

Editorial

Birds in Temperate and Tropical Forests: Introduction to the Special Issue

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Globally, forests are the most threatened habitats, especially due to tree logging and other disturbances caused mainly by humans. Therefore, the wildlife vertebrate communities within these ecosystems face great threats and individual species are assumed to evolve complex adaptive mechanisms based on these changes in the environment. Bird communities within forests represent highly flexible communities that promptly react to these changes due to their abilities to fly. However, the changes in bird communities under various disturbances still represent an evergreen topic in community ecology. Whereas the distribution of general bird species residing in especially temperate forests is quite well known, we still lack this information for tropical areas with the most pronounced forest losses. There are also other challenging issues still waiting to be uncovered, such as detailed responses of bird communities to small-scale disturbances, the effect of invasive plant species, or detailed descriptions of changes in the diurnal activities of bird species within the same feeding guild or of the interactions among the species within one taxonomic group. The articles included in this Special Issue at least partly shed more light on the abovementioned topics and deal with other general topics related to forest birds within temperate, subtropical, and tropical regions.

The first article deals with the activity patterns of syntropic Columbidae species within Guadeloupe [1]. The three species studied differed in their abundances, and they simultaneously showed different daily activities and habitat preferences, allowing them to coexist. The species-specific temperature optima were also discovered. An interesting part of this study was a comparison of the daily activities of these species with non-native species such as domestic dogs, domestic cats, or small Indian mongooses. The latter issue represents a new challenging opportunity for future research, since the effect of non-native predators on the populations of native Columbidae species in this area remains to be uncovered.

The second article compared bird assemblages during the breeding and non-breeding seasons among urban-forested areas, with different landscape and vegetation structures, in China [2]. The main result was that simplified habitats represent poor wintering habitats and that municipal parks served as key wintering habitats. During the breeding season, the key factor positively affecting the species richness was woodland areas. These findings can significantly improve planning of the structure of vegetation within urban parks.

Another study from China conducted an inter-species comparison of the calling activity of seven Cuculidae species that use nesting parasitism [3]. The authors clearly showed that both diurnal and temporal patterns of the calling activities differed among the species. The differences reflected the breeding strategy of each species, especially the effect of the availability of nests suitable for laying the eggs of the host species. Most of the species simultaneously showed a decrease in vocal activity throughout the course of the breeding season because of the need to find a mate early in the breeding season. These results bring a unique perspective to how these species co-exist within the study area and how they cope with changing breeding opportunities.



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The spreading of invasive non-native plant species may also negatively affect the bird community structure. The fourth study, by Grzędzicka [4], showed that *Heracleum* species represent a current threat for forest bird diversity in Poland. The sites with increased area of *Heracleum* growth showed less individuals and a lower number of species overall, compared with the control sites. These differences were pronounced for the group of forest bird species that formed a unique bird community within the sites affected by increased presence of *Heracleum* plants. The authors also concluded that removing a particular part of the *Heracleum* growth might facilitate regeneration of native growth and contribute to increasing the alpha diversity of forest bird communities.

Small-scale disturbances within the forest may also affect the structure of bird communities considerably. The study by Cameroon [5] showed that forest elephants play an important role as ecosystem engineers within the pristine mature rainforest. They significantly change the vegetation structure, which further affects the structure of the bird community. The gaps in the vegetation further attract some non-forest species, which consequently increase the diversity of the forest bird community. It is important to note that the study was performed within an area with intermediate abundance of forest elephants. The effect of elephant activities on bird community structure within areas with increased an abundance of elephants therefore represents a challenge for future research.

The last article describes the foraging behavior of selected bird species in Fiji's forest in detail [6]. Since forest bird communities are often very complex, the feeding behavior of particular species should be optimized according to the feeding tactics of other species due to their competitive relationships. Consequently, the species within the same higher taxonomical groups clearly differed in foraging height. Such a niche partitioning theory was already established by Darwin, and we need to gather data from various forest ecosystems to confirm his idea on a broader scale.

In conclusion, the articles in this Special Issue significantly improve our knowledge on the mechanisms shaping the diversity of forest bird communities from different areas of the world. Simultaneously, the results uncovered the complex relationships among species and helped us solve the puzzle that is behind the complex ecosystem of a forest.

Conflicts of Interest: The author declares no conflict of interest.

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