

California Native Plant Society

POLICY ON APPROPRIATE APPLICATION OF *EX SITU* CONSERVATION TECHNIQUES

Adopted September 1992

The California Native Plant Society has always emphasized and will always emphasize *in situ* approaches to the conservation of rare and endangered plants. *In situ* conservation protects and enhances populations and species by protecting appropriate habitat within the historic range of the target species. *In situ* conservation is regarded by this Society and by existing biological resource laws as the best available approach for conserving biological diversity at the species level.

In recent years, however, it has become clear that the rates of endangerment and extinction of entire species are accelerating. Habitat destruction remains the principle reason for accelerating endangerment in California, the nation, and the world. The destruction of biologically valuable habitat must be slowed, if not stopped, by using political, legislative, and economic strategies. Nevertheless, we recognize that for some species the risk of extinction is so high that only aggressive and extraordinary measure may effect their conservation. Such measures remove plants or propagules from their habitats into cold storage, gardens, or managed sites in the hope that the species can be re-established in the wild at some later date. Those measures fall under the realm of *ex situ* conservation.

Ex situ conservation involves a temporary, short-term set of germplasm preservation techniques that are usually applied as choices of last resort. The techniques include, but are not limited to: propagule collection from natural populations and cryogenic storage, garden propagation, tissue culture, transplantation, and the establishment of new populations in nature. Such techniques do not conserve all of the genetic variation, the metapopulation characteristics, the symbionts, the associated species, the community as a whole, the habitat, or the ecosystem of the endangered plant. Consequently, they do not conserve a species in its entirety and they do not conserve a species within its evolutionary and ecological contexts. For these reasons and also because we lack a solid knowledge of the effectiveness and limits of *ex situ* techniques at this time, we view the application of such techniques with scientific skepticism.

However, the members of CNPS recognize the gravity of the extinction problem and will not oppose the use of certain *ex situ* conservation techniques under certain circumstances. Those circumstances can be summarized as one of two general types:

1) During mandated recovery of endangered species, *ex situ* techniques may be essential for establishing new populations when all extant natural populations are fully protected *in situ*. This approach, if successful, can result in a gross (as opposed to net) increase in the number of extant populations of an endangered species. All recovery activities, including those which use *ex situ* techniques, must be designed and executed by qualified biologists with the approval of relevant state and federal government agencies (e.g., California Department of Fish and Game, U.S. Fish and Wildlife Service).

2) During the analysis of extinction probabilities for a given species (usually based on demographic or minimum viable population studies) it is determined that the remaining natural population(s) is (are) likely to go extinct in the near future due to stochastic, genetic, or natural ecological factors. This approach can minimize the effect of degenerative extinction processes that are effective when the population(s) is (are) very small. Such analysis must be conducted by qualified biologists with the approval of relevant state and federal government agencies (e.g., California Department of Fish and Game, U.S. Fish and Wildlife Service).

We continue to strongly oppose the use of *ex situ* conservation techniques under the following circumstances:

1) When applied as mitigation for human-caused impacts to natural populations other than those impacts which operate on a global scale (e.g., global warming, acid rain). Losses of plant populations





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considered "significant" under the California Environmental Quality Act (CEQA) or the National Environmental Quality Act (NEPA) cannot be mitigated to less-than-significant levels using *ex situ* conservation techniques. Decrease in the number of individuals and populations of an endangered plant impacted by human activity cannot be compensated for in this manner.

2) When adequate ecological information does not exist for the remaining natural populations of a target species. Adequate studies of microhabitat selection, fecundity, essential pollinators, community relationships, and other important biological characteristics must be completed before seeds or other plant materials are removed from natural habitats for an *ex situ* conservation effort.

3) When reestablishment in the wild of plant material stored *ex situ* could result in genetic contamination of existing populations of the same or different taxa. Such reestablishment projects must be carefully reviewed to protect the target species from genetic contamination.

4) When the *ex situ* techniques are not based on scientific principles or facts, or when the methods and results of such projects are not fully documented.

5) When the *ex situ* conservation effort is not designed or conducted by qualified biologists or with the knowledge and consent of relevant governmental agencies (e.g., California Department of Fish and Game, U. S. Fish and Wildlife Service).

GLOSSARY

cryogenic preservation - storage of rare materials at very low temperatures (usually below -25° C)

ex situ conservation - conserving a germplasm, species, or natural community in the absence of its natural habitat or ecosystem, usually by removing propagules from the habitat and storing them temporarily "off site" (e.g., in a freezer, botanical garden, etc.)

germplasm - the contents of a species' genes, the actual genetic material (DNA contained in chromosomes).

in situ conservation - conserving a germplasm, species, or community within its natural habitat or ecosystem

metapopulation - one of several interacting populations of a species

propagule - any living material that can be used to propagate a species: includes seeds, fruits, rhizomes, stolons, buds

species - fundamental category in a taxonomic hierarchy, a "kind" of organism which shares similar appearance, ecology, and behavior with others of its kind in time and space. For purposes of this document it includes subspecies, varieties, and other legally recognized categories of organisms

stochastic - random, unpredictable

symbionts - different kinds of organisms that must live together in order to mutually prosper

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