

Insect Identification

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Which is good.
 Which is bad.



Leps Coleo Hemi Hym Dip Orth Neur Thys Trom Tylen Psoco

What are they?

| | |
|----------------|--------------|
| Lepidopterans | Coleopterans |
| Hemipterans | Hymenoptera |
| Diptera | Orthoptera |
| Neuroptera | Thysanoptera |
| Trombidiformes | Tylenchida |
| Psocoptera | |

Good bugs

Bad bugs

Leps Coleo Hemi Hym Dip Orth Neur Thys Trom Tylen Psoco

Lepidoptera

- Caterpillars of moths and butterflies
- **Defoliators**, leaf rollers, leaf miners, tent caterpillars, cutworms



Photo Cred: Colin Hutton

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Photo Cred: Allen Knutson & Mike Merchant

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Photo Cred: Allen Knutson and Mike Merchant

Lepidoptera

- Pollinators
- Feed on invasive weeds



Photo Cred: Scott Evers Photography

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Lepidoptera

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- Feed on invasive weeds



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Coleoptera

Beetles Scarabs Grubs
 Wireworms Weevils



Photo Cred: Illinois extension

Leps Coleo Hemi Hym Dip Orth Neur Thys Trom Tylen Psoco

Coleoptera

Beetles Scarabs Grubs
 Wireworms Weevils



Photo Cred: Pat Porter

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Photo Cred: livingwithinsect.wordpress.com

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Photo Cred: BugBlog

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UGA5178066

Natasha Wright, Cook's Pest Control, Bugwood.org



Peggy Greb, USDA Agricultural Research Service, Bugwood.org

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Coleoptera

Beetles Scarabs Grubs
Wireworms Weevils



UGA1241011



UGA5016051



UGA1241012



UGA5016056

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Photo Cred: Allen Knutson & Mike Merchant

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Coleoptera

Wireworms Lady beetles Ground Beetles



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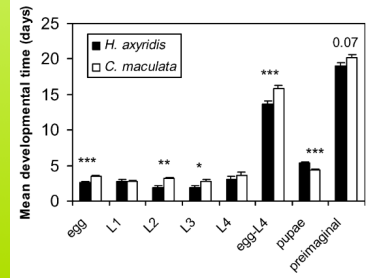
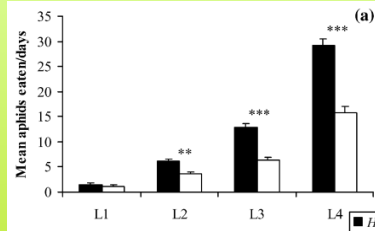
Coleoptera

Wireworms Lady beetles Ground Beetles



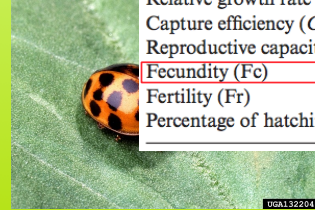
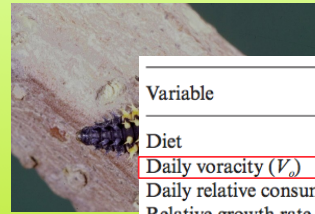
Coleoptera

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Coleoptera

Wireworms Lady beetles Ground Beetles



| Variable | <i>M. persicae</i> | <i>A. fabae</i> |
|---------------------------------------|--------------------|-----------------|
| Diet | | |
| Daily voracity (V_o) | 45.8 ± 3.5a* | 35.4 ± 3.3b |
| Daily relative consumption rate (RCR) | 21.2 ± 1.6a | 37.2 ± 3.4b |
| Relative growth rate (RGR) | 3.9 ± 0.4a | 4.1 ± 0.4a |
| Capture efficiency (CE) | 0.082 ± 0.007a | 0.125 ± 0.01b |
| Reproductive capacity | | |
| Fecundity (Fc) | 314.0 ± 42.6a | 342.2 ± 32.9a |
| Fertility (Fr) | 244.3 ± 41.3a | 251.6 ± 29.1a |
| Percentage of hatching (Ph) | 63.2 ± 7.5a | 63.9 ± 7.0a |

Coleoptera

Wireworms Lady beetles Ground Beetles



Video Cred: Franz Simon

Coleoptera

Wireworms Lady beetles Ground Beetles



Coleoptera

Wireworms Lady beetles Ground Beetles



UGA5195051

- Introduced to California Citrus groves to control cottony cushion scale in 1889
- Established the practicality of biological control
- Had cleared some orchards (150 acres+) of the cottony cushion scale
- Only takes a few beetles to get a population started

- 8 - 12 generations per year
- Females lay ~150 - 190 eggs in their lifetime

Hemiptera

Aphids Mealy bugs Chinch bug
 Lygus bug Brown Marmorated SB Cicada
 Scale Whiteflies Plant/Leaf bug



Hemiptera

Overwinter

Short daylength
 Cooler temperature
 Degrading habitat



Asexual wingless female

Illustration from [Mauro Mandrioli](#)



Photo Cred: [Steve Wilson](#)

Photo Cred: [Paul Bertner](#)



Photo Cred: [Charles Chien](#)



What to look for?

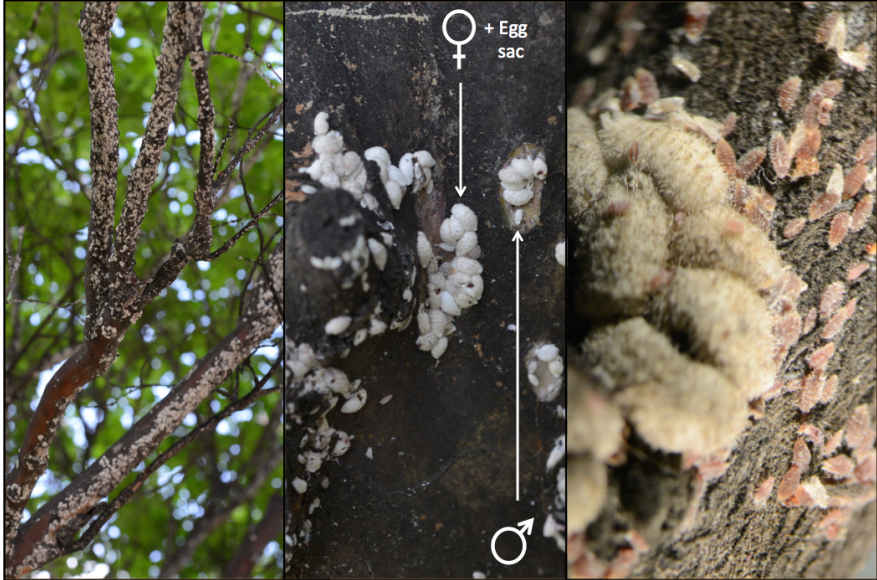


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Hemiptera



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Hemiptera

- | | | |
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| Lygus bug | Brown Marmorated SB | Cicada |
| Scale | Whiteflies | Plant/Leaf bug |

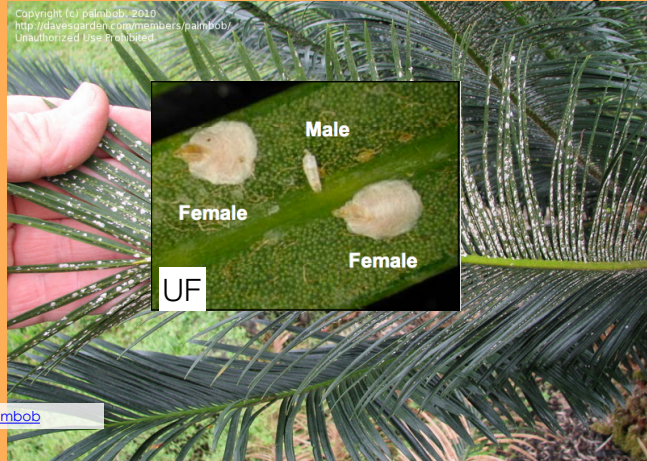


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