Lessons Learned from Ten Years of NOW Egg Trap Research

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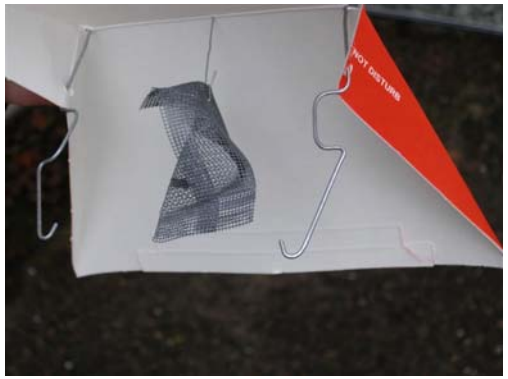
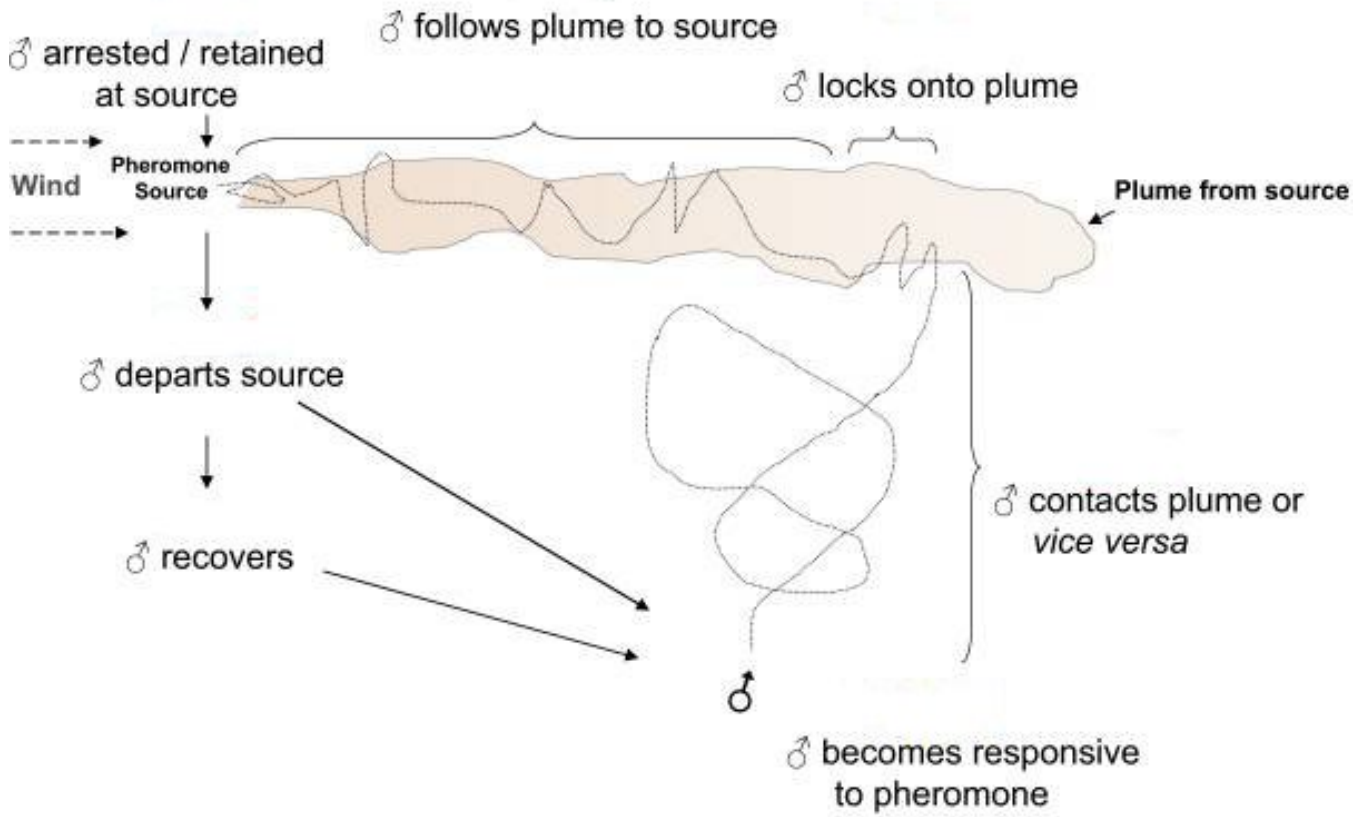
USDA/ARS, Parlier



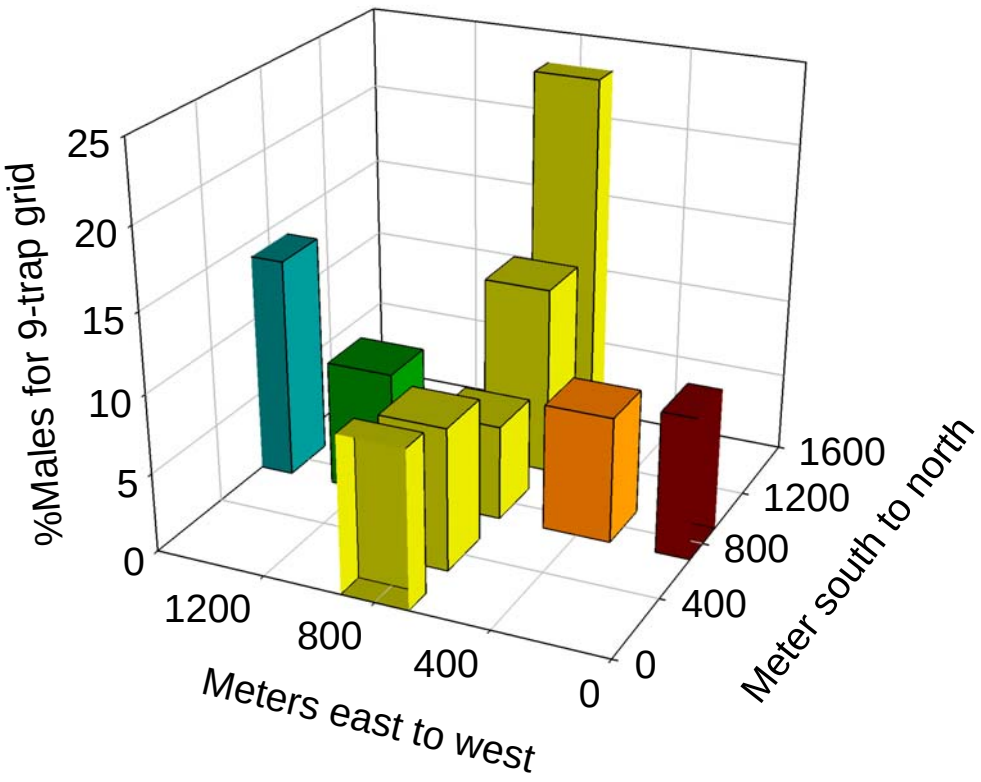
1) The range of attraction is far shorter for egg traps than for pheromone traps

What is range of attraction?



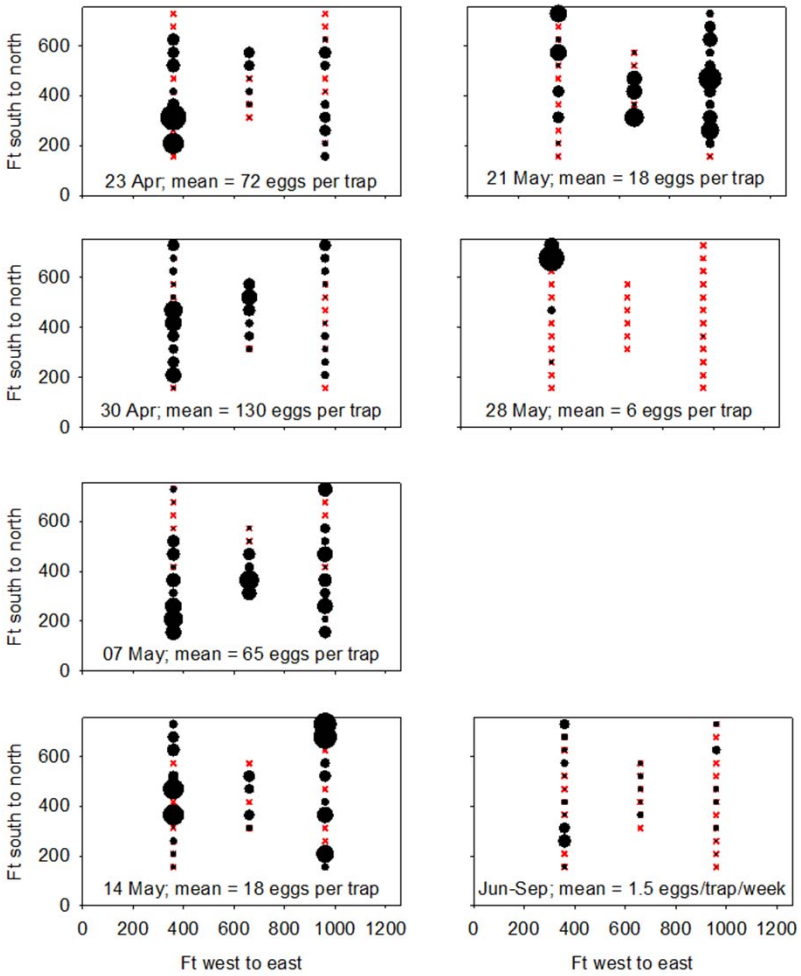
Modified from Miller et al., PNAS 107:22-27, 2010

Long range of attraction—NOW pheromone traps



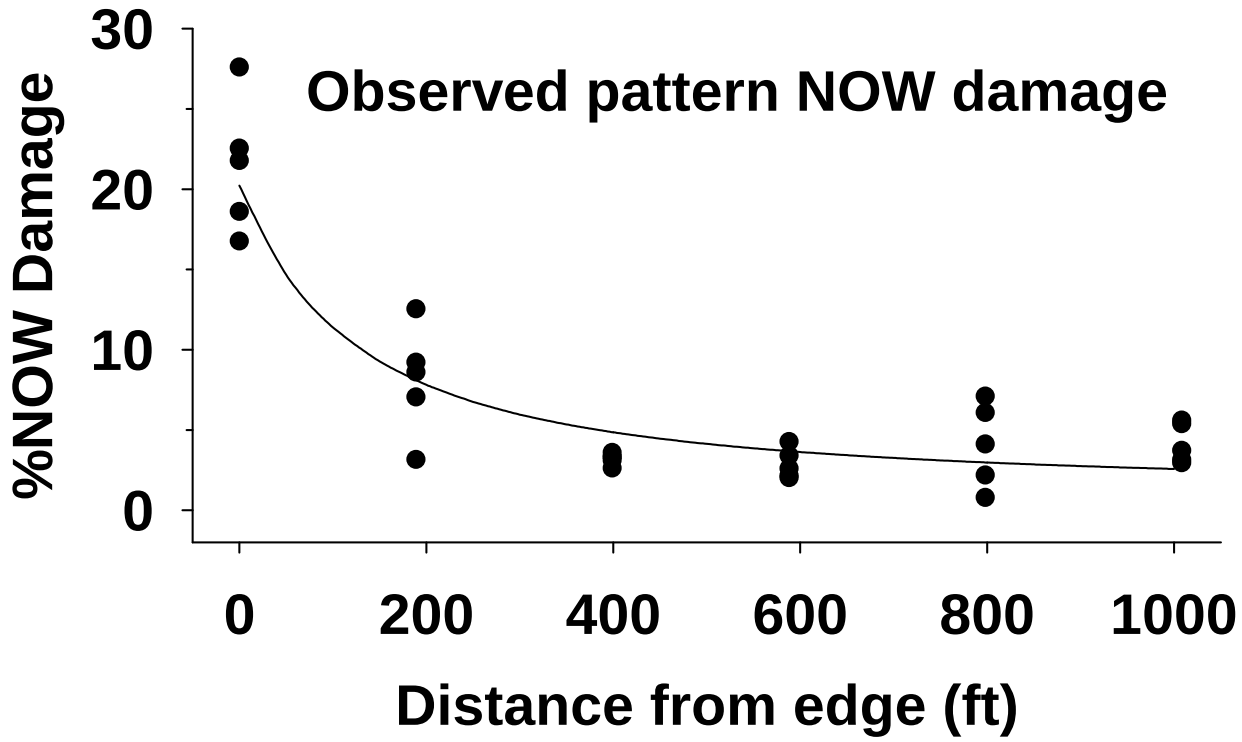
Burks & Higbee, 2013, Environ. Entomol. 42:143-149

Short range of attraction—NOW egg traps



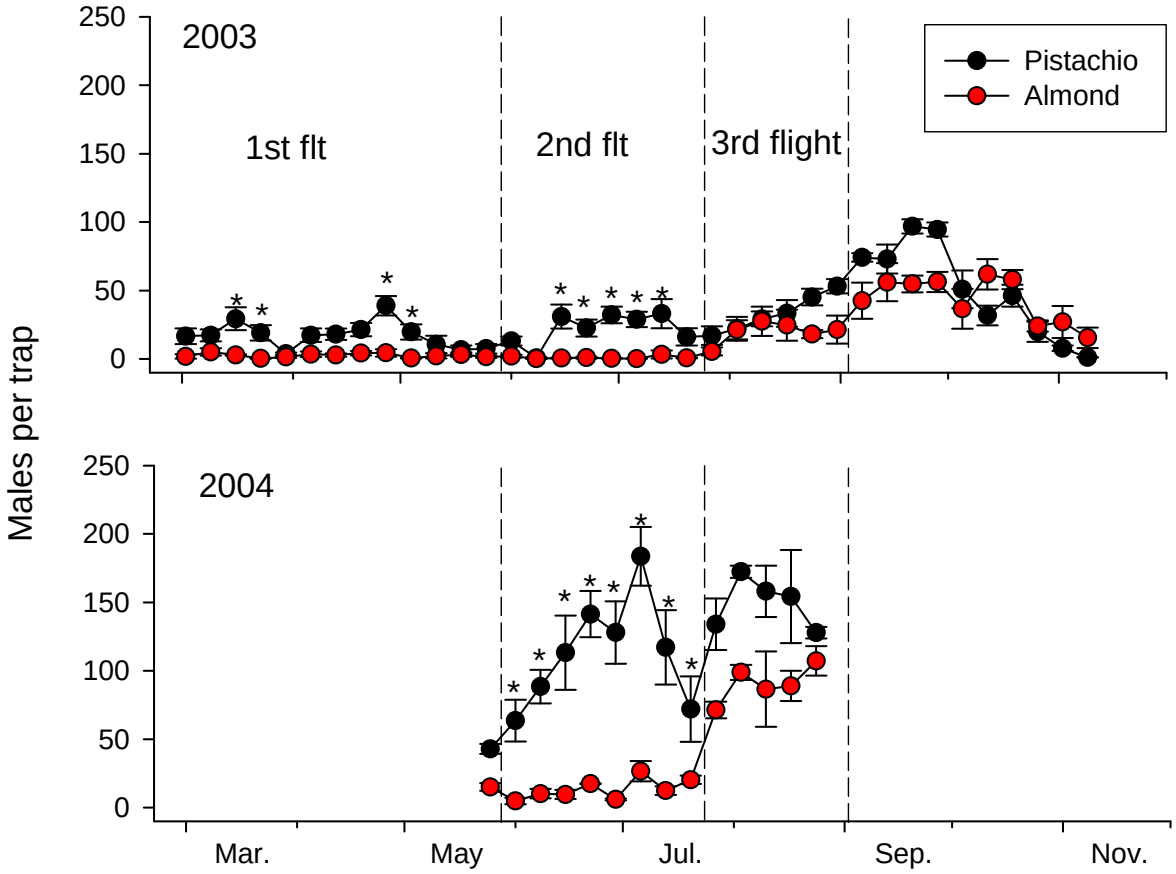
Walnuts, 2012

Importance short range of attraction



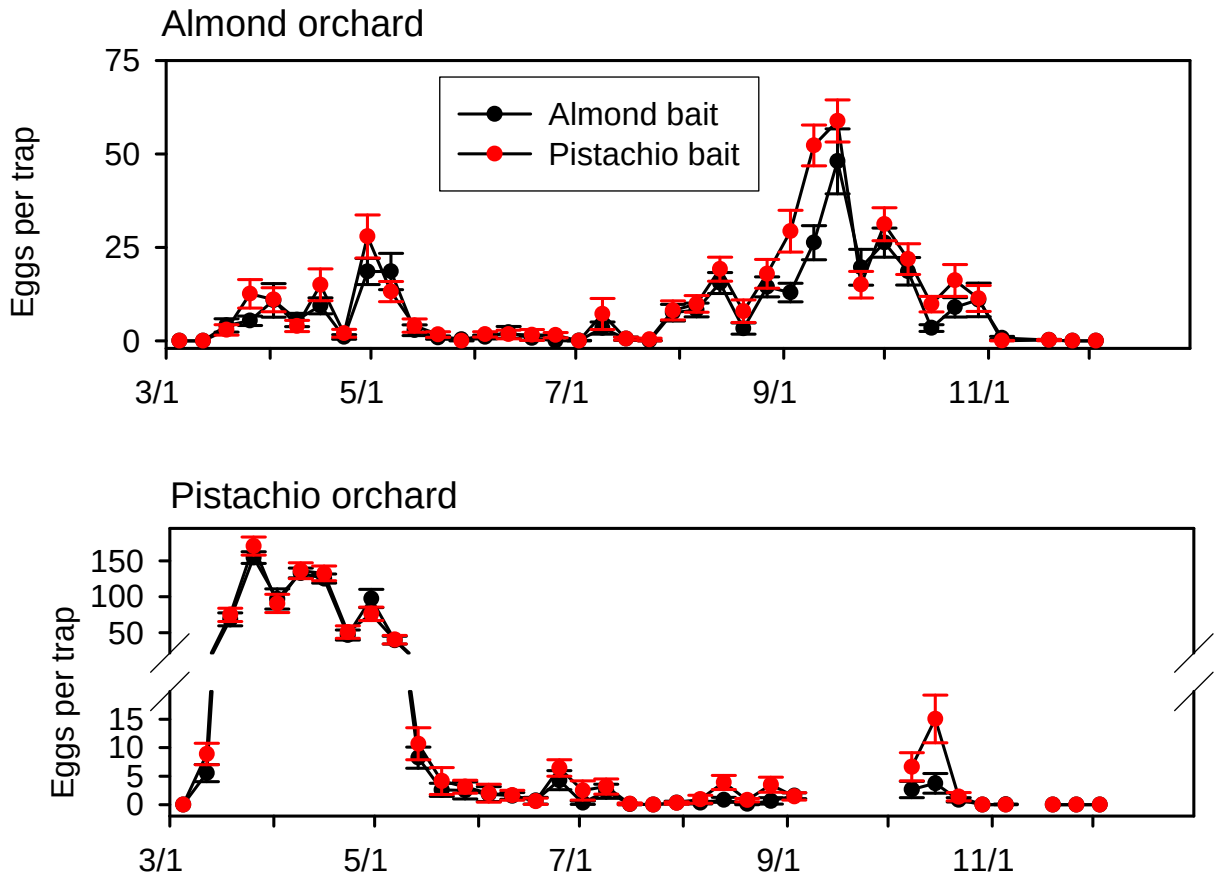
2) Egg traps are more affected by crop type than pheromone traps

Males—greater abundance in pistachios than in almonds



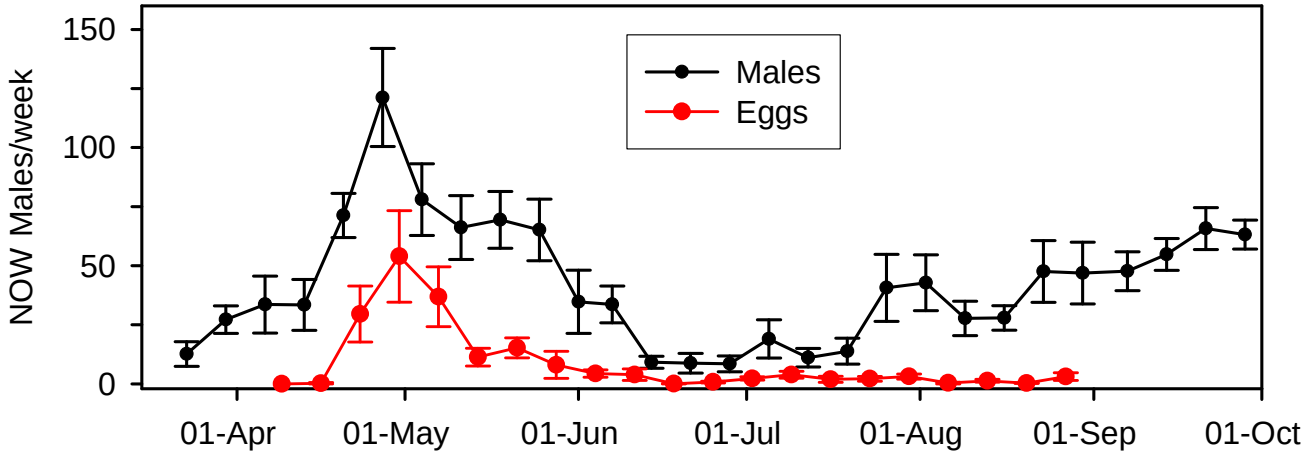
Burks et al., 2008. Entomol. Exp. Appl. 129:66-76

Eggs—fewer eggs and greater differences in pistachios than in almonds



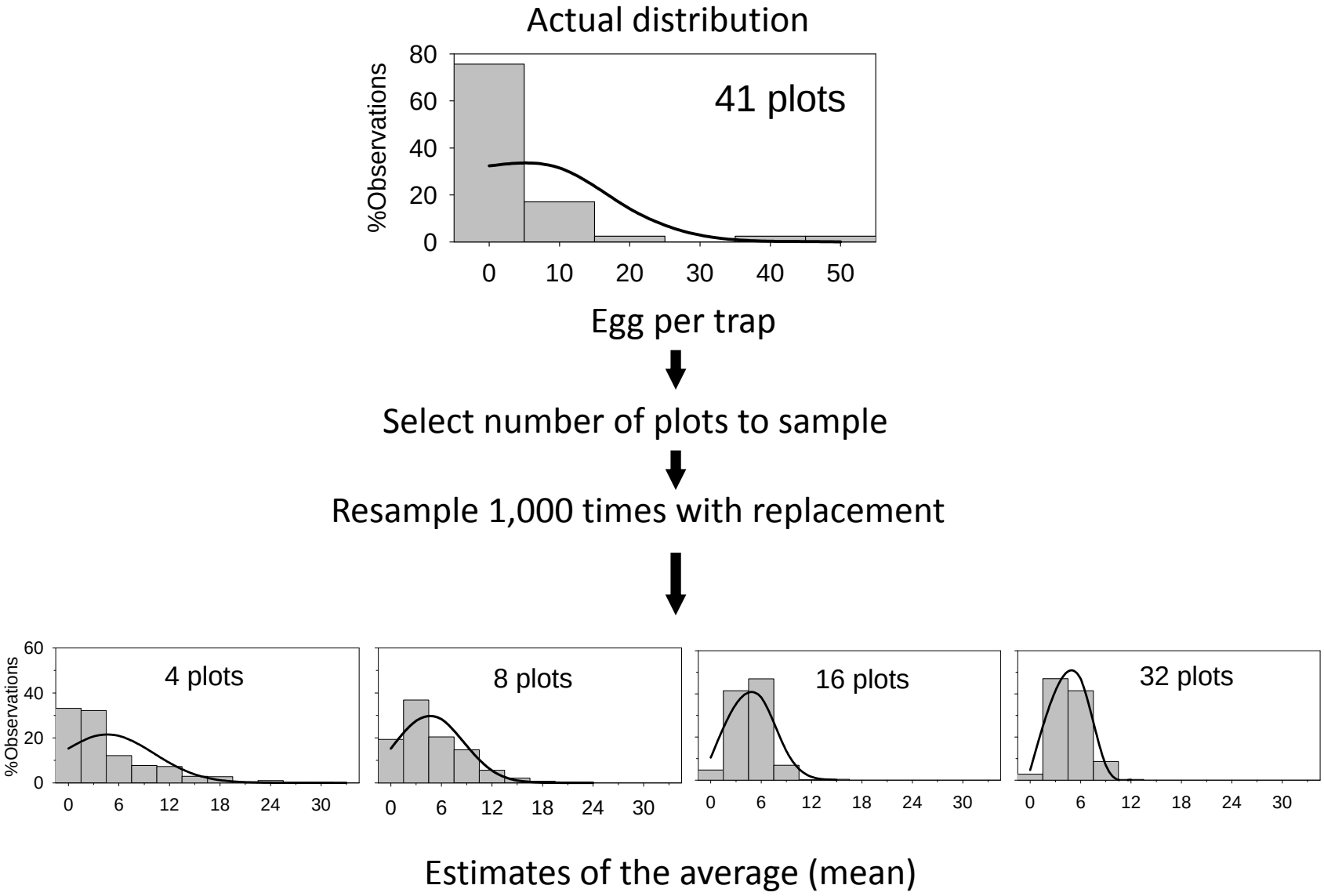
Higbee and Burks, 2011. J. Econ. Entomol. 104:211-219

Eggs v. males in walnuts—similar to pistachios

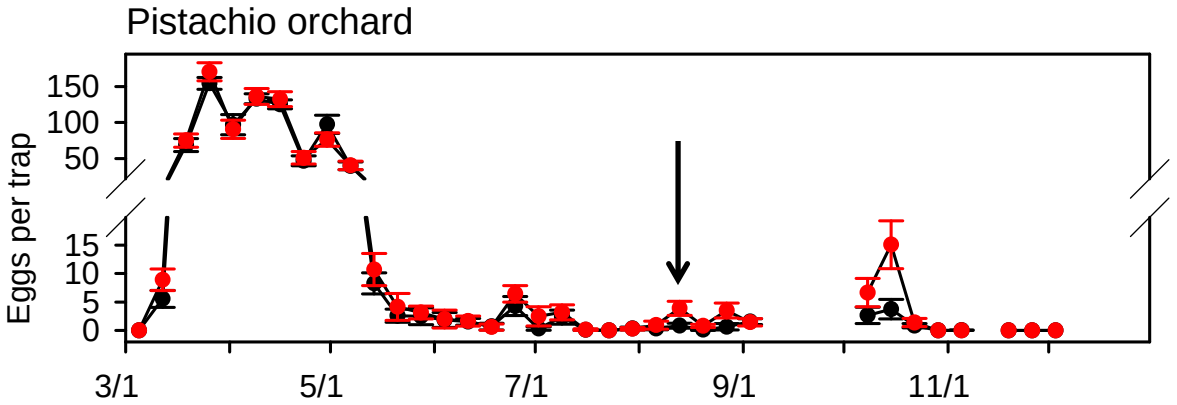


3) The number of traps trumps the bait in the traps

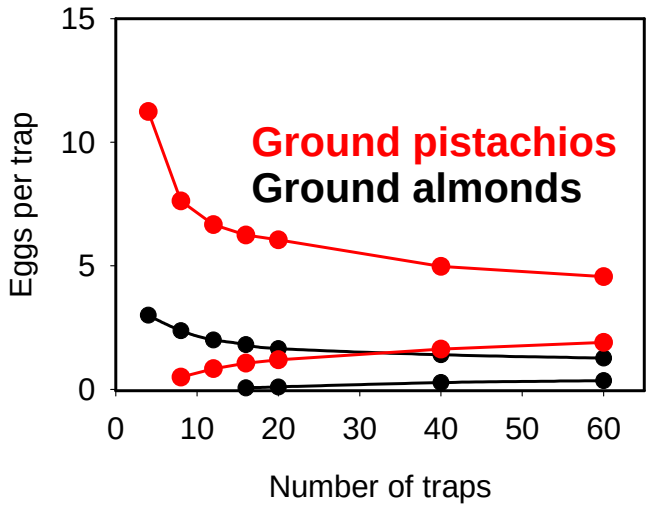
Bootstrap analysis of the effect of the number of traps examined



Bootstrap analysis: effect of the bait used



Bootstrap analysis, 60 traps



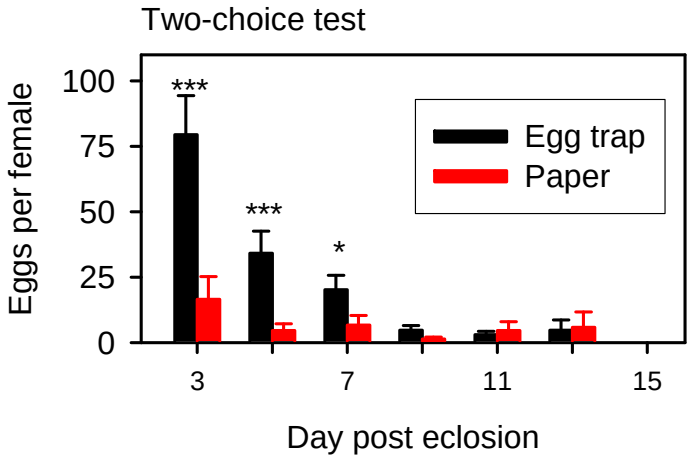
Higbee and Burks, 2011. J. Econ. Entomol. 104:211-219

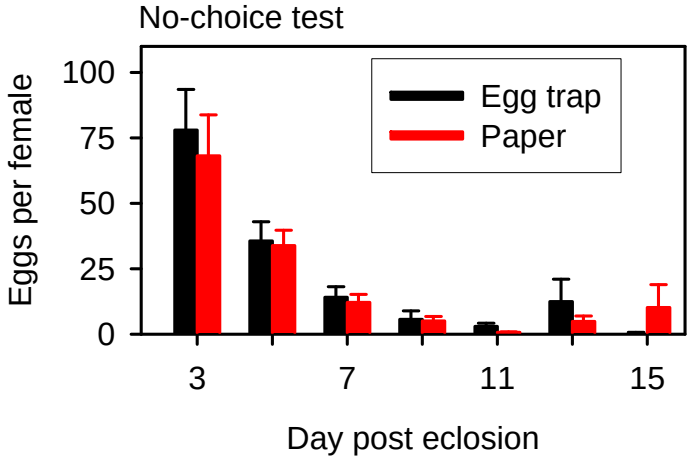
4) Where eggs are laid depends on the choices available

Laboratory test—choice v. no-choice

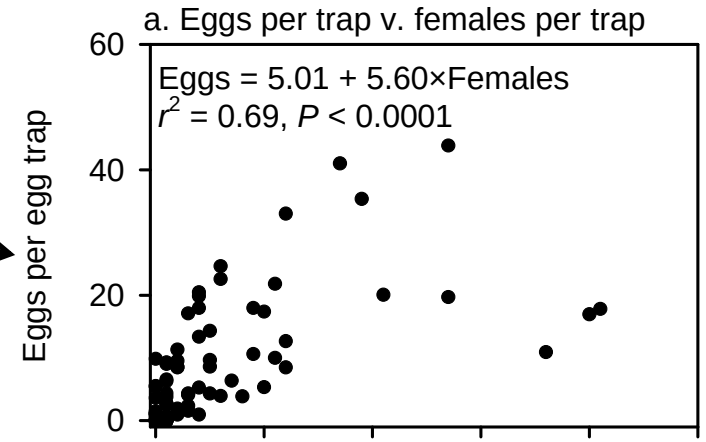
Set-up, two-choice test

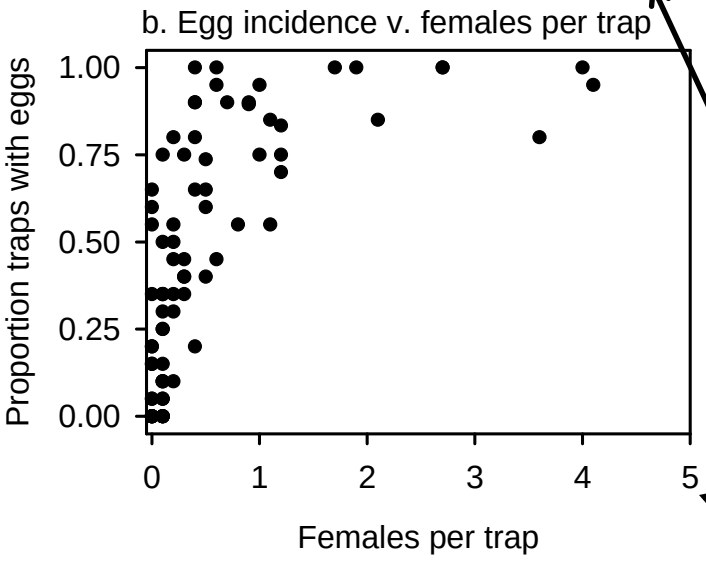
Set-up, no-choice test



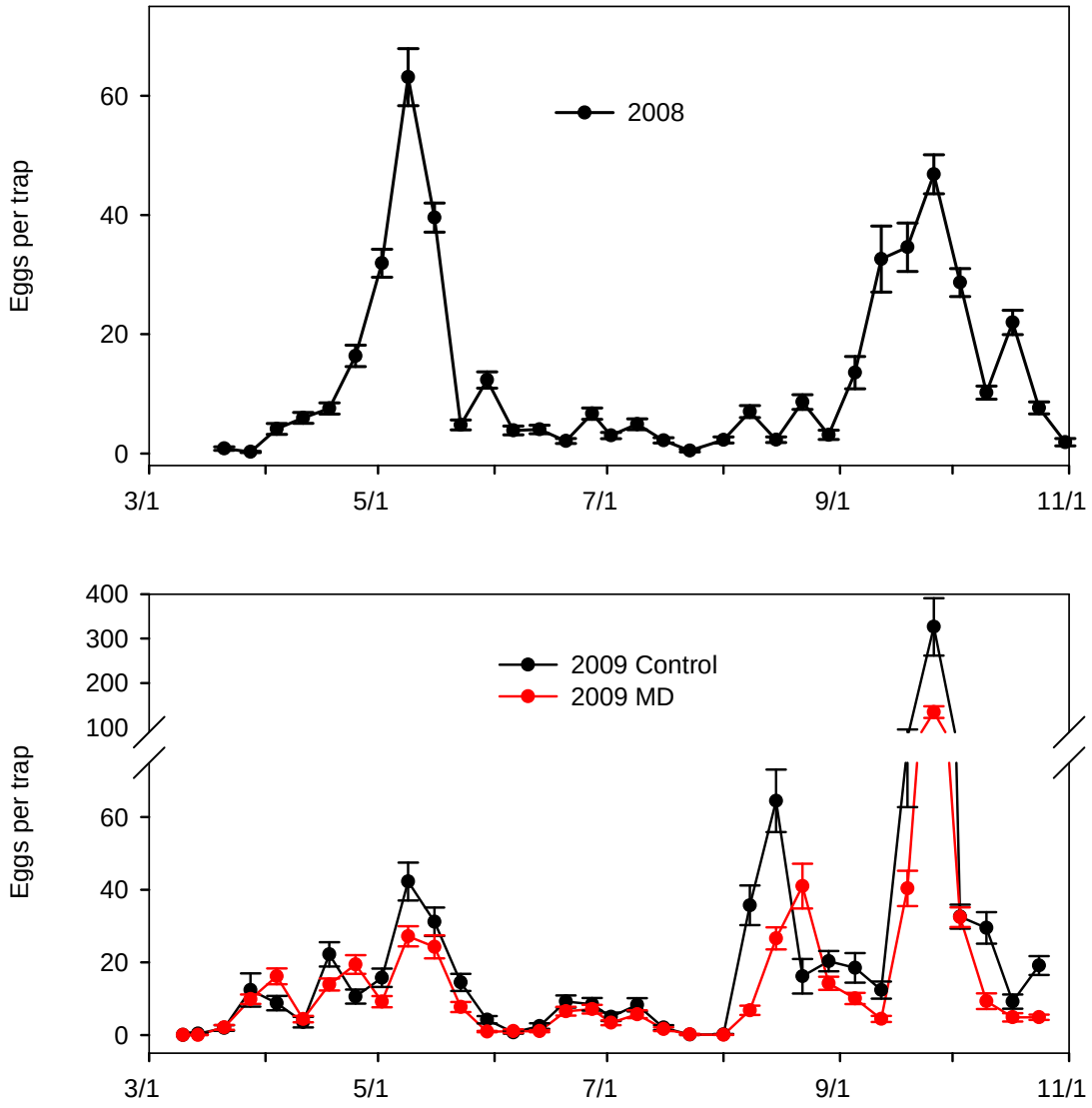


5) Egg traps give two types of information—how many females, and how fertile

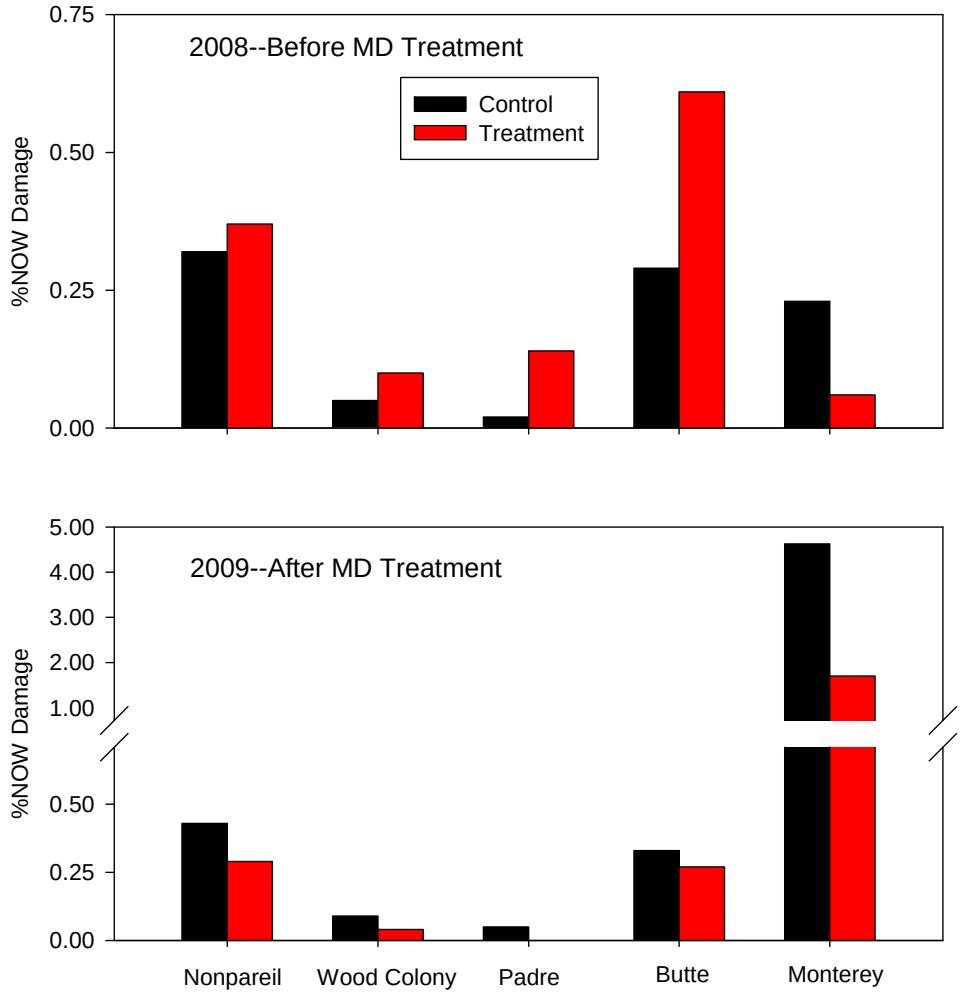

a. Eggs per trap v. females per trap
Eggs = 5.01 + 5.60×Females
r^2 = 0.69, P < 0.0001
Eggs per egg trap
60
40
20
0


b. Egg incidence v. females per trap
Proportion traps with eggs
1.00
0.75
0.50
0.25
0.00
0
1
2
3
4
5
Females per trap

Eggs and damage (mating disruption)



Eggs and damage (mating disruption)



Egg trap lessons—summary

1) Short range of attraction
2) More affected by crop type
3) Number of traps more important than bait type
4) Oviposition strongly dependent on choices available
5) Information on both number of females and there fertility

Kaweah River Valley (http://drycrikjournal.com/)