Version 3/17/2021

Lepidoptera Surveying at Xeric Habitat Sites in the Northeastern U.S.

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Purpose

The primary goal of this survey is to develop more complete species lists and document relative abundances for nocturnal moths in Xeric Habitats in the Northeastern U.S. Secondarily, we hope to link these results with habitat condition data and management strategies which are also being tracked and analyzed at these sites in association with the Regional Conservation Needs (RCN) Project “Habitat for Pollinators: Improving Management of Regionally Significant Xeric Grasslands, Barrens, and Woodlands in the Northeast.”

Surveying Protocol

Timing

Contractors will perform individual survey events within 5 sampling windows: April, May, June-July, July-August, and September-October (note: total number of surveys may be adjusted as necessary to stay within allocated budget). Surveys should be performed on nights with little predicted rainfall (ideally none), low wind speed, high temperature, and run as close as possible to a new moon or with heavy cloud cover. Each trap deployed shall be operational for one full night (i.e., deployed before sunset and left to run until the sun has fully risen). Nocturnal moth specimen trapped shall be collected as soon as possible thereafter for processing.

Equipment

All specimen surveys will be conducted using 15W UV bucket traps, and unless otherwise agreed three such traps shall be deployed and remain fully operational during each survey event. Each trap should be powered with a car battery or similar, a photo sensor if necessary, and armed with an appropriate killing agent (e.g. acetone or ethyl acetate). Rain tops may be added (15-inch diameter plastic platter) if rain or heavy dew is in the forecast.

Approved trap options include

- Leroy Koehn’s bucket traps (the industry standard)
- Bioquip bucket traps modified to fit a straight 15W UV bulb

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Locations for buckets

Contractors shall deploy 3 bucket traps per site per survey event. Traps should be located at least 100 m apart. One trap must be located near the bee sampling transect for this RCN grant project. The other traps should be placed at the contractors discretion, in consultation with the site manager, and preferably in locations where habitat may be somewhat different than the bee sampling transect (so as to maximize chances of documenting species diversity), while still being representative of the overall xeric site condition. If the site includes a bog or wetland, a trap should be placed at an edge habitat near the wetland. If lupine or wild indigo are present at sites, please try to stay ~6 ft away from plants so as to avoid trampling frosted elfin larvae.

Survey data collection

The following information should be logged for each survey event:

- site name - town - county - state
- coordinates of each bucket trap deployed in decimal degrees and state plane
- dates/times of bucket trap deployment and collection
- Weather: temp range in deg C, wind speed, cloud cover, relative humidity, any notable previous weather events or anticipated unusual weather conditions
- habitat (e.g. NVC) type, dominant plant species

If processing and specimen identification will be delayed, the sample should be frozen for preservation.

Microlepidoptera, if in reasonably good condition, should be poured onto a layer of pressed cotton, stored in layers, in a box in a freezer with the collection even label until they can be transported or shipped to Jason Dombroskie at Cornell University.

Jason J. Dombroskie; Cornell University; Comstock Hall; Department of Entomology; Ithaca, NY 14853-2601 USA

Specimen Identification, Data Processing and Recording

All macrolepidoptera should be identified to species level, with reference to that species' Hodges checklist number. Every specimen processed should be recorded in an excel spreadsheet that will be provided by the project leader. Among the data to be recorded regarding each specimen collected and identified will be:

- A "**collection event code**" - a code unique to each time an individual bucket trap was deployed at any individual site on any specific survey event date to collect nocturnal moths. The "collection event code" shall be recorded in the following format: "**Site Name-Deployment Date [mm/dd-yyyy]-Trap #**). For example, the collection event code specific to "Bucket Trap #1," the first of three traps hypothetically deployed on "Site A" on "October 1, 2020" would read "**Site A-10012020-1**." The second trap deployed at that site on that date would be assigned collection event code "**Site A-10012020-2**," etc.

Each unique numbered bucket trap should be deployed at the same site location across all site visits. I.E., “bucket trap #1” should be placed at the same coordinates on each of the 5 site visits. If it is not possible to place the bucket in the same location (within 10 m of the previous location), renumber the bucket and document the new coordinates for the collection event.

- a species-level identification wherever possible
- the name of the person who provided the identification

At least one voucher specimen will be kept for every moth species collected at each site. Voucher specimen shall be pinned and stored in a box suitable for transportation/shipping. For some groups (e.g. *Probole*, *Symmerista*, *Metarranthis hypochraria* complex) several voucher specimens should be kept for ID verification. Collaborators will take unidentified specimens to the University of Connecticut or other museums to compare with vouchers or send specimens to Neil Schoppman who will visit the museum at the end of the season. Vouchers will be permanently housed at the University of Connecticut insect collection.