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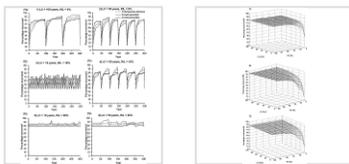
4. Discussion

Acknowledgments

References

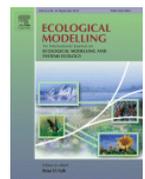
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Ecological Modelling

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Effects of different logging schemes on bird communities in tropical forests: A simulation study

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Abstract

Most tropical forests are located in developing countries which heavily utilize their natural resources for development. Thus, setting aside remaining natural forests for conservation purposes is nearly impossible. Balancing economic activities, such as logging, with conservation programs will play an important role in conserving the rich biodiversity typical of these regions. Therefore, the effects of logging on biodiversity need to be more thoroughly understood. To address this, we simulated the recovery of avian communities following a variety of potential logging schemes that varied by the logging interval (1–100 years) and the wood volume left after harvesting (0–100%). The recovery rate of forest generalists was very high during the first 15 years of succession and then became asymptotic. The recovery rate of forest specialists remained high until about 50 years of succession. After 50 years, the recovery rate was lower, and fewer bird species colonized in subsequent years. Logging schemes with either a logging cycle >15 years or wood volume left after harvesting >30% resulted in 70% of the regional forest bird species pool being conserved. The results from these simulations suggest that logging schemes with either cycle lengths >40 years or wood volume left after harvest >55% should be implemented to conserve 80% of the species pool. Our simulations provide a prediction of how avian communities could be affected under different logging schemes and can provide guidance to management agencies in developing, forested tropical countries.

### Highlights

► Simulations predict how logging affects avian communities in tropical forests. ► Generalist bird species recovered quickly during the first 15 years after logging. ► Specialist species recovery remained high until 50 years post-logging. ► Logging cycle lengths >40 years allow for conservation of 80% of bird species. ► Leaving >55% wood volume after logging allows for conservation of 80% of species.

### Abbreviations

MYRLIN, methods of yield regulation with limited information; LC, logging rotation cycle; WL, wood volume left after a logging event

### Keywords

Avian community; Forest management; Forest specialists; Forest generalists; Logging; Southeast Asia; Tropical natural forest

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