

The ecology of extinction

Daniel Simberloff

Acta Palaeontologica Polonica 38 (3-4), 1993: 159-174

Studies of species-area curves and of the spatial correlation of biogeographic ranges with climatic variables may allow some crude prediction of amount of extinction over large regions in the face of major environmental change. However, these approaches tell little about the proximate causes of species loss. The contention that failure of metapopulation dynamics is at the root of many species extinctions is so far not borne out by observed rates of inter-population movement. Rather, most species that have a metapopulation structure seem to have central source populations and peripheral sink populations. Much of the extinction recorded in the ecological literature is probably of such peripheral populations and their loss has little to do with species extinctions. The disappearance of central, source populations is more important but its causes are not well documented. Habitat loss is the single greatest ultimate cause of current extinction. However, disappearance of the very last individuals of the last population of a species may not be obviously related to habitat loss. Rather, it may seem mysterious, because the last individuals will look healthy, or it may seem attributable to one of the stochastic forces widely assumed to set minimum viable population sizes.

Key words: biogeographic range, body size, extinction, metapopulation, minimum viable population size, species-area curve

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.