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Fire Ants, Argentine Ants, & Tawny Crazy Ants: Texas-Sized Invasive Ant Problems



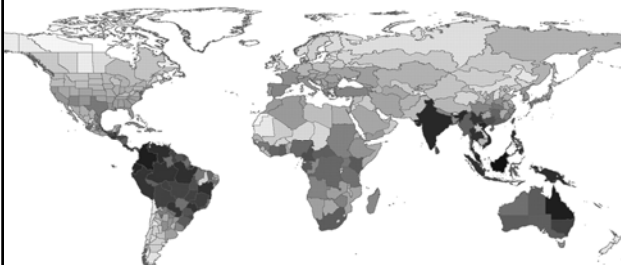
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Texas A&M AgriLife Extension: Department of Entomology
Rollins Urban & Structural Entomology Facility
Texas A&M University
College Station, TX

Outline:

- Ant Biology
- Ant IPM
- Common and Invasive Texas Ants

Ant Success:

- As a group, ants occupy every ecological niche and ecoregion (except for arctic and marine systems).



Guénard, B. et al. 2012. *PNAS* 109(19)

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- Arboreal, terrestrial, and subterranean species

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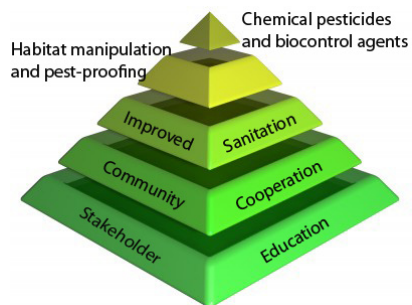
Ant Success:

- As a group, ants occupy every ecological niche and ecoregion (except for arctic and marine systems).
- Arboreal, terrestrial, and subterranean species
- **Social Organisms**
 - Reproductive division of labor (sterile and reproductive castes)
 - Overlapping generations
 - Cooperative brood care
- **Social Form (Red Imported Fire Ants)**
 - Monogyne- Single-queen colonies (low mound density)
 - Polygyne- Multiple-queen colonies (high mound density)
- **Resource foraging behavior:**
 - Search
 - Recruit nestmates
 - Exclude competition

Ant Problems:



Ant IPM:



Ant IPM:



Glue-Boards

Soapy Water Moat

Insecticide Impregnated Strips

Ant IPM:

- Chemical Methods for Reducing Ant Populations
- Baits, baits, baits...



Ant IPM:

- Chemical Methods for Reducing Ant Populations
- Baits, baits, baits...
- Ant baits are designed to exploit ant foraging behavior
 - Not all ants are attracted to the same baits
 - Some species prefer carbohydrates, others prefer protein, and some prefer BOTH depending on season
 - PROPER IDENTIFICATION IS CRITICAL!!!
 - Ant baits include granular and liquid/gel formulations

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 - Granular baits are typically broadcast throughout ant infested areas.

Ant IPM:



Rover Ants (*Brachymyrmex spp.*):



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- 1 Abdominal Spine



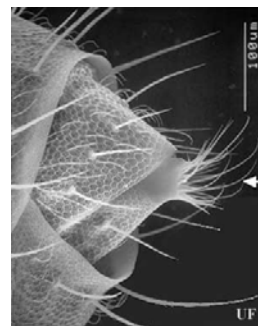
Rover Ants (*Brachymyrmex* spp.):

- 1 Abdominal Spine
- 9 Segmented Antennae
 - (Only Genus with 9)



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- 1 Abdominal Spine
- 9 Segmented Antennae
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- Small circle of hairs on tip of abdomen
- Inconspicuous nest sites



Rover Ant Management

- **EXTERIOR**
 - Residual Insecticides along perimeter and on lawn
- **INTERIOR**
 - Gel baits
 - Maxforce Quantum



Leaf Cutter Ants (*Atta texana*):



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Leaf Cutter Ant Management

- **Contact Insecticide**
 - Non-repellent residual insecticides (treat mound entrances)
 - Dust foraging trails
- **Bait**
 - Amdro® Ant Block
- **Diligence**
 - Leaf cutter ant colonies can be huge! Follow up treatments are often necessary.



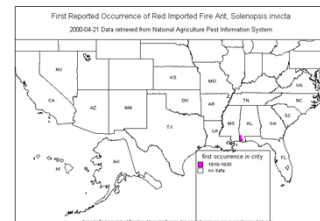
Invasive Ant Species'

Red Imported Fire Ants (RIFA)



U.S. Range Expansion

- South American Migrants
- *S. richteri* arrived in Mobile, AL @ 1918
- *S. invicta* established in Mobile, AL between 1933 and 1945
- Stowaways in shipping ballast
- Contiguous range from Texas to east coast
- Western disjunct populations in California, Nevada Arizona, and New Mexico
- Disjunct northeastern population in Maryland



RIFA Impact

- Ecology
- Economy
- Quality of Life

RIFA Success Story

- Release from natural enemies
- Extremely efficient foraging behavior
- Success in disturbed habitats



RIFA Success Story

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Ant IPM:

- Baits, baits, baits...



RIFA Success Story

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RIFA Success Story

- Release from natural enemies



Fire Ant Decapitating Flies Phorid Flies

- Parasitic flies
- Native to South America
 - Argentina
 - Brazil
- *S. invicta* specialists
- 20+ Species



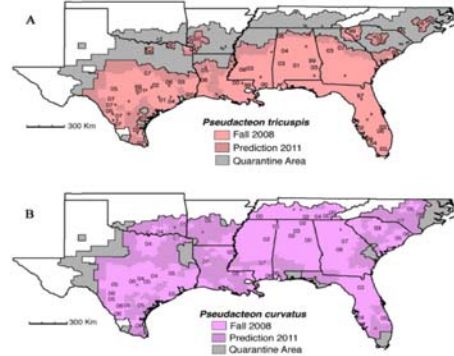
Fire Ant / Phorid Fly Interactions



Fire Ant / Phorid Fly Interactions



Fire Ant Decapitating Flies Phorid Flies



Tawny Crazy Ants (TCA)



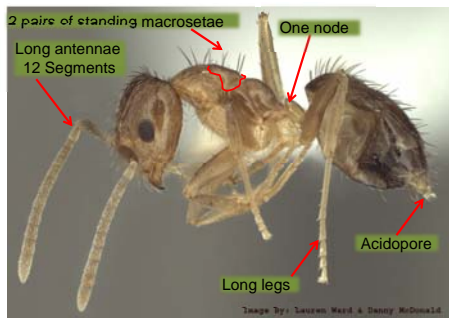
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Tawny Crazy Ants (*Nylanderia fulva*):



Image By: Lauren Ward & Danny McDonald

Tawny Crazy Ants (*Nylanderia fulva*):



Nylanderia spp.:



All Photos From: Antweb.org

Scientific Classification Confusion:

- Originally, Texas populations thought to be the Caribbean crazy ant (*Paratrechina pubens*).
- Caribbean crazy ants have a Caribbean origin and are a prominent pest ant in peninsular Florida.
- However, nuanced morphological features led many to conclude that the Texas population was a different, but closely related, species.
- This ant was assigned the scientific name '*Paratrechina* sp. nr. *pubens*' and common name 'Raspberry crazy ant'.
- Gotzek et al. (2012) published a paper that conclusively separated the Texas and Florida ants and identified Texas population as *Nylanderia fulva* (S. American origin) based primarily on morphological differences in males of the two species.

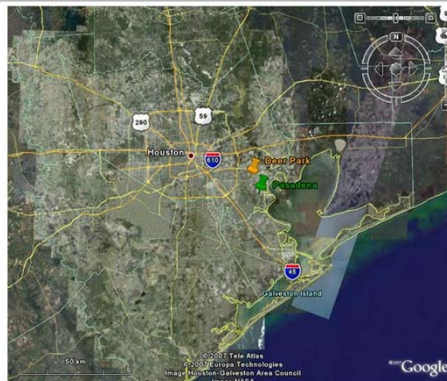
Common Name Confusion:

- Original common name 'Raspberry crazy ant' assigned based on discoverer in Texas
- Entomological Society of America is responsible for assigning official insect common names
- 'Raspberry crazy ant' deemed too uninformative by Oi and Gotzek (2012)
- 'Tawny crazy ant' proposed by Oi and Gotzek (2012) and accepted by ESA

Pasadena, TX (2002)



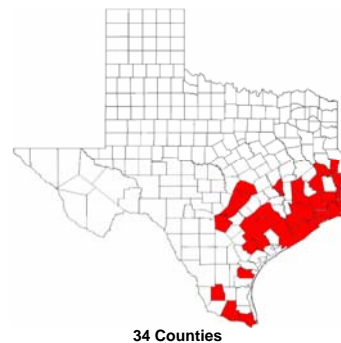
Texas Distribution (2002):

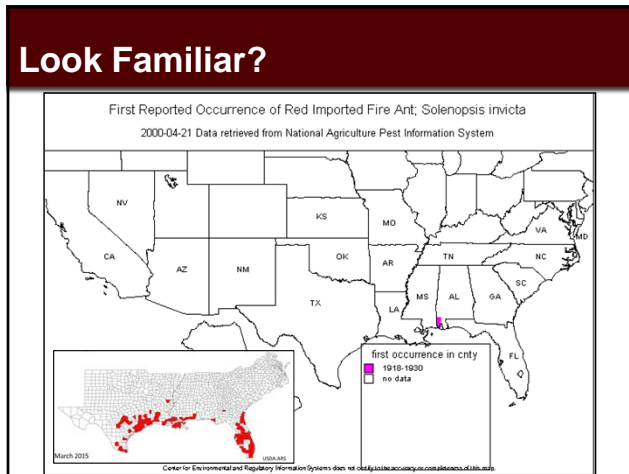
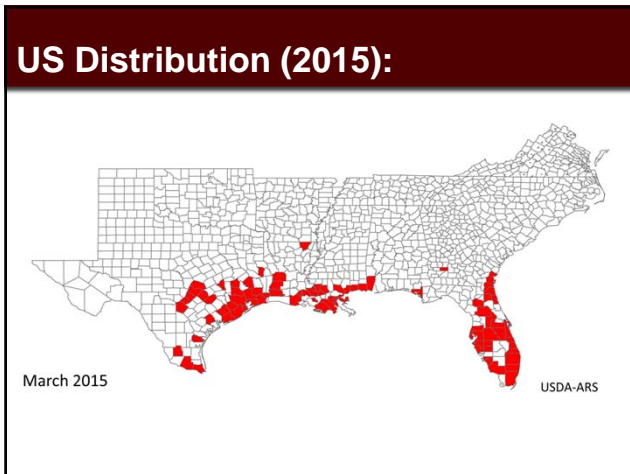


Texas Distribution (2007):



Texas Distribution (Current):





Management:

Tawny Crazy Ant Bait Preference:



Granular Ant Baits:

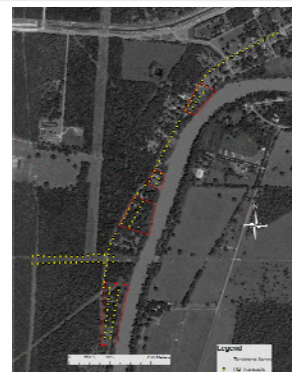
- Determine the effectiveness of Advance® Carpenter Ant Bait as a stand-alone treatment against *Nylanderia fulva*

Advance® Carpenter Ant Bait:



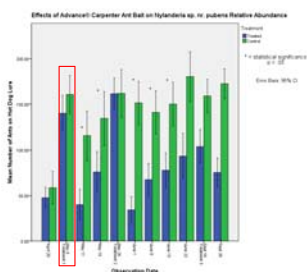
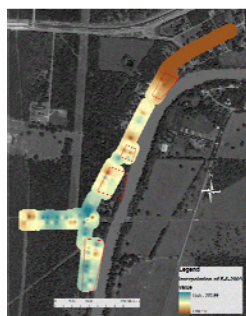
- ACAB broadcast using a Herd seeder attached to ATVs
- 3 treatments per year
- Observations
 - Once per week
 - As weather and circumstances permit

Sampling Transects and Treatment Areas

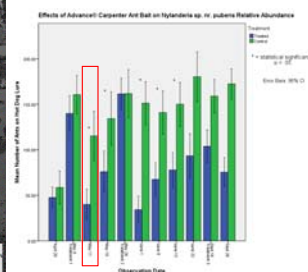
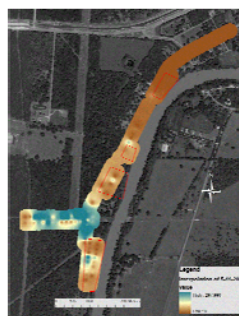


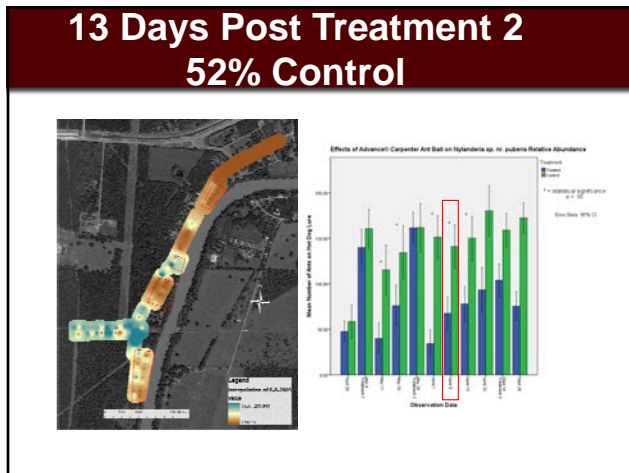
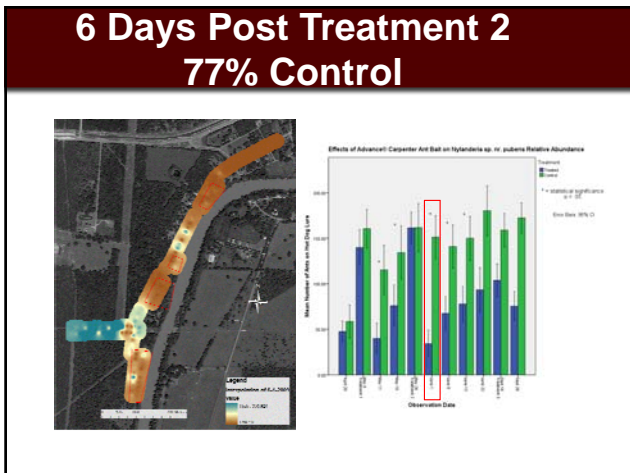
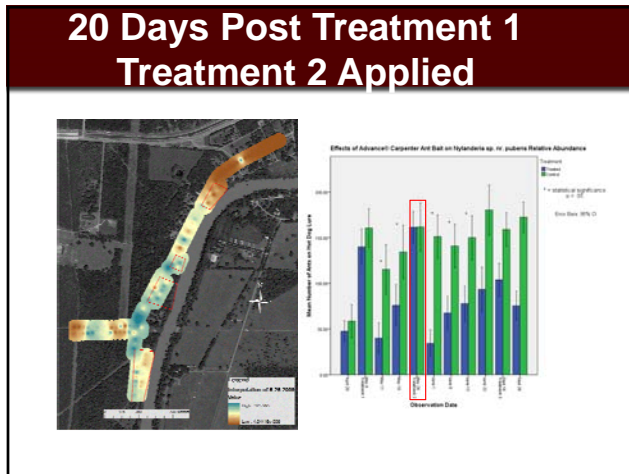
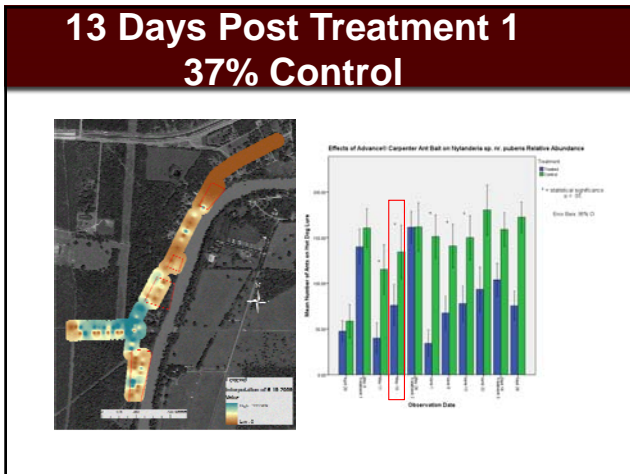
- Food lure (Bar-S Hot Dogs)
 - 60 min. exposure
 - Collected in zip-lock bags
 - Ants identified and counted

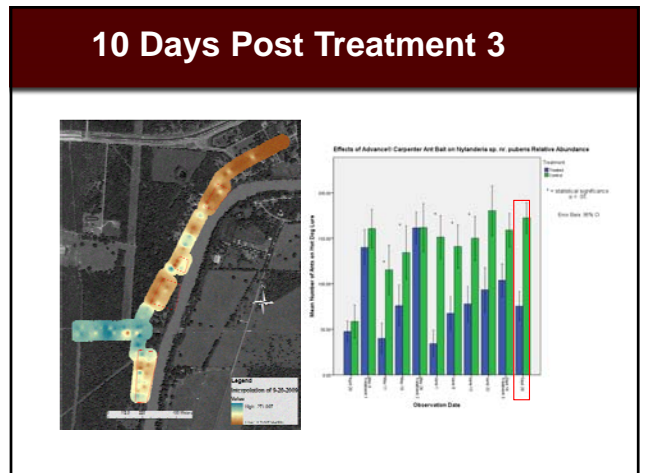
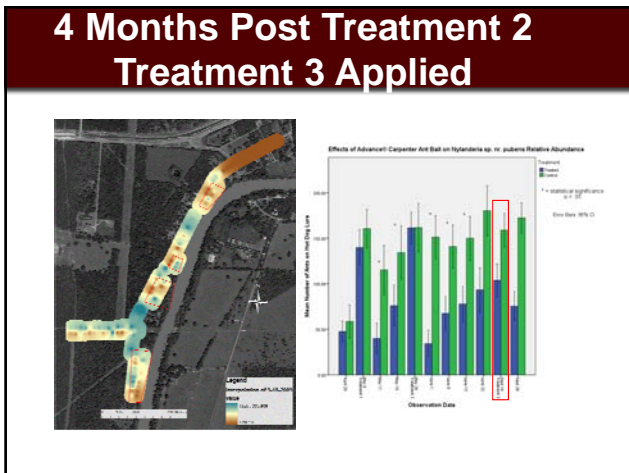
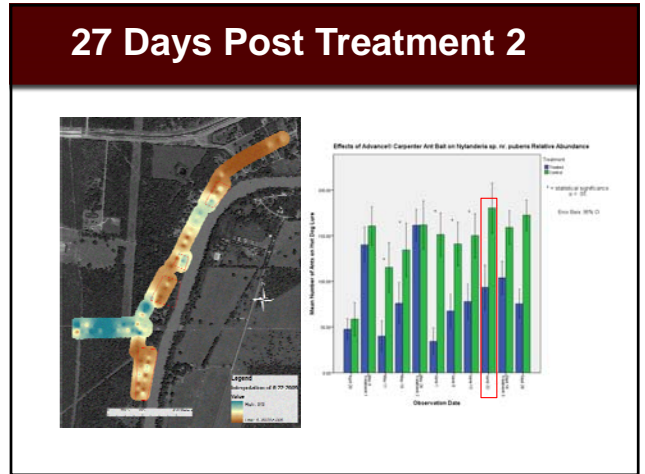
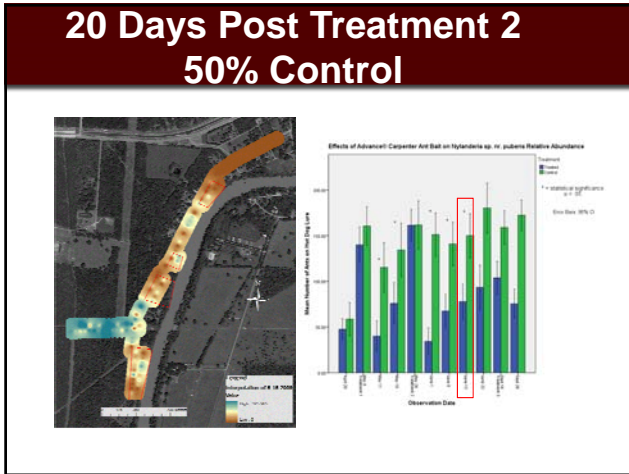
Treatment 1 Applied



5 Days Post Treatment 1 58% Control







Perimeter Treatment:



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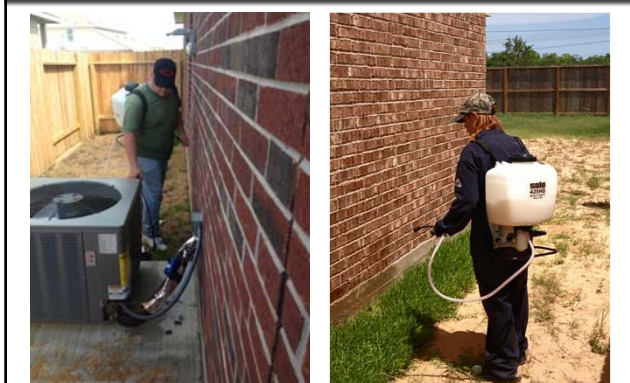
Trial Location: Texas City, TX

TREATMENTS (4 Reps):

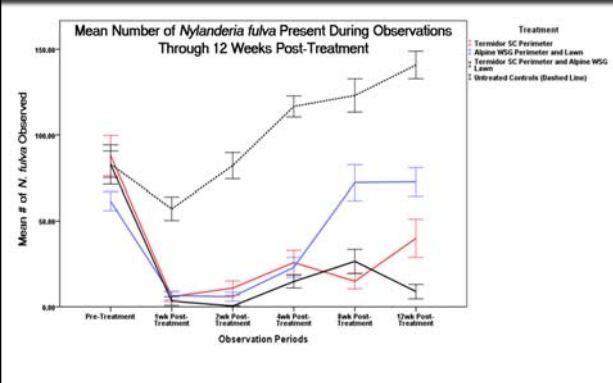
1. Termidor SC Perimeter Treatment (*Fipronil* 0.06%)
2. Alpine WSG Perimeter and Lawn Treatment (*Dinotefuran* 0.10%)
3. Termidor SC Perimeter and Alpine WSG Lawn Treatment
4. Untreated Controls



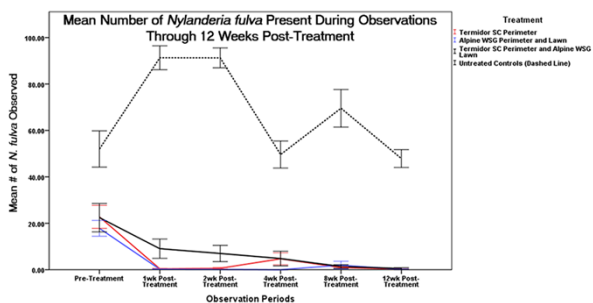
Perimeter Treatment:



Results (Year 1):



Results (Year 2):



Conclusions:

- Tawny crazy ants appear to be here to stay, and are rapidly expanding to many areas of Texas and the southern US.
- Management of these ants is a challenge, but can be accomplished with acceptable results.
- Applications of pesticides must be made with thoroughness, and only after precise application calculations have been made.

Acknowledgements:

Texas Invasive Ant Research and Management Project



- Taylor Wade
- Danny Mueller
- Dr. Diane Silcox-Reynolds
- Dr. Danny McDonald
- Dr. Jason Meyers
- Dr. Paul Nester

Insect Specimens for Identification:

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Collection and Preservation of Specimens

- Place specimens in vials containing 70-80% ethyl-alcohol or 70% isopropyl alcohol.
- When possible, collect more than one specimen.
- Labels are absolutely necessary.
 - Should be kept with specimen, inside the vial.
 - Should be written on acid-free card stock or index cards
 - Use only permanent ink or pencil to write labels.

Texas: Brazos Co.
1020 Main St., Bryan
26 June 1997
Joe W. Smith

PLEASE DO NOT...



PLEASE DO NOT...



PLEASE DO NOT...

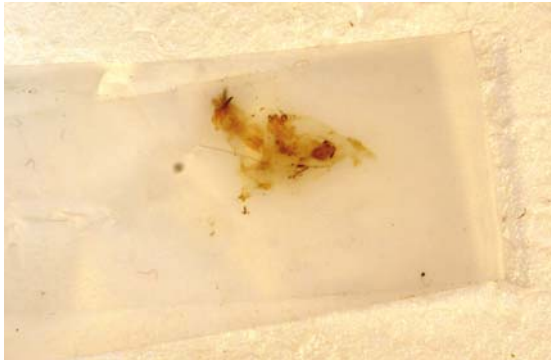


Photo: R. Puckett

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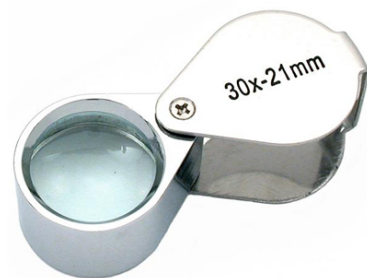


Photo: R. Puckett

Use Your Technology...



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- **Please send specimens to:**
Rollins Urban & Structural Entomology Facility
Texas A&M University
2556 F&B Rd
BLDG 1804
TAMU 2143
College Station, TX 77843
ATTN: Robert Puckett



- **Additional Contact Information:**
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 - 979.458.0853
 - [@Robert_Puckett](https://twitter.com/Robert_Puckett)
 - urbanentomology.tamu.edu

Photo: R. Williams