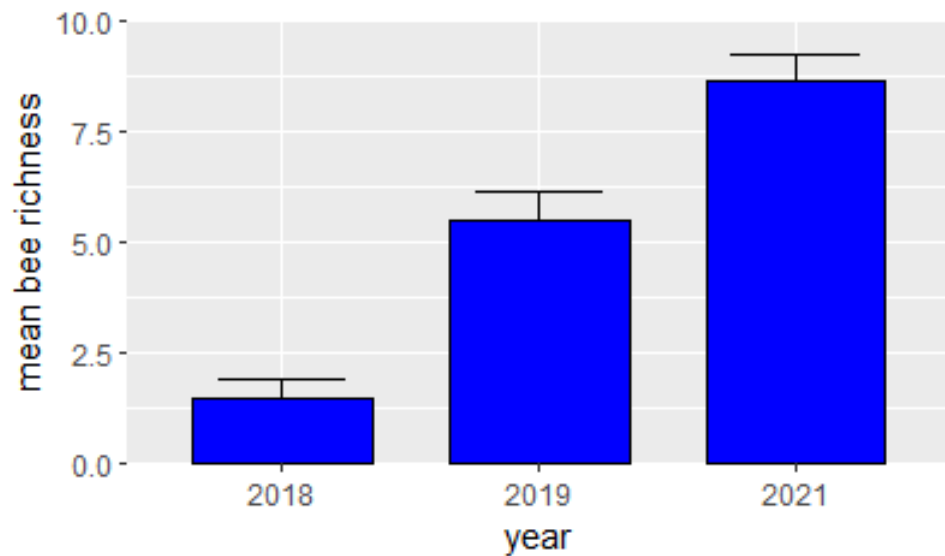
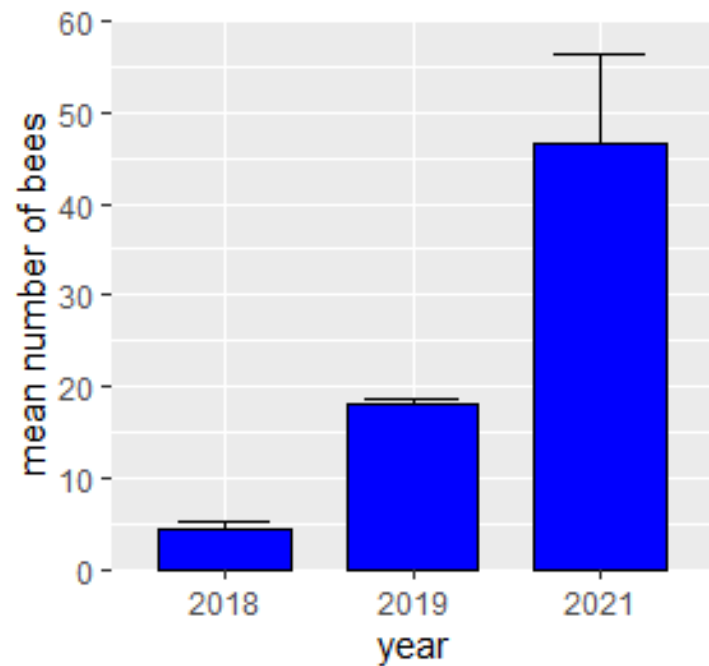


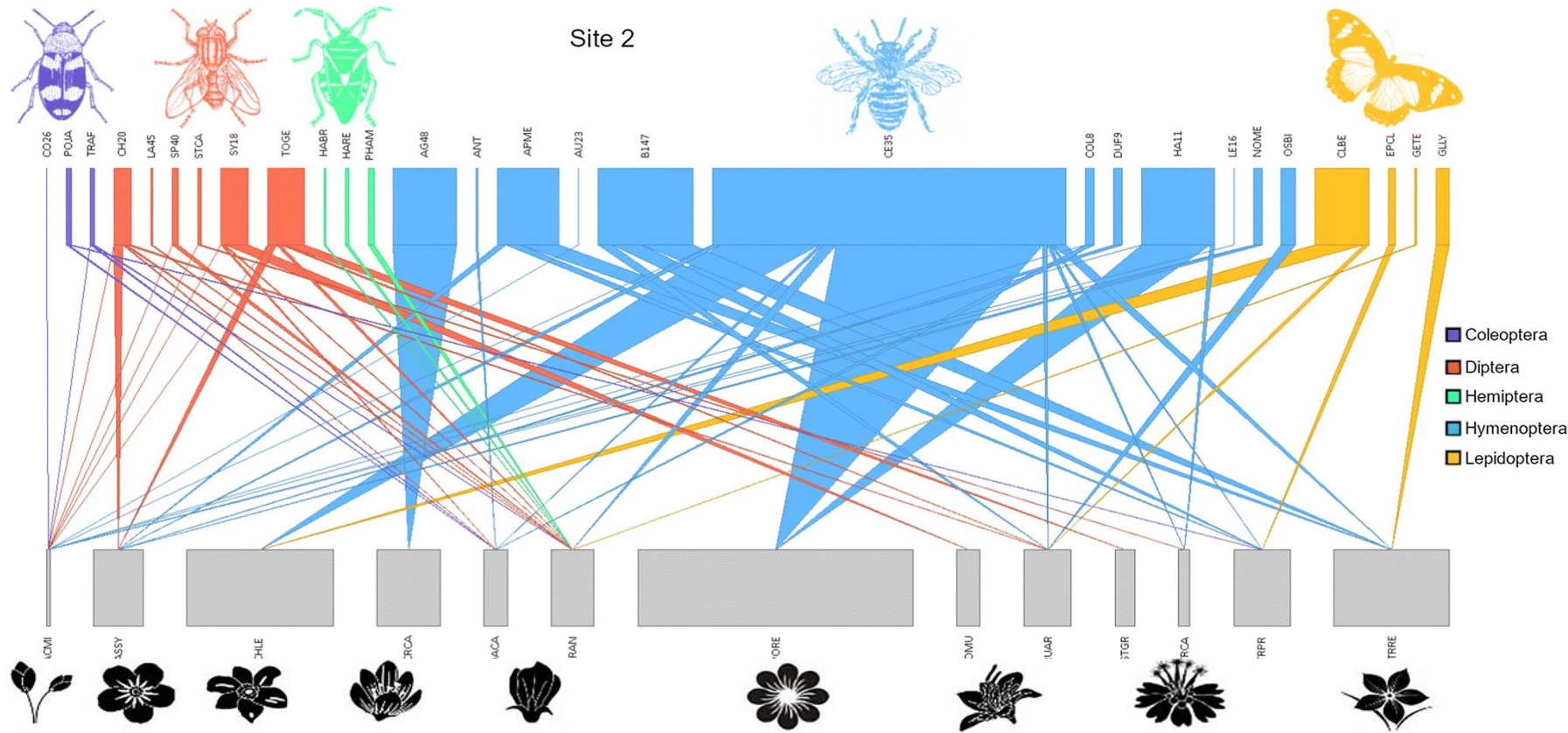


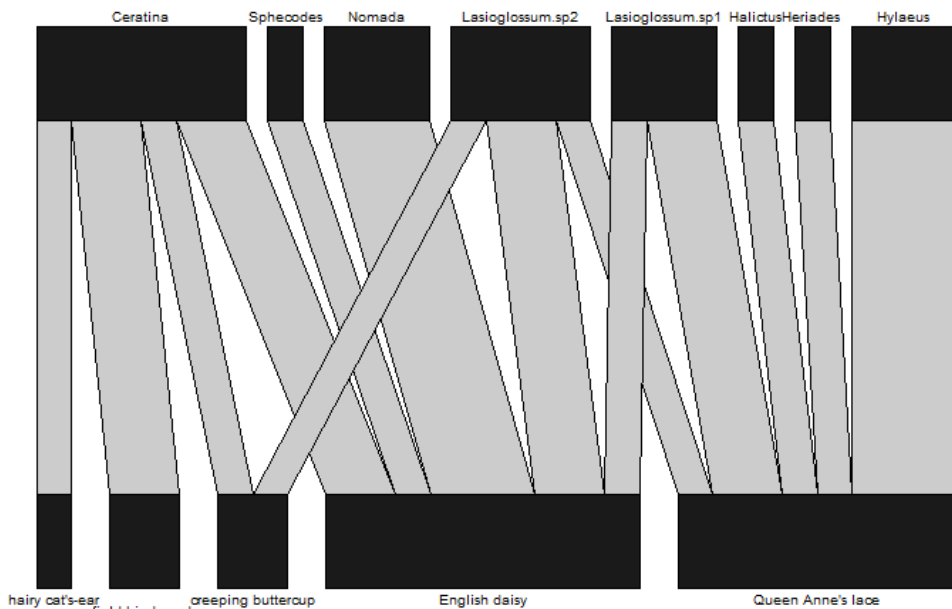


**POLLINATOR
PARTNERSHIP**









**POLLINATOR
PARTNERSHIP**

