



DRAPER
NATURAL HISTORY MUSEUM

2025 Preliminary Results

POLLINATOR CENSUS



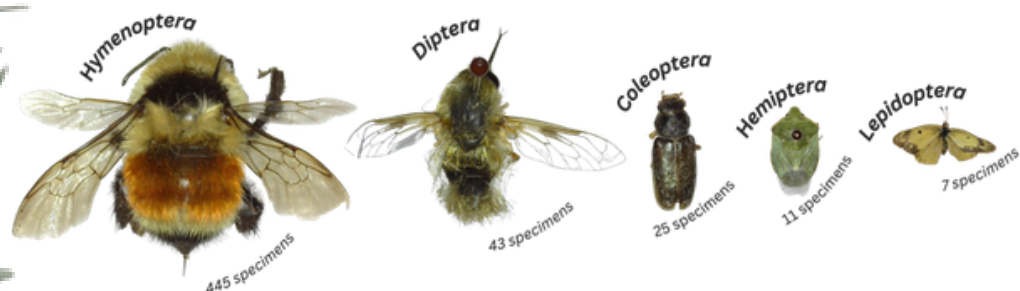
By Amy Phillips, Assistant Curator,
Draper Natural History Museum

The summer of 2026 was the first time in three years that we have not collected pollinators. Instead, after Judy Mackie finished pinning (and doing a wonderful job), I focused on cataloging and identifying 2025's **536 specimens**.

This year, **seven Orders were represented!** Hymenoptera (Bees, wasps, and ants) is the most numerous Order, with 445 specimens representing at least 14 families. After that Diptera (Flies) was most numerous with 43 specimens, and Coleoptera (Beetles) with 25 specimens. All the other Orders had fewer than 15 specimens.

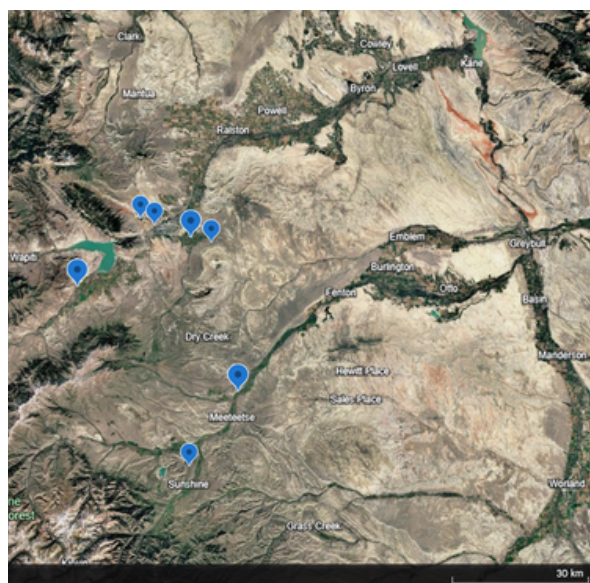
With all the specimens cataloged, we sought help from the expert – Michelle Toshack. Michelle works with The Xerces Society for Invertebrate Conservation (Xerces), an organization dedicated to the conservation of insects. Specifically, Michelle is involved with the Bumble Bee Atlas project, and some of you may have met her in June 2025 when she conducted a Bumble Bee Atlas training at the Cody Library. She was generous enough to come down from Montana and identify all our bumble bees. You can find the results of her efforts on page 4.

Now that our bumble bees are identified and ready for some time on panels in the galleries (keep an eye out!), it's time to turn our attention to all the other species. My fabulous volunteers are also helping me dream up some more site-specific monitoring. Stay tuned for updates on the Draper's Facebook page and website.





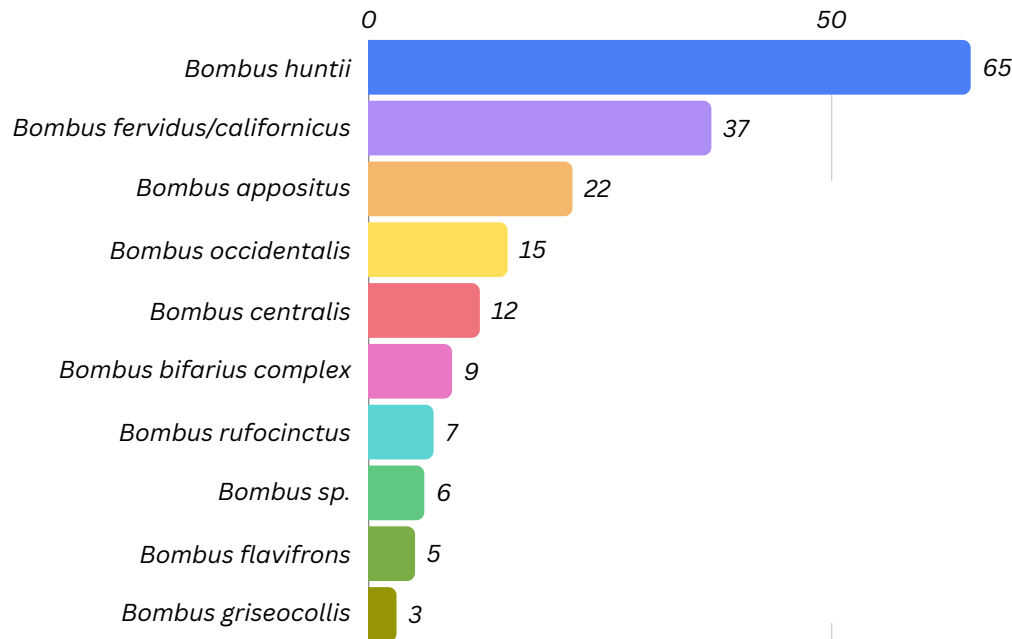
Collection Sites



The 2025 Pollinator Census occurred on the same sites as in 2024, seen in the table below and map to the left. The sites were chosen to represent the variety of land uses, including different grazing activity (* indicates grazing occurs nearby the site), water sources, and honey bee activity. Sage and Bear Creek were added in 2024 and have only two years of data.

Site Name	Mowing	Livestock Grazing	Native Grazing	Honey Bee Hives	Water
Paul Stock	No	No	No	No	River
Roshon Ranch	Periodic	Cattle, Horses	Suspect	Yes	River
Archery Range	Periodic	No*	Yes	No	None
Bear Creek	Yes	No*	No	Yes	Irrigation
Sage Creek	No	No	Yes	No	Pond
Newton Lakes	No	No*	Suspect	Yes	Lake
Sunshine Habitat Area	No	Bison	Yes	No	None

Xerces Identifies Bumble Bees



Michelle Toshack with Xerces (*far right*) visited the Draper in August 2026 to identify all 205 bumble bees in our collection. She managed the task in just two days! Here are a few takeaways from the dataset:

- *Bombus occidentalis* was found at four sites, but was only found at the Sunshine Habitat Area two years in a row (2024 - 2025).
- The site with the most *Bombus* species (n = 11) was Bear Creek on the South Fork.



Vulnerable Species Documented

As mentioned in the 2024 preliminary report of this project, insects have been declining at an alarming rate within the last 30 years. Unfortunately, bumble bees are no exception. In some good news, we have seen evidence of some of the rarer species at our study sites.

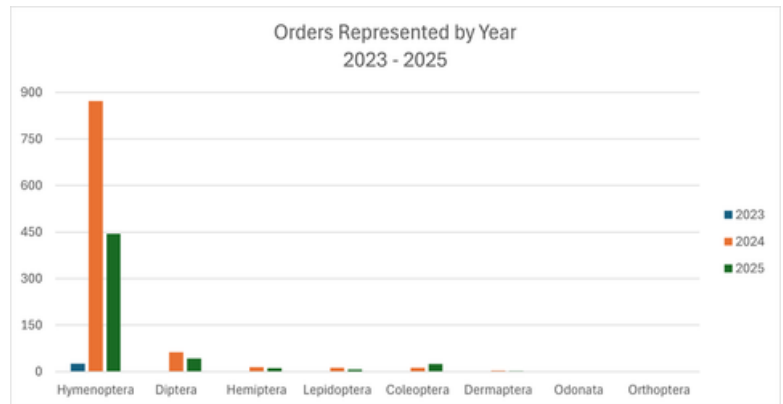
Four bumble bee species from our sample are listed on the IUCN Red List as Vulnerable. These are the Western Bumble Bee (*Bombus occidentalis*), Yellow Bumble Bee (*Bombus fervidus/californicus*), American Bumble Bee (*Bombus pensylvanicus*), and Forest Bumble Bee (*Bombus sylvicola*). The IUCN considers species listed as “Vulnerable” to face a high risk of extinction.

Right top to bottom (not to scale): *Bombus occidentalis* (DRA.301.130), *Bombus fervidus/californicus* (DRA.301.1093), *Bombus sylvicola* (DRA.301.1370), and *Bombus pensylvanicus* (DRA.301.308).



Identification

Insect identifications are tricky. Many specimens sit in museums for up to 20 years before being identified. Some take longer. We can never go back in time, and collections from previous years gain value as we become increasingly separated from that time and place. This presents a challenge in drawing meaningful conclusions with a limited data set (both temporally and in abundance). Each year we've shared what the sampling effort looks like by Order. This broader taxonomic system allows us to sort insects broadly. In this study, we aimed to collect Hymenoptera, and that Order is best represented.



As we get more specific, identifications become trickier. Most are easy to identify to Family and even to Genus. Sweat bees (see below) are incredibly numerous, but for the most part easy to separate from other families and identify to Genus.

Species-level identifications require a trained eye. Thanks to Michelle's efforts, we have a good handle on our bumble bees. We can look at differences between sites with and without species considered vulnerable by the IUCN to see what may be different about them.

At the end of three years, we're still working on confirming species identification. There are new tools at our disposal. For example, artificial intelligence (AI) can use identifications of known bees compared with those from our collection to narrow down species. On 200 non-*Bombus* bees, AI identifications matched what we had assigned 82.9% of the time! We can also collaborate with other specialists, like Michelle.

Class (Insecta)

Order

Family

Genus

species

Diversity in Sweat Bees

By far the most numerous family of bees collected across all years has been Halictidae. This Family has over 4,500 species described worldwide. For context, roughly 3,600 bee species are native to North America.

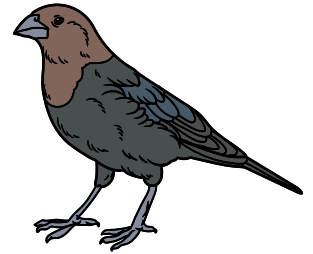
Visitors to the lab have been most surprised by the diversity of sweat bees documented by our project. Here are a few different genera to keep an eye out!



Left to right (not to scale): *Agapostemon* (DRA.301.332), *Lasioglossum* (DRA.301.344), *Agapostemon* (DRA.301.446), *Halictus* (DRA.301.524), *Lasioglossum* (DRA.301.562) and *Lasioglossum* (DRA.301.639).

The Birds and the Bees

Cuckoo bees and wasps are named after the Cuckoo, a bird known to lay eggs in the nests of other birds. Like the bird, these bees and wasps lay their eggs in the nests of other bees. In our area, the brown-headed cowbird is an example of a bird that uses this wings-off approach to rearing its offspring.



The project has collected a few different kinds of cuckoo bees and wasps, and we thought we'd share a bit about two of our favorites.

Perhaps the most striking of these is a wasp that parasitizes Metallic Green Bee nests. To accomplish this, the wasp mimics the appearance of the Metallic Green Bee. To date, we have collected four of these from four sites!



Despite appearances, this bee does not collect its own pollen. Known as the Cuckoo Bee (*Triepeolus* sp.), this bee is a cleptoparasite of many different bees including long-horned bee species, such as *Melissodes*.

This bee's pointed abdomen is a sign of its approach to egg laying. The sharp end pierces the nest of another bee. This bee has tentatively been identified as *Coelioxys*.

