Where the Wild Things Are: Common Insects for Backyard Habitats

Sam Marshall Horticulture Agent, Haywood County













• Before diversity, there was evolution...

...and insects are the most diverse organisms in the history of life!

- Insects are unmatched in:
 - Longevity







• Before diversity, there was evolution...

...and insects are the most diverse organisms in the history of life!

- Insects are unmatched in:
 - Longevity
 - Diversity of adapt







Let there be flight!







@ MATT BERTONE 2014







The Big Four: Flies, Bees/Wasps, Beetles, Butterflies/Moths









- Phytophagous
 - 'Phyto'==plant
 - Phagous—feeding
- Of the big four:
 - 100,000 species of beetles feed on plants
 - 150,000 species of butterflies and moths









• Before diversity, there was evolution...

...and insects are the most diverse organisms in the history of life!

- Insects are unmatched in:
 - Longevity
 - Diversity of adaptations
 - Biomass





• Before diversity, there was evolution...

...and insects are the most diverse organisms in the history of life!

- Insects are unmatched in:
 - Longevity
 - Diversity of adaptations
 - Biomass
 - Ecological Impact





"In terms of biomass and their interactions with other terrestrial organisms, insects are the most important group of terrestrial animals."





Order: Odonata





Odonata

- An ancient order of extant lineage
- Includes damselflies
- Incomplete metamorphosis
- Adults and larvae predaceous
- Indicators of moderate water quality





Odonata: Aeshnidae—Darners

- Largest and most powerful group of dragonflies; up to 116 mm long;
- Green darner most common;
- Exhibit 'non-contact guarding' behavior



Common Green Darner



Odonata: Libellulidae—Skimmers

- Largest and most powerful group of dragonflies; up to 116 mm long;
- Green darner most common;
- Exhibit 'non-contact guarding' behavior.





Odonata: Gomphidae—Clubtails

- Robust group;
- 30-90mm in length;
- Yellowish/greenish markings;



• Distinguishable enlargement at terminal end of abdomen



Odonata: Calopterygidae

- Relatively large group;
- *Calopteryx* and *Hetaerina* most common genera;





Mantodea: Mantidae

- Carolina Mantids
- Incomplete metamorphosis
- Usually a mottled gray/brown/green
- Adults are small ~2 inches





Mantodea: Mantidae

- Chinese Mantids
- Incomplete metamorphosis
- Wings extend back over abdomen
- Adults are much larger
 - Eat birds, insects, snakes, small mammals!





Hemiptera: True Bugs

- Incomplete metamorphosis
- Can be predaceous but are also pests
- Robust group!





Hemiptera: Reduviidae

- Large group, ~160 spp.
- Beaks twice as thick as antennae
- Can appear spider-like
- Feed on:
 - Caterpillars
 - Other plant-feeding insects







Hemiptera: Pentatomidae

- Large group, ~200 spp.
- Spined solider bugs
- Beaks twice as thick as antennae;
- Adults: orange-black coloration;
- Sharp 'spines' that stick out from bodies

ADULT









Hemiptera: Corixidae

- Water boatmen;
- Common in stream and pond edges; occasionally in brackish pools;
- Feed on algae and midge larvae.





Hemiptera: Gerridae

- Water striders;
- "Skate" along the surface of the water;
- Predaceous of other insects that fall into the water





Coleoptera

- The most diverse insect order
 - Over 300,000 species
- Complete metamorphosis
 - Larvae often referred to as "grubs"
 - Feed on plant roots
- Most species do not damage plants



Spotted Cucumber Beetle



Coleoptera: Coccinellidae

- Important predators
 - Aphids
 - Other insects
- Larvae also are predaceous



NC STATE UNIVERSIT







Coleoptera: Carabidae

- Ground beetles and tiger beetles; ~2,600 spp.
- Predators of weed seeds, other insects;
- Effective as biocontrol agents.





Coleoptera: Cantharidae

- Late summer/Early fall; 473 spp.
- Light colored margin around the wings
- Flattened body
- Larvae also are predaceous







Coleoptera: Scarabaeidae

- Scarab beetles; ~1,400 spp.
- Mostly dung-feeders; detritivores;
- Plant feeders;
- Worshipped in ancient Egyptian cultures





Coleoptera: Staphylinidae

- Rove beetles; 710 spp.
- Distinguished by shortened elytra/exposed abdomen;
- Active insects: fly and/or run;
- Mostly predaceous;





Coleoptera: Passalidae

- Bess beetles;
- Detritivores, found primarily under logs and rotting wood;
- "Hiss" in order to escape predation





Order: Diptera

- Complete metamorphosis, larvae known as maggots;
- 2 wings; reduced hindwings (*halteres*);
- Important disease vectors (food and humans).





Diptera: Dolichopodidae

- Large group, ~1,300 species;
- Very long, thin legs;
- Metallic coloring;
- General predators as adults; larvae thought to be predaceous, but little known about their biology.





Diptera: Asilidae

- Robber flies; ~1,000 spp.
- Very large, robust flies;
- Stubby antennae;
- "Bearded face"





© MATT BERTONE 2014



Diptera: Tachinidae

- Tachinid flies; 2nd largest family, ~1,350 spp.
- Large, hairy abdomen;
- Parasites of many pests;
- May be confused with houseflies.





Diptera: Phoridae

- Small group, ~370 spp.
- Mostly detritivores; some are parasites of other insects, or commensal







Diptera: Syrphidae

- ~870 spp.
- Bee/wasp mimics;
- Pollinators as adults;
- Larvae feed on soft-bodied insects.









Common Insects: Wasps

Hymenoptera: Vespidae

- ~325 spp.
- Predators of caterpillars and other insect pests;
- Long gangly legs;
- Notched eyes;
- Bald or shiny appearance



© MATT BERTONE 2014



Common Insects: Wasps

Hymenoptera: Scoliidae

- Robust, hairy body;
- Bright, iridescent blue;
- Orange abdomen;
- Wings have many wrinkles at the end;
- Parasites of june beetle grubs





Common Insects: Wasps

Hymenoptera: Scelionidae

- Parasites of a large range of insect/arthropod eggs:
 - Orthoptera, Mantids, Hemiptera, Coleoptera, spiders, etc.
- Very successful as biological control agents;
- Some may be considered pests.





Hymenoptera: Trichogrammatidae

- Parasites of a large range of insect/arthropod eggs:
 - Orthoptera, Mantids, Hemiptera, Coleoptera, Lepidoptera.
- Most widely-used biocontrol agents; 10's of millions of acres per year

