Pollinator Steward Certification



A PROGRAM OF POLLINATOR PARTNERSHIP

Module 6: Identification and Monitoring

Tuesday, April 1st, 2025

Anthony Colangelo Pollinator Partnership

Lora Morandin Pollinator Partnership

> www.pollinator.org stewards@pollinator.org



Housekeeping:

- Recordings will be shared on the Course Information page and will be available until December 31st, 2025
- Closed captioning is available enable in your controls.
- Please put questions in the Q&A box; UPVOTE questions you like!
- Questions for panelists will be answered at the end of the session.
- Contact <u>stewards@pollinator.org</u> for registration issues, questions, etc.
- Engage in respect and kindness with each other in the chat.
- We suggest that you write down in point form or 1-2 sentences the key takeaways from each training while you are attending live.





Course Information Page:

The Course Information page will be your homebase for module recordings, updates, and program resources. Login to the Course Information page using the following username and password:

website: https://www.pollinator.org/psc/course-info

username: PollinatorSteward

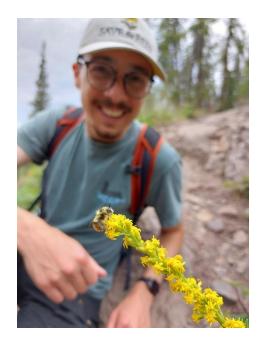
password: psc2025

Please do not share the username and password as this page is only for registered participants of the 2025 Pollinator Steward Certification program.





Tonight's Speakers!



Anthony Colangelo
Outreach and Education Specialist
Pollinator Partnership



Lora Morandin, PhD
Associate Director
Pollinator Partnership













What can we monitor?







PLANT ESTABLISHMENT



PUBLIC IMPRESSIONS







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Pollinator Observation Data Sheet SAMPLE

Site			Temp	
Date		,	Wind	
Observer			Sun	
Start time	End Time	<u> </u>	Section #	

Flower type	Wasp	Butterfly	Beetle	Fly	Honey Bee	Native Bee	Bumble Bee	Hairy leg bee	Hairy belly bee	Other bee	UFO	Notes



BEE IDENTIFICATION GUIDE

Bees are beneficial insects that pollinate flowering plants by transferring pollen from one flower to another. This is important for plant reproduction and food production. In fact, pollinators are responsible for 1 out of every 3 bites of food you take. While the honey bee gets most of the credit for providing pollination. there are actually about 4000 species of bees in North America!





All bees have three body segments, a head, thorax, and abdomen. The head is where large multi-faceted eyes, long slender antennae, and mouthparts are found. The thorax is the middle segment where the wings and legs attach. Last is the abdomen, which for female bees ends in a stinger for some types of bees...

Special pollen-carrying hairs unique to female bees resemble dense broom bristles, and are commonly found on the rear legs or the underside of the abdomen. Some carry pollen in an almost hairless, flattened pollen basket on the rear legs.

This card provides key features needed to identify 10 types of bees found in home landscapes. The approxi-









Additional ID features that may be seen with the aid of a hand lens.



loney Bee

ight to dark brown body with pale and dark hairs in bands on abdomen. Pollen basket present. Abdomen barrel-shaped. Head heart-shaped.



Honey bees have hairy eyes!



Leaf Cutting Bee

Megachile spp.

Black body with light or dark hairs. Pollen-carrying hairs beneath abdomen. Head is as broad as the thorax with large mouthparts used to cut

Solitary, but nest in aggregations natural or man-made.

which are used to line their nests!



Bumble Bee Bombus spp.

Black body, extensively covered with black and yellow hairs on all body segments. Pollen basket present. Robust body. Long face.

Colonies often nest underground,

Bumble bees pollinate in cool,



Large Carpenter Bee

Xylocopa spp.

Black body with light or dark hairs. Pollen-carrying hairs on rear legs. Similar body shape to bumble bee, but abdomen shiny and mostly lacking hair. Round face.







Sweat Bee

Halictidae

Two forms: 1) bright metallic green or 2) black/brown with light bands of hair on the abdomen, Pollen-carrying nairs on rear legs. Slender body.



Nest in the soil, solitary to

Mason Bee

Squash Bee

Osmia spp.

Some are attracted to the salt in your sweat!

Two forms: 1) black body covered in

green-blue and less hairy. Pollen-car-

rying hairs beneath abdomen. Head

Solitary, but nest in aggregations

in above-ground pre-existing holes.

as broad as thorax, robust body.

Callect mud to line their nests!

Peponapis pruinosa 11-14mm

Brown body covered in dense light

hair on the thorax and in bands on

abdomen. Pollen-carrying hairs on

Ground nesting, mostly near

Only collects pollen from

squash/pumpkin plants!

squash and pumpkin fields.

have protruding "nose".

rear legs. Long antennae. Appear to

pale hairs or 2) dull metallic



Small Carpenter Bee Ceratina spp.

Dark blue-green and shiny, appearing hairless on all body segments. Pollen-carrying hairs on rear legs. Slender with shield-shaped abdomen.



Solitary, nest in twigs and stems.

Pale vellow marks on face. Females upside-down "T"!



Mining Bee Andrena spp.

Black body, with black, yellow, and sometimes rust-colored hair on most of the body. Pollen is carried on the hairy back legs.



Shallow depressions between their eyes and antennae hold short



Long Horned Bee Melissodes spp.

Black body covered in dense pale or dark hairs. Pollen-carrying hairs on rear legs may be very long. Stout-bodied, Males have extremely long antennae.

nesters.

Some are especially attracted to



Some insects that you will see visiting flowers are bee mimics. While they are not bees, they may resemble them in appearance.

Common bee mimics are flies and wasps. A fly has only 2 wings, while a bee has 4. Flies slender like a bee, but short and stubby or feathery. Some flies are easy to spot

A wasp has 4 wings, chewing mouthparts, a sting, and long antennae like a bee. Wasps are smooth and almost hairless, while bees are generally covered with hair on their bodies and legs. Wasps have slender waists and they will never have pollen-carrying A final clue: If an insect is eating another insect, it may be a fly or wasp. Bees are

Now that you are a bee and bee mimic expert, try your hand at identifying these



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Landscape Survey Methods Transects and quadrats

Lists and distribution

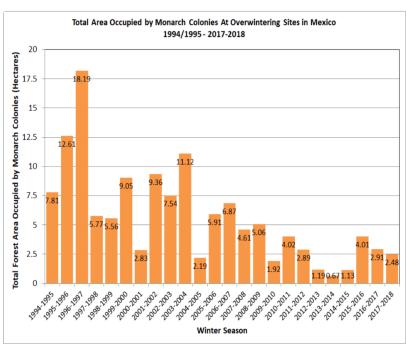
Species presence, dominancy, frequency, density



Long Term Data: Monarch Butterfly Overwintering Counts



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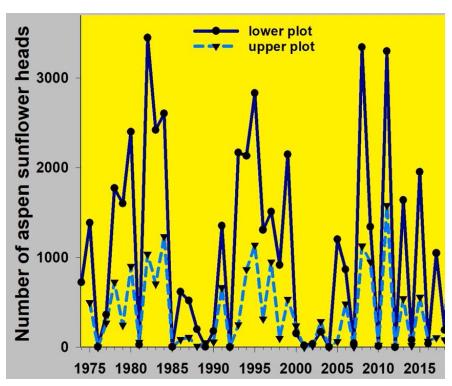
Data from 1994-2003 were collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Protected Natural Areas (CONANP) in Mexico. Data from 2004-2018 were collected by the WWF-Teicel Alillance, in coordination with the Directorate of the MBBR, 2000-01 population number as reported by Garcia-Serrano et. al (The Monarch Butterfly: Biology and Conservation, 2004)



Long Term Data: Sunflowers and Frost



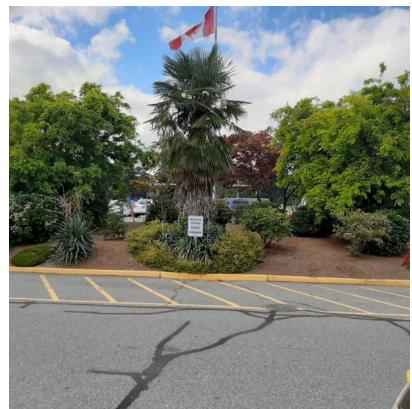




Courtesy of David Inouye and the Rocky Mountain Biological Lab

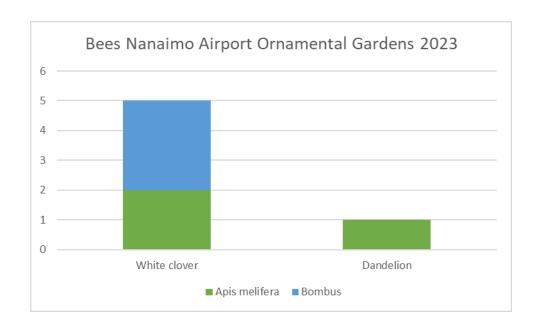




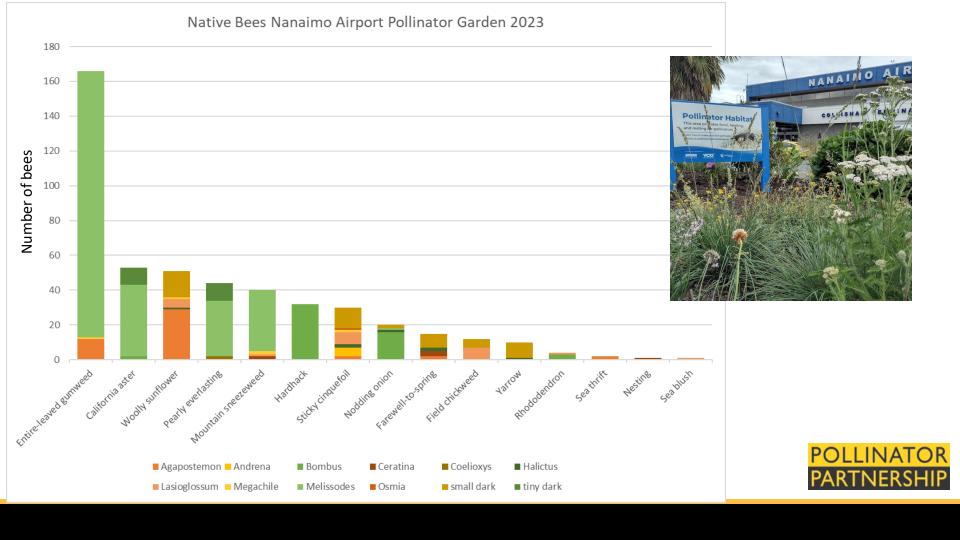




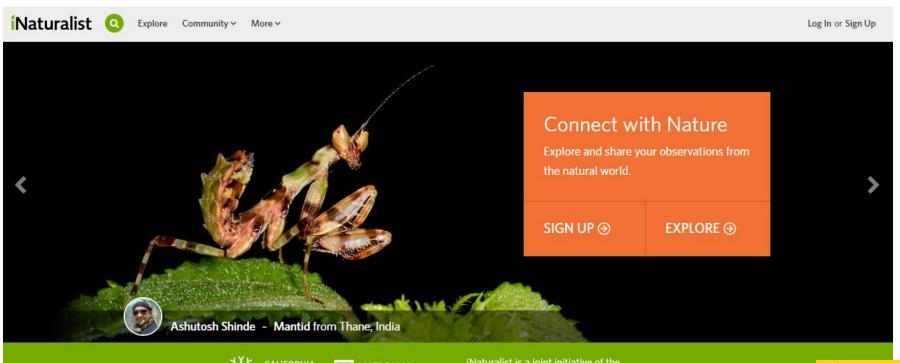








Community Science Programs

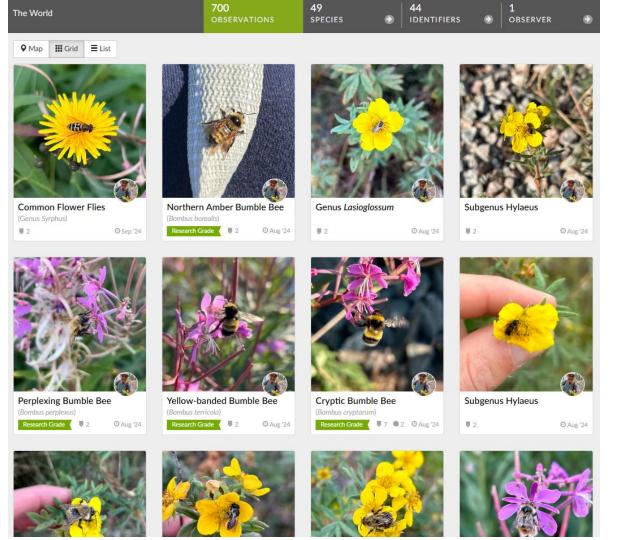


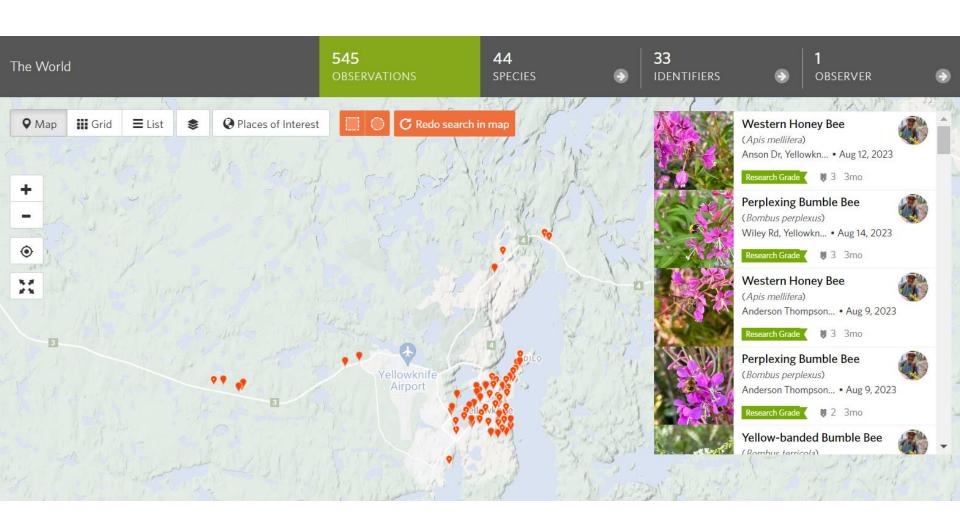




iNaturalist is a joint initiative of the California Academy of Sciences and the National Geographic Society.









Orange-Legged Drone Fly

(Eristalis flavipes)



Golden-Belted Bumble Bee

(Bombus kirbiellus)



Orange-Rumped Bumble Bee

(Bombus melanopygus)



Ashton's Cuckoo Bumble Bee

(Bombus ashtoni)







Fireweed (Chamaenerion angustifolium)



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)

Other Bees Observed

Masked Bee (Genus *Hylaeus*) Bumble Bee-like Digger Bee (*Anthophora bomboides*) Leafcutter Bees (Genus *Megachile*)

Other Pollinators Observed

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

Prickly Wild Rose (Rosa acicularis)



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)
Yellow-Fronted Bumble Bee (Bombus flavifrons)

Other Bees Observed

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

Other Pollinators Observed

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

Shrubby Cinquefoil (Dasiphora fruticosa)



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)

Other Bees Observed

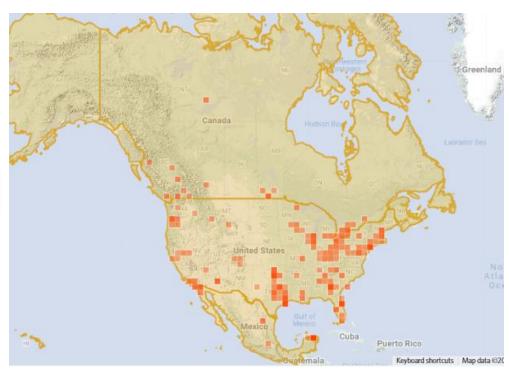
Mining Bees (Genus Andrena)
Masked Bee (Genus Hylaeus)
Leafcutter Bees (Genus Megachile)

Other Pollinators Observed

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

Pollinator Week Bioblitz







Community Science Programs





Community Monitoring Programs

- https://www.bumblebeewatch.org/
- iNaturalist regional databases, project specific monitoring, checked by other local experts
- www.ebird.org
- https://www.e-butterfly.org/
- https://nationalmothweek.org/how-tosubmit-data-2/
- BAMONA https://www.butterfliesandmoths.org/



Wrap Up and Next Session:

- Recordings and resources will be shared on the Course Information page by next week.
- Tuesday, April 8th, 4 pm PST/7pm EST
 - Module 7: Expand Your Impact! This will be our final module.
 - More info on the Step 1 and Step 2 Forms will be discussed next week.



