

ABSTRACT

THESIS PROJECT: Assessing the influence of social information and habitat structure on Cerulean Warbler breeding distribution in southern Indiana

STUDENT: Kevin W. Barnes

DEGREE: Master of Science

COLLEGE: Sciences and Humanities

DATE: July 2014

PAGES: 122

Cerulean Warbler breeding distributions are often clustered, which suggests that settlement is induced by certain external cues, such as vegetation structure. However, habitat selection studies have been inconsistent when reporting microhabitat structure associated with Cerulean Warbler settlement. In this study I assessed the role of both social information and habitat structure on Cerulean Warbler settlement and distribution. I tested the role of social information on male Cerulean Warbler settlement decisions by broadcasting conspecific vocalizations in areas that had low relative abundance. I assessed the influence of habitat structure on male Cerulean Warbler occurrence and density by incorporating lidar-derived metrics of canopy structure into habitat models. Conspecific social information had no effect on Cerulean Warbler settlement; however, it is unknown how many individuals were exposed to the settlement cues. Canopy structure variables only improved density habitat models. The top model examining the relationship of habitat variables to Cerulean Warbler occurrence indicated that occurrence was more likely on northeast facing slopes, lower elevations, steeper slopes, and in areas with greater hickory (*Carya* sp.) basal area (m^2/ha). Other influential variables were a tall canopy and greater total basal area (m^2/ha) and tuliptree (*Liriodendron tulipifera*) basal area

(m²/ha). The top models examining the relationship of habitat variables to Cerulean Warbler density indicated that high-use areas are more likely to exist on steeper slopes, with less total basal area (m²/ha) and large trees (≥ 53 cm DBH), more white oak (*Quercus alba*) basal area (m²/ha), and contain a homogeneous horizontal and vertical canopy structure. Other influential variables were areas lower in elevation with more small shrubs and saplings $\geq 3 < 10$ cm DBH per ha.