Maryland Department of Natural Resources
Wildlife & Heritage Service

Guidelines for Rare, Threatened and Endangered Plant Reintroductions in Maryland

Guidelines for planning, implementing, and evaluating reintroductions of rare, threatened or endangered plants for the purpose of establishing viable, self-sustaining populations are presented below. These guidelines are intended to assist the Department of Natural Resources and others in decision-making for permitting, funding, or implementing plant reintroductions to benefit rare, threatened or endangered plants. The use of these guidelines is also encouraged for reintroductions of other plant species for conservation purposes.

Reintroduction is defined as: *To establish a plant taxon that was recently lost from part of its historic range or that enhances populations which remain within its historic range.* Historic range includes suitable habitat within the physiogeographic range of the taxa since the 1600s, but not necessarily documented from the specific site.

The Department of Natural Resources recognizes reintroductions as a valid tool for rare, threatened, and endangered plant conservation. However, reintroductions are not be considered a substitute for the protection of existing rare plant populations.

These guidelines are in three parts. The first section is intended to help assess the need or appropriateness of reintroduction; the second section helps guide the implementation process; and the last section establishes criteria to measure success, both in the short-term and long- term.

The Guidelines

Is Reintroduction Appropriate?

Need

1. Status of the species, including global status and population status within the state.
2. Threats to species.
3. Risk of extirpation from the state, including future trends.
4. Historical levels in the state, including past losses.

Biological Issues

1. Basic biology of the species, including life history, genetics, and demographics. Supplemental information may include disease concerns, pest problems, and knowledge of small population dynamics.
2. Reproductive system of the species, including life span (annual, perennial), pollination biology, asexual or clonal growth, seed dispersal, and reproductive phenology.

Ecosystem Issues

1. Habitat requirements, including soils, aspect, hydrology, and special adaptations or needs.
2. Role of plant in ecosystem, including essential ecological processes.
3. Community associates and interactions with other plants and animals.

Location

1. Historic range, including historic records.
2. Landowner commitment and site preservation mechanisms.
3. Site description, including management needs.

How Will Reintroduction Be Conducted?

Source of Plants

1. Number of source sites and description of each site, including population sizes of target plant, habitat, and location.
2. Assess risk of disease, pests, and weeds associated with the source population that could potentially be introduced.
3. Legal and permit requirements addressed. Proof of legal acquisition from another state or written permission of landowner for collection provided.

Methodology

1. Description of how the source material is to be obtained, including field collection techniques, preparation of plant material, and propagation methods.
2. Scientific approach to be used for designing and implementing reintroduction. Experimental design provided when appropriate. Site management needs, such as prescribed burning, vegetation control, etc., addressed when appropriate.
3. Protocol to be established for monitoring the progress of the reintroduction, including factors for measuring success.
4. Justification for the methods selected, including evaluation of other techniques not selected.
5. Encourage a contingency plan in the event the selected methodology does not work or unforeseen circumstances occur.

How Is Success Measured?

Short-Term (few generations)

1. Life cycle of the plant is completed *in situ.*
2. Reproduction occurs on site and a progressive increase in the established population is documented, with lambda (i.e., rate of population growth) greater than 1.0 in at least one year. Seed production and life stage distribution is similar to naturally occurring reference populations.
3. Established population expands beyond the reintroduction site as facilitated by native vectors. Outcrossing satellite groups are established.

Long-Term (after several generations)

1. Persistence is exhibited as subpopulations persist through natural environmental cycles in greater than one microhabitat and with maximum microhabitat diversity among populations.
2. Minimum viable population size is attained and maintained.
3. Established populations exhibit resilience through their ability to recover from perturbations, either natural or anthropogenic. This may be measured by seed bank densities being similar to reference populations.
4. Established populations maintain a low coefficient of variation in effective population size.

For more information, please contact:

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