

Purdue University
Department of Entomology
Undergraduate Capstone
Project Summary

Name of Student:

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Project Title:

A Pictorial Key to *Agrilus* of Northeastern North America

Project Summary:

I have liked the systematic and taxonomy of insects for many years so a key to any group was a logical choice for me to make. I thought about a lot of small genera or families that I like, but really have no economic importance. Finally I settled on the *Agrilus* because they are a very large group and the current tools for identification are lacking in some aspects. Because of this I decided to make a well illustrated key to these species.

The current keys covering the genus *Agrilus* are very poorly illustrated. Some of these keys do have line drawings to illustrate certain anatomical features, but these features are used to help key out genera not species. Therefore, certain terms can be interpreted many ways, and often sound the same. Other keys, however, contain no drawings or images of any kind to aid in identification. Other problems with the existing keys are that they do not include a few native species and do not include newer invasive species. This makes it very hard for someone who has just received some specimens and must identify them. Usually what will happen if it is a difficult species or is not in the key the specimen will be labeled as *Agrilus* sp. and no record of that species will occur.

When I began developing this key I first looked up the existing keys. I then found what species occur in the Northeast and put those species into a list. I then looked at a lot of species records and checklists to find out what other species weren't included. Once I had my list I put the couplets for those species together on the computer. I had to make new couplets for those species which were not included in other keys. With the list I needed to know what species we had here at Purdue and what species I would need to borrow. Once I knew what species to borrow I requested them from many eastern universities. At the same time I started taking pictures of the specimens we had at Purdue. As the other species came in the mail I would re-key them to make sure they were correct. Once I knew they were, I would find the best ones to take images of and photograph the features needed. I also had to dissect the aedeagi, the male genitalia, out of many specimens as these are used in identification. Once I had pictures I would use Photoshop to crop and orient them so they would work in the format I had chosen.

The key ended up covering the 69 species of *Agrilus* occurring in Northeastern North America. I would like to include dorsal images and images of the aedeagi, as well as host plants and distribution if I get it published. I would also like to create a key to females of this genus because many species are not identifiable unless they are male. My ultimate goal will be to create a pictorial key to the genera of Buprestidae and include keys to all the species in the family.