



Pollinator Identification and Monitoring

PSC 2026

Lora Morandin, PhD
Associate Director

Anthony Colangelo
Education Manager

www.pollinator.org
info@pollinator.org



**POLLINATOR
PARTNERSHIP**

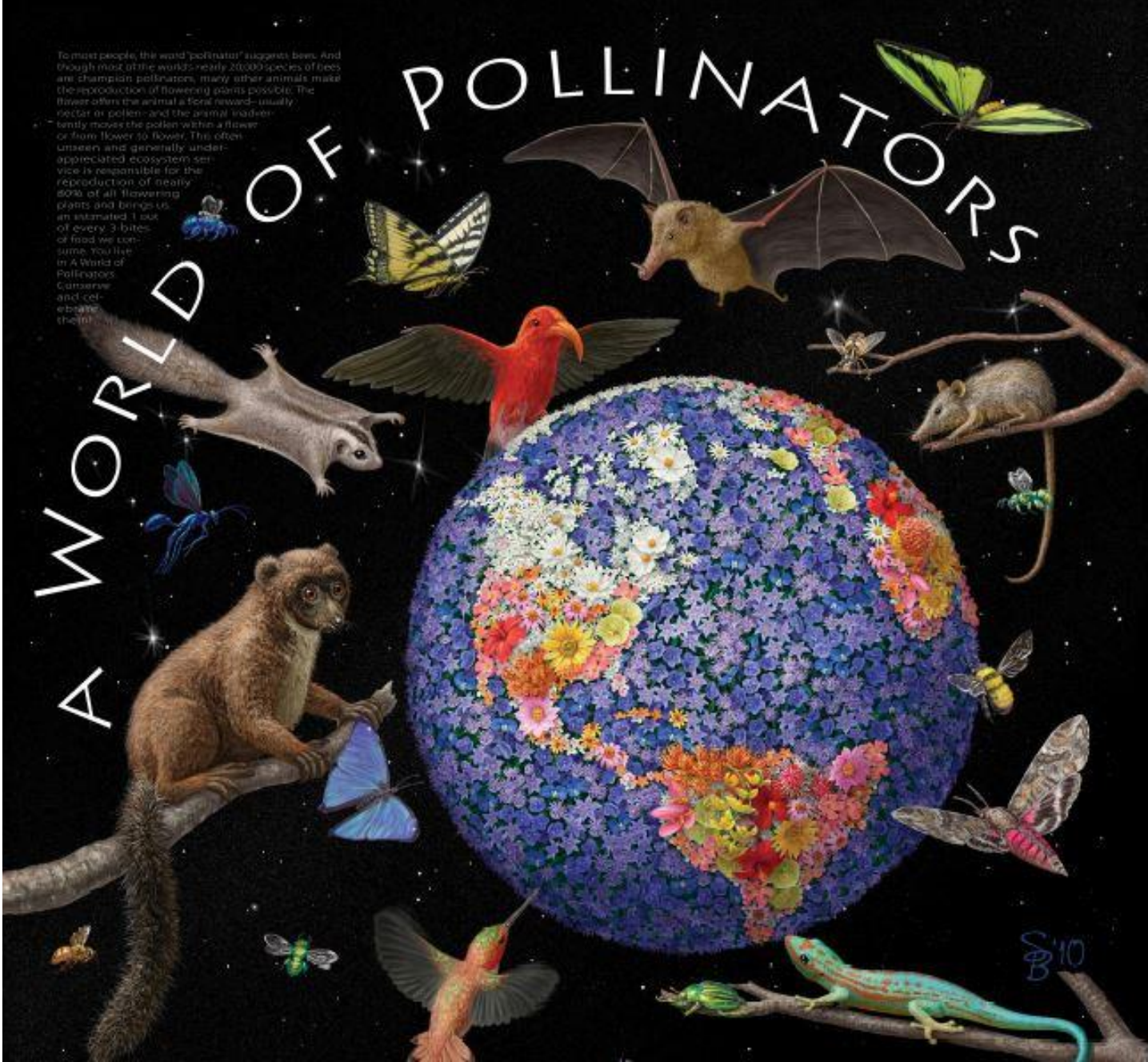
Pollinator ID and Monitoring (~60min)

- Distinguishing major groups
- Bee families
- Bee groups for monitoring
- Bee ID resources
- Monitoring with Anthony

**POLLINATOR
PARTNERSHIP**



To most people, the word "pollinator" suggests bees. And though most of the world's nearly 20,000 species of bees are champion pollinators, many other animals make the reproduction of flowering plants possible. The flowers offer the animal a food reward—usually nectar or pollen—and the animal inadvertently moves the pollen within a flower or from flower to flower. This often unseen and generally underappreciated ecosystem service is responsible for the reproduction of nearly 80% of all flowering plants and brings us an estimated 1 out of every 3 bites of food we consume. You live in A World of Pollinators. Conserve and celebrate them!



**POLLINATOR
PARTNERSHIP**



A Bee or Not a Bee
That's easy!



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**



**POLLINATOR
PARTNERSHIP**

A group of diverse people are silhouetted against a bright, hazy sky, likely at sunset or sunrise. They are captured in various dynamic poses of celebration and movement, including running, jumping, and raising their arms in triumph. The overall mood is one of joy and achievement.

Results!

**POLLINATOR
PARTNERSHIP**

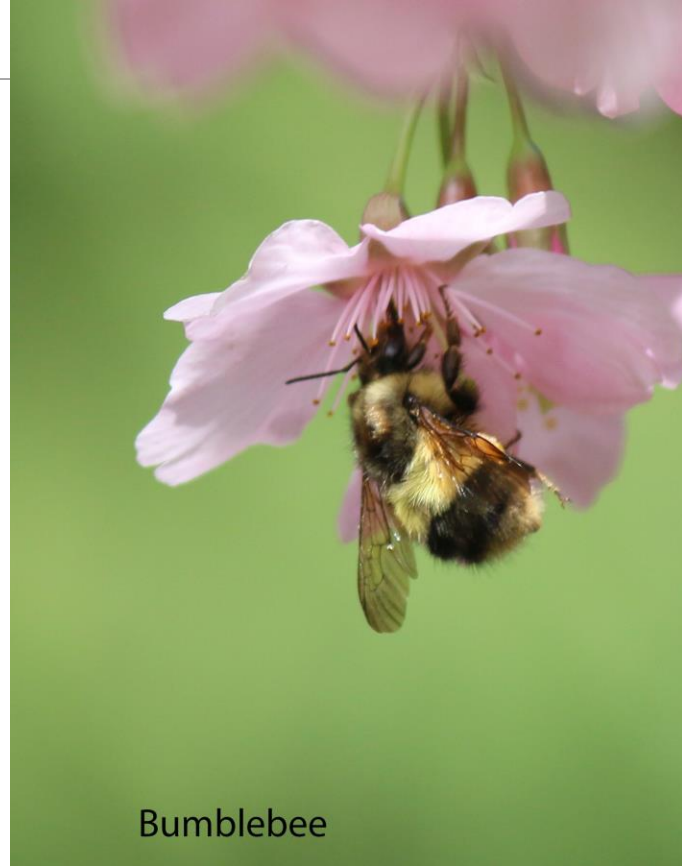
Why are there WannaBees?

Batesian mimicry



Batesian mimicry

- A harmless species that evolved to imitate the warning signals of a harmful species
- Named after the naturalist Henry Walter Bates worked on butterflies in Brazil



Bumblebee



Syrphid Fly

Anthony Westkamper
<https://m.northcoastjournal.com/NewsBlog/archives/2015/04/05/humbug-mimics>

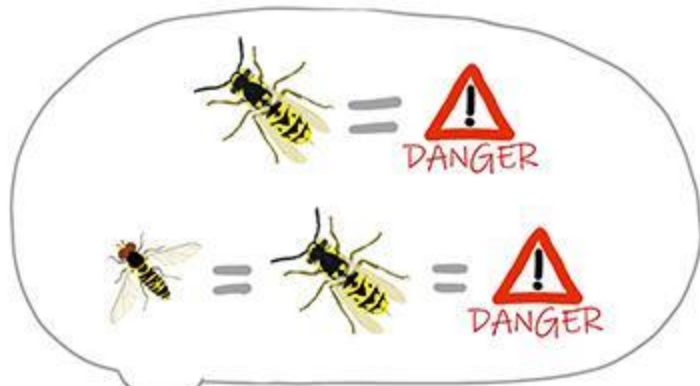
**POLLINATOR
PARTNERSHIP**



The model



The mimic



The dupe

<https://m.espacepourlavie.ca/blogue/en/a-sheep-wolf-s-clothing-batesian-mimicry-insects>



coral snake

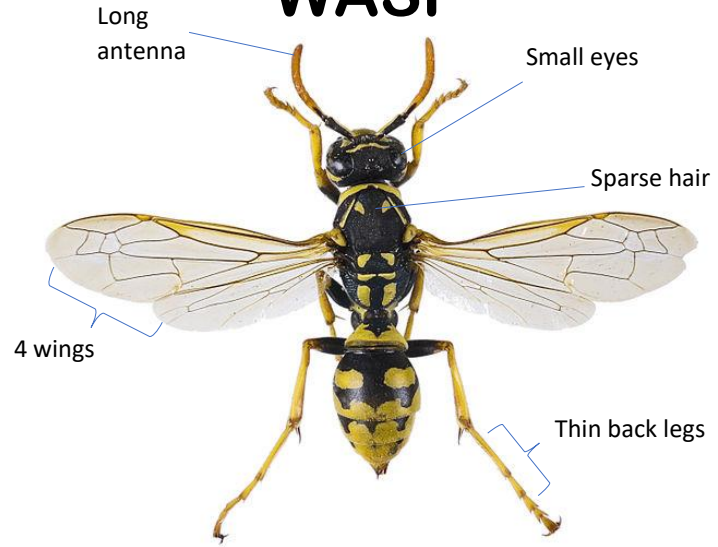


king snake

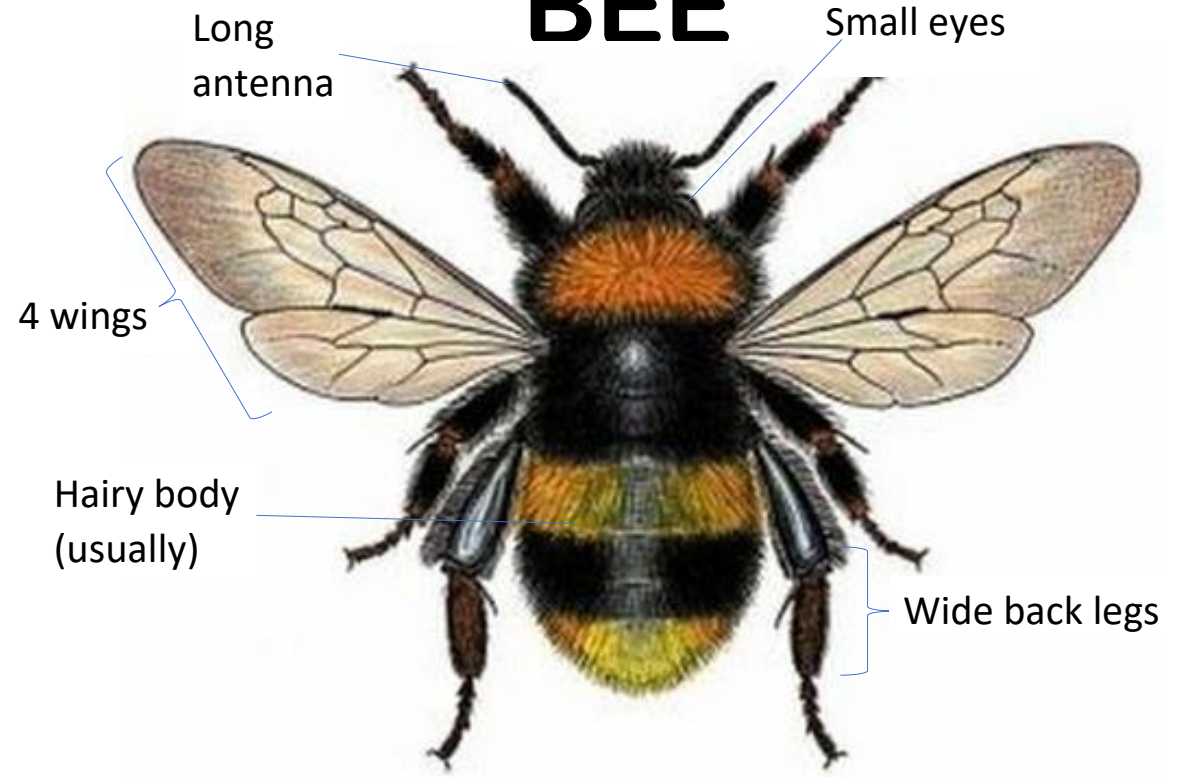


**POLLINATOR
PARTNERSHIP**

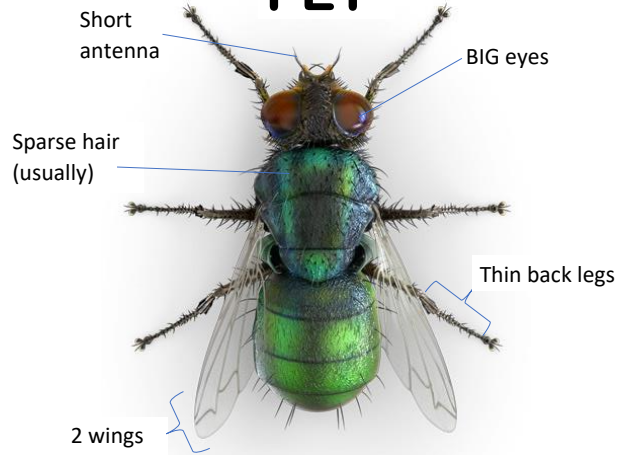
WASP



BEE



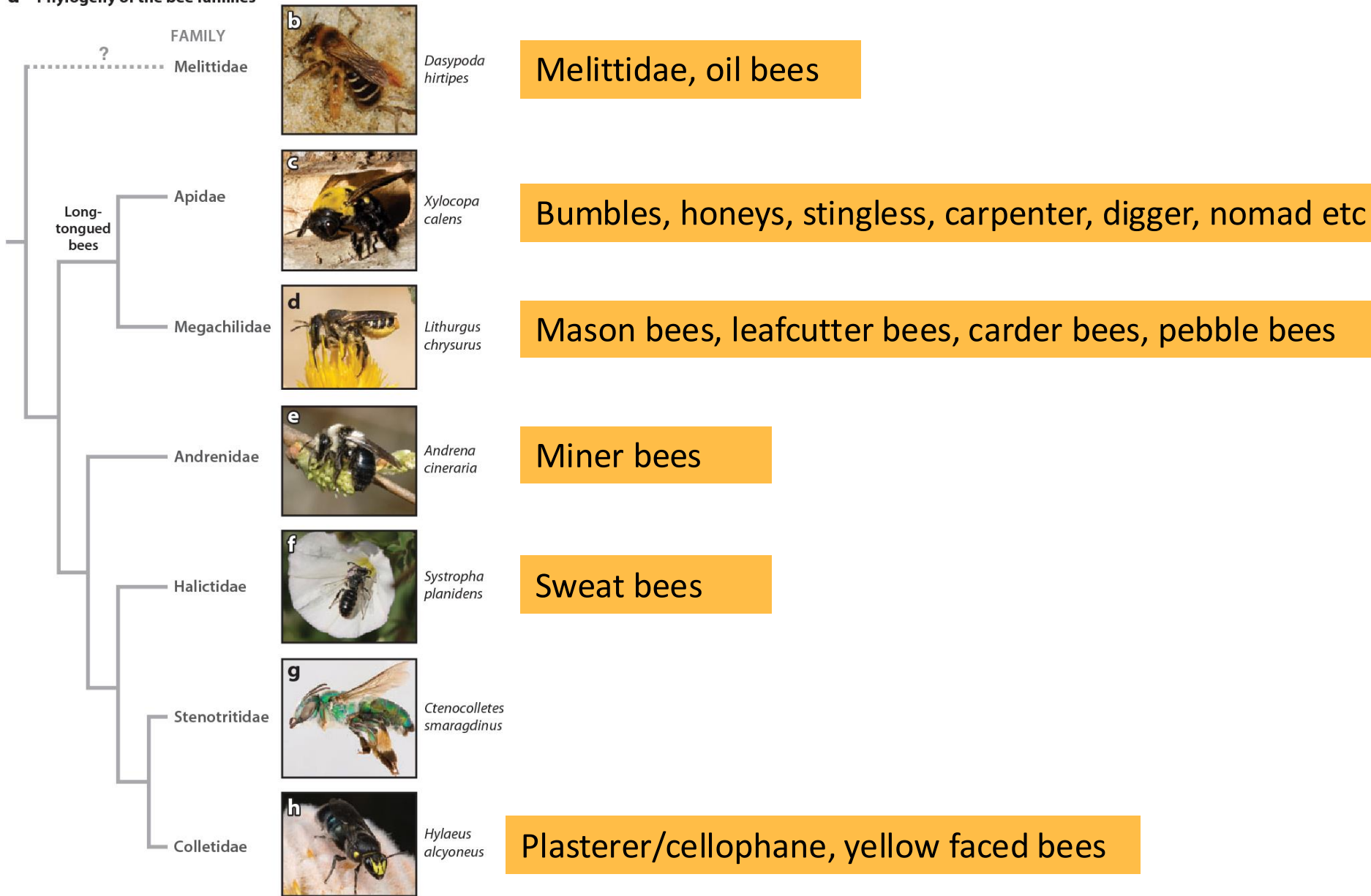
FLY



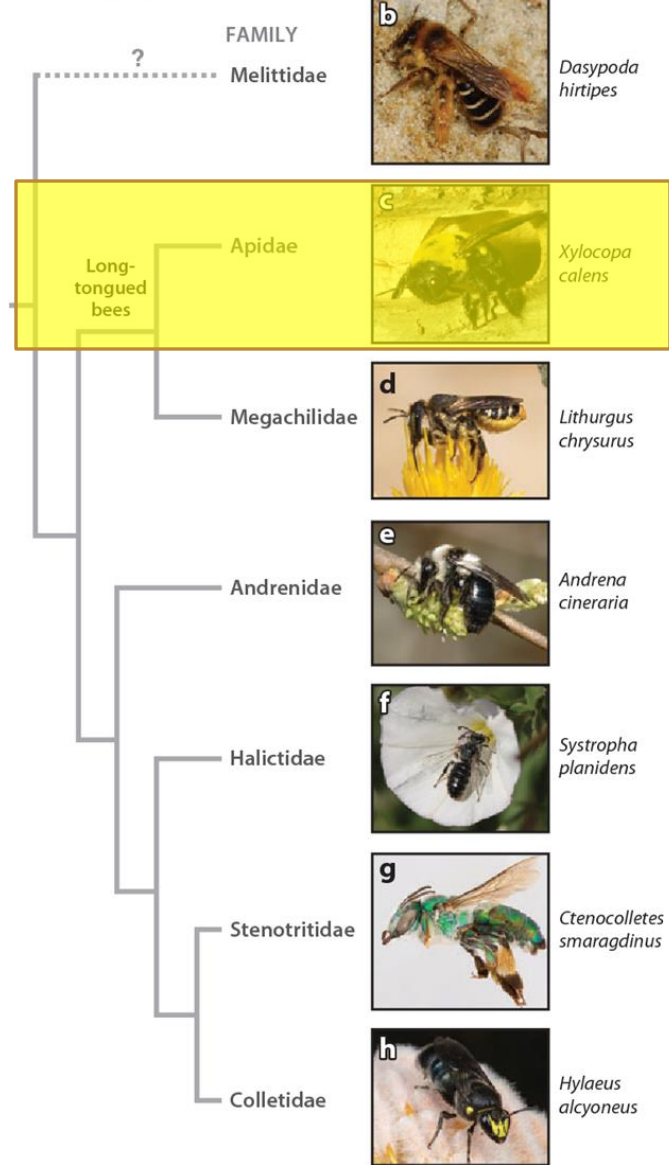




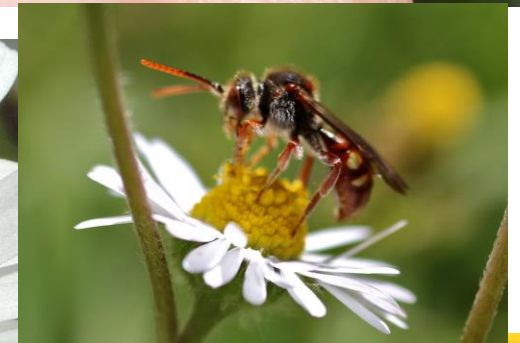
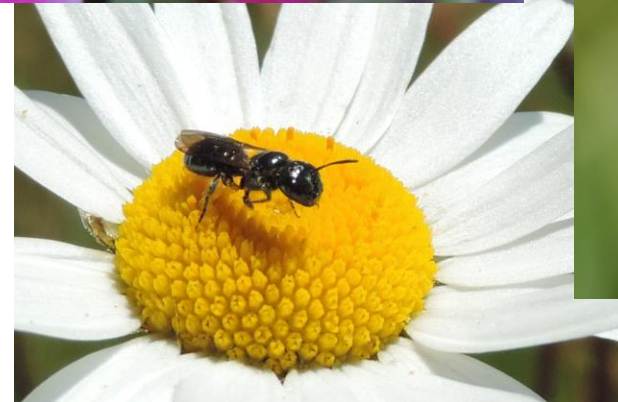
a Phylogeny of the bee families



a Phylogeny of the bee families

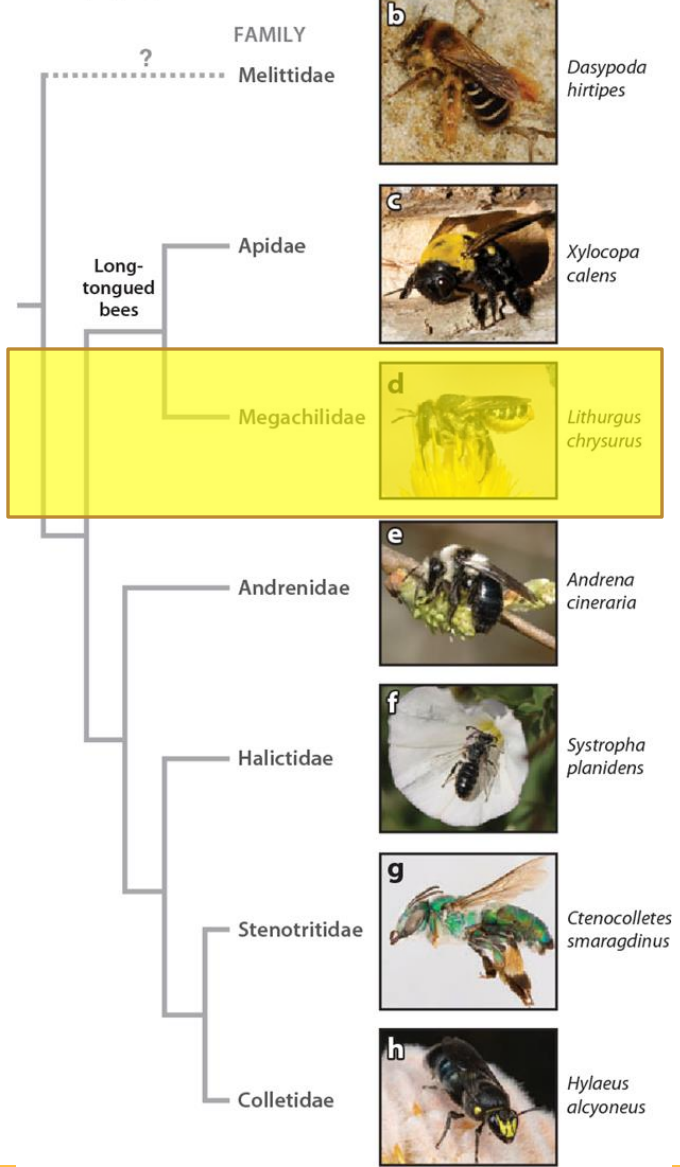


- ~5700 species
- Bumble bees, honey bees, stingless bees, carpenter bees, digger bees, nomad bees
- Many important for crop pollination



POLLINATOR PARTNERSHIP

a Phylogeny of the bee families

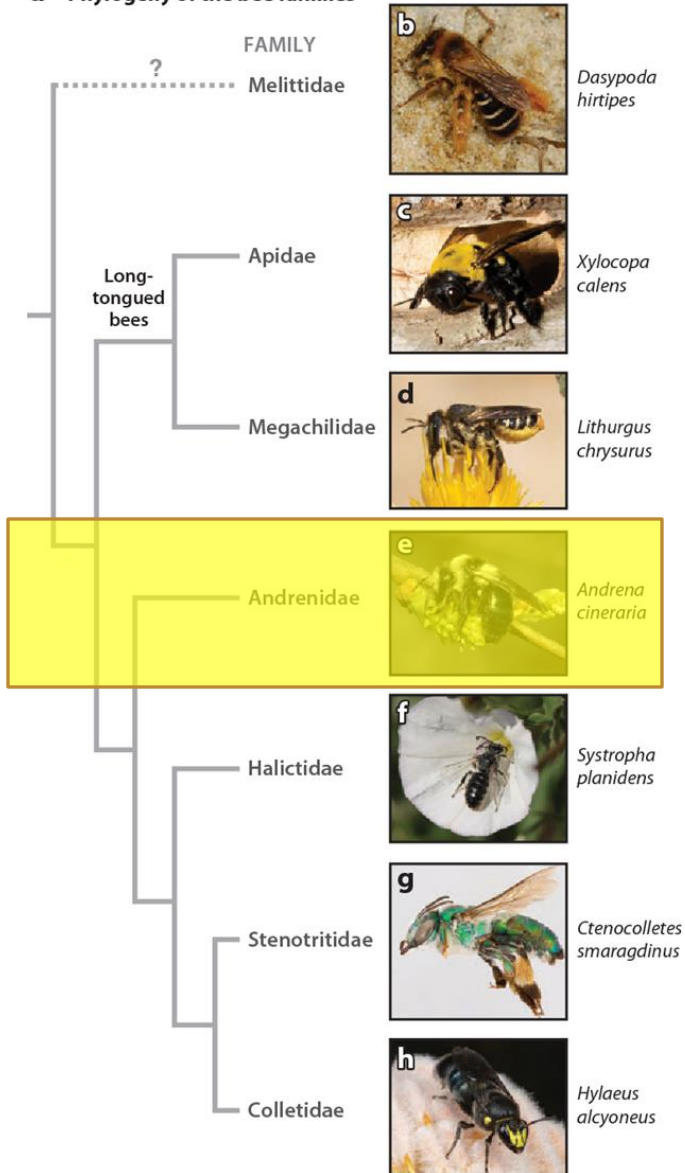


- ~4000 species identified
- Orchard mason bees, leaf cutter bees, wool-carder bees
- Most above ground nesters, all solitary

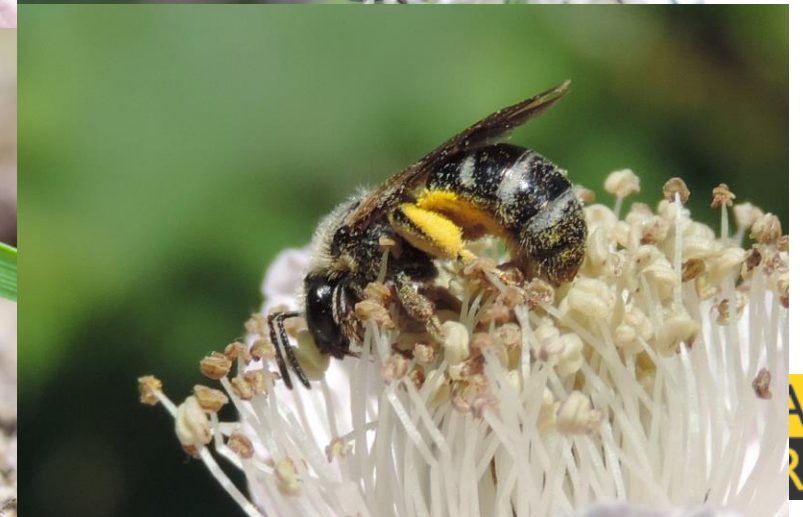


**POLLINATOR
PARTNERSHIP**

a Phylogeny of the bee families

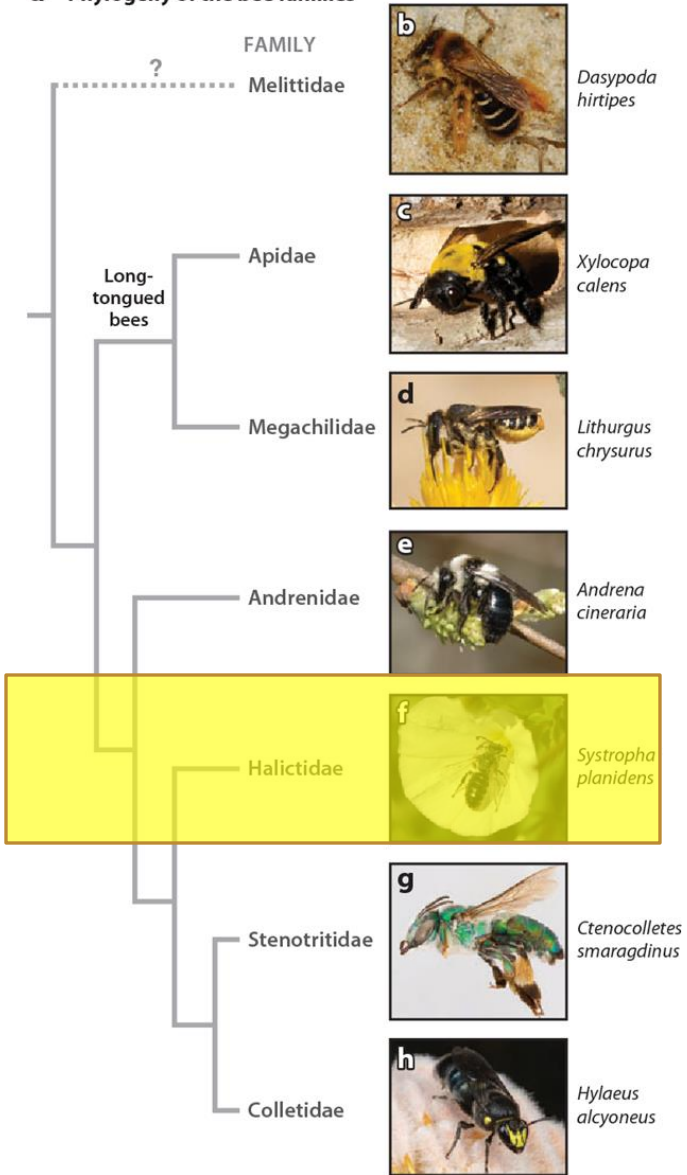


- ~3000 species identified
- Mining bees: dig nests in ground
- Many are specialists, reduced stinger

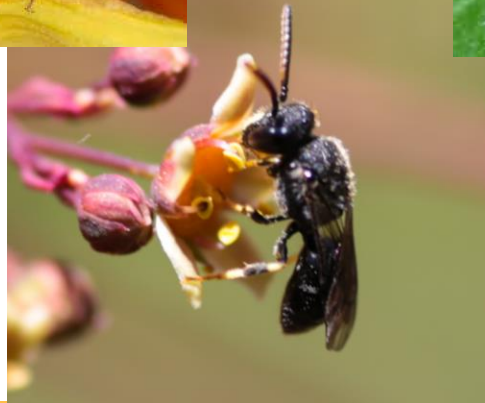


ATOR
RSHIP

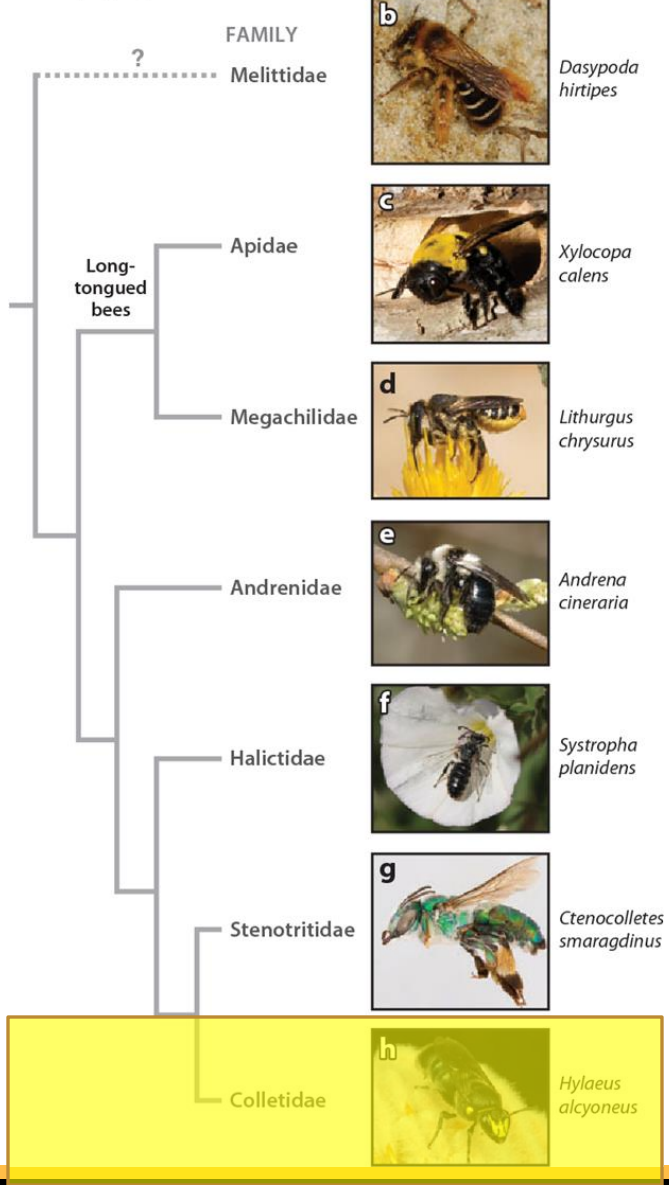
a Phylogeny of the bee families



- ~4,500 species identified
- ‘Sweat bees’
- Many solitary, mostly ground nesting, some social



a Phylogeny of the bee families



- ~2000 species identified
- Plasterer/Polyester bees
- Various nesting locations ground/above ground



Bee

Non-
native

Native Bee

1. Honey
bee

2. Bumble
Bee

3. Hairy
Leg Bee

4. Hairy
Belly Bee

5. Other
Bee



29

1. Honey bees

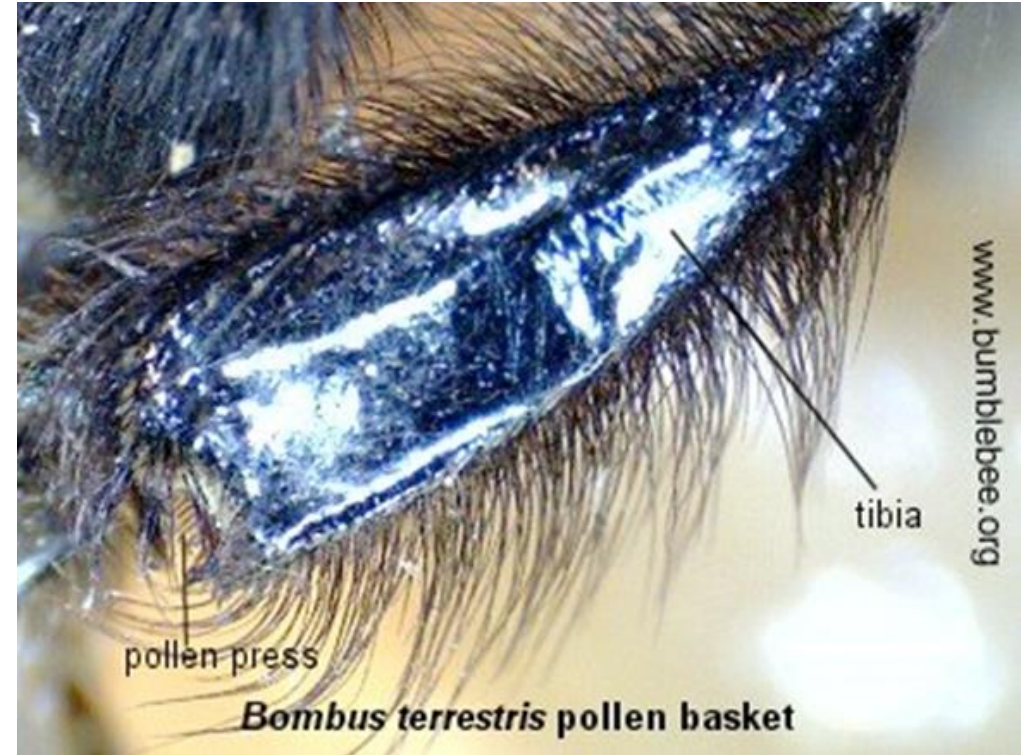


Pollen Basket





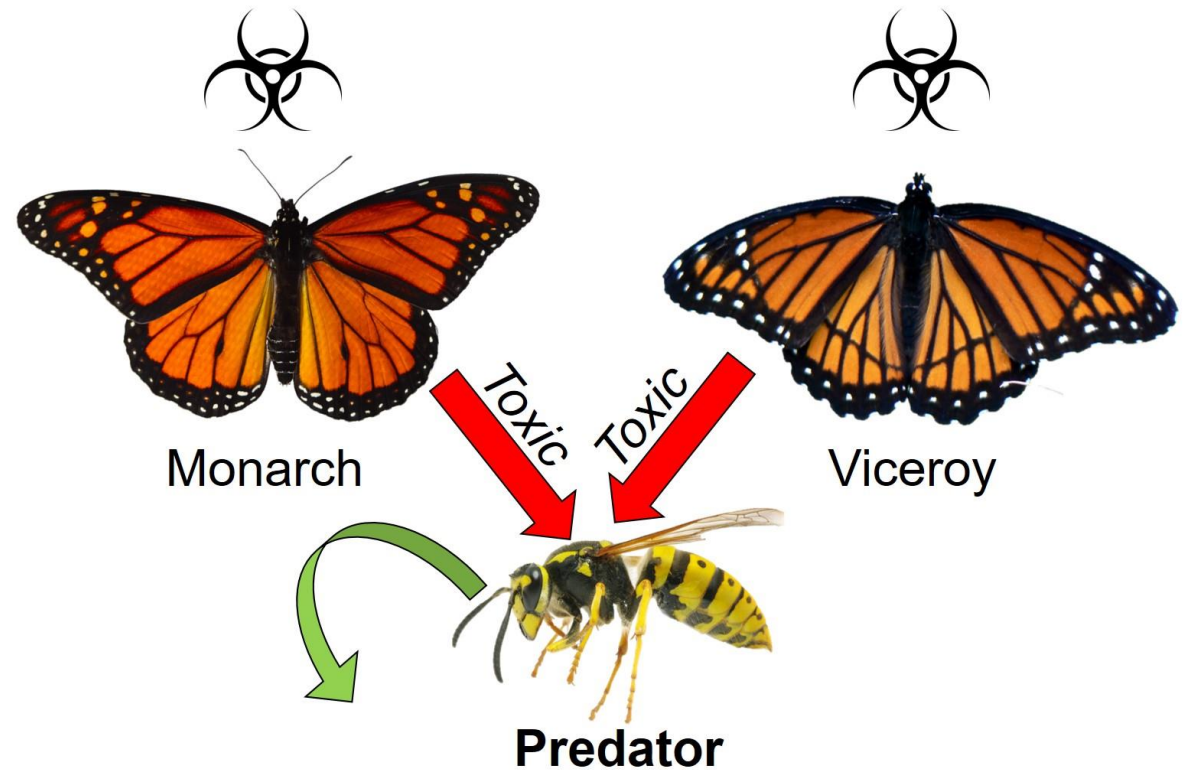
**POLLINATOR
PARTNERSHIP**



2. Bumble Bees

Müllerian mimicry

- Both are toxic/unpalatable and have evolved to look like each other
- boost the potential for the signal to be learnt by predators
- Co-evolutionary relationship between the two species

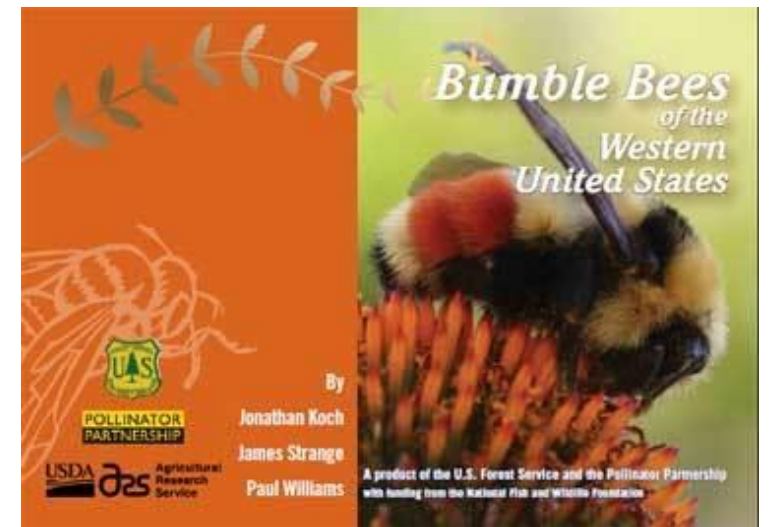
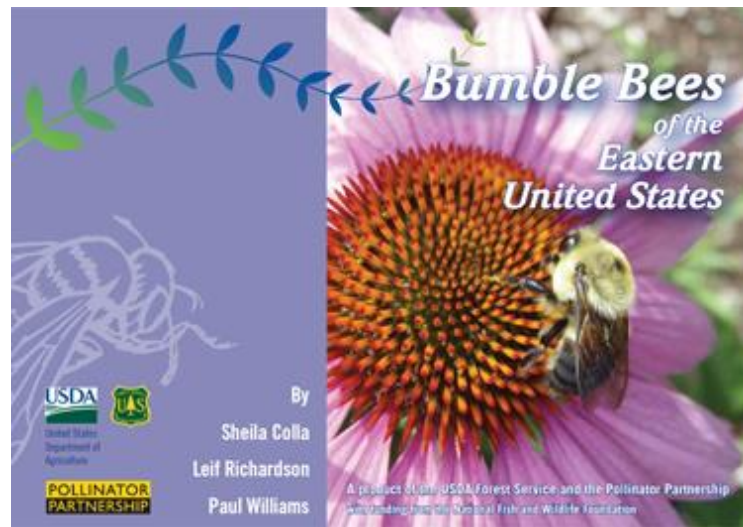
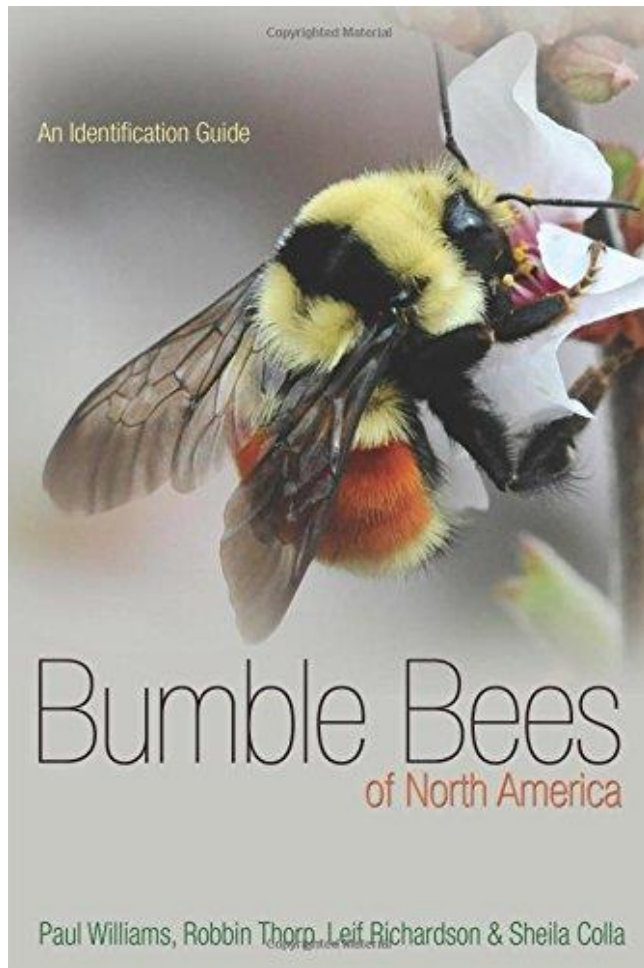


<https://theg-cat.com/tag/mullerian-mimicry/>



Photo: Joseph Wilson/USU
<https://www.nature.com/articles/s41598-022-22402-x#Abs1>

**POLLINATOR
PARTNERSHIP**



<https://www.pollinator.org/shop/books>





3. Hairy Leg Bees (Sweat bees, carpenter bees, miner bees, etc)

**POLLINATOR
PARTNERSHIP**



4. Hairy Belly Bees (mainly mason bees and leafcutter bees)

**POLLINATOR
PARTNERSHIP**



5. Other Bees (Yellow face, parasitic)

Bee

Non-
native

Native Bee

1. Honey
bee

2. Bumble
Bee

3. Hairy
Leg Bee

4. Hairy
Belly Bee

5. Other
Bee



**POLLINATOR
PARTNERSHIP**

iNaturalist

The screenshot shows the iNaturalist website interface. At the top, there's a navigation bar with 'iNaturalist', 'Explore', 'Community', and 'More'. A main banner features a bee on a flower with the text 'Pollinator WEEK June 16-22, 2025' and 'Pollinator Week 2025 - Pollinator Bioblitz'. Below the banner, there are three sections: 'Status' showing a countdown timer (79 days, 19 hours, 23 mins, 40 secs), 'Project Requirements' listing criteria like 'Taxa' and 'Location', and 'Journal' which is currently empty.

This screenshot displays a grid of 15 iNaturalist observations for various butterfly species. Each observation includes a photograph, the species name, its scientific name, a 'Research Grade' badge, and the date 'Jun '24'. The species shown are: Black Swallowtail (*Papilio polyxenes*), Oblique Longhorn (*Epimelissodes obliqua*), Essex Skipper (*Thymelicus lineola*), Peck's Skipper (*Pollites peckius*), Northern Checkerspot (*Chlosyne palla*), Common Alpine (*Erebia epipsodea*), Silvery Blue (*Glaucopsyche lygdamus*), and another Black Swallowtail (*Papilio polyxenes*). The grid is titled '15 Program Brea...' at the top.

**POLLINATOR
PARTNERSHIP**



Pollinator Identification and Monitoring



**POLLINATOR
PARTNERSHIP**