

PLANT INSPECTION ADVISORY

DATE: May 6, 2010

TO: Bureau of Plant & Apiary Inspectors and Supervisors

SUBJECT: Update for Spotted wing *Drosophila*, *Drosophila suzukii* and potential on Blueberries

- *D. suzukii* has rapidly dispersed and established in the State of Florida. From the first detection in Hillsborough in early August 2009, it spread to twenty two counties in 40 weeks.
- Based on climate suitability models, with multiple generations per year, *D. suzukii*, will continue to move northward in the State of Florida and into the Southeastern US, where it may overwinter as an adult.
- *D. suzukii* is a highly opportunistic exploiter of multiple hosts as they become available, with local populations rapidly increasing and declining almost to extinction as the general population continues to expand filling new ecological niches and possibly finding new hosts in Florida.

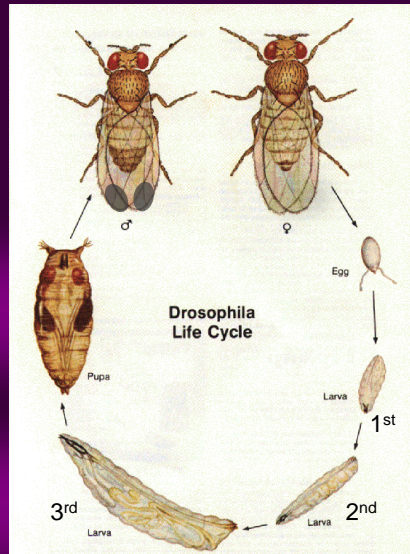
Drosophila suzukii has been confirmed attacking fruit on the following host plants in Florida: *Eugenia uniflora* (Surinam Cherry), *Fragaria ananassa* (commercial strawberries), *Murraya paniculata* (L.) Jack (Orange Jessamine), *Morus rubra* (Red Mulberry), and most recently in commercial *Vaccinium* (Blueberry) in Hillsborough County. *Drosophila suzukii* has also been collected from the following fallen fruit on the ground: *Eriobotrya japonica* (loquat), and *Solanum lycopersicum* (tomato).

Although *Drosophila suzukii* were recovered from various commercial strawberries during this season, there was no report of severe infestation in Florida fresh market strawberry production during the 2010 season. However, in strawberries which were held for processing, there were severe infestations by *Drosophila melanogaster* which may have been facilitated by initial fruit damage caused by *D. suzukii* and may have masked the impact of *D. suzukii* on Florida strawberries this season.

Because *D. suzukii* has the potential for a rapid buildup of populations on blueberries within its present distribution in South and Central Florida, those plant inspectors who have contact with blueberry growers should be informed of what damage looks like in blueberries, so that they can assist growers to recognize it during the 2010 harvest season. An up to date distribution map and other relevant information is available at <http://www.doacs.state.fl.us/pi/enpp/ento/spotted-wing-drosophila.html>.

Because it is within the current known distribution of the pest, suspect infested fruit and specimens can be sent to the Fruit Fly Identification Laboratory in Palmetto. All new county records and identification will be forwarded to Dr. Steck and placed as voucher specimens in the FSCA collection in Gainesville.

Development in *Drosophila suzukii*



- **Egg** two tapering filaments
- **Larvae** three stages
1st, 2nd, and 3rd instars
- **Pupa** pupate outside fruit with strongly separated breathing tubes on front spiracles
- **Adult** female will lay 2-3 eggs per fruit, and will lay around 350 eggs in her lifetime. The life cycle in the laboratory, from egg to egg laying female, is 12 to 5 days at 65° F.

Credits: Carolina Biological modified by David Dean FDACS/DPI

Female and Male

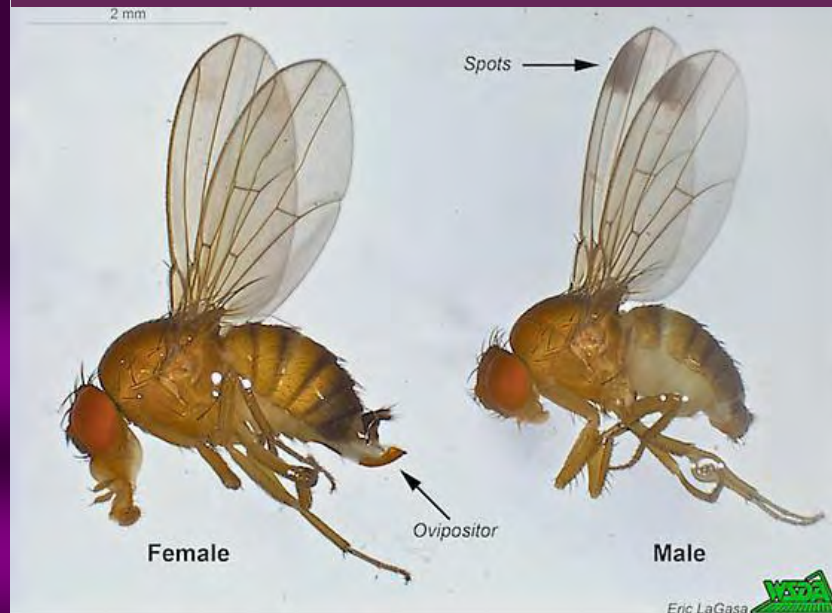
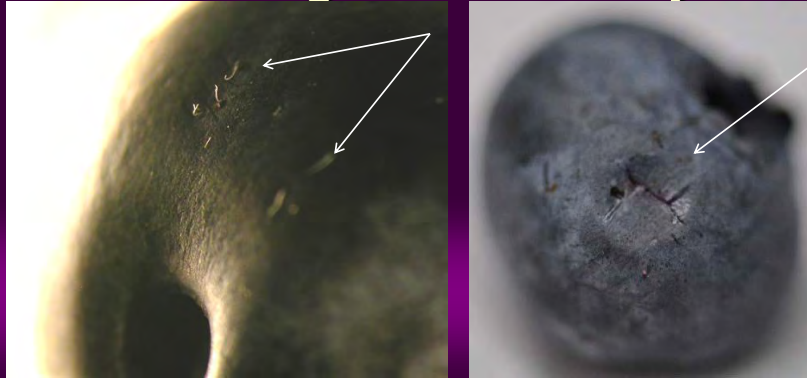


Photo credits: Eric LaGasa WSDA

Detecting *Drosophila suzukii* Damage in Blueberry



- Ripe fruit can be found with small oviposition holes and fine white filaments protruding from the egg just below the skin.
- Later collapsed fruit damaged caused by the larva feeding around the oviposition sites in the blueberry can be seen.

Photo credits: D. Dean FDACS/DPI, British Columbia Plant Diagnostic Laboratory and D. Bruck, USDA-ARS

Drosophila suzukii Larvae



3rd instar larva in blueberry

The egg and the 1st 2nd and 3rd instar larvae are all found inside the fruit.

Photo credit: D. Bruck USDA-ARS

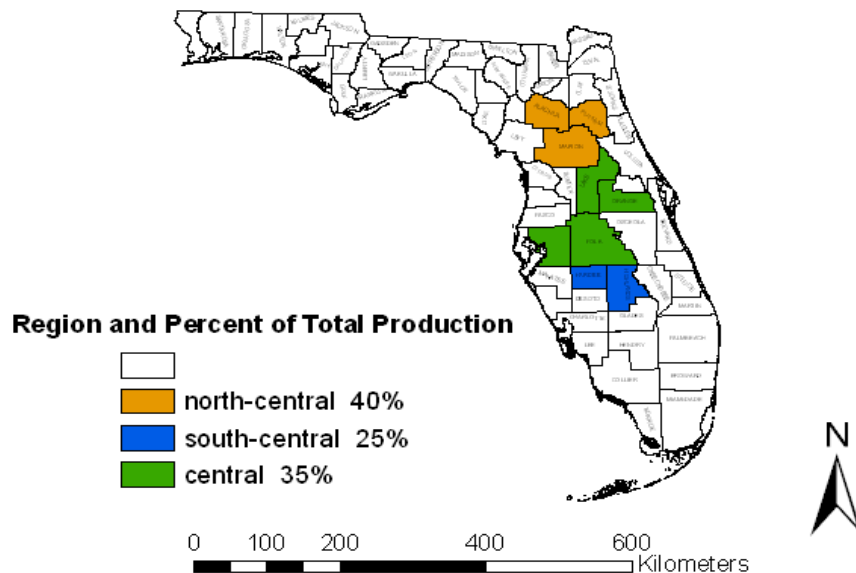
Drosophila suzukii Pupae

The 3rd instar larvae exits the fruit to pupate.



Photo credit: David Dean FDACS/DPI

Commercial Fresh Fruit Shipping Blueberry Production Regions in Florida

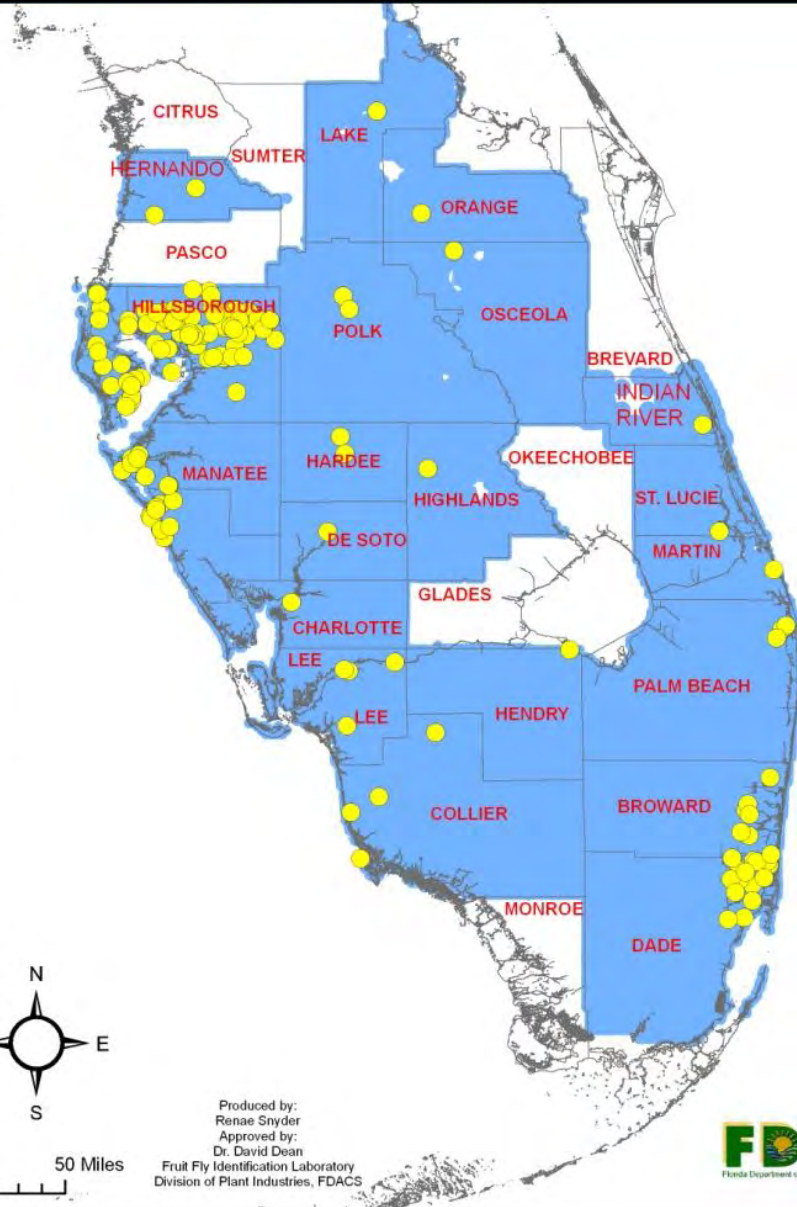


Source: United States Census Bureau
TIGER/Line Files
Scale: 1:100,000 Date: 1990
State of Florida
Map by: Elena Rhodes

Current County Distribution in Florida May 7, 2010

Drosophilidae, *Drosophila suzukii* Finds by County

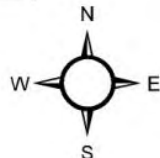
| | County | Count of Total | Sum of Total |
|----|--------------------|----------------|--------------|
| 1 | BROWARD | 6 | 28 |
| 2 | CHARLOTTE | 1 | 1 |
| 3 | COLLIER | 4 | 4 |
| 4 | DADE | 20 | 56 |
| 5 | DESOTO | 1 | 1 |
| 6 | HARDEE | 1 | 1 |
| 7 | HENDRY | 1 | 2 |
| 8 | HERNANDO | 2 | 4 |
| 9 | HIGHLANDS | 2 | 3 |
| 10 | HILLSBOROUGH | 164 | 659 |
| 11 | INDIAN RIVER | 1 | 1 |
| 12 | LAKE | 1 | 1 |
| 13 | LEE | 4 | 10 |
| 14 | MANATEE | 11 | 62 |
| 15 | MARTIN | 1 | 1 |
| 16 | ORANGE | 1 | 1 |
| 17 | OSCEOLA | 1 | 1 |
| 18 | PALM BEACH | 3 | 9 |
| 19 | PINELLAS | 24 | 40 |
| 20 | POLK | 2 | 3 |
| 21 | SARASOTA | 17 | 79 |
| 22 | ST. LUCIE | 1 | 1 |
| | Grand Total | 269 | 968 |



REV. 5/07/2010
 REV. 4/30/2010
 REV. 4/23/2010
 REV. 4/19/2010
 REV. 4/09/2010
 3/18/2010

LEGEND

- = County Boundary
- = *Drosophila suzukii* find

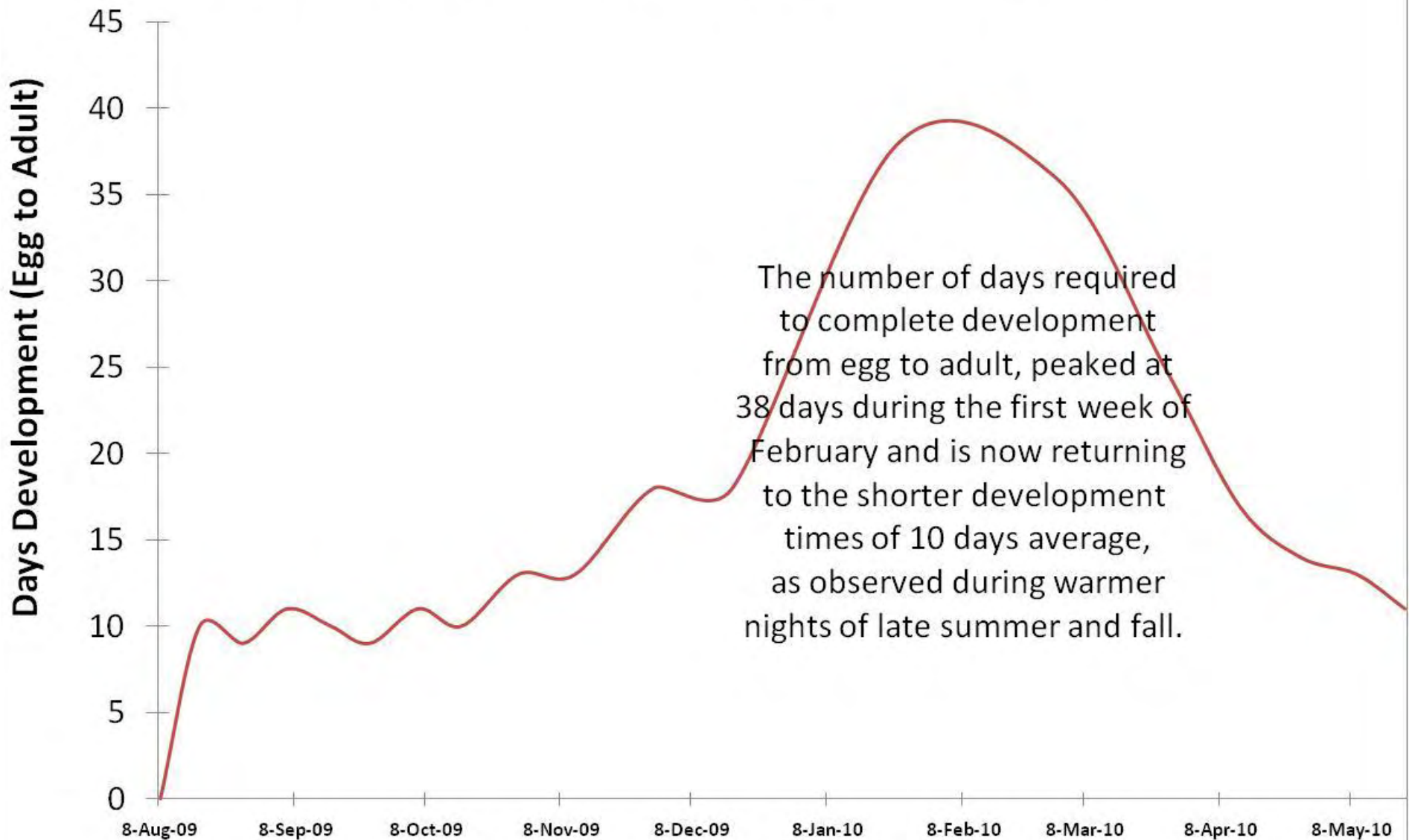


0 12.5 25 50 Miles

Produced by:
 Renae Snyder
 Approved by:
 Dr. David Dean
 Fruit Fly Identification Laboratory
 Division of Plant Industries, FDACS



Days Development *Drosophila suzukii* Florida Founder Population First Detection Hillsborough Co. Aug 8, 2009 - May 8 2010*



* SineSingle Sine Degree Day Model 48 °F and 86 °F lower and upper thresholds, DD338/generation, using Tampa temperatures