

Insects and Laboulbeniales (Ascomycota, Fungi) of Lake Eustis and Emeraldal Marsh Conservation Area: a case study on urbanization and diversity

Patricia Kaishian¹

¹SUNY College of Environmental Science and Forestry

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Abstract

A rapid biodiversity assessment of insects and associated Laboulbeniales fungi was conducted over the course of five nights in August, 2018 at two central Florida lakes: Lake Eustis and the nearby protected and restored National Natural Landmark, Emeraldal Marsh Conservation Area (EMCA), which encompasses a portion of Lake Griffin. These locations were selected because Lake Eustis was surveyed for Laboulbeniales in 1897 by mycologist Dr. Roland Thaxter, but has not since been investigated. Because Lake Eustis has been urbanized, with the lake perimeter almost entirely altered by human development, the site offers a look into Laboulbeniales diversity across a 121 year timeline, before and after human development. By surveying Lake Eustis and EMCA, a modern case study comparison of Laboulbeniales and insect diversity between a developed and unrestored system and a protected and restored system is made. A total of 4,022 insects were collected during the rapid assessment. Overall, insect abundance was greater at EMCA, with 3,001 insects collected, compared to 1,021 insects collected from Eustis. Though family level insect richness was comparable between sites, with 55 families present at EMCA and 56 at Eustis, 529 out of 3,001 (17.6%) of the insects collected at EMCA were hosts to parasitic Laboulbeniales fungi whereas only 2 out of 1,021 (0.19%) collected from Eustis were infected. There were 16 species of Laboulbeniales found at EMCA compared to only one at Eustis. The current number of Laboulbeniales species documented at Eustis was incredibly depauperate compared to the 27 species recorded by Thaxter in 1897, suggesting the possibility of utilizing Laboulbeniales as indicators of ecosystem health. A figure displaying host-parasite records and a species list of Laboulbeniales fungi is compiled and updated occurrence records for species of *Ceratomyces* and *Hydrophilomyces* are provided.

Hosted file

Insects and Laboulbeniales of Lake Eustis and Emeraldal Marsh Conservation Area_ a case study on urbanization and diversity available at <https://authorea.com/users/367153/articles/486671-insects-and-laboulbeniales-ascomycota-fungi-of-lake-eustis-and-emeraldal-marsh-conservation-area-a-case-study-on-urbanization-and-diversity>