

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Distance Master of Science in Entomology Projects

Entomology, Department of

11-2012

Cerambycidae in the Hawk Rise Sanctuary, Linden, NJ

Tiffany R. Mauro

University of Nebraska-Lincoln

Follow this and additional works at: <http://digitalcommons.unl.edu/entodistmasters>



Part of the [Entomology Commons](#)

Mauro, Tiffany R., "Cerambycidae in the Hawk Rise Sanctuary, Linden, NJ" (2012). *Distance Master of Science in Entomology Projects*. S.

<http://digitalcommons.unl.edu/entodistmasters/5>

This Thesis is brought to you for free and open access by the Entomology, Department of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Distance Master of Science in Entomology Projects by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Tiffany R. Mauro
M.S. Degree Project Summary
November 12, 2012

Introduction

The family Cerambycidae is a diverse group. These wood borers greatly impact the flora and fauna of the habitat in which they reside. One of the most destructive invasive cerambycids is the Asian Longhorned Beetle (ALB) *Anoplophora glabripennis*. It has devastated both the urban and forested landscapes in New York, Illinois, New Jersey, Massachusetts, and Ohio. It threatens the maple syrup industry, logging, and tourism tied to the fall foliage in New England. In New Jersey thousands of trees were removed and chemically treated due to the ALB infestation. The communities where this infestation occurred were greatly impacted as the landscape surrounding them drastically changed. Even eight years after the original infestation was detected, the reaction about the program from people in these communities vary greatly and include both cooperative and uncooperative individuals. The encouraging fact is that there are people who are familiar with the invasive beetle proactively report suspicious damage helping the agency find new infestations. As an employee of the ALB Eradication Program, my goal was to create a record of Cerambycidae of this area and to become more familiar with the Cerambycidae that inhabit the ALB quarantine zone.

Project Background

There were many challenges encountered before the trapping period began. These challenges are similar to what many federal regulatory agencies experience especially when strong cooperative working relationships do not exist. Gaining the permission to trap in the final trap location was a testament to how critical cooperation amongst different groups is for success. The traps were not set in either of the two originally selected locations because the two locations required the University to provide proof of insurance with the establishment name included on the insurance letter. This was not reproducible by the University of Nebraska-Lincoln. After

months of trying to resolve this issue I reached out to the City of Linden New Jersey which is the only area in the State of New Jersey where the entire city was impacted by Asian Longhorned Beetle. The ALB Program and I have established a cooperative working relationship with the town and their city workers. As a result, I was able to gain permission to set my traps in the Linden Landfill. The landfill consists of a section where wood material is chipped in compliance with federal regulation and a forested area that surrounds the landfill. The trees in wooded part of the landfill consist of a variety of species belonging to the following genera: The tree species that are present in the landfill include species of *Quercus*, *Acer*, *Sassafras albidum*, *Fagus*, *Betula*, *Carpinus*, and *Populus*. This site is a high risk site due to the incoming wood material. As part of the established protocols for ALB, this area was chemically treated with Imidacloprid for three consecutive years and surveyed three times for ALB. While this was not my original trap location, the history of the ALB program's activities and operations at this location makes it an important site to collect Cerambycidae.

Linden Landfill History

In recent years the landfill was shut down. In a cooperative effort between the New Jersey Department of Environmental Protection, the Audubon Society, and the City of Linden the landfill was converted into urban greenway now referred to as Hawk Rise Sanctuary (NJDEP, 2012). This area of land nestled in between urban environments is proving not only to be a place for people to learn about the natural flora and fauna that exists around them, but also to provide an important niche for wildlife. Prior to this initiative this section of forest was only considered a vacant property surrounded by various industrial companies. Since this conversion and during the trapping period new native plants were planted, a pathway forming a perimeter around the forested area was constructed, and nature trail interpretive signs were erected

throughout the area. These changes are attracting people from inside and outside the community and providing them with an opportunity to observe the flora and fauna that exists. During trap collections I observed people bird watching and reading about the local flora and fauna that can be found in the landfill. Having a record of the cerambycid species that were captured is valuable historical data for the landfill and community.

Trapping Results

My trapping period started March 11, 2012 and ended September 11, 2012. I captured 55 cerambycids using the following trapping methods: Lindgren funnels traps, black light, and active searching. The lures used for the Lindgren funnel trap were: alpha-pinene lure, ultra high release lure, and a homemade batch of fermented bait consisting of brown sugar, yeast and water. All traps captured at least one cerambycid except for Trap #4 alpha-pinene lure. Trap #6, Fermented Bait Trap, captured 29 cerambycids which is more than any other trap. The first beetle was captured on May 24th and the last beetle was captured on August 16th with a total of 15 different species captured (this excludes the one Cerambycid that could not be identified to species because its head was missing). The month that yielded the most cerambycids was August with a total of 31 cerambycids captured. All specimens collected are native species that commonly inhabit New Jersey. The most abundant species that I captured was *Eburia quadrigeminata* with a total of 27 individuals. This species is commonly found throughout the eastern U.S. and is active from April to September. The larvae of this species develop in several different species of hardwood trees. The second most abundant species was *Parelapheidion aspersum* with a total of 8 individuals. *P. aspersum* is widespread throughout the eastern and central U.S. and is active June through October. The larvae are known to develop in species of

Quercus, *Carya*, *Betula nigra*, and *Celtis laevigata*. All identifications with the exception of *Heterachthes pallidus* were made using Special Publication No. 3 Illustrated Key to the Longhorned Woodboring Beetles of the Eastern United States by Steven W. Lingafelter. *Heterachthes pallidus* was identified using Douglas Yanega's Field Guide to Northeastern Longhorned Beetles (Coleoptera: Cerambycidae) in addition to Longafelter's key.

At the beginning of the trapping period the traps were checked once a week and the alpha-pinene and UHR lures were changed every 45 days. However, no specimens were caught in in the months of March and April. As a result, starting in May, the traps were left undisturbed for a longer period of time before collecting any samples and two of the same lures were hung at the same time from each trap. A greater number and variety of cerambycids was caught later in the trapping period. An adjustment of the trapping methodology and warmer weather both may have contributed to this result.

The results of my project show that there are native species that exist and that do thrive in areas where the landscape was significantly changed. The specimens collected is representative of some the species that currently inhabit the area. It is important to be familiar with the native species in order to recognize new and invasive species such as the Asian Longhorned Beetle. This is not only for educational purposes but also necessary in order to preserve natural resources. When invasive species are left undiscovered, it threatens the native flora and fauna in that habitat. For example, the ALB was not discovered in Massachusetts until about 12 to 15 years after it was first introduced into the area. Unfortunately this was because city and contracted tree workers were not familiar with the native versus non-native species of the area this beetle went unreported. As a result the damage was so widespread that many large urban

shade trees and forested trees had to be removed due to this infestation. This Cerambycid collection serves as a species record for the area and can be referred to by the public, city, state, and federal employees.

Electronic Records and Collection

The project consists of an electronic record of trap location details, an electronic record of the specimen list, electronic photos of the traps and insect collection, and a collection of cerambycids. The “Trap Locations” tab in the “trmauro_Linden Landfill Trap 1-6 Locations and Specimen List” excel document provides the trap number, latitude and longitude, altitude, direction, bait type, date placed, and tree species where the traps were placed. Refer to the “Specimen List” tab to view a detailed record of the specimens collected. This tab lists all the specimens collected in chronological order. It includes the species, collection method, trap number (if applicable), lure type (if applicable), collection date, location, coordinates, collector, and column and row numbers that correspond to the collection. Please refer to “trmauro_MS Project Photographic Record.docx” to view pictures of traps 1-6, the Linden Landfill, and the completed Cerambycidae collection. Finally please refer to JPEG images “trmauro_Cerambycidae Rows 1-3” and “trmauro_Cerambycidae Rows 4-6” included in the electronic project submission.

References

New Jersey department of Environmental Protection. News Release, May 2012.
http://www.nj.gov/dep/newsrel/2012/12_0062.htm. Accessed September 2012.



Figure 1: Trap 1 alpha-pinene



Figure 2: Trap 2 UHR-ethanol



Figure 3: Trap 3 Fermented Bait



Figure 4: Trap 4 alpha-pinene



Figure 5: Trap 5 UHR-ethanol



Figure 6: Trap 6 Fermented Bait



Figure 7: Hawk Rise Project-Linden Landfill



Figure 8: Linden Landfill- Landfill with surrounding forest



Figure 9: Linden Landfill Forest

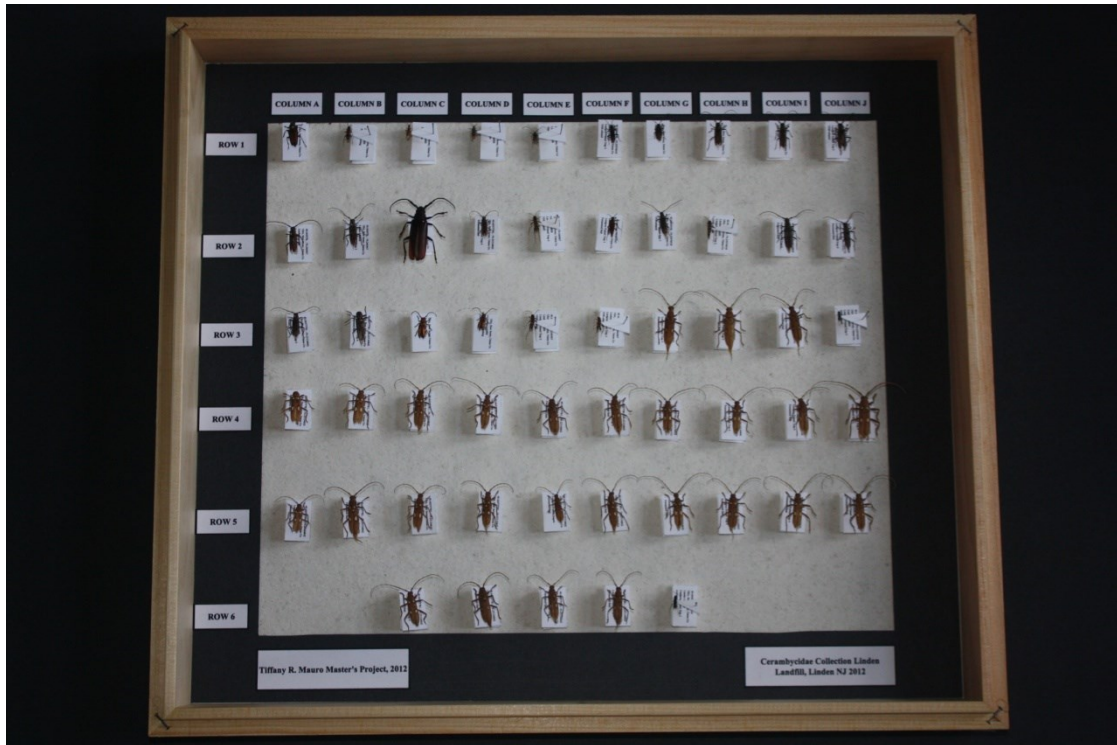


Figure 10: Cerambycidae Collection



Figure 11: Cerambycidae Collection

