

The Overwintering Habits of Spotted Wing *Drosophila* in the Pajaro Valley.

A senior thesis project by Katrina Hunter

Acknowledgements:

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Why is the study of overwintering in insects important?



Overwintering
Bird-Cherry Oat
Aphid



Bird-Cherry Oat
Aphid



Bird-Cherry Tree (*Prunus padus*)

Objectives

1. Determine at which **life stage** Spotted Wing Drosophila overwinters in the Pajaro Valley.
2. Determine **reproductive status** of Spotted Wing Drosophila wintering females through **ovary dissections** and **live traps**.
3. Determine **if** Spotted Wing Drosophila **locally** overwinters, its **abundance** over the months of January, February and March, and **where** Spotted Wing Drosophila is overwintering (in fields or alternative habitat).

Methods

- To answer the questions, where Spotted Wing Drosophila overwinters and what is their abundance over the winter months, wet traps were placed in raspberry ranch fields and adjacent to field in different vegetation types.

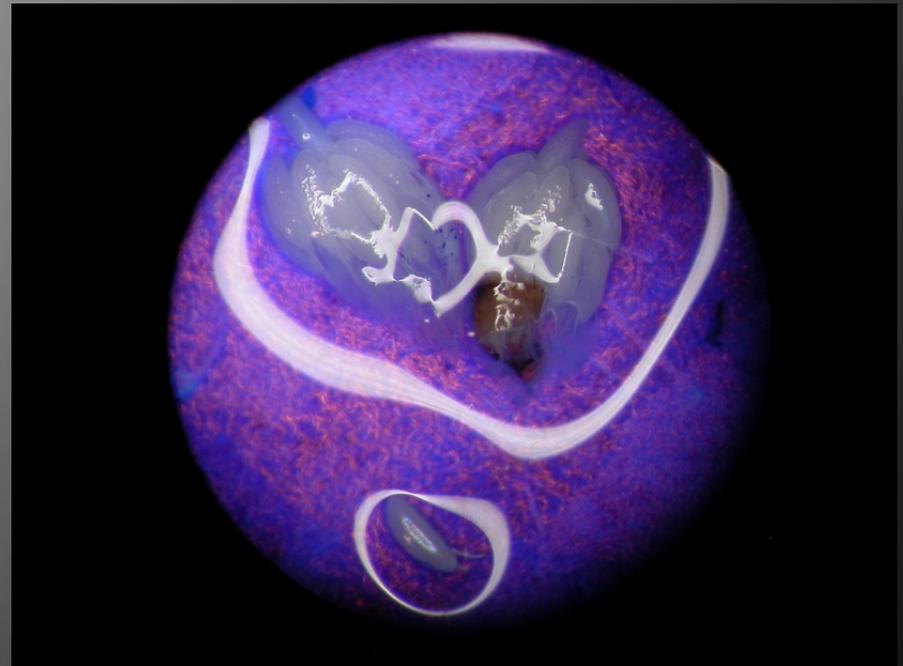


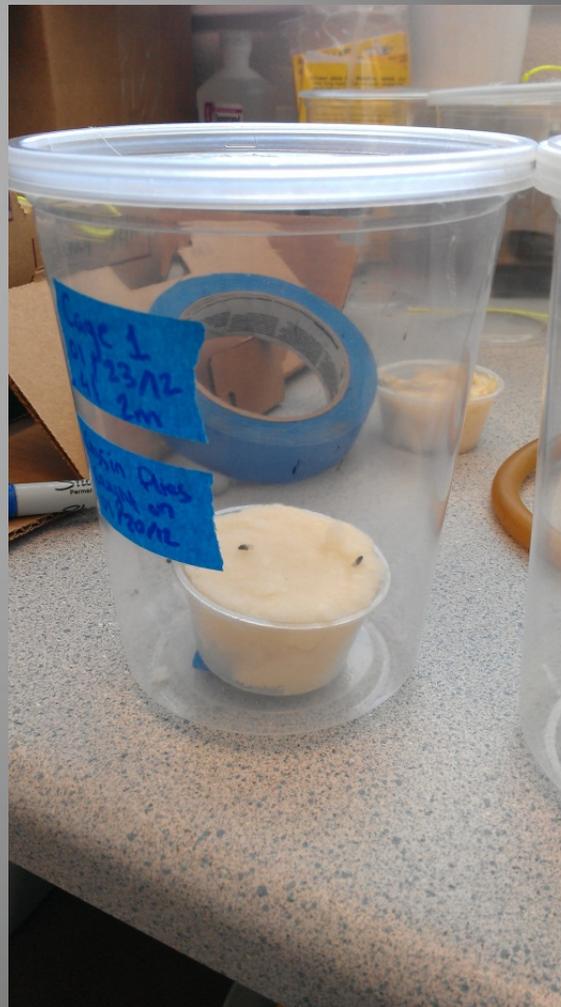
- To determine at which life stage Spotted Wing Drosophila overwinters, soil samples were taken to test for the presence of pupae, and catches of adults from wet traps were also useful in answering this question.



A partially dissected SWD female.

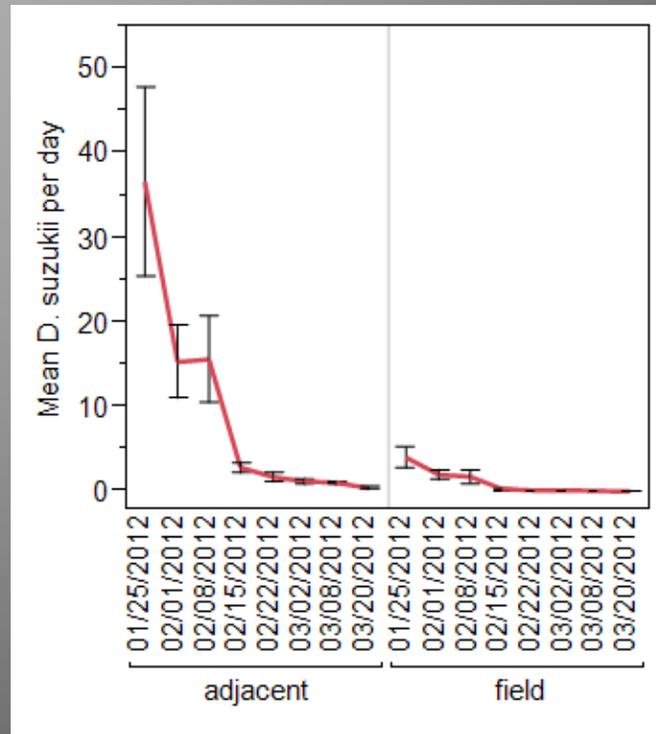
Ovaries and ovarioles of a dissected SWD female, below: a fully developed SWD egg with breathing filaments.



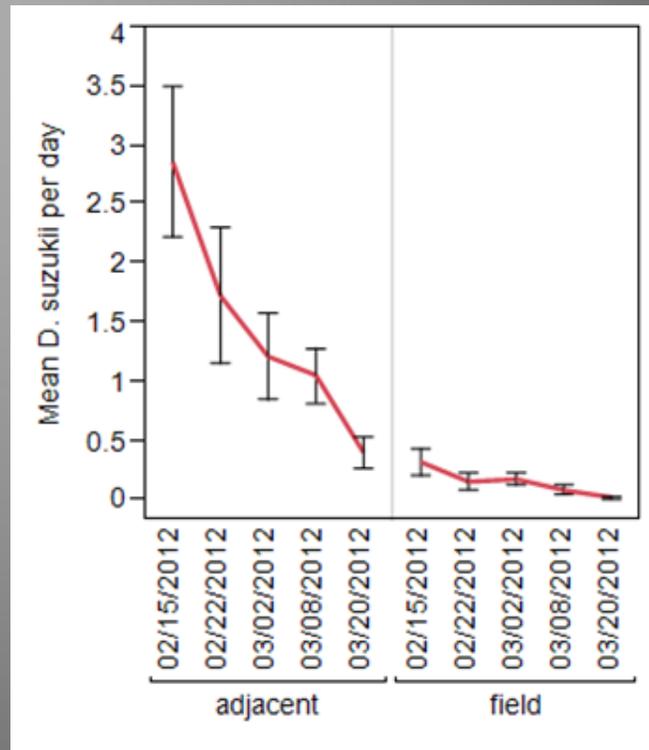


- Live traps made from potato, sugar, and yeast
- Placed on rearing media for 2 days to test for egg-laying to determine reproductive status.

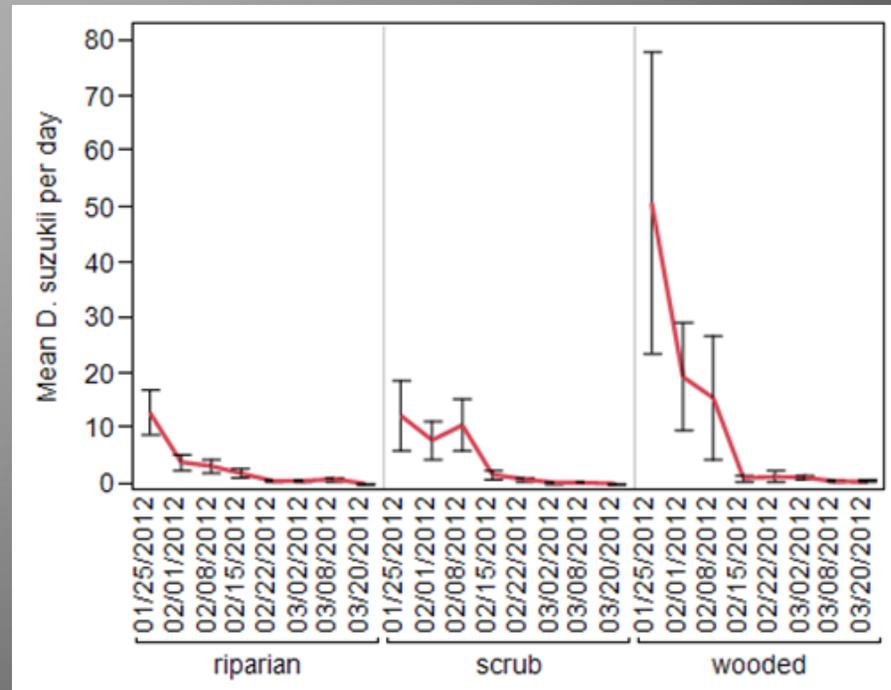
Where is spotted wing drosophila overwintering?

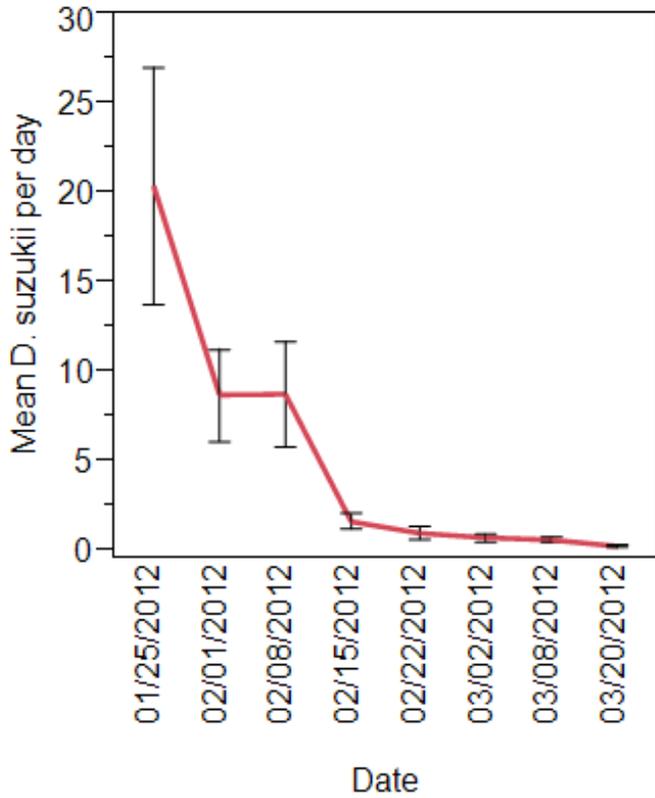


Where is spotted wing drosophila overwintering?



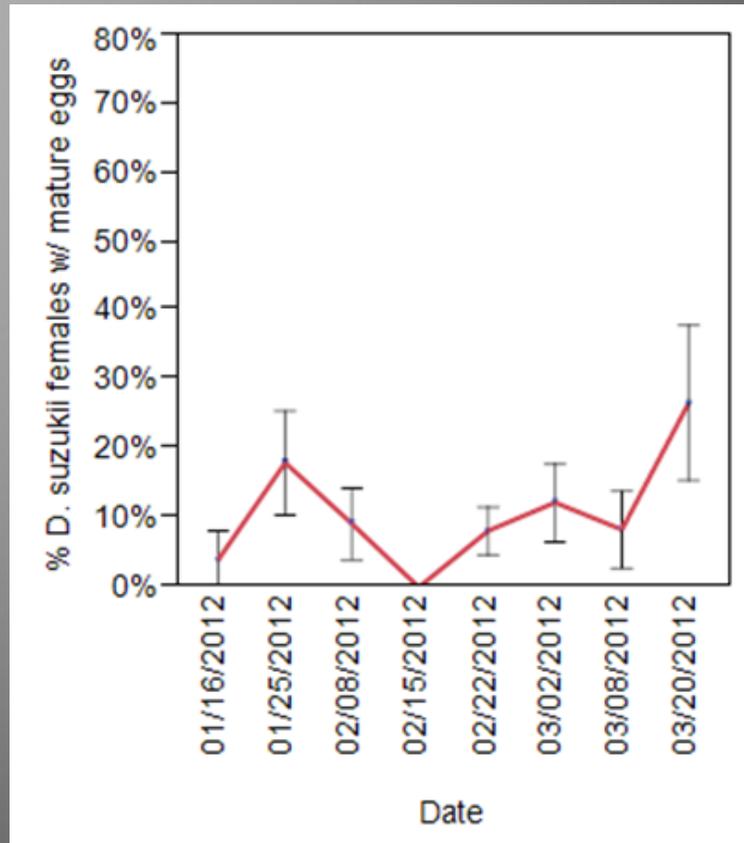
Where is Spotted Wing Drosophila overwintering?



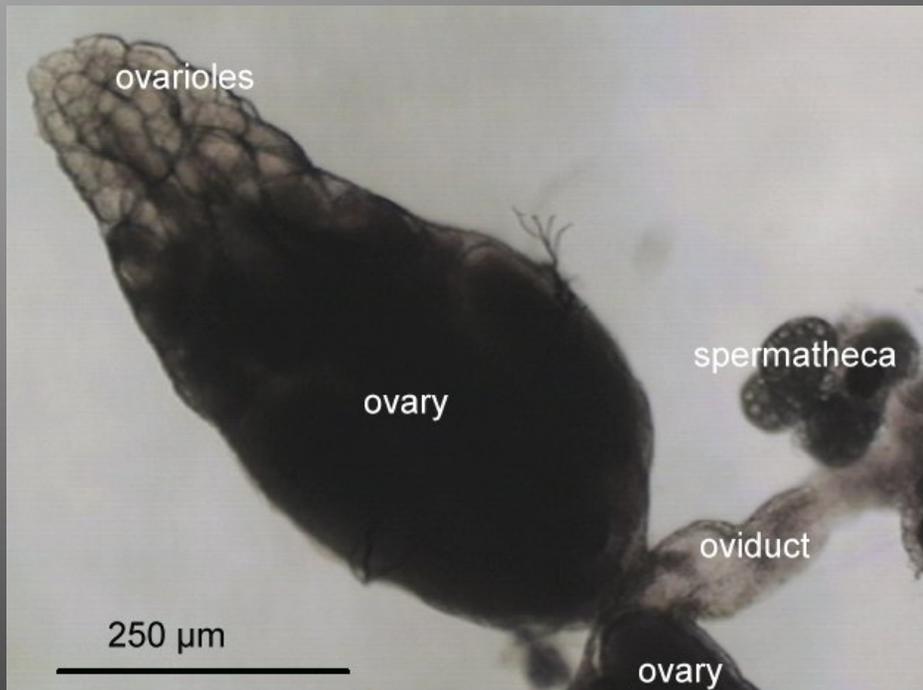
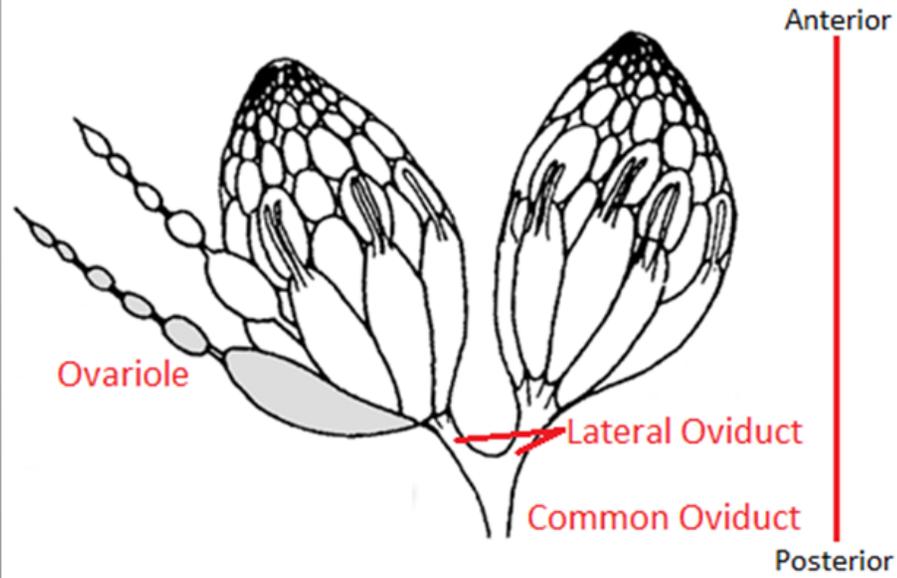


Spotted Wing Drosophila abundance over January, February, and March.

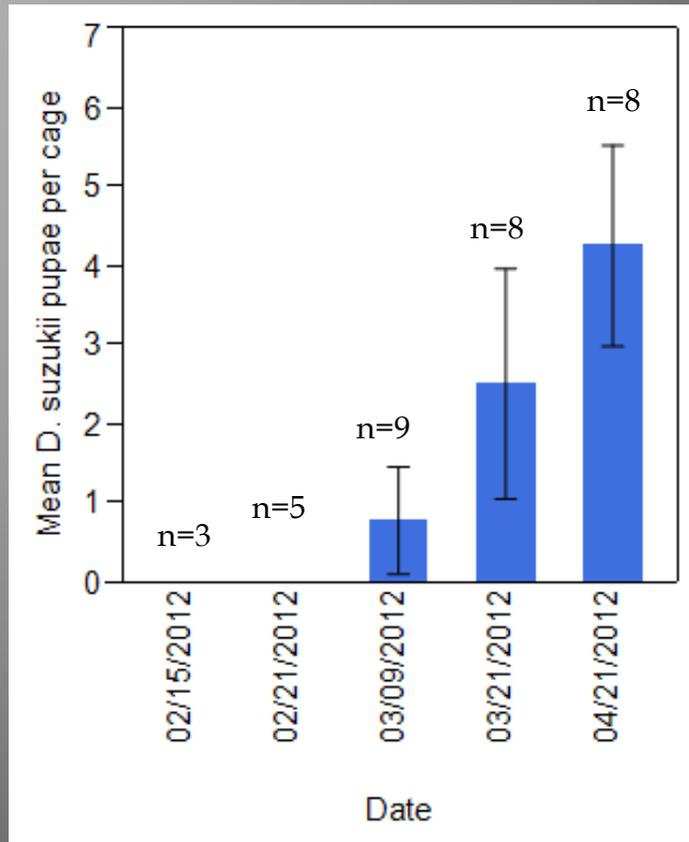
Ovary Dissections



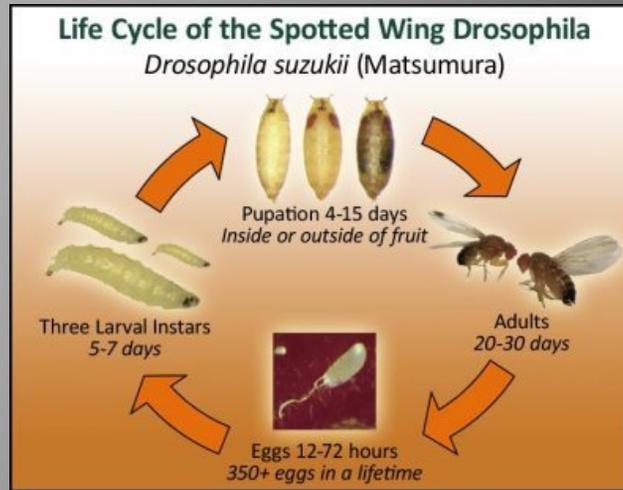
Drosophila Ovary



Egg-laying experiments

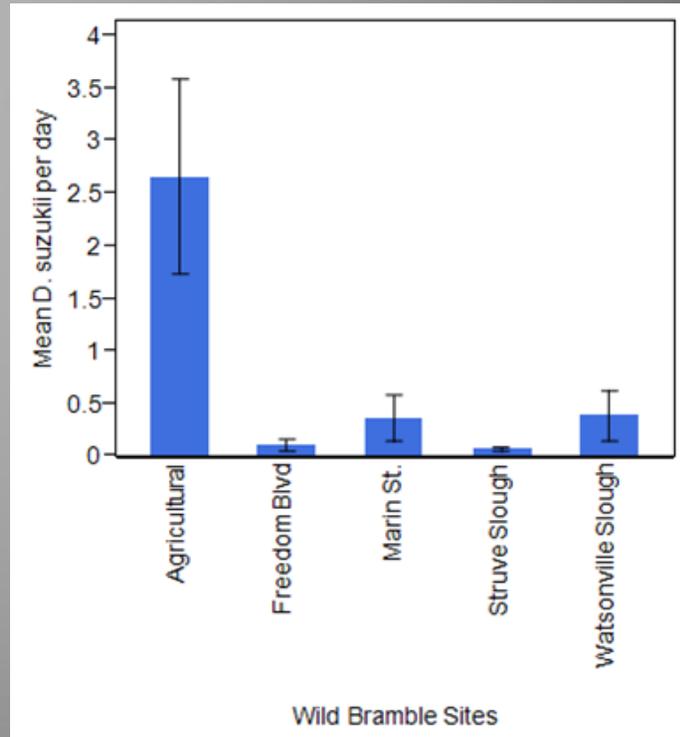


Discussion



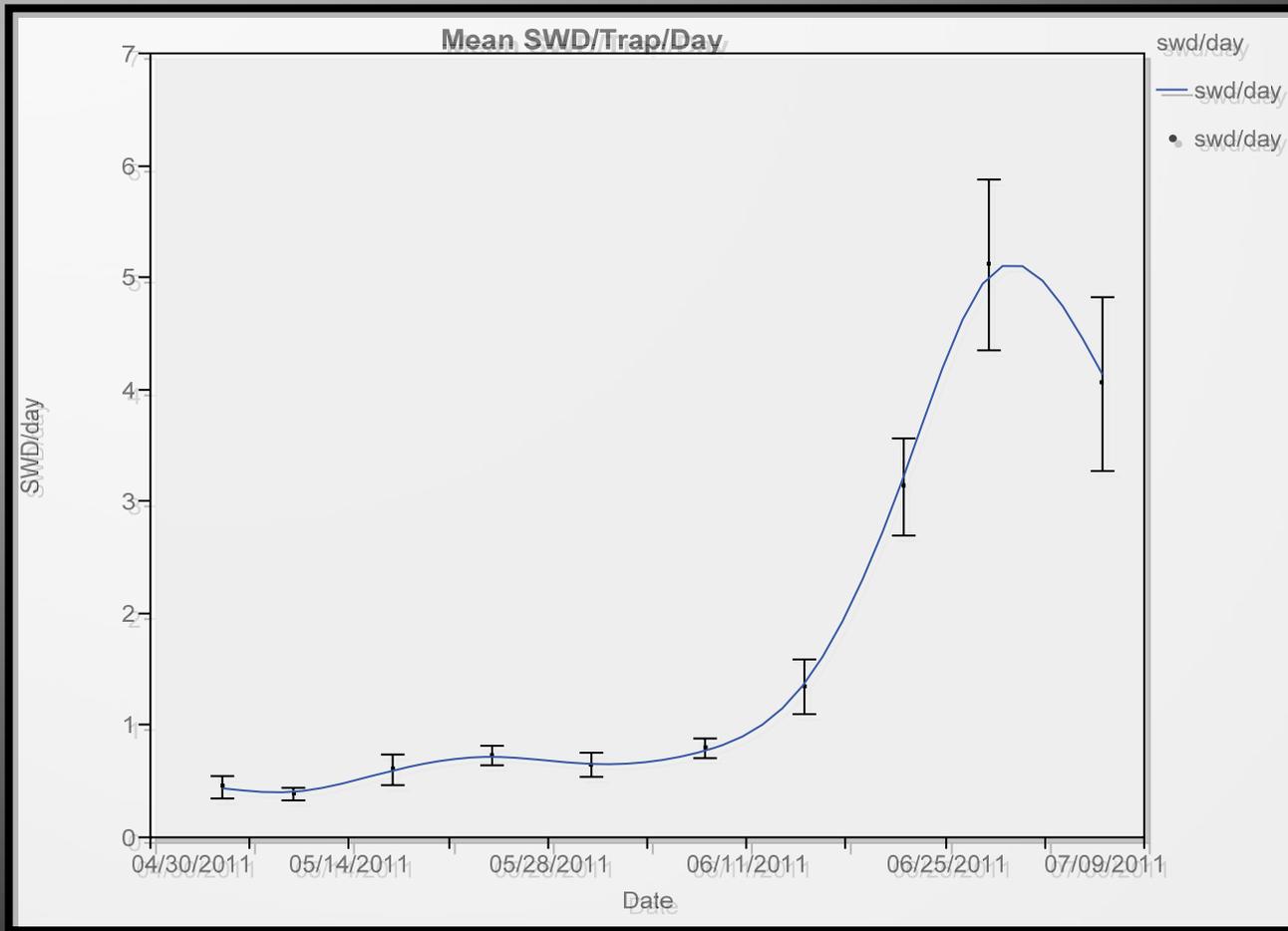
- Spotted wing drosophila overwinters in the adult stage, and not the pupal stage, in line with other *Drosophila* species such as, *D. melanogaster* in Spain, population structure consists of both males and females. No living pupae were found in soil samples.
- In overwintering populations, mortality is high, and SWD abundance declines to less than 1/day, as measured by the number captured in wet traps by late March.

- Spotted wing drosophila overwinter in close proximity of host plants.

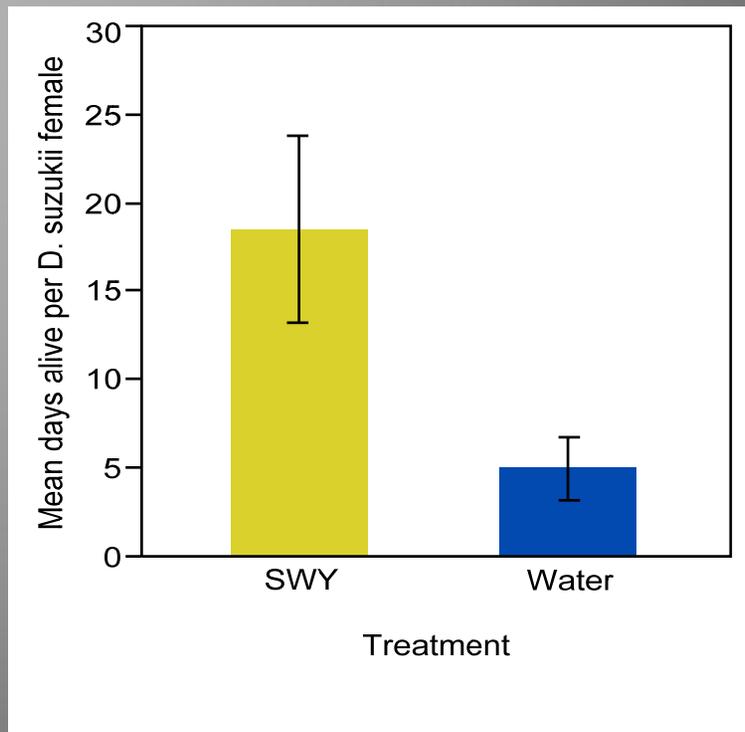


- A difference in popn. survival by vegetation type was not found, as SWD declined to less than 1/day in all treatments
- The use of nearby vegetation for overwintering combined with heavy overwintering mortality explains the disappearance of *D. suzukii* from monitoring traps in agricultural fields during winter and early spring.
- Egg-laying in wild caught SWD females did not commence until early March.

Why is this study of SWD overwintering useful?



Questions?



***D. suzukii* winter abundance including "trap-out" abundance**

