INLAND FISHERIES ANNUAL REPORT 2020

Providing the best possible fishing opportunities
while protecting and enhancing freshwater aquatic resources

TEXAS PARKS & WILDLIFE

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INLAND FISHERIES ANNUAL REPORT 2020

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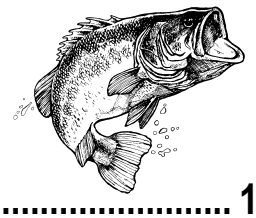

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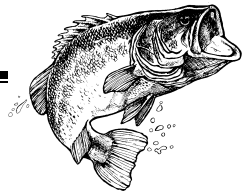
INLAND FISHERIES OVERVIEW



Mission

To provide the best possible fishing opportunities while protecting and enhancing freshwater aquatic resources.

Scope

The Inland Fisheries Division is responsible for managing the fishery resources in approximately 1,100 public impoundments and about 191,000 miles of rivers and streams together totaling 1.7 million acres. These resources are used by 1.21 million anglers aged 16 and over, whose fishing activities result in at least $960 million in trip and equipment expenditures annually.

Agency Goals

Texas Parks and Wildlife Department's Land and Water Resources Conservation and Recreation Plan (2015) established four primary goals to direct the agency's divisions regarding the state's conservation and recreation needs.

- Practice, encourage, and enable science-based stewardship of natural and cultural resources
- Increase access to and participation in the outdoors
- Educate, inform, and engage citizens in the support of conservation and recreation
- Employ efficient, sustainable, and sound business practices

Division Goals

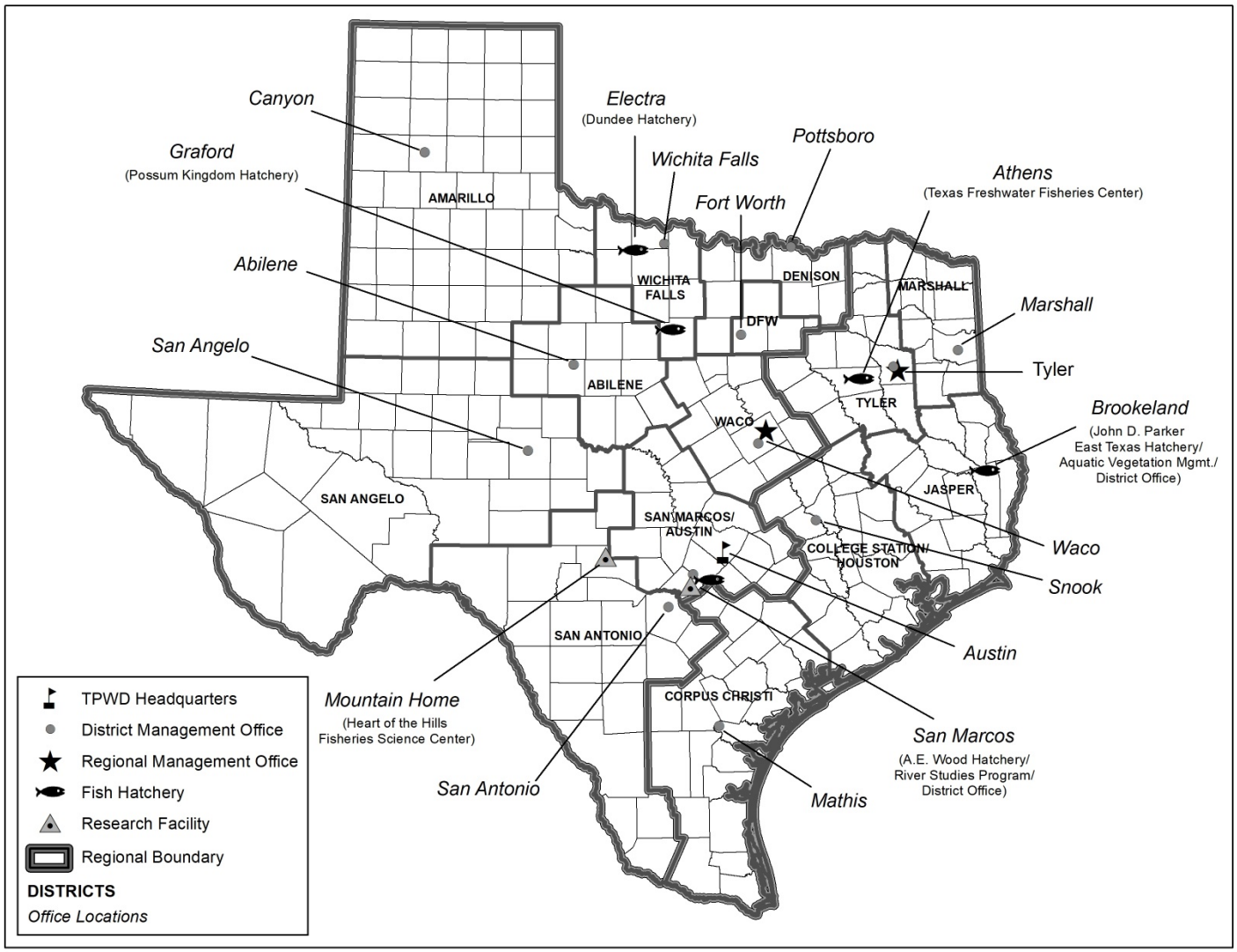
The division goals were developed to address the major issues facing the freshwater fisheries resources of Texas.

- Maintain or restore appropriate conditions to support healthy aquatic ecosystems
- Maintain quality fish communities for recreation and ecological health and value
- Maintain or increase constituent satisfaction, participation, or stewardship
- Employ efficient and sustainable business practices in fisheries management

Staff

Inland Fisheries has 211 positions assigned to management, hatchery, research, outreach, habitat, analytical services, and administrative programs and branches. For details, see Appendix – Organization Charts.

Facilities



Contact Information

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(800) 792-1112 or (512) 389-4444 • www.tpwd.texas.gov

Funding and Allocation

In FY20, $19,918,896 was budgeted for Inland Fisheries (not including fringe benefits or capital construction). Federal Aid grants reimbursed the Department $8,996,596 on eligible Inland Fisheries activities.

FY20 Budget by Program

Administration	$2,265,950
Management and Research	$5,641,890
Hatcheries and Laboratory	$5,281,631
Habitat Conservation and Aquatic Invasive Species	$5,318,546
Outreach/Texas Freshwater Fisheries Center	$1,410,879
Total FY20 w/o fringe	**$19,918,896**

WHAT WE DO

Administration

The Administrative function of the Inland Fisheries Division occurs primarily at Texas Parks and Wildlife Department headquarters in Austin. The administrative staff provides critical leadership, management of budgets and grants, and managerial support to field offices that carry out the mission of the division. The Inland Fisheries Division seeks to maximize collaborative efforts among its work groups to accomplish projects and to achieve the larger goals of the division. These efforts, at least in part, are due to the close coordination of a small group of leaders who direct activities of staff in the areas of fisheries management and research, hatcheries, habitat conservation, information and regulations, analytical services, and outreach.

Habitat Conservation

Healthy fish populations and quality freshwater fishing opportunities depend upon healthy aquatic habitats in Texas creeks, rivers, and reservoirs. The Inland Fisheries Division's Habitat Conservation Branch cooperates with local, state and federal agencies, private landowners, local communities, river authorities, fishing clubs, watershed alliances, and other nongovernmental organizations to design, plan, and conduct aquatic habitat restoration, enhancement, and protection projects. Examples include restoration and protection of natural river flows by protecting springs or augmenting reservoir dam releases, management of reservoir water levels to maximize the availability of fish spawning and nursery habitats, restoration and protection of riparian buffers along creeks and rivers, cleanup and recovery of habitats negatively affected by oil spills and other pollution, and management of aquatic invasive plants. The Habitat Conservation Branch also monitors the status and trends of the diversity of Texas freshwater fishes, mussels, and other aquatic species, and develops and implements conservation plans to preserve the state's freshwater biodiversity. Another area of emphasis for the branch is improving angler access to bank, wade, and kayak fishing opportunities on Texas rivers through the Texas Paddling Trails Program and the River Access and Conservation Areas Program.

Habitat Conservation Branch staff and Rebekah McDaniel (American Fisheries Society Hutton Scholar) conduct Guadalupe Bass surveys at Pete's Pecan Patch, a public fishing access area on the Llano River located downstream of Junction, Texas.

Fisheries Management and Research

The Fisheries Management and Research Branch assesses fish communities, fish habitat, angler access, and angler use of public water resources. Sampling activities performed by this group are guided through scientifically accepted procedures that ensure a high degree of data quality, integrity, and validity for use in analyzing trends and making sound fisheries management decisions. This team develops fisheries management plans for individual water bodies, develops the statewide fish stocking plan, recommends changes to harvest regulations, implements habitat improvement projects, assists with treatment of aquatic invasive species, conducts public outreach, manages our urban fishing programs, and performs research to evaluate and improve fisheries management strategies. Staff members provide assistance and information to the public, fishing-related industries, water-controlling authorities, local governments, angling groups, civic groups, property owners, media, universities, and other natural resource agencies. Work teams are located at two regional offices and 14 district offices statewide.

The Inland Fisheries research program at the Heart of the Hills Fisheries Science Center in Mountain Home provides leadership, support, and coordination for all research activities supported by the division. The program also provides intensive research investigations, literature reviews, statistical analyses, staff training, and science-based position papers that inform decision makers on critical aquatic resource-related issues or problems.

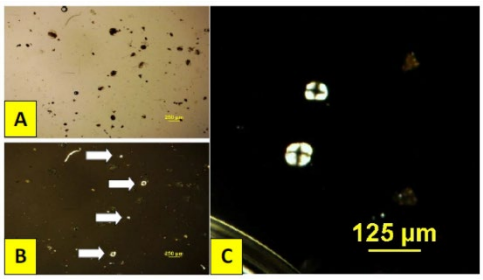
Hatcheries

The Hatcheries Branch serves as an important component of Inland Fisheries resource management. Fish stocking is one of several essential tools used to protect, manage, and enhance statewide fisheries resources as well as achieve specific fisheries resource objectives. Stocked fish must meet specific requirements including number, size, genetic integrity, disease-free status, and time of stocking. Hatchery-stocked fish are used to start new fish populations, supplement existing fish populations, restore depleted or threatened populations, provide fish in small urban lakes, enhance population genetics and performance, take advantage of improved habitat, and increase angler opportunities and success. Also, hatchery personnel are involved in outreach programs and agency-sponsored fishing events as well as providing educational hatchery tours to the public and students of all ages.

The Texas Freshwater Fisheries Center Hatchery ponds provide both fish for statewide stocking and educates the public about hatchery and management efforts via tram tours.

Analytical Services

Analytical laboratories serve a unique function within Inland Fisheries by providing scientific analyses in water quality, fish pathology, and fish genetics. Analytical Services conducts a variety of analyses in support of divisional, interdivisional, and interagency programs. Analyses are routinely performed in support of ongoing monitoring, routine fish health inspection, disease diagnosis and treatment, program evaluation and focused research conducted by Inland Fisheries.



Microscopic view of zebra mussel veligers.

Information and Regulations

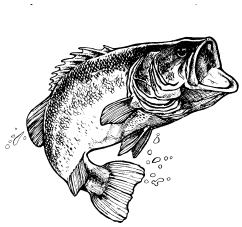
The Information and Regulations Branch works closely with the Fisheries Management and Research Branch to develop fishing regulation change proposals, obtain public input on the changes, and communicate the proposals to the Texas Parks and Wildlife Commission. Staff members also provide administrative support to division staff based in Austin and furnish expertise for division-wide and agency-wide assessments of relevant data. This group coordinates the issue of triploid grass carp permits and handles the freshwater fishing web pages, river access information including Texas Paddling Trails, Angler Recognition, and general information for the public. Staff are located at TPWD headquarters in Austin.

Texas Freshwater Fisheries Center

The Texas Freshwater Fisheries Center (TFFC) in Athens is a multipurpose facility that strives to provide educational experiences representing the breadth of the activities of the Inland Fisheries Division to the public. A main component of TFFC is serving as a working state fish hatchery that produces millions of fish each year to meet the stocking needs of fisheries managers. TFFC also serves as headquarters for the Toyota ShareLunker program and is home to the Texas Freshwater Fishing Hall of Fame. More than 30,000 people typically visit the center annually; at least 14,000 of those are youth aged 12 and under. The visitor center opens to individuals and families six days a week in spring and summer, and five days a week in fall and winter. In addition, TFFC provides high quality, intensive, hands-on outdoor and science educational experiences for K-12 students and educators. Special events are held throughout the year to encourage and enhance constituent participation. These activities result in connections to aquatic resources in Texas, information about Inland Fisheries management and hatchery efforts, and great fishing experiences. Due to the COVID-19 pandemic the facility closed to public visitation on March 14, 2020 and reopened with limited visitation and public operations on May 27, 2020.

The Texas Freshwater Fisheries Center Dive Theater is one of several attractions that visitors were unable to enjoy since the COVID-19 pandemic altered TFFC operations.

KEY ACCOMPLISHMENTS



Monitoring, Management Plans, and Permits

Reservoir Surveys — Staff conducted 326 surveys of fish populations, habitat, vegetation, water quality, angler access, and angler use on 153 reservoirs covering 1,196,740 surface acres of water. These led to the production of 47 comprehensive reservoir fisheries management plans designed to improve freshwater fishing opportunities.

River Surveys — Staff conducted 100 surveys to assess the status of fish communities, freshwater mussels, benthic invertebrates, aquatic and riparian habitats, and recreational use in 26 selected rivers and their tributaries throughout the state. Surveys were used to inform river recreation enhancements and riverscape conservation projects such as establishment of new paddling trails and fishing access leases, riparian invasive species control, permitting of instream sand and gravel mining, native riparian vegetation recolonization, freshwater mussel species conservation, fish passage improvements, and native fish restoration. Focal fish species included Guadalupe Bass, Alligator Gar, American Eel, Blue Sucker, Devils River Minnow, Largemouth Bass, Smallmouth Bass, Smallmouth Buffalo, White Bass, and imperiled West Texas fishes.

Fish Health Investigations — The Analytical Services Laboratory (and collaborating laboratories) investigated 26 fish health cases, analyzing approximately 1,304 fish. A total of 1,483 water samples were processed for detection of zebra mussel larvae and/or DNA. A total of 132 samples were analyzed for *Prymnesium parvum* (golden alga) toxicity and presence in public lakes. In addition, the laboratories completed 20 genetics projects with 1,806 samples.

Permits — The division issued 16 permits authorizing external individuals and organizations to introduce fish into public waters to enhance fishing opportunities. Another 56 permits were issued authorizing commercial harvest of nongame fishes from public waters. Introduction permits were also issued for aquatic plant restoration (6) and for relocation of aquatic resources (76) to minimize impacts of projects that temporarily disturbed aquatic habitats. Staff issued 155 permits or renewals authorizing possession of prohibited exotic fish, shellfish, or aquatic plants for the purpose of invasive plant management (12); fish/shrimp aquaculture (72); culture of water spinach as a food source (41); research (20); and zoological display (10). Staff issued 1,141 permits to stock triploid grass carp for biological control of nuisance vegetation, authorizing a total of 37,505 fish. One broodfish collection permit was also issued. Seven sand and gravel permits for disturbing or taking sedimentary material within navigable streams were issued.

Applied Management and Conservation Actions

River Fishing Access — Although Texas has over 40,000 miles of perennially flowing creeks and rivers, private ownership of riverbanks limits the number of river reaches in the state where anglers and paddlers can safely and legally gain access. To expand river fishing access, the Inland Fisheries Division has cooperated with local communities to open 78 Texas Paddling Trails. Additionally, through partnerships with private streamside landowners, 18 fishing access leases are currently being maintained that open nearly 200 river miles for bank, wade, and kayak fishing. In 2020, the Inland Fisheries Division secured over $1 million in federal funding through the U.S. Fish and Wildlife Service Sport Fish Restoration Boating Access Grant Program and the U.S. Department of Agriculture Voluntary Public Access and Habitat Incentive Program to maintain existing and support new river access areas during 2021–2023. The Inland Fisheries Division expects to add 15-20 new access areas over that timeframe.

Supporting Fish Habitat Improvements through the Texas Freshwater Fish Stamp — With fish habitat degradation identified as a significant contributing factor in fisheries declines nation-wide, a variety of national and multi-state fish habitat restoration initiatives were established in the early 2000s. The Inland Fisheries Division played an active leadership role in the formation of the Southeast Aquatic Resources Partnership (2004), National Fish Habitat Partnership (2006), Desert Fish Habitat Partnership (2009), and Reservoir Fisheries Habitat Partnership (2009). Establishment of these partnerships resulted in increased funding and capacity to deliver fish habitat improvements in Texas and adjacent states. Over the past decade, more than 80 fish habitat improvement projects were supported in Texas through those efforts, which restored or enhanced more than 10,000 acres of freshwater fish habitats. Meanwhile, for Texas to continue to offer arguably the best freshwater fishing opportunities in world, the scope and scale of fish habitat conservation efforts must be substantially increased. In recognition of this need in 2017, the 85th Texas Legislature expanded eligible uses of revenues from the Texas Freshwater Fish Stamp, a $5 stamp purchased in association with each freshwater fishing license, to allow funding to support fish habitat improvements. In preparation for potential appropriations from the Texas Legislature explicitly for that purpose beginning in state fiscal year 2022, the Inland Fisheries Division initiated planning for of a new grant program that would enable cooperation with communities and local conservation groups to restore and enhance fish habitats in creeks, rivers, and lakes throughout the state. Examples of potential fish habitat improvement projects to be supported through a new grant program include the deployment of artificial, rock, or woody structures to enhance fish-attracting cover in habitat-deficient rivers and lakes, native aquatic vegetation planting or riparian habitat improvements to stabilize shorelines or riverbanks, and removal of accumulated silt and excessive organic materials from lakes that have high potential for quality fishery development. During 2020, the Inland Fisheries Division made significant strides in design of a future grant program and launched a planning process to identify fish habitat improvements that are needed in creeks, rivers, and lakes throughout the state. The initial request for proposals through this grant program is expected to be announced in spring 2021, with the first set of projects slated to begin on September 1, 2021 contingent upon funding.

Zebra Mussel Monitoring & Prevention — Inland Fisheries and partners continued to intensively monitor water bodies (66) for early detection of zebra mussel infestations or population monitoring, using a combination of shoreline surveys, settlement samplers, plankton sampling, and DNA analysis. At year's end, 21 Texas lakes across five river basins were classified as infested, meaning the lake was determined to have an established, reproducing population. Zebra mussels or their larvae had been found more than once in nine other lakes and in rivers downstream of infested waters. As part of efforts to prevent further spread of this highly invasive species, Inland Fisheries continued to partner with the Texas Parks and Wildlife Department Communications Division and external cooperators to implement a targeted Protect the Lakes You Love public awareness outreach campaign encouraging boaters to clean, drain, and dry their boats to prevent the spread of aquatic invasive species.

Aquatic Vegetation Control — Inland Fisheries and partners continued to maintain control of giant salvinia and water hyacinth throughout Texas' reservoirs and river systems. TPWD's Inland Fisheries' integrated pest management (IPM) plan was greatly expanded in late 2015 (FY16) as a result of record funding provided by the State Legislature. The IPM plan included installing floating booms, conducting herbicide treatments, and releasing biocontrol agents as well as employing an effective giant salvinia outreach campaign.

In FY20, Inland Fisheries and partners treated 15,100 acres of giant salvinia and 1,050 acres of water hyacinth with herbicides. Since the beginning of FY16, nearly 80,000 acres of giant salvinia and nearly 8,000 acres of water hyacinth have been treated with herbicides by Inland Fisheries and partners.

Floating containment booms were utilized again in FY20 to prevent a new giant salvinia infestation from spreading lake-wide at Houston County Lake and to contain giant salvinia in the upper arms of Lake Raven (Huntsville State Park). The booms at Lake Raven helped maintain angler access and create giant salvinia weevil nurseries to help with giant salvinia control.

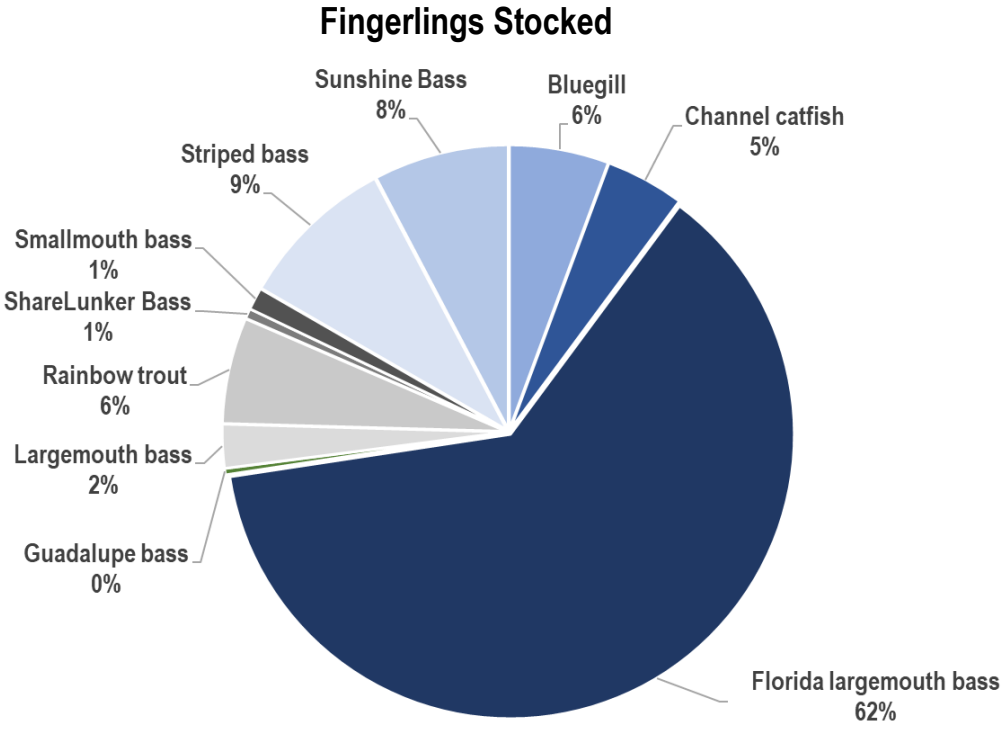
Also in FY20, Inland Fisheries released approximately 325,000 giant salvinia weevils among lakes Caddo, Naconiche, and Raven as well as in Big Hill Bayou, adjacent to the J.D. Murphree Wildlife Management Area. Since FY16, Inland Fisheries has released approximately 1,590,000 giant salvinia weevils throughout several reservoirs and river systems in east and southeast Texas. Inland Fisheries has documented self-sustaining populations of giant salvinia weevils in many of the stocked water bodies in southeast Texas.

Riparian Invasive Species — A variety of projects are underway to manage nonnative, invasive plants that grow along the banks of Texas rivers and streams. When left unchecked, these invaders often crowd out native plants and change the food webs that native fish depend on. Many of the worst offenders can also reduce stream flow, alter soil chemistry, worsen flooding, increase wildfire risk, and harbor other nonnatives such as feral hogs.

- Watershed-scale management of saltcedar in the Upper Brazos River Native Fish Conservation Area began in late 2015 (FY16), spanning more than 600 river miles designated as critical habitat for Smalleye Shiner and Sharpnose Shiner where saltcedar is contributing to habitat degradation. The project is a partnership with the U.S. Fish and Wildlife Service and other agencies, private landowners, and researchers to manage saltcedar and reduce its negative impacts over time. To date, 15,659 acres of saltcedar have been treated across more than 120 properties in the project area, with 1,773 acres treated in FY20. Eight research sites have also been established to study the vegetation community, river geomorphology, and hydrology and monitoring is ongoing.
- Inland Fisheries' Healthy Creeks Initiative has been actively seeking out and treating infestations of Arundo (giant cane) in headwater streams of the Hill Country since 2015. Currently, over 325 landowner partners on the Blanco, Guadalupe, Llano, Medina, and Pedernales rivers are enrolled in the program, which expanded coverage to include a seventh county in 2020. Efforts are expected to benefit Guadalupe Bass and other native fish species.
- Inland Fisheries staff conducted an aerial survey of Arundo along approximately 160 river miles in the Llano River watershed. Data are being used to guide expansion of outreach and management efforts.
- Inland Fisheries also continues to support control of Arundo in the Nueces River and its tributaries through cost-share agreements. Now in the 11th year of the project, the private properties of over 220 landowners along 90 river miles in four counties have been monitored and treated to improve boater access and benefit native fish.
- Since 2010, TPWD has been working with partners and volunteers to treat nonnative elephant ear plants on the upper Llano River. Approximately 53 river miles are currently in management status.
- At Gorman Creek in Colorado Bend State Park, Inland Fisheries staff continued spot treatments of elephant ears. The infestation's extent has been greatly reduced but will need continued monitoring.

- Inland Fisheries staff conducted initial surveys of invasive riparian plants along San Felipe Creek in Del Rio. Surveyors noted the presence of nonnative Chinaberry, Chinese tallow, saltcedar, glossy privet, and Japanese honeysuckle, as well as large monoculture stands of Arundo and elephant ears. Management recommendations for Arundo control and streamside restoration will be presented to the City of Del Rio.

Hatcheries and Stocking — Hatcheries are an important component of Inland Fisheries resource management. Fish stocking is utilized as one of several essential tools to protect, manage and enhance statewide fisheries resources as well as achieve specific fisheries resource objectives. Stocked fish must meet specific stocking requirements including number, size, genetic integrity, disease-free status, and time of stocking. Hatchery stocked fish are used to start new fish populations, supplement existing fish populations, restore depleted or threatened populations, provide fish in small urban lakes, enhance population genetics and performance, take advantage of improved habitat, and increase angler opportunities and success. Additionally, Inland Fisheries hatcheries also play a significant role in public education and outreach. Hatchery personnel are involved at public outreach programs and agency sponsored fishing events as well as providing educational hatchery tours to the general public and students of all ages.

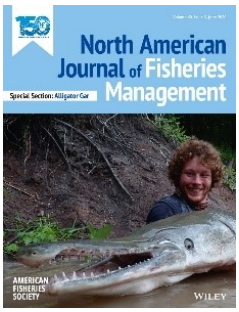


A total of 6.15 million fingerlings were produced and stocked in public water. Species stocked included Largemouth Bass, Guadalupe Bass, Striped Bass and hybrid Striped Bass, Channel Catfish, Smallmouth Bass, Bluegill , Rainbow Trout, and Red Drum. Rainbow Trout are acquired from a commercial producer and red drum are produced by the Coastal Fisheries Division. Additionally, a portion of the advanced Channel Catfish fingerings (12”-14”) stocked in support of the Neighborhood Fishin’ Program are acquired from a commercial producer. Most of the fingerlings stocked are Largemouth Bass (62%), or either Striped Bass or hybrid Striped Bass (14%), which collectively comprise approximately 76% of the total number of fingerlings stocked. Hatchery staff drove more than 284,103 miles during more than 955 stocking trips to distribute the fish to more than 369 water bodies throughout Texas.

Regulation Updates — The following regulation changes were adopted by the Texas Parks and Wildlife Commission to improve angling opportunities and protect fisheries resources.

- Moss Lake (Cooke County) – Enacted a 16-inch maximum length limit for Largemouth Bass.
- Brushy Creek Lake and Brushy Creek (Williamson County)
    - Modified harvest regulations for Brushy Creek Lake by changing to the statewide 14-inch limit for Largemouth Bass
    - On the section of Brushy Creek downstream from the lake to the Williamson/Milam County line reduced Blue and Channel Catfish daily bag limit to five and added gear restrictions (pole and line only).
- Lake Nasworthy (Tom Green County) – Modified the harvest regulations for Black and White Crappie by removing the current 10-inch minimum length limit.
- Lake Texoma and the Texas waters of the Red River below Denison Dam (Cooke and Grayson counties)
    - On Lake Texoma for Blue and Channel Catfish, changed to no minimum length limit. For Flathead Catfish, changed to no minimum length limit.
    - In the Texas waters of the Red River from Denison Dam downstream to the mouth of Shawnee Creek for Blue and Channel Catfish, changed to no minimum length limit and 15-fish daily bag limit, which includes a limit of one Blue Catfish 30 inches or greater per day. For Flathead Catfish, changed to no minimum length limit.
- Falcon International Reservoir (Starr and Zapata counties) – The five-fish daily bag for Alligator Gar was continued (sunset provision was removed).

Research Highlights



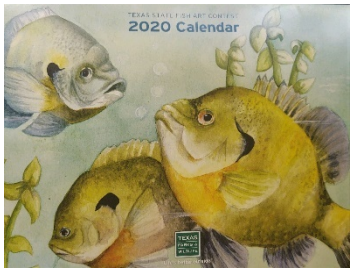
Publication of Research in Symposia on Alligator Gar and Catfish – Alligator Gar and catfish fisheries continue to increase in popularity in Texas and throughout the U.S. TPWD Inland Fisheries scientists have worked to contribute to the scientific knowledge of these species and the anglers that pursue them. Much of this work was formally disseminated to the scientific community in 2020 through presentations and publication in two American Fisheries Society sponsored symposia. The first was in a special section of the North American Journal of Fisheries Management (NAJFM) focused on Alligator Gar where Inland Fisheries scientists contributed to 6 of the 13 peer-reviewed publications. The second symposium was Catfish 2020, held in Little Rock, Arkansas in February. Inland Fisheries scientists contributed to five papers submitted to the proceedings which publication is anticipated in the NAJFM as a special issue in 2021.

Focused Research to Inform Conservation of Freshwater Mussels – Of the 52 species of freshwater mussels known to occur in Texas, TPWD has listed 15 as state-threatened, one as federally endangered, and 10 that are being considered for federal listing. This has afforded these species with additional protections and prioritization to fund research to address associated science needs. Investments by TPWD and the U.S. Fish and Wildlife Service from 2016-2020 have been about $1.4 million, primarily through State Wildlife Grants and Endangered Species Section 6 Grants. Listings have also encouraged other Texas state agencies to invest in freshwater mussel research, including the Texas Department of Transportation and the Texas Comptroller of Public Accounts' Natural Resources Program. Collectively, research investments in freshwater mussels in Texas have increased understanding of distribution, population status, life history requirements, flow-ecology relations, fish hosts, chemical and thermal tolerances, genetics, and conservation needs. This focused effort was highlighted by Inland Fisheries scientists contributing to six peer-reviewed publications in this past year.

Outreach

Sharing the Great Outdoors — Texas Freshwater Fisheries Center (TFFC) is our division's primary outreach and education center. In 2020, TFFC provided facility tours, workshops, aquatic education classes, and other special events. Visitors included 16,382 people from 133 Texas counties, 39 states and four foreign countries. The Center provided hands-on fishing for 6,049 visitors, with 210 receiving First Fish Awards. A total of 3,450 people toured the hatchery ponds via 139 guided tram trips. TFFC hosted 48 school and youth group trips that included 2,200 participants, of which 700 were recorded as minorities. In addition to TFFC, all 14 Fisheries Management District offices, the Heart of the Hills Fisheries Science Center, and the A.E. Wood State Fish Hatchery also conducted fisheries outreach events.

State-Fish Art Contest — TFFC hosts the Texas division of this contest, which is sponsored by the national non-profit Wildlife Forever and Gulf States Toyota, through the Toyota Bassmaster Texas Fest. In 2020, 286 entries from grades K-12 were submitted to the program. The top 10 contestants in each of four grade divisions were recognized. All entries received certificates. First-place winners in each of the four age groups advanced to the national level and competed against winners from other states. Three Texas winners were announced as national winners by Wildlife Forever. Amber Li's steelhead trout won first place in the nation for the 7th through 9th grade category. Eunice Kim's Cutthroat Trout won second place in the 10th through 12th grade division and Philip Kim's northern pike was selected as the third-place winner in the 4th through 6th grade group. Amber Li's essay, "Steelhead Trout, A Short Biography" also won second place nationwide in the grade 7-9 category. A 2020 calendar was published highlighting the top three entries in each of the four grade categories from 2019.



Merit Badge University — TFFC partnered with Boy Scouts of America Circle 10 to plan a conservation themed Merit Badge University on the TFFC campus. This event typically hosts more than 500 scouts from across northeast Texas to be educated in such topics as fly-fishing, archery, and plant identification. Due to COVID-19 this event was postponed and is planned to be conducted in October in partnership with TFFC at the Clements Scout Ranch.

Toyota ShareLunker Program — After three decades of partnering with anglers to collect and breed big bass, the Toyota ShareLunker Program relaunched in 2018 with new goals that would create much broader public participation. Since that time, ShareLunker has partnered with anglers year-round (January 1 – December 31) to collect catch and genetic data on bass 8 pounds or 24 inches and larger, and to collect bass 13 pounds and larger during our ShareLunker collection season (January – March) for selective breeding. The relaunch was a collaborative effort of TPWD's Inland Fisheries, Communications, and Information Technology Divisions, along with Toyota and several new external donor partners. New branding, media campaign, website and award-winning mobile app were among the accomplishments of this team. Thus far, in the third season of ShareLunker 2.0, more than 4,000 additional anglers registered to participate increasing the number of app users to more than 11,000 anglers. This increase in users was greatly supported by a partnership with the TPWD marketing team to conduct a digital ad campaign. Thus far, 228 entries from 72 lakes across the state were approved into the program. Of those entries: 163 were Lunker Class (8+ lbs.), 61 Elite Class (10+ lbs.), 0 Legend Class (13+ lbs.), 4 Legacy Class (13+ lbs. and donated for spawning). Collection of this angler-driven data is vital in evaluating the impact of ShareLunker stockings as well as understanding the big bass potential of each reservoir. Knowledge gained can be used to improve management of fisheries and help make Texas bass fishing better.

Angler James Maupin caught the 13.15-pounds ShareLunker 585 from O.H. Ivie Reservoir on March 29.

Developing ShareLunker offspring from Legacy Class fish donated to the program as hatchery broodstock continues to be a major focus of the program. To date, two (2) year classes of broodstock (6,600 fish) have been developed and will be placed into production in the spring of 2022. Additionally, hatchery staff stocked 35,040 fingerlings from the selective breeding of the Legacy Class bass. More than 18,767 of those fingerlings were stocked into reservoirs that loaned a Legacy Class fish. The remaining offspring were stocked in other reservoirs to help meet management objectives including the small waters that will become part of the new Bois d'arc Reservoir under construction in Fannin County. The 2019 Bois d'arc Reservoir ShareLunker stocking was filmed and aired as part of an episode of the "Lone Star Law" television series on Animal Planet.

Texas Freshwater Fishing Hall of Fame and ShareLunker Promotion — In 2020, the Texas Freshwater Fishing Hall of Fame and Toyota ShareLunker were planned to be featured at the Toyota Bassmaster Texas Fest, an Elite Series Bass Tournament benefiting the Texas Parks and Wildlife Department. Due to the covid-19 pandemic, this event was postponed until November 5-8, 2020. Plans include leveraging relationships with Bassmaster and Gulf States Toyota to deliver on-stage award presentations, online video coverage, and written articles in Bassmaster Magazine and Bassmaster.com. Plans include promoting these programs and related videos on Bassmaster Live, ESPN network television, and though digital advertising media on Bassmaster.com. The effort will help increase statewide and national exposure of these valued programs supported by our department at a reduced cost to the agency. The Texas Freshwater Fishing Hall of Fame 2020 Inductee was Shane Wilson and three anglers earned ShareLunker awards by contributing four fish.

The 2020 Texas Freshwater Fishing Hall of Fame inductee was Shane Wilson, founder/CEO of Fishing's Future.

Infrastructure Enhancements

Construction and renovation efforts continued at several facilities (table below) including the Tyler Nature Center, Possum Kingdom and Dundee Fish Hatcheries and Corpus Christi District Office in Mathis. Work began on the Tyler Nature Center. The new facility will accommodate the Tyler District as well as serve as the regional headquarters for State Parks, Wildlife, and Law Enforcement. In response to the growing threat of zebra mussels, work continued on a microfiltration facility at the Possum Kingdom Hatchery. The project is expected to be compete in early FY21. Design for an ozone disinfection system and effluent pump at the Dundee Hatchery continues to progress with construction expected to begin during FY21. Additionally, design on the new district fisheries office in Mathis continues to progress. The project will construct a new office, and maintenance and storage space on available property at Lake Corpus Christi State Park. The project will also incorporate office, maintenance, and storage space for State Park staff.

IF Capital Projects

	Project #	Phase	Expended
Tyler Nature Center*	126484	Design/Construction	$16,094,865.55
Micro-filtration at PK	1210301	Construction	$2,457,839.80
Pump back at Dundee	1110061	Design	$445,074.52
Ozone Disinfection at Dundee	128632	Design	$257,013.91
Mathis Office Replacement	127144	Design	$154,212.09
			$19,409,005.87

*Joint project with State Parks, Wildlife and Law Enforcement Divisions; dollars expended include all divisions (Inland Fisheries portion was $1,719,268.70)

Agency-wide Collaboration

Revision of the Lists of State Threatened and Endangered Species — During 2020, Inland Fisheries Division biologists served on an interdisciplinary and cross-divisional Threatened and Endangered Species Working Group alongside representatives from the TPWD Coastal Fisheries and Wildlife divisions. The Working Group was tasked with coordinating the development and adoption of consistent methodologies for assessing the conservation status of Texas fish, wildlife, and plants and for coordinating the development of science-based and data-driven recommendations for revision of the State Threatened and State Endangered species lists. The Inland Fisheries Division coordinated a statewide assessment of the conservation status of Texas freshwater fishes, facilitated review and input by subject matter experts from cooperating universities, and provided recommended revisions to the species lists, which were adopted by the Texas Parks and Wildlife Commission. As a result, 44 of Texas 191 species of freshwater fish are now included on the lists of State Threatened or State Endangered Species, with 14 added in 2020. A journal article profiling this effort was accepted for publication by the Journal of the Southeastern Association of Fish and Wildlife Agencies (anticipated publication in April 2021). The article profiles the species conservation status assessment approach, and shares recommendations and lessons learned transferrable to other states that maintain similar state-based protected species lists.

Celebrating the 10th Anniversary of TPWD's Watershed Conservation Initiative — In 2010, the TPWD Wildlife and Inland Fisheries divisions began collaborating on the implementation of a watershed conservation initiative. The purpose of the initiative was to plan and deliver landscape-scale conservation of upland, riparian, and instream habitats within priority watersheds, and to facilitate a holistic, multi-species approach to conservation of fish and wildlife resources. The Landowner Incentive Program's "Watershed Funding Series" was established as a mechanism to provide technical guidance, planning assistance, and financial incentives to cooperating landowners. From 2010-2020, more than $2.1 million (1:1 cost-share with cooperators; $4.2 million total) was invested in 160 projects that restored over 60,000 acres within priority watersheds, such as the Llano, Pedernales, and Blanco rivers, and Terlingua and Alamito creeks. 2020 marked the 10th anniversary of this initiative, which continues be implemented through an active partnership involving the Wildlife Division Private Lands and Public Hunting Program and the Inland Fisheries Division Habitat Conservation Branch.

Harmful or Potentially Harmful Fish, Shellfish and Aquatic Plants Rules — Inland Fisheries staff with assistance from the Legal, Law Enforcement, and Legal divisions, competed a multiyear process to developed proposed updates to the rules for exotic fish, shellfish and aquatic plants. The proposed changes significantly reorganize the existing rules to enhance accessibility, meet the changing needs of the regulated community, and address current and potential future threats posed by these exotic species. The proposal would also establish fees for new permits and update the aquaculture permit fees to align with new permit intervals and inspection periods. The TPW Commission will review and consider the proposed changes for approval in November 2020

Responding and adapting to the COVID-19 Pandemic — The COVID-19 global pandemic impacted many aspects of Division operations during FY 2020. Normal activities were modified, restricted or deferred until they could be resumed safely out of concern for the health and wellbeing of Division staff and their families as well as in response to local, regional and statewide executive orders. Staff who could productively work from home were asked to do so. Staff whose functional job description could not be completed in whole or in part off site or from home were granted emergency leave as necessary. Restrictions on travel and in person meetings constrained traditional approaches to collaborative work groups. However, with the judicious use

of online technology such as MS Teams, Zoom and Skype allowed staff adapted quickly and effectively to maintain functional teams and collaborative work groups. Additionally, workspaces, work assignments and scheduling were modified to segregate or group staff and provide physical distance along with recommended personal protection equipment (face masks) to help control close contact and potential spread of the COVID-19 virus. Hatchery production as well as operations at the Texas Freshwater Fisheries Center (TFFC) were significantly impacted by partial facilities closures. Hatchery production of key species were postponed or deferred. Additionally, after initialing closing to the public, limited public access to amenities at TFFC were resumed once adequate protocols to protect facility staff and the public were put into place and local restrictions were lifted allowing groups of people to gather in outdoor venues.

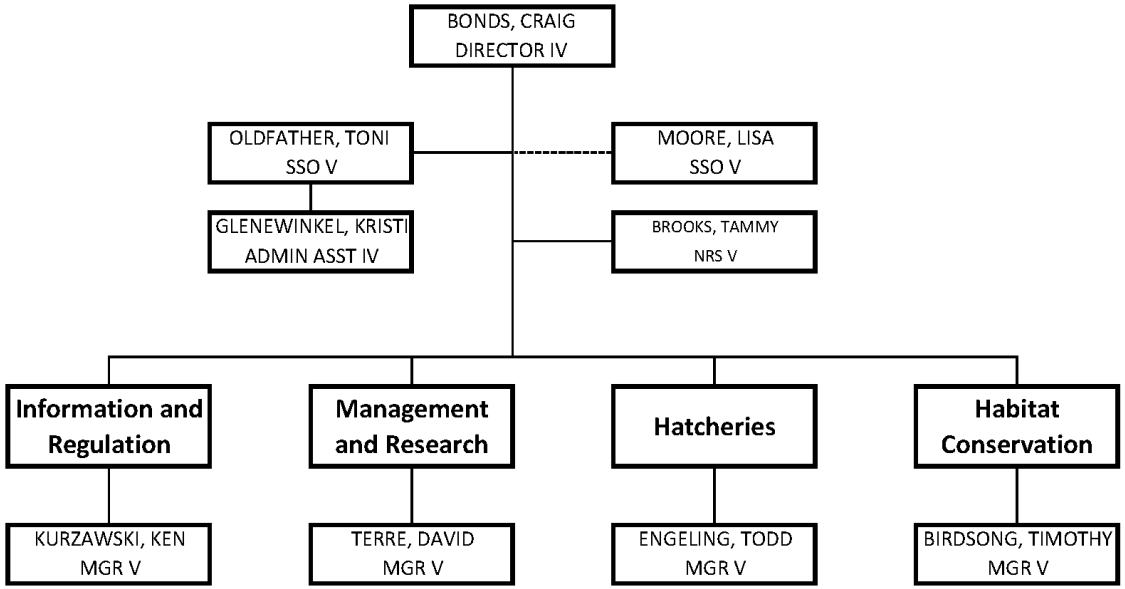
APPENDIX

Organization Charts

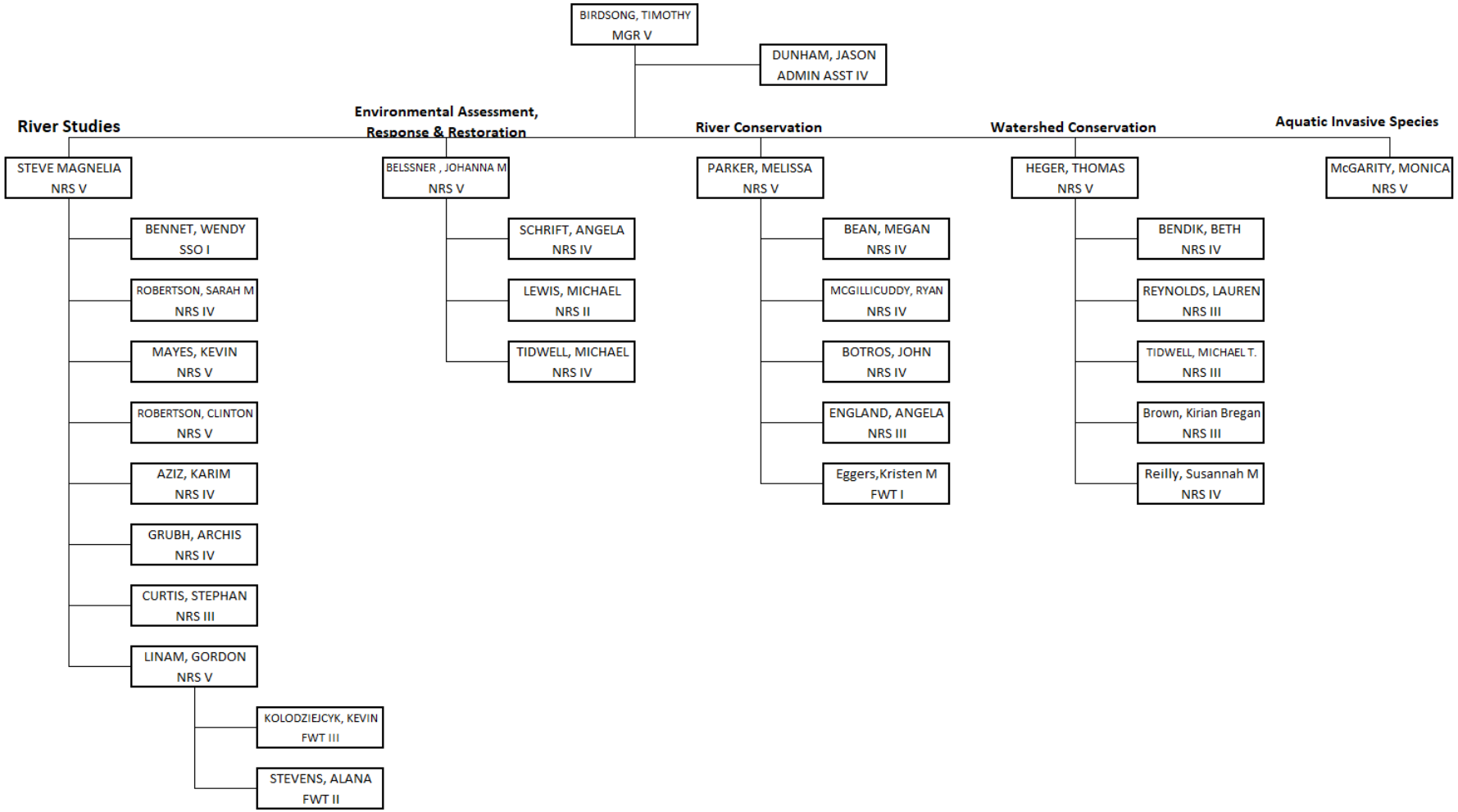
Legend

Abbreviation	Job Title
ADMIN ASST	Administrative Assistant
FWT	Fish and Wildlife Tech
INV & STORE SPEC	Inventory & Store Specialist
MAINT SUPER	Maintenance Supervisor
MGR	Manager
NRS	Natural Resources Specialist
PS	Program Specialist
SSO	Staff Services Officer
WEB ADMIN	Web Administrator

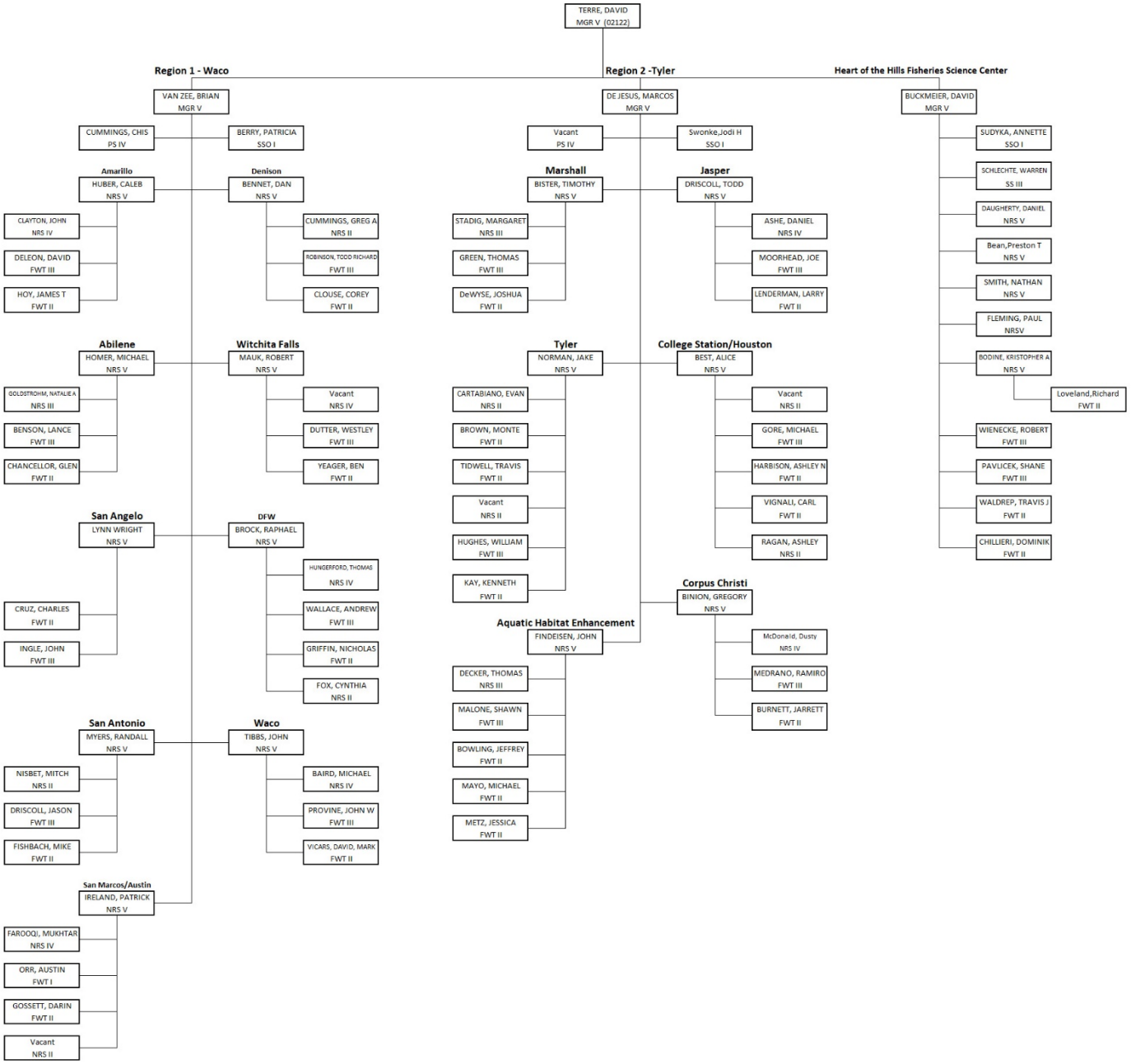
Inland Fisheries Administration



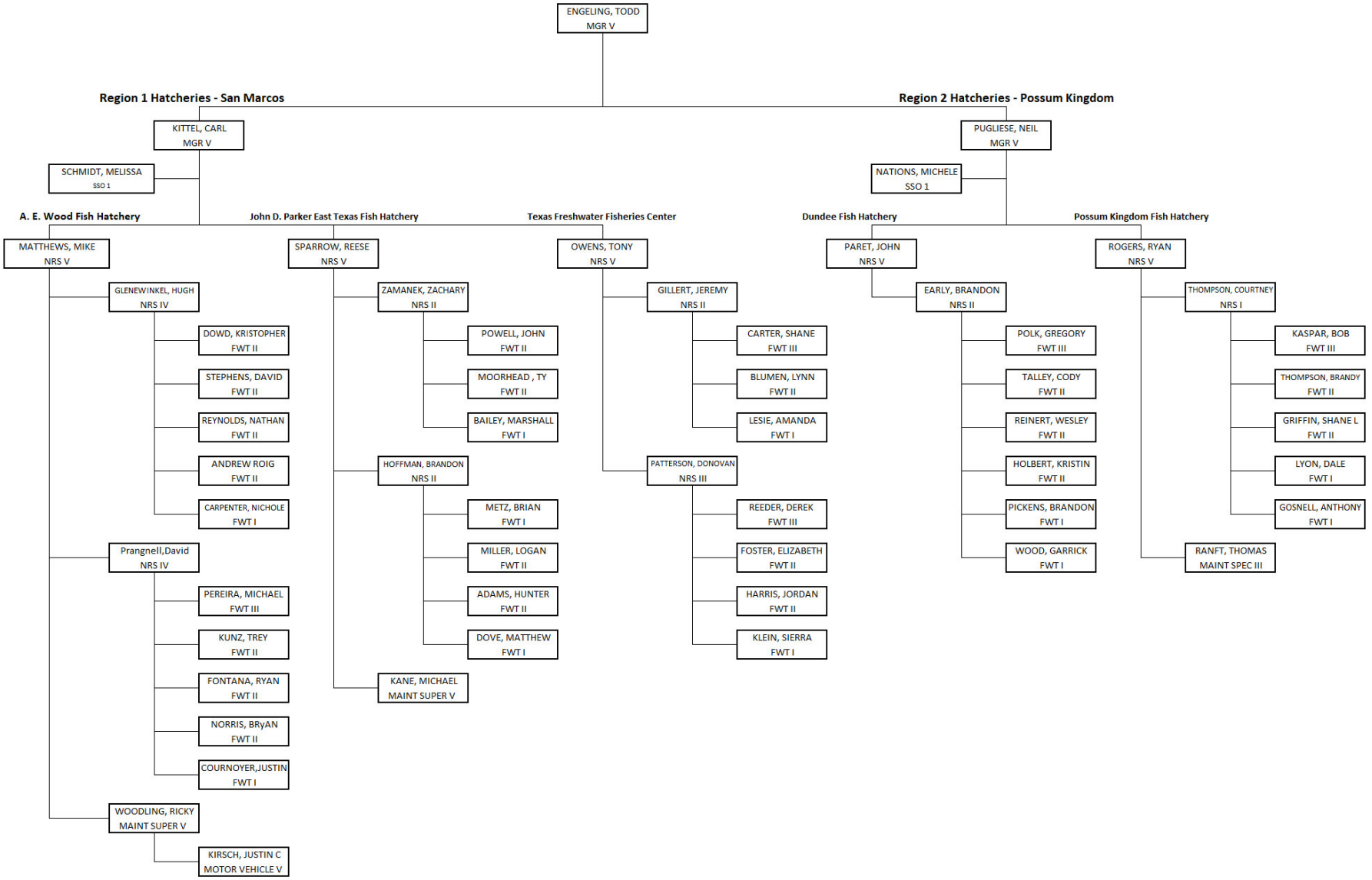
Habitat Conservation



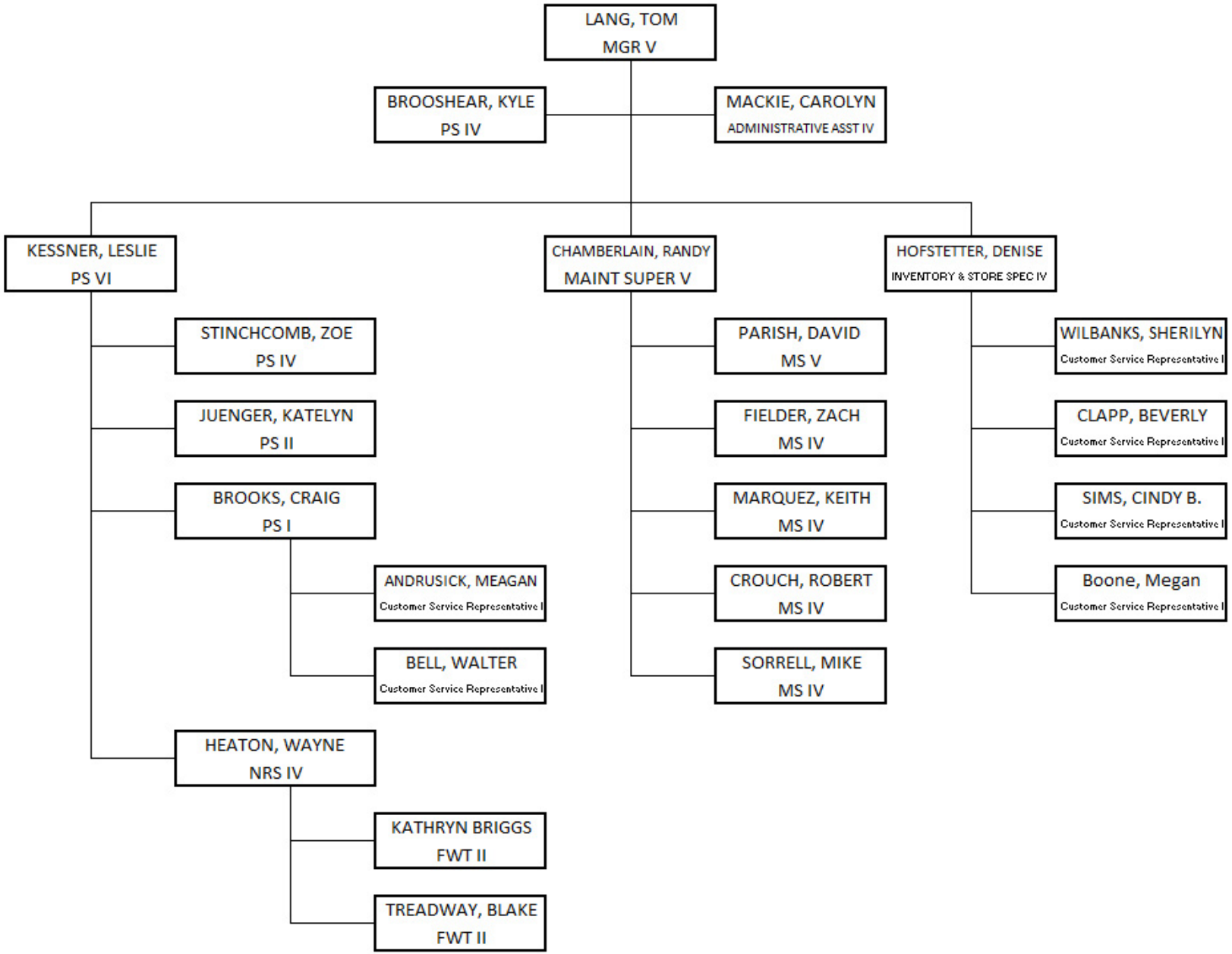
Fisheries Management and Research



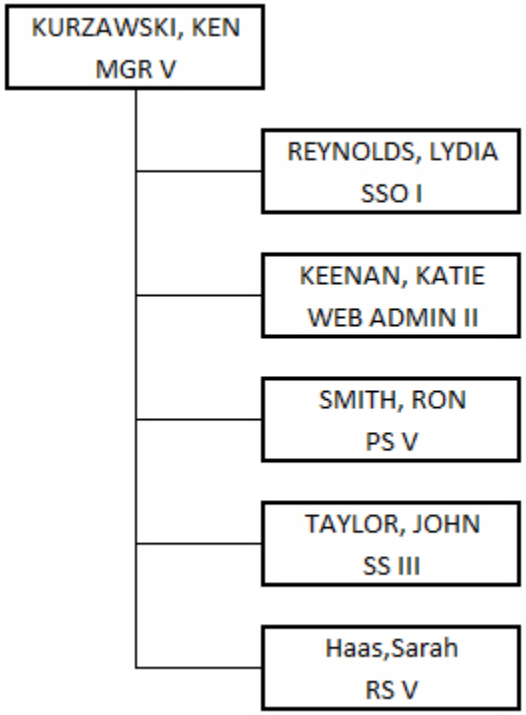
Hatcheries


ENGELING, TODD
MGR V
Region 1 Hatcheries - San Marcos
Region 2 Hatcheries - Possum Kingdom
KITTEL, CARL
MGR V
SCHMIDT, MELISSA
SSO 1
PUGLIESE, NEIL
MGR V
NATIONS, MICHELE
SSO 1
A. E. Wood Fish Hatchery
John D. Parker East Texas Fish Hatchery
Texas Freshwater Fisheries Center
Dundee Fish Hatchery
Possum Kingdom Fish Hatchery
MATTHEWS, MIKE
NRS V
SPARROW, REESE
NRS V
OWENS, TONY
NRS V
PARET, JOHN
NRS V
ROGERS, RYAN
NRS V
GLENEWINKEL, HUGH
NRS IV
DOWD, KRISTOPHER
FWT II
STEPHENS, DAVID
FWT II
REYNOLDS, NATHAN
FWT II
ANDREW ROIG
FWT II
CARPENTER, NICHOLE
FWT I
Prangnell,David
NRS IV
PEREIRA, MICHAEL
FWT III
KUNZ, TREY
FWT II
FONTANA, RYAN
FWT II
NORRIS, BRyAN
FWT II
COURNOYER,JUSTIN
FWT I
WOODLING, RICKY
MAINT SUPER V
KIRSCH, JUSTIN C
MOTOR VEHICLE V
ZAMANEK, ZACHARY
NRS II
POWELL, JOHN
FWT II
MOORHEAD , TY
FWT II
BAILEY, MARSHALL
FWT I
HOFFMAN, BRANDON
NRS II
METZ, BRIAN
FWT I
MILLER, LOGAN
FWT II
ADAMS, HUNTER
FWT II
DOVE, MATTHEW
FWT I
KANE, MICHAEL
MAINT SUPER V
GILLERT, JEREMY
NRS II
CARTER, SHANE
FWT III
BLUMEN, LYNN
FWT II
LESIE, AMANDA
FWT I
PATTERSON, DONOVAN
NRS III
REEDER, DEREK
FWT III
FOSTER, ELIZABETH
FWT II
HARRIS, JORDAN
FWT II
KLEIN, SIERRA
FWT I
EARLY, BRANDON
NRS II
POLK, GREGORY
FWT III
TALLEY, CODY
FWT II
REINERT, WESLEY
FWT II
HOLBERT, KRISTIN
FWT II
PICKENS, BRANDON
FWT I
WOOD, GARRICK
FWT I
THOMPSON, COURTNEY
NRS I
KASPAR, BOB
FWT III
THOMPSON, BRANDY
FWT II
GRIFFIN, SHANE L
FWT II
LYON, DALE
FWT I
GOSNELL, ANTHONY
FWT I
RANFT, THOMAS
MAINT SPEC III

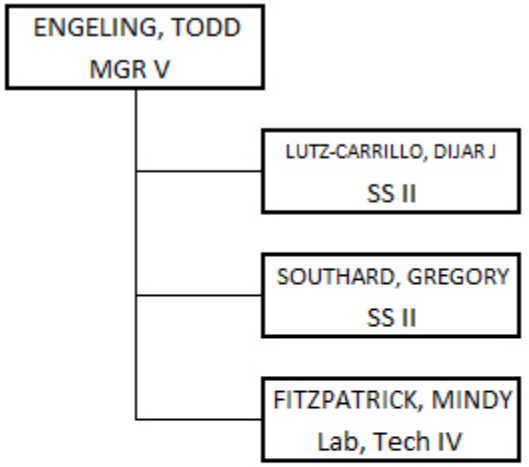
Texas Freshwater Fisheries Center



Information and Regulations



Analytical Services



Stocking Reports

Inland Fisheries Hatchery Stockings

Species	Adult	Fingerling	Fry	Total
Blue Catfish	4	382,051		382,055
Bluegill	1,490	35,347		36,837
Brown Trout	1,350	944		2,294
Channel Catfish	1,683	1,363,109		1,364,792
Channel Catfish x Blue Catfish		60,157		60,157
Fathead Minnow	11480			11,480
Flathead Catfish		10,513		10,513
Florida Largemouth Bass		8,975,885	1,719,931	10,695,816
Guadalupe Bass	64			64
Largemouth Bass	120	281,423	121,005	402,548
Palmetto Bass (Striped X White Bass Hybrid)		474,370		474,370
Rainbow Trout	359,820	76		359,896
Red Drum		1,217,078		1,217,078
Redear Sunfish	6			6
ShareLunker Largemouth Bass		55,376		55,376
Smallmouth Bass		74,309		74,309
Striped Bass	10	1,175,569		1,175,579
Sunshine bass (White Bass x Striped Bass Hybrid)		240,937	1,000,000	1,240,937
Threadfin Shad	500	250		750
Walleye			1,707,410	1,707,410
White Crappie		140		140
Total	376,527	14,347,534	4,548,346	19,272,407

Research and Special Projects

Research works to develop innovative solutions and improve the efficiency and effectiveness of Division operations and programs. This year progress was made on 47 studies that focused on:

Evaluating fish habitat use, enhancement efforts, and assessment tools (Five studies)

Highlights:

- Understand post-flood habitat and fish assemblage recovery
- Assess use of artificial habitats by fish and effect on angling success
- Efficacy of mapping underwater habitats using side-scan sonar

Filling data gaps for species of greatest conservation need and associated fisheries (12 studies)

Highlights:

- Develop genetic tools and assess hybridization in Micropterid species
- Assess Guadalupe Bass populations and tools to reduce hybridization
- Evaluate population structure and hybridization in Gambusia and Cyprinodon species
- Quantify population and recruitment dynamics of Alligator Gar
- Determine age and swimming performance of Blue Sucker

Largemouth bass management and genetics (Six studies)

Highlights:

- Use genetics to evaluate ShareLunker and Florida Bass stockings
- Quantify habitat use and movement of Largemouth Bass in large reservoirs
- Estimate contribution of stocked northern Largemouth Bass in power plant reservoirs

Informing catfish management and conservation (Six studies)

Highlights:

- Assess customer segmentation of catfish anglers
- Evaluate relative catchability of Channel Catfish and hybrids by anglers
- Assess population structure and hybridization in Headwater Catfish

Assessing and reducing threats to fisheries (Four studies)

Highlights:

- Assess impacts of trotline “ghost-fishing”
- Investigate Golden Algae blooms and control methods
- Evaluate strategies to reduce Zebra Mussel veliger transport

Increasing fishing participation (Two studies)

Highlights:

- Develop partnerships and marketing techniques to recruit, retain, and reactivate anglers

Increasing hatchery production of fish and evaluating fish production protocols (Six studies)

Highlights:

- Assess Morone fry deformities as related to maternal stress
- Evaluate effects of feeding regimes and feed utilization in Morones and Koi

Evaluating current management strategies and development of new techniques (Six studies)

Highlights:

- Assess utility of self-reported creel data
- Evaluate various approaches to providing hybrid Striped Bass fisheries
- Validate age estimation procedures for Alligator Gar and Guadalupe Bass

Publications and Presentations

Scientific Publications and Reports

Bennett, D.L., T. J. Bister, R. A. Ott, Jr. 2020. Using recreation-grade side-scan sonar to produce classified maps of submerged aquatic vegetation. North American Journal of Fisheries Management 40:145-153.

Birdsong, T. W., S. Magnelia, J. Botros, M. Bean, A. Hoffman, M. M. Parker, S. Robertson. 2020. Texas river access and conservation areas: a case study in use of riparian leases to enhance angler access and facilitate river stewardship. Journal of the Southeastern Association of Fish and Wildlife Agencies 7:114-122.

Bodine, K. A., R. A. Ott, D. L. Bennett, J. D. Norman, and J. W. Schlechte. 2020. Round 2: A four-year follow-up evaluation of a Flathead Catfish population exposed to hand fishing. North American Journal of Fisheries Management. Published online, DOI: 10.1002/nafm.10476

Caldwell, T. G., B. D. Wolaver, T. Bongiovanni, J. P. Pierre, S. Robertson, C. Abolt, and B. R. Scanlon. 2020. Spring discharge and thermal regime of a groundwater dependent ecosystem in an arid karst environment. Journal of Hydrology 587:1–14. Published online, DOI: 10.1016/j.jhydrol.2020.124947

Daugherty, D. J., A. H. Andrews, and N. G. Smith. 2020. Otolith-based age estimates of Alligator Gar assessed using bomb radiocarbon dating to greater than 60 years. North American Journal of Fisheries Management 40:613-621.

Daugherty, D. J. and D. L. Bennett. 2019. A review of hooking mortality, associated influential factors, and angling gear restrictions, with implications for management of the Alligator Gar. Management Data Series number 297. Texas Parks and Wildlife Department, Austin.

Driscoll, T., W. Schlechte, D. Daugherty, and S. Haas. 2020. Evaluating material type and configuration on fish attractor effectiveness in a Texas reservoir. Journal of the Southeastern Association of Fish and Wildlife Agencies 7:144-152.

Dudding, J. F., M. Hart, J. M. Khan, C. R. Robertson, R. Lopez, and C. R. Randklev. 2020. Reproductive life history of 2 imperiled and 1 widely distributed freshwater mussel species from the southwestern United States. Freshwater Science. Published online, DOI: 10.1086/707774

Harried B. L., D. J. Daugherty, D. J. Hoeinghaus, A. P. Roberts, B. J. Venables, T. M. Sutton, and B. K. Soulen. 2020. Population contributions of large females may be eroded by contaminant body burden and maternal transfer: a case study of Alligator Gar. North American Journal of Fisheries Management 40:566-579.

Khan, J. M., J. Dudding, M. Hart, C. R. Robertson, R. Lopez, C. R. Randklev. 2020. Linking flow and upper thermal limits of freshwater mussels to inform environmental flow benchmarks. Freshwater Biology. Published online, DOI: 10.1111/fwb.13598

Kreiser, B. R., D. J. Daugherty, D. L. Buckmeier, N. G. Smith, and E. B. Newsome. 2020. Sibship analysis to characterize Alligator Gar reproductive contributions in two Texas systems. North American Journal of Fisheries Management 40:555-565.

Magnelia, S. J., and G. A. Cummings. 2020. Fate and habitat use of Rainbow Trout stocked in Canyon Reservoir Tailrace. Management Data Series number 299. Texas Parks and Wildlife Department, Austin.

Myers, R., M. Nisbet, S. Harrison. 2020. Alligator Gar reproduction, growth, and recruitment in Falcon Reservoir, Texas. Journal of the Southeastern Association of Fish and Wildlife Agencies 7:84.92.

Prangnell, D., and G. Steinmetz. 2019. Nitrogen fertilizer reduction and nutrient budgets in Florida Largemouth Bass *Micropterus salmoides floridanus* fingerling rearing ponds. Management Data Series number 298. Texas Parks and Wildlife Department, Austin.

Randklev, C. R., S. Wolverton, N. A. Johnson, C. H. Smith, T. P. DuBose, C. R. Robertson, J. Conley. 2020. The utility of zooarchaeological data to guide listing efforts for an imperiled mussel species (Bivalvia: Unionidae: Pleurobema riddellii). Conservation Science and Practice. Published online, DOI: 10.1111/csp2.253

Randklev, C. R., M. A. Hart, J. M. Khan, E. T. Tsakiris, and C. R. Robertson. 2019. Hydraulic requirements of freshwater mussels (Unionidae) and a conceptual framework for how they respond to high flows. Exosphere 10(12):1-19.

Robertson, S., J. Botros, S. Curtis, A. Grubh, P. Ireland, G. Linam, M. Parker, C. Robertson and M. Casarez. 2020. Middle Colorado River Bioassessment Report. River Studies Report number 30. Texas Parks and Wildlife Department, Austin.

Robertson J. J., T. M. Swannack, M. McGarrity, and A. N. Schwalb. 2020. Zebra mussel invasion of Texas lakes: estimating dispersal potential via boats. Biological Invasions 22:3425–3455.

Sakaris, P. C., D. L. Buckmeier, N. G. Smith, and D. J. Daugherty. 2019. Daily age estimation reveals rapid growth of age-0 Alligator Gar in the wild. Journal of Applied Ichthyology 35:1218-1224.

Saylam, K., A. R. Averett, L. Costard, B. D. Wolaver, and S. Robertson. 2020. Multi-sensor approach to improve bathymetric lidar mapping of semi-arid groundwater-dependent streams: Devils River, Texas. Remote Sensing 2020:1–24.

Shoup, D. E., and K. A. Bodine. 2020. Effect of sample duration on catch rate and size structure data for Blue Catfish by low-frequency electrofishing. North American Journal of Fisheries Management. Published online, DOI: 10.1002/nafm.10479

Smith, N. G., D. L. Buckmeier, D. J. Daugherty, D. L. Bennett, P. C. Sakaris, and C. R. Robertson. 2020. Hydrologic correlates of reproductive success in the Alligator Gar. North American Journal of Fisheries Management 40:595-606.

Smith, N. G., D. J. Daugherty, E. L. Brinkman, M. G. Wegener, B. R. Kreiser, A. M. Ferrara, K. D. Kimmel, and S. R. David. 2020. Advances in the conservation and management of the Alligator Gar: A Synthesis of current knowledge and introduction to a special section. North American Journal of Fisheries Management 40:527-543.

Smith, R., J. Trungale, R. Lowerre, T. Hayes, M. Montagne, T. Bister, L. Overdyke, and M. Hackett. 2019. Instream flow restoration and watershed conservation in the Cypress Basin, Texas. AFS Symposium 91:345-366.

Valente, J., D. Bradsby, K. B. Mayes, C. Loeffler, L. Hamlin, D. Geeslin, K. Horndeski, D. Young, J. Trungale, R. Smith, K. Garmany, and T. Hayes. 2019. Developing a geospatial decision support tool for protecting and restoring environmental flows in Texas rivers and streams. AFS Symposium 91:253-268.

Technical Presentations

A total of 39 presentations were given by staff as author or co-author, at more than 10 professional meetings or conferences. Venues included:

- American Fisheries Society – The Wildlife Society, joint annual meeting, Reno, NV
- American Fisheries Society Webinar Series, online
- Friends of Reservoirs, annual meeting, Kansas City, KS
- Desert Fishes Council, annual meeting, Alpine, TX
- Catfish 2020: The Third International Catfish Symposium, Little Rock, AR
- Southeastern Association of Fish and Wildlife Agencies, annual meeting, Hilton Head, SC
- Southern Division American Fisheries Society, annual meeting, Little Rock, AR
- Texas Chapter American Fisheries Society, annual meeting, Waco, TX
- Texas Society for Ecological Restoration, annual meeting, Galveston, TX
- The 5th International Symposium on Urbanization and Stream Ecology, Austin, TX

Popular Articles

Sixteen popular articles were written and published by Inland Fisheries staff in six different outlets. A total of 43 press releases were written, and 168 media coordination efforts were conducted with TV, radio, news, and outdoor-related media outlets, regarding aquatic natural resource conservation, fisheries management, and recreational fishing opportunities across branches. These were corroborated with our Inland Fisheries-Communications Division liaison. There were nearly 300 social media posts communicating Division interests uploaded in Facebook and Instagram. Of these, 176 Facebook posts reached 1,771,774 people and engaged 196,401 people.

Outreach Events

Inland Fisheries staff members were event leaders at 141 outreach events for targeted user groups (youth under 17, minorities, women, and physically challenged) in which 13,086 individuals participated.

Event Summary

	Youth 17 & under	Adults	Total
Males (1)	3,856	3,389	7,245
Females (2)	3,021	2,820	5,841
Minorities	1,789	782	2,571
Physically Challenged	119	29	148
Total (1+2)	6,877	6,209	13,086

Work with Other Organizations

Program Contracts and Agreements

Rio Grande Joint Venture	Conservation Delivery within Native Fish Conservation Areas of the Chihuahuan Desert	$50,000.00
American Fisheries Society	The Hutton Junior Fisheries Biology Program	$30,000.00
Angelina and Nacogdoches Counties WCID	Lake Striker Salvinia Control	$20,000.00
Caddo Biocontrol Alliance	Biological control of giant salvinia	$30,000.00
Camp Huaco Springs	Public Leased Access to the Guadalupe River Trout Fishery at Camp Huaco Springs	$2,600.00
Private Landowner	Public Leased Access to the Llano River at 14717 RR 152, Llano, TX	$9,000.00
Chautauqua Foundation	Leased Angler Access to the Lower Colorado River at the Texas River School River Camp	$12,000.00
Coastal Water Authority	Control of water hyacinth and hydrilla at Lake Houston and its tributaries	$25,000.00
Compadres Del Rancho Grande	Restoration of Freshwater Resources at Big Bend Ranch State Park	$16,788.80
Cypress Valley Navigation District	Boat lane maintenance and boater access on Caddo Lake and Big Cypress Bayou	$35,000.00
Devils River Conservancy	Development of a Web-based Clearinghouse Offering Access to Current and Historic Data, Reports, and Other Pertinent Information from the Devils River Native Fish Conservation Area	$93,077.00
Dick's Canoes	Public Leased Access to the Brazos River at Dick's Canoes	$12,000.00
Private Landowner	Pena Blanca Spring and Creek Restoration Project	$25,502.93
Guadalupe Blanco River Authority	Control of water hyacinth and other aquatic or riparian plant species in the Guadalupe River and its tributaries	$20,000.00
Hill Country Alliance	Community Outreach and Capacity Building for Hill Country River Stewardship	$25,025.00
Hill Country Alliance	Landowner and Community Engagement in Control of Arundo and Restoration of Hill Country Rivers	$28,402.00
Private Landowner	Public Leased Access to the Llano River at 535 KC 312, City of Junction, TX	$15,750.00
Private Landowner	Public Leased Access to the Sabine River at FM 1794, Beckville, TX	$12,000.00
Private Landowner	Public Leased Access to the Colorado River at 203 Hidden Shores Loop, Smithville, TX	$14,400.00
Llano River Watershed Alliance	Facilitating Conservation Delivery of Species of Greatest Conservation Need in the Central Edwards Plateau Native Fish Conservation Area through Technical Guidance and Planning Assistance	$154,300.00

Lavaca-Navidad River Authority	Control of water hyacinth, giant salvinia, and other invasive aquatic or riparian plant Species in Lake Texana and its tributaries	$50,000.00
Loma Paloma, Inc	Bishop Wetlands Salix and Riparian Nursery	$5,240.00
Lower Neches Valley Authority	Control of water hyacinth, giant Salvinia, and other aquatic or riparian plant species in Sam Rayburn Reservoir and B.A. Steinhagen Reservoir	$135,000.00
Private Landowner	Public Leased access to the South Llano River at KC 150	$18,000.00
Nueces River Authority	Arundo Control and Riparian Restoration in the Upper Nueces River Watershed	$33,346.78
Nueces River Authority	Arundo Control and Riparian Restoration in the Sabinal, Frio and Dry Frio River Watersheds	$11,314.77
Private Landowner	Public Leased Access to the Llano River at FM 2768 Crossing	$10,500.00
Private Landowner	Cienega Creek Restoration	$56,399.52
Private Landowner	Public Leased Access to the Colorado River at 750 Hwy FM 2571, Smithville, TX	$14,400.00
Private Landowner	Public Leased Access on the Llano River at 4373 Maso Llano Rd, City of Mason, TX	$20,826.40
Southeast Aquatic Resources Partnership	Assessment and Prioritization of Barriers in the Upper Guadalupe River Upstream from Canyon Reservoir, TX	$74,998.00
Private Landowner	Public Leased Access to the Devils River in Val Verde County	$48,000.00
Stephen F. Austin University	Assessing pathways of introduction of non-native Fishes in Texas streams	$74,580.00
Texas A&M University, AgriLife Extension Service	An Economic Analysis of the Lake Texoma Fishery Extension Service	$18,967.00
Texas A&M University, AgriLife Research	Alligator Gar Lateral Movements and Habitat Use in the Lower Brazos River	$99,640.00
Texas A&M University, AgriLife Research	Assessing the phylogenetic relationships and species boundaries of the genus *Truncilla* (Family: Unionldae) in Texas	$98,914.00
Texas A&M University, AgriLife Research	Ecological forecasting and conservation contingency planning for imperiled Great Plains fishes of Texas	$91,218.00
Texas A&M University, AgriLife Research	Examining the conservation status of freshwater mussels in Texas	$79,993.00
Texas A&M University, AgriLife Research	Examining trematode prevalence at mussel biodiversity hotspots throughout the state	$50,000.00
Texas A&M University, AgriLife Research	Host Fish Use of Three Rare Central Texas Mussel Species	$207,361.00
Texas A&M University, AgriLife Research	Host fish use, reproduction, and propagation potential of two East Texas threatened mussel species	$100,000.00

Texas A&M University, ArgiLife Research	Influence of thermal tolerance on population performance of rare and common freshwater mussel species in central and east Texas, and assessment of taxonomic status and population genetic structure of Texas fatmucket throughout its distributional range	$120,180.00
Texas A&M University, AgriLife Research	Measuring and Predicting Movement Ecology for Imperiled Great Plains Fishes in Texas	$141,558.00
Texas A&M University, AgriLife Research	Temporal Trajectories and Landscape Correlates for Stream Fish Community Change in Central and West Texas with Emphasis on Conservation Status of Chihauhua Catfish and Conchos Pupfish	$200,000.00
Texas Christian University	Growth, survival, and reproductive success of zebra mussels	$37,515.00
Texas Conservation Science	Assessment of Passive Revegetation of Upper Brazos River Basin Saltcedar Management Sites	$29,980.31
Texas Conservation Science	Cypress Basin Riparian Productivity and Environmental Flow Management: Trend Analysis and Paired-Watershed Assessment	$29,600.00
Texas Conservation Science	Riparian productivity in three Texas river basins	$84,000.00
Texas State University	A Framework for Conservation in the Guadalupe River Basin: Towards Collaborative Stewardship Through Strategic Geographic Prioritization and Stakeholder Coordination	$120,000.00
Texas State University	Analytical Services Genetics Student Worker Laboratory Assistant	$35,977.15
Texas State University	Geographic Information System Data Architecture Upgrade for Healthy Creeks Initiative	$14,531.40
Texas State University	Impact of zebra mussels on unionid mussels, population dynamics, and limiting factors for growth and survival	$54,294.00
Texas State University	Life History, Distribution and Trophic Ecology of the Endangered Comal Springs Dryopid Beetle	$42,988.00
Texas State University	The impact of environmental contaminants on Texas unionid mussels in the Guadalupe Basin	$21,699.35
Texas State University	Zebra Mussel Monitoring in Texas Water Bodies	$54,358.00
Texas Tech University	Distribution and habitat use of Kisatchie Painted Crayfish in northeast Texas with investigation of Multi-scale environmental influences on crayfish Community structure	$59,998.00
Private Landowner	Public Leased Access to the San Marcos River	$24,000.00
Trinity River Authority	Control of giant Salvinia, water hyacinth, and other aquatic or riparian plant species in Lake Livingston and its tributaries	$50,000.00
University of Houston Clear Lake	Distribution, Abundance and Habitat use of the American Eel in the Lower Sabine, Colorado, and Guadalupe River Basins	$109,657.00

University of North Texas	Alligator Gar Population Connectivity and Habitat Use in the Trinity River National Wildlife Refuge	$149,979.00
University of North Texas	Assessing Swimming Performance to Inform Stream Crossing Design and Barrier Prioritization-Guadalupe Bass	$33,862.00
University of North Texas	Assessing Swimming Performance to Inform Stream Crossing Design and Barrier Prioritization-Guadalupe Darter, Guadalupe Roundnose Minnow and Plateau Shiner	$40,000.00
University of Texas Austin	American Eel: Utilization Modern Techniques to Assess Conservation Status in Texas	$79,945.00
University of Texas Austin	Gap Sampling within the Texas Native Fish Conservation Areas Network	$229,297.00
University of Texas Austin	Conservation Planning within the Texas Native Fish Conservation Areas Network	$280,786.00
University of Texas Austin	FY20 Monitoring Hydrologic Effects of Salt Cedar Control in the Upper Brazos River Basin, Texas	$82,955.72
University of Texas Austin	Airborne Lidar bathymetry survey and aquatic habitat evaluation for Devils River Minnow and Texas Hornshell in the Devils River	$34,700.00
University of Texas San Antonio	Evaluating the suppression of *Hydrilla verticillata* by Manual removal and planting native aquatic plants	$31,855.00
Private Landowner	Public Leased Access to the Nueces River at 12317 Figueroa St., Corpus Christi, Texas	$12,000.00

Grants and Donations — Incoming Funds

Donor	Program	Amount
City of Dallas	Neighborhood Fishin' Program	$20,000
Guadalupe River Trout Unlimited	Trout Intern	$7,000
Memorial Donations	Inland Fisheries Projects	$410
Texas Parks and Wildlife Foundation	Neighborhood Fishin’ Program	$250,000
Texas Parks and Wildlife Foundation	Toyota ShareLunker Program	$40,000

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