



## Local Ecotype Guidelines



The following guidelines are intended to assist Wild Ones members and others in their natural landscaping efforts. The guidelines were developed by a committee of Wild Ones national board members and others who read extensive scientific literature and consulted with experts. While there is ongoing debate within the restoration community concerning the issues below, we offer the following guidelines with the hope that they will help make natural landscapes places of health, diversity, and ecological integrity.

***A NATIVE PLANT SPECIES IS ONE THAT OCCURS NATURALLY IN A PARTICULAR REGION, ECOSYSTEM AND/OR HABITAT AND WAS PRESENT PRIOR TO EUROPEAN SETTLEMENT.***

WITH THIS DEFINITION IN MIND, WILD ONES NATURAL LANDSCAPERS ADVOCATES THE SELECTION OF PLANTS AND SEEDS DERIVED, INsofar AS IS POSSIBLE, FROM LOCAL OR REGIONAL SOURCES AT SITES HAVING THE SAME OR SIMILAR ENVIRONMENTAL CONDITIONS AS THE SITE OF PLANTING. SUCH PLANT MATERIAL IS OFTEN TERMED THE LOCAL ECOTYPE.

- Environmental Conditions: These include everything from soil, climate, elevation, drainage, aspect (such as North/South slope), sun/shade, precipitation, etc.
- Local or Regional Sources: Plant material that originates in and is native to your geographic region is generally the best to use. These regions have ecological, not political boundaries, i.e. it is better to use a source from your geographic region but outside your state than to use a source from a different geographic region inside your state. Such regions are often referred to as ecoregions by scientists. The ecoregions within the US are best delineated by The USDA Forest Services [US Ecoregions](#) Map.

## Why Choose Local Ecotypes?

- To ensure the greatest success in your landscaping efforts. In general, the more closely you match the environmental conditions of the source of your plant material to that of the planting site, the better it will grow. Studies show that this is because species have become genetically adapted to the local conditions to varying degrees — some species more than others. Since there is little species-specific information, it is best to take a conservative approach so plantings will do better both in the short term and in the long term.



**Example:** A red maple from the deep south will not do well in the north. Also, a red maple from a lowland will not do well if transplanted to an adjacent upland site.

**Exception:** Threatened and endangered species which have reduced genetic variability, may need an infusion of genetic variability from plants from other, maybe distant locales, in order to ensure their survival over the long term. Work with such species should be conducted under the supervision of the state and federal agencies which have jurisdiction over them.

- To help preserve local pollinators, insects, birds, and mammals, and other wildlife which have co-evolved with plants of local ecotype and depend upon them for food, shelter, etc.
- To preserve the genetic diversity and integrity of native plants. An all-important concern today is the preservation not only of a diversity of species, but also of the genetic diversity within each species. A native species varies genetically in its adaptation to the particular localities and environmental conditions under which it grows. This results in a number of ecotypes of the same species or gradations (clines) between populations.

You can help preserve the local ecotypes in your area by using them in your landscaping. There can also be significant genetic variation within an ecotype in terms of form, size, growth rate, flowering, pest resistance, etc. You can help preserve this gene pool by asking for seedling stock, not clonal stock or cultivars.

## How to Find Your Local Ecotypes

To prevent the local extinction of native plants, plants should be bought from reputable nurseries, not dug from natural areas.

**Exception:** Plants rescued from a site slated for immediate development. (However, every effort should be made to save such sites whenever possible.)

## Where to Buy



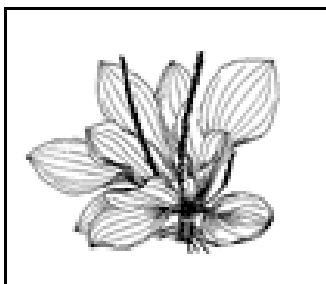
A list of nurseries carrying native plants of local ecotypes can often be obtained from local nature centers, from state natural resource departments, from local Wild Ones chapters or from native plant organizations. Nature centers or nurseries dealing exclusively with native plants are more apt to have stock of local ecotypes.

- Ask the nursery about the source of its plant material. Does it originate within your ecoregion?
- Beware of plant material dug from the wild or plants which are “nursery grown” in pots after being dug from the wild. Plants should instead be “nursery propagated” from seed or cuttings, not collected from the wild. It is environmentally unethical and contrary to the mission of Wild Ones to buy plants dug from our last remaining natural areas in order to naturalize your yard.
- Ask for seedling stock, not clonal stock, natives, cultivars or horticulturally enhanced plants. Clonal stock, natives, cultivars and horticulturally enhanced varieties lack genetic variation. They are usually selected for bigger, showier flowers or more sturdy stems and this goal of aesthetic uniformity is at the expense of genetic diversity. Cultivars and horticulturally enhanced varieties are often propagated asexually and thus are clones rather than unique, genetic individuals. (A variety of an individual species can be a naturally occurring variety or a horticulturally produced variety.) Check with local lists of native plants to see if the varieties are native locally or horticulturally produced.

## Seed Collection

When collecting seeds, collect from many individual plants from within the same ecotype of each species (rather than taking seeds only from the biggest plant, for example), and do not take all the seeds from any plant. This will help preserve and increase the genetic variation of the population. Also, be sure to get permission for seed collecting; it is not allowed in some natural areas.

## Document Your Project



Keep records of the origins of the plant material you use. This is particularly important for large scale restorations, especially if they are at nature centers or other places of education. Detailed records on sources of plants used can help us understand their success or failure and adapt our plant selection strategies, as needed. This may become increasingly important given the changes in climate expected with global warming.

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This guideline has been drafted by the Local Ecotype Committee: Pat Armstrong, Lorraine Johnson, Chistine Taliga, and Portia Brown, with final revisions made by committee chair, Mariette Nowak, August 7, 2001; revised March 19, 2002 and July 17, 2018.

# LOCAL ECOTYPES BIBLIOGRAPHY

- Allard, R.W. 1970. Population Structure and Sampling Methods, GENETIC RESOURCES IN PLANTS
- Ambrose, John 1990. Ecological Concerns inactive Landscaping, WILDFLOWER, Winter
- Barrett, Spencer C.H. & Joshua R. Kohn 1991. Genetics and Evolutionary Consequences of Small Population Size in Plants: Implications for Conservation, GENETICS AND CONSERVATION OF RARE PLANTS: 3-30.
- Blumer, Karen 1990. LONG ISLAND NATIVE PLANTS FOR LANDSCAPING: A SOURCE BOOK, Growing Wild Publications, growinwild@aol.com
- Blumer, Karen The New Natives Local Genotypes—No Longer a Laughing Matter, GROWING WILD ON LONG ISLAND, a newsletter
- Bowles, Marlin L. & Christophen J. Whelan, RESTORATION OF ENDANGERED SPECIES, Cambridge University Press.
- Brown, A.H.D. & J. D. Briggs 1991. Sampling Strategies for Genetic Variation in Ex Situ Collections of Endangered Plant Species, GENETICS AND CONSERVATION OF RARE PLANTS: 452-490.
- Center for Plant Conservation 1991. Genetic Sampling Guidelines for Conservation Collections of Endangered Plants, GENETICS AND CONSERVATION OF RARE PLANTS.
- Cochrane, Thodore S. & Hugh H. Iltis ATLAS OF THE WISCONSIN PRAIRIE AND SAVANNA FLORA, p. 190.
- Dudash, Michele R. & David E. Carr 1997. Inbreeding Depression and its Genetic Basis in Mimulus: Implications for Conservation Biology, PLANT POPULATION GENETICS: BRIDGING THE GAP BETWEEN RESEARCH AND STEWARDSHIP SYMPOSIUM, Chicago Botanic Garden, October 30, 1997.
- Falk, Donald A. 1991. Guidelines for Developing a Rare Plant Reintroduction Plan, RESTORING DIVERSITY, Island Press: 452-490.
- Falk, Donald A., Constance I. Millar, & Margaret Olwell 1991. RESTORING DIVERSITY, Island Press.
- Franson, Raymond 2001. A Dichotomous Key for Selecting Plant Material for Restoration Projects, NEWSLETTER OF THE NORTH AMERICAN NATIVE PLANT SOCIETY, Spring: 10-12.
- Galloway, Laura F & Charles B. Fenster 1997. evidence for Outbreeding Depression, PLANT POPULATION GENETICS: BRIDGING THE GAP BETWEEN RESEARCH AND STEWARDSHIP SYMPOSIUM, Chicago Botanic Garden, October 30, 1997.

- Godt, Mary Jo & J. L. Hamarick 1997. Genetic Diversity—An Overview, PLANT POPULATION GENETICS: BRIDGING THE GAP BETWEEN RESEARCH AND STEWARDSHIP SYMPOSIUM, Chicago Botanic Garden, October 30, 1997.
- Havens, Kayri 1998. The Genetics of Plant Restoration, An Overview and a Surprise, RESTORATION & MANAGEMENT NOTES 16(1) Summer: 68-72.
- Havinga & Daigle The Gene, RESTORING NATURE'S PLACE.
- Havinga & Daigle Criteria for Restoration-Quality Plant Stock, RESTORING NATURE'S PLACE.
- Houseal, Greg & Daryl Smith. 2000. Source-Identified Seed: The Iowa Roadside Experience, ECOLOGICAL RESTORATION 18(3):173-183.
- Huenneke, Laura Foster 1991. Ecological Implications of Genetic Variation in Plant Populations, GENETICS AND CONSERVATION OF RARE PLANTS: 31-44.
- Husband & Barrett 1996. A Metapopulation Perspective in Plant Population Biology, THE JOURNAL OF ECOLOGY, May-June
- Karron, Jeffrey D. 1991. Patterns of Genetic Variation and Breeding Systems in Rare Plant Species, GENETICS AND CONSERVATION OF RARE PLANTS: 87-98.
- Karron, Jeffrey D. 1997. The Relationship between Reproductive Biology and the Genetic Structure of Plant Populations, PLANT POPULATION GENETICS: BRIDGING THE GAP BETWEEN RESEARCH AND STEWARDSHIP SYMPOSIUM, Chicago Botanic Garden, October 30, 1997.
- Keller, M., J. Kollmann & P.J. Edwards 2000. Impact of Crossing 'Native' Species Collected from Afar on Local Population Genetics, JOURNAL OF APPLIED ECOLOGY 37(4): 647-659.
- Knapp, Eric E. & Kevin J. Rice 1994. Starting from Seed: Genetic Issues in Using Native Grasses for Restoration, RESTORATION & MANAGEMENT NOTES 12(1)Summer:
- Lesica, Peter & Fred W. Allendorf 1999. Ecological Genetics and the Restoration of Plant Communities: Mix or Match?, RESTORATION ECOLOGY 7(1) March :42-50.
- Linhart, Yan B. and Michael C. Grant 1996. Evolutionary Significance of Local Genetic Differentiation in Plants, ANNUAL REVIEW ECOLOGICAL SYSTEMATICS 27: 237-277.
- Millar, Constance I. & William J. Libby 1998. Disneyland or Native Ecosystem: Genetics and the Restorationist, RESTORATION & MANAGEMENT NOTES 16(1)Summer:
- Molano-Floras, Brenda 2000. The Importance of Plant Breeding Systems in Prairie Restorations, PROCEEDINGS 5TH CENTRAL ILLINOIS PRAIRIE CONFERENCE, 16-18.

- Montalvo, Arlee M., et al. 1997. Restoration Biology: A Population Biology Perspective, RESTORATION ECOLOGY 5(4) December:277-290.
- Nabhan, Gary Paul ENDURING SEEDS. NATIVE AMERICAN AGRICULTURE AND WILD PLANT CONSERVATION
- National Wildlife Federation Native Plants and Your Habitat, BACKYARD WILDLIFE HABITAT
- Packard, Steve & Cornelia F. Mutel 1997. TALLGRASS RESTORATION HANDBOOK, Island Press, Chapter 6: 89-95.
- Reinartz, James A. 1995. Planting State-Listed Endangered and Threatened Plants, CONSERVATION BIOLOGY, 9(4): 771-781.
- Reinartz, James A. Restoring Populations of Rare Plants, THE TALLGRASS RESTORATION HANDBOOK,
- Rhodes, Ann 1999. Conservation and Commercialism of Native Plants in the Landscape Annual Conference, Millersville, PA, UNITED PLANT SAVERS NEWSLETTER.
- Rieseberg, Loren H. 1991. Hybridization in Rare Plants: Insights from Case Studies in Cercocarpus and Helianthus, GENETICS AND CONSERVATION OF RARE PLANTS
- Schwarzmeier, Jerry WHAT ARE OUR RESPONSIBILITIES IN PRAIRIE RESTORATION? Retzer Nature Center, Waukesha, WI.
- Shank, D. 1999. The Provenance Issue: Opportunities and Challenges, HORTUS WEST 10 (1): 98-102.
- Society for Ecological Restoration 1993. PROJECT POLICIES, adopted May 31, 1993.
- Stritch, Larry 1997. Genetic Considerations in a Landscape-Scale Restoration: The Midewin National Tallgrass Prairie, PLANT POPULATION GENETICS: BRIDGING THE GAP BETWEEN RESEARCH AND STEWARDSHIP SYMPOSIUM, Chicago Botanic Garden, October 30, 1997.
- Waller, Don 1997. Using Genetics to Understand Population Persistence and Re-establishment, PLANTPOPULATION GENETICS: BRIDGING THE GAP BETWEEN RESEARCH AND STEWARDSHIP SYMPOSIUM, Chicago Botanic Garden, October 30, 1997.
- Xie, Chang-Yi & Cheng C. Ying 1995. Genetic Architecture and Adaptive Landscape of Interior Lodgepole pine (*Pinus contorta* ssp. *Latifolia*) in Canada, CANADIAN JOURNAL OF FORESTRY RESEARCH 25: 2010-2021.

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