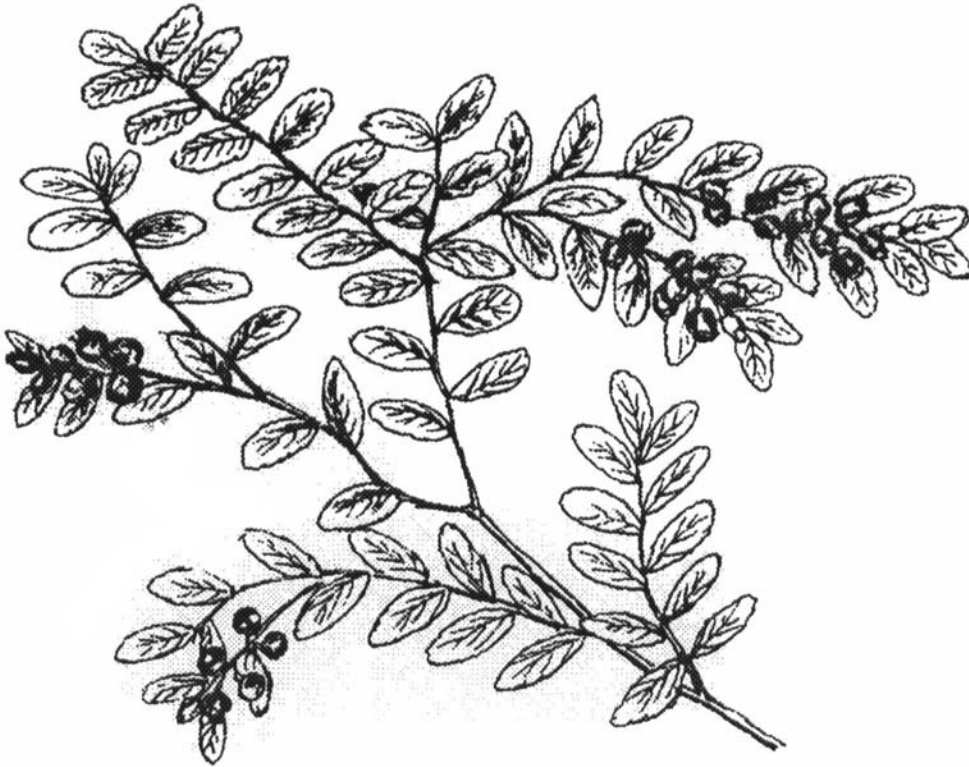


GUIDELINES FOR THE REINTRODUCTION OF RARE PLANTS IN MARYLAND



REPORT OF THE PLANT REINTRODUCTION TASK FORCE

November 1999

PLANT REINTRODUCTION TASK FORCE

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March 6, 2000

Sarah J. Taylor-Rogers, Ph.D.
Maryland Department of Natural Resources
580 Taylor Avenue
Annapolis, MD 21401

Dear Dr. Taylor-Rogers:

In the spring of 1999 a task force was convened to develop guidelines for rare plant reintroduction efforts in Maryland. The Department of Natural Resources (DNR), at the suggestion of Phil Sheridan and others, established the task force. Its purpose was to discuss plant reintroduction as a tool for rare plant conservation and suggest guidelines and other recommendations for the DNR to consider. The members of the task force meet monthly for several months and developed the enclosed guidelines. The task force hereby requests that the DNR consider the recommendations provided in this report and adopt the suggested guidelines for rare plant reintroductions.

On behalf of the task force, thank you for your considerations and dedication to plant conservation.

Sincerely,



Glenn D. Therres
Task Force Coordinator

Enc.

**GUIDELINES FOR THE REINTRODUCTION
OF RARE PLANTS IN MARYLAND**

REPORT OF THE PLANT REINTRODUCTION TASK FORCE

to

Maryland Department of Natural Resources
Tawes State Office Building
Annapolis, MD 21401

November 1999

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INTRODUCTION

Reintroduction is a viable recovery tool for rare, threatened and endangered species populations. The re-establishment of rare, threatened or endangered species helps maintain biological diversity on the landscape. However, to be considered of conservation value, reintroductions of rare, threatened or endangered species must be accomplished through a scientifically and biologically sound process with the ultimate goal of establishing self-sustaining populations.

In Maryland, the Department of Natural Resources (DNR) is the primary state agency responsible for endangered species conservation of both plants and animals. An official list of state threatened and endangered species has been established through regulation by the DNR (COMAR 08.03.08). A list of rare, threatened and endangered plants is published periodically (DNR 1996). In addition to the official threatened and endangered plants, the DNR tracks the status of hundreds of other plants and encourages appropriate conservation of these rare species as well

Special permits are required by the DNR for the possession and transportation of state-listed plants. These permits are issued only for scientific or educational purposes that contribute to the conservation of the species. Reintroduction of state-listed plants is therefore a regulated activity, subject to DNR permitting requirements. Currently, the DNR has no standards or guidelines for reviewing plant reintroduction permit applications.

Additionally, the DNR is in a position to conduct plant reintroductions as part of its recovery responsibilities to the rare, threatened and endangered species. The DNR also may be in the position of funding certain plant reintroductions through several different programs. Again, no standards or guidelines are currently in place to guide these decisions.

ESTABLISHMENT OF THE TASK FORCE

In an effort to develop standards or guidelines to be used in the evaluation of plant reintroduction efforts, the DNR established a task force comprised of botanists and conservation biologists with expertise in plant reintroductions or conservation biology to assist in this effort. The task force consisted of eleven individuals representing academia, government agencies (including DNR), and conservation organizations. The purpose of the task force was to assist the DNR in the formation of guidelines for the reintroduction of rare, threatened and endangered plants in Maryland. Rare, threatened and endangered plants were defined as those taxa with a state rank of S1, S2, S3, or S3.1 and included all those officially listed as threatened or endangered.

Reintroduction is defined, for the purposes of this task force, 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 is defined as "in suitable habitat within the physiogeographic range of the taxa since the 1600s, but not necessarily documented from the specific site."

Over a series of five meetings the task force identified numerous issues to consider during reintroduction efforts, discussed biological requirements and constraints, debated the scientific rigorousness needed to consider the effort conservation, discussed the legal ramifications of reintroducing threatened and endangered species, and the uses of the guidelines once developed. The task force utilized the valuable insights provided in a publication by the Center for Plant Conservation concerning plant reintroductions (Falk et al. 1996) in developing guidelines for use in Maryland.

RECOMMENDED GUIDELINES FOR RARE, THREATENED AND ENDANGERED PLANT REINTRODUCTIONS

Recommended 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 DNR 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.

The 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.

I. IS THE 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.

2. 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.

3. 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.

COMMENTS

Reintroduction of rare plants for conservation purposes should not be considered a substitute for the protection of existing rare plant populations. Though the establishment of rare plant populations may enhance the species' continued existence in Maryland, priority should be given to the conservation of those areas which currently support rare species. The maintenance and protection of naturally occurring populations should continue to be the Department's priority. Reintroductions are risky and success cannot be guaranteed, so substituting protection of existing populations with reintroductions is not recommended.

One reason reintroductions are risky is that complete knowledge of the rare plant species is often lacking. The basic biology and reproductive systems of the species in question may not be known or only some aspects of its life history may be documented. Furthermore, habitat requirements, especially microhabitat needs, are often poorly known for common species much less for rare plants. Though it may not be absolutely essential that everything be known prior to attempting a reintroduction, it is recommended that a thorough review of all biological information be conducted during the early phase of planning. This review should include consultation with experts about the species, as well as gleaning information about plant associates and conspecifics. The best available information should be used to plan a reintroduction.

Reintroduction projects should be planned in such a way so as to collect as much scientific data as possible to help expand the knowledge base for the rare species. Whenever possible a sound experimental design should be developed as part of the reintroduction methodology and the results of the effort should be published. However, the reintroduction may still be implemented in the absence of a rigorous experimental design if the reintroduction has merit for recovering a threatened or endangered species.

Reintroduction of rare, threatened, or endangered plants should only be attempted if the chances of success have been maximized and the impact to the source populations and existing populations in Maryland have been minimized. Reintroductions with a marginal chance of success may not be worth the investment of time or energy—energy that could be directed to other conservation concerns. Conservation and recovery of threatened or endangered native plant species should be the guiding goal of the Department of Natural Resources and rare plant reintroduction is one tool that may help in this effort, it should be used only in those instances where it contributes to that overall goal.

ADDITIONAL RECOMMENDATIONS

The task force identified several other recommendations for the DNR to consider relative to plant reintroductions. They are as follows:

1. Share the guidelines with other state heritage programs, natural resources agencies, etc.
2. Disseminate the final guidelines to NGOs and scientific organizations.
3. Post the guidelines on the DNR webpage.
4. Establish a review committee to assist DNR in the review of plant reintroduction proposals.
5. Establish a registry for plant reintroduction sites and monitoring data.
6. DNR should inspect reintroduction sites and efforts during the reintroduction and conduct follow-up inspections periodically thereafter.
7. Reconvene the task force at least one year after the guidelines have been adopted to reassess the guidelines and their effectiveness.

LITERATURE CITED

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