

Part 1 Organic Farming
and
Gardening Skills

Unit 1.8

**Managing
Arthropod
Pests**



A Project for the Center of Agroecology & Sustainable Food Systems
(CASFS)

University of California, Santa Cruz

Insects' Taxonomic Position

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Order: Hemiptera (true bugs)

Family: Miridae

Genus: *Lygus*

Species: *hesperus*

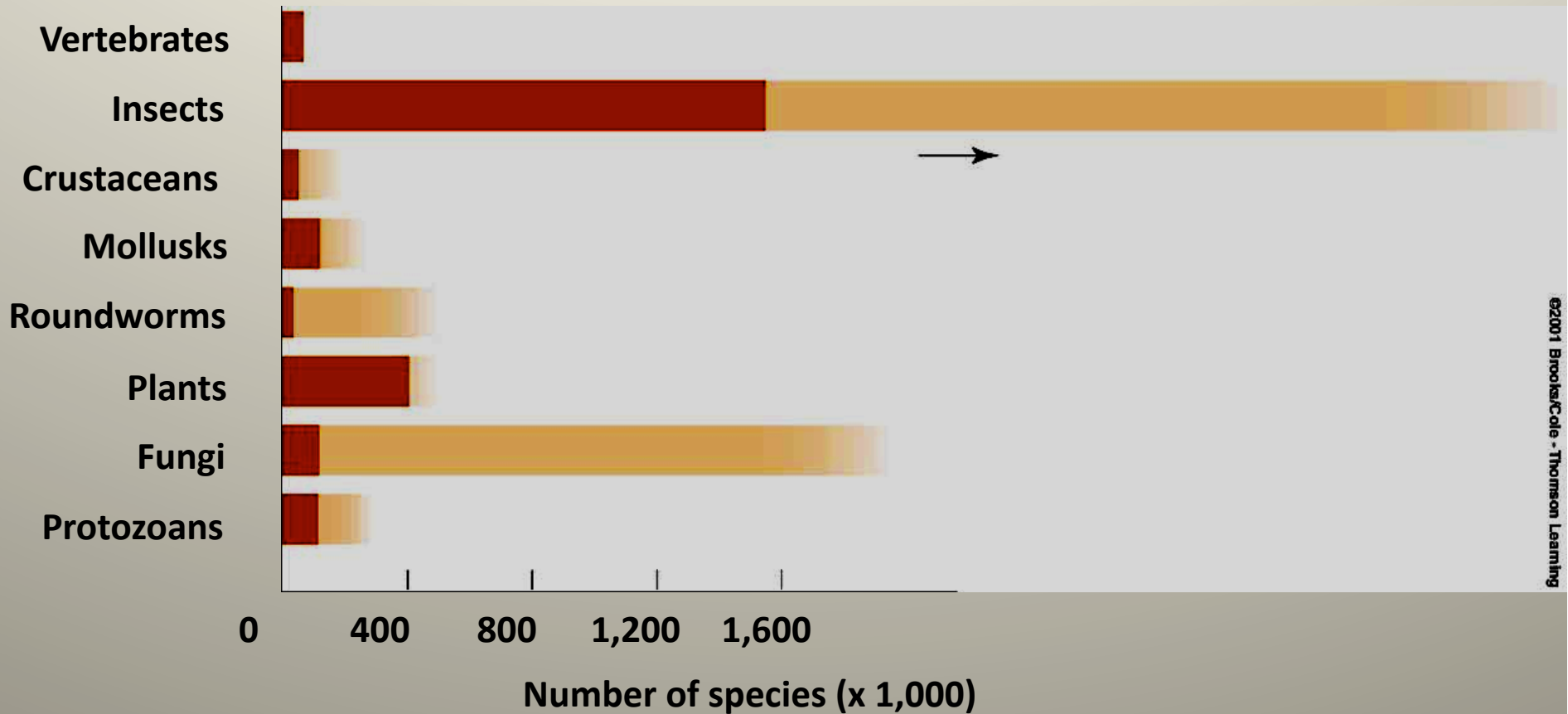
Common name = lygus bug



Arizona State University

Undiscovered Life

Current species diversity



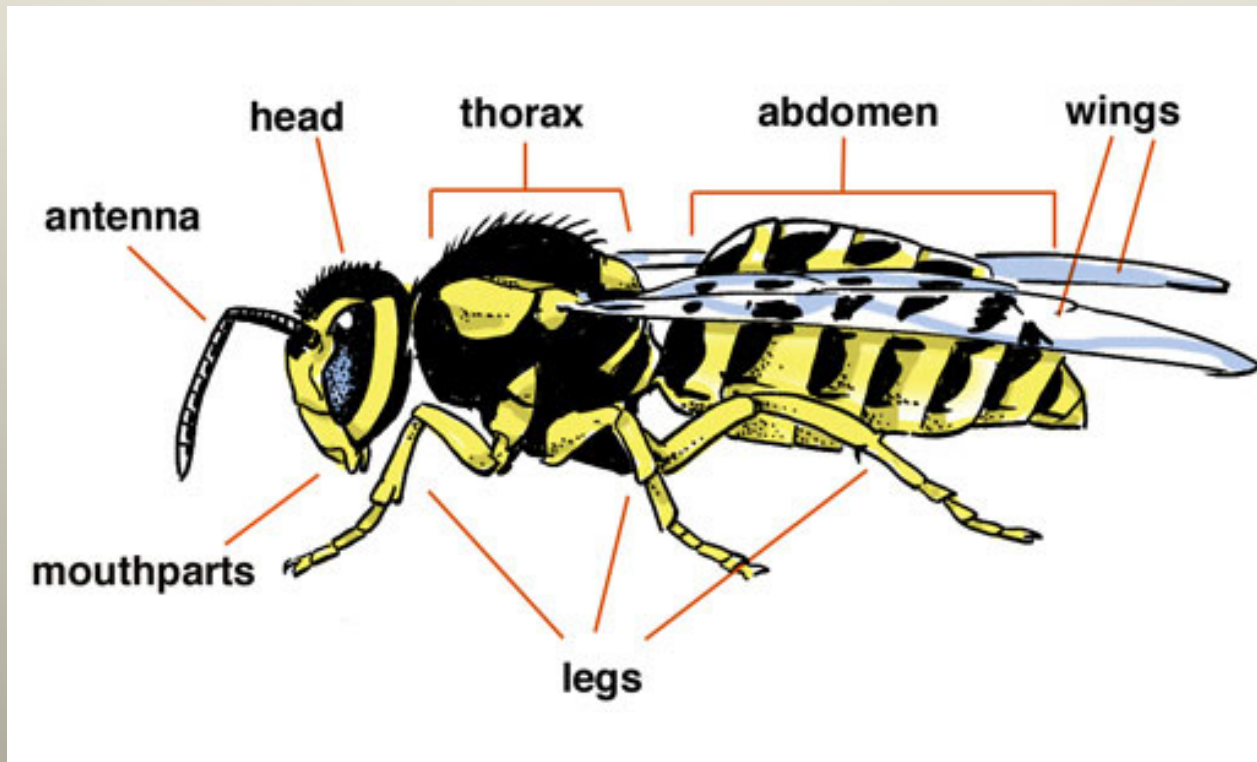
Red = Known species
Gold = Estimated number of species not yet discovered

Beetle Diversity

- The number of taxonomically described beetles (only one of 31 orders of insects) is more than 250,000 species
 - 1/5 of all described animals



Insect Anatomy

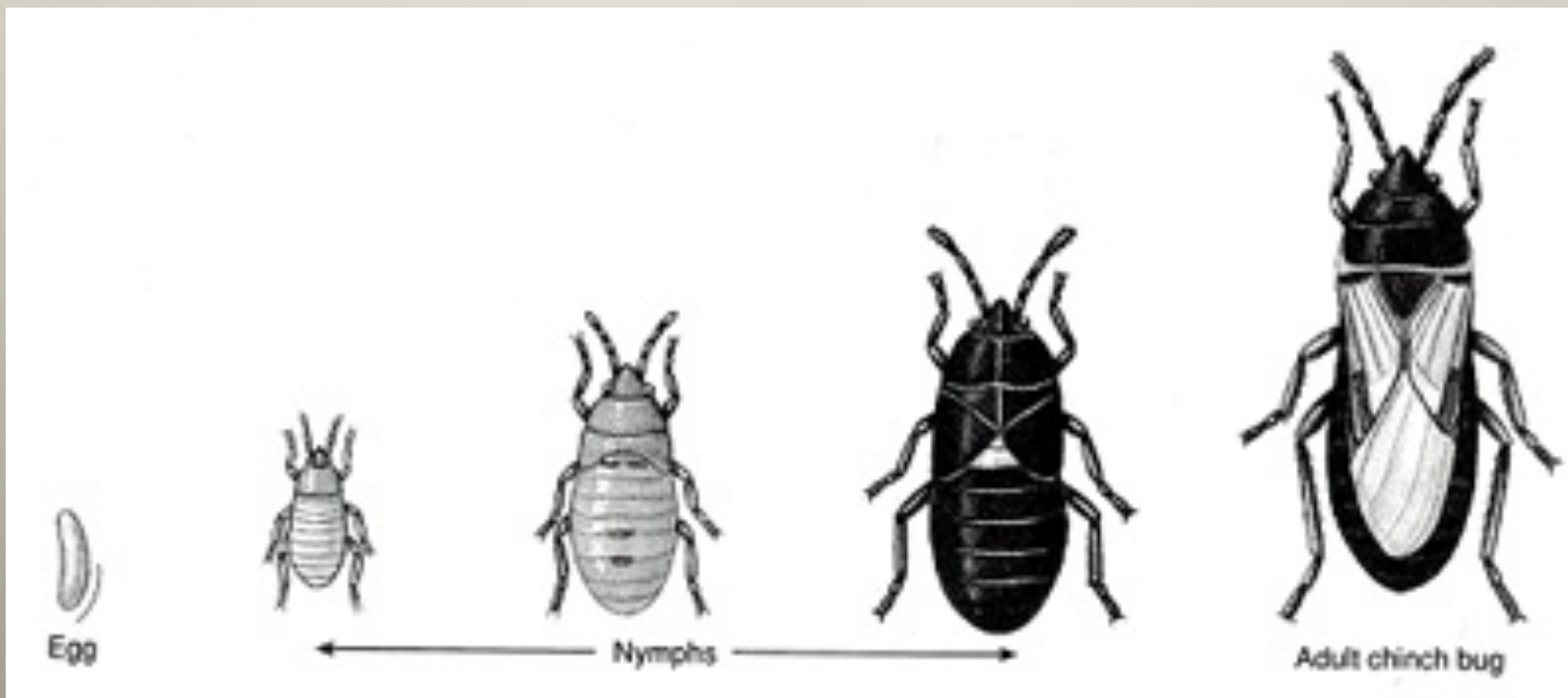


Head: sensory

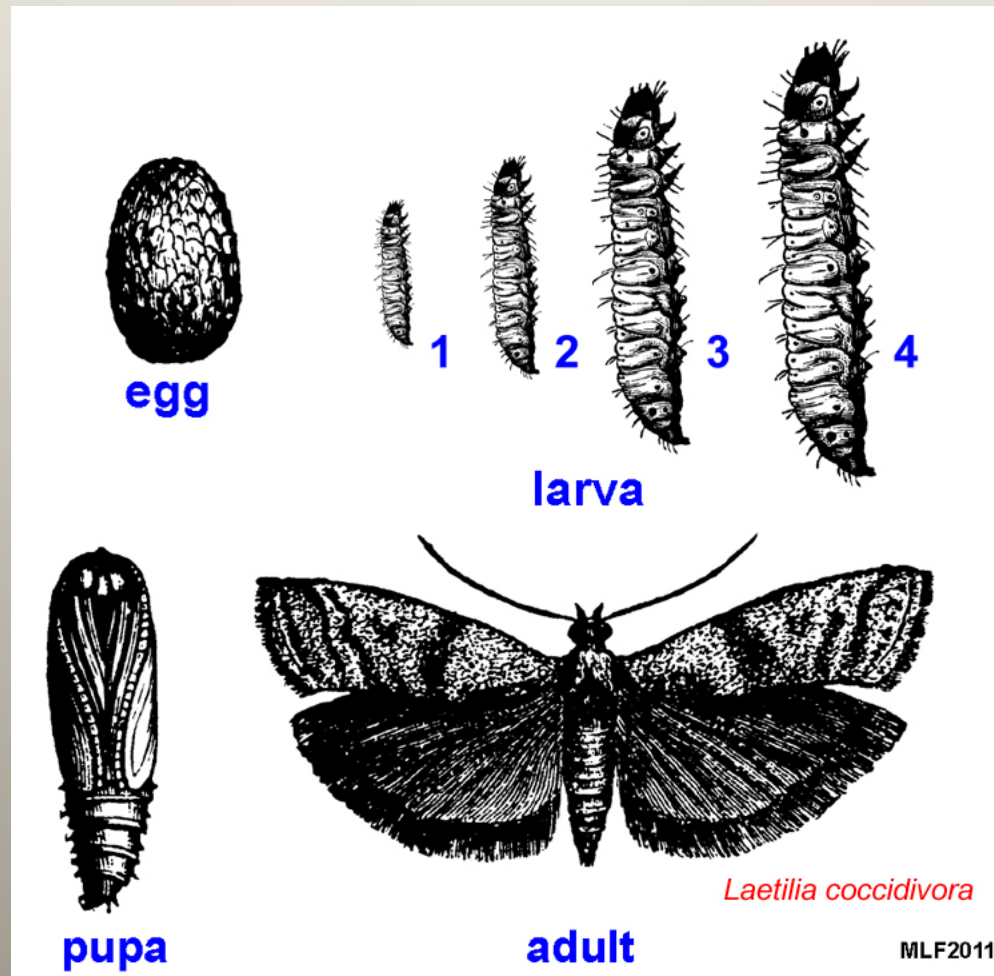
Thorax: movement, locomotion

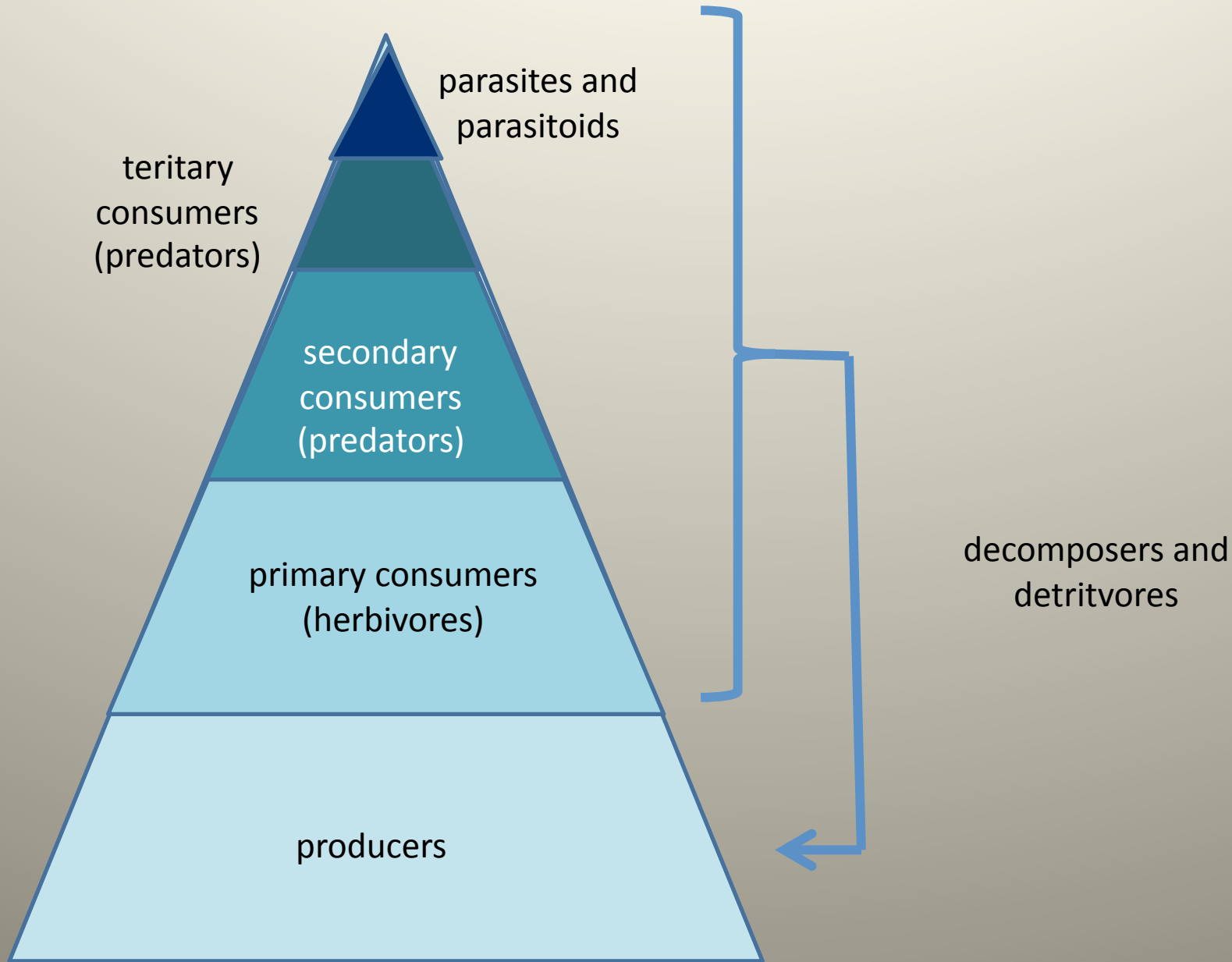
Abdomen: respiration, digestion, reproduction

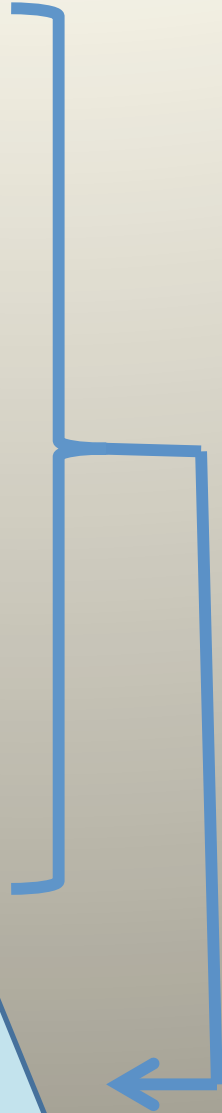
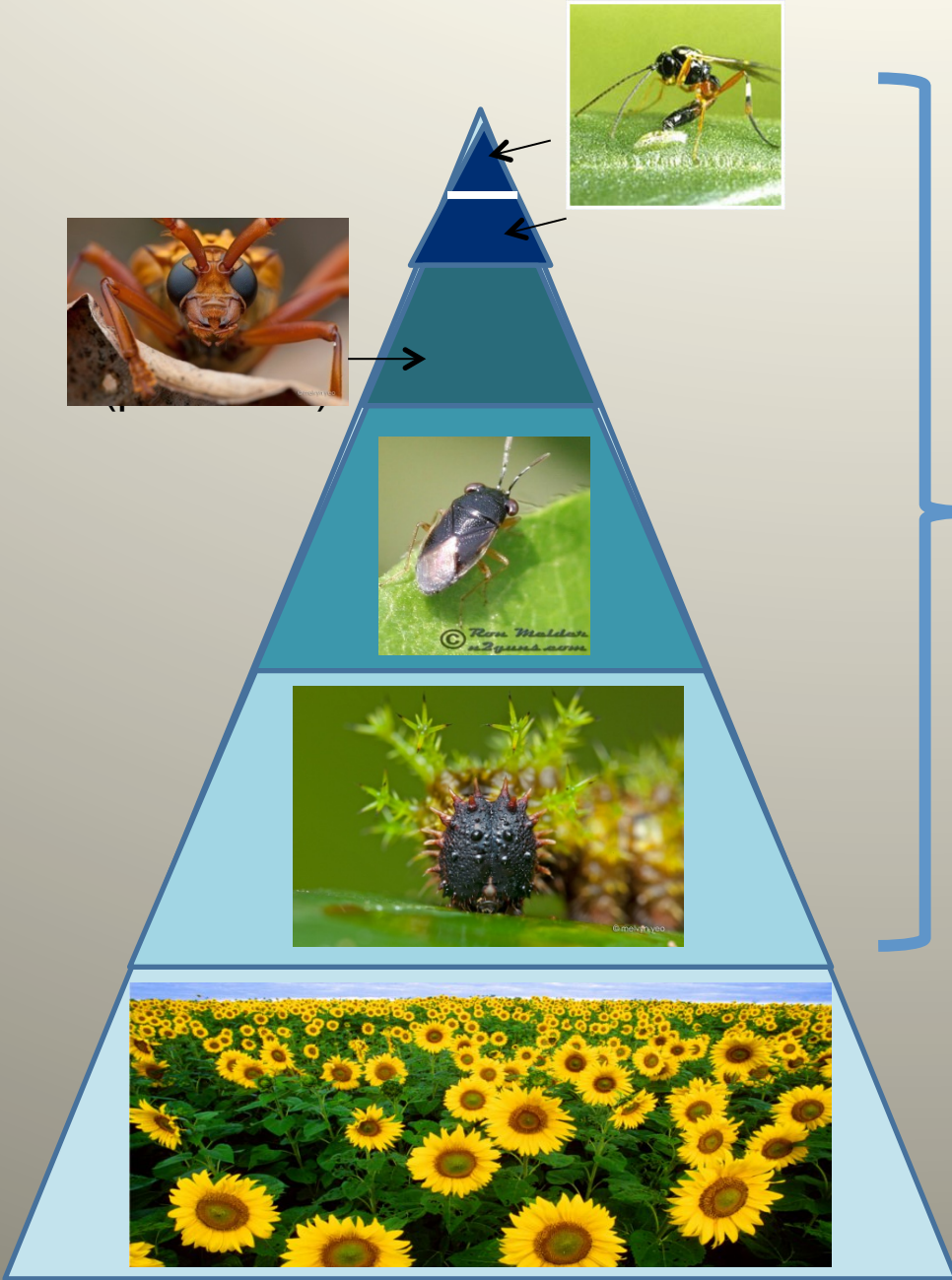
Hemimetabolous Development



Holometabolous Development







Functional Categories



ORTHOPTERA

grasshoppers, crickets and katydids



ORTHOPTERA

grasshoppers, crickets and katydids



Carlos Porto

Orthopterans in CA

- *Melanoplus* spp. occasionally a pest in wheat and small grains, particularly when adjacent to foothills (UC IPM)
- Katydidids in peaches



HOMOPTERA

planthoppers, leafhoppers, aphids, scale, cicadas and mealybugs



© melvyn yeo

HOMOPTERA

planthoppers, leafhoppers, aphids, scale, cicadas and mealybugs



HOMOPTERA

planthoppers, leafhoppers, aphids, scale, cicadas and mealybugs



Homopterans in CA

- Aphids in vegetables
- Scale in citrus
- Leafhoppers in grapes
- Whiteflies in cucurbits
- Mealy bugs in floriculture
- Pysllids in tomatoes

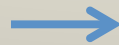


Homopteran as Vectors



USDA

Asian Citrus Psyllid

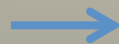


Yellow dragon disease or HLB



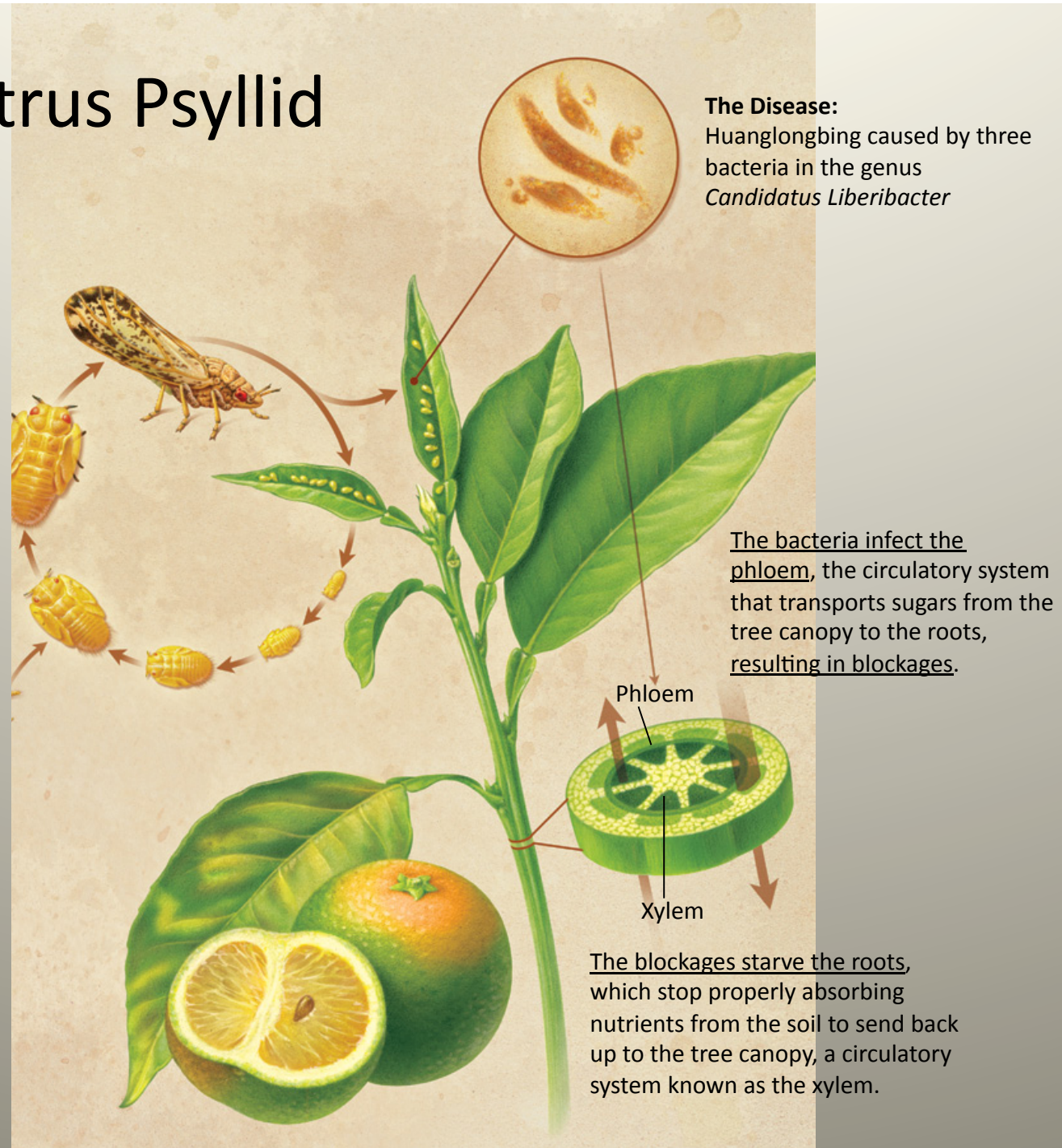
Quest.org

Potato Psyllid



Zebra chip

Asian Citrus Psyllid



Hemiptera

true bugs



Hemiptera

true bugs



Hemiptera

true bugs



Hemipterans in CA

- Lygus bugs in strawberries, cotton
- Stink bugs in tomatoes, almonds
- False chinch bugs in grapes, walnuts
- Bed bugs...everywhere!
- **Predators:** minute pirate bug, bigeyed bug, damsel bug, assassin bug, stink bug

lygus bug



Colin Brown

damsel bug



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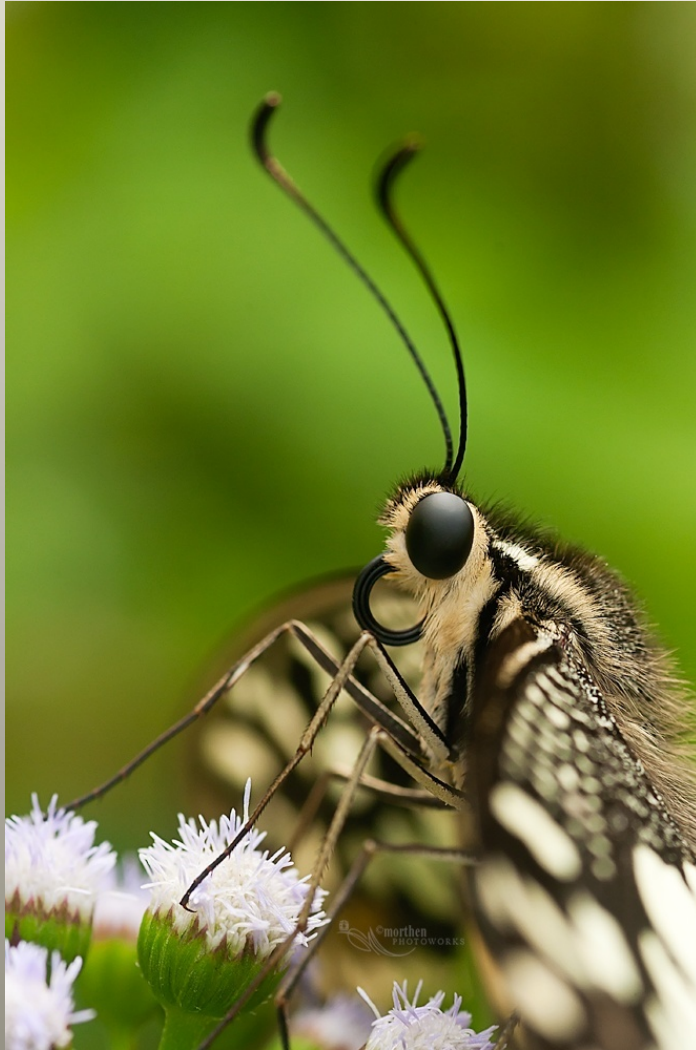
Lepidoptera

butterflies and moths



Lepidoptera

butterflies and moths



Lepidoptera

butterflies and moths



Lepidopterans in CA

- Diamondback moth in cole crops
- Artichoke plume moth
- Codling moth in apples
- Navel orange worm in almonds
- Citrus cutworm
- Western grapeleaf skeletonizer
- Tomato hornworm
- Corn earworm

