Responses of Chilean forest birds to anthropogenic habitat fragmentation across spatial scales

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Although it is recognized that anthropogenic forest fragmentation affects habitat use by organisms across multiple spatial scales, there is uncertainty about these effects. We used a hierarchical sampling design spanning three spatial scales of habitat variability (landscape > patch > within-patch) and generalized mixed-effect models to assess the scale-dependent responses of bird species to fragmentation in temperate forests of southern Chile. The abundances of nine of 20 bird species were affected by interactions across spatial scales. These interactions resulted in a limited effect of within-patch habitat structure on the abundance of birds in landscapes with low forest cover, suggesting that suitable local habitats, such as sites with dense understory cover or large trees, are underutilized or remain unused in highly fragmented landscapes. Habitat specialists and cavity-nesters, such as tree-trunk foragers and tapaculos, were most likely to exhibit interactions across spatial scale