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ABSTRACT BOOK

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Agricultural expansion as a major driver of deforestation in conserved tropical landscapes

H Manjari Jayathilake

Earth's land surface continues to experience human pressures that rapidly intensify in high biodiversity areas. Agricultural expansion, a major driver of deforestation, is increasingly affecting such protected landscapes globally. We surveyed 29 of Wildlife Conservation Society (WCS) global tropical landscapes using the Driver-Pressure-State-Impact-Response framework to identify the current major drivers of deforestation, most relevant threats and opportunities available for improvement. We collected this information from WCS landscape managers with a targeted structured survey questionnaire, a quick and inexpensive method. The current main driver of deforestation in the considered landscapes is agriculture, in both commercial and subsistence scales, followed by settlement expansion and infrastructure development. Asian and African landscapes are the most affected by ongoing deforestation activities with higher percentage deforestation rates compared to the Americas. Rice, rubber and cassava are the top three commercial crops listed as drivers while rice, cassava and maize are the top three subsistence crops. Respondents expect current deforestation to continue at equal or greater magnitude in the majority of surveyed landscapes. The findings suggest that more effective management responses are needed to maintain the viability of these biodiversity-rich, largely protected areas.

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Symposium 11.2 - Feeding the planet whilst minimizing environmental and socio-economic costs

Shifting baselines provide over-optimistic assessments of the impacts of land-use change on biodiversity

Anderson Saldanha Bueno and Carlos A. Peres

Environmental impact assessments largely rely on comparing control sites with impacted sites, so that greater site contrasts result in higher impact diagnostics. The intactness of control sites as a baseline condition is therefore likely to affect the outcomes of such assessments and the conservation strategies proposed to mitigate the impacts. Degraded baselines experiencing previous extinction filters or the proliferation of disturbance-adapted species are expected to yield lower contrasts with impacted sites, compared to intact baselines. We surveyed understorey birds in five continuous intact forest sites (control) and 33 forest islands (impacted sites) within a large hydroelectric reservoir in Brazilian Amazonia, and defined two types of species assemblages derived from 2,115 captures representing 130 species. The first includes only those intact species assemblages occurring within control, whereas the second comprises all species occurring in both control and impacted sites (overall species assemblage). We then compared the slopes of species-area relationships for these two species assemblages to assess the degree to which estimated impact of habitat loss on the number of species differs between them. We also used a complementary approach to define the minimum set of forest island retaining the maximum combined number of species for each species assemblage. Furthermore, we produced a gradient of baseline degradation to assess the extent to which estimated conservation values of forest islands are affected by baseline intactness. This gradient was based on the forest area of five sets of reference sites, namely continuous forest, 1,000 ha, 500 ha, 250 ha and 100 ha. We show that a focus on intact species assemblages not only reveals a greater impact of habitat loss on the number of species but also reduces conservation investments in terms of the number of forest islands to be protected. Finally, we provide empirical evidence that degraded baselines over-inflates the estimated conservation value of impacted sites in relation to "true" estimates based on intact baselines.

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