INLAND FISHERIES ANNUAL REPORT 2019

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

TEXAS PARKS & WILDLIFE

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Executive Director

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INLAND FISHERIES ANNUAL REPORT 2019

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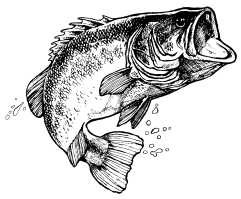
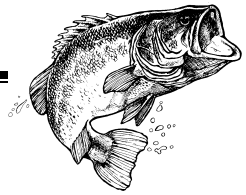
TABLE OF CONTENTS



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.

Agency Goals

Texas Parks and Wildlife Department's Land and Water Resources Conservation and Recreation Plan (2015) establishes four primary goals to direct the agency's division operating plans and decisions 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

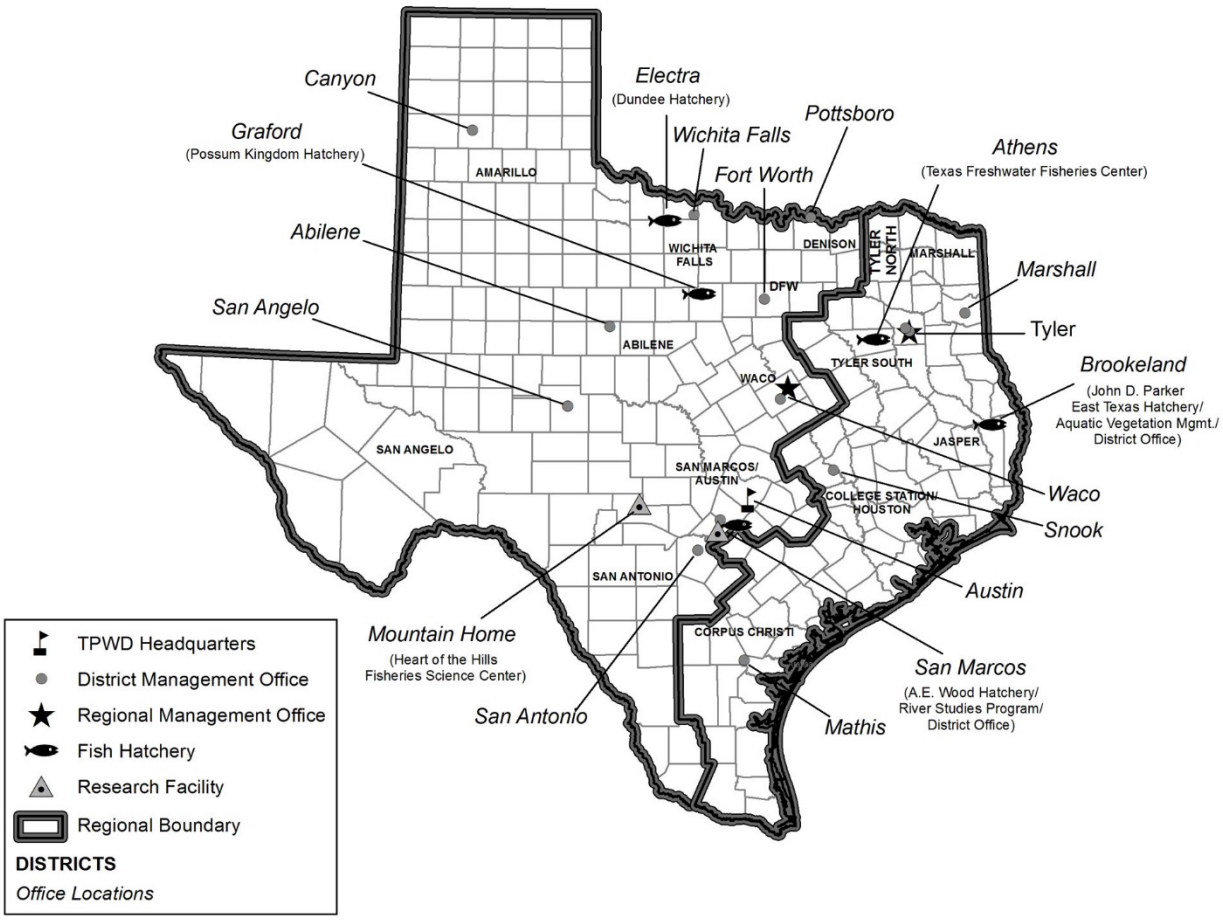
The division goals were developed to address the major issues facing the freshwater fisheries resources of Texas.

- 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 branches. For details, see Appendix – Organization Charts.

Facilities



Contact Information

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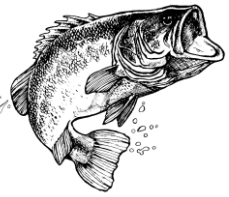
Funding and Allocation

In FY19, $19,820,808 was budgeted for Inland Fisheries (not including fringe benefits or capital construction). Federal Aid grants are expected to reimburse the Department $8,996,596 on eligible Inland Fisheries activities. The allocation of Federal Aid monies was $2,808,727 for Fish Hatchery and Laboratory facilities, and $6,187,869 for Management and Research, Habitat, Outreach, and Administrative services.

FY19 Budget by Program

Administration	$2,450,538
Management and Research	$5,592,495
Hatcheries and Laboratory	$5,129,849
Habitat/Aquatic Invasive Species	$5,222,833
Outreach/Texas Freshwater Fisheries Center	$1,425,093
Total FY19 w/o fringe	**$19,820,808**

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 a number of field offices that work to carry out the mission of the division, largely outside the walls of headquarters. The Inland Fisheries Division seeks to maximize collaborative efforts between 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 Texas Freshwater Fisheries Center (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 non-governmental 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.

Aquatic biologists from the Habitat Conservation Branch conduct freshwater mussel surveys in the Devils River to provide biological data used to inform management of groundwater and river flows.

Fisheries Management and Research

Some of our branch leaders took a team building trip to Lake Tawakoni to "catch" some of its giant blue catfish. Catfish management and conservation has been a major priority for the Inland Fisheries Division over the past decade.

The division's fisheries management program 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 15 district offices statewide.

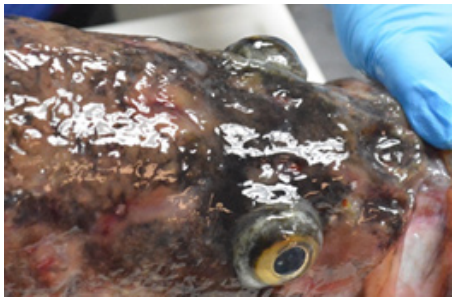
The Inland Fisheries research program at the Heart of the Hills Fisheries Science Center in Mountain Home provides leadership, support, and coordination for all research activities supported by the division. The program also provides intensive research investigations, literature reviews, statistical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

Hatcheries

Hatcheries serve 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. Hatchery personnel are also involved in outreach programs and agency-sponsored fishing events as well as providing educational hatchery tours to the public and students of all ages.

Fertilized eggs for a number of sportfish species are hatched in racks of "McDonald Jars" at our five freshwater fish hatcheries located across the state. Our fish hatcheries are essential for maintaining healthy fish communities and providing great fishing opportunities for all Texans.

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.

Information and Regulations

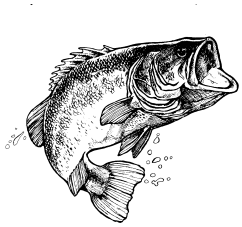
The Information and Regulations group works closely with the Fisheries Management and Research branch to develop fishing regulation change proposals, obtain public input on the changes, and communicate the proposals to the Texas Parks and Wildlife Commission. Staff members also provide administrative 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 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.

Children always enjoy seeing the large fish in the reservoir aquarium at the Texas Freshwater Fisheries Center in Athens. This is just one of many popular displays that can be enjoyed at our outreach center.

KEY ACCOMPLISHMENTS



Monitoring, Management Plans, and Permits

Reservoir Surveys — Staff conducted 230 surveys of fish populations, habitat, water quality, and angler use on 137 reservoirs covering 1,135,220 surface acres of water. These led to the production of 46 comprehensive reservoir fisheries management plans designed to improve freshwater fishing opportunities.

River Surveys — Staff conducted 51 surveys to assess the status of fish communities, freshwater mussels, benthic invertebrates, aquatic and riparian habitats, and recreational use in selected rivers throughout the state including mainstem reaches and tributaries of the Blanco, Brazos, Colorado, Comal, Conchos, Cypress, Devils, Frio, Guadalupe, Leon, Llano, Nueces, Paluxy, Pedernales, Rio Grande, Sabine, San Antonio, San Bernard, San Gabriel, San Jacinto, and Trinity rivers. Surveys were used to inform river access improvements for anglers and paddlers, fish habitat restoration and management, water management, invasive species management, and other conservation measures to restore and preserve fisheries resources and enhance related recreational opportunities. Focal species of river surveys included Guadalupe bass, alligator gar, American eel, blue sucker, Devils River minnow, imperiled West Texas fishes, and freshwater mussels.

Fish Health Investigations — The Analytical Services Laboratory (and collaborating laboratories) investigated 40 fish health cases, analyzing approximately 1,640 fish. A total of 143 water samples were processed for zebra mussel larvae and/or DNA. A total of 124 samples were analyzed for *Prymnesium parvum* (golden alga) toxicity and presence in public lakes. In addition, the laboratories completed 27 genetics projects with 1,424 samples.

Permits — The division issued 40 permits authorizing external individuals and organizations to introduce fish into public waters to enhance fishing opportunities. Another 49 permits were issued authorizing commercial harvest of nongame fishes from public waters. Introduction permits were also issued for aquatic plant restoration (2) and for relocation of aquatic resources (86) to minimize impacts of projects that temporarily disturbed aquatic habitats. Staff issued 193 permits or renewals authorizing possession of prohibited exotic fish, shellfish, or aquatic plants for the purpose of invasive plant management (22); fish/shrimp aquaculture (86); culture of water spinach as a food source (50); research (24); and zoological display (11). Staff issued 1,034 permits to stock triploid grass carp for biological control of nuisance vegetation, authorizing a total of 33,308 fish. One broodfish collection permit and two permits authorizing interstate transport of an exotic species were also issued. In addition, three sand and gravel permits for disturbing or taking sedimentary material within navigable streams were issued.

Applied Management and Conservation Actions

Zebra Mussel Monitoring & Prevention — TPWD and a growing number of partners continue to intensively monitor approximately 50 water bodies 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, 17 Texas lakes across five river basins were classified as infested, meaning the lake has an established, reproducing population. Zebra mussels or their larvae had been found more than once in ten other lakes and in rivers downstream of infested waters. As part of efforts to prevent further spread of this highly invasive species, TPWD and partners continued a targeted outreach campaign encouraging boaters to *Clean, Drain and Dry* and *Protect the Lakes You Love* and conducted boater and marina surveys to inform the campaign strategy. Outreach to more than 200 marinas continued to seek to minimize movements of infested boats.

Aquatic Vegetation Control — TPWD and its partners were able to maintain control of giant salvinia and water hyacinth. The cold weather event in January 2018 and numerous, subsequent high inflows reduced giant salvinia and water hyacinth statewide. However, that reduction of plant material would have been short lived without the implementation of an integrated pest management plan (IPM). The IPM plan included installing floating booms, conducting herbicide treatments, and releasing biocontrol agents as well as employing an effective giant salvinia outreach campaign. As a result, giant salvinia was eradicated from Lake Athens, Lake Fork, Brandy Branch Reservoir, and Martin Creek Reservoir, and more open water was maintained on public water bodies than only two years before. Nearly 1000 feet of floating booms were deployed, herbicides were applied to 15,062 acres of giant salvinia and 1,767 acres of water hyacinth, and approximately 200,000 giant salvinia weevils were released by TPWD and its partners.

Neighborhood Fishin' Program Expansion in Houston

We opened two new Neighborhood Fishin' Program (NFP) lakes to further enhance fishing opportunity in our state's largest and most diverse metropolitan area. One of the new lakes is in southeast Houston at Burke Crenshaw Park in Pasadena; and the other is in north Houston at Herman Little Park between Aldine and Spring. Both feature small fishing piers and paved or natural shoreline trails for bank fishing access. These additions bring the total number of NFP lakes in the Houston area to four, including Community Park Lake located southwest of Houston in Missouri City and Mary Jo Peckham Park in Katy. Both were opened with a ribbon cutting ceremony hosted by the local controlling authority.

Neighborhood Fishin' lakes are stocked every two weeks throughout the year. In addition to being managed for high-quality fishing, these lakes are in public parks with ample parking, restrooms, lighting and plentiful recreational amenities to ensure an enjoyable experience for the whole family. We now have 19 NFP lakes statewide. They serve to recruit, retain, and reactivate anglers in 10 major metropolitan areas.

The NFP lakes in Houston are supported by proceeds from the Toyota Bassmaster Texas Fest, Sport Fish Restoration funds, and local partners including the Timber Lane Utility District, Pasadena Parks and Recreation, Harris County Precinct 3, and Missouri City Parks and Recreation.

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 degrade habitat for fish and wildlife. Many of the worst offenders can also reduce stream flow, change the shape of the river channel, 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, more than 90 private landowners, and university researchers. To date, over 13,700 acres of saltcedar have been treated in the project area, with 3,350 acres treated in FY19. Eight research sites have also been established to study the vegetation community, river geomorphology, and hydrology.

- TPWD's 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 300 landowner partners on the Blanco, Guadalupe, Medina, and Pedernales rivers are enrolled in the program, which expanded coverage to include a sixth county in 2019. Efforts are expected to benefit Guadalupe Bass and other native fish species.

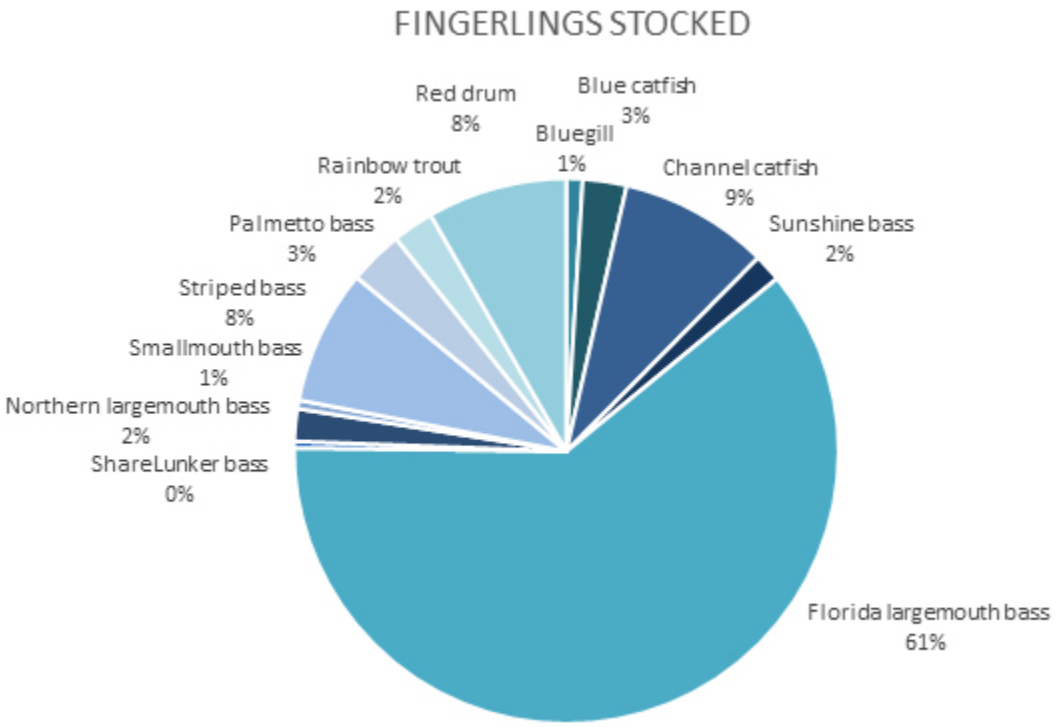
- TPWD staff conducted aerial surveys of Arundo in the Hill Country along approximately 300 river miles in the project area. Surveys will help to guide outreach and management efforts and to assess dispersal and establishment of Arundo following flood events.

- TPWD also continues to support control of Arundo in the Nueces River and its tributaries through cost-share agreements. Since 2010, 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. Massive flooding swept the managed area soon after our fall 2018 treatment, and by the end of summer 2019, survey crews were able to find only a few isolated elephant ears.

- At Gorman Creek in Colorado Bend State Park, TPWD staff continued spot treatments of elephant ears. The infestation's extent has been greatly reduced but will need continued monitoring.

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, TPWD 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.



In fiscal year 2019, a total of 14.28 million fingerlings were produced and stocked in public water. Species stocked included largemouth bass, Guadalupe bass, striped bass and hybrid striped bass, channel catfish, blue catfish, smallmouth bass, bluegill, walleye, 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 inches) stocked in support of the Neighborhood Fishin' Program are acquired from a commercial producer. The majority of the fingerlings stocked are largemouth bass (61%) or either striped bass or hybrid striped bass (13%) which collectively comprise approximately 73% of the total number of fingerlings stocked. Hatchery staff drove 218,157 miles during 749 stocking trips to distribute the fish to 403 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.

- Implemented an 18-inch minimum length limit and three-fish daily bag for largemouth bass on Lake Lakewood (Williamson County).
- Implemented a 16-inch maximum length limit and five-fish daily bag for largemouth bass on Mill Creek Lake (Van Zandt County) with an exception allowing for possession and weighing for bass 24 inches or greater for possible submission to ShareLunker program.
- Expanded the area in Southeast Texas currently covered by the 12-inch minimum length limit for largemouth bass to include Hardin County, Newton County (excluding Toledo Bend Reservoir), and Liberty County south of U.S. Highway 90.
- Alabama bass from Alan Henry Reservoir (Garza County) reverted to the statewide limits (no length limit and five-fish daily bag in combination with largemouth bass).
- The following changes were made to harvest regulations for alligator gar
    - All persons who take an alligator gar from the public fresh waters of the state other than Falcon International Reservoir are required to report the harvest via the department's website or by mobile app within 24 hours of take.
    - Enacted a 4-foot maximum length limit for alligator gar on the Trinity River from the I-30 bridge in Dallas downstream to the I-10 bridge in Chambers County including the East Fork of the Trinity River upstream to the dam at Lake Ray Hubbard.
    - A drawing was implemented to allow selected anglers to harvest one alligator gar over 48 inches in length per year from the Trinity River. The limited entry system makes available non-transferable harvest authorizations for a set number of alligator gar. Authorizations were selected and distributed through a limited random draw of interested applicants.
    - Between one half-hour after sunset and one half-hour before sunrise, no person may take or possess an alligator gar by means of lawful archery equipment or crossbow on the Trinity River unless they have received a harvest authorization through the drawing system.

Research Highlights

Research to Inform Conservation of State Threatened Blue Sucker – Science-based recommendations are critical for informing water resource policy decisions, which not only provide adequate water for human use, but also sustain quality river sport fisheries and conserve native fishes. To provide such data in the lower Colorado River, TPWD Inland Fisheries staff collaborated with the TPWD Water Resources Branch, Lower Colorado River Authority (LCRA), and Texas Tech University to assess age estimation methods, swimming performance, movement, population dynamics, and habitat occupancy studies of the endemic state-threatened blue sucker. Blue sucker are fluvial-specialists associated with big rivers and serve as an indicator of ecosystem health. Although once

common in the lower Colorado River, population estimates from 2009-2014 indicate fewer than 1,000 of these fish remain, and there is little evidence of recruitment since 2009. Data are being used to further inform LCRA's Water Management Plan, which provides guidance for releases from the Highland Lakes, in part, to maintain a healthy aquatic community in the lower Colorado River, Matagorda Bay, and associated estuaries.

Multispecies and Watershed Approaches to Freshwater Fish Conservation – Publication of this AFS symposium proceedings highlights freshwater systems in the United States that continue to suffer substantial alterations that threaten freshwater fish diversity, habitat quality, and watershed function. TPWD Inland Fisheries staff contributed to planning and hosting this symposium, as well as contributing to 11 of the 28 chapters. These chapters demonstrate how alterations not only threaten non-game fish species, but also sport fish, which angling for contributes significantly to the nation's economy. The publication also highlights analytical approaches that integrate conservation biology, aquatic connectivity, and spatial prioritization principles that inform conservation planning and delivery, and presents innovative planning approaches that can yield diverse, multi-agency partnerships.

Outreach

Inland Fisheries Hosts Southern Division AFS — The Texas Chapter of the American Fisheries Society hosted the 2019 Annual Meeting of the Southern Division of the American Fisheries Society at Moody Gardens Hotel and Conference Center in Galveston in January 2019. Fourteen Inland Fisheries team members served on the conference planning committee. They provided the leadership and resources necessary to make this a successful event. Approximately 600 fisheries scientists from across the southeastern United States, along with some additional guests from the North-Central Division, attended the meeting. Numerous TPWD-Inland Fisheries staff participated in the meeting, which included:

- 214 oral technical presentations (27 presented by IF team members)
- 85 poster technical presentations (six presented by IF team members)
- 13 professional continuing education workshops (three were co-instructed by IF team members)
- 10 Symposia (six organized and led by IF team members)

Inland Fisheries Division Hosts Annual Reservoir Fisheries Habitat Partnership Conference — The Inland Fisheries Division hosted the annual meeting of the Reservoir Fisheries Habitat Partnership (RFHP) in October 2018 at the Texas Freshwater Fisheries Center in Athens. Fisheries professionals and Friends of Reservoir (FOR) chapter members from Texas and other states attended to discuss and learn about fish habitat improvement work in our nation's aging reservoir systems. A total of 100 people attended the meeting; the highest attendance of any RFHP meeting held since 2009. Inland Fisheries Division team members played key leadership roles in organizing and presenting at a one-day workshop on best management practices and a two-day technical session to highlight fish habitat projects. Twenty technical presentations (13 by Inland Fisheries staff and Texas FOR chapter members) were given that showcased our work and partnerships in Texas. Two individuals from Texas were nationally recognized by the RFHP for their work in this area.

Texas Fest: The Impetus Behind Changing Formats in Tournament Fishing — A conservation-minded tournament format (catch-weigh-immediate release) was created, used, and refined at "Texas Fest" events (TTBC and TBTF) from 2007-2019. That format has now set a new standard for tournament competition, fish care, site selection, and growth in the tournament fishing industry.

In 2019, a new professional bass fishing circuit (Major League Fishing – Pro Bass Tour) was created. This tour exclusively uses our "fish-friendly" format, which replaces traditional stage weigh-in practices for a format that weighs, scores, and immediately-releases fish from an angler's boat. Many top professionals in the bass fishing industry have embraced this new format that maximizes fish care, better facilitates live "on-the-water" action and allows tournaments to happen in more locations across the country. Often-times special harvest regulations, which are imposed to improve fishing, can restrict where tournaments can be fished using older stage-weighing formats. This new format helps break down this barrier because fish are not possessed or retained in live wells. Increased adoption of this format will reduce the need and on-going requests for regulation exemptions for fishing tournaments. In Texas and other states, these types of requests have created political and fisheries management problems for managing agencies. They have also facilitated social conflicts between tournament and non-tournament anglers.

TPWD Inland Fisheries can be very proud of past research that documented effects of delayed mortality in tournament fishing and our past actions to demonstrate an alternative tournament format that reduces their effects on public water. Our catch-weigh-immediate release format is now widely regarded as the way of the future in fish care, tournament competition, conservation, and promotion of our fisheries though tournament competition.

Sharing the Great Outdoors — Texas Freshwater Fisheries Center (TFFC) is our division's primary outreach and education center. In 2019, TFFC provided facility tours, workshops, aquatic education classes, and other special events. Visitors included 33,934 people from 140 Texas counties, 47 states and 11 foreign countries. The Center provided hands-on fishing for 22,989 visitors, with 584 receiving First Fish Awards. A total of 12,365 people toured the hatchery ponds via guided tram. In addition to TFFC, all 15 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 2019, 448 entries from grades K-12 were submitted to the program. The top 10 contestants in each of four grade divisions were recognized with an awards ceremony, luncheon, fishing gear, and a day at TFFC.

Merit Badge University — TFFC partnered with Boy Scouts of America Circle 10 to launch a conservation themed Merit Badge University on the TFFC campus. Over 500 scouts from across northeast Texas attended and were educated in such topics as fly-fishing, archery, and plant identification.

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. In the second season of ShareLunker 2.0, more than 2,000 additional anglers registered to participate, and 327 entries from 88 lakes across the state were approved into the program. Of those entries: 242 were Lunker Class (8+ lbs.), 76 Elite Class (10+ lbs.), 4 Legend Class (13+ lbs.), 5 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. It will ultimately lead to better management of fisheries and help make Texas bass fishing bigger and better.

Hatchery staff stocked 57,446 fingerlings from the selective breeding of the Legacy Class bass. More than 55,376 of those fingerlings were stocked into reservoirs where a Legacy Class fish was caught. The remaining 2,070 were stocked in small waters that will become part of the new Bois d'Arc Reservoir under construction in Fannin County. The Bois d'Arc Reservoir ShareLunker stocking was filmed to be included in an episode of the "Lone Star Law" television series on Animal Planet.

Texas Freshwater Fishing Hall of Fame and ShareLunker Promotion — In 2019, the Texas Freshwater Fishing Hall of Fame and Toyota ShareLunker were featured at the Toyota Bassmaster Texas Fest, an Elite Series Bass Tournament benefiting the TPWD. We leveraged relationships with Bassmaster and Gulf States Toyota to deliver on-stage award presentations and written articles in Bassmaster Magazine and Bassmaster.com. We promoted these programs and related videos on Bassmaster Live, ESPN network television, and though digital advertising media on Bassmaster.com. The effort helped increase statewide and national exposure of these valued programs supported by our department at a reduced cost to the agency.

Infrastructure Enhancements

Construction and renovation efforts continued at several facilities (table below) including the Possum Kingdom and Dundee Fish Hatcheries, Analytical Service Laboratory, and River Studies building. In response to the growing threat of zebra mussels, work began on a microfiltration facility at the Possum Kingdom. Additionally, the HVAC at the Analytical Services Lab and San Marcos District Office was completely replaced and upgraded to a more efficient system. Site work and final installation of modular office to accommodate the River Studies Program was completed on site at the A.E. Wood Fish Hatchery. Design for an ozone disinfection system and effluent pump at Dundee as well as a new district fisheries office in Mathis continue to progress. Construction for each of these projects is expected to begin during 2020-2021.

IF Capital Projects

	Project #	Phase	Expended
River Studies Office Building	128562	Complete	$777,066.08
HVAC Replacement at AEW	MC10481	Complete	$556,132.37
ETFH Replace Vertical Turbine Pumps	1210288	Sub-Complete	$204,741.81
Micro-filtration at Possum Kingdom	1210301	Construction	$1,987,714.83
Pump back at Dundee	1110061	Design	$436,536.84
Ozone Disinfection at Dundee	128632	Design	$257,013.91
Mathis Office Replacement	127144	Design	$137,447.09
			$4,356,652.93

Agency-wide Collaboration

Electronic Harvest Reporting for Alligator Gar — Our Division worked with the Information Technology, Wildlife, and Communications divisions to create and test new alligator gar reporting functions as part of the My Texas Hunt Harvest app. The goal was to provide anglers with a simple tool for reporting harvested alligator gar and for entering drawings to obtain special harvest authorizations for the Trinity River. The tools were created in response to new regulatory requirements for alligator gar effective on September 1, 2019. Data obtained through the My Texas Hunt Harvest app and online will help our fisheries management team gain a better understanding of this species' distribution, sizes, and harvest. The information will also help us manage for quality fishing in the future.

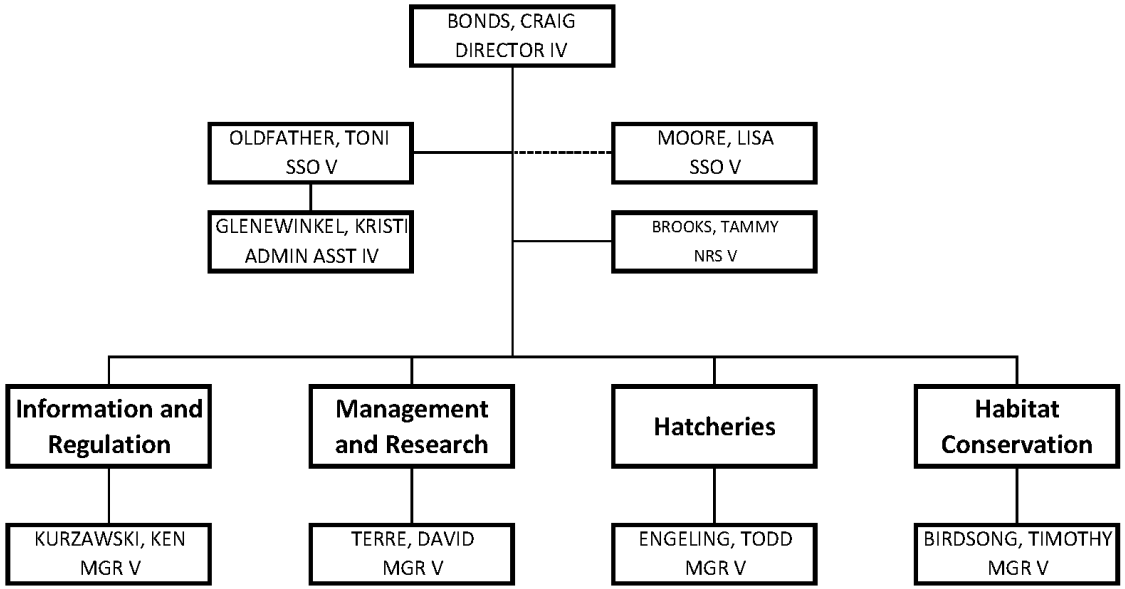
APPENDIX

Organization Charts

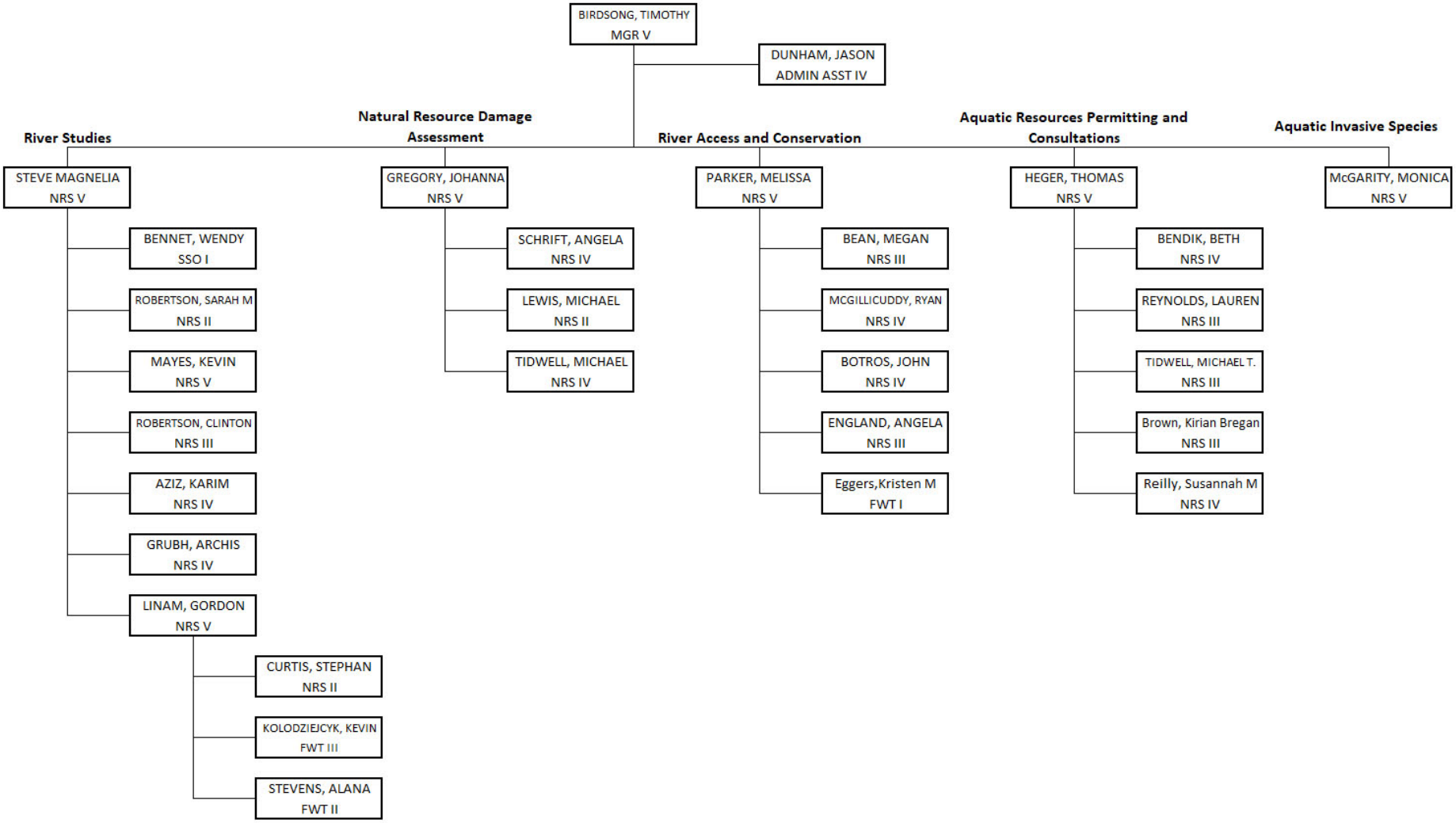
Legend

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

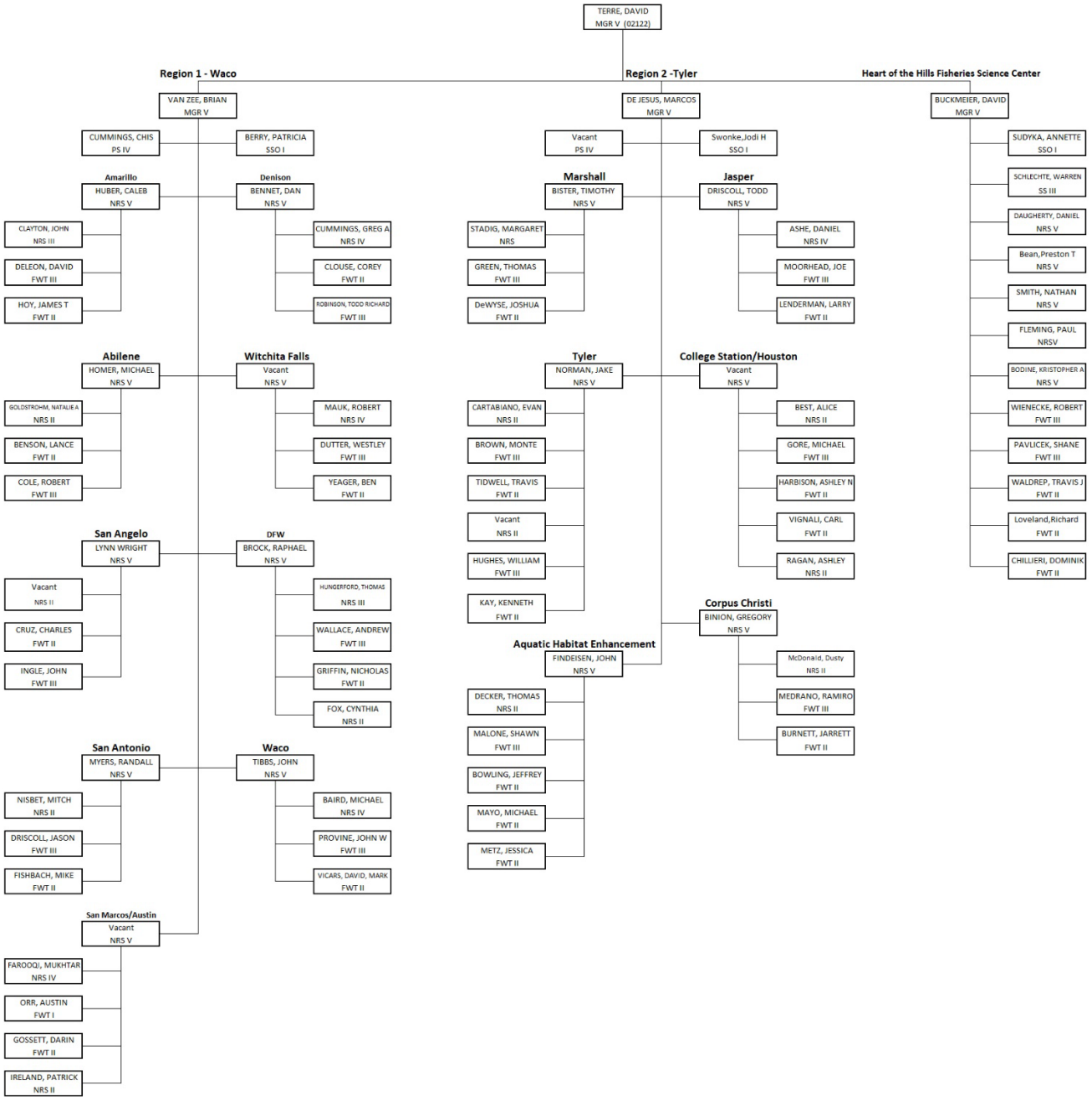
Inland Fisheries Administration



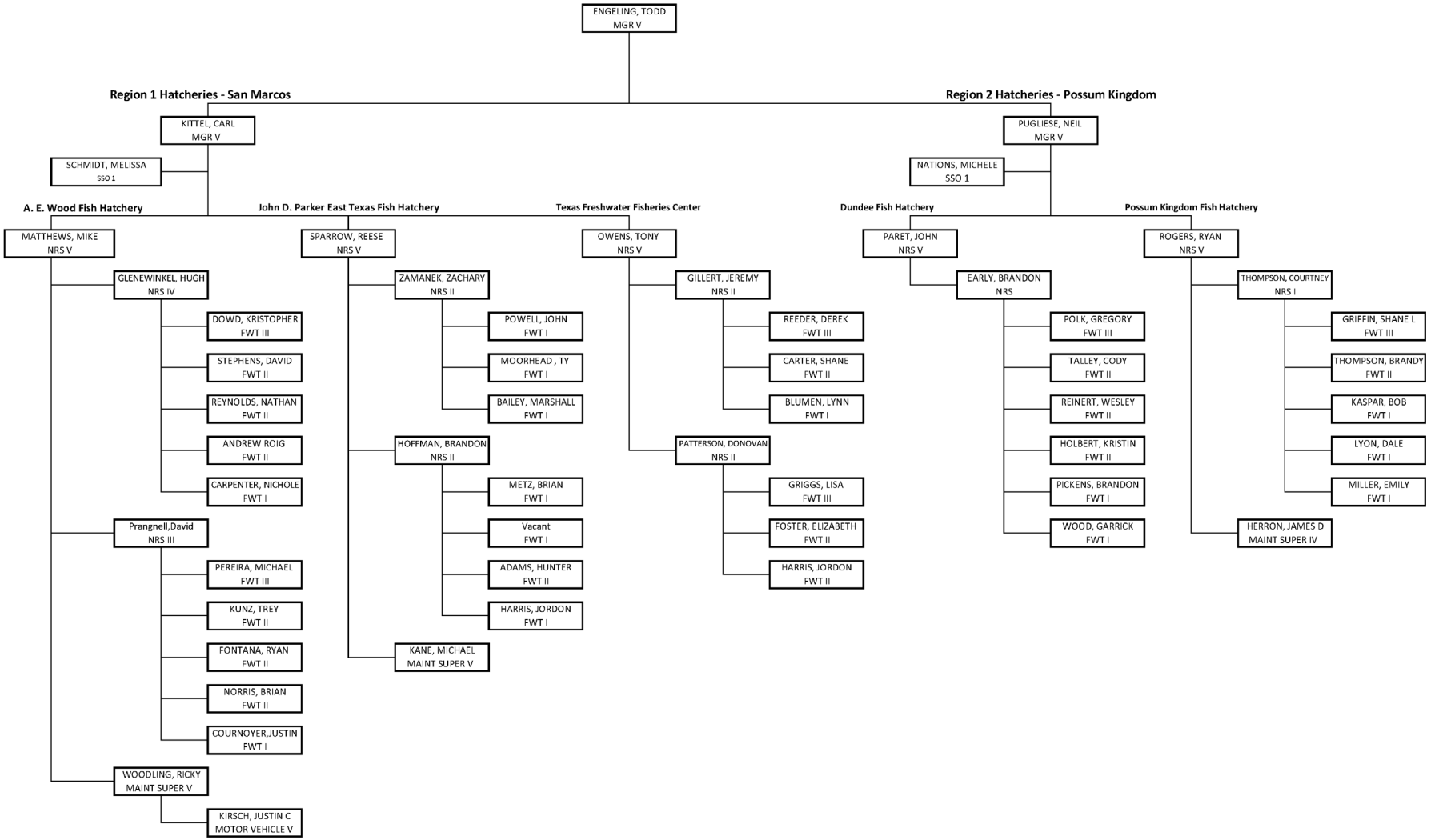
Habitat Conservation



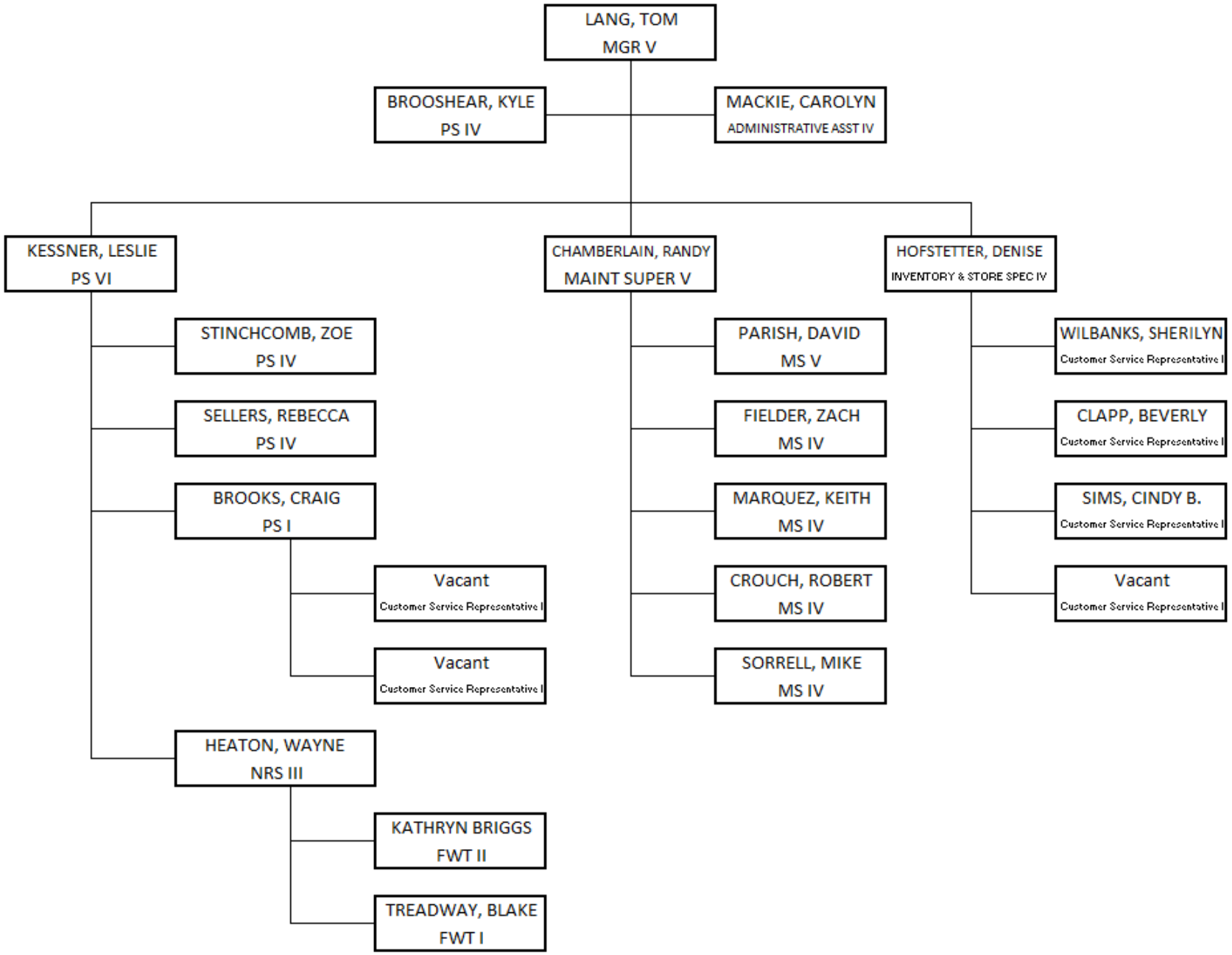
Fisheries Management and Research



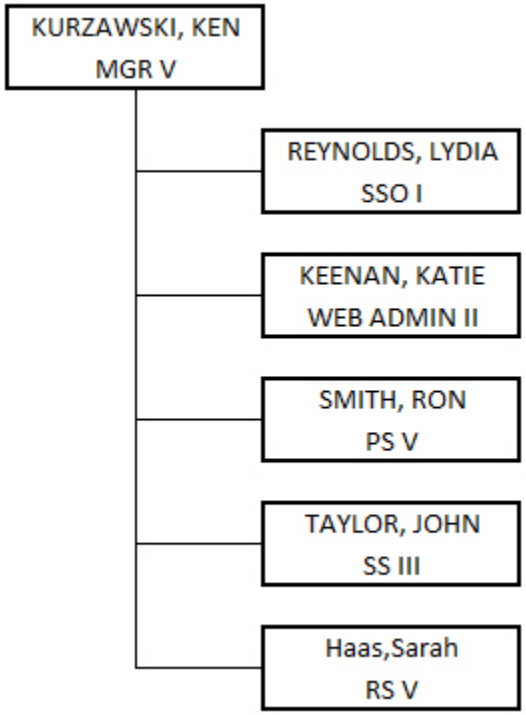
Hatcheries


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

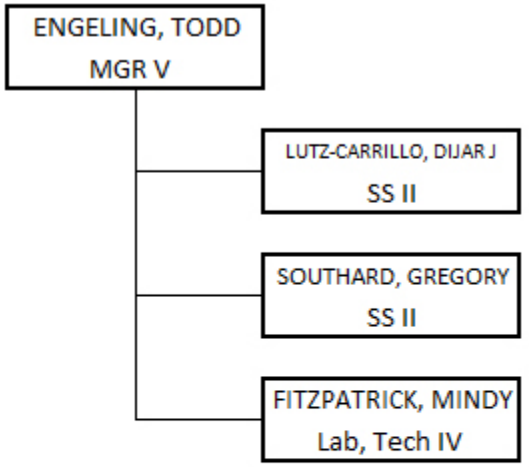
Texas Freshwater Fisheries Center



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	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 48 studies that focused on:

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

Highlights:

- Morone fry deformities as related to maternal stress
- Effects of feeding regimes and feed utilization in koi and morones

Managing, conserving, and understanding the ecology of river fishes (10 studies)

Highlights:

- Population structure and hybridization in headwater catfish
- Assessing population and recruitment dynamics of alligator gar
- Habitat association of rainbow trout in a tailwater
- Determining age and swimming performance of blue sucker

Black bass management and genetics (10 studies)

Highlights:

- Assessing Guadalupe bass population densities and movements in central Texas rivers
- Comparison of treatment methods for depressurization illness in largemouth bass
- Comparing growth of ShareLunker offspring and other Florida largemouth bass
- Economic value of large fishing tournaments at Lake Fork
- Genetic assessment of relatedness among ShareLunker program entries

Catfish management (four studies)

Highlights:

- Harvest and angler behavior in a flathead catfish fishery
- Relative catchability of channel catfish and hybrids by anglers

Aquatic invasive species management and Golden Alga control (four studies)

Highlights:

- Identifying treatments for preventing zebra mussel transfers during fish transport
- Evaluating treatments for controlling golden alga blooms and toxicity

Evaluation of current management strategies and development of new techniques (seven studies)

Highlights:

- Recruitment success of fry-stocked hybrid striped bass
- Efficacy of mapping underwater habitats using side-scan sonar
- Validating age estimation procedures

Understanding anglers, developing urban fisheries, and other studies (seven studies)

Highlights:

- Evaluation of ghost-fishing of abandoned trotlines
- Developing partnerships and identifying marketing strategies to recruit anglers
- Using fish attractors to enhance aquatic habitat
- Evaluating stocking success of hybrid striped bass

Publications and Presentations

Scientific Publications and Reports

Birdsong, T. W., J. Botros, S. Magnelia, J. Anderson, M. Bean, T. Broad, D. Cortez, T. Grabowski, C. Kowaleski, C. Chute-Canal, J. East, K. Glenewinkel, B. Hester, R. Husted, J. Joplin, J. Lewey, S. Nichols, D. Oppenheimer, M. Parker, S. Robertson, and A. Stevens. 2019. Texas River Access and Conservation Areas Program: partnering with private landowners to expand paddling and fishing opportunities on Texas rivers. Texas Parks and Wildlife Department, Austin.

Birdsong, T. W., D. C. Dauwalter, G. P. Garrett, B. J. Labay, M. Bean, J. Broska, J. Graham, S. Magnelia, K. B. Mayes, M. McGarrity, K. M. Johnson, S. Robertson, T. Thompson, S. Vail-Muse, and J. B. Whittier. 2018. Native fish conservation areas of the southwestern USA: facilitating landscape-scale conservation of aquatic habitats and freshwater fishes. Southeast Aquatic Resources Partnership, Panama City, Florida.

Birdsong, T., M. Bean, P. Bean, J. Botros, M. De Jesus, A. England, P. Fleming, P. Ireland, C. Kittel, G. Linam, D. Lutz-Carrillo, S. Magnelia, M. Matthews, M. McGarrity, R. McGillicuddy, M. Parker, N. Smith, and P. Thompson. 2019. Guadalupe Bass Restoration Initiative 2018 Annual Report. Texas Parks and Wildlife Department, PWD RP 3200-2079 (1/19), Austin.

Bodine, K. A., J. W. Schlechte, and D. E. Shoup. 2018. An indirect method for estimating size-specific exploitation. North American Journal of Fisheries Management 38:1085-1090.

Bower, L., F. Keppeler, E. Cunha, Y. Morales, D. Saenz, E. Lopez, T. Bokhutlo, C. Arantes, M. Andrade, C. Robertson, K. Mayes, K. Winemiller, and Y. Quintana. 2019. Effects of hydrology on fish diversity and assemblage structure in a Texan coastal plains river. Transactions of the American Fisheries Society 148:207-218.

Buckmeier, D. L., and N. G. Smith. 2019. Validation of annuli and identification of discontinuities in sagittal otoliths of juvenile Alligator Gar. North American Journal of Fisheries Management early view online doi: 10.1002/nafm.10341

Carlson Mazur, M. L., J. Schaeffer, J. E. Granneman, N. Goldstrohm, F. A. Fitzpatrick, J. H. Larson, P. C. Reneau, K. P. Kowalski, P. W. Seelbach. 2019. Seasonal patterns in hydrochemical mixing in three Great Lakes rivermouth ecosystems. Journal of Great Lakes Research 45:651-663.

Coyle, S. D., and M. D. Matthews. 2019. Production of feed trained Largemouth Bass fingerlings: nursery phase through feed training. Pages 91-129 in J. H. Tidwell, S. D. Coyle, and L. A. Bright, editors. Largemouth Bass Aquaculture. 5m Publishing, Sheffield, UK.

Daugherty, D. J., Pangle, K. L., D. L. Buckmeier, and N. G. Smith. 2019. A tale of two timescales: using otolith microchemistry to improve our understanding of alligator gar movement in the lower Trinity River, Texas. Journal of the Southeastern Association of Fish and Wildlife Agencies 6:51-57.

Daugherty, D. J., D. L. Buckmeier, and N. G. Smith. 2019. Sex-specific dynamic rates in the Alligator Gar: implications for stock assessment and management. North American Journal of Fisheries Management 39:535-542.

Dudding, J., M. Hart, J. Khan, C. Robertson, R. Lopez, and C. Randklev. 2019. Host fish associations for two highly imperiled mussel species from the Southwestern United States: Cyclonaias necki (Guadalupe Orb) and Fusconaia mitchelli (False Spike). Freshwater Mollusk Biology and Conservation 22:12-19.

Fleming, B. P., D. J. Daugherty, N. G. Smith, and R.K. Betsill. 2018. Efficacy of low-cost, side-scan sonar for surveying Alligator Gar. Transactions of the American Fisheries Society 147:696-703.

Fleming, B. P., and N. G. Smith. 2019. Spatial distribution and hybridization levels in Guadalupe Bass five years after remedial stocking. Pages 231-244 in M. Siepker and J. Quinn, editors. Managing centrarchid fisheries in rivers and streams. American Fisheries Society, Symposium 87, Bethesda, Maryland.

Gomelsky, B., K. J. Semmens, E. Peatman, S. D. Coyle, and M. D. Matthews. 2019. Reproduction and genetics. Pages 61-90 in J. H. Tidwell, S. D. Coyle, and L. A. Bright, editors. Largemouth Bass Aquaculture. 5m Publishing, Sheffield, UK.

Grubh, A., and K. Winemiller. 2018. Spatiotemporal variation in wetland fish assemblages in the Western Ghats region of India. Knowledge & Management of Aquatic Ecosystems 419, 35. https://doi.org/10.1051/kmae/2018023

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Khan, J.M., M. Hart, J. Dudding, C. Robertson, R. Lopez, and C. Randklev. 2019. Evaluating the upper thermal limits of glochidia for selected freshwater mussel species (Bivalvia: Unionidae) in central and east Texas, and the implications for their conservation. Aquatic Conservation: Marine and Freshwater Ecosystems DOI: 10.1002/aqc.3136

Magnelia, S., G. Linam, R. McGillicuddy, K. Saunders, M. Parker, T. Birdsong, D. Lutz-Carillo, J. Williamson, R. L. Ranft, and T. Bonner. 2019. Repatriation of Guadalupe Bass in the Blanco River, Texas: a case study in the opportunistic use of drought as a fisheries management tool. Pages 213-230 in M. Siepker and J. Quinn, editors. Managing centrarchid fisheries in rivers and streams. American Fisheries Society, Symposium 87, Bethesda, Maryland.

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Patterson, D. 2018. Evaluation of stocking density and other factors improving Florida Largemouth Bass fingerling production efficiency at the Texas Freshwater Fisheries Center hatchery. Management Data Series, number 296. Texas Parks and Wildlife Department, Austin.

Prangnell, D. I., and M. D. Matthews. 2019. The early life history of the Guadalupe Bass: lessons for culturing a threatened species. North American Journal of Aquaculture 81(4):296–325.

Randklev, C., E. Tsakiris, M. Johnson, T. DuBose, M. Hart, J. Khan, D. Geeslin, C. Robertson. 2019. The effect of dewatering on freshwater mussel (Unionidae) community structure and the implications for conservation and water policy: a case study from a spring-fed stream in the southwestern United States. Global Ecology and Conservation 16:e00456. DOI: 10.1016/j.gecco.2018.e00456

Southard, G., Prangnell, D., Early, B., and H. Hrncirik. 2019. HAB Species: Texas fish hatchery uses hydro-optic ultraviolet disinfection for treatment of toxic golden alga. International Aquafeed Magazine 22(5):40-42.

Thongda, W., M. Lewis, H. Zhao, B. Bowen, D. Lutz-Carrillo, B. Peoples, and E. Peatman. 2019. Species-diagnostic SNP markers for the black basses (Micropterus spp.): a new tool for black bass conservation and management. Conservation Genetics Resources 2019. https://doi.org/10.1007/s12686-019-01109-8

Zawalski, R., Nowlin W. H., Cottenie, K., Grubh A. and A. N. Schwalb. 2019. Distinctive macroinvertebrate communities in a subtropical river network. Journal of Freshwater Ecology, 34:1, 135-150. DOI: 10.1080/02705060.2019.1574921

Special Publication:

Dauwalter, D. C., T. W. Birdsong, and G. P. Garrett, editors. 2019. Multispecies and watershed approaches to freshwater fish conservation: science, planning, and implementation. American Fisheries Society, Symposium 91, Bethesda, Maryland 693 pp.

Birdsong, T. W., G. P. Garrett, B. J. Labay, M. G. Bean, P. T. Bean, M. J. Casarez, A. E. Cohen, T. G. Heger, A. Kalmbach, D. A. Hendrickson, S. J. Magnelia, K. B. Mayes, M. E. McGarrity, R. McGillicuddy, M. M. Parker, and S. Robertson. 2019. Texas native fish conservation areas network: strategic investments in restoration and preservation of freshwater fish diversity. AFS Symposium 91:183-230.

Dauwalter, D. C., T. W. Birdsong, and G. P. Garrett. 2019. Preface: Multispecies and watershed approaches to conservation—thinking and acting holistically. AFS Symposium 91:ix-xii.

Dauwalter, D. C., S. L. Vail-Muse, T. R. Thompson, J. B. Whittier, K. M. Johnson, and M. G. Bean. 2019. Partnering on multispecies aquatic assessments to inform efficient conservation delivery. AFS Symposium 91:11-32.

Garrett, G. P., T. W. Birdsong, M. G. Bean, and B. J. Labay. 2019. Chihuahuan Desert native fish conservation areas: a multispecies and watershed approach to preservation of freshwater fish diversity. AFS Symposium 91:231-252.

Labay, B. J., J. S. Perkin, D. A. Hendrickson, A. R. Cooper, G. P. Garrett, and T. W. Birdsong. 2019. Who's asking? Interjurisdictional conservation assessment and planning for great plains fishes. AFS Symposium 91:57-84.

Magnelia, S. J., K. B. Mayes, M. G. Bean, C. L. Loeffler, and D. D. Bradsby. 2019. Four decades of conserving native fish in the Colorado River watershed, Texas. AFS Symposium 91:269-292.

Mayes, K. B., G. R. Wilde, M. E. McGarrity, B. D. Wolaver, and T. G. Caldwell. 2019. Watershed-scale conservation of native fishes in the Brazos River basin, Texas. AFS Symposium 91:315-344.

McGarrity, M. E. 2019. Spatial conservation assessment for balancing avoidance of impacts of tilapia introduction on imperiled fish biodiversity with economic impacts to the aquaculture industry. AFS Symposium 91:161-182.

Robertson, S., B. D. Wolaver, T. G. Caldwell, T. W. Birdsong, R, Smith, T. Hardy, J. Lewey, and J. Joplin. 2019. Developing the science and public support needed to preserve the Devils River: a case study in collaborative conservation. AFS Symposium 91:293-314.

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 122 presentations were given by staff as author or co-author, at more than 30 professional meetings or conferences. Venues included:

- Abilene Chamber of Commerce, monthly meeting, Abilene, TX
- American Fisheries Society, annual meeting, Atlantic City, NJ
- Angelo State University, Wildlife Techniques, San Angelo, TX
- Aquaculture 2019, annual meeting, New Orleans, LA
- Colorado/Wyoming Chapter of the American Fisheries Society, Fort Collins, CO
- Desert Fishes Council, annual meeting, Death Valley, CA
- Ecological Society of America, annual meeting, Louisville, KY
- Fly Fishers International Associations, multiple chapters, multiple locations, TX
- Freshwater Mollusk Conservation Society Symposium, San Antonio, TX
- Healthy Creeks Initiative to Control Arundo - landowner workshops, multiple locations, TX
- Knights of Columbus, general meeting, Marshall, TX

- Marshall Lion's Club, general meeting, Marshall, TX
- National Fish Habitat Partnership, annual board meeting, Hunt, TX
- National Reservoir Habitat Partnership, annual meeting, Athens, TX
- NRCS State Technical Advisory Committee Meeting. Austin, TX
- Society of Environmental Toxicology and Chemistry North America, annual meeting, Sacramento, CA
- Society of Molecular Biology and Evolution, annual meeting, Manchester Central, England
- Southeast Aquatic Resources Partnership Steering Committee Meeting, Little Rock, AR
- Southeastern Association of Fish and Wildlife Agencies, annual meeting, Mobile, AL
- Southern Division American Fisheries Society, annual meeting, Galveston, TX
- Southwestern Association of Naturalists, annual meeting, San Marcos, TX
- Texas A&M Agrilife, Pond Management Fundamentals, Wichita Falls, TX
- TPWD, Inland Fisheries Staff Meeting, San Antonio, TX
- TPWD, Inland Fisheries Hatchery Branch, annual meeting, Bandera, TX
- TPWD Wildlife Diversity Technical Committee Meeting, Leakey, TX
- Texas Invasive Plant and Pest Conference, Austin, TX
- Texas Master Naturalist Training for multiple chapters, multiple locations, TX
- Texas Riparian and Stream Ecosystem Training for multiple groups, multiple locations, TX
- Texas State University Women in Science and Engineering Conference, San Marcos, TX
- TransPecos Workgroup, general meeting, Austin, TX
- Urban Riparian Symposium, Grapevine, TX
- Watercraft Inspection Training, Level 1, Marble Falls, TX

Popular Articles

Twenty-nine popular articles were written and published by Inland Fisheries staff in five different publications. A total of 133 press releases on aquatic natural resources, fisheries management, and recreational fishing opportunities were provided to TV, radio, news, and outdoor-related media outlets by management district offices and habitat conservation teams some with assistance from TPWD-Communications Division. There were 715 social media posts in Facebook and Instagram. Of these, 223 Facebook posts reached 1,054,402 people and engaged 112,325 people.

Outreach Events

Inland Fisheries staff members were event leaders at 279 outreach events for targeted user groups (youth under 17, minorities, women, and physically challenged) in which 29,693 individuals participated.

Participants

	Youth 17 & under	Adults	Total
Males (1)	10,622	5,089	15,711
Females (2)	8,995	4,987	13,982
Minorities	6,695	2,057	8,752
Physically Challenged	745	222	967
Total (1+2)	19,617	10,076	29,693

Work with Other Organizations

Program Contracts and Agreements

American Bird Conservancy	Conservation Delivery in Chihuahuan Desert Native Fish Conservation	$ 50,000
Angelina and Nacogdoches Counties Water Control and Improvement District	Lake Striker Salvinia Control	$ 40,000
Caddo Biocontrol Alliance	Biological control of giant salvinia	$ 50,000
Camp Huaco Springs	Public Leased Access to the Guadalupe River Trout Fishery at Camp Huaco Springs	$ 2,600
Charlotte Hopson-Hanson	Public Leased Access to the Llano River at 14717 RR 152, Llano, TX	$ 9,000
Chautauqua Foundation	Leased Angler Access to the Lower Colorado River at the Texas River School River Camp	$ 12,000
Coastal Water Authority	Control of water hyacinth, *Eichhornia crassipes,* and hydrilla in Lake Houston and its tributaries	$ 25,000
Cypress Valley Navigation District	Boat lane maintenance and boater access on Caddo Lake and Big Cypress Bayou	$ 61,000
Devils River Conservancy	Development of a Web-based Clearinghouse Offering Access to Current and Historic Data, Report and Other Pertinent Information from Texas Native Fish Conservation Areas	$ 93,077
Dick's Canoes	Public Leased Access to the Brazos River at Dick's	$ 12,000
Fishing's Future	Family Fish Camp Learn-to-Fish Events	$ 6,000
Guadalupe Blanco River Authority	Control of water hyacinth, *Eichhornia crassipes,* and other aquatic or riparian plant species in the Guadalupe River and its tributaries	$ 50,000
Hill Country Alliance	Landowner and Community Engagement in Control of Arundo and Restoration of Hill Country Rivers	$ 60,698
Hill Country Alliance	Conserving Texas Rivers Initiative: Community Outreach, Education and Capacity Building for Stewardship of Hill Country Rivers	$ 39,476
Joana Laake	Public Leased Access to the Llano River at 535 KC 312, City of Junction, TX	$ 15,750
John Cooke II	Public Leased Access to the Sabine River at FM 1794, Beckville, TX	$ 12,000

Karrie Lera McKeown	Public Leased Access to the Colorado River at 203 Hidden Shores Loop, Smithville	$ 14,400
Keep Texas Beautiful	Organization and Implementation of Litter Clean-up at TPWD River Access and Conservation Area Sites	$ 9,650
Kingsland Slab Group, LLC	River Access Lease Agreement	$ 2,000
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
Lavaca-Navidad River Authority	Control of water hyacinth, *Eichhornia crassipes;* giant salvinia, *Salvinia molesta;* and other invasive aquatic or riparian plant species in Lake Texana and its tributaries	$100,000
Lower Neches Valley Authority	Control of water hyacinth, *Eichhornia crassipes;* giant Salvinia, *Salvinia molesta;* and other aquatic or riparian plant species in Sam Rayburn Reservoir and B.A. Steinhagen Reservoir	$280,000
Lykes Bros., Inc	Landowner Incentive Program, Brewster County, TX	$ 50,000
Nol Dear	Public Leased access to the South Llano River at KC 150	$ 18,000
Nueces River Authority	Arundo Control and Riparian Restoration in the Nueces River Basin: Upper Nueces River	$ 20,900
Nueces River Authority	Arundo Control and Riparian Restoration in the Nueces River Basin: Sabinal, Frio and Dry Frio Rivers	$ 64,840
Randy Leifeste	Public Leased Access to the Llano River at FM 2768 crossing	$ 10,500
Sandra Hightower	Public Leased Access to the Colorado River at 750 FM 2571, Smithville, TX	$ 14,400
Scott Mayes	Public Leased Access on the Llano River at 4373 Maso Llan Rd, City of Mason, TX	$ 20,826
Southeast Aquatic Resources Partnership	Assessment and Prioritization of Barriers in the Upper Guadalupe River Upstream from Canyon Reservoir: A Pilot Project	$ 74,998
Skyline Ranch	Public Leased Access to the Devils River in Val Verde County	$ 48,000
Stephen F. Austin University	Control of *Salvinia molesta* with an endocide	$ 49,990
Texas A&M University, AgriLife Research	An Economic Analysis of the Lake Texoma Fishery	$11,862

Texas A&M University, AgriLife Research	Host Fish Use of Three Rare Central Texas Mussel Species	$207,361
Texas A&M University, AgriLife 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
Texas A&M University, AgriLife Research	Thermal tolerance of *Popenaias popeii* from the Rio Grande, Texas	$124,303
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
Texas Conservation Science	Riparian Productivity in the Brazos, Guadalupe and Trinity River Basins	$ 50,000
Texas Conservation Science	Riparian productivity in three Texas river basins	$ 84,000
Texas State University	A Framework for Conservation in the Guadalupe River Basin: Towards Collaborative Stewardship Through Strategic Geographic Prioritization and Stakeholder Coordination	$120,000
Texas State University	Analytical Services Genetics Student Worker Laboratory Assistant	$ 61,918
Texas State University	Life History, Distribution and Trophic Ecology of the Endangered Comal Springs Dryopid Beetle (*Stygoparnus comalensis*)	$ 42,988
Texas State University	The impact of environmental contaminants on Texas unionid mussels in the Guadalupe Basin	$ 81,915
Texas State University	Downstream dispersal, survival and growth of zebra mussels (*Dreissena polymorpha)* downstream of invaded Central Texas reservoirs	$ 97,783
Texas Tech University	Recruitment Dynamics and Reproductive Ecology of Blue Sucker in Texas	$166,157
Texas Tech University	Towards a Better Understanding of Blue Suckers: Validation of Age Determination Methods and Establishing the Influence of Temperature on Aerobic Scope and Swimming Performance	$131,874
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

Thomas A. Goynes	Public Leased Access to the San Marcos River	$ 24,000
Trinity River Authority	Control of giant Salvinia *Salvinia molesta*, water Hyacinth *Eichhorria crassipes* and other aquatic or Riparian plant species in Lake Livingston and its Tributaries	$ 25,000
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
University of North Texas	Alligator Gar Maternal/Egg Contaminant Analyses	$ 16,500
University of Texas Austin	Airborne Lidar bathymetry survey and aquatic habitat evaluation for Devils River Minnow and Texas Hornshell Mussel in the Devils River	$276,862
University of Texas Austin	American Eel: Utilization Modern Techniques to Assess Conservation Status in Texas	$ 79,945
University of Texas Austin	Continued Monitoring hydrologic effects of salt cedar control in the Upper Brazos River basin	$123,521
University of Texas Austin	Exploring the distribution of groundwater salamanders and catfish with environmental DNA	$ 75,288
University of Texas Austin	Gap Sampling within the Texas Native Fish Conservation Areas Network	$229,297
University of Texas Austin-BEG	Surface water-groundwater interactions in the Upper Brazos River basin in Texas and quantitative relationship to smalleye and sharpnose shiner reproductive success	$ 99,935
University of Texas Austin-LBJWC	The TexasInvasives.org Program	$ 93,844
University of Texas Austin	Texas Native Fish Conservation Areas Network	$280,786
University of Texas Rio Grande Valley	Impacts of hydrologic alteration on imperiled Brazos River vertebrates	$ 51,405
William H. Haley, III	Public Leased Access to the Nueces River at 12317 Figueroa St., Corpus Christi, TX	$ 12,000
Wood Hole Oceanographic Institution	Accelerator mass spectrophotometry analysis of Alligator Gar otoliths	$ 8,520

Grants and Donations — Incoming Funds

Donor	Program	Amount
BNSF Foundation	Neighborhood Fishin' Program	$5,000
Guadalupe River Trout Unlimited	Trout Intern	$7,000
Gulf States Toyota	Toyota ShareLunker Program	$40,000

	Item	Value
TPW Foundation	Tackle Items	$6,238
Friends of TFFC	Apple iMac Pro	$5,376
James Stefano	Backpack Electrofishing Unit	$500
TPW Foundation	2018 Toyota Tundra	$42,797
Friends of TFFC	LaCie 6TB External Hard Drive	$225

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