EMG Training: Native Plants

April 27, 2016

Charlotte Glen
Horticulture Agent
NC Cooperative Extension – Chatham County Center
Defining Native

“A plant or animal that has evolved in
- a given place
- over a period of time
- sufficient to develop complex and essential relationships
- with the physical environment and other organisms
in a given ecological community”
Native is meaningless if you do not define location

Think ecoregion, not political boundaries

NC Piedmont = “Southeastern US Plains”
Native Range

Consider native range of plants

- Some very widespread
  - All of NC; eastern US
  - Typically adaptable to wider range of conditions

- Some very restricted
  - May be adapted to specialized conditions

Best source for native range: USDA PLANTS Database
Venus Flytrap
*Dionaea muscipula*
Period of Time

- 1000’s of years
- Does not include plants recently introduced from other regions that have naturalized or become invasive

Not all plants found growing wild are native. **Naturalized species**, such as daylilies, persist after cultivation. Others are **invasive species**, such as Japanese honeysuckle.
Complex and Essential Relationships

- Specialized feeders
- Adapted to feed on very narrow range of plants
- Typically one genera
- Most caterpillars, some beetles, some pollinators
- Eg. Southeastern Blueberry Bee - Vacciniums
Complex and Essential Relationships

- Generalist feeds
- Can feed on wider range of plants
- Few plant eaters (herbivores) are generalists feeders
- Sap feeders more likely to be generalists
- Some pollinators are generalists

Fall Webworm – one of our few native generalist herbivores
Physical Environment

- Plants adapt to specific conditions – soil, sun/shade, climate
- Occur in plant communities
Ecological Community

a group of interacting species living in the same place . . . bound together by the network of influences that species have on one another

Source: University of Michigan
Healthy Ecosystems

- Support a **diverse array** of plants, insects, birds and animals

- **Lots of redundancy**
  - Many different species performing the same function

- Healthy ecosystems home to diversity of plant species
Healthy Ecosystems

- Provide services essential to human wellbeing and survival, including:
  - Pollination
  - Water and Air Purification
  - Soil Formation
  - Balance Pest Species
  - Climate Stability

Learn More: Millennium Ecosystem Assessment
Plants Have Many Functions

- Protect soil from erosion
- Help cycle nutrients
- Help cycle water
- Support soil microbes
Most Important Function: Foundation of Food Webs

Plants capture and convert the sun’s energy into a form that can be consumed by other organisms.
Within Ecosystems, All Plants Are Not Equal

- Most herbivorous insects have adapted to feed on certain plants.
- Plants with which they share an evolutionary history.
- Plants native to the same region.

Luna moth caterpillars love sweet gum.
Monarchs

- Caterpillars can only survive on species of *Asclepias*
  - Milkweed
  - Butterflyweed
- 15 species of *Asclepias* native to NC
TREND: Natural areas replaced by managed landscapes
Managed Landscapes

- Often dominated by non-native plants
  - Turf
  - Exotic trees, shrubs, flowers
  - Focus on “pest free”

- Do not sustain ecosystems they replaced
“A plant that has fed nothing has not done its job”

D. Tallamy, *Bringing Nature Home*
Native Plants

- Evolved with native insects
- Feeding is tolerated
- Most native insects feed on very narrow range of species
- Feed for part of life cycle – usually 2-4 weeks

Polyphemus moth caterpillars feed for a few weeks in late summer
The Challenge

- Create healthier ecosystems by changing the way:
  - Gardeners
  - Landscapers
  - Plant Breeders
  - Nurseries

- View and value landscape plants
Beyond Ornamental

- Landscape plants are more than ornaments!
- Living organisms
- Not in isolation - Part of the local ecosystem

Choosing plants for your landscape is more complex than choosing artwork for your home
A New Paradigm

Select plants for:
- Appearance
- Performance
- Adaptation to site conditions

PLUS ability to sustain native species
- Support ecosystem services
- Unique to native plants
More Natives, Not All Native Every Site

Native doesn’t mean:
- Adapted to all landscapes/sites
- Well behaved
- Easy care or low maintenance
- Capable of fulfilling all landscape purposes

There are very few small, evergreen shrubs native to NC.
Urban soils are highly altered

- Few natives tolerate highly urban environment

Parking lots are a graveyard for red maple
Some natives are too vigorous in landscapes

Canada Goldenrod
Solidago canadensis

Hardy Ageratum, Conoclinium coelestinum
Weedy versus Invasive

- **Invasive** refers to non-native plants capable of harming ecosystems
- **Weedy** – spread vigorously in garden/landscape setting
  - By seed
  - By roots – rhizomatous

*Saliva lyrata*, lyre-leaf sage, self seeds prolifically!
Others natives are too finicky

Lady Lupine, *Lupinus villosus*

Pitcher Plant, *Sarracenia flava*
Key to Success

Choose plants adapted to site

- Sun/Shade
- Moisture/Drainage
- Soil pH and nutrient levels
- Space to grow

Swamp Rose Mallow
*Hibiscus moscheutos*
Needs moist soil!
What about cultivars?

Purple Coneflower, *Echinacea purpurea*

*Echinacea ‘Razzmatazz’*
“Nativars”

- Cultivated varieties of native species
- Selected for unique/desirable feature
- Propagated by cuttings, division to maintain genetic integrity = clones

*Cercis canadensis* ‘Merlot’ Purple leaf form of redbud
Key Question: How different is it?

- Flowering time
- Flower shape
- Flower color
- Foliage color
- Topic of current research
  - Mt. Cuba Center
Getting the Most Benefit

Help plants thrive:

- **Prepare the soil**
  - Alleviate compaction
  - Incorporate organic matter

- **Water during establishment**
  - First season

- **Mulch!**
Getting the Most Benefit

Ecological Design

- More plants natives to region
- Diversity of species and height ranges
  - Less lawn - More trees, shrubs, and flowers
- Year round food supply
  - Flowers, fruits, seeds, leaves
Getting the most benefit

THINK LAYERS!
More layers generally means more natural species

Canopy
Understory
Shrub
Flowers/Groundcover
A Few Great Natives for Piedmont Landscapes

- Serve ecological function:
  - Support other species

- Serve landscape function:
  - Attractive and adaptable
  - Not overly aggressive or finicky

- Can be nursery produced
  - Some only available from specialty nurseries
Think Layers: Canopy Trees

- The top layer, 40’-80’+ tall
- Provide shade
- Protect soil
- Food source for many species (leaves, nuts/fruit, nectar/pollen)
- Large, unbroken areas of woodland needed
Foraging Hubs

- Trees are the most important source of caterpillars
- Most caterpillar species feed on very narrow range of species
- Feed for part of life cycle – usually 2-4 weeks

Polyphemus moth caterpillars feed for a few weeks in late summer
Caterpillar Hunters

- Nearly all terrestrial birds rear their young on insects, not seeds or berries
- Chickadees are caterpillar specialists
  - Requires 6,000-10,000 caterpillars to fledge a single nest!
- **Caterpillars rarely a threat to tree health!**
Getting the Most Benefit

Add trees to connect fragmented areas

- Work with neighbors to:
  - Protect existing natural areas
  - Connect natural areas
- Create larger area for habitat
- Bridges existing areas to create a corridor
Trees

- Provide joy from the day they are planted
Many Great Native Trees

Readily Available:

- **River Birch**, *Betula nigra*
- **Red Maple**, *Acer rubrum*
- **Black Gum**, *Nyssa sylvatica*
- **Southern Magnolia**, *Magnolia grandiflora*
Oaks

- Support 100’s of species
  - Acorns
  - Leaves
  - Habitat
- The best shade trees
- Most are very long lived
- Over 30 species native to NC!
Oaks

- Most common in the landscape:
  - Willow oak, *Quercus phellos*
  - Pin oak, *Quercus palustris*
  - Live oak, *Quercus virginiana*
Oaks

- Ask for:
  - **Shumard Oak**, *Quercus shumardii*
  - **White Oak**, *Quercus alba*
  - **Swamp White Oak**, *Quercus bicolor*
  - **Overcup Oak**, *Quercus lyrata*
  - **Red Oak**, *Quercus rubra*
  - **Scarlet Oak**, *Quercus coccinea*
More Great Native Trees

Less Readily Available:

- **Persimmon**, *Diospyrus virginiana*
- **Hickory**, *Carya* species
- **American Beech**, *Fagus grandifolia*

NC Forest Service, Tree Seedling Store -
[http://nc-forestry.stores.yahoo.net](http://nc-forestry.stores.yahoo.net)
Understory Trees and Shrubs

- **Middle layer**
- Often missing in managed landscapes
- **Prime nesting height** for most birds, 5’-15’ above ground
- Many have attractive flowers, produce fruits/berries

Middle/understory layer missing in many modern landscapes
Popular Understory Trees

- Redbud, *Cercis canadensis*
- Flowering Dogwood, *Cornus florida*
- American Holly, *Ilex opaca*
Serviceberry
*Amelanchier* species

- **A. arborea** –
  - Mtns and piedmont
  - Small tree
- **A. canadensis** –
  - CP and piedmont
  - Deciduous shrub
- Sun to part shade, moist soil
- White flowers in spring
- Sweet berries ripen late May
Fringe Tree

*Chionanthus virginicus*

- Native throughout NC in moist woodlands
- Deciduous
- Shrub or small tree, 10’-20’
- Sun to part shade
- Moist to well drained soil
- Lacy flowers in spring – males are heavier bloomers
- Female plants - dark blue berries late summer
Sweet Bay Magnolia

*Magnolia virginiana*

- Coastal plain and eastern Piedmont
- Grows 20’-30’ tall, often with multiple trunks
- Red seeds in fall eaten by birds
- Sun to part shade, moist soil – tolerates flooding
- Mostly deciduous
Fothergilla

- *F. major*, Piedmont
  - 6’-8’ x 6’-8’

- *F. gardenii*, Coastal Plain and sandhills
  - 3’-4’ x 3’-4’, suckers

- Deciduous shrubs

- Early spring flowers – honey scented

- Sun – pt. shade, moist or well drained soil

- Cultivar: ‘Mt. Airy’
Inkberry
*Ilex glabra*

- Coastal plain, eastern piedmont
- 4’-5’ x 3’-4’
- Evergreen
- Tolerates moist soil
- Bees attracted to blossoms

‘Shamrock’
American Beautyberry
*Callicarpa americana*

- Eastern half NC
- Deciduous shrub
- Sun to part shade
- Moist or dry soil
- Magenta berries late summer - attract songbirds
- 4’-5’ tall and wide
- Cut back to 1’-2’ in early spring
Coral Honeysuckle

- *Lonicera sempervirens*
- Coastal plain, piedmont, foothills
- Semi-evergreen vine
- Spring blooming – often reblooms
- Hummingbirds!
- Sun, most soil types
- Climbs 10’+
Perennials

- Ground layer
- Critically important nectar and pollen source for pollinators and beneficial insects

**Most benefit:**
- Plan for something to be in bloom spring-fall
- At least 3 different types in bloom each season

Blossoms with many small flowers clustered together are the richest nectar plants
Getting the Most Benefit

- Plant flowers in groups
- Allows birds and pollinators to feed with less movement
- Also aesthetically pleasing

Black-eyed Susan, *Rudbeckia fulgida*
Green and Gold

*Chrysogonum virginianum*

- Native to Piedmont, some Coastal Plain counties
- Light to part shade, moist or well drained soil
- 1’ x 2’
- Evergreen foliage
- Early spring flowers
- Var. *australe* is stoloniferous, lower growing
Eastern Columbine
Aquilegia canadensis

- Native throughout NC, sporadic in Coastal Plains
- Blooms late March - May
- Sun or shade, well drained soil
- 12” – 24” tall in bloom
- Attracts butterflies and hummingbirds
- Will naturalize in the garden by self seeding
Bluestar

*Amsonia tabernaemontana*

- Native throughout NC
- Tough, long lived clumping perennial
- Pale blue flowers in spring loved by bees
- 1 to 2’ tall and wide
- Glossy green foliage, turns clear yellow in the fall
- Sun to part shade, wet to well drained soil
White False Indigo

*Baptisia alba*

- Native Piedmont, Neuse River Basin
- Long lived, clump forming perennial
- 3’-4’ tall, leggy
- Blooms May
- Other species and cultivars available
Coreopsis, Tickseed

- Several species native to NC
- Sun lovers
- Threadleaf Coreopsis
  - *C. verticillata*
  - Long live
  - Summer blooming
  - Drought tolerant
  - ‘Zagreb’ – 2’ x 2’
Butterfly Weed
Asclepias tuberosa

- Native statewide
- Orange flowers summer – attract many pollinators
- Sun to part shade
- Well drained soil
- Very drought tolerant
- Late to emerge in spring
Support Monarchs – Plant Asclepias!
Swamp Milkweed
*Asclepias incarnata*

- Native Mountains, Piedmont, northern Coastal counties
- 3’ tall and wide
- Spring/early summer flowers
- Sun to part shade
- Moisture tolerant
- Monarchs! Attracts many pollinators
Mountain Mints

*Pycnanthemum* species

- 12+ species
- Bloom mid-late summer
- Sun to light shade
- Moist soil
- 3’ tall and wide
- The best pollinator plants!
- Deer resistant

*Pycnanthemum tenuifolium*
Pycnanthemum loomisii

- Clump forming – not rhizomatous!
- 3’ - 4’ tall
- Moist – average soil, sun – part shade
Joe Pye Weed

- Sun – pt. shade
- Wet to moist soil
- *Eutrochium dubium*
  - 4’-5’ tall x 3’-4’ wide
  - More common coast
- *E. fistulosum*
  - 5’-8’ x 3’-4’
  - More common piedmont
- *E. purpureum and E. maculatum* in Mountains
- Deer resistant
Cardinal Flower

*Lobelia cardinalis*

- Native throughout NC
- Sun or shade, wet to moist soil
- Red flowers late summer to fall
- 3’-4’ tall in flower
- Attracts hummingbirds and butterflies
Rough Stemmed Goldenrod

- *Solidago rugosa*
- Native throughout NC
- cultivar ‘Fireworks’
- Grows 3’-4’ high and wide
- Sun to part shade, well drained to wet soils
- Blooms late summer - nectar for butterflies and many other pollinators
Narrow Leaf Sunflower
*Helianthus angustifolius*

- Native Piedmont, Coastal Plain
- Grows well in sun, moist to well drained soils
- Clump forming perennial
- 5’-8’ tall, 5’ wide
- Fall blooms - Excellent nectar source for butterflies
- Winter seed - birds
Calico Aster

- *Symphiotrichum lateriflorum*
- Native statewide
- Sun to light shade, moist to wet soil
- Fall blooming
- 4’ tall and wide
- Attracts many pollinators and butterflies
Switch Grass

*Panicum virgatum*

- Native throughout NC
- Several cultivars, 3’ - 8’ tall
- Moist or dry soils
- Sun to light shade
- Stands up well through winter, birds enjoy seeds
- Cut back by late Feb.

‘Northwind’
Learn More:
Going Native Website

http://www.ncsu.edu/goingnative/

Searchable plant database!
Extension Plants Database:
Can help you select native and non-invasive non-native species for your yard

http://plants.ces.ncsu.edu/
Plant Profiles:
- Height
- Hardiness
- Soil
- Exposure
- Description
- Images
- More!
Pollinator Conservation

http://www.protectpollinators.org

Visit the Pollinator Paradise Garden in Pittsboro!
Learn More

Extension Gardener Handbook


- Chapters cover many topics
  - Soils, Insects, Landscape Design, Vegetables, Flowers, etc.

- **Native Plants Chapter** online later this year

Cross Vine, *Bignonia capreolata*
Great Books to Learn More!

- **Native Plants of the Southeast**
  - L. Mellichamp

- **Best Native Plants for Southern Gardens**
  - G. Nelson

- **Gardening with Native Plants of the Southeast**
  - S. Wasowskki

- **Bringing Nature Home**
  - D. Tallamy

- **The Living Landscape**
  - D. Tallamy and R. Darke
Questions?

Learn more:
http://go.ncsu.edu/nativeplants