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Population changes of endemic species in disturbed tropical rainforests

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The land-use change is currently the greatest threat of tropical biodiversity. Changes in environmental conditions caused by forest disturbances may increase and accelerate certain extinction processes, especially those which are linked to species with more specific ecological interactions. Endemic species are likely to be more sensitive to these changes. From a conservative perspective, the loss of these species leads to a loss of biodiversity on a wider scale. Therefore, the objective of this study is to evaluate how forests submitted to deforestation (secondary forest) and how selective logging forests affect their population of endemic species. The study was developed in nine fragments of Atlantic Forest. The nine fragments presented different sizes and they were categorized as unmanaged, logged and secondary forest. In each fragment we sampled all trees with diameter ≥ 4.8 cm at breast high in 0.5 ha and we used the database "Flora do Brasil" to classify the endemic species to the Atlantic Forest domain. In order to analyze the effect of fragment size and disturbance regime on endemic species richness and abundance we used generalized mixed models with negative binomial distributions (count data). The best model was indicated by the lowest AICc value. We observed that the endemic species were impacted by forest disturbance regime ($F= 18.326$; $p < 0.001$), however, they were not impacted by forest size ($F= 11.714$; $p= 0.179$). The richness and abundance of endemic species were not significantly different between the unmanaged and logged forests. Nevertheless, secondary forests presented significant lower values of endemic species richness ($Z= -5.298$; $p < 0.001$) and abundance ($Z= -3.813$; $p < 0.001$) than other forests evaluated. Finally, we conclude that logged forests can still retain rates of endemism equivalent to those found in unmanaged forests and higher than those found in secondary forests. This suggests that efforts to conserve and recover biodiversity should also focus on disturbed forests.

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