Effects of an urbanization gradient on arthropod prey availability and woodpecker provisioning rates

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Understanding the impacts of urbanization will provide important information about the alteration of wildlife habitat, such as how human development changes the vegetative composition which in turn impacts herbivores and further influences predators that use these areas. The impacts of urbanization on woodpeckers are especially important because, as cavity nesters, woodpeckers provide habitat elements for a suite of other species, and are therefore essential in many ecological communities. The alteration of ecosystem processes and species composition as a result of urbanization, directly affects the prey availability for nesting woodpeckers. Thus, the effects of urbanization on woodpeckers may have cascading effects throughout the community. The goal of this project was to assess the effect of various levels of urban development on arthropod food sources for three species of nesting woodpeckers: Downy Woodpecker (*Picoides pubescens*), Red-bellied Woodpecker (*Melanerpes carolinus*), and Yellow-bellied Sapsucker (*Sphyrapicus varius*) in central Massachusetts. I quantified food resources and nest provisioning along an urbanization gradient (wildland, small town, large town) using modified pitfall traps and nestling feeding observations, respectively. Results indicated that large town plots had the greatest arthropod abundance, while small towns and wildland plots had the lowest arthropod abundance. Additionally, the adults brought significantly more small food items to the nest in wildlands than in the small or large towns. Because arthropods provide a key protein source for a diversity of wildlife during the breeding season, understanding the impacts of urbanization on arthropod populations will provide crucial insight into how woodpeckers will be affected, as well as future management goals, including city planning methods.