

Spotted Wing Drosophila, *Drosophila suzukii*



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Distribution

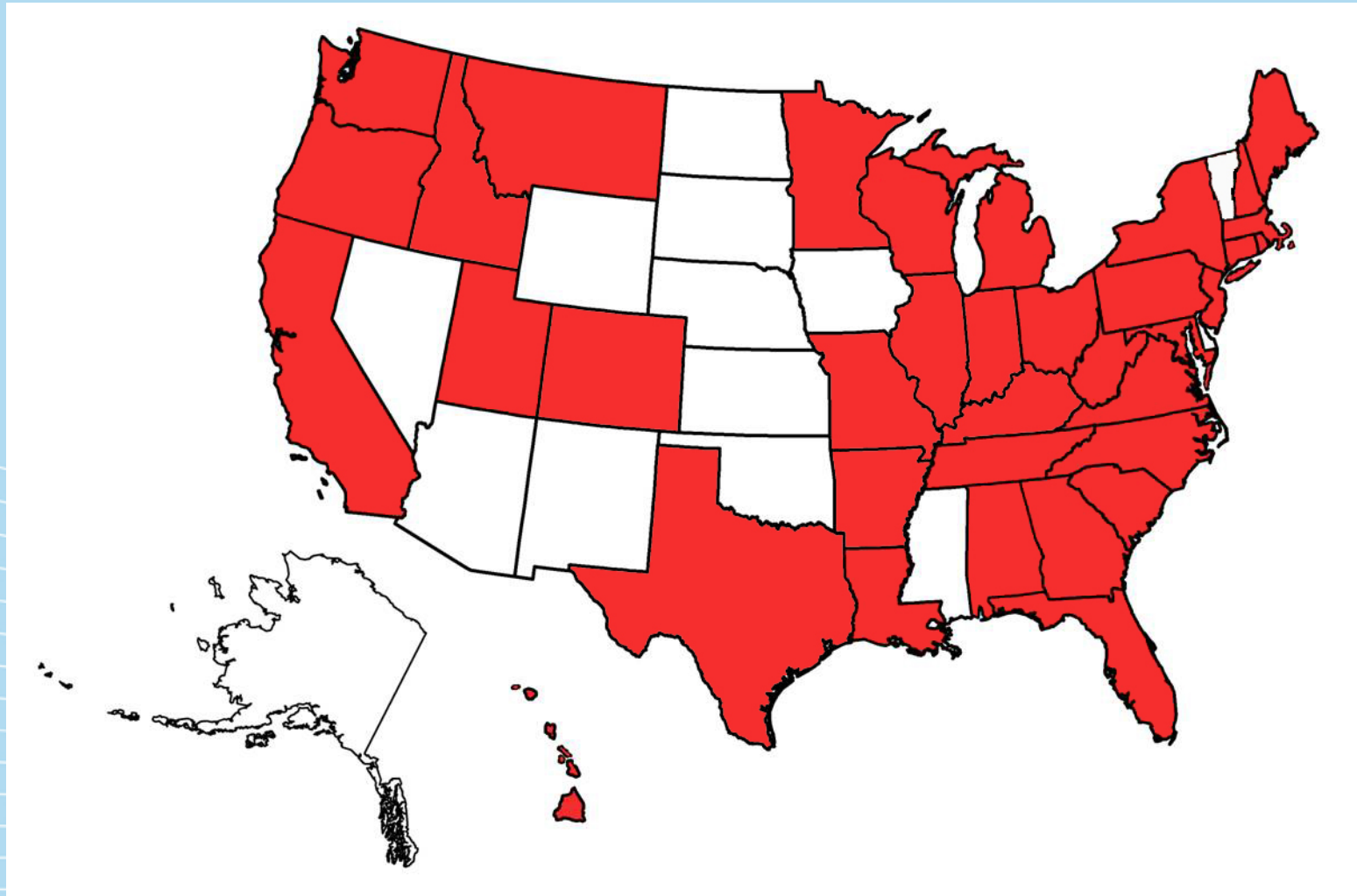
- Native to southeast Asia
- Found in Asia, Canada, Europe, Central America, and the United States
- Established in Hawaii in the 1980s
- Detected in continental United States in 2008 in Santa Cruz County, California
 - Has since been detected in many other states
- It is commonly abbreviated as SWD
 - It is also known as cherry vinegar fly, the cherry fruitfly, cherry drosophila, and spotted wing wine fly



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U.S. Distribution



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Hosts



Image citation: cherries – F. Dosba, INRA, Bordeaux, www.bugwood.org, #0725025; peaches - Carroll E. Younce, USDA Agricultural Research Service, www.bugwood.org, #1304024; persimmon - Forest & Kim Starr, Starr Environmental, www.bugwood.org, #5419354; raspberries - Deena Chadi, William Paterson University, www.bugwood.org, #5440220; blueberries - Scott Bauer, USDA Agricultural Research Service, www.bugwood.org, #1321065; strawberries - Ko Ko Maung, Asiatic Agricultural Industries Pte Ltd., www.bugwood.org, #5443625; plums- Peggy Greb, USDA Agricultural Research Service, , www.bugwood.org, #1355013.



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Damages



“pin pricks” left by
ovipositor

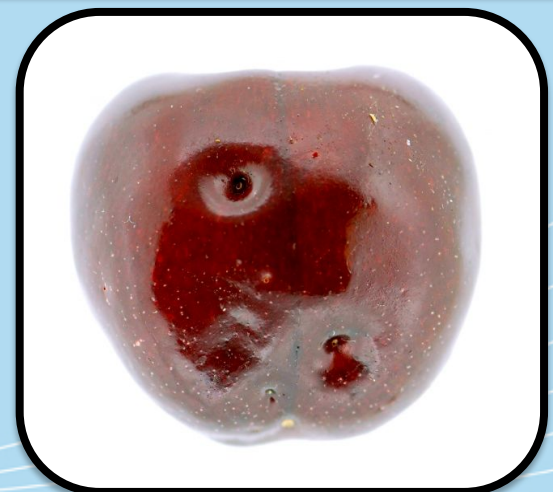
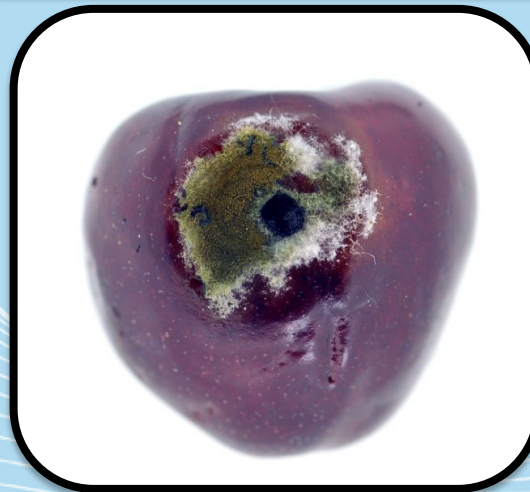


Image citation:
Bottom right and middle – Martin Hauser, California Department of Food and Agriculture
Left - British Columbia Ministry of Agriculture
Top right – Oregon State University



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Identification

- Eggs

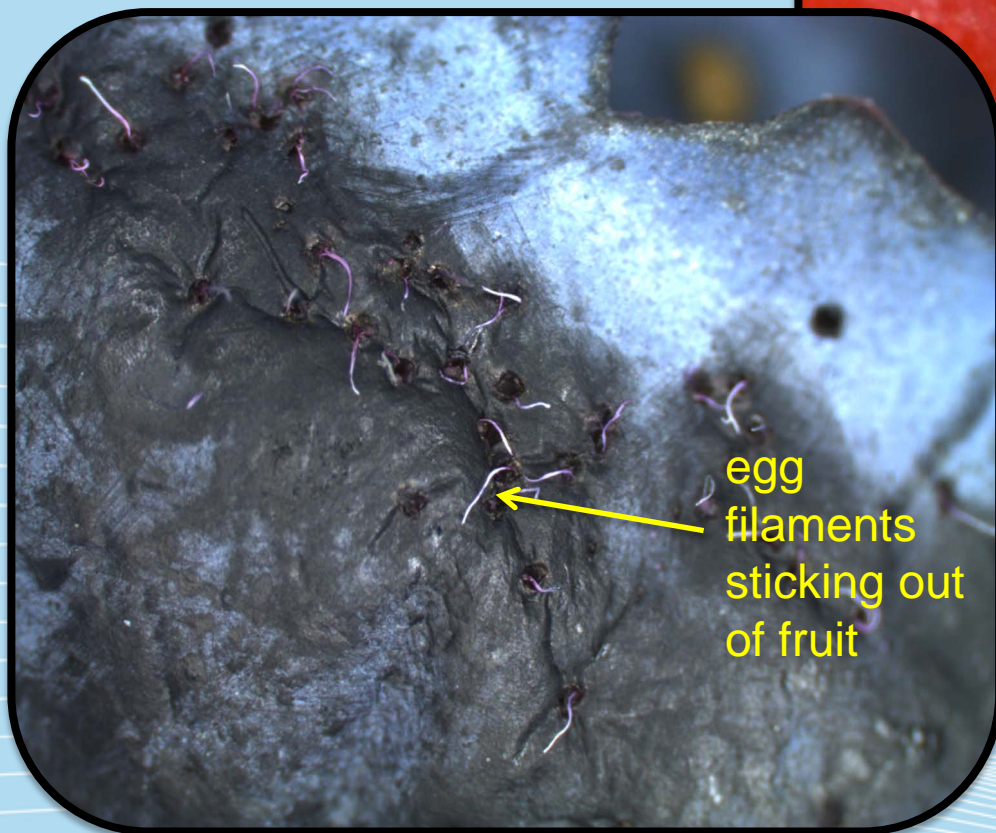
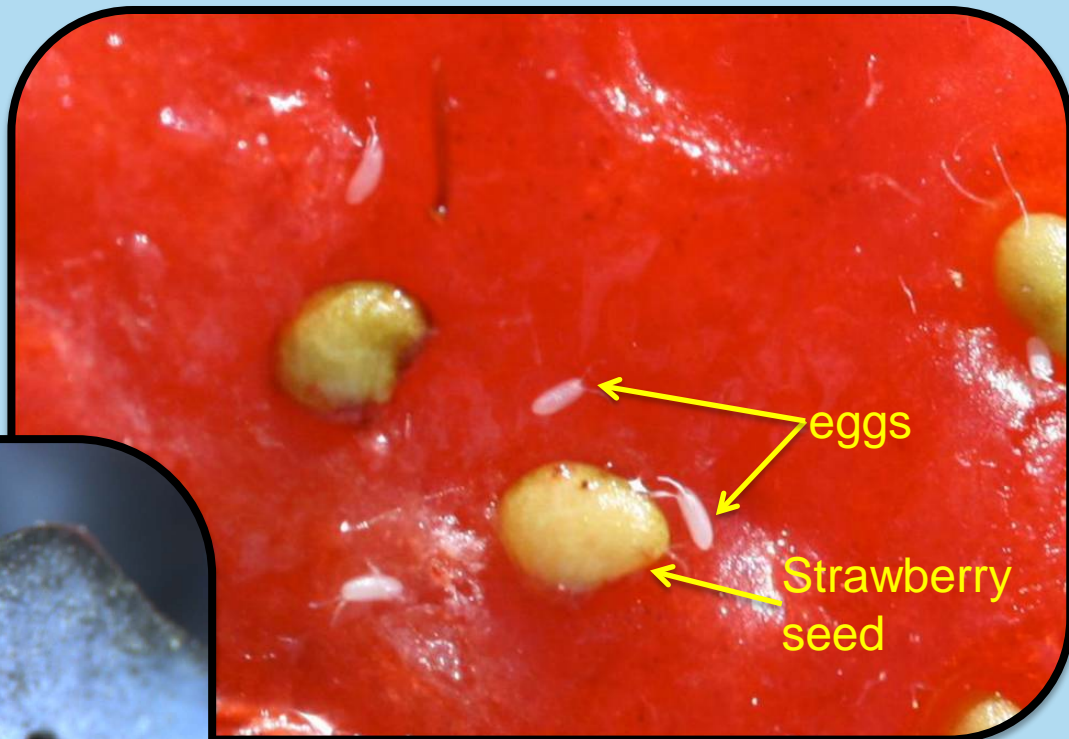


Image citation:

Top right - Hannah Burrack, North Carolina State University, www.bugwood.org, #5444195

Bottom right - British Columbia Ministry of Agriculture

Left - Oregon State University

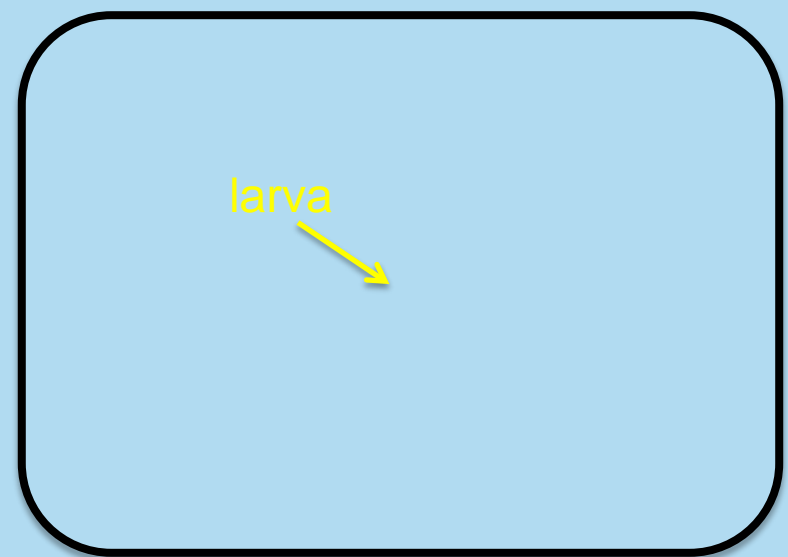
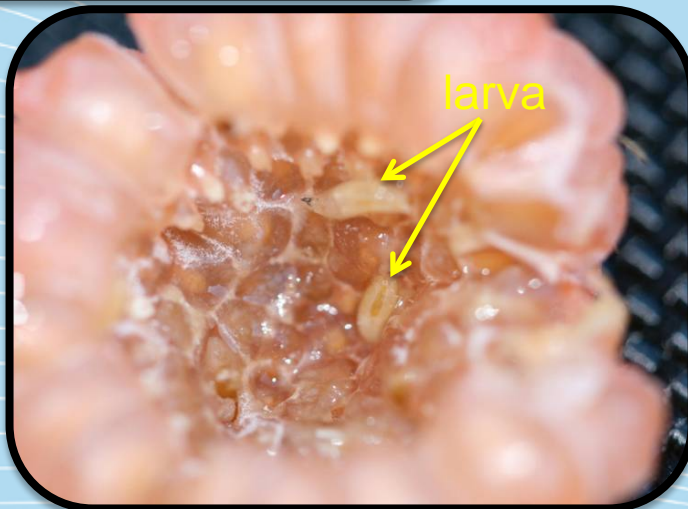
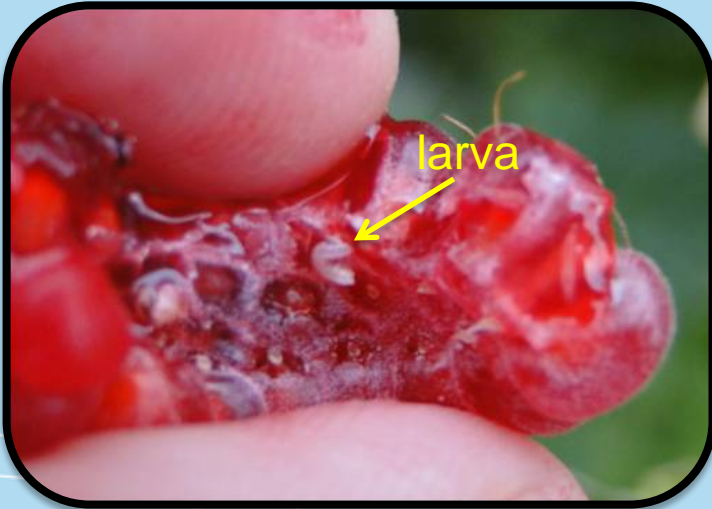


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Identification

- Larvae



The larva pictured above is very close to pupation which means you will probably not see it at this stage.

Image citation: top and bottom left - Hannah Burrack, North Carolina State University, www.bugwood.org, #5444186 and #5444192

top right – Oregon State University

Bottom right –Elizabeth H. Beers, Department of Entomology, Washington State University from their [publication](#).



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Identification

- Pupae

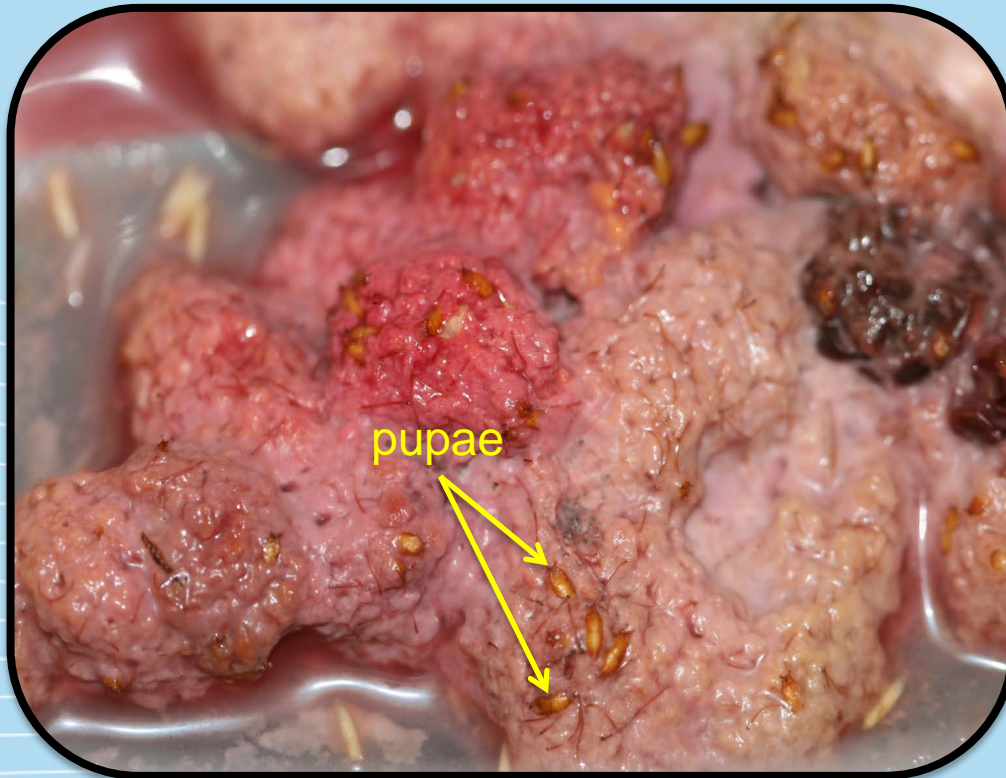


Image citation:

Top right and bottom - Elizabeth H. Beers, Department of Entomology, Washington State University from their [publication](#).

Left – Hannah Burrack, North Carolina State University



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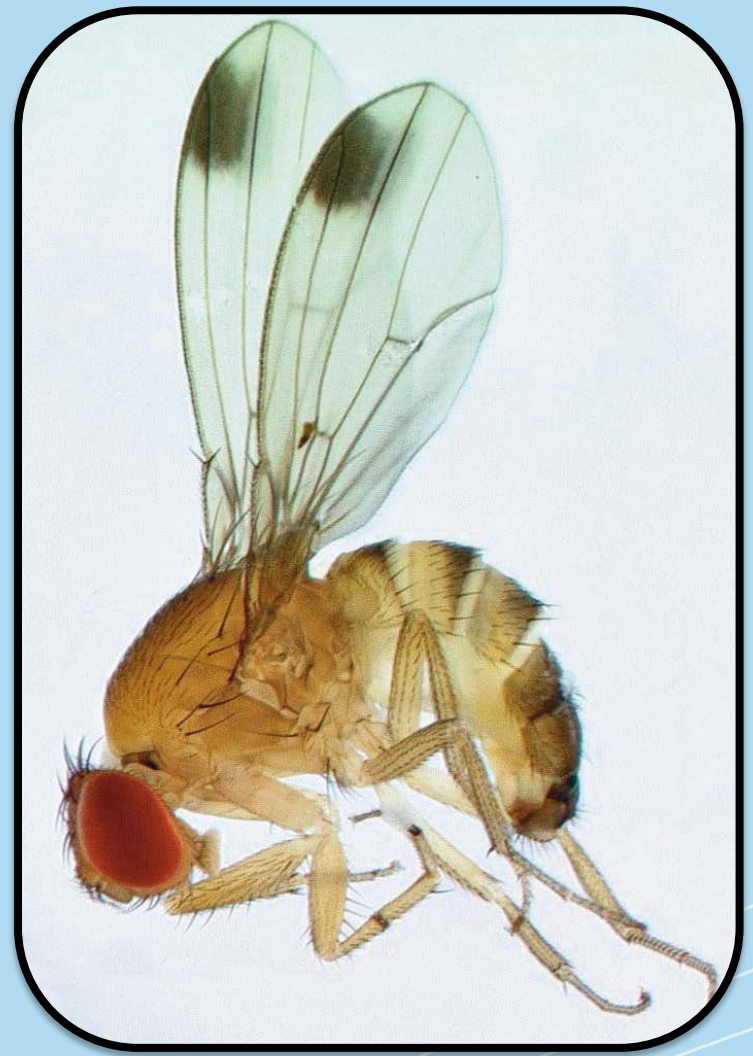
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Identification

- Adults



Female



Male



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Life Cycle

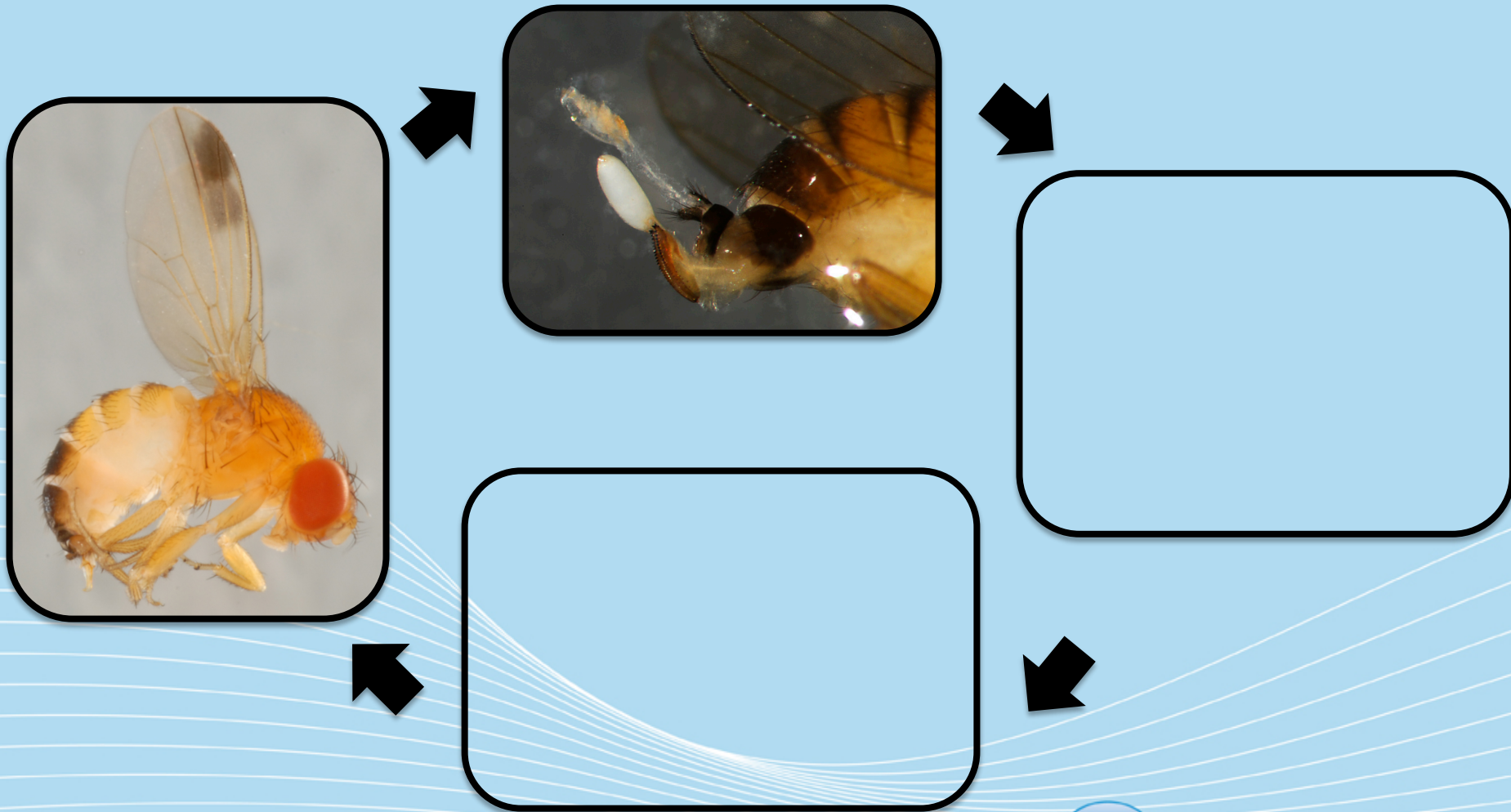


Image citation:

Adult – Lyle Buss, Department of Entomology and Nematology, University of Florida

Egg and ovipositor - Elizabeth H. Beers, Department of Entomology, Washington State University from their [publication](#).

Larvae – Oregon State University

Pupae - British Columbia Ministry of Agriculture



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Diapause and Dispersal

- Can overwinter in the adult stage in colder climates
 - If they emerge in late summer or fall
- Remain active from April to November
 - In places like Florida, they are active year round
- Dispersal by
 - Wind
 - Transportation of infected fruit
 - Most effective means



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Monitoring

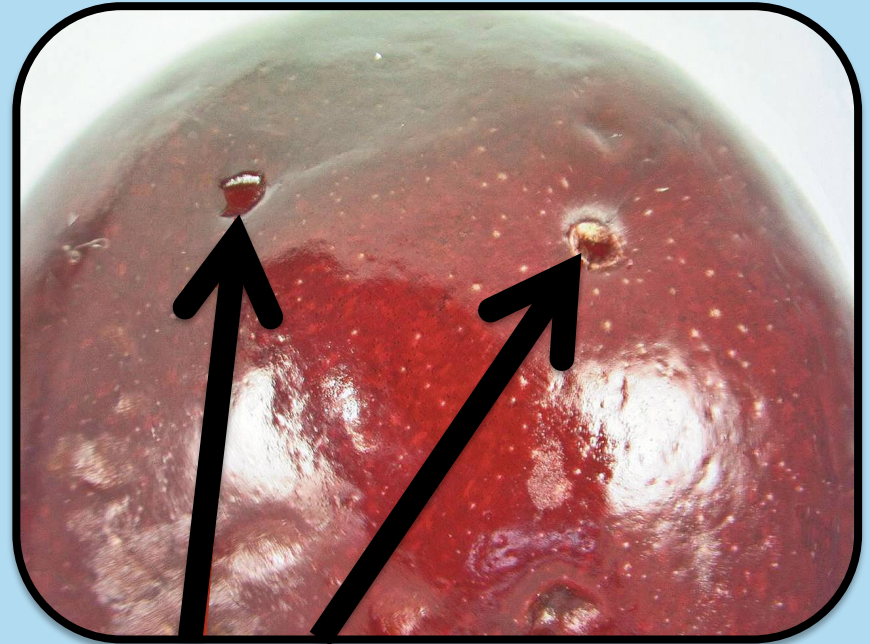


Image citation:

Trap and adult on trap - Hannah Burrack, North Carolina State University, www.bugwood.org, #5444190 and #5444191

Fruit with ovipositioning holes - - Gevork Arakelian, Los Angeles County Department of Agricultural

Commissioner/Weights and Measures used in this [publication](#).

All others – PowerPoint Clipart



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Chemical Management

- Raspberries
 - malathion and spinetoram
- Blueberries
 - bifenthrin, diazinon, esfenvalerate, fenpropathrin, malathion, methomyl, spinetoram, spinosad, and zeta-cypermethrin
- Cherries
 - DMTP, permethrin, cypermethrin, tralomethrin, spinosad, imidacloprid, malathion, fenpropathrin, zeta-cypermethrin, lambda-cyhalothrin, beta-cyfluthrin, spinetoram



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Biological Management



Braconidae wasp.



Orius insidiosus



Cynipidae wasp



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Image citation:

Top left – Joseph Berger, www.bugwood.org, #5393798

Bottom left – Gyorgy Csoka, Hungary Forest Research Institute, www.bugwood.org, #5410749

Right – John Ruberson, University of Georgia, www.bugwood.org, #2666062



Cultural Management

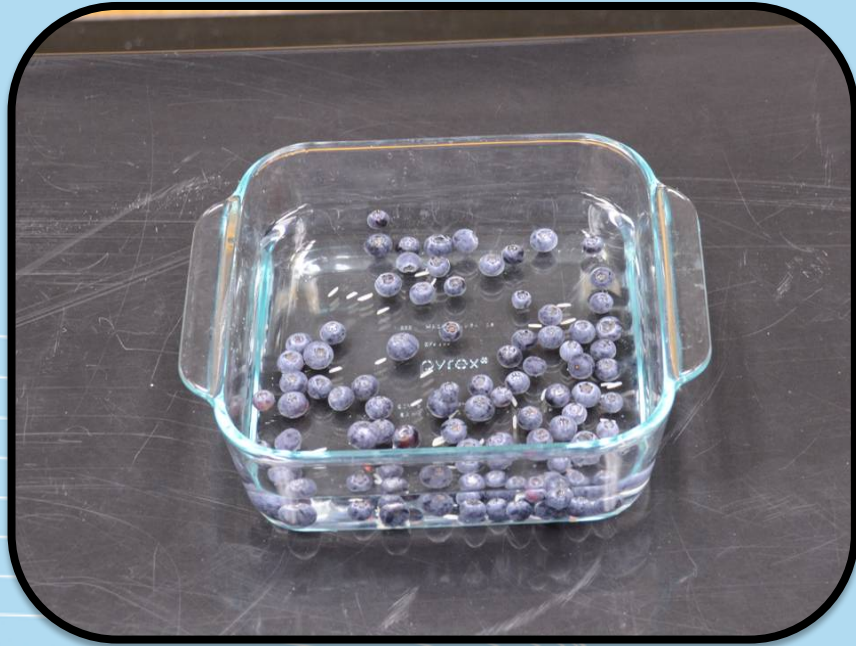
- Bag or solarize cull fruit
- Keeping processing area and equipment free of old fruit
- Avoid or cull “split” fruit
- Harvest fruit immediately when marketable
- Consider protecting fruit with an appropriate net



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Checking fruit for larvae



Salt test

Click [here](#) to view video.



Sugar test

Click [here](#) to view video.



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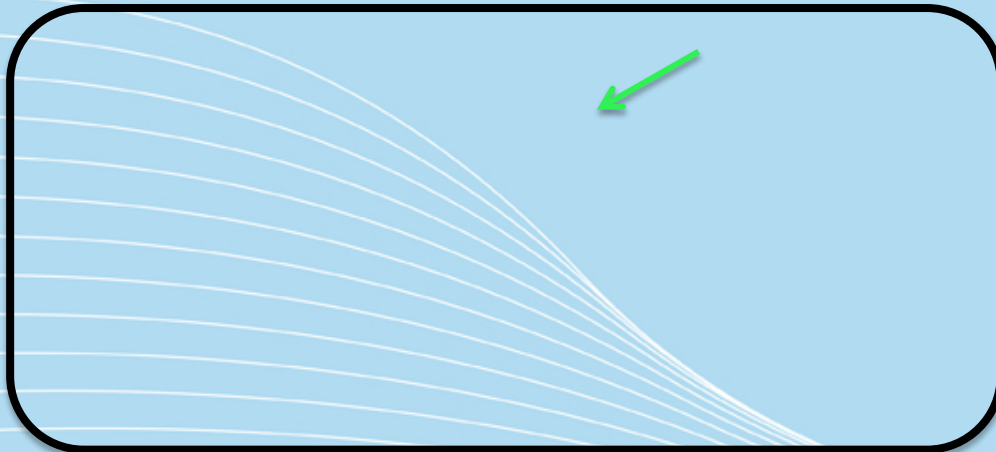
Other organisms you might encounter



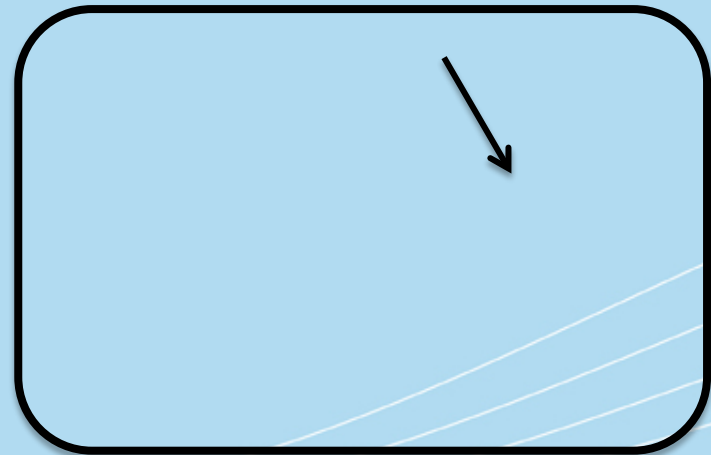
Rhagoletis mendax



Drosophila suzukii



larva of sap beetle (Nitidulidae)



Grapholita packardii

Image citation:

Rhagoletis mendax - Jerry A. Payne, USDA Agricultural Research Service, www.bugwood.org, #1227056

Drosophila suzukii - Hannah Burrack, North Carolina State University, www.bugwood.org, #5444194

Nitidulidae – Lyle Buss, Department of Entomology and Nematology, University of Florida

Grapholita packardii – British Columbia Ministry of Agriculture



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Drosophila melanogaster

Other organisms you might encounter



Rhagoletis mendax



Rhagoletis cingulata



Rhagoletis indifferens

Image citation:

Drosophila melanogaster – Wikimedia Commons

Rhagoletis indifferens – Stephen Hart - <http://bugguide.net/node/view/207662/bgimage>

Rhagoletis cingulata - left - Bill Johnson - www.billjohnsonbeyondbutterflies.com and right - Peter Cristofono - <http://bugguide.net/node/view/196628>

Rhagoletis mendax - Jerry A. Payne, USDA Agricultural Research Service, www.bugwood.org, #1224207



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Questions?

- For more information, check out www.protectingusnow.org
- You can also contact:
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- Updated: August 2013



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Homeland Security \(DHS\)](#)

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State Departments of
Agriculture](#)

[National Plant Diagnostic Network
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