Connecticut Entomological Society
Minutes from the 579th Meeting
20 October 2023

Jones Auditorium,
CT Agricultural Experiment Station
123 Huntington Ave., New Haven, CT 06511

Members met for a pre-meeting social at the Experiment Station approx. 6:30pm. Refreshments were served. Michael Montgomery brought fried long peppers from his garden to share. Richard Cowles showed some heirloom apple varieties from his orchard; there were Spitzenburg, Cox's Orange Pippin, Macoun, and Baldwin varieties for the tasting.

Business meeting:

President Richard Cowles called the meeting to order at approximately 7:30pm.

Old Business:

- CES merch available: T-shirts

New Business:

- A suggestion was made to increase fees: increasing student membership from $7.00 to $10.00, and to raise to $20 for regular members
- The motion to increase fees was tabled until the annual meeting in April; bylaws specify that membership fees can only be raised at the annual meeting.
- Treasurer Michael Montgomery mentioned that donations are what keep the society going, and agreed that it is time to increase dues.

Announcements:

- Raul Ferreira announced a bioblitz in Middletown, RI which will be happening on 7 June, 2024. Contact Raul if interested.

Exhibits:

- Matthew Nochisaki brought a *Lucanus elaphus* (elephant stag beetle) adult major male reared from eggs from South Carolina.
- Lukas Keras brought a drawer of *Catocala* moths from Connecticut, a live adult reared *Dolba hyloeus* sphinx moth*,* and a drawer of moths from the Appalachians and the Southeastern coastal plain.

President Richard Cowles introduced the speaker.

The evening presentation started at 8 pm.

Evening Presentation:

Taste: From Function to the Emergence of a Pest Fly

Hany Dweck, Ph. D.

Hany Dweck, Ph. D, presented on the role that taste played in the adaptation of the *Drosophila suzukii* fruit fly to feed on not-overripe (and thus commercially viable) fruit. He began the talk with an explanation of plant defenses against insects, mentioning the Neem tree (*Azadirachta indica*), which produces asdractine, a bitter-tasting compound. It is used to organically deter insect pests from crops in the Indian Subcontinent, where the Neem tree is native. Asdrachtine is sensed by the labellum, or "tongue," of an insect, to be distasteful. Dr. Dweck discussed how the responsivity of the labellum to bitter compounds can be measured in fruit flies, and the relationship between olfactory and gustatory responses. He found that flies with a mutant GR-39 gene were unresponsive to caffeine. He then gave an overview of the subject of study, *D. suzukii.* It differs from other species of fruit fly in that it has a serrated ovipositor, allowing it to oviposit on ripe fruits inaccessible to other species which require overripe or fermenting fruit. Because of this, *Drosophila suzukii* is a commercially important pest on fruit. To test the influence of olfactory/gustatory responses on fruit fly oviposition, Dr. Dweck separately blended ripe, overripe, and unripe (green-white) strawberries and placed the resulting mash in separate dishes in a flight cage. Females of *Drosophila suzukii* and *D. melanogaster* were introduced to the cage. While *D. melanogaster*, even with a soft laying surface, preferred overripe strawberries, *D. suzukii* laid on all given mediums, even preferring green and ripe strawberries to the overripe ones. Conducting the same experiment with

mutant *D. melanogaster* flies that had a shifting of the GR-33 gene, Dr. Dweck found that the mutant *D. melanogaster* flies preferred ripe fruit to overripe. He found that a loss of bitter responses in *D. suzukii* was then the cause of its adaptation to feed on unripe fruit. Bitter compounds in the egg-laying substrate do not discourage *D. suzukii* from laying. *D. suzukii* also lacks a preference for sugars in the egg-laying substrate, unlike other species, which prefer higher sugar concentrations (as would occur in overripe fruit). *D. suzukii* does, however, respond to acids, and does not tolerate them in the egg-laying medium as well as other species. This may discourage it from laying on fruit so overripe that most of the alcohol has been converted to vinegar (although this kind of fruit is still suitable for other *Drosophila*). In conclusion, *Drosophila suzukii* has adapted, due to novel gustatory response changes, to utilize non-overripe fruit for oviposition. Dr. Dweck concluded the talk with acknowledgements, and mentioning his other studies involving the Spotted Lanternfly. The evening presentation ended at **8:40*,*** with questions until **8:50.**

Respectfully submitted, Secretary Lukas Keras