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Environmental Scholars

Lepidoptera Research Summary

Conclusions

After running an experiment for 36 days, where two butterfly bait traps were set up directly next to each other but baited with two different types of juice, a total of 19 Lepidoptera were captured. Out of these 19, 13 were captured in the banana-based bait trap, while only 6 were captured by the trap baited with apple-based juice. Since 68% of the captures were found in the banana-based bait trap, this bait seems to be more attractive to Lepidoptera. Even though the moths captured were not classified successfully, it is evident from pictures taken of the captures that a greater variety of Lepidoptera species were captured in the banana-based bait trap as well.

Proposed Further Experiments

Since there is such a broad variety of species within the class Lepidoptera, there are a countless number of experiments that could be executed to test different aspects of the insects. However, it would be interesting to run an experiment during the fall using the same methods of this experiment to further test the efficacy of the banana-based bait juice. Also, different components of the bait recipe could be altered to determine which factor attracts the insects more. For example, prepare one batch of juice that does not utilize prune juice, one that does not utilize bananas, and prepare one that utilizes both to use as a control. It would be interesting to note whether Lepidoptera are more attracted to the bananas, to the prune juice, or to the combination of both.

Also, a trap could be set up on campus next to the Hillside landscaped area. This could compare the different species that reside in an area with a greater variety of man-planted flowers to the species inhabiting in a more natural area such as the Hammond Pond Conservation Area. Using a mark-release-recapture technique, the range of Lepidoptera could be tested by determining whether an insect trapped in a trap in the conservation area is captured in the Hillside trap or vice versa.

Finally, a light trap should be deployed in conjunction with the bait traps to attain a more thorough survey of the moths found in the area. A comparison of different aspects, such as body or mouth size, could be assessed by comparing the moths captured in the bait traps to those captured in the light trap.

Semester Activity Summary

| Date | Activity | Time | Hours |
|-------------|---|-------------|--------------|
| 30-Jan | Meeting with Dr. Auger | 3 to 4 | 1 |
| | E-scholar meeting | 6:30-7:30 | 1 |
| | Lit. research (light traps) | 9 to 12 | 3 |
| 13-Feb | E-scholar meeting | 6:30 - 7:30 | 1 |
| 14-Feb | Met with Auger | 3-3:30 | 0.5 |
| | Lit. research (mark-release-recapture) | 7 to 10 | 3 |
| 16-Feb | Field trip to wild animal care facility | 10-5:30 | 7.5 |
| 21-Feb | Met with Auger | 3-3:30 | 0.5 |
| 26-Feb | Frozen bog visit | 1:30-3:30 | 2 |
| 28-Feb | Met with Auger | 3-3:30 | 0.5 |
| 2/29 - 3/10 | SPRING BREAK | | |
| 12-Mar | E-scholar meeting | 7-8:30 | 1.5 |
| 14-Mar | Bait Juice Preparation | 7 to 10 | 3 |
| 18-Mar | Literature Research (UV dusting techniques) | 12 to 3 | 3 |
| | Met with Auger | 3-3:30 | 0.5 |
| 3/20-3/24 | EASTER | | |
| 26-Mar | Trap setup | 12 to 3 | 3 |
| 28-Mar | Trap checks | 2-3:30 | 1.5 |

| | | | |
|--------|---------------------------------------|------------|-----|
| 30-Mar | Trap checks | 11:30-1 | 1.5 |
| 31-Mar | Trap checks | 2-3:30 | 1.5 |
| 1-Apr | Trap checks | 1:30-3 | 1.5 |
| 2-Apr | Trap checks | 2:30-5 | |
| 3-Apr | Trap checks | 1:30-3 | 1.5 |
| | Met with Auger | 3-3:30 | 0.5 |
| | Picture downloading/sorting | 3:30-6 | 2.5 |
| 5-Apr | Trap checks | 4:30-6 | 1.5 |
| 6-Apr | Trap checks | 12:30-2 | 1.5 |
| 8-Apr | Moth pinning | 3 to 4 | 1 |
| | Trap checks | 4-5:30 | 1.5 |
| 9-Apr | Trap checks | 4:30-6 | 1.5 |
| | Pinning and research (classification) | 6-9:30 | 3.5 |
| 10-Apr | Trap checks | 1:30 - 3 | 1.5 |
| 11-Apr | Trap checks | 1:30-3 | 1.5 |
| | Moth pinning | 3 to 6 | 3 |
| | Beer bait preparation | 6 to 7 | 1 |
| 12-Apr | Trap checks | 3:30 to 5 | 1.5 |
| | Moth pinning | 5 to 7 | 2 |
| | Cropped pictures | 7-8:30 | 1.5 |
| 13-Apr | Trap checks | 10:30-12 | 1.5 |
| 14-Apr | Moth pinning | 10 to 12 | 2 |
| | Trap checks | 12:30-2 | 1.5 |
| | Picture sorting | 7 to 9 | 2 |
| 15-Apr | Moth pinning | 2-3:30 | 1.5 |
| | Trap checks/ rearranging | 3-5:30 | 2.5 |
| 16-Apr | Moth pinning | 12:30-2:30 | 2 |
| | Trap checks | 2:30-4 | 1.5 |
| 17-Apr | Banana bait preparation | 10 to 11 | 1 |
| | Trap checks | 1-2:30 | 1.5 |
| 19-Apr | Trap checks | 3-4:30 | 1.5 |
| 20-Apr | Trap checks | 11-12:30 | 1.5 |
| 22-Apr | trap checks | 1:30-3 | 1.5 |
| 23-Apr | Data compilation | 6 to 9 | 3 |
| | Photo editing/cropping | 11 to 1 | 2 |
| 24-Apr | Trap check | 1 to 2:30 | 1.5 |
| 25-Apr | Trap check | 2 to 3:30 | 1.5 |
| 28-Apr | Trap check | 2 to 4 | 2 |
| 30-Apr | Trap check | 12 to 1:30 | 1.5 |
| | total | | 97 |

Sources Cited

Laaksonen, J., Laaksonen, T., Itämies, J., Rytönen, S. & Välimäki, P. 2006: A new efficient bait-trap model for Lepidoptera surveys – the “Oulu” model. *Entomologica Fennica* **17**: 153–160.

Landolt, P.J. 1995. Attraction of *moths Latipes* (Lepidoptera: Noctuidae) to sweet baits in traps. *Florida Entomologist*. **78 (3)**: 523- 530.

Narissu, J., Lockwood, A., Schell, S. P. 1999. A novel mark-recapture technique and its application to monitoring the direction and distance of local movements of rangeland grasshoppers (Orthoptera: Acrididae) in the context of pest management. *Journal of Applied Ecology*. **36**: 604-617.