

Hixon Center for Urban Ecology

Student Research Fellows

Bird Diversity is Higher in Developed Landscapes

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Fig. 3 Green heron (*Butorides virescens*) observed preying tadpoles in an agricultural wetland.

Problem Investigated:

Anthropogenic development leads to the conversion of native habitat, resulting in landscapes characterized by a mosaic of agricultural fields, human settlement, and forest. A large body of research documents the negative consequences of habitat conversion on native wildlife. However, recent studies suggest that some species may respond positively to human dominated landscapes. This study looks at how wetland dependent birds respond to habitat conversion by investigating their distribution across three classes of land cover: urban/suburban, agricultural, and forested.

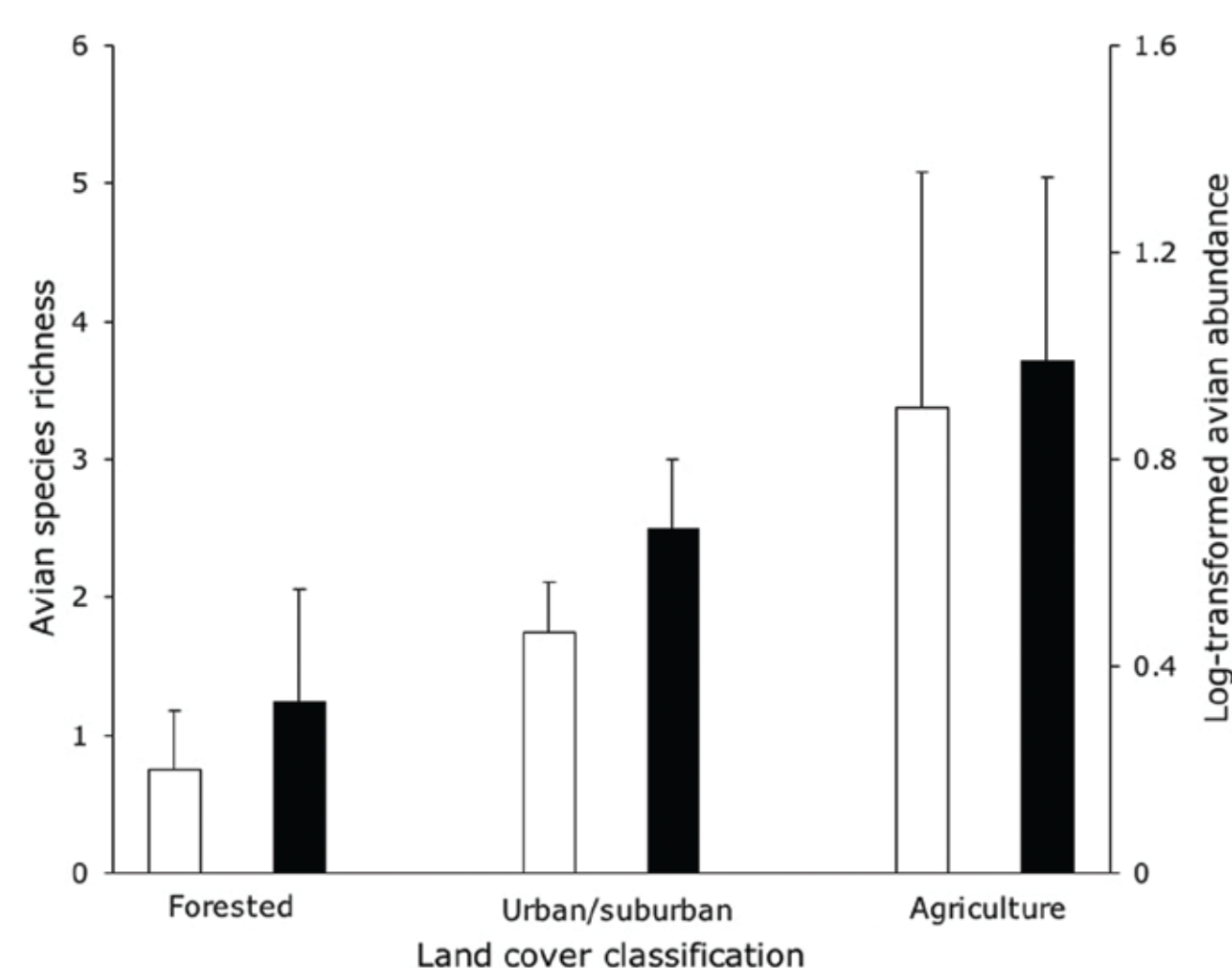


Fig. 1 Mean richness (open bars) and abundance (closed bars; + 1 SE) of wetland dependent birds across three classes of land cover.

Background:

- Approximately 40 % of land in CT is developed for agriculture and urban/suburban settlement
- Land conversion is typically associated with declines in biodiversity
- The negative response of forest songbirds to habitat conversion is well studied, however the response of wetland-dependent birds is less known

Methods:

- Selected 16 wetlands varying in surrounding land cover
- Used GIS to quantify proportion of land cover types in 200 m buffer around each wetland
- Based on dominant land cover, assigned each wetland to one of three categories: urban/suburban, agricultural, or forest
- Conducted point count surveys to record all wetland dependent birds at each wetland
- Conducted surveys in summer 2006; repeated surveys in spring 2007

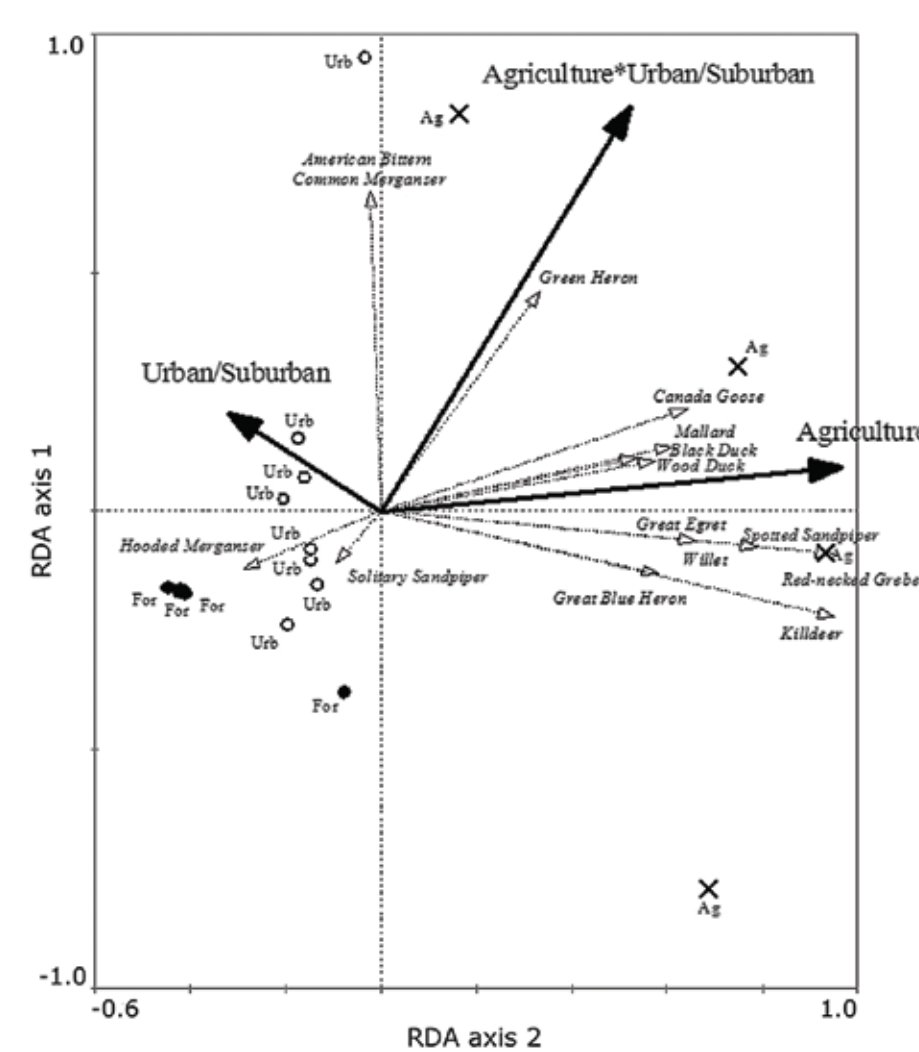


Fig. 2 Graphical results of redundancy analysis (RDA). Ordination diagram shows the relationship between species composition (dashed arrows) and the proportion of two land cover types (agriculture and urban/suburban), and their interaction (solid arrows). Open circles (O) denote urban/suburban wetlands (Urb); closed circles (+) denote forest wetlands (For); each X denotes an agricultural wetland (Ag).

Conclusion:

- Wetlands situated in human dominated landscapes support larger and more diverse communities of wetland dependent birds.
 - In particular, wetlands encompassed by agricultural landscapes support the highest richness and abundance.
- Potential mechanisms contributing to the outcome might include:
 - Food resources might be more abundant in developed wetlands
 - Bird communities may become concentrated in human dominated wetlands as conversion of surrounding landscapes decreases overall wetland abundance
- Response of wildlife to anthropogenic development is context dependent
- Developed landscapes may offer opportunities for meeting conservation objectives