



MODELING BIRD SPECIES' DIFFERENTIAL RESPONSES TO URBANIZATION IN THE NEWARK REGION, DELAWARE, UNITED STATES

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BACKGROUND

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Background

Like many other urban hubs in the world, the region of Newark, Delaware, United States is getting increasingly urbanized, which is likely to affect many of the (bird) species that are key to this region of the United States. In order to be able to quantify these effects, the dynamics of wood thrush (*Hylocichla mustelina*, 1974-present) and gray catbird (*Dumetella carolinensis*, 2007-present) in Ecology Woods, a nature conservation site in Newark owned by the University of Delaware, have been tracked meticulously by comprehensive and long-lasting field studies.



These studies, which have included investigations on nesting ecology (e.g., nest survival, nest site location), population genetics and mating behavior, host-parasite interactions with avian brood parasite: brown-headed cowbird (*Molothrus ater*), diet and nutritional ecology, and movement ecology (including both radio telemetry and GPS-tagging), are important to gain information on the conservation of songbirds, in general. The continued study of how gray catbirds (urban adapter) and wood thrushes (urban avoider) differentially respond to anthropogenic change (e.g., climate change, urbanization, pollution, etc.), provides a unique research opportunity to examine how sensitive biological indicators are adapting (or not) to rapid environmental change. Conservation of species and biodiversity must arise from the sustainable management of the natural resources that support those species, and will help ensure the health and functioning of ecosystems that humans are also dependent on.

Scope of the thesis

The aim of this thesis is to develop a model that simulates complex nesting behaviours or patch occupancy for catbirds and wood thrushes, and to parameterize and validate this model using data collected in the field at University of Delaware in Newark, Delaware, USA. Ultimately, these models will allow the comparison of various environmental scenarios and testing hypotheses through simulating responses of populations to effects from increasing urbanization.