

Current Status of Spotted Wing *Drosophila* in Utah

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Summary

Spotted Wing *Drosophila* (SWD), *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae), is a prolific invasive insect pest of soft summer fruits that differs from other species in the genus in that it oviposits in healthy, developing fruit compared with the over-ripe or damaged fruit usually selected by other members of the genus. In the U.S., SWD has been established in Hawaii since the early 1980's, was first recorded from California in 2008, and has subsequently spread to nearly every state. SWD is now a severe economic pest of fruit in many parts of the U.S., including California, Oregon and Washington. SWD was first detected in traps in Utah in 2010, but has not yet reached economically injurious levels. Recent surveys, however, have revealed new county detections and comparatively higher numbers of adults in traps situated near commercial, feral, and wild fruits than in previous years.

Research and Survey Objectives

SWD Distribution in Utah: SWD was detected in Utah in 2010 in Davis County and has been found in relatively low abundances every year since 2013 (Table 1). In 2014, SWD was detected for the first time in Rich, Cache, Box Elder, Weber, and Utah Counties, with abundances being highest in Cache County, near the Utah-Idaho border (Fig. 1). SWD is consistently detected in nearly the same locations each year in Utah, suggesting that flies are overwintering at or near sites of capture.

Lure Effectiveness: In 2015, plastic container traps (Fig. 2) baited with apple cider vinegar (ACV) and a Trece SWD lure detected SWD earlier and in greater numbers than traps baited with either yeast and sugar, or ACV alone.

Host Use: SWD has been caught in traps in apple, cherry, peach, plum, and caneberries in commercial and home garden sites, and in wild habitats that include river hawthorn, serviceberry, wild plum, wild rose, Russian olive, elderberry, golden currant, dogwood, and other wild and feral fruits (Figs. 3-5).

Seasonal Activity: First annual detections of SWD adults begins in late summer or early fall, after peak summer temperatures have decreased (Fig. 6) and much later than what is predicted by the current degree-day model (Fig. 7). SWD activity has peaked in early to mid-October.

Select Outreach Publications:

- Spears, L. and R. Ramirez. 2014. Invasive Insect Field Guide for Utah. Utah State University Extension.
- Stanley, C. 2012. Monitoring for Spotted Wing *Drosophila* in Utah. Fact Sheet ENT-161-12. Utah State University Extension.
- Davis, R., D. Alston, and C. Stanley. 2010. Spotted Wing *Drosophila*. Fact Sheet ENT-140-10. Utah State University Extension.
- Stanley, C. 2011. Trapping and Identifying Spotted Wing *Drosophila*. Video Fact Sheet. Utah State University Extension.



Figure 1 Current county-level status of SWD in Utah.

Table 1 SWD detections by year in Utah. Note that for 2014, a single adult fly was captured on June 2, but flies were not detected again in the state until August 12. Traps deployed in 2015 are still being monitored.

Year	Total # of SWD	Date of 1st trap capture
2010	73	August 18
2011	61	September 8
2012	16	September 17
2013	23	September 25
2014	3582	June 2 / August 12
2015	4332 and counting	July 20



Figure 2 SWD trap



Figure 3 Commercial peach orchard in Utah



Figure 4 Backyard garden in Utah where SWD has been found in high abundances.



Figure 5 Wild site (Logan Canyon) in Utah where SWD has been found in high abundances.

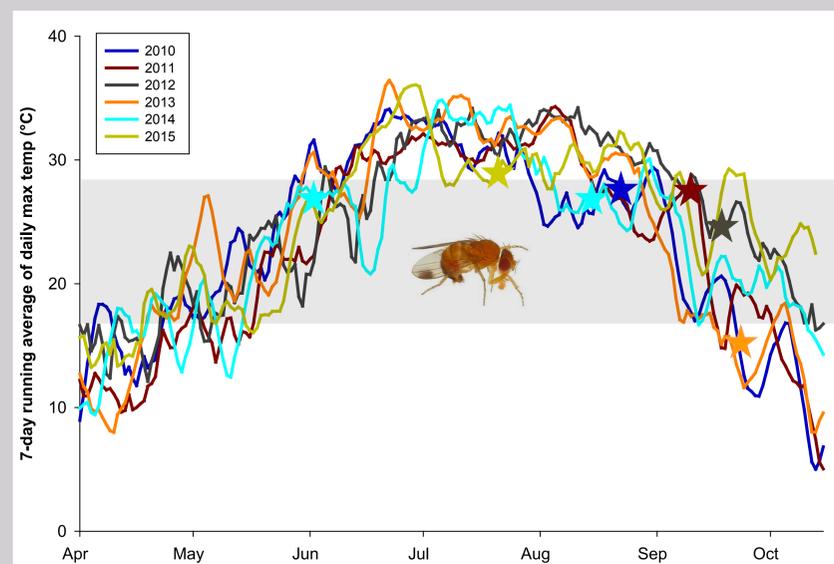


Figure 6 SWD adults start appearing in traps after peak summer temperatures have decreased. The shaded region represents when adult flies are expected to be most active (when temperatures are between 17-28°C). Stars indicate dates of first trap captures. Note that for 2014, a single adult fly was captured on June 2, but flies were not detected again in the state until August 12.

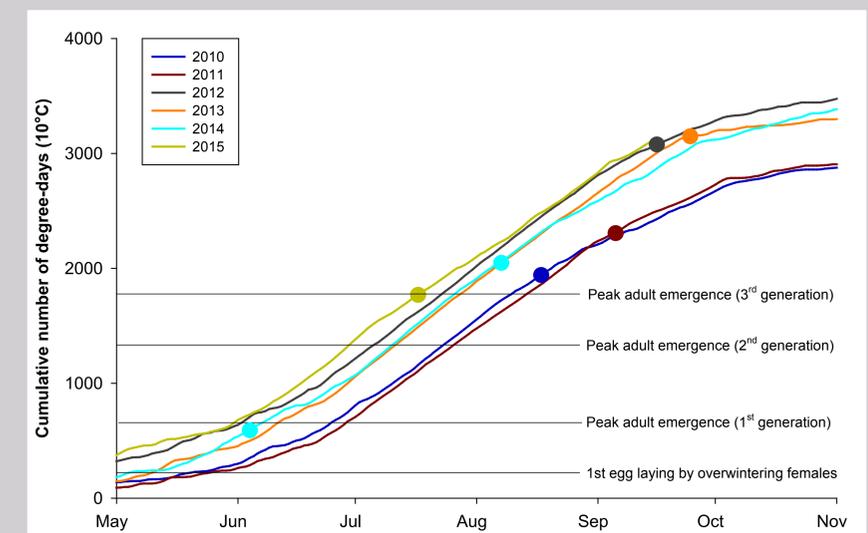


Figure 7 SWD adults are not detected in traps until late summer or early fall, much later than predicted by the current degree-day model (represented by horizontal lines in figure). Circles indicate dates of first trap captures.

Discussion

- Research suggests that SWD are limited by high temperatures and low humidity. It is possible then that SWD will not cause significant damage to fruit in Utah and other areas of the country that are characterized by hot, dry summers.
- SWD appears, however, to be gaining a foothold in Utah. SWD abundances are highest in backyard gardens and wild habitats. These habitats may allow SWD to increase in abundance before moving on to commercial orchards when cultivated fruits are highly susceptible near maturity.
- There is evolutionary potential for SWD to adapt to Utah's climate and cause unwanted impacts, especially considering that their short generation times and high reproductive potential increase the rate at which they can evolve. Yet their ability for rapid adaptation has not generally been considered as an important factor in their establishment and spread.

New Invasive Fruit Pest in Utah

The African fig fly (*Zaprionus indianus*) was detected in Utah for the first time in 2015. This pest was found in Utah, Davis, and Box Elder Counties in a wild habitat, backyard garden, and commercial peach orchard, respectively. Flies were found in ACV traps used for monitoring SWD. The African fig fly is believed to have the potential to infest soft fruit crops.



Figure 8 Adult African fig fly. Photo courtesy of Doug Pfeiffer, Virginia Tech.

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