Deforestation and avian extinction on tropical landbridge islands

Abstract

here are few empirical data, particularly collected simultaneously from multiple sites, on extinctions resulting from human-driven land-use change. Southeast Asia has the highest deforestation rate in the world, but the resulting losses of biological diversity remain poorly documented. Between November 2006 and March 2008, we conducted bird surveys on six landbridge islands in Malaysia and Indonesia. These islands were surveyed previously for birds in the early 1900s, when they were extensively forested. Our bird inventories of the islands were nearly complete, as indicated by sampling saturation curves and nonparametric true richness estimators. From zero (Pulau Malawali and Pulau Mantanani) to 15 (Pulau Bintan) diurnal resident landbird species were apparently extirpated since the early 1900s. Adding comparable but published extinction data from Singapore to our regression analyses, we found there were proportionally fewer forest bird extinctions in areas with greater remaining forest cover. Nevertheless, the statistical evidence to support this relationship was weak, owing to our unavoidably small sample size. Bird species that are restricted to the Indomalayan region, lay few eggs, are heavier, and occupy a narrower habitat breadth, were most vulnerable to extinction on Pulau Bintan. This was the only island where sufficient data existed to analyze the correlates of extinction. Forest preservation and restoration are needed on these islands to conserve the remaining forest avifauna. Our study of landbridge islands indicates that deforestation may increasingly threaten Southeast Asian biodiversity. © 2010 Society for Conservation Biology.