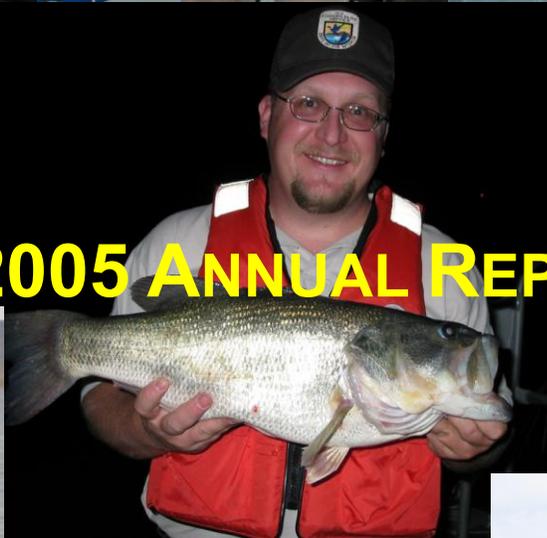


ARIZONA FISHERY RESOURCES OFFICE



FY 2005 Annual Report **(October 1, 2004 – September 30, 2005)**

U.S. Fish and Wildlife Service Arizona Fishery Resources Office

Prepared by:

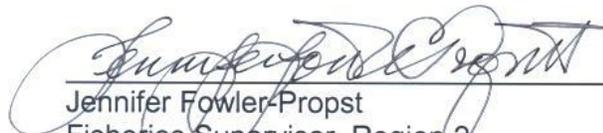
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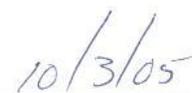
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Date

Perspectives..... ii

Introduction..... 1

Fisheries Program Focus Areas

Partnerships and Accountability..... 2

Aquatic Species Conservation and Management..... 4

Public Use..... 7

Cooperation with Native Americans 7

Leadership in Science and Technology 9

Aquatic Habitat Conservation and Management..... 10

Workforce Management..... 12

Appendices

A. AZFRO Fisheries Operating Needs (FONS) 13

B. AZFRO Budget..... 15

C. AZFRO Publications 16

D. AZFRO Presentations..... 17

E. AZFRO Organizational Chart..... 19

Acknowledgements

We would like to thank those within AZFRO that contributed stories and photos for inclusion in this report. We would also like to thank the many partners that we worked with throughout the year, all of which helped us achieve the accomplishments found within this report. Lastly, we would like to thank Jennifer Fowler-Propst and Lynn Starnes for reviewing and commenting on an earlier version of this report.

To put it bluntly, AZFRO “ROCKED” in FY 05! Heading into this past year, we were told that this would be the year of “doing less with less.” Well they were half right. We did have fewer personnel, less office space, and less budget than the previous year. However, despite this, we were able to accomplish more projects this past year than we ever have in previous years. How were we able to do this?...Please read on.

In preparation for FY 05, we met as a team to evaluate what was working within AZFRO, what wasn't, what our individual and team strengths were, and how best to utilize them. We then compiled what appeared to be an overly optimistic list of projects we wanted, and felt needed to be accomplished for the betterment of the resource. With “doing less with less” lingering in the backs of our minds, skepticism began to set in. However, because of the dedication and strong commitment on the part of every AZFRO employee, we were “willing to give it a shot.”

Now that the past FY has ended, we not only accomplished everything from our list, but actually completed several more projects that presented themselves along the way. Several of the highlights this past year include the restoration of Fossil Creek, with historic flows and a native fish community being returned to the stream (see page 11), continued efforts toward the recovery of Apache trout (see page 5), control of the invasive plant known as giant salvinia along the lower Colorado River (see page 10), managing “big-river” fishes in the Colorado and Little Colorado rivers (see pages 4 and 5), and conducting research on the movement/habitat use of bonytail (see page 9) and swim performance of wild and hatchery-reared Apache trout (see page 9).

We know that AZFRO may be faced with more change and challenges in FY 2006, but because of the resolve, determination, sound scientific means, and innovative methods of AZFRO, we will continue to accomplish great things for the natural resources of Arizona and the Southwest.

*Stewart Jacks
Mark Brouder*



The Arizona Fishery Resources Office (AZFRO) is part of the U.S. Fish and Wildlife Service's (Service) Southwest Region (Region 2), which includes Arizona, New Mexico, Texas, and Oklahoma. AZFRO is one of 64 Fishery Resources Offices located across the country, and along with 70 National Fish Hatcheries, 9 Fish Health Centers, and 7 Fish Technology Centers makes up the U. S. Fish and Wildlife Service's Fisheries Program.

Expertise: The talents and expertise of AZFRO's employees are as diverse as Arizona's landscape. Our staff (Appendix E) is knowledgeable and experienced in the areas of administrative assistance, aquatic ecology, budget and finance, contaminants, database design and management, ecosystem management, fish ecology, geographic information system (GIS), grant writing, ichthyology, population dynamics and modeling, public outreach and education, sportfish management, statistical procedures and analyses, and stream, riparian, and watershed restoration.

Challenges: Since the settling of the West by pioneers in the early 1880s, native fish populations have disappeared, diminished, or become isolated. In Arizona, 95 percent of the rivers have been altered by dams, water diversion projects, urban encroachment, cattle grazing, excessive ground water pumping, or converted to agricultural lands. These activities have resulted in the loss of more than 90 percent of riparian habitat. In addition, at least 100 species of non-native fish have been either intentionally or inadvertently introduced into Arizona's waters. As a result of habitat fragmentation and destruction and introductions of non-native fish, 1 of the 35 fish species native to Arizona is extinct and approximately 75 percent are federally listed as threatened or endangered, proposed for listing, or candidates for listing. In addition to native fish conservation needs, supporting sport fishing programs is an important aspect of what we do. In 2001, 419,000 people 16 years or older fished in Arizona and spent \$336 million on fishing related expenses. The overall economic impact of these expenditures was more than \$1.1 billion.

Mission and Goals: AZFRO's mission is to "work with others to conserve, protect, and enhance fish and other aquatic organisms and their habitats in Arizona." AZFRO is the U.S. Fish and Wildlife Service's lead station for recovery of threatened and endangered fish including Apache trout and Little Colorado spinedace, and also works with loach minnow, Gila topminnow, and the "big river" fish such as razorback sucker, humpback chub, and bonytail that inhabit the Colorado River. Our recovery efforts include renovating streams and other aquatic habitats inhabited by non-native fish species that out-compete and often prey upon native fish. Additional efforts include constructing barriers to prevent upstream migration of non-native species, replicating native fish populations into suitable habitat (either natural or man-made), restoring fish passage to previously inaccessible habitat, and monitoring native fish populations. We cooperate with our Tribal partners by providing technical fishery assistance in support of sport fishing programs, and conserving and recovering native aquatic species and their habitats found on Native American reservations.

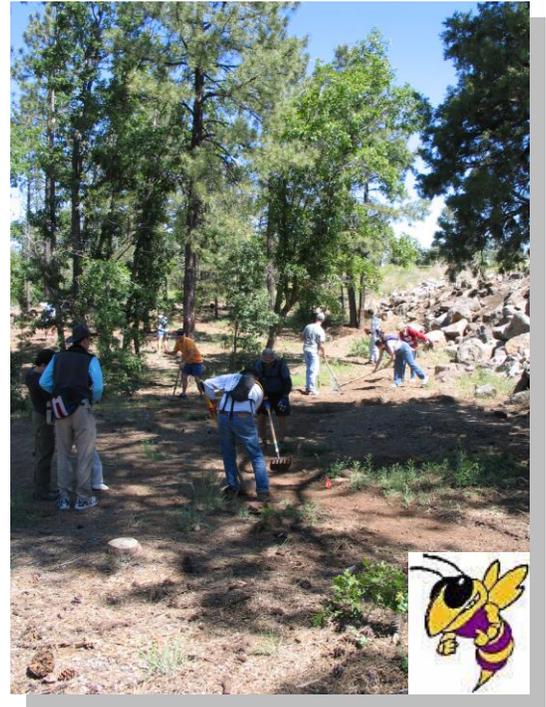
Vision: In 2002, the Fisheries Program developed a *Vision for the Future*, which identified 7 Focus Areas that our future goals, objectives, and activities will focus on. These Focus Areas are: **Partnerships and Accountability, Aquatic Species Conservation and Management, Public Use, Cooperation with Native Americans, Leadership in Science and Technology, Aquatic Habitat Conservation and Management, and Workforce Management.** The complexity and diversity of our accomplishments in 2005 encompassed all 7 Focus Areas. For brevity's sake, we included each accomplishment only once, even though it may have fit into several focus areas. For example, most of our accomplishments had an element of "Partnerships and Accountability" but this was only the major focus of a couple of accomplishments.

PARTNERSHIPS AND ACCOUNTABILITY

Partnerships are essential for effective fisheries conservation. Many agencies, organizations, and private individuals are involved in fisheries conservation and management, but no one can do it alone. Together, these stakeholders combine efforts and expertise to tackle challenges facing fisheries conservation. The success of these partnerships will depend on strong, two-way communications and accountability.

AZFRO Continues Administering Partners for Fish and Wildlife Program throughout Arizona

In FY 2005, AZFRO assisted the Service's State Coordinator in administering Partners for Fish and Wildlife Program grants to the Blue Ridge Middle School, San Carlos Apache Tribe, and White Mountain Apache Tribe in support of several projects designed to contribute to the recovery of threatened and endangered species, protect sensitive wetland and spring habitats and the species that depend on them, and protection of natural and cultural resources found on the different Reservations. AZFRO personnel assisted these various partners in identifying and describing projects, developing budgets and cooperative agreements, and implementing on-the-ground projects.



AZFRO Continues to Administer Fish Passage Program in Arizona

In FY 2005, AZFRO administered \$162,700 of Fish Passage grants in support of several projects that improved habitat conditions for endangered humpback chub in the Little Colorado River, native fishes in Fossil Creek, and threatened and endangered Rio Yaqui fishes. On the San Bernardino National Wildlife Refuge, fish passage dollars helped pay for the planning, redesign, and construction of approximately 4 acres of shallow wetlands, allowing for excess water to feed into various portions of the Rio San Bernardino, providing a year-round flow through much of this riparian area and allowing physical and genetic connectivity with previously isolated native fish populations throughout the refuge and in Mexico. At Fossil Creek, what once was a low water crossing and the only access across the creek to the Irving Power Plant is now a bridge, thanks to Fish Passage dollars awarded to the Arizona Public Service. Constructing the bridge across Fossil Creek was just one of several actions taken this past year that resulted in Fossil Creek being restored to its historic native fish community and full flows within the stream channel.

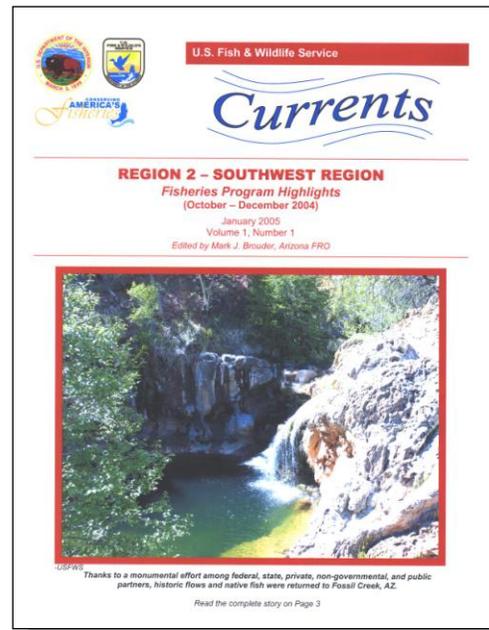
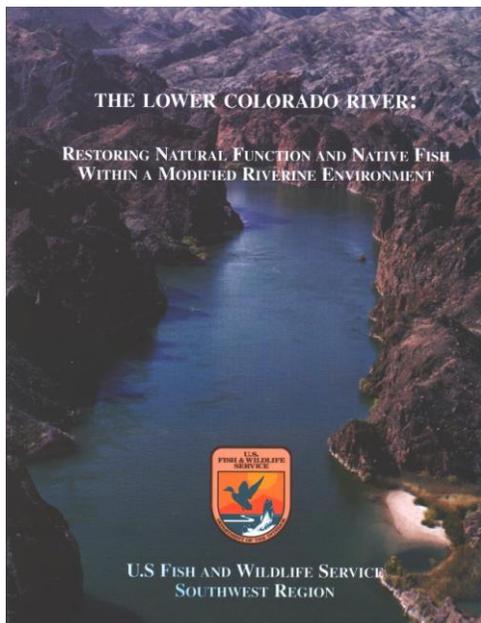


AZFRO Builds and Strengthens Partnerships and Recovery Efforts

AZFRO personnel participated in numerous scientific, technical, recovery, and workgroup meetings, all of which provided excellent opportunities for both information exchange and building or improving of relationships. Those meetings included Colorado River Aquatic Biologists, Lower Colorado River Native Fish Workgroup, Native American Fish and Wildlife Society, American Fisheries Society, Desert Fishes Council, Upper Colorado River Researchers Review, Apache Trout/Little Colorado Spinedace Recovery Team, Loach minnow/Spikedace Conservation and Assessment Team, Native Fish Conservation Team, and others. AZFRO personnel presented 20 papers at these meetings in FY 2005.

AZFRO Completes Much-Anticipated Symposium/Workshop Proceedings

In 1998 and 1999, the U.S. Fish and Wildlife Service and U.S. Bureau of Reclamation co-sponsored and convened 2 symposia/workshops focused around identifying strategies to restore natural function and native fish within the modified lower Colorado River. In FY 2005, AZFRO completed the long-awaited published proceedings from these symposia/workshops, which contained papers and abstracts presented by experts in the areas of hydrologic function and native fish restoration (below left). It should be noted that AZFRO was given responsibility late in FY 2004.



AZFRO Highlights Regional Fisheries Program Accomplishments

Beginning in FY 2005, AZFRO personnel conceptualized and published 3 Region 2 Fisheries Program quarterly newsletters titled “Currents”, which highlighted fishery resource, national fish hatchery and technology center, and fish health accomplishments throughout the southwest region (above right). “Currents” is widely distributed to partners both within and outside of the Fish and Wildlife Service. Feedback from our partners has been positive, as demonstrated by the following quotes, “telling your story is critical to the success of the Fisheries Program,” “this helps raise the profile and understanding of the Region 2 Fisheries Program,” and “your newsletter is awesome.” And no, these quotes weren’t from our mothers.

AZFRO Can Now Be Found on the World Wide Web

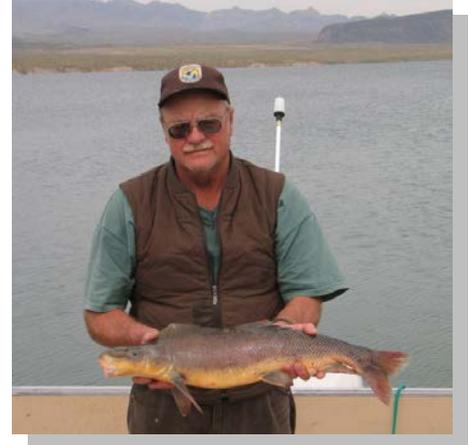
Answers to the who, what, when, where, and how of AZFRO can now be found at www.fws.gov/southwest/fishery/azfro/index.html. Thanks to the efforts of several AZFRO personnel, AZFRO now has a website dedicated to providing our partners and the general public with information pertaining to our mission, existing staff, current projects, past accomplishments, briefing documents, and a whole lot more.

AQUATIC SPECIES CONSERVATION AND MANAGEMENT

The Fisheries Program maintains and implements a comprehensive set of tools and activities to conserve and manage self-sustaining populations of native fish and other aquatic resources. These tools and activities are linked to management and recovery plans that help achieve restoration and recovery goals, provide recreational benefits, and address Federal trust responsibilities. Sound science, effective partnerships, and careful planning and evaluation are integral to conservation and management efforts.

AZFRO Continues to Round up Razorbacks and Bonytails on Lakes Mohave and Havasu

AZFRO completed annual efforts to “round-up” endangered razorback sucker and bonytail in lakes Mohave and Havasu, both of which are located along the lower Colorado River below Hoover Dam. The annual round-up has been conducted for 26 years on Lake Mohave, whereas the round-up on Lake Havasu has been conducted for the last 7. The annual round-up is a multi-agency effort to assess the status of wild and introduced populations of both species in both lakes using mark-recapture techniques. In addition to assessing the population status, “wild” bonytail are collected for possible inclusion into the bonytail broodstock being maintained at Dexter National Fish Hatchery and Technology Center.



Endangered Desert Pupfish Population Estimation Completed at Refuges

AZFRO conducted surveys of endangered desert pupfish refugia populations recently established at Cibola and Imperial National Wildlife Refuges. A population estimate conducted at Cibola NWR in FY 2005 resulted in an estimated 1,088 pupfish, with multiple size classes being present. Population estimates at Imperial NWR resulted in an estimated 137 pupfish. These activities have become an annual event to monitor the population trends of this endangered fish. AZFRO is working with managers at the Bill Williams NWR to establish a third refugia population in FY 2006.

Endangered Razorbacks and Bonytails Monitored at Cibola National Wildlife Refuge

AZFRO continued working with the U.S. Geological Survey and Arizona State University to monitor endangered razorback sucker and bonytail introduced into High Levee Pond in 1993. To date, 4 year-classes of both species are present in the pond and they are actively recruiting; the only place in the Colorado River basin where this has been documented. The project has allowed for a better understanding of other important life history aspects of both species has also been gained through this cooperative effort. Unfortunately, non-native largemouth bass invaded this pond in FY 2005; and plans are underway to salvage endangered fish, renovate the habitat, and return the endangered fish.



AZFRO Assists Arizona Game and Fish Department with Threatened Spinedace Surveys

AZFRO is the Service’s lead station for the recovery of federally listed Little Colorado spinedace, a rare minnow recently impacted by competition with and predation by non-native fish and crayfish. In addition, habitats have been negatively impacted by ongoing drought conditions. In FY 2005, AZFRO assisted the Arizona Game and Fish Department with a comprehensive status survey for Little Colorado spinedace in Nutrioso Creek, AZ, which was identified in the recovery plan as a critical component leading toward the recovery of this species.



Gila Trout Salvaged Prior to 2004 Wildfire Return Home

IN FY 2004, AZFRO participated in a multi-agency effort to evacuate federally listed Gila trout from Raspberry Creek located on the Apache-Sitgreaves National Forest, AZ, due to threats of ash and debris flows associated with monsoonal rains as a result of the KP Wildfire. In FY 2005, biologists from AZFRO assisted the Forest Service and Arizona Game and Fish Department with the repatriation of Gila trout back into Raspberry Creek. These fish had been taken to Mora National Fish Hatchery & Technology Center for safekeeping until conditions warranted their return this past year.

Apache Trout Moves Several Steps Closer to Recovery in FY 2005

AZFRO is the Service's lead station in the recovery of the federally listed Apache trout in Arizona. In FY 2005, AZFRO implemented activities critical to the recovery of the species by assisting the Arizona Game and Fish Department with the renovation of 4 streams (Bear Wallow, East Fork of the Little Colorado River, Hayground, and Fish Creek) located on the Apache-Sitgreaves National Forest. Efforts during this past FY have resulted in over 46 miles of stream that are now ready for Apache trout stocking this fall. In addition to renovating streams, AZFRO assisted with the stocking of Apache trout into 2 streams (Hayground and Lee Valley) on the Apache-Sitgreaves National Forest.



Annual Humpback Chub Stock Assessment Completed

The Little Colorado River is a tributary to the Colorado River in Grand Canyon and provides important spawning and rearing habitat for endangered humpback chub and 3 other native fishes. In FY 2005, AZFRO completed 4 monitoring trips to obtain stock assessment information on humpback chub, as well as provide population information on the other native and non-native fish that inhabit the Little Colorado River. The population estimates generated by these efforts correspond to current recovery goal objectives and report the number of adult humpback chub that return to spawning grounds each spring.



Translocation of Endangered Humpback Chub Deemed a Success

In FY 2005, AZFRO, with assistance from SWCA, Inc. released an additional 567 endangered humpback chub above a series of travertine formed falls collectively known as Chute Falls in the Little Colorado River in hopes of increasing humpback chub recruitment to adulthood. During post-translocation monitoring in FY 2005, translocated humpback chub demonstrated significant growth and survival. The release of this year's 567 fish brings the total number of humpback chub translocated above Chute Falls into previously unoccupied habitat to just over 1,000 fish. Because growth rates and retention of translocated humpback chub suggest that survival in previously unoccupied habitats is possible and may contribute to an expansion of the species' range, continued monitoring and another translocation are planned for FY 2006.



Razorback Sucker Management Continues in Newly Created Habitats

In FY 2005, AZFRO continued monitoring water quality and the status of introduced razorback suckers in a pond located on the Imperial NWR and introduced larger (>35 cm) adult razorback suckers, along with several tons of gravel, in hopes that they would spawn. To date, there is no evidence that spawning has occurred.



Endangered Rio Yaqui Fishes Monitored on Private Cattle Ranch

In FY 2005, AZFRO assisted the San Bernardino National Wildlife Refuge by analyzing and summarizing data collected from the fall 2004 annual fish monitoring of endangered Rio Yaqui fishes on the El Coronado Ranch and in West Turkey Creek per the requirements of the El Coronado Ranch HCP. In addition, AZFRO conducted non-native fish and bullfrog removal efforts in West Turkey Creek as part of a conservation measure to protect resident endangered Rio Yaqui fishes.

AZFRO Assists with Establishing a New Refugia Population of Desert Pupfish

In May of this past year, AZFRO collected 573 desert pupfish from the refuge pond located at Cibola NWR that were ultimately transported across the state and introduced into The Nature Conservancy's San Pedro River Preserve near Tucson, AZ. This project was in development for the past 2 years and was a multi-agency effort including the U.S Fish and Wildlife Service's Ecological Services Phoenix and Tucson offices, Cibola and Imperial NWRs, Arizona Game and Fish Department, Arizona State University, U.S. Bureau of Reclamation, and The Nature Conservancy.



Native Fish are Rescued from the Cave Creek Complex Fire

During the Cave Creek Complex Fire of 2005, AZFRO assisted with fish salvage operations from Sycamore Creek by helping remove native Gila chub, speckled dace, longfin dace, and desert suckers. Once secured, AZFRO, in cooperation with the USFS's Rocky Mountain Research Station, treated fish for ectoparasites and maintained their existence until monsoon flows moved through the burned areas. AZFRO took the lead in the care of salvaged fish, which included daily feeding, routine tank maintenance, and disease treatment. Maintenance of these fish was conducted in consultation with the Pinetop Fish Health Center. Once conditions were such that fish could be returned to the wild, AZFRO led the effort in returning these fish back into Sycamore Creek.



As the population in the United States continues to grow, the potential for adverse impacts on aquatic resources, including habitat will increase. At the same time, demands for responsible, quality recreational fishing experiences will also increase. The Service has a long tradition of providing opportunities for public enjoyment of aquatic resources through recreational fishing, habitat restoration, and education programs and through mitigating impacts of Federal water projects.

AZFRO Coordinates Fish Stocking in Support of Tribal Recreational Fishing Programs

Tribal recreational fishing programs generate a significant amount of revenue from the sale of fishing, boating, and camping permits. In FY 2005, AZFRO, in cooperation with Alchesay-Williams Creek, Willow Beach, and Inks Dam National Fish Hatcheries, coordinated and assisted with the stocking of native Apache trout, brook trout, brown trout, cutthroat trout, rainbow trout, and channel catfish in support of cold- and warmwater fisheries located on numerous Indian Reservations located throughout Arizona and New Mexico.



AZFRO Continues to Assist Army Corps of Engineers with Water Quality Monitoring

Through a long-standing contract from the Army Corps of Engineers, AZFRO continued water quality and bacteriological monitoring of Alamo Lake in FY 2005. Data collected are provided to both the Army Corps of Engineers and the Arizona Game and Fish Department, the later of which uses these data to manage the largemouth bass and black crappie fishery for Arizona's residents. AZFRO has been monitoring water quality of these two reservoirs for the Army Corps of Engineers for over 20 years.

COOPERATION WITH NATIVE AMERICANS

Conserving this Nation's fish and other aquatic resources cannot be successful without the partnership of Tribes; they manage or influence some of the most important aquatic habitats both on and off reservations. In addition, the Federal government and the Service have distinct unique obligations toward Tribes based on trust responsibility, treaty provisions, and statutory mandates. The Fisheries Program plays an important role in providing help and support to Tribes as they exercise their sovereignty in the management of their fish and wildlife resources on more than 55 million acres of Federal Indian trust land and in treaty reserved areas.

AZFRO Assists San Carlos Tribe with Annual Lake Surveys

The annual surveys of San Carlos, Talkalai, and Seneca lakes were completed by AZFRO and San Carlos Recreation and Wildlife Department biologists in FY 2005. The black crappie and largemouth bass populations in San Carlos Lake continue to do well, and with the filling of the lake to approximately 50% of its capacity due to a "wet" winter, both populations should have strong year-classes due to increased availability of spawning habitat. The fisheries of both Talkalai and Seneca lakes also appear to be doing well, with multiple size-classes of largemouth bass being present in both lakes.



AZFRO Assists in Harvesting Razorback Suckers from the Hualapai Native Fish Production Facility

AZFRO and personnel from the Hualapai Department of Natural Resources harvested 639 adult razorback sucker from the Hualapai Native Fish Production Facility. Harvested fish were originally received by the Tribe as fingerlings and were raised to adult size in an attempt to determine the feasibility of using the Tribe's production facility to raise native fish. All adult fish harvested (194) were tagged and transported to Lake Havasu where they were released into the wild as part of the Lake Havasu Fishery Improvement Project.



AZFRO Assists with Surveys of Colorado River Indian Tribe Reservation Lakes

AZFRO and personnel from the Colorado River Indian Tribe's Fish and Game Department completed winter surveys of 5 lakes on the Reservation to evaluate the fish community found within each lake and to assist the Tribe in developing future management strategies for each species found. Two of the lakes are stocked with rainbow trout by the Service, whereas the other lakes are managed as warmwater fisheries. Of special note was the capture of 6 endangered razorback suckers, one of which was originally tagged in 1993. Ten other species of fish were collected. These data were provided to the Tribe to assist in their planning of future monitoring activities.

AZFRO Assists Navajo Nation with Stream and Lake Surveys

In August 2005, the Navajo Department of Fish and Wildlife with the assistance of AZFRO completed fisheries surveys of several lakes and streams in the northeastern part of the Navajo Nation. This year's effort and data continue our ongoing effort to assist the Navajo Nation with the development of a long-term fishery management plan for these lakes and streams, an effort that began with *Stream and Reservoir Sampling on the Navajo Nation August 2002*. Lakes sampled in 2005 included Asaayi, Tsaile, Wheatfields, and Ganado, while backpack electrofishing surveys were completed on sections of Asaayi, Crystal, Bear Canyon, and Nazlini creeks.

AZFRO and the San Carlos YCC Continue to Work Toward Natural Resource Conservation

For the 3rd consecutive year, Region 2's Ecological Services program, in support of the Youth Conservation Corps (YCC) program, funded AZFRO to hire and direct the activities of 4 San Carlos Apache Tribal teens interested in natural resources conservation. The San Carlos YCC crew worked with AZFRO and San Carlos Tribal biologists and game rangers on fish, wildlife, and habitat projects throughout the Reservation. The San Carlos YCC completed sport fish surveys of several small ponds, surveys of over 10 miles of perennial, native fish streams, water quality monitoring of San Carlos Lake, and revegetation and upland fencing projects. YCC is a summer employment program sponsored by the US Departments of the Interior and Agriculture for young males and females ages 15 through 18 to work, learn, and earn together by working on projects, projects with a stated purpose of developing and maintaining natural resources for the American people.



AZFRO Completes Survey Below Grand Falls on the Navajo Nation

In FY 2005, AZFRO, with assistance from the Arizona Game and Fish Department, completed a survey below Grand Falls on the Little Colorado River, Navajo Nation, to look for possible sources of nonnative fish and parasites that pose a threat to downstream populations of endangered humpback chub. Results of the survey indicate that even though there are only intermittent pools of water with very shallow depths, these pools do hold nonnative fishes that are host to parasites. Both nonnative fish and parasites are transported downstream into areas occupied by endangered humpback chub during high flows brought on by annual monsoon events.

AZFRO Assists Several Tribes with Creel Survey Design, Data Collection, Analysis, and Reporting

AZFRO assisted the San Carlos Apache Tribe, White Mountain Apache Tribe, and Navajo Nation with designing creel surveys, collecting creel survey data, analyzing data, and reporting the results. Creel surveys were conducted on several recreational sport fishing lakes, as these lakes represent a significant amount of revenue-generating capability through the sale of fishing permits. In addition to assisting the Tribes with managing these lakes, these same data were compiled and summarized by AZFRO staff and provided to a Washington Office economist as part of an analysis of the economic benefits of fish produced by the Service's Alchesay-Williams Creek National Fish Hatchery Complex, which was requested of the Service by the White Mountain Apache Tribe.

LEADERSHIP IN SCIENCE AND TECHNOLOGY

Science and technology form the foundation of successful fish and aquatic resource conservation and are used to structure and implement monitoring and evaluation programs that are critical to determine the success of management actions. The Service is committed to following established principles of sound science.

AZFRO Completes Phase I of a Bonytail Telemetry Study on Lake Havasu

In FY 2005, AZFRO implanted 12, 12-month sonic transmitters into adult bonytail and began tracking movements of these fish throughout Lake Havasu. To date, 10 of the 12 fish are continuing to be monitored. Results of this project will hopefully enable us to better understand habitat use by this endangered fish and maybe even help us identify spawning habitat. The bonytail used in this study were raised and held at Dexter National Fish Hatchery and Technology Center before being transported to Lake Havasu for surgery. Phase II will constitute more of the same, with the exception that smaller, shorter duration tags will be used, allowing us to focus our efforts during the spawning season.



AZFRO Completes Phase I of an Apache Trout Swim Performance Study

In FY 2005, AZFRO began a study to examine the swim performance of wild and hatchery-reared, adult and juvenile Apache trout. The study entails "swimming" fish until exhaustion, thus identifying a fish's maximum critical swimming speed. Understanding the swimming performance of both wild and hatchery-reared Apache trout will help managers better conserve this threatened species. In addition, knowing a species' critical swimming speed, along with several other life history parameters, can be used to assist in determining the "best" design of a fish passage structure (i.e., culvert) for a particular species.



AZFRO Completes Pilot Study Exploring Hoop Net Retention

In an attempt to quantify “retention” of endangered humpback chub captured by hoop nets being used to monitor the Little Colorado River population, underwater video cameras were mounted on hoop nets. Questions regarding the accuracy of catch rates and potential size bias in using this gear type have arisen. To address these questions, AZFRO completed a pilot study to examine the feasibility of using underwater video cameras to address these potential concerns. AZFRO continues to work out the details resulting from this pilot study and modifying where necessary. Preliminary results indicated that this project may be successful at addressing the potential concerns with using hoop nets as the standard sampling gear.



AZFRO Completes a Strategy for Improving Fish Passage in AZ

In FY 2005, AZFRO completed the drafting of an operational plan for implementing the National Fish Passage Program in the state of Arizona. The overall goal of the plan, titled “National Fish Passage Program: Inventory, Prioritization, Implementation, and Monitoring Strategy for Arizona” is to strategically improve fish passage in the rivers and streams of Arizona.



AZFRO Biologists Continue to Publish Research Findings

In FY 2005, AZFRO Biologists have had results from projects conducted over the past several years accepted for publication in peer-reviewed journals. Titles of manuscripts accepted for publication include “*Observations on the reproductive biology of roundtail chub, Gila robusta, in the upper Verde River, Arizona,*” “*Effect of baiting on miniature hoop net catch rates of humpback chub in the Little Colorado River, Arizona,*” “*Ontogenesis of endangered humpback chub (Gila cypha) in the Little Colorado River, Arizona,*” and “*Differential detection of ingested items evacuated from Genus Gila Cyprinids by tow nonlethal alimentary tract lavage techniques.*”

AQUATIC HABITAT CONSERVATION AND MANAGEMENT

Loss and alteration of aquatic habitats are principal factors in the decline of native fish and other aquatic resources and the loss of biodiversity. Seventy percent of the Nation’s rivers have altered flows, and 50 percent of waterways fail to meet minimum biological criteria.

Efforts to Control the Spread of Giant Salvinia Underway

AZFRO, through a contract from the U.S. Bureau of Reclamation, continued spraying herbicides to control the spread of the invasive fern known as giant salvinia in the Palo Verde Irrigation District drain near Blythe, California, along the lower Colorado River. To date, 4 passes have been made through the 22-mile long drain, resulting in a significant decrease in biomass of the plant. Giant salvinia grows rapidly to cover the surface of lakes and streams, forming floating mats that shade and crowd out important native plants, and reducing dissolved oxygen that is important for the survival of fish and other aquatic organisms.



AZFRO Evaluates Mechanical Removal Efforts to Protect Native Fish Community

In the spring of 2005, AZFRO lead a survey effort on Stillman Lake, at the headwaters of the Verde River with the Arizona Game and Fish Department. The goal of this survey was to continue evaluation of the effectiveness of mechanical removal efforts to reduce nonnative fish species such as common carp, channel catfish, and smallmouth bass. During a 3 day removal effort, 235 carp, 76 channel catfish, and 23 smallmouth bass were removed by mechanical means. The purpose of this effort is to determine if mechanical removal is a viable option for renovating this important area at the headwaters of the Verde River. Mechanical removal is one of the alternatives being analyzed under the NEPA for the Stillman Lake Renovation project. Other alternatives being considered are draining the lake and chemical renovation.



AZFRO Leads Native Fish Salvage Efforts Prior to Renovating Fossil Creek

Using a team of over 15 volunteers from Federal, State, academic, and the local community, AZFRO organized and implemented a native fish salvage operation in Fossil Creek, Arizona prior to a chemical renovation. Native fishes along 14 miles of creek were removed via electrofishing, trammel and hoop netting, angling, and minnow traps. Fish were held in a temporary “hatchery facility” at the Irving Power Plant. Once renovation was complete, fish were returned near their point of capture. Post renovation monitoring was completed in cooperation with Arizona Game and Fish Department and Northern Arizona University.



AZFRO Renovates Stock Tanks Within the Fossil Creek Watershed

In cooperation with Arizona Game and Fish Department, U.S. Bureau of Reclamation, and the Arizona Ecological Services Office, AZFRO renovated 6 stock tanks in the Fossil Creek drainage to remove nonnative fish from the stock tanks and complete monitoring prior to the completed renovation of Fossil Creek, returning its natural condition. The objective of this project was to eliminate nonnative fish from these stock tanks to remove a potential source of contamination to Fossil Creek and to promote further conservation of Gila River basin native fishes. Post-renovation monitoring resulted in no nonnative fish being collected.

AZFRO Renovates Office Cove for Razorback Sucker Grow-out Facility

Office Cove, a small pond adjacent to Lake Havasu on the Bill Williams River National Wildlife Refuge, was chemically renovated with Rotenone this past spring, thereby removing nonnative fishes. Once the renovation was completed, 4,000 fingerling razorback suckers were stocked. Along with fish, AZFRO installed a solar-powered aeration system and began monitoring its affect on the water quality within this grow-out pond. The aeration system has had the desired effect on water quality conditions by preventing anoxic conditions during the warm summer months, despite water temperatures exceeding 35°C. Lastly, habitat was also introduced into this pond to provide cover for the fingerling fish, which hopefully helped reduce bird predation.



WORKFORCE MANAGEMENT

The Fisheries Program relies on a broad range of professionals to accomplish its mission: biologists, managers, administrators, clerks, animal caretakers, and maintenance workers. Without their skills and dedication, the Fisheries Program cannot succeed. Employees must be trained, equipped, and supported in order to perform their jobs safely, often under demanding environmental conditions, and to keep current with the constantly expanding science of fish and aquatic resource management and conservation.

AZFRO BioTech is Recognized with the Chief Sealth Award

Daniel Parker, AZFRO BioTech, was the recipient of this year's Native American Fish and Wildlife Society *Chief Sealth Award*. The prestigious Chief Sealth Award (named after the famous Chief Seattle) is awarded annually by the Native American Fish & Wildlife Society to someone who has had a positive impact on Tribal natural resources. Daniel Parker, a member of the White Mountain Apache Tribe, has worked for AZFRO for more than 30 years and exemplifies what this award stands for. Daniel Parker has worked with more than 20 tribes across Arizona and the southwest. When asked how he feels about receiving this award Daniel said "I feel honored to be given this award and want to thank all the people I've worked with over the years." Daniel Parker is an asset to the Service and has dedicated his career to improving natural resources on Tribal lands throughout Arizona and the Southwest.



AZFRO Successfully Completed and Provided Training

In order to remain a strong leader in the conservation and management of our Nation's aquatic resources and habitats, AZFRO personnel completed several courses including MOCC, Otolith Preparation and Aging Techniques, Stream Restoration Techniques, Wildlife Predation Forensics and Disease Identification, Use of Rotenone and Antimycin in Fisheries Management, Pesticide Applicators License, B3 Airplane and Helicopter Safety. In addition to completing 67 courses, AZFRO personnel taught 17 courses in the areas of Motorboat Operators Certification Course (MOCC), Hazard Analysis Critical Control Point (HACCP), Creel Survey Design and Analysis, B3 Airplane and Helicopter Safety, and others. By completing and providing training to our partners, AZFRO continues to maintain its role as a leader in the conservation and management of aquatic resources and habitats. This past FY, AZFRO employees have completed details into the WO, Stepping Up to Leadership, and participated on the National Fish Habitat Initiative, Science Committee.

AZFRO Employee Efforts Recognized by Regional Director

Mitch Thorson, AZFRO BioTech, and Brenda Brouder, former AZFRO Biologist, were both recipients of Exemplary Act Awards. Mitch was recognized for a lifesaving effort on Alamo Lake and Brenda was recognized for her response to a deadly traffic accident. Mitch and Brenda's courageous and selfless efforts were recognized at an awards ceremony by Regional Director, Dale Hall.



Project Title (Project Duration)	Cost
<u>Apache Trout Restoration</u>	
Apache Trout Recovery Activities (4 years).....	\$2,000,000
Apache Trout Swim Performance Studies (1 year)	\$15,000
Apache Trout Recovery Program Outreach (5 years)	\$20,000
Total	\$2,035,000
<u>Habitat</u>	
Habitat Restoration on Private Lands Through the PF&W Program in Arizona (10 years)	\$2,000,000
Management of Backwater Habitats on the Lower Colorado River (10 years)	\$1,000,000
Stillman Lake Renovation (1 year).....	\$50,000
Bylas Springs Habitat Renovation (1 year).....	\$30,000
Construction of a Desert Pupfish Refuge on Bill Williams River NWR (1 year)	\$40,000
Water Quality Monitoring on Painted Rock & Alamo Reservoirs (10 years)	\$650,000
Arizona Watershed Project Phase II (1 year)	\$75,000
Total	\$3,845,000
<u>Tribal</u>	
Tribal Fishery Training Workshops (1 year).....	\$50,000
Angler Creel Surveys on the San Carlos Apache Reservation (1 year).....	\$30,000
Zuni Bluehead Sucker Status/Restoration on the Navajo Nation (2 years)	\$90,000
Dry Lake Renovation on the San Carlos Apache Reservation (1 year)	\$25,000
Colorado Cutthroat Restoration on the Navajo Nation (3 years).....	\$150,000
Gila Topminnow Replications on the San Carlos Apache Reservation (2 years)	\$50,000
Development of Fishery Management Plans on Tribal Lands (5 years)	\$250,000
San Carlos Fishery (Native & Sport) Surveys (5 years)	\$750,000
Navajo Nation Fishery Surveys (5 years)	\$750,000
Fort Apache Indian Reservation Fishery (Native & Sport) Surveys (5 years).....	\$750,000
Hualapai Tribal Assistance (5 years)	\$500,000
Hopi Tribal Assistance (5 years)	\$500,000
Total	\$3,895,000
<u>Invasive Species</u>	
Aquatic Nuisance Species - Giant Salvinia Control (1 year)	\$100,000
Conduct Hazard Analysis Critical Control Point Planning Training (3 years).....	\$75,000
Crayfish-Smallmouth Bass-Native Fish Interactions Study (2 years).....	\$50,000
Selected Invasive Fish Control in Talkalai Lake (3 years).....	\$75,000
Total	\$300,000
<u>Big River Fishes Recovery</u>	
Little Colorado River Humpback Chub Monitoring (10 years).....	\$3,000,000
Humpback Chub Translocation Above Chute Falls (2 years)	\$150,000
Bonytail Telemetry on Lake Havasu, Phase 2 (1 year)	\$75,000
Diamond Creek Down - Grand Canyon Native Fish Sampling (5 years)	\$500,000
Manage Office Cove for Razorback Sucker & Bonytail Grow-out (5 years).....	\$50,000
Beal Lake Renovation (1 year).....	\$100,000
Cibola High Levee Pond Study (3 years).....	\$125,000
Humpback Chub Above Chute Falls - Food Base and Genetics Study (3 years).....	\$200,000
Affects of High Conductivity on Razorback Sucker and Bonytail Chub Study (3 years).....	\$150,000
Razorback Sucker & Bonytail Roundups on Havasu & Mohave Lakes (10 years).....	\$500,000
Total	\$4,850,000

Project Title (Project Duration)	Cost
Native Fish	
Gila Trout Recovery Activities (10 years).....	\$1,000,000
Little Colorado Spinedace Status Surveys (5 years)	\$500,000
Spikedace Surveys (5 years)	\$500,000
Native Fish Surveys in the West Clear Creek Drainage (2 years)	\$200,000
Desert Pupfish Population Estimates (5 years)	\$50,000
Native Fish Surveys in the Bill Williams River Drainage (2 years)	\$200,000
Development of Fishery Management Plans on National Wildlife Refuges (5 years).....	\$250,000
Lead the Arizona Native Fish Conservation Teams (3 years).....	\$75,000
Grand Falls Monitoring (1 year)	\$30,000
Native Fish Surveys in the Blue River Drainage (2 years)	\$200,000
Native Fish Swim Performance Studies (3 years)	\$45,000
El Coronado Ranch Habitat Conservation Plan Fishery Monitoring (5 years)	\$75,000
Development of Fishery Management Plan for the Verde River (1 year).....	\$50,000
Total	\$3,175,000
Fish Passage	
Implement Arizona Fish Passage Inventory, Prioritization, Implementation, & Evaluation Plan	
Fish Passage in Little Colorado River Watershed (5 years).....	\$500,000
Fish Passage in Gila-Salt-Verde Watershed (5 years).....	\$500,000
Fish Passage in Lower Colorado River Watershed (5 years)	\$500,000
Fish Passage in Rio Yaqui Watershed (5 years).....	\$200,000
Total	\$1,700,000
Total FONS	\$19,800,000



Fiscal Year 2005 Budget:	Total	\$1,116,075
	Reimbursables.....	\$560,944
	Partners for Fish & Wildlife.....	\$41,500
	Youth Conservation Corps	\$15,000
	Fisheries	\$498,632
Fiscal Year 2004 Budget:	Total	\$1,237,199
	Reimbursables.....	\$601,902
	Partners for Fish & Wildlife.....	\$40,000
	Youth Conservation Corps	\$15,000
	Fisheries	\$555,375
	Volunteer	\$5,000
	Contaminants	\$4,922
	Station of the Year.....	\$15,000
Fiscal Year 2003 Budget:	Total	\$1,375,724
	Ecological Services**	\$87,000
	Reimbursables.....	\$459,650
	Partners for Fish & Wildlife.....	\$30,000
	Youth Conservation Corps	\$15,000
	Fisheries	\$784,074
Fiscal Year 2002 Budget:	Total	\$1,041,684
	Ecological Services**	\$86,500
	Reimbursables.....	\$270,984
	Partners for Fish & Wildlife.....	\$40,000
	Fisheries	\$644,200
Fiscal Year 2001 Budget:	Total	\$1,057,100
	Ecological Services**	\$70,000
	Reimbursables.....	\$260,214
	Partners for Fish & Wildlife.....	\$40,000
	Fisheries	\$686,886

**Ecological Services funding was solely for the support of an Ecological Services biologist stationed in Pinetop.

APPENDIX C. AZFRO PUBLICATIONS

The following is a list of technical publications published in FY 2005. Copies of these publications can be obtained by contacting:

U.S. Fish and Wildlife Service
Arizona Fishery Resources Office
P.O. Box 39
Pinetop, AZ 85935
928-367-1953

Brouder, M.J. 2005. El Coronado Ranch Habitat Conservation Plan 2004 Fish Monitoring Report. USFWS-AZFRO-PT-05-008.

Brouder, M.J. 2005. Overwinter Survival and Growth of Sub-catchable and Catchable Rainbow and Brown Trout Stocked into Point of Pines and Seneca Lakes. USFWS-AZFRO-SC-05-003.

Brouder, M.J. 2005. Angler Catch Rates, Harvest Rates, and Economic Benefits of the Coldwater Trout Fisheries of Point of Pines and Seneca Lakes. USFWS-AZFRO-PT-05-009.

Brouder, M.J. 2005. 2005 Spring Lake Surveys: San Carlos Lake, Seneca Lake, and Talkalai Lake. USFWS-AZFRO-PT-05-010.

Brouder, M.J. and L.S. Jacks. 2004. FY 2004 Arizona Fishery Resources Office Annual Report. USFWS-AZFRO-PT-05-001.

Hedwall, S. and P.J. Sponholtz. 2005. Renovation of Stocktanks in the Fossil Creek Watershed. USFWS-AZFRO-FL-05-011.

Hedwall, S., A. Sillas, and P.J. Sponholtz. 2005. Sycamore Creek Fish Salvage and Repatriation. USFWS-AZFRO-FL-05-008.

Minckley, C.O. and M.S. Thorson. 2005. Bonytail Roundup Report for Lake Mohave AZ-NV 2005. USFWS-AZFRO-PA-05-011.

Minckley, C.O. and M.S. Thorson. 2005. Report on the 6th Annual Native Fish Roundup on Lake Havasu, AZ-CA, 14-18 February 2005. USFWS-AZFRO-PA-05-010.

Minckley, C.O. 2005. Report on Spraying Activities on the Palo Verde Drain 2004 Annual Report. USFWS-AZFRO-PA-05-008.

Minckley, C.O. 2005. Arizona Fishery Resources Office Activities During the Razorback Roundup, March 2005, Lake Mohave, AZ-NV. USFWS-AZFRO-PA-05-009.

Minckley, C.O. 2005. Population Estimates for Desert Pupfish Refugia at Imperial and Cibola National Wildlife Refuges, 2005. USFWS-AZFRO-PA-05-012.

Stone, D.M. and P.J. Sponholtz. 2004. Translocation of Young-of-Year Humpback Chub above Chute Falls in the Little Colorado River, AZ 2004 Interim Report. USFWS-AZFRO-FL-05-002.

VanHaverbeke, D.R. 2005. Stock Assessment and Fisheries Monitoring Activities in the Little Colorado River within Grand Canyon During 2004. USFWS-AZFRO-FL-05-003.

VanHaverbeke, D.R. 2005. Monitoring of Native Fishes of the Colorado River Ecosystem in Grand Canyon, Little Colorado River Fall 2004 Trip Report. USFWS-AZFRO-FL-05-001.

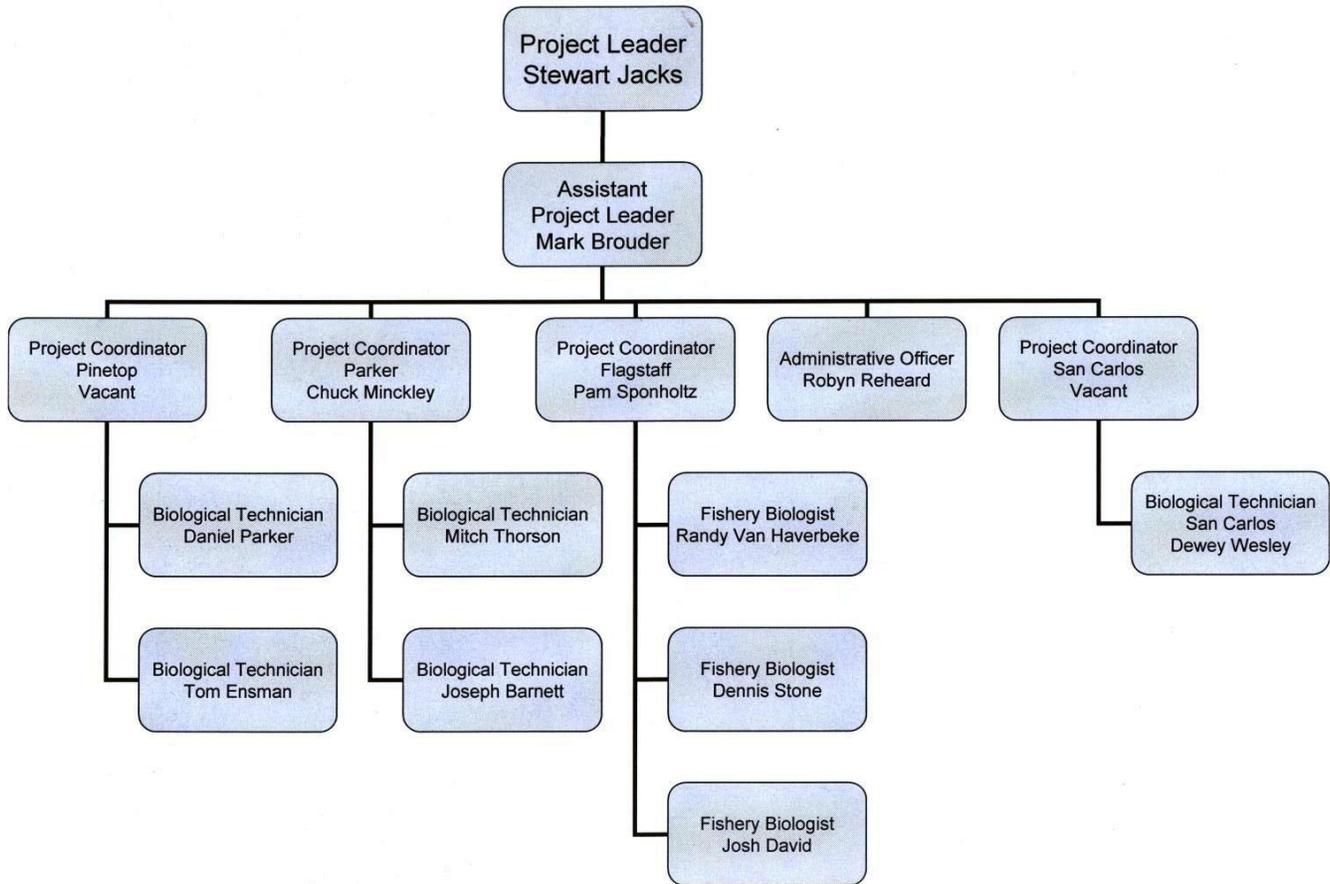
VanHaverbeke, D.R. 2005. Monitoring of Native Fishes of the Colorado River Ecosystem in Grand Canyon, Little Colorado River Spring 2005 Trip Report. USFWS-AZFRO-FL-05-007.

The following is a list of presentations given by AZFRO personnel in FY 2005:

- Brouder, M.J. and D.R. Van Haverbeke. 2005. Closed Population Estimates of the Humpback Chub (*Gila cypha*) in the Little Colorado River, Grand Canyon, AZ. Upper Colorado River Basin Researchers Annual Meeting, Grand Junction, CO.
- Brouder, M.J. 2005. Management of Native Fish Protected Habitats on Imperial National Wildlife Refuge, 2002 – 2004. AZ/NM Annual Chapter Meeting of the American Fisheries Society, Gallup, NM.
- Brouder, M.J. 2005. The Role of Native Fish Protected Habitats in the Recovery of Endangered Razorback Sucker. American Fisheries Society 135th Annual Meeting, Anchorage, AK.
- David, J.W. and P.J. Sponholtz. 2005. 2004 Activities by Arizona Fishery Resources Office in the Little Colorado River and Grand Canyon. Annual Colorado River Aquatic Biologists Meeting, Laughlin, NV.
- David, J.W. 2005. Stream Sampling on the Navajo Nation 2002 -2004. AZ/NM Annual Chapter Meeting of the American Fisheries Society, Gallup, NM.
- Ensman, T.M. and D. Parker. 2005. Occupations as a Fishery Biologist with the U.S. Fish & Wildlife Service. McNary Schools Career Day, McNary, AZ.
- Ensman, T.M. 2005. Apache Trout Recovery. Blue Ridge Mid School Field Trip, Pinetop, AZ.
- Hartsell, L.D. 2004. Apache Trout Recovery Program. Washington Office Fisheries Branch Meeting, Arlington, VA.
- Jacks, L.S., T. Busiahn, J. Goldberg, and H. Bolton. 2004. The National Fish Habitat Initiative. 33rd Annual Desert Fishes Council Meeting, Tucson, AZ.
- Jacks, L.S. 2004. Utilizing HACCP (Hazard Analysis Critical Control Point) During Department of Interior – Motorboat Operator Certification Course Training. Regional DOI-MOCC Instructors Meeting, Aransas, TX.
- Jacks, L.S., P.J. Sponholtz, and D.M. Stone. 2005. Monitoring Efforts for Humpback Chub Above Chute Falls, Little Colorado River. AZ/NM Annual Chapter Meeting of the American Fisheries Society, Gallup, NM.
- Jacks, L.S. 2005. Occupations as a Fishery Biologist with the U.S. Fish & Wildlife Service. Blue Ridge Mid School Career Day, Pinetop, AZ.
- Jacks, L.S. 2005. National Fish Habitat Initiative, Fish Passage, Invasive Species Control Through Pathway Management, and the Field Integration Team. Regional Partners for Fish & Wildlife Meeting, Broken Bow, OK.
- Jacks, L.S. 2005. Invasive Species: Threats, Issues, and Stopping Their Spread Through Pathway Management. DOI Motorboat Operator Certification Course Training, Lake Havasu City, AZ.
- Jacks, L.S. 2005. Science Needs: A Fishery Resources Office Perspective. National Fish Technology Center & Fish Health Center Meeting, Davis, CA.
- Jacks, L.S. 2005. Arizona Fishery Resources Office, Sport Fish Management, and Apache Trout Recovery. White Mountain Fly Fishing Club Monthly Meeting, Show Low, AZ.
- Jacks, L.S. 2005. Fisheries Biology. Blue Ridge Mid School Environmental Camp, Pinetop, AZ.
- Jacks, L.S. 2005. The Fisheries Program of the U.S. Fish & Wildlife Service. Pinetop-Lakeside Town Hall Forest Health Meeting, Pinetop, AZ.
- Jacks, L.S. 2005. Preventing and Controlling Invasive Species. Southwest Regional Native American Fish & Wildlife Society Annual Meeting, Hon Dah, AZ.
- Minckley, C.O. and M.S. Thorson. 2004. Updates for Ducks Unlimited Ponds, Beal Lake, High Levee Pond, and the Lake Havasu Fisheries Project. Lower Colorado River Native Fish Workgroup Meeting, Laughlin, NV.

Appendix D. (cont)

- Minckley, C.O. and M.S. Thorson. 2005. Activities completed by Arizona Fishery Resources Office on the Colorado River between Hoover Dam and Yuma in 2004. Annual Colorado River Aquatic Biologists Meeting, Laughlin, NV.
- Minckley, C.O. and M.S. Thorson. 2005. Summary of Desert Pupfish Activities Conducted in Arizona and Northern Mexico by AZFRO 1996-2004. AZ/NM Annual Chapter Meeting of the American Fisheries Society, Gallup, NM.
- Sponholtz, P.J. and D. Stone. 2004. Monitoring Efforts for Humpback Chub Above Chute Falls in the Little Colorado River. 33rd Annual Desert Fishes Council Meeting, Tucson, AZ.
- Sponholtz, P.J. 2004. Fossil Creek Restoration and Humpback Chub Recovery. Northern Arizona Flycasters Meeting, Flagstaff, AZ.
- Sponholtz, P.J. and D. Stone. 2005. Growth rates of humpback chub above Chute Falls, Little Colorado River, AZ. Upper Colorado River Basin Researchers Annual Meeting, Grand Junction, CO.
- Sponholtz, P.J., S. Hedwall, C. Paradzick, D. Smith, and J. Pebworth. 2005. Restoration efforts along the Upper Verde River. AZ/NM Annual Chapter Meeting of the American Fisheries Society, Gallup, NM.
- Sponholtz, P.J. and C. Benedict. 2005. Restoration Techniques Used on the Fossil Creek Restoration Project. Master Naturalist Training Program Workshop, Flagstaff, AZ.
- Sponholtz, P.J. 2005. Fishery Identification and Sampling Techniques. Sinagua High School Advanced Science Placement Training, Flagstaff, AZ.
- Sponholtz, P.J. 2005. Colorado River Management: Endangered Species Restoration Opportunities. Arizona State University Environmental Law Student Training, Grand Canyon, AZ.
- Sponholtz, P.J. 2005. Spring 2005 Chute Falls Monitoring Results. Grand Canyon Technical Workgroup Meeting, Phoenix, AZ.
- Sponholtz, P.J. 2005. The Little Colorado River and the Adaptive Management Plan for Glen Canyon Dam. Little Colorado River Watershed Coordinating Council Meeting, Flagstaff, AZ.
- Sponholtz, P.J. 2005. Chute Falls Humpback Chub Translocation Project. Grand Canyon Adaptive Management Workgroup Meeting, Phoenix, AZ.
- Sponholtz, P.J., S. Hedwall, D. Weedman, A. Unthank, I. Reid, and A. Haden. 2005. Physical and Biological Restoration of Fossil Creek, Arizona: Successful Collaboration Across Organizations and Individuals. American Fisheries Society 135th Annual Meeting, Anchorage, AK.
- Stone, D.M. 2004. Effect of Turbidity on Miniature Hoop Net Catch Rates of Humpback Chub and Other Fishes in the Little Colorado River, AZ. 33rd Annual Desert Fishes Council Meeting, Tucson, AZ.
- Stone, D.M. 2005. Humpback Chub Translocation Experiment in the Little Colorado River. Annual Grand Canyon Stock Assessment Workshop and Cooperators Meeting, Flagstaff, AZ.
- Van Haverbeke, D.R. 2004. Stock Assessment Activities in the Little Colorado River from 2001 to 2004. 33rd Annual Desert Fishes Council Meeting, Tucson, AZ.
- Van Haverbeke, D.R. 2005. Closed Population Estimates of the Humpback Chub (*Gila cypha*) in the Little Colorado River, Grand Canyon, AZ. AZ/NM Annual Chapter Meeting of the American Fisheries Society, Gallup, NM.
- Thorson, M.S. 2005. Status of the Lake Havasu Bonytail Telemetry Project. Lake Havasu Fisheries Improvement Project Meeting, Lake Havasu City, AZ.
- Weedman, D. and P.J. Sponholtz. 2005. Physical and Biological Restoration of Fossil Creek, Arizona: Successful Collaboration Across Organizations and Individuals. AZ/NM AFS Annual Chapter Meeting, Gallup, NM.



Arizona Fishery Resources Office

Our Mission:

“Working with others to conserve, protect, and enhance fish and other aquatic organisms and their habitats in Arizona and the Southwest”

For additional information regarding the Arizona Fishery Resources Office or any of the accomplishments highlighted within this report, please feel free to contact us at one of our four Arizona locations:

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928-367-1953

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