



earth-wise guide to

Beneficial Insects



Parasitic wasp pupae on a tomato hornworm

don't kill the good guys!

more than **95%** of insects aren't pests. some pollinate our flowers and vegetables, while many others feed on pests in our gardens. by allowing them to do their job, we can reduce the need for pesticides and maintain austin's water quality.

resources

- A Field Guide to Common Texas Insects, Drees & Jackman
- The Texas Bug Book—the Good, the Bad, and the Ugly, Malcolm Beck and Howard Garrett
- Natural Enemies Handbook - The Illustrated Guide to Biological Pest Control, University of California Press
- Common Sense Pest Control, William Olkowski, et al.
- <http://hortipm.tamu.edu/pestprofiles/beneficials.html>

1. Preventing Pests

- Use disease and insect-resistant plants
- Monitor your plants regularly to catch problems early
- Encourage birds, lizards and frogs – they can be very helpful in controlling insects
- Properly identify problem pests before treating and choose treatment according to the pest

2. Attract Beneficials in Your Yard

- Plan the garden so there are blooming plants throughout the seasons to provide nectar and pollen
- Provide an accessible source of water, such as a bird bath, small water garden or a pond and some rocks so they can access the water safely
- Provide shelter – leave some leaf litter or plant some groundcovers

3. Introduce Populations of Natural Enemies

- If you don't have enough beneficials in your yard, purchase them from a nursery or commercial insectary
- Follow release directions from supplier for optimum results

4. Have Patience:

- Tolerate a few pests – they provide a food source for beneficial insects
- Resist the urge to spray when you first see plant damage – plants can withstand a lot of damage and you should allow time for beneficial populations to build up
- Monitor outbreak areas – if beneficials do not populate, other solutions may be necessary

4. Make Wise Product Choices

- When spraying is necessary, select a narrow spectrum product whenever possible. Broad spectrum insecticides don't discriminate between pests and beneficial insects – they kill both. This can include naturally-derived products such as pyrethrum and rotenone as well as chemical products
- Avoid over-use of pesticides – they can increase the chance of pest resistance
- Choose an insecticide that won't harm other insect-eating garden creatures like birds, bats, spiders, lizards, and toads (see last page and Grow Green Products fact sheet for ratings)
- Treat only the outbreak area
- Choose products that break down quickly like soaps or pyrethrum sprays

Managed colonies of bees, important pollinators, are believed to be in decline because of mites, diseases and environmental stresses including the over-use of pesticides

Good Guys

Photos by Lisa Lennon and Wizzie Brown



Assassin Bug



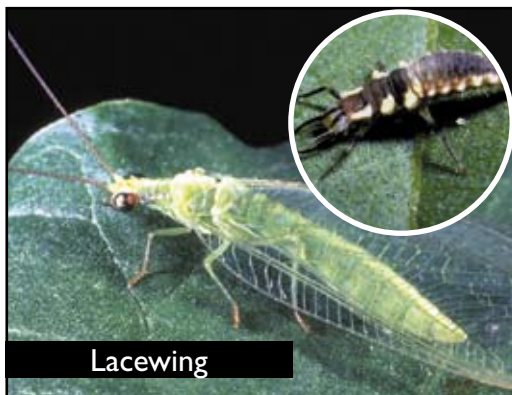
Damsel Bug



Damsel Fly



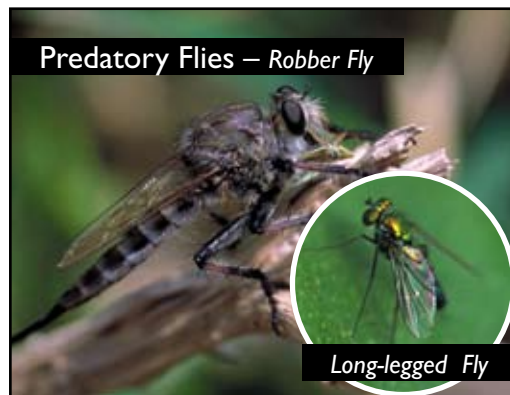
Ground Beetle – Scarab Beetle



Lacewing



Lady Beetle



Predatory Flies – Robber Fly

Long-legged Fly



Predatory Wasps – Red Wasp



Praying Mantis



Spiders



Syrphid Flies



Honey Bees



Giant Wheel Bug

Some Common Beneficial Insects:

Insect	Food Source	Description	Attracted to:
Assassin Bug	Larvae and adults: <ul style="list-style-type: none"> • Beetles • Caterpillars • Many other pests 	Large eyes; excellent hunters	Sunflowers
Damsel Bugs	Nymphs and adults: <ul style="list-style-type: none"> • Caterpillar eggs • Small larvae • Fleahoppers • Leafhoppers • Spider Mites 	Nymphs: similar to adults but without wings; wings develop as insect matures	Clover
Damsel Flies	Adults: <ul style="list-style-type: none"> • Mosquitos • Gnats • Other flying insects 	Black to reddish-brown or metallic, small to medium, fast-moving insects;	Water
Ground Beetles	Larvae and adults: <ul style="list-style-type: none"> • Snails • Slugs • Root-feeding insects 	Feed at night	<ul style="list-style-type: none"> • Stone pathways • White clover • Compost piles
Lacewings <i>Green or Brown</i>	<ul style="list-style-type: none"> • Aphids • Small Caterpillars • Whiteflies • Thrips 	Green: lay eggs on long stalk Brown: lay tiny eggs on leaves near aphids their food source	Nectar-producing plants like: <ul style="list-style-type: none"> • Scented geraniums • Roses
Lady Beetle <i>(Ladybugs)</i>	Larvae and adults: <ul style="list-style-type: none"> • Aphids • Scales • Mites • Other soft-bodied insects 	Larvae: wingless, spiny: orange and black markings Adults: red or orange with dark spots or black with two red spots or no spots	Nectar-producing plants like: <ul style="list-style-type: none"> • Tansy • Scented geraniums • Tropical milkweed
Predatory Flies	Adults: <ul style="list-style-type: none"> • Caterpillars • Beetle larvae • Sawflies 	Examples: <ul style="list-style-type: none"> • Robber Fly: large head, prominent eyes, long legs, thin abdomen • Long-legged Fly: medium to small, slender, with green, blue or copper metallic colored bodies and long legs 	Nectar-producing plants
Predatory Wasps	Most insect groups	Examples: <ul style="list-style-type: none"> • Red Wasps (see picture): red bodies with black wings, "paper" nest • Yellowjackets: 1/2 inch long wasp, with clear wings, yellow and black, shorter legs 	Pollen-producing plants with tiny flowers like: <ul style="list-style-type: none"> • Caraway • Fennel • Tansy
Praying Mantis	Nymphs: many pests and beneficials Adults: <ul style="list-style-type: none"> • Flies • Bees • Crickets • Moths 	Nymphs: similar to adult but without wings; wings develop as insect matures	Flower and vegetable gardens
Spiders	<ul style="list-style-type: none"> • Flying insects • Caterpillars • Others 	Arachnids: have eight legs, various sizes, usually specialized as either roaming hunters or web builders; many are harmless	Flower and vegetable gardens
Syrphid Flies	Larvae: <ul style="list-style-type: none"> • Aphids • Caterpillars • Beetles • Thrips 	Larvae: creamy-white to green or brown Adults: 1/4 to 3/4", black or brown with yellow-banded abdomens; resemble small wasps or bees but only have two wings	Composite flowers like: <ul style="list-style-type: none"> • Dill • Fennel • Coreopsis • Feverfew
Honey Bees	Pollen and flower nectar	Not aggressive if left alone; they are necessary for fruit-producing plants in the vegetable garden such as squash, watermelons, and okra	Pollen and nectar-producing flowers like: <ul style="list-style-type: none"> • Asters • Black-eyed Susans • Goldenrod
Giant Wheel Bug	Nymphs and adults: <ul style="list-style-type: none"> • Caterpillars • Moths • Squash bugs • Cucumber beetles 	Nymphs: similar to adult but brightly-colored; don't have a crest Adults: 1 to 1 1/4", grey to brown	Live in shrubs and trees

least toxic products



General Insecticide
Lawn Problems/Grubs & Fleas
Insect Repellent for Yard
Aphids
Caterpillars
Mosquito Larvae
Snails and Slugs
Fungal Problems

Note	Product Name	Active ingredient(s) / Concentrations	General Insecticide	Lawn Problems/Grubs & Fleas	Insect Repellent for Yard	Aphids	Caterpillars	Mosquito Larvae	Snails and Slugs	Fungal Problems
	American Brand® Thuricide Concentrate	<i>Bacillus thuringiensis var kurstaki</i>					x			
	Bonide® Hot Pepper Wax Ready-to-Use	Capsaicin and related capsaicinoids 0.184%	x							
	Bonide® Remedy	Potassium bicarbonate 85%								x
	Concern® Copper Soap Fungicide®	Copper octonate 0.08%								x
	Concern® Insect Killing Soap	Potassium salts of fatty acid 1%	x							
	Garden Safe® Fungicide 3-in-1 Ready-to-Use	Extract of neem oil 0.9%	x							x
	Green Light® BT Worm Killer	<i>Bacillus thuringiensis var kurstaki</i>					x			
	Green Light® Yard Safe CedarCide® Repellent Granules	Cedar oil 2%			x					
	Ladies in Red Beneficial Nematodes	<i>Steinernema carpocapsae</i>	x							
	Ladies in Red Ladybugs	Ladybugs				x				
	Safer® Caterpillar Killer	<i>Bacillus thuringiensis, var. kurstaki (DIPPEL)</i> 1.76%					x			
	Safer® Garden Fungicide	Sulfur 12%								x
	Safer® Insecticidal Soap Multi-purpose Insect Killer w/Seaweed	Fatty acid soap 2%	x							
	Serenade® Disease Control	<i>Bacillus subtilis</i> 1.34%								x
	Serenade® Lawn Disease Control	<i>Bacillus subtilis</i> 1.34%								x
	Sluggo®	Iron phosphate 1%							x	
	Summit® Mosquito Dunks	<i>Bacillus thuringiensis var israeliensis</i> 10.31%					x			
	SureFire® Garden Fungicide	Sulfur								x

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Texas A&M System
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Watershed Protection
Development Review

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