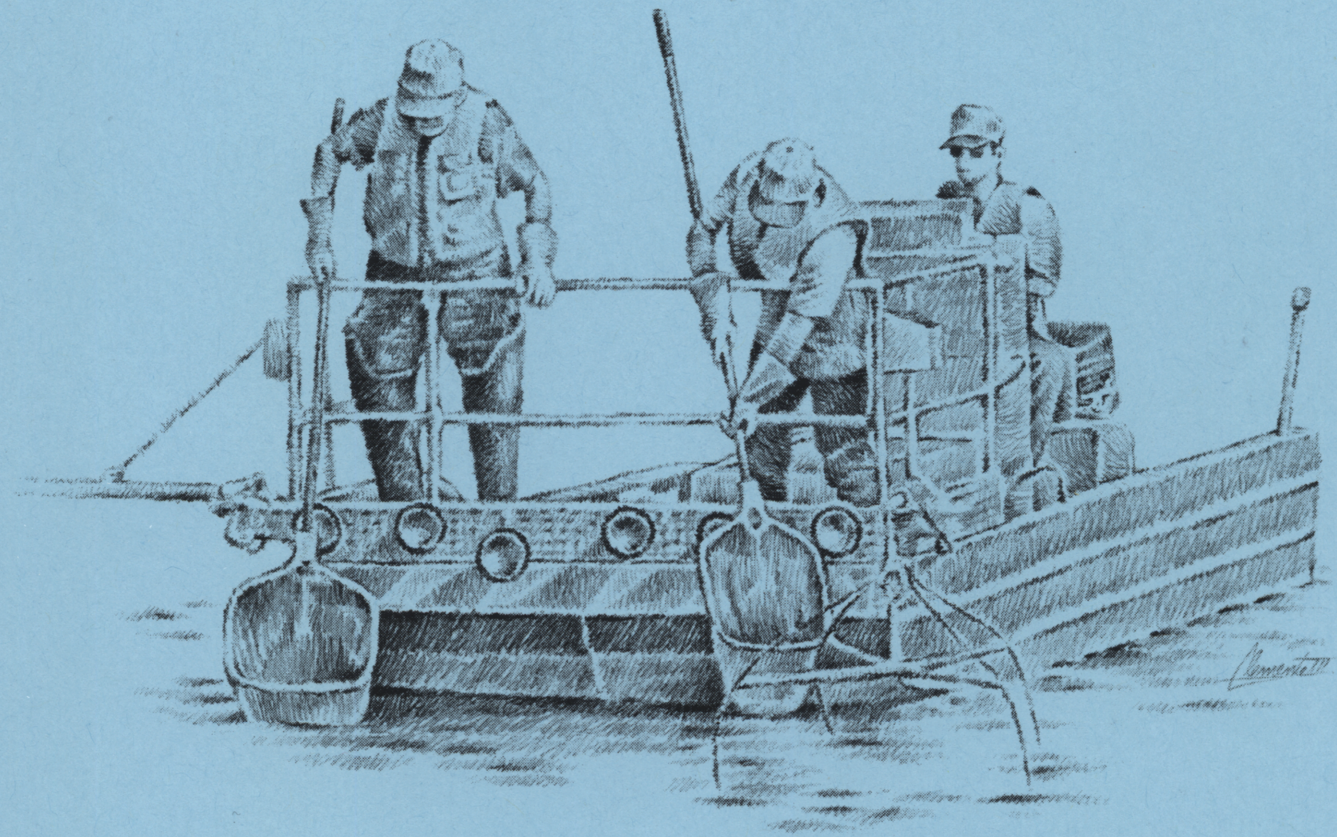


INLAND FISHERIES ANNUAL REPORT 2011



IMPROVING THE QUALITY OF FISHING

Carter Smith
Executive Director



Gary Saul
Director, Inland Fisheries

IN MEMORIAM

Staff of the Inland Fisheries Division would like to reflect on
the many contributions and personal friendships of

Mark Howell and Mike Little

who passed away unexpectedly in 2011.

These two employees left us with
a lasting legacy of dedicated service to TPWD,
Texas anglers, and our state's aquatic resources.



TEXAS PARKS AND WILDLIFE DEPARTMENT

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T. Dan Friedkin
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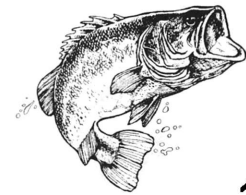
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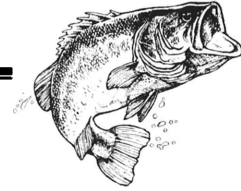
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INLAND FISHERIES OVERVIEW



Mission

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

Scope

The Inland Fisheries Division is responsible for managing the fishery resources in approximately 800 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

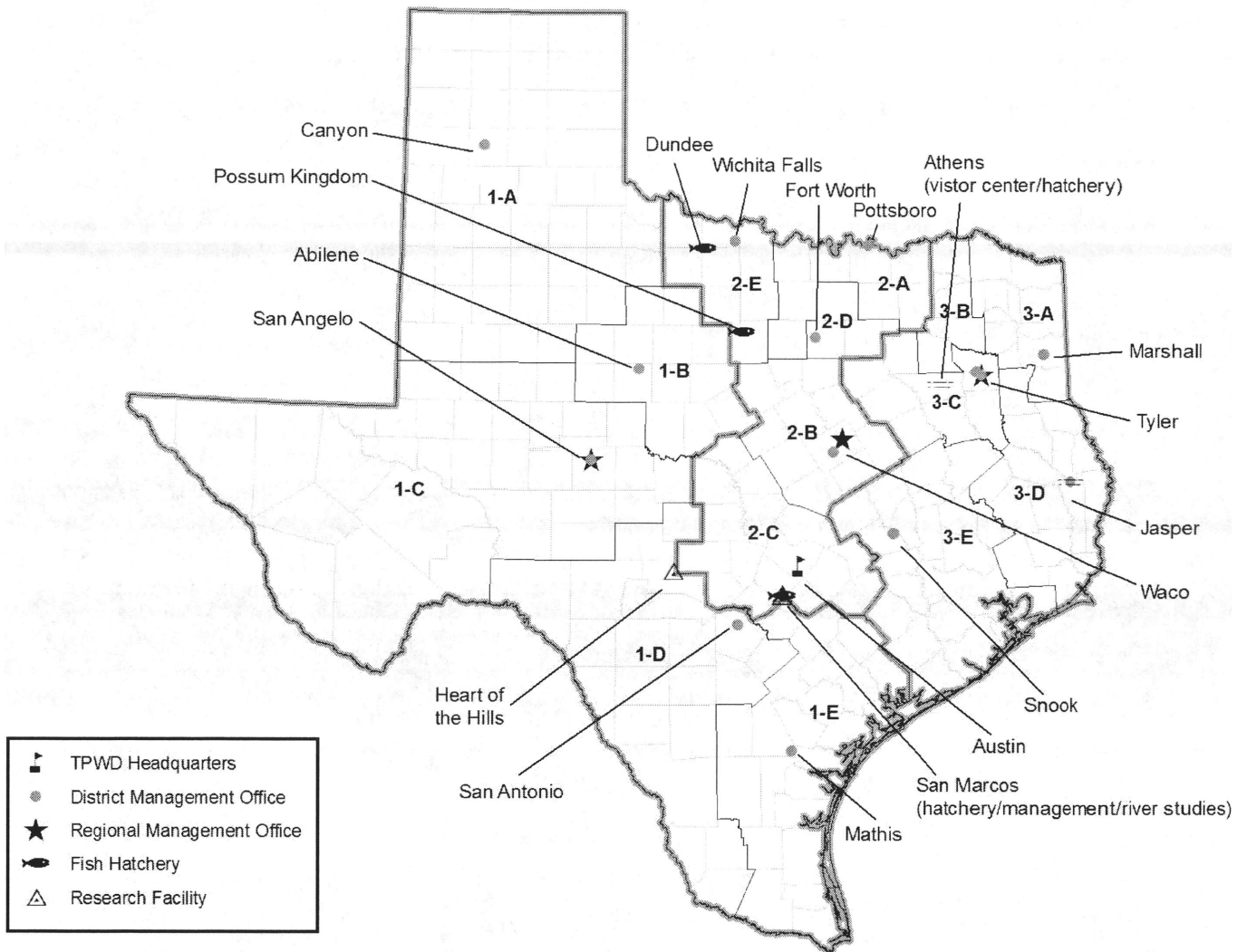
The Division goals were developed to address the major issues facing the freshwater fisheries resources of Texas.

- 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 225 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.state.tx.us/fishboat/fish

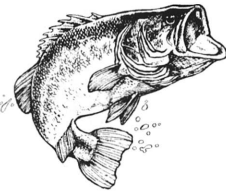
Funding and Allocation

In FY11 \$17,204,230 was budgeted for Inland Fisheries (not including fringe benefits or capital construction). Federal Aid grants are expected to reimburse the Department \$10,083,481 on eligible Inland Fisheries activities. The allocation of Federal Aid monies was \$2,430,734 for Fish Hatchery facilities and \$7,652,747 for Management and Research, Habitat, Outreach, and Administrative and Laboratory services.

FY 11 Budget by Program

Administration	\$1,496,829
Management and Research	\$5,071,883
Hatcheries	\$4,574,762
Habitat	\$4,381,955
Outreach/Texas Freshwater Fisheries Center	\$1,105,657
Analytical Labs	\$573,144
Total FY11 w/o fringe	\$17,204,230

ADMINISTRATION



Description

The administrative function of the Inland Fisheries Division occurs at Texas Parks and Wildlife Department Headquarters in Austin. 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).

Legislation

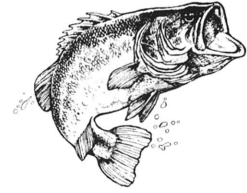
During the 82nd Legislative Session, several bills were passed that affected Inland Fisheries:

- HB 790 – Removed the sunset provision (set for September 1, 2014) for the freshwater fishing stamp and extended it indefinitely.
- HB 2189 - Allows licensed anglers to hand fish for catfish in public fresh water.
- SB 1480 - Amended Section 66.007, Parks and Wildlife Code to return the regulation of exotic aquatic plants to the use of a prohibited list and permits for possession of prohibited plants. Section 66.0072, Parks and Wildlife Code was also changed to reduce the penalty to fine only for first time offenses for possession of exotic aquatic plants, but continues to enhance the penalty for second and third offenses.

Organization

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

HABITAT CONSERVATION



Program Description

Habitat Conservation goals and objectives are accomplished through numerous 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 Inland Fisheries Habitat Conservation Branch, which consists of more than 30 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.

Program responsibilities include a broad range of natural resource issues including watershed protection and restoration; instream flow science; native species conservation; management of aquatic invasive species; harmful algal blooms monitoring and research; environmental response, damage assessment and restoration; and a variety of other topics affecting the health of Texas fisheries, their habitats, and other aquatic resources. Branch staff members are located throughout the state with office locations in Austin, Jasper, Mountain Home, San Marcos, Tyler and Waco.

The branch leverages state funding against State Wildlife Grants, ESA Section 6 Grants, Boating Access Grants, Texas Water Development Board Research and Planning Grants and other competitive grants from NGOs, corporations, federal agencies and other entities to support collaborative research and habitat conservation projects throughout the state.

Accomplishments

In collaboration with the Brazos River Authority and partner agencies of the Texas Instream Flow Program, conducted initial field data collection in support of priority instream flow studies on the middle and lower Brazos Rivers.

In collaboration with the San Antonio River Authority and partner agencies of the Texas Instream Flow Program, conducted an instream flow study of the lower San Antonio River. An interim draft report including instream flow recommendations was completed in August 2011.

Completed instream and riparian habitat surveys in the South Llano River to support development of a habitat restoration plan for Guadalupe bass and other native fishes at the South Llano River State Park.

In partnership with TCEQ, updated historic surveys of the Texas Least Disturbed Streams Project and surveyed additional candidate streams.

Organized and hosted a drought response workshop to identify potential actions needed to address drought impacts on priority fishes and mussels.

In partnership with Texas Tech University, collected, transported and held endemic Brazos River minnows at the Possum Kingdom State Fish Hatchery to ensure these candidate species would be available for reproductive studies and repatriation efforts if the drought persisted.

Initiated reintroduction of Guadalupe bass into the Blanco River Watershed by removing non-native, introduced smallmouth bass and Guadalupe bass x smallmouth bass hybrids from enduring pools (result of the drought). Plans are in place to reintroduce Guadalupe bass into the upper Blanco River in spring 2012.

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 rivers.

Participated in water rights evaluations associated with the proposed Lower Bois d'Arc Creek Reservoir, Cedar Ridge Reservoir (Clear Fork of the Brazos River), Lake Columbia Reservoir (Neches River), and the Brazos River Authority's System Operation Permit, which guides operations of all reservoirs operated by the Brazos River Authority.

Participated in Federal Energy Regulatory Commission relicensing efforts for the Toledo Bend Hydropower Project (lower Sabine River) and the licensing of a new hydropower project on Lake Livingston (lower Trinity River).

Completed field data collection for a study that evaluated effects of the Wichita River Desalinization Project on fish assemblages and water quality. The final project report will be published in 2012.

In partnership with the Texas Commission on Environmental Quality, conducted the Pine Island Bayou Use Attainability Study.

Staff served on the Planning Committee for the Instream Flow Council's FLOW 2011 Conference in Nashville, TN, and organized science, policy, social marketing and valuation workshops. The conference was attended by over 200 professionals engaged in the environmental flow arena.

Organized a multi-divisional workshop to explore uses of unmanned aerial vehicle technology, and initiated a two-year project in partnership with Texas State University to evaluate potential applications of unmanned aerial vehicle technology in support of TPWD fish and wildlife management programs.

Developed a native fish habitat restoration project for the Alamo Creek Preserve and secured project funding from the Desert Fish Habitat Partnership.

In partnership with Trout Unlimited, evaluated opportunities for reintroduction of Rio Grande cutthroat trout in McKittrick Creek, located within the Guadalupe Mountains National Park.

Partnered with Texas A&M University researchers to collect and analyze specimens of an undescribed species of roundnose minnow from the Big Bend Ranch State Park.

Participated on a panel convened by the National Park Service to assess values of the Rio Grande Wild and Scenic River.

Organized and conducted riparian conservation workshops for landowners in Lockhart, Utopia, San Marcos, and San Antonio. Two more workshops were held in partnership with the Texas Nature Conservancy for landowners along the Pedernales River. These workshops provided information to landowners on the value of proper watershed and riparian management to the overall function and sustainability of rivers and streams.

Staff served on the Texas Paddling Trails Team, which was responsible for opening 13 new trails during FY11. These trails educate Texans on fishing, wildlife, conservation, safety, and proper etiquette while recreating on Texas rivers and lakes.

In partnership with the USDA Natural Resources Conservation Service, The Nature Conservancy, Texas AgriLife Extension, and other conservation partners, developed a Watershed Conservation Workshop curriculum for use at workshops conducted throughout the state.

Completed a web-based clearinghouse of watershed best management practices that support conservation of Texas aquatic ecosystems. This resource can be accessed at www.watershedbmps.com.

Stocked 175,000 Guadalupe bass fingerlings in the South Llano River to support genetic restoration efforts.

Assisted with restoration of the federally endangered Rio Grande silvery minnow in the Big Bend Region of the Rio Grande.

Staff served on the Fort Worth District of the U.S. Army Corps of Engineers' Interagency Review Team (IRT), evaluating numerous stream and wetland mitigation bank proposals in Northeast Texas.

Staff served as mentors to schools that participated in Service Learning Texas' Healthy Habitats Program, guiding aquatic habitat projects conducted by middle school and high school students.

Participated in the planning of habitat restoration and flood abatement projects initiated by the U.S. Army Corps of Engineers on Cibolo Creek, Leon Creek, Keys Creek, and the San Marcos River.

Coordinated design, format, and content of the Texas Watersheds newsletter, a full color electronic publication which replaced the Texas Wetland News. The new newsletter increased the size and scope of content, soliciting a greater number of articles and expanding coverage to a watershed scale.

In partnership with the Angelina Neches River Authority, the Texas Commission on Environmental Quality, and the Texas Water Development Board, developed a proposed methodology for determining compensatory mitigation requirements for the Lake Columbia Reservoir Project.

Organized, hosted, and participated in a week-long river restoration training for TPWD Inland Fisheries, Coastal Fisheries and Wildlife division biologists, with the objective of enhancing knowledge of stream functions to facilitate cross-divisional participation in aquatic and riparian habitat restoration.

Participated in the Watershed Protection Planning processes for the Lampasas River, Alligator and Geronimo Creeks, and Upper Cibolo Creek watersheds.

Performed field investigations and made recommendations relative to the issuance of TPWD "Sand and Gravel" permits for disturbance or taking of substrate materials in the Atascosa, Blanco, Brazos, Colorado, Concho, Dry Frio, Frio, Guadalupe, Llano, Lampasas, Nueces, San Gabriel, San Jacinto, Sabinal, Sabine, San Marcos, and South Llano Rivers; Barton Creek, Cypress Creek, Hondo Creek, Independence Creek, Salado Creek, and other smaller streams to assure that the activity would not adversely affect fish and wildlife resources or recreation opportunities.

Through contracts, partnerships, and other cooperative arrangements, along with on-the-ground actions of staff, 10,366 acres of invasive aquatic and semi-aquatic vegetation were treated on 23 public water bodies with herbicides, biological controls, or other treatment methods. The top three plant species treated were water hyacinth (3,710 acres), salvinia (3,407 acres), and hydrilla (3,059 acres).

Began production of giant salvinia weevils at two new rearing facilities in East Texas to enhance control efforts for giant salvinia.

Completed approximately 500 risk assessments for aquatic and semi-aquatic plant species.

Staff participated with State and Federal counterparts regarding the natural resource damage assessment and restoration planning for the Deepwater Horizon oil spill. Activities included:

- Baseline surveys of beachfront tar-ball incidence along the Texas Coast.
- Hosting multiple public meetings in Galveston and Port Arthur to explain the damage assessment process and start a dialogue with the public regarding restoration for impacts associated with the spill as well as initiate the Programmatic Environmental Impact Statement for anticipated restoration project types.
- Hosting a Habitat Equivalency Analysis training course for State Natural Resource Trustee representatives from Texas, Louisiana, and Mississippi; and Federal Trustees representing the U.S. Departments of Interior and Commerce.
- Briefing approximately 120 Texas researchers developing multi-university research consortia for spill-related studies in response to a Gulf of Mexico Alliance Request for Proposals.

Finalized a settlement in a Natural Resource Damage Assessment case at Days Creek, recovering approximately \$450,000 for injuries to natural resources related to a former creosoting facility.

Continued to monitor habitat construction projects encompassing approximately 50 acres of riparian habitat, 30 acres of freshwater wetland and 200 acres of estuarine wetland construction to ensure success criteria are met.

Investigated 142 fish and wildlife kills and 52 pollution events, documenting impacts and providing guidance on natural resource sensitive clean-up techniques.

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 a Natural Disaster Operational Workgroup focused on the coordination of multi-agency response efforts and the development of database software, Response Manager, to assist in that coordination. Habitat Conservation staff led development of modules to collect and track information related to impacted wildlife response activities and provide sensitive wetlands response guidance.

Provided technical review of ecological risk assessments and participated in a workgroup to update guidance on the conduct of ecological risk assessments under the Texas Risk Reduction Program.

Completed sampling of largemouth bass from approximately 60 reservoirs in East Texas to assess mercury contamination levels as a follow up to a similar study completed in 2001.

Supported updates to the Texas Outdoor Recreation Plan, Texas Conservation Action Plan, and National Fish Habitat Action Plan.

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

- Steering committees of the Gulf Coast Prairie Landscape Conservation Cooperative, Southeast Aquatic Resources Partnership, Desert Fish Habitat Partnership, and Big Bend Bi-National Conservation Cooperative
- Science and data committees of the National Fish Habitat Partnership, Desert Landscape Conservation Cooperative, Great Plains Landscape Conservation Cooperative, Southeast Aquatic Resources Partnership, and Desert Fishes Habitat Partnership
- Southern Division Warmwater Streams, Non-Game Aquatics and Instream Flow Committees; Mississippi River Basin, Western Region, and Gulf and South Atlantic Region Panels on Aquatic Nuisance Species; Edwards Aquifer Recovery Team; Texas Hazard Mitigation Team; Research Review Board of the U.S. Army Corps of Engineers Aquatic Plant Control Research Program; National Invasive Species Advisory Committee and Interagency Giant Salvinia Control Team
- Advisory boards of the Texas Riparian Association and the Pecos River Resolution Corporation

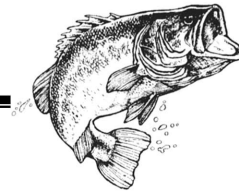
Staff members also chaired the Golden Alga Task Force, the Rio Grande Fishes Recovery Team and the Coordinating Committee of the Southeast Native Black Bass Keystone Initiative, and served as Vice-Chair of the Texas Invasive Species Coordinating Committee.

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 Inland Fisheries management program assesses fish communities, fish habitat, angler access, and angler use of public water resources. The 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 harvest regulations changes, implements habitat improvement projects, assists with treatments of invasive aquatic species, conducts public outreach, manages our urban fishing programs, and performs research to evaluate and improve fisheries management strategies. Staff provides 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 361 surveys on 149 reservoirs covering 1,377,550 surface acres of water. Conducted additional surveys on three rivers and streams (50.9 miles). For a detailed list of waters surveyed, see **Appendix – Surveys Conducted in Public Waters**.

Prepared comprehensive fisheries management reports and fisheries management plans on 45 public reservoirs. Reports were made available to reservoir controlling authorities and the general public through the agency website.

Provided recommendations and supporting information that led to 23 species-specific harvest regulation changes on seven reservoirs and one river segment statewide.

Conducted habitat improvement activities that affected 3,457 surface acres on 32 public reservoirs.

Directed the stocking of 20,814,957 fish of 21 different species in 399 different water bodies. Detailed stocking reports can be found in **Appendix – Stocking Reports**.

Management staff met with representatives of the Louisiana Department of Wildlife and Fisheries and the Sabine River Authority - Louisiana to discuss standardizing sport fish harvest regulations on Caddo Lake, Toledo Bend Reservoir, and the Sabine River. Proposals were finalized and presented to the Texas Parks and Wildlife Commission. Research staff assisted in the review and modeling of crappie data. These efforts led to simple, uniform sets of harvest regulations for Texas' and Louisiana's shared waters.

Research works to improve the efficiency and effectiveness of Division operations and aquatic resource management. The focus of this year's fishery management research included:

- Effects of changing water levels on fish and habitats (four studies)
- Development of channel catfish fisheries (nine studies)
- Improving stocking or sampling techniques (eight studies)
- Alligator gar management (four studies)
- Other applied research topics (12 studies)

Another 21 research studies were underway in the Division's hatchery and analytical services branches. Research staff coordinated these studies 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 eight scientific articles in peer-reviewed professional journals and published two studies in the Department's Management Data Series.

Published 60 popular articles and distributed 294 news releases. A complete list of published work can be found in **Appendix – Presentations, Articles and Publications**.

Developed review criteria and scoring protocols for distribution to external entities requesting TPWD funding for golden alga research. This will focus the Division's funding for external research on agency priority areas and facilitate fair and consistent assessment of proposals.

Worked jointly with the Wildlife Division and USFWS to allocate federal endangered species grant funds to research projects best aligned with TPWD priorities for species conservation.

Developed and conducted statistics training for the Division's hatchery branch staff, provided fish identification training at the Game Warden Academy, and provided invasive aquatic plants and zebra mussel training to Game Wardens in the field.

Completed a statewide survey of Texas' catfish anglers, describing constituent attitudes, opinions, and activity. Results will guide development of catfish fisheries in the state.

Recently completed research studies on hydrology and fisheries in the Colorado River basin yielded data, reports, and analyses for use by TPWD Water Resources section in the LCRA Water Management Planning process for the Colorado River.

Maintained an active role in fisheries science professional service. Various staff members served as an associate editor of a scientific journal, organized an international, published symposium on catfish

conservation and management, served on a graduate advisory committee for a Ph.D. candidate at Texas Tech University, and served as officers of the Texas Chapter of AFS.

Recommended the implementation of an agency-wide Senior Scientist Career Track.

Developed and distributed a fact sheet on golden alga entitled "Golden Alga and Texas Fisheries – Impacts and Management Efforts" and worked with the Communications Division to ensure weekly fishing reports reflected real-time golden alga conditions.

Prepared and delivered a presentation to the TPW Commission on results of alligator gar research and management stemming from recent changes in harvest regulations.

Briefed the Trinity River Authority on ongoing research in the Trinity River. The briefing increased support for TPWD conservation actions and further strengthened a cooperative relationship within the river basin.

Worked with Coastal Fisheries and State Parks division staff to mitigate for golden alga blooms in the reflection pool of the San Jacinto Monument.

Maintained productive partnerships for alligator gar research, arranging data collection from bow fishing tournaments and tagging of gar in the Trinity River by fishing guides. Staff worked with Georgia Southern Polytechnic University to validate the use of otoliths for estimating the age (in days) of young gar, and collaborated with anglers in competitive bow fishing tournaments to collect alligator gar for aging. We provided surveys to participants to learn more about competitive alligator gar anglers in Texas and began investigations of alligator gar in other river basins.

Discussed Division goals and research findings related to alligator gar during interviews on Cabela's Lone Star Outdoor Radio Show and a video produced by the Arkansas Game and Fish Commission.

Worked with River Studies staff to review data analyses submitted by the Sabine River Authority for hydropower relicensing at Toledo Bend Reservoir.

Continued support of the Reservoir Fisheries Habitat Partnership (RFHP). Efforts included completing Texas reservoir assessment surveys, hosting the first-ever RFHP regular membership meeting in Conroe, receiving a \$10,000 grant from the RFHP to support habitat improvement projects at Lake Conroe, and the creation of the nation's first Friends of Reservoirs Chapter at Lake Conroe.

Organized and led a highly-successful 2010 Toyota Texas Bass Classic at Lake Conroe. Cumulative donations hit the \$1M mark this year. Opportunities for promotion of our programs were maximized, including two video pieces, public displays, and promotion of proper fish-care practices.

Continued efforts to acquire additional information on angler catches of trophy-sized largemouth bass. Notable examples included trophy bass surveys for lakes Nacogdoches and Fork. For example, we estimated anglers caught over 2,680 largemouth bass larger than 5 pounds and 241 bass larger than 10 pounds from Lake Nacogdoches in the last 2 years.

Continued and expanded efforts to facilitate and develop stakeholder advisory committees for reservoirs with active aquatic vegetation management plans. Notable examples include Conroe, Houston County, and Austin reservoirs.

Worked with partners (Texas BASS Federation Nation, Texas Bowfishing Association, San Jacinto River Authority, U.S. Forest Service, and Stow-A-Way Marina) to conduct grass-carp-removal tournaments on Lake Conroe in an effort to reduce excess grass carp to a number that will continue to control hydrilla, but allow native aquatic plant enhancement efforts to flourish.

Provided fish-care advice and valuable information to competitive tournament organizers, weigh-in facility planners, and participants during the year.

Consulted with City of Lufkin to acquire mailing addresses for current permit holders at Lake Kurth, and conducted a mail-out opinion survey to address constituent concerns regarding access and fisheries management.

Assisted with the East Texas Woods and Waters Foundation fundraising banquet held at the Tyler Nature Center. The banquet raised over \$32,000 for conservation projects primarily in East Texas.

Completed the first year of native aquatic plant production from the new plant nursery at the Texas Freshwater Fisheries Center. Native plants were provided for seven fisheries habitat enhancement projects as well as the establishment of a second plant nursery at the Waco Wetlands.

Worked with staff from the Sabine River Authority and the City of Dallas Water Utilities to implement a plan to avoid pumping water out of Lake Fork during the largemouth bass spawning period.

Hosted a Lake Fork State of the Lake Meeting in Quitman to inform and communicate with the public concerning aquatic vegetation and fisheries management issues at Lake Fork.

Worked with State Parks staff to survey and begin development of a management plan for the new Devil's River Natural Area.

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

Staff from Management, Research, Hatcheries and the Communications Division continued working on the Neighborhood Fishin' program by developing and evaluating marketing strategies to further increase participation by urban anglers. A new site, Southside Lions Park in San Antonio, was added to the program in FY11.

Treated Sister Grove Creek in an effort to eradicate zebra mussels. This was the first time anyone in the country had attempted to eradicate zebra mussels from a flowing creek.

A Management and Research Branch employee received a TPWD Employee Recognition Award in the "Partnership" Category for his work with Guadalupe River Trout Unlimited.

River Studies, Management, Hatcheries and Research staff worked together to collect Guadalupe bass brood stock from the Llano River as part of the Guadalupe bass restoration initiative.

Assisted Hatcheries staff with the collection of striped bass brood fish from the Trinity River below Lake Livingston.

Staff from Management and Research, River Studies, Kills and Spills and Coastal Fisheries participated in monitoring the Wichita River as part of a special project to evaluate the impacts of a Reverse Osmosis plant.

Continued to monitor for the potential spread of zebra mussels in several reservoirs across North Texas.

Assessed boat ramp availability (statewide) during 2011 drought conditions and recommended needs for improvements to department leadership.

Attended and received training in Applied Fluvial Geomorphology and Side Scan Sonar Imaging to improve our ability to manage the state's resources.

Inland Fisheries, Communications and Executive Office staff developed and implemented a comprehensive Zebra Mussel public awareness campaign aimed at stopping or slowing the spread of zebra mussels across the state. This campaign is a result of effective partnerships that were developed with several municipalities, water districts and river authorities.

Produced and printed an "Anglers Guide to West Texas" to help inform constituents about fishing opportunities in west Texas.

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

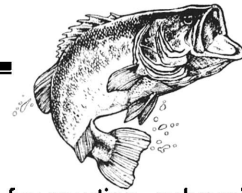
Worked with several reservoir controlling authorities to find a balance between navigational safety and maintaining valuable fish habitat. These issues arose as a result of low water levels during the drought.

Participated in the very successful "Ask an Expert" web chat that allowed constituents the opportunity to ask fisheries-related questions of local experts.

Organization

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

FISH HATCHERIES



Program Description

Fish hatcheries are functional support for fisheries management and provide a tool for creating, enhancing and maintaining fish populations in Texas public waters. Inland Fisheries operates five fish hatcheries located in San Marcos (AE Wood), Athens (Texas Freshwater Fisheries Center), Graford (Possum Kingdom), Electra (Dundee) and Jasper. Stocked fish must meet specific stocking requirements including number, size, genetic integrity, disease-free status, and time of stocking. Hatchery stocked fish are used to 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 manmade influences. They are also used to 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 a total of 15.3 million fingerlings, 5.1 million fry and 305,547 adult fish in 394 locations. Detailed stocking reports can be found in **Appendix – Stocking Reports**.

Made significant progress toward completing the John D. Parker East Texas State Fish Hatchery. Funding was allocated for 22 additional ponds to complete construction of the full design. Construction is anticipated to be complete in July 2012.

Completed ozone disinfection system at the Possum Kingdom Fish Hatchery. The system will treat up to 2,000 gallons per minute and remove golden alga-associated toxins from the incoming water. Benefits of the new system are expected to be more dramatic in 2012 when the unit is fully functional, better understood and can be more fully utilized to assist in controlling golden alga.

Staff conducted 18 research projects on aspects of fish rearing and golden alga control in hatchery environments. A complete list of research topics can be found in **Appendix – Research and Special Projects**.

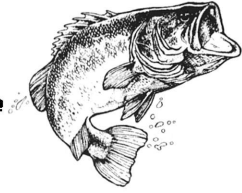
Staff authored or co-authored two publications in peer review journals and three reports for the TPWD Management Data Series, and made four oral presentations at professional conferences and symposia. Details can be found in **Appendix – Presentations, Articles and Publications**.

A total of 14,776 visitors toured hatchery facilities in connection with special events. This number does not include general visitation at Texas Freshwater Fisheries Center, which is described in the TFFC section of this report.

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 environmental chemistry, 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 Contaminants Assessment Team, 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 TPWD and the State.

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 those 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.

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. Our fish health expertise imparts an ability to focus on specific pathogens of interest. Our 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. In the case of fish kill investigations, the two analytical labs may work together to analyze both biological and chemical agents of concern.

Accomplishments

Completed water quality analyses on a total of 268 water samples in support of hatchery discharge monitoring at the AE Wood, Dundee, Heart of the Hills, Jasper, and Possum Kingdom facilities.

Conducted analyses on 96 fish health cases comprised of 2,490 individual fish.

Conducted 289 cell counts and 223 bioassays in association with golden alga monitoring, research, or fish kill investigations.

Completed genetic analyses (allele frequency and genotypes) for 562 largemouth bass collected from 18 public reservoirs from fall electrofishing surveys. An additional 260 largemouth bass from Lake Victor Braunig were genotyped in support of a special study.

Completed genetic analyses on 297 largemouth bass submitted to the Toyota ShareLunker Program or used in Operation World Record (OWR). This total includes the following:

- ShareLunker entries for 2011 (n = 19)
- Archived ShareLunker samples dating back to 1994 and prior to the use of multilocus genotype panels (n = 46)
- OWR study lakes (145 fish from three sites)
- Male brood fish for use in OWR (n = 87)

Completed genetic analyses on a total of 696 micropterids in support of the Guadalupe bass restoration program. These samples include the following:

- Putative Guadalupe bass from the South Llano River were genotyped to determine their suitability as brood fish (n = 290). The genetic data were used to determine effective population size of the river and the hatchery production. Genotypes also were used when pairing fish to avoid suboptimal crosses (e.g., matings among potentially related individuals).
- North Llano River (n = 22)
- Blanco River (n = 31)
- Cibolo Creek (n = 10)
- Johnson Creek (n = 343)

Conducted genetic analyses on smallmouth bass collected from Belton Reservoir (n = 75) as future brood fish. No evidence of introgression with other micropterids was detected.

Evaluated *Morone* brood fish (217 striped bass and 215 white bass) at two diagnostic markers prior to using their offspring in fingerling production of striped bass and white bass. No hybrids were detected.

Worked to develop and evaluate an early detection method for zebra mussels using shed DNA (eDNA).

A total of 588 samples were received by the Environmental Contaminants Laboratory. The samples include the following:

- Tissue and water samples submitted for a study of mercury in Texas reservoirs (n = 121)
- Samples submitted in support of the Kills and Spills Team (n = 84) and Environmental Crimes Unit (n = 91) investigations
- Water submitted for metals and toxin analyses in support of golden alga monitoring activities (n = 178)
- Water submitted in support of monitoring potential effects of a desalination plant on the Wichita River (n = 18)
- Blue catfish submitted for metals and organics analyses in support of an evaluation of trophy fisheries (n = 17)
- Water samples submitted for testing treatments aimed at controlling zebra mussels (n = 28)
- Miscellaneous samples submitted for a variety of projects (n = 51)

Coordinated unwanted chemical and waste disposal for the Inland Fisheries Division.

Participated as judges in local and statewide science fairs.

Presented at the Game Warden Academy and at the Texas Association of Environmental Law Enforcement Agency meetings.

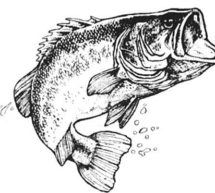
Served on an interagency panel formed to approve a method for testing marine life for exposure to contaminants associated with the Deepwater Horizon oil spill.

Laboratory staff prepared responses to anticipated questions from the House Culture, Recreation, and Tourism Committee. We specifically addressed the scientific validity of the ShareLunker/OWR programs, the effectiveness of the program, why only Florida largemouth bass were included in the breeding program, and why anglers should donate fish to the program.

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 handles the freshwater fishing web pages, river access information including Texas Paddling Trails, Angler Recognition, and general information to the public. Staff are located at Texas Parks and Wildlife Department headquarters in Austin.

Accomplishments

Web and data analysis staff designed and launched a set of fishing pages especially designed for mobile web access. Hosted within the larger TPWD web site, the Texas Mobile Fishing Web offers weekly fishing reports, Neighborhood Fishin' locations, a searchable database of fish records and site-specific fishing regulations in a mobile-friendly format.

Continued to utilize GovDelivery subscription service to share timely information with interested constituents and saw a steady increase in subscribers throughout the year.

Reviewed and revised exotic species and other permit applications to streamline permitting process and reflect new staff assignments.

Worked with Human Resources to provide text and photos for new "Careers in Inland Fisheries" recruiting brochure.

A staff member served as division representative to the working group that developed an agency-wide plan to serve constituents with Limited English Proficiency, as required by the U.S. Fish and Wildlife Service. The plan was finalized and presented to executive leadership.

Participated in agency-wide task force to develop Conservation Education and Key Messages Strategy. This work will be completed and implemented in 2012.

Data analysis staff finalized preparation for the migration of the GoFish suite of applications and the database to new servers and to new versions of the software involved.

Data analysis staff worked with other divisions on projects involving the agency's SAS Enterprise Business Intelligence (EBI) server and the License Utilization and Revenue Enhancement System (LURES) project:

- Installed and configured the agency's SAS EBI server, including design and implementation of an architecture to manage security for users and groups.
- Worked to identify data sets across the agency appropriate for access via the SAS EBI server and built connections from the SAS EBI server to those appropriate databases and tables.

- Developed understanding of the mechanics of the agency's data system used to track license sales and worked with SAS consultants to build reporting capabilities from that data.
- Worked with Administrative Resources Division to help generate accurate funds available reports, several of which were not available or not correct in the BIS program.
- Worked with Coastal Fisheries staff to make several of their fisheries monitoring reports available on the SAS EBI Server.
- Trained Information Technology Division's Desktop Computer Services group on procedures and best practices for taking responsibility of SAS installations across the agency.

Continued participating in inter-departmental team assisting the agency's participation in the Recreational Boating and Fishing Foundation's cooperative program to increase fishing license sales.

Texas Paddling Trails team opened 13 new paddling trails encompassing 98 water miles.

Facilitated the enhancement of 16 public water access locations including two net new locations.

Angler Recognition Program welcomed 667 new participants.

Coordinated and facilitated Division participation in five Life's Better Outside events, Texas Toyota Bass Classic 2011 and Troutfest 2011.

Issued a total of 923 Grass Carp Permits for FY11.

Regulation Changes

Coordinated and participated in meetings with Oklahoma Department of Wildlife Conservation and Louisiana Department of Wildlife and Fisheries staff to discuss current and potential fishing regulations.

Coordinated the agency's regulatory hearing process for proposed changes to the 2011-2012 hunting and fishing regulations.

Assisted with revisions to the 2011-2012 version of the Outdoor Annual.

The following changes in fishing regulations, recommended by staff to improve angling quality, optimize angling opportunity, and protect fisheries resources, were adopted by the TPW Commission.

Wheeler Branch Reservoir

Implement the following harvest regulations: a 14-21 inch slot length limit for largemouth bass (only one largemouth bass 21 inches or greater may be retained each day); an 18-inch minimum length limit for smallmouth bass; daily bag for all black bass combined is five fish per day of which no more than three can be smallmouth bass; and restrict angling to pole and line only.

Lake Kyle

Implement the following harvest regulations: a 14-21 inch slot length limit for largemouth bass (only one largemouth bass 21 inches or greater may be retained each day) and a five fish daily bag. Reservoir will also fall under Community Fishing Lake regulations (pole-and-line angling only, and no minimum length limit and five fish daily bag for channel and blue catfish).

Lake Alan Henry

Change harvest regulations to a five fish daily bag limit for largemouth bass and spotted bass combined and allow the harvest of only two largemouth and spotted bass under 18 inches. Regulations for smallmouth bass will be changed to a 14-inch minimum length limit and a five fish daily bag limit.

Kirby Reservoir, Lake Palestine

Change harvest regulation for blue and channel catfish from statewide limits to no minimum length and 50-fish combined daily bag limit of which only five blue and/or channel catfish 20 inches or greater in length may be retained per day.

Toledo Bend Reservoir

- Channel and blue catfish - No minimum length limit and 50 fish combined daily bag with only five fish over 20 inches.
- Flathead catfish - Increase daily bag to 10 fish; retain 18-inch minimum length limit.
- White and black crappie - No minimum length limit and 25 fish combined daily bag.
- Change upper limit of reservoir from Highway 84 to TX/LA state line.

Sabine River

Encompasses section from Toledo Bend dam downstream to I-10 bridge; downstream boundary coincides with the freshwater/saltwater boundary.

- Channel and blue catfish - No minimum length limit and 50 fish combined daily bag with only five fish over 20 inches.
- Flathead catfish - Increase daily bag to 10 fish; retain 18-inch minimum length limit.
- White and black crappie - No minimum length limit and 25 fish combined daily bag.
- Largemouth and spotted bass - Increase daily bag to eight fish combined; retain 14-inch minimum length limit for largemouth bass and no minimum length limit for spotted bass.
- Striped bass - No minimum length limit and five fish bag with only two fish over 30 inches.
- White bass - No minimum length limit and 25 fish daily bag.

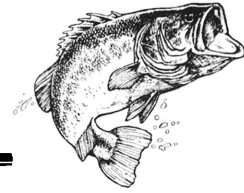
Caddo Lake

- Channel and blue catfish - No minimum length limit and 50 fish combined daily bag with only five fish over 20 inches.
- Flathead catfish - Increase daily bag to 10 fish; retain 18-inch minimum length limit.
- White and black crappie - No minimum length limit and 25 fish combined daily bag.
- Largemouth and spotted bass - Eight fish bag combined with spotted bass; retain 14-18 inch slot length limit for largemouth bass but limit harvest to four fish over 18 inches; retain no minimum length limit for spotted bass.
- White bass - No minimum length limit and 25 fish daily bag.

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. More than 60,000 people visit TFFC to learn about Texas Parks and Wildlife Department. Ten special events are held throughout the year to enhance community involvement at TFFC.

Accomplishments

Open to the public for 302 days in FY11, the Visitor Center provided a high quality visitor experience including facility tours (guided and self guided), workshops, distance learning opportunities and aquatic education classes. Also provided were support materials for the general public, teachers and students. In FY11 the center saw 57,044 visitors from 49 states and 12 foreign countries.

Provided quality hands-on fishing experiences for 31,098 visitors, with 338 receiving First Fish Awards.

Hosted the two-day, 2011 Wildlife Forever National State-Fish Art Contest Expo and Awards Ceremony, attended by student artists from 30 states.

Surveyed Texas State-Fish Art Contest participants to learn the impact of taking part in the contest; 76% reported becoming more interested in fishing.

Facilitated the annual Wetland Adventure, a two-day event involving over 75 Stephen F. Austin State University School of Education preservice teachers and hundreds of local school students.

TFFC provides an annual TAKS Academy for Athens ISD students, providing them intensive science education classes for all high school biology, fifth and eighth grade students. TFFC offers experiential activities to target school-identified weaknesses in standardized tests.

TFFC Facebook page established (currently more than 600 fans)

Toyota ShareLunker Facebook page established (currently more than 3,800 fans)

Had a successful Toyota ShareLunker season with 19 ShareLunkers donated:

- Seven identified as pure Florida largemouth bass
- Four spawned, producing 255,503 fry
- Stocked 171,265 fingerlings into six sites
- Stocked 7,449 advanced fingerlings (6-inch) into four study sites

Organization

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

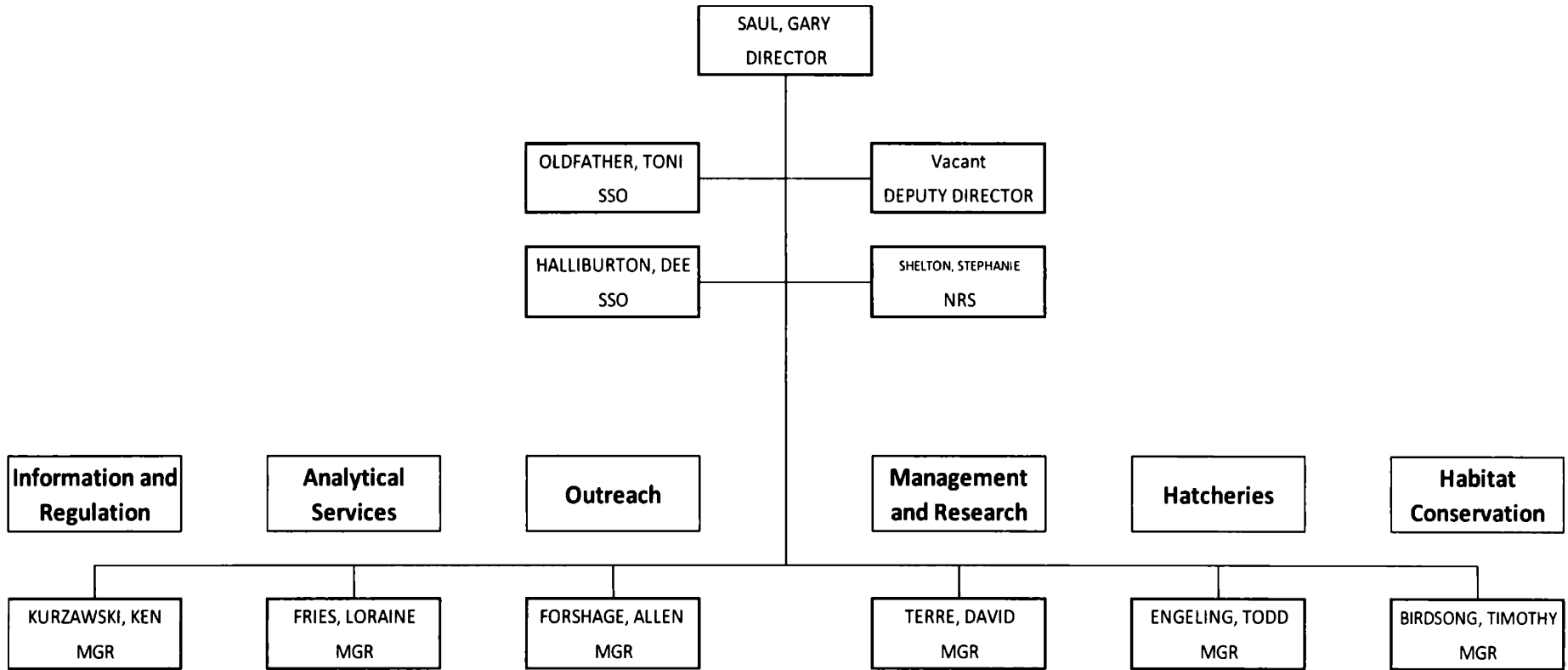
APPENDIX

Organization Charts

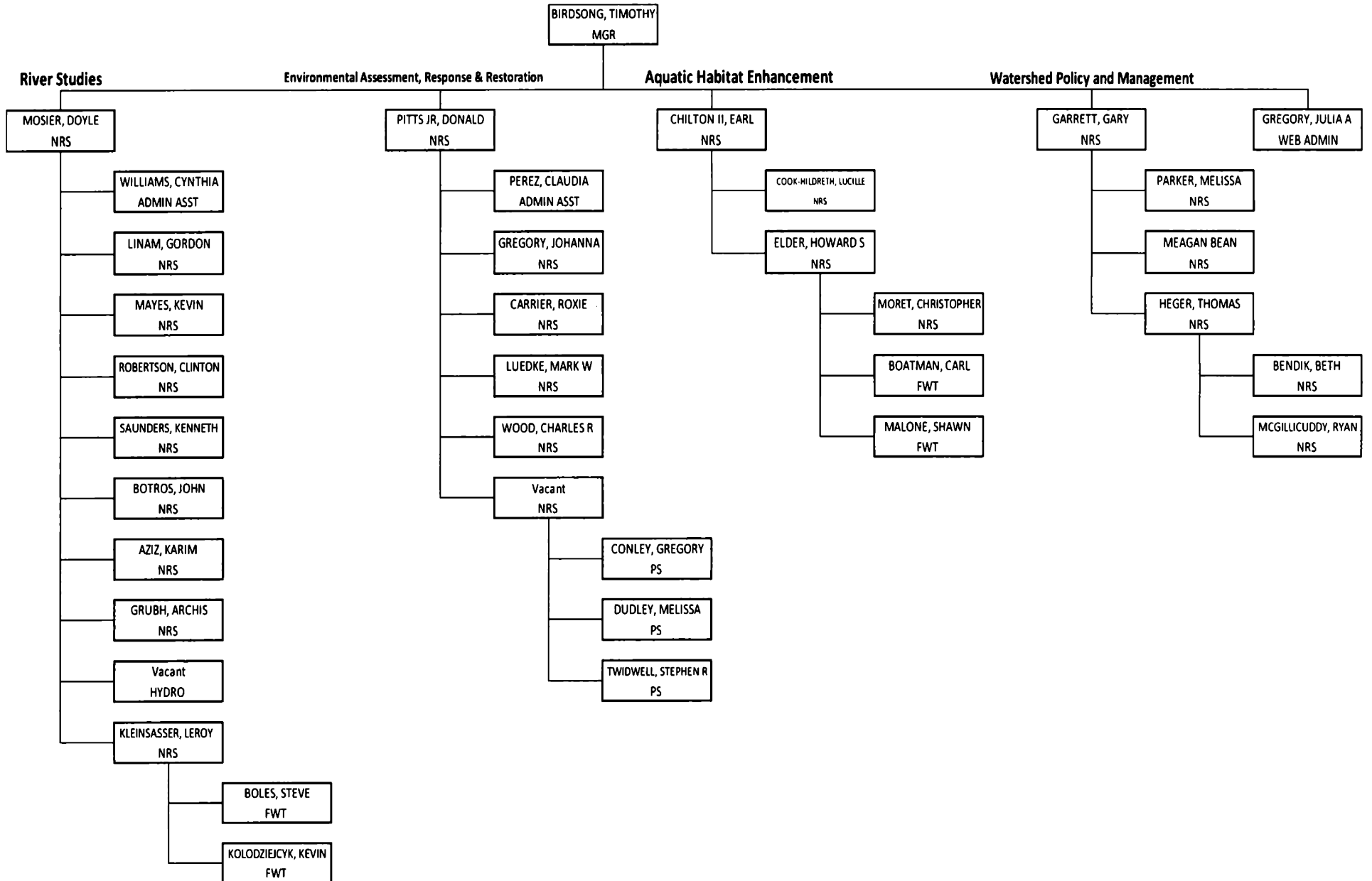
Legend

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

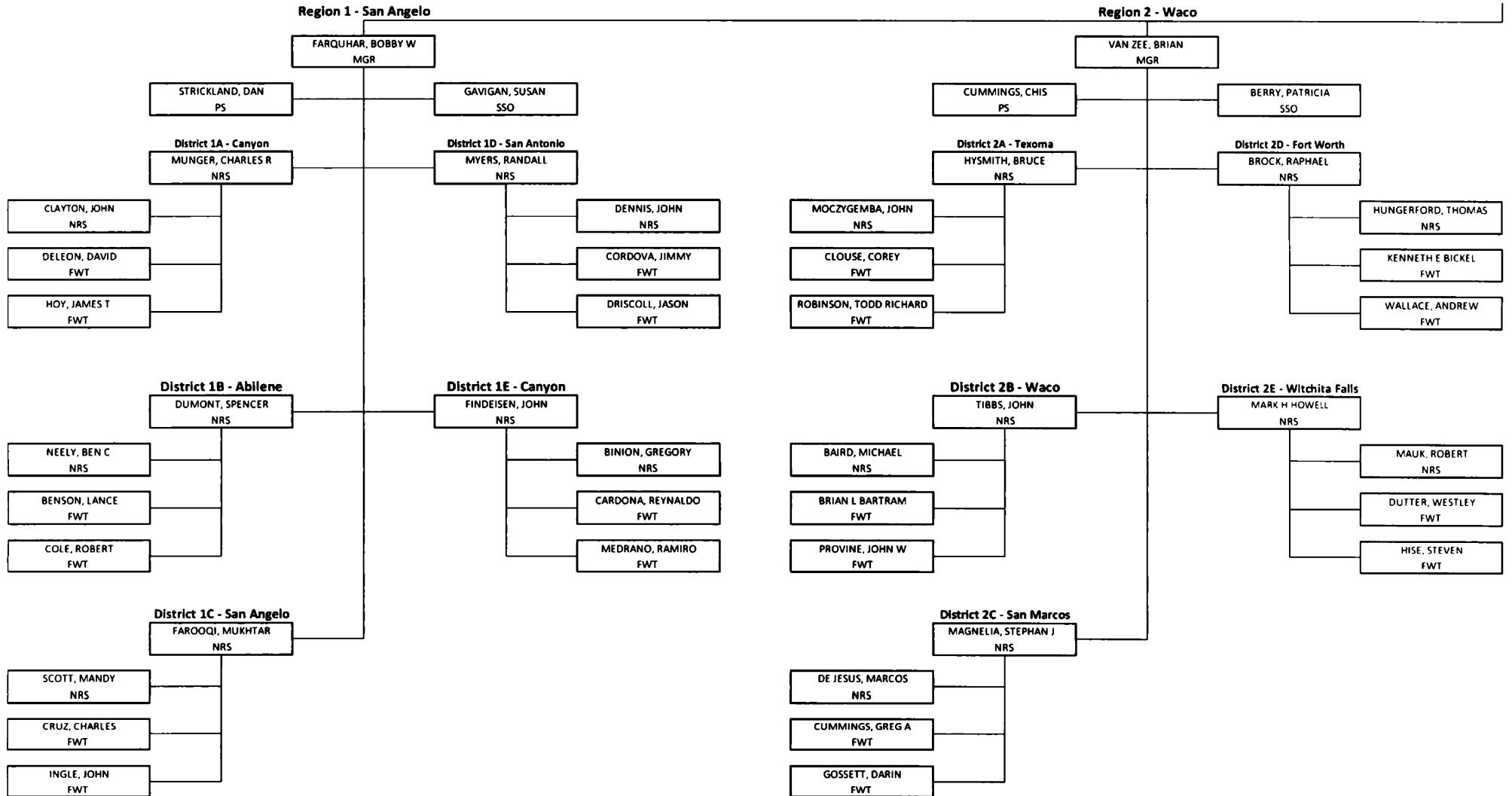
Inland Fisheries Administration



Habitat Conservation



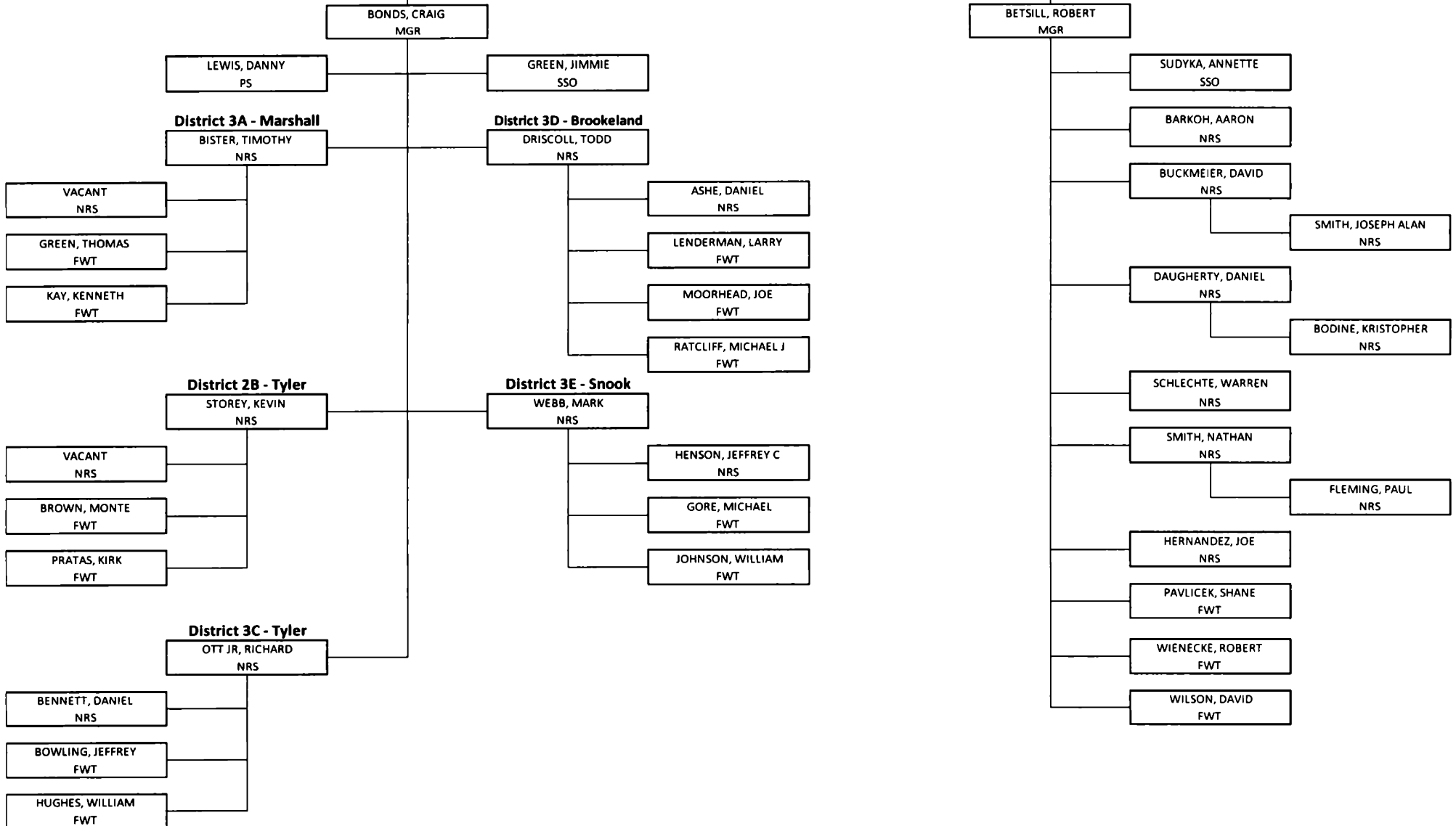
Fisheries Management and Research Regions 1 & 2



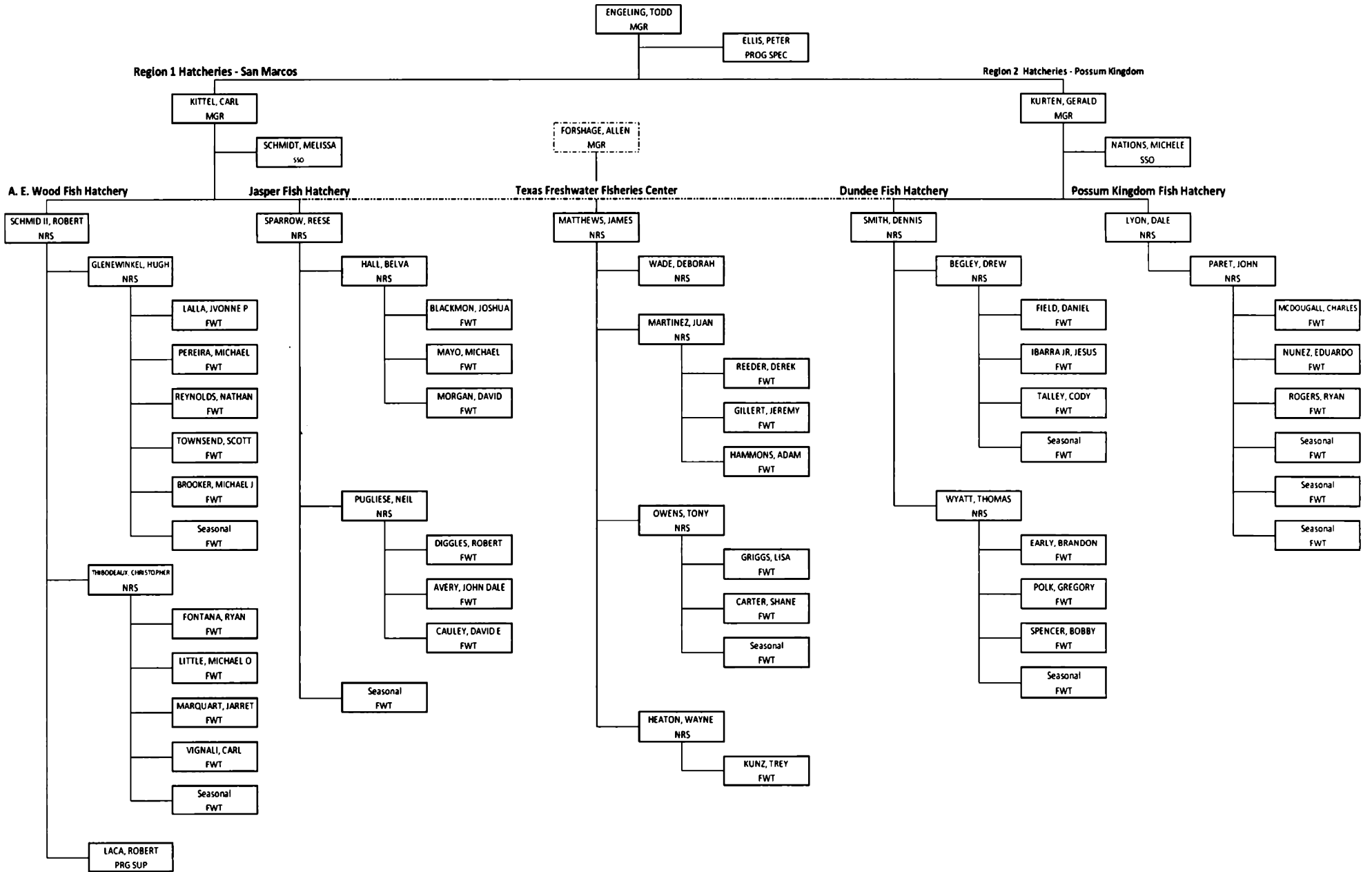
Fisheries Management and Research Region 3 & Heart of the Hills

Region 3 - Tyler

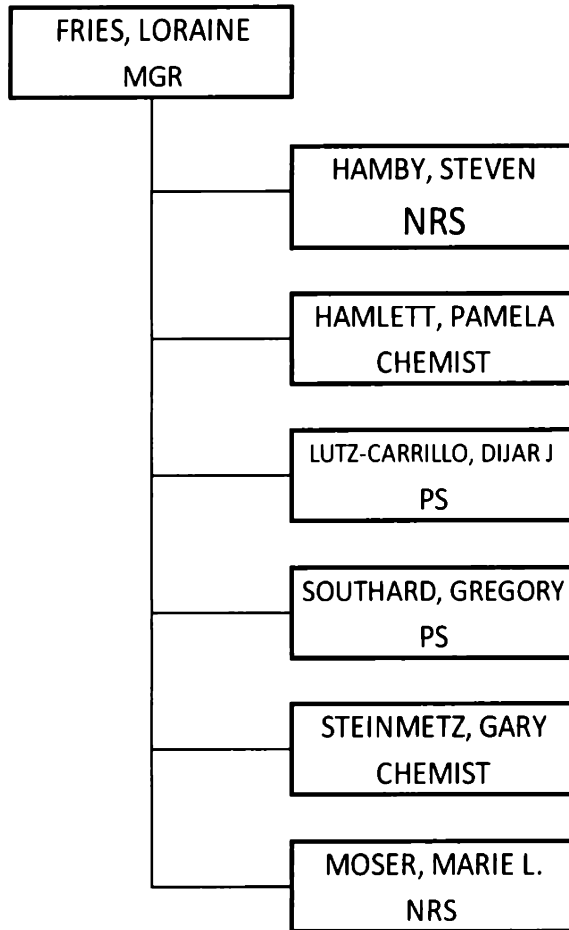
Heart of the Hills Fisheries Science Center



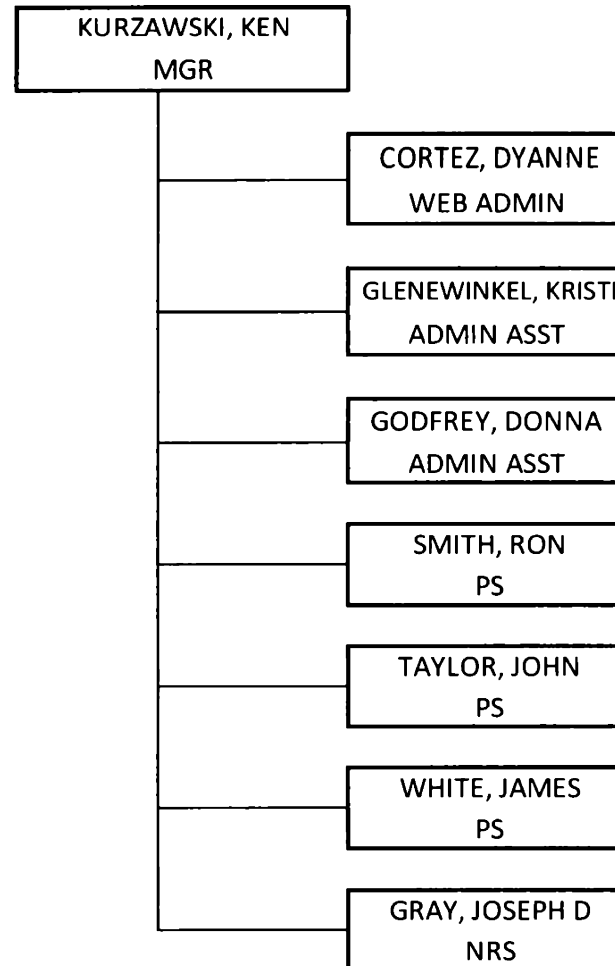
Hatcheries



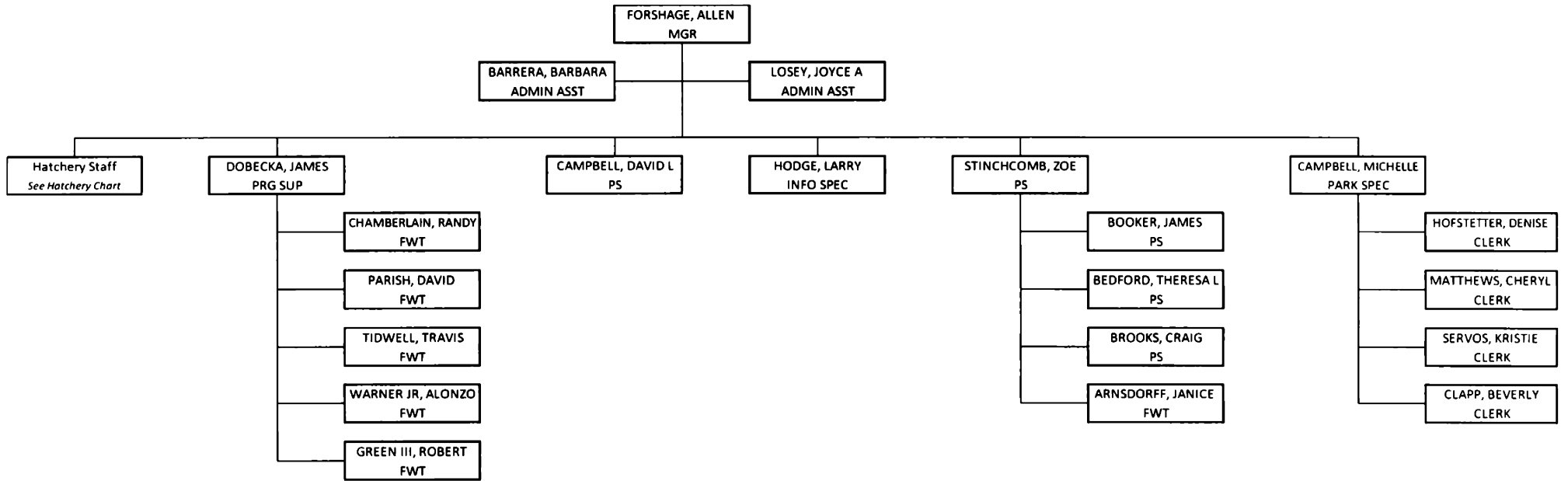
Analytical Services



Information and Regulations



Texas Freshwater Fisheries Center



Surveys Conducted in Public Waters

Reservoir Surveys

Reservoir	Size	Creel	Angler Access	Electrofishing	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
Abilene	595					X				
Alan Henry	2,884	X		X						
Amistad	63,680				X	X				
Amon G. Carter	1,540	X		X						
Aquilla	2,366			X	X	X	X			X
Archer City	52				X					X
Arlington	1,939		X	X	X	X				X
Arrowhead	14,969		X			X	X			
Athens	1,799		X				X			
Austin	1,599			X			X			
Bachman Lake (Dallas)	132		X	X	X	X				X
Bardwell	3,138			X	X					X
Bastrop	906		X	X	X		X			
Belton (Bell County)	12,385	X		X	X	X	X			
Benbrook	3,635			X						
Big Creek Lake	520		X							
Bob Sandlin	9,116					X	X			
Bonham City	1,020									X
Brady Creek Reservoir	2,020	X		X	X					X
Brandy Branch	1,257		X			X	X			
Brazos Lake	474			X	X		X			X
Bridgeport	11,954			X	X					
Bringle	199			X						
Brownwood	6,509			X						
Buchanan	22,211	X	X		X					
Buffalo Creek	1,576			X	X					X
Buffalo Springs	241			X	X					
Bullfrog Pond	1	X								
Caddo	27,472						X			
Calaveras	3,110					X				
Canyon	8,308		X				X			
Canyon SE Park	3	X								
Casa Blanca	1,680			X	X					
Cedar Creek Res.	32,623	X	X				X			
Champion Creek	1,560			X	X					X
Choke Canyon Reservoir	25,989	X	X	X	X	X	X			
Cisco	1,050					X				
Clear Lake	15						X			
Cleburne State Park	107			X						
Coleman	56			X						
Coleman City	2,000			X						
Coleto Creek Res.	3,100			X						
Colorado City	1,612			X	X				X	
Conroe	20,118			X			X			
Cooper	250									X
Cooper Reservoir	19,018		X			X	X			

Reservoir	Size	Creel	Angler Access	Electrofish	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
Crook	1,060			X	X					X
Cypress Springs	3,461		X	X	X	X	X			X
Davy Crockett	355	X		X						
E. V. Spence	14,640								X	
Eagle Mountain	8,505			X						
Fairfield	2,034			X	X					
Falcon	86,843	X		X						X
Fayette County	2,400		X				X			
Fort Parker SP	725			X	X	X	X			X
Fort Phantom Hill	4,213					X				
Gibbons Creek Reservoir	2,770	X		X	X					
Gilmer Reservoir	1,010			X			X			
Gladewater City	481						X			
Gordon	34	X			X					
Granger	4,009									X
Grapevine	6,892			X						
H-4	696		X				X			X
Halbert	531			X	X					X
Hawkins	634		X			X	X			
Hills Lake	40						X			
Holbrook	650			X			X			
Houston	10,459	X		X	X	X				
Houston County	1,330			X						
Hubbard Creek Res.	14,922					X				
Inks	768			X			X			
Jacksonville	1,208			X			X			
Joe Pool	7,470			X			X			
Kemp	15,104				X					
Kirby	740	X								X
Kurth	726	X		X	X					
Lady Bird	7		X				X			
Lake Corpus Christi	18,256			X	X					X
Lake Fork	27,264	X	X	X			X			
Lake Georgetown	1,297			X						
Lake O' the Pines	16,269	X	X	X	X	X	X			X
Lake Pflugerville	180			X			X			
Lake Wood	229		X				X			
Lavon	21,400			X	X					X
Leon	1,590			X	X		X			
Lewisville	29,592	X				X				
Livingston	83,277	X								
Lone Star	1,516			X	X		X			X
Lost Creek	368			X	X					X
Lyndon B. Johnson	6,502			X			X			
Mackenzie	896			X	X					
Marine Creek	250		X	X	X	X				X
Meadow Lake	59			X						
Medina	5,410				X					
Meredith	16,411	X		X	X					X

Reservoir	Size	Creel	Angler Access	Electrofish	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
Meridian SP	50			X						
Mill Creek Lake	237			X						
Millers Creek	1,794		X			X	X			
Mineral Wells	440			X	X					X
Monticello	2,001		X			X	X			
Moss	1,140			X	X					X
Moss Creek City	160								X	
Murvaul	3,397			X			X			
Nacogdoches	2,212	X		X			X			
Nacouiche	692			X			X			
Nasworthy	1,380			X	X					X
New Ballinger	500			X						
O. H. Ivie	19,149	X		X			X		X	
Oak Creek	2,375			X	X					X
Palestine	25,560				X					
Palo Duro Reservoir	2,413			X	X					X
Palo Pinto	2,399		X			X	X			
Petrolia City (Old)	36									X
Pinkston	447						X			
Placid	198			X						X
Possum Kingdom	15,588	X		X	X					X
Proctor	4,474			X	X					
Purtis Creek State Park	349		X	X			X			
Quitman	799		X				X			
Raven	204			X			X			
Ray Hubbard	22,745			X	X		X			
Richland-Chambers	41,356	X		X	X					X
Sam Rayburn	114,500	X	X	X	X	X	X			
San Augustine City	200			X	X		X			X
Sheldon	1,230						X			
Somerville	11,456				X					
Squaw Creek	3,297			X	X	X	X			
Stamford	5,124			X	X					
Sweetwater	630			X	X					
Tawakoni	37,879			X	X					
Teague	129			X						
Texana	9,727			X	X		X			X
Texoma	74,686				X					
Thompson Park	13	X			X					
Timpson	223						X			
Toledo Bend	181,600	X		X			X			
Travis	18,622		X	X	X					
TXU Contract Lake #1	110		X				X			
Tyler East	2,276	X	X		X		X			
Tyler West	2,224	X	X		X		X			
Victor Braunig	1,350	X		X						
Waco	8,465	X		X			X			
Walter E. Long	1,269		X	X	X					
Wheeler Branch Res.	180			X	X					X

Reservoir	Size	Creel	Angler Access	Electrofish	Gill Net	Habitat Survey	Veg Survey	Seine	Water Quality	Trap Net
White River Reservoir	1,418			X	X					X
White Rock Lake	1,088			X						
Wichita	1,224				X					X
Winnsboro	806			X	X					X
Worth	3,458	X	X	X	X	X				X
Totals	1,377,550	33	33	95	67	28	59	0	4	42

River and Stream Surveys

River Basin	Miles	Affected River Reach	Category	Objective	Methods
Brazos	80	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
Brazos	15	Brazos River	Habitat survey	Flight of unmanned aerial vehicle (UAV) to obtain high resolution imagery of study sites and associated riparian areas.	UAV mapping
Brazos	290	Middle and lower Brazos River	Instream flow survey	Developed flow-ecology relationships for fish to support instream habitat analysis	Seine, electrofishing, water quality, and hydrology sampling
Brazos		Upper Brazos River	Native fish conservation	Collected smalleye and sharpnose shiners threatened by extreme drought; maintain population at Possum Kingdom State Fish Hatchery for study and future repatriation efforts	Seine
Brazos	30.5	Proposed Cedar Ridge Reservoir project reach	Technical guidance and instream flow survey	Provided technical oversight and assistance in pre-impoundment instream flow survey	Technical review, seine, electrofishing
Colorado	2.6	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
Colorado-Lavaca	5	Upper Colorado, Concho, Llano, Pedernales, Lavaca, and Navidad rivers and Onion and Tres Palacios creeks	Hydraulic habitat survey	Collected data for instream habitat modeling for Colorado-Lavaca BBEST process; relates to Senate Bill 3	Surveying and hydrologic assessment
Cypress	0.2	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
Guadalupe	7.5	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
Guadalupe	0.5	Lower Canyon Reservoir gorge	Habitat restoration	Proposal submitted to U.S. Army Corps of Engineers for reducing potential for sediment and heated water transfer into the Canyon Reservoir tailrace	Technical guidance
Guadalupe	11	Canyon Reservoir tailrace	Habitat restoration	Proposal submitted to map instream habitat using sidescan sonar to guide habitat improvement projects for rainbow trout	Geo-referenced sidescan sonar mapping
Guadalupe	4.4	San Marcos River to confluence with Blanco River	Native aquatic species conservation	Evaluated effects of non-native suckermouth catfish and native big claw freshwater shrimp (<i>Macrobrachium carcinus</i>) on stream ecosystem functioning	Snorkeling and experimental cages
Guadalupe	10	Upper Blanco River	Native fish conservation	Removed smallmouth bass and smallmouth x Guadalupe bass hybrids to begin reintroduction process of pure Guadalupe bass	Seine and electrofishing
Guadalupe	11	Canyon Reservoir tailrace	Sportfish enhancement	Determined movement and habitat utilization of stocked rainbow trout to guide fisheries management actions	Radio telemetry

River Basin	Miles	Affected River Reach	Category	Objective	Methods
Guadalupe	11	Canyon Reservoir tailrace	Sportfish enhancement	Documented oversummer survival of rainbow trout	Electrofishing
Guadalupe/San Antonio	9	Sites located near Cuero, Westhoff, Spring Branch, Luling, Wimberley, Comfort, Bandera, San Antonio, and Refugio	Hydraulic habitat survey	Collected data for instream habitat modeling for Guadalupe-San Antonio BBEST process; relates to Senate Bill 3	Surveying and hydrologic assessment
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
Lavaca	0.25	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
Llano	4	South Llano River from South Llano River State Park to the Texas Tech University Field Station	Habitat survey	Conducted habitat surveys to support development of restoration plan at South Llano River State Park	Seine, geo-referenced mapping, and riparian assessment
Llano	23	South Llano River from headwaters to Junction, TX	Native fish conservation	Completed genetic survey and began restoration efforts for Guadalupe bass	Stocked 175,000 pure Guadalupe bass fingerlings
Neches	93	Pine Island Bayou	Biological, habitat, and water quality survey	Conducted a study to evaluate the current aquatic life use	Seine and electrofishing
Neches	26.4	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
Neches		Neches River	Native aquatic species conservation	Evaluated hydrologic and geomorphic controls on fish, mussel, and riparian vegetation communities	Seine, electrofishing, riparian, and geomorphic assessment
Neches		Proposed Columbia Reservoir project reach	Technical guidance	Developed proposed methodology for determining compensatory mitigation requirements for Columbia Reservoir project	Technical guidance
Neches	0.3	Neches River	Fisheries Management	Determine composition of fish community	Electrofishing
Northeast Texas		Northeast Texas	Technical review	Evaluated stream and wetland mitigation bank proposals in northeast Texas as a part of the Interagency Review Team	Technical review
Nueces	8	Headwaters of the Sabinal River	Exotic species management	Coordinated with the Nueces River Authority, private land owners and other state agencies to implement multiple <i>Arundo donax</i> eradication techniques	Herbicide, and mechanical treatment
Nueces	55	Headwaters of the Nueces from Uvalde to Zavala Counties	Exotic species management	Coordinated with the Nueces River Authority, private land owners and other state agencies to implement multiple <i>Arundo donax</i> eradication techniques	Herbicide, and mechanical treatment
Nueces	8	Upper headwaters of the Sabinal River	Exotic species management	Collected basic information on several test plots of <i>Arundo donax</i> prior to and up to one year after a variety of herbicide applications to determine effectiveness	Quantitative assessment
Nueces	1.5	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

River Basin	Miles	Affected River Reach	Category	Objective	Methods
Nueces	1.5	Nueces River at Laguna and Three Rivers and Frio River	Hydraulic habitat survey	Collected data for instream habitat modeling for Nueces BBEST process; relates to Senate Bill 3	Surveying and hydrologic assessment
Red	49.6	Wichita River	Biological, habitat, and water quality survey	Evaluated potential effects of a desalinization project on fish assemblages and water quality	Seine, hoop net, water quality, and invertebrate sampling
Red	8.6	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	0.5	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
Rio Grande		Alamito Creek	Habitat restoration	Developed native fish habitat restoration project and acquired funding through DFHP	Technical guidance
Rio Grande	6	Pecos and Devils rivers and Independence Creek	Hydraulic habitat survey	Collected data for instream habitat modeling for Upper Rio Grande BBEST process; relates to Senate Bill 3	Surveying and hydrologic assessment
Rio Grande		McKittrick Creek	Native fish conservation	Evaluated reintroduction feasibility of Rio Grande cutthroat trout	Seine and visual assessment
Rio Grande		Alamito Creek	Native fish conservation	Collected and analyzed undescribed fish species from Big Bend Ranch State Park	Seine, genetics assessment
Rio Grande		Lower Rio Grande	Native fish conservation	Reintroduced Rio Grande silvery minnows and conducted regional fish assemblage collections	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	4.6	Pinto Creek	Native fish conservation	Evaluated habitat utilization and variables affecting reproduction of the Devils River minnow	Electrofishing, seining, geo-referenced aerial mapping
Rio Grande		Lower Rio Grande	Technical guidance	Participated on panel to assess values of the Rio Grande Wild and Scenic River	Technical guidance
Sabine	14.9	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
San Antonio	0.25	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
San Antonio	282	Lower San Antonio River	Instream flow survey	Developed flow-ecology relationships for fishes and developed interim report including instream flow recommendations	Seine, electrofishing, water quality, and hydrology sampling

River Basin	Miles	Affected River Reach	Category	Objective	Methods
San Antonio	5	Lower San Antonio River	Native aquatic species conservation	Determined general abundance, distribution, and species composition of native mussels at the five instream flow study sites on the lower San Antonio River and lower Cibolo Creek	Quantitative mussel survey
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	32.1	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
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
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	Electrofishing and seines
Statewide		Cibolo Creek, Leon Creek, Keys Creek, San Marcos River	Habitat restoration	Planned habitat restoration and flood abatement projects initiated by US Army Corps of Engineers	Technical guidance
Statewide		50 acres riparian, 30 acres freshwater wetland, and 200 acres estuarine wetland	Habitat restoration	Monitored habitat construction projects to ensure success criteria were met	Technical review
Statewide		Statewide	Outreach	Provided technical guidance to schools participating in Service Learning Texas' Healthy Habitats Program	Technical guidance
Statewide		Lockhart, Utopia, San Marcos, San Antonio, and several in the Pedernales River watershed	Outreach	Provided information and technical guidance to landowners on value of proper watershed and riparian management to the overall function and sustainability of rivers and streams	Workshop and technical guidance
Statewide		Statewide	Outreach	Hosted workshop to identify potential actions needed to address drought impacts on fish and mussels	Workshop
Statewide		Statewide	Outreach	Developed presentations and technical material to present at landowner watershed workshops	Workshop
Statewide		Statewide	Outreach	Developed website to disseminate watershed conservation best management practices	Website
Statewide		Statewide	Outreach	Provided public information on river and stream ecosystems at the Toyota Texas Bass Classic	Display booth
Statewide		Statewide	Outreach	Hosted cross divisional training workshop aimed at enhancing knowledge of stream functions in aquatic and riparian areas	Workshop
Statewide		Statewide	River recreation enhancement and outreach	Developed new paddling trails to educate public on fishing, wildlife, conservation, safety, and etiquette while on streams and rivers	Riparian and habitat surveys, geo-referenced mapping

River Basin	Miles	Affected River Reach	Category	Objective	Methods
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, Colorado-Lavaca, Brazos, and Guadalupe-San Antonio 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		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		Lampasas River, Alligator and Geronimo creeks, upper Cibolo Creek	Watershed protection	Served as technical guidance in the watershed protection planning process	Technical guidance

Stocking Reports

Inland Fisheries Hatchery Stockings by Species

<u>Species</u>	<u>Adult</u>	<u>Fingerling</u>	<u>Fry</u>	<u>Total</u>
Blue catfish		110,440		110,440
Bluegill		338,552		338,552
Channel catfish	229	487,757	122,248	610,234
Florida largemouth bass	170	10,147,975	1,127,583	11,275,728
Guadalupe bass		168,338		168,338
Largemouth bass		241,003		241,003
Palmetto bass (striped x white bass hybrid)		1,324,507		1,324,507
Rainbow trout	305,148			305,148
Red drum		1,794,816		1,794,816
ShareLunker largemouth bass		177,646		177,646
Smallmouth bass		312,181		312,181
Striped bass		50,687		50,687
Walleye			3,772,650	3,772,650
Walleye x Sauger		105,549	131,000	236,549
Triploid grass carp		1,800		1,800
Grand Total	305,547	15,261,251	5,153,481	20,720,279

Waterbody	Blue catfish	Bluegill	Channel catfish	Florida Largemouth bass	Guadalupe bass	Largemouth bass	Palmetto Bass	Rainbow trout	Red drum	ShoreLunker Largemouth Bass	Smallmouth bass	Striped bass	Sunshine Bass	Threadfin shad	Walleye	Walleye X Sauger	Gizzard shad	Triploid grass carp	Redbreast sunfish	Redear sunfish	White crappie	Total
Worth				173,982																		173,982
Hubbard Creek Reservoir				373,397																		373,397
Tyler East				115,650																		115,650
Pat Mayse				298,130																		298,130
Ratcliff				6,224																		6,224
TXU Contract Lake #1																	475					475
South Llano River					168,338																	168,338
Cryan Memorial Park Pond						200																200
Shenandoah (Duncanville)						317																317
Bedford Boys Ranch						2,400																2,400
Ninnie Baird Park (Ft. Worth)						510																510
Lake Findley							1,840															1,840
Bridgeport							59,931															59,931
Mackenzie							2,039															2,039
Cedar Creek Reservoir							101,341															101,341
Fort Phantom Hill							29,498															29,498
Palestine							101,611															101,611
Graham							18,343															18,343
Medina							28,180															28,180
Palo Pinto							18,169															18,169
Benbrook							44,990															44,990
Beal Park Lake								3,274														3,274
Unidentified Public Water Body								1,070														1,070
Paluxy River								1,021														1,021
Landmark Inn State Park								1,002														1,002
Whitney Tailrace											9,985											9,985
Stillhouse Hollow											23,242											23,242
Kirby																23,919						23,919
Bonham State Park Lake			1,630																			1,630
Mineral Wells			11,163																			11,163
75-Acre Lake		8,019	925																			8,944
John Randolph Wheeler Park			100																			100
Bright Lake			1,944																			1,944
Meadow Lake (Round Rock)			1,541																			1,541
Round Rock City			933																			933
Taylor Regional Park Lake		36				37													52	34		159

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	Walleye X Sauger	Gizzard shad	Triploid grass carp	Redbreast sunfish	Redear sunfish	White crappie	Total	
Purtis Creek State Park			14,741							1,720													16,461
Community Park Pond			552																				552
Ben Ficklin			1,213																				1,213
Lone Wolf Lake			1,310																				1,310
Five Mile Dam			1,228																				1,228
Southeast Park			1,185																				1,185
Display Pond			159																				159
Metcalf			1,281																				1,281
Picnic Pond			528																				528
Spring Lake (Contract Lake)										556													556
Fort Worth Hatchery										100													100
Grand Total	110,440	338,934	610,759	11,275,728	168,338	241,795	1,324,507	305,148	1,794,816	177,646	312,181	50,687	42,500	44,300	3,772,650	236,549	475	7,200	120	71	113	20,814,957	

Research and Special Projects

Heart of the Hills Fisheries Science Center

Dan J. Daugherty and Nathan G. Smith

Title: Modeling effects of year-class frequency and life history on sport fishery metrics

Objective: Determine the effect of the frequency of strong year-classes on fishery characteristics for three life-history strategies of fishes (short-, intermediate- and long-lived) using simulation modeling of three model sport species.

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

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.

Dan J. Daugherty

Title: Determination of critical habitat characteristics for age-0 flathead catfish

Objective: Determine habitat selection preferences and requirements of age-0 flathead catfish for promotion of growth and survival.

David L. Buckmeier, Dan J. Daugherty, and Peter Sakaris (Southern Polytechnic University)

Title: Validation of daily ring deposition in the otoliths of age-0 blue and flathead catfish

Objectives: To (1) develop techniques for estimating daily ages from age-0 blue and flathead catfish otoliths and (2) validate daily ring formation in these species.

Warren Schlechte, Dave Buckmeier – contract with Kevin Hunt (Mississippi State University).

Title: Survey of Texas' catfish anglers

Objectives: (1) Determine angler types and management preferences of Texas' catfish anglers

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

Title: Seasonal movement and habitat use of alligator gar and striped bass in the Trinity River

Objective: 1) Determine seasonal movement and habitat use of alligator gar and striped bass in the lower Trinity River and 2) identify alligator gar spawning areas in the lower Trinity River.

David L. Buckmeier

Title: Gar age validation and tag retention

Objectives: To 1) Validate annulus formation in otoliths, scales, and pectoral fin rays in gar and 2) Document retention of PIT (passive integrated transponder), CWT (coded wire tag), and Floy T-bar tags in gar for at least one year.

Nate 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 to river and reservoir fish communities

Objectives: 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.

Doyle Mosier, David L. Buckmeier, Warren Schlechte, and Tim Bonner

Title: Evaluation of stream flow and habitat availability for Devil's River minnow in Pinto Creek

Objective: Assess the instream flow needs of the Devil's River minnow in Pinto Creek.

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 and 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.

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, Steven Hamby, and Warren Schlechte

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.

Jvonne Lalla, Chris Thibodeaux, and Hugh Glenewinkel

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

Dale D. Lyon, Aaron Barkoh, and Weber Pires, Jr.

Title: Enumeration of Florida largemouth bass fry: an index for gravimetric estimation of numbers.

Objectives: 1) verify the accuracy of the Jensorter fry counter for enumeration of FLMB fry, 2) document the validity of the current gravimetric index of 275 fry/g used for estimating numbers of largemouth bass fry, or to provide more reliable estimates, if possible.

Staff

Title: Performance of wild stock and Imperial stock channel catfish fingerlings in hatchery ponds.

Objectives: Determine differences in growth rate, feed conversion and survival between native wild and Imperial strain channel catfish fingerlings during routine culture of 229-mm fingerlings.

Staff

Title: Evaluation of two strategies using ammonium sulfate to control *Prymnesium parvum* in striped bass fingerlings production ponds.

Objective: Determine which of two strategies better controls *P. Parvum* and improves water quality and fish production.

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 and 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.

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.

Gerald L. Kurten, Aaron Barkoh, Thomas Wyatt, Hugh Glenewinkel, and John M. Paret

Title: **Effect of water exchange on fish production and water quality in nine-inch channel catfish fingerling production ponds.**

Objectives: Determine the effect of conservative water use and liberal water use on fish production, incidence and severity of disease, water quality, and production costs.

Thomas Wyatt, Aaron Barkoh, and J. Warren Schlechte

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

Objectives: Estimate the 96-h LC₅₀ of NH₃-N for striped bass fry and fingerlings, determine the maximum concentrations of NH₃-N (concentrations at which 89% of the fish survives) that striped bass fry and fingerlings can tolerate for 96 h at select pH and temperature, and determine the no-effect-levels (NOEL) of NH₃-N for striped bass fry and fingerlings.

Aaron Barkoh, Drew C. Begley, Dennis G. Smith, Gerald L. Kurten, Loraine Fries, and Warren Schlechte

Title: **Evaluation of SolarBee® solar-powered water circulation (SPC) to control *Prymnesium parvum* blooms and toxicity in fish hatchery ponds**

Objectives: Determine if *P. parvum* cells and ichthyotoxicity are eliminated or significantly reduced in ponds with SPC and to identify the ecological factors responsible for the control, (2) evaluate the effects of SPC on the diversity and population densities of the algal community (phytoplankton) and zooplankton.

Drew C. Begley, Gerald Kurten, Aaron Barkoh, and Loraine T. Fries

Title: **Combined nitrogen and phosphorus fertilization for controlling *Prymnesium parvum* toxicity in fish culture ponds.**

Objectives: Evaluate two fertilization regimens of nitrogen and phosphorus (300N:30P and 300N:60P three times weekly) for efficacy in reducing dominance and toxin production by *P. parvum* in limnocorrals placed in a pond at the Dundee fish hatchery.

Drew Begley and Ryan Rogers

Title: **Standardization of aluminum sulfate (alum) treatments to control pH in *Morone spp.* fingerlings production ponds.**

Objective(s): (1) Determine the phenolphthalein alkalinities of pond waters at Dundee and Possum Kingdom State Fish Hatcheries, and (2) Determine the effectiveness of alum treatments in lowering pH and the time required for pH to return to pretreatment levels, and estimate the alum concentration required to decrease pH by 0.5 in 24 h. Verify the 1:1 relationship between phenolphthalein alkalinity and alum treatment rate.

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.

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*.

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.

Contaminants Lab

Pamela Hamlett and John Tibbs

Title: Organic screening of blue catfish for pharmaceuticals in liver and brain tissue.

Objectives: Determine presence of anthropogenic chemicals in blue catfish

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.

Spencer Dumont

Title: **Assessment of population genetic composition of Age-0 versus adult largemouth bass.**

Objectives: Determine if genetic composition from samples of age-0 largemouth bass is an accurate and precise representation of genetic composition of adult largemouth bass.

Ben Neely and Spencer Dumont

Title: **Determination of angler attitudes and perceptions on blue catfish management and implications for system-specific management.**

Objectives: Determine the proportion of anglers in the Abilene area who specifically fish for blue catfish. Determine an angler-accepted size for trophy blue catfish in the Abilene area. Determine if area anglers would accept more stringent blue catfish harvest regulations. Make recommendations for future blue catfish management in area fisheries.

Robert Cole

Title: **Seasonal distribution and movement of saugeye in Kirby Reservoir, Texas.**

Objectives: 1) Determine saugeye seasonal and diel distribution and habitat preferences in Kirby Reservoir using ultrasonic tags; 2) Determine if dissemination of information regarding saugeye seasonal distribution and habitat preference increases angler success and directed effort for saugeye.

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.

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.

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.

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-weighted 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.

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 Dan Daugherty

Title: Comparison of lighted and unlighted trap nets for increasing efficiency of crappie sampling.

Objectives: Determine efficacy of lighted fish attractors to increase catch rates of crappie. Compare size of fish caught in lighted and unlighted trap nets.

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.

Brian L. Bartram

Title: Factors affecting blue catfish populations in Texas reservoirs.

Objective: Determine the factors that allow for populations of blue catfish to exist in Texas reservoirs.

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.

Mark Howell

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.

Stephan Magnelia

Title: Survival and movement of recently-stocked and resident rainbow trout in the Canyon Reservoir tailrace.

Objectives: 1) Determine persistence/survival and emigration of recently Stocked and resident rainbow trout above and in the special regulation area of the Canyon Reservoir tailrace. 2) Determine meso- and/or microhabitat preferences of recently stocked and resident rainbow trout.

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.

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 cooperative work relationships between sponsoring organizations, area businesses, local fishing guides, and Lake Fork anglers; 3) Use angler catch data to help publicize, promote, and educate anglers about trophy bass fishing opportunities at Lake Fork Reservoir; and 4) Use angler catch data, in conjunction with results of standardized population and creel surveys, to monitor trends in Lake Forks Largemouth bass fishery and to help evaluate management programs.

Mark Webb

Title: Texas Parks and Wildlife habitat establishment initiative.

Objectives: 1) Determine aquatic plants suitable for habitat enhancement in Texas reservoirs; 2) develop techniques for establishing founder colonies in Texas reservoirs; and 3) monitor survival, growth and spread of founder colonies.

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.

Presentations, Articles and Publications

Technical Presentations

- Barkoh, A., T. Wyatt, W. Schlechte, and G. Kurten. 2011. Refining un-ionized ammonia treatments for golden algae control in striped bass fingerling production ponds. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 10.
- Barkoh, A., T. Wyatt, W. Schlechte, and G. Kurten. 2011. Ammonia Tolerance by juvenile striped bass. Presented at the Annual Mid-Continent Workshop, Ashland, Nebraska, February 7.
- Barkoh, A. and G. Southard. 2011. A monster killer that got its way: a microalga that invaded Texas. Invited presentation at the Marine Ecology Department, Linnaeus University, Kalmar, Sweden, May 23.
- Birdsong, T.W. 2011. The Big Picture for Fish Habitat Conservation: Moving the Needle in Texas through Collaboration at Regional and National Scales. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas.
- Birdsong, T., M. Bean, and S. Robinson. 2010. Application of the National Fish Habitat Assessment as a Conservation Planning Tool in the Southeastern US. Presented at the Annual Meeting of the American Fisheries Society, Pittsburgh, Pennsylvania.
- Birdsong, T., D. Krause, J. Leitner, J. Long, S. Robinson, S. Sammons, J. Sedell. 2010. Cooperative Conservation of Endemic Black Bass Species in the Southeastern US. Presented at the Annual Meeting of the American Fisheries Society, Pittsburgh, Pennsylvania.
- Binion, G. R., D. J. Daugherty, J. W. Schlechte, R. A. Ott, Jr., and T. J. Bister. 2011. Efficacy of a light attractant for increasing trap net catches of crappies. Presented at the Annual Meeting of the Southern Division of the American Fisheries Society, Tampa, Florida, January 15.
- Bonner, T., T. Hardy, K. Mayes, and C. Robertson. 2011. Calculating habitat suitability for Texas fishes from expert perception: a request for participation. Poster presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 11.
- Buckmeier, D. L., N. G. Smith, J. W. Schlechte, and A. M. Ferrara. 2011. Population dynamics of alligator gar in the Trinity River, Texas. Presented at the Annual Meeting of the Southern Division of the American Fisheries Society, Tampa, Florida, January 15.
- Buckmeier, D. L., N. G. Smith, J. W. Schlechte, and A. M. Ferrara. 2011. Population dynamics of alligator gar in the Trinity River, Texas. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 11.
- Buckmeier, D. L., N. G. Smith, J. W. Schlechte, and A. M. Ferrara. 2011. Population metrics of alligator gar in the Trinity River, Texas. Presented at the Meeting of the Alligator Gar Technical Committee of the Southern Division of the American Fisheries Society, Dyersburg, Tennessee, May 25.
- Chilton, E.W., II. 2010. Revisions to exotic aquatic plant regulations in Texas. Presented at the annual meeting of the International Water Gardening Society, San Angelo, Texas, September 17.

- Chilton, E.W., II. 2010. Algae and the Implementation of revisions to exotic aquatic plant regulations in Texas. Presented at the annual meeting of the Algal Biomass Organization, Phoenix, Arizona, September 29.
- Cook-Hildreth, S.L., E.W. Chilton, and L. Robinson. 2011. Increased urbanization could provide opportunity for increased aquatic exotic releases: Impacts to industry and pro-active measures taken at a state and national level. Presented at the Urban Wildlife Conference, Austin, Texas. May 24.
- Forshage, A. C. C. Bonds, T. Owens, and J. G. Martinez. 2011. Short-term survival in the wild of advanced Florida largemouth bass fingerlings reared in hatchery ponds on artificial or natural food. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 12.
- Garrett, G.P., R.J. Edwards and N. Allan. 2011. Desert Fishes Research and Management in Texas During 2010. Presented at the Annual meeting of the Desert Fishes Council, Moab, Utah, November 18.
- Hutt, C., K. Hunt, J. W. Schlechte and D. L. Buckmeier. 2011. A stated choice analysis of Texas catfish angler fishing trip preferences. Presented at the Annual Meeting of the Southern Division of the American Fisheries Society, Tampa, Florida January 15.
- Hysmith, B. T., J. H. Moczygema, R. Myers, M. Allen, and T. Driscoll. 2011. Impacts of tournament mortality on a Texas largemouth bass fishery. Presented at the Annual Meeting of the Southern Division of the American Fisheries Society, Tampa, Florida, January 15.
- Kurten, G., T. Wyatt, A. Barkoh, H. Glenewinkel, and J. Paret. 2011. A evaluation of liberal and conservative water use in fingerling channel catfish production pond. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 10.
- Littrell, B., E. Oborny, K. Mayes, G. Linam, C. Robertson, and D. Geeslin. 2011. Developing fish habitat suitability criteria for the lower San Antonio River basin. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 12.
- Lutz-Carrillo, D. J. and N. Rathjen. How do largemouth bass determine sex? Annual conference of the American Fisheries Society. Pittsburgh, Pennsylvania, September 13.
- Lutz-Carrillo, D. J. and N. Rathjen. How do largemouth bass determine sex? Annual conference of the Texas Chapter of the American Fisheries Society. San Marcos, Texas, February 11.
- Mayes, K., T. Hardy, J. Botros, C. Robertson, B. Littrell, and K. Aziz. 2011. Using envelope curves to derive fish habitat suitability indices for instream assessments. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 12.
- Mayes, K. 2011. Socio-political and technical challenges of establishing environmental flows in Texas. Presented at the 96th Annual Meeting of the Ecological Society of America, Austin, Texas, August 8.

- Munger, C. R. 2011. Harvest and survival of channel catfish in Community Fishing Lakes. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 12.
- Neely, B. C. and S. C. Dumont. 2011. Angler attitudes and opinions concerning blue catfish management on a local scale. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 11.
- Opdyke D., K. Mayes, C. Loeffler, J. Botros, and C. Robertson. 2011. The Texas environmental flows process: you can't always get what you want, but sometimes you get what you need. Presented at FLOW 2011 Conference, Nashville, Tennessee, May 2.
- Schlechte, J. W., D. L. Buckmeier, K. Hunt, C. Hutt, B. Neely, S. Dumont, J. Tibbs, and J. Leitz. 2011. Surveying Texas' freshwater catfish anglers. Presented at the Annual Meeting of the Southern Division of the American Fisheries Society, Tampa, Florida January 15.
- Schlechte, J.W., D. L. Buckmeier, Kevin Hunt, Cliff Hutt, and Jeremy Leitz. 2011. Surveying Texas' freshwater catfish anglers. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 11.
- Smith, J. A., P. Fleming, K. Bodine, and D. Buckmeier. 2011. Importance of river-reservoir connectivity for migratory reservoir fishes. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 11.
- Smith, J. A., P. Fleming, K. Bodine, and D. Buckmeier. 2011. Importance of river-reservoir connectivity for migratory reservoir fishes. Presented at the Annual Meeting of the Southern Division of the American Fisheries Society, Tampa, Florida, January 15.
- Sutton, T. M. and D. J. Daugherty. A decision-support tool for sturgeon rehabilitation strategies: implications for restoration of Danube River sturgeons. 2011. Presented at the International Conference on Conservation, Recovery, and Sustainable Use of Sturgeons of the Danube River, Tulcea, Romania, March 30.
- Terre, D. R., M. Webb and C. Bonds. 2010. The San Jacinto River Watershed Management Initiative: A Model for Integrated Resource Management and Outreach. Presented at the Annual Meeting of the North American Lake Management Society, Oklahoma City, Oklahoma, November 4.
- Tibbs, J., T. Hungerford, and R. A. Ott, Jr. 2011. Attitudes, opinions, and economic impact of jug-line anglers on three Texas reservoirs. Presented at the Annual Meeting of the Texas Chapter of the American Fisheries Society, San Marcos, Texas, February 11.
- VanLandeghem, M., M. Farooqi, B. Farquhar, G. Southard, and R. Patiño. 2010. The Relationship between Water Quality and Toxic Golden Alga Blooms in Reservoirs of the Upper Colorado River, Texas. Presented at the Chihuahuan Desert Conference, El Paso, Texas. November 13.

VanLandeghem*, M., Farooqi, M., Farquhar, B., Southard, G., and R. Patiño. 2011. Relationships between Water Quality and Toxic Golden Alga Blooms in Reservoirs of West Texas. Presented at the Texas Chapter of the American Fisheries Society Annual Meeting, San Marcos, Texas. February 11.

Webb, M. 2011. Native vegetation restoration at Lake Conroe: a model for a cooperative management program. Presented at the Annual Meeting of the Utah Chapter of the American Fisheries Society, Salt Lake City, Utah, March 21.

Webb, M. 2010. Native vegetation restoration at Lake Conroe: a model for a cooperative management program. Presented at the Reservoir Fisheries Habitat Partnership Annual Meeting, Conroe, Texas, September 30.

Scientific Publications & Reports

Barkoh, A., D. C. Begley, D. G. Smith, G. L. Kurten, L. T. Fries, and J. W. Schlechte. 2011. Can solar powered circulation control *Prymnesium parvum* blooms and toxicity in fish hatchery ponds? *Harmful Algae* 10:173-180.

Barkoh, A., Drew C. Begley, Dennis G. Smith, Gerald L. Kurten, Loraine L. Fries, and J. Warren Schlechte. 2010. Evaluation of solar powered water circulation for controlling *Prymnesium parvum* blooms and toxicity in fish hatchery ponds. *Management Data Series* 261.

Barthel, B. L., D. J. Lutz-Carrillo, K. E. Norberg, W. F. Porak, M. Tringali, T. W. Kassler, W. E. Johnson, A. M. Reader, R. A. Krause, and D. P. Philipp. 2010. Genetic relationships among populations of Florida bass. *Transactions of the American Fisheries Society* 139:1615-1641.

Binion, G. R., D. J. Daugherty, J. W. Schlechte, R. A. Ott, Jr., and T. J. Bister. 2011. Efficacy of a light attractant for increasing trap net catches of white crappies. *North American Journal of Fisheries Management* 31:455-460.

Carson, E.W., A.H. Hanna, G.P. Garrett, J.R. Gibson, and J.R. Gold. 2010. Conservation genetics of cyprinid fishes (Genus *Dionda*) in Southwestern North America. II. Expansion of the known range of the manantial roundnose minnow, *Dionda argentosa*. *The Southwestern Naturalist* 55:576–58.

Daugherty, D. J., D. L. Buckmeier, and P. K. Kokkanti. 2011. Sensitivity of recreational access to water-level variation: an approach to identify future access needs in reservoirs. *North American Journal of Fisheries Management* 31:63-69.

DiTomaso, J.M., J.K. Reaser, C.P. Dionigi, O.C. Doering, E. Chilton, J.D. Schardt, and J. N. Barney. 2010. Biofuel vs. Bioinvasion: Seeding Policy Priorities. *Environmental Science and Technology* 44(18): 6906–6910. (September 2010)

Dumont, S. C. and B. C. Neely. 2011. A proposed change to Palmetto bass Proportional Size Distribution length categories. *North American Journal of Fisheries Management* 31(4):722-725.

- Dumont, S. C. and D. J. Lutz-Carrillo. 2011. Estimating genetic composition in introgressed largemouth bass populations: does age matter? *North American Journal of Fisheries Management* 31(1):176-181.
- Kurten, G. L., A. Barkoh, D. C. Begley, and L. T. Fries. 2011. Nutrient manipulation to control the toxic alga *Prymnesium parvum*: verification of treatments and resolution of the issue of elevated pH. *North American Journal of Aquaculture* 73:141-152.
- Kurten, G. L., Aaron Barkoh, Thomas Wyatt, Hugh Glenewinkel, and John M. Paret. 2011. Comparison of liberal and conservative water exchange effects on water quality and channel catfish fingerling production in hatchery ponds. *Management Data Series 265*, Texas Parks and Wildlife Department, Austin.
- Lyon, Dale D., Aaron Barkoh, and John M. Paret. 2011. Evaluation of two ammonium sulfate application strategies to control *Prymnesium parvum* in striped bass fingerling production ponds. *Management Data Series 266*, Texas Parks and Wildlife Department, Austin.
- McClure-Baker, S.A., A.A. Echelle, R.A. Van Den Bussche, A.F. Echelle, D.A. Hendrickson and G.P. Garrett. 2010. Genetic Status of headwater catfish in Texas and New Mexico: A perspective from mtDNA and morphology. *Transactions of the American Fisheries Society* 139:1780–1791.
- Neely, B. C., S. C. Dumont, R. L. Cole, and M. A. Farooqi. 2011. Seasonal home range estimates and habitat selection of saugeye in a small warmwater impoundment. *Fisheries Management and Ecology* 18:113-120.
- Roelke, D., J. Grover, B. Brooks, J. Glass, D. Buzan, G.M. Southard, L.T. Fries, G. Gable, L. Schwierzke-Wade, M. Byrd, and J. Nelson. 2011. A Decade of Fish-Killing Haptophyte Blooms in Texas: Roles of Hydraulic Flushing and Salinity. *Journal of Plankton Research* 33(2): 243-254.
- Sullivan, M., A. Grubh, Y. Zhang, and T. Bonner. 2011. Winter diet composition of introduced rainbow trout and macroinvertebrate assemblages in the Guadalupe River, Texas. *Final Report to Guadalupe River Trout Unlimited*, Austin.
- Texas Instream Flow Program and San Antonio River Authority. 2011. Instream flow study of the lower San Antonio River and lower Cibolo Creek, interim progress report and instream flow recommendations. *Texas Instream Flow Program and San Antonio River Authority*, Austin.
- Winemiller, K.O., S.C. Zeug, C.R. Robertson, C. Saenz, B.K. Winemiller, L. Kelso-Winemiller, and R. L. Honeycutt. 2011. Food web structure of coastal streams in Costa Rica revealed by dietary and stable isotope analyses. *Journal of Tropical Ecology* 27(5): 463-476.

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- Ashe, D.E. 2010. Carp. *Lakecaster* Vol. 20 No. 9.
- Ashe, D.E. 2010. Whiskey is for drinking, water is for fighting. *Lakecaster* Vol. 20 No. 11.

- Ashe, D.E. 2011. Aquatic invasive species. Lakecaster Vol. 21 No. 1. Ashe, D.E. 2011. Temperature effects on fish. Lakecaster Vol. 22 No. 3.
- Ashe, D.E. 2011. Largemouth bass spawning and factors for success. Lakecaster Vol. 22 No. 5.
- Ashe, D.E. 2011. Crappie confusion. Lakecaster Vol. 22 No. 7.
- Cruz, C. 2010. Mussel invasion is threat to area. San Angelo Standard Times, Sports Page. September 11.
- Cruz, C. 2010. Golden alga wreaks havoc on reservoirs in West Texas. San Angelo Standard Times, Sports Page. October 2.
- Cruz, C. 2011. Lake Kirby has the blues. San Angelo Standard Times, Sports page, January 2.
- Cole, R. 2011. Now is the time to get ready for spring crappie. Abilene Reporter News, Sports page, February 12.
- Cortez, D.F. 2011. The Art of Fish. Texas Parks & Wildlife Magazine 69(6): 10.
- Cortez, D.F. 2011. Splash, Splash! Fizz, Fizz! Scientists test cures for overinflated bass. Texas Parks & Wildlife Magazine 69(8): 10
- Driscoll, M.T. 2010. Find the shad, find the bass. Lakecaster Vol. 20 No. 10.
- Driscoll, M.T. 2010. Tournament statistics at Sam Rayburn Reservoir. Lakecaster Vol. 20 No. 12.
- Driscoll, M.T. 2011. Will different sizes and configurations of planted brushpiles affect fish use? Lakecaster Vol. 22 No. 2.
- Driscoll, M.T. 2011. Black bass 101. Lakecaster Vol. 22 No. 4.
- Driscoll, M.T. 2011. Reservoir stratification, thermoclines, and turnover. Lakecaster Vol. 22 No. 6.
- Driscoll, M.T. 2011. 1.5 million Florida largemouth bass stocked at Sam Rayburn and Toledo Bend. Lakecaster Vol. 22 No. 8.
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- Dumont, S. 2010. Rains this year have filled some lakes, not others. Abilene Reporter News, Sports page. October 3.
- Dumont, S. 2010. Shad is a fish favorite at Big Country lakes. Abilene Reporter News, Sports page. November 14.
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- Dumont, S. 2011. Lunker bass biting best during full, new moon. Abilene Reporter News, Sports page, March 26.
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- Dumont, S. 2011. Lake Stamford is blue and white all over. Abilene Reporter News, Sports page, May 8.
- Dumont, S. 2011. Lake Athens: a great getaway destination. Abilene Reporter News, Sports page, June 26.
- Dumont, S. 2011. Water-level woes continue. Abilene Reporter News, Sports page, July 17.
- Dumont, S. 2011. Be on the lookout for exotic, invasive zebra mussels. Abilene Reporter News, Sports page, July 31.
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- Elder, H. 2010. "Tops" fish attracting structures in habitat-limited reservoirs. Lakecaster Vol. 20 No. 12.
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- Farooqi, M. 2011. Lake surveyed for fish. San Angelo Standard Times, Sports page, April 2.
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- Henson, J. 2010. Snakehead mania: separating fact from fiction. Dockline Magazine, Lake Houston Edition. September Issue.

- Henson, J. 2010. Snakehead mania: separating fact from fiction. Dockline Magazine, Lake Conroe Edition. September Issue.
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- Henson, J. 2010. Rainbow trout stockings begin in December. Dockline Magazine (Lake Houston and Lake Conroe editions). December Issue.
- Henson, J. 2011. Recent shock survey assesses largemouth bass population at Lake Conroe. Dockline Magazine (Lake Houston and Lake Conroe editions). January Issue.
- Henson, J. 2011. Florida largemouth bass stockings have greatly enhanced trophy potential at Lake Conroe. Dockline Magazine (Lake Houston and Lake Conroe editions). February Issue.
- Henson, J. 2011. Wiper, hybrid striper, palmetto bass – whatever you call them, their name spells tons of fun for anglers. Dockline Magazine (Lake Houston and Lake Conroe editions). April Issue.
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- Jubar, A. 2010. Fork: home to fascinating aquatic life. The Fisherman's Guide: News You Can Use. Vol. 11, No. 133, September edition.
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Outreach Events

Inland Fisheries staff members were event leaders at 342 outreach events for targeted user groups (youth under 17, minorities, women, and physically challenged) in which 27,893 individuals participated.

	Youth 17 & under	Adults	Total
Males (1)	11,322	3,107	14,429
Females (2)	9,913	3,551	13,464
Minorities	9,409	1,513	10,922
Phys. Challenged	492	222	714
Total (1+2)	21,235	6,658	27,893

Work with Other Organizations

Program Contracts and Agreements

Texas State University (Tim Bonner)	Survey of Habitat Suitability for Texas Freshwater Fishes	\$34,000
University of North Texas (Jim Kennedy)	Habitat Requirements for <i>Quadrula aurea</i> (Golden Orb) in the Lower San Antonio and Guadalupe River Drainages	\$35,000
Texas Tech University (Gene Wilde)	Population Dynamics Model for Fishes of the Upper Brazos River	\$317,476
Texas State University (Yixin Zhang)	Bigclaw River Shrimp in the San Marcos River: Invasive Species' Impact	\$51,560
University of Texas (Lance Williams)	Hydrologic and Geomorphic Controls on Fish, Mussel, and Riparian Vegetation Communities in the Upper Neches River Watershed	\$65,320
South Llano Watershed Alliance (Tyson Broad)	Watershed Conservation Plan for Upper Llano Watershed	\$21,000
Texas Tech University (Tim Grabowski)	Establishing guidelines to evaluate the ecological effectiveness of stream restoration projects in the Edwards Plateau ecoregion	\$127,000
University of Texas (Dean Hendrickson)	Data standardization and georeferencing of the Fishes of Texas database	\$50,000
University of Texas (Dean Hendrickson)	Fishes of Texas illustrations and production of an interactive digital fish identification key	\$34,000
University of Texas Pan American (Robert Edwards)	Biological Monitoring of the Repatriation Efforts for the Endangered Rio Grande silvery minnow (<i>Hybognathus amarus</i>) in Texas	\$112,500
Texas Tech University (Chris Taylor)	Abundance and distribution of the threatened minnows <i>Campostoma ornatum</i> and <i>Notropis chihuahua</i> in the Trans-Pecos region of Texas	\$79,000
Oklahoma State University (Tony Echelle)	Genetic status of San Felipe Gambusia	\$50,000
Sam Houston State University (Chad Hargrave)	Conservation Status of Comanche Springs Pupfish (<i>Cyprinidon elegans</i>) and Pecos Gambusia (<i>Gambusia nobilis</i>) in the ciénegas of Balmorhea State Park, Texas	\$28,500

Nueces River Authority (Sky Lewey)	Pioneering a concept to incentivize proper functioning condition on privately owned riparian lands in the Nueces River Basin	\$54,500
Texas A&M University (John Gold)	Genetic Monitoring of Imperiled and Critically Imperiled Species of Genus <i>Dionda</i> (Cyprinidae) in Texas	\$37,500
Texas A&M University (John Gold)	Genetics of <i>Dionda</i> in the Big Bend region	\$8,000
Lykes Bros. Inc (O2 Ranch)	Restoration of buffer zone along Duff Springs corridor	\$40,500
Cypress Valley Navigation District	Boating access and aquatic vegetation management on Caddo Lake	\$120,000
Enviroscience	The Use of the Watermilfoil Weevil (<i>Euhrychiopsis lecontei</i>) for the Management of Eurasian Watermilfoil in Coletto Creek Reservoir, Texas	\$73,000
Guadalupe-Blanco River Authority	Aquatic vegetation management on Lake Gonzales and Lake Wood	\$80,000
Jefferson County Drainage District No. 6	Management of invasive aquatic and semi-aquatic vegetation in Jefferson County waterways	\$60,000
Lavaca-Navidad River Authority	Management of nuisance aquatic vegetation on Lake Texana	\$20,000
Nueces River Authority	Control and management of <i>Arundo donax</i> along the Nueces and Sabinal Rivers	\$150,000
San Jacinto River Authority	Management of nuisance aquatic vegetation in Lake Conroe	\$100,000
Statewide herbicide contractors	Certified Pesticide Applicators pool for state contracts involving management of nuisance aquatic and wetland vegetation using EPA approved herbicides	
Texas Invasive Plant and Pest Council	Review of exotic aquatic and riparian plant risk assessments conducted by TPWD	\$24,000
Trinity River Authority	Management of nuisance aquatic vegetation on Lake Livingston	\$105,000
University of North Texas	Restoration of native aquatic vegetation in two Texas lakes	\$150,000

Texas A&M University at Galveston (Ann Armitage)	Identifying ecologically effective wetland restoration techniques in coastal wetlands	\$20,000
Texas A&M University at Galveston (Andre M. Landry, Jr.)	Sea Turtle Nesting Activity on the Upper Texas Coast; Proposed Initiatives to Enhance Nesting Detection and Increase Nesting Potential	\$75,000
Texas Cooperative Fish and Wildlife Research Unit	Cooperative Agreement	\$30,000
The Bait Barn	Purchase of 47,627 channel catfish to support the Neighborhood Fishin' Program	\$131,451
Inks Dam National Fish Hatchery	Purchase of 8,520 channel catfish to support the Neighborhood Fishin' Program	\$18,573
Crystal Lake Fisheries	Purchase of 267,296 rainbow trout to support the winter stocking and Neighborhood Fishin' programs	\$258,144
Texas State University (Glenn Longley)	Student Workers	\$34,159.80
Auburn University (Jeff Terhune)	Southeastern Fish Disease Cooperative Project	\$8,000

Texas Freshwater Fisheries Center is operating under a Memorandum of Understanding with Stephen F. Austin State University. This allows a collaborative approach to interpretive projects and materials, providing educational programs for students and the general public and professional development for teachers and preservice teachers.

Partnership with the Federation of Student Anglers was established to help publicize their program to organize school-based fishing clubs across Texas and facilitate their state championship tournament on Lake Athens in conjunction with the Texas State-Fish Art Contest awards banquet starting in 2012.

Grants and Donations

Texas Water Development Board	Habitat Requirements for <i>Quadrula aurea</i> (Golden Orb) in the lower San Antonio and Guadalupe River Drainages	\$35,000
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
National Fish and Wildlife Foundation	Guadalupe Bass Restoration Initiative: Restoring Habitats for Guadalupe Bass and Other Native Fishes in the Upper Llano River Watershed	\$300,000
National Fish and Wildlife Foundation	Restoration of Stream Habitats in the James River to Support Restoration of Guadalupe Bass	\$100,000
Southeastern Aquatic Resources Partnership	Restoration of aquatic and riparian habitats of the Edwards Plateau at the South Llano River State Park	\$75,000
Sabine River Authority	Aquatic vegetation management on Toledo Bend Reservoir	\$100,000
Sabine River Authority	Aquatic vegetation management on Lake Fork Reservoir	\$50,000
U.S. Department of Agriculture (APHIS)	VHS and Invasive Species public awareness	\$30,000
Texas Bass Classic Foundation	Support for Neighborhood Fishin' Program	\$180,000
Texas Bass Classic Foundation	New Marketing approaches for Neighborhood Fishin'	\$30,000
Texas Bass Classic Foundation	Texas State-Fish Art Contest	\$17,000
Bass Pro Shops	Habitat Improvement project at Lake Conroe	\$10,000
Texas Bass Classic Foundation	Habitat Improvement project at Lake Conroe	\$10,000
U.S. Fish and Wildlife Service	Control or Eradication of incipient Zebra Mussel	\$4,205
City of San Antonio	Support of Neighborhood Fishin' program	\$11,812.50
City of Wichita Falls	Support of Neighborhood Fishin' program	\$5,337.50

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
USDA Animal and Plant Health Inspection Service	Viral Hemorrhagic Septicemia Cooperative Agreement	\$30,000
Texas Parks Wildlife Foundation	Operation World Record Grant (rollover amount from previous grant period)	\$12,263
USDA Agricultural Research Service	Biosolids Application: Quantifying and Modeling Impacts on Ecosystem Services Across Urban, Agricultural, and Wildlife Interfaces (rollover amount from previous grant period)	\$19,170
Friends of TFFC	Fundraising Event, October 2010	\$51,644
Friends of TFFC	Construction of metal awnings between the Game Warden Museum and the Hart-Morris Conservation Center and on the south wall of the Visitor Center	\$41,889
Toyota	Toyota ShareLunker Program	
William E. Armentrout Foundation	Teacher workshops, science academy and technology improvements at Texas Freshwater Fisheries Center	\$38,947



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