

Forest restoration: a global dataset for biodiversity and vegetation structure

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Abstract. Restoration initiatives are becoming increasingly applied around the world. Billions of dollars have been spent on ecological restoration research and initiatives, but restoration outcomes differ widely among these initiatives in part due to variable socioeconomic and ecological contexts. Here, we present the most comprehensive dataset gathered to date on forest restoration. It encompasses 269 primary studies across 221 study landscapes in 53 countries and contains 4,645 quantitative comparisons between reference ecosystems (e.g., old-growth forest) and degraded or restored ecosystems for five taxonomic groups (mammals, birds, invertebrates, herpetofauna, and plants) and five measures of vegetation structure reflecting different ecological processes (cover, density, height, biomass, and litter). We selected studies that (1) were conducted in forest ecosystems; (2) had multiple replicate sampling sites to measure indicators of biodiversity and/or vegetation structure in reference and restored and/or degraded ecosystems; and (3) used less-disturbed forests as a reference to the ecosystem under study. We recorded (1) latitude and longitude; (2) study year; (3) country; (4) biogeographic realm; (5) past disturbance type; (6) current disturbance type; (7) forest conversion class; (8) restoration activity; (9) time that a system has been disturbed; (10) time elapsed since restoration started; (11) ecological metric used to assess biodiversity; and (12) quantitative value of the ecological metric of biodiversity and/or vegetation structure for reference and restored and/or degraded ecosystems. These were the most common data available in the selected studies. We also estimated forest cover and configuration in each study landscape using a recently developed 1 km consensus land cover dataset. We measured forest configuration as the (1) mean size of all forest patches; (2) size of the largest forest patch; and (3) edge:area ratio of forest patches. Global analyses of the factors influencing ecological restoration success at both the local and landscape scale are urgently needed to guide restoration initiatives and to further develop restoration knowledge in a topic area of much contemporary interest.

Key words: *amphibians; birds; ecological restoration; fragmentation index; invertebrates; landscape ecology; mammals; meta-analysis; reptiles; restoration success; species composition; vegetation structure.*

The complete data sets corresponding to abstracts published in the Data Papers section of the journal are published electronically as Supporting Information in the online version of this article at <http://onlinelibrary.wiley.com/doi/10.1002/ecy.1474/supinfo>.