TEXASINVASIVES.ORG HELLO INVASIVE SPECIES

Texas INVASIVE Species Institute

TEXAS INVASIVES' Research, Programs & Outreach

September 9, 2024 H-GAC Parks & Natural Areas Roundtable

Ashley Morgan-Olvera, M.S.

Director of Research & Education Texas Invasive Species Institute Huntsville, TX





















Focuses on **Early Detection and Rapid Response (EDRR)** to newly invasive pests and **Enhance Public Education** about invasive species.

PUBLIC EDUCATION: is the best way to make progress in the fight against Invasive Species. By showing *what* an Invasive Species is, how humans spread them, and we can show them how to stop it.

Audiences of all ages:

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- Master Naturalists/Gardeners
- Public, Private and Home School groups
- Citizen Scientist Workshops



• State Stewardship & Natural Resource Meetings/Roundtables

TEXASINVASIVES.ORG: TISI now runs this website and reporting database. We are working on expanding the reporting capabilities and updating the website.

INVASIVE SPECIES DATABASES Texasinvasives.org & TSUSinvasives.org

INVASIVES DATABASE

SALVINIA MOLESTA

Family: Salviniaceae (Water Fern Family)

uration and Habit: Annual, Perennial Ferr

n Biologist, Bugwood.org

GIANT SALVINIA

HELLO INVASIVE SPECIES.

GOODBYE TEXAS.

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INVASIVE DATABASE INVASIVE PLANTS INVASIVE ANIMALS INVASIVE INSECTS

INVASIVES 10

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INVASIVE PATHOGENS

INVADERS OBSERVATIONS

MAP INVASIVES

your email

COUNTY COMPARISONS



DESCRIPTION Salvinia is a cotless, floating aquatic fem. Emergent groups of leaves (fronds), colong and flat (imaller groups of semi-cupped/folded (larger growth forms), grow in chains and float on the water surface forming dense mats. Leaves grow in pairs and grow to approximately 1/2 inches wide and 1 inch long. Brown, theread-like leaves hang underwater. joining at a node along a horizontal, underwater stem and are similar in appearance to a root system. The uppear surface of the green leaves is covered with roos of while, course hair, acting as a water repellent. The hairs of glant salvinia are joined at the tips in an egg beater shone.

HELLO INVASIVE SPECIES.

DUT | IWIRE | SPOTLIGHT | C

Go Back | Printer Friendly Fact Sheet Federal Noxious Weed

Invasive Plant Atlas of the US

NOTE: Comeans species is on that list

Additional Images

opens new window or tab

TDA Natious Weed

RESOURCES

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Illustrated Descriptions Distribution & Habitat Biology & Spread/Threat History of Introduction Control & Management Native Look-a-likes References



Biology & Spread/Threat Texas INVASIVE Species Institute History of Introduction REDBAY AMBROSIA BEETLE

Xyleborus glabratus

t | Facilities | Contact | Sear

Class: Insecta Order: Coleoptera Family: Curculionidae



Photographer: Michael C. Thomas Affiliation: lorida Department of Agriculture and Consumer Services Source:www.bugwood.org Copyright CC BY-NC 3.0

DESCRIPTION

Adult Description: The redbay ambrosia beetle (Xytébonus grabankus) is a dark colored, bullet shaped beetle with small puncture-like dents covering the elyta, and is 2 mm long when mature. The redbay ambrosia beetle is a member of the family Curculionidae along with weevils, which can be identified with a characteristic sourt erpresenting modified mandibles for taking up nutrients. Positive identification of X. glabantus is impossible without the help of a professional, but the glaboraus upper surface and abrupt apical decivity may help distinguish this invasive beetle from other native species.

Larva Description: Redbay ambrosia beetle larvae, consistent with most beetles, are legless, white grubs. The head capsule of the redbay ambrosia beetle grub is amber colored. These flightless grups are found feeding on infected trees beneath or on the surface of the body.

NATIVE ORIGIN

India, Japan, Myanmar, and Taiwan

CURRENT LOCATION

U.S. Habitat: The redbay ambrosia bestle can be found in areas where host plants are present, most commonly found on redbay and sassafars hosts. Within the U.S. the redbay ambrosia bestle is found feeding on healthy trees and shrubs. In areas where the bestle is native, stressed or dying trees are shrubs are utilized as host plants. U.S. Present FL. GA. LA, MN, SC. and TX

THE TEXAS 🚖 STATE UNIVERSITY SYSTEM

MANAGEMENT

You can help prevent the spread of the redbay ambrosia beetle by avoiding the transport of firewood. Wood chips of infested trees should not be transported out of the area, but left on-sight as mulch.

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What is an Invasive Species?

The Federal Definition

a species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. (Executive Order 13112, 1999)





Red Imported Fire Ant (Solenopsis invicta)

Attacks native ground-dwelling animals Harms soil arthropod community & displaces native ants Sting can cause **Colonies destroy numerous** allergic reactions or crops: corn, soybean, death in humans, blueberries, cabbage, etc.

pets and livestock

5475893

Fire ants cause \$500 million/year in livestock, wildlife, and public health damages and control efforts in TEXAS alone¹

¹Pimentel et al., 2000

Why Do We Battle Invasive Species?

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Lionfish Spread & Appetite for Destruction



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How Invasive Species Spread

Natural Dispersal

- Production of offspring
 - Wind- or water-borne seeds or larvae
 - Animal-borne seeds or larvae
- Movement of adults
 - Swim, fly, walk/run, etc.
- But.... can't always explain expansion







GRAVITY

ANIMALS: DIGESTION

ANIMALS: ATTACHME



WATER





WIND

CULTIVATION (PLANTING

TEXASINVASIVES.ORG HELLO INVASIVE SPECIES.

How Invasive Species Spread

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Human Assistance



HOW INVASIVE SPECIES SPREAD

Accidental

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- Produce
- Nursery stocks
- Ship ballasts
- Packing materials & containers
- Travelers
- Hay & Flowers
- Vehicles
- Firewood
- Boots and gear







Purposeful

- Ornamental planting
- **Erosion control**
- Wildlife value
- Agriculture/Sport
- Pets/Aquariums
- **Biological Controls**



Focuses on **Early Detection and Rapid Response (EDRR)** to newly invasive pests and **Enhance Public Education** about invasive species.

DETECTION SURVEYS: TISI has assisted USDA-APHIS, USFS, TPWD, TAMU Forest Service and other entities with **early detection and rapid response surveys & outreach.**

- Invasive Pest Surveys
 - Emerald Ash borer
 - Pine & Oak bark beetles
 - Redbay Ambrosia Beetle
 - Asian Citrus Psyllid 🚿

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- Asian Pine-Defoliating Moths
- Apple Snails & Invasive Slugs

GOODBYE TE





Focuses on **Early Detection and Rapid Response (EDRR)** to newly invasive pests and **Enhance Public Education** about invasive species.

CITIZEN SURVEYS: TISI also relies on its widespread network of engaged citizens who visit our website to **report on invasive species we may not be detecting through survey or cannot fully detect by ourselves.**

Citizens have been instrumental in tracking:

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- Emerald Ash borer, RAB & ACP
- Apple Snails & Invasive Slugs
- Asian Jumping Worms
- Giant Salvinia

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- Zebra Mussels
- Hammerhead flatworms
- New Guinea flatworm
- THOUSANDS of invasive plant reports: Tallow, Privet, Johnsongrass, Giant Reed, Honeysuckle, etc.











Focuses on **Early Detection and Rapid Response (EDRR)** to newly invasive pests and **Enhance Public Education** about invasive species.

SURVEY MAPPING: Data acquired through citizens or surveys is shared with invasive species mapping entities, like as **EDDMapS.** Allows data to be available to researchers across the country. We also share data with **TPWD, HARC and APHIS.** *FY24 Uploads to iNaturalist pending.*

- <u>Invasive Plant</u> locations & densities
 - On Texasinvasives.org
- <u>Weed Risk Assessments</u> for TPWD stored on website
- Invasive/Pest distribution

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- Pending: Habitat preference of Ips grandicollis beetles
- Emerging invasive pest locations
 - Sent to partners upon receipt & confirmation of ID.



Focuses on **Early Detection and Rapid Response (EDRR)** to newly invasive pests and **Enhance Public Education** about invasive species.

WATER QUALITY & E. COLI TESTING: TISI has the unique opportunity of sharing a facility with the TRIES Analytical Research Laboratory. Proximity allowed us to become a successful <u>HGAC Partner</u> for TCEQ's Texas Clean Rivers Program (CRP).

- Quarterly CRP sampling (2016-present)
 - East Fork San Jacinto, Neblett's Creek, Winters & Tarkington Bayous
- Bacterial Monitoring Projects (2023)
 - White Oak Creek, Conroe
 - Unnamed Tributary Greens Bayou, Houston
- TMDL Sampling (2024)
 - Tarkington & Luce Bayous and Marsh Branch







Public Awareness Campaigns

PROTECT THE LAKES YOU LOVE.

Protect the Lakes You Love.

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- Hello Zebra Mussels.
 Goodbye Texas Boating.
- Don't Move Firewood

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Never Dump Your Aquarium

CLEAN, DRAIN AND DRY. TPWD.TEXAS.GOV/ZEBRAMUSSELS





KEEP INFORMED

Sign up for the iWire to get breaking , events and the species spotlight.

vour email

Texasinvasives.org Public Awareness

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The iWire monthly email newsletter

Important updates

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- Invasive species spotlights
- News from TX and beyond
- Workshop Schedules

Citizen Scientists of the Month Friends of West Bouldin Creek Greenbelt

The December Citizen Scientists of the Month are the Friends of West Bouldin Creek Greenbelt and the West Bouldin Creek Neighborhood Association in Austin. The partnership was nominated by restoration team members, who remove invasive species in the West Bouldin Creek Greenbelt.

The community

New Rules to Prevent Zebra Mussel Spread in Texas

In the state's ongoing effort to combat the spread of invasive zebra mussels, the Texas Parks and Wildlife Department has created new rules to halt the spread of the species. Effective December 10th, all boats operating on public water in 17 Northeast Texas counties must be drained after use or face legal consequences. Read More.

The Texas Parks and Wildlife Commission is inviting public comments on a proposal to add 30 additional counties to the recently-implemented rules preventing zebra mussel spread. Read More.

Comments on potential additions can be made in writing to Ken Kurzawski, TPWD Inland Fisheries, 4200 Smith School Road, Austin, TX 78744, by emailing <u>ken.kurzawski@tpwd.texas.gov</u>, or in person at any of the two following public hearings.

- Tuesday, January 7 in Austin at TPWD Headquarters, Commissioners Meeting Room - 4200 Smith School Road.
- Thursday, January 9 in Waco at the McLennan County Courthouse, Commissioners Courtroom - 1st Floor, 501 Washington Ave.





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Stay informed with our monthly iWire!



STOP THE SPREAD

REPORTIT

ERADICATOR CALCULATOR

SPREAD THE WORD

GET INVOLVED

GO NATIVE

KEEP INFORMED

Sign up for the iWire to get breaking news, event info and the species spotlight.

your email

WE NEED YOUR HELP TO STOP THE SPREAD

STOP THE SPREAD

There are many things you can do to help stem the tide of invasive species. One of the most effective ways to manage invasive species is for recreationalists such as boaters, fishermen, pet owners, and gardeners to Take Action. Here are some easy everyday things you can do to meet the Invasive Species Challenge:

BOATERS AND ANGLERS

You can "<u>Stop Aquatic Hitchhikers</u>" by following these tips for preventing the transportation of aquatic invasive species:

 CLEAN, DRAIN AND DRY YOUR BOAT, TRAILER AND GEAR EVERY TIME YOU LEAVE A BODY OF WATER!

Requires Control, Treatment, Management & Monitoring





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Texas NVASIVE Species Institute

Take Action!What YOU can do...

artners exas A&M















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Prevent Dispersal!

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Two-pronged approach:

1. Early detection

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- 2. Prevent transport by humans
 - Different for terrestrial vs. aquatic species



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Invasive ≠ Illegal





"Invasive" does NOT mean "Prohibited to sell"







Elephant Ears

(Colocasia, Alocasia, & Xanthosoma)









Search...

(800)-Tell-TDA

Searct

eServices v

Noxious and Invasive Plants List

Texas Department of Agriculture - Complies this list of species.

Check this and texasinvasives.org before purchase

REPORT NURSERIES SELLING THESE PLANTS; These are <u>actually illegal</u>.

Contact: ARMoo1@shsu.edu



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TEXAS DEPARTMENT OF AGRICULTURE COMMISSIONER SID MILLER

HOME »	NEWS & EVENTS »	GRANTS & SERVICES »	REGULATORY PROGRAMS »	LICENSES & REGISTRATIONS »	FOOD & NUTRITION	EDUCATION & TRAINING	RE PUB	EPORTS & LICATIONS	ABOUT »	FORMS
Regula	tory Programs	> Plant Qualit	y > Noxious and I	nvasive Plants						
Noxio	ous and Inv	asive Plants						Resou	rces	
What is a Noxious and Invasive Plant Any plant species that has a serious potential to cause								() Contacts		
	econor horticu	nical or ecologio Ilture, native pl	cal harm to the agr ants, ecology and v	iculture, vaterways of Texas.				Relate	d Links	
P	Process to Add nvasive Plant	d a Plant Specie s List	es to TDA's Noxiou	s and			<	TDA's N Invasive P	oxious and lants Regul	ations

TDA Noxious Plants List





Noxious plants Invasive plants alligatorweed chinaberry balloonvine Brazilian peppertree Chinese tallow tree broomrape Japanese climbing fern camelthorn kudzu Chinese tallow tree saltcedar Eurasian watermilfoil tropical soda apple giant duckweed giant reed hedge bindweed hydrilla itchgrass Japanese dodder kudzu lagarosiphon paperbark purple loosestrife rooted waterhyacinth saltcedar salvinia serrated tussock torpedograss tropical soda apple water spinach PLANTS. It is illegal. waterhyacinth waterlettuce



Contact: ARM001@shsu.edu

Prevent Transport

WE aid the spread of invasives

HELLO INVASIVE SPECIES.

GOODBYE TEXAS.

- WE should help prevent the spread of invasives DON'T LET YOUR PETS BECOM
 - Clean, Drain, Dry



NEVER DUMP



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YOUR AQUARIUM.

INVASIVE SPECIES HIDE IN YOUR BOAT



CLEAN your boat, trailer and gear by removing all plants, animals and foreign objects.

DRAIN all water from the boat, including the motor, bilge, livewells and bait buckets.

DRY the boat and trailer for a week or more. If unable to let it dry for a week, wash it with a highpressure washer and hot (140-degree), soapy water.

STATE LAW REQUIRES THAT YOU DRAIN ALL WATER BEFORE APPROACHING OR LEAVING THIS LAKE

www.texasinvasives.org To report a violation, call 1 (800) 792-4263.



Prevent Transport

• WE aid the spread of invasives

HELLO INVASIVE SPECIES GOODBYE TEXAS

- WE should help prevent the spread of invasives
 - Clean, Drain, Dry
 - Don't Move Firewood



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Prevent Transport

• WE aid the spread of invasives

HELLO INVASIVE SPECIES

- WE should help prevent the spread of invasives
 - Clean, Drain, Dry

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- Don't Move Firewood
- Remove seeds/egg casings from boots, clothes
- CHECK NEW PLANTS







Leave



Detection

- Trapping
- Monitoring
- Vigilance

Texas: Sentinel Pest Network



Sentinel Pest Network: Report It!



Sentinel Pest Network: Report It!

TAKE ACTION





TAKE ACTION

STOP THE SPREAD

SPREAD THE WORD

GET INVOLVED

GO NATIVE

ERADIGATOR CALCULATOR

KEEP INFORMED

Sign up for the iWire to get breaking news, event info and

the species spotlight.

GRAB THE APP

Report invasives

with the new

Invaders App

your email

REPORT IT



ITIZEN SCIENTISTS

GIANT SALVINIA

Salvinia molesta

PROFESSIONALS

Giant salvinia is currently one of the most dangerous invasive aquatic plants in Texas. It damages aquatic ecosystems by outgrowing and replacing native plants that provide food and habitat for native animals and waterfowl.

RESOURCES

INVASIVES DATABASE

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ASH BORER

GIANT SALVINIA





Agrilus planipennis

In infested areas, this beetle has killed millions of ash trees and has led to major efforts by state and local officials to limit its spread through strict guarantines and fines for the movement of wood, especially firewood, out of infested areas. T ...



ZEBRA MUSSELS

Dreissena polymorpha

The zebra mussel is a highly invasive, small freshwater mussel that multiplies rapidly and can cause tremendous environmental and economic damage. Their larvae are microscopic, and the adults are usually less than 1 1/2 inches long. Zebra mussels are ...

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Common Name Apple Snail **Cactus Moth** Soapberry Borer **Crested Floating Heart** Cogongrass Tropical soda apple **Gypsy Moth** Lionfish, Red Lionfish Brown Fir Longhorned Beetle Tawny Crazy Ant **Giant African Land Snail Tropical Spiderwort Giant Hogweed** Spotted Lanternfly **Emerald Ash Borer Giant Salvinia** Sirex Woodwasp Japanese climbing fern Zebra Mussels Brown marmorated stink bug **Yellow Floating Heart** Onionweed Asian Longhorned Beetle **Redbay Ambrosia Beetle** Asian Citrus Psyllid **Citrus Greening** / Huanglongbing Asian Jumping worms

Type of Organism	Category of Animal	In Original Dirty Dozen?	Currentl in Texas
Non-insect	Mollusk		Y
Insect	Lepidoptera	Y	Y
Insect	Coleoptera		Y
Plant			Y
Plant		Y	Y*
Plant		Y	Y*
Insect	Lepidoptera	Y	
Non-insect	Fish		Y
Insect	Coleoptera	Y	Y
Insect	Hymenoptera		Y
Non-insect	Mollusk	Y	
Plant		Y	
Plant		Y	
Insect	Hemiptera		
Insect	Coleoptera	Y	Y
Plant			Y
Insect	Hymenoptera	Y	
Plant			Y
Non-insect	Mollusk		Y
Insect	Hemiptera		Y
Plant			Y
Plant		Y	
Insect	Coleoptera	Y	
Insect	Coleoptera		Y
Insect	Hemiptera		Y
Pathogen	Pathogen		Y
Non-insect	Annelid		Y







OPTIONS

IDENTIFICATION RESOURCES

"The Quiet Invasion"

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- Lower Galveston Bay Watershed and Upper Texas Coast
- Booklet

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- Digital version: https://www.galvbayinvasives.org/
- Produced by HARC

Texasinvasives.org

• Online and mobile app



TSUSinvasives.org

Invasive Species Database





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Sentinel Pests To report and manage



TEXA:

LOLIF







PARTNERS









Giant Apple Snails: Report it!

Pomacea maculata (syn. P. insularum)

Freshwater Ampullaridae snail.

- Native: Brazil, Paraguay & Argentina.
 Confused with P. canaliculata due to identical appearance.
- **Primary Introduction:** Pet trade. Aquarium dumps in Florida.
- Distribution: Southeast U.S.
 - Texas: First observed around 2000. Found in at least 10 watersheds.



Apple Snails HARM & IDENTIFICATION

- Fully <u>aquatic adults</u>
 - Found submerged in waterbodies
- <u>Larger</u> than any native snails
 - 3-6 inches
- Lays bright pink eggs on plants or structures above water.
 - THE easiest way to <u>confirm infestation</u>!

HEALTH ALERT: Known to carry <u>Rat Lungworm</u> Angiostrongylus cantonensis in Florida, Hawaii and Louisiana.




INVASIVE APPLESNAIL

Large, invasive applesnails threaten freshwater habitats in Texas. They are very distinct from native snails due to their ability to grow to large size [3-6 inches].

These snails can cause significant damage to rice crops and freshwater vegetation necessary for native aquatic species. They are known to transmit a parasitic nematode, the rat lungworm, to mammals including humans. The snail and parasite are both present in Florida and Louisiana; therefore, lesnails and limiting their spread in Texas is important to man health.

> be hard to identify as adults, but their egg masses are a Vorange color and are laid on dry surfaces just above h as grasses, tree trunks, or other plants.

If you see eggs san it can squish the mater line suc Adult applesnails live underwater, but their eggs must be laid on dry surfaces to grow. Their populations can be reduced by destroying the bright pink egg masses through two easy methods: squish them or sink them.

> Squish Cut off the section of plant that the eggs are on. Lay them on the ground and thoroughly step on them.

Eggs cannot survive underwater. Cut off an egg-filled section (smash it if you can) and throw it further into the water.

Applesnails can't legally be sold in Texas but may be sold in pet stores elsewhere or be hidden in aquarium plants. They have spread across the southern United States, including Texas, as a result of aquarium dumps and flooding events.







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Diaphorina citri

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Native Range: Southeast Asia

First Detection: Florida 1998 at door/yard citrus plants.

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Host Plant: Citrus trees- transmits Citrus Greening disease

Locations: AL, AZ, CA, FL, HI, GA, LA, MS, SC & <u>TX</u> (2012: in San Juan)

Its presence has led to Citrus Quarantines in TX

and other states.





Larval psyllids with white waxy secretions



Texas INVASIVE Species Institute

TEXASINVASIVES.ORG HELLO INVASIVE SPECIES.



Native Range: Southeast Asia First Detection: Florida 1998 at door/yard citrus plants. Host Plant: Citrus trees Locations: CA, FL, GA, LA, PR, SC & TX (2012: in San Juan)

TX QUARANTINED COUNTIES:

RGV: Brooks, Cameron, Hidalgo, Kenedy, Starr, Webb & Willacy Coastal Bend: Aransas, Calhoun, Nueces & Kleberg Gulf Coastal: Brazoria, Galveston, Ft. Bend,



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Asian Citrus Psyllid IDENTIFICATION: SIGNS & SYMPTOMS

Greatest activity of the psyllid corresponds with the **periods of new Citrus growth**. <u>Eggs</u> will be laid at new growth <u>Nymphs</u> are completely exposed, and their white waxy excretions are a strong indicator.







Univ. of CA-Division of Ag & Natural Resources

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Citrus Greening IDENTIFICATION: SIGNS & SYMPTOMS

Most infected trees die within a few years.

- blotchy mottle leaves
- stunted growth
- reduced fruit size
- premature fruit drop
- corky veins
- root decline

Infected trees produce fruits that are green, misshapen and bitter, unsuitable for sale as fresh fruit or for juice.







Texas NVASIVE Species Institute

Citrus Greening Outreach Initiative

PUBLIC EDUCATION: Engaging the public is the best way to make progress in the fight again Invasive Species.

Received USDA-APHIS funding to provide Citrus Greening & Citrus Psyllid detection.

- Please contact <u>armoo1@shsu.edu</u> to schedule a Workshop or Sampling Effort!
 - Will provide trapping materials
 - Identification of pests
 - In-field starch testing for potential Citrus Greening
 - Molecular confirmation at TISI lab.







Asian Jumping Worm Amynthas spp.

Other nicknames: Snake worm, Crazy worm,

Alabama jumper.

Over 400 species worldwide

Arrival: Hitchhiked in imported potted plants

- In the Northeast US since the **1910s**.
- NOW invading south (found in **20 states**)
 - Potentially from movement of potted plants & angler bait.
 - 2022-24 TX REPORTS: Buda, Conroe, Dallas, Granbury, Houston, Huntsville & Fort Worth.

Why are they worse than Lumbricus?

- They consume ALL organic matter, completely removing all nutrients - severely degrading topsoil.
 - Jumping Worm infestation inhibits seed germination!
 - Also, reach maturity twice as quickly, creating TWICE as many generations per season.







Cornell Cooperative Extension

Asian Jumping Worms: Soil Damage

Consume ALL organic matter in upper layers of topsoil.

- Leaves soil without the ability to hold moisture or deliver nutrients to plants.
- **EROSION:** Loosens the top layer of soil so much; plants' roots have a hard time hanging on and obtaining the nutrients they need.
- Their digestion changes the appearance of soil. LOOK FOR "COFFEE GROUND" SOIL



Asian Jumping Worms: Soil Damage



Sign of jumping worms: "Coffee ground" soil

- Grainy
- Little loose organic matter
- Small slightly compact pieces (worm castings) Photo credit: Purdue Plant and Pest Diagnostic Laboratory

Uninvaded soil

- Higher ratio of organic matter to "sand"
- Loose organic matter
- No or few small compact pieces Photo credit: Maria Barnes

Telling the difference



Asian Jumping Worm	European Earthworm
Clitellum is white & flush	Clitellum pink & raised
Dry & Smooth	Slimy & Floppy
Thrashes & jumps around	Undulates and wiggles
"coffee ground" soil	



has species

ish to Pink Clitellum lly encircle body e-like ly raised from of body

European Earthworm

Body *Slimey *Thick *Floppy







that resembles coffee-grounds

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Redbay Ambrosia Beetle Introduction & Distribution



Native Range: India, Japan, Myanmar, and Taiwan Primary Transmission: Flight, firewood, wood products First Detection: Georgia, 2002 Introduced: Solid wood packing material

Locations: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN and **TX**

Expansion into Harris Co. (Kingwood, TX) recorded November 2022!

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Redbay Ambrosia Beetle Host Plants & Characteristics

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Laurel Wilt Signs and Symptoms





• Leaf wilting and color-change

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- Discoloration of the wood. Seen when peeling bark or cutting limbs.
- Death in a few weeks, must destroy tree quickly after







Prevention and Management

















PREVENTION: Worm, Slug & Flatworm

• LOOKOUT in soil, potted plants, mulch or compost.

- **REMOVE SOIL** from all plants before transporting or potting into sterile potting soil. This helps to remove worm cocoons (egg cases) and slug eggs.
- DO NOT move any material that might have them.

• ESPECIALLY if you participate in garden club sales/exchanges.
• DO NOT BUY worms advertised as jumping worms, "snake worms", "Alabama jumpers" for any purpose.

• PLAY, CLEAN, GO: Leave no trace and clean equipment (gardening, hiking, etc.) before going to another location.

- DISPOSE of unwanted bait worms in the trash.
 - NOT in the water! They do not drown right away.
 - NOT into the environment Remember, all earthworms are non-native.



INVASIVE PLANT MANAGEMENT

Use an Integrated Pest Management strategy Treat early and Remove often!

Choose the appropriate management technique:

mechanical biological chem<mark>i</mark>cal

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- License required?
- Read AND FOLLOW label instructions
- Caution near aquatic habitats
- Wear protective gear
- Beware "drift"

<u>Monitor</u> (seed bank/resprout) <u>& Repeat!</u> **Plant Natives!** Check our website for invasive plants

MECHANICAL

- Hand pulling
 - To a certain size
- Weed wrenching
 - Effective for medium-sized plants
- **Consistent Mowing/Grazing**
 - Works for a few, with others it helps them spread quicker
- Prescribed Fire
 - Effective on rangeland
 - Limited by fire bans
- Tree Girdling

 Strip the upper bark layer
 Exposes phloem (inner bark).
 Cliff Tyllick on YouTube

Effective on dense thickets of **Privet and Tallow**



CHEMICAL

- Follow all labels and directions
- Do not overuse & only when needed

• BE SELECTIVE

USE PESTICIDES WISELY: ALWAYS READ THE ENTIRE PESTICIDE LABEL CAREFULLY, FOLLOW ALL MIXING AND APPLICATION INSTRUCTIONS AND WEAR ALL RECOMMENDED PERSONAL PROTECTIVE GEAR AND CLOTHING. CONTACT YOUR STATE DEPARTMENT OF AGRICULTURE FOR ANY ADDITIONAL PESTICIDE USE REQUIREMENTS, RESTRICTIONS OR RECOMMENDATIONS. MENTION OF PESTICIDE PRODUCTS ON THIS WEB SITE DOES NOT CONSTITUTE ENDORSEMENT OF ANY MATERIAL.





Direct Foliar Spray*

Aquatic-approved herbicides Effective on Elephant Ears

Basal Spray

Hack-n-Squirt





The most important step...

The Rehabilitation Phase

- Do not just cut down invasive plants! They will regrow!
 - Replanting and reseeding native species is vital to keep down re-sprouting invasives and prevent soil from washing out.



American Beauty Berry

Native Seaoats

Eastern Redbud

Texas INVASIVE Species Institute

PREVENTION: Invasive Pests



HELLO INVASIVE SPI

COODBYE TEX

TEXASINVASIVES.ORG

Trees destroyed by ANY bark beetle (NATIVE OR INVASIVE)

Remove trees ASAP!! Do not keep it for firewood! Do not share with neighbors! Mulch & bag before disposal (BURN, if possible)

HELLO INVASIVE SP

TEXASINVASIVES.ORG



Connections, Collaborations, Presentations & Invasives Removal with Texasinvasives.org

















Connection, Collaboration & MORE

CONNECTION

<u>Connection is vital in the fight against Invasives</u>. We have established connections with state, federal and local groups.

Local groups want to volunteer, enjoy removal, and want to support or collaborate with larger entities. <u>We can help!</u>

COLLABORATION & ADVERTISING

Sometimes we do not have funding to host, but we are always willing to collaborate with time, effort and advertising.

TRIES ANALYTICAL LAB: Being housed together allows us direct access to complete water, soil, wood pellet and other kinds of environmental tests.

PRESENTATIONS: NO GROUP TOO SMALL Public education is paramount. You pick the "Invasive" topic! **TRIES** Lab

REMOVAL DAYS: Groups with organized removal plans really make an impact!



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Woodlands Master Naturalists: Being trained by
 SARA on disposal; Cleared in some Woodlands' waters
 Does HGAC suggest other authorities for contact?
 Listed: Trinity, San Jacinto & Brazos RAs
 What about urban council areas?

REMOVAL DAYS: Groups with organized removal plans really make an impact! Texas Gulf Region CWMA: Brazilian Peppertree removal, Port Aransas The Woodlands Taskforce: Air Potato Removal & Biocontrol Program (w/ USDA-APHIS) Alamo Master Gardeners: 2000 Apple Snails removed at Riverwalk (S.A.R.A. approval) LaPorte Park System: Apple Snail removal with TISI, 200 lbs. removed.





VAL DAYS: Groups with <u>organized removal plans</u> really make an impact! exas Gulf Region CWMA: Brazilian Peppertree removal, Port Aransas The Woodlands Taskforce: Air Potato Removal & Biocontrol Program (w/ USDA-APHIS) Alamo Master Gardeners: 2000 Apple Snails removed at Riverwalk (S.A.R.A. approval) LaPorte Park System: Apple Snail removal with TISI, 200 lbs. removed.

TPWD: Healthy Creeks, Giant Reed removal on private land along 5 rivers in Central TX

PULL, KILL, PLANT



Submitting Reports on Texasinvasives.org





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Texas NVASIVE Species Institute

APPLESNAIL

SOUTH AMERICA FRESHWATER INVASIV

WHY report directly to Texasinvasives.org?

TEXAS

PARKS &

WILDLIFE

TEXAS A&M

OREST SERVICE

APHIS

EDDMapS



HOGWEED

HARITAT THREAT

GIANT

FURASIA

WOODWASP

KILLS PINE TREES

SIREX NOCTILIO

SIREX

EUROPE

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Reporting Invasive Species Sentinel Pest Network



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Texas NVASIVE Species Institute



Tips for Taking Pictures

HELLO INVASIVE S

- Remember: pictures are used for validation
 - Only one picture can be submitted so make it count
- Close-ups if possible
 - In focus!

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- Prefer landscape orientation
- Capture characteristics that help to identify the species
- A contrasting background is very helpful!
Sentinel Pest Network: Report It!

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	REPORT FORM If you have spotted Agrilus planipennis (Emerald Ash Borer), use this report form to send an email to the appropriate authorities.
	Your Name
	Email
	Phone Number
	Street Address
Location Choose Location	City
Latitude: Longitude: In decimal degrees	County
Map Satellite TEXAS	Zip Code
Killeen	Location Choose Location
College Stati	Latitude: Longitude: in decimal degrees Did You Collect a Specimen?
Austin Austin	Yes or No.
	If applicable, what is the host plant?
San Antonio +	Commenta. Describe une species, impaci, imestation or generally milat you are seeing.
Google Map data ©2020 Google, INEGI Terms of Use Report a map error	Please upload a photo of the specimen or the site where the specimen was seen. NOTE: The photo file must be no larger than 2 MB in size.
Latitude: 30.141550149493376 Longitude: -98.05531203125001	



Stop the Spread! RESOURCES

Invasive Species Info & Management at: texasinvasives.org or TSUSinvasives.org

> Report Sentinel pests via: texasinvasives.org

Other sightings: invasives@shsu.edu

Citrus Sampling or Invasive Workshop: arm001@shsu.edu









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