



US Army Corps
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Seattle District



White Paper on Use of Un-manipulated Native Plant Species versus Native Cultivars

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The issue of using ornamental varieties of native plants in mitigation sites has recently surfaced. Examples of ornamental varieties are plants that have been manipulated by selection or breeding to be dwarfs, to have flowers or leaves that appear different, to be disease or insect resistant, to not produce fruit, or have other particular qualities. Based on our review of the available science (see references below), it is the position of the Seattle District, U.S. Army Corps of Engineers, Regulatory Branch, that ornamental varieties of native plants should not be used in Corps-approved mitigation or restoration projects. Only plants produced by seeds, cuttings, divisions, or rhizomes from native species that have not been manipulated to have particular characteristics should be used. Using un-manipulated native species will help ensure that the mitigation project provides the full suite of functions required as compensatory mitigation for authorized impacts.

Because landscaping with native plants has become more popular with the general public, it is now relatively easy to purchase ornamental varieties (cultivars) of native plants, which are frequently called “nativars”, at local plant nurseries and even at large chain stores. In some instances, nurseries and plant stores sell only nativars, and it can be difficult to find un-manipulated native species.

Unfortunately, researchers are finding that nativars do not necessarily perform the same ecological functions in the landscape that un-manipulated native plants do. Most of the research has focused around insect use of nativars versus un-manipulated native plants. Researchers have found that nativars may provide poorer quality resources for insects, which subsequently impacts the food web (Perry, 2016).

Some nativars have leaves that appear different from the leaves of the un-manipulated native species. They may be purple, variegated, larger, smaller, or ruffled. Purple-leaved varieties contain higher levels of anthocyanins which are well known as insect feeding deterrents (Tenczar, 2007). Variegated leaves contain less chlorophyll and therefore lower levels of nitrogen, which makes them less nutritious for the insects that feed on them. Hence, insect health and survival may be adversely impacted.

Flowers of nativars may appear and function differently than those of un-manipulated native species. Pollinators in general, and bees in particular, show strong preferences for familiar flower characteristics. As such, researchers have found that some nativars are visited significantly less frequently by pollinator insects than un-manipulated native plant species. In general, the more manipulated the breeding of the nativar, the more insect pollinators avoided it. Fewer pollination visits means less nectar (an important food source) consumed by insects (Poitress 2015). In addition, manipulated plants can be a poor food source - one nativar studied produced 80% less nectar than its wild (un-manipulated) relative (White, 2016).

Bird diversity and abundance are higher on sites with high insect abundance and diversity. In particular, native bird species that feed insects to their young are more abundant on sites with more insects (Burghardt, 2009). Therefore, if natives are installed on a mitigation site, there may be fewer insects, which means fewer native birds might use the site.

Dwarf plant varieties, by definition, result in smaller, less structurally complex mature specimens, which produce less leaf litter and woody material than their un-manipulated native counterparts. In addition, the shorter the plant, the shorter the distance that litter and woody material will be disbursed. These factors reduce the material available to decomposing organisms, which could result in a simplified ecosystem and an impoverished food chain. In addition, most natives have not been on the market for very long, so their long-term growth, survivability in mitigation settings, tolerance for drought and other stresses, life-span, and reproductive success are unknown.

Conclusion: In order to ensure that the mitigation project provides the full suite of functions required as compensatory mitigation, and to provide the greatest opportunity for maximum ecological lift at a mitigation site, un-manipulated native plant species should be installed, not natives. The use of natives may result in the mitigation site not succeeding in the long-run or not providing a solid base to the food web, affecting wildlife populations on the entire site over time.

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