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POPULATION VIABILITY ANALYSIS

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INTRODUCTION

Population viability analysis (PVA) is a process. It entails evaluation of data and models for a population to anticipate the likelihood that a population will persist for some arbitrarily chosen time into the future (125, 128). A closely related concept is minimum viable population (MVP) analysis. An MVP is an estimate of the minimum number of organisms of a particular species that constitutes a viable population. Reference is also made to population vulnerability analysis which is a negative appellation for PVA. PVA embraces MVP, but without seeking to estimate the absolute minimum population necessary to keep a species viable (136).

In the United States, the US Forest Service has a mandate to preserve viable populations on its lands under the National Forest Management Act (158). Likewise, the US Fish and Wildlife Service and the National Marine Fisheries Service have been evaluating PVAs for many species or populations proposed for listing under the Endangered Species Act (152). Establishing criteria for what constitutes a viable population is no longer strictly an academic pursuit.

PVAs have been attempted for at least 35 species; perhaps the most celebrated are those for the grizzly bear (*Ursus arctos horribilis*) (126, 129, 144), and the northern spotted owl (*Strix occidentalis caurina*) (18, 79, 95, 98a). Most PVAs are simulation studies that remain unpublished, or when published, they may only include outlines of model structure (95, 126, 131). Others invoke analytical methods or "rules of thumb," always burdened with severe assumptions (31, 152). PVAs vary according to the ecology of the species, the expertise of the modelers, and the extent of available data.

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