Biology Seminar

Western
UNIVERSITY · CANADA

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on ZOOM

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Population density and site-occupancy dynamics of understory birds across an Amazon forest disturbance frontier

When the large-scale field experiment of the Biological Dynamics of Forest Fragments Project was implemented in the central Brazilian Amazon, 43 years ago, thousands of hectares of old growth forest were cleared for cattle pasture, leaving a set of 1-, 10- and 100- ha forest islands in its midst, which were the focus of much subsequent research. The cleared area, surrounded by old-growth that still extends hundreds of kilometers to the north, east and west, was soon abandoned by ranchers giving place to a disturbed, secondary-forest area that has been re-colonized by plants and animals from the adjacent old growth. This talk presents a comparison of the understory bird faunas in old growth and secondary forest areas on either side of the disturbance frontier. The comparison is based on two 5-year sets of mark-recapture (2013-2017) and site-occupancy (2010-2014) data. The data concerns 83 bird species, one fifth of which appear in both datasets. The mark-recapture information, analyzed with spatial capture-recapture models, reveals a moderate tendency toward lower population densities and bigger home range sizes in the secondary forest than in old growth. The bioacoustic site-occupancy data, which was automatically processed to identify vocalizations of 62 species, does not show the expected accumulation of species in secondary forest, perhaps because five years is two short a period for detecting signs of succession. Our multi-species site-occupancy dynamics models do show, however, a tendency for detection probability to decrease over time in the old growth. These results are discussed in the light of demographic responses to a disturbed environment and of possible effects of the climate crisis on the apparently untouched old-growth forest.

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