APPENDIX 2 – CONSERVATION COMMITTEE GUIDELINES

NOT POLICY, BUT REFERRED BACK FOR REMEDIAL ACTION BY 1986 AGM ACCEPTED 1991. FRENCH TRANSLATION PUBLISHED 1992.

Position Paper on Transplantation as a Means of Preservation

Natural vegetation is being increasingly threatened by land development; such development is often opposed by conservationists because of the potential destruction of native species as well as habitat. Suggestions have been made that transplanting rare species from proposed development sites to other locations would eliminate conflict and, thus, tend to satisfy both developer and conservationist.

The Canadian Botanical Association is strongly opposed to the idea that transplanting is a reliable method of conserving rare species. Ecosystem preservation is the only viable means of maintaining a full range of genetic diversity and thus removal of some elements from natural communities to other locations is not a desirable conservation alternative. Not only may transplantation fail to perpetuate species, but degradation of natural areas may be accelerated in the process.

This policy is based on the following rationale. A rare native species cannot be considered in isolation from its habitat. It is not simply the presence of rare plants that makes a site significant. Rather, rare species indicate that the habitat and, thus, the entire ecosystem is significant. Rare species may signify sites of phytogeographical importance, or unusual soil, microclimatic or other ecological conditions. In some cases, their presence may indicate a lack of disturbance. In all instances, the habitat is as important to scientific knowledge and our cultural heritage as the rare species itself. Thus, the transfer of rare species to a garden or a habitat where they did not occur naturally does not constitute a reasonable conservation alternative because the native habitat has been lost. Further, the extensive literature on ecological information needed to transplant rare species, methods of ascertaining whether transplanting has been successful, and schemes for expediting transplanting are largely irrelevant because transplanting does not preserve the native habitat.

Since any species taken from its native habitat no longer interacts with its natural suite of biological and physical environmental factors, the answers to many important questions dealing with its biology are lost along with the native habitat. For example, if plants are introduced to non-native sited, it may be difficult if not impossible to discover how natural factors determined the native range of species or even what the original native range was. It will be impossible to probe physiological adaptations which have fitted plants to grow under specific natural conditions.

In parts of the world where the entire landscape has already been altered by man, and no other conservation alternatives exist, transplantation has been used to permit some genotypes to persist at least for some period of time. However, the success of a transplant cannot be predicted and the permanence of the protection available in

cultivation is similarly uncertain – further reasons why transplantation is not a desirable alternative.

The propagate of rare plants in gardens may be aesthetically pleasing and indeed can be an important tool for scientific research. However, many desirable natural ecosystems could be destroyed of impoverished by collecting rare and uncommon plants for purposes of cultivation, and certainly, neither the plant community nor a reasonable range of genetic variability of a species will be preserves in most gardens.

Perhaps the most serious problem of all is the possibility that extensive, transplanting might become viewed as a standard way of resolving the preservation vs. development conflict. If transplanting is condoned as a standard conservation method, then uninformed decision-makers will feel no compunction about approving developments in any natural area. Attempts have been made to "recreate" natural ecosystems through transplantation and seeding. This has been generally undertaken in environments which were known to have formerly supported a similar community. Despite considerable expense, development of sophisticated techniques, and passage of time which might have allowed for establishment, such attempts can only be judged as partially successful. The best results have generally been obtained with simple grassland committees but even the most successful examples of these are not similar to natural communities. Attempts to re-create forest communities have only partly re-established the natural forest canopy and the understorey in these cases is decidedly out of character. While attempts t ore-establish a few of the commonest, least environmentally challenging elements such as trees, are fraught with difficulty, establishment of understorey are rare species is even more problematical. It is quite a different matter simply to produce green vegetation cover over an eroding or unstable site; it is a worthwhile undertaking but not remotely equivalent to reconstituting a natural ecosystem – floristically, structurally or compositionally.

NSERC regulations on ownership of material
(Rephrasing of Para. 221 with respect to specimens)

Animal, plant or geological specimens collected by the grantee with NSERC funds do not become the property of the grantee, but are held in trust by him/her. The grantee may move them with him/her to another Canadian University, but they must eventually be made available for deposit in an appropriate Canadian Museum or herbarium, administered by the federal or a provincial government or by a University. Grantees are encouraged to deposit scientifially valuable material in such a museum or herbarium as soon as the research for which it was collected is completed.

This provision does not preclude normal scientific exchange of specimens, nor the scientific collaboration involved in collecting material for other scientists while on NSERC supported field trips.

Gardening with Wild Plants

The primary concern of the CBA is that remaining natural ecosystems, due to their scarcity and diminishing size, be as little disturbed as possible. Therefore, planting of wildflowers or native shrubs and trees must be done in such a way that it poses no threat to the integrity of natural communities. Nothing extraneous should be planted into natural communities and very close limits should be placed on what is taken out. Exotic genotypes of native plants should not be grown nearby because if they interbreed, locally adapted gene complexes might break down.

The preferred source of native plants for gardening is propagules which have been grown under culture. Commercial producers of seeds may take the pressure from natural areas as a source of stock for horticulture. Initially, seeds or cuttings (preferably not roots or rhizomes) must come from natural or semi-natural populations, but afterward should be generated in fields or gardens. A wild species which cannot be propagated in sufficient quantities this way should probably not be grown extensively in private gardens or offered for sale commercially.

Unfortunately, some nurseries offer mature plants which may have been taken directly from their natural habitats. This seems to be the case with certain orchids, known to require 10 years from seed to flowering, as some companies selling them are unable or unwilling to discuss source. Nurseries should provide information on the origin of their stocks, and customers must satisfy themselves that wild plants being sold were not removed from natural areas. If claims of being "nursery grown" are suspected to be false, companies should be challenged.

Exchanging cuttings, seeds or roots of wild plants among gardeners who have propagated them is a harmless way to stock a wildflower garden. Local genotypes, adapted to local climatic conditions are generally most successful, especially if sited according to known ecological requirements. While it may be reasonable for an individual to collect a limited number of seeds from a natural area, it must be remembered that each enthusiastic gardener could well be only one of several doing the same thing. A few collectors could remove most of the seed crop of a species for a given year. Taking plants and propagules from a natural area, which definitely will be destroyed, is a possibility, but wildflowers would benefit far more from active intervention at an earlier stage to ensure that destruction never happens. Long-term survival of native species is best in their natural habitat.

So that rare or endangered plants are not punished needlessly, amateurs should usually grow the more common and easily identifiable wild plant species. In a private garden, attractive but vigorous and easily propagated wild plants such as Helianthus (sunflowers), Rudbeckia (blackeyed susans), and (sumac) and Symphoricarpus (snowberry) can be utilized very effectively. Species chosen depend of course on the region.

Planting to Complement Natural Area Protection

All vegetation uses atmospheric CO_2 and gives off O_2, prevents erosion, humifies soil, enhances replenishment of ground water reserves and provides wildlife habitat. Artificial plantings, while lacking important characteristics of natural communities, confer many of these same benefits and could serve to extend total vegetation cover as well as provide connections between scattered remnant natural areas. This would allow native species to expand their presently limited habitat and would partially compensate for the extensive conversion of natural vegetation to agriculture, industry and urbanization.

The Canadian Botanical Association (CBA) advocates that only native species should be used for reclamation, and the following are CBA recommendations concerning the process.

1. Protection of remaining natural areas

   Existing natural areas should be saved as examples of functioning ecosystems. They are irreplaceable as objects of scientific interest and a fundamental part of our natural heritage. They may also be a source of disseminules for natural recolonization of adjacent areas and for artificial revegetation.

   Reserves should be protected from disturbances such as genetic contamination. Exotic species or inappropriate provenance should be controlled in adjacent areas since close proximity might permit hybridization and generate non-adaptive gene complexes. If aliens or their derivatives are successful and invasive, they could out-compete -native species.

2. Reconnection of natural remnants

   Spontaneous extensions may occur if "zones of opportunity" are established around existing natural areas. For example, unproductive or superfluous agricultural fields should be permitted to undergo succession, based on native species in the soil seed bank as well as adjacent natural communities, and to ultimately return to natural communities. In some cases, management techniques such as alteration of grazing regimes might facilitate revegetation. Removal of aliens or the use of controlled burns also may be effective.

   Deliberate plantings could also be made to connect remnants and extend possibilities for populations which are presently isolated. These plantings could consist of extensive acreages, wide corridors or even narrow hedgerows, but ideally would form a continuous network of green areas. Local provenance should be used because particular physiological races may have evolved which are predisposed to existing local conditions, e.g., exposure, soil or moisture availability.

To broaden genetic representation somewhat, seeds or other propagules should be collected from several different plants, and only a small percentage of those produced in any one season should be taken. If massive plantings are planned, seeds should be propagated in gardens rather than removed from a natural area.

Initial planting of native trees, rather than only herbs or shrubs, may hasten the successional process. In this case, common pioneer tree species which grow in similar situations should be used. Inclusion of shrubs will not only diversify the habitat, but may provide cover for establishing trees. The art of revegetation is still poorly developed, however, and there are no established methods for producing even a close compositional facsimile of most kinds of natural communities.

To minimize confusion in future generations of botanists, the procedures followed and results achieved should be fully documented and a report deposited with a responsible person such as a regional ecologist or public institution such as a museum.

3. Enhancing survival of rare species

The greatest advantage to rare plants can be provided by protecting their natural habitat. However, including some species in plantings might be beneficial, at least in the short term.

If stands including rare species are clearly under immediate threat of destruction and no remedy is possible, plants could be transferred to botanical gardens or areas being revegetated. However, the most effective way to establish them elsewhere is probably by seed. Experienced botanists are generally better equipped to assume responsibility for rare plants than amateurs, but the success rate may be very low, nevertheless.

In no case should recovered plants be introduced into other natural areas. Besides the fact that particular microhabitat requirements or interactions with other species are poorly understood, there are many problems regarding the mechanics of transplantation. Introduction is itself a form of disturbance, and as a result communities could be altered compositionally and structurally. Component species could be atypical both physiologically and with respect to the degree of variation in each frustrating investigation which attempts to understand the functioning of natural ecosystems. Therefore, introduction is best done into peripheral plantings from which a species may gradually find its own way into adjacent stands, if appropriate.

Disseminules of rare plants, such as seeds, might be taken for propagation from intact natural areas only if limited numbers are collected and only if it is clear that these are not required to maintain existing populations. No introductions, even by seeding, should be made into natural areas.

Records of stock source, storage and planting procedures as well as exact location of out-plantings should be maintained, and a copy placed with a reliable public agency.

1. Co-ordination of regional efforts

   Communications are essential among all land management agencies in order to achieve maximum effectiveness.

   Approved by Executive and AGM in 1991. French translation in 1992.