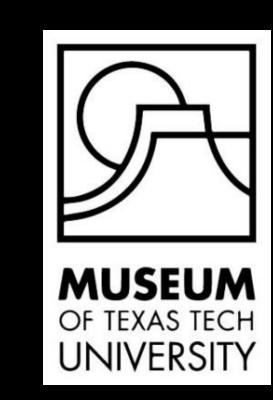
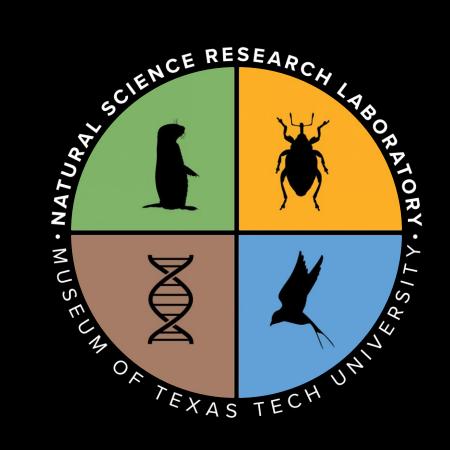


Teaching the Teachers: Outreach to Promote Entomology Learning Experiences in Texas High Schools







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Abstract

Annually, numerous high school students across the US engage in Entomology career development events though the Future Farmers of America (FFA). Students learn facts about various insects specific to their state and get to participate in competitions at local and state levels. Only eight states or territories in the US host entomology competitions, including Texas.

One of the limitations that these student teams have, is that their teachers have only limited training in entomology to be able to coach them for the competition.

In 2024, we established a workshop for FFA agricultural teachers with high school entomology teams. The workshop aims to enhance instruction for students by providing hands-on experience in collecting, curating, and archiving specimens, ultimately fostering interest in entomology among the younger generation.

Context

- Many Texas teachers leading FFA entomology teams lack prior entomology education.
- Since Texas is such a large state it is almost impossible to reach all high schools in person.
- Teachers and students are expected to know 155 different invertebrates as well as a bank of 250 general entomological questions, but they currently have no centralized study material.
- We've created workshops and remote learning methods to remedy this.

I just started my FFA Entomology team-what do I do?

Getting Started

Building Your Collection

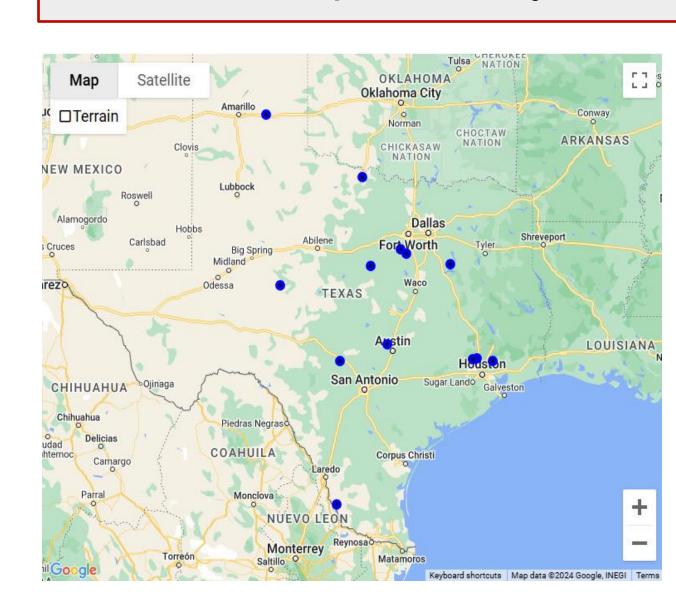


Methodology

The project aims to offer basic entomology education to high school teachers and students through various approaches to reach a wide audience. By the end of the project, both students and teachers will have basic training in entomology, as well as diverse educational materials available.

Workshop

- First annual "Bugshop" hosted in Junction, TX for FFA entomology team coaches.
- Duration: 3 days of training.
- Focused on collecting, preserving, and identifying insect specimens.
- Covered various collecting methods for both terrestrial and aquatic arthropods.
- Provided instructions for pinning, pointing, and maintaining a collection.
- Attendees collected specimens to take home.
- Feedback survey indicated high satisfaction; many called it the best workshop ever.
- Plans to open next year's workshop to students to foster interest in entomology.



Map showing home locations of each teacher that attended our workshop



Inaugural Class of the Texas Tech Bugshop 2024 Junction, TX

Fact Sheets

- Set of 202 informational slides reviewing the 155 individual taxa that students need to know, organized by order.
- Each sheet contains: common name, order, metamorphosis type, type of mouthparts, general significance to agriculture.
- Additional Information: scientific name, size, characteristics, species counts, etc.

MOUTHPARTS: Siphoning METAMDRPHOSIS: Holometabolous SIGNIFICANCE: Beneficial – important as pollinators. Can pollinate wide areas due to their migration. HIGHER TAXONOMY: Danaus plexippus SIZE: wingspan of – 4 inches FOOD: Milkweed as larvae, flower nectar as adults DISTINCTIVE CHARACTERS: 2 pairs of brilliant orange-red wings featuring black veins and white spots along the edges, males have black dots along the veins of their wings ISP. WORLOWIDE, ISP. IN N. AMERICA, ISP. IN TEXAS OTHER FUN FACTS: Adults live 4-5 weeks unless it's they're in the over 3,000 miles *Questions 195 and 217 involve this insect

Webinars

Starting in mid-January we will be hosting live webinars over Zoom that will be recorded and later put online for other schools to use. Topics for these webinars will be loosely based on the exam questions, with categories including anatomy, morphology, reproduction and development, and several others.

Collections

One of the challenges we are facing now is gathering specimens for all 155 taxa on the FFA list. We are attempting to build two reference collections.

Some of the challenges include:

- Presence and abundance of specimens by locality
- Limited time and resources to gather all 155 specimens
- Differing preservation methods among specimens makes storage of a complete set difficult



Acknowledgements

We would like to thank the inaugural group of 14 teachers that were willing to take a chance on our workshop this summer.

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The Invertebrate Zoology Collection from the Natural Science Research Laboratory, Museum of Texas Tech University provided materials and specimens for the workshop.