

David M. Theobald, *Estimating natural landscape changes from 1992 to 2030 in the conterminous US*, Landscape Ecology 25: 999–1011 (May 1, 2010).

Abstract

Quantifying landscape dynamics is a central goal of landscape ecology, and numerous metrics have been developed to measure the influence of human activities on natural landscapes. Composite scores that characterize human modifications to landscapes have gained widespread use. A parsimonious alternative is to estimate the proportion of a cover type (i.e. natural) within a spatial neighborhood to characterize both compositional and structural aspects of natural landscapes. Here I extend this approach into a multi-scale, integrated metric and apply it to national datasets on land cover, housing density, road existence, and highway traffic volume to measure the dynamics of natural landscapes in the conterminous US. Roughly one-third of the conterminous US (2.6 million km²) in 1992 was classified as human-dominated. By 2001 this expanded by 80,800 km², and forecasted residential growth by 2030 will potentially lead to an additional loss of up to 92,200 km². Wetland cover types were particularly affected. The natural landscapes metric developed here provides a simple, robust measure of landscape dynamics that has a direct physical interpretation related to proportion of natural habitat affected at a location, represents landscapes as a gradient of conditions rather predicated on patch/matrix definition, and measures the spatial context of natural areas.