

# Light Brown Apple Moth and Related Species in California

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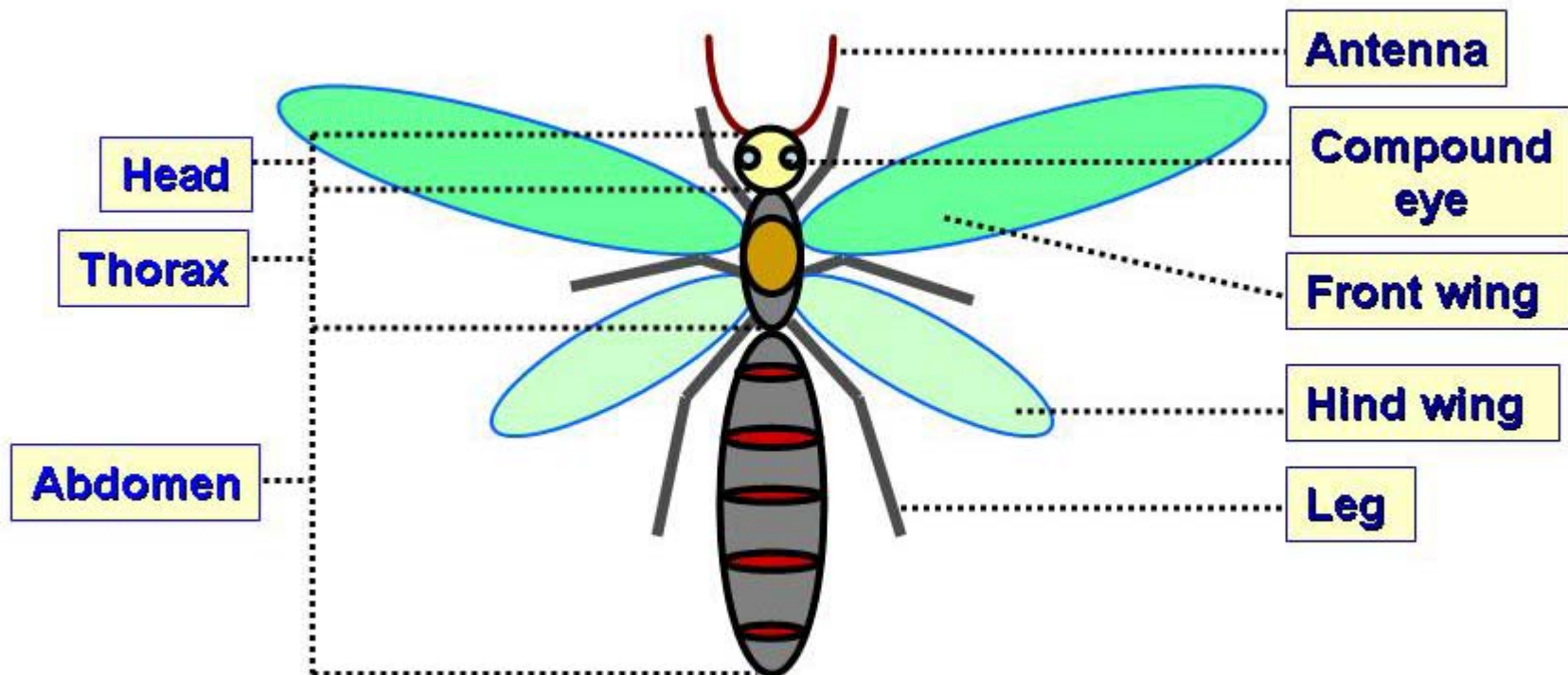
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Monterey County**



# Characteristics of Insects

- Animals with jointed legs (Arthropods)
- Exoskeleton and bilateral body
- 3 body regions (head, thorax, and abdomen)
- 3 pairs of legs and 0 - 2 pairs of wings





# Order: Lepidoptera Butterflies and Moths

- The insect has stages of egg, larva, pupa, and adult
- Adults have 2 pairs of membranous wings
- Body, wings, and legs are usually with scales
- Eggs are laid on hosts and larvae feed on leaves, stems, and flowers



**Scaly Wing of Imperial Moth**



**Scales**

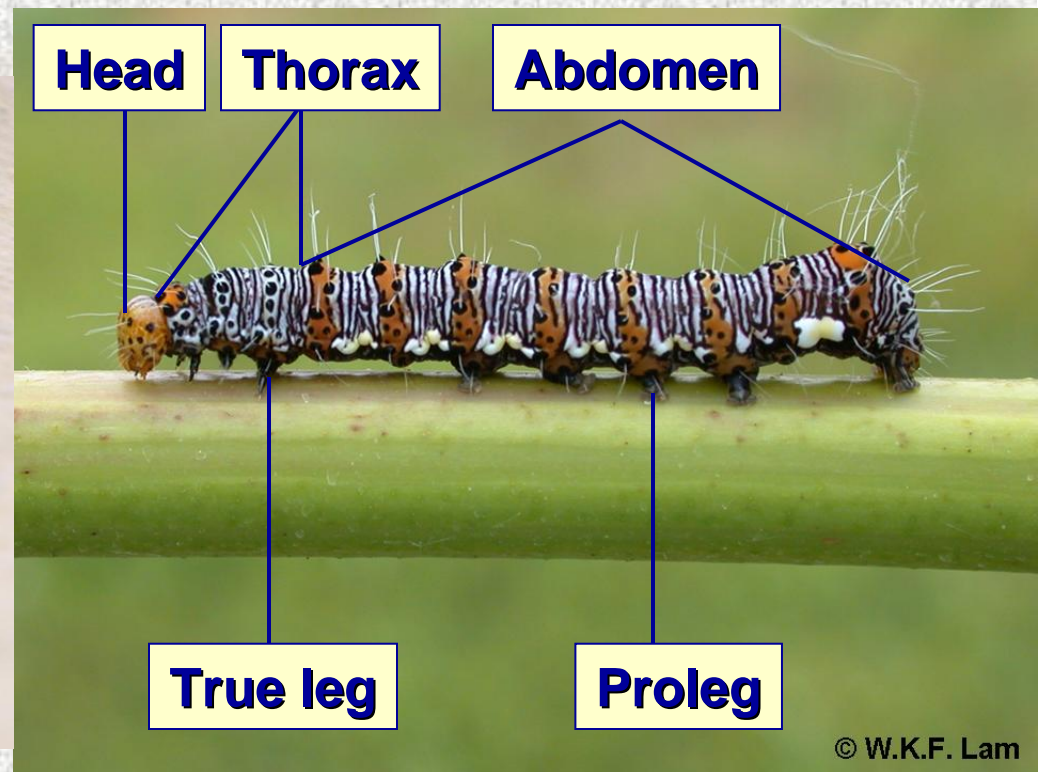


- Mouthparts of adults are developed into a long, coiled structure for sucking (proboscis) and feed on nectar
- Larvae (caterpillars or worms) have true legs and prolegs
- Larvae usually pupate on the hosts or in the soil



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**Proboscis of Hawkmoth**



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**Eightspotted Forester Larva**

# Family: Tortricidae

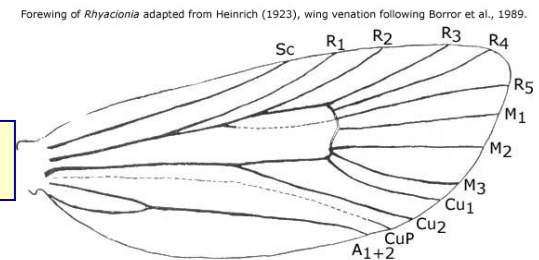
## Leafrollers

- Adults have a 0.25-1.25 inch wingspan
- Adults are usually gray, tan, or brown
- Antennae are usually threadlike (filiform)
- Wings have dark bands or mottled areas, and occasionally with metallic spots
- Front wings are usually rather square-tipped

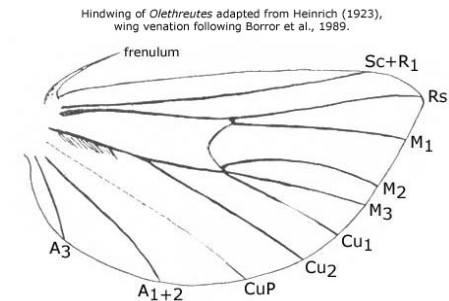


**Light Brown Apple Moth**

**Front wing**

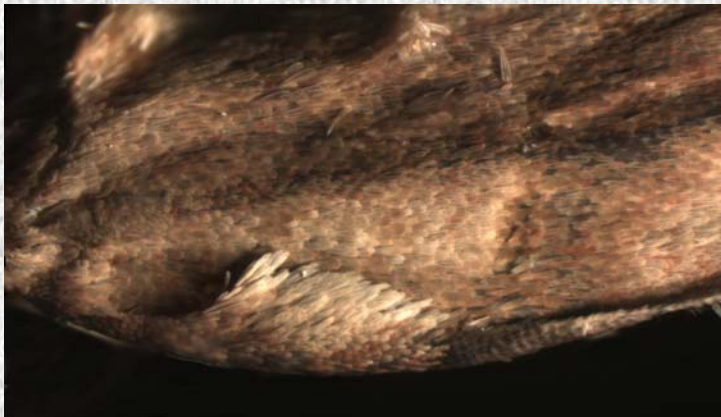


**Hind wing**



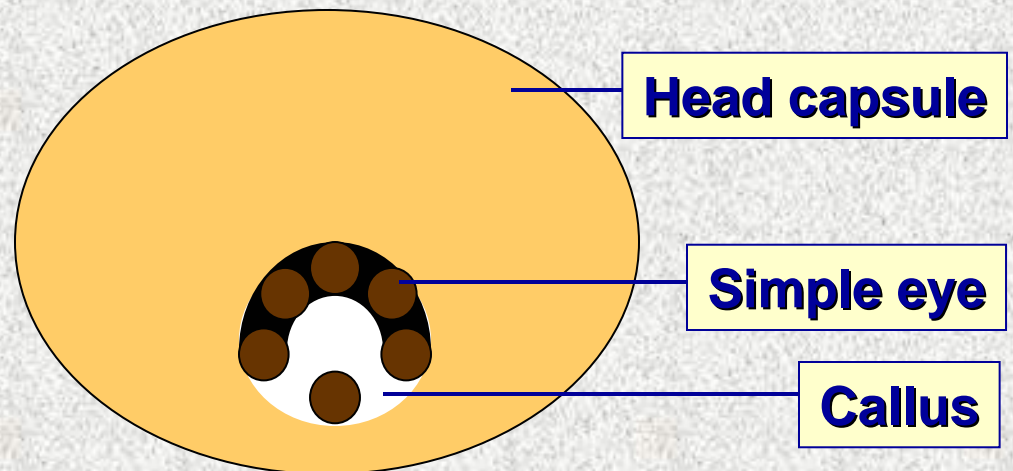


- Front wings of some male moths have costal folds with scales or hairs
- Larvae with 6 simple eyes (stemmata) on each side of the head capsule
  - 5 simple eyes are linked by a black arc that encloses a white callus
  - The 6<sup>th</sup> simple eye is located alone below the callus



**Costal Fold of  
Light Brown Apple Moth**

Photo by Marc Epstein and Megan O'Donnell, CDFA





- Hardened plate (prothoracic shield) at the back of the head
- Anal comb located at the end of larval abdomen
- Larvae usually roll the leaf or leaves and fruit together with webbing and feed inside (hence, leafrollers)
- Larvae wriggle vigorously backwards and drop to the ground when disturbed



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**Anal Comb of Oriental Fruit Moth**



**Prothoracic shield**

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**Orange Tortrix**



- **Obtect pupae:** Wings and appendages of the pupae are appressed to (pressed against) the body and most of the abdominal segments are immovable
- **Shinglelike egg masses** are laid on upper surface of leaves



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**Obtect Pupa of  
Fruittree Leafroller**



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**Shinglelike Egg Mass of  
Omnivorous Leafroller**



## Light Brown Apple Moth, *Epiphyas postvittana*

- Native to Australia and has 3 - 4 generations per year, depending on the latitude
- Introduced to Tasmania, New Zealand, England, New Calendonia, and Hawaii
- *Very similar in size and appearance to other leafroller species in California*
- Have a wingspan of 0.67 inch in male and 1 inch in female moths



**Female**

**Male**



- Light brown moths with varying amounts of dark brown areas on front wings
- Extremely variable species with different wing patterns between males and females and among individuals
- Male moth with costal folds on front wings



**2 Male Light Brown Apple Moths (Scale = 0.15 inch)**

Photo by Scott Kinnee and Marc Epstein, CDFA



- Fully grown larvae are pale green (common in leafrollers)
  - Male larvae are about 0.33 inch long
  - Female larvae are about 0.67 inch long
- Larvae with 6 simple eyes
- Prothoracic shield at the back of the head
- Anal comb at the end of larval abdomen
- Obtect pupa
- Shinglelike egg mass



**Light Brown Apple Moth Larva**

Photo by Marc Epstein and Megan O'Donnell, CDFA



# Other Leafroller Moths in California

## Apple Pandemis, *Pandemis pyrusana*

- 2 - 3 generations per year
- Larvae are greenish yellow with straw-colored head
- Adults are light brown to rusty color with bands on the front wings
- UC IPM Guidelines: Apple and caneberries

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## Codling Moth, *Cydia pomonella*

- 2 - 4 generations per year
- White caterpillars with black or brown heads
- About 0.5 to 0.75 inch long when fully grown
- Pupate in soil or in bark crevices





- **Adults are mottled gray moth about 0.5 to 0.75 inch long**
- **Tiny disc-shaped eggs are laid singly on leaves, fruits, and nuts**
- **UC IPM Guidelines: Gardens and landscape, apple, pear, plum, prune, and walnut**





## Fruittree Leafroller, *Archips argyrospila*

- 1 generation per year
- Larvae wriggle vigorously when disturbed and hang on the plant or drop to the ground with a silken thread





- Larvae roll leaves together with silken thread and feed inside the nests
- Green larva with dark brown head and a tan plate behind the head
- Mature larvae pupate inside the nests



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- **Adults are bell-shaped moth with dark brown bands about 0.6 to 0.8 inch long**
- **Egg masses are laid on twigs**
- **UC IPM Guidelines: Gardens and landscape, almond, apple, apricot, cherry, citrus, nectarine, peach, pear, plum, and prune**





## Garden Tortrix, *Ptycholoma peritana*

- 2 - 4 generations per year
- Larvae are light green with light brown heads about 0.5 inch long when mature
- Moths are light brown and bell-shaped about 0.25 inch long
- Front wing has a marginal spot and a dark diagonal stripe
- UC IPM Guidelines: Strawberries



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## Obliquebanded Leafroller, *Choristoneura rosaceana*

- 2 - 3 generations per year
- Greenish yellow larvae with dark heads
- 2nd or 3rd larval stages overwinter in a silken case
- Adults are reddish brown moths with dark-brown, oblique bands on wings
- UC IPM Guidelines: Almond, apple, apricot, cherry, nectarine, peach, pear, pistachio, plum, and prune





## Omnivorous Leafroller, *Platynota stultana*

- Greenish brown larvae with brown heads
- Mature larvae have white knoblike or round structure (tubercles) with hair (seta) protruding on the top of abdomen





- **Adults are dark brown moths with rusty tan color on the tips of front wings**
- **Adults are about 0.4 inch long**
- **Shinglelike egg masses are laid on leaves**
- **UC IPM Guidelines: Apple, citrus, cotton, grape, nectarine, peach, pear, pepper, and plum**





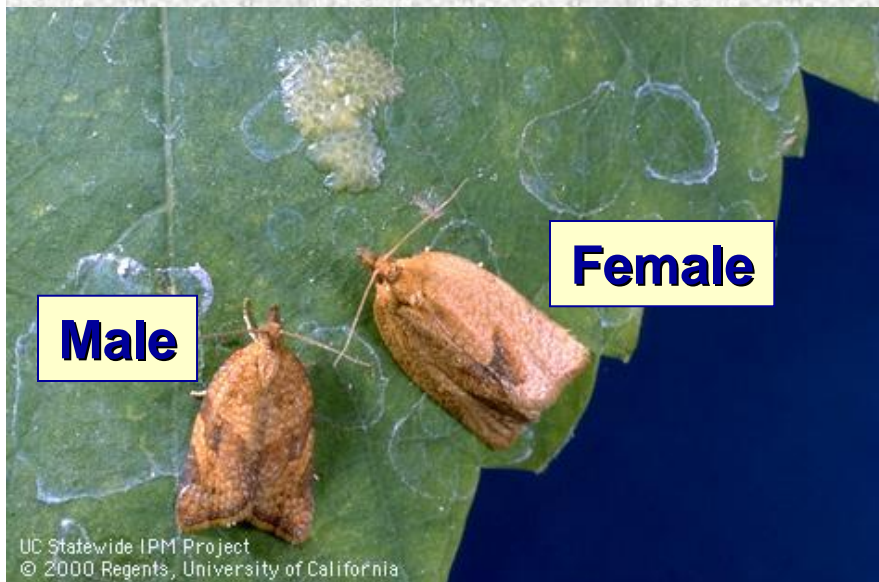
## Orange Tortrix, *Argyrotaenia franciscana*

- 3 generations per year
- Green or straw-colored larvae with brown heads
- Prothoracic shield is located behind the head on the thorax
- Mature larvae are about 0.5 inch long
- Larvae wriggle sideways or backwards when disturbed





- Adults are orange brown bell-shaped moths about 0.5 inch long
- A faint V-shaped marking is usually located on the front wings when at rest
- Shinglelike egg masses are laid on leaves
- UC IPM Guidelines: Apple, apricot, avocado, cherry, citrus, grape, pear, pepper, plum, and prune





## Oriental Fruit Moth, *Grapholita molesta*

- 5 - 6 generations per year
- White larvae with black heads when hatched; turn pink with brown heads when mature
- Mature larvae are about 0.5 inch long
- Anal comb at the end of the larval abdomen





- Larvae feed on shoot terminals and fruits
- Larvae pupate on shoots or fruits
- Adult oriental fruit moths are grayish moths about 0.4 inch long
- UC IPM Guidelines: Almond, nectarine, and peach





## Western Avocado Leafroller (Amorbia), *Amorbia cuneana*

- 2 - 3 generations per year
- Primarily pest on avocado and occasionally on citrus
- 2 horizontal lines on each side of the head and on the shield behind the head
- Prothoracic shield is located behind the head on the thorax
- Mature larvae are about 0.75 inch long





- Larvae roll the leaves or tie leaves to fruit
- Larvae pupate on leaves inside the nests
- Orange to tan moths with dark markings on front wings
- Adults are about 1 inch long
- UC IPM Guidelines: Avocado and citrus

**Male**

**Female**





# Family: Dioptidae

## Oakworms

California Oakworm, *Phryganidia californica*

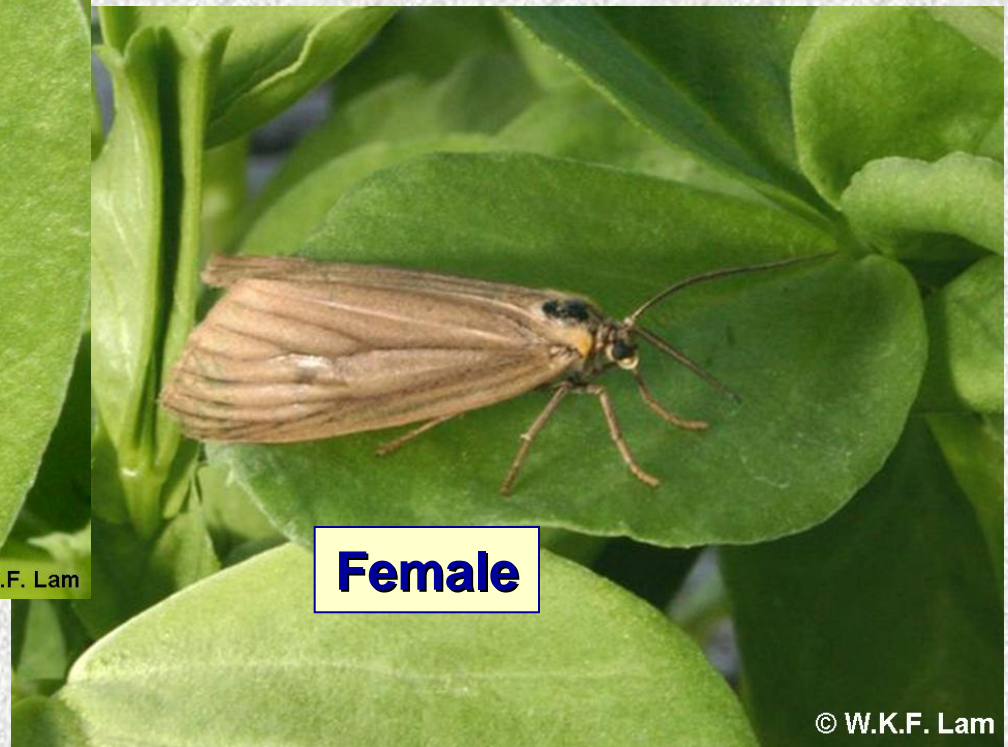
- 2 - 3 generations per year
- Larvae are variable in color, but commonly are dark with prominent yellow or olive stripes
- Larvae are about 1 inch long when fully grown



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- Adults are tan to gray moth with characteristics wing veins and about 0.75 inch long
- Antennae of male moths are large and branched on 2 sides (bipectinate) when compared with those of the females





- **Pupae are pale yellow with black lines and dots**
- **Tiny, white eggs are laid in groups on leaves and twigs**
- **UC IPM Guidelines: Gardens and Landscape**



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