FORREX Supporting Sustainable Natural Resource Management Decisions

Abstract

Dispersal-based indices and mapping of landscape connectivity

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Connectivity is often recommended as a coarse-filter indicator of landscape-level biodiversity, but useable measures of the concept for management applications are poorly developed. We describe a dispersal-based algorithm to index and map connectivity, modified from Richards *et al.* (2002). Users define hypothetical species with simple habitat and dispersal suitability models, home range sizes, and potential dispersal scales. Dispersal is simulated from suitable home ranges, with habitat-based declines in survivorship imposed with distance travelled. Indices include suitable home ranges, suitable home ranges encountered by dispersers, and a combined index of amount and connectivity of suitable habitat. Dispersal success and dispersers passing through each cell are mapped to help guide detailed landscape planning. We illustrate the connectivity algorithm with landscape scenarios simulated on a landscape in the North Thompson drainage of southern British Columbia. Compared to the simulated fire regime, clearcutting led to moderate declines in suitable home ranges and connectivity, clearcutting with Old-Growth Management Areas (OGMAS) produced a slight recovery by year 100, while partial cutting increased suitable habitat and dispersal. OGMAS and partial cuts better maintained some corridors. The connectivity algorithm, in conjunction with other indicators, is a useful tool for comparing planning scenarios, indexing progress over time, and guiding more detailed landscape planning.

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