

Plant-Insect interactions



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What is a pest?



Arizona State Butterfly –  
the two-tailed swallowtail *Papilio multicaudata*

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What is a pest?



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### Symptoms of plant problems caused by insects

1. Chewed or tattered foliage or blossoms
2. Stippled (flecked), yellowed, bronzed or bleached foliage
3. Distortion of plant parts
4. Dieback of plant parts
5. Insect or insect-related products

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### Many other "pests"



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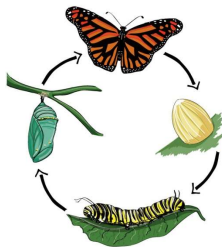
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### 'Pest' Identification is Critical!

- All stages of a pest may not look the same or cause the same damage.
- Knowing the host or where it was found helps!



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## 'Pest' Identification is Critical!



- Handle samples carefully.



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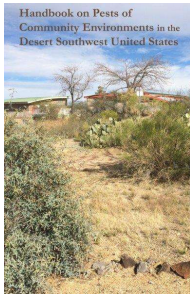
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## Use good resources



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## Use good resources

<https://cals.arizona.edu/apmc/Handbook.html>



The University of Arizona,  
**Western Region School And Home IPM Work Group**

COORDINATING EXTENSION

**Handbook on Pests of Community Environments in the Desert Southwest United States**

- Home
- About Us
- Organization
- Activities
- IPM Projects
- Pesticide Info
- Partners/Links
- Contact Us

1. [Climate zones and locations](#) (PDF, 1.2MB)
2. [Introduction](#) (PDF, 2.0KB)
3. [IPM in community environments](#) (PDF, 209KB)
4. [Flora, climate and common pests](#) (PDF, 2.9MB) \*Note insects can be found on page 23.
5. [General household pests](#) (PDF, 4.5MB)
6. [Pests of plants](#) (PDF, 2.3MB)
7. [Pests of public health importance](#) (PDF, 1.9MB)
8. [Pests of stored products](#) (PDF, 2MB)
9. [Domestic pests \(wood-damaging pests\)](#) (PDF, 2.2MB)
10. [Termites](#) (PDF, 0.8B)

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### Take good pictures

- Don't zoom too much on your phone.
- Hold your camera with both hands and as steady as possible.
- Get as many pictures as possible.
- Click, check, click again.
- Get pictures of damage, or other useful background.

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### Take good pictures

• Smartphone photo tip: **Zoom in with your hands or feet, not your phone**





Photo taken without zooming, keeping camera steady, from a good distance.



Can be enlarged by receiver without losing much of the details.





Photo taken with zooming on phone already lost some clarity.



Further zooming by receiver makes it very blurry.

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### Add something for scale








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**Its not always a pest!!!**

**Abiotic stress signs**

- Leaves –changes in color, wilting, abnormal growth
- Stem or trunk – die back
- Flowers/fruit – changes in size/color, abnormal growth, drying up, wilting



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**What caused these?**



Scale insect damage

Leaf scorch

Drought damage

Whitefly damage

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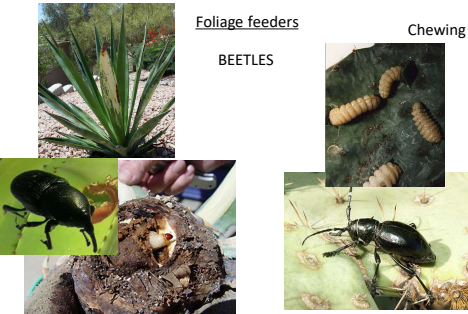
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**Common insect pests in the desert landscape**

**Foliage feeders**

**BETLES**

**Chewing and biting**



Agave weevil

Cactus longhorn beetle

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**Common insect pests in the desert landscape**  
Foliage feeders


BUTTERFLIES AND MOTHS




Gulf fritillary



Bagworm



Palo verde webworm



Tent caterpillar

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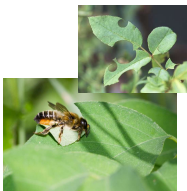
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**Common insect pests in the desert landscape**  
Foliage feeders



Grasshoppers  
Chewing and biting



Leaf-cutter bees  
Chewing and biting

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**Common insect pests in the desert landscape**  
Foliage feeders

Leaf miners  
Chewing and biting

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**Common insect pests in the desert landscape**

Thrips  
Rasping and sucking

Foliage/fruit  
feeders

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**Common insect pests in the desert landscape**

Aphids

Pay attention →

Foliage feeders

Piercing and sucking

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**Common insect pests in the desert landscape**

BUGS-HEMIPTERA  
Piercing and sucking

Foliage feeders

Leafhoppers

Lace bugs

Whiteflies

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**Common insect pests in the desert landscape**

BUGS-HEMIPTERA  
Piercing and sucking

Cochineal scales

Mesquite scales

Foliage feeders

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**Common insect pests in the desert landscape**

BUGS-HEMIPTERA  
Piercing and sucking

Foliage feeders

Giant Mesquite Bugs – Scary but harmless

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**Common non-insect pests**

Mites

Foliage feeders

Piercing/Scraping and sucking

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Common insect pests in the desert landscape

Foliage, root  
feeders      BEETLES



Palo verde beetle  
Chewing and biting

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Common insect pests in the desert landscape

Foliage, root  
feeders      BEETLES



White grubs  
Chewing and biting

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Common insect pests in the desert landscape

Stem/trunk borers      Chewing and biting



Flatheaded borer

Round-headed borer

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### Nuisance pests-Ants



- Nuisance, can give painful bites
- Watch out for fire ants – 2 noded waist

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### Nuisance pests-Ants



- Harvester ants also bite
- Beard, 2-noded waist

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### Nuisance pests-Rove beetles



- Nuisance, but no damage
- Mostly feed on organic matter or other insects

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**Nuisance pests-Earwigs**



- Nuisance, but no damage
- Mostly feed on organic matter or other insects

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**Quiz time!**

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**Identify the pest group that caused this damage**



Leaf beetle or  
young caterpillars

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Identify the pest group that caused this damage



Caterpillars

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Identify the pest group that caused this damage



Tent caterpillars

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Identify the pest group that caused this damage



Stem borers

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Identify the pest group that caused this damage



Stem borers

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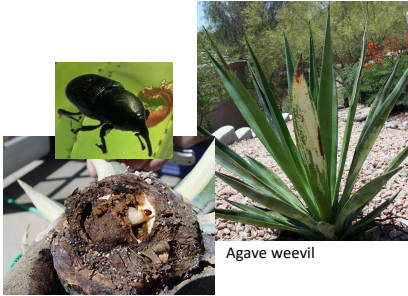
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Identify the pest that caused this damage



Agave weevil

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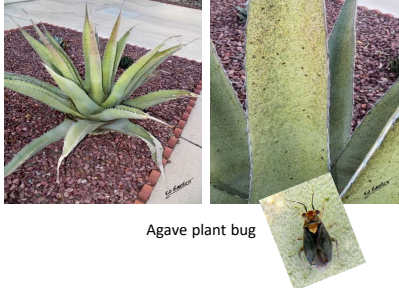
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Identify the pest group that caused this damage



Agave plant bug

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Identify the pest group that left these signs



Caterpillars

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Identify the pest group that left these signs



Bag worms

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Identify the pest group that caused this damage



Leaf miners

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Identify the pest group that caused this damage



Mites

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Identify the pest group that caused this damage



Bacterium (*Pseudomonas syringae savastanoi*)  
Causes Oleander galls

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Identify the pest group that caused this damage



Cynipid wasp  
(Desert gall)

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Identify the pest group that caused this damage



Leaf-cutter bees

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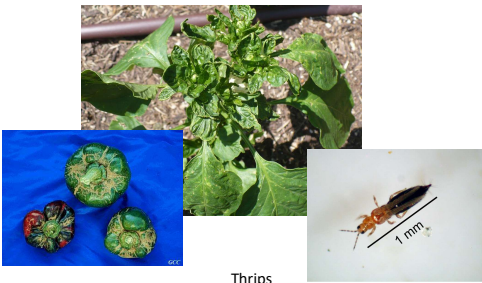
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Identify the pest group that caused this damage



Thrips

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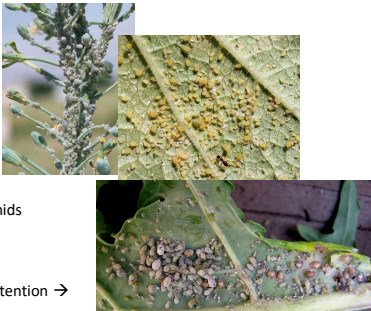
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What are these?



Aphids

Pay attention ->

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What are these?



Mealy bugs

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What are these?



Psocid



Psyllid



Winged aphid

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What are these?



Psyllid nymph  
"lerps"

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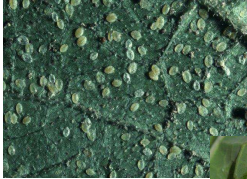
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What are these?



Whitefly nymphs



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What are these?



Cochineal scales



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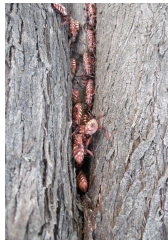
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Scary looking!



Giant Mesquite Bugs – Scary but harmless

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What are these?



Conenose bug/  
kissing bug



Corsair

Assassin bugs

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What are these?



Assassin bugs

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What are these?



Stink bugs

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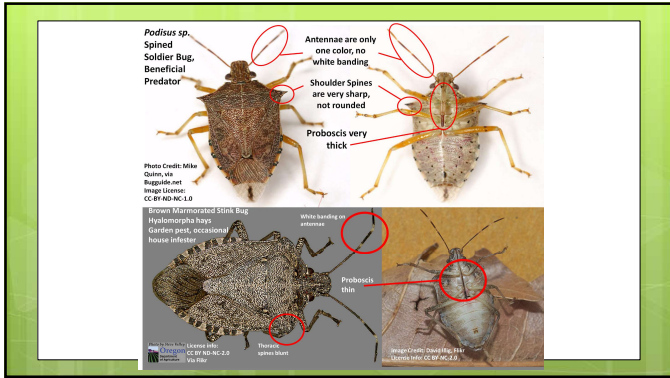
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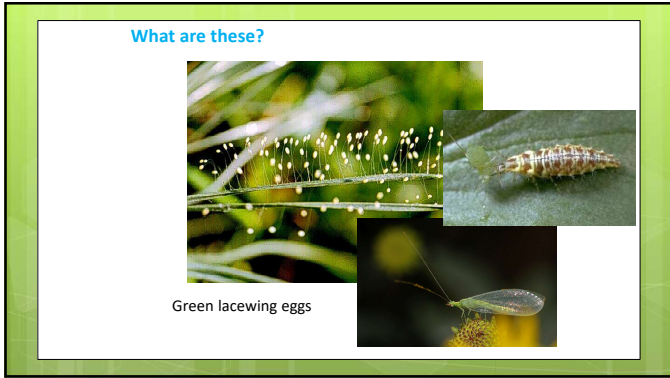
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Bugs get bugs too!



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Parasitoid wasps



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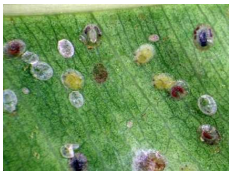
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Parasitized beetle grub



Parasitized whitefly nymphs

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**Not all bugs are bad!** Beneficials

Lady beetle

Paper wasp

Green lacewing

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**Pests or not?**

Digger bees

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**Pests or not?**

Leaf cutter bees

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**Pests or not?**



Turkestan

American

Oriental

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**Pests or not?**



Africanized bees

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**Pests or not?**



Scorpions

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### Mosquitoes



- Athletic and event disruption
- West Nile Virus, dengue fever, chikungunya, most recently - Zika

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### School Playing Field



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- Thousands from 1 gallon of water
- 1/4 inch of water is enough



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Food for thought



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Contact



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