

Species traits determine the influence of anthropogenically-modified habitats on forest bird occurrence throughout the annual cycle

The conversion of forest to agriculture is considered one of the greatest threats to avian biodiversity. Our current understanding of avian responses to deforestation largely comes from small-scale studies during one stage of the annual cycle. However, both migratory and resident species can vary greatly in the environments they experience and their habitat and resource requirements at different times and locations across the annual cycle, which may impact how they respond to land cover modification. Using data from the eBird community-science program, we investigated associations between anthropogenically-modified land cover and the occurrence of 238 forest birds based on three sets of avian traits: migration strategy, dietary guild, and foraging strategy. We used species distribution models to quantify the importance of human-modified land cover across the Western Hemisphere then assessed how relationships varied among seasons and traits. The importance of modified land cover varied widely across seasons and trait groups, but was generally greatest outside of breeding season and least for omnivores. Neotropical migrants were one notable exception, with modified cover being most important during pre- and post-breeding periods and least during the nonbreeding season. Overall, Neotropical residents and frugivores responded more positively to modified land cover than to natural land cover across the annual cycle. Because our results show that associations with anthropogenically-modified habitats vary widely by season and species groups, management efforts that are based upon broad generalizations may be ineffective.