



Brazilian Peppertree Biological Control: Update

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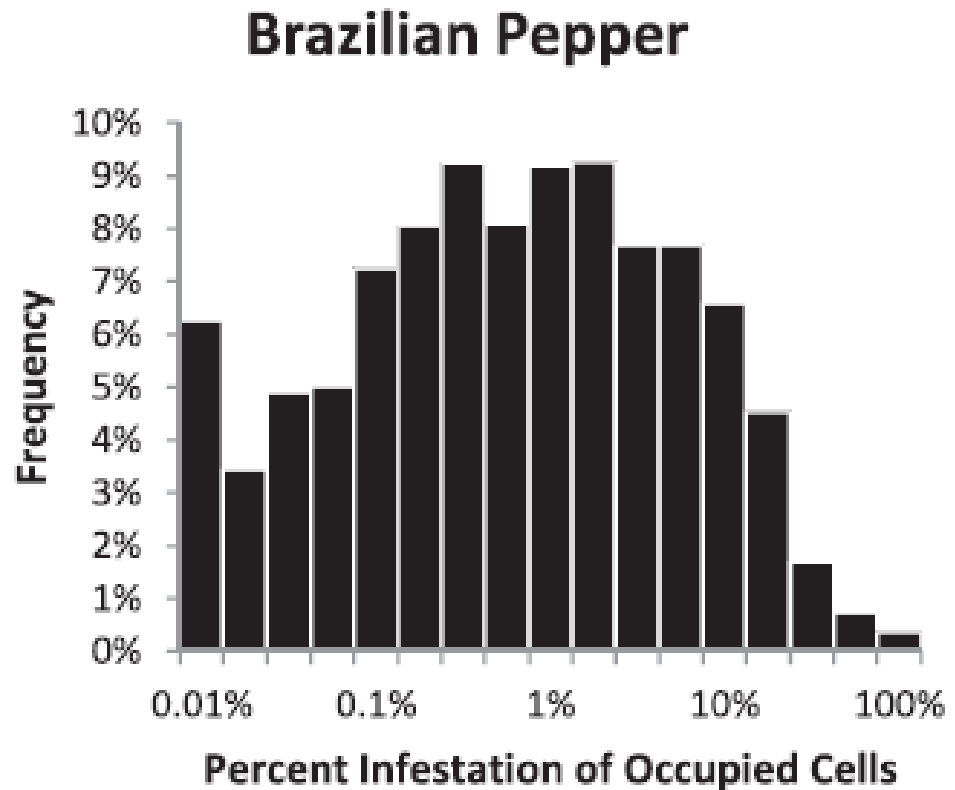
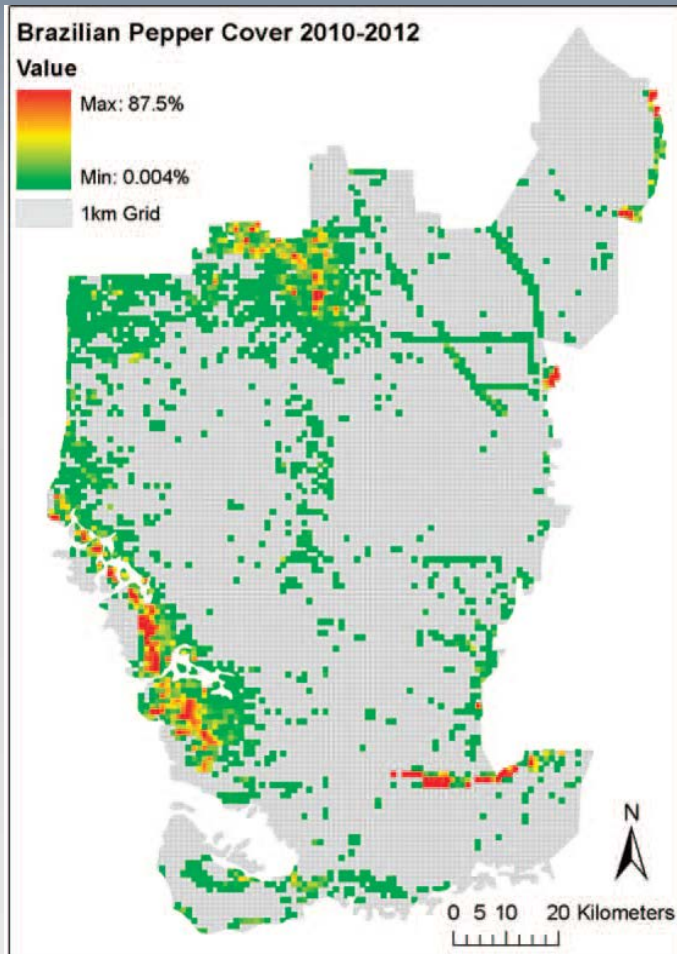


Acknowledgements

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- **Florida Industrial & Phosphate Research Institute**
- **FWC, Bureau of Invasive Plant Management**
- **South Florida Water Management District**
- **UF/IFAS Center for Aquatic & Invasive Plants**

BP Cover & % Infestation

FL Everglades, 2010-12



Rodgers et al. (2014)

New Natural Enemy

CALOPHYA LATIFORCEPS, A NEW SPECIES OF JUMPING PLANT LICE (HEMIPTERA: CALOPHYIDAE) ASSOCIATED WITH *SCHINUS* *TEREBINTHIFOLIUS* (ANACARDIACEAE) IN BRAZIL

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ABSTRACT

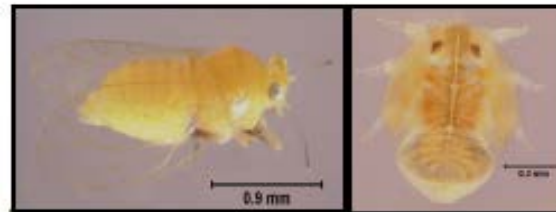
Brazilian peppertree, *Schinus terebinthifolius* Raddi, is a perennial woody plant native to Brazil, Argentina, and Paraguay that is recognized as one of the most invasive weeds in Florida. A new species of leaflet galling psyllid was discovered attacking Brazilian peppertree in Bahia, Brazil in March 2010. In this paper, a formal morphological description of the new psyllid *Calophya latiforceps* **sp. nov.** (Hemiptera: Calophyidae) is presented along with molecular evidence confirming new species designation. This previously unknown natural enemy may have potential as a biological control agent for the Brazilian peppertree.

Key Words: *Calophya latiforceps* **sp. nov.**, natural enemy, Brazilian peppertree, leaflet gall former, weed biological control

Calophya latiforceps

(Hemiptera: Calophyidae)

- Native to Brazil, Adults
 - Green & Yellow
- Nymphs
 - Form Circular Pit Galls
 - Dorsal Surface Sclerotized
- Discovered in 2010



Burckhardt et al. (2011)

Peruvian Peppertree Example

- *Calophya schini* Discovered in CA, 1980s
- Attacked Ornamental *Schinus molle* L.
 - Spread from San Diego to San Francisco
 - Caused Severe & Widespread Damage
 - Did NOT Attack Brazilian Peppertree



Downer et al. (1988)



Surveys in Brazil

- Conducted near Salvador, Bahia; Ubu, Espirito Santo; Itajai, Santa Catarina
 - August 2012
 - March 2014

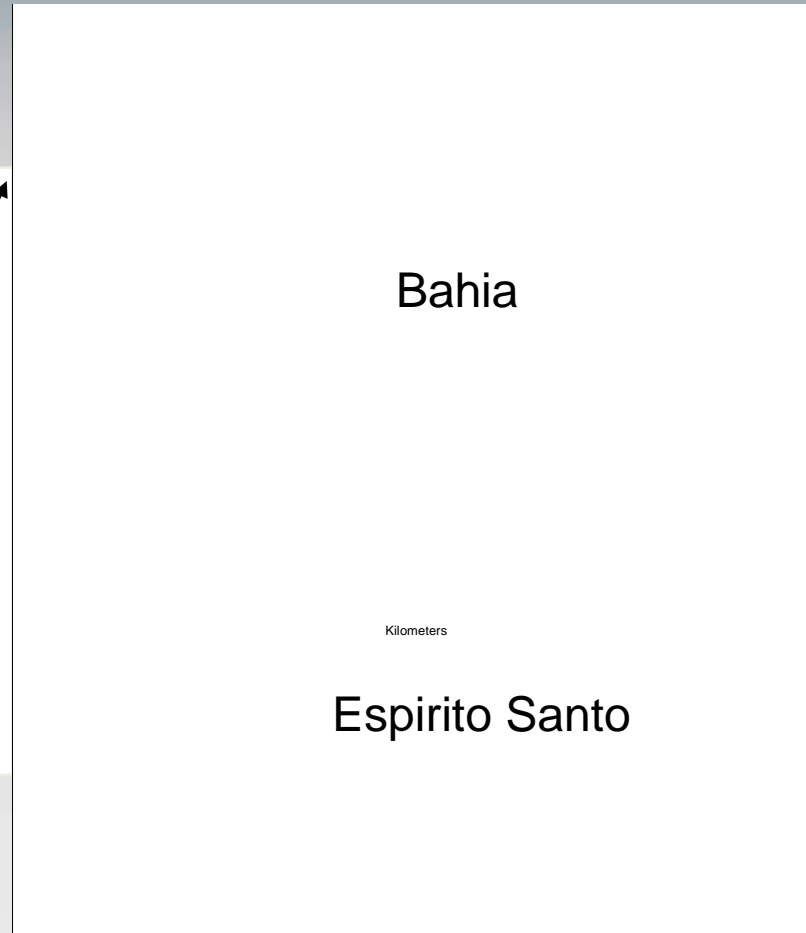
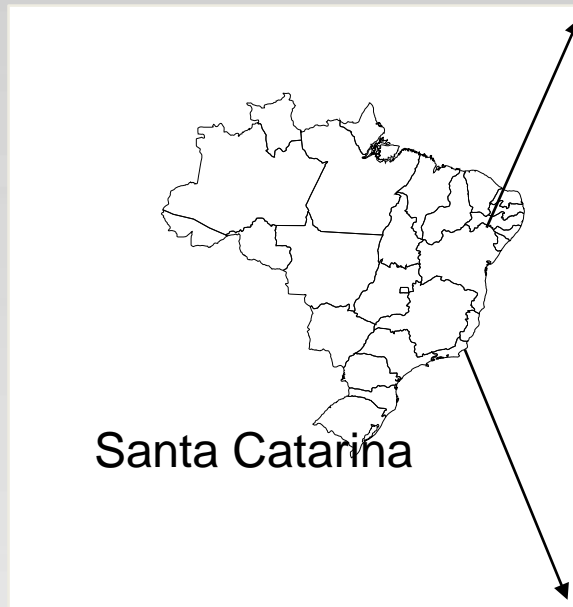
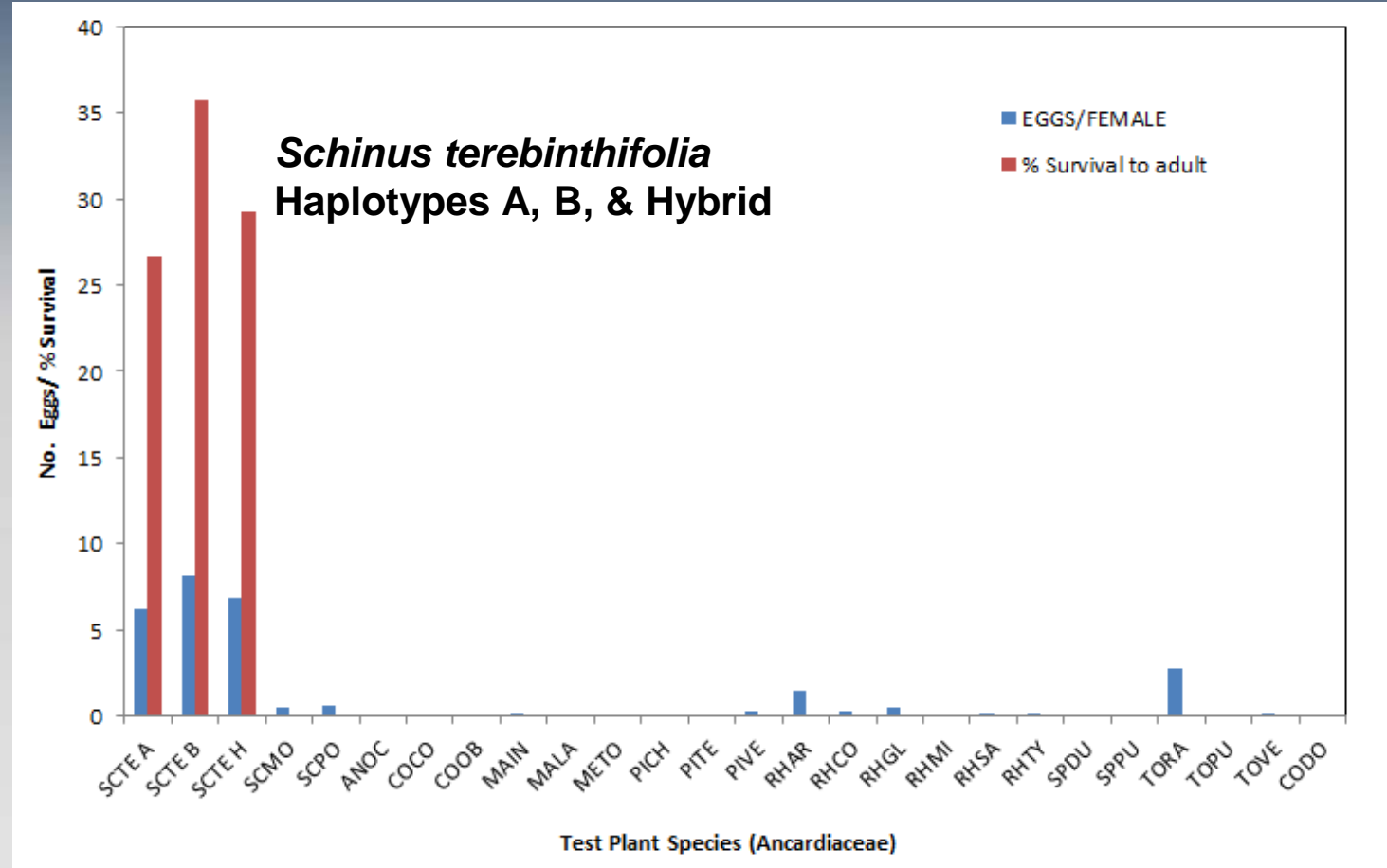


Photo Credit: R. Diaz

Host Specificity



- Test plants included 90 species in 48 families
- Gall initiation and complete development only on Brazilian peppertree!!

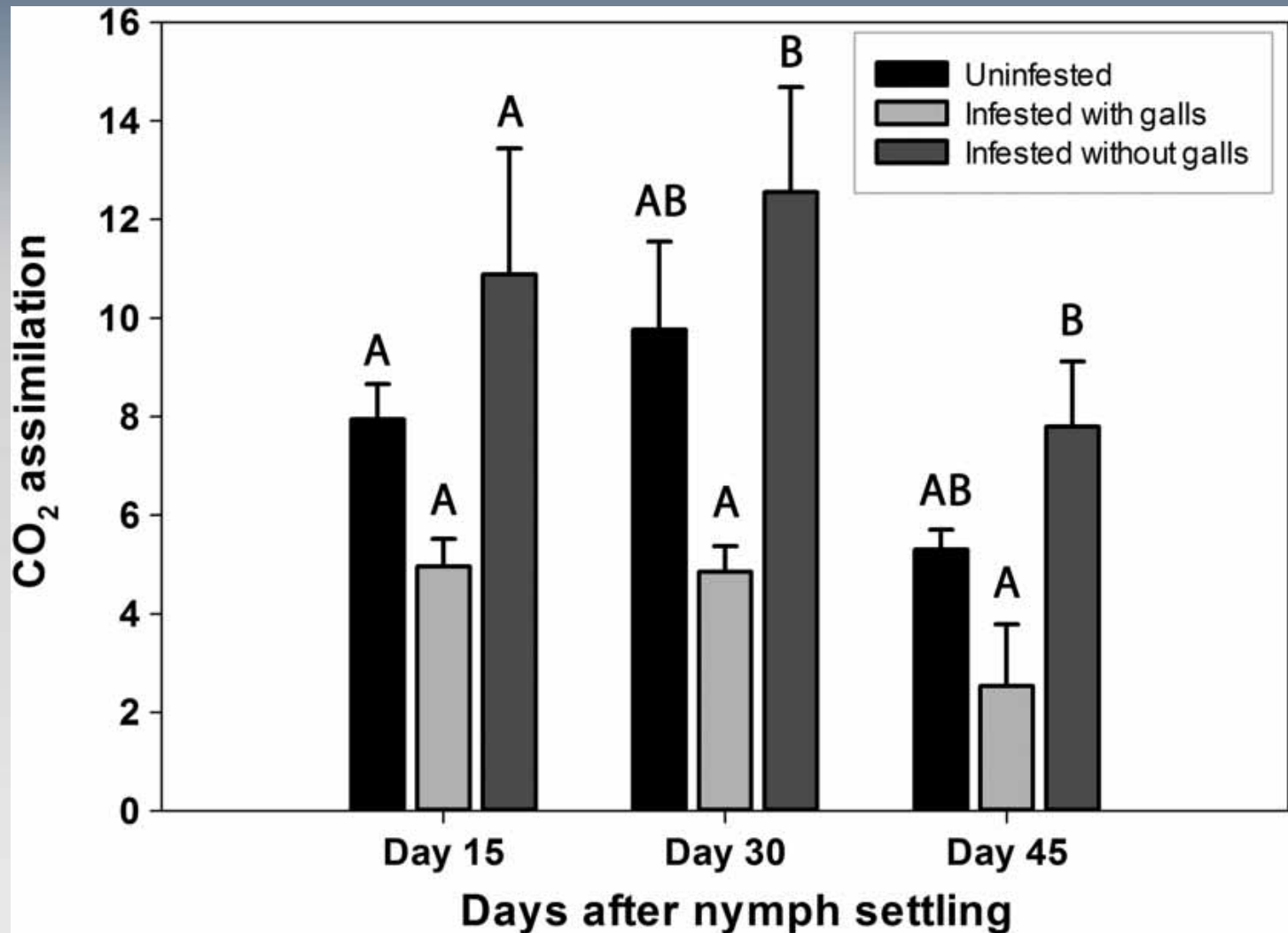
Diaz et al. (2014)

Impact on Plant Height



- **Plants after 4 months of exposure, without (L) & with (R) psyllid galls** (Photo Credit: R. Diaz)

BP Leaf Photosynthetic Rates



Prade et al. (2015)

Technical Advisory Group for Biological Control Agents of Weeds TAG Petitions - APHIS Actions
Updated April 2016

TAG No.	Petitioner	Petition Type	Agent (Biological Control Organism)	Target Weed	TAG Recommendation (date)	APHIS Action (date)	FONSI (signed date)	Was Release Authorized [Date Permitted]
15-01	Gregory S. Wheeler	Field Release	<i>Dikashia collaris</i> Daly (Coleoptera: Chrysomelidae)	Chinese allow, <i>Triadica sebifera</i> (Euphorbiaceae)	Under Review			
15-02	William A. Overholt	Field Release	<i>Calophya latiforceps</i> Burckhardt (Hemiptera: Calophyidae)	Brazilian peppertree: <i>Schinus terebinthifolia</i> Raddi (Sapindales: Anacardiaceae)	Recommended for Release (04/08/2016)			
15-01	Jeffrey Littlefield, et al	Field Release	<i>Cheilosia urbana</i> Meigen (Diptera: Syrphidae)	Hawkweeds: <i>Pilosella</i> <i>glaberrima</i> , <i>P. caespitosa</i> , <i>P. flagellaris</i> , <i>P. floribunda</i> , <i>P. glomerata</i> , <i>P. officinarum</i> , <i>P. piloselloides</i> (Asteraceae)	Under Review			
14-04	James L. Hanula	Field Release	<i>Leptopypha hospita</i> (Hemiptera: Tingidae)	Chinese Privet <i>Ligustrum sinense</i> (Oleaceae)	Not recommended for Release (3/25/2016)			
14-03	John A. Goolsby, Ph.D.	Field Release	<i>Lasioptera donacis</i> Coutin (Diptera: Cecidomyiidae)	Giant reed, <i>Arundo donax</i> L. (Poales: Poaceae)	Recommended for Release (04/02/2015)			
14-02	Gregory S. Wheeler, Veronica Manrique, William A. Overholt, Fernando Mc Kay, and Kirsten Dyer	Field Release	<i>Pseudophilothrips ichini</i> (Hood) (Thysanoptera: Phlaeothripidae)	Brazilian peppertree, <i>Schinus terebinthifolia</i> Raddi (Anacardiaceae)	Under Review			
14-01	Dana K. Berner (Contact), Craig Cavin, Dan Bean, and William L. Bruckart, III	Field Release	<i>Colletotrichum salsolae</i> B. Weir & P. R. Johnst. (Phylum Ascomycota, Order Glomerellales, Family Glomerellaceae)	Russian thistle, <i>Salsola tragus</i> L. (Chenopodiaceae)	Not recommended for Release (3/25/2015)	NA	NA	NA
13-05	Alec McClay and Urs Schaffner	Host Test Plant List	<i>Dichrorampha aeratana</i> Pierce & Metcalfe (Lepidoptera: Tortricidae), <i>Cyphocleonus trisulcatus</i> Herbst (Coleoptera: Curculionidae), <i>Apion stolidum</i> Germar (Coleoptera: Curculionidae), and <i>Tephritis neesii</i> Meigen (Diptera: Tephritidae)	Oxeye daisy, <i>Leucanthemum vulgare</i> (Vaill.) Lam. (Asteraceae)	3/25/15: Recommendation for the Petitioner to examine all comments provided and proceed with testing realizing that some additional plants will be required to ensure the concerns of the reviewers are addressed			

Yeah
Baby!

Conclusion

- Release of first Brazilian peppertree biological agent in Florida imminent
- Psyllid colony currently being maintained at UF/FDACS BCRCL, Ft. Pierce, FL
- Need to support the new biocontrol scientist
- Plan/ coordinate psyllid releases with FWC, USDA, WMDs, etc.

Thanx!!



EVERGLADES CISMA