Biodiversity of Sweat Bees (Hymenoptera: Halictidae) Occurring in the Texas High Plains

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Background

In the Texas High Plains, collections of bees have been conducted from different studies since 2015, focusing on agricultural landscapes. Funding from the Texas Parks and Wildlife Department has supported work to curate (i.e., mount, label, and identify) these specimens to transfer them to long-term storage in the Invertebrate Zoology Collection at the Natural Science Research Laboratory of the Museum of Texas Tech.

About Sweat Bees:

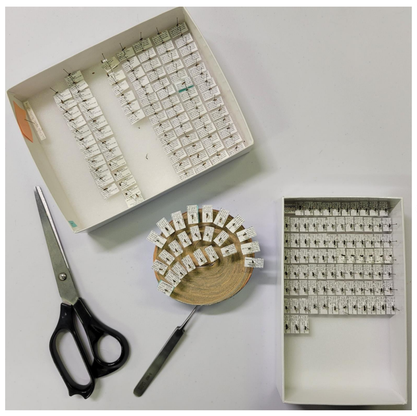
- ❑ 2nd largest family within the Hymenoptera order
  - Around 4,500 species within the Halictidae family
  - 1 of 7 families
- ❑ Small to medium in size: 4 to 23 mm
- ❑ Coloration ranges from black to metallic green
- ❑ Found on temperate and tropical regions in 6 of the 7 continents
- ❑ Nests are usually built in the ground during spring
- ❑ Feed on nectar, pollen, and sweat from humans

Collection, Curation and Identification

- ❑ Common collecting methods include:
  - Bee bowls, sweep nets, or aspirator
- ❑ Proper specimen curation steps:
  1. Obtain specimen
  2. Kill sample using either a kill jar or by freezing for at least 3 days
  3. If needed, rinse and dry sample. Be careful to make sure the wings and legs remain intact.
  4. Pin sample using standard stainless steel insect pins. Make sure to pin through the thorax, just to the right of the midline.
  5. Attach a label with information including: locality, date of collection, collection method, and collectors' name.
  6. Place the curated sample into a unit tray.
- ❑ Common characteristics that are used for sweat bee species determination include:
  - Color, shape, size and microsculpture
  - Location where the bee was caught

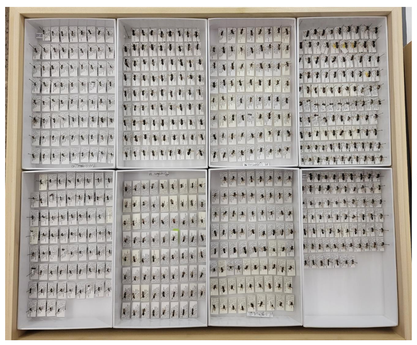
Collect, mount, and label specimen

***Agapostemon* sp. ♀**
TTU-Z_289790



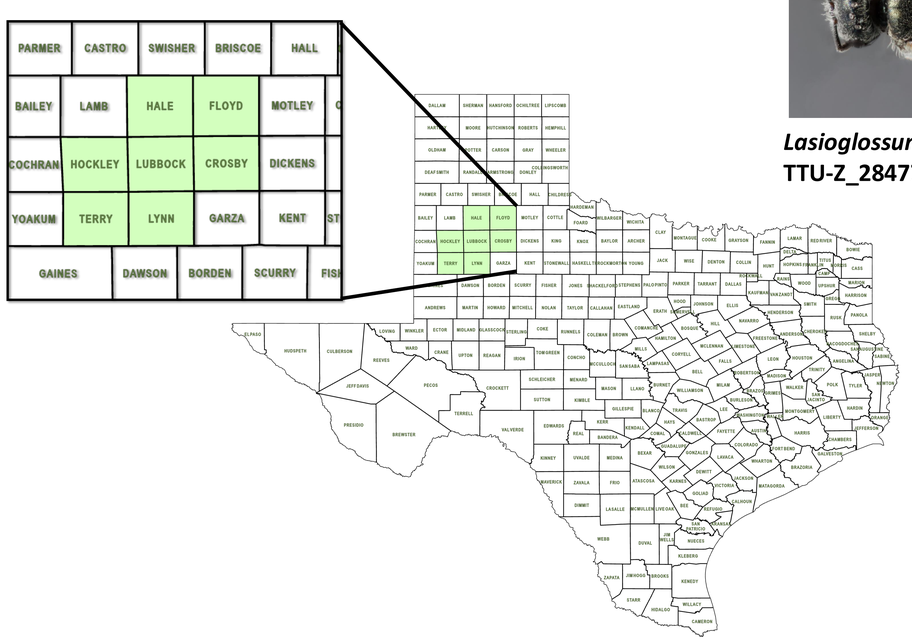
Identify based on morphological features

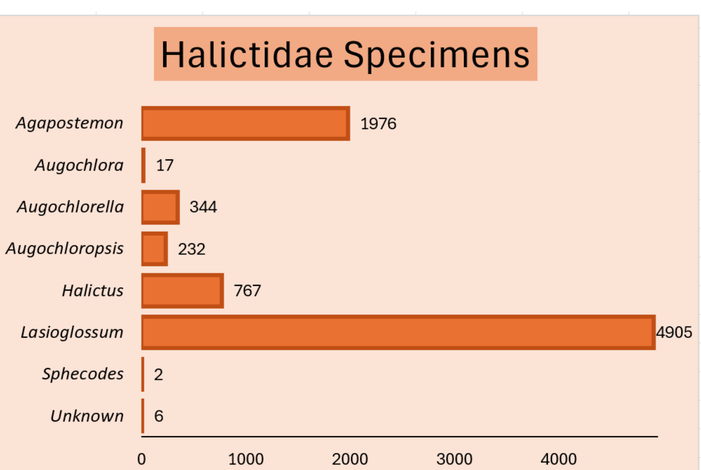
***Agapostemon angelicus* ♂**
TTU-Z_288937



Enter information into spreadsheets to transfer to Ecdysis

Lasioglossum hudsoniellum
TTU-Z_284776





Genus/species	Number of specimens
Lasioglossum sp.	3838
L. coactum	1
L. danforthi	2
L. disparile	3
L. hudsoniellum	946
L. pectorale	1
L. tegulare	114

Current Data

- ❑ 8,249 Halictidae specimens across seven Texas counties have been databased
- ❑ Specimens collected from July 2015 to October 2016
- ❑ Most common location – Lubbock, TX
- ❑ Most common genus - *Lasioglossum*
- ❑ Most common identified species - *Lasioglossum hudsoniellum*
- ❑ Least common genus: *Sphecodes*
- ❑ Least common species: *Agapostemon veriscens, A. melliventris, Lasioglossum coactum & L. pectorale*

Project Status

As of October 2024, there are over 6,388 Halictidae specimens entered into Ecdysis. We expect to have around 9,500 Halictidae specimens in the Longing Lab identified and digitized by the end of 2024.

Overall, out of 8,249 Halictidae specimens digitized, about 70% of the specimens have been identified to genus and 30% have been identified to species. Currently, about 66% of the 12,423 specimens digitized in the lab are Halictidae.

The Longing Lab currently houses 5 of the 7 bee families:

- Andrenidae
- Apidae
- Colletidae
- Halictidae
- Megachilidae

Future Uses

- ❑ As one of the most abundant native bee families in the region, digital and physical information on the biodiversity of the Halictidae will provide important background information to support future research and conservation in agricultural landscapes.
- ❑ DNA barcoding will be utilized on species of interest in our collection to better understand their taxonomic traits and create a more comprehensive reference record in our databases.

Special Thanks

Dr. Jennifer Girón, Curator of Invertebrate Zoology in Museum of Texas Tech University

The Digitization Lab - Daniel Ozlowski, Elle Cleveland, Rachel Simpson & Reannah Hollaway

Specimen Collectors – C. Jewett, A. Patridge, B. Rendon, S. Discua & C. Tomlinson

This work is supported by a grant from the Texas Parks & Wildlife Department: *Digitization species of interest for the bee (Hymenoptera: Anthophila) with DNA barcoding*

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Invertebrate Zoology Collection

Ecdysis

References

https://animaldiversity.org/accounts/Halictidae/
https://bugguide.net/node/128