

Bird assemblage development in the canopy and understorey of Neotropical secondary forest

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Secondary forest habitats are increasingly recognized for their potential to conserve biodiversity in the tropics. However, the development of faunal assemblages in secondary forest will vary according to habitat quality and species-specific traits.

In this study, we predicted that bird assemblage development would be dependent on secondary forest age and level of isolation, and on the species' traits of diet and body mass. Critically, assemblage development will vary between the canopy and the understorey.



Canopy-dwelling species such as Keel-billed Toucans (left) regularly travel some distance, whilst understorey insectivores such as Bicoloured Antbirds (right) are unable to disperse very far. These differing traits affect a species' ability to colonise secondary forests.

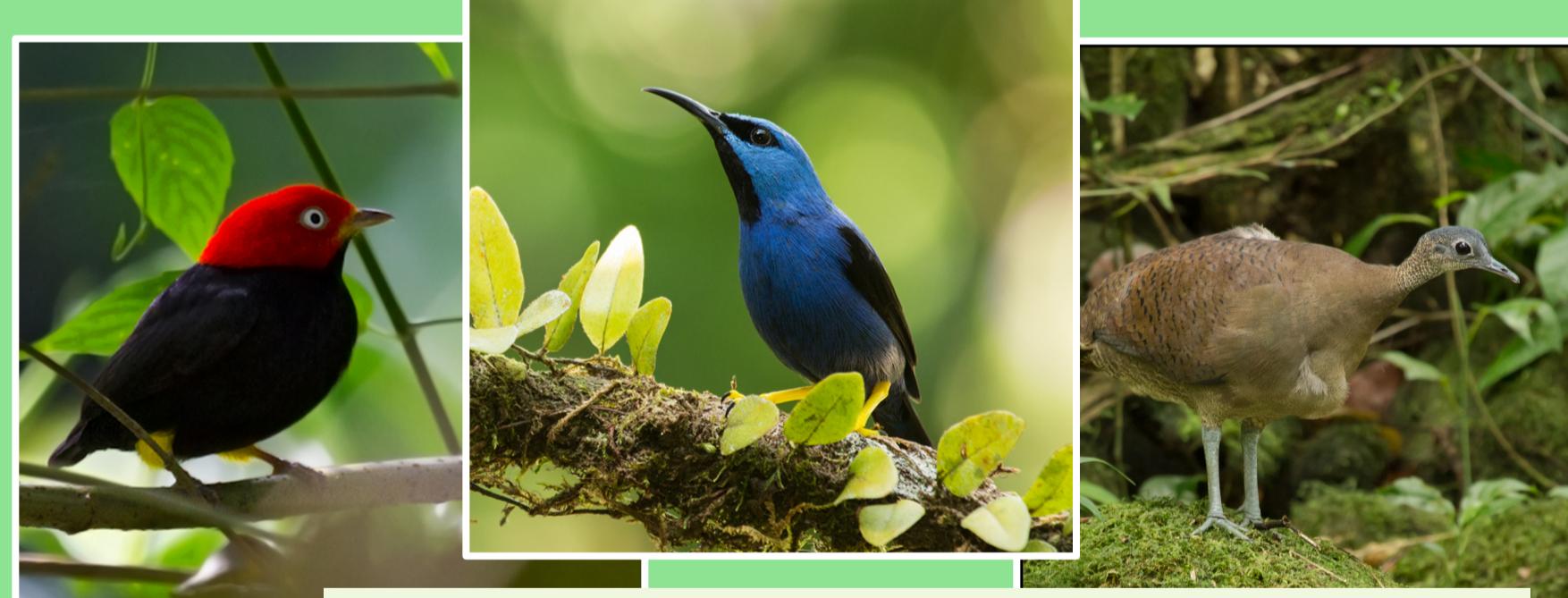
This study was undertaken in central Panama: in 60, 90 and 120 year-old secondary forests, and neighbouring old-growth forest.

To give equal attention to all forest strata, we employed a novel method that paired simultaneous surveys in canopy and understorey. This survey method provides a more nuanced picture than ground-based studies, which are biased towards understorey assemblages.



Bird assemblage development varied according to both habitat age and level of isolation, but these factors affected understorey birds more than canopy dwelling birds.

Canopy assemblages were characterized by higher species diversity, and greater variation in both dietary breadth and body mass, relative to understorey assemblages. Their traits predispose canopy-dwelling species to greater tolerance of sub-optimal habitats.



Red-capped Manakins (left) are forest generalists inhabiting all levels of forest. Shining Honeycreepers (middle) inhabit forest canopy of all ages. Great Tinamous (right) are understorey birds restricted to older and more connected forests.

Conclusions

Secondary forests may offer critical refugia for many bird species, particularly specialist canopy-dwellers. However, successful dispersal into secondary forest is strongly dependent on both suitable mature habitat, and a lack of barriers to colonisation. Understorey bird species may be less able to colonise and adapt to these habitats, and should be the focus of conservation efforts encouraging bird colonisation of secondary forests.

This work would not have been possible without financial support from the Percy Sladen Memorial Fund, and from the Smithsonian Tropical Research Institute.

In addition, we would like to thank: Joe Wright and Rachel Page, who commented on the study design at an early stage; Steve Yanoviak and Max Adams, for many tree-climbing related discussions, and to the latter for demonstrating the tree-climbing techniques used in this study; Oris Acevado, Belkys Jimenez and the rest of the STRI staff, for facilitating this work; and the members of the Tropical Ecology and Conservation (TEAC) group at the University of Stirling for many helpful discussions, particularly Nils Bunnefeld and Tim Paine.

A paper based on this study is currently in review.

If you would like more information, please get in touch.



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