**Effects of hemlock woolly adelgid on mesic understory tree community composition in the old growth forest of Lilley Cornett Woods**

DeAnna Kidd1 and Jennifer Koslow2

1Department of Biology and Chemistry, Morehead State University, Morehead, KY 40351

2Department of Biological Sciences, Eastern Kentucky University, Richmond, KY 40475

Lilley Cornett Woods (LCW) is one of the best examples of an old growth, mixed mesophytic forest left in Kentucky. The forest composition has been well-characterized since Bill Martin established plots in 1971 that have been surveyed every 10 years. While the forest has been protected from many anthropogenic disturbances, it is still vulnerable to invasive species such as hemlock woolly adelgid (HWA*, Adelges tsugae*). This study compares data collected in 1999 (pre-HWA invasion) and 2010 (post-HWA invasion) to data collected in May to August of 2020 to determine how HWA has affected the understory populations of the beech (*Fagus grandifolia*) and hemlock (*Tsuga canadensis*) communities at LCW. Eleven hemlock dominated plots and eighteen beech dominated plots were surveyed across two different areas of the forest. The data collected in each plot includes tree species identity and diameter at breast height, with the understory composed of all trees 2.5 cm dbh to 12.5 cm dbh. Importance values, species richness, and total density were calculated to show change over time. There was an overall decrease in species richness and total density in each community, as well as an increase in the importance values of beech within each community. The overall increase in importance values of beech shows that beech trees are becoming more dominant in the understory of both communities. Importance values from the two areas show that understory composition is changing more rapidly in one area of Shop Hollow, while the other surveyed understory (Whittaker) is staying more stable.