Evaluation of traps for monitoring blueberry gall midge (*Dasineura oxycoccana* Johnson) and using SADIE analysis to model midge and parasitoid distribution in rabbiteye blueberries

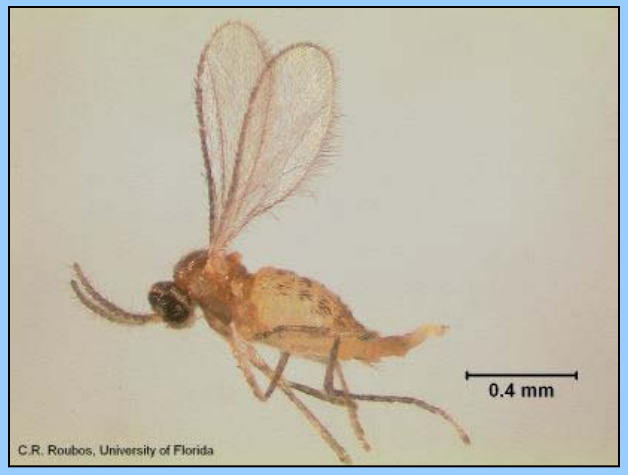
Elena M. Rhodes
University of Florida Entomology and Nematology Department

Rabbiteye blueberries

- U-pick and local sales in FL
- Commercially grown in GA and other SE states
- Ripen later than southern highbush blueberries
- Blueberry gall midge can cause up to 80% yield loss

Blueberry gall midge

- *Dasineura oxycoccana* Johnson
- Pupae overwinter in soil
- Adult females lay eggs in developing buds



Monitoring

- Bucket emergence trap
  - Roubos 2009
- Clear panel trap
  - Cook et al. 2011

Control

- Few insecticides
  - Conventional: diazinon and malathion
  - Reduced-risk: Delegate™ and Assail®
- Parasitoids
  - Most common genera: *Platygaster* (flower buds) and *Aprostocetus* (leaf buds)
  - Other genera: *Synopeas* and *Telenomus*

Platygaster sp.

Aprostocetus sp.

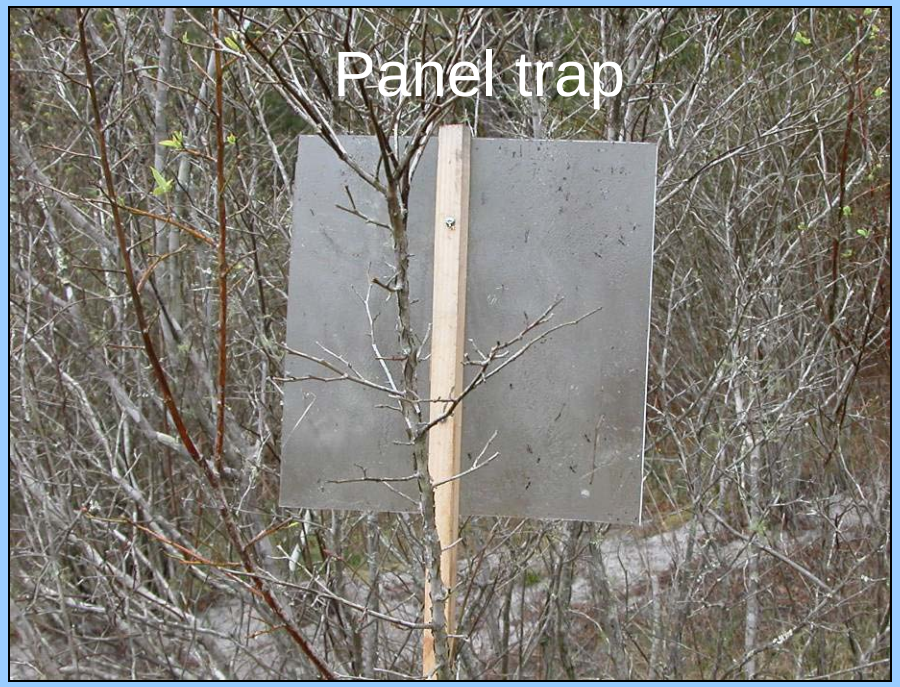
Objectives

- To compare the efficacy of bucket emergence traps and clear panel traps in midge monitoring
- To examine the distribution of midge and its parasitoids in a rabbiteye planting using SADIE analysis

Methods: trap comparison

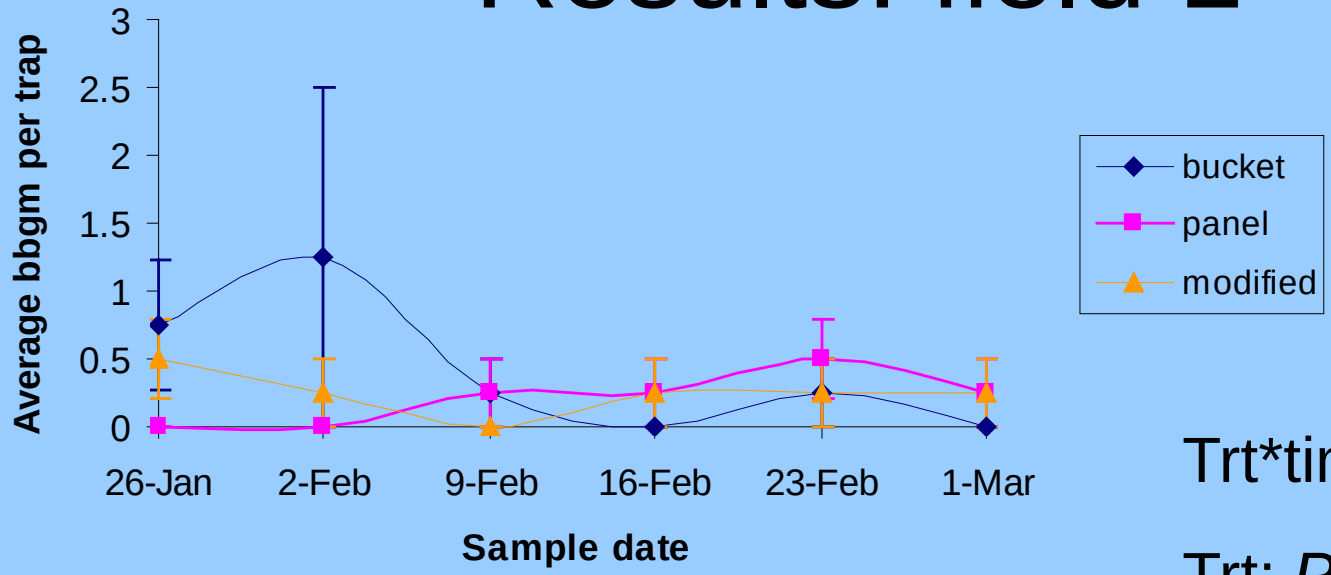
- 2 experimental plots with 4 replicates of 3 treatments in RCBD
  - Bucket emergence trap
  - Clear panel trap
  - Modified clear panel trap
- Traps checked weekly and rotated to avoid positional bias
- Buds collected weekly to monitor larval population


Modified Panel trap


Panel trap

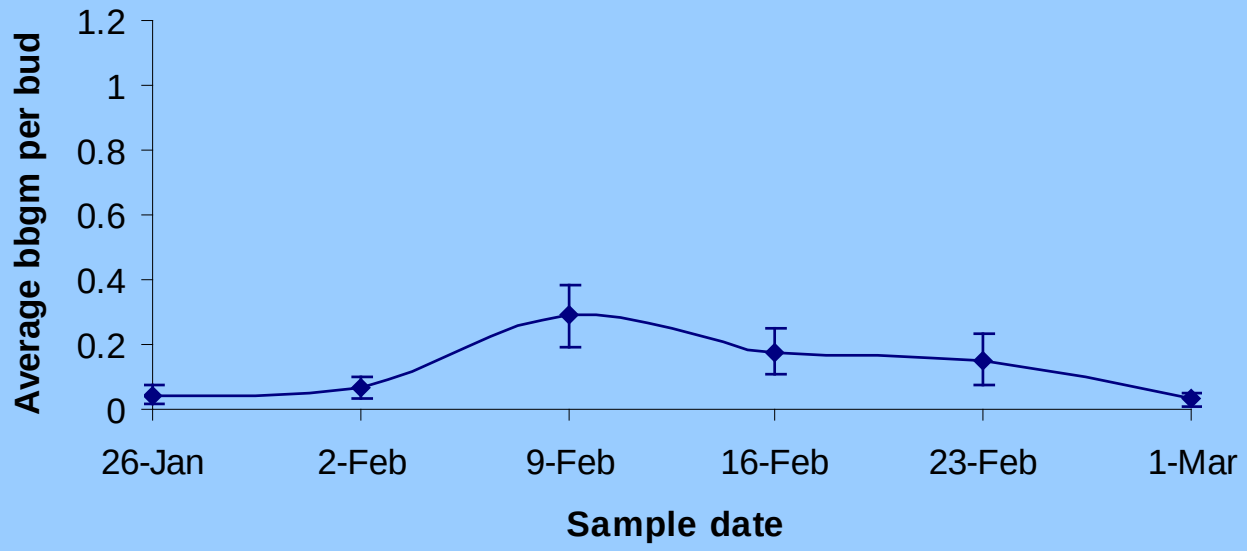

Bucket emergence trap

Results: field 1

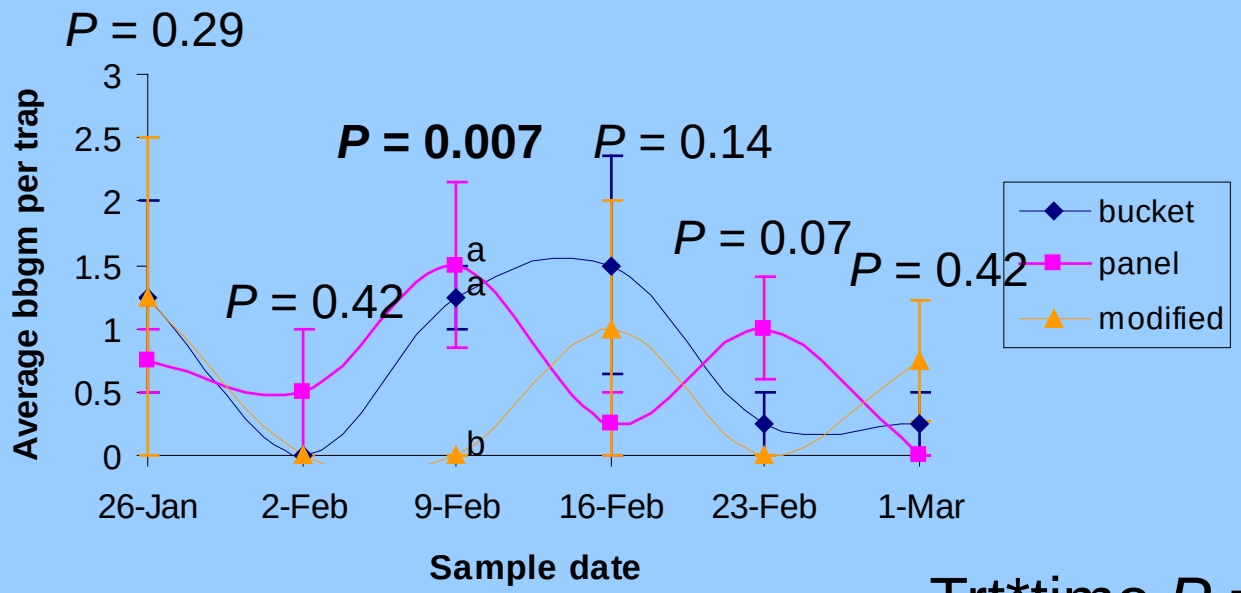


Trt*time *P* = 0.63

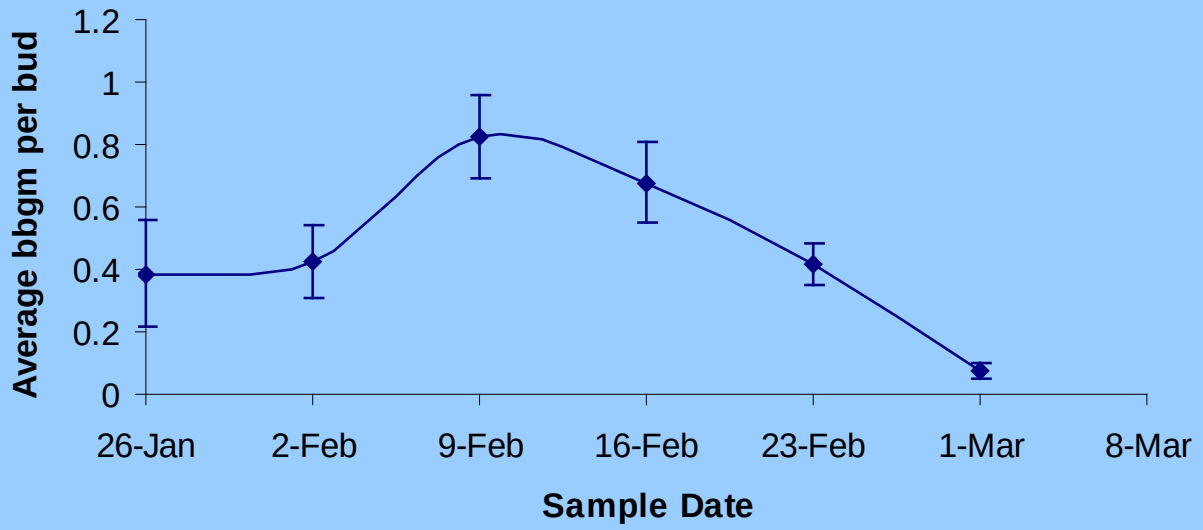
Trt: *P* = 0.62



Results: field 2



Trt*time *P* = 0.02



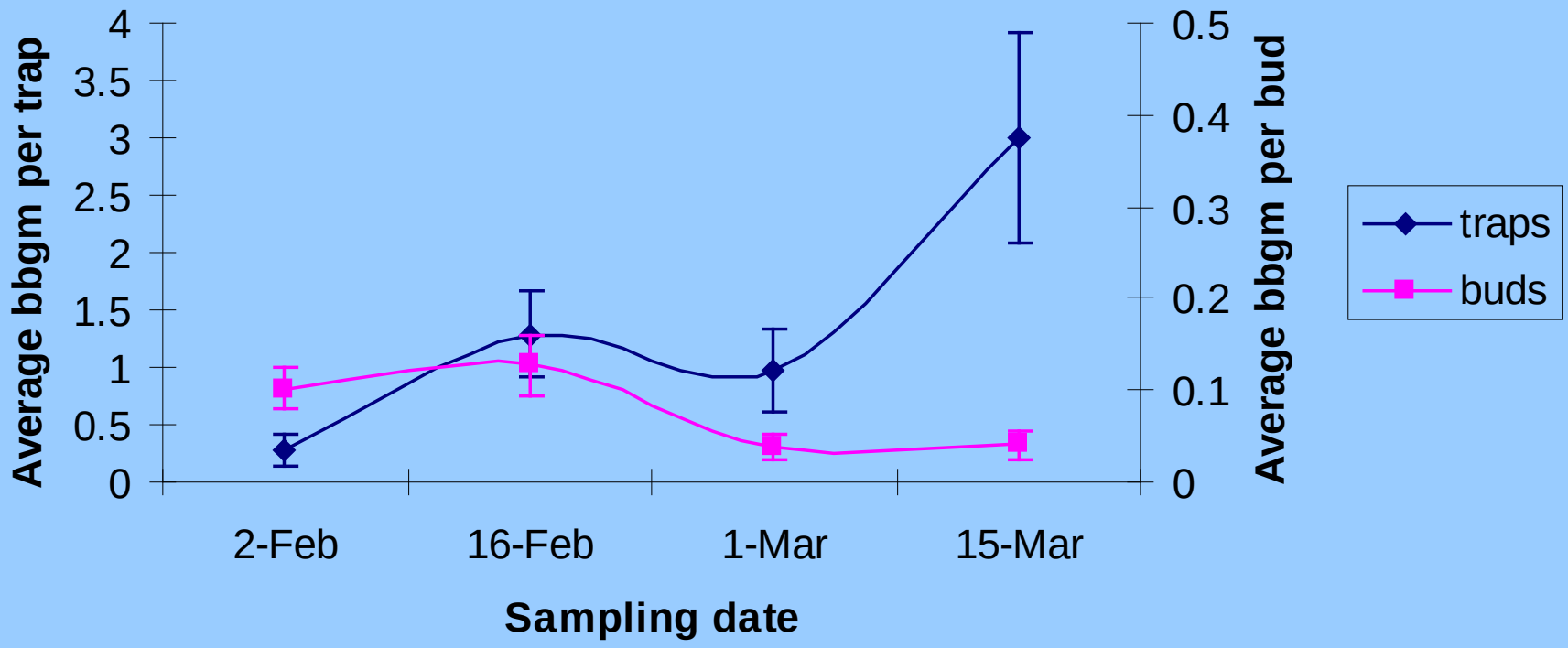
Summary

- When midge numbers were low, only the bucket trap was effective
- At moderate numbers both bucket and panel traps were effective
- Modified panel was ineffective

Methods: distribution

- 5 x 5 grid of 25 sampling locations
- Sampled every other week for 8 weeks
  - Adult midges: petri dish traps
  - Adult parasitoids: yellow sticky cards
  - Larvae: bud samples
- SADIE analysis

Results: Midge



Results: Midge SADIE

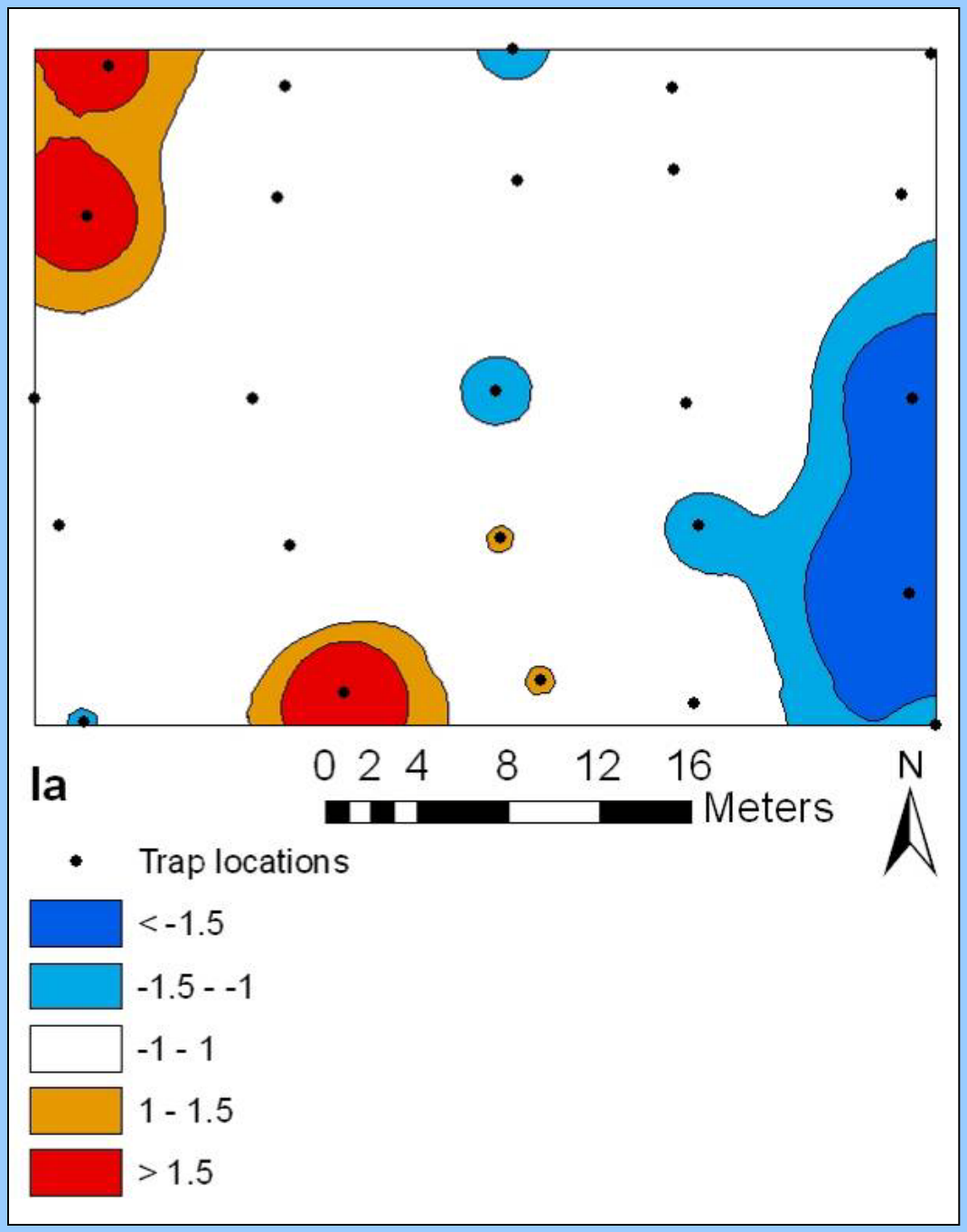
larvae

date	Ia	P
2-Feb	1.38	0.0323
16-Feb	1.044	0.341
1-Mar	0.783	0.9353
15-Mar	0.994	0.4443

Ia = index of aggregation

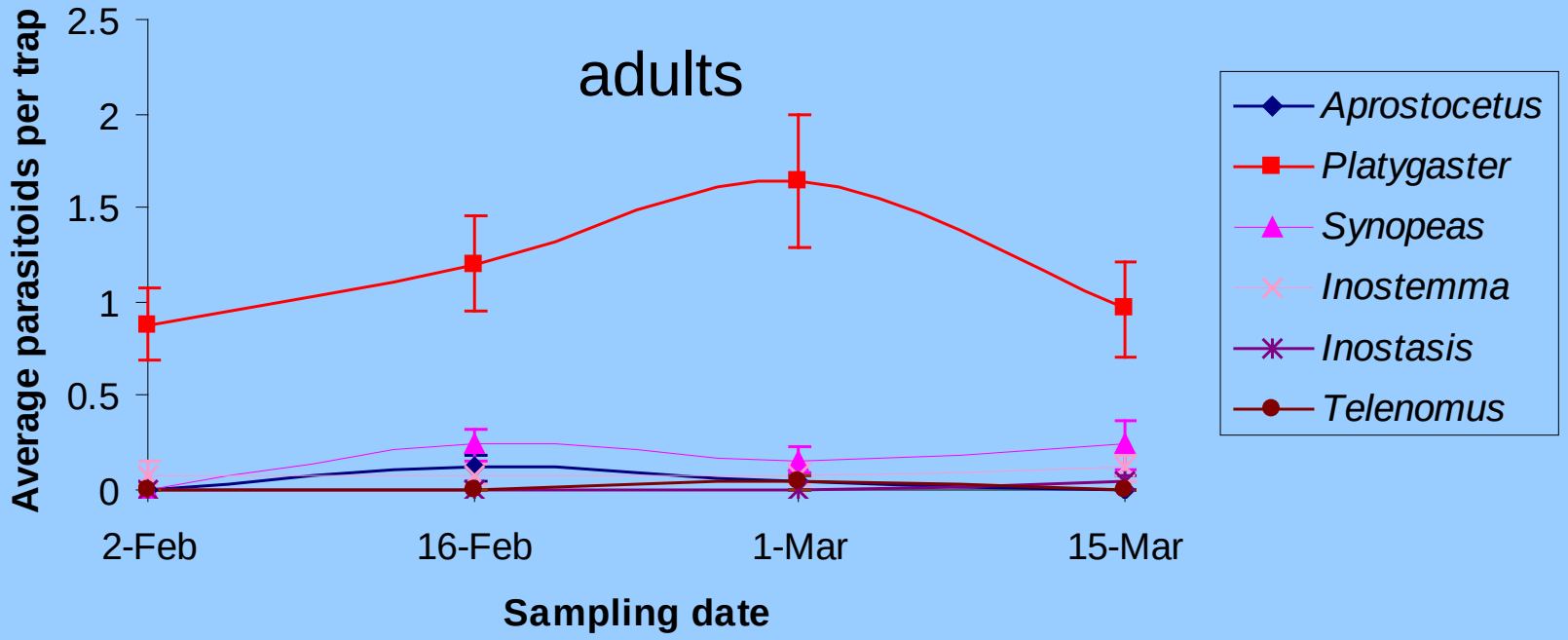
adults

date	Ia	P
2-Feb	1.149	0.1709
16-Feb	0.884	0.7218
1-Mar	1.124	0.2026
15-Mar	0.776	0.9558



Ia

Results: parasitoids



larvae (total)

Date	***Aprostocetus***	***Platygaster***	***Synopeas***
2/2/2012	6	4	2
2/16/2012	5	1	0
3/1/2012	0	0	0
3/15/2012	0	0	0

Results: *Platygaster* SADIE

date	Ia	P
2-Feb	0.911	0.6358
16-Feb	0.87	0.7471
1-Mar	1.247	0.0917
15-Mar	1.037	0.3638

Ia = index of aggregation

Summary

- Midge and *Platygaster* adults were randomly distributed
- Midge larvae were aggregated at first
- *Platygaster* was the most abundant parasitoid genus

Conclusions

- Panel trap as effective as bucket trap except at very low midge infestation levels
- Some gall midge and parasitoids come from within the field

Future research

- Panel trap size and material
- First catch comparison
- Repeat distribution study with improved method of parasitoid larval detection

Acknowledgements

- Dr. Oscar Liburd
- Dr. Nicole Benda
- Dr. Craig Roubos
- Sara Brennan
- Small Fruits IPM Lab staff and students
- Gainesville organic blueberry farm

Questions?