Sustainable Home Gardening: Preserving Native Insects

DIANE ALSTON
ENTOMOLOGIST
UTAH STATE UNIVERSITY EXTENSION

UTAH STATE MASTER GARDENER CONFERENCE
SALT LAKE CITY
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The Attractive Garden

Plant Diversity
Continuous Bloom
Nectar & Pollen
Shelter
Variety of Insect Prey
Water & Mud

Color
Texture
Design
Variety
Function

Misconceptions of Biological Control in the Home Garden

- Releasing insects
  - Lady beetles (or lady bugs)
  - Praying mantis
- Predatory insects will stay in your garden after release
- Other practices/activities don't matter

Functional Biological Control

- Rely on native or natural enemies
  - Mostly small in body size
- <u>Conservation of natural enemies</u>
  - Avoid toxic chemicals
  - Maintain a diverse plant environment (avoid monocultures)
    - Continuity in time & space
  - Cultivate plants that provide quality nectar & pollen
  - Tolerate some herbivorous insects
- Get a hand lens to see them!

Parasitic wasp that attacks caterpillars

Big-eyed bug nymph feeding on an insect egg

Native Pollinators

Beneficial Insects Need a Diverse Diet & Shelter

- Protein and carbohydrate (sugar) food sources
  - Protein
    - Insect prey, pollen, bird droppings
  - Carbohydrate
    - Nectar, plant nectaries, aphid honeydew
- Shelter & varied habitat

Flowering plants
Herbs
Wildflowers

Plants with Quality Nectar and Pollen

USDA ars United States Department Of Agriculture Agricultural Research Service

Northern Plains | Logan, UT | Pollinating Insects-- Biology, Management and Systematics Research

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Plants Attractive to Native Bees

ARS Research Links

- ARS National Programs
- Search for a research project

Sorted By Genus

Blue plant names are widely cultivated & broadly attractive to bees

FAMILY	*GENUS*	COMMON NAME	*Notes*
Caprifoliaceae	*Abelia*	abelia	
Fabaceae	*Acacia*	acacia	
Aceraceae	*Acer*	maple	
Asteraceae	*Achillea*	yarrow	*A. millefolium* weedy
Ranunculaceae	*Aconitum*	monkshood	
Lamiaceae	*Agastache*	hyssop	
Lamiaceae	*Ajuga*	carpet bugle	
Malvaceae	*Althea*	hollyhock	not doubled
Liliaceae	*Allium*	allium	
Rosaceae	*Amelanchier*	serviceberry	
Boraginaceae	*Anchusa*	wild forget-me-not	
Apiaceae	*Anethum*	dill	
Ranunculaceae	*Aquilegia*	columbine	not doubled
Ericaceae	*Arctostaphylos*	manzanita	
Papaveraceae	*Argemone*	prickly poppy	
Plumbaginaceae	*Armeria*	sea thrift	
Asteraceae	*Aster*	aster	not doubled
Fabaceae	*Astragalus*	locoweed	
Asteraceae	*Baileya*	desert marigold	

www.ars.usda.gov/research/docs.htm?docid=12052

Pollinator of the Month

www.fs.fed.us/wildflowers/pollinators/pollinator-of-the month/index.shtml

Beneficial Insects & Mites

Cast of Characters

Parasitic wasps & flies

Predaceous true bugs & beetles

Common Aphid Predators

Predaceous Mites

Lady Beetles (Lady Bugs)

Native

Introduced

Synchrony of predator & prey
Continuous food source
Shelter
Alternative food

Prey specific
- Aphids
- Scales
- Mealybugs

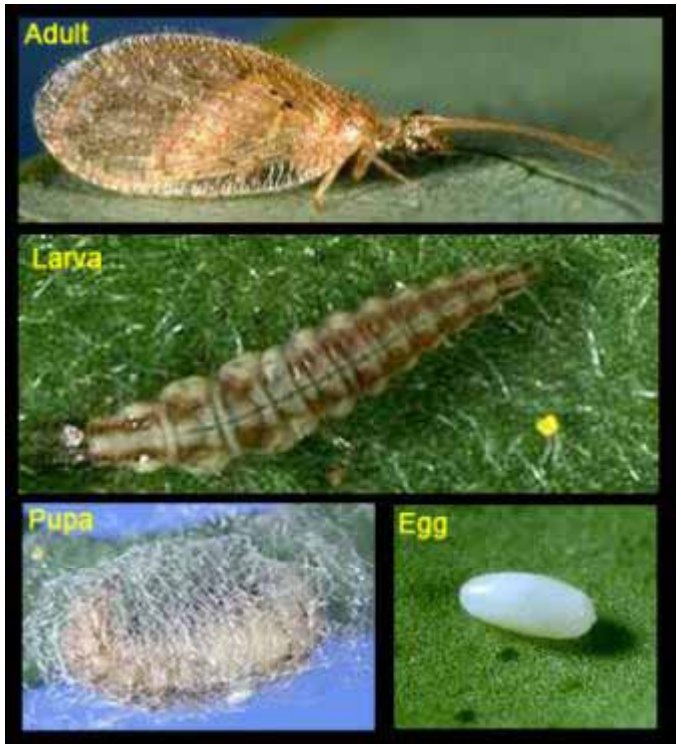
Habitat specific
- Arboreal vs. forbs

Lacewings

Green lacewing
most common

Wide variety of prey
- small insects
  - aphids
  - mealybugs
  - thrips
  - caterpillars
  - leafhoppers
  - insect eggs

Brown lacewing



Syrphid or Hover Flies

Adults mimic bees

Eat a variety of small insects & insect eggs

Ground Beetles & Tiger Beetles

Eat mid-sized prey
- **caterpillars**
- **cutworms**
- **slugs**

Live on the ground

Nocturnal

Minute Pirate Bug

Adult

Nymph

Prey

- small insects & mites
  - caterpillars, leafhoppers, psylla, aphids, etc.
  - insect eggs

Big-eyed Bug

Adult

Nymph

Eat small insects, insect eggs, & mites

Damsel Bug

Adult

Nymph

Eat small insects & eggs

Ambush Bug

Use camouflage and ambush to attack prey

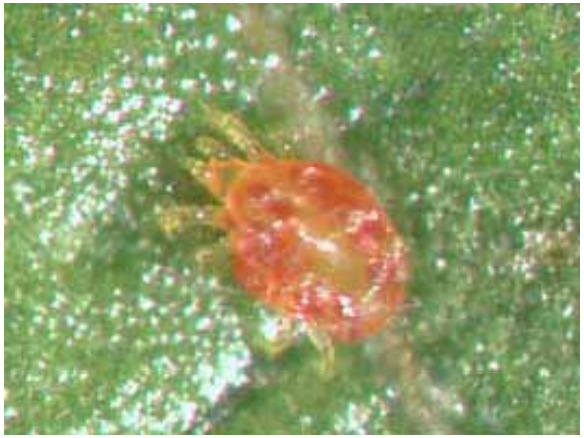
Their bite can hurt – ouch!

Eat small to mid-sized insects

Predatory Mites

Western predatory mite

Native species
Need plant-feeding spider mites for food
Cannibalistic
Some also eat pollen & nectar



Zetzellia

Parasitic Wasps

Parasitic Flies

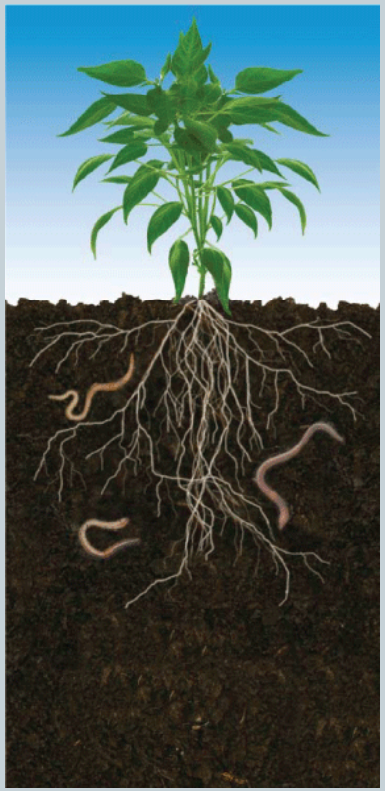
Tachinid Fly
Lay eggs on caterpillars
Fly larvae parasitize host

Insect Pathogens = Entomopathogens

Nematodes
Fungi
Protozoa
Viruses

Protect, Conserve & Promote Native Insects

- Diverse, healthy garden with flowering plants
  - Continuity in food & shelter in space & time
- Quality pollen & nectar
  - Wildflowers, herbs, fruit trees
- No toxic pesticides
  - Use cultural & mechanical pest management practices
  - Use selective, “soft” pesticides
- Tolerate some plant-feeding insects
  - Natural enemies must have food to survive



Start from the bottom up – healthy soil