Native Plants

Charlotte Glen, Statewide Coordinator-Extension Master Gardener Program,

NC STATE EXTENSION
Review these slides and explore additional resources on native plants:

http://go.ncsu.edu/natives
Return of the Natives

- Why plant natives?
- Defining native
- A few great natives for Piedmont landscapes
- Resources to learn more!

Eastern Columbine, *Aquilegia canadensis*
Why should native plants be part of residential landscapes?
Why Plant Natives?

Natives are needed to:

- To support a diverse array of insects, birds and animals
- Sustain healthy ecosystems
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
Southeastern Blueberry Bee

- Native pollinator
- Solitary, ground nesting
- Forages primarily on wild blueberries, *Vaccinium* species within 1 mile of nest
- Active only during blueberry bloom season
- 17 species of *Vaccinium* native to NC!
What is a native plant?

From an NC nursery:

Indicates plants that are native to North America. We use the term "native" to refer to plants which evolved in North America, whether they are indigenous to the southeast or not.
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”
Given Place

- Native is meaningless without location!
- Think ecoregion, not political boundaries
- Greatest benefit:
  choose plants from local ecoregion

**Ecoregions of North America**
Level III: Peidmont
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
Butterflyweed
Asclepias tuberosa
Venus Flytrap

*Dionaea muscipula*
Congeners

- Plants in same genus
- For example:
  - *Amsonia tabernaemontana*
  - *Amsonia hubrichtii*
- Congeners from southeast US often support local pollinators and beneficial insects even if not native to this region
Native Range

Amsonia tabernaemontana

Amsonia hubrichtii

Best source for native range: USDA PLANTS Database
Which is best for your site?

Consider both:

- Geographical range
- Type of habitat

- **Amsonia tabernaemontana**
  - Moist woods, stream edges
  - Prefers moist soil, part shade

- **Amsonia hubrichtii**
  - Rocky outcrops, dry creek banks
  - More sun and drought tolerant
Period of Time

- 1000’s of years
- Does not include plants recently introduced from other regions that have naturalized or become invasive
- Wild doesn’t mean native!

Naturalized species, such as daylilies, persist after cultivation. Others are invasive species, such as Japanese honeysuckle.

Daylily, *Hemerocallis fulva*

Japanese Honeysuckle, *Lonicera japonica*
Complex and Essential Relationships
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 New Paradigm

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

- **PLUS** ability to sustain native species
  - Support ecosystem services
  - Unique to native plants

Holly hybrids provide nectar and pollen for bees, and berries for birds
More Natives, Not All Native Every Site

Native doesn’t mean:
- Adapted to all landscapes/sites
- Well behaved
- Long lived
- Easy care or low maintenance – especially if planted in the wrong place

There are very few small, evergreen shrubs native to NC.
More Natives, Not All Natives

- Some natives not adapted to highly urban environment

Parking lots are a graveyard for red maple

Gloomy Scale
Being Native Doesn’t Make a Plant Great for Landscaping!

Things to consider:

- Spreading tendencies
- **Longevity**
  - Some species short lived - often self seed
  - Rely on disturbance to sustain populations
  - May disappear over time OR become a nuisance
  - May require periodic “editing”

Golden Alexanders
*Zizia aurea*
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!
Making the most of spreaders

- Spreaders that aren’t too aggressive make great groundcovers
- Layer under and around taller plants – “living mulch”

*Viola walteri* ‘Silver Gem’
Others natives are too finicky

Lady Lupine, 
*Lupinus villosus*

Pitcher Plant, 
*Sarracenia flava*
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
  - Doug Tallamy and others
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!
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

- Majority of plants natives to local ecoregion
- Diversity of species and height ranges
  - Less lawn - More trees, shrubs, and flowers
- Year round food supply
  - Flowers, fruits, seeds, leaves

Very diverse!
Not diverse!
Getting the most benefit

THINK LAYERS!
More layers provide habitat for more species
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/fruits, 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

Rosy maple 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 threaten 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
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 in Landscapes

Most commonly planted:

- Willow oak, *Quercus phellos*
- Pin oak, *Quercus palustris*
More Oaks

Commercially Available:

- 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

- Black Gum, *Nyssa sylvatica*
- 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.
Redbud  
*Cercis canadensis*

- Small deciduous tree
- Blooms early spring before leaves come out
- Lives ~ 20 yrs.
- Sun – pt. shade, well drained soil
- Protect from deer when young
Leafcutter Bees
Redbud Cultivars

‘Forest Pansy’, ‘Merlot’, ‘Burgundy Hearts’

‘Hearts of Gold’, ‘Rising Sun’

‘Royal White’
Dogwood
*Cornus florida*

- 15’ – 30’ tall
- Moist, well drained soil
- Best in afternoon shade
- Spring blooms, excellent fall color
- Many cultivars
Fall fruits relished by birds
Serviceberry
Amelanchier arborea

- Small tree – often multi-stemmed
- Sun to part shade, moist soil
- White flowers in spring
- Sweet berries ripen late May
- Rust can be a problem on fruit and leaves if red cedar trees are nearby
Amelanchier blooms in early April
Cedar Quince Rust on Serviceberry
Smaller cousin of Southern Magnolia
Grows 20’-30’ tall, often with multiple trunks
Sun to part shade,
Moist or well-drained soil – tolerates flooding
Fragrant flowers, spring-early summer
Deciduous
Upright habit;
Fall seeds great for birds
‘Mt. Airy’ Fothergilla
*Fothergilla major*

- 4’-5’x 4’-5’
- Sun to part shade
- Moist or well drained soil, acidic
- Honey scented spring blooms
- Deer resistant
Fothergilla fall color
Inkberry
Ilex glabra

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

‘Shamrock’
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*
Mt. Cuba Center, Delaware

Plant trials:

https://mtcubacenter.org/research/trial-garden
Green and Gold
*Chrysogonum virginianum*

- Light to part shade, moist or well drained soil
- 1’ x 2’
- Evergreen foliage
- Spring flowers
- Self seeds
- Var. *australe* is stoloniferous, lower growing - groundcover
Eastern Columbine
*Aquilegia canadensis*

- Blooms March - May
- Part sun or shade, well drained soil
- 12” – 24” tall in bloom
- Attracts butterflies and hummingbirds
- Will naturalize in the garden by self seeding
- Deer resistant
Bluestar
Amsonia tabernaemontana

- Tough, long lived clumping perennial
- Pale blue flowers
- Deer resistant
False Indigo

- *Baptisia* - hybrids and species
- 3’ - 4’ x 2’ - 3’
- Sun to light shade
- Drought tolerant
- Very long lived, clump forming
- Several species native to SE US
- Deer resistant

*Baptisia australis*
Baptisia alba
‘Purple Smoke’

‘Carolina Moonlight’
Coreopsis, Tickseed

- Several species native to NC
- Sun lovers
- Threadleaf Coreopsis
  - *C. verticillata*
  - Long lived
  - 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
- Deer resistant
Support Monarchs – Plant Asclepias!
Swamp Milkweed
Asclepias incarnata

- 3’ tall and wide
- Summer flowers
- Sun to part shade
- Moisture tolerant
- Monarch larval host
- 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*
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
Goldenrods

Solidago species

Several native species – some too vigorous for landscapes

- *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
Asters

- Many are native
- Most need sun
- Pollinators!
- **Blue Wood Aster, Symphyotrichum cordifolium**
  - Shade tolerant!
  - Moist-dry soil
  - 2-3’ tall
  - Native statewide
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.
- Deer resistant

‘Northwind’
Think differently about plants in your landscape:

“A plant that has fed nothing has not done its job”

D. Tallamy, Bringing Nature Home

Best bets plant list
Learn More

**Extension Gardener Handbook**
- Chapters cover many topics
  - Soils, Insects, Landscape Design, Vegetables, Flowers, etc.
- **Chapter 12 is Native Plants!**

[Image of Cardinal flower - Lobelia cardinalis]
Learn More:
Going Native Website

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

Searchable plant database!

Going Native: Urban Landscaping for Wildlife with Native Plants
You can go native!...with native plants in your landscape.

- See why landscaping with native plants is better for wildlife and for the environment.
- Find out about the problems caused by invasive, exotic plants. Odds are you have invasive exotics in your own backyard!
- Discover the native plants you can use as alternatives to exotic plants. We can tell you where you can find them!
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!

- **NC Botanical Gardens, Chapel Hill**
  - [http://ncbg.unc.edu](http://ncbg.unc.edu)

- **Duke Gardens, Blomquist Garden of Native Plants**
  - [http://gardens.duke.edu](http://gardens.duke.edu)

- **NC Native Plant Society**
  - [http://www.ncwildflower.org](http://www.ncwildflower.org)
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. Wasowski

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

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

Learn more: http://go.ncsu.edu/natives
The North Carolina Extension Master Gardener Program

A Growing Partnership!
NCEMG Program Partners:

- **NC State University**
  - NC State Extension
  - Dept. of Horticultural Science

- **N.C. Cooperative Extension**
  - Center in every NC county
  - EMG Programs in 84 of 100 counties; Operate under leadership of horticulture agent

- **Gardeners** across NC who volunteer their time, knowledge and expertise!

- **County government, local organizations** and communities

EMGVs of Buncombe County, Healing Garden – VA Center, Asheville
NC Extension
Master Gardener Program, State Level

Lucy Bradley
Extension Specialist – Urban Horticulture

Kathleen Moore
Program Assistant – Urban Horticulture (part-time)
Current projects:
• EMGV training curriculum
• Plant Database

Charlotte Glen
State Coordinator, NCEMG Program
NC Extension Master Gardener Program – State Level

Supports Master Gardener volunteers by providing:

- **Advanced training opportunities, including:**
  - Plants, Pests and Pathogens webinar series
  - EMG College
  - Travel Study Tours

**New Zealand Travel Study Tour**
March 1-14, 2019 - Only 2 spots left!
$6585 dble occupancy (airfare not included)
[http://go.ncsu.edu/2019-nz](http://go.ncsu.edu/2019-nz)
Plants, Pests and Pathogens

- Free webinars
- 4th Tuesday, every other month, Feb. – Oct., 10am – noon
- Next webinar: Oct. 23
  - How Weather and Climate Affect the Garden,
    NC State Climate Office
- Learn more:
  [go.ncsu.edu/ppp](http://go.ncsu.edu/ppp)
  [http://www.nc-climate.ncsu.edu/climateblog](http://www.nc-climate.ncsu.edu/climateblog)
Save the Date!

2019 EMG College

June 6 - 9, 2019

NC State University
2019 EMG College
“40 Years and Still Growing!”

Join us for:

• Exciting tours
• Interesting hands-on workshops
• Excellent keynote speakers
• Informative concurrent sessions
• Plenty of opportunities for fun and fellowship!

Will Hooker will lead a tour of 610 Kirby St. – permaculture landscape
New & Improved Accomodations!

- Free parking!
- NO bunkbeds!
- Bathrooms ensuite
- Dining facilities onsite
- Double and single rooms available
NC Extension
Master Gardener Program – State Level

Supports Master Gardener volunteers by providing:

• **EMGV Intranet**, NCSUgarden.com
  – Work with programmer, Chris Cook, and NCSUgarden Mgmt Team

• **Recognition opportunities**
  – Milestone pins for hours and years of service
  – Search for Excellence
2019 Search for Excellence

• **Call for applications** will go out in January; due late March
  – Seeking group projects that result in significant learning

• **Categories:**
  – Youth Programs
  – Demonstration Garden
  – Workshop or Presentation
  – Community Service
  – Innovative Projects
  – Research
  – Special Need Audiences

2017 Winner – Wake County Ready, Set, Grow Workshops
NC Extension
Master Gardener Program, State Level

Provides leadership for statewide program development

- Guidelines and policies
- Manage brand and logo
- Statewide communication
- Evaluate and report impacts
- Program promotion
  - Public website and social media
  - Find us on facebook:
    NC Extension Master Gardener Volunteers
Coming soon - PORTAL: emgv.ces.ncsu.edu
NC EMG Program Guidelines

Available online:
[go.ncsu.edu/EMGV-Guidelines](go.ncsu.edu/EMGV-Guidelines)

- Define NC EMG Program policies and operating procedures
- An excellent resource to learn more about the NC EMG Program
- Currently under review – taking suggestions!
Annual Report

Data come from NCSUgarden

NC STATE Extension Master Gardener
2017 ANNUAL REPORT

Highlights:

4333
Master Gardener volunteers

214,108
Volunteer hours, equal to 103 full time positions

97,363
North Carolinians directly reached

$6.4 MILLION
Value of volunteer service and in-kind donations

Extension Master GardenerSM Volunteers Embody the Mission of N.C. Cooperative Extension

Across our state, Extension Master Gardener (EMG) volunteers partner with their local N.C. Cooperative Extension county center to connect people with research-based information and provide practical solutions that grow NC.

They educate residents to grow healthy people, gardens, landscapes, and communities through safe, effective and sustainable gardening practices. Working with their local N.C. Cooperative Extension county center, Master Gardener volunteers:

- Empower people to make informed decisions
- Enhance local food security
- Connect children and families with nature
- Cultivate environmental stewardship
- Promote health and wellbeing through gardening, better nutrition and increased physical activity

BURKE COUNTY
Community Garden Enables Hands-On Learning

For apartment dwellers and those living in mountainous areas, finding space to cultivate a garden can be a major challenge. The community garden created and managed by Burke County Extension Master Gardener volunteers provides the space for 29 local families, making it possible for them to grow their favorite vegetables.

In addition, Master Gardener volunteers led workshops on sustainable gardening practices ensuring everyone has a bountiful harvest.

CHATHAM COUNTY
Second Graders Explore the Life Cycle of Pollinators

Over 100 second graders in Chatham County gained hands-on experience rearing butterflies from caterpillars and learned about the importance of pollinators during a series of lessons taught by Extension Master Gardener volunteers.

Chatham County EMG volunteers partnered with North Carolina 4H and NC State Extension to develop the curriculum, which focused on experiential learning and aligned with the learning objectives for NC public schools.

Johnston County
School Garden Grows Vegetables and Pride for High School Students

Extension Master Gardener volunteers worked with students enrolled in the Life Skills class at South Johnston High School to turn a sad place – an old, unused playground – into a great place where fresh vegetables, pollinator-friendly flowers and civic pride thrive.

Throughout the year, EMG volunteers use the garden to teach students how to plan, cultivate and harvest a year-round supply of healthy vegetables.
NC Extension Master Gardener Program, State Level

Provides leadership for statewide program development:

- Agent training and support
- Budget and fundraising
  - NCEMGV Endowment
  - Logowear
- Liaison to NCEMGVA
New Logowear Items Now Available!
go.ncsu.edu/emg-logowear

- Aprons
- Tote bags
- Cotton shirts
- Additional hats
- Visor and more!

Available with state program logo and county program logo!
Expanded color options for apparel!

https://brand.ncsu.edu/color

Traditional Colors

- Wolfpack Red
- Wolfpack Black
- Wolfpack White

- 10% Gray
- 25% Gray
- 60% Gray
- 90% Gray

Expanded Palette

- Reynolds Red
- Pyroman Flame
- Hunt Yellow

- Genomic Green
- Innovation Blue
- Bio-indigo

Can also add watering can icon!
Special Requests Welcome!

Contact Cody Williams, The Roberts Group
• 828-433-5277, office
• 919-300-7640, direct
• 919-609-8079, mobile
• cody@robertsgrouponline.com

cc Charlotte Glen, cdglen@ncsu.edu
NCEMGV Endowment

• Created to strengthen and support the NCEMG Program
  – Interest funds Search for Excellence Awards
  – Current return ~ $1500/year
• **Help us grow** - Purchase or renew your EMGV license plate!
• [go.ncsu.edu/emgv-license-plate](http://go.ncsu.edu/emgv-license-plate)
• Or donate online: [go.ncsu.edu/support-ncemgv](http://go.ncsu.edu/support-ncemgv)
Act now if you want the watering can design – limited numbers are available!

When existing stocks run out, the design will be updated with the new logo.
Stay Connected!
Subscribe to NC State EMGV Listserv

go.ncsu.edu/subscribe-emgv