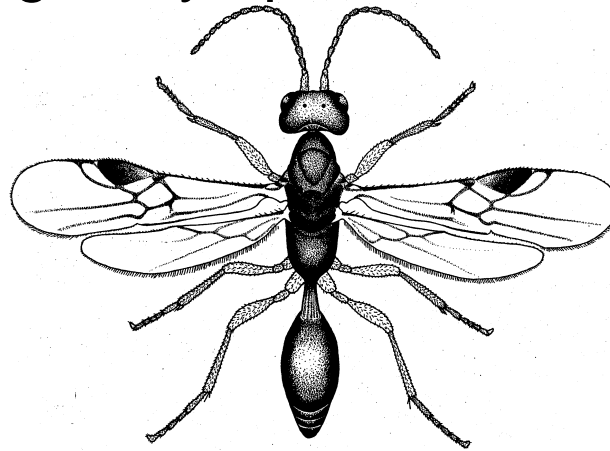


# Establishment and Spread of the Lygus Parasitoid *Peristenus relictus* in California

30 October 2012

3<sup>rd</sup> International Lygus Symposium, Scottsdale, Arizona



**Charles Pickett (presenter)**  
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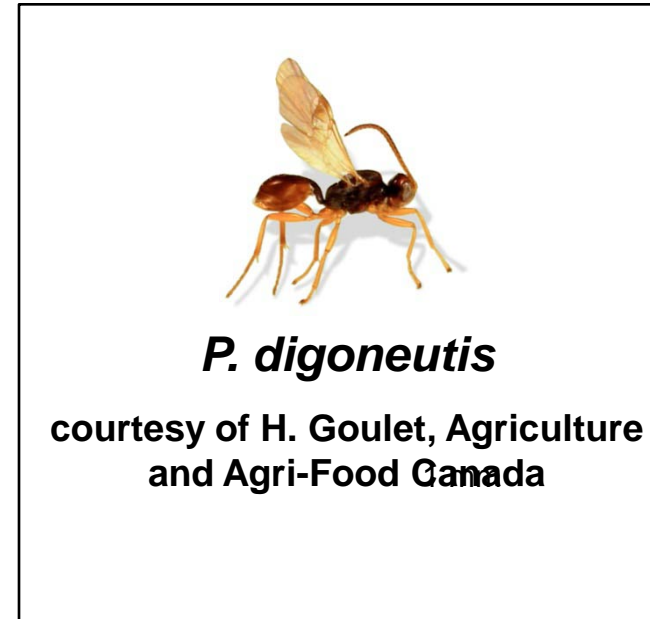
# OUTLINE

- Importation, release
- Establishment, Spread
- Seasonal Trends/Impact

# Importation of *Peristenus* spp. 1998 to 2002



***P. relictus***  
**(=*stygicus*)**  
**stinging Lygus**  
**nymph**



***P. digoneutis***

courtesy of H. Goulet, Agriculture  
and Agri-Food Canada

# Third Instar Peristenus Emerging from Lygus nymph

photo by D. Wisheropp, 2009



# California release sites:





# Overwintering recovery

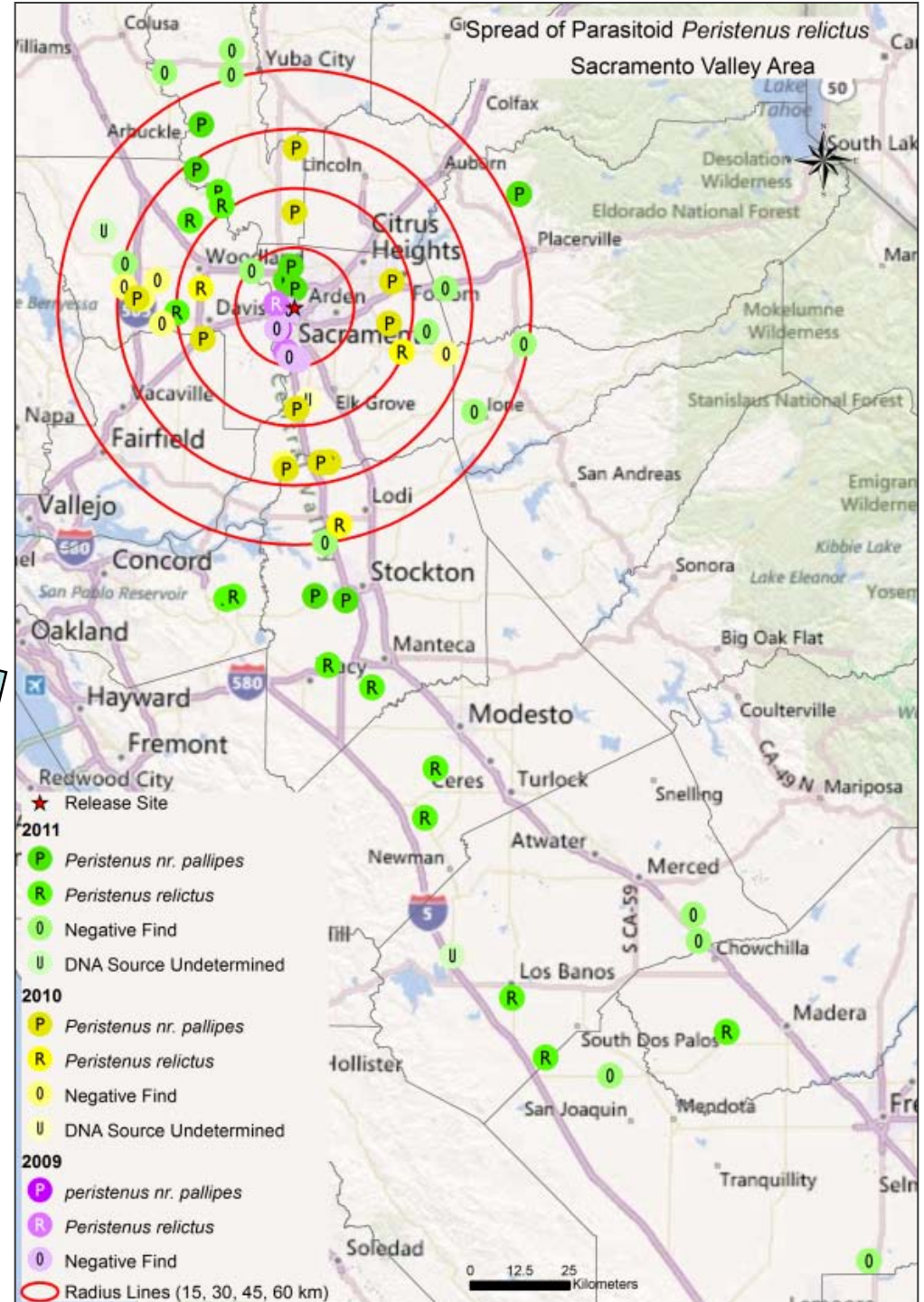
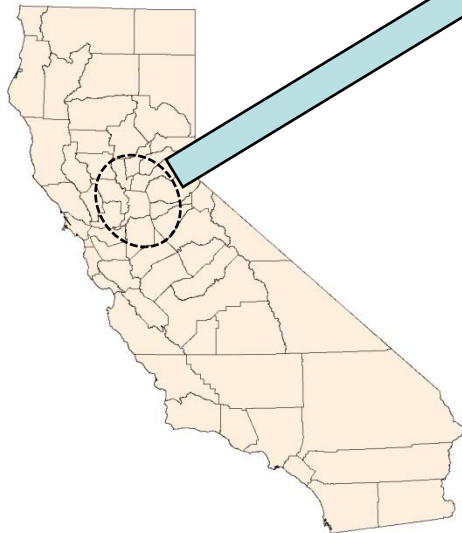
- Sacramento: 2 years after release
  - Both *P. relictus* and *P. digoneutis*
- Central Coast, following year of release
  - Only *P. relictus*



# Dispersal of *P. relictus*

1998-2011, 213 km

On average, 16 km per year.

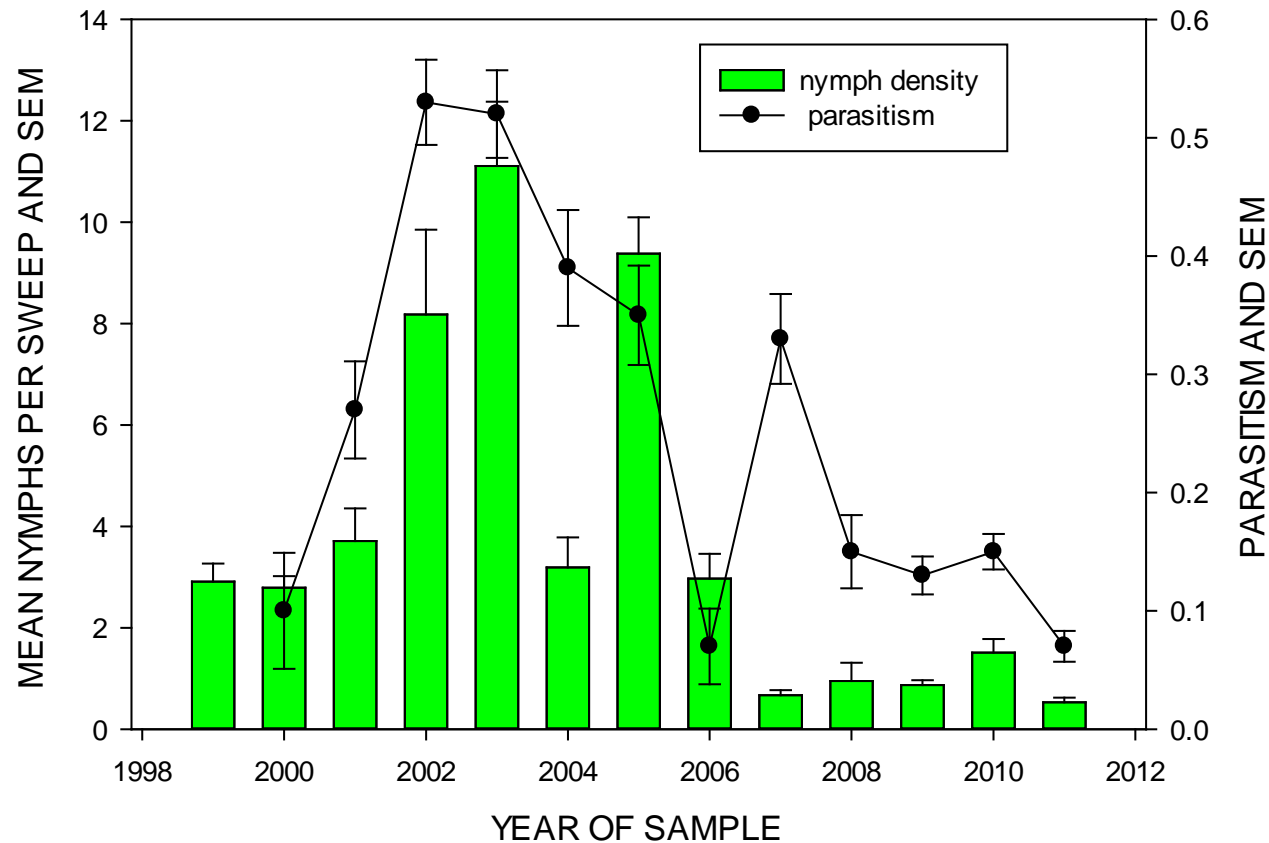




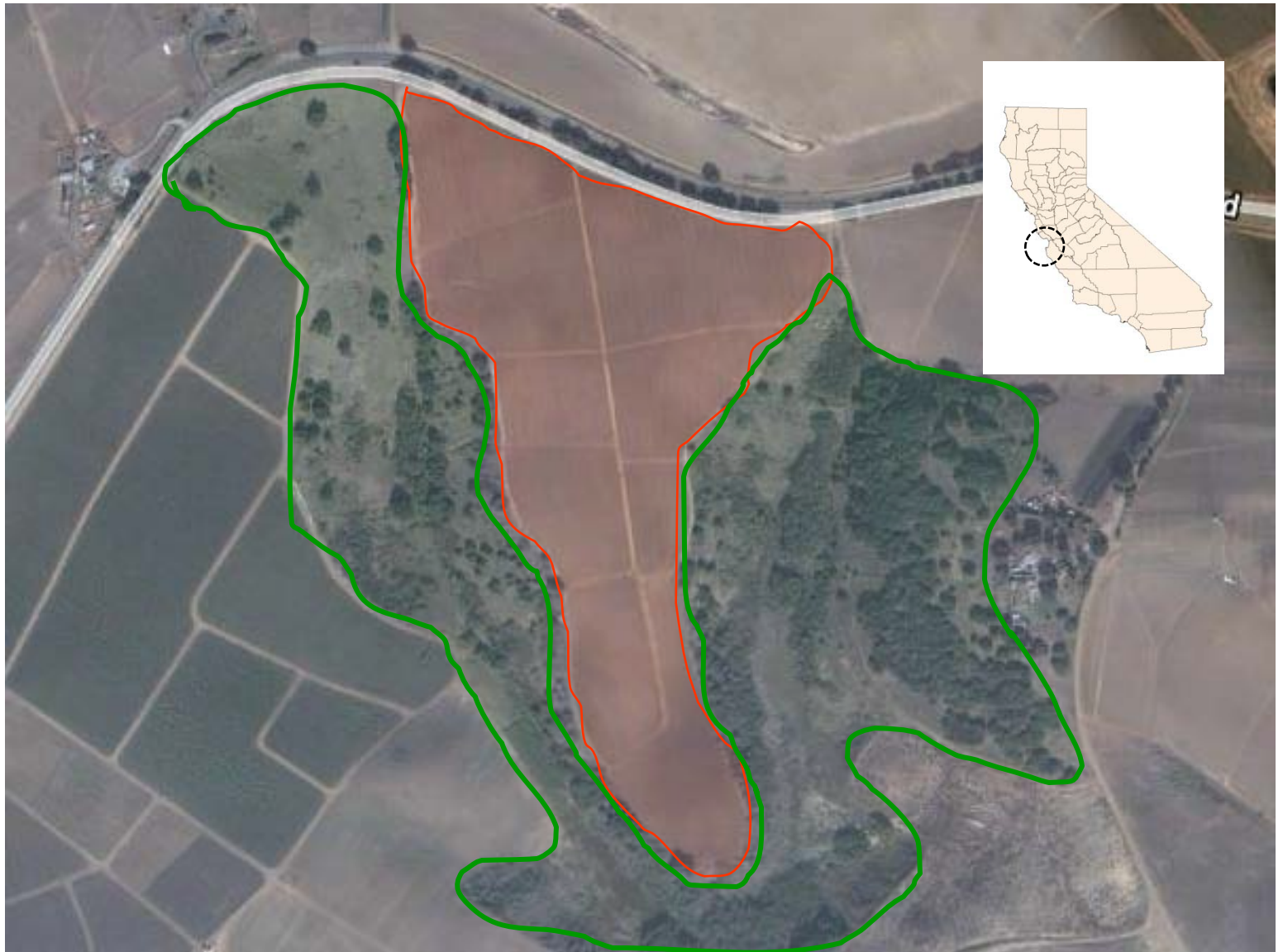
# First Release Site: Alfalfa Plot, Sacramento,



NB St. Seasonal Trends



# Castroville Site:





# Castroville, Monterey Bay Region (second release area), Conventional Strawberries, starting 2002

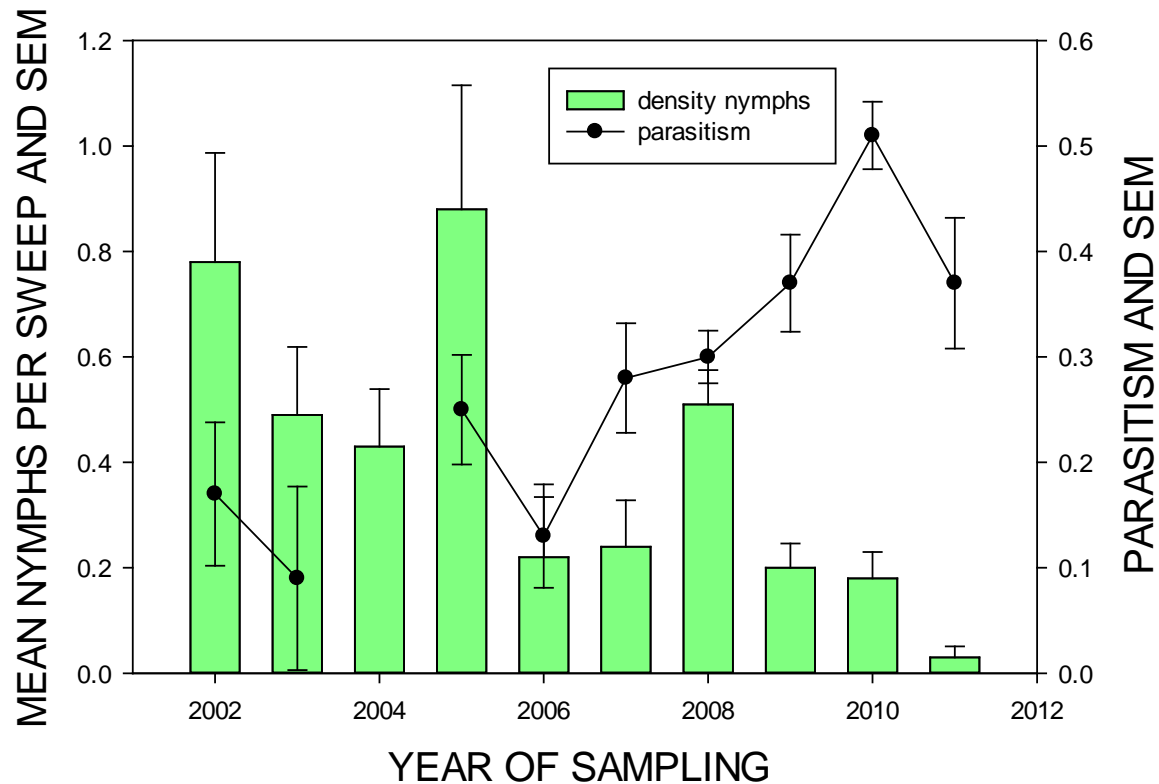
strawberries





# Seasonal Trends in Wild Vegetation Castroville (Castro1) Site

Castro1 Site, Weeds, Seasonal Trends<sup>1</sup>



# Harkins Slough, Watsonville

Third Release Site, 2003



Undisturbed vegetation next to organic production

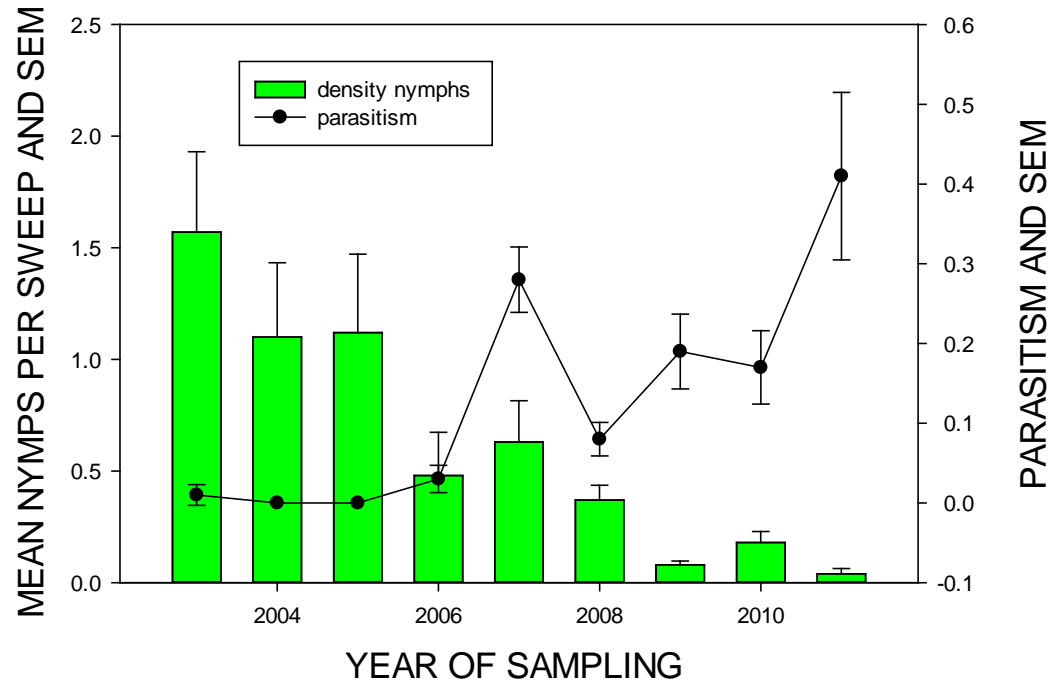
Weeds present all summer





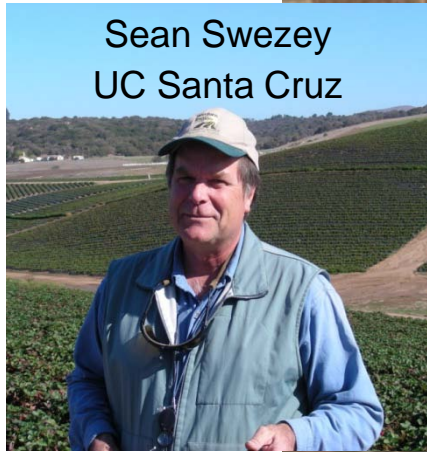
# Harkins Slough Release Site, Monterey Bay Season Trends

HARKINS SLOUGH SITE, SEASONAL TRENDS<sup>1</sup>



# Eagle Tree, Monterey Bay: commercial, organic strawberries

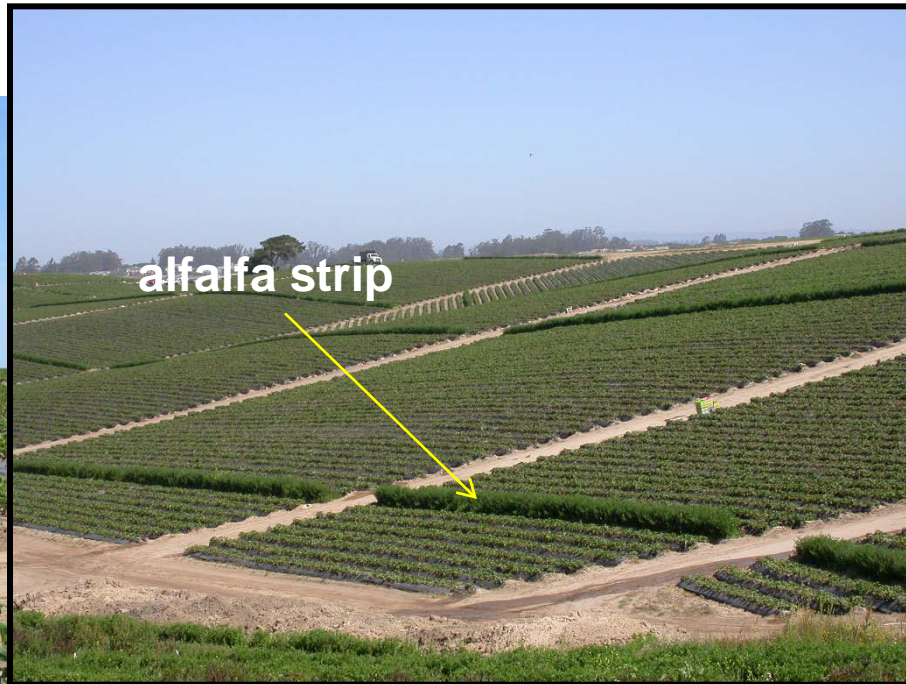
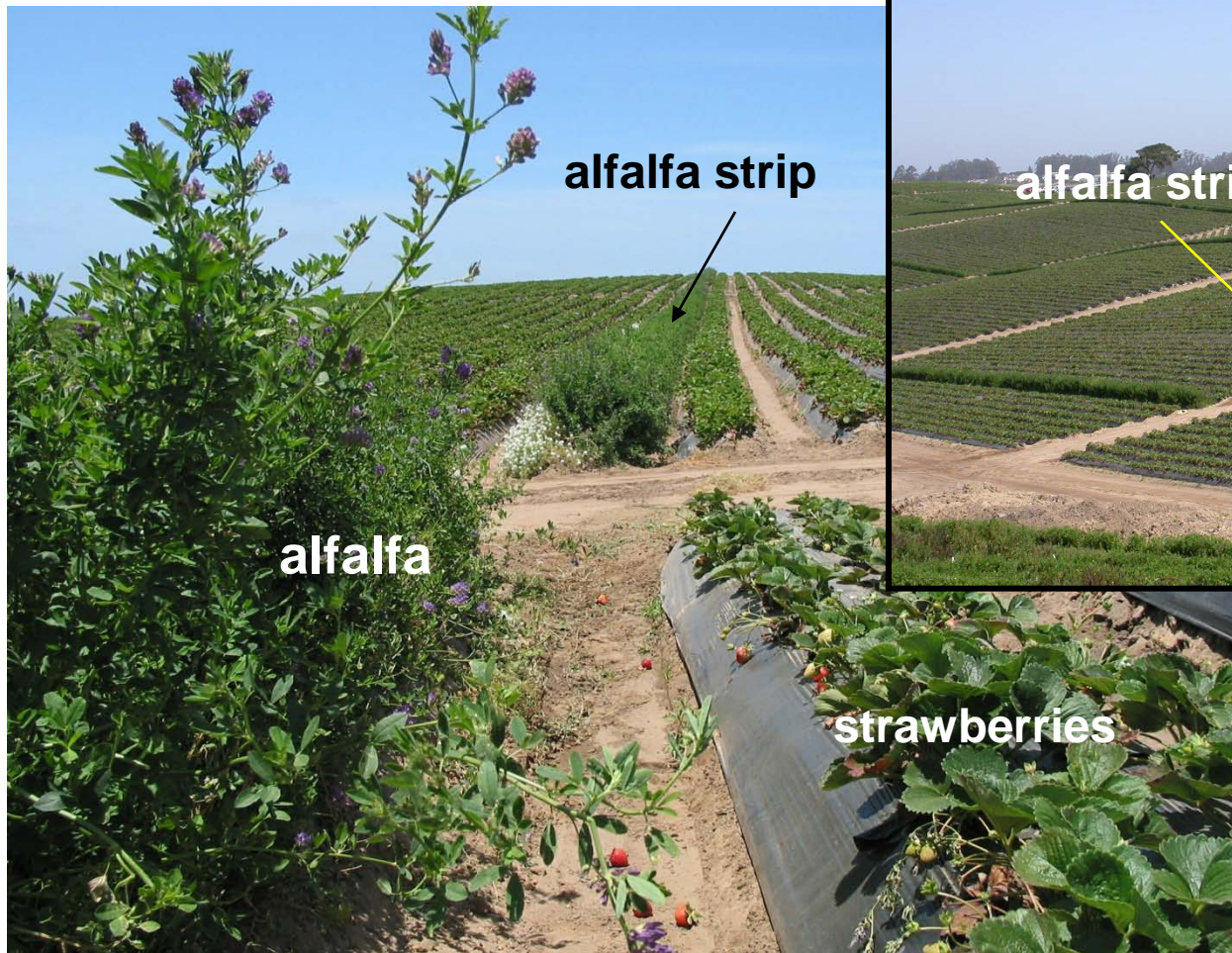
## Fourth release site, starting in 2004





# Releases into strips of alfalfa

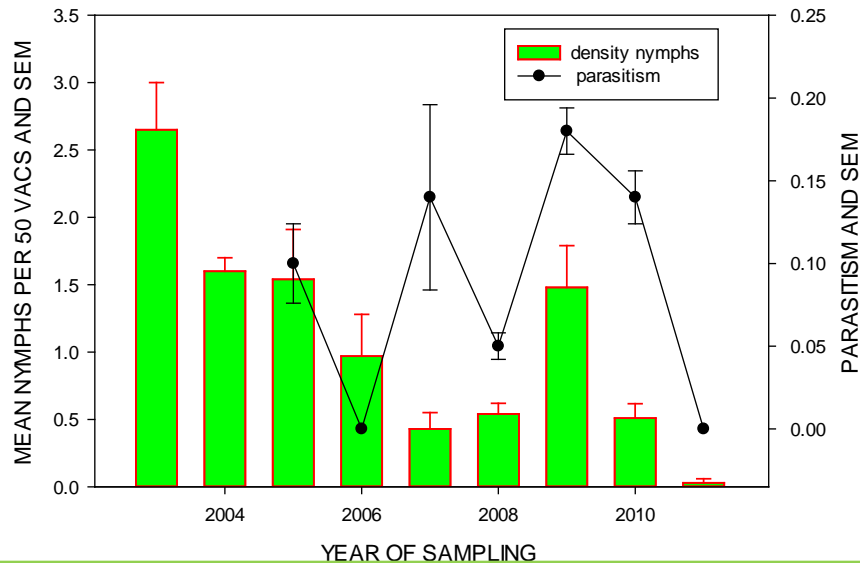
(Eagle Tree, organic farm)



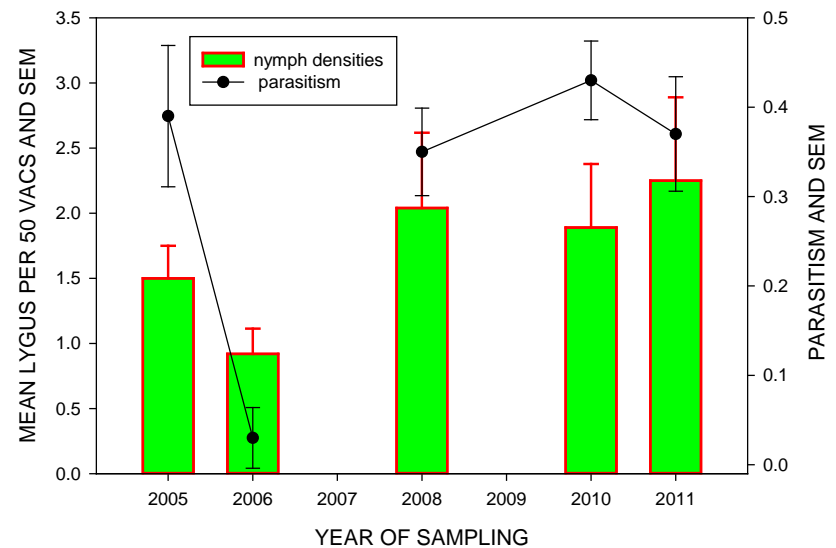
# Strawberries: Organic (with strips) vs. Conventional



Organic Strawberries, Seasonal Trends  
Eagle Tree, Monterey Bay



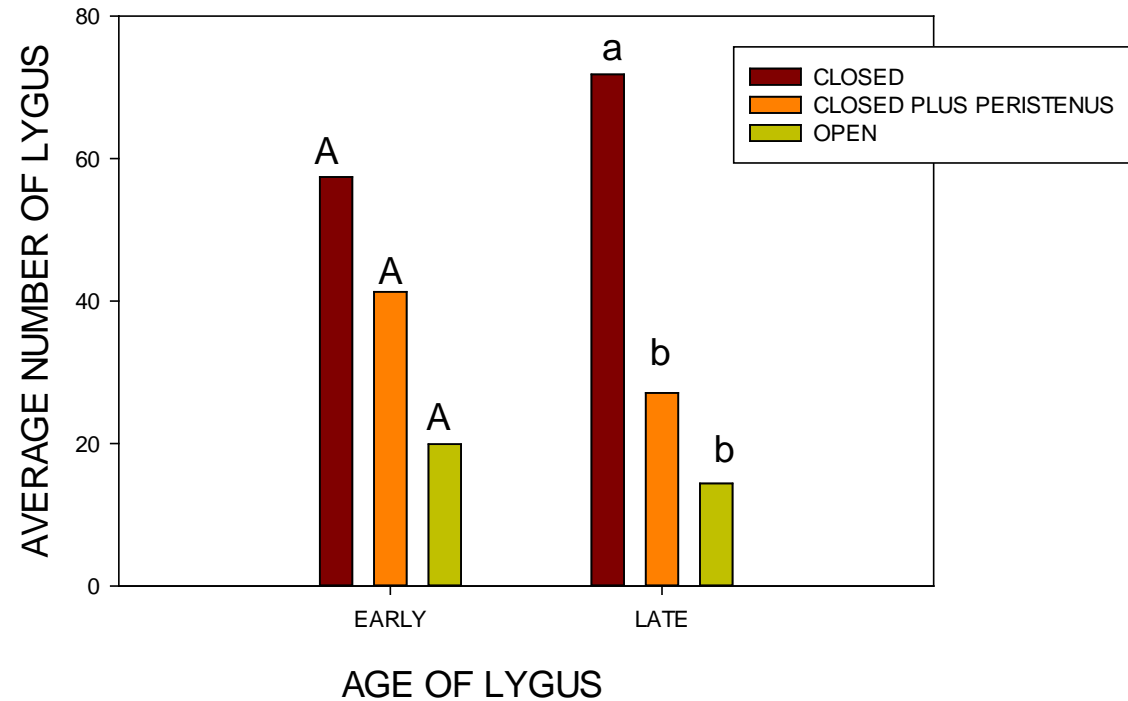
Conventional Strawberries, Seasonal Trends  
Castro1 Site





# Parasitism vs. Predation

Fig. 5. Effect cage treatment on different aged Lygus.







# Summary

- *P. relictus* established and spreading throughout California.
- Drop in *Lygus* spp. correlated with increased populations of *P. relictus*
- Strips of alfalfa promote parasitism in organic strawberry fields

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**Dale Spurgeon, USDA ARS, Shafter, CA**