



Footfills

Nature Notes

CITY OF PALO ALTO • COMMUNITY SERVICES DEPARTMENT • OPEN SPACE, PARKS AND GOLF DIVISION

California Oak Moth

Visitors to our preserves may hear faint clicking sounds as they walk the quiet trails of the preserves' oak woodlands. A look at the surface of the trail would reveal thousands of tiny roundish pellets 1/16 inch in diameter. These are the droppings of the caterpillar or larvae of the California Oak Moth (*Phryganidia californica*) which feed upon the leaves of oaks. So voraciously do they feed that entire trees or forests are defoliated when these insects reach maximum populations. Fortunately, the oaks survive this onslaught by budding and producing a new leaf system following an attack.

The life cycle of the oak moth has four stages: egg, caterpillar (larvae), pupa (resting stage), and adult moth. Eggs hatch into hungry larvae which feed upon the leaves of oaks, eating all but the coarser leaf veins. After reaching a length of about one inch, the smooth-bodied, yellow striped larvae enter the resting stage by enclosing themselves in pupa cases. The tissues are reorganized to form the adult moth. Adults emerge as pale brownish moths with wingspans of slightly more than one inch. Being poor fliers they reproduce and deposit their eggs within or near the tree of their birth, unless carried farther away by winds.

Adults deposit eggs on the undersides of oak leaves in June or July. By October or November this summer generation has completed its lifecycle and the new adults similarly deposit the eggs of the winter brood. The winter generation takes about nine months to complete its life cycle, since the cooler weather slows down the feeding activities of the larvae.

While the oak moth is always present in the oak woodland, it occasionally occurs in populations of tremendous proportions for reasons which are not fully understood. Past records in the Bay Area would indicate that peak infestations have occurred at intervals of three to nine years. It was thought that natural enemies such as predatory bugs and parasitic wasps checked exploding populations. While these natural enemies undoubtedly play important roles in this



Oak Moth Larva and Adult (enlarged)

regard, they do not seem to be prime limiting forces. It seems, rather, that the moth literally eats itself out of house and home: populations suddenly decline when the food source is depleted. Entire stands of totally defoliated oaks attest dramatically to the depleted food supply.

An interesting situation occurs when the female oak moth deposits her eggs on valley oaks in the fall. Unlike the coast live oak, the valley oak sheds its leaves in the winter and the emerging larvae find themselves in a tree devoid of foliage; starvation results.

While the ravages of the California oak moth seem quite severe at times, it should be remembered that this insect has been a part of the ecology of the oak woodland for thousands of years and the oaks are still here. These are the normal interrelationships of living things that make the natural world a thing of wonder and fascination.

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