Scale IPM in greenhouses and landscapes

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Texas A&M AgriLife Extension

Crapemyrtle

Crapemyrtle

- Cultivated in the US for over 175 years (Dirr, 2009)
- Common landscape plant in the South
- Valued over $46 million in nursery crop sales in 2009 (USDA NASS, 2009)
- Relatively low maintenance with few key pests

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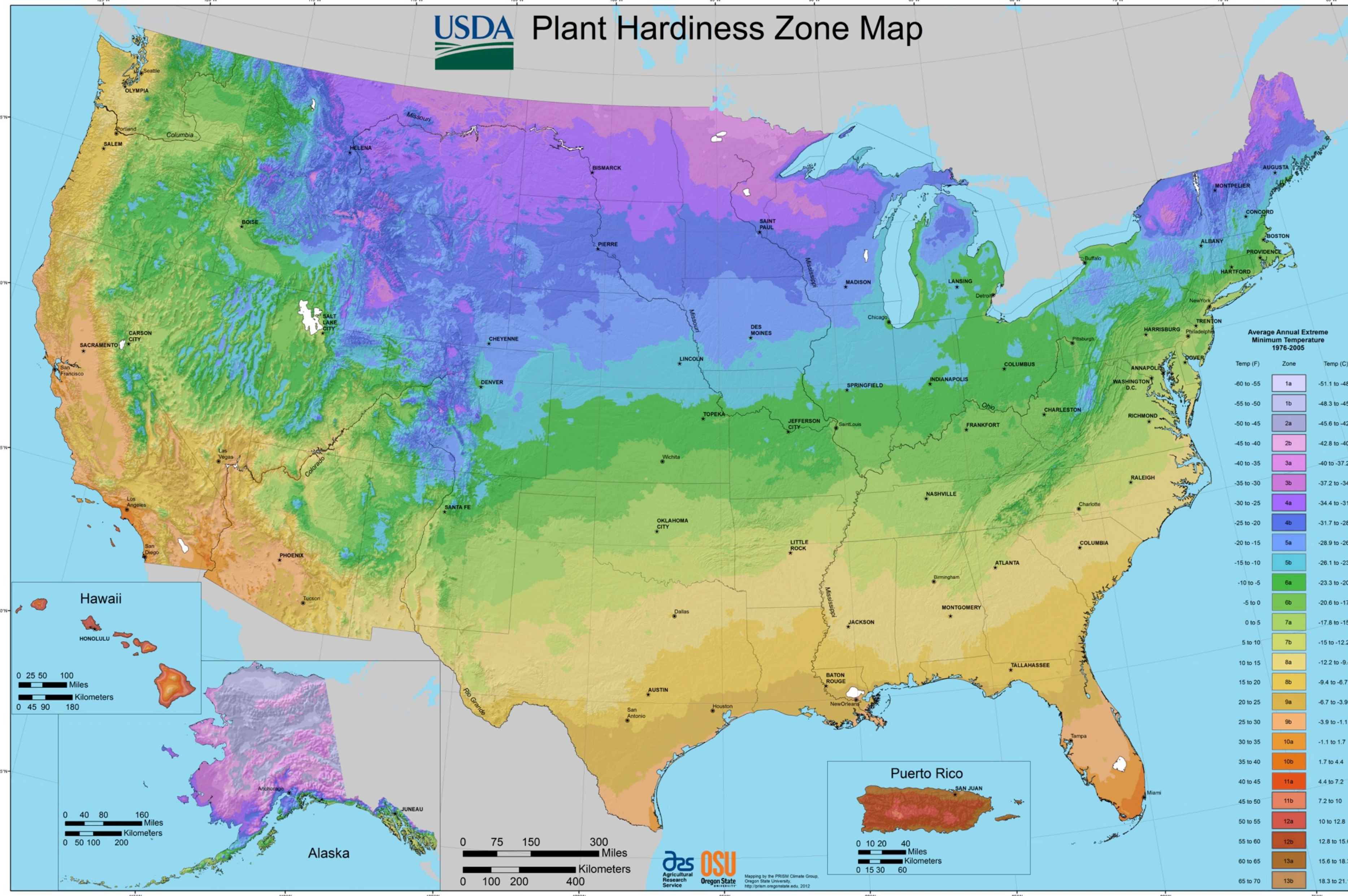
Lagerstroemiae:



Crapemyrtle bark scale

North Amer. First sighting: 2004, Northern Texas

Now found in:
TX, OK, LA, AR, NM, TN, GA, AL, MS, and VA (and WA?)

Originally from:
Asia
[*Eriococcus lagerstroemiae* (Hemiptera: Eriococcidae]

TEXAS A&M AGRILIFE EXTENSION

Crapemyrtle bark scale

Potential alternate hosts:

- Pomegranate
- Axlewood
- Chinese Hackberry
- Persimmon
- Common Fig
- Soybean
- Border Privet
- Rubus sp. (Blackberries, raspberries, etc.)

(Kwon & Han 2003)

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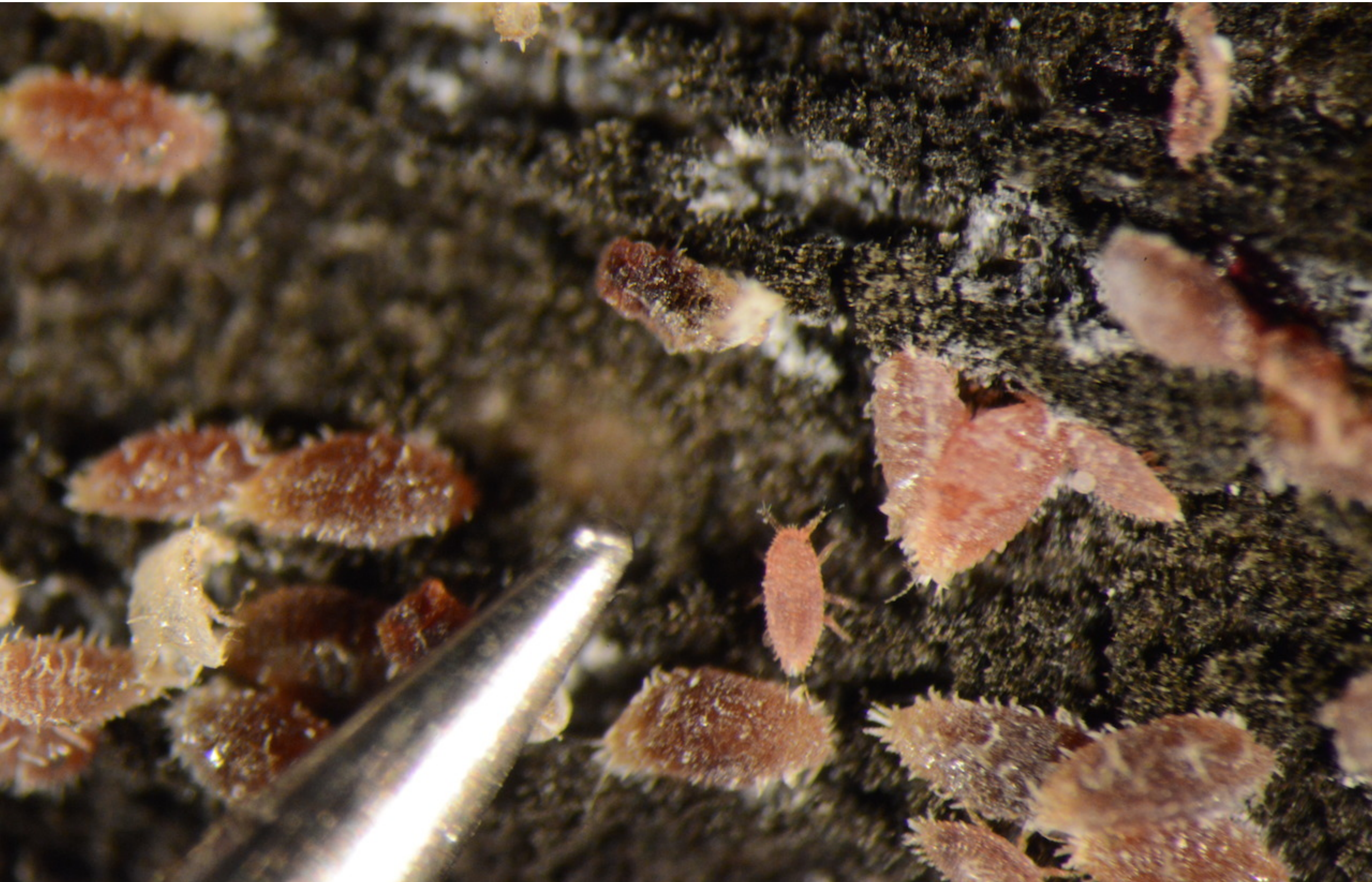
Crapemyrtle bark scale | Beautyberry

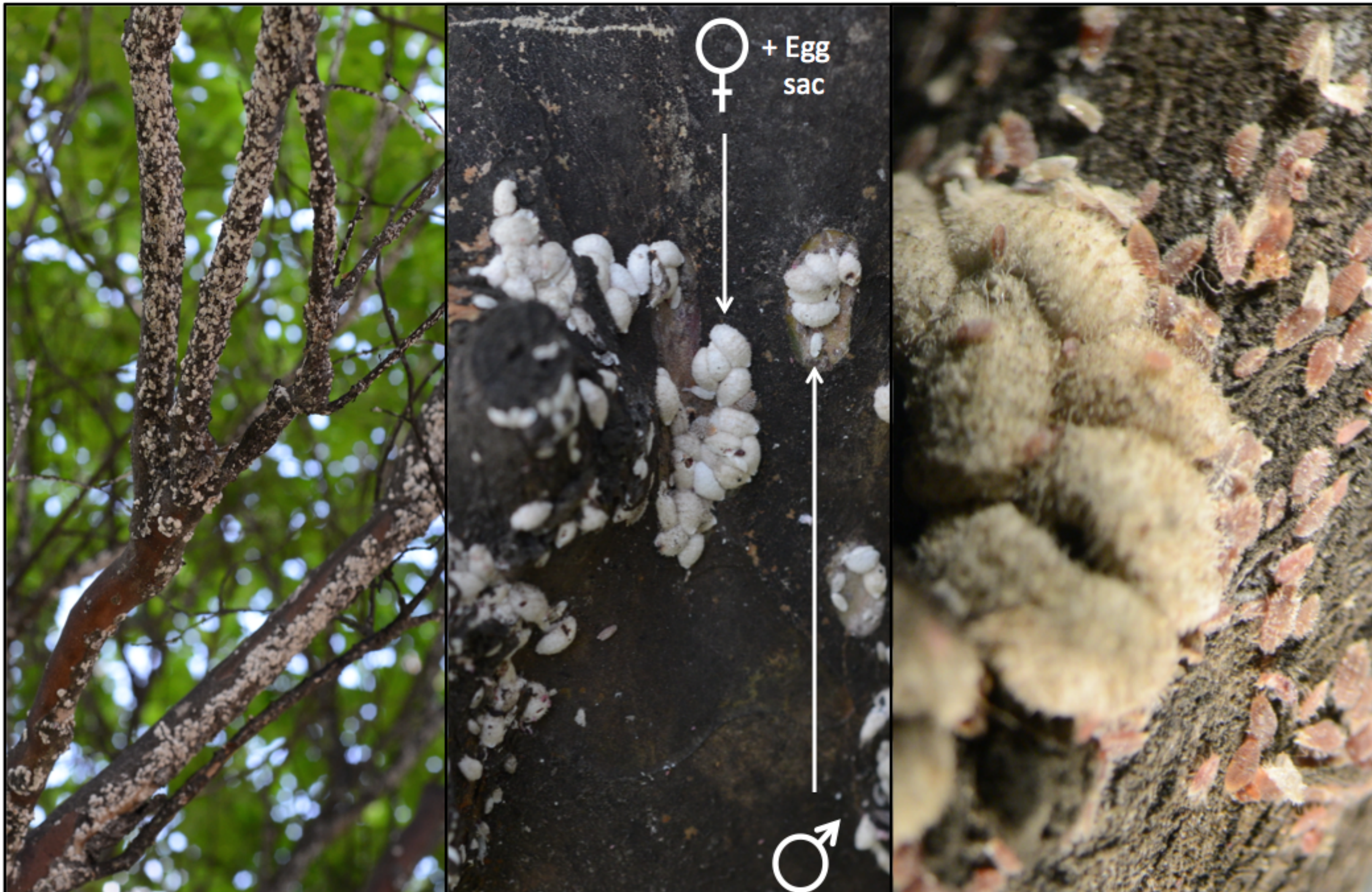


Crapemyrtle bark scale



Crapemyrtle bark scale

Crapemyrtle bark scale



Crapemyrtle bark scale

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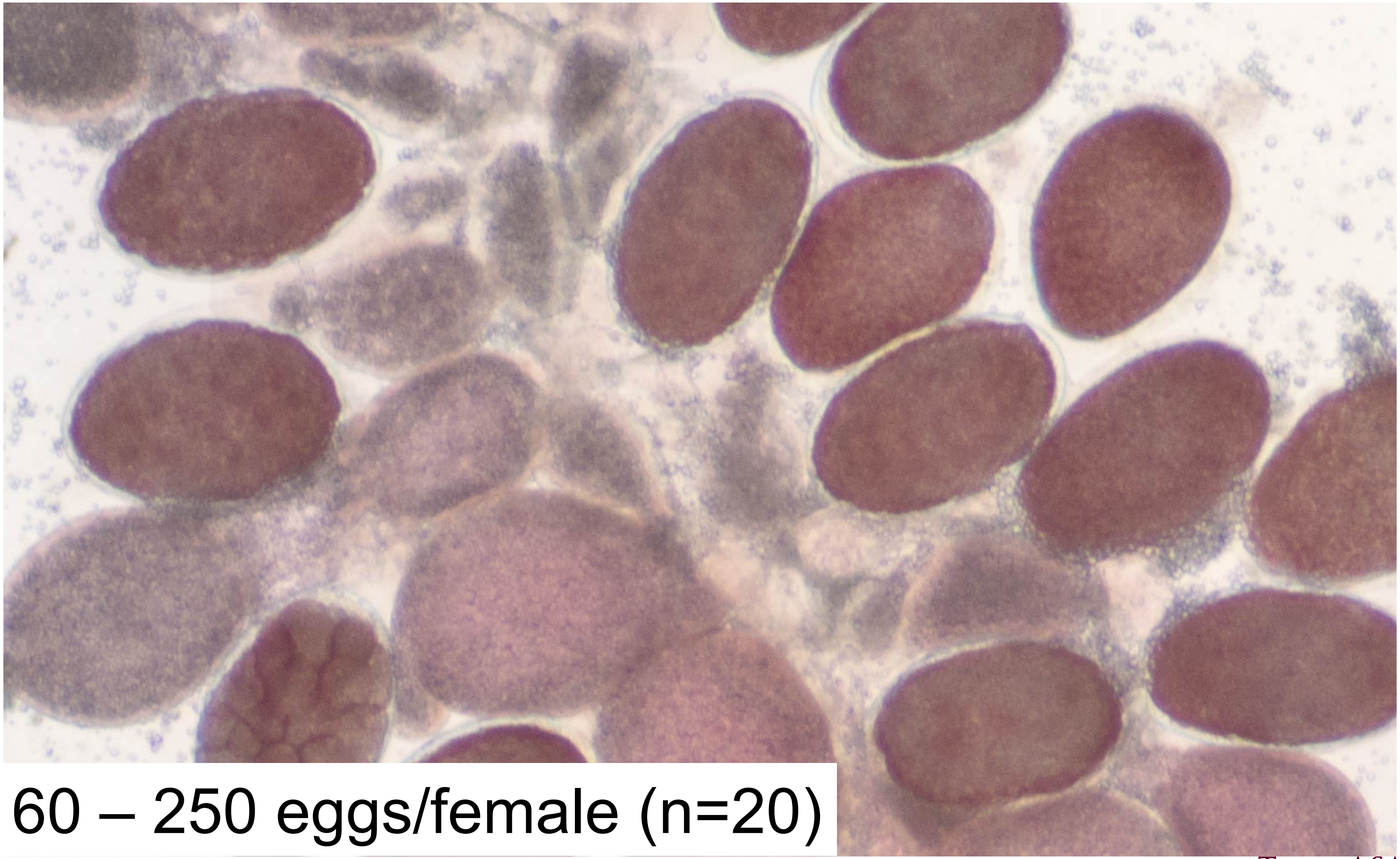

60 – 250 eggs/female (n=20)

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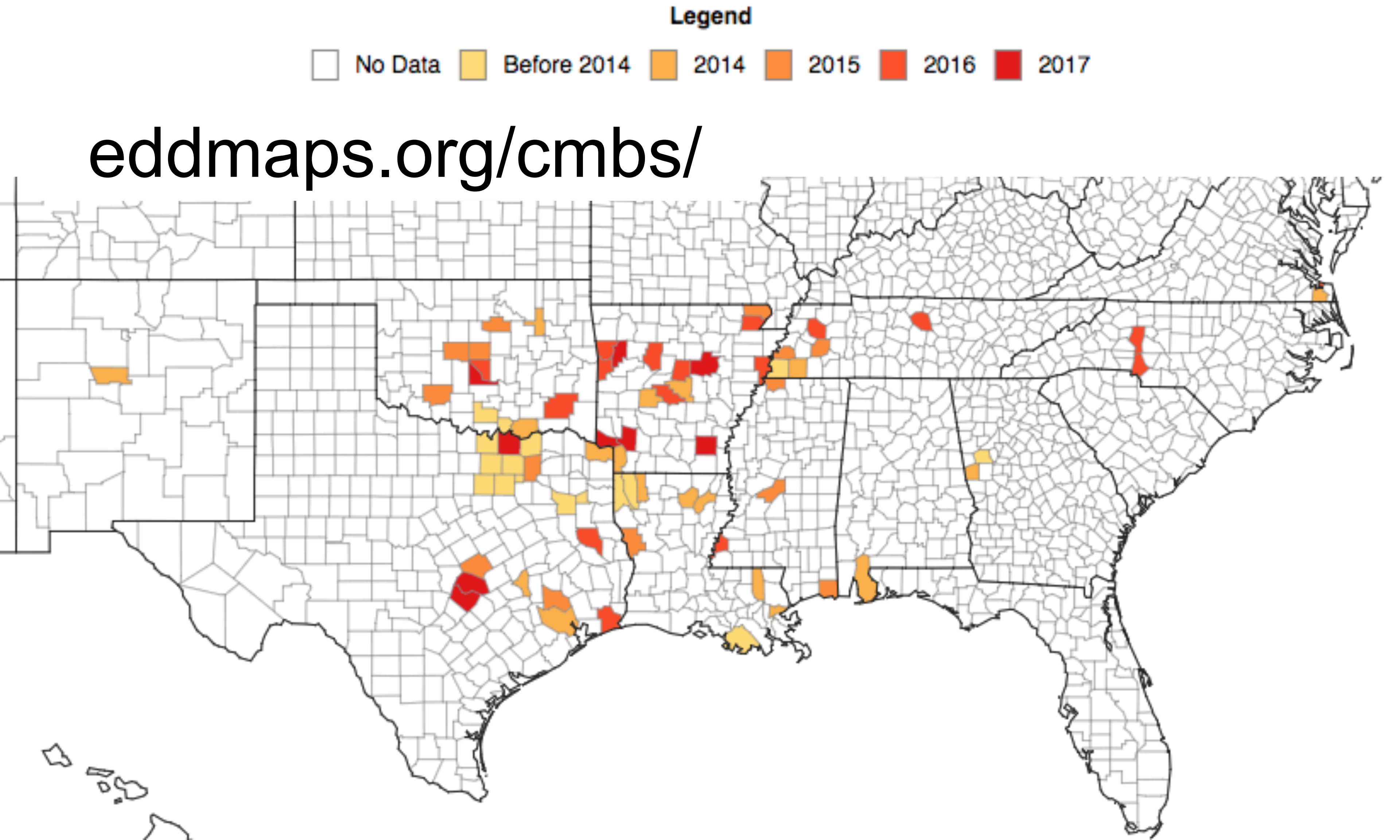
Crapemyrtle bark scale

eddmaps.org/cmbs/



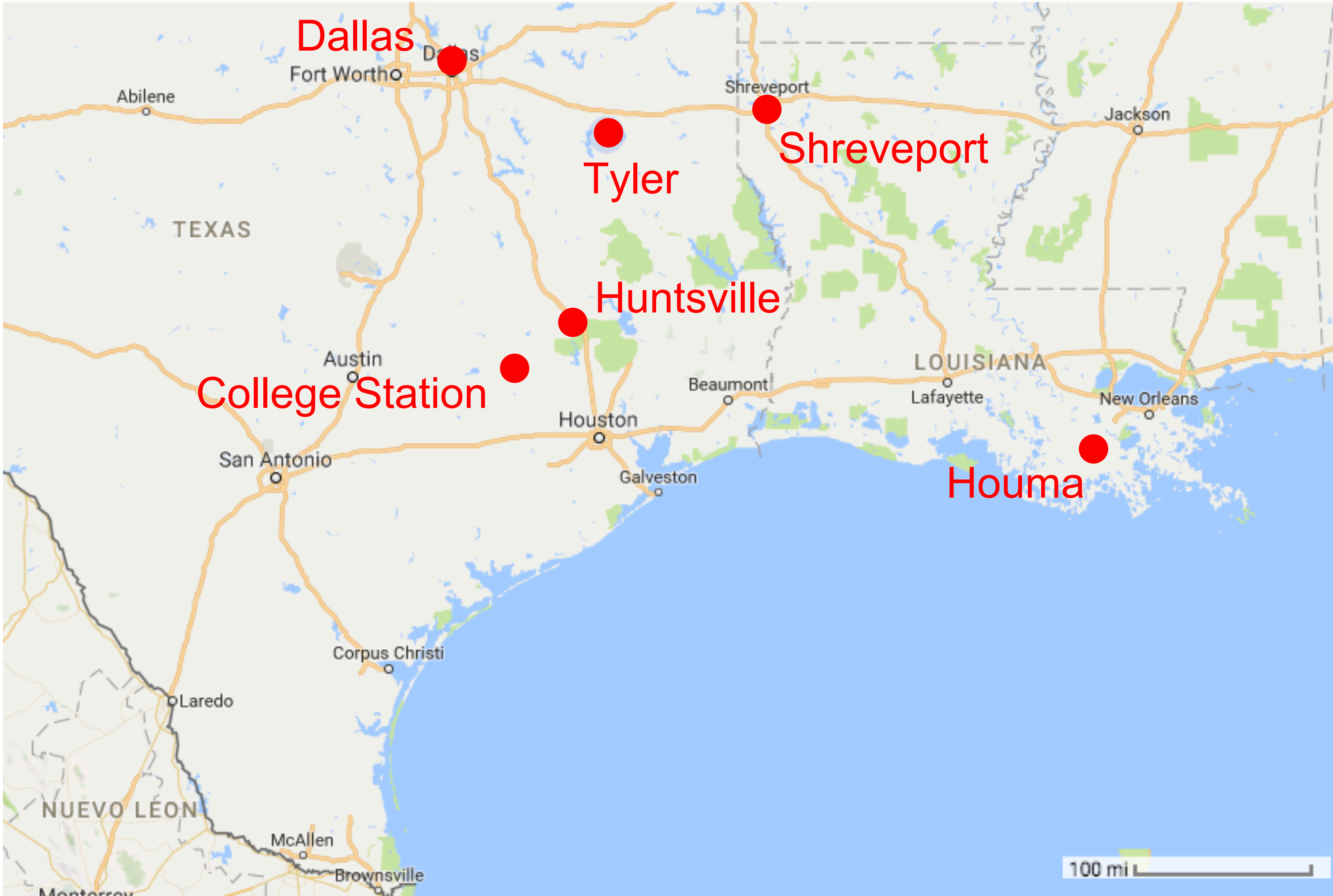
Objectives

1. Population Dynamics
2. Population Control
3. Role of natural enemies

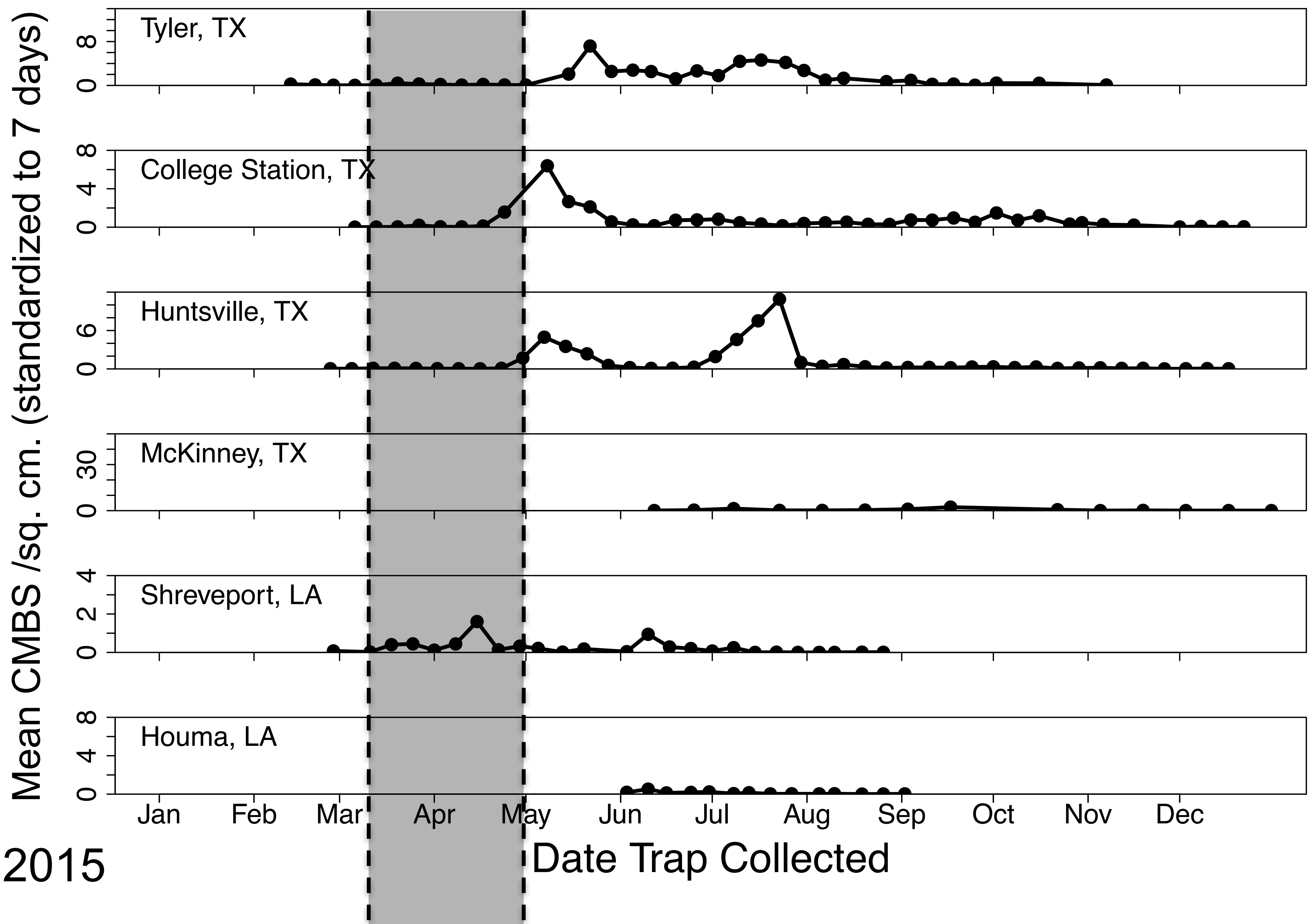
Objectives 1. Population Dynamics

> 3 trees per location

Objectives 1. Population Dynamics



Objectives 1. Population Dynamics



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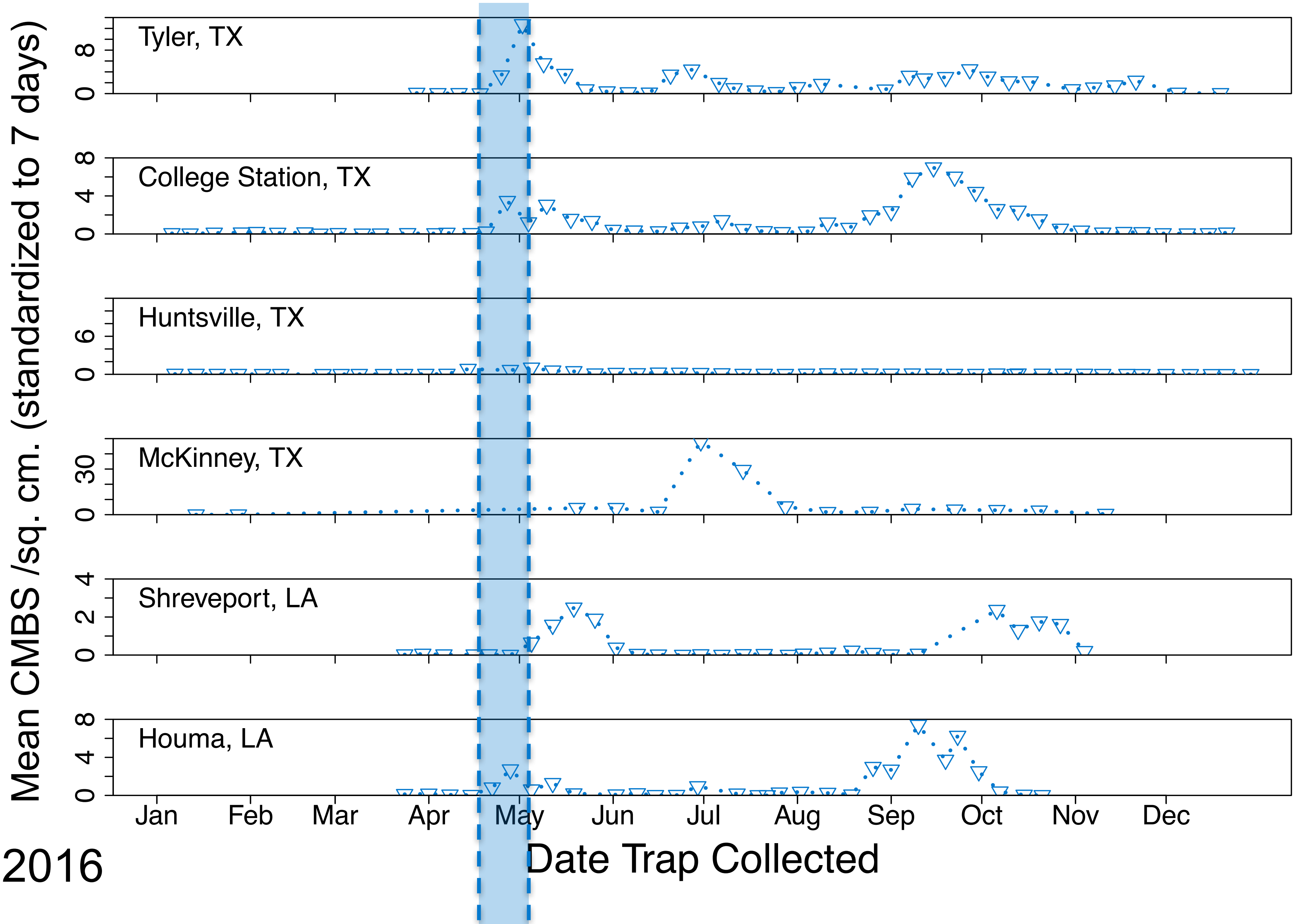
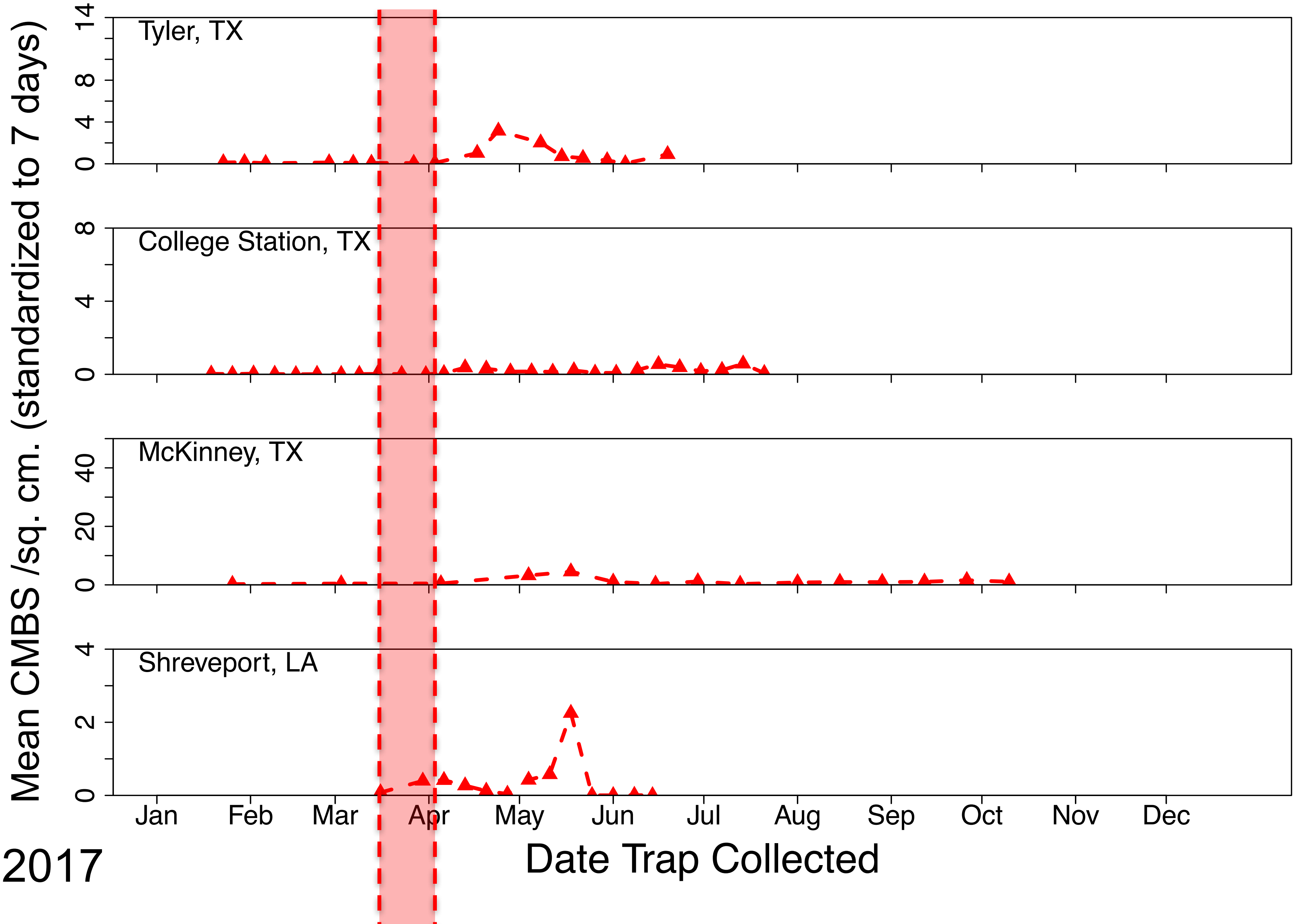
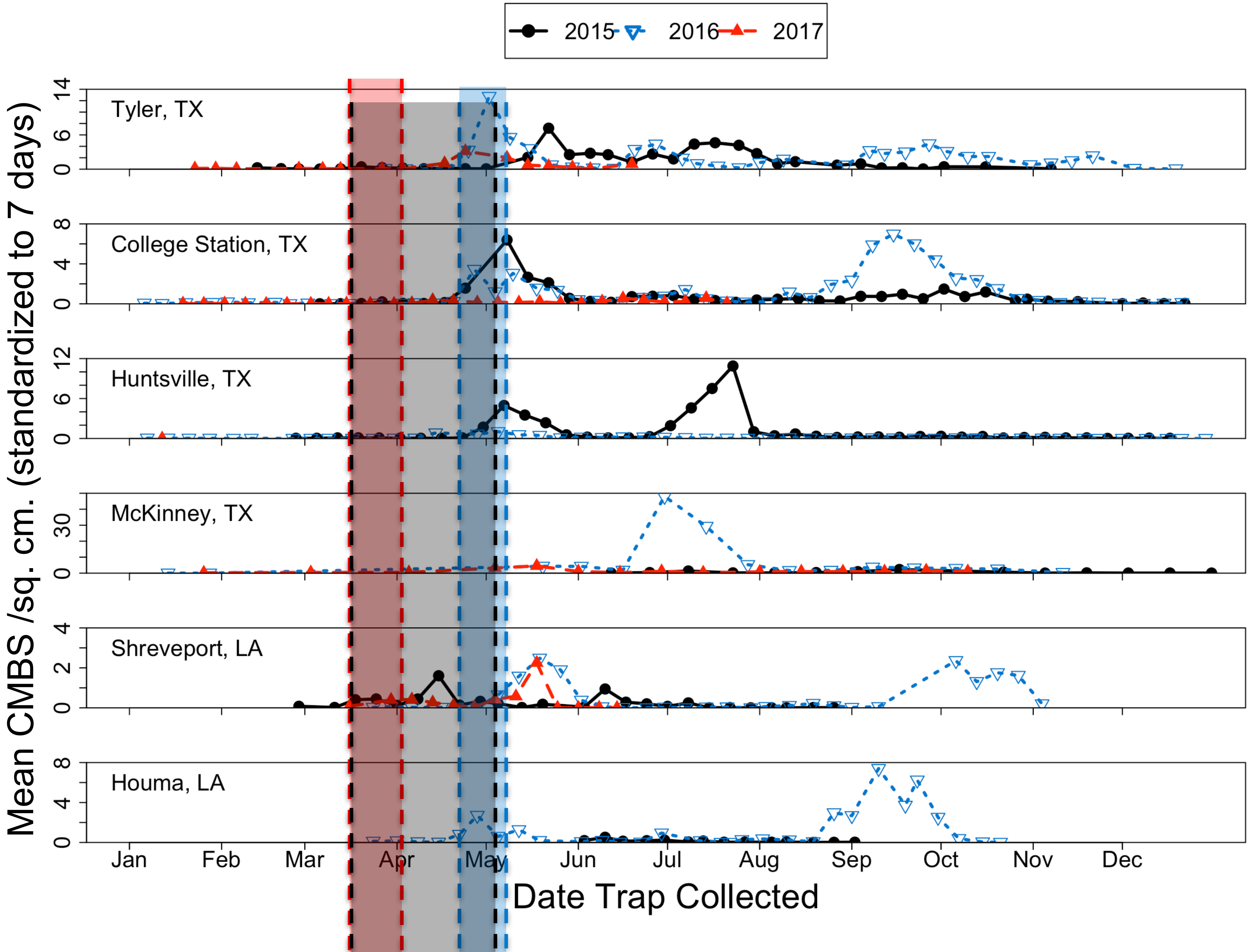


2016

Objectives 1. Population Dynamics



2017



2015
2016
2017
Mean CMBS /sq. cm. (standardized to 7 days)
Tyler, TX
College Station, TX
Huntsville, TX
McKinney, TX
Shreveport, LA
Houma, LA
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Date Trap Collected

Objectives 2. Management | Landscape

2016

n = 7 per treatment, n = 6 for control/water

Treatments:
- Safari
- Merit
- SuffOil + Molt-X
- Acephate 97UP
- Talstar
- Water
- Untreated

Objectives 2. Management | Landscape

2016

Bifenthrin applied twice (mid and end of April)

=

Short-term crawler control

Imidacloprid or Dinotefuran drench (mid April)

=

long-term crawler control

Vafaie and Knight, *in press*

Objectives 2. Management | Potted

2017

a.i.	MoA	Rate	Method	App 1	App 2	App 3	App 4
Dinotefuran	4a	4 fl oz/g	Drench	16-Mar			
Dinotefuran	4a	24 oz/gal	Spray	30-Mar			
Capsil		12 fl oz/100 gal	Spray	30-Mar			
Imidacloprid	4a	1.7 fl oz per 110 plants	Drench	16-Mar			
Pyriproxyfen	7c	12 fl oz/100 gal	Spray		6-Apr		20-Apr
Flupyradifurone	4d	14 fl oz/100 gals	Spray	30-Mar		13-Apr	
Chromobacterium *subtsugae* strain PRAA4-1	NA	2 lbs / 50 gal	Spray	30-Mar		13-Apr	
Burkholderia spp. Strain A396	NA	2 quart / 50 gal	Spray		6-Apr		20-Apr
Cyantraniliprole	28	0.25 fl oz / in. dbh in 40 fl oz water	Drench	30-Mar			
Chlorantraniliprole	28	0.25 fl oz / in. dbh in 40 fl oz water	Drench	30-Mar			22-Jun
Afidopyropen	9d	1.4 fl oz / 100 gal	Spray	31-Mar		13-Apr	
Pure oil		1 gal / 100 gal		31-Mar		13-Apr	
Buprofezin	16	14 oz / 100 gal	Spray	30-Mar		13-Apr	
Bifenthrin	3a	21.7 fl oz / 100 gal	Spray	30-Mar	6-Apr		
Dinotefuran	4a	4 fl oz/g potting media	Drench	16-Mar			
Water	na		Spray				

n=5

Double-sided sticky tape (>3 per tree)

5- gallon pots, ~7 feet tall

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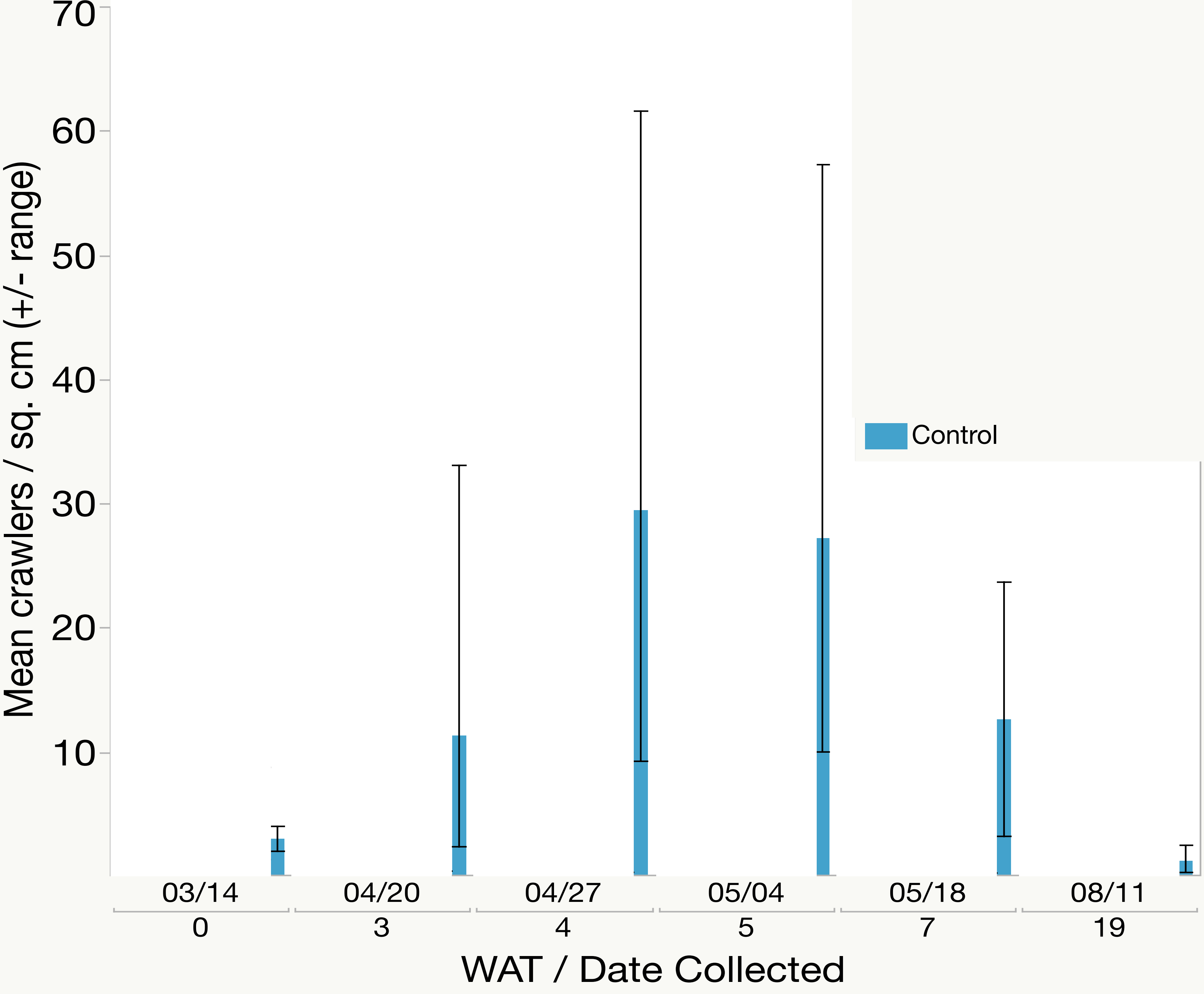
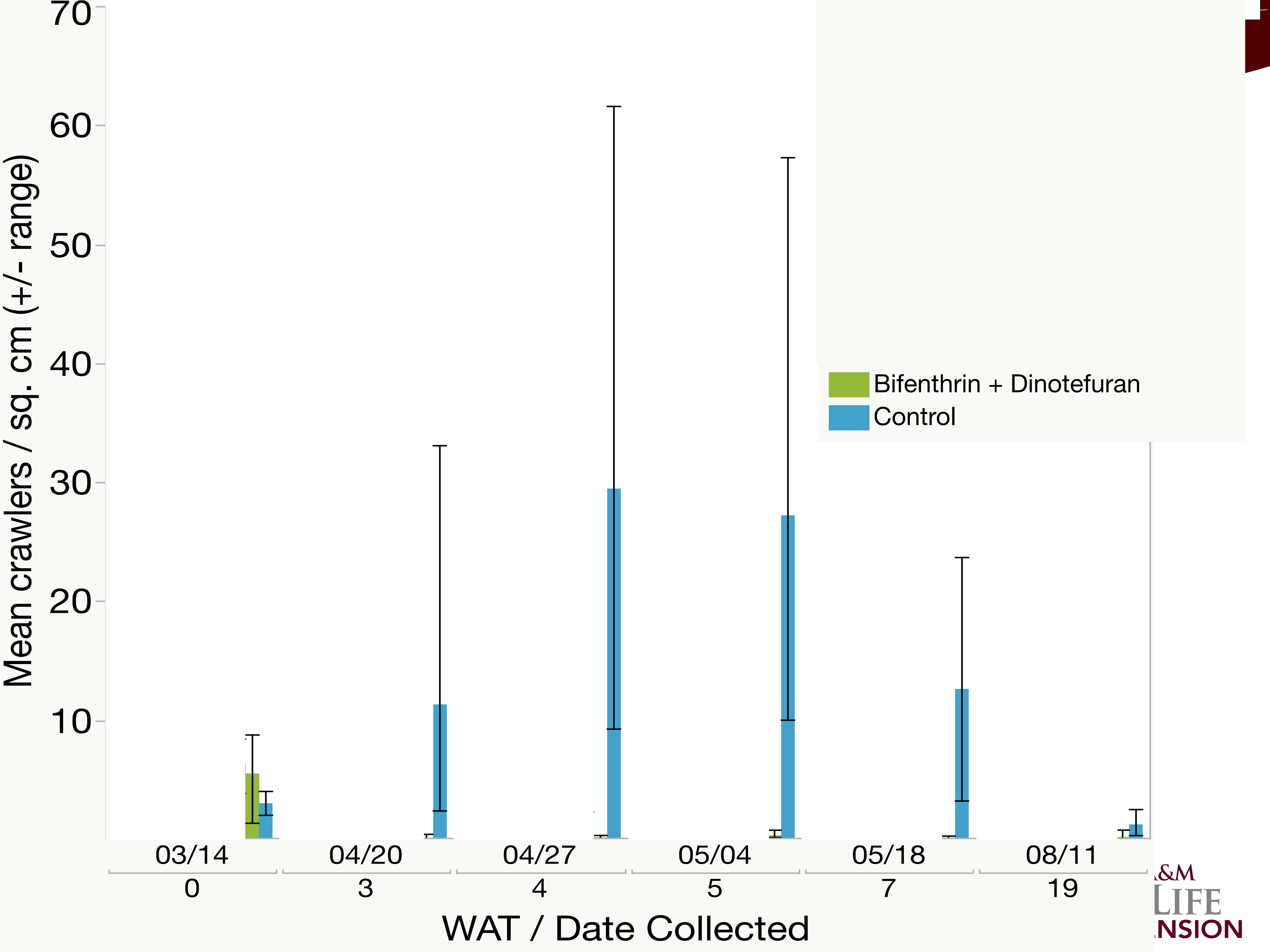
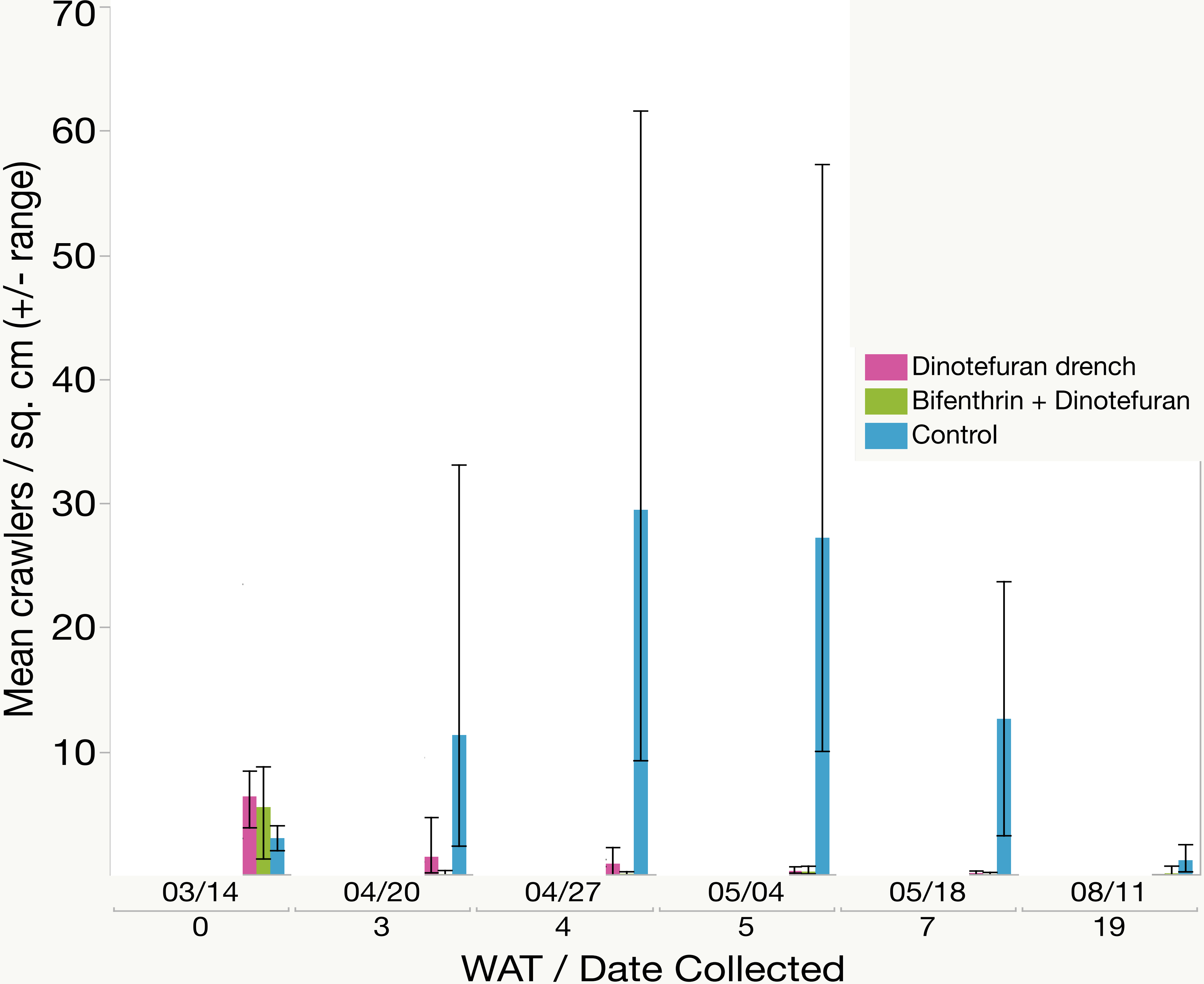
Objectives 2. Management | Potted

2017

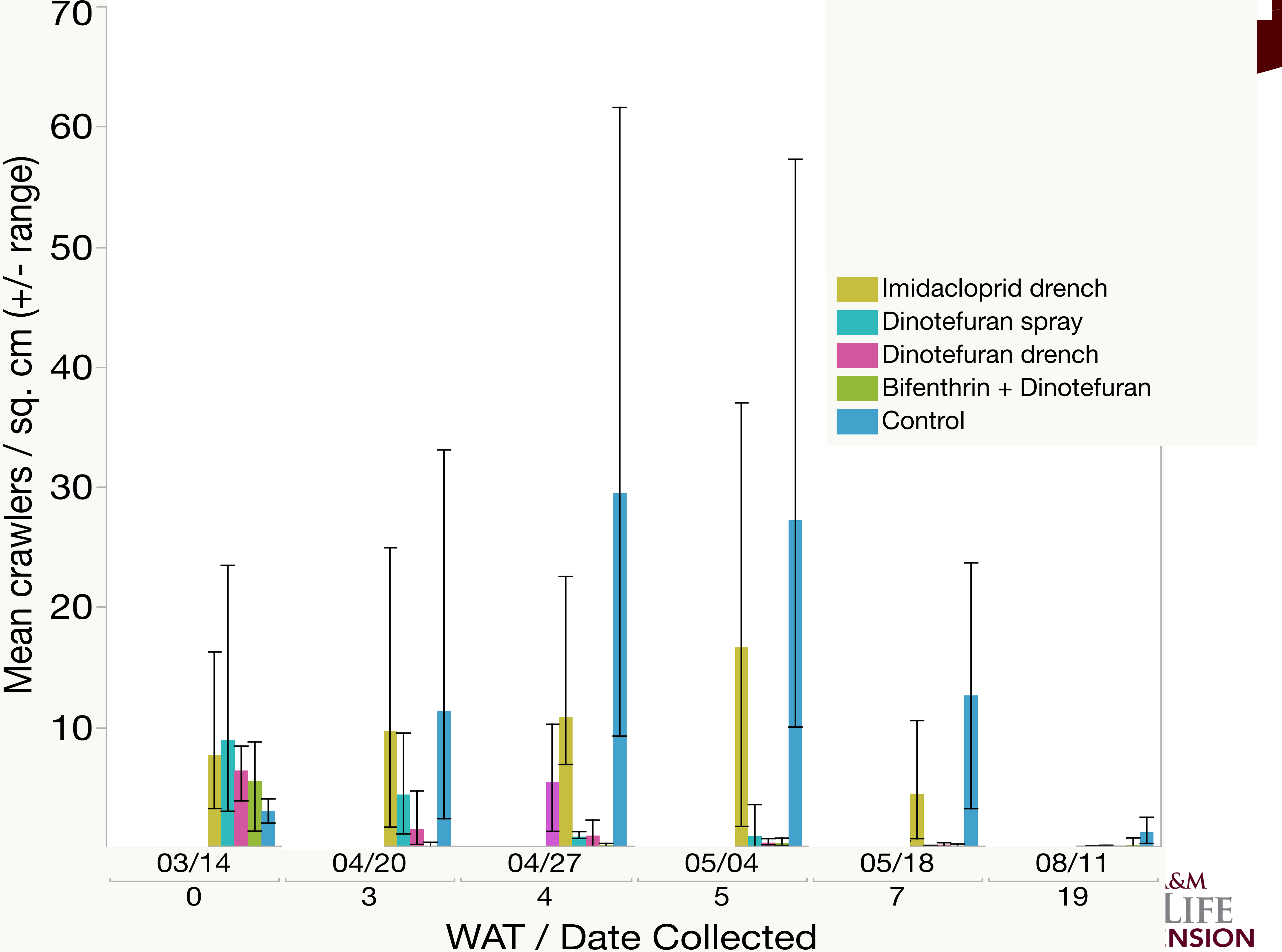


70
60
50
40
30
20
10
Mean crawlers / sq. cm (+/- range)
Control
03/14
0
04/20
3
04/27
4
05/04
5
05/18
7
08/11
19
WAT / Date Collected


Mean crawlers / sq. cm (+/- range)
70
60
50
40
30
20
10
Bifenthrin + Dinotefuran
Control
03/14
04/20
04/27
05/04
05/18
08/11
0
3
4
5
7
19
WAT / Date Collected



Mean crawlers / sq. cm (+/- range)
70
60
50
40
30
20
10
Dinotefuran drench
Bifenthrin + Dinotefuran
Control
03/14
04/20
04/27
05/04
05/18
08/11
0
3
4
5
7
19
WAT / Date Collected


Mean crawlers / sq. cm (+/- range)
70
60
50
40
30
20
10
Imidacloprid drench
Dinotefuran spray
Dinotefuran drench
Bifenthrin + Dinotefuran
Control
03/14
0
04/20
3
04/27
4
05/04
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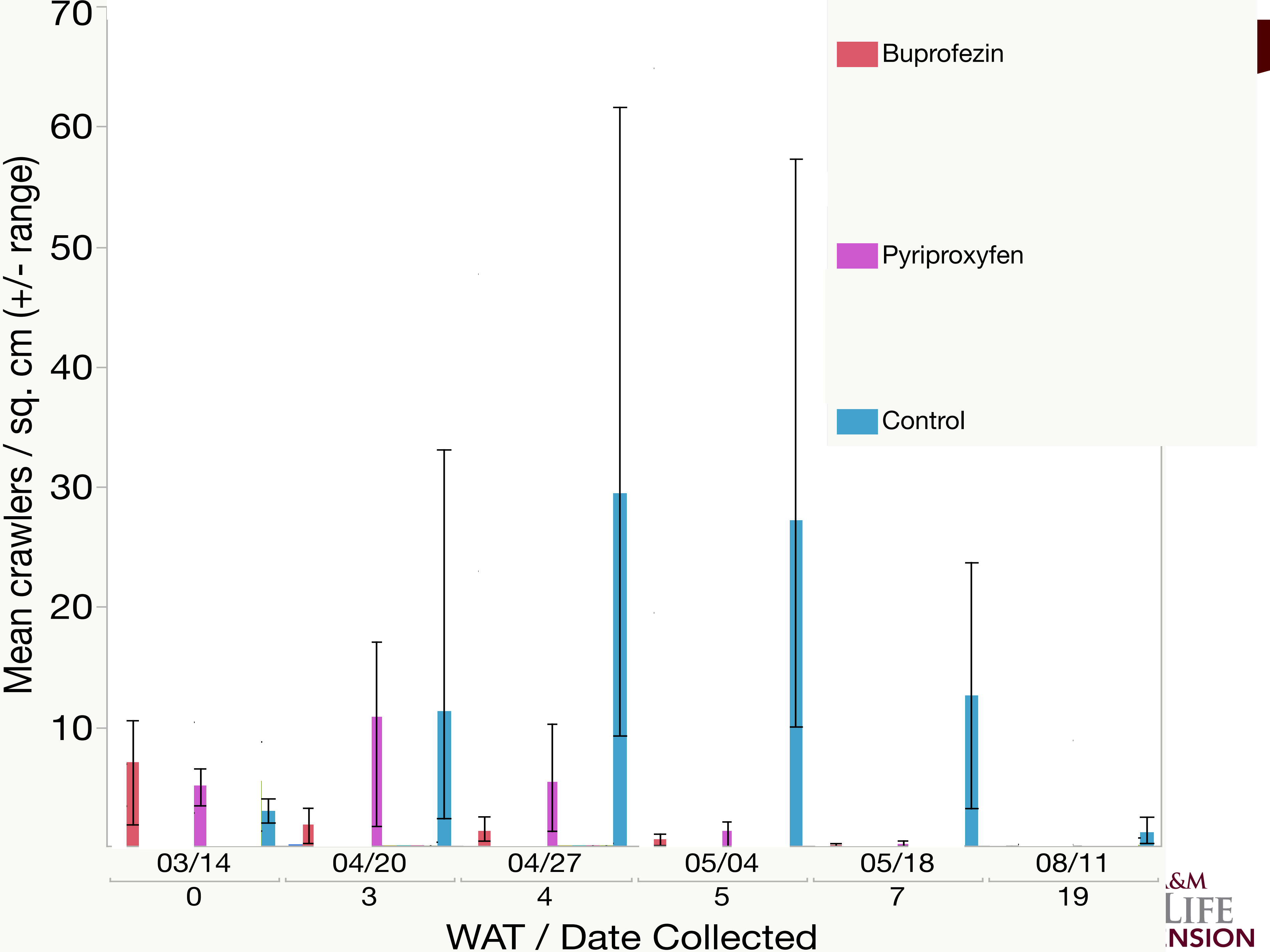
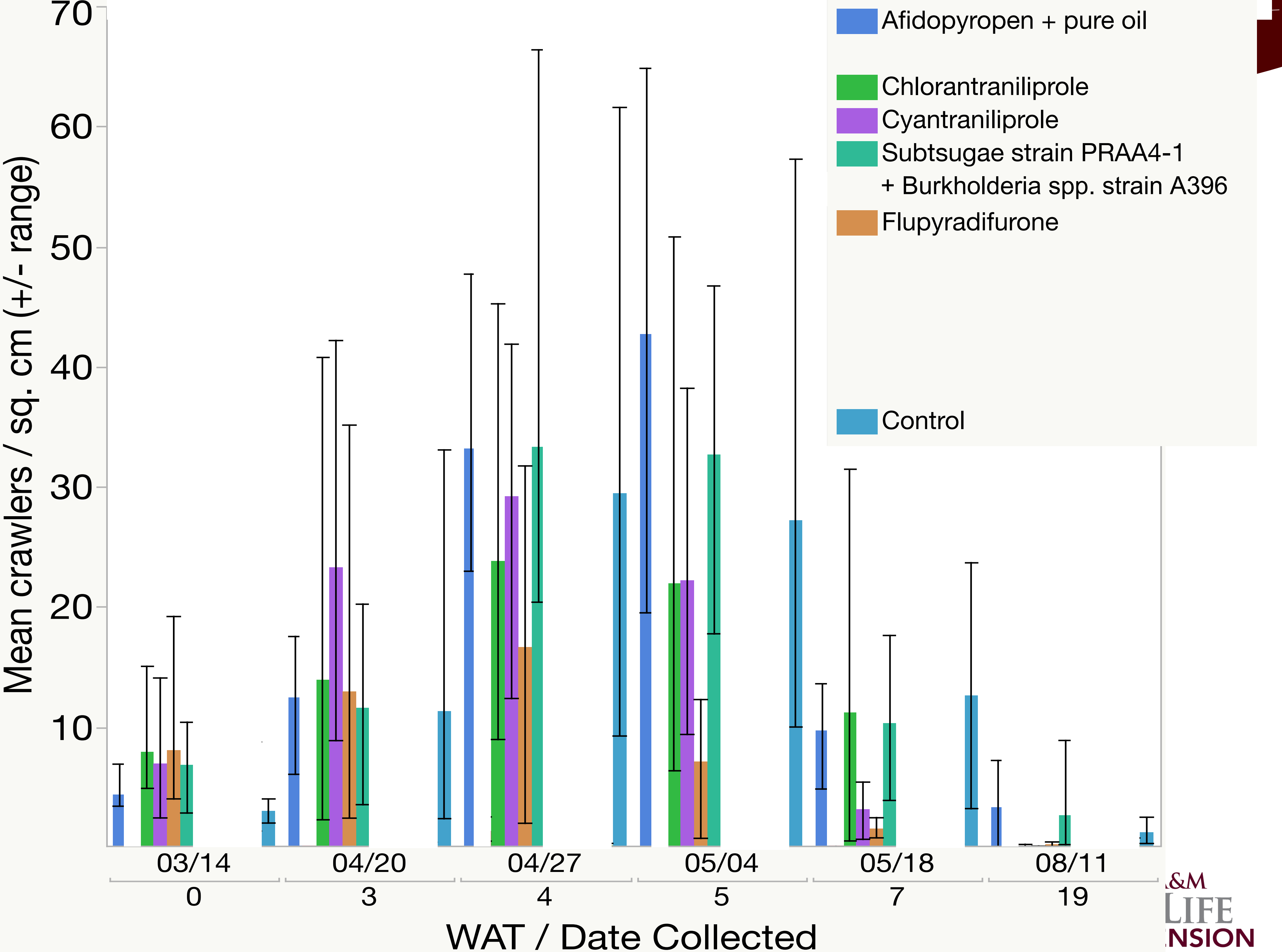
WAT / Date Collected



Mean crawlers / sq. cm (+/- range)
70
60
50
40
30
20
10
Buprofezin
Pyriproxyfen
Control
03/14
04/20
04/27
05/04
05/18
08/11
0
3
4
5
7
19
WAT / Date Collected



70
60
50
40
30
20
10
Mean crawlers / sq. cm (+/- range)
Afidopyropen + pure oil
Chlorantraniliprole
Cyantraniliprole
Subtsugae strain PRAA4-1
+ Burkholderia spp. strain A396
Flupyradifurone
Control
03/14
04/20
04/27
05/04
05/18
08/11
0
3
4
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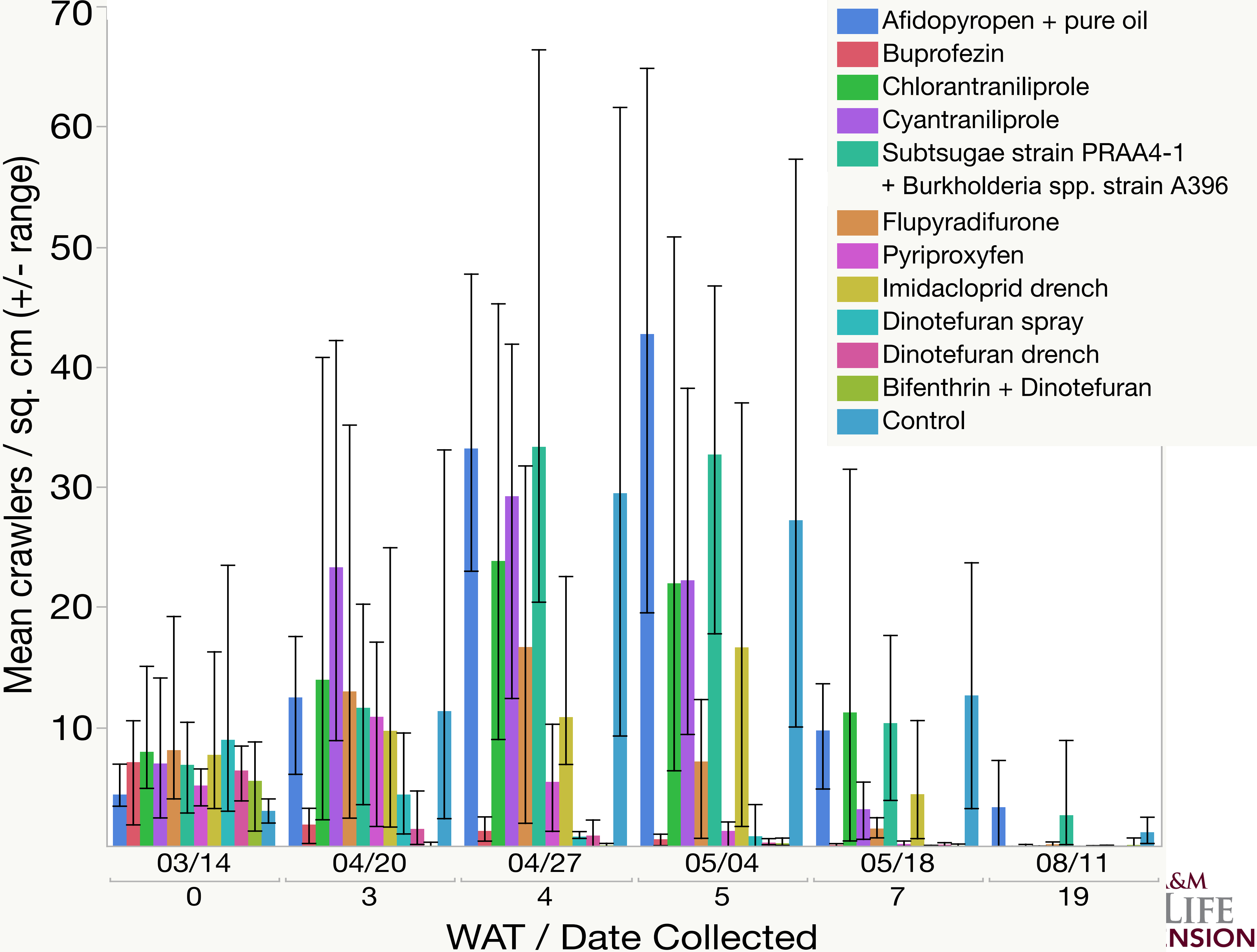
WAT / Date Collected


Mean crawlers / sq. cm (+/- range)
70
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03/14
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0
3
4
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WAT / Date Collected

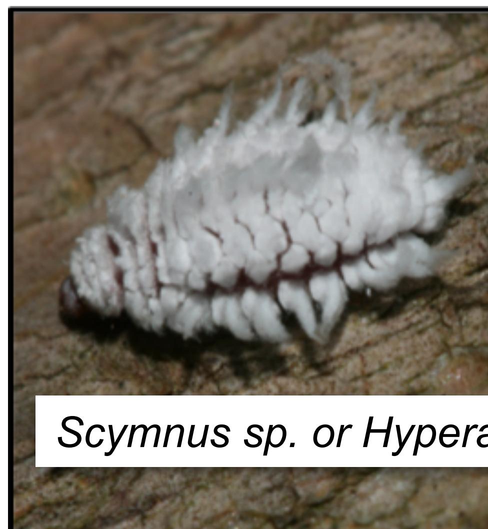
Objectives 2. Management | Potted

Objectives 3. Natural Enemies

Objectives 3. Natural Enemies

Chilocorus cacti L.

Hyperaspis lateralis



Scymnus sp. or Hyperaspis sp.

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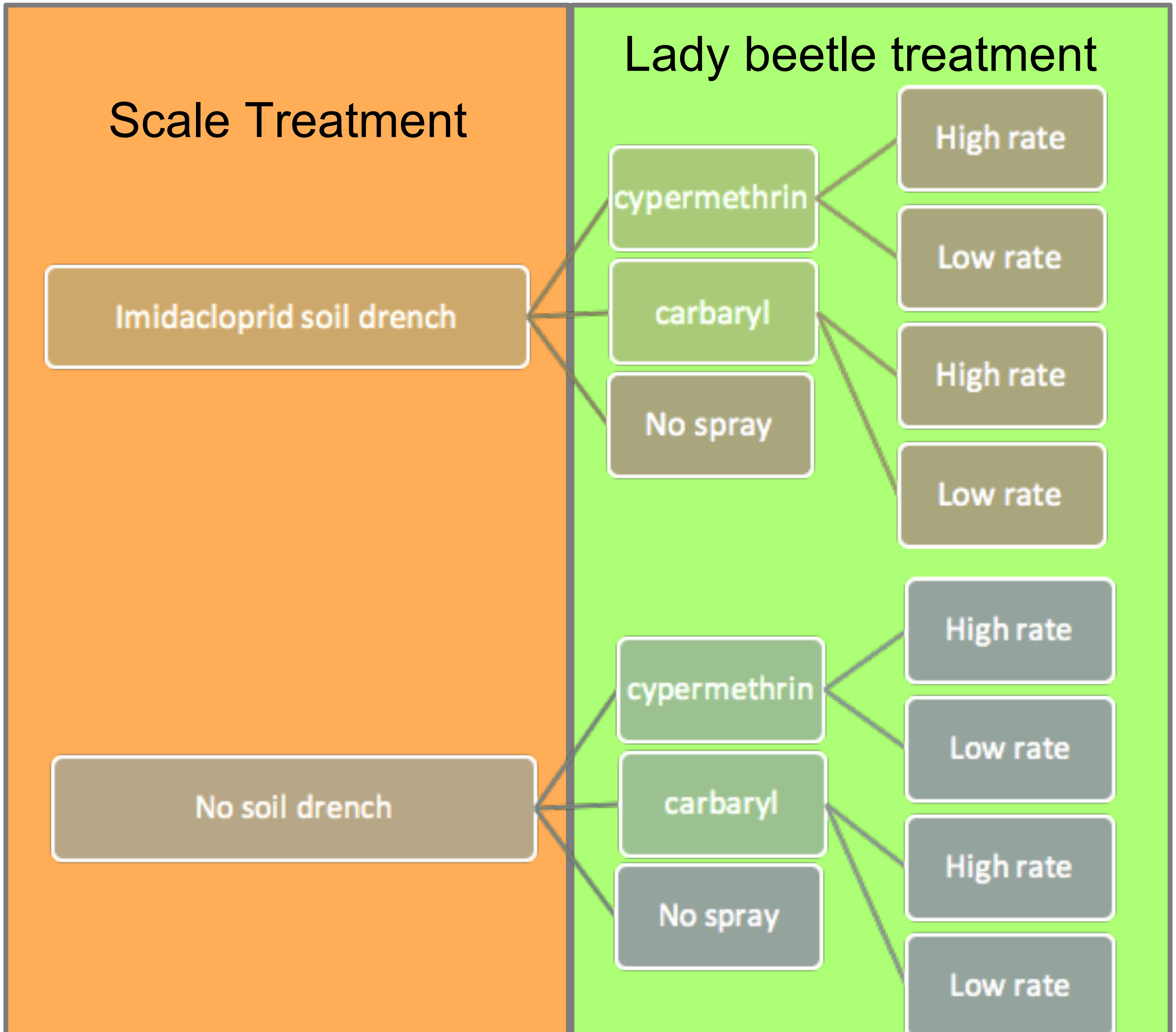
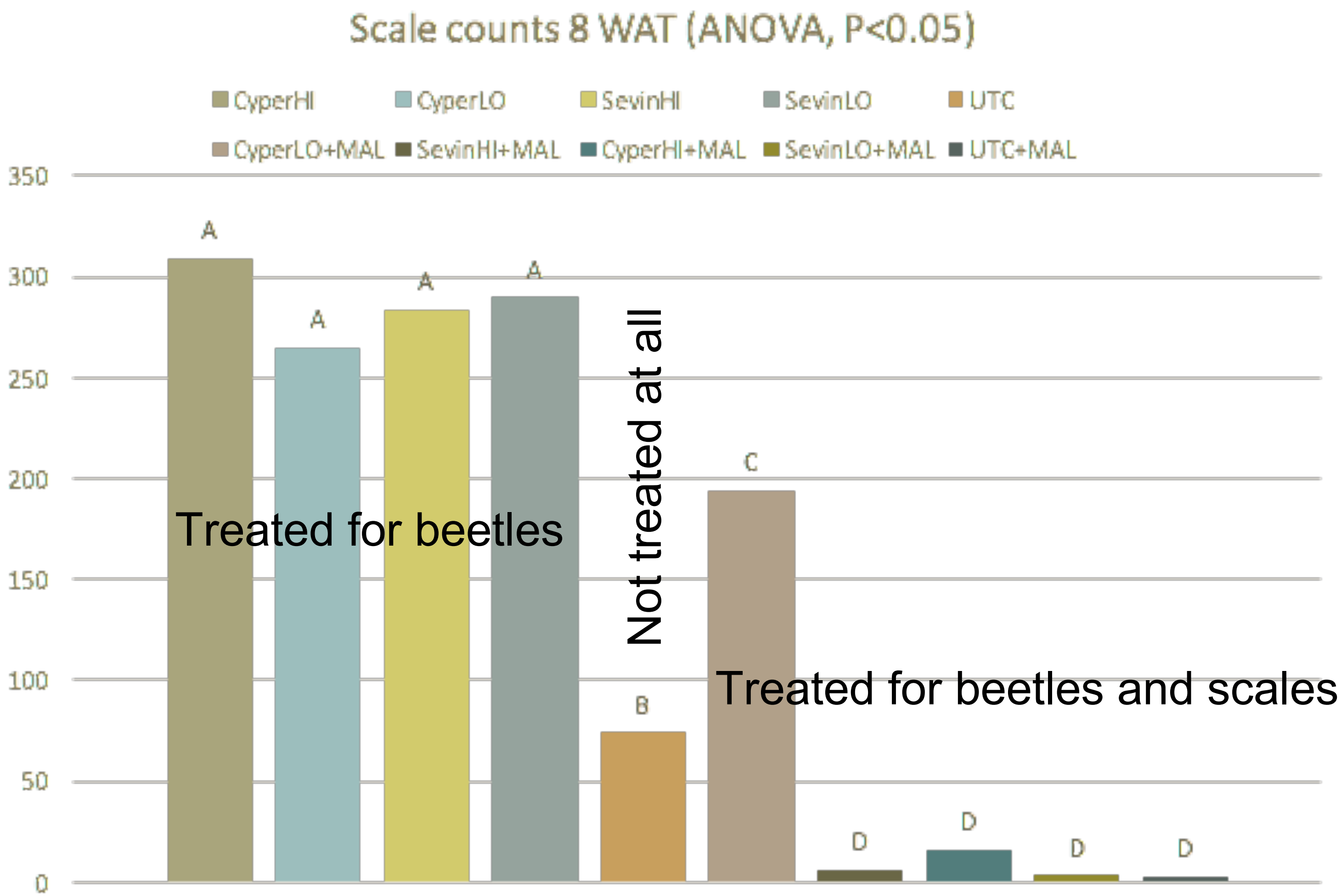
Objectives 3. Natural Enemies

Objective 3. Impact of Predators



Merchant 2016

Objective 3. Impact of Predators



* Percent control calculated with Henderson's method

Merchant 2016

Conclusion

Phenology	Crawler populations appear most active around beginning of May. Future: Collect data across wider climatic range in order to develop CDD model.
Natural Predators	Mostly lady beetles (*Symnus*, *Hyperaspis*, and *H. axyridis*) Can provide about 75% suppression in the landscape
Management	Bifenthrin, Imidacloprid, Dinotefuran, Buprofezin and Pyriproxyfen show most promise.

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Scale IPM in greenhouses and landscapes

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Acknowledgements

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