What is a native plant?

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Laura Rericha & Gerould Wilhelm
Conservation Research Institute

In our view, the descriptor "native plant" is not an abstraction, brand, or chauvinistic characterization that renders a garden of native plants more environmentally progressive than an old-fashioned but diverse, perennial garden. Indeed, a native plant is a biological entity that has coevolved with a suite of biotic (e.g., the faunistic and the aboriginal human relationships) and abiotic (e.g., fire) factors that have shaped, honed, and defined the ecological community of which it is a part. In a garden, a native plant is isolated from many of its ecological counterparts, planted in a soil absent of temporal and ecological development, and admired by people for its own sake.

A native plant is conservative or restricted to habitat(s) in which it has coevolved. Following the settlement of North America, some native plants were shown to be adapted to novel habitats or ones that were recent manifestations of "economic progress."

To understand the conservatism of a native plant, coefficients of conservatism—C values that range from 0 to 10—have been assigned to species designated as "native" to a region or state (Swink & Wilhelm, 1994; Wilhelm & Rericha, 2017). The term "native plant," when deployed in this context, is circumscribed around a philosophy that characterizes the inhabitancy of species to aboriginal, largely intact landscapes that still possess at least a fragment of their remnant ecology.

Plants that show strong predilections for original soils and natural area remnants have C values of 5 through 10 and can be regarded, rather confidently, as native to a specific natural area remnant. An example of a remnant is a calcareous dry-mesic sand prairie that has developed on a base-rich sandy outwash soil. Numerous plant species, however, may be conservative to a broader array of remnant habitats. For example, *Oligoneuron album*, a composite with a C value of 10, is restricted to wet to dry, typically high-quality prairies of calcareous sandy to gravelly soils. The wet to dry habitat designation corresponds to an aboriginal suite of habitats, such as along a topographic gradient, to which the plant is conservative. As an unfortunate artifact of the post-settlement era and its associated anthropogenic practices, remnants have become degraded or destroyed.

Another example of a native plant occurring in a diverse array of remnant habitats is S*arracenia purpurea* or pitcher plant. In the Chicago Region, this plant has a C value of 10 and occurs prevailingly in sphagnum bogs, a regionally rare habitat. In an even rarer habitat circumstance, the plant can be observed in artesian fens, such as on the region's northern fringe. Like the complex of habitats described earlier for *Oligoneuron album*, an artesian fen and sphagnum bog are a part of a regional array of remnant habitats to which pitcher plant is adapted.

Plants with C values lower than 7 can endure significant habitat disturbance or occur in novel or recently created systems. With a C value of 5, *Agrimonia pubescens* occurs prevailingly in mesic to dry-mesic remnant woodlands but can grow in soils that have endured a moderate degree of disturbance, such as grazing. Plants with values from 0 through 2 occur in habitats that are either novel, such as a salted roadside, or remnant systems that are significantly degraded. Even within a high-quality remnant, however, there may be degraded vignettes in which may

occur native plants conservative to disturbed conditions. Two such plants are *Solidago altissima* and *Ambrosia artemisiifolia*, which have C values of zero.

Native plants have also coevolved with their ecological counterparts, such as with pollinators. Bees, for example, are pollinating insects that are dependent on nectar and pollen from flowering plants. For bees, the flowering substrate provides food provisions and a place on which to form leks or aggregations of males awaiting the visitation of a foraging female. Indeed, a remnant habitat possesses a pre-settlement array of species, such as remnant-conservative bees and plants, their ecological relationships, and an array of abiotic factors that have shaped and defined the system.

For example, numerous bee species are conservative to remnant habitats, along with the plant species on which they depend. Two such bees are *Andrena aliciae* and *Nomada graenicheri*, the latter species a cleptoparasite of the former. The time frame during which both bees emerge corresponds to the flowering of *A. aliciae's* primary pollen host in the region: *Helianthus strumosus*, a native plant of open woodlands and savannas. Indeed, both bee species forage together on the pollen host, which forms lush flowering stands in regularly burned, well-managed systems. In addition to the bees just discussed, a diverse compliment of anthophilous insects can be observed on the flowering heads of this sunflower, especially in well-managed habitats. The complexity of the faunal array is emblematic of the quality of the habitat that can support it. A diverse array of native plants is a keystone group of organisms in remnant systems. Indeed, by studying the assemblage of extant plant species within a remnant habitat can one begin to grasp the potential for diversity of its dependent faunal components.

Plants that are commonly planted in gardens and conservative to remnant habitats can attract a cohort of insects, but typically ones that are generalist and significantly fewer in

number. For example, a hallmark of a remnant habitat is the diversity of insects and native plants that the system can support and sustain. The isolation of a garden far-removed from a remnant diminishes that garden's ability to attract pollen specialists and remnant-dependent species that may be exploiting the resources within a complex comprised of both restoration and remnant. Indeed, it is not enough for a garden to have possession of a remnant-dependent plant to be able to both attract and sustain a rare bee specialist or remnant-conservative insect. For example, *Andrena helianthiformis* is a prairie-dependent bee that does not occur in gardens, regardless of whether the pollen host, such as species of the genus *Echinacea*, are present. Indeed, this bee is a remnant-dependent insect that is conservative to dry-mesic to dry sandy-gravelly prairies that support remnant populations of either *E. pallida* or *E. angustifolia*.

Of the region's 500+ native bees, only several dozen or so are known to frequent "native plant" gardens. The majority of native bees is confined to remnants, just as are many of our native plants. If one installs a conservative native plant in a garden or *de novo* restoration, it has horticultural interest to the gardener. The full array of its biological and abiotic-sustaining infrastructure, however, is not available to it. Indeed, its future in the system is likely to be short-term. The likelihood that the plant will produce viable progeny in a garden and coalesce with a diversity of other such species to form a self-replicating and ecologically-functioning system is remote.

The assertion that plants generally native to an area have an adaptive advantage over species long in cultivation and tolerant of nutrient-rich or ruderal soils is wishful thinking, born in part from the idea that conservative native plants are independent entities that can thrive virtually alone in a contemporary anthropogenic world. Such fantasies discount the very nature of living systems. We do not wish to discourage the introduction of "native species" in a garden,

but caution against feelings of environmental virtue that often accompany such horticultural applications.

If native species of plants and animals are to survive as life companions with us on this earth over the long run, we simply must identify the remnant landscapes that support them and preserve them. We must also learn what human cultural relationships are necessary to sustain them, such as fire, thinning, and aboriginal harvesting practices. Collecting the seeds of "native plants" and planting them in a garden or restoration is insufficient if the goal is truly to preserve them.

References

Swink, F. A. & G. Wilhelm. 1974. *Plants of the Chicago Region. Rev. and exp. ed. with keys*. 4th ed. Indianapolis: Indiana Academy of Science. 921 p.

Wilhelm, G. & L. Rericha. 2017. *Flora of the Chicago Region: A Floristic and Ecological Synthesis.* Indianapolis: Indiana Academy of Science. 1372 p.