



Aquatic Invasive Species Management: Summary of Texas Statewide Efforts FY 2020-2021

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—both natural lakes and man-made reservoirs, providing arguably the best freshwater fishing in the nation. Freshwater fishing is clearly important to our state's economy, and quality fisheries 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 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 treatment including use of containment booms, herbicides, and biological controls, and research on potential introduction pathways, population dynamics, and novel control methods.

This report highlights significant accomplishments in AIS management in fiscal years 2020 – 2021 (September 1, 2019 – August 31, 2021).



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.” –



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



Never Dump Your Tank outreach campaign graphic

– was informed by consumer research, including focus groups and online surveys of registered boaters. 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 2020-2021 Outreach and Prevention Accomplishments

Protect the Lakes You Love Campaign

- Annual AIS outreach campaign from Memorial Day through Labor Day
- Over 325 million “impressions” generated
- Supported by funding from a coalition of 13 partners
- Billboards, gas station advertising on key routes
- Prominent signage at 275+ boat ramps
- Paid ad campaign on key digital media platforms
- Communication with 575K+ registered boaters
- 91% of boaters surveyed have heard or seen “Clean, Drain and Dry” message

Never Dump Your Tank Campaign

- Campaign ran from July through August 2021 and targeted aquarium enthusiasts in major metro areas in Texas
- Paid digital ad campaign on Facebook reached 1,396,443 people
- Over 5.5 million “impressions” were generated along with 13,000 clicks to the web landing page

Invasive Carp Prevention Outreach Efforts

- Outreach efforts conducted in Summer 2021
- Updated invasive carp prevention signage was posted in high-risk areas for transfer of invasive carp as live bait
- Targeted email outreach to 112,928 licensed anglers in high-risk areas with a high, 30% open rate well above the industry average
- Targeted social media outreach highlighting ongoing research efforts and encouraging anglers to not transport live bait in high-risk areas

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 season 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. Releases and other key information are distributed through regular emails targeted at anglers, boaters, and marina owners.

FY2020-2021 Media and Communications Accomplishments

- A total of 35 press releases were distributed
 - Approximately 529 articles on media outlets contained information about AIS
 - The reach number for these articles was 855,852,308
 - Facebook posts produced 5,058,183 combined impressions across agency pages.
 - Twitter posts produced 213,640 impressions from the @TPWDnews account in FY 2021 alone
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Invasive Mussel Early Detection Monitoring

Invasive zebra and quagga mussels are a highly problematic species 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 from Eurasia and rapidly spread, reaching Texas in 2009 via overland movement of boats. Since 2009, zebra mussels have invaded 33 lakes in Texas across six river basins primarily via movement on boats, although many new introductions inevitably result in downstream dispersal. Invasive quagga mussels were first detected in Texas in 2021 in Lake Amistad in the Rio Grande basin. Except in extremely rare instances, such as the success recently reported for 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.

FY2020-2021 Invasive Mussel Early Detection Accomplishments

- Coalition of 10 partner agencies work together to monitor nearly 50 lakes for early detection of invasive mussels' DNA, larvae, or settled adults
 - Partners monitoring existing populations in over 20 water bodies
 - Zebra mussels successfully eradicated from Lake Waco as a result of very early detection and coordinated, interagency rapid response
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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 more than 50 water bodies around the state.

FY 2020-2021 Aquatic Vegetation Management Accomplishments

- Over 50 water bodies being actively managed
- Intensive early detection and rapid response
- More than 18,000 acres of giant salvinia treated
- Nearly 670,000 giant salvinia weevils introduced as biological controls
- More than 3,100 acres of water hyacinth treated
- Nearly 1,000 acres of other species treated



Strategically deployed, floating booms contain dense mats of giant salvinia for more effective treatment and prevent further spread.

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 benefits over 700 private landowners in the state.



Invasive Arundo crowds out native plants and chokes rivers and streams, impeding access and stormwater conveyance.

FY 2020-2021 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 350 landowners participating in Arundo control across five Hill Country river basins encompassing 250 river miles
- Over 250 landowners participating in the Pull.Kill.Plant Arundo control initiative over 110 miles of rivers in the Nueces River Basin

- Implementation of a new Arundo control project on San Felipe Creek in Del Rio
- 4,705 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

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 2020-2021 Aquatic Invasive Species Research Accomplishments

- Successful implementation of a Request for Proposals to identify key research for funding
- Funding of four projects focusing on zebra mussel impacts on native mussels and ecosystems, factors influential in success of zebra mussel invasions, enhancing aquatic invasive plant management through native planting techniques, and invasive fishes and the live bait introduction pathway

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

www.tpwd.texas.gov/aquatic-invasives