<u>Native Plant Gardening: Using plant habitat preferences to our advantage</u>

Presented to the NPSNJ – Southeast Chapter on November 16, 2020 by Joseph Russell

I. Summersweet Native Plants LLC
   A. Started in 2017 by environmental scientist, Joe Russell
   B. Specialize in propagating plants native to the mid-Atlantic and northeastern regions of North America
II. Plant communities/Garden archetypes
   A. Meadows and Grasslands
      1. Comprised of herbaceous plants (grasses, forbs, occasionally ferns)
      2. Full sun to part-shade (savannas and edges)
   B. Shrublands
      1. Comprised of a matrix of shrubs, herbaceous plants, and trees
      2. Full sun to part-shade (when trees are a part of the mix)
   C. Woodlands
      1. Comprised of a canopy layer of woody trees with shrubs and an herb layer in the understory
      2. Part to full shade
III. Ecoregions
   A. What is an Ecoregion?
      1. Ecoregions are geographical regions that are characterized by specific ecological patterns.
      2. Share similar biogeographical characteristics, such as:
         a) Endemic species
         b) Environmental conditions
         c) Ecological dynamics
      3. Intended to represent the original distribution of distinct natural assemblages
   B. Why are Ecoregions important to gardening?
      1. We can use our knowledge of ecoregions and natural ranges of plant species to make some educated guesses about their habitat preferences.
      2. Knowledge about habitat preferences can act as a guide for whether certain species will work for our specific landscape conditions.
IV. Plant Characteristic Guide Categories
   A. Regional Nativity (Native, Adaptable)
      1. Native to your region?
      2. Native outside of your region, but adaptable to site?
      3. Ecotype/provenance?
         a) Due to genetic variations, species can exhibit variation in appearance, bloom time, characteristics, or habitat preferences throughout its range.
         b) Plants native to your region, but whose source is from a different ecoregion may not be adapted as well to your site as one of more local provenance.

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4. If planting site conditions have been drastically altered and are not the same as would have naturally occurred, locally native or local ecotype may not always be the best adapted.

B. Soil pH (Acid, Neutral, Alkaline)
   1. Acid Soils: <3 – 6.5
      a) Low pH reduces the availability of macro- and secondary nutrients
      b) Meadow/Grassland – Yellow False Indigo (*Baptisia tinctoria)*
      c) Shrubland – Lowbush Blueberry (*Vaccinium angustifolium)*
      d) Woodland – Flowering Dogwood (*Cornus florida)*
   2. Neutral Soils: 6.6 – 7.3
      a) Most nutrient available to plants. Also means more weed pressure
      b) Meadow/Grassland – Queen of the Prairie (*Filipendula rubra)*
      c) Shrubland – Elderberry (*Sambucus nigra ssp. canadensis)*
      d) Woodland – Lady fern (*Athyrium filix-femina)*
   3. Alkaline Soils: 7.4 – 8.5>
      a) High pH reduces the availability of most micronutrients
      b) Meadow/Grassland – Tennessee Coneflower (*Echinacea tennesseensis)*
      c) Shrubland – Shrubby Cinquefoil (*Dasiphora fruticosa)*
      d) Woodland – Green and Gold (*Chrysogonum virginianum)*
   4. Instead of amending to change soil pH, use it to your advantage and use plants that are adapted to those conditions. Amending soil to get closer to neutral or increase richness may increase your weed pressure.

C. Soil Moisture (Hydric, Mesic, Xeric)
   1. Xeric - Dry, little moisture retention, excessively drained. Water removed very rapidly in relation to supply; soil is moist for brief period following precipitation
      a) Meadow – Little Bluestem (*Schizachyrium scoparium)*
      b) Shrubland – Carolina Rose (*Rosa Carolina)*
      c) Woodland – Hairy Beardtongue (*Penstemon hirsutus)*
   2. Mesic - Moist, adequate soil moisture retention year-round. Water removed somewhat slowly in relation to supply; soil may remain moist for a significant, but sometimes short period of the year. Available soil moisture reflects climatic inputs
      a) Meadow – Foxglove Beardtongue (*Penstemon digitalis)*
      b) Shrubland – Black Chokeberry (*Aronia melanocarpa)*
      c) Woodland – Scarlet Bee Balm (*Monarda didyma)*
   3. Hydric - Wet, plants periodically or often inundated by water. Water removed so slowly that water table is at or above soil surface all year; gleyed mineral or organic soils
      a) Meadow – Sneezeweed (*Helenium autumnale)*
      b) Shrubland – Buttonbush (*Cephalanthus occidentalis)*
      c) Woodland – Cinnamon Fern (*Osmunda cinnamomea)*

D. Soil Texture (Rocky, Sandy, Loamy, Silt-Clay)

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1. Sand
   a) Largest particles amongst soil types
   b) Poor water holding capacity (excessively drained)
   c) Low nutrient levels
2. Silt
   a) Smaller particles than sandy soil
   b) More water holding capacity
   c) Most fertile type of soil.
3. Clay
   a) Smallest particles amongst soil types
   b) Little or no airspace, densest, heaviest soil type
   c) Very good water storage but poor drainage; hard for moisture or air to penetrate it
4. Loam
   a) Loam is the "ideal" combination of sand, silt, and clay
   b) The percentages of sand, silt, and clay need to fall into a certain range to be considered a loam – an example of a loam soil would be 50% sand, 30% silt, and 20% clay.
   c) Good ability to retain moisture and nutrients
5. NRCS – Soil Texture Calculator
6. Rocky/Sandy Plants
   a) Meadow – Flowering Spurge (*Euphorbia corollata*)
   b) Shrubland – New Jersey Tea (*Ceanothus americanus*)
   c) Woodland – Dittany (*Cunila origanoides*)
7. Loamy Plants
   a) Meadow – Rattlesnake Master (*Eryngium yuccifolium*)
   b) Shrubland – Red Chokeberry (*Aronia arbutifolia*)
   c) Woodland – Summer Phlox (*Phlox paniculata*)
8. Silt-Clay Plants
   a) Meadow – Hollow Joe Pye (*Eutrochium fistulosum*)
   b) Shrubland – Ninebark (*Physocarpus opulifolius*)
   c) Woodland – Spicebush (*Lindera benzoin*)

E. Height (Tall, Medium, Short)
   1. Tall or Structural Layer
      a) Meadow – New York Aster (*Symphyotrichum novae-angliae*)
      b) Shrubland – Nannyberry (*Viburnum lentago*)
      c) Woodland – Black Cohosh (*Actaea racemosa*)
   2. Medium or Seasonal Theme Plants
      a) Meadow – Narrow Leaf Mountain Mint (*Pycnanthemum tenuifolium*)
      b) Shrubland – Winterberry Holly (*Ilex verticillata*)
      c) Woodland – Wild Geranium (*Geranium maculatum*)
   3. Short or Grand Cover Layer
      a) Meadow – Blue Eyed Grass (*Sisyrinchium angustifolium*)
      b) Shrubland – Shrubby St. Johnswort (*Hypericum prolificum*)

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        c)   Woodland – Woodland Stonecrop (*Sedum ternatum*)

F.   Root Depth (Shallow, Medium, Deep)
1.   Shallow
     a)   Meadow – Wild Bergamot (*Monarda fistulosa*)
     b)   Shrubland – Steeplebush (*Spiraea tomentosa*)
     c)   Woodland – Crested Iris (*Iris cristata*)
2.   Medium
     a)   Meadow – Gray Goldenrod (*Solidago nemoralis*)
     b)   Shrubland – Beach Plum (*Prunus maritima*)
     c)   Woodland – Solomon's Seal (*Polygonatum biflorum*)
3.   Deep
     a)   Meadow – Indian Grass (*Sorghastrum nutans*)
     b)   Shrubland – Scrub Oak (*Quercus ilicifolia*)
     c)   Woodland – Pawpaw (*Asimina triloba*)

G.   Reproductive Strategy (A-Sexual, Seed Dispersal, Seed Ripening Season)
1.   A-Sexual
     a)   Rhizomes – Common Milkweed (*Asclepias syriaca*)
     b)   Stolons – Wild Strawberry (*Fragaria virginiana*)
     c)   Bulb Offsets – Turk's Cap Lily (*Lilium superbum*)
2.   Seed Dispersal
     a)   Fauna – American Holly (*Ilex opaca*)
     b)   Gravity – Cardinal Flower (*Lobelia cardinalis*)
     c)   Wind – Showy Goldenrod (*Solidago speciosa*)
     d)   Water – Gray's Sedge (*Carex grayi*)
3.   Seed Ripening Season
     a)   Spring – Pussytoes (*Antennaria plantaginifolia*)
     b)   Summer – Allegheny Serviceberry (*Amelanchier laevis*)
     c)   Fall – False Sunflower (*Heliopsis helianthoides*)

H.   Practical Habitat Fidelity – Some plants exhibit fidelity to particular native habitats, while others do not (think a generalist or specialist or somewhere in between).
1.   Low
     a)   Meadow – Giant Purple Hyssop (*Agastache scrophulariifolia*)
     b)   Shrubland – Staghorn Sumac (*Rhus typhina*)
     c)   Woodland – White Wood Aster (*Eurybia divaricata*)
2.   Medium
     a)   Meadow – Blue Flag Iris (*Iris versicolor*)
     b)   Shrubland – Summersweet (*Clethra alnifolia*) – **Our namesake!**
     c)   Woodland – Wild Ginger (*Asarum canadense*)
3.   High
     a)   Meadow – Sundial Lupine (*Lupinus perennis*)
     b)   Shrubland – Bearberry (*Arctostaphylos uva-ursi*)
     c)   Woodland – Pink Lady Slipper (*Cypripedium acaule*)

I.   Practical Competitiveness (Low, Medium, High)
1.   Low

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        a)   Meadow – Spotted Horsemint (*Monarda punctata)*
        b)   Shrubland – Eastern Red Cedar (*Juniperus virginiana)*
        c)   Woodland – Wild Red Columbine (*Aquilegia canadensis)*

2. Medium
        a)   Meadow – Blue False Indigo (*Baptisia australis)*
        b)   Shrubland – Meadowsweet (*Spiraea alba)*
        c)   Woodland – Zig-Zag Goldenrod (*Solidago flexicaulis)*

3. High
        a)   Meadow – Panicgrass (*Panicum virgatum)*
        b)   Shrubland – Silky Dogwood (*Cornus amomum)*
        c)   Woodland – Golden Ragwort (*Packera aurea)*

V. Valuable Resources

    A. Books:
1. **Nature's Best Hope,** by Doug Tallamy
2. **Bringing Nature Home**, by Doug Tallamy
3. **The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden**, by Rick Darke and Doug Tallamy
4. **Planting in a Post-Wild World: Designing Plant Communities for Resilient Landscapes**, by Thomas Rainer and Claudia West
5. **Garden Revolution: How Our Landscapes Can Be a Source of Environmental Change**, by Larry Weaner and Thomas Christopher.
6. **The Once and Future Forest: A Guide to Forest Restoration Strategies**, by Leslie Sauer
7. **The Know Maintenance Perennial Garden**, By Roy Diblik
8. **Attracting Native Pollinators: The Xerces Society guide, Protection North America's Bees and Butterflies**, by The Xerces Society
9. **Principles of Ecological Landscape Design**, by Travis Beck
10. **Plant Communities of New Jersey: A Study in Landscape Diversity**, by Beryl Robichaud Collins

    B. Websites:
1. Ecological Landscape Alliance
2. The Wild Seed Project
3. The Lady Bird Johnson Wildflower Center
4. The Missouri Botanical Garden
5. The Biota of North America Project (BONAP)
6. Wild Plant Culture
7. The New Jersey Native Plant Society
8. Jersey Friendly Yards
9. Citizens United to Protect the Maurice River
10. Level III and Level IV Ecoregions of the United States - EPA
11. NRCS – Web Soil Survey

    C. Podcasts:
1. The Native Plant Podcast
2. Wild Plant Culture Podcast

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3. [In The Weeds](#)
4. [In Defense of Plants](#)
5. [The Field Guides](#)

D. Botanic Gardens/Educational Sites
1. [Mt. Cuba Center, Hockessin, DE](#)
2. [Bowman's Hill Wildflower Preserve, New Hope, PA](#)
3. [Brandywine Conservancy, Chadds Ford, PA](#)
4. [Delaware Botanic Gardens, Ocean View, DE](#)
5. [Scott Arboretum of Swarthmore College, Swarthmore, PA](#)
6. [Stoneleigh: a natural garden, Villanova, PA](#)

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