

Natives *in* Design

Part II

By Robert E. Schutzki, Department of Horticulture, Michigan State University

NATIVE PLANT SPECIES ARE PART OF DIVERSE ECOLOGICAL COMMUNITIES THAT HAVE EVOLVED OVER TIME TO CLIMATE, SOILS, HYDROLOGY, COMPETITION, AND OTHER BIOTIC AND ABIOTIC INFLUENCES. THE RELATIONSHIPS BETWEEN AND AMONG INDIVIDUALS AND THEIR DEPENDENCIES ON THE PHYSICAL AND ENVIRONMENTAL CONDITIONS ARE AN INTEGRAL PART OF THE COMMUNITIES. THE CHARACTERISTICS OF PLANT COMMUNITIES PROVIDE BASIC INFORMATION ABOUT PLANT PERFORMANCE AND CAN ALSO PROVIDE INSIGHT INTO THEIR ROLE OR FUNCTION IN THE LANDSCAPE.

Landscaping with native plants





Native forbes: *Rudbeckia* and *Asclepias*



Native forbes: *Eupatorium*



Cornus florida

Ecological communities are defined by their structure, physical conditions, and the ecological processes within their boundaries. A more in-depth breakdown of ecoregions and their respective communities can be found by visiting the U.S. Environmental Protection Agency (EPA) website: <<http://www.epa.gov/wed/pages/ecoregions>>. U.S. EPA has developed maps and descriptors for ecoregions of North America. It is a level system that classifies ecosystems based on type and quality. Ecoregion classifications begin with Level I consisting of 15 broad classes across the continent. Subsequent levels (II–IV) further dissect these regions into more specific areas based on environmental conditions and structural components. For example, Level III consists of 52 areas nestled in the Level I regions. Level IV is even more finite with many designations and descriptions still under development. Reviewing ecoregions and their native plant communities is extremely helpful when considering the appropriateness and adaptability of native plant species outside our local ecological boundaries.

Native plant communities are classified as upland, wetland, and estuarine, with subclasses being more specific according to their components and physical appearance. Upland systems are areas typically associated with dry soils and plant species that cannot withstand prolonged periods of saturated soils. They are further broken down into forest, barrens, and shrub and herbaceous complexes. Upland forests exhibit soils and environmental conditions that support dense canopies with corresponding understory vegetation. Canopy or dominant species can be a mixture of deciduous and evergreen trees with multiple genera and species within each type. The understory can also be a mixture of small trees, shrubs, and forbes. Michigan examples would include: Northern hardwood-conifer forests, Southern hardwood forests, and Beech-Maple forests. When we consider using understory plant species from upland forests, careful thought is given to soil drainage, soil moisture, and light exposure. Upland barrens

are also referred to as savannas. These are intermediate areas between forests and open prairies. Although there are some canopy species, tree cover is usually a small percentage of the total space. Understory species will consist of prairie grasses, forbes, and shrubs. Due to the open exposure of the sites and fluctuating environmental conditions, savannas can be harsh, thus supporting what we would consider stress tolerant plant species. A selected group of Michigan savanna communities includes: Bur Oak plains, Oak barrens, Oak-pine barrens, and Great Lakes barrens. Upland shrub complexes consist of open stands of shrubs interspersed with grasses and forbes. Trees are usually not existent in these communities. Upland herbaceous communities are prairies and meadows dominated by grasses and forbes with Michigan examples being Lakeplain mesic sand prairie, hillside prairie, woodland prairie, and dry sand prairie.

Wetland or palustrine systems are intermediates between upland and freshwater aquatic systems. They are characteristic of high water tables, saturated soils, and standing water. Vegetation within these systems is tolerant of prolonged flooding as well as periods of fluctuating moisture conditions. Wetland systems can be described as forest, shrub, or herbaceous communities. Wetland forests consist of a tree canopy of evergreen and deciduous trees similar to our upland forests (however, different genera/species). They will vary with the depth and seasonality of the standing water, also contributing to the mix of upper and understory vegetation. A majority of Michigan's wetlands consists of wetland forest communities with examples including: hardwood-conifer swamps; poor conifer swamps; Southern floodplain forests; and Southern swamps. Wetland shrub communities are dominated by shrub species with same variations in water levels as the forests. Michigan's wetland shrub communities include: Northern shrub thicket; Southern shrub-carr; and inundated shrub swamp. Wetland herbaceous communities consist of emergent herbaceous species forming



(photo left) Cultivated landscape with native plant species



(photo right) Wetland community

our marshes, wet prairies, fens, and bogs. Michigan is home to several diverse wetland herbaceous communities: Great Lakes marsh, Northern wet meadow, Lakeplain wet meadow, Northern fen, prairie fen, bog, and muskeg to name a few.

The Great Lakes regions offer a number of diverse plant communities as well as being the northern limits to many native plant species. The Michigan Natural Features Inventory (MNFI) contains lists and descriptions of 74 natural plant communities covering our upland and wetland systems. It can be accessed by: <http://web4.msue.msu.edu/mnfi/>. This resource can aid in our understanding and integration of native plants into the landscape in addition to finding that we may have already been using several native plants on a regular basis. Accompanying the plant lists is basic information about climate, environmental influences, soil, and other physical features that will aid in identifying Right Plant/Right Place. One approach in using the MNFI data is to begin with a specific natural community. Lets use the Southern Floodplain Forest as our example.

Southern Floodplain Forest

Overview: A bottomland deciduous forest type located south of the transition zone and occurring on mineral soil (less frequently on shallow muck).

Physiography and geology:

Located along streams which are third order or greater.

Soils: Loam or silt loam (sometimes sandy loam and occasionally thin muck); neutral pH.

Dominant plants: Dominant plants nearly always include *Acer saccharinum*, often *Fraxinus pennsylvanica*, and sometimes *A. rubrum*. *Ulmus americana* was once important but was eliminated from the canopy by elm blight. Several other species can be important, especially in the southernmost watersheds, resulting in complex patterns of dominance. These additional species include *Juglans cinerea*, *Acer nigra*, *Aesculus glabra*, *Acer negundo*, *Fraxinus nigra*, *Salix nigra*, and *Populus deltoides*, the last two in former channels and on low riverbanks. *Ulmus rubra* is occasionally important.

Associated species: When sufficient elevation in the floodplain exists, species of surrounding higher ground will invade (e.g., *Acer saccharum*, *Fagus grandifolia*, *Tilia americana*, *Fraxinus americana*, *Carya cordiformis*). Other typical canopy species include *Quercus bicolor*, *Platanus occidentalis* (which may dominate less frequently flooded “flats”), *Celtis occidentalis* and *Juglans nigra*. *Crataegus* spp., *Lindera benzoin*, *Cornus alternifolia*, *Carpinus caroliniana*, and *Cercis canadensis* often occur in the understory. A number of species reach their northern limit in this forest type, including *Aesculus glabra*, *Asimina triloba*, *Camassia scilloides*,

Cercis canadensis, *Diarrhena americana*, *Fraxinus quadrangulata*, *Gleditsia tricanthos*, *Gymnocladus dioica*, *Mertensia virginica*, *Morus rubra*, *Trillium nivale*, *T. recurvatum*, *T. sessile*.

Variation: The flora of many of the river floodplains north of the tension zone, such as the Menominee and Sturgeon Rivers in the southern Upper Peninsula, contain species with a more southern affinity. A more complete survey of these streams is needed to determine whether the range of the community should be extended north or whether additional floodplain types should be added.

Similar communities: southern swamp, mesic southern forest.

Natural processes: Flooding and windthrow.

Disturbance effects: Flooding and windthrow introduced frequent disturbances to floodplain forests. Weedy exotics and natives like *Ambrosia trifida*, *Alliaria officinalis*, *Lysimachia nummularia*, and *Urtica dioica* are common. Grass and herb-dominated openings of *Phalaris*, *Elymus virginicus*, *E. riparia*, and *Solidago altissima* are often present.

The initial information gives us a perspective on soils. Bottomlands confirm that we are dealing with a seasonal high water table and periodic flooding. Plant species associated with this community are tolerant of flooding, poor drainage, and seasonal

wet and dry situations. Examination reveals: *Acer saccharinum*, *Fraxinus pennsylvanica*, *Acer rubrum*, *Quercus bicolor*, *Celtis occidentalis*, *Crataegus* spp., *Lindera benzion*, *Cornus alternifolia*, *Carpinus caroliniana*, *Cercis canadensis*, *Gleditsia tricanthos*, *Gymnocladus dioica*, and *Mertensia virginica*. Within the first community investigated we have found 13 native plant species that not only are we familiar with, but they are readily available in the trade (I take that back, there are 12. We will not count Green Ash). Investigation of Southern shrub-carr, another wetland community, offers several more native plant species that are commonly used and readily available, such as *Cornus racemosa*, *C. stolonifera*, *Sambucus canadensis*, and *Ilex verticillata*. Reviewing a reasonable cross section of the upland and wetland systems in Michigan will result in a fairly comprehensive list of plants covering just about every environmental and soil condition that we encounter in the landscape. We will also be surprised at the number of native plant trees, shrubs, vines, ground covers, grasses, ferns, and herbaceous perennials and their respective cultivars that are commonly available in the trade. The investigation does not end with the Michigan natural plant communities, we can continue our search into other ecoregions and identify plants

with ornamental appeal, hardiness, and adaptability. Again, there is a tremendous selection of North America native plant species that will work well in our Michigan landscapes. What would our landscapes be without *Hydrangea arborescens* ‘Annabelle’, *Hydrangea quercifolia*, *Clethra alnifolia*, *Fothergilla major* ‘Mt Airy’, *Ilex glabra*, and *Itea virginica*? Native plant species have always been an integral part of our plant palettes in the nursery and landscape industry; sometimes we overlook a plant’s origin or take it for granted.

Our examination of the natural plant communities resulted in a reasonable list of plant species and their respective environmental and soils requirements. With the list in hand, it’s time to return to Right Plant/Right Place. Under the guides of Right Plant /Right Place, plant selection and use follow an organized process and integrate the function that the plant will serve in its location, the adaptability of the species to the site, and the management required to ensure establishment and subsequent performance “true to form”. Let us consider function. Native plants in the landscape can be used to address several different objectives, each with their own set of parameters, restrictions, and/

or guidelines. Ecological restoration requires a more sophisticated approach to species introduction than landscape restoration, where the objectives may be more related to environmental benefits such as storm water management, erosion control, or some other engineering objective. Ecological restoration may dictate species mix, require specific genetic origin, and restrict clonally propagated materials. Landscape restoration on the other hand may focus on species adaptability and the respective environmental benefit, thereby being more flexible with the species, their origin, and selection through horticultural sources. Finally, there is landscaping with native plants. Landscaping with native plants is basically incorporating native plant species into a cultivated or managed landscape. The interest may be for aesthetics, integrating the cultivated landscape with surrounding natural areas, site adaptation, or simply selecting a few old-time favorites.

Regardless of the reason, we are fortunate to have a broad selection of native plant species from which to choose and be in an industry that serves the public’s interest in gardening and contributes to the environmental quality of our communities. 



- ◆ *Marble & Granite Countertops*
- ◆ *Wholesale Stone Supplier*
- ◆ *Limestone & Bluestone Fabrication*

5595 AUBURN ROAD
SHELBY TOWNSHIP, MI 48317 USA
PH: 586-739-1905 FX: 586-726-0779
WWW.ABELLASTONE.COM

WHOLESALE GROWERS

QUALITY LANDSCAPE-SIZE
SHADE AND ORNAMENTAL TREES,
SHRUBS, EVERGREENS,
CONTAINER STOCK,
AND PERENNIALS

• Located on Rushton Road between 7 & 8 Mile
(3 miles east of US 23)

• Owned and operated by
Christensen's Plant Center



Rushton Nurseries
9710 RUSHTON RD., SOUTH LYON, MI 48178
(888) 437-0300 FAX (888) 437-7220