Native Plants and Communities of the Piedmont of North Carolina©

Dennis P. Niemeyer
Magnolia Ridge Farm / Carlton Plants, 195 Macedonia Lake Rd., Flauda, North Carolina 28773
Email: dennis@ncwildflower.com

INTRODUCTION

The current plant communities in the Piedmont of North Carolina differ greatly from the original landscape that existed prior to settlers coming to the region. Almost all virgin forest has been harvested, with much of the land being used for houses and development and the remainder being used for agriculture. As this land regenerates from the harvest, the countryside has become a patchwork of multiple different stages of regeneration taking place.

Disturbance of a plant community is usually followed by recovery, which we call succession. Succession represents a sequence of populations that replace each other, resulting in community change. A typical sequence of dominant vegetation is: Summer, winter annual weeds ⇒ herbaceous perennials ⇒ shrubs ⇒ early successional trees ⇒ late successional trees.

Succession is a continuous process of change in vegetation, which can be separated into a series of phases:

- Pioneer: 0–10 years
- Sub Climax: 10–100 years
- Climax: 100–300 years

Many factors come into play in contributing to the succession process. Seeds survive for variable lengths of time and germinate at varying times over multiple years, causing the succession process to be sometimes unpredictable. Seed survival is classified as:

- Transient seeds (1 year or less)
- Short-term persistent seeds (1–5 years)
- Long-term persistent seeds (> 5 years)

Succession is a process of opportunity. It occurs where death or destruction creates an opening, e.g., a tree falling in a forest, grass dying in a field. Thus, scale is important. In a forest there is a mosaic of mini successions occurring even when the forest overall appears to be the climax community.

SUCCESSION STAGES

Pioneer: 0 to 10 years. Succession starts at the microscopic level, and the earliest stages of the colonization of bare ground are associated with the microbial, algae, lichen, and moss components of ecosystems. As succession proceeds, early pioneer short-lived species are replaced by perennial communities dominated by several grasses. Eventually, a tall-grass prairie may develop that would be dominated by other tall grasses and perennial herbs. The prairie is then invaded by shade-intolerant shrubs and trees, forming the nuclei of a forest.

Sub Climax: 10 to 100 years. This segment of succession is the most dominant phase seen in the Carolina Piedmont. Early successional trees have multi-layered

foliage. Leaves deep in the canopy are able to get enough light to be above the compensation point. They also have efficient seed dispersal systems and are precocious reproducers, e.g., eastern red cedar, *Juniperus virginiana.*

Climax: 100 to 300 years. Studies of the Piedmont in North Carolina show that oak-dominated forests establish after about 150 years. Identification of stable climax communities in the field is usually difficult, in part because of the very long temporal scale. For example, old-field succession may require 100 to 300 years to reach climax community. But in this time frame, the probability that a physical disturbance (fire, hurricane, flood, logging) will occur becomes so high, the process of succession may never reach completion. Climax is characterized by slow rates of change in an old-growth community compared with more dynamic, earlier stages. Climax communities are dominated by species tolerant of competition for resources, and late successional trees have a single layer of leaves in a shell around the tree and are more efficient in a crowded canopy. Also, seeds are larger and poorly dispersed, and the juvenile phase is long, e.g., sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*).

The piedmont of North Carolina is currently a combination of Pioneer and Sub Climax successions. Most areas are in some stage of the Sub Climax succession with recent disturbances in the Pioneer stage.

THE FOLLOWING IS A LIST OF SOME OF THE COMMON PLANTS SEEN IN THE SUCCESSION STAGES OF THE NORTH CAROLINA PIEDMONT

Pioneer. *Ambrosia artemisiifolia* (ragweed), *Andropogon virginicus* (broom sedge), *Elymus canadensis* (wild rye), *Helianthus atrorubens* (sunflower), *H. microcephalus* (sunflower), *Panicum dichotomiflorum* (annual), *Phytolacca americana* (pokeweed), *Silphium compositum* (Rosin weed), *Solidago arguta* (goldenrod), *S. erecta* (goldenrod), *Rubus argutus* (blackberry)

Sub Climax.

Herbaceous Plants Include. *Asarum arifolium* (wild ginger), *Asclepias syriaca* (common milkweed), *A. tuberosa* (butterfly weed) *Aster concolor*, *A. dumosus*, *A. paternus, Chrysogonum virginianum* (yellow and gold), *Chasmanthium latifolium* (northern sea oats), *Eupatorium album* (queen of the meadow), *Eupatorium coelestinum* (ageratum), *Geranium maculatum* (wild geranium), *Passiflora incarnata* (maypops), *Podophyllum peltatum* (May apple), *Polygonatum biflorum* (Solomon's seal), and *Trillium catesbyi.*

Understory Plants include. *Bignonia capreolata* (cross vine), *Clematis virginiana* (woodbine), *Cercis canadensis* (redbud), *Cornus florida* (flowering dogwood), *Euonymus americanus* (strawberry bush), *Hamamelis virginiana* (witch hazel), *Ilex verticillata* (winterberry), *Parthenocissus quinquefolia* (Virginia creeper), *Rhododendron eastmanii, Rhus glabra* (smooth sumac), *Viburnum acerifolium* (maple leaf viburnum)

Associated Tree Species Include. *Acer rubrum* (red maple), *A. leucoderme* (chalk maple), *Carpinus caroliniana* (ironwood, blue beech), *Liriodendron tulipifera* (tulip tree), *Liquidambar styraciflua* (sweet gum), *Nyssa sylvatica* (black gum), *Oxydendrum arboreum* (sourwood), *Sassafras albidum*.

Characteristic Tree Species Include. *Carya carolinae-septentrionalis* (southern shagbark hickory), *C. glabra* (pignut hickory), *C. tomentosa* (Nittall hickory), *Juglans nigra* (black walnut), *Celtis laevigata* (southern hackberry), *Quercus alba* (white oak), *Q. stellata* (post oak), *Q. lyrata* (overcup oak), *Q. michauxii* (swamp chestnut oak), *Q. prinus* (chestnut oak), *Q. rubra* (red oak), *Q. coccinea* (scarlet oak).

There are two famous plants the Charlotte, North Carolina region is well known for: the endangered Schweintzs sunflower (*Helianthus schweinitzii*) and the big leaf magnolia (*Magnolia macrophylla*). *Helianthus schweinitzii* is only known to exist in a couple counties in North Carolina, growing at the woods edges and thickets.

Magnolia macrophylla boasts the largest flowers and largest simple leaves of any tree native to temperate North America. The flowers, which often have purple spots at the base of the pedals, may be up to 1.5 ft in diameter, and the leaves may be 1 ft wide and up to 3 ft long. Andre Michaux reported finding this unusual tree only in the Carolina Piedmont and in the Cumberland region of Tennessee.