

The Spread of Zebra Mussels in Texas



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GSARP – October 2016



Reclassification & Infestation Status

Infested – A water body that has an established (recruiting or reproducing) ZM population. [Previously, a water body with any detection of zebra mussels or their larvae.]

Established population: ZM *juvenile* settlement or multiple age classes of juveniles/adults present on substrates other than a boat or juveniles/adults detected at multiple, separate locations.



Ray Roberts– Trinity:
Infested



Reclassification & Infestation Status

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"Infested" Lakes (8) – Belton?, Bridgeport, Dean Gilbert (a 45-acre Community Fishing Lake in Sherman), Eagle Mountain*, Lewisville?, Ray Roberts?, Stillhouse Hollow*, and Texoma?

* detected in 2016

? Populations declining or cyclic?



Ray Roberts– Trinity:
Infested

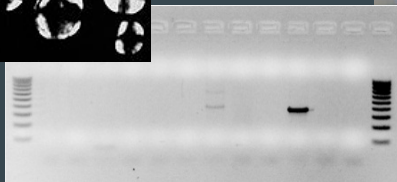
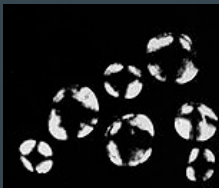


Reclassification & Infestation Status

Positive— Multiple sampling events (within or across years) that meet the minimum criteria for detection.

Detection — the *verified* presence of any life stage of ZM.

Minimum criteria to verify detection: Two independent results from the same sample, using scientifically accepted techniques—veligers must be visually identified by two experts and PCR.



Reclassification & Infestation Status

Positive— Multiple sampling events (within or across years) that meet the minimum criteria for detection.

"Positive" Lakes (5) - Lavon, Livingston*, Waco, Worth*, and Fishing Hole Lake** (a small lake connected to the Trinity River below Lake Lewisville)

* detected in 2016

** detected late 2015



Lake Waco – Bosque River:
Positive



Reclassification & Infestation Status

Suspect – Water body that has met the minimum criteria for detection once (e.g. one verified detection of ZM).

“Suspect” Lakes – Fork, Ray Hubbard

Inconclusive (temporary status) - Water body has not met the minimum criteria for detection (e.g. DNA only or veliger visually identified but not confirmed by PCR).



Lake Fork – Sabine River:
Suspect



Reclassification & Infestation Status

Undetected/Negative - Sampling/testing is ongoing and neither ZM nor their DNA have been detected (includes delisted lakes).

Status Unknown – Waters that have not been monitored in the past year.



Canyon Lake— Guadalupe River:
Undetected/Negative



Aug 2016 Status of Zebra Mussels in TX

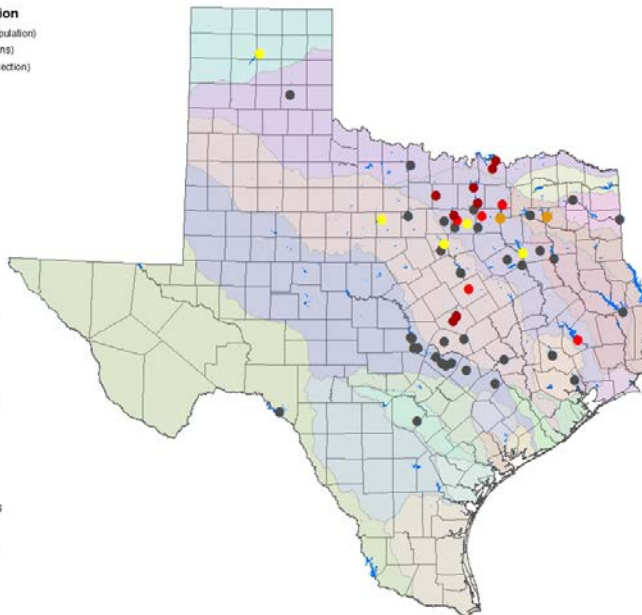
Zebra Mussel Status - August 2016

Water Body Classification

- Infested (Reproducing Population)
- Positive (Multiple Detections)
- Suspect (One Verified Detection)
- Inconclusive
- Undetected/Negative

River Basin

- Brazos
- Brazos-Colorado
- Canadian
- Colorado
- Colorado-Lavaca
- Cypress
- Guadalupe
- Lavaca
- Lavaca-Guadalupe
- Neches
- Neches-Trinity
- Nueces
- Nueces-Rio Grande
- Red
- Rio Grande
- Sabine
- San Antonio
- San Antonio-Nueces
- San Jacinto
- San Jacinto-Brazos
- Sulphur
- Trinity
- Trinity-San Jacinto



Infested:

- Belton
- Bridgeport
- Dean Gilbert*
- Eagle Mountain**
- Lewisville
- Ray Roberts
- Stillhouse Hollow**
- Texoma

Positive:

- Lavon
- Livingston**
- Waco
- Worth**
- Fishing Hole*
- RC Wetlands**

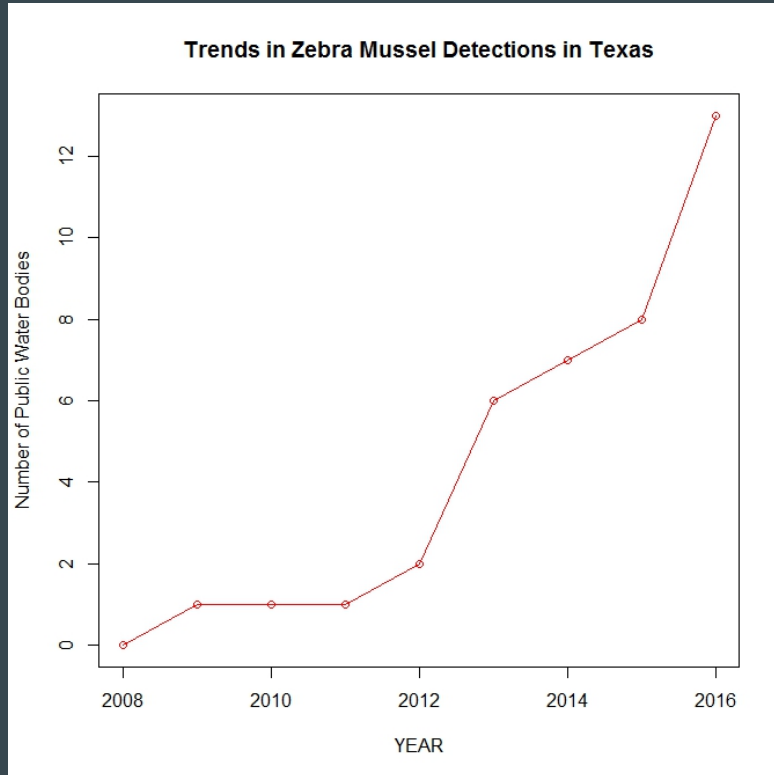
Suspect:

- Fork
- Ray Hubbard

* 2015 detection

** 2016 detection

Spread of Zebra Mussels in TX



Newly Infested: Stillhouse Hollow

- July 2016 - citizen reports ZM
- Waco team confirmed multiple size classes at 6/6 sampling sites
- ZM more numerous or easier to find in lower reservoir
- Pipeline to Lake Georgetown (uninfested), > 1 yr since pumping; will pump next spring; “lifeline” for Williamson County, without which they would not have enough water for their population in a normal year



ZM from Stillhouse Hollow –
recently listed Infested lake



Newly Infested: Eagle Mountain

- May 2016 - TRWD detected hundreds of veligers
- June 2016 - Adult ZM confirmed at the lake
- July 2016 - found at the majority of marinas, multiple age classes present but no evidence of recent settlement...

Newly Positive: Livingston

- June 2016 - USGS found ZM (4 individual mussels, 3 sites) at three sites.
- Reproducing population or downstream dispersal?



Lake Livingston - Positive



Newly Positive: Worth

- May 2016 - TRWD detected veligers in plankton samples.
- June 2016 – Waco team detected adult ZM
- July 2016 - AIS team surveyed additional sites, found no ZM additional mussels.
- Reproducing population or downstream dispersal?

Probably Positive: R-C Wetlands

- Summer 2016 – Controlling authority detected ZM in intake, water from Elm Fork Trinity River
- Fall 2016 through 2017 – intensive sampling, exploration of operational control methods
- Risk to Richland Chambers Reservoir?



Update: Dean Gilbert

- Late 2015 – ZM detected, leaking pipeline under lake
- Early 2016 – lake drawdown, pipeline repair
- August 2016 - Denison team found no live ZM; lake heavily stratified - DO dropped down to 0.4 mg/L at 2 m
- October 2016 – additional sampling planned



Lake Dean Gilbert - Infested



Update: Fishing Hole

- 2016 – ZM detected in lake and pipeline (Infested) , water from Elm Fork Trinity River
- Special signage installed; low risk of transfer
- Monitoring ongoing – self-sustaining population?



Update: Waco

- 2014 – localized infestation detected, barge likely source
- 2014-2015 – tarping effort, few ZM found on removal
- 2015 – no veligers or ZM detected
- 2016 – no veligers or ZM detected, sampling ongoing



Lake Waco – Bosque River:
Positive



Coordinated Monitoring Efforts

Plankton Sampling (veligers)

Settlement Samplers (juveniles/adults)

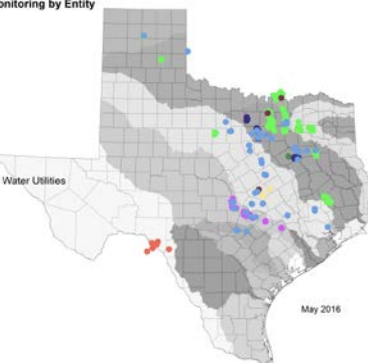
‘Rock Kick’ Surveys (juveniles/adults)

58+ Water Bodies, 8 partners



Zebra Mussel Monitoring by Entity

- TPWD
- USGS
- UT-A
- TRWD
- NPS
- TxState
- LCRA
- Corsicana Water Utilities



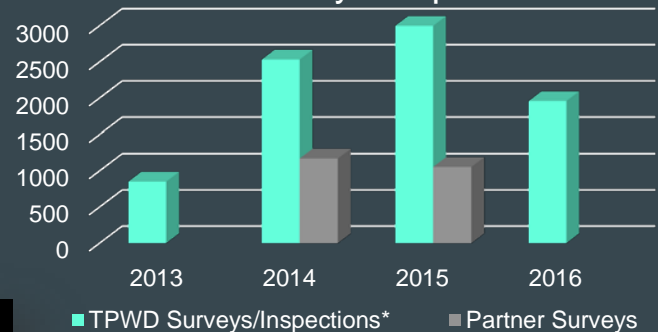
Prevention: Boater Inspections

2013-2015: Intern Surveys

2016: Seasonal Inspections

- 28 Lakes (57 Ramps)
- 1,960 boats

Texas Zebra Mussel Prevention:
Boater Surveys/Inspections



*Inspections conducted in 2016 only; previously survey only

TEXAS
PARKS &
WILDLIFE



Prevention: Marina Outreach

“Gatekeepers” Approach

Build partnerships, provide updates & advice

Identify locations for fee-based decontamination

- 2016: Visited 87 Marinas & 63 Repair Shops
- 17 interested in providing decontamination services...
- ...but only 2 capable



Prevention: Public Awareness Campaign



**ZEBRA MUSSELS
ATTACK LAKES.**

CLEAN, DRAIN AND DRY
YOUR BOAT, TRAILER AND GEAR EVERY TIME.

**FINES
UP TO
\$500**

LAKE RAY ROBERTS BOATER ALERT

**ZEBRA MUSSELS
ATTACK LAKES.**

Destructive zebra mussels have infested Lake Ray Roberts and other Texas lakes. They can spread by hitching a ride on your boat, trailer or gear. Do your part to protect the Texas lakes you love from this invasive species. Always **CLEAN, DRAIN and DRY** before leaving the lake — it's the law. Learn how at TexasInvasives.org/CleanDrainDry.

CLEAN, DRAIN AND DRY.

**FINES
UP TO
\$500**



**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, live wells 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 high-pressure washer and hot, soapy water.

IT'S THE LAW
**DON'T TRANSPORT INVASIVE SPECIES
OR LEAVE THIS WATER BODY
WITHOUT DRAINING ALL WATER.**

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

**TEXAS
INVASIVE
SPECIES
ACT**
Lake Ray Roberts

ZEBRA MUSSELS HIDE HERE.
CLEAN, DRAIN AND DRY YOUR BOAT.

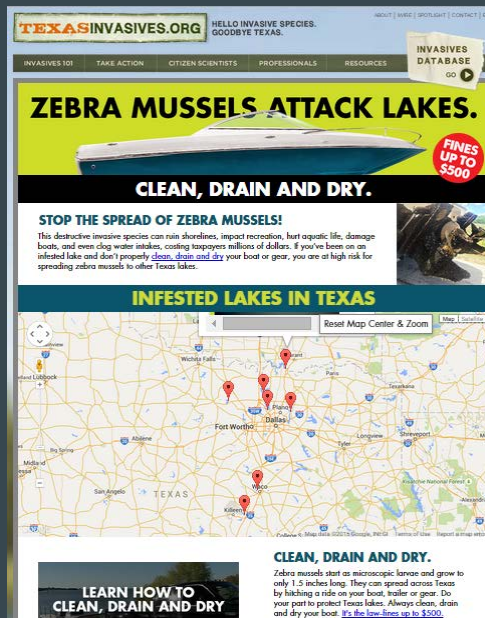
Clean your boat. Save your lake. Zebra mussels are a real threat to Texas waters. They're hitching a ride on your boat, trailer and gear. Do your part to protect the Texas lakes you love from this invasive species. Always **CLEAN, DRAIN and DRY** before leaving the lake — it's the law. Learn how at TexasInvasives.org/CleanDrainDry.

HELLO ZEBRA MUSSELS. GOODBYE TEXAS LAKES.
www.texasinvasives.org/zebramussels

Prevention: Public Awareness Campaign

New landing page for digital media:

<http://www.texasinvasives.org/cleandraindry/>



TEXAS
PARKS &
WILDLIFE

Prevention: Regulations

Possession of Zebra Mussels or other Prohibited Species is Illegal—live or dead

Regulations regarding ‘harmful or potentially harmful exotic fish, shellfish, and aquatic plants’ (Title 31 Ch 57A, Texas Administrative Code)

It is an offense for any person to release into the water of this state, import, sell, purchase, transport, propagate, or possess any species, hybrid of a species, subspecies, eggs, seeds, or any part of any species defined as a harmful or potentially harmful exotic fish, shellfish, or aquatic plant.

The prohibited list includes zebra mussels, water hyacinth, water lettuce, giant and common salvinia, Eurasian watermilfoil, hydrilla, and applesnails.



See the TPWD website for a full list:

http://tpwd.texas.gov/huntwild/wild/species/exotic/prohibited_aquatic.phtml

Prevention: Regulations

Regulations regarding 'Draining of Water from Vessels Leaving or Approaching Public Fresh Water' (Title 31 Ch 57 Texas Administrative Code, Rule 57.1001)

- (1) General Provisions. Except as provided in paragraph (2) of this section, **no person may use any public roadway other than a boat ramp to transport a vessel to or from a public water body** to which the provisions of paragraph (3) of this section apply unless **all bilges, live wells, and other similar receptacles and systems holding or capable of holding water on board the vessel** as a result of immersion in or transfer from the public water body have been drained.

...with some exceptions.



Thanks! Questions?

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