

Identifying fruit pest Drosophilidae
(vinegar flies) in Oregon:
Drosophila suzukii and *Zaprionus indianus*



Oregon Department
of Agriculture
Guides and Pest Alerts



OREGON
DEPARTMENT OF
AGRICULTURE

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IPPM
Insect Pest Prevention
and Management

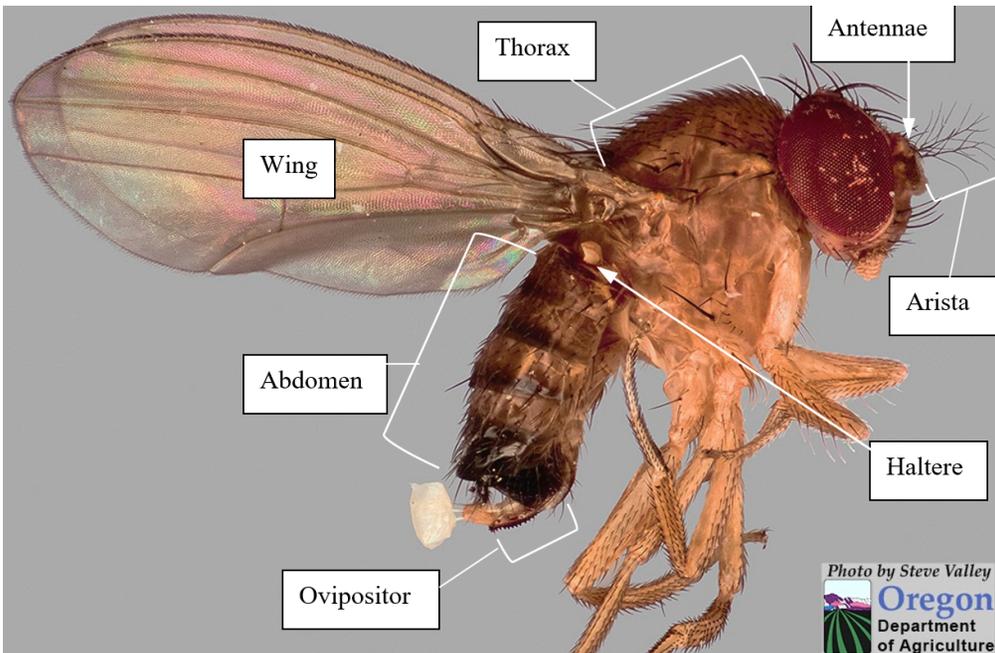
Identifying fruit pest Drosophilidae (vinegar flies) in Oregon: *Drosophila suzukii* and *Zaprionus indianus*

Original version created by Josh Vlach-
Oregon Department of Agriculture November, 2016
Modified by J Buck Dunlap March 2023

IMPORTANT: This is a dichotomous key. Dichotomous keys only work properly when specimens are worked through the key step by step. Characters cannot be taken from the key and used independently. Doing so will result in misidentifications.

Note: All images not attributed to ODA have been produced by Martin Hauser of CDFA unless otherwise noted

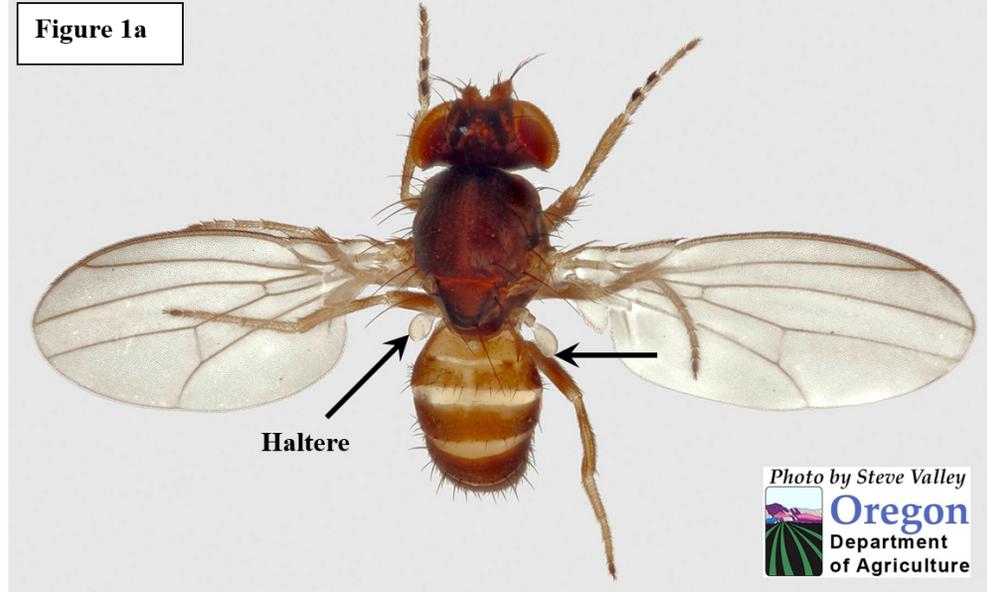
Introduction to Drosophilidae (Vinegar Fly) Basic Anatomy



①

1. Two wings and two halteres (Figure 1a).....2
Either with four wings OR no wings, no halteres present
.....**Not a fly**

Figure 1a



②

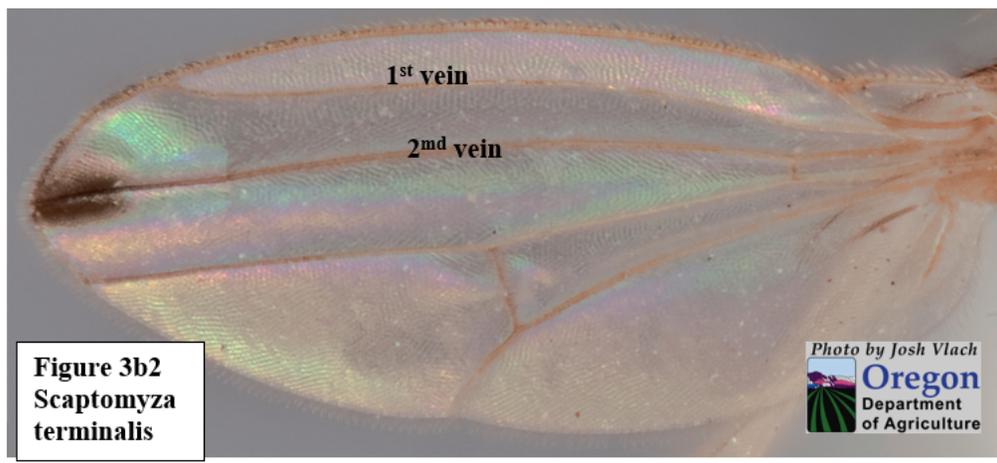
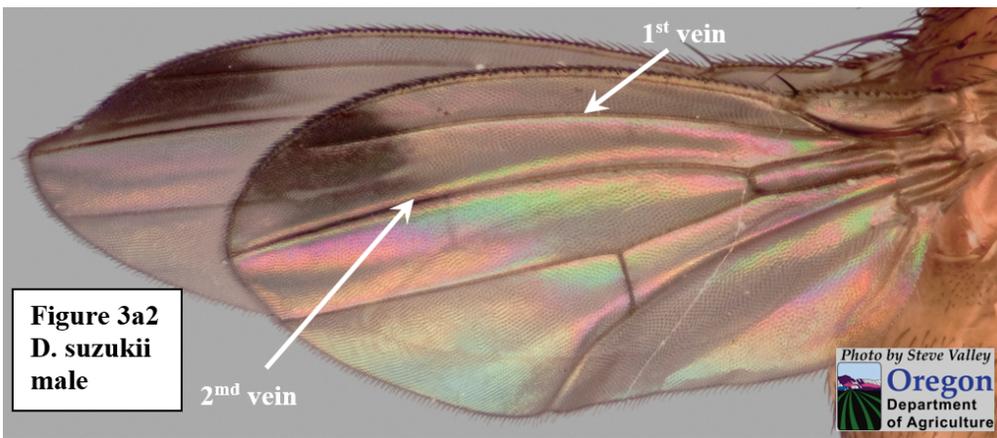
2 (1). Red to reddish-brown eyes.....3
Eye color other than red or reddish-brown
.....**Not *Drosophila suzukii***

③

③

3.a (2) Wings clear (Figure 3a1) or with a dark spot near the end of the leading edge of the wing on first vein (Figure 3a2), this can be accompanied by a spot on the 2nd vein (Figure 3a3)4

3.b Wings with bands, multiple spots, with a crossvein with a darkened “cloudy” area around it (Figure 3b1), or a single spot at the tip of the wing on second vein (Figure 3b2)not *D. suzukii*



④

4.a (3) Short, stubby antennae with branched arista (Figure 4a).....5

4.b Long antennae or short and stubby antennae with an unbranched arista (Figure 4b)not *D. suzukii*



Figure 4a



Figure 4b

⑤

5.a (4) Length under 4mm (~1/8").....6

5.b Length greater than 4mmnot *D. suzukii*

⑥

6.a (5) With single dark spot in front of wing tip, or rarely with a second spot on the second vein (Figures 6a and 6b)
.....*D. suzukii* male

6.b Without spot near wing tip7



Figure 6a:
D. suzukii male



Figure 6b:
D. suzukii male wing

Drosophila suzukii male character summary

7



D. suzukii male

7.a (6) Thorax and head without white stripes8

7.b Thorax with white stripes bordered by dark stripes on top of head and on the dorsum and sides of the thorax
.....*Zaprionus indianus* Gupta

Important: this potential fruit pest is not currently known from Oregon and should be reported to the Oregon Department of Agriculture if detected

Z. indianus



- 1. Light yellow or brown flies with red eyes
- 2. Dark spot on the leading edge of the wing near the tip centered on the first major wing vein. Rarely observed with a second spot on the second vein or coalesced into one large spot covering the tips of both veins.
- 3. Body markings consist of bands at the ends of abdominal segments. These bands are unbroken.
- 4. Front feet with two combs each. Each comb with 3 to 6 teeth lying parallel to the long axis of the foot.



Top image: by Darren J. Obbard <https://obbard.bio.ed.ac.uk/>

Bottom image: Nicola White <https://drosophoto.com/>

8

9

8.a (7) Without combs on feet (Figure 7a)9 (female)
 6.b With one (Figure 7b1) or more (Figure 7b2) combs on front feet or with visible male genitalia (Figure 7b3).....
11 (male)

9.a (8) Large sclerotized (hard, shiny and dark), ovipositor with strong serrations or teeth (saw-like edge when fully exposed) (Figure 8a)10
 9.b Small soft ovipositor sometimes with weak serrations or teeth (Figure 8b)Non-target

Figure 7a



Figure 7b2

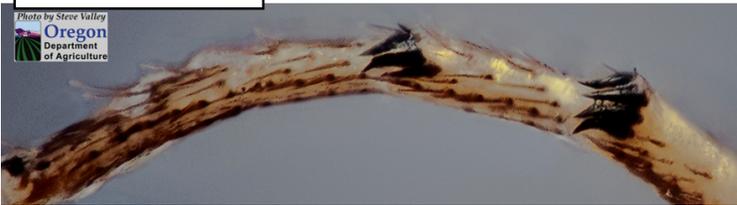


Figure 7b1



Figure 7b3
Male genitalia

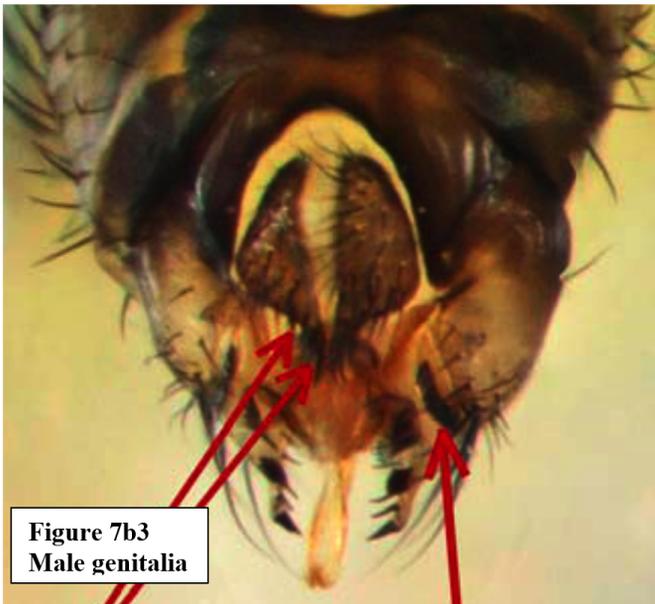


Figure 8a



Figure 8b

10

10

10.a (9) Teeth on ovipositor much darker than the rest of ovipositor (Figure 9a1, 9a2). body without stripes, spots, or patterns except for complete dark bands (no breaks) at the end of abdominal segments (Figures 9a3, 9a4). The last segment is sometimes all dark brown
.....*D. suzukii* female (Figure 9a5)

10.b Teeth on ovipositor the same color as the rest of the ovipositor (at most slightly darker) (Figure 9b1, 9b2)
OR body with stripes, spots, or patterns other than above (Figure 9b3) including a break in the center of the abdominal bands (Figure 9b4)Non-target

Figure 9a3, *D. suzukii*

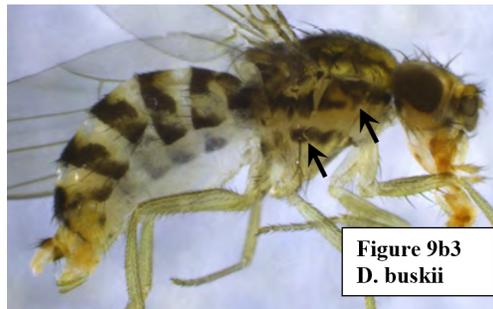
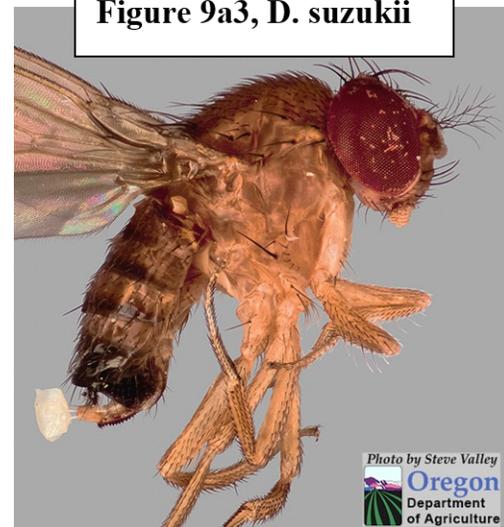


Figure 9b3
D. buskii

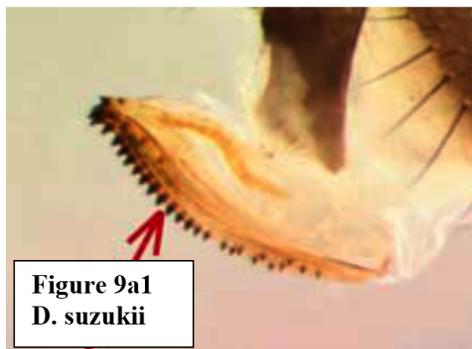


Figure 9a1
D. suzukii



Figure 9a2
D. suzukii

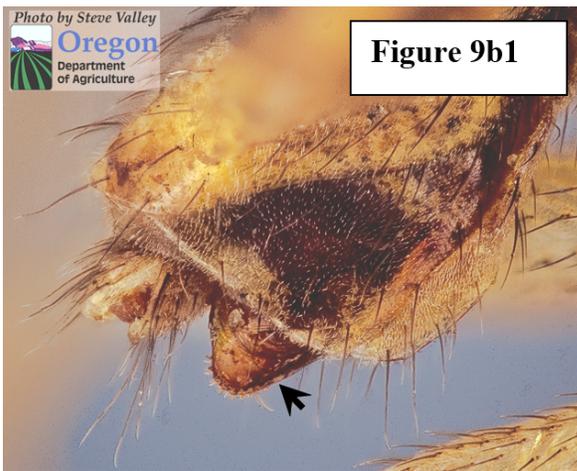


Figure 9b1

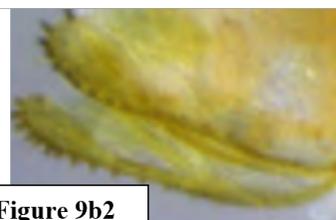


Figure 9b2

Note: the female ovipositor consists of two halves, visible here

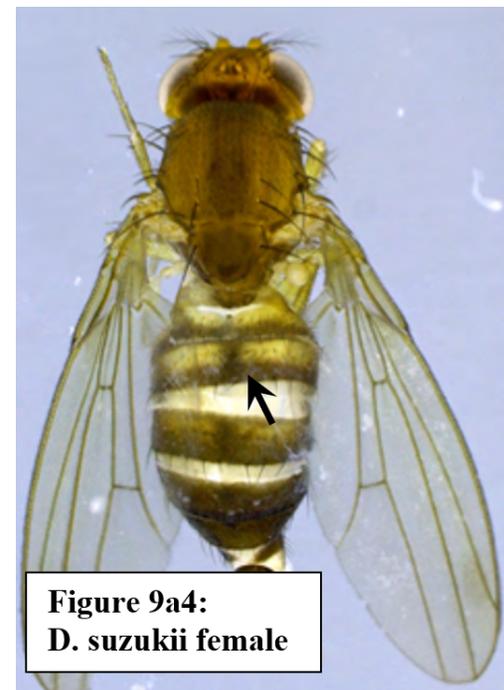


Figure 9a4:
D. suzukii female



Figure 9b4

Drosophila suzukii female character summary

11

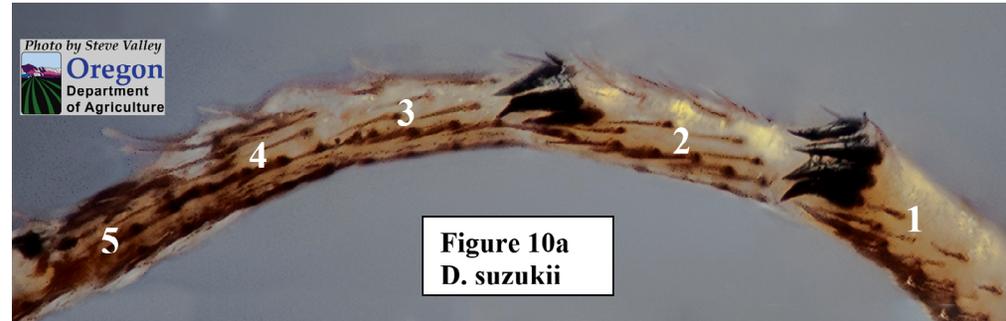


**Figure 9a5:
D. suzukii**

- 1. Light yellow or brown fly with red to red-brown eyes.
- 2. Large, hardened, saw-like ovipositor with dark teeth.
- 3. Markings consist of complete (unbroken) bands at the ends of abdominal segments.
- 4. No dark areas around wing veins.
- 5. No combs on front feet.
- 6. Smaller than 1/8" or 4mm.

11.a (8) Each of the front feet with a comb on both the first and second segments (Figure 10a)12

11.b Each of the front feet with one (Figure 10b), three, or more combs, never with two combs.....Non-target



**Figure 10a
D. suzukii**

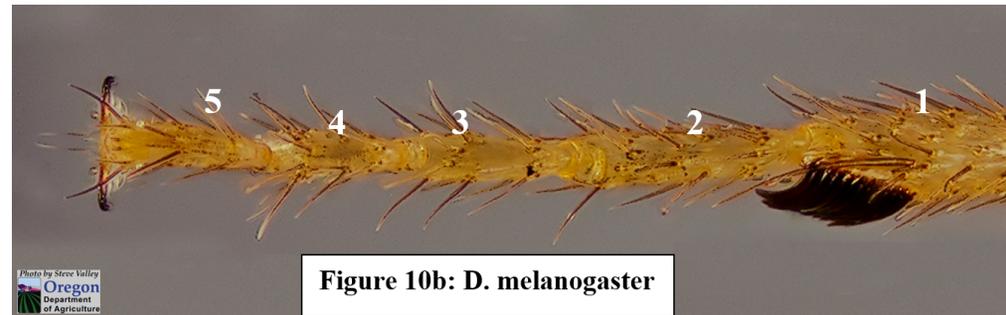


Figure 10b: D. melanogaster

12

Drosophila suzukii “spotless” male character summary

12.a (11) Front feet with teeth of combs on first and second segments parallel to the length of the foot and combs with 3 to 6 “teeth” (Figure 11a1). End of abdominal bands with a continuous dark band and last segment often dark brown, otherwise the body and legs do not have notable markings ...
.....[D. suzukii male](#) (Figure 11a2)

These bands are rarely observed. Specimens keying here should be verified by an Entomologist

12.b Front feet with teeth of combs on front feet perpendicular to the length of the feet or with more than 6 “teeth” (Figure 11b) OR body with patterns other than above (for example: bands on body, abdominal bands split bands, etc.).....Non-target

Figure 11a2. *D. suzukii* “spotless” male



Figure 11a1. Teeth parallel to foot, *D. suzukii* male

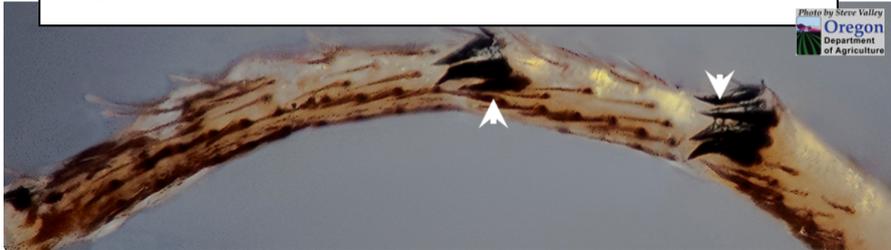
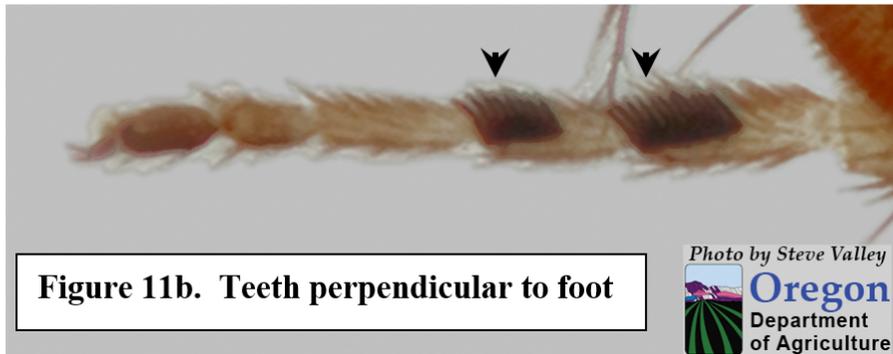


Figure 11b. Teeth perpendicular to foot



1. Light yellow or brown fly with red or red-brown eyes.
2. Front feet with two combs each. Combs with 3 to six teeth. Teeth parallel to the length of the foot.
3. Markings consist of complete and unbroken bands at the ends of abdominal segments.
4. No dark areas around wing veins.
5. Smaller than 1/8” or 4mm.