Connecticut Entomological Society
Minutes from the 582nd Meeting
23 February 2024

Hybrid Zoom held at University of Connecticut, Biology & Physics Building.

Members met for a tour of the collections at the Biology & Physics Building 6pm. A second tour started at 6:45. Tours each lasted for approx. 30 minutes. Refreshments were served at 6:30.

Business meeting:

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

New Business:

- Treasurer Mike Montgomery reported that there is a small deficit in the checking balance; it is not a worry.
- The Treasurer showed a graph of membership numbers, which seem to be steady.
- The Treasurer urged currently unpaid members to pay their dues

Old Business:

- CTENTSOC merch available

Announcements:

- Bioblitz in Suffield, May 22-23rd. Contact Justin Kaput if interested.
- Victor DeMasi: The CT coalition against pesticides will be having a conference on Neonicotinoids in non-agricultural use.

Upcoming meetings:

- March 29th - student symposium
- April 19th - Annual meeting - Mark Stukel at Jones Auditorium in the Connecticut Agricultural Experiment Station.
    - President Richard Cowles note: need volunteers for new President.

Exhibits:

- Ray Simpson brought a box of pinned moths from the Carrabassett Valley of Maine.
- Mark Stukel brought pinned cicadas and their exuviae from New Zealand.

President Richard Cowles introduced the speaker.

The evening presentation started at 7:50 pm.

Evening Presentation:

The Collapse of Nature: Insect Decline in the Anthropocene

Dr. David Wagner

Dr. David Wagner began with a brief summary of the issues of insect decline. Insects may be in even steeper decline than other wildlife. Dr. Wagner gave an overview of terms used to measure insect populations. Biodiversity can be measured in several ways, including:

- Biomass. This is an important method because it can be measured very easily (by simply weighing the sample) and because biomass is the main player in an ecosystem (fluctuations in insect biomass = fluctuations in food for much of the ecosystem).

Dr. Wagner showed a graph of moth occupancy in Britain. Moth occupancy is decreasing by 30% on average in Britain currently - a disturbing rate. Biodiversity may also be measured as species abundance - the change in the abundance of specific species from year to year. While many species are moving north into Britain due to global warming, increasing species count, the abundance of individuals of each species is still going down. Dr. Wagner highlighted that, while there is a lot of focus on endangered species, it is also important to look at the declining numbers of previously common species. Ecosystem function requires that all naturally occurring species are present, but the abundant species are the ones which ecosystem function depends upon.

Dr. Wagner explained an important issue in measuring insect declines, which is that most quantitative insect studies actually ignore what happens to individual species. An example of where this type of measurement would lead to great error, according to Dr. Wagner, is the number of butterflies in the American Southwest in October of 2021. Much of the American Southwest - 92% - had been plagued by severe drought. Tucson had been dry for 14 months - an unnatural length of time. In July of 2021, SE Arizona was hit by one of the top 3

biggest monsoons ever recorded. After the monsoon, it seemed as though there were great quantities of butterflies. However, noticing their species, it becomes evident that 83% were non-natives which had blown in from Mexico. The native butterflies did not bounce back as they normally would after a monsoon. The hesperiid skippers, which spend the dry season aestivating in above-ground shelters, were especially hard-hit. After the drought, native skippers were present in 50% of the expected abundance and diversity.

Dr. Wagner noted that not all species decline at equal rates. Larger, single-brooded species, and host plant specialists with low rates of dispersal are especially likely to decline quickly. In Connecticut, which has not experienced severe drought, lycaenidae are in particular decline, as well as the noctuid moth genus *Papaipema* - 20% of the species still present in Connecticut are state listed. Large carabid beetles are also in decline, possibly due to the increasing rarity of snails. Dr. Wagner especially highlighted that insect declines are non-linear, and that drought and increasing variability of climate may be causes of insect decline. While there are many proposed causes, there is not any definitive explanation to insect decline. Dr. Wagner therefore proposed the “Death By a Thousand Cuts” theory - that insect decline is not moved by any one cause, but by many causes acting together. But, there is light at the end of the tunnel. Great success has been had in restoring habitat for insects. The Karner Blue is thriving, thanks to prescribed burns and other habitat restoration efforts, in the Albany Pine Bush. Insects can easily increase their population if the habitat is optimal. Restoration of sandplain habitat at Mansfield Hollow State Park, including deer fencing, has doubled the population of Frosted Elfins found there.

The most important things we can do to help insects now, according to Dr. Wagner, are:

- To make the image of insects better in our (USA) culture.
- To “rewild” lawns - as little as 10% of a lawn left for insect habitat can have significant benefits.
- To lower the usage of pesticides, in particular those used for aesthetic purposes on lawns.
- To plant natives.

Insects can come back. Even on soils soaked with pesticides, in the Midwest, habitat restoration efforts cause a tremendous increase in the numbers of insects.

Presentation ended at 8:55 pm, with questions to 9:05.

Respectfully submitted, Secretary Lukas Keras