Educating Future Entomologists: Developing Learning Resources for the Texas FFA Entomology CDE

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Background

Texas Tech University hosts both Area and State competitions for Texas FFA (Future farmers of America). One of these competitions is the Entomology CDE (Career Development Event), where high school students compete in teams to identify insects and other arthropods and take an exam about general entomological knowledge. Teams, coached by teachers, from across Texas compete in these events.

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.

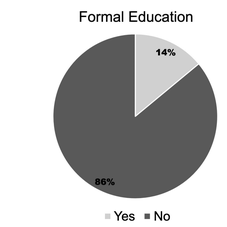
This project aims to offer basic entomology education and resources to high school teachers and students through various approaches to reach a wide audience.

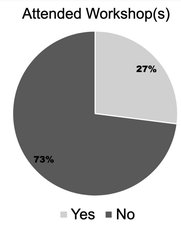
Methods

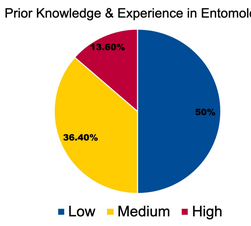
- Interest survey created on Microsoft Forms sent to FFA Entomology coaches including an assessment of their background in entomology.
- Fact sheets created with information relevant to the identification portion of the CDE:
  - Type of mouthparts
  - Metamorphosis
  - Significance to health and agriculture
- Information gathered from textbooks and online resources.
- Images obtained from iNaturalist, Google Photos CC, and other free use sources.
- Webinars planned and organized to cover major areas of the exam and provide context for answers to exam questions.
- Slides include numbers in parentheses that correspond to exam question number in the Entomology Exam Bank.
- A second survey sent out and responses analyzed to measure knowledge and preparedness before and after viewing fact sheets and webinars.

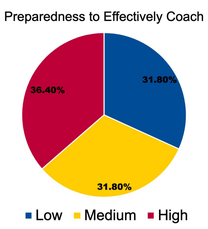
Teacher Response

- Responses obtained from 22 FFA coaches
- 14% had taken an entomology course in college or had other formal training
- 27% had attended other workshops for entomology
- Responses regarding “Prior knowledge and experience in entomology” and “Preparedness to effectively coach” measured on a 10-point scale
- Low (L): 1-3, Medium(M): 4-7, High(H): 8-10
- Prior knowledge and experience in entomology 50% L, 36.4%M, 13.6%H
- Preparedness to effectively coach 31.8%L, 31.8% M, 36.4%H



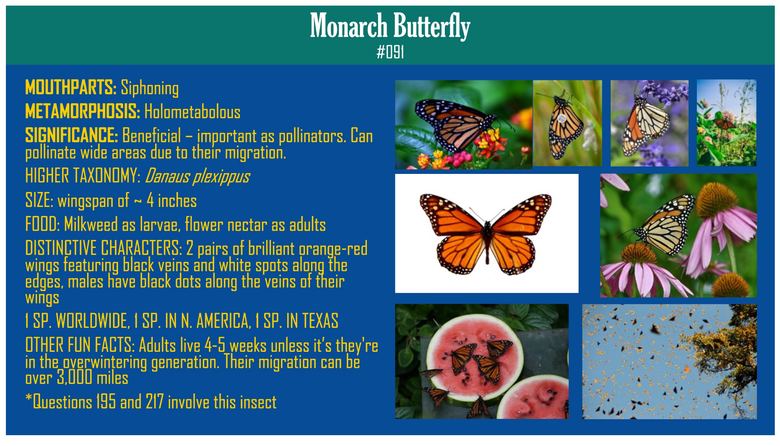






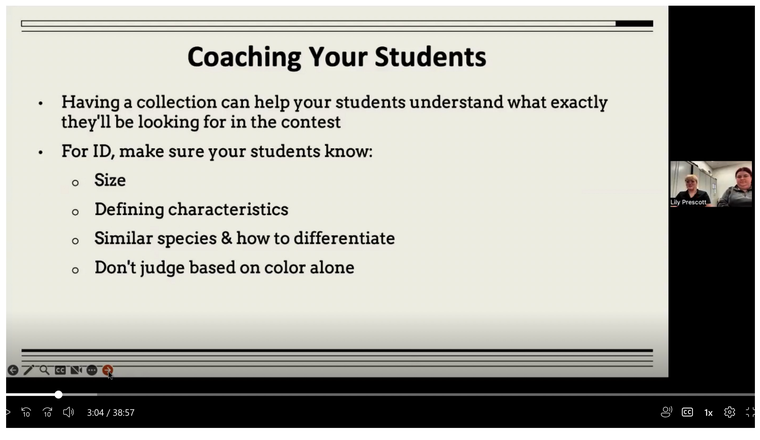
Fact Sheets

- Set of 202 informational sheets reviewing the 155 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, biodiversity, etc.



Webinars

In February we began hosting live webinars over Zoom. Topics for these webinars were customized to cover questions in the exam portion of the competition and featured topics such as anatomy, reproduction and development, and insect’s importance to health and agriculture.



Collections

We are attempting to build several complete collections of all 155 taxa on the FFA Entomology ID list. Some of the challenges of this include:

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

Knowledge Gain Assessment

- Responses obtained from 4 FFA coaches who had viewed educational material
- Responses regarding “Knowledge after viewing educational material” and “Preparedness to effectively coach” were measured on a 10-point scale
- Low (L): 1–3, Medium(M): 4–7, High(H): 8–10
- Knowledge after viewing educational material 0% L, 100% M, 0% H
- Preparedness to effectively coach 0% L, 50% M, 50% H

Conclusion

This is still ongoing work. We hope to have a better understanding of how this project has impacted FFA teams following the Area and State competitions.

Acknowledgements

We would like to thank the FFA coaches who took the time to participate in surveys and attend our Webinars.

Access our resources here