Species-level persistence probabilities for recovery and conservation status assessment

Jun 23, 2016

Author:
Judy P. Che-Costaldo and Maile C. Neel

Abstract:

Recovery planning for species listed under the U.S. Endangered Species Act has been hampered by a lack of consistency and transparency, which can be improved by implementing a standardized approach for evaluating species status and developing measurable recovery criteria. However, managers lack an assessment method that integrates threat abatement and can be used when demographic data are limited. To help meet these needs, we demonstrated an approach for evaluating species status based on habitat configuration data. We applied 3 established persistence measures (patch occupancy, metapopulation capacity, and proportion of population lost) to compare 2 conservation strategies (critical habitat designated by the U.S. Fish and Wildlife Service and the Forest Service’s Carbonate Habitat Management Strategy) and 2 threat scenarios (maximum limestone mining, removal of all habitat in areas with mining claims; minimum mining, removal of habitat only in areas with existing operations and high-quality ore) against a baseline of existing habitat for 3 federally listed plant species. Protecting all area within the designated critical habitat maintained a similar level (83.9–99.9%) of species persistence as the baseline, whereas maximum mining greatly reduced persistence (0.51–38.4% maintained). The 3 persistence measures provided complementary insights reflecting different aspects of habitat availability (total area, number of patches, patch size, and connectivity). These measures can be used to link recovery criteria developed following the 3 R principles (representation, redundancy, and resilience) to the resulting improvements in species viability. By focusing on amount and distribution of habitat, our method provides a means of assessing the status of data-poor species to inform decision making under the Endangered Species Act.

Read the full article in Conservation Biology. [1]

Associated SESYNC Researcher(s):
jchecastaldo [2]

DOI for citing:
DOI: 10.1111/cobi.12728

Source URL:
https://www.sesync.org/species-level-persistence-probabilities-for-recovery-and-conservation-status-assessment

Links