

Sacramento Valley Pest Monitoring and IPM Updates



Emily J. Symmes
Sacramento Valley Area IPM Advisor

University of California Cooperative Extension and Statewide IPM Program



Collaborators: R. P. Buchner, UCCE Tehama & F. J. A. Niederholzer, UCCE Colusa, Yuba, Sutter

Objectives

- Monitor the activity of key arthropod (insect and mite) pests of almonds in the Sacramento Valley production region.
- Disseminate pest activity reports and pest management information weekly via various extension methods.
- Maintain continuity in the historical records of pest activity in almonds in the Sacramento Valley.

Methods

- Pest monitoring was conducted throughout the 2017 growing season in multiple almond orchard locations representing the Sacramento Valley (Colusa County, Glenn County, and Tehama County).
- Traps were set for navel orangeworm, peach twig borer, and oriental fruit moth according to standard University of California Statewide Integrated Pest Management Guidelines.
- Data summarized here is focused on monitoring of the key Lepidopteran pest in almonds, navel orangeworm (NOW).
 - A combination of egg, pheromone, and kairomone traps were used based on orchard size and location.
 - Egg traps (4 Tehama, 8 Colusa, 18 Glenn) track female ovipositional activity. Baited with ground almond meal with crude almond oil (Trece, Inc).
 - Pheromone traps (2 Colusa, 18 Glenn) track adult male flight activity. Baited with L2 lure (Trece, Inc).
 - Kairomone traps (18 Glenn) track adult female flight activity. Baited with ground pistachio (Peterson Trap Co).

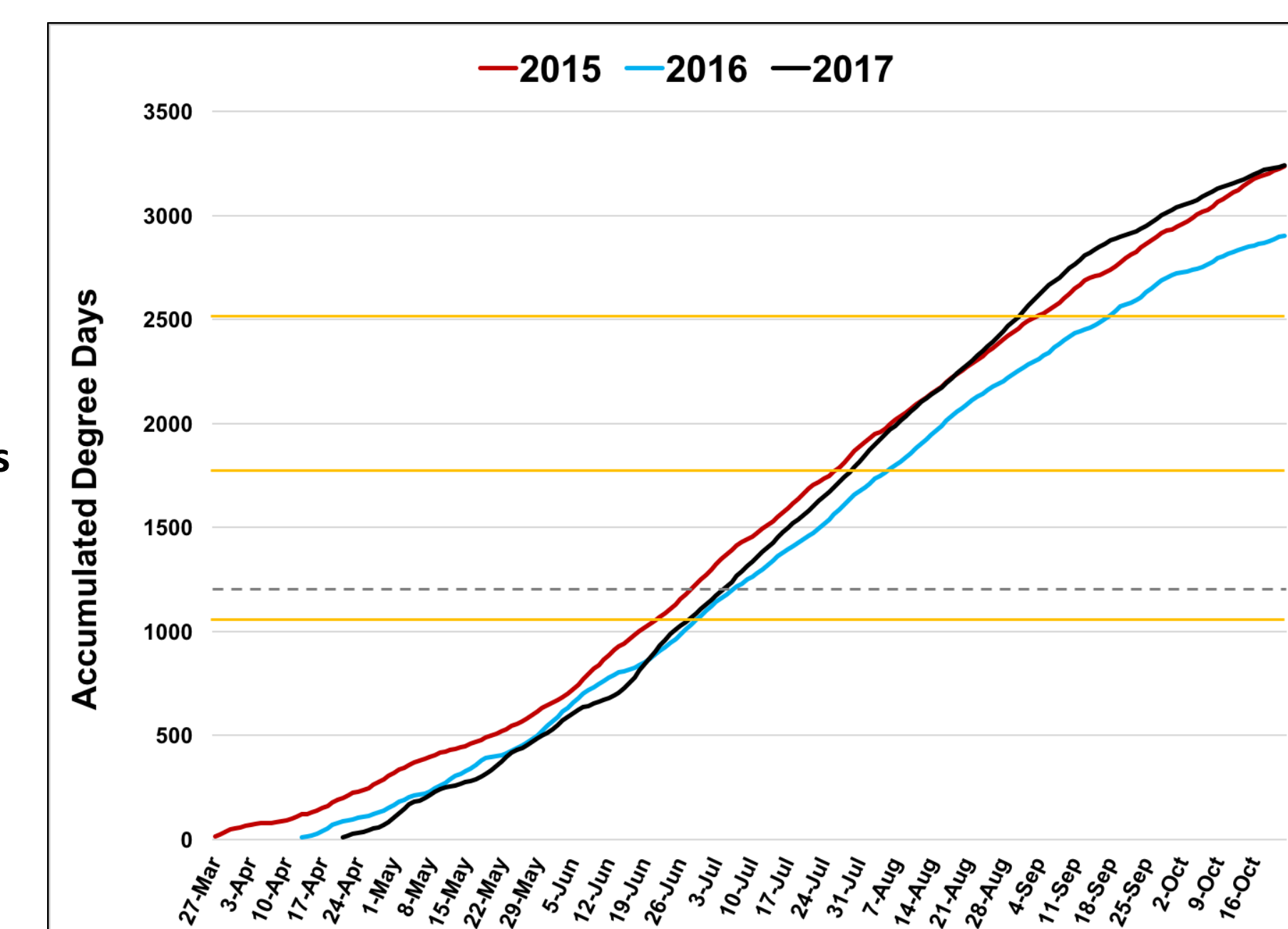


Figure 1. Degree day accumulation for navel orangeworm (NOW) in the Sacramento Valley (Durham.A CIMIS #12) 2015-2017. Yellow lines represent DD model predictions for each generation (flight). The dashed gray line represents DD-based hull split spray timing.

Table 1. Degree day model predictions and dates for NOW in the Sacramento Valley (Durham.A CIMIS #12) 2015-2017.

	Predicted Degree Days	2015	2016	2017
Spring Egg Biofix (1 st flight)	--	March 27	April 13	April 21
F1 Biofix (2 nd flight)	1056	June 21	June 29	June 28
"Hull Split Spray" timing	1200	June 28	July 6	July 4
F2 Biofix (3 rd flight)	1779	July 27	August 6	July 30
F3 Biofix (4 th flight)	2502	September 3	September 17	August 31

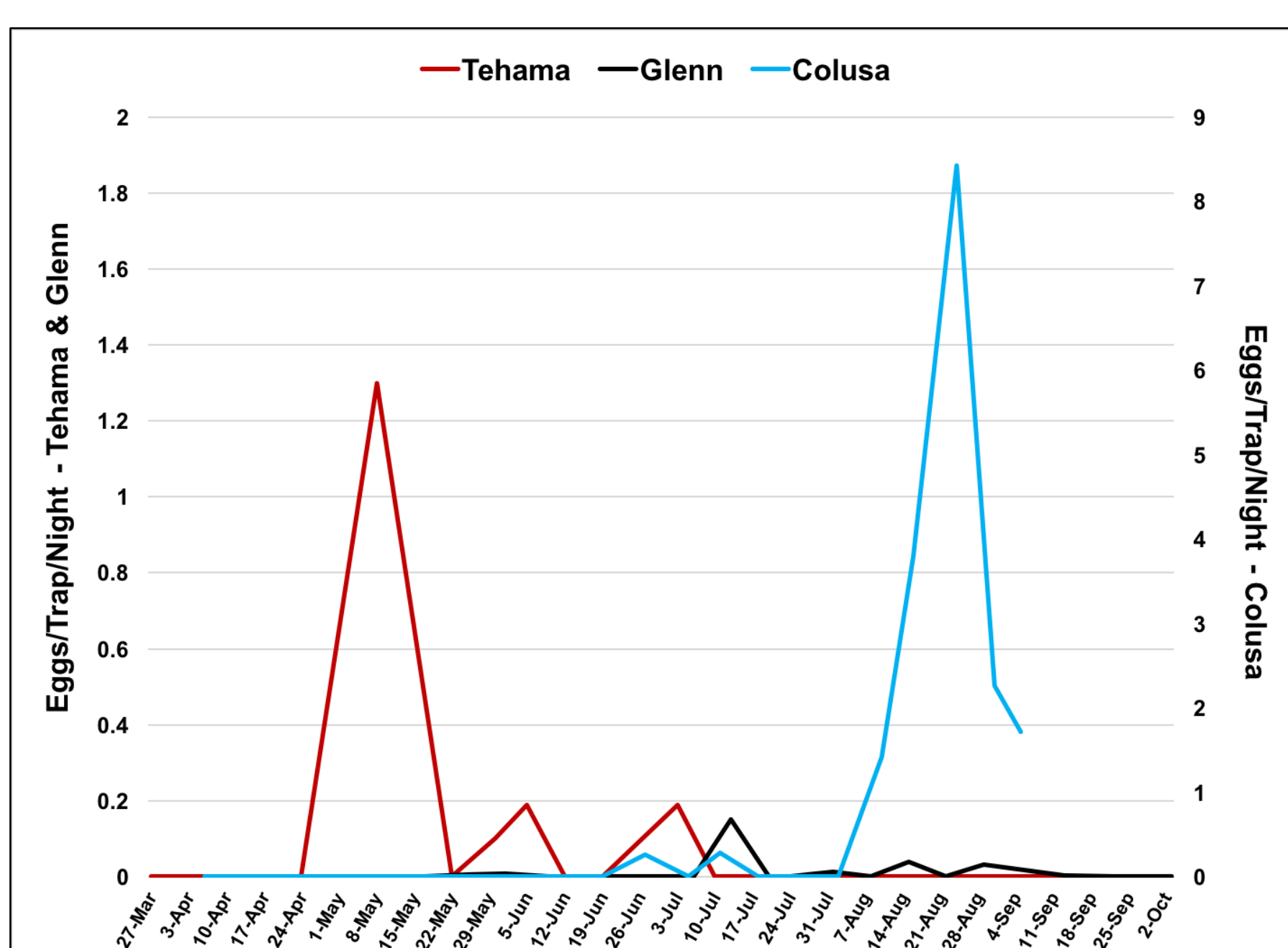


Figure 2. Egg trap data expressed as eggs/trap/night for monitoring sites in Tehama, Glenn, and Colusa counties. Colusa county data is plotted on the secondary axis.

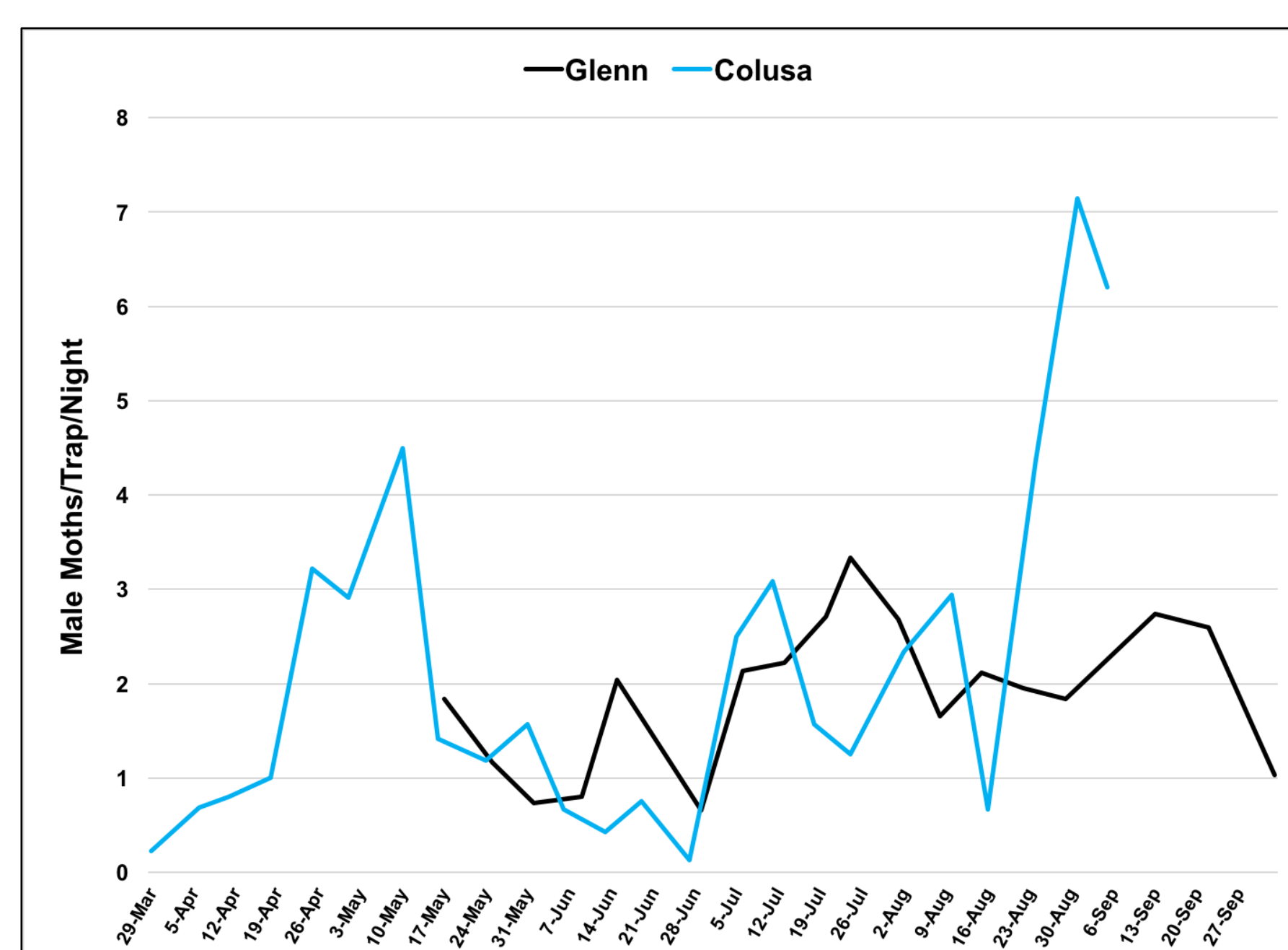


Figure 3. Pheromone trap data expressed as male moths/trap/night for monitoring sites in Glenn and Colusa counties.

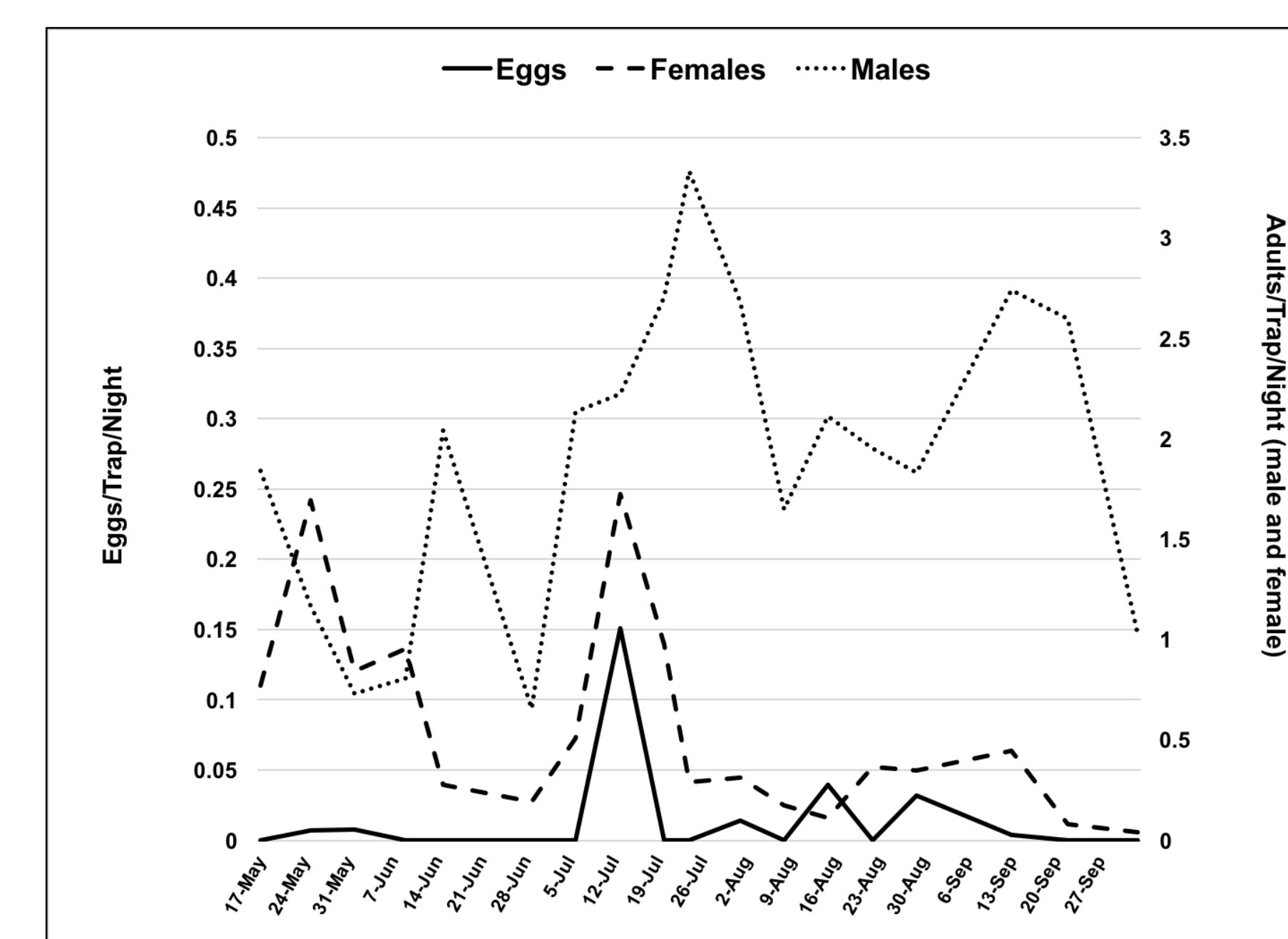


Figure 4. Egg, pheromone, and kairomone trap data at the Glenn county site. Egg traps are plotted on the primary axis, pheromone and kairomone traps are plotted on the secondary axis.

Significant Findings

- Navel orangeworm (NOW) Sacramento Valley regional egg biofix dates and degree day model predictions (2015-2017) are shown for comparison in Figure 1 and Table 1. Fourth flights (typically thought to be less common in the Sacramento Valley) are becoming increasingly common due to earlier biofixes (e.g., 2015) and increased summer heat unit accumulation (e.g., 2017).
- Low numbers of eggs were detected on egg traps in all locations, with the exception of a substantial peak at the Colusa site in August (please note that Glenn and Tehama data are plotted on a different scale than Colusa) (Figure 2). This large peak in August is unusual, as egg traps typically lose attractiveness once the in-season crop splits and becomes highly attractive to ovipositing females.
 - Due to difficulties with sanitation in the winter of 2016-2017, large numbers of mummies were present in many orchards. It is likely that egg traps are less attractive to the early flights of female moths when significant "mummy-competition" is present, particularly when mummies have been previously infested by NOW.
- Kairomone trap activity largely coincided with egg trap activity at the Glenn county site and provided more resolution (i.e., greater numbers/trap) than egg traps in 2017 (Figure 4).

Extension Efforts

- Pest monitoring and degree-day data, along with University of California best practices guidelines for Integrated Pest Management (IPM) approaches targeting relevant pests was disseminated season-long throughout the Sacramento Valley.
 - Weekly website posts at www.sacvalleyorchards.com and email updates (March through October)
 - Monthly IPM breakfast meetings (February through November)
 - Field workshop (May) co-sponsored by the Almond Board
 - Post-harvest IPM meeting (November)
 - Personal contacts with growers, PCAs, CCAs throughout the season
 - Social media posts