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NATIVE PLANTS, NATURAL LANDSCAPES

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Guidelines for Selecting Native Plants: The Importance of Local Genotype

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Wild Ones
promotes
environmentally
sound landscaping
practices to preserve
biodiversity through the
preservation, restoration and
establishment of native plant
communities.

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These guidelines, meant to assist Wild Ones members and others in their natural landscaping efforts, were developed using scientific literature and after consulting with experts. This information is to help you choose native plants for gardens and landscapes that support biodiversity, ecological integrity, and ecosystem health.

“Native plant” defined – *A native plant species is one that occurs naturally in a particular region, ecosystem and/or habitat, and was present prior to European settlement.*

Selecting for the local genotype – *Wild Ones advocates for selecting native plants and seeds originating, whenever possible, from local or regional sources having the same or similar environmental conditions as the planting site. Such plant material is often termed the “local genotype.”*

“Environmental conditions” include soil characteristics, drainage, pH, sun/shade, prevailing wind direction, temperature range, precipitation, elevation, aspect (such as north/south slope).

In encouraging the use of local or regional sources for your native plant materials, we mean those defined by ecological, not political boundaries. When you can't get suitable local native plants, select plants or seeds *from your ecoregion* in a nearby state, rather than plants from your state from a different ecoregion with dissimilar environmental conditions. U.S. ecoregions are well delineated by the U.S. EPA's *Ecoregions of North America, Level III* map. (Also, see our paper titled “Ecoregions, Native Ranges, and Hardiness Zones Explained.”)

Key reasons to choose local genotypes

1. *To preserve the genetic diversity and integrity of native plants.*

Whether in landscaped or natural areas, an all-important concern is preserving not only a diversity of plant species, but also the genetic diversity *within* each species. Native species vary genetically in their adaptation to their environmental conditions and ecological relationships where they grow. This results in various genotypes for the same species over its range.

2. *To help support other species.*

Pollinators, other insects, birds, mammals, and other wildlife have co-evolved with local genotype plants and depend upon them for seasonally-available food and shelter in a well-functioning habitat.

3. *To ensure the greatest success in your landscaping efforts.*

Take your cues from nature. The more closely you match your environmental conditions with the plant species' naturally-occurring habitat, the better your native plants will thrive. Complex interactions develop between species within habitats, so also consider growing a few more plants associated from the same habitat for optimal growth.

Until there is definitive research, choosing local genotypes can help ensure greater long-term success for your garden and for sustained ecosystem health.

An example: Compare butterfly weed (*Asclepias tuberosa*) growing in the Great Lakes region with a 35" average annual precipitation, to butterfly weed from the Southwest with 12" per year. Snowbirds may be tempted to bring butterfly weed seeds from their northern gardens for their southern winter garden. While the same species, the genotype from Great Lakes states is not adapted to the hot, xeric growing conditions of the Southwest—where plants typically have a thick cuticle and reduced leaves with deep stomata to withstand drought.

An exception: Endangered and threatened species from fragmented habitats with small, isolated populations may have reduced genetic fitness or lack a large enough population to reproduce. Over time, they can become extirpated. Often, their long-term survival can be improved by an infusion of genetic variation from plants of the same species but from an unrelated or disjunct population. Work with such species should be conducted only with permission of state and federal agencies that have jurisdiction over them.

Local genotype and climate change

Changes in our climate are affecting our native (and non-native) plants. Some ecologists support assisted migration (moving plants to other locations) to help them migrate in concert with changing climates, such as moving a species from a southerly location that is getting hotter to a more northerly location. This is a controversial topic and ecologists can be found on both sides of the debate. The main rationale for assisted migration is to avoid species extinction. Two drawbacks: the possibility of the translocated species becoming invasive at the new site, and/or bringing pests to the new site. Research on assisted migration has been limited so far, showing mixed results, as some species benefit and some do not.

Until further research clarifies this issue, the best course is a "no regrets" approach—plant local genotype species, but consider favoring those species from the warmer parts of your region. Encourage green corridors to enable species to move on their own through neighborhoods and along streams and rivers, railroads, power lines, for example.

If you have the time to deal with a potential invasive, you might try experimenting by using some species from adjacent regions.

How to find your local genotypes

First, check with Wild Ones chapters close to your home. If you want to expand your research, you can also connect with native plant organizations and your state's natural resources department to find reputable sources. Nature centers and nurseries dealing exclusively with native plants likely have local genotype stock. There are several on-line databases that help find native plant species for your zip code: websites of the National Wildlife Federation, Audubon Society, and Xerces Society.

Important: Ask questions to confirm the seeds or plants originated from within your ecoregion and that your locale is included in the species' native range.

Beware of plant material dug from the wild or plants that are "nursery grown" in pots after being dug from the wild. Plants should instead be "nursery propagated" from seed or cuttings, not collected from intact habitats. It is environmentally unethical and contrary to Wild Ones' mission to buy plants dug from our last remaining natural areas in order to naturalize your yard.

An exception: Plants may be rescued from a site slated for development. Every effort should be made first to conserve the habitat. If a rescue is imminent, be certain to get formal permission before the rescue, and keep records of the site location and its habitat.

We recommend using straight native species grown from seedling stock originating from natural sources. While certain cultivars of native plants have been shown to be used by pollinators and herbivores, they are still propagated clonally and have no genetic variability. As Dr. Douglas Tallamy, University of Delaware entomologist, states, "Loading our landscapes with plants that have no genetic variability is a not a good plan ever, but it is particularly bad in the age of wild climate swings." If you do choose to use some cultivars, select only those for which research has proven equal to or better than native plants in their value to wildlife, knowing that they nonetheless

lack genetic variability. See Wild Ones paper, "Nativars (Cultivars of Native Plants): Where do they fit in?" for details. One other consideration in your plant selection is whether the grower uses neonicotinoid treatments. This is a class of pesticide used to control insect damage. The problem is that these pesticides are very long-lasting in the food chain and have been implicated in pollinator and other beneficial insect die-off. These substances are "systemic," meaning that they become a part of affected plants, cannot be washed off, and persist in soils. Neonicotinoids work by killing insects such as bees and butterflies by disrupting their nervous systems. When you purchase plants, ask the provider which sprays were used. Do not purchase the plants if the answer is any of these: *acetamiprid*, *clothianidin*, *dinotefuran*, *imidacloprid*, *nitenpyram*, *nithiazine*, *thiacloprid* and *thiamethoxam*.

Seed collection

Prior to collection, it is imperative that you have permission from the land owner, as wild collection is not permitted in many natural areas or preserves.

If you are collecting native seeds, gather only fully ripe seeds from many individual plants within a population of each species (rather than taking seeds only from the biggest plant, for example), and do not take all the seeds from any plant. A good rule of thumb is to take no more than 20-30% from a common native species; for uncommon species and annuals, take no more than 10%. This will help preserve the original population and foster genetic variation.

Document your project

Keep records of your native plant and seed origins. This is particularly important for natural area or habitat restorations, especially those at nature centers or other educationally-focused sites. Documentation supports records of the natural history of the area, records what is growing naturally from the seed bank, and helps to understand plantings' success or failure so you can adapt future plant selection strategies. Such record-keeping may become increasingly important given climate changes, too.

[These guidelines initially drafted by Wild Ones Local Ecotype Committee: Pat Armstrong, Lorraine Johnson, Christine Taliga, and Portia Brown; final revisions by chair Mariette Nowak, Mar. 2002; further updated Feb. 2020 by Mariette Nowak, Janice Hand, Denise Gehring, Ellen Folts, and a board review.]