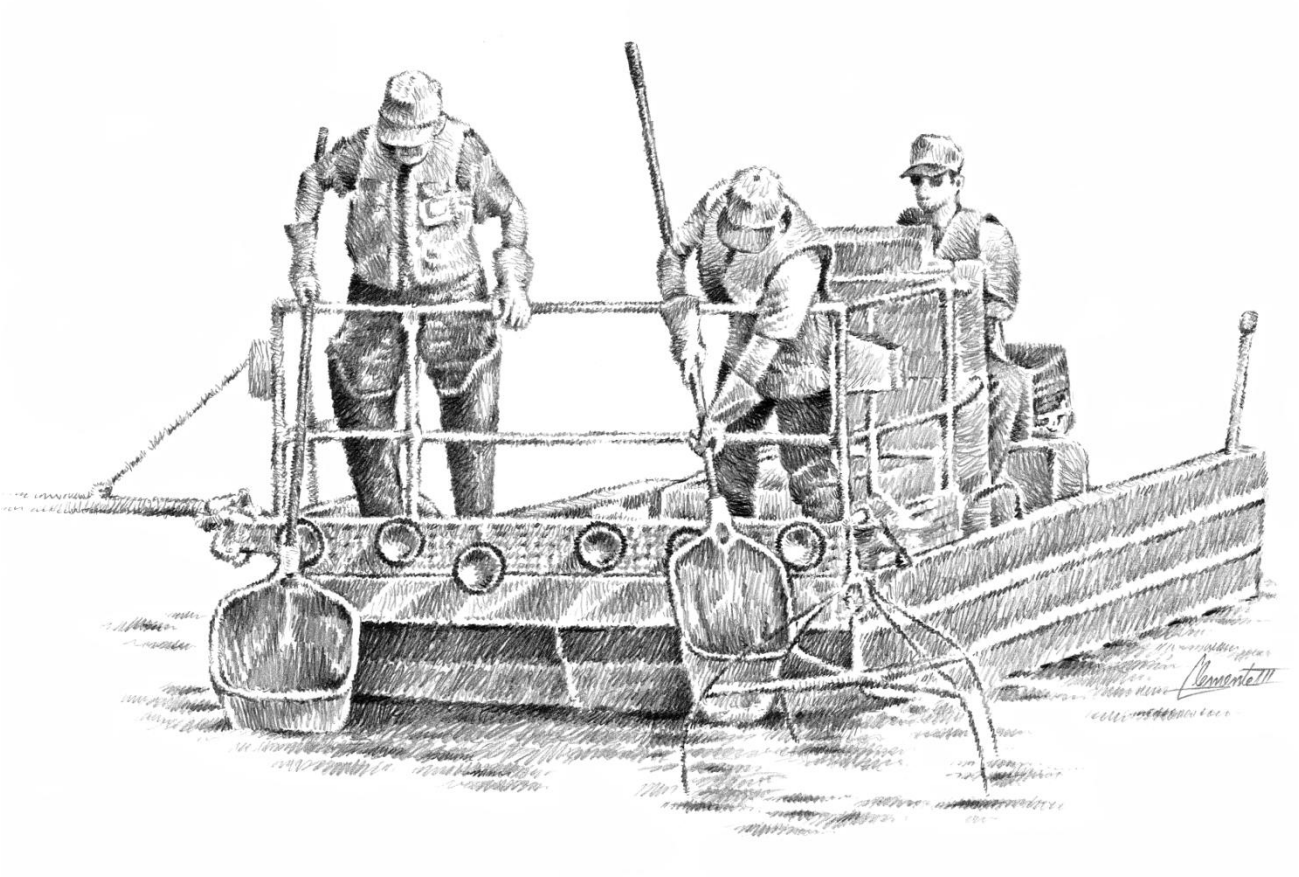
INLAND FISHERIES ANNUAL REPORT 2015



IMPROVING THE QUALITY OF FISHING

TEXAS PARKS & WILDLIFE

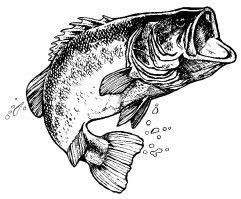
Carter Smith
Executive Director

Craig Bonds
Director, Inland Fisheries

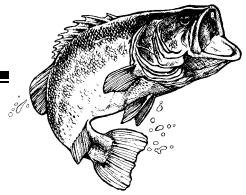
INLAND FISHERIES ANNUAL REPORT 2015

TEXAS PARKS AND WILDLIFE DEPARTMENT

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 1.85 million anglers, 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

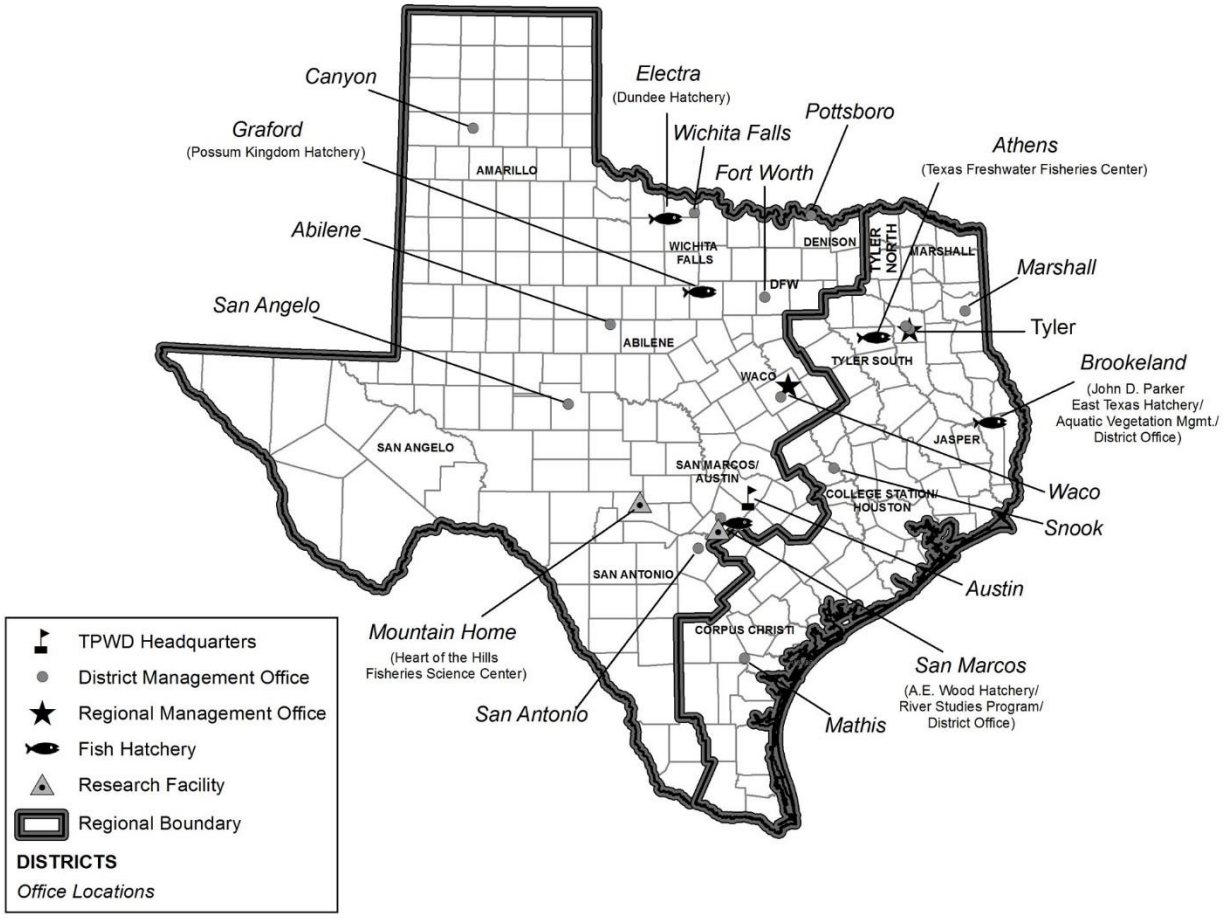
The Division goals were developed to address the major issues facing the freshwater fisheries resources of Texas.

- 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 213.25 positions assigned to management, hatchery, research, outreach, habitat, analytical services, and administrative branches. For details, see Appendix – Organization Charts.

Facilities



Contact Information

Inland Fisheries Division • Texas Parks and Wildlife Department
4200 Smith School Road • Austin, Texas 78744
(800) 792-1112 or (512) 389-4444 • www.tpwd.texas.gov

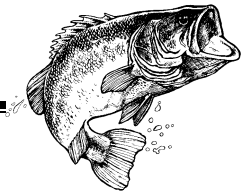
Funding and Allocation

In FY15 $17,325,975 was budgeted for Inland Fisheries (not including fringe benefits or capital construction). Federal Aid grants are expected to reimburse the Department $9,477,711 on eligible Inland Fisheries activities. The allocation of Federal Aid monies was $2,484,422 for Fish Hatchery facilities and $6,993,289 for Management and Research, Habitat, Outreach, and Administrative and Laboratory services.

FY15 Budget by Program

Administration	$1,640,443
Management and Research	$5,833,392
Hatcheries and Laboratory	$5,310,110
Habitat	$3,351,180
Outreach/Texas Freshwater Fisheries Center	$1,190,850
Total FY15 w/o fringe	**$17,325,975**

WHAT WE DO



Administration

The administrative function of the Inland Fisheries Division occurs 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 large 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 habitats in Texas streams, rivers and reservoir systems. The Inland Fisheries Division's goals and objectives for conservation of freshwater fish habitats are accomplished through science and conservation partnerships with other TPWD divisions, non-governmental organizations, private landowners, local communities, river authorities, local, state and federal agencies, and other conservation organizations.

Specific conservation actions are led and coordinated by the Division's Habitat Conservation branch, which consists of 36 employees with multidisciplinary training and expertise in aquatic biology and ecology, hydrology, fluvial geomorphology, riparian and floodplain ecology, instream flow science, toxicology, restoration science, and conservation policy. Responsibilities include a broad range of natural resource issues including watershed protection and restoration; instream flow science; fish conservation; management of aquatic invasive species; environmental response, damage assessment, and restoration; and other topics affecting the health of Texas fisheries, their habitats, and other aquatic resources.

Fisheries Management and Research

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 statistically 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,

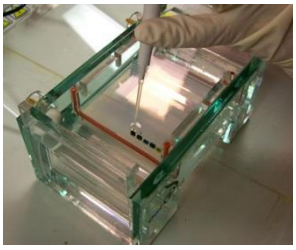
implements habitat improvement projects, assists with treatment of invasive aquatic species, conducts public outreach, manages our urban fishing programs, and performs research to evaluate and improve fisheries management strategies. Staff provide assistance and information to the general public, fishing-related 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

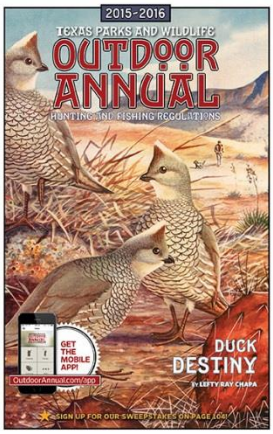
Hatcheries serve as an important component of Inland Fisheries resource management. Fish stocking is one of several essential tools used to protect, manage and enhance statewide fisheries resources as well as achieve specific fisheries resource objectives. Stocked fish must meet specific requirements 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. Also, TPWD hatcheries 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.

Analytical Services



Analytical laboratories serve a unique function within Inland Fisheries by providing state-of-the-science analyses in water quality, fish pathology, and genetics. Analytical Services conducts a variety of chemical analyses in support of divisional, interdivisional, and interagency programs. Analyses are routinely performed for the Kills and Spills Team, Law Enforcement Division's Environmental Crime Unit, and in support of research conducted by Inland Fisheries staff. The collective expertise of the Analytical Services staff allows customized analyses aimed at meeting the changing needs of the department and the state.

The Fish Health and Genetics Laboratory provides specialized expertise in fish health and genetics, and in support of hatchery discharge permits. In-house expertise facilitates timely and efficient response to emerging and ongoing concerns. Fish health expertise imparts an ability to focus on specific pathogens of interest. Genetics expertise and equipment are used to facilitate management and advance scientific knowledge of important sport fish including largemouth bass, striped bass, and catfish, along with species of concern such as Guadalupe bass and the Pecos River pupfish. In the case of fish kill investigations, the lab may work to analyze both biological and chemical agents of concern.



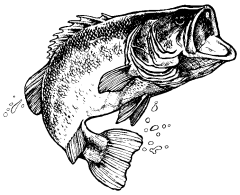
Information and Regulations

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 Texas Parks and Wildlife Department headquarters in Austin.

Texas Freshwater Fisheries Center

The Texas Freshwater Fisheries Center (TFFC) in Athens is a multipurpose facility that provides educational experiences to the public while also producing millions of fish annually to meet the stocking needs of fisheries managers. TFFC also serves as headquarters for the Toyota ShareLunker program. More than 50,000 people visit TFFC annually; over 20,000 of those are youth aged 12 and under. The visitor center opens six days a week to individuals and families. In addition, TFFC provides high quality, intensive, hands-on outdoor and science educational experiences for K-12 students, preservice teachers, 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 work, and great fishing experiences.

KEY ACCOMPLISHMENTS



Monitoring, Management Plans, and Permits

Reservoir Surveys — Staff conducted 401 surveys of fish populations, habitat, water quality, and angler use on 183 reservoirs covering 1,372,778 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 surveys to assess the status of fish communities, freshwater mussels, benthic invertebrates, and aquatic and riparian habitats in selected rivers throughout the state, including mainstem reaches and tributaries of the Blanco, Brazos, Colorado, Guadalupe, Devils, Llano, Nueces, Pedernales, Rio Grande, San Antonio, and Trinity rivers. Surveys were used to inform a variety of river recreation and conservation projects including riparian invasive species control, establishment of new paddling trails and other public access improvements, water management decisions, restoration of Guadalupe bass populations, and other native fish conservation efforts.

Guidance for Activities Affecting Watersheds — Inland Fisheries offers technical guidance to other government agencies and private corporations on strategies to avoid, minimize, and mitigate impacts to sport fisheries, their habitats, and other aquatic resources. In 2015, we provided guidance on proposed development projects with the potential to affect more than 200 miles of creeks and rivers and 22 square miles of wetlands. Staff also provided technical guidance on the designs of 120 park development, trail construction, and boater access projects, helping to direct those projects toward outcomes that would support sustainable recreational access to Texas rivers.

Fish Health Investigations — A.E. Wood and collaborating laboratories investigated 130 fish health cases, analyzing approximately 2,691 fish. A total of 101 samples were processed for zebra mussel larvae or DNA and 96 samples were analyzed for *Prymnesium parvum* (golden alga) toxicity and presence in Texas public lakes. In addition, the laboratories completed five chemistry and 12 genetics projects.

Zebra Mussel Monitoring and Prevention – Inland Fisheries and partners continue to intensively monitor water bodies deemed at risk for zebra mussel infestation. In 2015, 37 water bodies were monitored with plankton sampling, settlement samplers, and DNA analysis. At year's end, adult zebra mussels had been found in seven reservoirs. Another 18 water bodies had tested positive for zebra mussel DNA, but no mussels had been found. As a precaution against further spread of zebra mussels, a zebra mussel inspection program will be initiated in 2016, targeting water bodies already infested and those in close proximity.

Permits — The Division issued 198 permits for possession of prohibited exotic fish, shellfish, or aquatic plants. These permits authorized aquatic invasive plant removal projects (4), possession or culture of non-native species of fish and shrimp (93), commercial farming of invasive aquatic plants as a food source (71), invasive species research (16), and holding of invasive species by zoos and aquaria (14). In addition, 37 permits were issued for the collection of native nongame fishes from public waters and 72 permits for projects that temporarily disturbed aquatic habitats in creeks and rivers.

Applied Management and Conservation Actions

Watershed-Scale Fish Habitat Improvements in the Llano River Watershed — Staff completed a five-year habitat restoration initiative in the Llano River watershed. Biologists worked closely with landowners to design and implement landscape-scale habitat improvements to benefit Guadalupe bass and other fishery and aquatic resources. Staff provided on-site technical guidance to landowners who steward more than 123,000 acres of ranch lands. Inland Fisheries also provided cost-share incentives for specific habitat restoration projects on private lands. These projects restored approximately 9,100 acres of aquifer recharge features, springs, creeks, and riparian buffers. Fifty springs and smaller spring complexes were restored and protected, and large-scale control measures were implemented along the Llano to control invasive riparian plants.

Refuge for Native Fish at Rillito Springs — TPWD staff worked with the United States Fish and Wildlife Service and a private landowner to create the Rillito Springs refugium, which now holds a population of the imperiled Pecos pupfish. This species was nearly extirpated from Texas due to hybridization with the introduced sheepshead minnow. The pupfish population in the refugium is thriving as a result of this effort. This cooperative effort is funded through the Desert Fish Habitat Partnership.

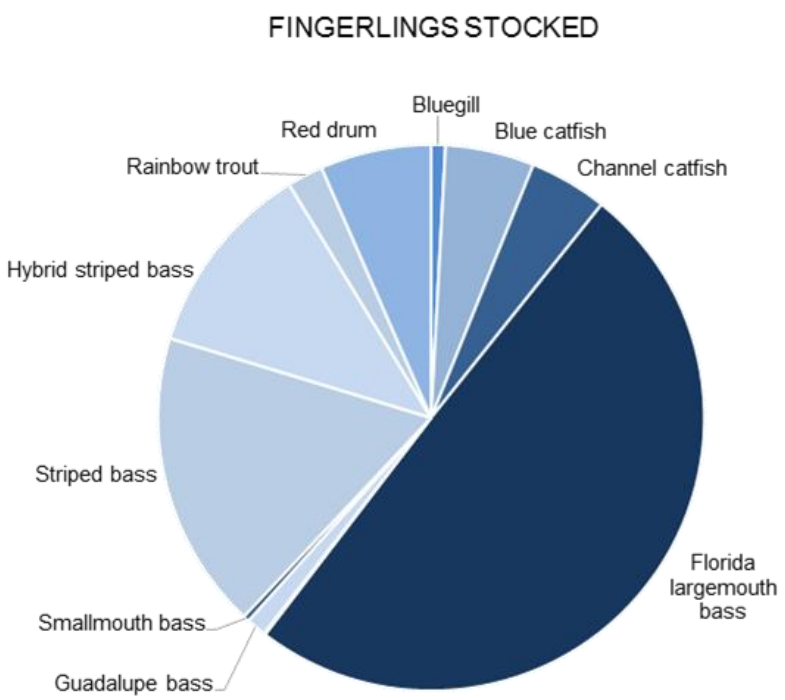
Rapid Bioassessments at State Parks and Wildlife Management Areas — Inland Fisheries is coordinating the development and implementation of bioassessments (BioBlitz) on rivers adjacent to TPWD properties such as State Parks, State Natural Areas, and Wildlife Management Areas. Data from these BioBlitzes will help land managers integrate aquatic species conservation into their management recommendations. Since 2012, BioBlitzes have been completed on the North Fork of the Guadalupe River adjacent to the Kerr Wildlife Management Area, Frio River at Garner State Park, Canadian River at Gene Howe WMA, Village Creek adjacent to Village Creek State Park, and Big Cypress Bayou. Two of these were completed in 2015. Additional assessments are planned for 2016.

Natural Resource Damage Assessment in Northeast Texas — Inland Fisheries participated in a multi-year, interagency effort to recover damages to fish and aquatic resources that resulted from releases of creosote and other chemicals into Days Creek and the adjacent floodplain from the Tronox industrial site, a former wood treatment facility near Texarkana. More than $23 million was provided in 2015 in support of the settlement. Funds will support aquatic and riparian habitat restoration and protection projects in northeast Texas.

Fish Kill Investigations — Staff investigated 57 fish kills and 14 pollution complaints. Damages to fisheries resources were recovered from responsible parties through a civil restitution process.

Urban and River Fishery Development — The Division is re-purposing existing staff and funding to develop more fisheries and better access to fishing in metropolitan areas and in our many rivers. We reorganized and streamlined the administration of fishery management offices, allowing us to move additional staff into Dallas-Fort Worth, College Station-Houston, and Austin-San Marcos offices. We expect many new fishing opportunities to come online in the near future for residents of these metro areas.

Enhanced Biosecurity Protocols — All branches of the Division incorporate strict procedures in their daily operations to minimize the risk of accidentally introducing exotic species such as zebra mussels and Asian carp to our facilities or to new waters. The cost of prevention is minimal compared to the cost of controlling aquatic invasive species once they are established.



Hatcheries and Stocking — Freshwater hatcheries produced 14.9 million fingerlings for stocking in public waters. The majority of the fingerlings stocked were largemouth bass (51%) or striped and hybrid striped bass (30%). Other species stocked included Guadalupe 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 12- to 14-inch advanced channel catfish fingerlings stocked in support of the Neighborhood Fishin' Program are acquired from a commercial producer. Hatchery staff made more than 895 stocking trips, driving more than 202,974 miles to distribute fish to more than 399 water bodies.

Habitat Improvement Projects — Staff conducted reservoir fish habitat improvement activities on 25 public reservoirs, affecting a total of 1,358 surface acres. We planted native aquatic vegetation, removed invasive plants, and installed natural or man-made fish attractor structures and habitats.

Managing Invasive Vegetation — Staff and contractors continued efforts to control aquatic invasive plants that degrade fish and wildlife habitats and impede boating and fishing access. Activities included herbicide treatment of more than 4,400 acres of giant salvinia (*Salvinia molesta*), an invasive floating fern that has been especially problematic at Caddo Lake and Toledo Bend Reservoir. In addition, nearly 130,000 salvinia weevils were reared and stocked at various locations for biological control. Herbicide treatments, biological controls, and physical removal were used to manage a variety of other aquatic and riparian invasive plants on East Texas reservoirs and selected rivers in Central Texas.

Regulation Updates — Staff recommended several changes in regulations to improve angling opportunities and protect fisheries resources. The following changes were adopted by the Texas Parks and Wildlife Commission.

- Changed harvest regulation for largemouth bass on Braunig and Calaveras lakes and smallmouth bass on O.H. Ivie Reservoir back to the standard 14-inch minimum length limit. Daily bag limit remains at five fish.
- On Nasworthy Reservoir in Tom Green County, harvest regulations for largemouth bass changed to a 14- to 18-inch slot limit with a five-fish daily bag.
- On Falcon Reservoir in Zapata and Starr counties, the bag limit for alligator gar increased from one fish to five fish per day. The new limit applies to all impounded waters of the Rio Grande from the Falcon Dam upstream to the Zapata/Webb County line.

Major Research Findings

Understanding Alligator Gar Reproduction — Long-awaited spring rains brought flooding to much of Texas, allowing biologists to test the hypothesis that flood pulses increase alligator gar spawning success. Reproduction in this species is thought to depend on overbank flows during spring and summer that provide access to vegetated floodplain habitats. After the 2015 floods, research sampling caught more than 1,000 juvenile alligator gar from river-reservoir systems across Texas, a stark contrast to the five juveniles collected during the drought years of 2013 and 2014. Researchers will use fish ages and genetic data to identify the specific flow and water level conditions that facilitate successful reproduction of alligator gar. These data, combined with floodplain inundation models that quantify spawning habitat, will allow us to predict future recruitment of alligator gar and work with water authorities to improve conditions for spawning.

Devils River Minnow Hydrology Study — A study of the effects of stream flow on the federally threatened Devils River minnow and other fish species was completed in the stretch of river that adjoins the Devils River State Natural Area. This information can be used to help predict changes in instream habitat as a result of decreased spring flows from groundwater pumping. This was a collaborative project with the Texas Nature Conservancy and the Meadows Center for Water and the Environment at Texas State University.

Advancements in Fish Culture and Stocking — Two key initiatives increased the efficiency of our hatchery production and management stocking programs:

- *Striped bass spawning:* Our hatchery production of striped bass and hybrid striped bass has always relied on fresh milt and eggs from wild-caught fish. Typically, male and female fish are caught in the wild and taken to hatcheries to be spawned. However, new research by our staff allows us to preserve milt from male striped bass in the field. This can eliminate the cost of transporting male fish back to the hatchery, and makes our spawning program more flexible and efficient.
- *Largemouth bass stocking:* Largemouth bass depend on shoreline habitat for feeding, spawning, and survival. Historically, stocking rates for largemouth bass were based on reservoir surface area. Staff conducted an extensive review of scientific literature and analyzed relationships between the surface area, shoreline length, and fish habitat of many Texas reservoirs. They found that the amount of shoreline is a better measure of a reservoir's ability to support stocked largemouth bass than the total surface area of a reservoir. A new stocking protocol based on shoreline length better aligns the number of fish stocked with available habitat. This habitat-based approach improves the efficiency of our largemouth bass stocking program.

Economic Impacts of Stream Fishing in the Texas Hill Country — Inland Fisheries collaborated with Texas Tech University to complete an economic impact study of river and stream anglers in a 24-county area of the Hill Country. The total economic impact from these anglers was estimated at $71.5 million over a 16-month period. The study provides economic justification for increased management of Guadalupe bass and other sportfish species in Hill Country rivers and streams.

Increase Access to Public Waters

New Neighborhood Fishin' Lake — Grover Nelson Park in Abilene became the newest site in the Neighborhood Fishin' Program. This family-friendly fishing program includes 17 lakes in 11 major metropolitan areas. The lakes provide easy access for fishing and get frequent stockings of channel catfish in summer and rainbow trout in winter. Support comes from the Toyota Texas Bass Classic and the host cities and parks.

Increased Boating Access — Staff worked to identify boat access needs and recommended funding priorities for two proposed freshwater boat ramp projects. These will be partially funded through a Federal Boating Access Grant.

New Paddling Trails — Two new paddling trails were launched, one on Pecan Bayou near Brownwood and another on the Lower Neches River in the Big Thicket.

Outreach

New Largemouth Bass Conservation Plate — We re-introduced our largemouth bass conservation license plate with a new design by wildlife artist Clemente Guzman. The new plate features a jumping bass and was the most popular design in an online public poll. Working with our Marketing and Creative Services teams, we launched the new plate at the 2015 Toyota Texas Bass Classic. The bass plate generates funds for reservoir fish habitat improvement projects.

State-Fish Art Contest — Texas Freshwater Fisheries Center hosts the Texas branch of this contest, which is sponsored by the national non-profit Wildlife Forever. In 2015, we had more than 1,000 entries from grades K-12, more than any other state. First, second, and third place winners received scholarships. The top 10 contestants in each of four grade divisions were recognized with an awards ceremony, luncheon, fishing gear, and day at TFFC. Jennifer Brooks, a Dallas ISD teacher, was recognized by Wildlife Forever as 2015 Educator of the Year.

Sharing the Great Outdoors — Texas Freshwater Fisheries Center is our division's primary outreach and education center. Open to the public for 310 days in FY15, the Center provided a high-quality experience including facility tours, workshops, and aquatic education classes. Visitors included 51,730 people from 47 states and 16 foreign countries. TFFC provided hands-on fishing for 25,574 visitors, with 313 receiving First Fish Awards. A total of 16,457 people toured the hatchery ponds via guided tram. The center also provided support materials for the general public, teachers, and students.

Special Events — TFFC planned and executed major events including the Bluegill Family Fishing Tournament, Fly Fish Texas, Cinco de Mayo, ShareLunker & Freshwater Fisheries Hall of Fame Awards Banquet, National Fishing Day, and community outreach events such as Halloween at the Hatchery, Eggfest Athens, and Fireworks at the Fishery.

Working with Schools — TFFC facilitated the annual Wetland Adventure, a three-day event involving more than 100 Stephen F. Austin State University School of Education preservice teachers and hundreds of regional school students. The center also provided its annual STAAR Academy for fifth- and eighth-grade students of the Brownsboro, Eustace and Athens school districts, offering intensive science education classes to target school-identified weaknesses in standardized tests.

Outreach to Target Audiences — Inland Fisheries staff led 318 outreach events designed to reach youth under 17, minorities, women, and physically challenged individuals. A total of 23,717 people participated in these events. For details on the various audiences, see Appendix – Outreach Events.

Infrastructure Enhancements

Hatchery Updates — Construction and renovation efforts continued at several facilities. Concrete raceways at the Possum Kingdom Hatchery were lined with a spray-on synthetic coating to prevent leaks and extend their useful life. Planning and design were completed for a renovation at Possum Kingdom to fully develop and expand the facilities that house the captive striped bass program, and for renovation to the effluent treatment facility at the A.E. Wood Hatchery. Construction of the proposed improvements at both facilities is scheduled in 2016.

Adapting to Drought — Dry conditions at the Dundee Fish Hatchery forced a temporary suspension of operations for the fourth consecutive year. Production at Dundee typically represents 20-25% of the total statewide production. The Division continued to develop and implement strategies to mitigate the effects of persisting dry conditions and sustain hatchery operations. At Texas Freshwater Fisheries Center, work was initiated to build a water storage reservoir to provide greater operational flexibility, install a system that allows the capture and reuse of hatchery effluent during extreme drought, and install two freshwater production wells as a contingency to supplement available water.

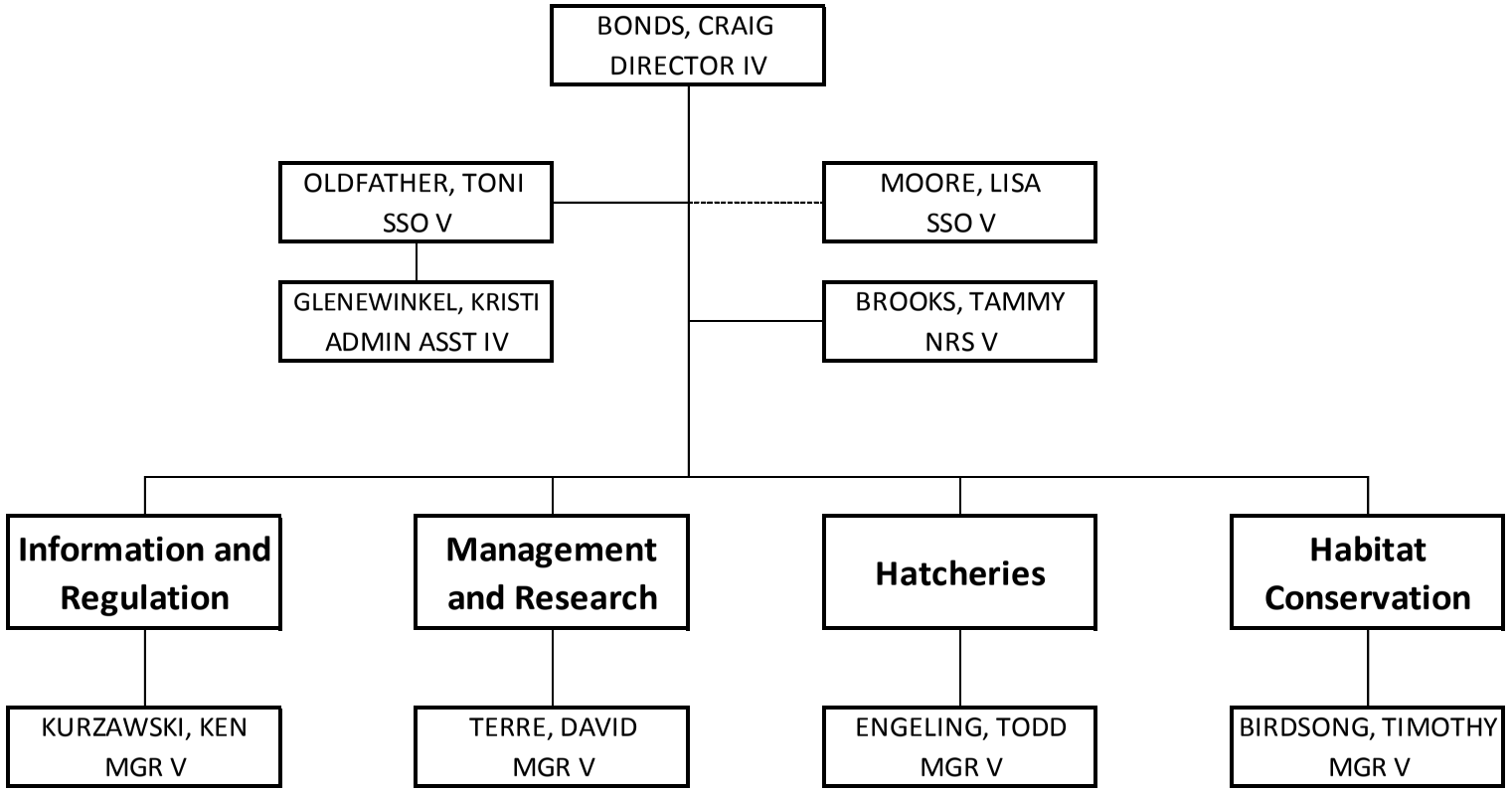
APPENDIX

Organization Charts

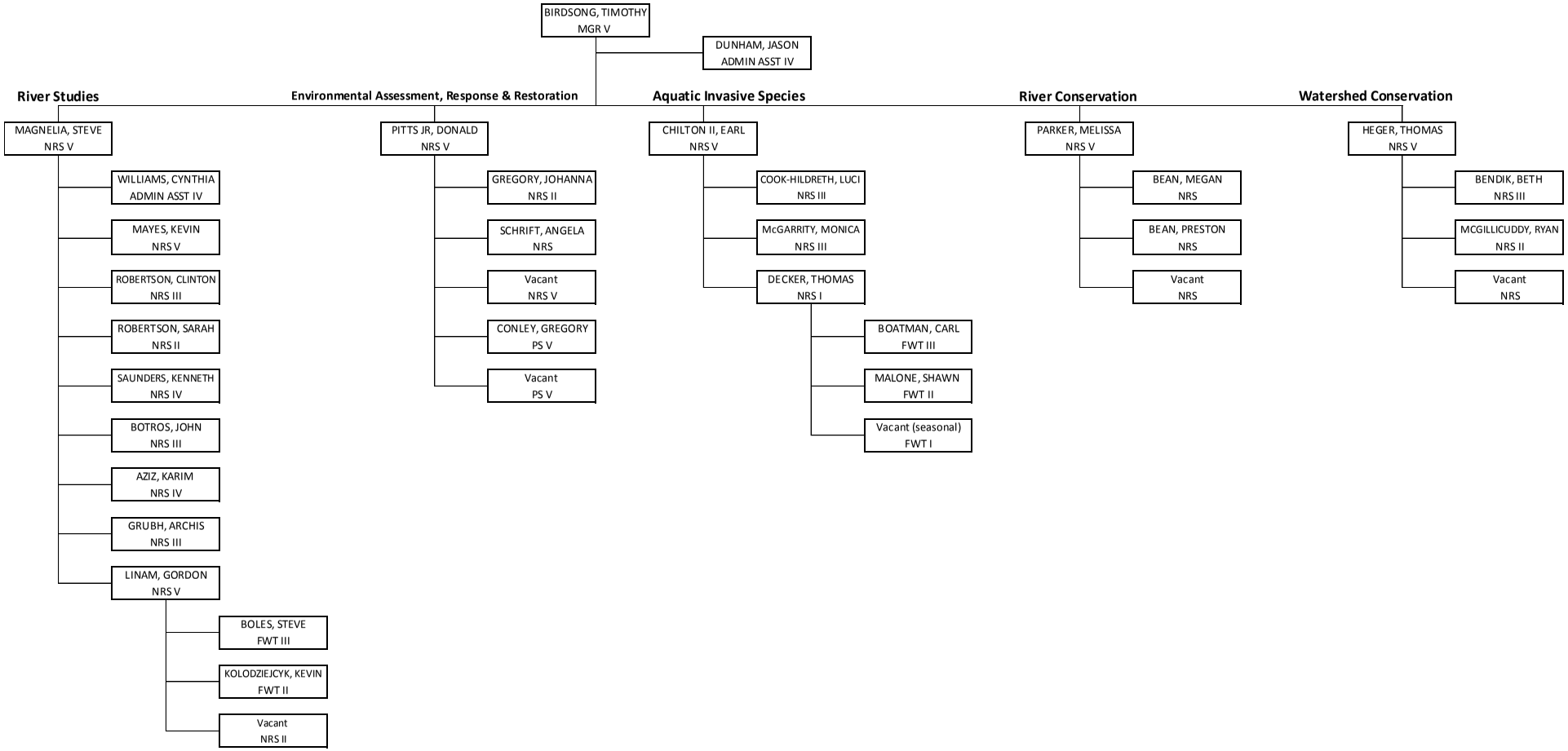
Legend

Abbreviation	Job Title
ADMIN ASST	Administrative Assistant
CLERK	Clerk
FWT	Fish and Wildlife Tech
INFO SPEC	Information Specialist
MAINT SUPER	Maintenance Supervisor
MGR	Manager
NRS	Natural Resources Specialist
PROG SUP	Program Supervisor
PS	Program Specialist
SSO	Staff Services Officer
WEB ADMIN	Web Administrator

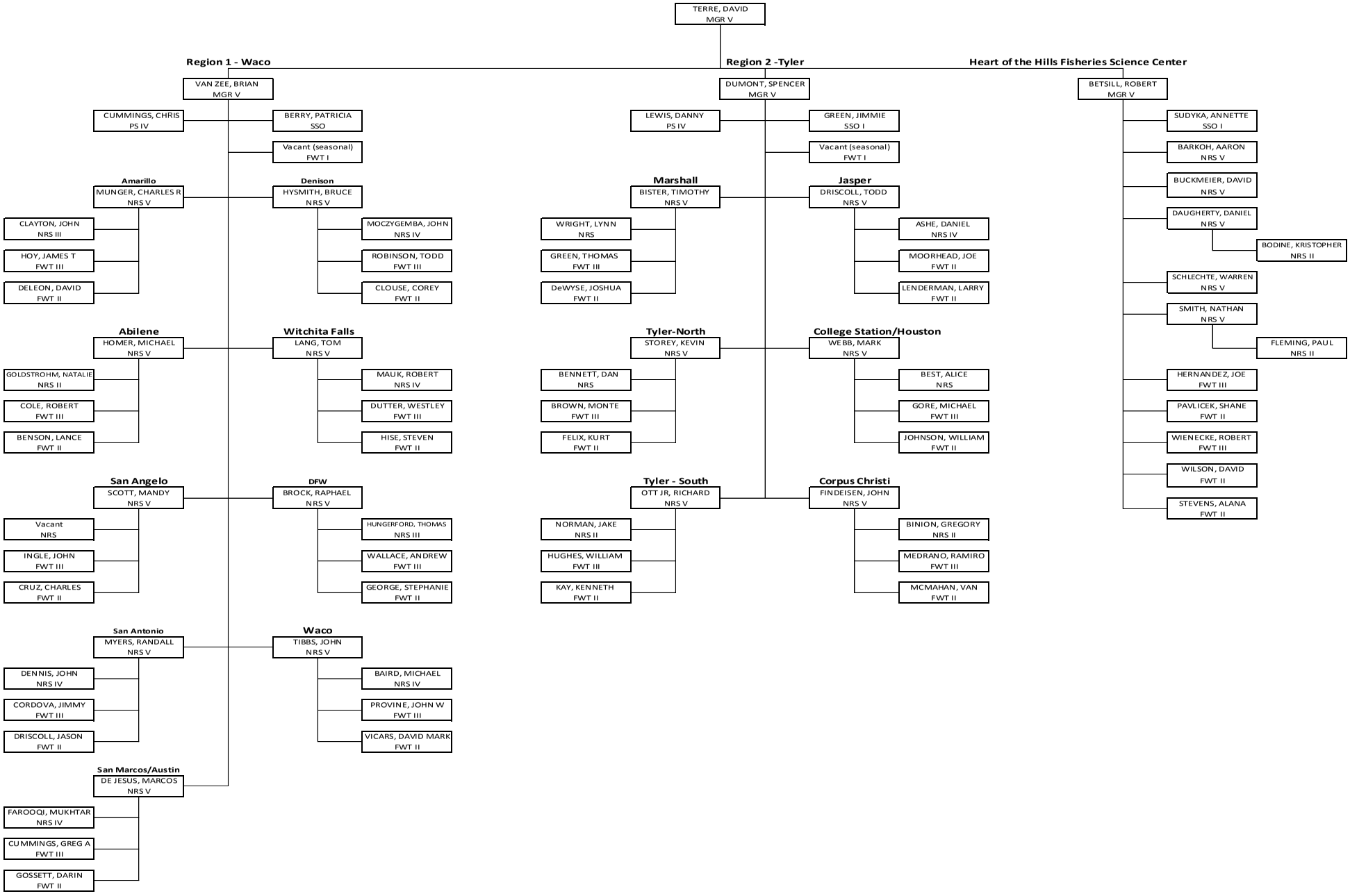
Inland Fisheries Administration



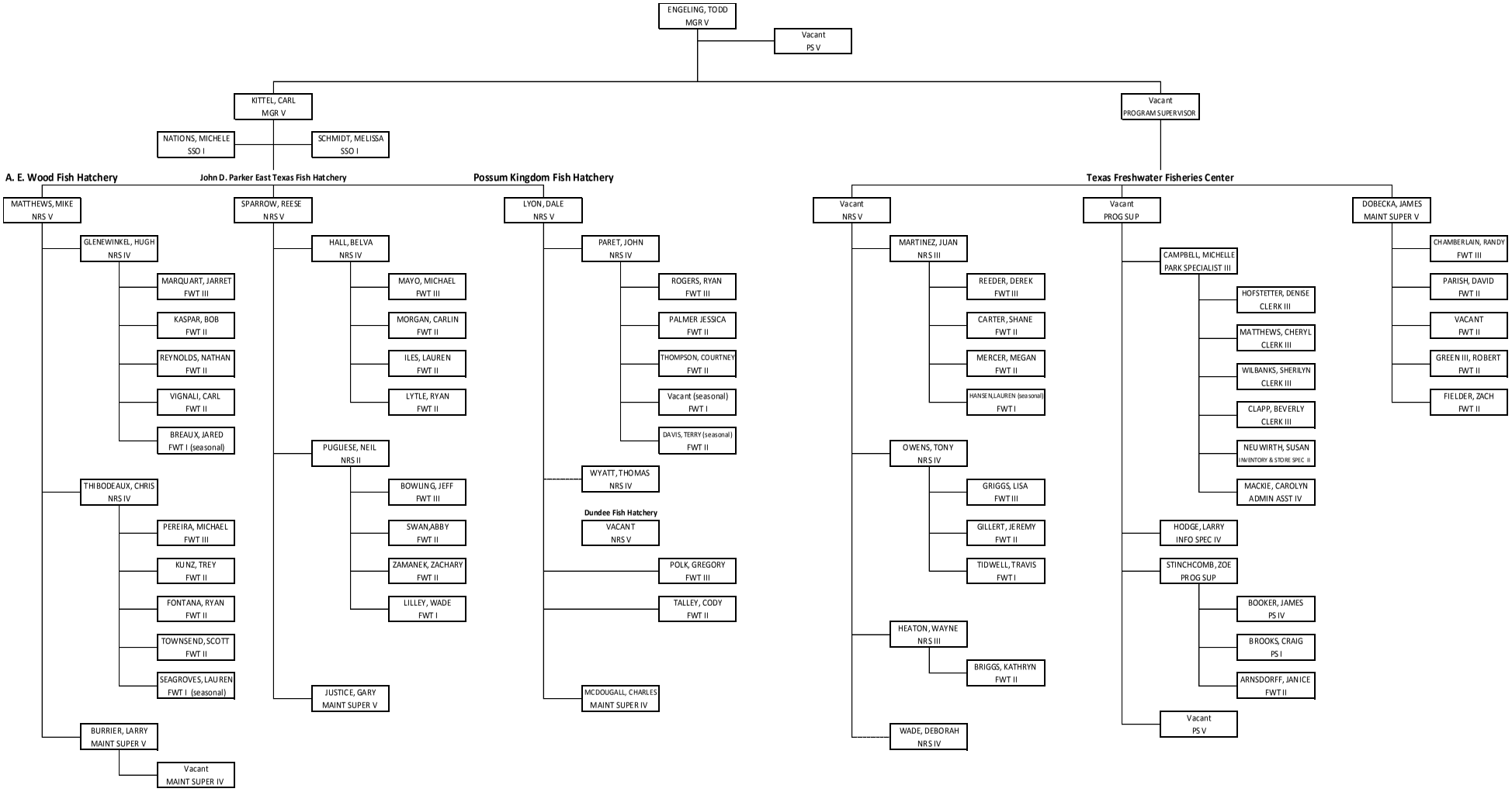
Habitat Conservation



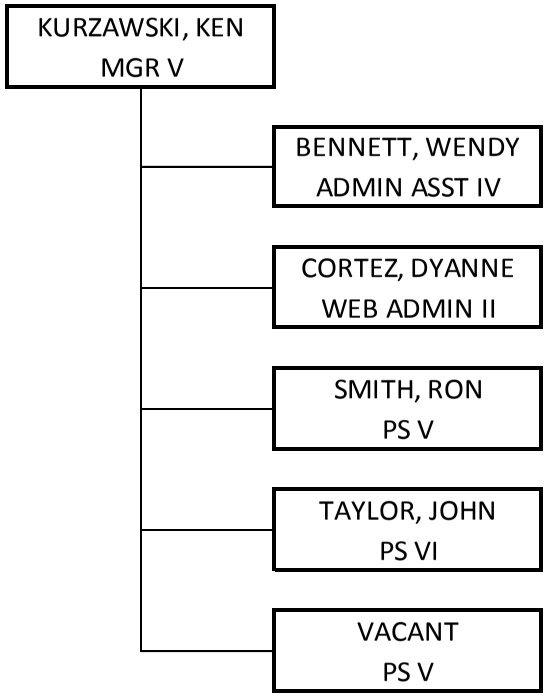
Fisheries Management and Research



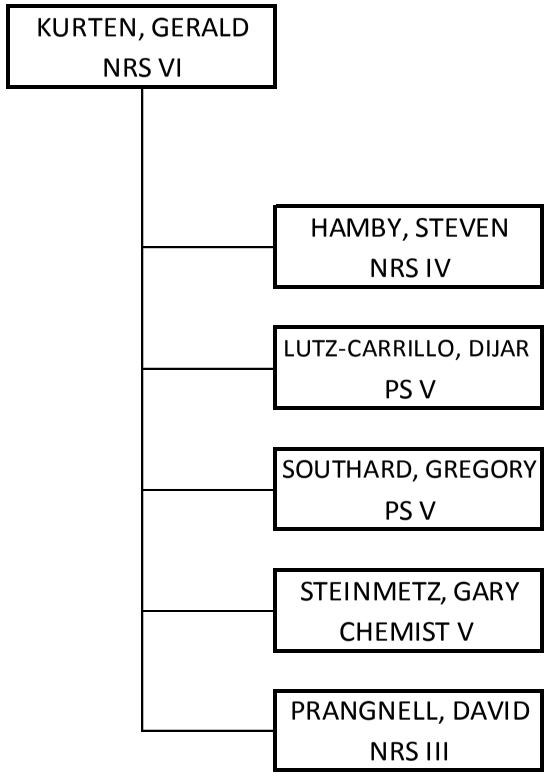
Hatcheries


ENGELING, TODD
MGR V
Vacant
PS V
KITTEL, CARL
MGR V
NATIONS, MICHELE
SSO I
SCHMIDT, MELISSA
SSO I
Vacant
PROGRAM SUPERVISOR
A. E. Wood Fish Hatchery
John D. Parker East Texas Fish Hatchery
Possum Kingdom Fish Hatchery
Texas Freshwater Fisheries Center
MATTHEWS, MIKE
NRS V
SPARROW, REESE
NRS V
LYON, DALE
NRS V
Vacant
NRS V
Vacant
PROG SUP
DOBECKA, JAMES
MAINT SUPER V
GLENEWINKEL, HUGH
NRS IV
MARQUART, JARRET
FWT III
KASPAR, BOB
FWT II
REYNOLDS, NATHAN
FWT II
VIGNALI, CARL
FWT II
BREAUX, JARED
FWT I (seasonal)
THIBODEAUX, CHRIS
NRS IV
PEREIRA, MICHAEL
FWT III
KUNZ, TREY
FWT II
FONTANA, RYAN
FWT II
TOWNSEND, SCOTT
FWT II
SEAGROVES, LAUREN
FWT I (seasonal)
BURRIER, LARRY
MAINT SUPER V
Vacant
MAINT SUPER IV
HALL, BELVA
NRS IV
MAYO, MICHAEL
FWT III
MORGAN, CARLIN
FWT II
ILES, LAUREN
FWT II
LYTLE, RYAN
FWT II
PUGLIESE, NEIL
NRS II
BOWLING, JEFF
FWT III
SWAN,ABBY
FWT II
ZAMANEK, ZACHARY
FWT II
LILLEY, WADE
FWT I
JUSTICE, GARY
MAINT SUPER V
PARET, JOHN
NRS IV
ROGERS, RYAN
FWT III
PALMER JESSICA
FWT II
THOMPSON, COURTNEY
FWT II
Vacant (seasonal)
FWT I
DAVIS, TERRY (seasonal)
FWT II
WYATT, THOMAS
NRS IV
Dundee Fish Hatchery
VACANT
NRS V
POLK, GREGORY
FWT III
TALLEY, CODY
FWT II
MCDOUGALL, CHARLES
MAINT SUPER IV
MARTINEZ, JUAN
NRS III
REEDER, DEREK
FWT III
CARTER, SHANE
FWT II
MERCER, MEGAN
FWT II
HANSEN,LAUREN (seasonal)
FWT I
OWENS, TONY
NRS IV
GRIGGS, LISA
FWT III
GILLERT, JEREMY
FWT II
TIDWELL, TRAVIS
FWT I
HEATON, WAYNE
NRS III
BRIGGS, KATHRYN
FWT II
WADE, DEBORAH
NRS IV
CAMPBELL, MICHELLE
PARK SPECIALIST III
HOFSTETTER, DENISE
CLERK III
MATTHEWS, CHERYL
CLERK III
WILBANKS, SHERILYN
CLERK III
CLAPP, BEVERLY
CLERK III
NEUWIRTH, SUSAN
INVENTORY & STORE SPEC II
MACKIE, CAROLYN
ADMIN ASST IV
HODGE, LARRY
INFO SPEC IV
STINCHCOMB, ZOE
PROG SUP
BOOKER, JAMES
PS IV
BROOKS, CRAIG
PS I
ARNSDORFF, JANICE
FWT II
Vacant
PS V
CHAMBERLAIN, RANDY
FWT III
PARISH, DAVID
FWT II
VACANT
FWT II
GREEN III, ROBERT
FWT II
FIELDER, ZACH
FWT II

Information and Regulations



Analytical Services



Stocking Reports

Inland Fisheries Hatchery Stockings

Species	Adult	Fingerling	Fry	Total
Blue catfish		803,220		803,220
Bluegill		129,257		129,257
Channel catfish	808	704,203	100,000	805,011
Channel catfish x blue catfish		23,682		23,682
Florida largemouth bass	246	7,577,890	551,331	8,129,467
Guadalupe bass		177,388	43,770	221,158
Largemouth bass		15,570		15,570
Paddlefish		2,007		2,007
Palmetto bass (striped x white bass hybrid)		1,371,450	5,520,613	6,892,063
Rainbow trout	324,175	325	1,700	326,200
Red drum		1,002,811		1,002,811
Smallmouth bass		54,573		54,573
Striped bass	388	2,697,935	817,787	3,516,110
Sunshine bass (white bass x striped bass hybrid)		399,137	2,000,000	2,399,137
Triploid grass carp	125			125
Walleye			1,331,375	1,331,375
Grand Total	325,742	14,959,448	10,366,576	25,651,766

Research and Special Projects

Research works to improve the efficiency and effectiveness of Division operations and programs. This year's Inland Fisheries research focused on the following areas.

Increasing hatchery production of fish (12 studies)

Highlights:

- Developing best practices for spawning smallmouth bass
- Managing zooplankton prey for fingerling Florida largemouth bass in ponds
- Fish disease control in channel catfish rearing ponds
- pH tolerance of striped bass fry and fingerlings
- Using genetics to refine raceway spawning of Guadalupe bass

Largemouth bass genetics and management (10 studies)

Highlights:

- Comparing growth of ShareLunker offspring and other Florida largemouth bass
- Economic value of large fishing tournaments at Lake Fork
- Growth and diet of largemouth bass fingerlings stocked into different habitats
- Genetic assessment of relatedness among ShareLunker program entries

Managing river fisheries (8 studies)

Highlights:

- Microchemistry for detecting alligator gar movement between rivers and estuaries
- Rainbow trout habitat use in the Canyon reservoir tailrace
- Importance of river flows and connectivity of backwaters for alligator gar spawning
- Evaluation of Guadalupe bass stocking in the upper Guadalupe River

Catfish management and urban-suburban community fisheries (7 studies)

Highlights:

- Survey of Neighborhood Fishin' program participants: numbers, catch, and expectations
- Assessing harvest of catfish by handfishing in East Texas
- Comparing catch and harvest of catfish with trotlines, juglines, and rod-and-reel
- Measuring survival and harvest of catfish in Community Fishing Lakes

Aquatic invasive species management or control (6 studies)

Highlights:

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

Fish habitat improvement and other studies (5 studies)

Highlights:

- Low-cost side-scan sonar technology for mapping fish habitat and aquatic vegetation
- Using fish attractors to enhance aquatic habitat

Scientific Publications and Reports

Bennett, D. L., R. A. Ott, and C. C. Bonds. 2015. Surveys of Texas bow anglers, with implications for managing Alligator Gar. Journal of the Southeastern Association of Fish and Wildlife Agencies 2:8-14.

Binion, G. R., D. J. Daugherty, and K. A. Bodine. 2015. Population dynamics of Alligator Gar in Choke Canyon Reservoir, Texas: implications for management. Journal of the Southeastern Association of Fish and Wildlife Agencies 2:57-63.

Birdsong, T. W., M. Bean, T. B. Grabowski, T. B. Hardy, T. Heard, D. Holdstock, K. Kollaus, S. Magnelia, and K. Tolman. 2015. Application and utility of a low-cost unmanned aerial system to manage and conserve resources in four Texas rivers. Journal of the Southeastern Association of Fish and Wildlife Agencies 2:80-85.

Birdsong, T. W., and 19 co-authors. 2015. Native black bass initiative: implementing watershed-scale approaches to conservation of endemic black bass and other native fishes in the southern United States. Pages 363-378 *in* M. D. Tringali, J. M. Long, T. W. Birdsong, and M. S. Allen, editors. Black bass diversity: multidisciplinary science for conservation. American Fisheries Society, Symposium 82, Bethesda, Maryland.

Bodine, K. A., D. J. Daugherty, J. W. Schlechte, and G. R. Binion. 2015. A strategy for increasing gill-net catch rates and minimizing sampling mortality of Alligator Gars. North American Journal of Fisheries Management 35:611-615.

Cheek, D., T. B. Grabowski, P. T. Bean, J. R. Groeschel and S. J. Magnelia. 2015. Evaluating habitat associations of a fish assemblage at multiple spatial scales in a minimally disturbed stream using low-cost remote sensing. Aquatic Conservation Marine and Freshwater Ecosystems DOI: 10.1002/aqc.2569.

Daugherty, D. J., D. L. Bennett, B. VanZee, T. Morgan, and J. Tibbs. 2015. Effects of water-level reductions on littoral habitat and recreational access in Brazos River reservoirs, Texas. Journal of the Southeastern Association of Fish and Wildlife Agencies, 2:1-7.

Fleming, B. P., G. P. Garrett, and N. G. Smith. 2015. Reducing hybridization and introgression in wild populations of Guadalupe Bass through supplemental stocking. Pages 537-547 *in* M. D. Tringali, J. M. Long, T. W. Birdsong, and M. S. Allen, editors. Black bass diversity: multidisciplinary science for conservation. American Fisheries Society, Symposium 82, Bethesda, Maryland.

Garrett, G. P., T. W. Birdsong, M. G. Bean, and R. McGillicuddy. 2015. Guadalupe bass restoration initiative. Pages 379-388 *in* M. D. Tringali, J. M. Long, T. W. Birdsong, and M. S. Allen, editors. Black bass diversity: multidisciplinary science for conservation. American Fisheries Society, Symposium 82, Bethesda, Maryland.

Israël, N. M. D., M. M., VanLandeghem, S. Denny, J. Ingle, and R. Patiño. 2014. Golden alga presence and abundance are inversely related to salinity in a high-salinity river ecosystem, Pecos River, USA. Harmful Algae 39:81-91.

Labay, B. J., D. A. Hendrickson, A. E. Cohen, T. H. Bonner, R. S. King, L. J. Kleinsasser, G. W. Linam, and K. O. Winemiller. 2015. Can species distribution models aid bioassessment when reference sites are lacking? Test based on freshwater fishes. Environmental Management 56: 835-846.

Lutz-Carrillo, D., C. Thibodeaux, M. Elliott, N. A. Rathjen, C. Kittel, L. T. Fries, and G. P. Garrett. 2015. Inferred reproductive behavior of captive Guadalupe bass. Pages 549-584 *in* M. D. Tringali, J. M. Long, T. W. Birdsong, and M. S. Allen, editors. Black bass diversity: multidisciplinary science for conservation. American Fisheries Society, Symposium 82, Bethesda, Maryland.

Perkin, J., K. B. Gido, K. H. Costigan, M. D. Daniels, T. F. Turner, M. J. Osborne, A. R. Cooper, E. R. Johnson, and K. B. Mayes. 2015. Fragmentation and dewatering transform Great Plains stream fish communities. Ecological Monographs 85(1):73-92.

Roelke, D. L., A. Barkoh, B. W. Brooks, J. P. Grover, K. D. Hambright, J. W. LaClaire II, P. D. R. Moeller, and R. Patiño. 2015. A chronicle of a killer alga in the west: ecology, assessment, and management of *Prymnesium parvum* blooms. Hydrobiologia DOI:10.1007/s10750-015-2273-6.

Sakaris, P. C., D. L. Buckmeier, and N. G. Smith. Validation of daily ring deposition in the otoliths of age-0 Alligator Gar. North American Journal of Fisheries Management 34:1140-1144.

VanLandeghem, M. M., M. Farooqi, G. M. Southard, and R. Patiño. 2015. Associations between water physiochemistry and *Prymnesium parvum* presence, abundance, and toxicity in West Texas reservoirs. Journal of the American Water Resources Association 51(2): 471-486.

VanLandeghem, M. M., M. Farooqi, G. M. Southard, and R. Patiño. 2015. Spatiotemporal associations of reservoir nutrient characteristics and the invasive, harmful alga *Prymnesium parvum* in West Texas. Journal of the American Water Resources Association 51(2): 487-501.

Tringali, M., M. Allen, T. Birdsong and J. Long, Editors. Black Bass Diversity: Multidisciplinary Science for Conservation (book chapter). 2015. American Fisheries Society, Bethesda, Maryland.

Outreach Events

Inland Fisheries staff members were event leaders at 318 outreach events for targeted user groups (youth under 17, minorities, women, and physically challenged) in which 23,717 individuals participated.

	Youth 17 & under	Adults	Total
Males (1)	9,589	2,625	12,214
Females (2)	8,384	3,119	11,503
Minorities	7,978	1,498	9,476
Physically Challenged	598	101	699
Total (1+2)	17,973	5,744	23.717

Work with Other Organizations

Program Contracts and Agreements

Armand Bayou Nature Center	Armand Bayou Preserve Water Hyacinth Treatment	$12,000
Brazos River Nature Center	Leased Angler Access to the Brazos River at the Brazos River Nature Center	$36,000
Central Michigan University (Kevin Pangle)	Chemical Analysis of Alligator Gar Otoliths	$10,000
Chautauqua Foundation	Leased Angler Access to the Lower Colorado River at the Texas River School River Camp	$12,000
Cypress Valley Navigation District	Management and Control of Aquatic Nuisance Plant Species in Caddo Lake	$50,000
Environmental Conservation Alliance (Tom Hayes)	Riparian Productivity Along the Middle Trinity River and Refinement of Riparian Productivity Versus Flow Relationships for Texas Rivers	$75,535
Environmental Conservation Alliance (Tom Hayes)	Riparian Productivity on the Brazos and Guadalupe Rivers	$149,866
Georgia Gwinnett College	Daily Age Estimation of Age-0 Alligator Gar from Texas Rivers	$10,000

Guadalupe-Blanco River Authority	Control of Water Hyacinth, Hydrilla, and Other Aquatic or Riparian Plant Species in the Guadalupe River Reservoirs, Lower Guadalupe River, and Guadalupe River Tributaries	$55,000
Guadalupe-Blanco River Authority (Debbie Magin)	Biological Baseline Sampling in the Lower Guadalupe River	$24,069
Hill Country Alliance	Private Landowner Incentive-Based Watershed Conservation in the Edwards Plateau Ecoregion – Coordinating Implementation of the Aquatic Resources Conservation Objectives of the Texas Conservation Action Plan	$150,000
Mississippi State University (Hal Schramm)	Estimation of Angler Mortality and Development of Live Well Management Procedures to Improve the Survival of Largemouth Bass	$19,007
Mississippi State University (Kevin Hunt)	A Social and Economic Analysis of the Lake Fork Reservoir Recreational Fishery	$39,727
Nueces River Authority	Control of Invasive Giant Reed in the Upper Nueces River Watershed	$122,000
Texas AgriLife Research	Native Aquatic Vegetation Restoration and Effects of Native Aquatic Vegetation Restoration on Fish and Wildlife Communities in Texas Reservoirs	$53,475
Texas AgriLife Research (Charles Randklev)	Mussel Data Collection in the Middle Trinity River	$60,000
Texas AgriLife Research (Kirk Winemiller)	Flow Dependent Species: Life History and Habitat Associations in Texas Gulf Coast Rivers	$135,000
Texas Tech University (Tim Grabowski)	Effects of Urbanization, Population Status, and Reproductive Success of Guadalupe Bass Populations in the Lower Colorado River	$134,951
Texas Tech University (Tim Grabowski)	Assessment and Monitoring at TPWD Public River Access Leases to Guide Sustainable Management	$249,651
Texas Tech University (Tim Grabowski)	Larval Fish in Trinity River Floodplains: Do River-Reservoir Interface Habitats Serve as Surrogate Nursery Habitats for Floodplain-Dependent Riverine Fishes?	$95,331
Texas State University	Development of Habitat Suitability Criteria for Benthic Macroinvertebrates in the Lower Guadalupe River	$26,000

Texas State University (Thom Hardy)	Assessment and Modeling of Environmental Flows to Support Riparian Areas, Native Fishes, and Unionid Mussels	$83,839
Texas State University (Glenn Longley)	Student Workers	$32,640
Trout Unlimited (Jack Williams)	Feasibility Study for Native Fish Establishment in West Texas Streams including Potential Reestablishment of Rio Grande Cutthroat Trout in McKittrick Creek, Guadalupe Mountains National Park, Texas	$26,225
University of Southern Mississippi (Brian Kreiser)	Molecular Identification of Young of Year Gar from Texas	$7,000
University of Texas at Austin (Dean Hendrickson)	Conserving Texas Biodiversity: Status, Trends, and Conservation Planning for Fishes of Greatest Conservation Need	$176,892
University of Texas at Austin	Age, Growth and Environmental Exposure Histories of Threated Freshwater Mussels Assessed with Sclerochronology and Shell Stable Isotopes	$31,601

Grants and Donations

National Fish and Wildlife Foundation	South Llano River Conservation Demonstration Area	$27,500
Great Plains Landscape Conservation Cooperative	Watershed-Based Conservation Planning to Inform Implementation of a Network of Native Fish Conservation Areas in the Great Plains	$160,000
The Favrot Fund	Conserving Texas Rivers Initiative: Coordinated Landscape-Scale Conservation in the Devils River Watershed	$30,000
Texas Parks and Wildlife Foundation	Texas State-Fish Art Program	$5,000
Texas Parks and Wildlife Foundation	Neighborhood Fishin’	$82,000
Texas Parks and Wildlife Foundation	Neighborhood Fishin’	$37,500

Texas Parks and Wildlife Foundation	Toyota ShareLunker Program Operations	$62,000
Carolyn Smith	Hatchery Operations – Memory of Dennis Smith	$75
Water Oriented Recreation District	Canyon Reservoir Habitat Improvements	$500
Guadalupe River Trout Unlimited	Student Intern	$7,000
San Antonio Livestock Exposition	Student Interns	$15,000
Whiting-Turner Contracting	Lake Austin Habitat Improvements	$5,000
Bass Pro Shops	Neighborhood Fishin’	$24,658
Wood County Industrial	Lake Fork Tournament Economic Survey	$2.935
Reservoir Fisheries Habitat Partnership	Sam Rayburn Reservoir Fish Habitat	$20,000

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