Landscaping for Wildlife with Native Perennials

Matt Jones
Extension Agent – Horticulture
NCCE Chatham County Center

16 April 2018
Resources

http://go.ncsu.edu/nativeplants
Remember this?
Krefeld Entomological Society

- Compared insect populations in local forest reserve
  - By biomass (weight), insect populations declined by 75% in 27 years!
- Other studies focused on specific species.

87% 90%
Sanchez-Bayo and Wyckhuys 2019

• Comprehensive meta-analysis of 73 studies

• At current rates, 40% declines in insect species by the end of the century
Proportion of Insect Species in Decline

A) Terrestrial taxa

- Carabids
- Coccinellids
- Dung beetles
- Saproxyllic beetles
- Hoverflies
- Hoppers
- Bees (Apidae)
- Other Hymenoptera
- Butterflies
- Moths
- Orthoptera

Legend:
- Blue: Decline <30%
- Orange: Vulnerable
- Yellow: Endangered
- Gray: Extinct
Major Drivers of Decline by Taxa

- Habitat change
- Pollution
- Biological traits
- Climate change

- Coleoptera
- Hymenoptera
- Lepidoptera
- Odonata
- Other aquatic
- Other terrestrial
Habit Loss and Fragmentation

Doug Tallamy

VNRC

POPULATION CHANGE BY COUNTY: 2000-2010

United States Census Bureau
Plants Have Many Ecosystem Functions

- Protect soil from erosion
- Help cycle nutrients
- Help cycle water
- Support soil microbes
- And…
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

- Herbivorous insects have strong host-specificity
  - Evolutionary history
- 90% species are specialists
- Native insects need native plants

*Asclepias* are the only plants Monarch caterpillars can feed on
Why Insects Evolved Host Specificity

Chemical co-evolution

- Taste
- Digestibility
- Toxicity
- Nutritional needs
Caterpillar Hunters

- Nearly all Passerines rear their young on insects, not seeds or berries.
- Non-native trees do not support caterpillar populations birds need to rear their young.
Native Plants Support More Insects

Herbivore Biomass

Caterpillar Biomass
Native Plants Support More Insects

Generalist Biomass

Species Richness
Extinction Terms

- **Extirpation** – localized extinction
- **Numerical Extinction** – total loss of breeding individuals
- **Functional Extinction** – present, but not in number to perform former ecological role

*A 30% population decline can destabilize ecosystems!*
Managed Landscapes

• Often dominated by non-native plants
• Do not sustain natural communities they replaced
• Not able to support healthy ecosystems
The Good News
Beyond Merely Ornamental

- Living organisms - Part of the local ecosystem
- Should support other species
- Should not require excessive resources
A New Paradigm

• Select landscape plants based upon traditional factors:
  – Appearance
  – Performance
  – Adaptation to site conditions

• PLUS ability to sustain native species and support ecosystem health
New Paradigm: Living Landscapes

• Not dominated by lawn/turf
• Home to many different plant species, majority native to local region
• Replicate natural communities - have layers
What is 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

• Greatest benefit – plants from local ecoregion
• Piedmont
• Southeast
Native Range: Geography and Habitat

*Amsonia tabernaemontana*  
*Amsonia hubrichtii*
Benefits of Natives

• Better adapted?
• Less of a nuisance?
• Fewer pest and disease issues
• **More food sources for more native wildlife species**
Natives Not Always the Answer

Gloomy Scale on Red Maple (*Acer rubrum*)
planted near impervious surfaces
Bed Preparation

Bed Establishment

• Soil test!
  – Lime and fertilizers as appropriate
• Incorporate 2-3” organic matter into the top 6-8” of soil
  – Compost
  – Pine bark
Bed Preparation

Existing Beds

• Add 2-3 as mulch annually
  – Compost
  – Pine bark nuggets
  – Pine straw

• Soil test every 2 years
How to determine soil pH?

Soil Testing from the NCDA!

- Only reliable method to assess soil nutrient content and pH
- Boxes and forms available from NC Cooperative Extension
- Analysis is *free* for NC residents (Apr.-Nov.)
  - $4/sample: Dec-Mar

Chatham MGVs deliver soil samples monthly during the free period!
How to Take Soil Samples

• Avoid thatch or mulch
• Take a ‘slice’ of soil
• **Turf**: 4” deep
• **Landscape beds, Vegetables**: 6” deep
• Mix subsamples together to make one composite sample for each unique area
How to Sample Soil

Sample different areas separately
  – Plants/Crops
  – Topography
  – Soil texture
  – Plant health

Avoid areas that will obviously skew results
  – Compost piles
  – Burn piles
  – Animal ‘minefields’

Take 5-10 subsamples per area
Where to Find Sample Results

http://www.ncagr.gov/agronomi/pals/

We will help you interpret the soil test report!
Planting Perennials

**Fall ideal**
- Enhanced root growth before spring
- Spring flowering perennials

**Spring good**
- Summer/fall flowering perennials
- Supplemental watering until well established
A Few of Matt’s Favorite Native Perennials

- Amount of Sunlight
- Soil/drainage requirements
- Mature dimensions, Height x Width
- Wildlife Benefits
- Bloom Period
Green and Gold

*Chrysogonum virginianum*

- Shade to part-sun
- Medium to well-drained
- Spring
- 6-12” x 8-18”
- Pollinators, birds
False Indigo

*Baptisia spp.*

- Sun to part shade
- Medium to well-drained
- Bees, butterflies, larval host

*Spring*

1-3’ x 1-1.5’

*Baptisia australis*
Baptisia alba
Baptisia cultivars

‘Purple Smoke’

‘Carolina Moonlight’
Eastern Columbine
Aquilegia canadensis

- **Part sun to part shade**
- **Medium to well-drained**
- **Hummingbirds, birds**
- **Spring**
- **1-3’ x 1-1.5’**
Joe Pye Weed

*Eutrochium spp.*

- Sun to part shade
- Summer
- Moist to wet
- 3-7’ x 1-4’
- Butterflies, bees, larval host, birds

**Butterflies, bees, larval host, birds**
**Bluestar**

*Amsonia tabernaemontana*

- **Sun to part-shade**
- **Moist to well-drained**
- **2-3’ x 2-3’**
- **Butterflies**
- **Spring**
Cardinal Flower
*Lobelia cardinalis*

- **Part shade to sun**
- **Moist to wet**
- **Late Summer**
- **Hummingbirds, butterflies**

- Height: 2-4’
- Width: 1-2’
Great Blue Lobelia
*Lobelia siphilitica*

- Part shade
- Moist to wet
- 2-3’ x 1-1.5’
- Bees, hummingbirds, butterflies
- Late Summer
Carolina Phlox

*Phlox carolina*

Sun to part sun

Moist, well-drained

2-4’ x 1-1.5’

Summer

Hummingbirds, butterflies
Orange Coneflower
*Rudbeckia fulgida*

- Sun
- Moist to well drained
- 2-3’ x 2-2.5’

Butterflies, bees, wasps, birds

Summer to fall
Close Relatives

*Rudbeckia* spp.

**Cuteaf Conflower**
*Rudbeckia laciniata*

**Black-eyed Susan**
*Rudbeckia hirta*
Stokes’ Aster

*Stokesia laevis*

- **Sun to part sun**
- **Early summer**
- **Moist*, well-drained**
- **1-2’ x 1-1.5’**
- **Bees, butterflies, etc.**
Mountain Mints
*Pycnanthemum spp.*

- **Sun to part-shade**
- **Medium-well drained**
- **Butterflies, bees**
- **Summer-fall**
- **2-3’ x 3-4’**

*P. loomisii*
Clump forming, less aggressive

*P. incanum*
Aromatic Aster

*Symphiotrichum oblongifolium*

Sun to part sun

Medium-well drained

Butterflies, bees, birds.

Mid-late fall

1-3’ x 1-3’
Swamp Milkweed  
*Asclepias incarnata*

- Sun to part sun
- Summer
- Medium to wet
- 3-4’ x 2-3’
- Pollinators, monarch larvae
Ferns

Dixie Wood Fern
Dryopteris x australis

Cinnamon Fern
Osmunda cinnamomea

Southern Maidenhair Fern
Adiantum capillus-veneris

Christmas Fern
Polystichum acrost
Pollinator Paradise Garden

• Chatham Mills (Pittsboro)
• NC Coop. Ext.
  – Debbie Roos, Sustainable Agriculture Agent
• Upcoming tours:
  • https://growingsmallfarms.ces.ncsu.edu/
Step Two - Map Existing Site and Vegetation

Landscape design is essentially a creative problem-solving process. It involves developing a design that is tailored to your site, meets your needs and desires, and also provides valuable wildlife habitat. So before you begin to make any landscape improvements to your property, you should thoroughly familiarize yourself with all aspects of your existing property. This will mean conducting an inventory and analysis of your property to identify opportunities and assets as well as constraints and liabilities. To help organize this information, you will need an accurate map of your property on which to record your observations and subsequent analysis.

Base Map
The first step in this process is the creation of an accurate base map, which shows all existing permanent physical site elements. The base map will be useful when considering design changes to the landscape. At its simplest, it is developed from your existing plot plan. When purchasing your house, you should have received a property survey, also called a plat or plot plan of your property. This is a plan drawing that typically includes the lot configuration, right-of-ways, sidewalks, easements, and position and dimensioning of the house (and permanent structures such as decks and steps), garage, and driveway. If you don’t have one, request one from the tax assessor’s office or download a copy from your county’s GIS website. You can also develop one entirely from your own field measurements, but that will take you longer.

A typical plot plan always includes a drawing scale, for instance 1"=40', which means that every inch on the map is equal to 40' on your property. Plot plans need to be enlarged to allow you to show more details of the landscape. You can take your plan to a copy shop and have it enlarged to a minimum of 8½"=10" for smaller properties or small areas of your garden, or up to 10"=20" for larger properties. The plan should have the north arrow on it as well, which will be needed to assess your growing conditions.

On the basis map of your property, you want to show the property lines and house footprint for your residence. On this sample base map, the information from the plot plan has been re-drawn on 11"x17" graph paper (when 1"=20', each square equals 2'). If your property or area of interest is larger, adjust the scale of your squares as needed. For instance, 1" could equal 40', which would make each square equal to 4'. For this, you can use a plot plan you had enlarged or take the dimensions directly off
NCSU Plants Database

https://plants.ces.ncsu.edu/
Extension Gardener Handbook

• Available online for FREE
  https://content.ces.ncsu.edu/extension-gardener-handbook

• Full-color, hardback copy available from UNC Press ($60)
Chatham County Native Plant Nurseries

http://www.curenursery.com/

https://www.growingwildnursery.com/

https://mellowmarshfarm.com/
Need help? Contact:

NC STATE EXTENSION

Master Gardener | Chatham County

Plant Clinic: MW 1:00-4:00, F 9:00-12:00
chathamemgv@gmail.com
919-545-2715
Door Prizes brought to you by…

http://www.curenursery.com/

https://www.growingwildnursery.com/
Evaluations

Please Complete!