



# **Aquatic Invasive Species Management: Summary of Texas Statewide Efforts FY 2022-2023**

## **Aquatic Invasive Species: A Problem for All Texans**

The Texas Parks and Wildlife Department (TPWD) manages freshwater fisheries and other aquatic resources in Texas' rivers and lakes, providing arguably the best freshwater fishing in the nation. Freshwater fishing is clearly important to our state's economy, and quality fisheries as well as other fish and wildlife are dependent upon healthy habitats in our creeks, streams, rivers, and lakes. However, there are numerous issues degrading our waterways, with one of the most significant being the introduction and spread of non-native aquatic invasive species (AIS).

## **The Economic, Environmental and Recreational Impacts of Aquatic Invasive Species**

It is estimated that the annual economic impact of invasive species in the U.S. has reached approximately \$219 billion, with global impacts estimated at more than \$4 trillion. In Texas, AIS negatively affect fish and wildlife, fishing, boating, hunting, and other recreational opportunities, water infrastructure, and even waterfront property values. This is a critical problem that must continue to be addressed long-term. It is estimated that highly effective management of AIS in Texas would require an annual investment of ~\$45 million.

## **Texas Taking Significant Action to Manage Aquatic Invasive Species**

Since state fiscal year 2016, the Texas Legislature has allocated approximately \$3.2 million annually to address these issues. Bolstered by this unprecedented investment of resources, TPWD and our partners have intensified efforts to combat AIS, increasing the annual acreage of AIS plants treated nearly five-fold, increasing rapid response and eradication efforts for giant salvinia, enhancing early detection for zebra mussels and aquatic plants, implementing strategies to control invasive riparian plants along rivers and streams, and supporting critical research to inform monitoring and management efforts. For Texas to keep pace with the constant and ever-evolving problems associated with AIS, it is critically important that we continue to invest in targeted control, prevention, monitoring, and research efforts.

The TPWD has an established AIS Working Group that coordinates agency and cooperative efforts with river authorities, water utilities, municipalities, private landowners, and other local partners to prevent the further spread of AIS and manage those that are already present. Specific actions include public outreach and prevention, early detection monitoring and rapid response, on-the-ground management including use of containment booms, herbicides, and biological controls, and research on potential introduction pathways, population dynamics, and enhancing control methods.

This report highlights significant accomplishments in AIS management in fiscal years 2022 – 2023 (September 1, 2021 – August 31, 2023).



### Engaging Texans in Prevention Efforts

Prevention is widely seen as the most effective frontline strategy for managing invasive species as it can help avoid the long-term, costly management required once an invasive species becomes established in a new waterbody. A multi-faceted public outreach campaign led by TPWD and supported by a coalition of partners seeks to increase awareness and participation in efforts to prevent the spread of highly problematic zebra mussels and giant salvinia by boaters. The campaign employs diverse advertising strategies including billboards, gas station advertising, digital advertising, online radio ads, social media, emails, and ads and editorials in magazines and newsletters. The current campaign messaging – “Protect the Lakes You Love.” – was informed by consumer research, including focus groups and online surveys of registered boaters.



Outreach billboards remind boaters to take action to prevent the spread of aquatic invasive species.



A survey of registered boaters confirmed that the campaign is effectively reaching the target audience as 91% had heard or seen the campaign call-to-action – “clean, drain and dry.” The “Never Dump Your Tank” campaign was also implemented to educate the public about the impacts of aquarium releases as well as targeted invasive carp prevention outreach.

## *FY 2022-2023 Outreach and Prevention Accomplishments*

### *Protect the Lakes You Love Campaign*

- Annual AIS outreach campaign from Memorial Day through Labor Day each year
- Partially supported by funding from a coalition of 13 partners
- Billboards, gas station advertising on key routes
- Prominent signage at 331 boat ramps
- Paid ad campaign on key digital media platforms
- Over 164 million “impressions” generated
- Communication with 368K+ registered boaters

### *Never Dump Your Tank Campaign*

- Campaign ran from May through July in FY22 and April through June in FY23 and targeted aquarium enthusiasts in two major metro areas
- Paid digital ad campaign on Facebook reached 2,547,456 people
- Over 9.2 million “impressions” were generated along with 18,941 clicks to the web landing page providing alternatives to release of potentially invasive aquarium life

### *Invasive Carp Prevention Outreach Efforts*

- Outreach efforts were conducted in Summer 2022 and 2023
- Targeted email outreach to 92,407 licensed anglers in high-risk areas in 2022 and 125,732 anglers in 2023, with a high open rate of at least 50%—well above the industry average and a significant increase from 30% in FY2021
- Targeted social media outreach highlighting ongoing research efforts and encouraging anglers to not transport live bait in high-risk areas and to target and report invasive carp

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## **Media and Communications Strategy**

The Texas Parks and Wildlife Department utilizes a multifaceted communications approach to educate and inform the media and public about AIS. Press releases are issued for new zebra mussel and giant salvinia infestations as well as for other important topics such as invasive carp. In addition, timely releases encouraging boaters to “clean, drain, and dry” are distributed during peak and strategic times in the boating and hunting seasons and to promote events such as National Invasive Species Awareness Week. TPWD utilizes multiple social media channels and pages—including Facebook, Twitter, and Instagram—across the agency to share press releases and content specifically crafted for social media.

### *FY 2022-2023 Media and Communications Accomplishments*

- A total of 13 press releases on AIS issues were distributed
  - Approximately 389 articles on media outlets contained information about AIS; the reach number for these articles was 1,001,837,071
  - Facebook and Instagram posts produced 2,888,330 combined impressions across agency pages
  - Twitter posts produced 30,473 impressions from the @TPWDnews account
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### **Invasive Mussel Early Detection Monitoring**

Invasive zebra and quagga mussels are a highly problematic species native to Eurasia that clogs and damages the infrastructure of facilities using raw surface water as well as private water intakes, damages boats and marinas, can impact drinking water quality, and litters shorelines with hazardous, sharp shells. Zebra mussels were first introduced into the U.S. in the late 1980s by oceangoing vessels and rapidly spread, reaching Texas in 2009 via overland movement of boats. Since 2009, zebra mussels have invaded 36 lakes in Texas across seven river basins primarily via movement on boats, although many new introductions inevitably result in downstream dispersal. Except in extremely rare instances, such as the success at Lake Waco, eradication or even management of zebra mussels after introduction is not possible. Therefore, TPWD efforts focus on preventing introductions into the many uninfested lakes in the state and monitoring for early detection to provide infrastructure operators with an advance warning to implement mitigation strategies and thereby reduce economic impacts.

### *FY 2022-2023 Invasive Mussel Early Detection Accomplishments*

- Coalition of 8 partner agencies work together to monitor more than 40 lakes for early detection of invasive mussels' DNA, larvae, or settled adults
  - Partners monitoring existing populations in nearly 30 water bodies
  - Invasive quagga and zebra mussel larvae were detected in Lake Amistad in the Rio Grande basin, although quagga mussel larvae have not been detected recently and the status of this species is uncertain. Monitoring is ongoing and to date no settled mussels have been found.
  - Lake Walter E. Long in Travis County and private-access Diversion Lake in Medina County were designated as fully infested with zebra mussels after monitoring detected the presence of settled adult mussels.
  - Hords Creek Lake in Coleman County was designated as fully infested with zebra mussels after evidence of a reproducing population was found, indicating further westward spread of this species.
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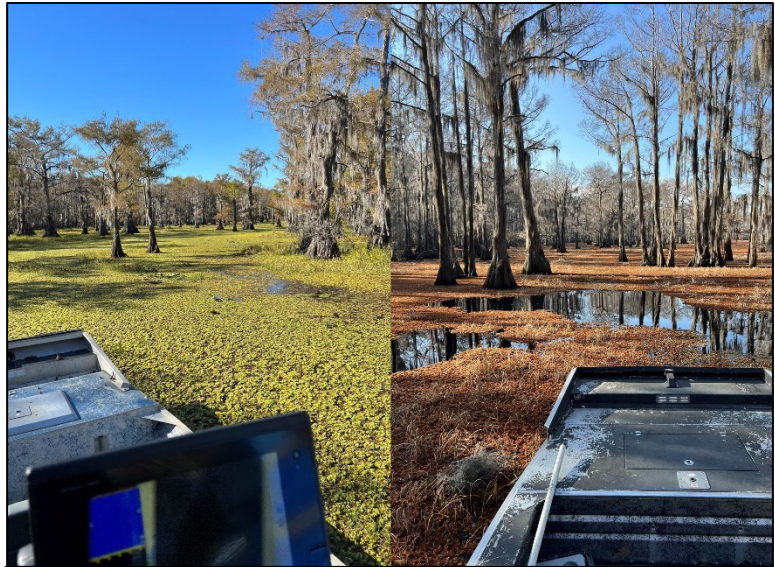
### **Aquatic Invasive Plant Management Promotes Boater Access**

Aquatic invasive plants are among the most problematic species in Texas. Numerous species such as giant salvinia form dense, impenetrable mats that impede access for boating, fishing, waterfowl hunting, and other recreation and impact water conveyance and infrastructure. Management of these

species in Texas employs a multi-pronged Integrated Pest Management strategy and focuses on maintaining boater access and early detection and containment and eradication to reduce long-term costs. Currently, aquatic invasive plant infestations are being managed on nearly 70 water bodies around the state.

### *FY 2022-2023 Aquatic Vegetation Management Accomplishments*

- Nearly 70 water bodies being actively managed
- Intensive early detection and rapid response efforts
- More than 28,000 acres of giant salvinia treated
- Nearly 670,000 giant salvinia weevils introduced as biological controls
- Nearly 3,200 acres of water hyacinth treated
- Nearly 500 acres of other species treated
- Mechanical containment implemented to supplement and support other control methods



Targeted herbicide treatments with help from cold weather events help keep giant salvinia and other non-native, invasive plants under control.

### **Restoring Texas Rivers and Streamsides**

Riparian invasive plants—those infesting areas alongside rivers and creeks—can cause significant problems, impeding access and stormwater conveyance, degrading fish and wildlife habitat, increasing the risk of flooding and erosion, and even posing a fire hazard. Efforts to manage these species in the state focus on improving access and fish and wildlife habitat in areas with significant infestations, particularly in Native Fish Conservation Areas where management of these species can have the greatest benefit for imperiled native fishes. Riparian invasive plant treatment occurs in partnership with private landowners, government agencies, river authorities, universities, nonprofit organizations, and volunteers and has benefited nearly 900 private landowners in the state.



Control of invasive *Arundo* along rivers and streams promotes natural restoration of critical riparian habitats once choked by this invader. Standing dead canes protect young native plants and decay gradually over time.

### *FY 2022-2023 Riparian Invasive Plant Management Accomplishments*

- Watershed-scale control of river and creekside invasive plants and riparian stewardship technical guidance site visits at no cost to landowners
- Over 380 landowners participating in Arundo control across five Hill Country river basins encompassing 250 river miles
- Over 300 landowners participating in the Pull.Kill.Plant Arundo control initiative over 110 miles of rivers in the Nueces River Basin
- More than 25 landowners participating in Arundo control along 5 miles of San Felipe Creek in Del Rio
- 1,607 acres of saltcedar treated on properties in the Upper Brazos River Basin
- Elephant ear control on more than 50 miles of the Llano River
- Public outreach and education in key project areas via community networking events, press releases, newsletters, mailers, webpages, and social media
- Targeted outreach to floodplain and right-of-way managers to promote the Arundo Control Man prevention program and collaborative opportunities to prevent the spread of Arundo
- Riparian stewardship plans and demonstration signs developed for county and city parks

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### **Aquatic Invasive Species Research**

Research plays an important role in informing and enhancing efforts to monitor and manage AIS and has been shown, in some cases, to aid in reducing management costs. Each biennium, TPWD supports several research projects through an AIS small grants program.

### *FY 2022-2023 Aquatic Invasive Species Research Accomplishments*

- Supporting four research projects focusing on technological advances in invasive mussel early detection, variation in zebra mussel population dynamics, suckermouth armored catfish assessment to augment population control efforts, and remote sensing of Arundo in Native Fish Conservation Areas to guide TPWD management efforts
- Successful implementation of a Request for Proposals to identify key research for funding for FY2024-2025

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**More information on ongoing AIS efforts in Texas can be found at:**

[www.tpwd.texas.gov/aquatic-invasives](http://www.tpwd.texas.gov/aquatic-invasives)