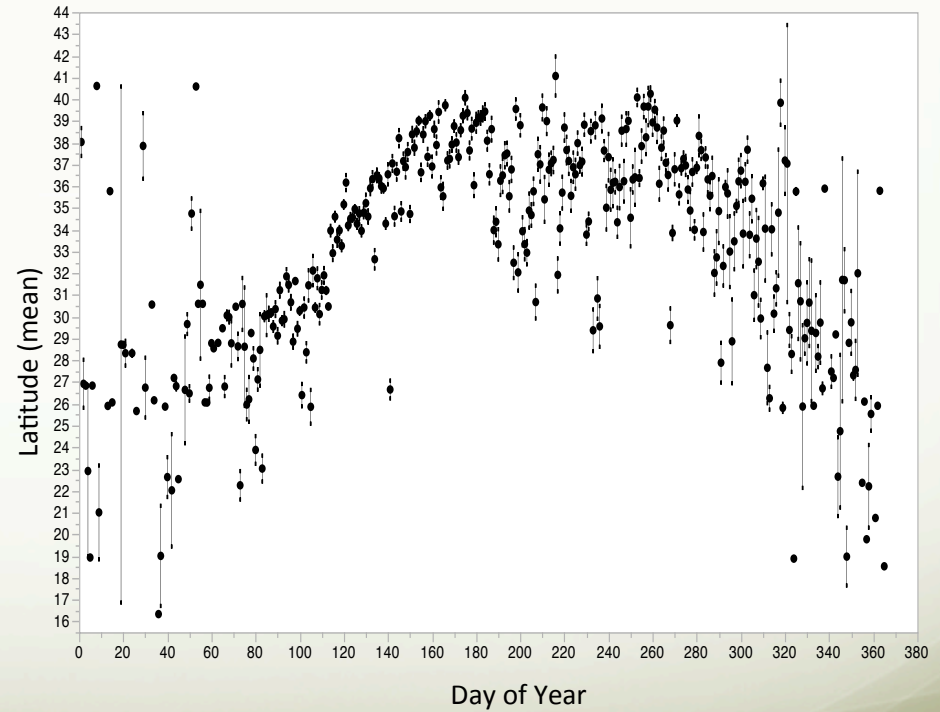


# Using Digitized Data: Two examples from North American museum collections

Christine Johnson  
American Museum of Natural History  
Division of Invertebrate Zoology





Fluid Storage Facility (PNSB) Insect Storage Facility

“Shells”

Division of Invertebrate Zoology  
*American Museum of Natural History*

# Using Digitized Museum Collections Data

## Revision of *Laryngodus* Herrich-Schaeffer, an *Allocasuarina* feeder, with comments on its biology and the classification of the family (Heteroptera : Lygaeoidea : Rhyparochromidae)

James A. Slater<sup>A</sup>, Randall T. Schuh<sup>B,E</sup>, Gerasimos Cassis<sup>C</sup>, Christine A. Johnson<sup>B</sup> and Paola Pedraza-Peñalosa<sup>B,D</sup>

### *Laryngodus cervantes*, sp. nov.

(Figs 4, 6–13; Tables 1, 4)

#### Material examined

**Holotype.** Australia: Western Australia: 9 km E of Cervantes, 30.4493°S 115.1183°E, 15 m, 10.xii.1997, Schuh, Brailovsky, *Allocasuarina huegeliana* (Miq.) L.A.S. Johnson (Casuarinaceae), det. Perth staff, 1♂ (AMNH\_PBI 00180636) (WAM).

**Paratypes.** Australia: Western Australia: 1 km E of Grey Rd on Ajana Rd, on southern boundary of Kalbarri National Park, 27.87052°S 114.1667°E, 197 m, 23 Oct 2004, Cassis, Wall, Weirauch, Symonds, *Allocasuarina campestris* (Diels) L.A.S. Johnson (Casuarinaceae), det. PERTH staff PERTH6988059, 1♀ (AMNH\_PBI 00024167) (UNSW); 9 km E of Cervantes, 30.4493°S 115.1183°E, 15 m, 10.xii.1997,

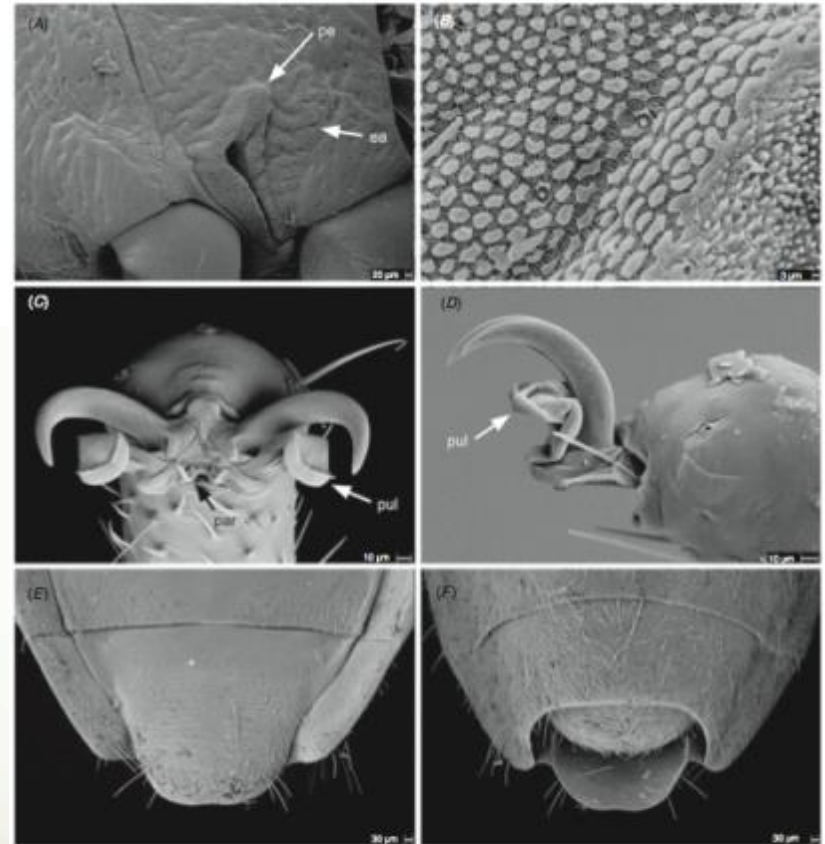
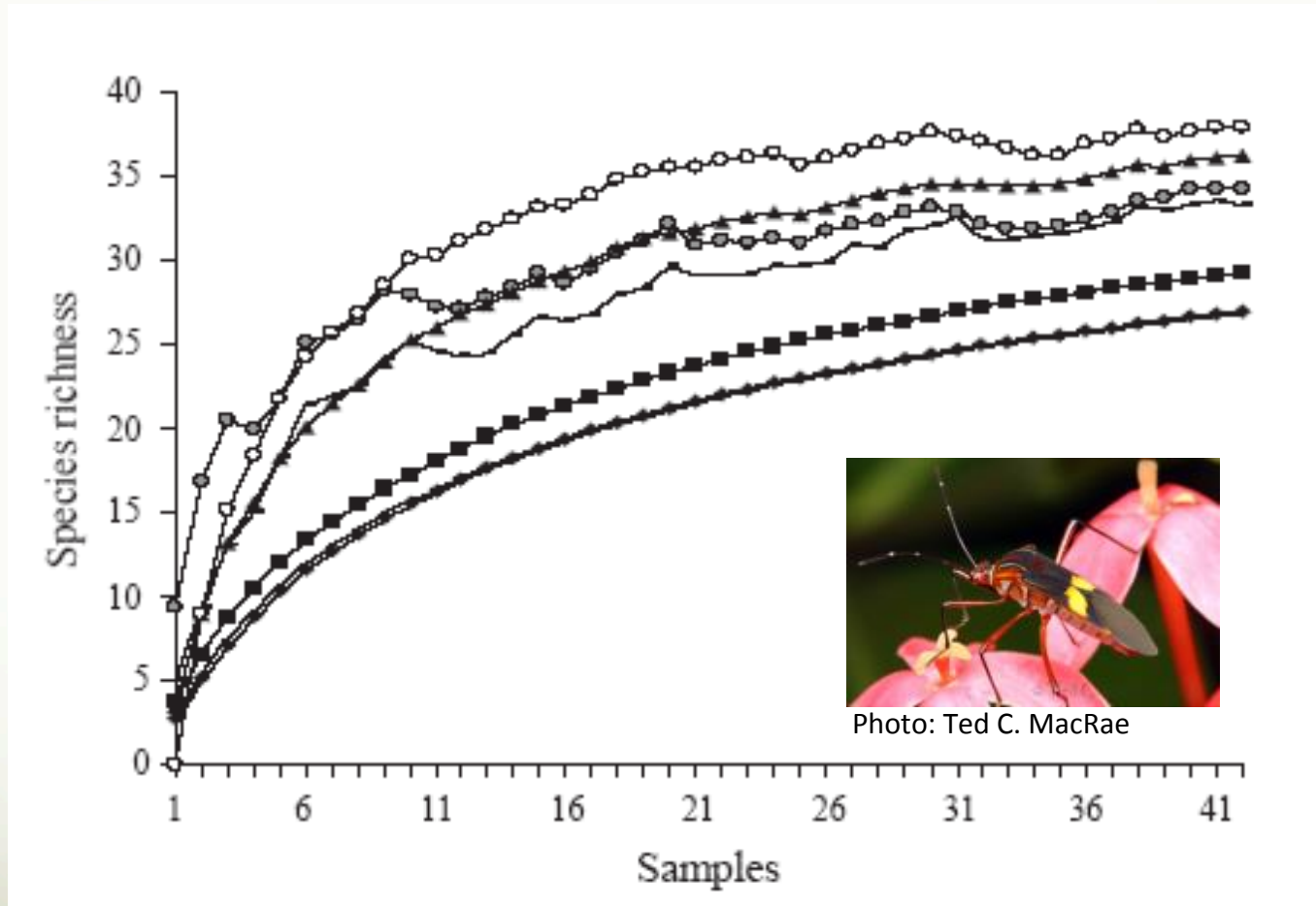


Fig. 6. Scanning electron micrographs of *Laryngodus cervantes* morphology. A, thoracic pleuron, showing meso- and metathorax, including scent-gland evaporatory area, peritreme, and mesothoracic spiracular open with surrounding mushroom bodies; B, detail of surface of scent-gland evaporatory area; C, frontal view of pretarsus, showing claws, pulvilli, and parempodia; D, lateral view of distal tarsal segment and pretarsus; E, dorsal view of abdomen, male; F, ventral view of abdomen, male, showing retracted pygophore. ca, evaporatory area; pe, peritreme; pul, pulvillus.



# Using Digitized Museum Collections Data



Species richness of Coreoidea from Southern Brazil  
Barcelos et al. 2008. *Neotropical Entomology*

# Using Digitized Museum Collections Data



# Using Digitized Museum Collections Data



# Tri-trophic Digitization Project

## *Thematic Collections Network*

35 Institutions; 3,645,975 insect & plant specimens digitized



Photo: S. Bauer



Illustration: W. J. Hooker



Photo: C. A. Johnson

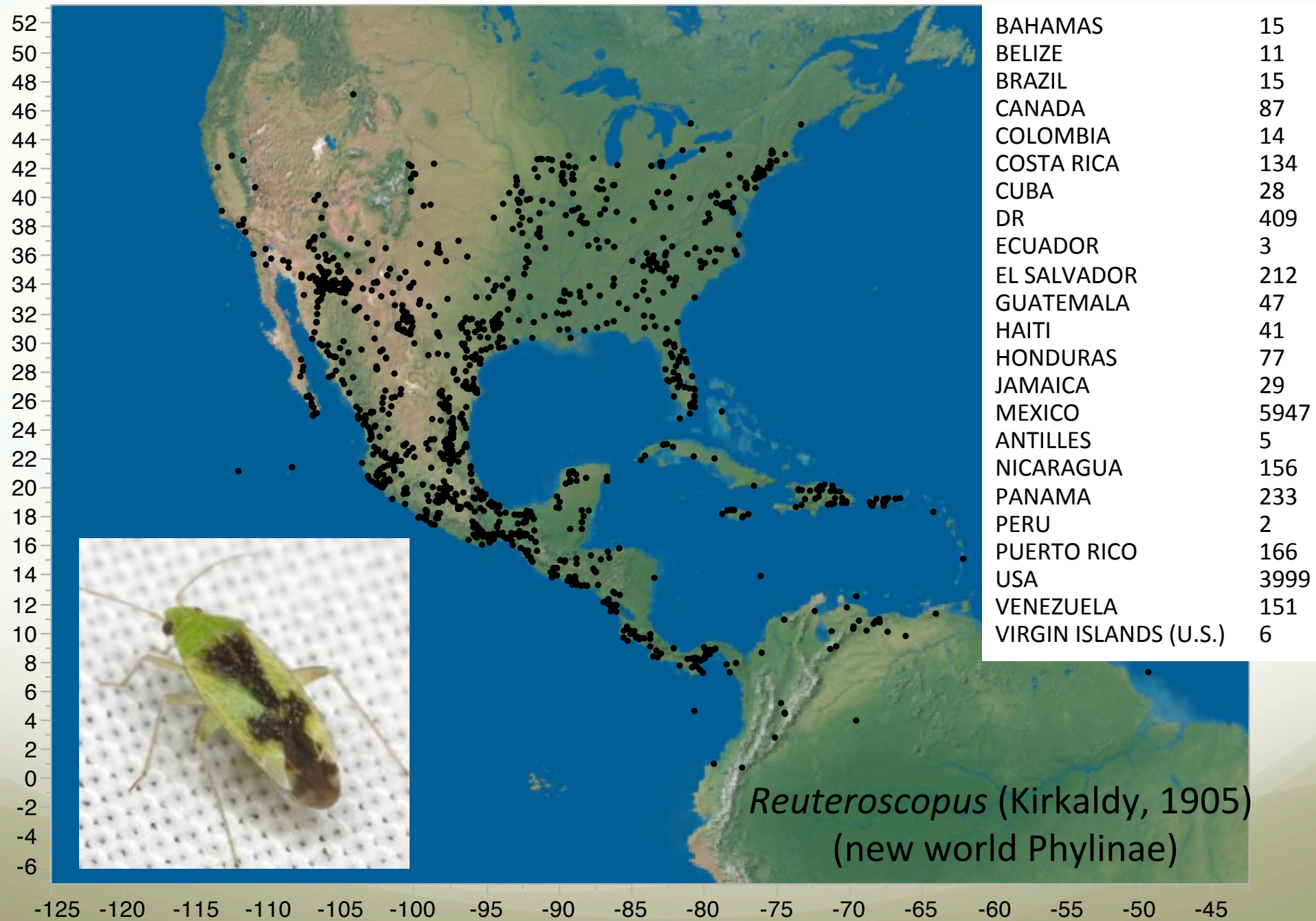


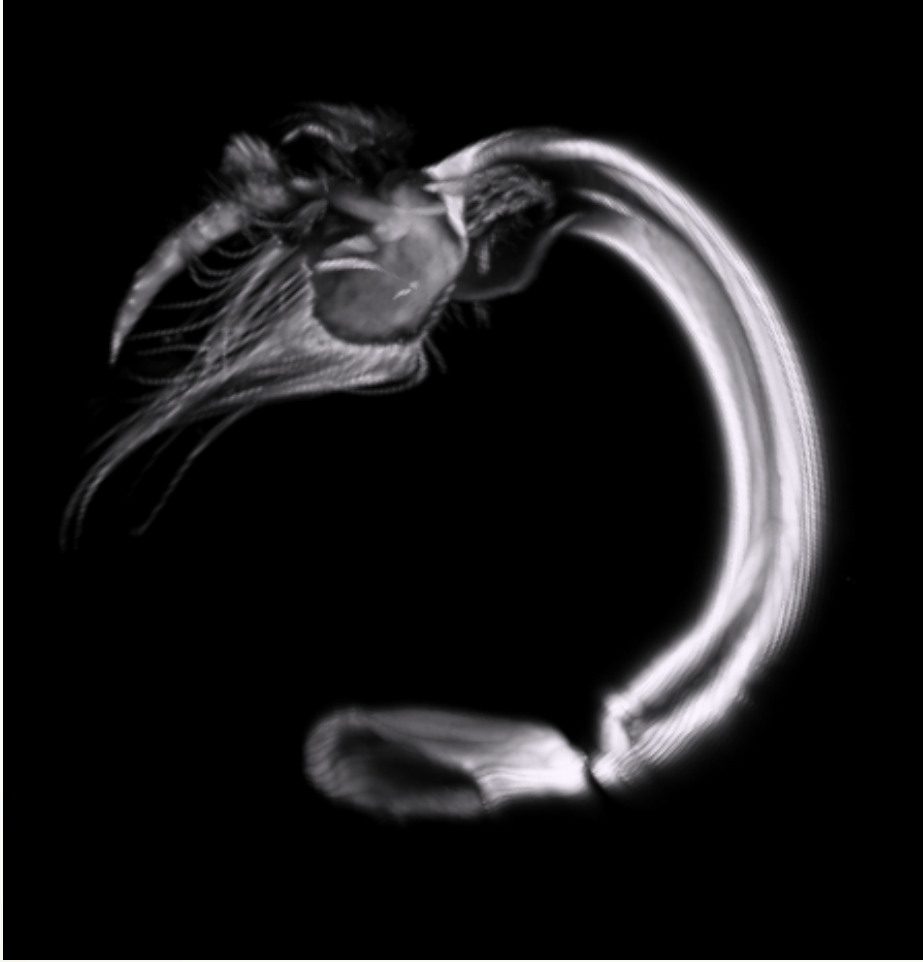
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AMNH_PBI	00300369	Reuteroscopus	diffusus	MEXICO	Yucatan	None or Unknown	Merida	20.96670	-89.61670	Nov 1961	N. L. H. Krauss
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AMNH_PBI	00300371	Reuteroscopus	diffusus	MEXICO	Sinaloa	None or Unknown	E. Mazatlan	23.23000	-106.40000	15 Aug 1954	Ryckman, Chrst
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AMNH_PBI	00300430	Reuteroscopus	ornatus	PANAMA	Panama	None	Limon Plantation, Chagres River, RP.G115			14 Jul 1918	H. F. Dietz &
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Photo: Prud'homme et al. 2011

Is there “signal” in museum membracid collections and oak tree phenology that suggests changes in global temperature are producing ecological shifts?



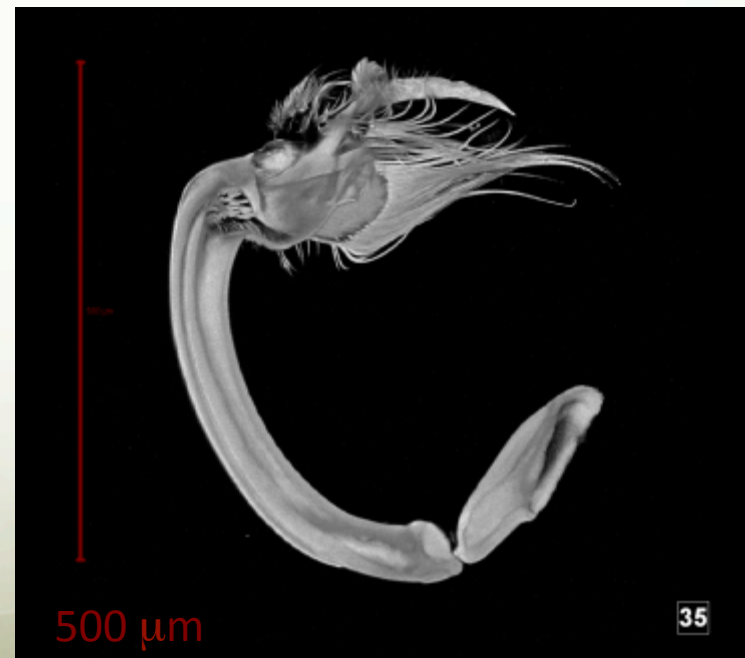


Male

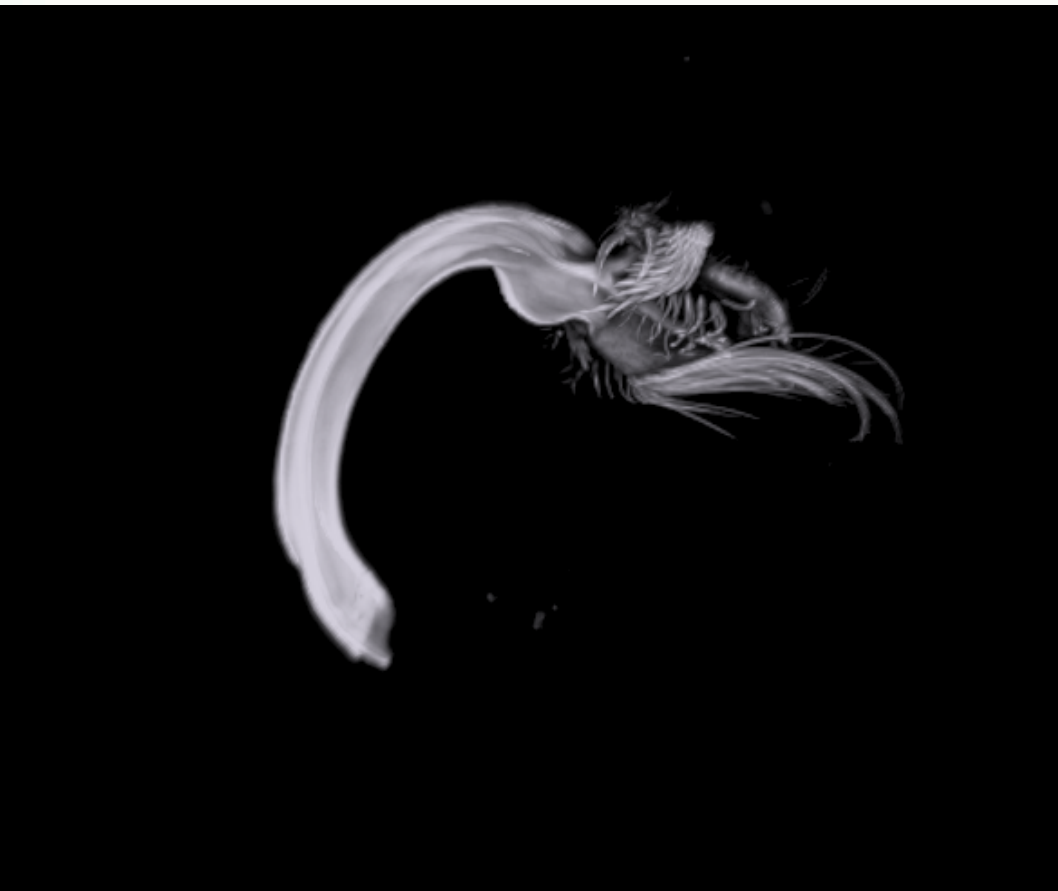


Female

*Reuteroscopus ornatus* CJ08-35  
Palm Beach, Florida



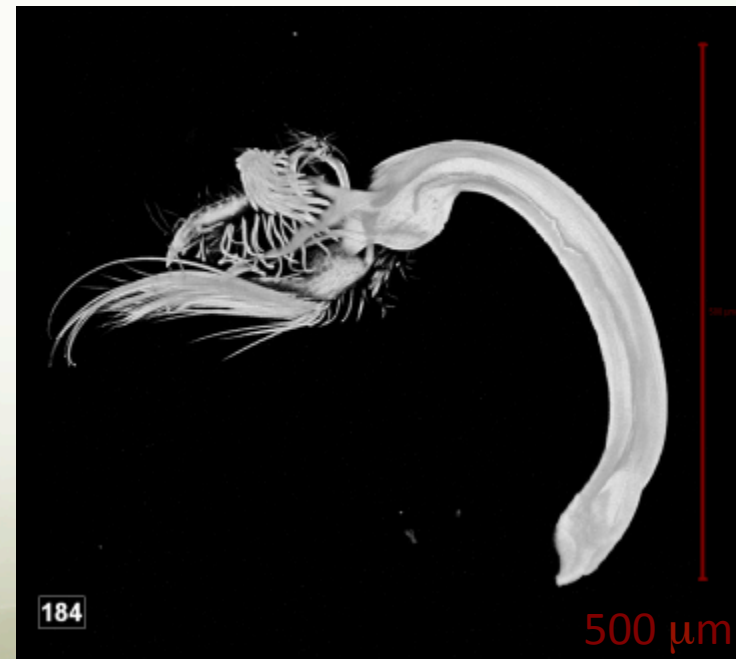
500  $\mu\text{m}$



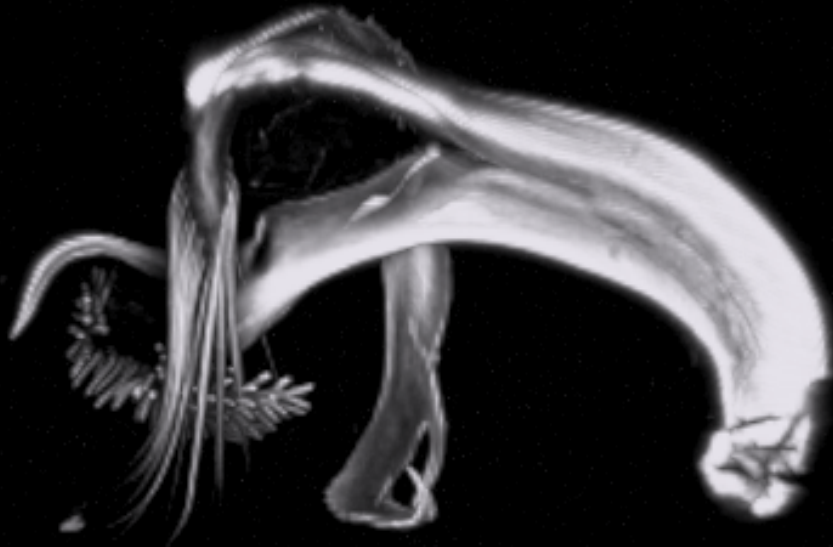
Male



Female



*Reuteroscopus* CJ08-184  
El Salto, Mexico

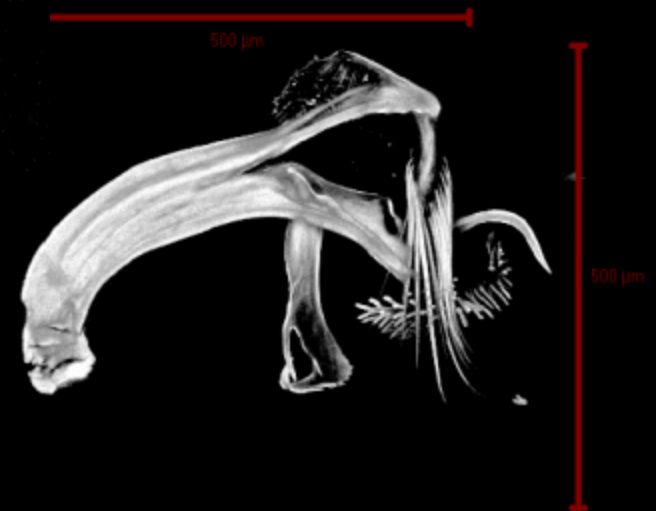


Male



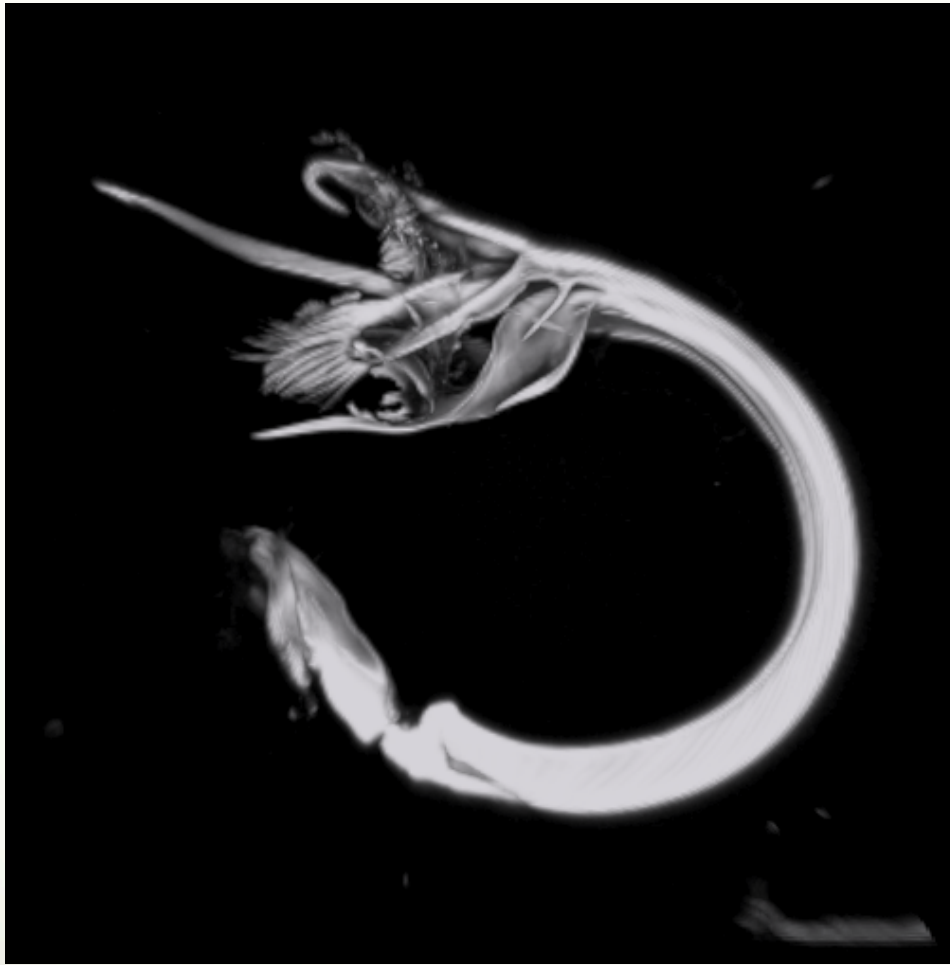
Female

*Reuteroscopus* CJ08-179  
Lea County, NM



04

500 μm



Male  
Holotype



Female  
Allotype

*Reuteroscopus complexus* CJ08-212

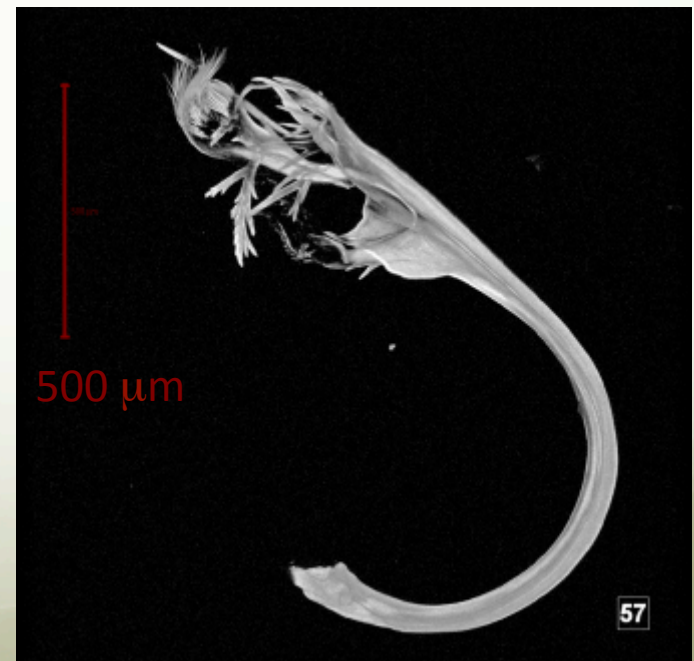




Male

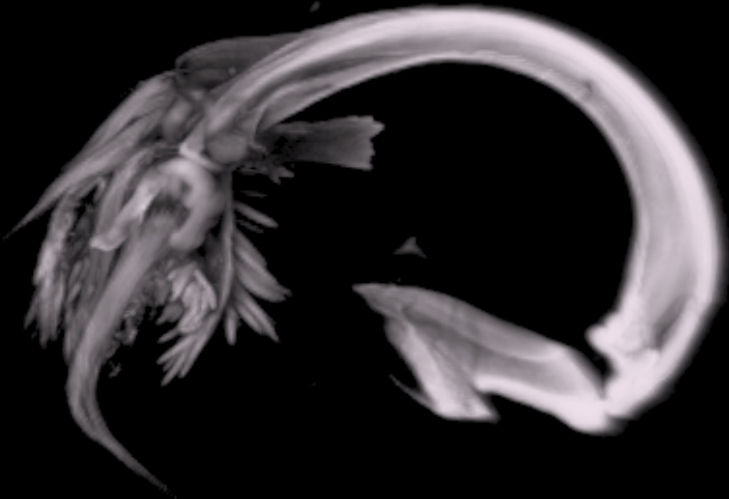


Female



*Reuteroscopus unique* CJ08-57  
El Ocotol, Mexico





Male  
Holotype



Female  
Allotype

*Reuteroscopus mexicanus* CJ08-211

500  $\mu$ m

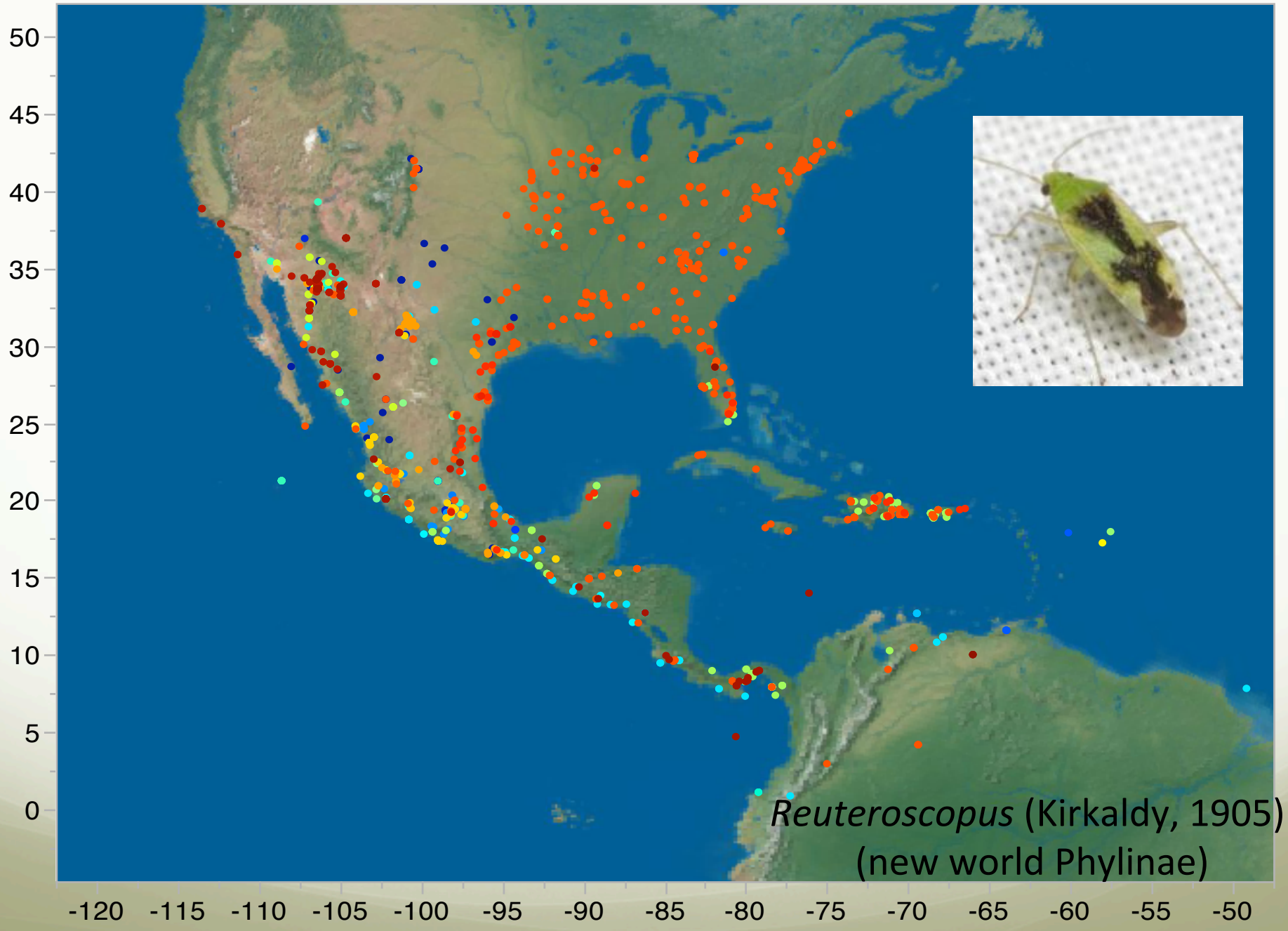


Male



Female

*Reuteroscopus basicornis* CJ08-227  
Arizona



*Reuteroscopus* (Kirkaldy, 1905)  
(new world Phylinae)

<b>Collecting Method</b>	<b>Count</b>
Beating Vegetation	3793
Sweeping	182
General Collecting	3319
Hand Collecting	15
Light Spot	6
Light Trap	1076
Light UV	286
Light MV	7
Malaise Trap	7
Pitfall Trap Single	1
Sifting Leaf Litter	1
Unknown	3431



Randall (Toby) Schuh with beating equipment



Male: 56% (128 males)



Female: 44% (100 females)

520 “first name” collectors collected 11,793 *Reuteroscopus* specimens

<b>Number of Collectors</b>	<b>Number of Specimens</b>	<b>Number of Collecting Events</b>
421 (81%)	1-15	1-9
54 (10.4%)	16-50	2-35
23 (4.5%)	51-100	2-40
14 (2.7%)	100-300	9-89
7 (1.3%)	301-1385	15-178

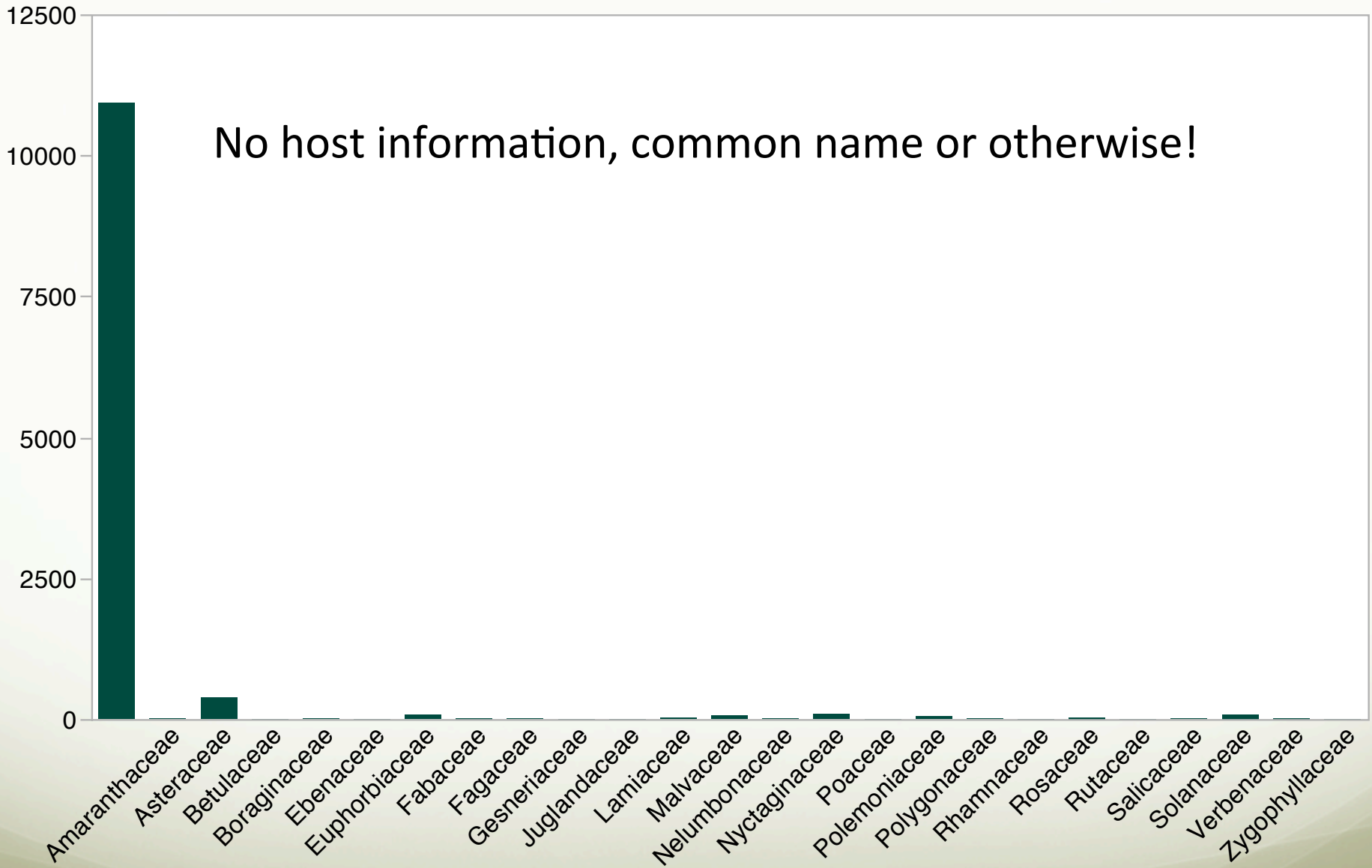
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23 (4.5%)	51-100	2-40
14 (2.7%)	100-300	9-89
7 (1.3%)	301-1385	15-178

Average Number of States = 2.07 (sd = 3.03)

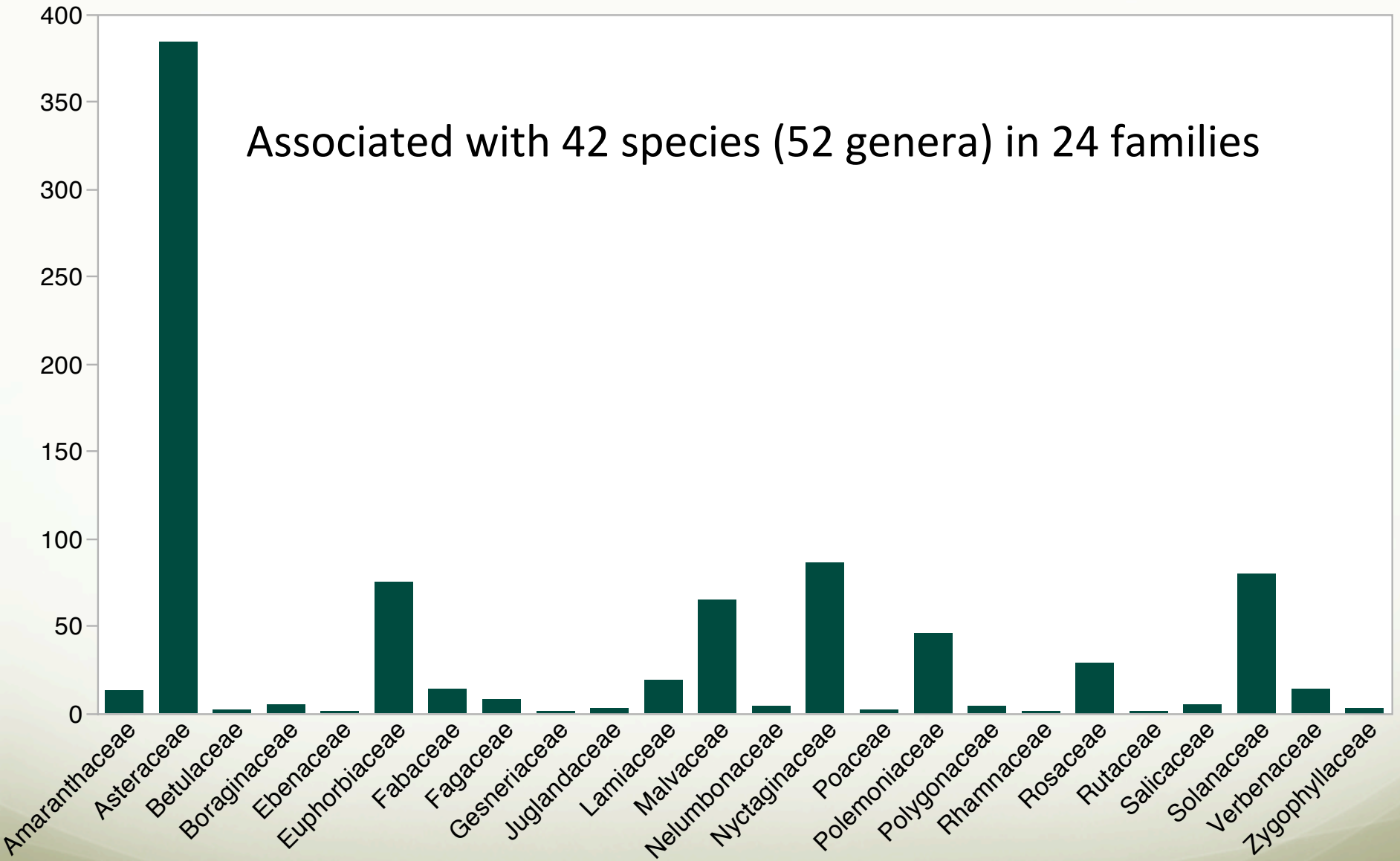
J. C. Schaffner collected (1241 spmns) in 35 States (MX & USA)

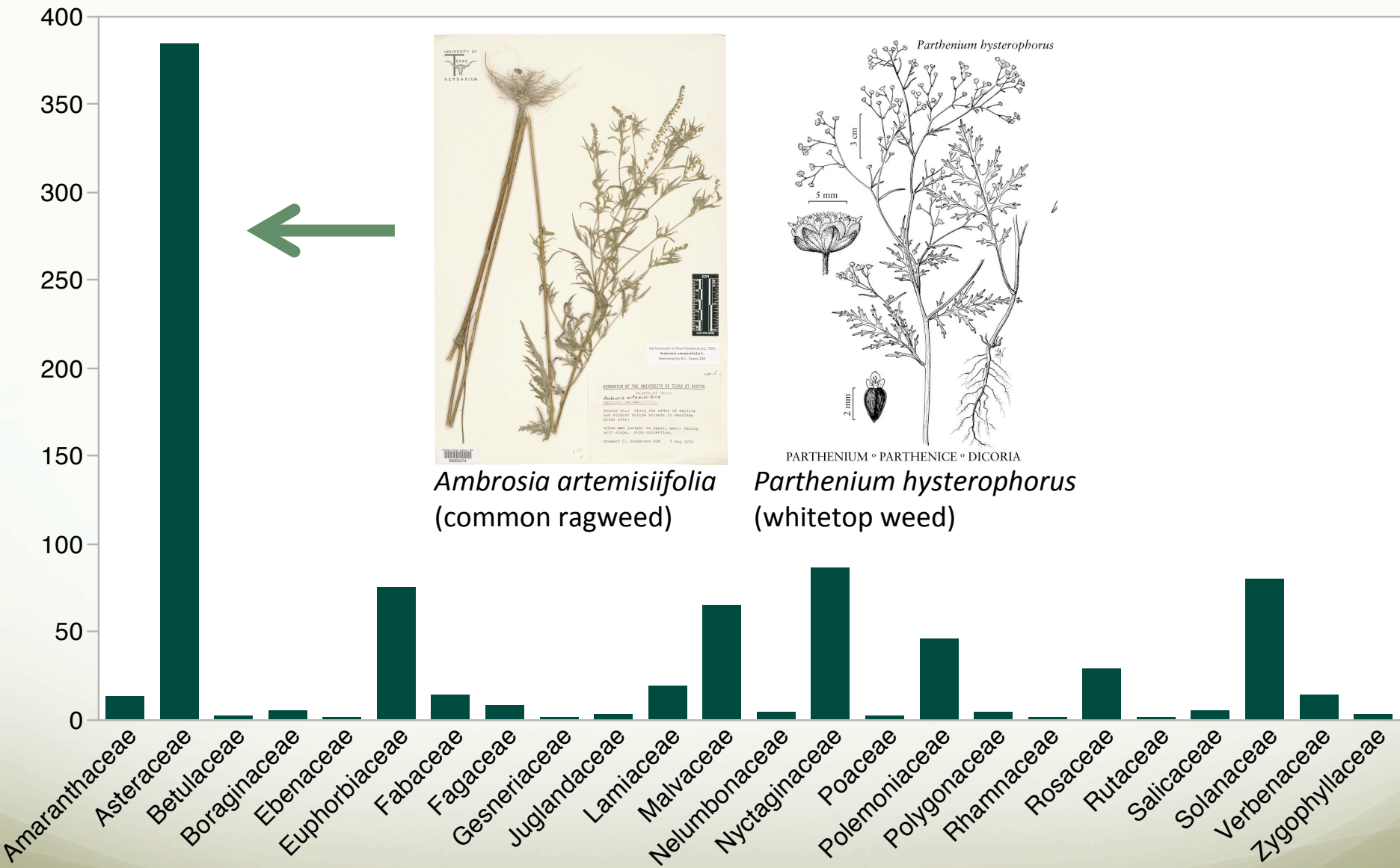
Kelton collected (1385 spmns) in 18 States (MX & USA)

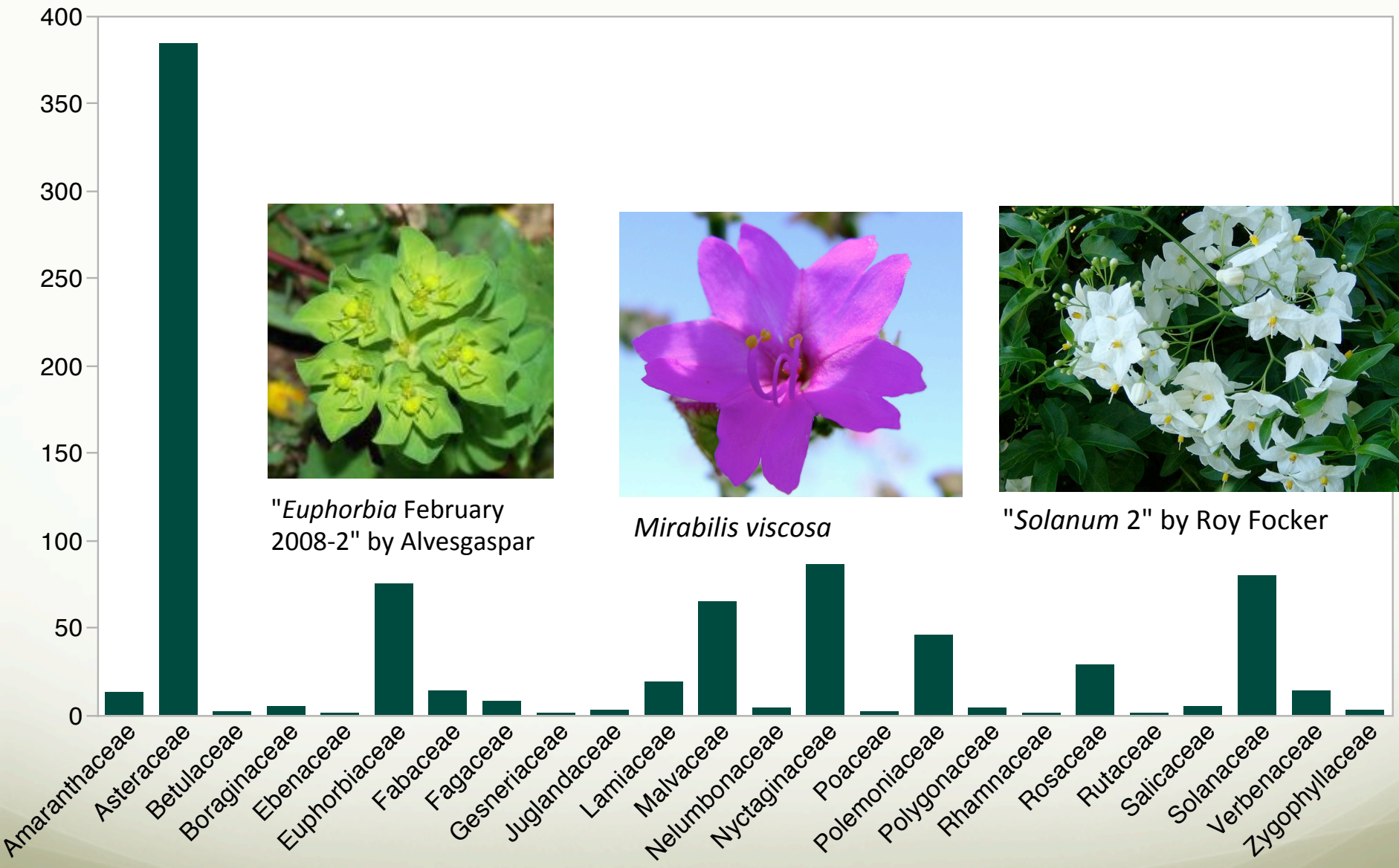




Associated with 42 species (52 genera) in 24 families







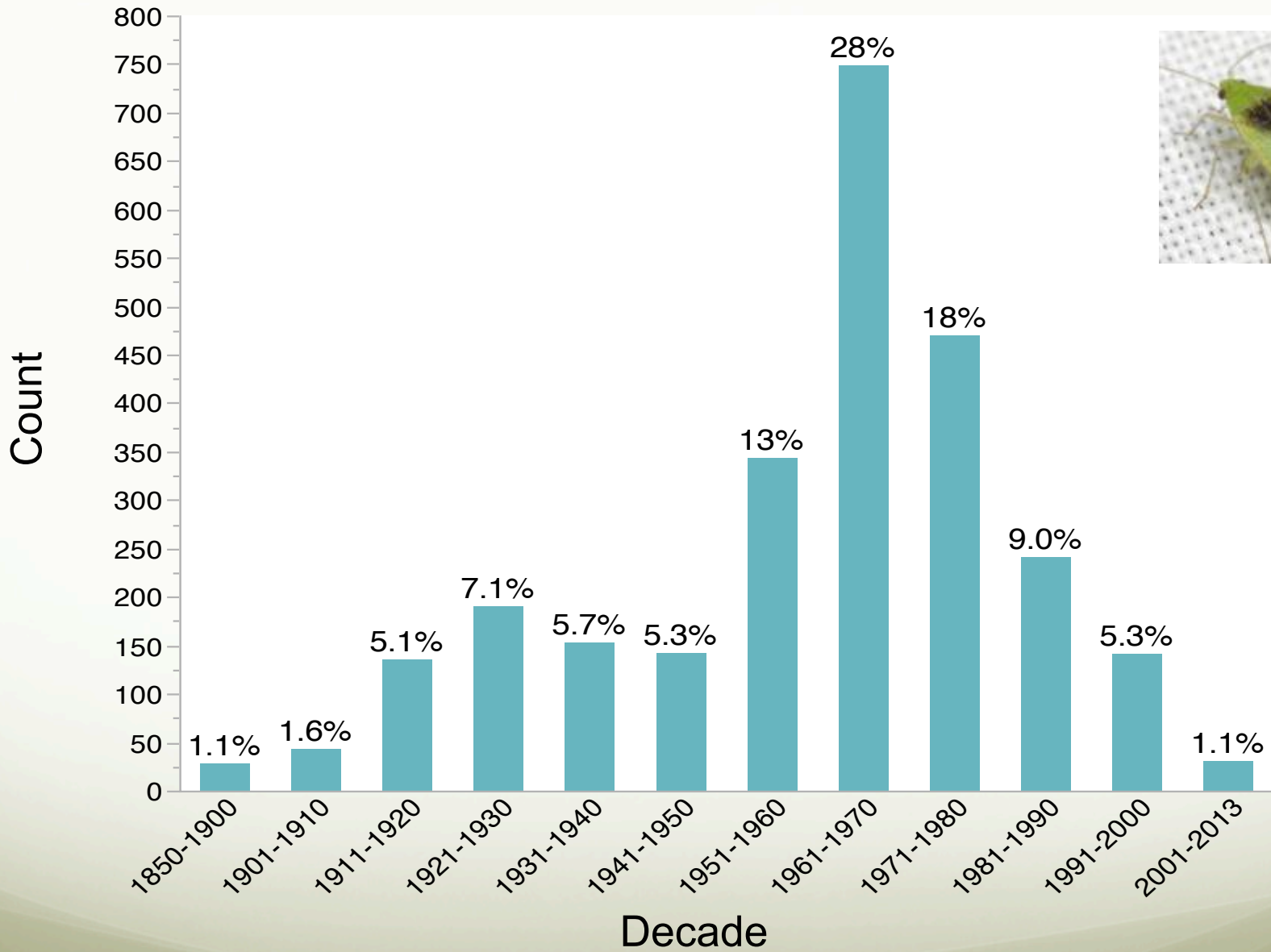
"Euphorbia February 2008-2" by Alvesgaspar

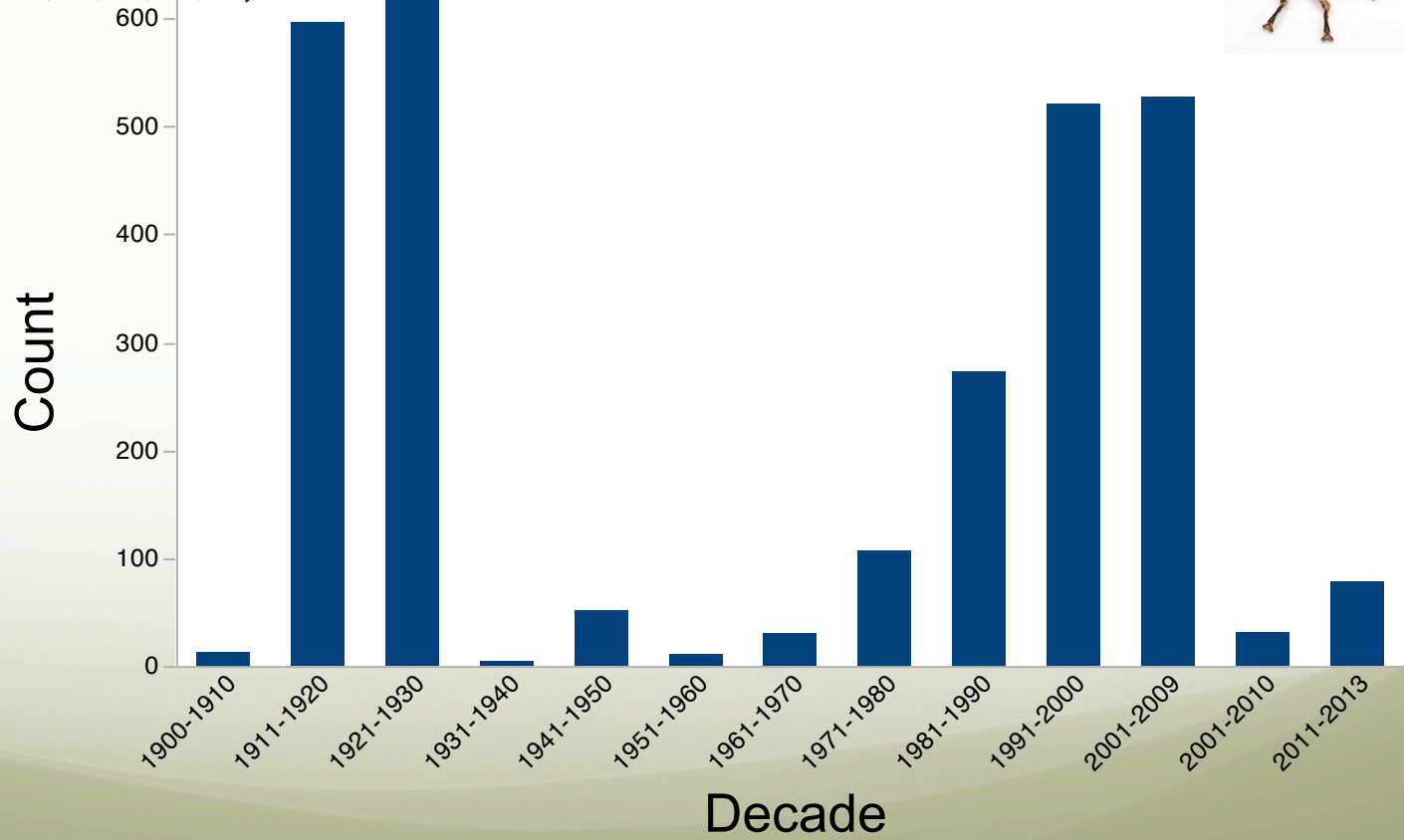
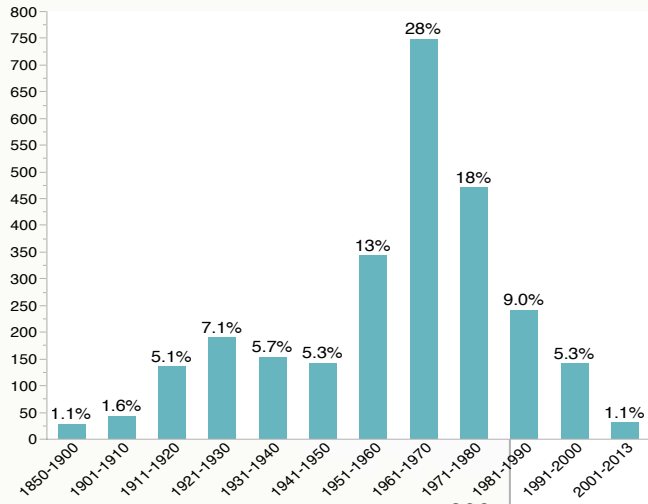


Mirabilis viscosa



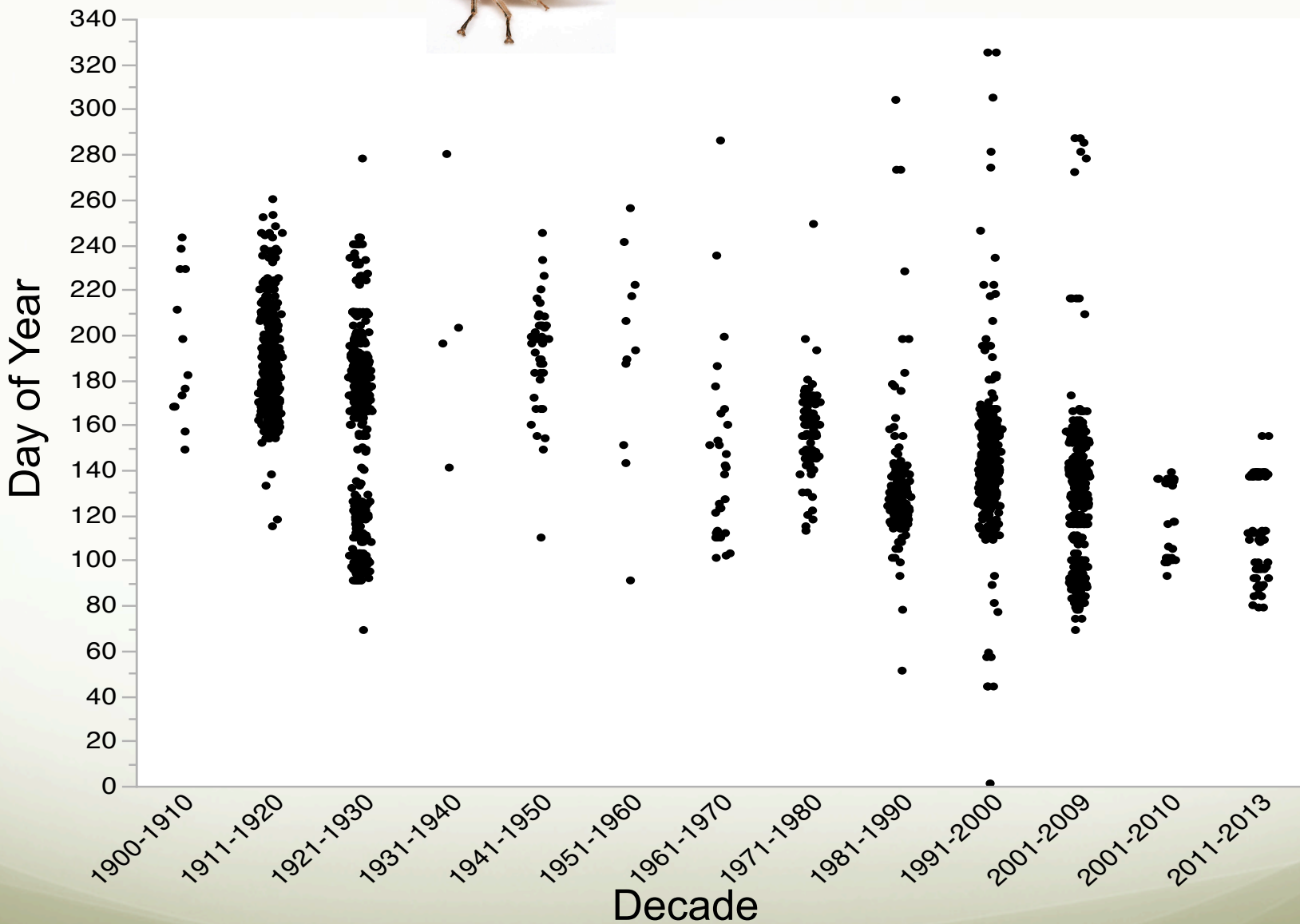
"Solanum 2" by Roy Focker





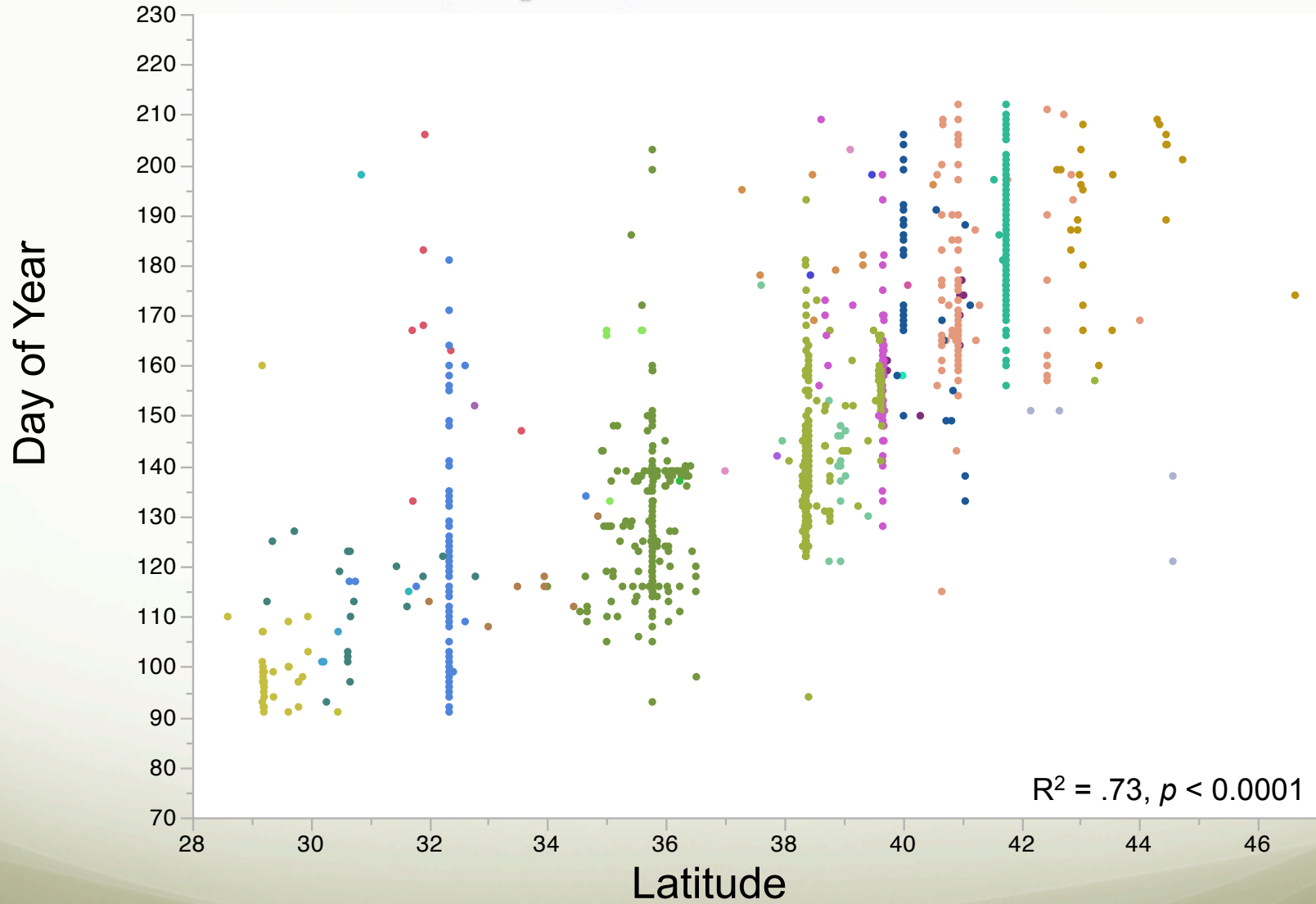


# Day of Year Membracidae Collected



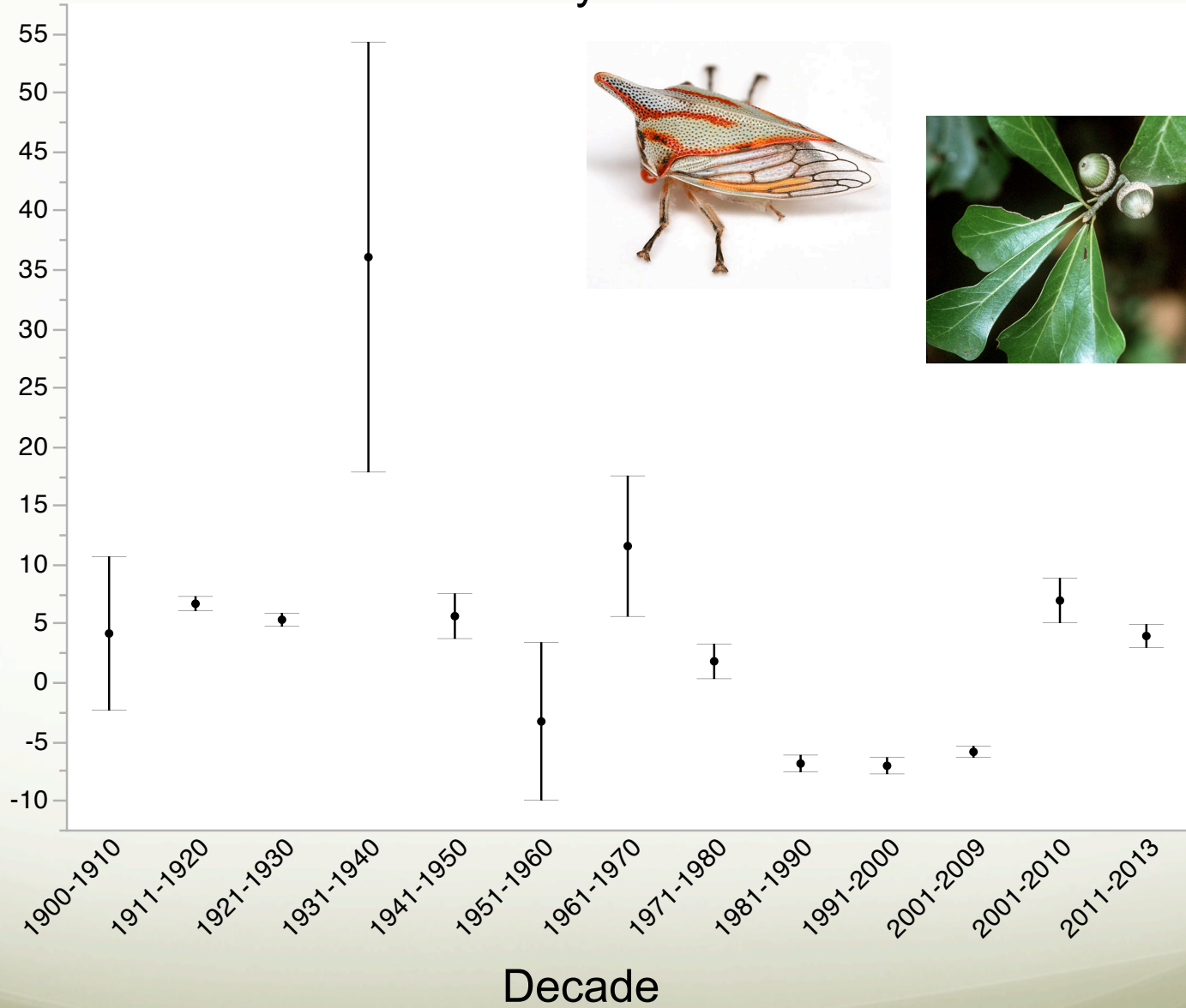


# Day of Year Membracidae Collected



# Day of Year Membracidae Collected

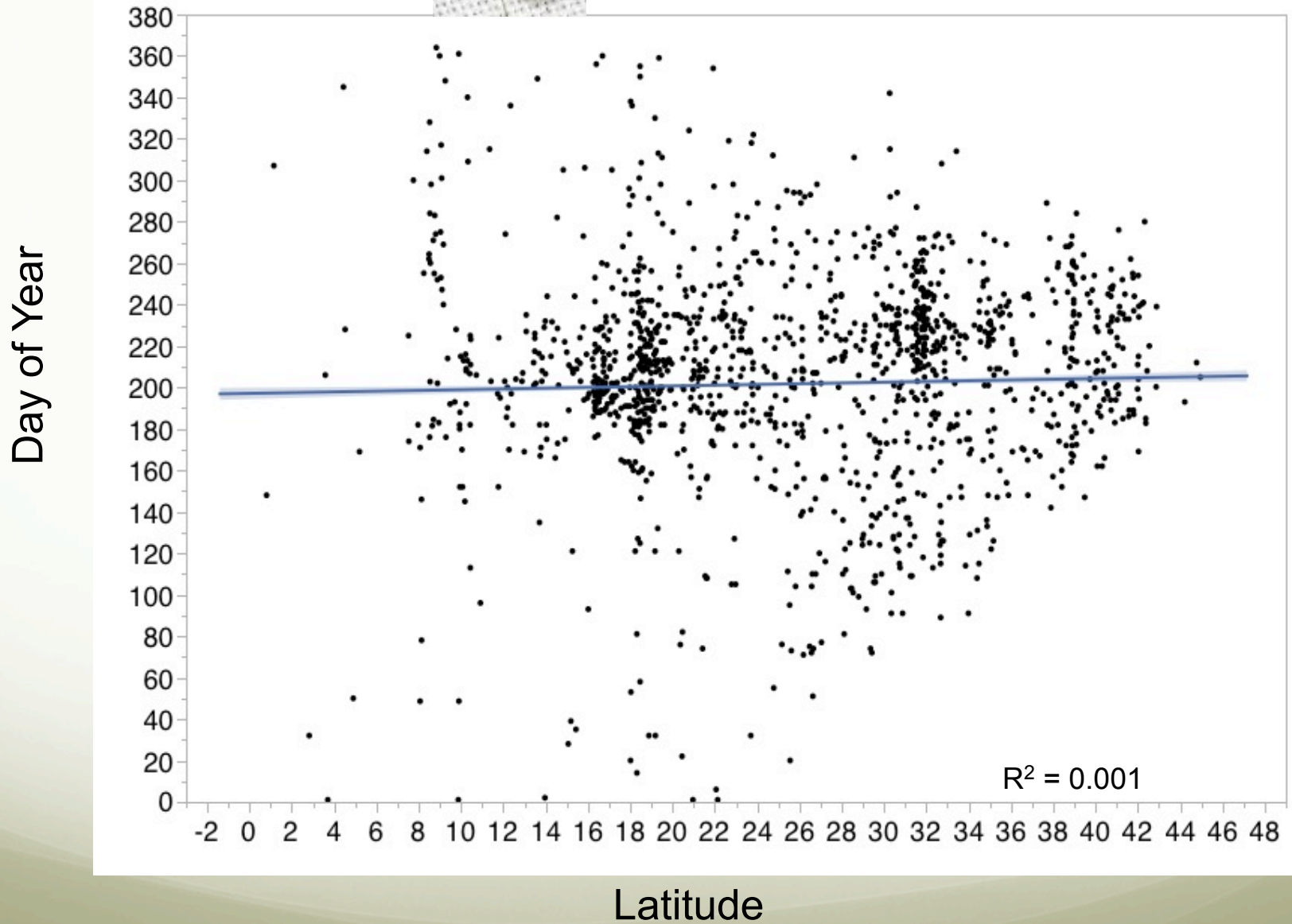
Day of Year  
(mean adj)

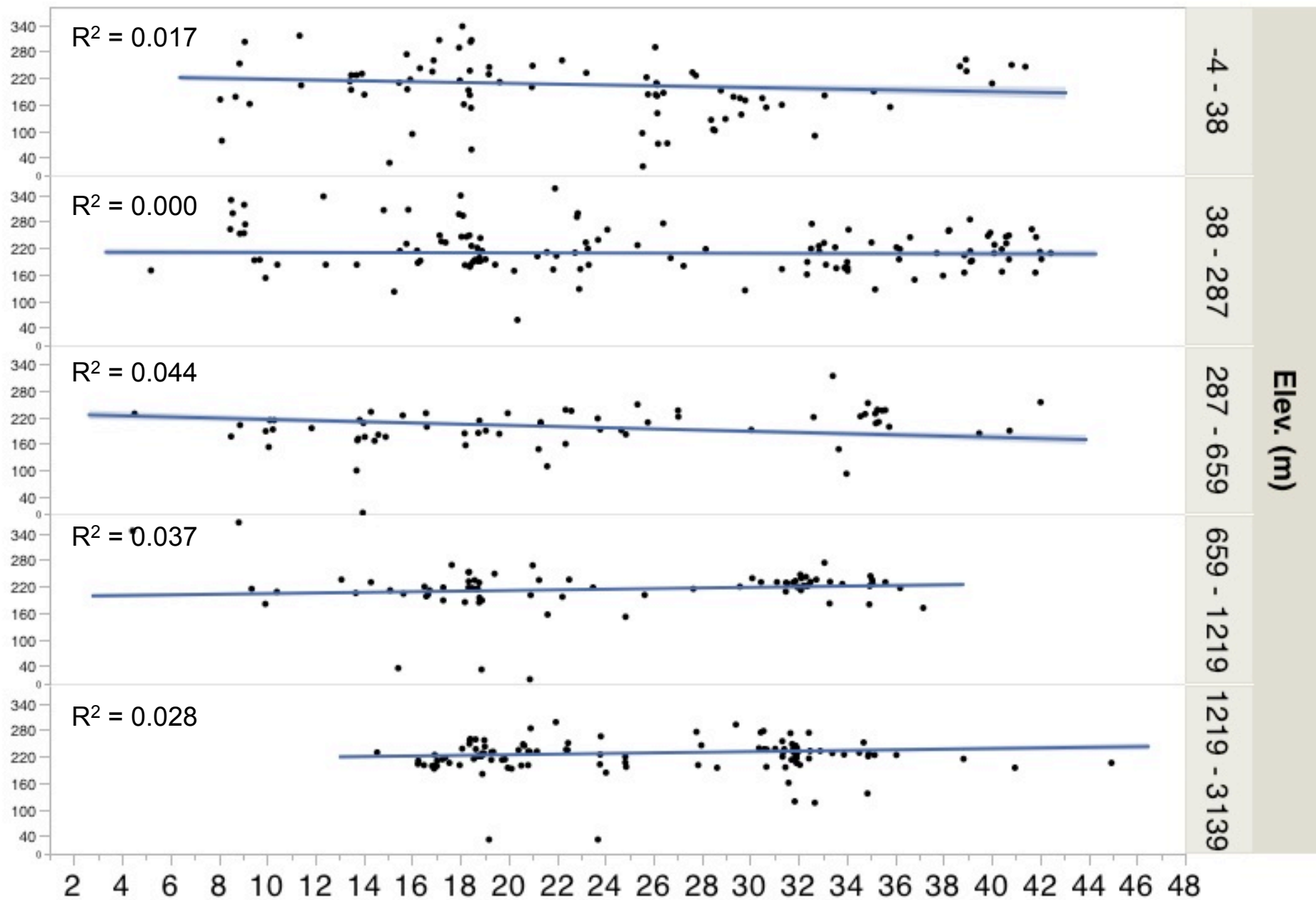




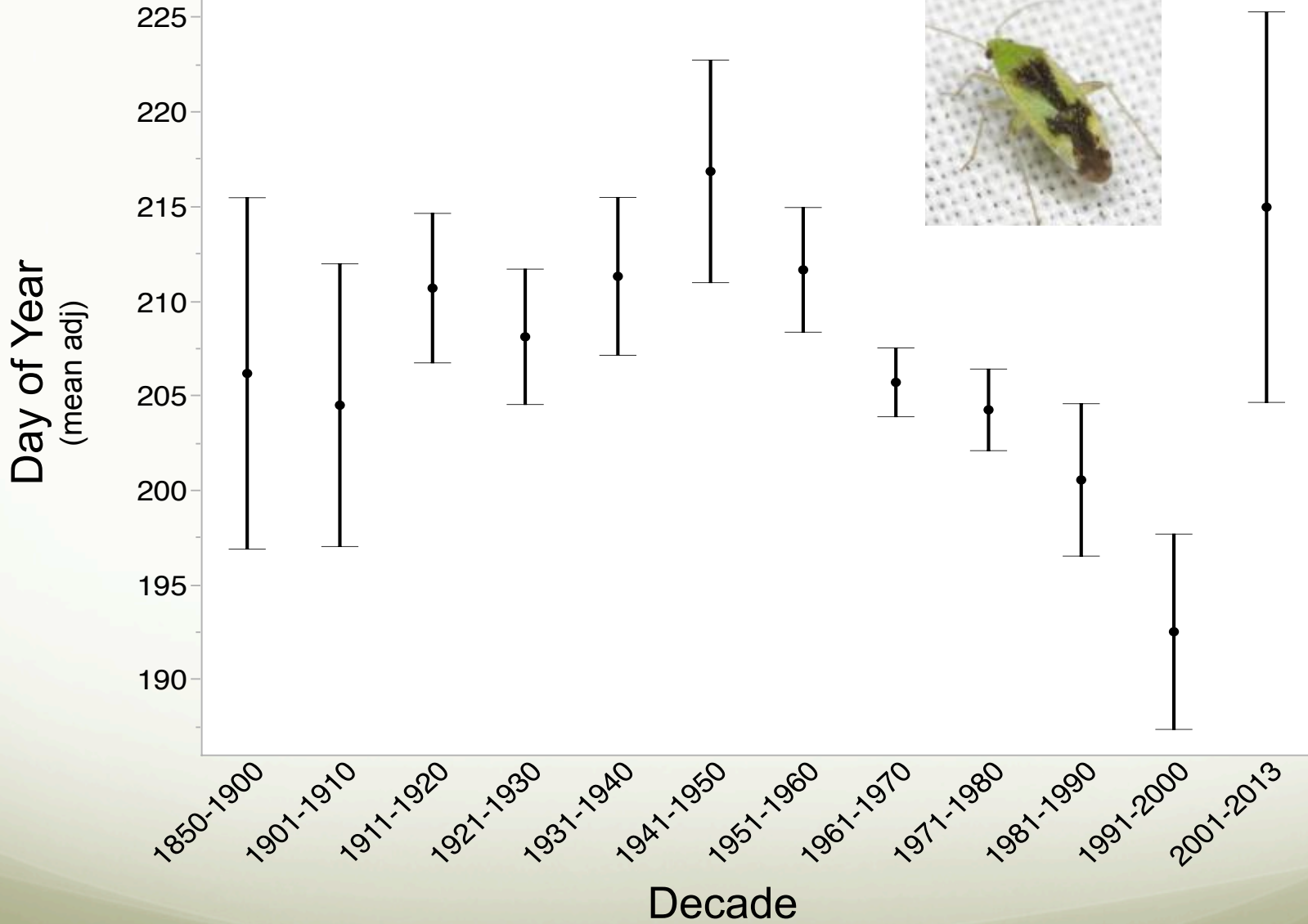


# Day of Year *Reuteroscopus* Collected





# Day of Year *Reuteroscopus* Collected





*Historical records can provide valuable information about ecological trends associated with specimens*



*Cannot necessarily make predictions about the future*

*Specimens in our collections  
represent participants in  
ecosystems*



*Rarely, if ever, are insects or other organisms from plant specimens recorded*



UNIVERSITY OF NORTH CAROLINA  
HERBARIUM  
460610



UNIVERSITY OF NORTH CAROLINA HERBARIUM  
NCU00009131

Herbarium of the University of North Carolina (NCU)  
Specimen image captured for the  
North Carolina Botanical Information Network (BOTNET)  
*Quercus rubra* L.

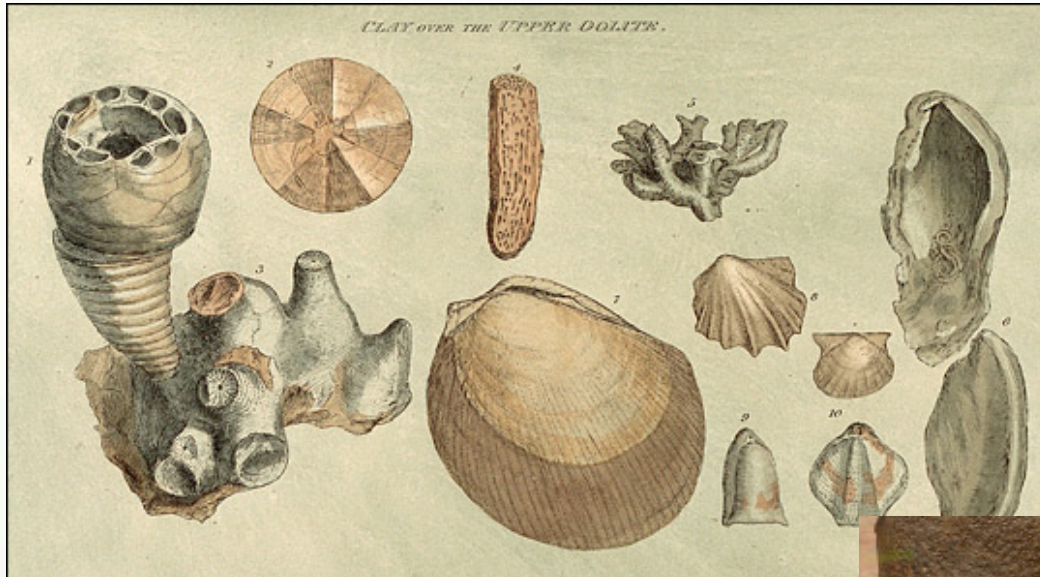
Det. & imaged by: Stephen M. Seiberling November 23, 2001

Herbarium of the University of North Carolina  
**NORTH CAROLINA**  
Martin County

*Quercus rubra* var. *rubra* L.

In beech-mixed hardwoods community. Steep slopes bordering swamps of Conoho Creek and its small tributaries in the Poplar Point area, off Co. Rd. 1419, ca. 1 mile E of jct. of Co. Rd. 1419 with Co. Rd. 1417, 6 miles NE of Williamston. "Conoho Creek" location  
Miklos Treiber 560 18 Oct. 1974  
Guy Nesbitt  
Plants of the Southeastern United States

*Archaeological & paleontological collections  
organized to represent a culture or stratum*







*Preserve a snapshot in time of what once was.*

*Thanks to the digitizers, Toby Schuh, Katja Seltmann.*

*Thank you!*