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# Vital steps toward success of endangered plant reintroductions

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## ABSTRACT

Reintroduction of endangered plants faces many challenges, but the survival of some species may depend on its success. What measures should practitioners take to ensure a successful project, and how should success be measured? Steps in the reintroduction process include planning and identification of objectives, finding source material, propagation, site selection, site preparation, outplanting, monitoring, evaluation and interpretation, feedback to improve protocols, communication with others, habitat maintenance, and repeated actions if necessary to meet objectives. Conducting reintroductions as designed experiments and applying the results through adaptive management will maximize the effectiveness of reintroductions.

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## KEY WORDS

recovery, rare species, restoration, translocation, population augmentation

## NOMENCLATURE

USDA NRCS (2008)

**R**eintroduction of endangered species is a step that becomes necessary when too few populations exist in the wild to sustain long-term viability, or when management objectives call for additional populations in areas where a species has been extirpated. In addition, reintroduction may be implemented to mitigate for population losses caused by habitat development or changes in management priorities, but mitigation of this sort is much more controversial and fraught with ethical concerns (for example, see Allen 1994). In a review of 181 recovery plans for endangered species, one study (Hoekstra and others 2002) found that 72% of plans call for some form of reintroduction. But how does one go about reintroducing a species that is missing from a portion of its historic range?

Population reintroduction is a field still searching for a consistent vocabulary (Armstrong and Seddon 2008). *Translocation* is a term widely used for the same process, and the term can include the wholesale transplanting of individuals or populations from one wild site to another. *Augmentation* is one form of reintroduction that involves adding individuals to an existing population to increase its size and viability. *Introduction* is also sometimes used as a synonym for reintroduction or translocation, but the term also describes the process of nonnative and invasive species movement into a new region. I use the term *reintroduction* here inclusively, meaning all forms of placing plant materials into occupied or unoccupied sites of an endangered species within its historic range or ecoregion, with the