

Biology of the
Spotted Wing
Drosophila
(*Drosophila suzukii*)



Kelly A. Hamby, Mark P.
Bolda, Monise E. Sheehan,
and Frank G. Zalom



Outline

Part 1: Seasonal trapping of *D. suzukii* in Watsonville Raspberries

- Intro

- Adult trap lure comparison

- Vacuum sampling

- Larval sampling

- Conclusions

Part 2: Recent collaborations in *D. suzukii* biology

- Dr. Zain Syed

 - D. suzukii* scent/taste organs

 - Electroantennograms

 - Host odor profiles

- Dr. Joanna Chiu

 - Circadian rhythms

 - Activity monitoring system

 - Insecticide activity

California Commercial Raspberries

18 month cane life span

Tunneled early March
through November

Vary horticultural practices
and varieties

Ripe raspberries available
from April to December



Weekly Adult Population Monitoring

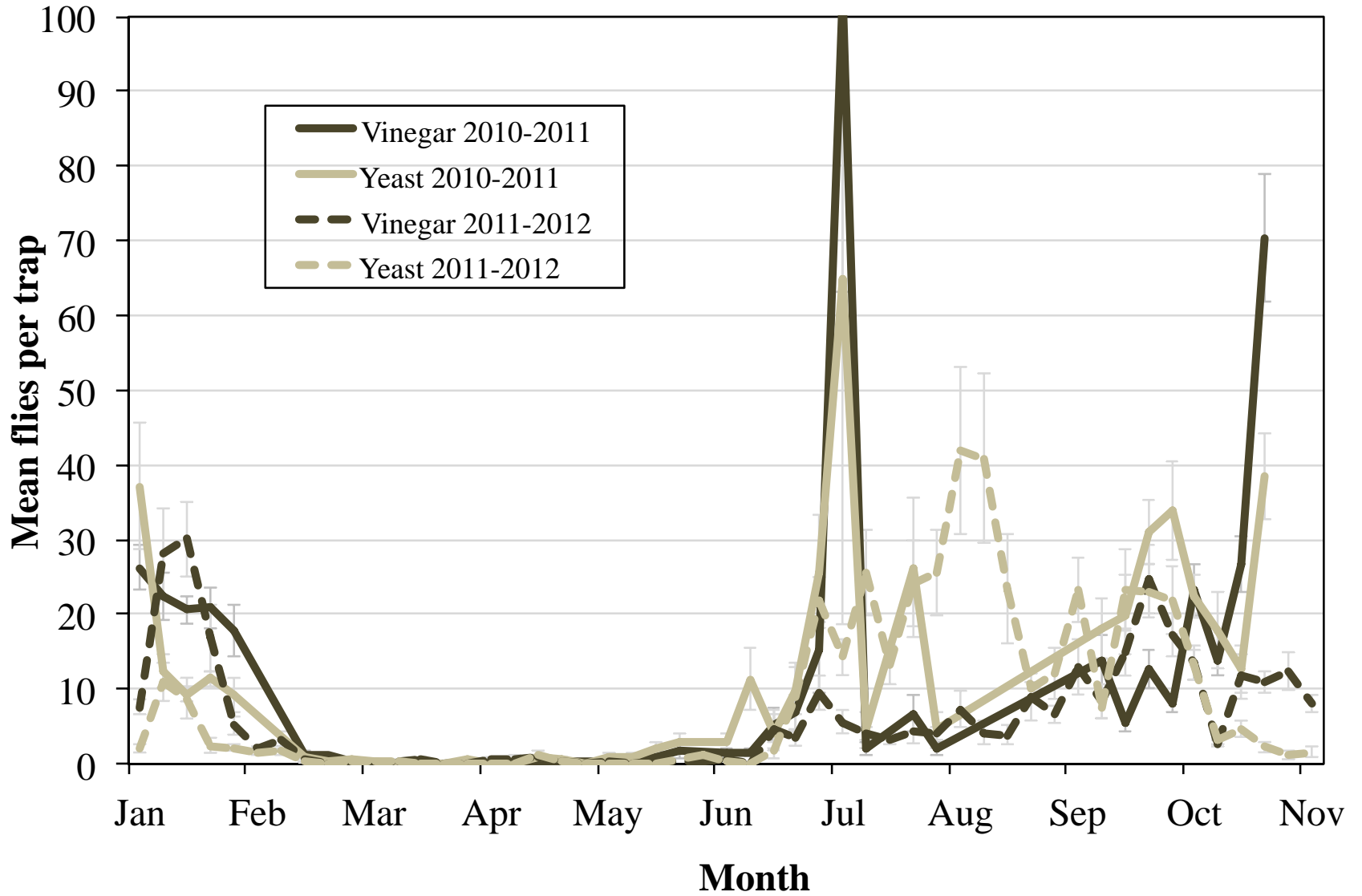
Trapping for 2 years

Early and late ripening varieties

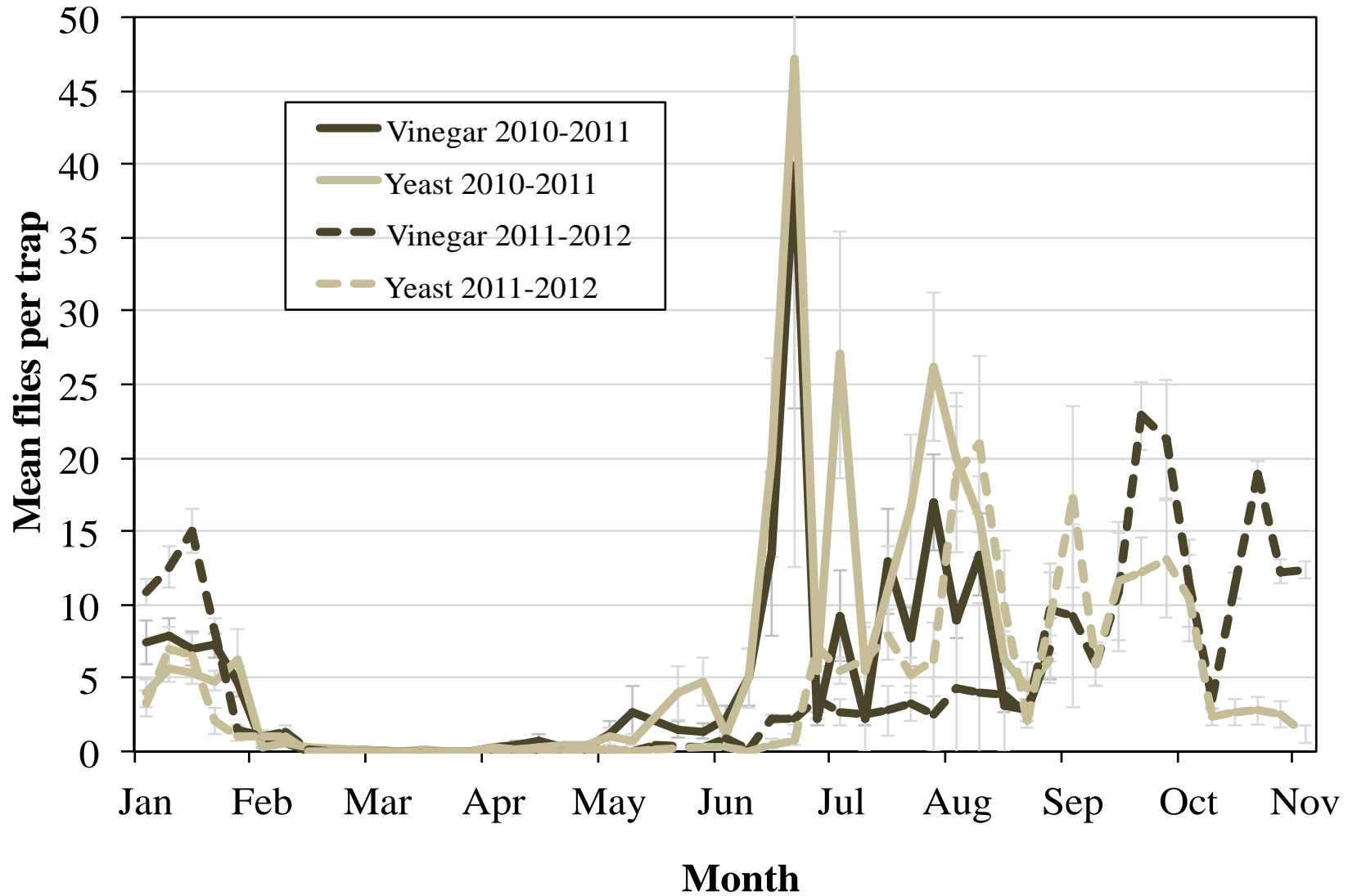
Apple cider vinegar, baker's yeast+sugar+water, and water control



Female *D. suzukii*



Male *D. sukuzii*



Lure Comparison

Yeast numbers slightly higher in summer

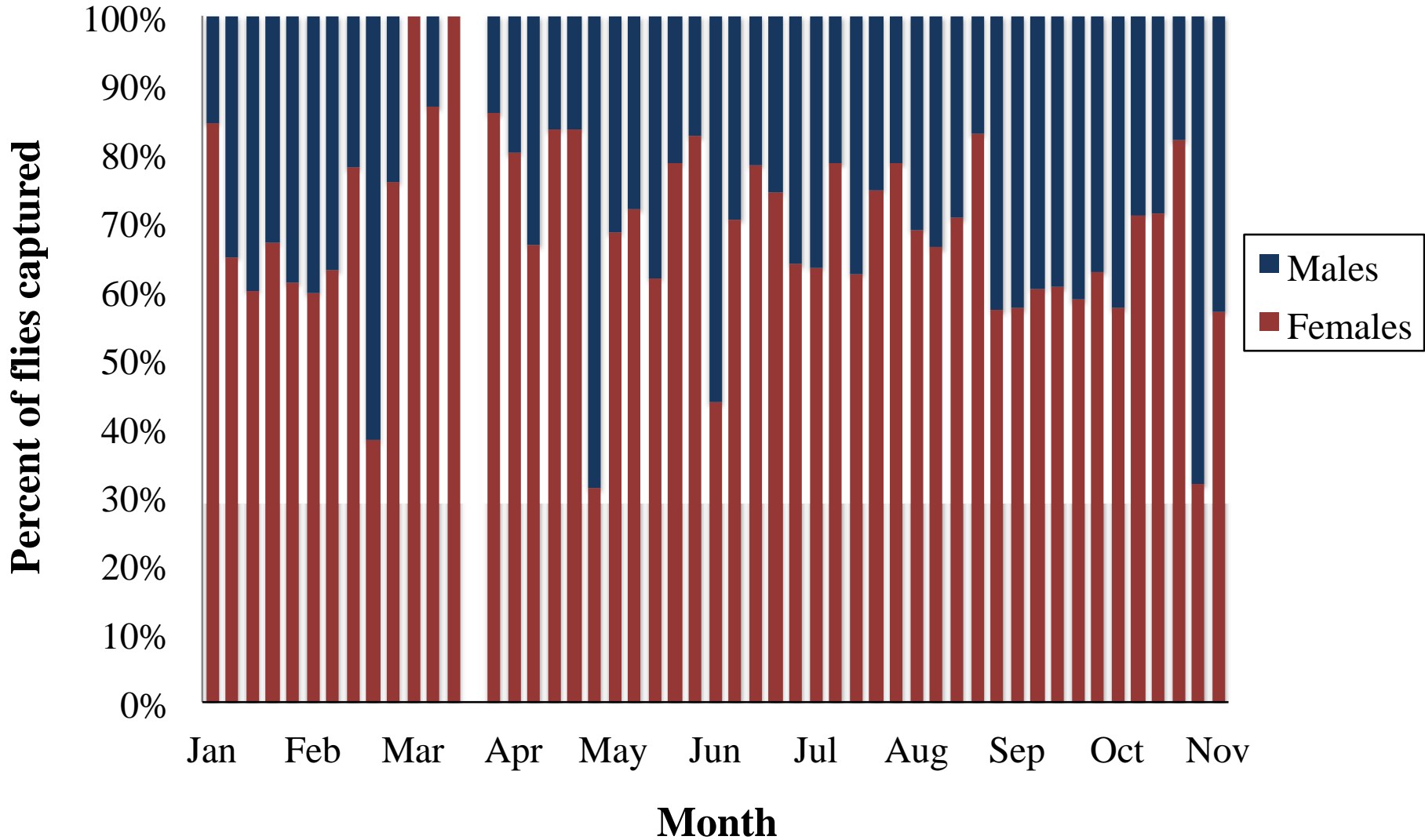
ACV in late fall/early winter

Otherwise fairly equal

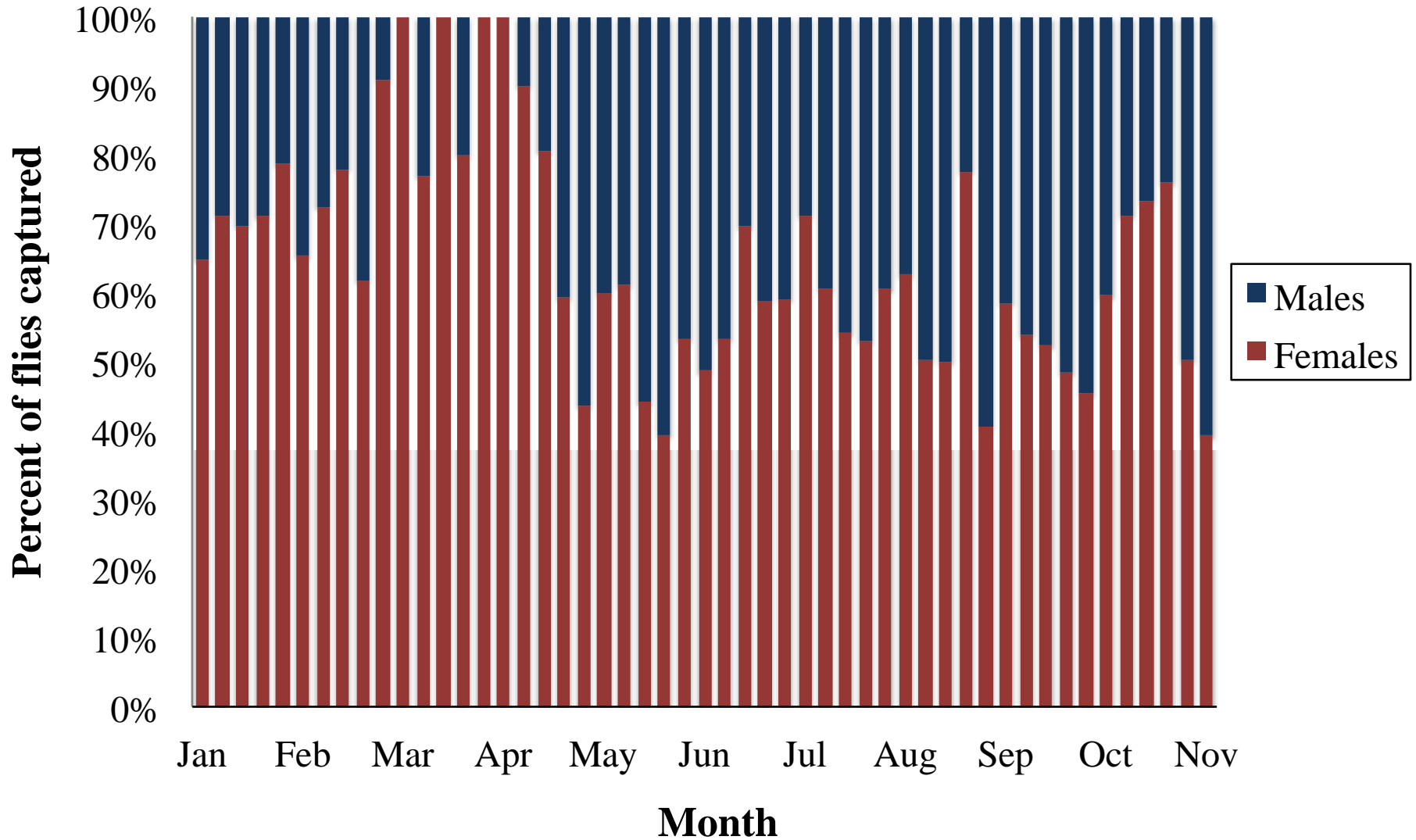
Neither particularly attractive in early spring



Yeast Sugar Water Sex Ratio



Apple Cider Vinegar Sex Ratio



Sex Ratio Comparison

YSW 33% male

ACV 38% male

ACV slightly more males



Monthly Vacuum Sampling

Vacuum each row

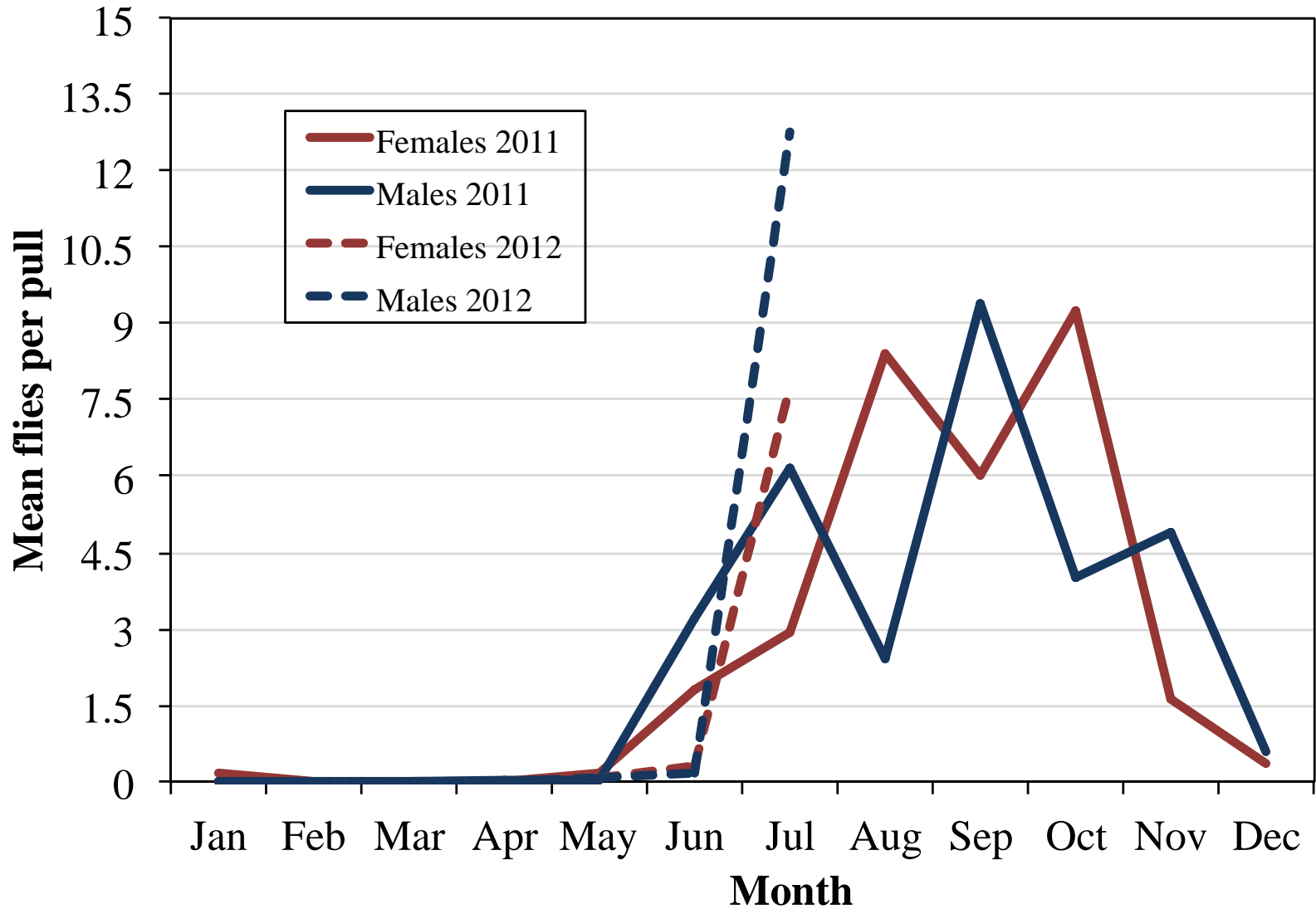
4 rows per variety

12 rows per site

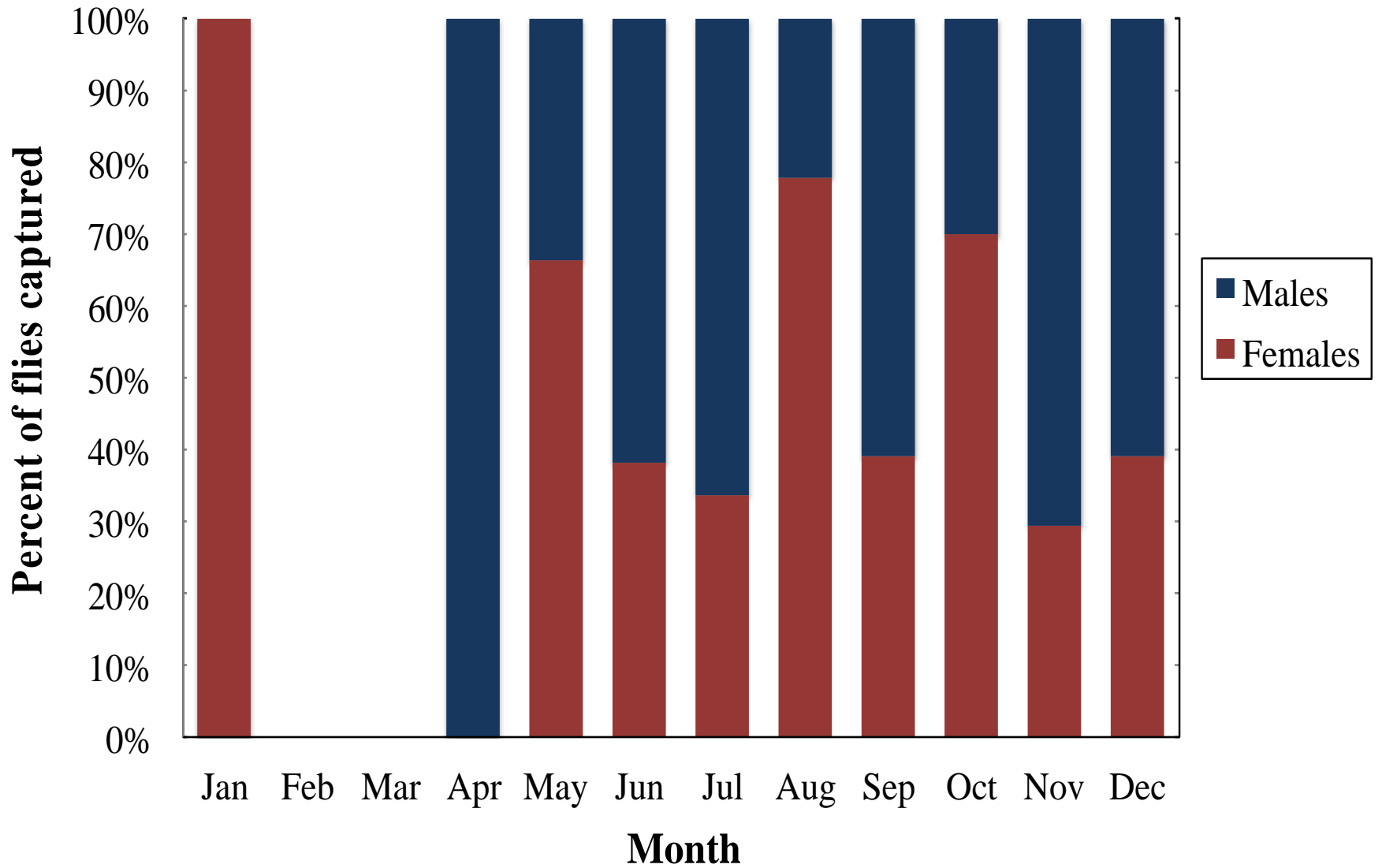
Vacuum 1 segment 5.5m



Vacuum *D. sukuzii*



Vacuum Samples Sex Ratio



Vacuum Sampling

Overall low capture

Not sensitive for
low populations

Less bias in sex ratio



Weekly Larval Population Monitoring

Collect fruit when available

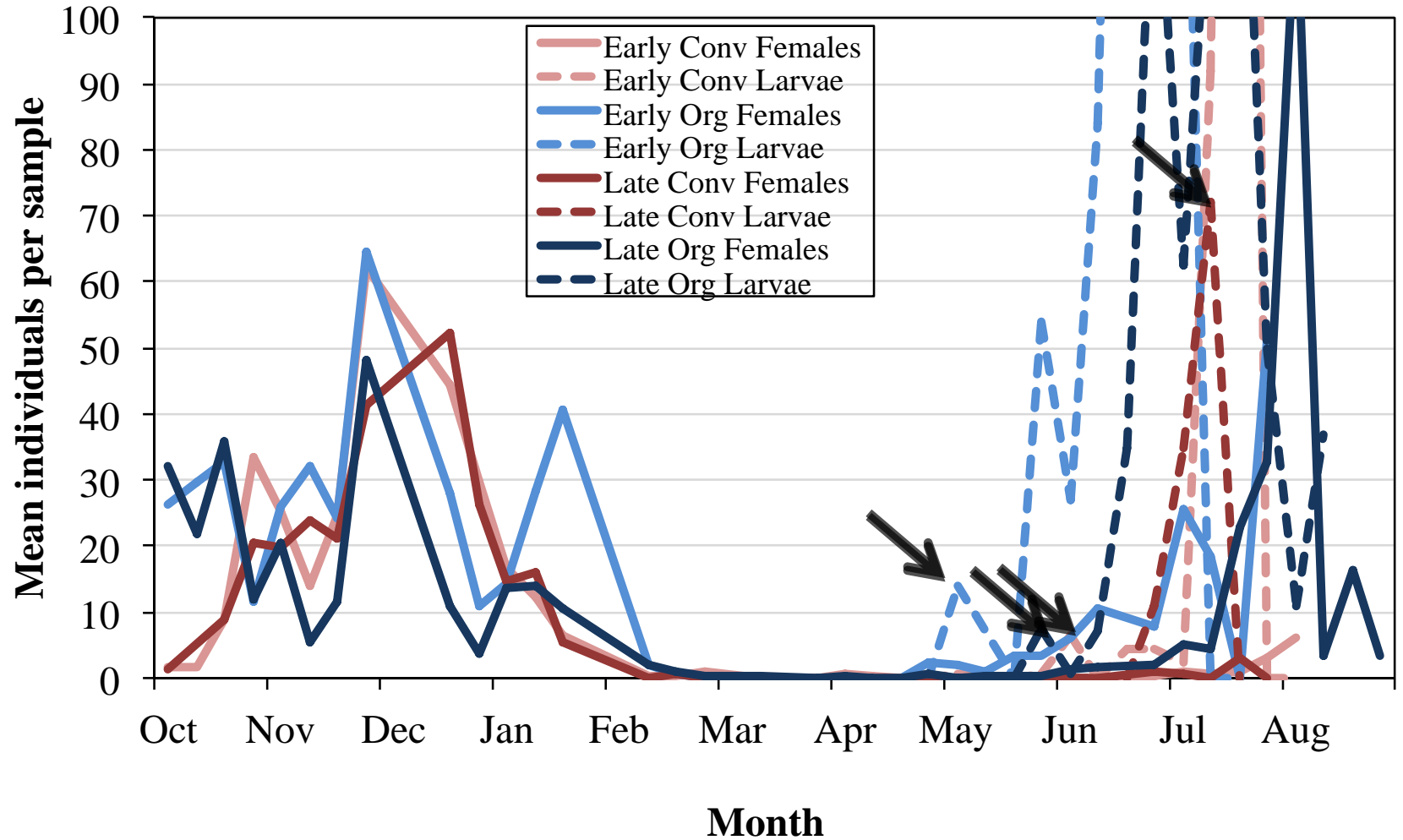
Float out with salt water

Filter through fine sieves

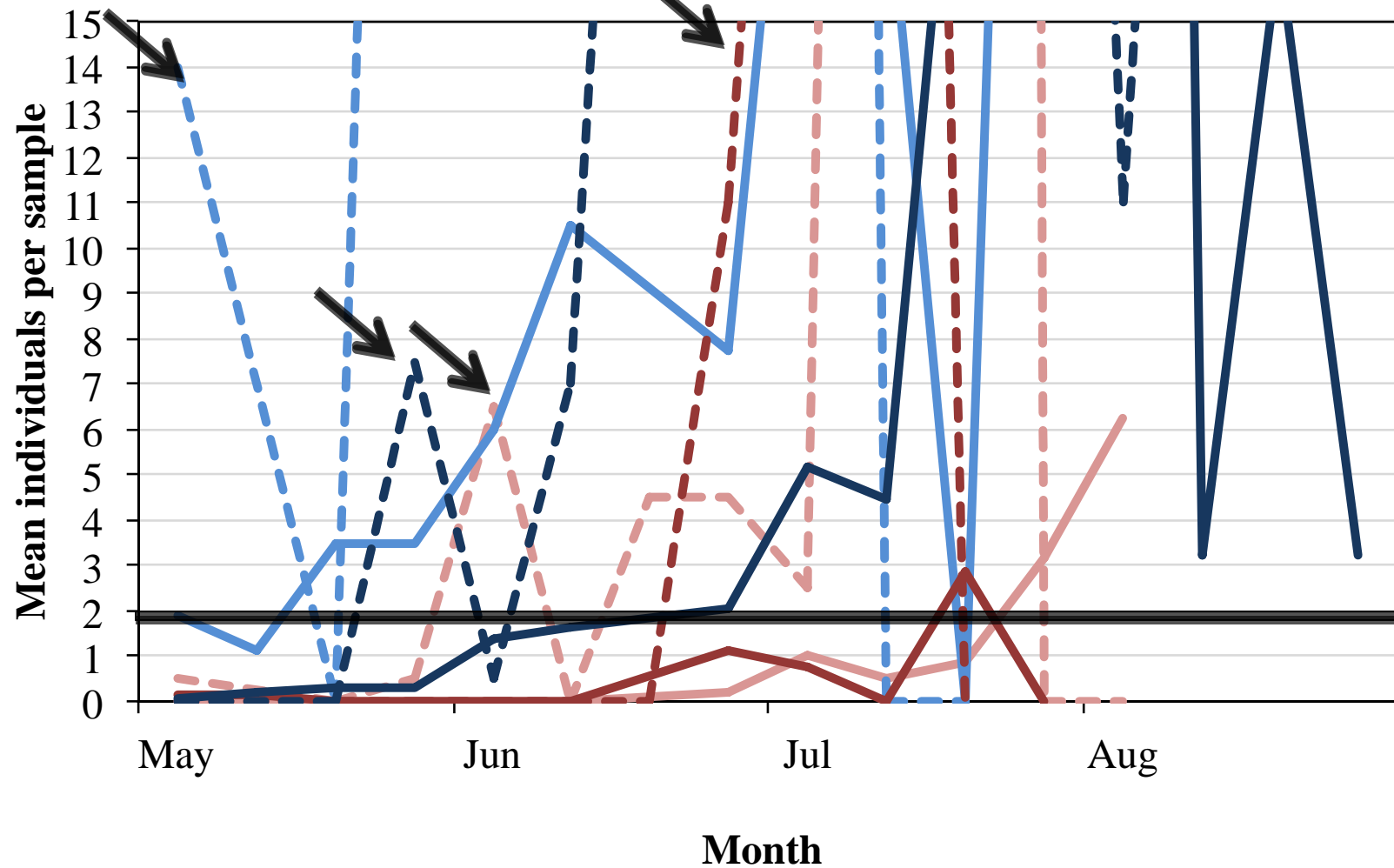
Count larvae under microscope



D. sukuzii population 2010-2011



D. sukuzii population 2010-2011



Organic and Conventional Sites 1 and 2

Site one planted Dec 2009

Fall 2010 Harvest

start Oct 2010

Spring 2011 Harvest

finish Aug 2011

Site two planted Dec 2010

Fall 2011 Harvest

start Aug 2011

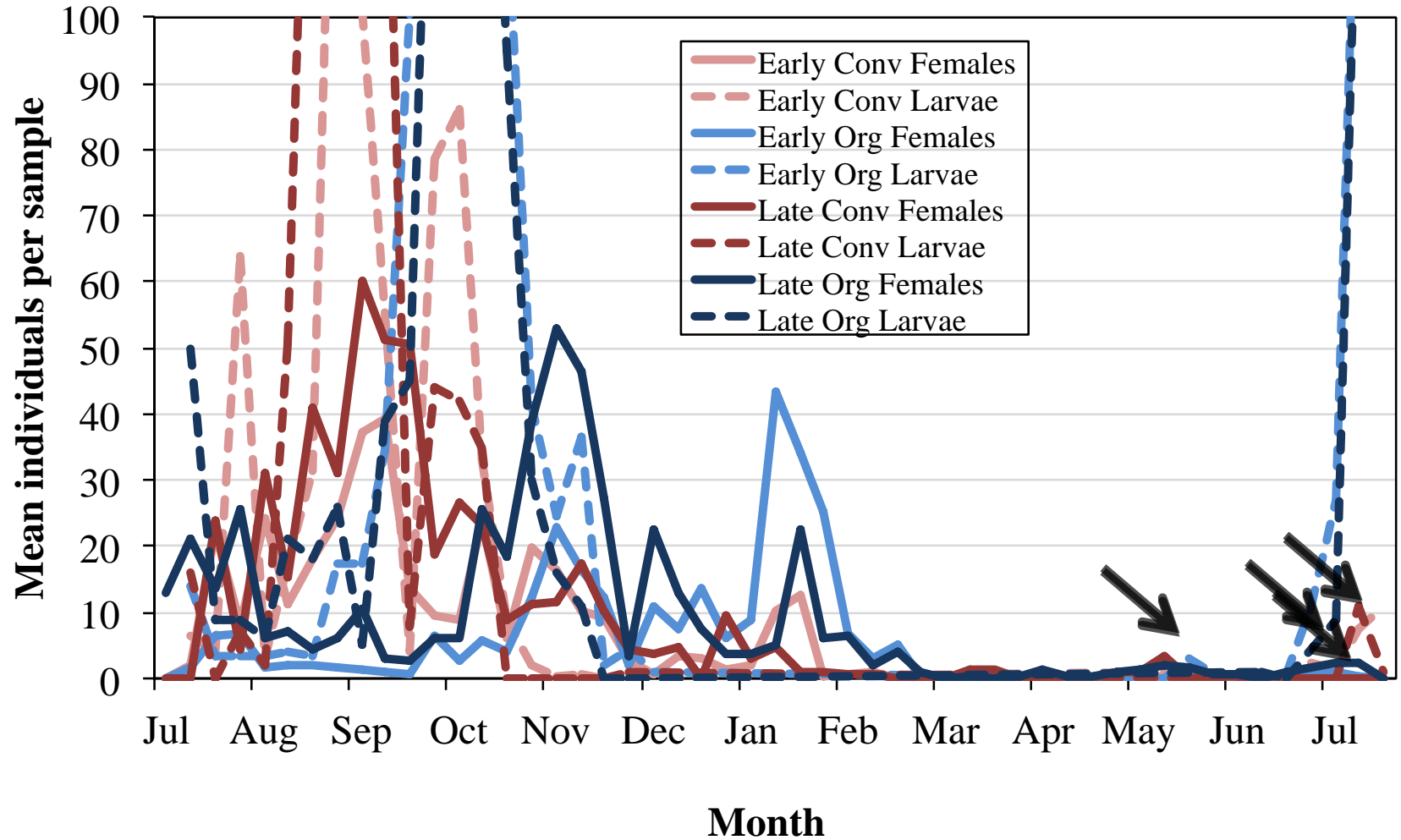
Spring 2012 Harvest

finish Aug 2012

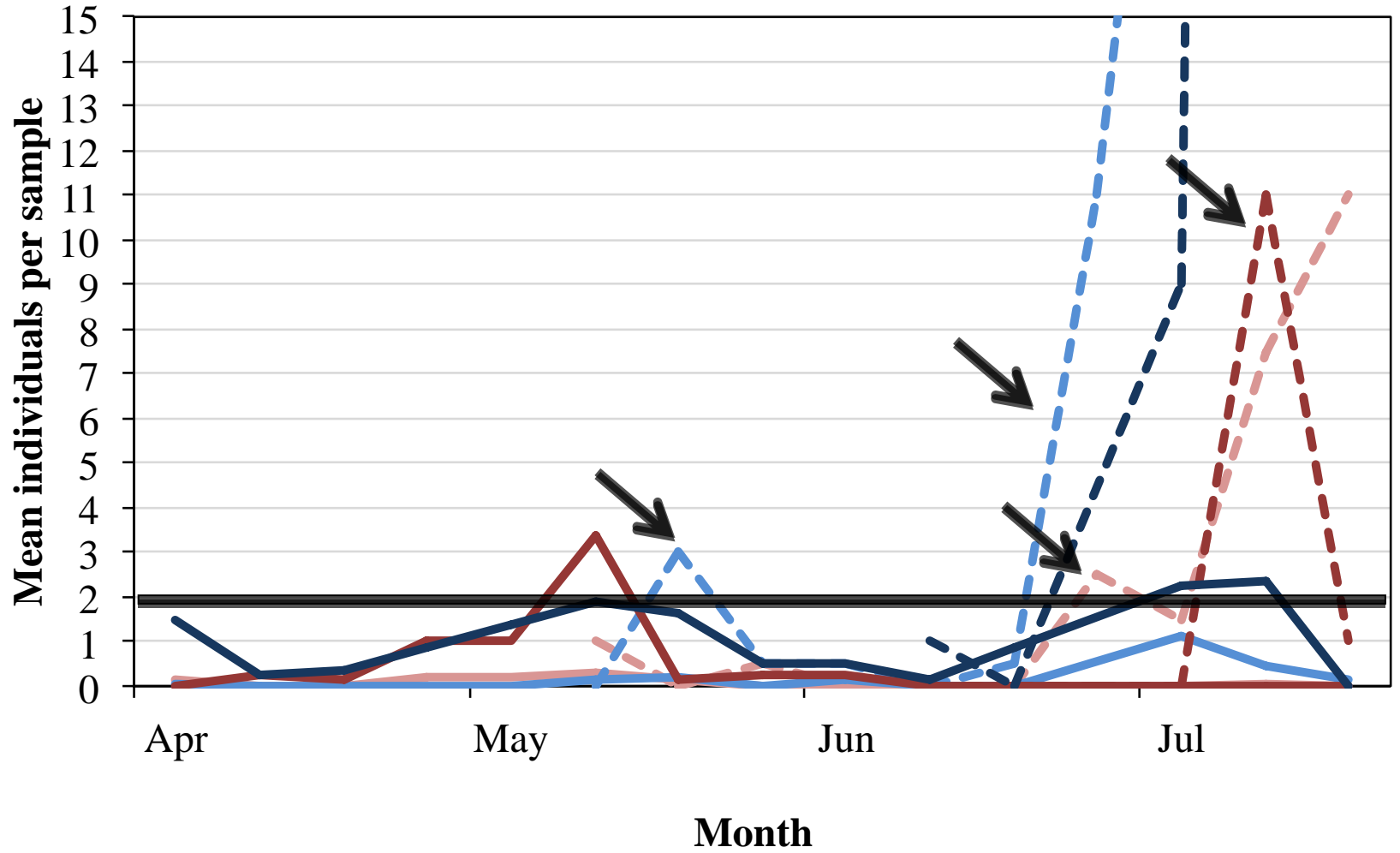


	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010-2011				HARVEST 2011				HARVEST 2010				
	MOW 2011											PLANTED 2009
2011-2012				HARVEST 2012				HARVEST 2011				
	MOW 2012											PLANTED 2010

D. sukuzii population 2011-2012



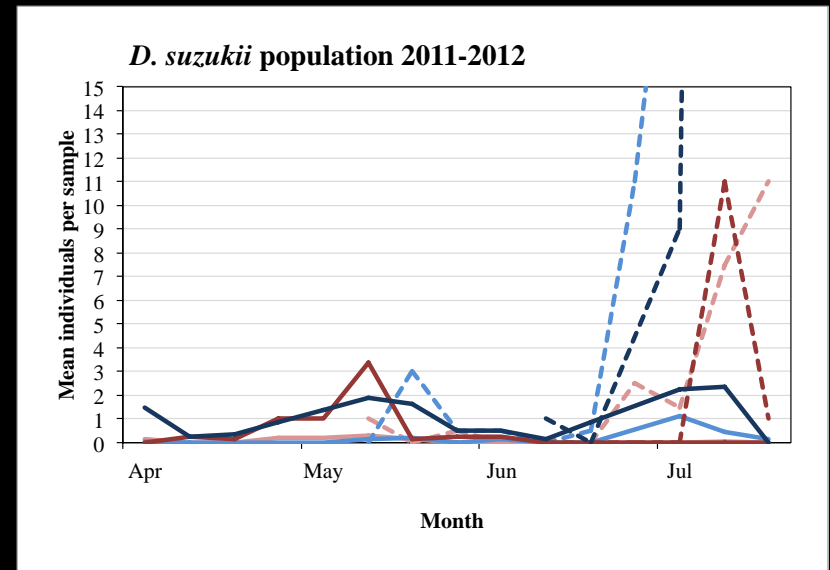
D. sukuzii population 2011-2012



Larval Sampling

Most sensitive population
measure

Larvae present in 40 berries
when < 2 female flies per trap



Conclusions

ACV about equivalent to YSW

Larvae present in berries prior to significant adult population

Vacuum sampling less biased but needs >5.5m per row

