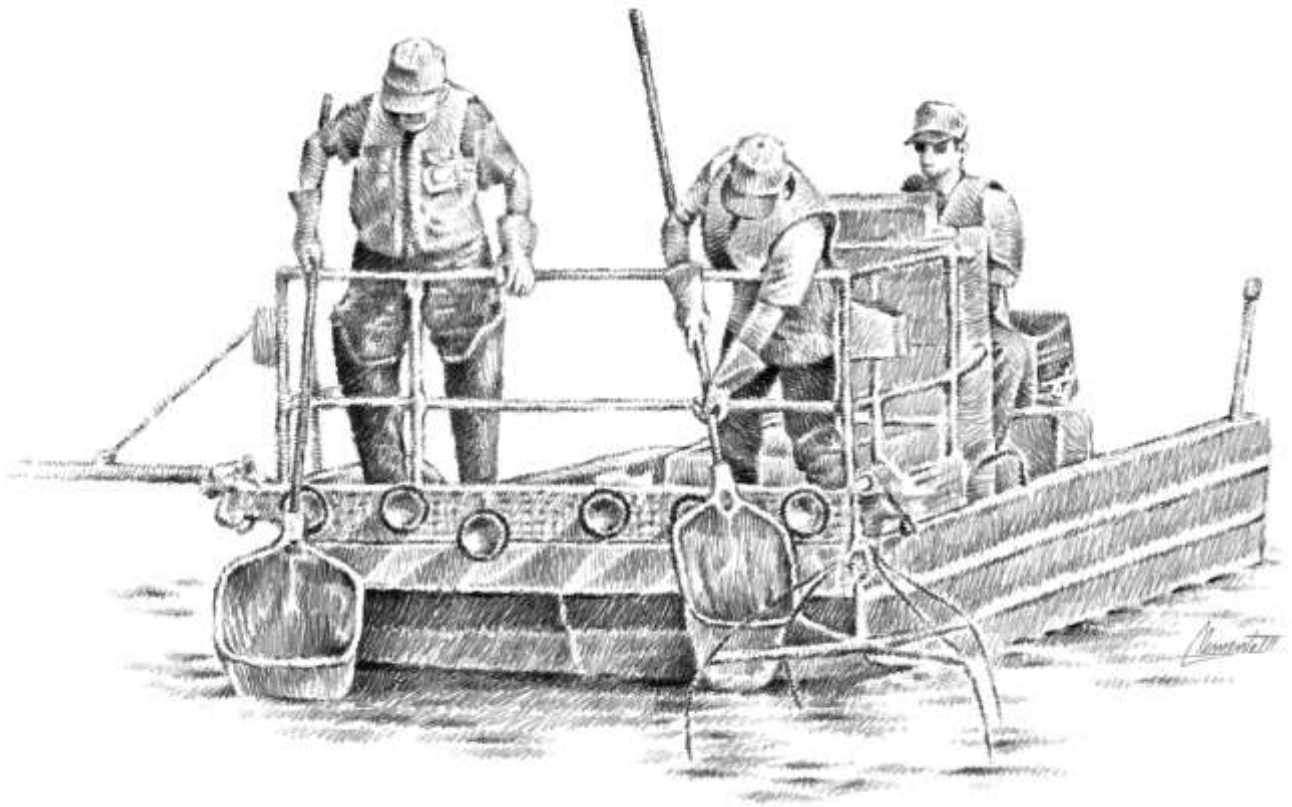


INLAND FISHERIES ANNUAL REPORT 2013



IMPROVING THE QUALITY OF FISHING



Carter Smith
Executive Director

Gary Saul
Director, Inland Fisheries



INLAND FISHERIES ANNUAL REPORT 2013



TEXAS PARKS AND WILDLIFE DEPARTMENT

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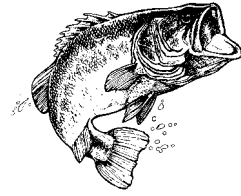
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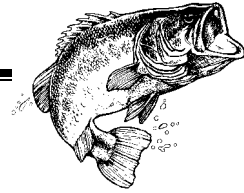
Lee M. Bass
Chairman-Emeritus
Ft. Worth

TABLE OF CONTENTS



INLAND FISHERIES OVERVIEW	1
• Mission	1
• Scope	1
• Agency Goals	1
• Division Goals	1
• Staff	1
• Facilities	2
• Contact Information	2
• Funding and Allocation	3
ADMINISTRATION.....	4
HABITAT CONSERVATION	5
FISHERIES MANAGEMENT AND RESEARCH	12
FISH HATCHERIES	18
ANALYTICAL SERVICES.....	19
INFORMATION AND REGULATIONS.....	22
TEXAS FRESHWATER FISHERIES CENTER.....	24
APPENDIX.....	26
• Organization Charts	27
• Surveys Conducted in Public Waters	35
• Stocking Reports	45
• Research and Special Projects	56
• Presentations, Articles and Publications	66
• Outreach Events	76
• Work with Other Organizations	77

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 1,000 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 \$2.38 billion in trip and equipment expenditures.

Agency Goals

Texas Parks and Wildlife Department's Land and Water Resources Conservation and Recreation Plan (2009) 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

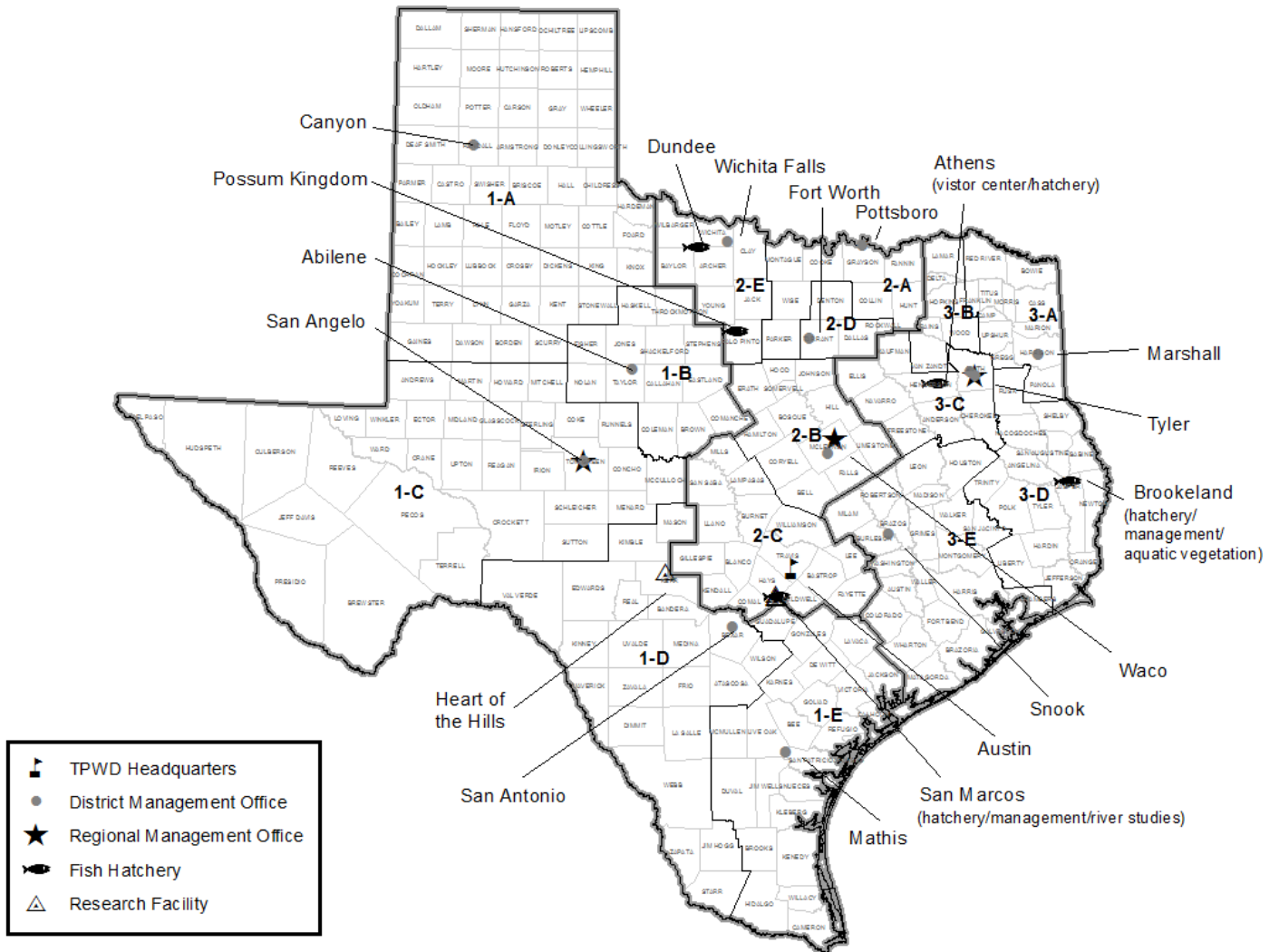
The Division goals were developed to address the major issues facing the freshwater fisheries resources of Texas.

- 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 204.75 positions assigned to management, hatchery, research, outreach, habitat, laboratory services and administrative branches.

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

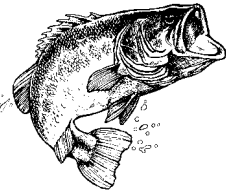
Funding and Allocation

In FY13 \$16,443,758 was budgeted for Inland Fisheries (not including fringe benefits or capital construction). Federal Aid grants are expected to reimburse the Department \$8,595,573 on eligible Inland Fisheries activities. The allocation of Federal Aid monies was \$2,702,750 for Fish Hatchery facilities and \$5,892,823 for Management and Research, Habitat, Outreach, and Administrative and Laboratory services.

FY 13 Budget by Program

Administration	\$1,467,193
Management and Research	\$5,853,152
Hatcheries	\$4,305,066
Habitat	\$3,298,973
Outreach/Texas Freshwater Fisheries Center	\$1,020,898
Analytical Labs	\$498,476
Total FY12 w/o fringe	\$16,443,758

ADMINISTRATION



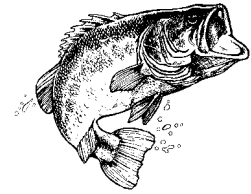
Description

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).

Organization

Administration organizational chart is located in **Appendix - Organization Charts**.

HABITAT CONSERVATION



Program Description

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 34 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.

Accomplishments

Staff members served on the Fort Worth District of the U.S. Army Corps of Engineers' Interagency Review Team, participating in the development of standard guidelines for establishment of stream and wetland mitigation banks and evaluating numerous proposed stream and wetland mitigation banks in North, Central and East Texas.

Through participation in state and federal regulatory review processes, provided recommendations for avoiding, minimizing, and mitigating negative impacts to fisheries and aquatic resources resulting from development projects potentially affecting 52.4 miles of streams, 108 acres of wetlands, and 41 acres of open water habitats.

Participated in planning of habitat restoration and flood abatement projects initiated by the US Army Corps of Engineers including restoration of Alazan, Martinez, Apache, and San Pedro creeks in San Antonio; Leon Creek; and the San Marcos River.

Reviewed applications and performed field investigations to evaluate proposed disturbance or take of substrate materials in the Blanco, Brazos, Colorado, Frio, Guadalupe, Llano, Lampasas, Nueces, Sabinal, Sabine, San Marcos, and South Llano rivers; Barton Creek, Cypress Creek, Graham Creek, Salado Creek, and numerous smaller streams in order to avoid or minimize adverse effects to fish and wildlife resources and water-based recreation.

Continued participation in the cross-Divisional Paddling Trails Team; supported designation and opening of 13 new Texas Paddling Trails encompassing 76 miles of new or improved paddling and kayak fishing opportunities on Texas rivers, reservoirs, and coastal bays.

Participated in watershed protection planning for the Lampasas River, Alligator and Geronimo creeks, San Marcos River, upper Cibolo Creek and upper Llano River watersheds.

Continued implementing watershed-scale conservation along the Llano River to benefit Guadalupe bass and other native fishes. At the end of FY13, a total of 27 ranches encompassing 80,000 acres of the Llano River watershed were in management plans that prescribe actions to improve habitat conditions for fish and wildlife.

Continued to host riparian conservation workshops for streamside landowners along the San Saba, Guadalupe, and Blanco rivers, highlighting best management practices to restore and preserve habitat conditions for fish and wildlife along river corridors. Partnered with the Texas State Soil and Water Conservation Board and Texas AgriLife to conduct riparian workshops to improve habitat conditions in impaired watersheds statewide.

Continued to maintain the Conservation Best Management Practices website (www.watershedbmps.com), promoting practices intended to restore and enhance habitat conditions for fish and wildlife.

Published the Winter 2013 edition of the newsletter *Texas Watersheds – Conservation News from Headwaters to Coast*.

Conducted ecological assessments and on-the-ground conservation actions to support the long-term persistence of the state's freshwater fish diversity, including:

- In spring 2013, stocked pure Guadalupe bass in the reach of the Blanco River where smallmouth bass removal efforts occurred the year before. Future stockings and genetic/population monitoring are planned for summer 2014.
- In partnership with the San Antonio River Authority and Texas State University, collected Guadalupe bass from the San Antonio River basin; performed genetic testing; surgically implanted radio tags into selected pure fish; stocked them in the recently restored Mission Reach of the San Antonio River; and tracked their movement in hopes of restoring a pure Guadalupe bass population to the river.
- Continued efforts to establish permanent habitat monitoring sites within Big Bend National Park and the Lower Canyons portion of the Rio Grande Wild and Scenic River as part of Big Bend National Park inventory and monitoring efforts and to complement the Rio Grande Silvery Minnow re-introduction project.
- Conducted quarterly monitoring of Pecos pupfish in Salt Creek, the last remaining water body with genetically pure Pecos pupfish in Texas. The work included DNA sampling with support provided by the Fish Health and Genetics Laboratory at A.E. Wood State Fish Hatchery.
- In partnership with U.S. Fish and Wildlife Service personnel and with funding from the Desert Fish Habitat Partnership, created a refugium for Pecos pupfish to ensure long-term survival of the species. An additional refugium was established at the Fort Worth Zoo. Those specimens (approximately 60 adults) have produced more than 300 offspring.
- In partnership with USFWS personnel, participated in upkeep and monitoring of Comanche Springs pupfish and Pecos gambusia in Phantom Springs.
- Continued to collaborate with Texas Tech University to refine techniques for captive spawning and rearing of pelagic-spawning prairie minnows to support possible repatriation in the upper Brazos River.
- In collaboration with the University of Texas at Austin, conducted spatial prioritization analyses for conservation of freshwater fish diversity. As a component of the project, conducted status and trends surveys of native fishes and their habitats in the Brazos, Devils, and Nueces rivers. Results

guided selection of priority watersheds for land conservation programs administered by TPWD, NRCS, and other agencies.

- In partnership with BIO-WEST, Inc., continued a radio tracking study of blue sucker, a state threatened species, in the lower Sabine River. The primary objectives of the study are to determine spawning locations by locating sexually mature adults; track movements during different seasons; and determine differential habitat use among varying life stages. In October 2012, 56 blue suckers (including two age-1 fishes) were tagged using combined acoustic-radio transmitters and radio transmitters. Data are being analyzed and reports drafted.
- In cooperation with Fisheries Management and Heart of the Hills Fisheries Science Center, designed a project to study the seasonal macrohabitat utilization of fishes in the middle Trinity River in and above Lake Livingston. Field sampling began in August 2013.
- Conducted bathymetry, substrate, mesohabitat, and vegetation mapping on three priority reaches of the Devils River and Dolan Creek in the Devils River State Natural Area. These data were collected in order to generate a hydraulic model that predicts changes in the amount of available Devils River minnow habitat with varying flow levels. Minnows were collected and released in order to verify suitable habitat areas predicted by the model.
- Initiated a collaborative study in cooperation with Fisheries Management and Heart of the Hills Fisheries Science Center to determine alligator gar recruitment success as it relates to hydrologic conditions and to identify potential alligator gar spawning areas. This study will be used to support high flow pulse and overbanking flow recommendations for the Middle Trinity River Instream Flow Study.

In response to the recent listing of five central Texas mussels as candidate species under the Endangered Species Act and the Department's listing of 15 mussel species as state threatened, collaborated with the Wildlife Division and Water Resources Branch to identify mussel research needs and priorities. This prioritized list of research projects will be vetted with state mussel experts and projects will be developed to fulfill identified research needs.

Compiled fish and habitat datasets collected at 328 unique sites between 1987 and 2013. Datasets will be entered into the River Studies data management application to facilitate data sharing and trends analyses. The dataset includes over 160 species/hybrids and 384,223 individuals. Output will be exported to the Multistate Aquatic Resource Information System (MARIS), allowing outside users online access to the most up-to-date TPWD fish data from Texas rivers. Future plans include integration of modern and historical sources of data from other TPWD efforts on rivers and streams; implementation of tools to facilitate transfer of data from electronic collection devices; analyses to facilitate standardized outputs for tables and graphs; and archiving of photos, associated field notes and other supporting documents.

Completed an economics and attitude/opinion survey of anglers fishing rivers and streams in a 24-county area of the Texas Hill Country in collaboration with Texas Tech University. A related manuscript was accepted for publication as part of the Proceedings of the Southern Division of the American Fisheries Society Black Bass Diversity Symposium.

In partnership with the U.S. Environmental Protection Agency, U.S. Coast Guard, Texas General Land Office, and Texas Commission on Environmental Quality, participated in the Natural Disaster Operational Workgroup (NDOW) focused on the coordination of multi-agency response efforts and the development of database software to assist in that coordination. Also participated in a NDOW hurricane field exercise in Corpus Christi.

In partnership with NDOW, EPA, USCG, TGLO, and TCEQ, finalized a plan for natural disaster-related orphan container recovery in sensitive coastal habitat of Texas.

As part of a settlement for injuries to natural resources resulting from the Explorer Pipeline Oil Spill near Huntsville, \$33,000 was provided to Inland Fisheries Management for construction of freshwater wetlands in Lake Raven. Other components of the settlement involved the addition of 490 acres of bottomland hardwood forest to the Alazan Bayou Wildlife Management Area located near Nacogdoches.

Finalized a settlement with GB Biosciences for impacts associated with release of DDT in Greens Bayou in Houston. The settlement will provide \$1.8 million to acquire and preserve 100 acres of bottomland hardwood forest adjacent to Spring Creek and construction of approximately 11 acres of artificial wetlands at the Baytown Nature Center.

Finalized a \$1.1 million settlement with Arkema for injuries to natural resources associated with releases of hazardous materials from a facility in Bryan. The settlement will provide for the preservation of approximately 400 acres of riparian bottomland hardwood forest.

Participated in the natural resource damage assessment for contaminated areas at Star Lake. Activities focused on injury assessment and coordination with the responsible party.

In partnership with the TCEQ and TGLO, conducted a site assessment of the Sunoco Pipeline Oil Spill to determine whether a natural resource damage assessment would be necessary.

Investigated 82 fish and wildlife kills and 39 pollution events, documenting impacts and providing guidance on clean-up techniques.

Developed training modules for TPWD biologists who participate in fish and wildlife kills, oil spills, and other pollution events.

Recovered \$32,000 in civil restitution and investigation costs associated with fish kills.

Participated with state and federal counterparts in the natural resource damage assessment and restoration planning for the Deepwater Horizon oil spill. Activities included:

- Initiating environmental reviews for the proposed Texas projects in the Draft Phase III Early Restoration Plan and Environmental Impact Statement (ERP/PEIS)
- Participating in technical work groups assessing impacts to birds, sea turtles, marine mammals, shoreline habitats and the human use of natural resources
- Serving on the drafting and review teams for the development of the Phase III ERP/PEIS
- Participating in Trustee Council discussions and meetings while serving on Assessment, Environmental Compliance, Restoration, Writing, and Executive sub-committees
- Evaluating proposed restoration projects

Helped collect field data to support the following Texas Instream Flow Program (TIFF) priority studies:

- Middle and lower Brazos River – along with partner agencies, collected water quality, fish habitat utilization, riparian habitat, and stream channel data to be used in the development of instream habitat, floodplain inundation, and water quality models. In FY13, a site on the Brazos River near

FM 1093 in Austin/Fort Bend counties was added to address environmental flow requirements associated with the permitted but unconstructed Allens Creek Reservoir.

- Lower San Antonio River – Conducted larval and seasonal fish sampling in support of the ongoing instream flow study. Habitat, water quality, benthic macroinvertebrate, coarse particulate organic matter, and hydrological data were also collected.
- Middle Trinity River – In cooperation with the Trinity River Authority and TIFP partners, two stakeholder meetings (Cedar Hill and Tennessee Colony) were held to provide information on the Instream Flow Program and upcoming work scheduled for the basin, and to solicit participation in the process as mandated by Senate Bill 2. TIFP partners completed processing baseline samples of fish, mussel, and benthic macroinvertebrate samples collected the previous year and began data analysis and report writing. This information was used to aid in scoping an instream flow study that was started in 2013.
- Lower Guadalupe River – Plans for baseline sampling in the lower Guadalupe River were developed in consultation with TIFP study partners and the Guadalupe-Blanco River Authority. In cooperation with the Guadalupe Blanco River Authority and TIFP partners, sampling was conducted to update biological data in five reaches on the Guadalupe River between Seguin and Victoria. Data were collected on fishes, mussels, benthic macroinvertebrates, physical habitat, and water quality. This information will be used to aid in scoping an instream flow study that will start in 2014.

Provided technical assistance and guidance to the Senate Bill 3 Science Advisory Committee, expert science teams, and stakeholder groups charged with developing environmental flow recommendations and standards for the Nueces, Rio Grande, Colorado-Lavaca, Brazos, and Guadalupe-San Antonio basins.

Participated in water rights evaluations associated with major proposed projects including Lower Bois d'Arc Creek Reservoir, Cedar Ridge Reservoir on the Clear Fork of the Brazos River, and the Brazos River Authority's System Operation Permit, which affects operations on all reservoirs managed by the authority.

Participated in Federal Energy Regulatory Commission (FERC) licensing efforts for Toledo Bend Reservoir on the lower Sabine River. Reviewed and commented on FERC's draft Environmental Impact Statement on Toledo Bend Hydropower to ensure protection, mitigation, and enhancement measures were included and identical to those in multi-party settlement agreement. Measures include improved downstream flows and water quality, as well as a process for facilitating American eel passage. Also tracked several preliminary permits issued by FERC for speculative development of hydropower projects.

Examined potential influences on fish assemblages and water quality from a desalinization project that discharges into the Wichita River near Wichita Falls. Pre-project baseline data were collected in 2005 and 2008, with post-project samples collected in 2009-2011. Data were analyzed and a final report is in preparation.

Conducted Least Disturbed Streams Surveys as part of a continuation of the Texas Aquatic Ecoregion Project that originated in the early to mid-1980s in partnership with the Texas Commission on Environmental Quality. The current project updated historic surveys and added new candidate streams. A list of potential streams was developed and staff participated in field work on three sites. Sampling will be conducted over the next five to six years with approximately six streams sampled per year for water quality, benthic macroinvertebrates, fish, and physical habitat.

In collaboration with the Salt Bayou Marsh Workgroup (a technical stakeholder group), completed the Salt Bayou Watershed Restoration Plan. This document represents a consensus of the workgroup members on a strategy to collectively improve conditions in the Salt Bayou system.

Initiated a new research project focused on age structure and reproduction of armored catfish in Landa Lake in New Braunfels. The project is being conducted in collaboration with Texas A&M University and SWCA Environmental Consultants.

Initiated a new research project on the efficacy of introducing saltcedar beetles for control of saltcedar in the Colorado River Basin.

Aquatic nuisance species management activities were completed in the following public water bodies:

- Lake Austin – Issued a permit for stocking 9,000 triploid grass carp to manage hydrilla.
- Caddo Lake – Treated approximately 622 acres of giant salvinia and water hyacinth with approved herbicides.
- Lake Gonzales – Treated approximately 18 acres of water hyacinth with approved herbicides.
- Lake O' the Pines – Treated 0.5 acres of giant salvinia with approved herbicides.
- Nueces River – Approximately 90,000 viable nodes of *Arundo donax* were physically removed, and 24 acres were treated with approved herbicides.
- Lake Travis – Conducted surveys to determine the extent of saltcedar infestation along the Colorado River at Lake Travis.
- Toledo Bend – Over 114,000 giant salvinia weevils (*Cyrtobagous salviniae*) were reared and stocked to help control giant salvinia. Approximately 833 acres of giant salvinia were treated with approved herbicides.
- Lake Wood – Treated approximately 8 acres of water hyacinth with approved herbicides or mechanical removal.
- South Llano River – Surveyed a 12-mile segment of the river near Junction and conducted herbicide treatments on elephant ear plants that were present.

Began construction of a new rearing facility for biological control organisms. The facility is located on the grounds of the East Texas Fish Hatchery, and is expected to reach full production capacity by mid-2014.

Staff participated in "Consensus in the West" meetings sponsored by the University of Oregon to help coordinate exotic species regulations, with particular emphasis on zebra mussels and boat inspections.

Collaborated with Dr. Stephanie Glenn of the Houston Advanced Research Center on an Invasive Species Scorecard Project.

Reviewed all regulations relating to invasive species and participated in an inter-Divisional workgroup to reorganize, update, and draft new regulations as appropriate for consideration by the Texas Parks and Wildlife Commission.

Reviewed regulations relating to introduction of fish, shellfish, and aquatic plants and participated in an inter-Divisional workgroup to begin to reorganize, update, and/or draft new regulations as appropriate for consideration by the TPW Commission.

To comply with new National Pollutant Discharge Elimination System regulations, as well as Texas Pollutant Discharge Elimination System regulations administered through the Texas Commission on Environmental Quality, a Pesticide Discharge Management Plan (PDMP) was assembled by staff in 2012 and approved by TCEQ. In 2013, an annual report was prepared by staff and submitted to TCEQ outlining all pesticide use by TPWD.

Staff members served on a number of advisory boards, panels, steering committees and organizing committees, including:

- Gulf Coast Prairie Landscape Conservation Cooperative
- Great Plains Landscape Conservation Cooperative
- Desert Landscape Conservation Cooperative
- Southeast Aquatic Resources Partnership
- Desert Fish Habitat Partnership
- National Fish Habitat Partnership
- Texas Chapter of the American Fisheries Society
- Texas Riparian Association
- Gulf and South Atlantic Regional Panel on Aquatic Invasive Species
- Western Regional Panel on Aquatic Nuisance Species
- Mississippi River Basin Regional Panel on Aquatic Nuisance Species
- Federal Invasive Species Advisory Committee
- Texas Invasive Plant and Pest Council
- Texas Invasive Species Coordinating Committee

Permits Issued:

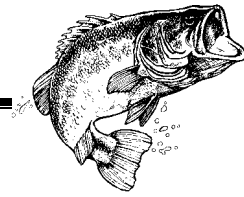
- 878 Triploid Grass Carp Permits
- 72 Exotic Species Permits for aquaculture
- 14 Exotic Species Research Permits
- 14 Exotic Species Zoological Permits
- 1 Exotic Species Interstate Transport Permit
- 65 Water Spinach Permits
- 4 Aquatic Vegetation Removal Permits
- 49 Nongame Fish Permits
- 61 Introduction of Fish, Shellfish, and Aquatic Plants Permits
- 2 Broodstock Collection Permits

Additional details about river and stream surveys, grants and donations, and partnership efforts can be found in **Appendix – Surveys Conducted in Public Waters** and **Appendix – Work with Other Organizations**.

Organization

The Habitat Conservation organizational chart is located in **Appendix – Organization Charts**.

FISHERIES MANAGEMENT AND RESEARCH



Program Description

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 (e.g. Fishery Assessment Procedures Manual) 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, stocks fish in public waters, 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. Staff are located at three 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.

Accomplishments

Conducted 369 surveys on 171 reservoirs covering 1,258,391 surface acres of water. Conducted five additional surveys on two rivers. For a detailed list of waters surveyed, see **Appendix – Surveys Conducted in Public Waters**.

Prepared comprehensive reports and fisheries management plans on 47 public reservoirs. Reports were made available to reservoir controlling authorities and the general public through the agency website.

The regulation to require that boats be drained before they leave water bodies was implemented to control the spread of zebra mussels in several new water bodies including Eagle Mountain, Lake Worth, parts of the Red River, parts of the Elm Fork of the Trinity River, and all impounded and tributary waters of the West Fork of the Trinity River above Lake Worth.

Worked with the zebra mussel invasion in a number of ways: giving presentations to professional organizations; sampling zebra mussel DNA, veligers, and adults at various reservoirs and rivers; training staff and outside partners to identify veligers; designing and delivering zebra mussel sampling kits to game wardens; and promoting public awareness through a campaign that included a boater survey and inspection program, press releases, TV interviews and other media interactions.

Conducted habitat improvement activities that affected 1,847 surface acres on 30 public reservoirs.

Directed the stocking of 26,342,610 fish of 18 different species in 321 different water bodies. Detailed stocking reports can be found in **Appendix – Stocking Reports**.

Coordinated and participated in 296 outreach events reaching 22,659 people.

Research works to improve the efficiency and effectiveness of Division operations and aquatic resource management. This year's fishery management research focused on:

- Development of catfish fisheries (seven studies)
- Improving stocking or sampling techniques (seven studies)
- Effects of hydrology and changing water levels on fish and habitats (four studies)
- Alligator gar management (three studies)
- Other applied research topics (10 studies)

Nineteen additional research studies were underway in the Division's hatchery and analytical services branches. Research staff coordinated and assisted with experimental design, data analysis, peer review of proposals, and other aspects of the research process. For a list of current research studies, see **Appendix – Research and Special Projects**.

Research and Management staff published 17 articles in peer-reviewed, scientific journals and six in the Department's Management Data Series. Two more are in press.

Staff made 21 presentations of research results to professional, scientific conferences.

Worked with other Inland Fisheries branches, the Wildlife Division, and the U.S. Fish and Wildlife Service to allocate federal endangered species grant funds to research projects best aligned with TPWD priorities for species conservation. Fish and mussel studies continue to be a high priority for these funds.

Staff from Management, Research, and River Studies initiated joint studies addressing conservation and research priorities for the middle Trinity River. These studies will inform the Inland Fisheries Division as the instream flow-setting process unfolds in the basin.

Research staff worked with Division leaders and partners from Oklahoma Dept. of Wildlife Conservation to obtain Gulf Coastal Prairie Landscape Conservation Cooperative funding for Texas Tech researchers to develop guidance for managing water levels to enhance floodplain-dependent fish species in the upper end of Lake Texoma and the Red River.

Reviewed the Neighborhood Fishin' Program's current and projected costs and revised the cost-share arrangements to maintain an appropriate balance of state and community partners' contributions to the program.

Devised and implemented marketing plans for Neighborhood Fishin' Program lakes.

Coordinated and assisted with the Bass Brigades Camp, a leadership development program for high school age youth.

Organized and led a highly-successful 2013 Toyota Texas Bass Classic at Lake Conroe. Cumulative donations hit the \$1.5 million mark this year. Maximized opportunities for promotion of our programs, including video pieces, public displays, and promotion of proper fish-care practices.

Coordinated two meetings with the Freshwater Fisheries Advisory Committee to get constituent input on fisheries issues.

Staff spent considerable time dealing with effects of drought and low water levels such as habitat loss and public access issues, as well as planning for and modifying stocking plans.

Staff from Management and Habitat Conservation branches, along with NRCS conservationist Steve Nelle, helped host a 6-hour watershed conservation workshop for South Concho River landowners.

In response to public inquiry, collected largemouth bass from Falcon Reservoir to assess impacts of alligator gar predation on largemouth bass. Affected fish were provided to the Fish Health and Genetics lab for evaluation and a written response was prepared.

Met with a land developer in Canyon to discuss the possibility of incorporating a renovation of Lake McSpadden into the plan for a new subdivision. This would create a new 30-acre Community Fishing Lake in the city of Canyon.

Helped re-establish ShareLunker receiving stations at Falcon and Lake Casa Blanca state parks.

Produced a Spanish language version of the ShareLunker Program application form.

Began collaborative project among Heart of the Hills, Management, and River Studies on an instream-flow study on the lower Guadalupe River.

Staff members attended Texas Water Development Board regional water planning meetings.

Staff members participated in "Conservation Power Chick" discussion panel at a Becoming an Outdoors Woman event in Brownwood.

Inland Fisheries presentations about tournament bass care on the slide share website have received 9,947 views.

Formed a committee to study the survival and angler use of stocked 9-inch channel catfish in small water bodies.

Formed a new committee on management of small impoundments (DCAC; Diversified Community Angling Committee).

Management staff met with Seitel, Cardno ENTRIX, Bureau of Reclamation, and other TPWD staff to discuss plan of operations, biomonitoring, and concerns with Choke Canyon 3D seismic survey. Conducted biomonitoring to observe and monitor on-water gun boat operations during survey.

Management, Research, and River Studies staff assisted the Brazos River Authority (BRA) with the establishment of new thresholds, WAM model data, and the Reservoir Fisheries Guidance Document for several reservoirs in the BRA's operating plan.

Management staff participated in a bi-state meeting with Oklahoma Department of Wildlife Conservation staff to discuss management of Lake Texoma.

Worked with the Communications Division to record a 50th Anniversary rainbow trout stocking segment for the Texas Parks & Wildlife TV series.

Updated the survey report format and distributed to district staff.

Met with Wichita Falls Parks Board members and Lakeside City mayor, council member, city manager, and local residents about Lake Wichita. The city pledged \$100,000 to a project aimed at re-vitalizing the lake, and a local resident offered his land as a location to dispose of dredge material.

Management and Hatchery staff from around the state assisted in the search and collection of white bass and striped bass for hatchery production of sunshine, palmetto, and striped bass.

Management staff participated in a Lake Austin hydrilla management meeting and decided that another stocking of grass carp was necessary as the surface acreage of hydrilla continued to expand.

Management staff attended the Lake Fork Sportsman Association Carp and Buffalo Tournament to network with media and tournament organizers in efforts to grow the sport in Texas.

Recruited the Lake Houston Sports and Recreation Foundation, Piney Woods Chapter of Texas Master Naturalists, Lake Buchanan Conservation Corporation, and Stillwaters Bass Club to become Friends of Reservoirs Foundation Chapters/Organizations.

Participated in Reservoir Fisheries Habitat Partnership (RFHP) meetings, project proposal scoring and project implementation; assisted with development of four presentation abstract submissions for the Reservoir Fish Habitat Symposium, and assisted in growing the funding arm Friends of Reservoirs (FOR), by recruiting chapters and developing promotional materials. Staff members developed a script and shot video footage of an interview with BASS Elite Pro Alton Jones to promote Friends of Reservoirs.

Submitted the Lake Conroe Habitat Enhancement Project for the 2013 Environmental Excellence Award from the Texas Commission on Environmental Quality. Staff accepted the award at a TCEQ banquet in Austin. This project was also approved by the National Fish Habitat Board as one of the Top Ten Waters to Watch in 2013.

Maintained a strong relationship with a key private partner, the East Texas Woods and Waters Foundation. Activities included assisting with the foundation's annual fundraiser banquet, giving presentations, and establishing a Memorandum of Understanding to pay angler tag return awards enabling research to investigate flathead catfish exploitation on Lake Palestine.

Continued to battle invasive aquatic plants, primarily giant salvinia, in a number of Texas reservoirs and rivers.

Management staff coordinated the statewide native aquatic plant stocking request, nursery maintenance, and plant pick-up with project recipient districts.

Management staff hosted the grand public opening of Lake Naconiche on September 1, 2012. Worked with the controlling authority to manage high-use demand immediately following opening, gave a presentation about the impoundment's fisheries management to the Nacogdoches County Economic Development Group, and managed a new infestation of giant salvinia.

Worked with public and private partners to enhance public fishing access to the Neches River upstream of Lake Palestine. Additional shoreline access was leased and enhanced as part of the expanded Neches River Access Area. Staff coordinated with partners and media for the ribbon cutting ceremony.

Management staff led a Texas Conservation and Recreation Forum Region 8 meeting of internal and external stakeholders. Presentations were provided by invited speakers on conservation topics relevant to East Texas and were recorded using Camtasia Studio for podcasting on a newly created Forum Facebook page and YouTube channel.

Management and Research staff advanced the science underlying handfishing practices and flathead catfish population dynamics in East Texas impoundments. Staff spoke with organizers of "roadrunner-style" handfishing tournaments conducted at Wright Patman and Palestine reservoirs and made suggestions to prevent the release of catfish into waters where they were not caught in order to minimize risk of aquatic nuisance species and disease spread. Staff attended the weigh-ins to gather information and survey participants, and conducted an exploitation study of flathead catfish on Lake Palestine.

Met with the San Jacinto River Authority concerning the San Jacinto River Watershed Management Plan and other projects at Lake Conroe including the FM 830 Boat Ramp Park, paddling trails, vegetation control, and native vegetation restoration.

Management staff developed a list of new habitat projects for an agency Land and Water Plan bullet measure. Staff completed fish habitat projects distribution maps.

Management staff completed work on the agency's Core Values Development Team. A final set of Core Values was presented to executive leadership for approval.

Staff members participated in TPWD's Diversity Task Force. A final report was produced with recommendations on improving diversity within the agency.

Submitted the Legislative Appropriation Request measures report for the number of fish population and harvest surveys conducted in the prior fiscal year.

Completed Federal Aid (F221M) interim project report and revised the F221M project statement and Section 7 to incorporate narrative about planting native aquatic plants and to develop a state funding code for this activity as an interim accommodation measure.

Staff completed experimental Rapid Learning online leadership coursework and provided comments on the program via online survey.

A management staff member received the agency's Employee Recognition Award for the category of Customer Service.

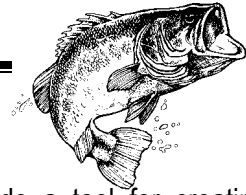
A management staff member was named the Texas Chapter American Fisheries Society's Outstanding Fisheries Worker of the Year in the category of Fisheries Management.

Staff were active in professional service, serving as associate editor of a scientific journal, the President-Elect of the Organization of Fish and Wildlife Information Managers, chair of the American Fisheries Society's (AFS) Skinner Award Committee, and Secretary-Treasurer and a member of the Reservoir Committee in the Southern Division of the AFS. Staff members also served on the AFS Education Committee and held a variety of leadership positions in the Texas Chapter. In addition, staff members conducted a graduate student training class at Nicholls State University in Louisiana, served on the advisory committee for a Ph.D. student at Texas Tech University, and peer-reviewed professional manuscripts from a variety of journals.

Organization

Fisheries Management and Research chart is located in **Appendix – Organization Charts**.

FISH HATCHERIES



Program Description

Fish hatcheries provide functional support for fisheries management and provide a tool for creating, enhancing and maintaining fish populations in Texas public waters. The Inland Fisheries Division operates five fish hatcheries located in San Marcos (AE Wood), Athens (Texas Freshwater Fisheries Center), Graford (Possum Kingdom), Electra (Dundee) and Brookeland (John D. Parker East Texas Fish State Hatchery). Stocked fish must meet specific requirements including number, size, genetic integrity, disease-free status, and time of stocking. Hatchery-stocked fish are used to establish initial year classes in new or renovated reservoirs, supplement natural recruitment, and increase angler opportunities. Additionally, stocked fish are used to increase species diversity and restore fish populations that have been decimated or reduced due to natural or man-made influences. Hatcheries also provide immediate recreational and educational opportunities by stocking catchable size fish in or near urban areas. In all, we stock more than 15 million fingerling fish of various species into fresh water each year.

Accomplishments

Stocked 24.9 million fish in 315 locations. The total included 13.8 million fingerlings, 10.9 million fry and 290,565 adult fish. Detailed stocking reports can be found in **Appendix – Stocking Reports**.

Completed construction of the John D. Parker East Texas State Fish Hatchery.

Produced a record number of Guadalupe bass at the A.E. Wood Fish Hatchery.

Produced and stocked more than 5 million Florida bass fingerlings from the Texas Freshwater Fisheries Center.

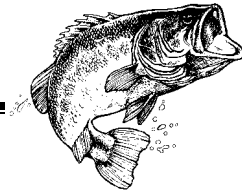
After several years of low production, produced and stocked more than 4 million striped bass and hybrid striped bass from A.E. Wood, Possum Kingdom and East Texas hatcheries.

Continued efforts to develop strategies to mitigate the impacts of the widespread drought across Texas and sustain hatchery operations. Strategies included modified hatchery operating and water reuse conservation plans, modification to existing pump systems and development of auxiliary pumping systems. Unfortunately, due to continuing drought conditions, the suspension of production activities at the Dundee Fish Hatchery extended into FY13.

Organization

Inland Fisheries Hatcheries chart is located in **Appendix – Organization Charts**.

ANALYTICAL SERVICES



Program Description

The 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, catfish, and 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.

The Environmental Chemistry Laboratory (ECL) specializes in analyzing contaminants in fish tissues, which is a complex matrix and very few labs nationwide perform similar analyses. Water and sediment samples also are analyzed. Analytes of concern are both naturally occurring and resulting from anthropogenic activities. They include heavy metals, pesticides, industrial wastes, and biotoxins such as those created by harmful algae. In addition to providing services for investigations of fish kills and pollution, the ECL analyzes environmental samples to establish baseline data or in support of department research.

At the end of FY13, the ECL was closed. This was a strategic decision based on the costs of operating a specialized lab and a decline in the need for its services over the last several years. The Fish Health and Genetics Laboratory will continue to operate as usual.

Accomplishments

Fish Health and Genetics Laboratory

Completed water quality analyses on 92 water samples in support of hatchery discharge monitoring at the AE Wood, Dundee, Jasper, and Possum Kingdom fish hatcheries and Heart of the Hills Fisheries Science Center.

Conducted analyses on 54 fish health cases comprising 2,767 individual fish.

Conducted 124 cell counts and 89 bioassays in association with golden alga monitoring, research, or fish kill investigations.

Completed genetic analyses (allele frequency and genotypes) for 1,060 largemouth bass collected from 36 public reservoirs from fall electrofishing surveys.

Completed genetic analyses on 136 largemouth bass submitted to the ShareLunker program or used in Operation World Record (OWR). This total includes the following:

- ShareLunker entries for 2013 (n = 12)
- Ancestry, relatedness, and reference samples (n = 15)
- OWR study lakes (109 fish from four water bodies)

Completed genetic analyses on a total of 1,239 micropterids in support of the Guadalupe Bass restoration initiative. These samples include the following:

- Supplemental Broodfish (n = 40)
- AEW production fingerlings (n = 668)
- Monitoring/ Habitat Association Study (n = 180)
- James River (n = 56)
- Medina River (n = 56)
- Johnson Creek (n = 237)
- Cibolo Creek (n = 2)

Morone brood fish (1,120 striped bass and white bass) were evaluated at two diagnostic markers prior to using their offspring in fingerling production of striped bass and palmetto pass. A single F1 hybrid was detected.

Each year potential record fish are submitted for verification of species. In January 2013 a micropterid caught in the Comal River and submitted as a water body record Guadalupe bass was determined to be a hybrid of the Guadalupe bass and smallmouth bass. In April 2013 a single *Morone* sample was submitted from the Arkansas Game and Fish Commission for species verification. The sample was submitted as a state record white bass but was identified as a first generation hybrid between striped and white bass. In July 2013, a putative yellow bass was caught from Toledo Bend and submitted as a water body record. This sample was identified as a first-generation cross between a white bass and a yellow bass.

Pupfish and sheepshead minnows (n = 149) from Salt Creek were evaluated to resolve the extent of site specific introgression and to determine whether specific sites could serve as sources for establishing refugia populations.

Development and evaluations of eDNA methods for the early detection of zebra mussels in the absence of veligers were completed. Results indicated that the developed methods were viable in laboratory environments but were not reliable within reservoirs. We concluded that plankton tows, paired with microscopy and PCR verification, was a more reliable approach.

Environmental Contaminants Laboratory

The laboratory received 132 samples submitted by Inland Fisheries hatcheries and management personnel, law enforcement including the Environmental Crimes Unit (ECU), and state parks. The overall number of samples was significantly down from previous years. The last sample was accepted July 11, 2013. A decision was made to close the ECL as of August 31. Analyses conducted during FY13 included:

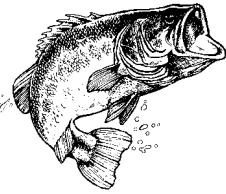
- Continuation of analysis of blue catfish tissues for endocrine-disrupting contaminants.
- Analysis of water samples from the John D. Parker East Texas State Fish Hatchery to determine whether water under liners was leaked pond water or groundwater.
- Water samples related to fish kills (n=18) to characterize nutrients or toxins.
- Samples related to Environmental Crimes (n=74) were analyzed. Cases were diverse and included badly managed drilling waste, a biodiesel production facility discharging production waste, and a truck emptying unknown material into a field.
- At the Texas Environmental Law Enforcement Association (TELEA) annual meeting, two staff members were recognized with the association's Environmental Investigator's Award in the non-commissioned category.

The ECL received \$27,087.20 for restitution resulting from environmental crimes investigations.

Organization

The chart for Analytical Services can be found in **Appendix – Organization Charts**.

INFORMATION AND REGULATIONS



Program Description

The Information and Regulations group works closely with the Fisheries Management and Research branch during the regulatory process to develop fishing regulation change proposals, obtain public input on the changes, and communicate the proposals to the Texas Parks and Wildlife Commission. Staff 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 permits including triploid grass carp 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.

Accomplishments

The Angler Recognition Program publicized a list of Official Weigh Stations that have agreed to partner with TPWD to help certify record catches around the state. The program also launched a “Catch of the Month” feature on the agency website.

Texas Paddling Trails opened 19 new inland and coastal trails.

Worked with Marketing team to develop content for the quarterly Fish Texas e-newsletter

Facilitated cross-divisional resource monitoring by completing updates to the species master table in the intranet database. This table cross-references Inland Fisheries, Coastal Fisheries, Pollution Response Inventory and Species Mortality (PRISM), Law Enforcement and Wildlife species codes.

Began work on a new intranet application for the River Studies group.

Along with Coastal Fisheries staff, assisted in planning and conducting the following human dimension-related surveys:

- Guadalupe River economic survey with Guadalupe River Trout Unlimited
- Hill Country Anglers survey with Texas Tech University
- 2012 statewide angler survey done in conjunction with Texas A&M University
- Hand fishers in Texas

Continued administration of Freshwater Fisheries Advisory Committee; organized the committee’s fall and spring meetings.

Met with Oklahoma Department of Wildlife Conservation and Louisiana Department of Wildlife and Fisheries staff to discuss current and potential fishing regulations.

Assisted with the agency's regulatory hearing process for proposed changes to the 2013-2014 hunting and fishing regulations. The following changes in fishing regulations, recommended by staff to improve angling quality, optimize angling opportunity, and protect fisheries resources, were adopted by the Texas Parks and Wildlife Commission.

- Lake Jacksonville (Cherokee County) - Changed regulations for largemouth bass to no minimum length limit for largemouth bass with only two bass less than 18 inches allowed to be retained each day. Daily bag limit for bass will remain at five fish.
- Kurth Reservoir (Angelina County) - Changed largemouth bass regulations to a 16-inch maximum length limit and five-fish daily bag. Only one bass 24 inches or greater may be retained alive in a live well and immediately weighed using personal scales. Bass weighing 13 pounds or more may be donated to the ShareLunker Program; otherwise, fish must be immediately released.
- Canyon Lake Project # 6 (Lubbock County) - Restrict fishing methods to pole-and-line only.
- Handfishing - Added a definition of handfishing to TPWD rules to clarify legal activities and methods associated with this fishing method.

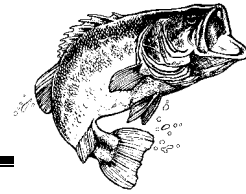
In addition to the above changes in fishing regulations, added the following water bodies to the rules intended to stop the spread of zebra mussels: lakes Bridgeport, Eagle Mountain, Lewisville, Ray Roberts, and Worth; and parts of the Elm and West Fork on the Trinity River.

Assisted with updates to the Outdoor Annual print edition and assisted Web Services team with conversion to new online format. Staff participated in planning, editing and user testing of the online version.

Organization

The Information and Regulations organizational chart can be found in **Appendix – Organization Charts**.

TEXAS FRESHWATER FISHERIES CENTER



Description

The Texas Freshwater Fisheries Center (TFFC), located 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. An average of 58,000 people visit TFFC annually, over 20,000 of those are youth. Special events are held throughout the year to encourage and enhance constituent participation. These numbers result in connections to aquatic resources in Texas, information about Inland Fisheries management and hatchery work and great fishing experiences.

Accomplishments

Open to the public for 309 days in FY13, the Visitor Center provided a high-quality experience including facility tours (guided and self-guided), workshops and aquatic education classes. The center also provided support materials for the general public, teachers and students. Visitors included 52,856 people from 44 states and 8 foreign countries.

Provided hands-on fishing for 27,521 visitors, with 270 receiving First Fish Awards. A total of 17,969 people toured the hatchery ponds via guided tram.

Planned and executed ten major events including Fly Fish Texas, Outdoor Fools Day, Cinco de Mayo, ShareLunker & 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.

Staff and volunteers facilitated numerous educational seminars and workshops open to the general public, including but not limited to fly fishing classes, hunter education classes (English and Spanish), invasive species workshop, professional development for classroom teachers, and monthly bird and nature walks.

Hosted the 2013 Texas State-Fish Art Contest Awards Ceremony for all Texas winners. Three first-place winners attended the National State-Fish Art Expo in Perry, Georgia.

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.

Provided annual STAAR Academy for Athens ISD students, offering intensive science education classes for eighth-grade students. TFFC offers experiential activities to target school-identified weaknesses in standardized tests.

Forged partnerships with Purtil Creek State Park and TPWD Coastal Expo to provide cooperative learning activities at all three facilities through joint participation in each entity's events.

Provided venue, staff and programming for Forest for Every Classroom, a partnership of organizations including the US Forest Service, Texas A&M University Forest Service, Texas Water Development Board, Houston Arboretum, Brazos Bend State Park and Texas Commission on Environmental Quality, to provide professional development for urban-area classroom teachers.

Developed the free TFFC App, available for both iOS and Android, to enhance the visitor experience at TFFC. Continued to maintain Facebook pages for TFFC (more than 2000 fans) and the Toyota ShareLunker Program (now more than 6,000 fans).

Had a successful Toyota ShareLunker season:

- Twelve entries were received from eight lakes. Two of those lakes, Dunlap and Palestine, produced their first ShareLunkers ever.
- Two program entries were caught by out-of-state anglers, both from Louisiana.
- Eleven of the 12 fish were returned alive to the lakes from which they were caught. Toyota ShareLunker 545, the new Lake Palestine record, was donated to TFFC for display.
- One fish, Toyota ShareLunker 538, caught by Gary Sims of Gunter on December 12, 2012, was a recapture. The fish weighed 15.02 pounds when caught by Sims; it weighed 14.25 pounds when caught by Ed Carter in March 2011.
- Lake Fork also produced the big bass of the season, a 16.04-pounder caught by Richard Scibek of Granbury on February 2, 2013.
- New ShareLunker Weigh and Holding Stations were established at Lake Casa Blanca International State Park, Falcon State Park, Oak Ridge Marina on Lake Fork and Johnson Creek Marina on Lake O' the Pines.
- Lake Fork's four entries weighed 14.06, 13.11, 16.04 and 15.02 pounds for an average weight of 14.55 pounds, well above the ShareLunker program historical average of 13.8 pounds.
- Fish have been getting longer, from 25.2 inches the first five seasons to 26 inches over the last five.

Organization

The chart for Texas Freshwater Fisheries Center can be found in **Appendix - Organization Charts**.

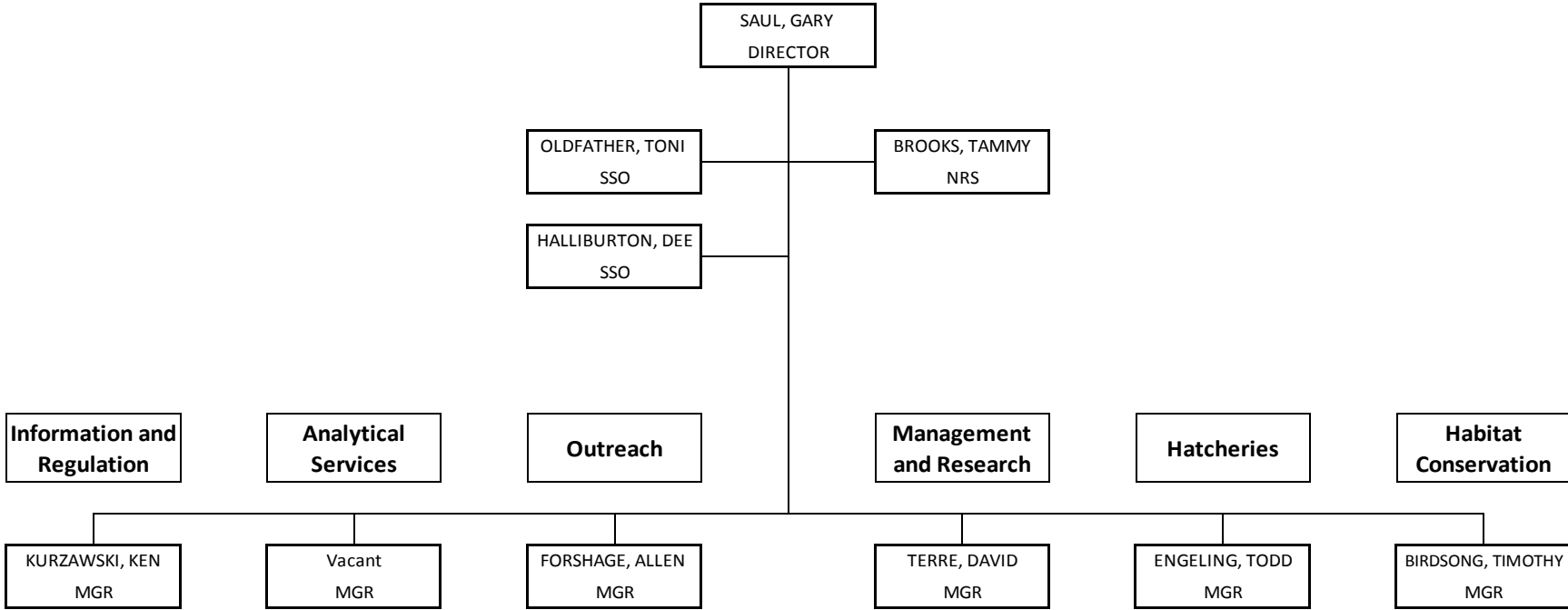
APPENDIX

Organization Charts

Legend

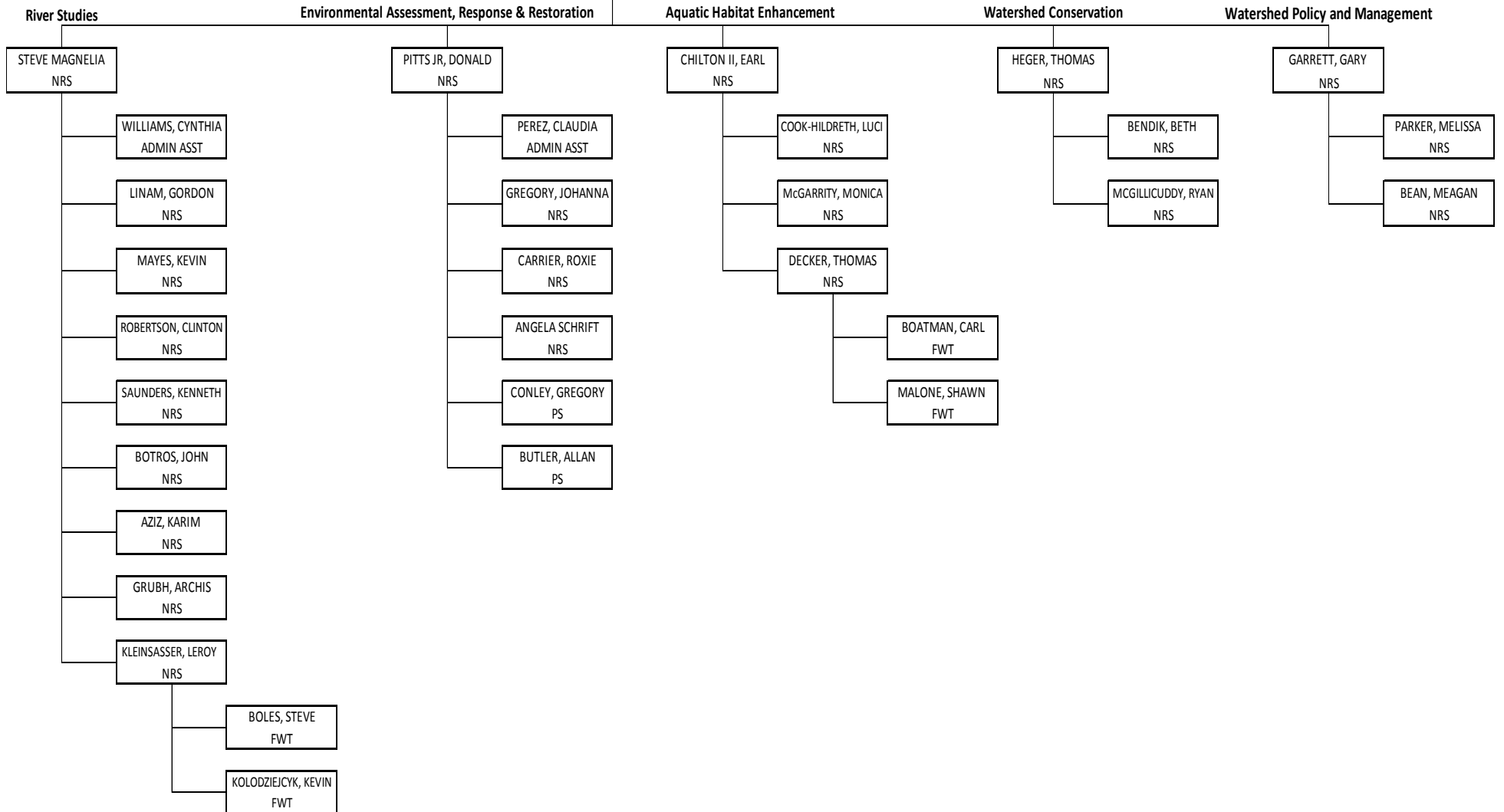
Abbreviation	Job Title
ADMIN ASST	Administrative Assistant
CHEM	Chemist
CLERK	Clerk
FWT	Fish and Wildlife Tech
INFO SPEC	Information Specialist
MGR	Manager
NRS	Natural Resources Specialist
PARK SPEC	Park Specialist
PROG SUP	Program Supervisor
PS	Program Specialist
SSO	Staff Services Officer
WEB ADMIN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

Inland Fisheries Administration

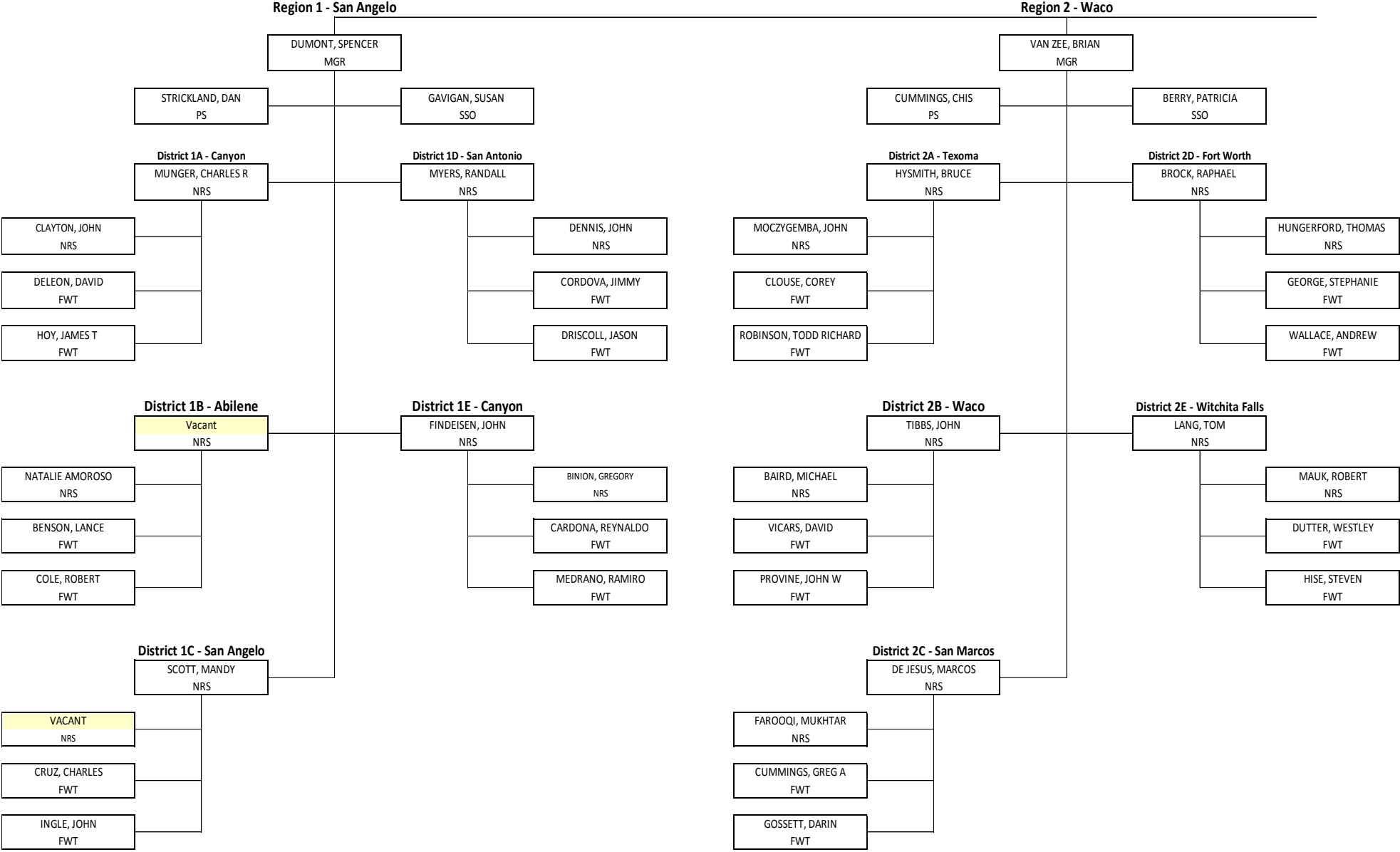


Habitat Conservation

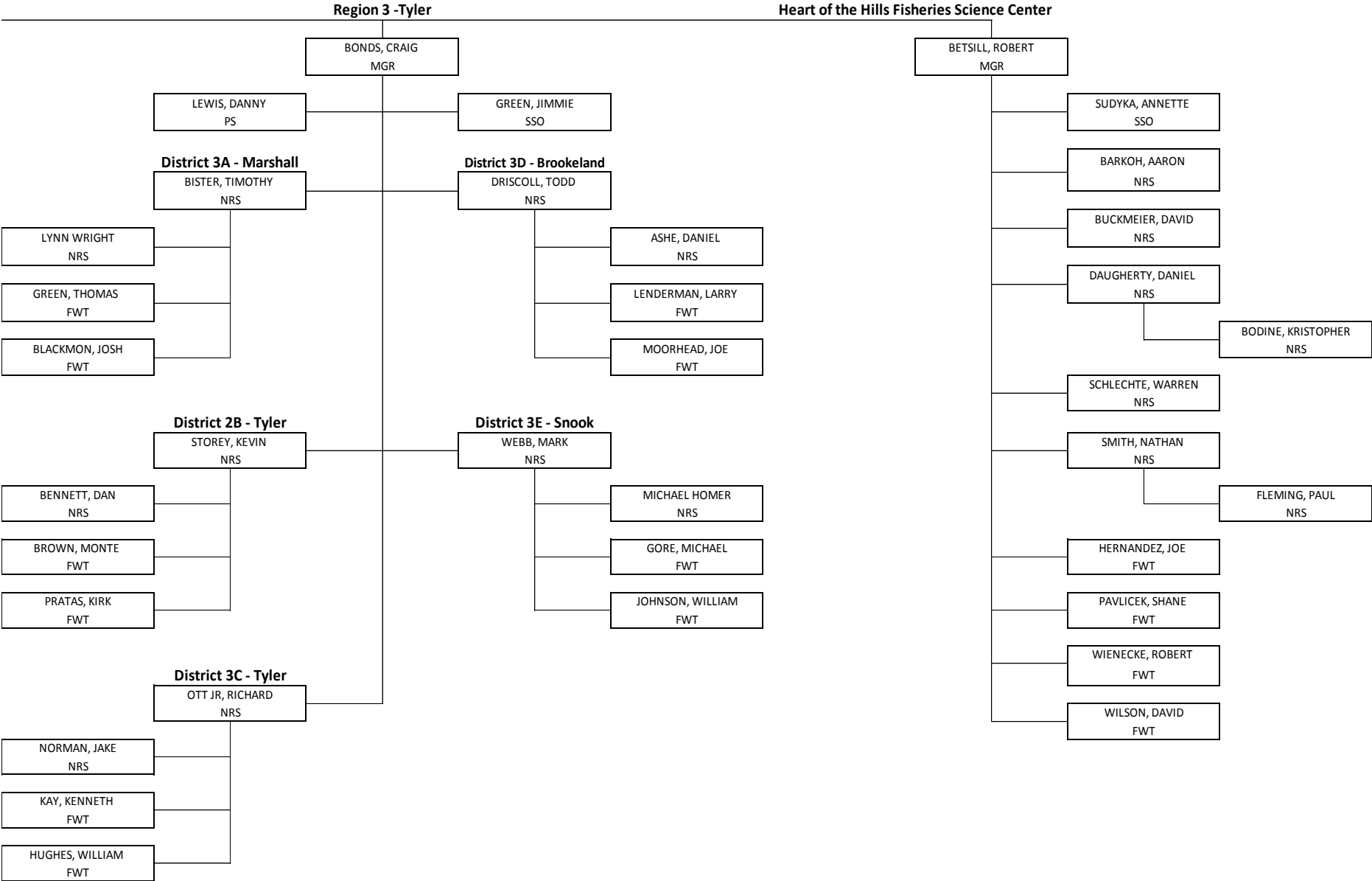
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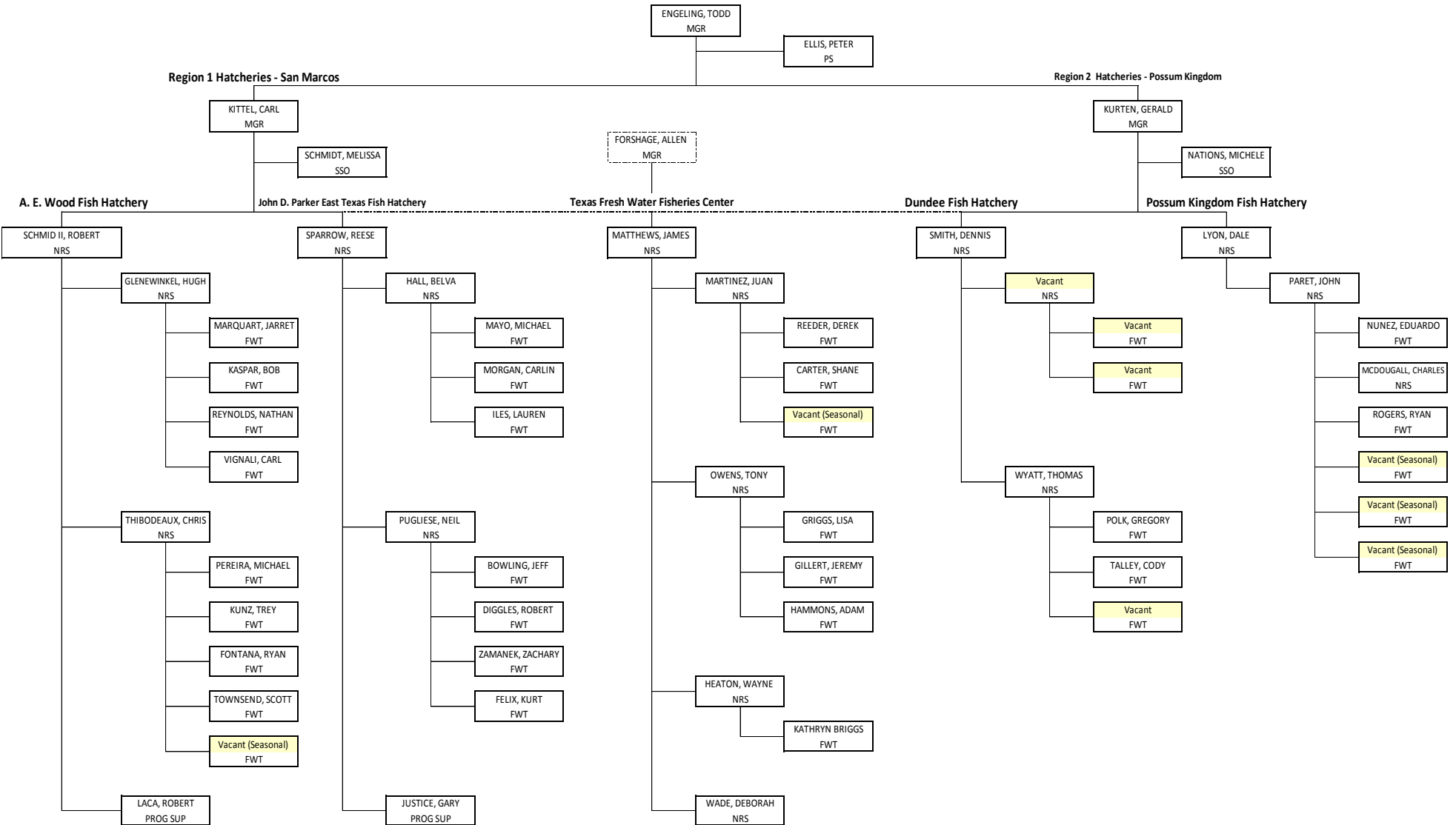
Fisheries Management and Research Regions 1 & 2



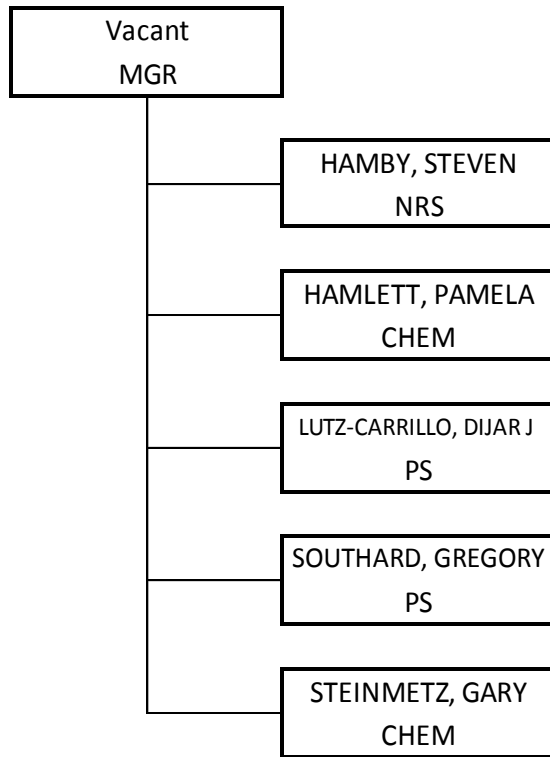
Fisheries Management and Research Region 3 & Heart of the Hills



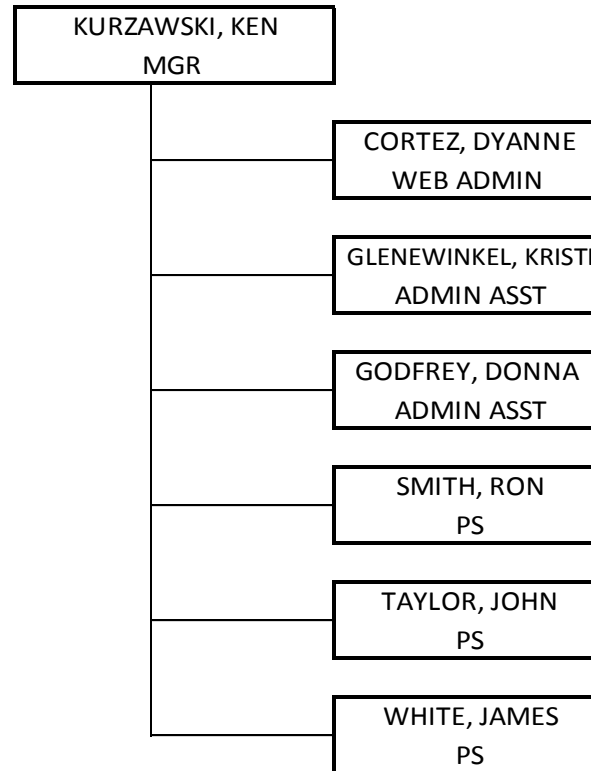
Hatcheries



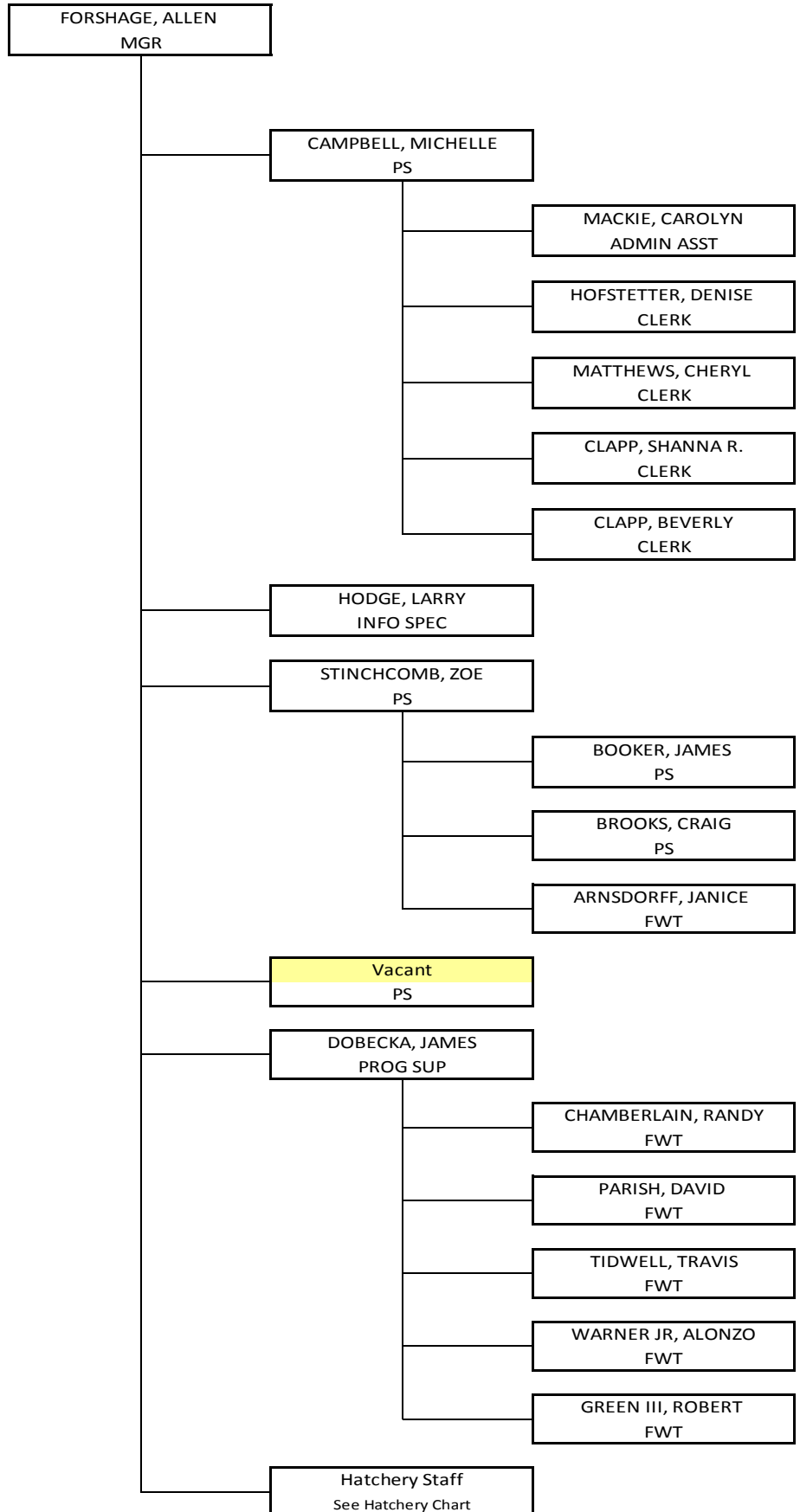
Analytical Services



Information and Regulations



Texas Freshwater Fisheries Center



Surveys Conducted in Public Waters

Reservoir Surveys

Reservoir	Size	Creel	Angler Access	Electrofish	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
Alan Henry	2,884	X	X	X		X	X			
Alvarado Park	437		X			X	X			
Amistad	63,680			X						
Amon G. Carter	1,540		X	X	X		X			X
Aquilla	2,366						X			
Ascarate	50								X	
Athens	1,799		X				X			
Austin	1,589		X	X	X	X	X			
Averhoff	174		X			X				
Balmorhea	573								X	
Bardwell	3,138				X					
Bastrop	906			X			X			
Beal Park Lake	1								X	
Bellwood	160			X						
Belton (Bell County)	12,385			X	X					
Bob Sandlin	9,116	X				X	X			
Bonham City	1,020		X	X	X		X			X
Brady Creek Reservoir	2,020			X						
Brandy Branch	1,257						X			
Brazos Lake	474			X	X		X			X
Bright Lake	18			X						
Brownwood	6,509			X	X					X
Brushy Creek Reservoir	30			X						
Buchanan	22,211				X					
Buena Vista Park Lake	1	X								
Buffalo Springs	241			X	X					X
Bullfrog Pond	1	X								
Byers City	12			X						
C. J. Kelly Park Pond	1								X	
Caddo	27,472						X			
Canyon Southeast Park	3			X						
Casa Blanca	1,680		X	X			X			
Central Park Pond #1	2	X								
Champion Creek	1,560			X	X					
Choke Canyon Res.	25,989	X		X	X		X			
Coleman (Hopkins)	56			X						
Coleman City	2,000			X	X					X
Coletto Creek Reservoir	3,100	X		X						X
Colorado City	1,612								X	
Comanche Trails Park	1								X	
Conroe	20,118	X		X						
Cypress Springs	3,461			X			X			
Daniel	924						X			
Diversion	3,133				X					
Dunlap	410						X			
E. V. Spence	14,640								X	
Eagle Mountain	8,505			X	X					X
Elder Lake	10			X						
Fairfield	2,034	X	X	X	X		X			
Falcon	86,843			X			X			
Fayette County	2,400						X			
Fischer Park Pond 1	3			X						
Fischer Park Pond 2	3			X						

Reservoir	Size	Creel	Angler Access	Electrofishing	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
Fort Phantom Hill	4,213			X						
Gibbons Creek Res.	2,770			X						
Gilmer Reservoir	1,010	X	X	X	X	X	X			X
Gordon	34									X
Graham	2,396	X				X	X			
Granger	4,009			X	X					X
Grapevine	6,892			X						
Green Lake	6,063						X			
Greenbriar Park (FW)	3	X								
H-4	696						X			
Hawkins	634						X			
Holbrook	650			X	X		X			
Hords Creek	510						X			
Houston	10,459	X					X			
Houston County	1,330			X	X	X	X		X	X
Hurst Chisholm Park	3	X								
Inks	768		X			X	X			
Jacksonville	1,208	X	X	X			X			
Joe Pool	7,470	X	X	X			X			
Joshua Creek Park	10			X						
Kemp (Baylor County)	15,104					X	X			
Kickapoo	6,028					X	X			
Kirby	740						X			
Kurth	726			X			X			
Lady Bird Lake	469						X			
Lake Findley	247			X						X
Lake Fork	27,264	X		X			X			
Lake Georgetown	1,297		X			X	X			
Lake Kyle	12			X						
Lake O' the Pines	16,269			X			X			
Lake Pflugerville	180			X			X			
Lakeside Park	3	X								
Leon	1,590	X	X	X			X			X
Limestone	11,785			X	X					
Livingston	83,277			X	X			X		
Lone Star	1,516			X			X			
Lyndon B. Johnson	6,502			X	X		X			X
Mackenzie	896			X	X					X
Maplewood Pond	3	X								
Marble Falls	573		X			X	X			
Martin Creek Res.	4,981		X				X			
Mary Jo Peckham Park	5	X								
McClellan	339		X			X	X			
Meadow Lake	59			X						
MEC Pond	11			X						
Medical Center North	3			X						
Medical Center South	7	X		X						
Medina	5,410			X	X					
Meredith	16,411				X					X
Mesquite City Lake	5	X								
Mill Creek Lake	237			X	X					
Miller's Pond	6	X								
Monticello	2,001						X			
Moss	1,140						X			
Moss Creek City	160							X		
Mountain Creek Lake	2,493		X	X	X		X			X

Reservoir	Size	Creel	Angler Access	Electrofish	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
Murvaul	3,397			X	X		X			X
Nacogdoches	2,212	X		X	X		X			
Nacooniche	692	X		X						
Nasworthy	1,380			X	X					X
Navarro Mills	5,061		X	X	X					X
New Ballinger	500			X						
Newcastle	100			X						X
North Anson	319								X	
O. H. Ivie	19,149	X	X	X			X			
Oak Creek	2,375			X	X					X
Old Winters	309		X							
Palestine	25,560	X					X			
Palo Duro Reservoir	2,413			X	X					
Palo Pinto	2,399	X								
Pampa City	7			X						
Pat Mayse	5,940			X	X					
Pinkston	447						X			
Placid	198			X	X					X
Possum Kingdom	15,588			X	X					
Proctor	4,474			X						
Purtis Creek State Park	349		X	X	X		X			X
Quitman	799						X			
Raven	204	X		X			X			
Ray Hubbard	22,745		X	X	X		X			X
Red Bluff	11,193								X	
Richards Park-Upper	10								X	
Richland-Chambers	41,356				X					
Sam Rayburn	114,500	X		X	X		X			
San Augustine City	200						X			
Sheldon	1,230			X	X					X
Somerville	11,456			X	X	X	X		X	X
South Lakes Park	4	X								
South Weeks	1	X								
Southside Lions Park	8	X								
Stamford	5,124			X						
Stillhouse Hollow	6,429			X			X			
Striker Reservoir	1,920			X	X					X
Sulphur Springs	1,478						X			
Sweetwater	630			X						X
Tawakoni	37,879	X			X					
Texoma	74,686		X	X	X		X			X
Thompson Park	13			X						
Timpson	223			X	X		X			X
Toledo Bend	181,600	X		X			X			
Tom Bass I	1	X								
Town Lake	4			X						
Tradinghouse Creek	1,793			X	X					X
Travis	18,622				X					
TXU Contract Lk #1	110						X			
Tyler East	2,276		X				X			
Tyler West	2,224		X				X			
Unity Park Pond	4			X		X	X		X	
Van Buren West	2								X	
Victor Braunig	1,350		X				X			
Walter E. Long Res.	1,269			X	X		X			
Waxahachie	553		X				X			

Reservoir	Size	Creel	Angler Access	Electrofishing	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
Welsh	1,334						X			
Wheeler Branch	180	X	X	X	X	X	X			
White River Reservoir	1,418			X	X					X
Winnsboro	806			X			X			
Winters-Elm Creek	316		X			X				
Wright Patman	20,143		X	X	X	X	X			X
Totals	1,258,391	38	32	96	52	19	78	1	15	35

River and Stream Surveys

River Basin	Miles	Affected River Reach	Category	Objective	Methods
Brazos	290	Middle and lower Brazos River	Biological and habitat survey	Developed flow-ecology relationships for fish to support instream habitat analysis	Seine, electrofish, water quality, habitat, and hydrology sampling
Brazos	290	Middle and lower Brazos River	Biological and habitat survey	Develop flow-ecology relationships to support riparian productivity	Riparian assessment and inundation models
Brazos	290	Middle and lower Brazos River	Biological and habitat survey	Developed flow-ecology relationships for mussel and benthic invertebrates to support instream flow habitat analysis	Quantitative mussel survey
Brazos	3	Main stem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Brazos, Colorado, Nueces, Rio Grande	8	Upper Brazos, Concho, Dry Frio, Frio, Nueces, Sabinal, West Nueces, Devils	Biological and habitat survey	Examined overall instream and riparian condition to support the Native Fish Conservation Areas modeling effort associated with the Great Plains Landscape Conservation Cooperative supported Conservation Opportunity Areas Project. Conducted intensive, field-based surveys in the June-August 2013 timeframe within segments of rivers and streams identified as potential Native Fish Conservation Areas	SVAP (Stream Visual Assessment Protocol), seining, electrofishing
Colorado	215	Lower Colorado River between Austin and Wharton	Habitat survey	Established photo points for ongoing surveys to document presence and density of water hyacinth moved into the Lower Colorado River with pulses of water released from the Highland Lakes	Geo-referenced photographic surveys
Colorado		South Llano Watershed, James River Watershed, Pedernales River Watershed	Technical guidance	Worked with/established Landowner Incentive Grant Program contracts with a total of 27 landowners and one conservation entity across each respective watershed to implement best management practices to enhance stream and riparian habitat for the benefit of aquatic resources	Technical guidance
Colorado	11	Main stem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Cypress	3	Main stem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Guadalupe		Main stem and tributaries	Biological, habitat, and water quality surveys	Plans for baseline sampling in the lower Guadalupe River were developed in consultation with TIFP study partners and the Guadalupe-Blanco River Authority	Technical review

River Basin	Miles	Affected River Reach	Category	Objective	Methods
Guadalupe		Lower Guadalupe River	Biological, habitat, and water quality surveys	Collected baseline biological, habitat, and water quality data to aid in scoping an instream flow study that will start in 2014	Seine, electrofish, water quality, habitat, and invertebrate sampling
Guadalupe	10	Upper Blanco River	Native fish conservation	Re-establish pure Guadalupe bass population in areas where hybridized individuals had been removed	Stocked pure Guadalupe bass fingerlings
Guadalupe/San Antonio	167	Reaches of San Marcos, lower Guadalupe, and San Antonio rivers	Native aquatic species conservation	Determined habitat requirements for the state threatened golden orb mussel species for use in habitat modeling	Quantitative mussel survey
Guadalupe		Landa Lake	Exotic species management	Conducted a two-year study to remove 10 to 20 armored catfish per month from Landa Lake for a reproductive biology and population age structure study	Gigs, bowfishing
Llano	12	South Llano	Exotic riparian species survey	Conducted a survey geo-mapping exotic riparian vegetation on the South Llano River to support development of restoration plan at State Park. Species primarily surveyed were Giant Reed, Chinaberry, and Elephant Ear	Georeferenced mapping, exotic species identification
Llano	23	South Llano River from headwaters to Junction, Texas	Native fish conservation	Continued genetic restoration efforts for Guadalupe bass	Stocked pure Guadalupe bass fingerlings
Neches, Sabine, San Antonio, Trinity	60	Main stem and tributaries	Technical guidance	Provided technical expertise and comment on stream restoration projects during U.S. Army Corps of Engineers permitting of stream mitigation banks	Technical guidance
Neches		Proposed Columbia Reservoir project reach	Technical guidance	Developed proposed methodology for determining compensatory mitigation requirements for Columbia Reservoir project	Technical guidance
Neches	7	Main stem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Nueces	72	Head waters of the Nueces from Uvalde to Zavala Counties	Exotic species management	The Nueces River Authority coordinated with TPWD, multiple private land owners and other state agencies to implement multiple Arundo donax irradiation techniques on 72 miles of the Nueces River	Herbicide, mechanical treatment
Nueces	8	Upper headwaters of the Sabinal River	Exotic species management	The Nueces River Authority coordinated with TPWD, multiple private land owners and other state agencies to implement multiple Arundo donax irradiation techniques on 8 miles of the Sabinal River	Herbicide, mechanical treatment
Nueces	8	Upper headwaters of the Sabinal River	Herbicide effectiveness study	Collect basic information on several test plots of Arundo donax prior to and up to one year after a variety of herbicide applications to evaluate effectiveness.	Meter plot markers, GPS unit, measurement gear

River Basin	Miles	Affected River Reach	Category	Objective	Methods
Pedernales	16	Lower Pedernales River	Biological and habitat survey	With partner agency (LCRA), surveyed to determine the distribution of a recent infestation of exotic, invasive saltcedar (<i>Tamarix</i> spp.) in the lower Pedernales River and document relative density to inform planning of management efforts.	Geo-referenced aerial surveys
Red	6	Mainstem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Rio Grande	0.1	Mainstem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Rio Grande		Devils River	Native fish habitat conservation	Mapped the river channel and instream habitats and used that data to create a hydraulic model that predicts changes in native fish habitat with changing flows	Surveying and hydrologic assessment
Rio Grande		Alamito Creek	Habitat restoration	Developed native fish habitat restoration project and acquired funding through DFHP	Technical guidance
Rio Grande		McKittrick Creek	Native fish conservation	Evaluated reintroduction feasibility of Rio Grande Cutthroat Trout	Seine and visual assessment
Rio Grande		Lower Rio Grande	Native fish conservation	Assisted the United States Fish and Wildlife Service in surveying the lower Canyons portion of the Rio Grande as part of the Silvery Minnow re-introduction project	Seine
Rio Grande	55	Lower Pecos River	Native fish conservation	Conducted regional fish assemblage collections, discharge, and water quality measurements associated with spring inputs	Seine, discharge, and technical guidance
Rio Grande		Salt Creek	Native fish conservation	Conducted quarterly monitoring of Pecos Pupfish, including genetic analysis	Sampling, genetics assessment
Rio Grande	10	Devils River	Native fish conservation	Surveyed river adjacent to Devils River Ranch south unit for populations of <i>Cyprinodon eximius</i>	Seine
Sabine	11	Mainstem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Sabine	146	Lower Sabine River, downstream of Toledo Bend Reservoir	Technical guidance	Provided technical expertise and comment during the Federal Energy Regulatory Commission relicensing of the Toledo Bend hydropower project	Technical guidance
Sabine	146	Lower Sabine River, downstream of Toledo Bend Reservoir	Biological, habitat, and water quality survey	Continued a radio-tracking study of blue sucker.	Electrofishing, acoustic and radio telemetry
Sabine	90	Lower Sabine River, between Bon Wier and Orange, Texas	Biological and habitat survey	Determine the distribution and abundance of mussels in the lower Sabine River	Quantitative mussel survey
San Antonio	2	Main stem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines

River Basin	Miles	Affected River Reach	Category	Objective	Methods
San Antonio		San Antonio River and Medina River	Native fish restoration	Collected and tagged a test population of Guadalupe bass. Released bass in a newly restored reach of the San Antonio River. Fish were monitored and additional sampling was conducted to determine if the restored habitat was suitable for Guadalupe bass	Electrofishing, fish tagging and release
San Antonio	25	Mission Reach and upper tributaries	Native fish conservation	Re-establish pure Guadalupe Bass population in the Mission Reach and perform a genetic assessment of Guadalupe bass within the upper basin	Stocked pure Guadalupe bass adults, radio telemetry, electrofish, seine
San Antonio	282	Lower San Antonio River	Instream flow survey	Conducted seasonal biological and habitat sampling in support of the ongoing instream flow study	Seine, electrofish, drift net, water quality, habitat and hydrology sampling
San Antonio/Lower Guadalupe		San Antonio River (Falls City and Goliad) and Guadalupe River (Seguin and Cuero)	Fish and macroinvertebrate biology	To quantify relationships between organic drift (larval fishes, macroinvertebrates, and coarse particulate organic matter) and discharge under base flow conditions and various tiers (i.e., one per season, one per year) of pulse flows in the San Antonio and lower Guadalupe rivers	Drift net, Seine
Sulphur	9.5	Mainstem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Trinity	32	Mainstem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Trinity		Lower Trinity River, downstream of Livingston Reservoir	Technical guidance	Provided technical expertise and comment during the Federal Energy Regulatory Commission licensing process for a proposed hydropower project	Technical guidance
Trinity	200	Middle Trinity River, upstream from Livingston Reservoir	Biological and habitat survey	Collaborative effort within Inland Fisheries to design and implement a study to collect data on the seasonal utilization of macrohabitats (i.e. river, reservoir, river-reservoir interface (RRI)) by fishes	Multiple gears
Trinity	200	Middle Trinity River, upstream from Livingston Reservoir	Biological and habitat survey	Collaborative effort within Inland Fisheries to collect young-of-year Alligator Gar to determine high flow pulses necessary for successful recruitment and to assess the availability of spawning habitat in the middle Trinity River	Dip nets, hydrologic assessment
Trinity	200	Middle Trinity River, upstream from Livingston Reservoir	Biological and habitat survey	Collaborative effort within Inland Fisheries to design and implement a study to collect data on the seasonal utilization of macrohabitats (i.e. river, reservoir, RRI) by fishes	Multiple gears
Trinity	200	Middle Trinity River, upstream of Livingston Reservoir	Biological, habitat, and water quality surveys	With partner agencies, conducted stakeholder meetings in preparation for commencement of instream flow study; performed analysis on data collected during the baseline biological sampling conducted the previous year	Technical guidance
Trinity	12.5	Mainstem and tributaries	Fish kill/pollution investigation	Investigated fish kills and pollution complaints, documented impacts, and provided guidance on clean-up techniques	American Fisheries Society Guidelines
Statewide		Rivers and streams in a 24 county area of Texas within the historical range of Guadalupe Bass	Economic Impact	Determine the direct expenditures and economic impact of anglers fishing for Guadalupe Bass	Internet based survey
Statewide		Statewide	Biological, habitat, and water quality surveys	Updated historic surveys of the Texas Least Disturbed Streams Project and surveyed additional streams; information will be used for developing reference conditions for assessment	Electrofish, seines, kick net, water quality, and habitat

River Basin	Miles	Affected River Reach	Category	Objective	Methods
Statewide		Statewide	Outreach	Provided public information on river and stream ecosystems at the Toyota Texas Bass Classic	Display booth
Statewide		Statewide	Technical guidance	Provided technical guidance to Senate Bill 3 Science Advisory Committee, Expert Science teams, and Stakeholder groups in the Nueces, Rio Grande and Brazos river basins	Technical guidance
Statewide		Statewide	Technical guidance	Provided technical guidance in water rights evaluations for proposed reservoirs	Technical guidance
Statewide		Statewide	Technical guidance	Explored uses of unmanned aerial vehicle technology to evaluate potential applications in support of TPWD fish and wildlife management programs	Workshop
Statewide		Statewide	Technical review	Performed field investigations and made recommendations to issuances of TPWD "Sand and Gravel" permits to assure activities would not adversely affect fish and wildlife resources or recreation opportunities on Texas rivers and streams	Technical review
Statewide		Navigable stream reaches statewide	Technical guidance / permitting	Assess stream condition and evaluate potential impacts from applications to disturb instream bed and bank material	Visual assessment, technical review
Statewide		Statewide	Technical review	Provided technical guidance on ecological risk assessments and participated in a workgroup to update guidance on the conduct of ecological risk assessments under the Texas Risk Reduction Program	Technical guidance
Statewide		Statewide	Outreach	Provided information and technical guidance to landowners on the value of proper watershed and riparian management to the overall function and sustainability of rivers and streams	Workshops and technical guidance
Statewide	76.0	Statewide	Outreach	Established Texas Paddling Trails to promote access to Texas rivers and lakes in a safe manner that promotes conservation of our water resources while providing additional recreational angling and paddling access.	Outreach

Stocking Reports

Inland Fisheries Hatchery Stockings by Species

Species	Adult	Fingerling	Fry	Total
Blue catfish		76,759		76,759
Bluegill		38,573		38,573
Channel catfish		513,817		513,817
Florida largemouth bass	152	8,387,672	648,218	9,036,042
Guadalupe bass		362,340		362,340
Largemouth bass		177,117		177,117
Palmetto bass (striped x white bass hybrid)		2,179,974	4,133,696	6,313,670
Rainbow trout	290,413			290,413
ShareLunker largemouth bass		55,316		55,316
Smallmouth bass		71,693		71,693
Striped bass		1,898,071	4,034,875	5,932,946
Sunshine bass (white x striped bass hybrid)		2,500	247,728	250,228
Walleye			1,838,900	1,838,900
Grand Total	290,565	13,763,832	10,903,417	24,957,814

Waterbody	Blue catfish	Bluegill	Channel catfish	Florida largemouth bass	Guadalupe bass	Largemouth bass	Palmetto Bass	Rainbow trout	Red drum	ShareLunker largemouth bass	Smallmouth bass	Striped bass	Sunshine Bass	Threadfin shad	Walleye	Triploid grass carp	Black bullhead	Mixed largemouth bass	Total
Temple Lion's Park Lake			444																444
Temple V.A. Center			640																640
Texana				485,671															485,671
Texas A&M Research & Teaching Reservoir										1,185									1,185
Texoma			200																200
Theo (Caprock Canyon)			1,765					2,020							150,000				153,785
Toledo Bend				604,447						4,677									609,124
Tom Bass I			1,846					903											2,749
Tom Bass III			906					1,779											2,685
Towne Lake								4,042											4,042
Travis												666,788							666,788
Trinity Park Clear Fork Trinity River (Fort Worth)								5,302											5,302
Two - Acre Lake								2,874											2,874
Tyler East				123,493															123,493
Tyler Nature Center Pond								2,153											2,153
Tyler State Park			1,648	75,855				4,050											81,553
Tyler West				116,595															116,595
Upper Kaufman			2,428																2,428
Utopia Park Lake								756											756
Valley Creek Big (Mesquite)						852													852
Victor Braunig							41,309		299,551										340,860
W. M. Brook Park Lake								501											501
Waco				415,086			43,566												458,652
Waco Optimist (HOT Fairgrounds)								2,011											2,011
Walter E. Long Reservoir							19,438												19,438
Waterloo Lake			521																521
Waterloo Park Pond			492					7,018											7,510
West Guth Park Pond (Corpus Christi)			416					502											918
Wheeler Branch Reservoir			18,133								4,481				873,900				896,514
Whitney												852,046							852,046
Wilson-Ledbetter Park Pond			516																516
Woldert Park Pond								1,552											1,552
Woodlawn			1,152																1,152
Worth				173,200															173,200
Wyatt's Pond								795											795
Grand Total	76,759	39,435	685,704	9,036,042	362,340	177,494	6,313,670	299,168	939,889	55,316	71,693	6,105,303	330,744	250	1,838,900	8,998	760	145	26,342,610

Research and Special Projects

Heart of the Hills Fisheries Science Center

Nathan G. Smith, Dan J. Daugherty, and David L. Buckmeier

Title: Relation between reservoir hydrology and year-class strength of sport and forage fishes.

Objective: To correlate year-class strength of sport and forage fish species with hydrologic variables in multiple reservoirs throughout the Colorado River watershed.

Nathan G. Smith

Title: Striped bass stocking evaluation of Lake Livingston and Livingston Tailrace.

Objectives: Determine survival, growth, and diet of striped bass fingerlings in Lake Livingston and Livingston Tailrace from time of stocking until fall dispersal, evaluate the contribution of each stocking group captured as adults, and quantify the extent of natural reproduction in Livingston Tailrace and the lower Trinity River by estimating YOY abundance and evaluating proportion of adult spawners.

Nathan G. Smith and Paul Fleming

Title: Guadalupe bass restoration: stocking evaluation

Objective: Assessment of remediation stocking to ameliorate Guadalupe bass hybridization in the upper Guadalupe River.

David L. Buckmeier, Nate Smith, Paul Fleming, and Kris Bodine

Title: Importance of river-reservoir transition zones for river and reservoir fish communities.

Objectives (part I): 1. Identify frequency, timing, and hydrologic conditions associated with movement through river-reservoir transitional zones by large-bodied fluvial species. 2. Determine seasonal variability in abundance of other species within river-reservoir transitional zones to identify those using both river and reservoir habitats. 3. Examine diet of migrant predators in transitional zones to determine possible effects on the resident fish community.

Objectives (part II): 1) Movements and Habitat Use of Blue Catfish, White Bass, Gray Redhorse, and Longnose Gar in the Colorado River and Lake Buchanan and, 1. Map important riverine and tributary habitats used by adult white bass and blue catfish. 2. Characterize meso- and macro-scale physical habitat (e.g., depth, substrate, temperature) of used by each species during the spawning season.

Dan Daugherty, Kris Bodine, and Greg Binion

Title: Characterization of alligator gar spawning stock abundance, spatial distribution, and exploitation in Choke Canyon Reservoir, Texas.

Objectives: 1) Determine alligator gar spawning stock abundance in Choke Canyon Reservoir, 2) Characterize the spatial distribution of spawning alligator gar in Choke Canyon Reservoir, and 3) Estimate annual, seasonal exploitation rates of alligator gar spawning stock in Choke Canyon Reservoir.

Kris A. Bodine and Paul Fleming

Title: Evaluation of an alternate technique for attaching external radio transmitters to catfishes.

Objectives: 1) Evaluate 30-day and 1-year retention of external radio transmitters fastened to the supraoccipital bone of catfishes and 2) Determine effects of transmitter attachment on growth and mortality of catfishes.

Dan Daugherty and Todd Driscoll

Title: Patch characteristics of artificial, structural habitat enhancement and effects on fish community use.

Objectives: 1) Determine the effect of artificial structure patch configuration on fish utilization, community composition, and size structure, 2) Determine the effect of artificial structure patch size on fish utilization, community composition, and size structure, and 3) Identify patch-level metrics that influence fish use of enhanced habitats.

Kris Bodine, Dan Bennett, and Rick Ott

Title: Harvest and Angler Behavior in a Flathead Catfish Fishery in East Texas.

Objectives: 1) Estimate gear- and size-specific exploitation rates of Flathead Catfish in Lake Palestine, 2) Estimate population size structure of Flathead Catfish in Lake Palestine, and 3) Characterize the demographics and angling behavior of handfishing anglers in Texas.

Nathan G. Smith and David L. Buckmeier

Title: Backwaters in the River-Reservoir interface: relevance to floodplain-adapted fish communities.

Objectives: 1) Determine whether or not backwater habitats in the Trinity River-Lake Livingston river-reservoir interface contain fish assemblages and have intra-annual variation similar to those of natural backwater habitats, and 2) Determine the influence of physical habitat and connectivity characteristics on fish assemblages of backwater habitats within the river-reservoir interface and river floodplain.

Paul Fleming, Archis Grubh, and Michael Homer

Title: Spatial Distribution and Habitat Association of Fishes at the River-Reservoir Ecosystem Scale.

Objectives: 1) Assess the contribution of river, river-reservoir interface, and reservoir to the overall fish assemblage of the Trinity River-Lake Livingston ecosystem, identifying species occurring in multiple segments, 2) Assess temporal variability of fish assemblages in these segments, and 3) Determine habitat associations for guilds and species of fish within each segment, identifying similarities in habitats used.

A. E. Wood Hatchery

Hugh Glenewinkel

Title: Effects of two pond-filling strategies on production of channel catfish fingerlings.

Objective: Determine if stocking channel catfish fry into filling ponds as opposed to holding fry in kettles for seven days before filling negatively affects fish survival, growth and feed conversion efficiency in the production of 75-mm fish.

Aaron Barkoh et al.

Title: Short-term preservation of striped bass milt for fingerling production.

Objectives: To determine if fresh and short-term (1-2-day) preserved striped bass milt will yield the same egg fertilization and fry hatch rates.

Staff

Title: **Effect of temperature on largemouth bass *Micropterus salmoides* egg incubation time, hatch rate and fungus *Saprolegnia* spp. colonization.**

Objectives: Determine if increasing incubation temperature by 2-5°F above ambient can increase largemouth bass fry production.

Carl Vignali and Hugh Glenewinkel

Title: **Effects of acute and chronic elevated pH exposure on survival of koi fry.**

Objectives: Determine the effects of acute (instantaneous) and chronic (acclimation) exposure of selected pH levels (9 – 10.5) on survival of 3- to 5-day old koi.

Possum Kingdom Hatchery

Aaron Barkoh et al.

Title: **Use of Short-term preserved striped bass milt for mass production of fry.**

Objectives: To determine if striped bass fresh milt, short-term (1-2-day) preserved milt, and combined fresh and preserved (1:1 ratio) milt will yield the same egg fertilization and fry hatch rates.

Dale D. Lyon and Aaron Barkoh

Title: **Evaluation of smallmouth bass spawning performance at two stocking densities in indoor concrete raceways.**

Objectives: Determine the effect of a 60% higher broodfish stocking density on spawning success of smallmouth bass in indoor concrete raceways.

Dale D. Lyon, Aaron Barkoh, John Paret, Ryan Rogers

Title: **Evaluation of the functional potential of ozone-treated water for fingerling fish culture in plastic-lined ponds.**

Objectives: 1) Verify the effectiveness of the ozone treatment system at Possum Kingdom Hatchery in eliminating *Prymnesium parvum* cells and toxicity, and 2) evaluate the effects of ozone-treated water used in pond culture of warm water fishes.

Gerald L. Kurten

Title: **Evaluation of community-level physiological profiling for monitoring microbial community function in fish hatchery ponds.**

Objective(s): 1) determine a suitable incubation time interval for developing measurable community substrate utilization patterns for fish hatchery ponds, 2) determine the degree of heterogeneity within individual pond microbial communities, 3) determine the number of replicates required to distinguish between ponds, and 4) determine if community substrate utilization pattern metrics indicate significant differences in microbial community function over time and between different types of aquaculture variables (i.e. fish composition, fish density, and water quality characteristics).

Dundee Hatchery

Aaron Barkoh and Thomas Wyatt

Title: **pH tolerance by striped bass fry and fingerlings in hard water.**

Objectives: To determine for striped bass fry and fingerlings (1) the 96-h LC₅₀ of pH, (2) the maximum pH levels (i.e., pH levels at which 89% of the fish survive) tolerated for 96 h, and (3) the no-effect levels of pH.

Texas Freshwater Fisheries Center

Jim Matthews and Tony Owens

Title: Refinement of alkalinity-adjustment strategies for a recirculating raceway system.

Objectives: Determine the amount of sodium bicarbonate required to optimize nitrification in a recirculating system at the Texas Freshwater Fisheries Center.

Juan Martinez and Tony Owens

Title: Efficacy of supplemental feeding and inoculation of Florida largemouth bass fingerling pond with zooplankton to increase growth and survival.

Objectives: Determine if inoculation and regular supply of zooplankton improves largemouth bass production variables in ponds.

Staff

Title: Comparison of three stocking densities for production of advanced Florida largemouth bass *Micropterus salmoides floridanus* fingerlings.

Objectives: Determine the stocking rate that provides the best survival and production of advanced largemouth bass in ponds.

Allen Forshage, Juan Martinez, and Dijar Lutz-Carrillo

Title: Growth of selectively bred Largemouth Bass (Contract Lake Version).

Objective(s): Monitor growth rates of ShareLunker offspring in private lakes with restricted access.

Fish Health and Genetics Lab

Loraine T. Fries, Greg Southard, and Dijar J. Lutz-Carrillo

Title: Statewide survey of Texas for golden alga *Prymnesium parvum*.

Objectives: To collect baseline statewide prevalence, environmental, and genetics data for *P. parvum*.

Gregory M. Southard, Loraine T. Fries, and Aaron Barkoh

Title: Effects of selected oxidants on *Prymnesium parvum* cell density and toxicity.

Objective(s): To investigate the efficacies of oxidative compounds registered as algacides and other oxidative chemicals commonly used in aquaculture (e.g. hydrogen peroxide and potassium permanganate) in controlling *P. parvum* densities or toxicity.

Greg Southard, Gary Steinmetz, and Aaron Barkoh

Title: Refining a fish model bioassay for managing *Prymnesium parvum* ichthyotoxicity during fingerling *Morone* spp. production.

Objectives: (1) Compare the sensitivities of *Pimephales promelas* fry (fathead minnow; FHM) and *Morone* spp. fry to *P. parvum* ichthyotoxin using bioassays conducted at 18-20 °C and using DADPA cofactor at pH 8.0, 8.5, and 9.0. (2) Develop a bioassay for *P. parvum* ichthyotoxin using *Morone* spp. as test fish. (3) Develop a FHM bioassay for *P. parvum* ichthyotoxin as surrogate for the *Morone* spp. bioassay. The *Morone* spp., striped bass (*M. saxatilis*) and palmetto bass (*M. saxatilis* ♀ x *M. chrysops* ♂), will be used in this study.

Dijar Lutz-Carrillo and Greg Southard

Title: Detection of zebra mussels in the absence of veliger formation.

Objectives: Develop genetic markers for the detection of zebra mussel-specific dissolved DNA from water samples: 1) develop primers and protocols to amplify species-specific DNA fragments from the zebra mussel (*Dreissena polymorpha*) mitochondrial genome; 2) develop and optimize protocols for isolating environmental DNA (eDNA) shed by zebra mussels into the water column; 3) quantify detection levels of zebra mussel eDNA based on the density of zebra mussels in a water body; and 4) quantify the power and error rate of the developed assay at the specified level of sensitivity through a series of blind tests.

Dijar Lutz-Carrillo et al.

Title: Inferred reproductive behavior of captive Guadalupe bass: evolving strategies for genetic conservation and restoration.

Objectives: 1) identify parents of all sampled offspring (Guadalupe bass production over two years); 2) resolve the mating system (behavior and fidelity) of Guadalupe bass in captivity; and 3) evaluate modifications to the crossing strategy (between years) and effects on the effective number of brooders.

Dijar Lutz-Carrillo

Title: Relatedness among ShareLunker entries

Objective: Estimate familial relationships among ShareLunker entries.

Fisheries Management - Statewide

Michael Baird, Tim Bister, Mukhtar Farooqi, Tom Hungerford

Title: An evaluation of growth of selectively-bred largemouth bass in six Texas reservoirs.

Objective: Compare length and weight of age-4 ShareLunker and resident largemouth bass in six Texas reservoirs.

Management Region 1

John Findeisen

Title: Comparison of catfish catch and harvest among three angling gear types at Choke Canyon Reservoir.

Objectives: To determine catch-per-unit-effort, catch-per-unit-hook-effort, total harvest, and size structure of catfish of three angling gear types at Choke Canyon Reservoir.

John Dennis

Title: Stocking sub-adult northern largemouth bass in a power plant reservoir.

Objectives: 1) determine 72-h post-stocking mortality of the stocked fish, 2) determine the contribution of the stocked fish to the reservoir's largemouth bass population at 8, 20, and 32 months following each stocking, 3) determine the effect of each stocking on largemouth bass abundance, size structure, and genetic composition, and 4) determine the effect of each stocking on the reservoir's fishery.

Randy Myers

Title: Depressurization illness in tournament-caught largemouth bass at Amistad Reservoir and comparison of treatment methods.

Objectives: 1) Determine incidence of depressurization illness (DI) in tournament-weighed largemouth bass and incidence of DI treatment by tournament anglers at Amistad Reservoir, Texas. 2) Determine if DI affects survival of tournament-released largemouth bass by comparing 3-d post-release survival of fish exhibiting DI versus fish not having the condition at Amistad Reservoir, Texas. 3) Determine and compare effectiveness of side-fizzing, mouth-fizzing, and deep-release methods for increasing survival of largemouth bass afflicted with DI by comparing 3-d post-release survival of treated fish versus untreated fish, among treatment methods, and at two water temperatures (60-65 F and 75-80 F). 4) Determine if timing of treatment influences survival of affected fish by comparing 3-d post-release survival between fish treated within 1-h of depressurization and 4-5 h following depressurization. 5) Determine if level of experience in applying fizzing-type DI treatment influences survival of affected fish by comparing 3-d post-release survival between fish treated by trained and non-trained individuals.

Charlie Munger

Title: Harvest and survival of channel catfish in community fishing lakes.

Objectives: Determine survival of stocked 9-inch channel catfish in CFL's. Determine angling and natural mortality rates for channel catfish in CFL's.

John Clayton

Title: Seasonal association between surface water quality, climate variables, and cell counts of *Prymnesium parvum* in the Jim Bertram Lake system (Lubbock).

Objectives: 1) Investigate the relationships between seasonal fluctuations of *P. parvum* cell counts and nutrients (nitrogen and phosphorous), total hardness (calcium hardness and magnesium hardness), turbidity, salinity, water temperature, dissolved oxygen (DO), and pH, 2) Investigate changes in seasonal weather patterns (wind, rainfall and cloud cover) on the above-mentioned water quality parameters, and 3) Document temporal and spatial progression of golden alga blooms within the Jim Bertram Lake system.

Mandy Scott, John Taylor and Jeremy Leitz

Title: Effectiveness of a constituent-led marketing campaign targeting non-traditional anglers in an urban area.

Objectives: Collaborate with local Hispanic youth and other community partners to plan and implement a marketing campaign for recruiting non-traditional anglers to the TPWD urban fishing program in San Angelo. Use pre- and post-marketing surveys to evaluate the effectiveness of this type of marketing campaign, and potential for statewide application.

Greg Binion and Muhktar Farooqi

Title: Evaluation of growth and survival of standard hatchery produced and selectively bred Florida largemouth bass: Implications for stocking success and efficiency

Objectives: 1) Compare differences in growth between standard hatchery offspring (HOS) Florida largemouth bass (FLMB) and selectively bred Lunker offspring (LOS) derived from the Toyota ShareLunker Program. 2) Quantify relative survival of fingerling HOS and LOS.

Management Region 2

Bruce Hysmith

Title: Largemouth bass exploitation in Amon G. Carter Reservoir, Texas: would changing harvest regulations be successful?

Objectives: 1) Estimate total annual exploitation adjusted for tournament mortality of largemouth bass in Amon G. Carter Reservoir; and 2) Assess potential of alternative largemouth bass harvest regulations.

John Tibbs, Rick Ott, and Tom Hungerford

Title: Evaluation of an experimental 30"-45" slot length limit for blue catfish in three Texas reservoirs.

Objectives: 1) Quantify winter jugline effort for blue catfish, before and after the regulation is enacted. 2) Measure attitude and opinions of jugline anglers, as well as the economic impact of the fishery, before and after the regulation is enacted. 3) Measure attitude and opinions of pole-and-line anglers, as well as the economic impact of the fishery, after the regulation is enacted. 4) Measure size structure of pole-and-line angler harvest before and after the regulation is enacted. 5) Measure size and age structure of jugline harvest before and after the regulation is enacted. 6) Measure size and age structure of blue catfish samples collected by low pulse DC before and after the regulation is enacted. 7) Determine if blue catfish contaminants are above action levels in three different size ranges.

Robert Mauk

Title: Wichita River monitoring in response to microfiltration/reverse osmosis plant discharge.

Objectives: 1) Determine if there are changes in fish and benthic assemblages in a segment of the Wichita River in response to point source discharge of reject water from the City of Wichita Falls new microfiltration/reverse osmosis treatment plant; 2) Assess changes in Wichita River water chemistry that could affect fish and other aquatic resources during the study period; and 3) Determine if there is any enhancement of golden alga risks in the study area as a result of potential changes in water chemistry.

Michael Baird

Title: Population assessment of the Alligator gar *Atractosteus spatula* in the lower Brazos River, Texas

Objective: 1) Estimate alligator gar population abundance and size structure in the lower Brazos River.

Robert Mauk

Title: Angler characteristics, catch, and harvest for Neighborhood Fishin' Program Lakes

Objectives: 1) Determine if the Neighborhood Fishing Program is meeting stated goals in terms of percentage of children participating, and creation of new anglers. 2) Examine NFP angling participation, catch, and harvest throughout the year, to determine if fish stocking schedules and rates can be altered to better meet temporal demand/expectations. 3) Examine angler catch using percent-of-success as an index. 4) Determine angler expectations in terms of catch and harvest of stocked fish.

Greg Cummings

Title: Habitat association of rainbow trout in the Canyon reservoir tailrace

Objectives: 1) Integrate channel topography, instream cover and substrate delineations to develop highly accurate hydrodynamic models for assessing habitat quantity and quality. 2) Determine rainbow trout habitat availability and association. 3) Evaluate accuracy and effectiveness of side scan sonar for habitat mapping in the tailrace.

Management Region 3

Todd Driscoll

Title: Annual economic value of recreational angling at Sam Rayburn Reservoir with emphasis on black bass tournaments.

Objectives: 1) Estimate annual number of black bass tournaments and associated participants at Sam Rayburn Reservoir; 2) Estimate annual direct expenditures, recreational value, and economic impact of black bass tournaments to Texas and counties surrounding Sam Rayburn Reservoir; and 3) Estimate total annual direct expenditures, recreational value, and economic impact of black bass tournaments to Texas and counties surrounding Sam Rayburn Reservoir.

Todd Driscoll

Title: Use of Plastic Fish Attractors to Enhance Aquatic Habitat

Objectives: 1) Determine the effect of two levels of structural habitat patch edge:area ratio on fish utilization, community composition, and size structure. 2) Determine the effect of two types of plastic material on fish utilization, community composition, and size structure. 3) Utilize information to improve future reservoir habitat enhancement efforts.

Kevin Storey

Title: A case history of Lake Fork: Texas' premier trophy largemouth bass fishery.

Objectives: To create a manuscript that chronicles the history of Lake Fork, and provides the following lessons to fisheries managers throughout the southeast: 1) To document the application of innovative techniques in the planning of Lake Fork and the subsequent development of a trophy largemouth bass fishery, 2) to demonstrate the ineffectiveness of traditional fisheries and creel sampling for collecting data on trophy largemouth bass and the identification of alternative methods, and 3) the development and promotion of non-traditional techniques in competitive bass fishing tournaments.

Aaron Jubar

Title: The Lake Fork trophy bass survey.

Objectives: 1) To annually monitor angler catches of trophy-size largemouth bass (> 7 pounds and/or 24 inches) at Lake Fork Reservoir through a volunteer angler reporting program held in cooperation with the Lake Fork Sportsman's Association and Lake Fork Chamber of Commerce; 2) Foster cooperation with sponsoring organizations, area businesses, local fishing guides, and Lake Fork anglers; 3) Use angler catch data to publicize, promote, and educate anglers about trophy bass fishing opportunities at Lake Fork Reservoir; and 4) Use angler catch data, and results of standardized population and creel surveys, to monitor trends in Lake Forks Largemouth bass fishery and to help evaluate management programs.

Dan Ashe

Title: Contribution, growth, and diet of stocked largemouth bass in two aquatic vegetation types in Toledo Bend Reservoir.

Objectives: 1) Estimate percent contribution, growth, and diet of stocked largemouth bass fingerlings in two aquatic vegetation types

Dan Bennett

Title: Estimating harvest and catch rates of alligator gar (*Atractosteus spatula*) from Trinity River bow fishing tournaments.

Objectives: 1) Estimate tournament effort, harvest rate, size distribution and harvest of alligator gar from bow fishing tournaments on the Trinity River. 2) Collect contact information, fish aging structures, and fish tissue samples provided by anglers targeting alligator gar.

Craig Bonds, Juan Martinez, Tony Owens, and Allen Forshage

Title: Comparison of growth, diet and survival of 6" pellet-reared versus minnow-reared LMB.

Objectives: 1) Determine survival rates of 6-inch largemouth bass (OWR) reared on synthetic diet (pellets) and natural diet (minnows) and stocked (25/acre, minimum; 50/acre, maximum) in a 20 acre lake. 2) Determine performance (growth, body condition, food habits, and vulnerability to angling) of 6-inch pellet-reared and minnow-reared largemouth bass and stocked (25/acre) in a 20 acre lake. 3) Determine cost to raise 6-inch largemouth bass using either pellets or minnows.

Dan Bennett and Tim Bister

Title: Evaluating the Efficacy of Mapping Underwater Macrophyte Distribution, Structural Habitat, and Fish Assemblages using Low-cost Side Scan Sonar

Objectives: 1) Evaluate the suitability of side scan sonar imagery to produce detailed georeferenced maps within a GIS to identify and define coverage of submerged macrophyte distribution in impoundments. 2) Determine the efficiency, accuracy, and relative cost effectiveness of using side-imaging sonar to produce a map product.

Presentations, Articles and Publications

Technical Presentations

- Barkoh, A. Assessment of short-term preservation of striped bass milt for fry production. Mid-Continent Warmwater Aquaculture Workshop, February 2013.
- Baird, M. Population Assessment of the Alligator Gar *Atractosteus spatula* in the Lower Brazos River, Texas. Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- Bennett, D. B. Processing images from Recreation-grade side scan sonar with Dr Depth software for use in a GIS. Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- Bennett, D. L. and C. C. Bonds. Description of Trinity River Bowfishing Tournaments with Emphasis on Harvest of Alligator Gar. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hot Springs, AR, October 2012
- Birdsong, T. Landscape-Scale Approaches to Conservation of Natives Fishes in the Edwards Plateau Ecoregion. Gulf Coast Prairie Landscape Conservation Cooperative Science Webinar Series, 2012.
- Birdsong, T. Expanding Public Support for Conservation of Rivers and Streams in Texas. Annual Meeting of the Texas Riparian Association. Bastrop, 2012.
- Birdsong, T. Consideration of Fish and Wildlife Conservation, Outdoor Recreation, and Community Stewardship Objectives in Stream Restoration. Plenary Session – Southwest Stream Restoration Conference. San Antonio, 2013.
- Birdsong, T. Expanding Public Support for Conservation of Native Black Bass Populations through Increased Recreational Access and Sustainable Use of Texas Rivers. Spring Meeting of the Southern Division of the American Fisheries Society, Nashville, TN, 2013.
- Buckmeier, D. B., N. G. Smith, B. P. Fleming, and K. A. Bodine. Intra-annual variation in river-reservoir interface fish assemblages: implications for fish conservation and management in regulated rivers. Annual Meeting of the Southern Division of the American Fisheries Society, February 2013.
- Cortez, D., J. Taylor, and K. Kurzawski. Texas Fishing Mobile Web. Annual Meeting of the Organization of Fish and Wildlife Information Managers, Austin, October 2012.
- Daugherty, D. J., D. L. Bennett*, B. VanZee, J. Tibbs, and T. Morgan. Reservoir Water Levels, Littoral Habitat, and Recreational Access: a Collaboration to Maintain Quality Fisheries in Brazos River Reservoirs. Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- De Jesus, M. J. Use of Artificial Gravel Beds and Ash Juniper (*Juniperus ashei*) Trees in Combination to Attract Centrarchids to a State Park Fishing Pier in Texas. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hot Springs, AR, October 2012.

- Driscoll, T., K. Hunt, and H. L. Schramm, Jr. Trends in Fishery Agency Assessments of Black Bass Tournaments in the Southeastern United States. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hot Springs, AR, October 2012.
- Fleming, B. P., G. P. Garrett, and N. G. Smith. Supplemental stocking reduces hybridization in Guadalupe Bass populations. Annual Meeting of the Southern Division of the American Fisheries Society, February 2013.
- Garrett, G. P., T. Birdsong and M. Bean. A Community-Based Approach to Stream Restoration in Texas. Southwest Stream Restoration Conference, San Antonio.
- Garrett, G., T. Birdsong and M. Bean. Guadalupe Bass Restoration Initiative. Spring Meeting of the Southern Division of the American Fisheries Society. Nashville, TN, 2013.
- Grabowski, T. B., T. Birdsong, P. T. Bean, B. D. Cheek and J. R. Groeschel. Endemic Black Basses as Drivers of Watershed Restoration and Conservation: Combining Emerging Technologies and Traditional Fisheries Techniques to Evaluate the Use of Guadalupe Bass as a Keystone Species in Texas Streams. Spring Meeting of the Southern Division of the American Fisheries Society. Nashville, TN, 2013.
- Homer, M., C. Jennings and J. Peterson. Comparison of age determination techniques for an introduced population of blue catfish. Poster presentation at the Southern Division of the American Fisheries Society, Nashville, TN.
- Homer, M., C. Jennings and J. Peterson. Comparison of age determination techniques for an introduced population of blue catfish. Poster Presentation at Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- Hunt, K. M., C. P. Hutt, J. W. Schlechte and D. L. Buckmeier. Demographics, Attitudes, Preferences, and Satisfaction of Texas Freshwater Catfish Anglers. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hot Springs, AR, October 2012.
- Hysmith, B., J. Moczygemba, R. Myers, T. Driscoll and M. Allen. Impacts of Tournament Mortality on a Texas Largemouth Bass Fishery. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hot Springs, AR, October 2012.
- Kittel, C., D. J. Lutz-Carrillo, C. Thibodeaux, G. Garrett and R. Schmid. Spawning Guadalupe Bass *Micropterus treculii* in hatchery raceways: maximizing production and genetic variation. Triennial Conference of the World Aquaculture Society. Nashville, TN, February 2013.
- Lang, T. Keeping Up With Cabela's, A Look at Recent Kansas Aquarium Refurbish Projects. Aquatic Resources Education Association Biannual National Conference, Phoenix, AZ.
- Lang, T., and S. Steffen. Converting Kansas' Fisheries Data into Angler Consumable Communication. Aquatic Resources Education Association Biannual National Conference, Phoenix, AZ.

- Linam, G. W., S. Magnelia, T. Bonner, S. McMillan, C.A. Craig, E. Moran, S. Lusk and R. Ranft. Re-establishment of Guadalupe bass in two central Texas rivers. Annual Meeting of the Southern Division of the American Fisheries Society, Nashville, TN, February 2013.
- Linam, G. W., S. Magnelia, T. Bonner, S. McMillan, C.A. Craig, E. Moran and S. Lusk. Re-establishment of Guadalupe bass in two central Texas rivers. Southwest Stream Restoration Conference, San Antonio, May 2013.
- Lutz-Carrillo, D. J., C. Thibodeaux, M. Elliott, N. A. Rathjen, C. Kittel, L. T. Fries and G. Garrett. Inferred reproductive behavior of captive Guadalupe Bass. Conference of the Southern Division of the American Fisheries Society, Black Bass Diversity Symposium. Nashville, TN, February 2013.
- Lutz-Carrillo, D. J. and S. Dumont. Subspecies composition of angled and electrofished Largemouth Bass in Texas reservoirs. Annual Meeting of the Southeastern Association of Fish & Wildlife Agencies, Hot Springs, AR, October 2012.
- Magnelia, S. J. Use of recreational economic impact surveys to better inform management decisions for rivers and streams of the Southwestern United States. Southwest Stream Restoration Conference, San Antonio, May 2013.
- Magnelia, S. J. and T. Birdsong. Use of lease access to improve angling opportunity in Texas rivers and streams. Southwest Stream Restoration Conference, San Antonio, May 2013.
- Magnelia, S. J., M. De Jesus and J. Leitz. Economics of a Lost or Diminished White Bass Run. Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- Mayes, K., J. Trungale and R. Smith. Stream restoration in the Cypress Basin, Texas. Southwest Stream Restoration Conference, San Antonio, May 2013.
- Mayes, K., B. Littrell, E. Oborny, J. Webster and C. Bunt. Combined Acoustic-Radio Tracking of Blue Sucker in the Lower Sabine River. Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- Munger, C. and D. J. Lutz-Carrillo. Do Alabama bass hybridize with largemouth bass in Alan Henry Reservoir, Texas. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hot Springs, AR, October 2012.
- Robertson, C. Overview of the Texas Instream Flow Program for the Guadalupe-Blanco River Authority Clean Rivers Program Steering Committee. Guadalupe River Clean Rivers Program Steering Committee Meeting, Seguin, March 2013.
- Robertson, C. Texas Instream Flow Program: Developing Flow-Ecology Relationships for Unionid Mussels. Texas Freshwater Mussel Identification and Sampling Workshop, Junction, August 2013.
- Robertson, C. The Texas Instream Flow Program: developing instream flow recommendations with consideration for mussels. Texas State University Aquatic Biology Society Seminar, San Marcos, April 2013.

- Robinson, S., T. Birdsong, D. Krause, J. Leitner, J. M. Long, S. Sammons and J. Slaughter. Native Black Bass Initiative: Implementing Watershed-Scale Conservation of Native Fish Populations in Southern US Rivers and Streams. Spring Meeting of the Southern Division of the American Fisheries Society. Nashville, TN, 2013.
- Smith, N. G. Seasonal Condition of Adult Striped Bass Relative to Thermal Habitat and Forage Availability. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies Hot Springs, AR, October 2012.
- Smith, N. G., D. L. Buckmeier and D. J. Daugherty. Channel and blue catfish recruitment patterns in Colorado River reservoirs, Texas. Annual Meeting of the Southern Division of the American Fisheries Society, February 2013.
- Sowards, B., M. Cordova, C. Robertson and C. Randklev. The freshwater mussels of the lower Brazos River. Texas Unionid Symposium, San Marcos, March 2013.
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- Tibbs, J., T. Hungerford and R. Ott. Growth of Blue Catfish in Three Texas Reservoirs. Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hot Springs, AR, October 2012.
- Urbanczyk, A., G. Wilde and K. Mayes. Captive spawning and propagation of imperiled broadcast-spawning cyprinids in Texas. Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- Urbanczyk, A., G. Wilde and K. Mayes. Captive spawning and propagation of imperiled broadcast-spawning cyprinids in Texas. Annual Meeting of the Southern Division of the American Fisheries Society, Nashville, TN, February 2013.
- Vaughn, C., D. Ruppel, A. Grubh, S. McMillan, G. Linam and T. H. Bonner. Effects of baseflow and high flow pulses on drifting CPOM, macroinvertebrates, and larval fishes. Annual Meeting of the Texas Chapter of the American Fisheries Society, Lake Conroe, January 2013.
- Vaughn, C., D. Ruppel, A. Grubh, S. McMillan, G. Linam and T. H. Bonner. Effects of baseflow and high flow pulses on drifting CPOM, macroinvertebrates, and larval fishes. Annual Meeting of the Southern Division of the American Fisheries Society, Nashville, TN, February 2013.
- Wilde, G. R., A. C. Urbanczyk, D. W. Knabe and K. B. Mayes. Conservation implications of introduced sheepshead minnow in the upper Brazos River. Annual Meeting of the Southern Division of the American Fisheries Society, Nashville, TN, February 2013.

Scientific Publications & Reports

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- Bean, P., D. J. Lutz-Carrillo and T. Bonner. 2013. Range-wide Survey of the Introgressive Status of Guadalupe Bass *Micropterus treculii*: Implications for Conservation and Management. *Transactions of the American Fisheries Society* 142:681-689.
- Bennett, D. and C. Bonds. 2012. Description of Trinity River Bowfishing Tournaments with Emphasis on Harvest of Alligator Gar. *Proceedings of the Annual Conference Southeastern Association of Fish and Wildlife Agencies* 66:1-5.
- Birdsong, T. W. 2012. Chapter 3 - Texas Wetlands. Pages 1-25 in: 2012 Texas Outdoor Recreation Plan. Texas Parks and Wildlife Department Report P4000-1673.
- Buckmeier, D. L., N. G. Smith and K. S. Reeves. 2012. Utility of Alligator Gar age estimates from otoliths, pectoral fin rays, and scales. *Transactions of the American Fisheries Society* 141:1510-1519.
- Buckmeier, D. L., N. G. Smith and D. J. Daugherty. 2013. Alligator Gar movement and macrohabitat use in the lower Trinity River, Texas. *Transactions of the American Fisheries Society* 142:1025-1035.
- Buckmeier, D. L., N. G. Smith, B. P. Fleming and K. A. Bodine. 2013. Intra-annual variation in river-reservoir interface fish assemblages: implications for fish conservation and management in regulated rivers. *River Research and Applications: Wiley Online Library* DOI: 10.1002/rra.2667.
- Daugherty, D. J. and N. G. Smith. 2012. Frequency of strong year-classes: implications on fishery dynamics for three life history strategies of fishes. *North American Journal of Fisheries Management* 32:1191-1200.
- Driscoll, M. T., H. L. Schramm, Jr. and K. M. Hunt. 2012. Trends in fishery agency assessments of black bass tournaments in the southeastern United States. *Proceedings of the Annual Conference Southeastern Association of Fish and Wildlife Agencies* 66:25-32.
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- Schlechte, J. W., N. G. Smith and J. B. Taylor. 2013. Options for estimating Striped Bass catch and harvest: effectiveness of creel surveys. Pages 291-312 in Biology and management of inland striped bass and hybrid striped bass, American Fisheries Society Symposium 80.
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- Amoroso, N. A. 2013. TPWD sampling starts off hot. Abilene Reporter News.
- Amoroso, N. A. 2013. Hunting and fishing licenses on sale this week. Abilene Reporter News.
- Ashe, D. 2012. Bass regulations 101. Lakecaster Vol. 23 No. 11.
- Ashe, D. 2013. The Little Things. Lakecaster Vol. 24 No. 9.
- Ashe, D. 2013. Temperature Effects on Fish. Lakecaster Vol. 24 No. 7.
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- Ashe, D. 2013. Save Money on Boat Fuel. Lakecaster Vol. 24 No. 3.
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Outreach Events

Inland Fisheries staff members were event leaders at 296 outreach events for targeted user groups (youth under 17, minorities, women, and physically challenged) in which 22,659 individuals participated.

	Youth 17 & under	Adults	Total
Males (1)	8,547	3,043	11,590
Females (2)	7,635	3,434	11,069
Minorities	6,444	1,560	8,004
Phys. Challenged	377	279	656
Total (1+2)	16,182	6,477	22,659

Work with Other Organizations

Program Contracts and Agreements

BIOWEST, Inc. (Ed Osborne)	Radio Tracking of Blue Sucker in the Lower Sabine River	\$212,450
Environmental Conservation Alliance (Tom Hayes)	Riparian Productivity on the Brazos and Guadalupe Rivers	\$149,866
Guadalupe-Blanco River Authority (Debbie Magin)	Biological Baseline Sampling in the Lower Guadalupe River	\$24,069
Nature Conservancy (Ryan Smith)	An Evaluation of the Relationship between Flow and Habitat Availability for the Devils River Minnow	\$16,774
Trinity River Authority (Webster Mangham)	Biological Baseline Sampling in the Middle Trinity River	\$24,000
Texas AgriLife Research (Charles Randklev)	Mussel Survey of the Lower Sabine River	\$50,600
Texas AgriLife Research (Charles Randklev)	Mussel and Macroinvertebrate Data Collection in the Middle and Lower Brazos River	\$27,770
Texas AgriLife Research (Kirk Winemiller)	Flow Dependent Species: Life History and Habitat Associations in Texas Gulf Coast Rivers	\$135,000
Texas Tech University (Gene Wilde)	Population Dynamics Model for Fishes of the Upper Brazos River	\$281,395
Texas Tech University (Thomas Arsuffi)	Recreational and Economic Impact of Guadalupe Bass in Hill Country Streams	\$10,441
Texas State University (Tim Bonner)	Focal Larval Fish Species Distribution and Habitat Use in the San Antonio River	\$165,000
Texas State University (Tim Bonner)	Assessment of Focal Larval Fish Species in the San Antonio River	\$49,000
Texas State University (Tim Bonner)	An Evaluation of the Relationship between Flow and Habitat Availability for the Devils River Minnow	\$8,135
Texas State University (Thom Hardy)	Texas Instream Flow Program Hydrological Support	\$190,000
Texas State University (Tim Bonner)	Assessment of Brazos River Habitat (Allens Creek)	\$5,520
Texas State University (Glenn Longley)	Student Workers	\$32,640

Grants and Donations

Guadalupe River Trout Unlimited	Support of Intern for work on Guadalupe River	\$7,000
Natural Resources Conservation Service	San Antonio River and Estuarine Sampling	\$165,000
San Antonio River Authority	San Antonio River Guadalupe Bass Project (Bring Back the Natives Grant)	\$8,504
Texas Parks and Wildlife Foundation	ShareLunker/Operation World Record	\$66,000
Texas Water Development Board	Radio Tracking of Blue Sucker in the Lower Sabine River Sub-basin	\$225,000
Texas Water Development Board	Mussel Survey of the Lower Sabine River	\$55,000
Texas Water Development Board	Mussel and Benthic Macro-invertebrate Data Collection in the Middle and Lower Brazos River	\$30,570
Texas Water Development Board	Riparian Productivity along the Lower Brazos River	\$40,000
Texas Water Development Board	Riparian Productivity along the Lower Brazos and Lower Guadalupe Rivers	\$55,000
Texas Water Development Board	Biological Baseline Sampling in the Trinity and Guadalupe Rivers	\$48,069
Texas Water Development Board	Habitat Suitability Sampling in the Lower Brazos River	\$15,236
U.S. Fish and Wildlife Service, Great Plains Landscape Conservation Cooperative	Conservation Opportunity Areas Mapping: Use of Ecological Systems Mapping Data to Inform Conservation of Native Fishes	\$50,000
Kills and Spills Team restitution fund grant	Habitat Enhancement at Possum Kingdom Lake	\$11,593
Sportsman's Club of Fort Worth	Support for Neighborhood Fishin' Program in Tarrant County	\$25,000
Nell V. Bailey Charitable Trust	Support for Neighborhood Fishin' Program in Tarrant County	\$5,036
Meta Alice Keith Bratten	Support for Neighborhood Fishin' Program in Tarrant County	\$10,000

Valero Corporation	Support for Neighborhood Fishin' Program in Bexar County	\$5,000
Texas Bass Classic Foundation	Texas State-Fish Art Program	\$20,000
Texas Bass Classic Foundation	Support for fish stocking at Nature Center in Tyler	\$3,500
Texas Bass Classic Foundation	Support for Inland Fisheries Division event displays	\$3,000
Texas Bass Classic Foundation	Support of Neighborhood Fishin' Program	\$162,000
Texas Bass Classic Foundation	New Marketing approaches for Neighborhood Fishin'	\$47,500
City of San Antonio	Support of Neighborhood Fishin' program	\$11,812
City of Wichita Falls	Support of Neighborhood Fishin' program	\$1,250
City of Mesquite	Support of Neighborhood Fishin' program	\$4,375
City of Denton	Support of Neighborhood Fishin' program	\$3,325
City of Amarillo	Support of Neighborhood Fishin' program	\$6,125
City of Waco	Support of Neighborhood Fishin' program	\$1,250
Travis County	Support of Neighborhood Fishin' program	\$1,250
Harris County	Support of Neighborhood Fishin' program	\$5,625
City of Duncanville	Support of Neighborhood Fishin' program	\$2,625
City of Hurst	Support of Neighborhood Fishin' program	\$2,625
City of Fort Worth	Support of Neighborhood Fishin' program	\$2,625
City of College Station	Support of Neighborhood Fishin' program	\$2,500
Field and Streams Sporting Goods	Support of Neighborhood Fishin' program	\$3,675
Texas Women Fly Fishers	Support of Inland Fisheries Management	\$250
Bengston-Koog-Riordan	Support of Inland Fisheries Management	\$15



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