

Navel Orangeworm Pilot Project 2022 – Weekly Report

Weeks Ending – February 4, February 11, and February 18, 2022

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I. Project Updates

Navel Orangeworm Sterile Insect Technique

The Navel Orangeworm (NOW) Pilot Project (Project) utilizes NOW sterile insect technique (SIT) moths obtained from the United States Department of Agriculture (USDA) Phoenix, Arizona Rearing Facility. Quality Control (QC) tests are performed on every shipment of NOW SIT moths used for aerial releases.

The Navel Orangeworm Action Committee (NOWAC) met to discuss plans for the 2022 aerial NOW SIT season on Thursday, February 24, 2022. Aerial releases for 2022 are expected to begin on March 15, 2022, with one magazine of approximately 750,000 moths being released over Zones 1 and 3. A second magazine of approximately 750,000 moths will be incorporated into the SIT program and will be released over Zones 5 and 7, but the start date for the second magazine has not been decided yet.

Navel Orangeworm Trapping

The NOW trapping program began May 5, 2020, with an Area Wide Project site that included a total of four orchards in Fresno County: two 640-acre almond orchards and two 640-acre pistachio orchards. On May 17, 2021, the Area Wide Project site expanded to include four additional orchards in Fresno County: one 640-acre almond orchard, one 640-acre pistachio orchard, one 160-acre almond orchard, and one 160-acre pistachio orchard. All eight orchards, designated as Zones 1 through 8, continue to be serviced on a weekly basis. Listed below are any circumstances which prevented regular servicing in 2022:

- Week of January 7: No traps were serviced due to severe weather on site
- Week of January 14: No traps were serviced in Zones 1 – 4 due to staffing issues

II. Project Design

The NOW Area Wide Project site includes eight orchards located in Fresno County, identified as Zones 1 through 8. Listed below is information related to each orchard:

| Zone # | Crop Type | Acres | Aerial SIT Release/Non-Release | Date Added to Area Wide Project |
|--------|-----------|-------|--------------------------------|---------------------------------|
| Zone 1 | Pistachio | 640 | Release | May 5, 2020 |
| Zone 2 | Pistachio | 640 | Non-Release | May 5, 2020 |
| Zone 3 | Almond | 640 | Release | May 5, 2020 |
| Zone 4 | Almond | 640 | Non-Release | May 5, 2020 |
| Zone 5 | Pistachio | 640 | Release | May 17, 2021 |
| Zone 6 | Pistachio | 160 | Non-Release | May 17, 2021 |
| Zone 7 | Almond | 640 | Release | May 17, 2021 |
| Zone 8 | Almond | 160 | Non-Release | May 17, 2021 |

Each zone has a trap site ratio of approximately 1 trap site per 18 acres for a total of 36 trap sites for each 640-acre zone and 9 trap sites for each 160-acre zone. Trap sites include two traps: one trap baited with NOW pheromone/PPO lures and one trap baited with pistachio meal. All traps are serviced on a weekly basis. Servicing includes collecting trap bottoms and replacing with new trap bottoms. Bait/lure changes occur once a month, and trap tops are replaced as needed. Counts are performed on each trap collected to determine number of wild versus sterile captures and male versus female captures.

III. Trap Results for Weeks Ending on February 4, February 11, and February 18, 2022

Zone 1

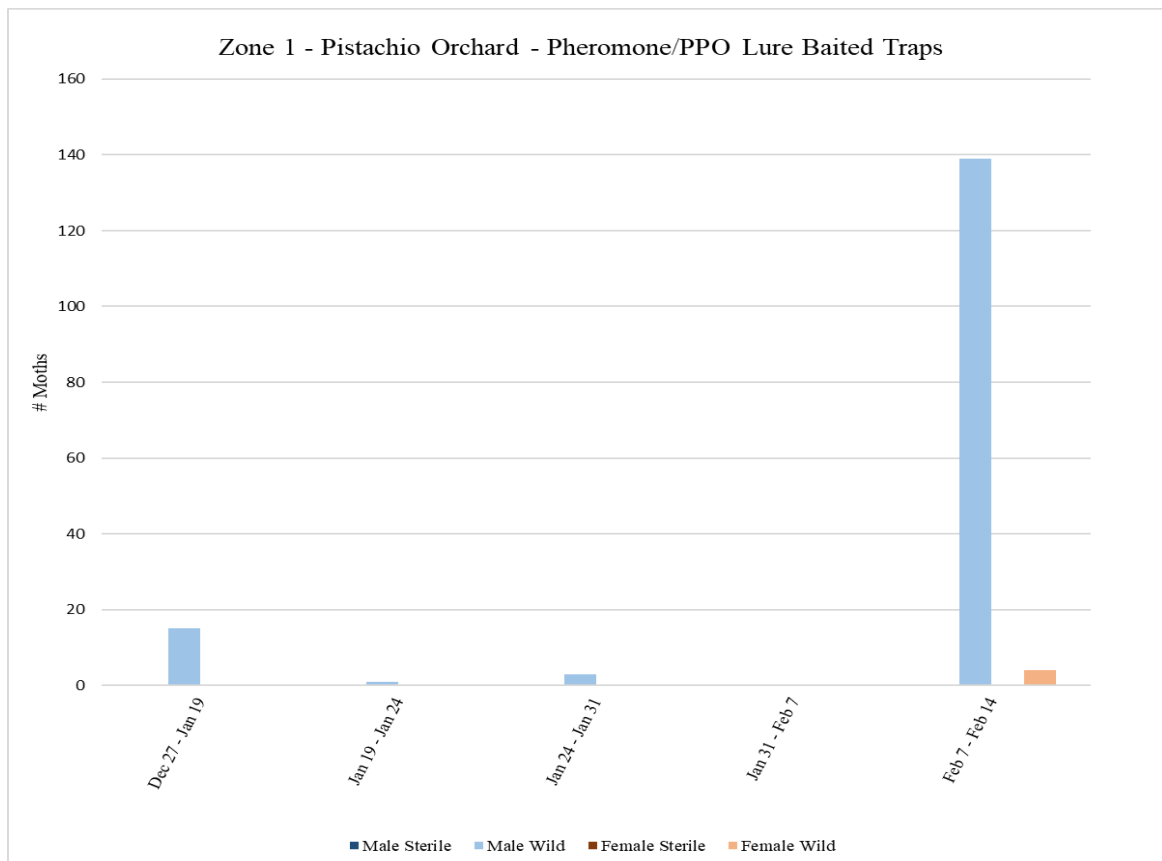
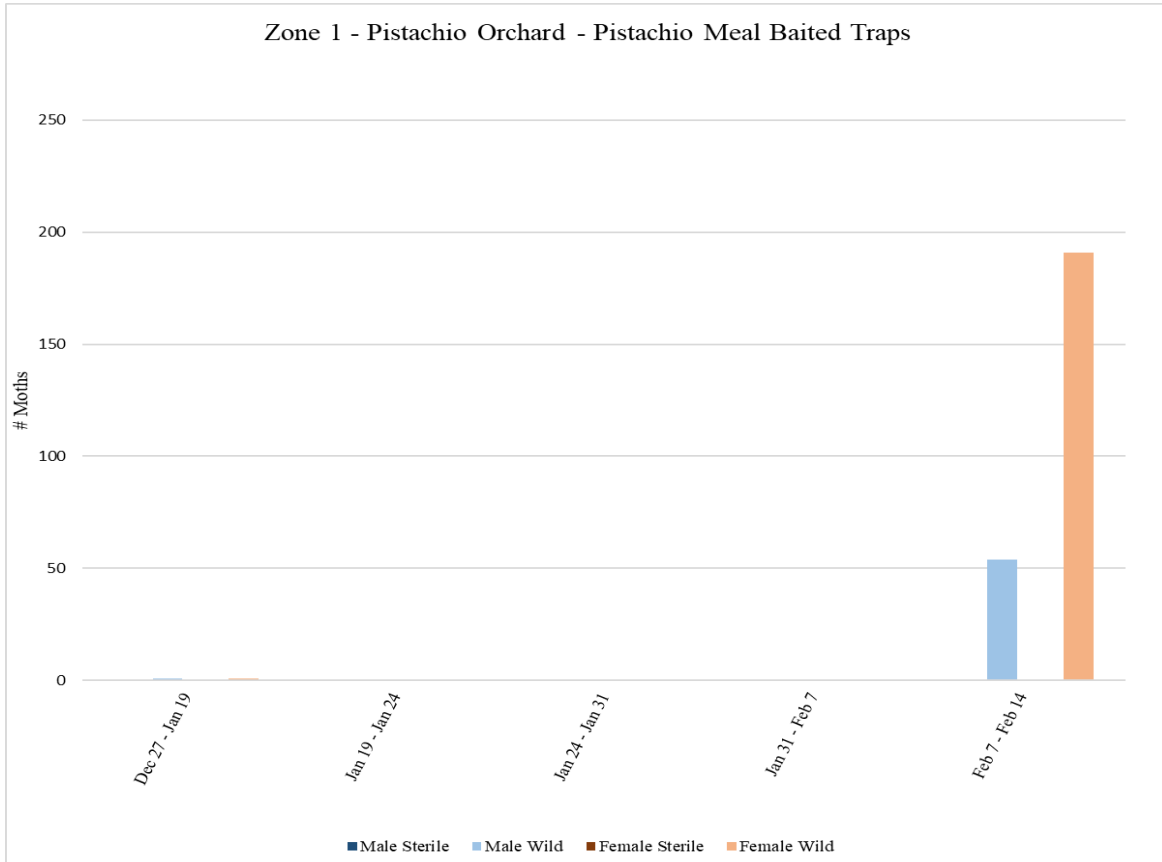
Zone 1 is a pistachio orchard where aerial NOW SIT releases will be conducted. A total of **72** traps were collected from Zone 1 on Monday, January 31, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 1 on Monday, February 7, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 1 on Monday, February 14, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

| Zone 1 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 27 - Jan 19 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| Jan 19 - Jan 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 24 - Jan 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 31 - Feb 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 7 - Feb 14 | 0 | 0 | 54 | 54 | 0 | 191 | 191 |
| ¹ 18 of the 36 traps in field since Dec 20; 18 of the 36 traps in field since Dec 27 | | | | | | | |

| Zone 1 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|------------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 27 - Jan 19 | 0 | 0 | 15 | 15 | 0 | 0 | 0 |
| Jan 19 - Jan 24 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Jan 24 - Jan 31 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| Jan 31 - Feb 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 7 - Feb 14 | 0 | 0 | 139 | 139 | 0 | 4 | 4 |
| ¹ 18 of the 36 traps in field since Dec 20; 18 of the 36 traps in field since Dec 27 | | | | | | | |



Zone 2

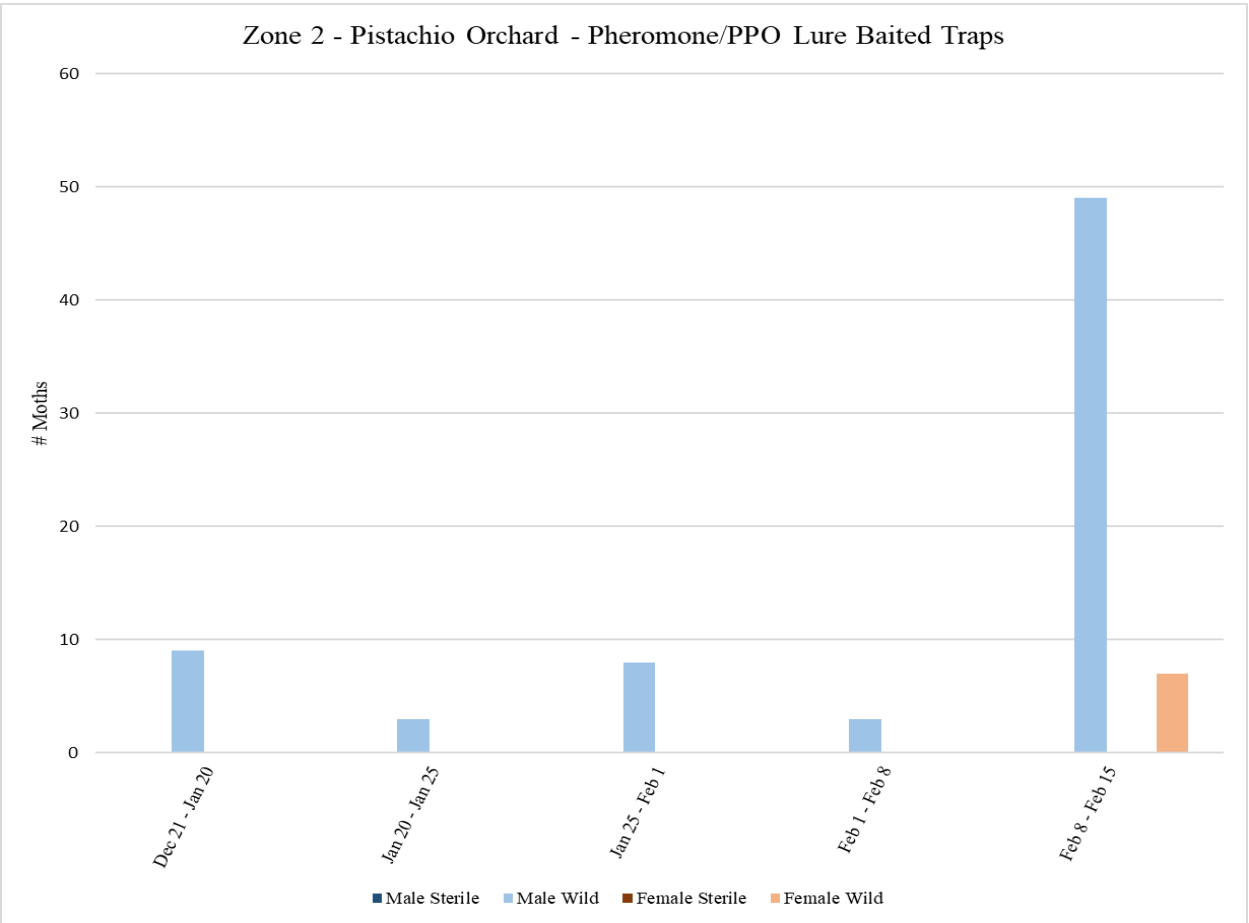
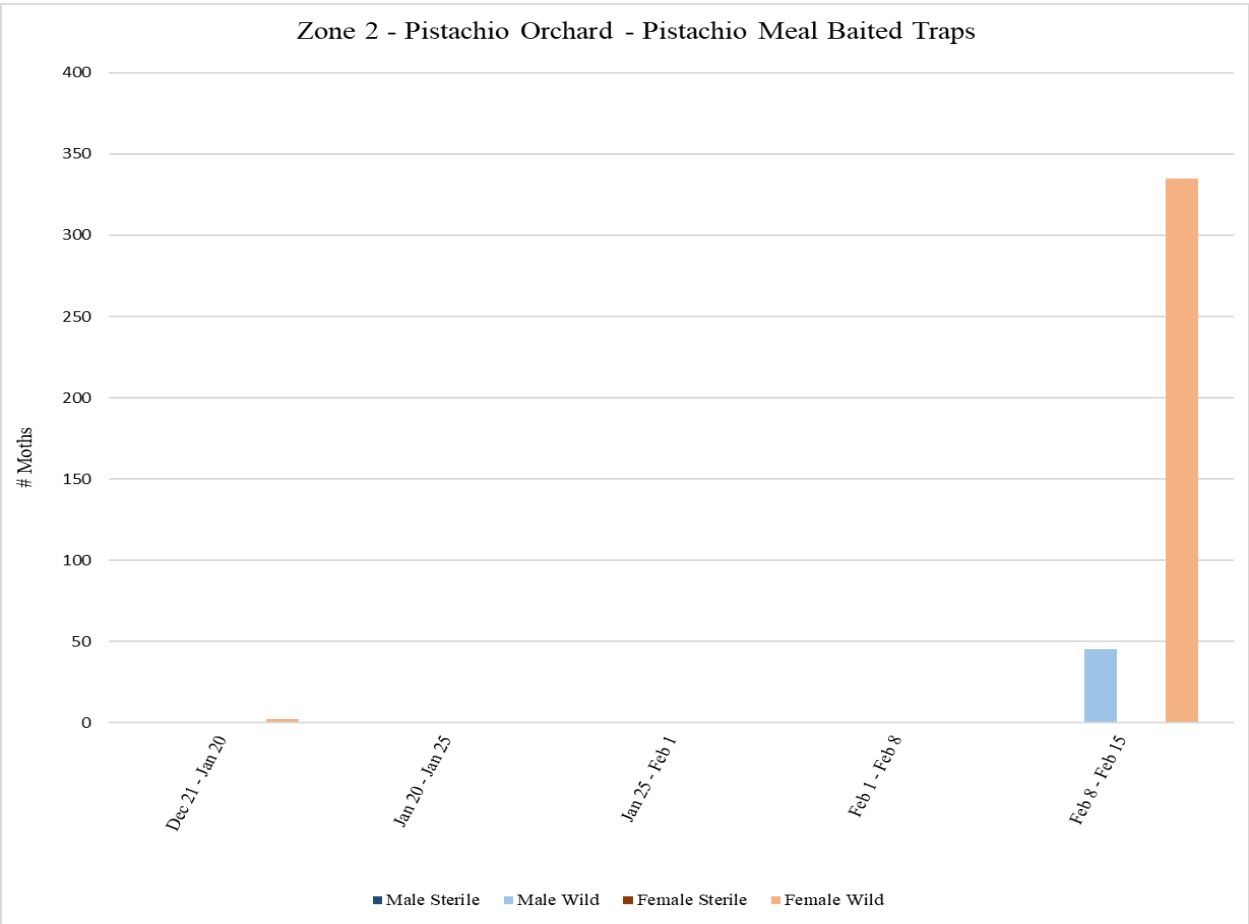
Zone 2 is a pistachio orchard where aerial NOW SIT releases will not be conducted. A total of **72** traps were collected from Zone 2 on Tuesday, February 1, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 2 on Tuesday, February 8, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 2 on Tuesday, February 15, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

| Zone 2 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 21 - Jan 20 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Jan 20 - Jan 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 25 - Feb 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 1 - Feb 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 8 - Feb 15 | 0 | 0 | 45 | 45 | 0 | 335 | 335 |
| | | | | | | | |
| ¹ Traps in field since 12/21 | | | | | | | |

| Zone 2 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 21 - Jan 20 | 0 | 0 | 9 | 9 | 0 | 0 | 0 |
| Jan 20 - Jan 25 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| Jan 25 - Feb 1 | 0 | 0 | 8 | 8 | 0 | 0 | 0 |
| Feb 1 - Feb 8 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| Feb 8 - Feb 15 | 0 | 0 | 49 | 49 | 0 | 7 | 7 |
| | | | | | | | |
| ¹ Traps in field since 12/21 | | | | | | | |



Zone 3

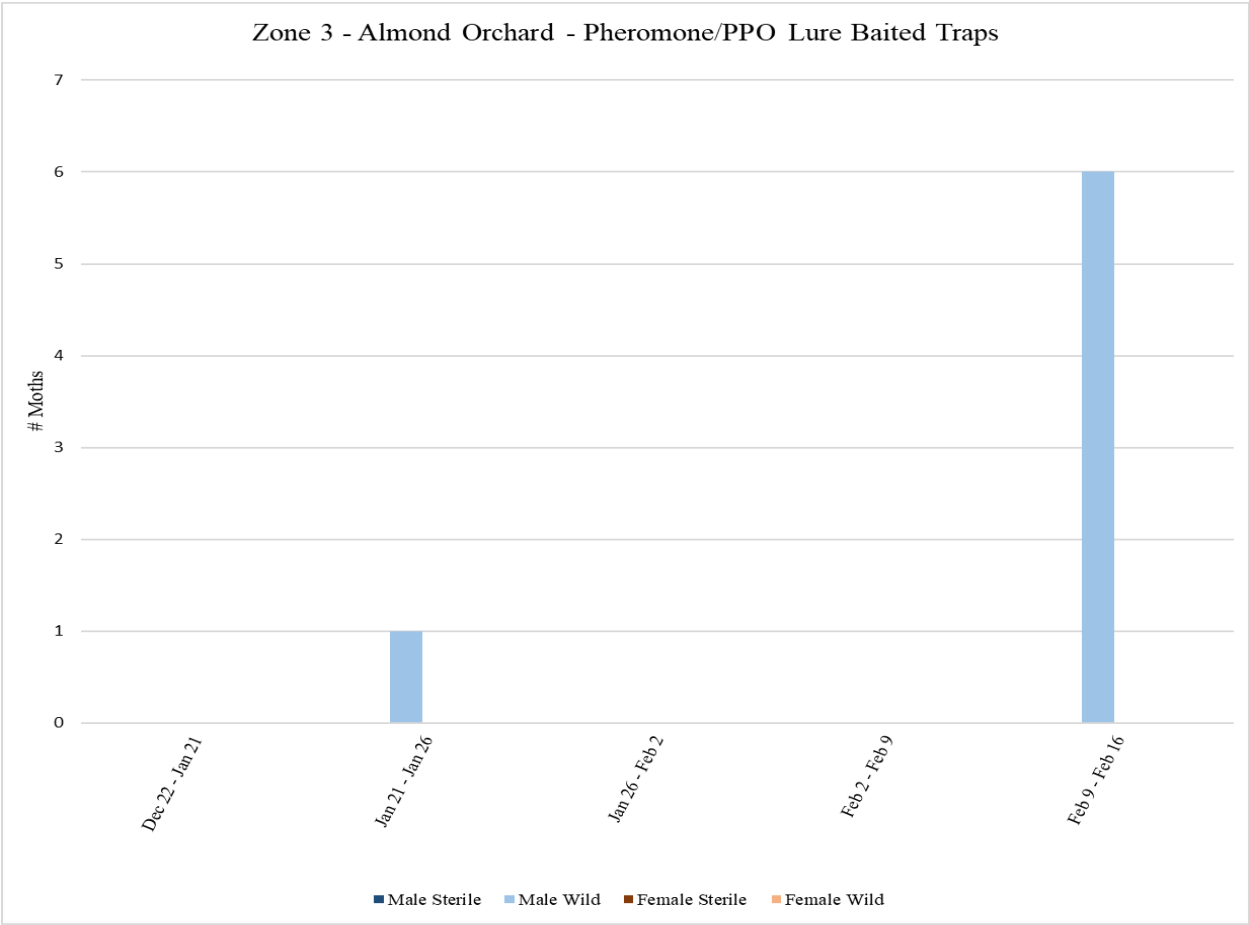
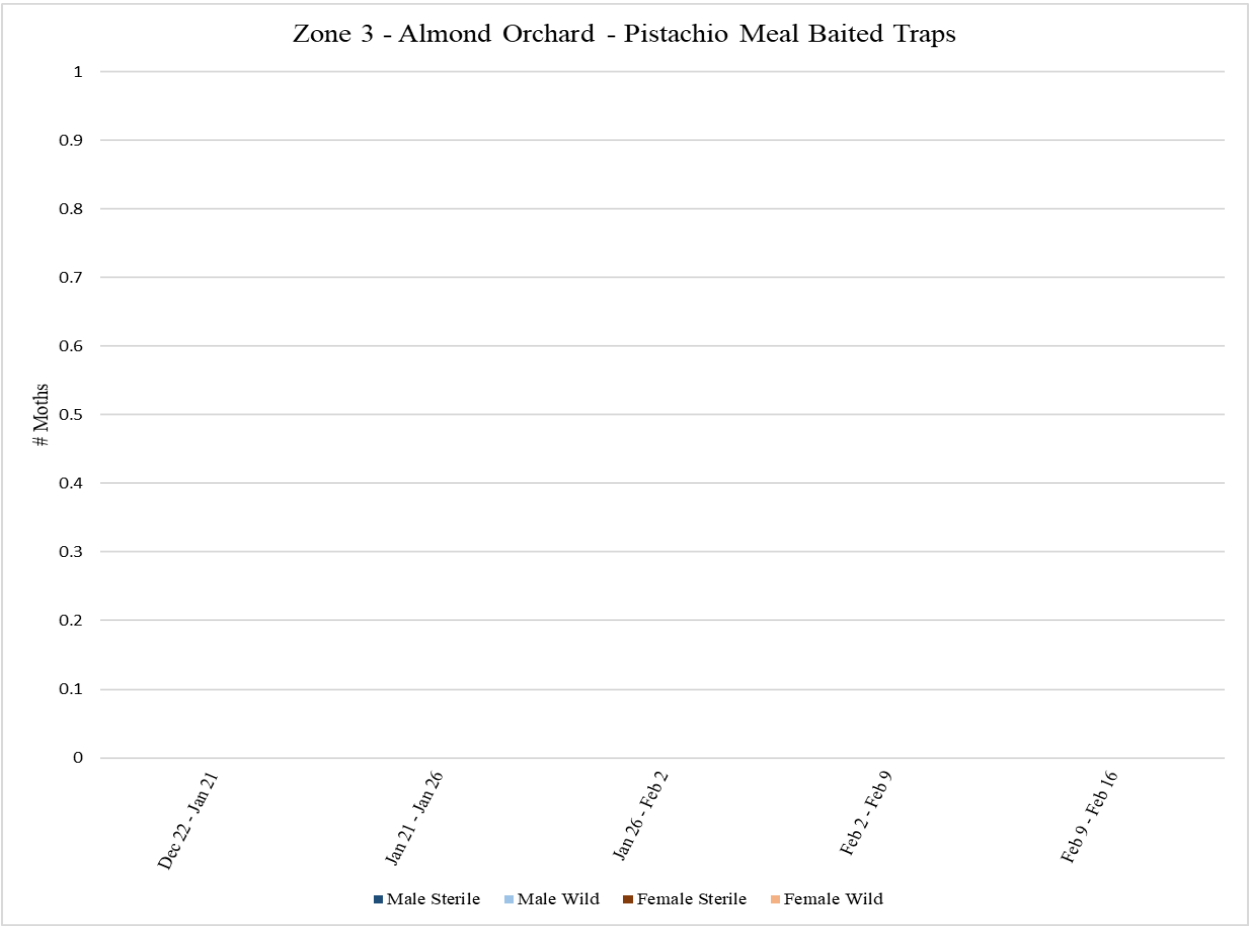
Zone 3 is an almond orchard where aerial NOW SIT releases will be conducted. A total of **70** traps were collected from Zone 3 on Wednesday, February 2, with **34** pistachio meal baited traps and **36** pheromone/PPO lure traps. Two meal-baited traps were missing.

A total of **72** traps were collected from Zone 3 on Wednesday, February 9, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 3 on Wednesday, February 16, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

| Zone 3 - Almond | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 22 - Jan 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 21 - Jan 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 26 - Feb 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 2 - Feb 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 9 - Feb 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/22 | | | | | | | |

| Zone 3 - Almond | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 22 - Jan 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 21 - Jan 26 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Jan 26 - Feb 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 2 - Feb 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 9 - Feb 16 | 0 | 0 | 6 | 6 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/22 | | | | | | | |



Zone 4

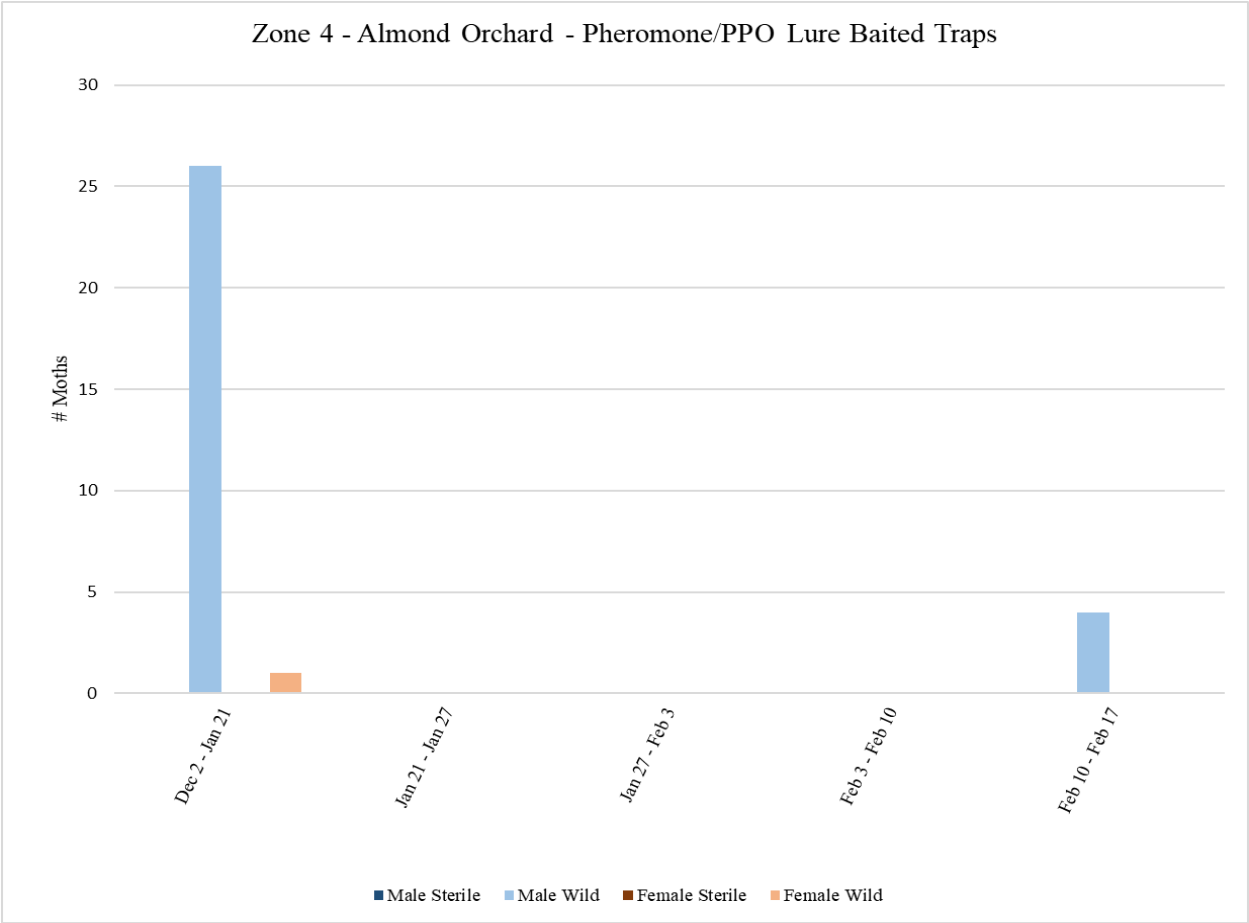
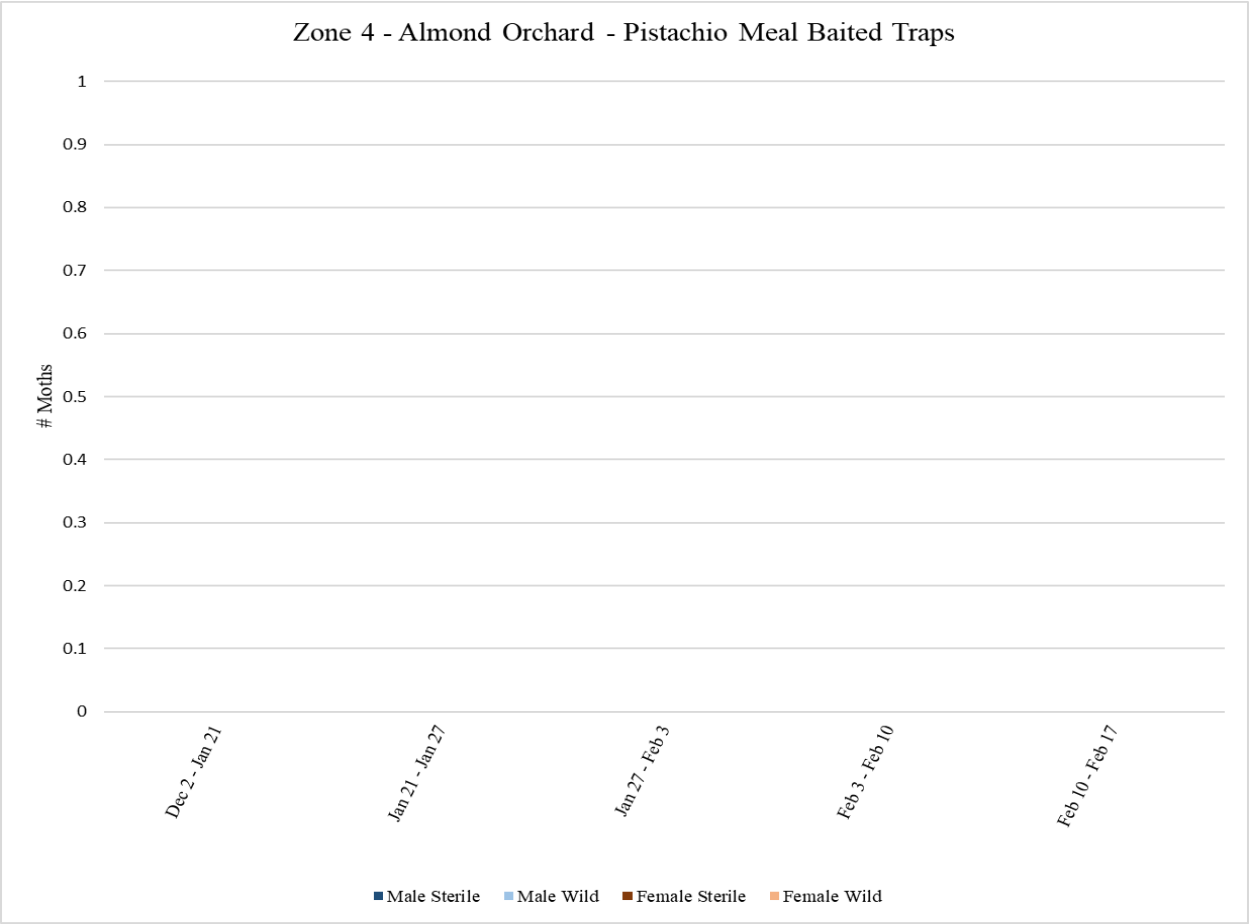
Zone 4 is an almond orchard where aerial NOW SIT releases will not be conducted. A total of **72** traps were collected from Zone 4 on Thursday, February 3, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 4 on Thursday, February 10, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 4 on Thursday, February 17, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

| Zone 4 - Almond | | | | | | | |
|--|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 2 - Jan 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 21 - Jan 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 27 - Feb 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 3 - Feb 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 10 - Feb 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/2 | | | | | | | |

| Zone 4 - Almond | | | | | | | |
|--|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 2 - Jan 21 | 0 | 0 | 26 | 26 | 0 | 1 | 1 |
| Jan 21 - Jan 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 27 - Feb 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 3 - Feb 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 10 - Feb 17 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/2 | | | | | | | |



Zone 5

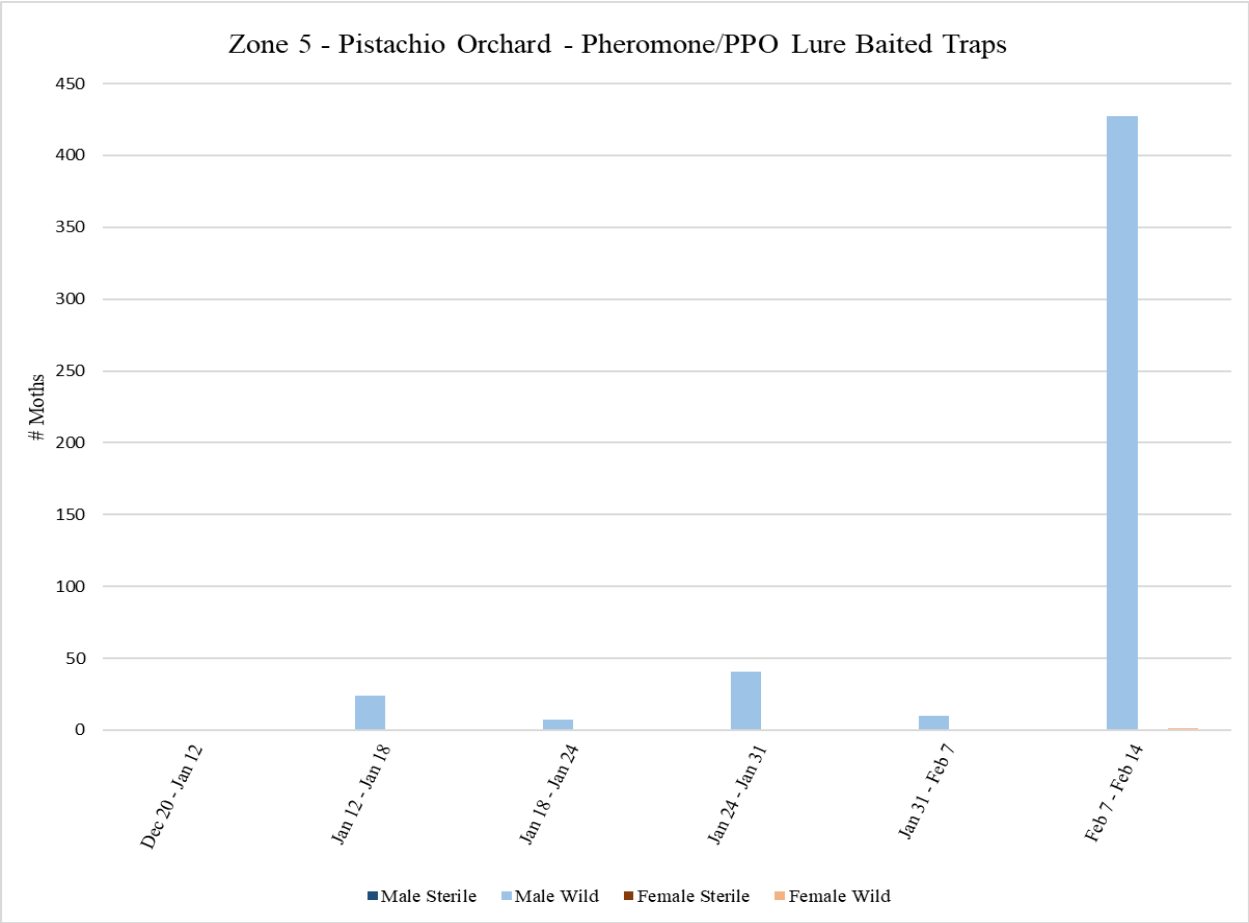
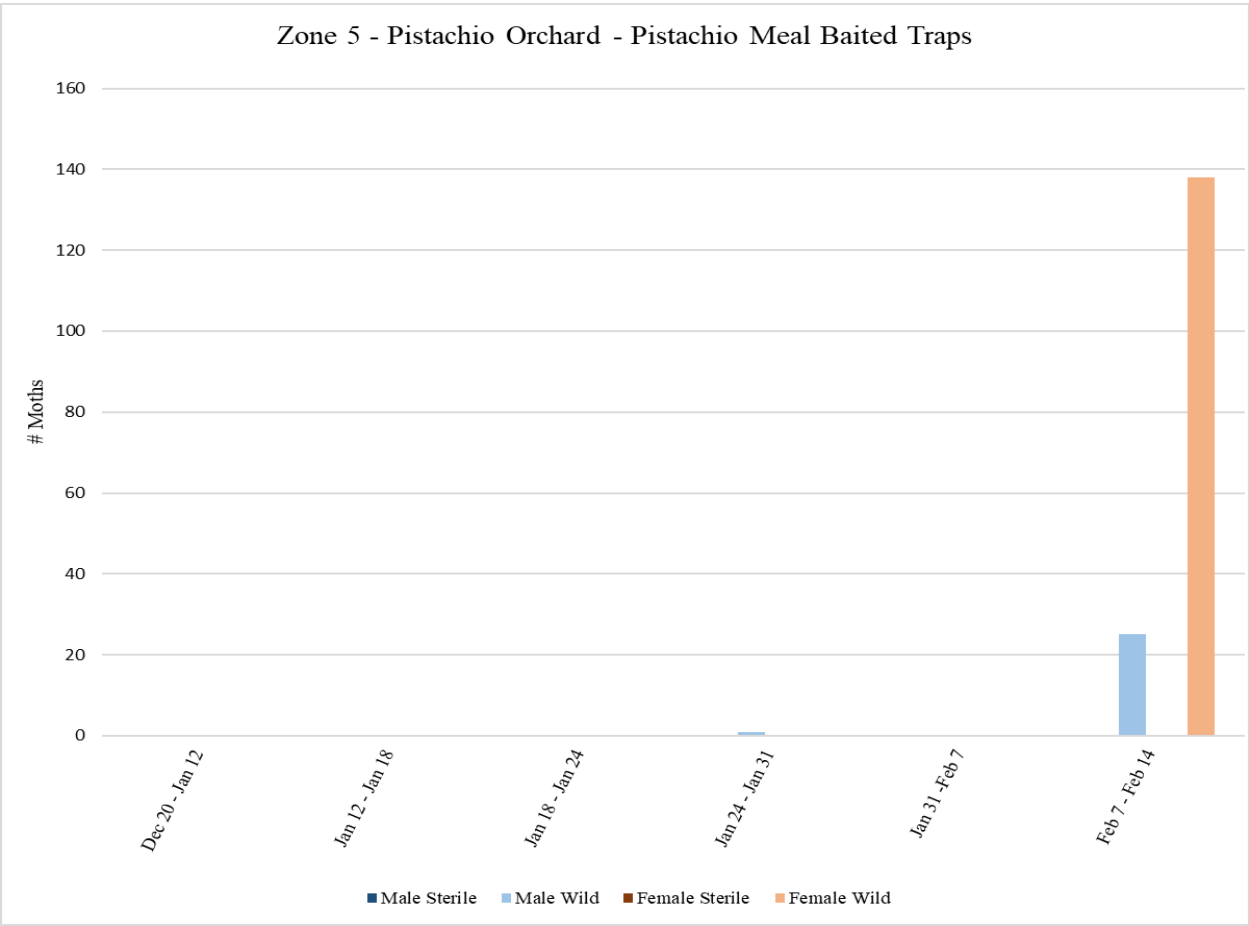
Zone 5 is a pistachio orchard where aerial NOW SIT releases will be conducted. A total of **72** traps were collected from Zone 5 on Monday, January 31, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 5 on Monday, February 7, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 5 on Monday, February 14, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

| Zone 5 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 20 - Jan 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 12 - Jan 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 18 - Jan 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 24 - Jan 31 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Jan 31 -Feb 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 7 - Feb 14 | 0 | 0 | 25 | 25 | 0 | 138 | 138 |
| | | | | | | | |
| ¹ Traps in field since 12/20 | | | | | | | |

| Zone 5 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|------------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 20 - Jan 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 12 - Jan 18 | 0 | 0 | 24 | 24 | 0 | 0 | 0 |
| Jan 18 - Jan 24 | 0 | 0 | 7 | 7 | 0 | 0 | 0 |
| Jan 24 - Jan 31 | 0 | 0 | 41 | 41 | 0 | 0 | 0 |
| Jan 31 - Feb 7 | 0 | 0 | 10 | 10 | 0 | 0 | 0 |
| Feb 7 - Feb 14 | 0 | 0 | 427 | 427 | 0 | 1 | 1 |
| | | | | | | | |
| ¹ Traps in field since 12/20 | | | | | | | |



Zone 6

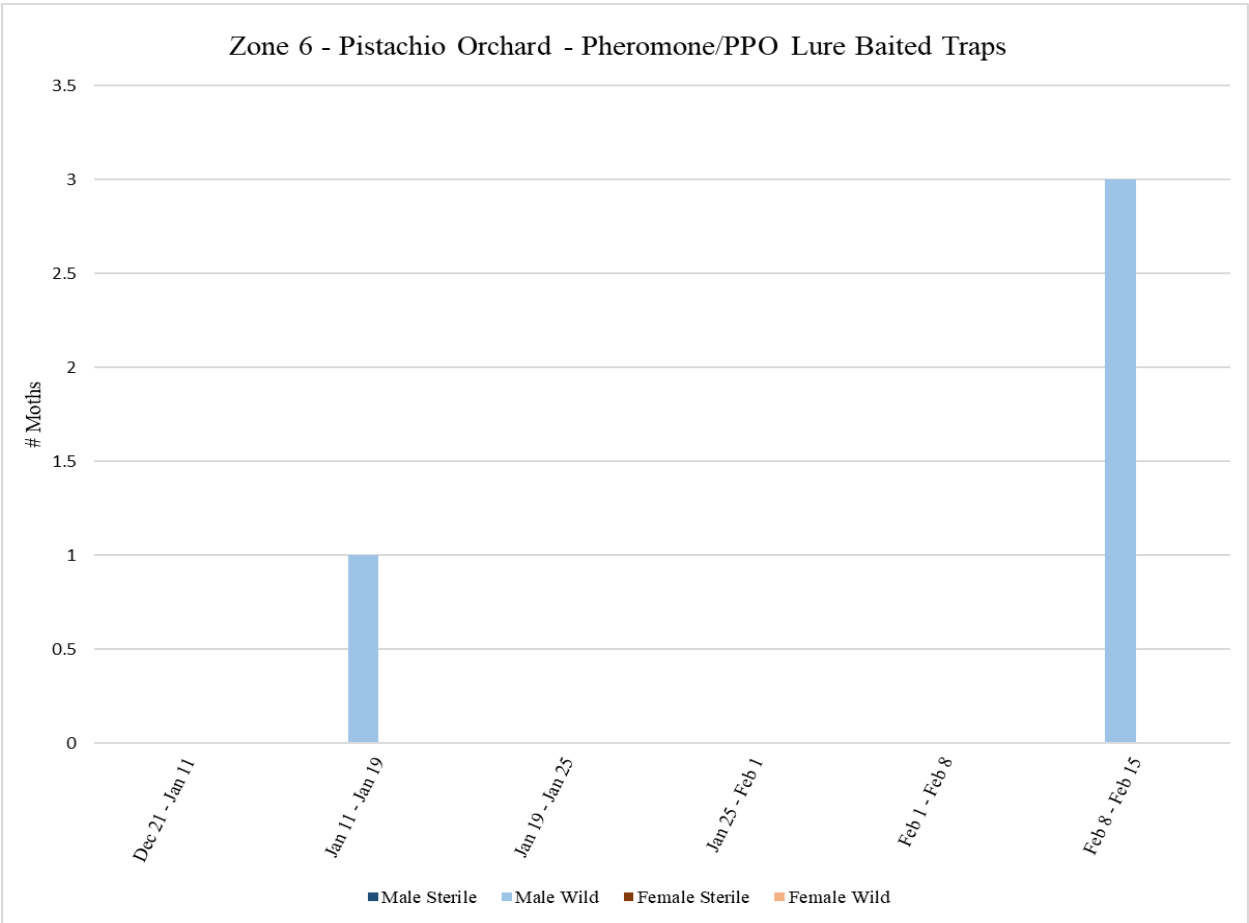
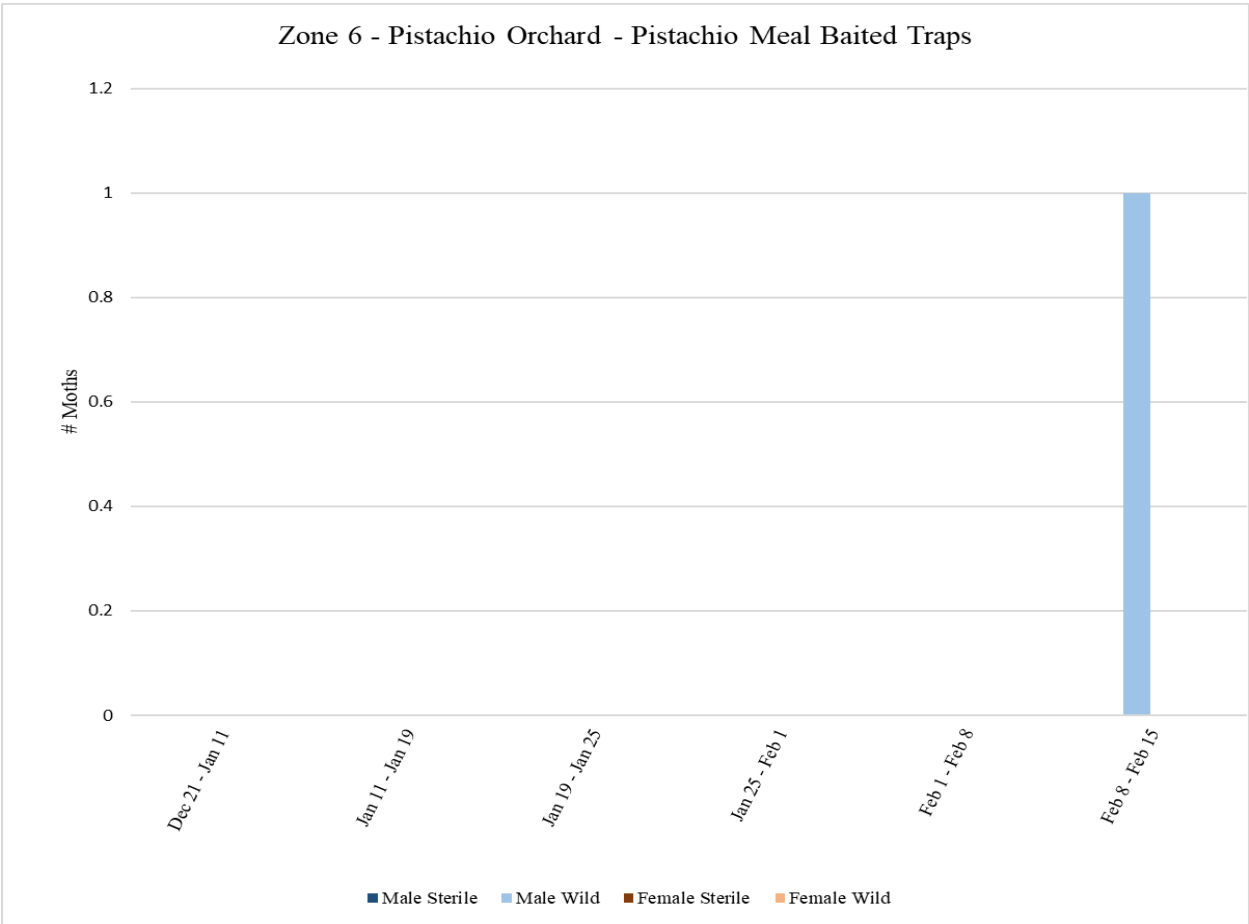
Zone 6 is a pistachio orchard where aerial NOW SIT releases will not be conducted. A total of **18** traps were collected from Zone 6 on Tuesday, February 1, with **9** pistachio meal baited traps and **9** pheromone/PPO lure traps.

A total of **18** traps were collected from Zone 6 on Tuesday, February 8, with **9** pistachio meal baited traps and **9** pheromone/PPO lure traps.

A total of **18** traps were collected from Zone 6 on Tuesday, February 15, with **9** pistachio meal baited traps and **9** pheromone/PPO lure traps.

| Zone 6 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 21 - Jan 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 11 - Jan 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 19 - Jan 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 25 - Feb 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 1 - Feb 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 8 - Feb 15 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/21 | | | | | | | |

| Zone 6 - Pistachio | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 21 - Jan 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 11 - Jan 19 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Jan 19 - Jan 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 25 - Feb 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 1 - Feb 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 8 - Feb 15 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/21 | | | | | | | |



Zone 7

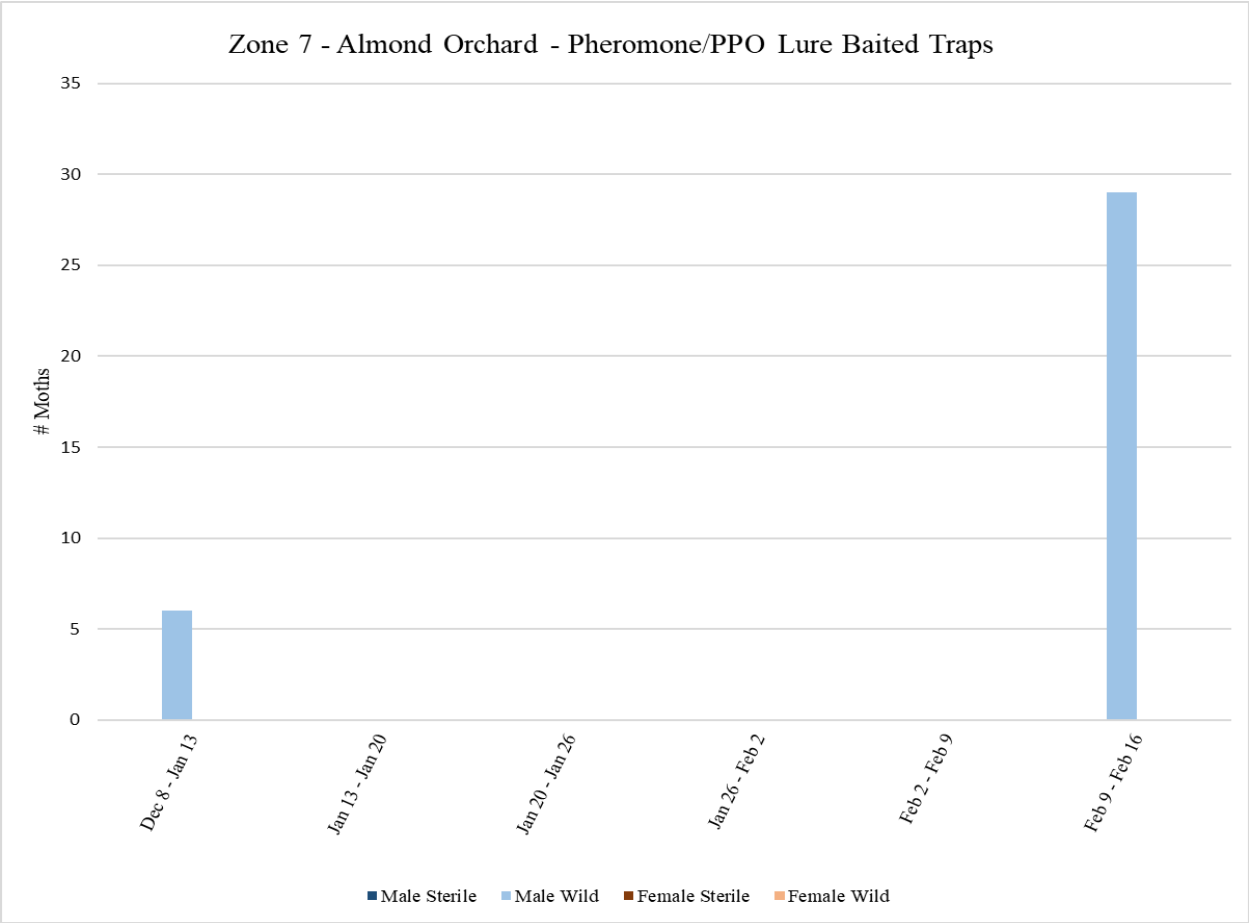
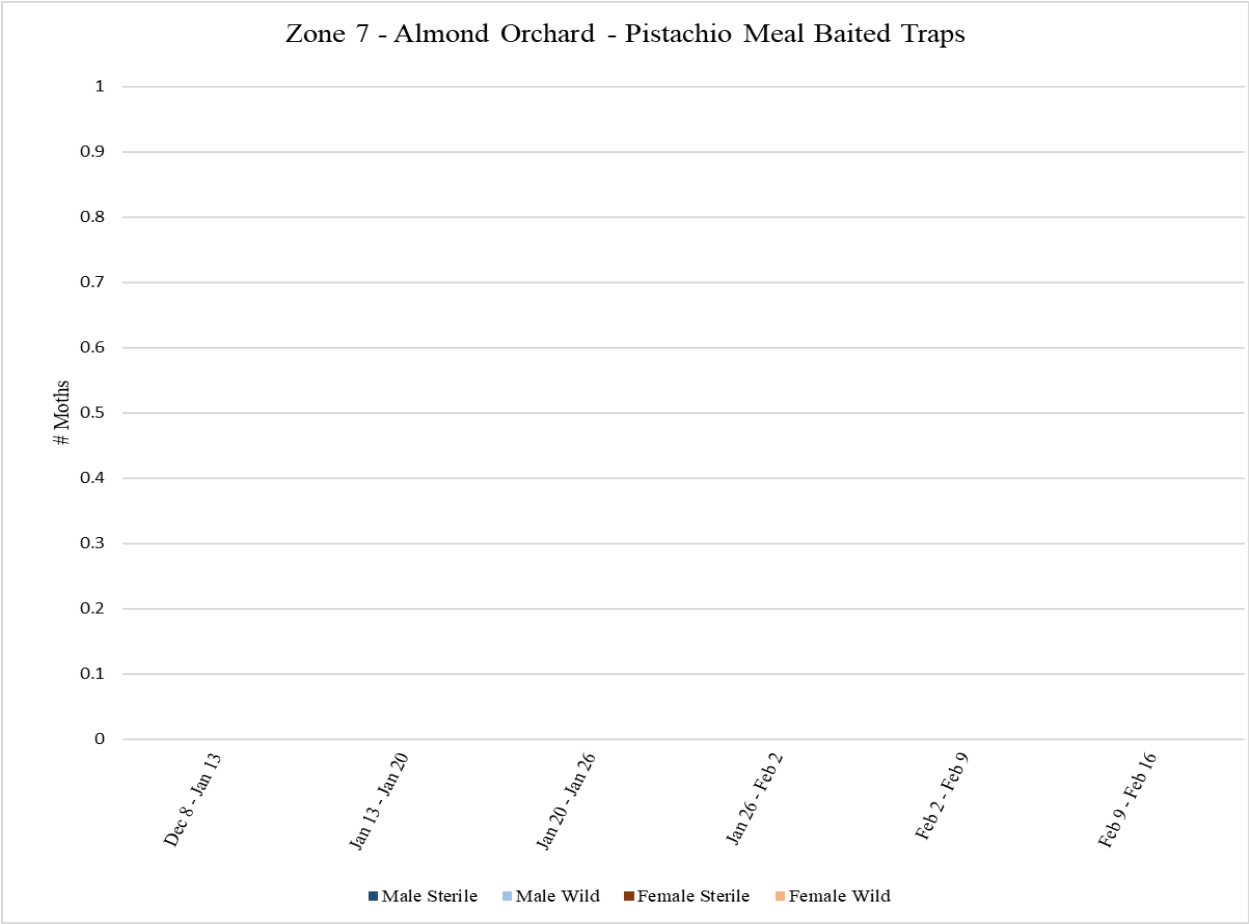
Zone 7 is an almond orchard where aerial NOW SIT releases will be conducted. A total of **72** traps were collected from Zone 7 on Wednesday, February 2, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 7 on Wednesday, February 9, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

A total of **72** traps were collected from Zone 7 on Wednesday, February 16, with **36** pistachio meal baited traps and **36** pheromone/PPO lure traps.

| Zone 7 - Almond | | | | | | | |
|--|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 8 - Jan 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 13 - Jan 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 20 - Jan 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 26 - Feb 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 2 - Feb 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 9 - Feb 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/8 | | | | | | | |

| Zone 7 - Almond | | | | | | | |
|--|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 8 - Jan 13 | 0 | 0 | 6 | 6 | 0 | 0 | 0 |
| Jan 13 - Jan 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 20 - Jan 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 26 - Feb 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 2 - Feb 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 9 - Feb 16 | 0 | 0 | 29 | 29 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/8 | | | | | | | |



Zone 8

Zone 8 is an almond orchard where aerial NOW SIT releases will not be conducted. A total of **18** traps were collected from Zone 8 on Tuesday, February 1, with **9** pistachio meal baited traps and **9** pheromone/PPO lure traps.

A total of **18** traps were collected from Zone 8 on Tuesday, February 8, with **9** pistachio meal baited traps and **9** pheromone/PPO lure traps.

A total of **18** traps were collected from Zone 8 on Tuesday, February 15, with **9** pistachio meal baited traps and **9** pheromone/PPO lure traps.

| Zone 8 - Almond | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pistachio Meal Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 21 - Jan 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 11 - Jan 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 19 - Jan 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 25 - Feb 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 1 - Feb 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 8 - Feb 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | |
| ¹ Traps in field since 12/21 | | | | | | | |

| Zone 8 - Almond | | | | | | | |
|---|----------------------------------|--------------|-----------|------------|----------------|-------------|--------------|
| Pheromone/PPO Lure Baited Traps | | | | | | | |
| Dates Traps in Field | # of Releases During Trap Period | Male Sterile | Male Wild | Male Total | Female Sterile | Female Wild | Female Total |
| ¹ Dec 21 - Jan 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 11 - Jan 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 19 - Jan 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jan 25 - Feb 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 1 - Feb 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feb 8 - Feb 15 | 0 | 0 | 2 | 2 | 0 | 1 | 1 |
| | | | | | | | |
| ¹ Traps in field since 12/21 | | | | | | | |

