Bird Conservation

Volume 25, Number 2 April 2023

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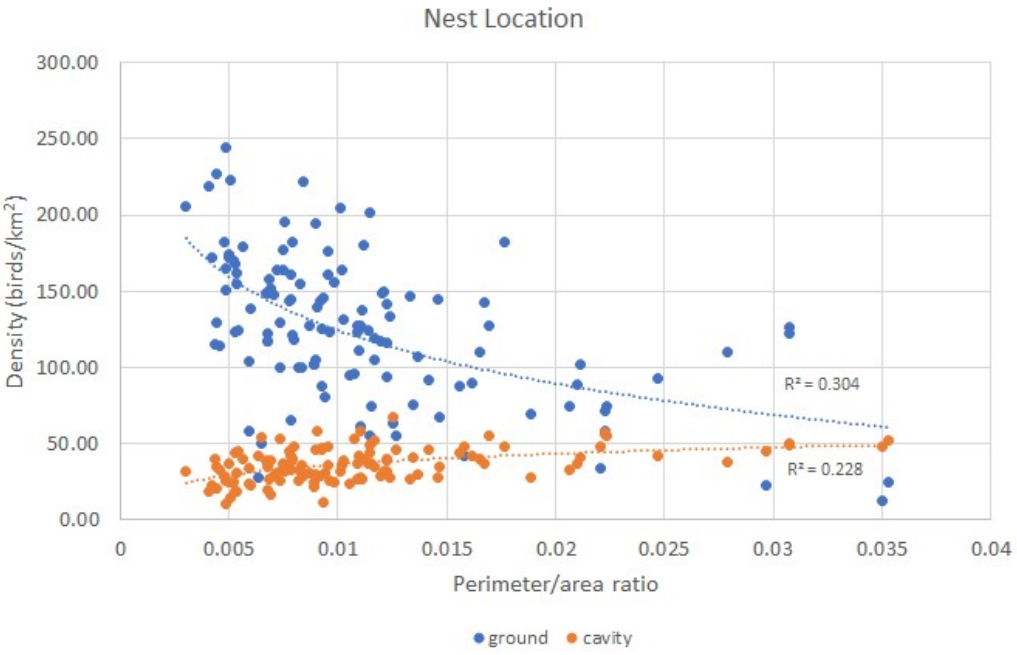
Forest Fragmentation Study's First Findings



The average density of ground-nesting birds declines with increasing forest fragmentation, whereas the density of cavity-nesting birds slightly but consistently increases.

The analysis of aerial images of our 121 bird survey routes through Connecticut are now complete. With the image data, we can examine how the landscape around survey routes affects what kinds of birds occur there. Although work continues, a number of patterns are already emerging.

We've begun by looking at how breeding birds respond to the total amount of forest present, the amount of core forest (forest more than 100 m from an edge) present, and the amount of forest fragmentation (measured

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FRAGMENTATION
-CONTINUED

Natural forest breaks like the watercourses and marshes in heavily forested Union, CT appear to have few impacts on forest bird communities other than some changes to species composition.

"...surprisingly, densities of the nest parasitic Brown-headed Cowbird show no relation to fragmentation ..."

as the forest perimeter to area ratio) present. These three measures are highly correlated, but of the three fragmentation appears to be a better predictor of a number of bird community attributes.

One attribute, where birds nest, is illustrated in the graph above. It demonstrates a moderately strong negative relationship between the density of ground-nesting birds and the degree of forest fragmentation. Chief among ground nesters showing this pattern are the Ovenbird and Veery– two of the most abundant species present in forests. In addition, tree-nesters like the also common Red-eyed Vireo, Scarlet Tanager and Eastern Wood Pewee show a similar pattern to ground-nesters. In a surprising contrast, cavity-nesting birds are more frequent in fragmented forests. Less surprisingly, forest edge and young forest-associated species show the same pattern.

Other groups showing a strong negative relationship with increasing forest fragmentation include neotropical migrants and arboreal foragers. However, species that classify as ecological generalists show little relationship to fragmentation. Similarly although again surprisingly, densities of the nest parasitic Brown-headed Cowbird show no relation to fragmentation, although in studies of midwestern forests this species experiences population increases with increasing fragmentation.

Fragmentation effects appeared to be related to human-associated breaks in forest cover. Natural forest breaks like marshes and watercourses have far fewer effects on bird communities.

Long-term Northeast CT Study Now Available

The Sharp-shinned Hawk, largely absent from Connecticut forests since the 1930s, has re-established itself as a breeding bird.

Our 20-year perspective on changes in the forest bird communities of northeastern Connecticut are available through the BCR web site. This review draft, at https://www.birdconservationresearch.org/pdf/NECT%20forest%20birds%20publisher.pdf, has now received editorial review and pending acceptance of revisions an edited version will replace this one.

The study demonstrated that in the extensive and largely undisturbed forests of the Northeast Uplands ecoregion, species composition has changed dramatically over time. Species like the Sharp-shinned Hawk above along with its close relative the Cooper's Hawk have recolonized the area after being virtually absent since the DDT era of the 1940s and 1950s. Other species have invaded from the south, including the Hooded Warbler, Kentucky Warbler and Red-bellied Woodpecker, whereas others have invaded from the north, including the Common Raven and Yellow-bellied Sapsucker. Still others like the Pine Warbler have gone from rare to abundant, and species like the Blackburnian Warbler and Black-throated Green Warbler have gone from common to uncommon.

"...in the extensive and largely undisturbed forests of the Northeast Uplands ecoregion, species composition has changed dramatically over time."

Field Station Update

Some of the 500 seedlings we have growing in preparation for the 2023 growing season.

"...we have been working to eliminate the introduced Norway Maple and replace it with such native fleshy fruit-bearing trees as the Pin Cherry."

Spring activities at the field station have included further removal of several invasive exotic shrub species from our field borders and removal of dead and dying trees so that they can be replaced with wildlife-friendly natives. Most recently, we have been working to eliminate the introduced Norway Maple and replace it with such native fleshy fruit-bearing trees as the Pin Cherry.

We have also begun preparing our agricultural plots for late April-May planting by amending the soil with compost and wood ash. Five hundred seedlings for spring planting are also growing in our greenhouse, and cold weather crops like spinach, peas and lettuce will be directly seeded into the ground shortly.

Other activities include monitoring of spring migrants moving through the area. To date, only a few migrants are present, although species like the Savannah Sparrow have begun to arrive and we expect other farmland-associated species to be arriving shortly.

Edge/Successional Birds

The versatile Gray Catbird is one of the commonest remaining bird species of forest edge habitats.

Forest birds include more than solely those species that live in the interior of mature forests. Since it first began growing in southern New England about 11,000 years ago, the forest has included a mosaic of habitats and not simply mature forest. In response to disease, fire, storms and other types of natural disturbance, forests were opened and seedlings of trees that germinate in full sun, such as oaks, pines, cherries and hickories, became established and grew into early successional woodlands. This open type of habitat was then replaced over time by dense stands of sapling trees. As these stands matured, additional more shade tolerant species like maples and beeches became established and competition among the trees resulted in forest thinning. Ultimately, mature forest returned.

This mosaic of forest types led to the evolution of bird species that specialize in particular stages in forest development. Thus, species like the Blue-winged Warbler, Song Sparrow and Gray Catbird specialize in early successional forests, whereas species like cuckoos, Least Flycatchers and American Redstarts are characteristic of mid-successional forests. A number of species, including catbirds, redstarts, orioles and Rose-breasted Gros-beaks are at home even in small forest openings that are termed forest gaps.

"This mosaic of forest types led to the evolution of bird species that specialize in particular stages in forest development."

The Newsletter of
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The Louisiana Waterthrush is one of our earliest spring migrants.

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It is time to renew your membership for 2023. If you have not yet become a member, you may do so online through GoFundMe (https://www.gofundme.com/f/1nqlss). Memberships remain one of our principal means of funding the projects that we conduct, so please consider joining us. Membership applications and contribution options are also available on our web site: https://www.birdconservationresearch.org/membership.php.