

Beneficials in the San Joaquin Valley Garden

Definition of Terms

- Predator – attacks and kills or paralyzes more than one host (lady bug eats many aphids)
- Parasite – true parasites do not kill host, or at least not right away. Fleas, lice, ticks – live on one host for many generations
- Parasitoid – kills host outright. One host develops one or thousands of new parasitoids

A predatory mite feeding on a plant mite



Predatory mite feeding on young leafhopper



Jumping spider – note big eyes and metallic fangs



Jumping spider with bug



Orb weaving spider



Argiope species



Argiope species with marked web



Unusual shaped orb weaver

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Black widow eating prey



Black widow male approaching female



Dragonfly – mosquito and midge predator



Dragonfly – note large eyes



Praying mantis – can be hard to see



Praying mantis – note large eyes



Yummy!



Leafhopper and spined assassin bugs

Spined assassin bug



Adult leafhopper assassin bug



Egg cluster



Nymph



Minute pirate bug



Big eyed bug



Damsel Bug



Rough Shield Bug



Green Lacewing Adult



Green Lacewing eggs



Green lacewing larva with aphid



Lacewing larva among white fly pupae



Ant Lion adult



Ant Lion larvae



Ant Lion pits in sandy or dusty soil

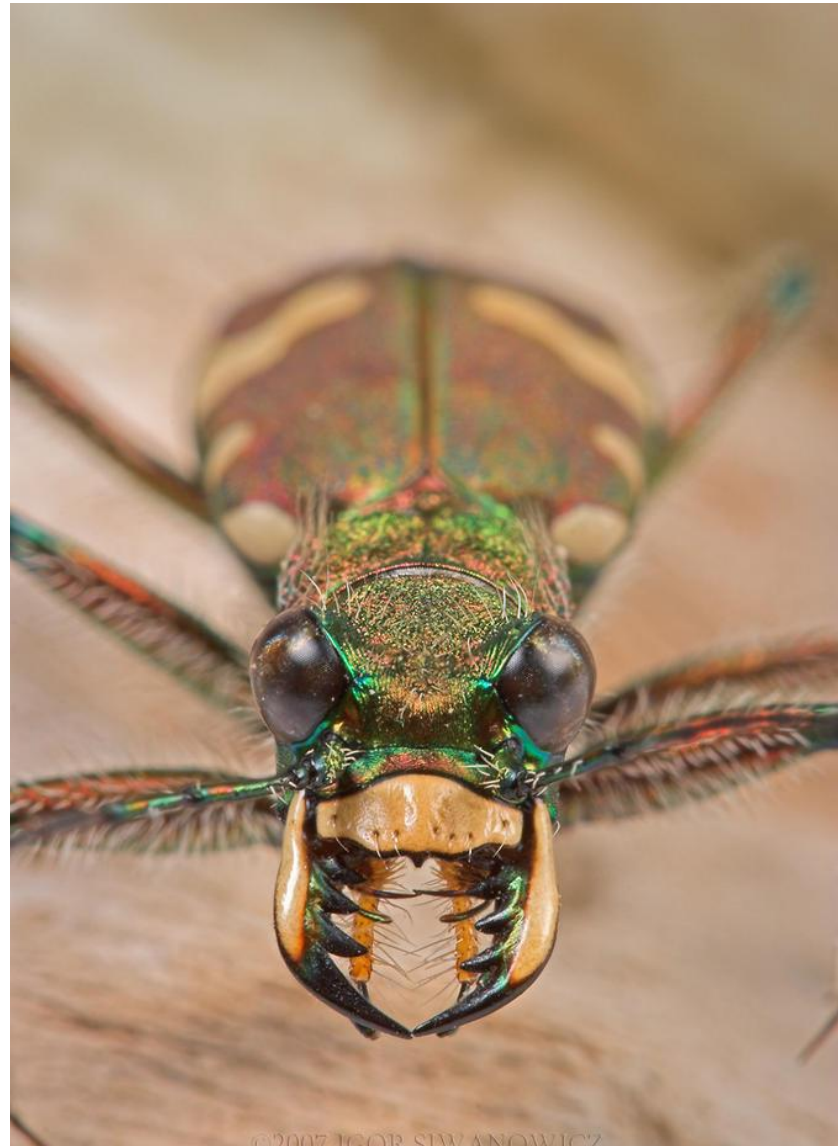


Antlion Pits. Photo by Iowa State Dept of Entomology

Local species of Tiger Beetle



Tiger Beetle jaws



Carabid Beetle - Scrutator



Carabid Beetle – black is most common color



Convergent Lady Beetle in family Coccinellidae



Convergent Lady Beetle larva



All stages of Convergent Lady Beetle



Vedalia Beetle adults feeding on Cottony Cushion Scale



Vedalia Beetle larva feeding on Cottony Cushion Scale



Ashy Gray Lady Beetle adult



Ashy Gray Lady Beetle in nature



Twice Stabbed Lady Beetle



Robber fly predating on winged ant



Robber fly with large green eyes and beak



Robber fly with dragon fly



Bumble bee asilid – common in the area



Syrphid Fly adult



Syrphid Fly adult nectaring



Syrphid Fly maggot feeding on aphids



Rose aphids being eaten by syrphid fly maggot



Tachinid Fly adult – look like blow flies
but are actually parasitoids



There are many species of tachinid flies



Tachinid fly eggs on caterpillar



Tachinid fly maggots exiting a Monarch chrysalis



Thread wasted wasp predate on caterpillars or grasshoppers



Mud dauber wasp on mud nest



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Crabronine wasp – predate on caterpillars



Small wasp that predate on aphid or
thrips



Spider wasps are handsome wasps
with a powerful sting



Spider wasp attacking spider



Female scoliid wasp



Male scoliid wasp – not as robust as females



Male scoliid wasps usually not as hairy.



Yellow Jacket



Yellow Jacket Trap



European Paper Wasp – recently introduced



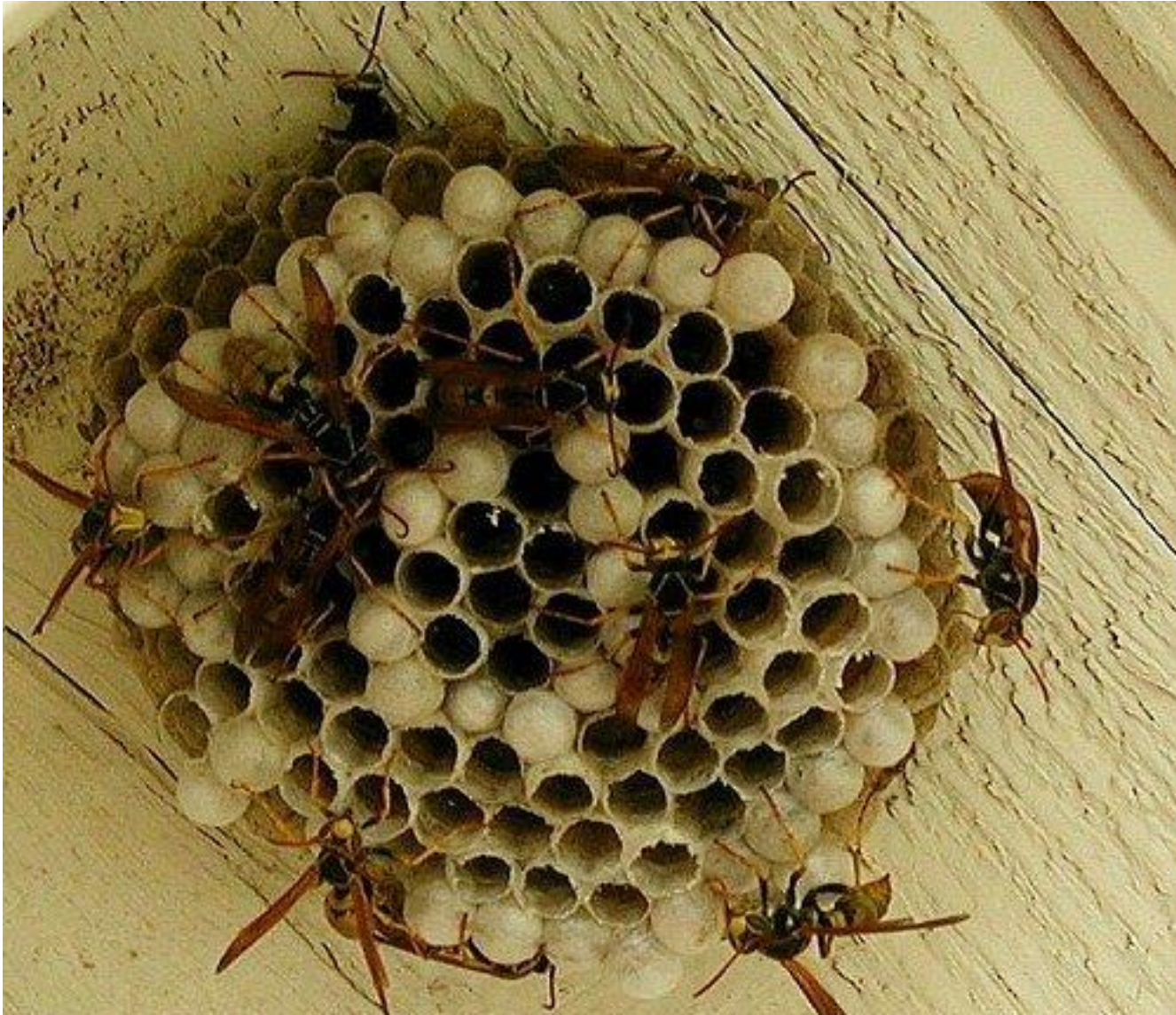
California sp. of paper wasp



Imported Cabbage Worm being killed by paper wasp



Typical paper wasp nest



Braconid wasp adult



Braconid wasp laying egg in young aphid



Braconid wasp picking on somebody
her own size



When you see a caterpillar with this,
don't destroy it.



Imported Cabbage Worm pupa with parasitoid



Imported Cabbage Worm with pupa nearby



Braconid parasitoid pupae on back of tomato hornworm



Beneficial pupae on flaccid tomato hornworm



Chalcidid wasp



Colin Hutton Photography

Pteromalid wasp



Gall wasp parasitoid - torymid



Torymid with long ovipositor



Perilampid wasp



Pteromalid wasp on fly pupa



Pteromalid wasp on side of caterpillar



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Argentine ant worker among soft scale



Small yellow buckwheat (eriogonum)



Buckwheat bush



Common buckwheat (*E. fasciculatum*)



Ceanothus – wild lilac



Ceanothus - purple



Mint leaves



Mint flowers are very attractive to
beneficials



Yellow yarrow



White yarrow



Choke cherry



Toyon –Christmas berry



Toyon bloom



Variegated euonymus



Palo verde in full bloom



Palo verde as a landscape tree



Diatomaceous Earth – best for long term control in garages and warehouses



Safer – bt formulation works well on caterpillars



Oil sprays work well for scales,
mealybugs, and whiteflies – non-toxic
to the environment



Tanglefoot can be used to stop Argentine ants from climbing trunks of trees



A powerful snail attractant that is safe for pets



Pheromones traps can lower your infestation level but likely will not kill all flying moths



Sulfur is a naturally occurring material that can control mites and thrips

