



# Common Insects: Wasps

## Hymenoptera: Ichneumonidae

- Largest family in all of Insecta, ~3,300 spp.
- Host range includes: flies, beetles, wasps, bees











# Common Insects: Bees

## Hymenoptera: Apidae

- Long-tongued bees; arguably most important in terms of angiosperm evolution and pollinator services;
- Includes honeybees, carpenter bees, cuckoo bees;
- Most exhibit eusociality.





## A horizontal row of nine different bees, including various species of Halictus and other bumblebees, shown in profile against a white background. The bees vary in color, including green, yellow, black, and blue, and in size and shape.

**Beyond Honeybees: Native Pollinators**

**4,000+ native species**



Generally more efficient at pollination; generalists

May have different preferences than honeybees

NOT Aggressive

Alkali sweat bee: *Nomia*

Sweet bee: *Lasioglossum (Lasioglossum)*

Mining bee: *Protandrena*

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Mining bee: *Perdita*

Mining bee: *Perdita*

Mining bee: *Perdita minima* (smallest bee in North America)



Bumble bee: *Bombus*

Squash bee: *Peponapis*

Squash bee: *Xenoglossa*

Digger bee: *Centris*

Carpenter bee: *Xylocopa*  
(Largest bee in North America)

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*Lasioglossum (Lasioglossum)*

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# Why Meadows?

## **Beyond Honeybees: Native Pollinators**

Ground-dwellers—70%

Bare ground

Abandoned nests





# Why Meadows?

## **Beyond Honeybees: Native Pollinators**

Cavity nesters—25-30%

Hollow/pithy stems—sumac, raspberries, milkweed

Dead wood—holes created by borers, bee hotels







# Common Insects: Butterflies and Moths

## Lepidoptera: Noctuidae

- Largest family in Lepidoptera, ~2,900 species;
- Mostly nocturnal, heavy-bodied moths;
- Some fruit feeders, mostly plant feeders; some major economic pests.







# Common Insects: Butterflies and Moths

## Lepidoptera: Saturniidae

- Largest moths in North America; up to 150mm wingspread;
- 68 North American species;
- Mostly nocturnal.



Jason We













# Common Insects: Butterflies and Moths

## Lepidoptera: Hesperidae

- Skippers, nearly 300 spp.;
- Feed inside sheltered cocoons as larvae;
- Many larvae overwinter and emerge in spring as adults.







# Common Insects: Butterflies and Moths

## Lepidoptera: Hesperiiidae

- *Papilioninae*: Swallowtails
- Includes some of the largest, and most colorful species in this order.







# Common Insects: Butterflies and Moths

## Lepidoptera: Nymphalidae

- ~210 spp.
- Brush-footed butterflies;
- Many beautiful and ornamental species, including:
  - Monarch butterfly
  - Great spangled fritillary
  - Red amirable
  - Zebra butterfly







# Tying it All Together

## Diverse landscapes:

- Add complexity to food webs
- Support higher species richness
- Afford more stability
- Prevent pest outbreaks
- Attracts and conserves wildlife species







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# Your yard and the landscape

## Made up of 5 vegetative layers:

- 5—Canopy
- 4—Mid-story
- 3—Shrub layer
- 2—Herbaceous ground cover
- 1—Lawn/grass cover

Diversity at each of these layers is key!



Questions?







# Native Groundcovers

## Bee Balm (*Monarda fistulosa*)

- Perennial; 3'X4'
- Summer flowers
- Clay, dry soils
- Tolerates drought
- Full sun







# Native Groundcovers

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- Tolerates drought
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# Native Groundcovers

## Anise hyssop (*Agastache foeniculum*)

- Perennial; 3'X3'
- Summer flowers
- Average, well-drained soils
- Tolerates drought
- Full sun; pt. shade
- Bees, bees, bees!















# Native Groundcovers

## Mountain mint (*Pycnanthemum* sp.)

- Several species available
- Summer flowers
- Drought tolerant (shade)











# Native Groundcovers

## Goldenrod (*Solidago* sp.)

- Perennial;
- Fall blooming;
- Wide range of conditions;
- Full sun;
- Look for colors throughout the fall:
  - *S. graminifolia*—late summer
  - *S. rugosa* 'Fireworks'—early fall
  - *S. speciosa*—Summer—fall
  - *S. gigantea*—late fall







# Native Groundcovers

## Blue grama grass (*Bouteloua gracilis*)

- Clumping grass <8" tall; 1' seed heads
- Full sun/drought tolerant
- Can be mowed—low maintenance turf alternative







# Native Groundcovers

## Joe Pye Weed (*Eutrochium* sp.)

- Several species available
- Summer—early Fall flowers
- Fertile soils;
- Moisture;
- Pt. shade-sun







# Native Groundcovers

## Indigo (*Baptisia alba* or *B. australis*)

- Perennial shrub;
- Late spring—summer blooms; purple or white
- Full sun—shade
- Member of the 'bean' family—fixes nitrogen







# Native Groundcovers

## Indian Pink (*Spigelia marilandica*)

- Late spring;
- 1.5' X 1'
- Pt.—full shade;
- Rich, humusy soils  
(think forest understory)







# Native Groundcovers

## Ferns (Various species)

- Part-shade—shade
- Average soils; dry—moist
- Some evergreen





# Your yard and the landscape

Made up of 5 vegetative layers:

- 3—Shrub Layer

Remember: Diversity at each of these layers  
is key!





# Native Shrubs

## Buttonbush (*Cephalanthus occidentalis*)

- Deciduous shrub
- Blooms June—August
- Moist soils; wet woods, marshes, pond edges
- Most soil types
- Supports bees and songbirds;











# Native Shrubs

## Spicebush (*Lindera benzoin*)

- Deciduous shrub—3-9' tall
- Strongly aromatic
- Spring flowers
- Red berries—early fall
- Stream margins
- Host plant for spicebush swallowtail











# Native Shrubs

## Virginia Sweetspire (*Itea virginica*)

- Perennial shrub;
- Full sun-to part shade
- Low maintenance once established
- Most soil types







# Native Shrubs

## Oakleaf Hydrangea (*Hydrangea quercifolia*)

- Southeastern U.S. native
- Large shrub up to 6' tall
- Shady sites; well-drained to moist soils
- Beautiful fall color







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- Beautiful fall color







# Native Shrubs

## Blue Star (*Amsonia* sp).

- Perennial
- Full sun-to part shade
- Low maintenance once established
- Most soil types
- Interesting foliage; many varieties!







# Native Shrubs

## Switchgrass (*Panicum virgatum*)

- Perennial; clumping/upright
- Full sun
- Dry conditions



Credit: Northcreek Nursery



# Your yard and the landscape

Made up of 5 vegetative layers:

- 4—Mid-story







# Mid-story Trees

## Fringe-tree (*Chionanthus virginicus*)

- Tall shrub/small tree—20' tall
- March/April flowers—fragrant
- Full sun—part shade
- Dry woodlands/  
savannahs







# Mid-story Trees

## Witch Hazel (*Hamamelis virginiana*)

- Deciduous tree
- 10-20' tall
- Flowers in the fall
- Medium water; low maintenance
- Sun—part shade; moist to well-drained soils; rain gardens







# Mid-story Trees

## Red buckeye (*Aesculus pavia*)

- Deciduous tree
- 20' tall
- Red flowers in spring
- Sun—part shade
- Moist, well-drained soils







# Your yard and the landscape

## Made up of 5 vegetative layers:

- 5—Canopy

Diversity at each of these layers is key!





# Canopy Trees

## Ironwood, American Hornbeam (*Carpinus caroliniana*)

- Deciduous tree
- Up to 35'
- Moist, shady areas; well-drained
- Typically found with:
  - American beech
  - Chestnut Oak
  - Red maples
  - Ash
  - Hickory



Credit: Univ. Kentucky



Credit: Univ. Kentucky

















# Canopy Trees

## Black gum (*Nyssa sylvatica*)

- Deciduous tree
- 80-100'
- Moist, well-drained soils
- Full sun—part shade







# Canopy Trees

## The Shotgun Approach: Oak Trees

- Support over 500 species of lepidopterans
- Insectivorous birds—350-570 caterpillars/day

