U.S. Fish & Wildlife Service

New Mexico Fish and Wildlife Conservation Office

Annual Report of Activities

Fiscal Year 2008

Arkansas River Shiner

Gila Trout

Razorback Sucker

Spikedace

Rio Grande Cutthroat Trout

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Introduction

The primary goal of the NMFWCO is to conduct dependable and accurate research, monitoring, and resource inventory activities and to use those data responsibly. A variety of projects to this end were continued in FY08 including nonnative fish removal on the San Juan River, Pecos River fish monitoring, Rio Grande silvery minnow surveys, Gila trout habitat restoration, inventories of Mexican fishes with cooperating Mexican partners, and community projects with local Tribal groups in New Mexico. These activities are outlined in detail in the following report. The NMFWCO is based in Albuquerque, New Mexico, and located at 3800 Commons Avenue NE. Office facilities include a 10,000 square foot building that houses offices, a library, a laboratory, captive propagation recirculating systems, a shop, and boat and equipment storage.

Staffing

The NMFWCO staff represents a variety of aquatic and outdoor disciplines and includes a combination of permanent, TERM, temporary (TEMP), and student career appointment (SCEP) positions. An Organizational Chart (Figure 1) was approved for NMFWCO during early 2007 and includes thirteen (13) permanent positions. Historically, funding has not been available to fill all vacant positions, particularly the Assistant Project Leader position that has remained vacant since FY03. Based upon current policies within the Service, the non-existent funding to fully staff field offices is not likely to change.

During FY07, two permanent positions were transferred from Ecological Services to address changes in Rio Grande silvery minnow field responsibilities. The FY08 staff at NMFWCO consisted of twenty-one (21) positions (see Table 1). Notable staff actions during FY08 included the hiring of Ernest Teller as a Biological Science Technician, the transfers of Stephanie Coleman to a permanent position with the U.S. Forest Service and Tammy Knecht to a permanent position with Arizona FWCO at the Parker, Arizona. In addition, we hired four fishery biologists (TEMP) and added one STEP appointment for contracted work.

Table 1. NMFWCO Personnel Roster for FY08

Name	*Title*	*Series*	*Appointment*
James E. Brooks	Supv. Fishery Biologist	GS-0482-14	Permanent
D. Chris Kitcheyan	Fishery Biologist	GS-0482-12	Permanent
Jason E. Davis	Fishery Biologist	GS-0482-12	Permanent
Daniel Weston Furr	Fishery Biologist	GS-0482-07	Permanent
W. Jason Remshardt	Fishery Biologist	GS-0482-11	Permanent
Susan M. Maestas	Administrative Officer	GS-0341-09	Permanent
Stephen R. Davenport	Fishery Biologist	GS-0482-11	TERM
Ernest Teller Sr.	Biol. Sci. Technician	GS-0404-08	TERM
Stephanie M. Coleman	Fishery Biologist	GS-0482-07	TERM
James P. Sandoval	Fishery Biologist	GS-0482-05	TERM
Thomas P. Archdeacon	Fishery Biologist	GS-0482-05	TERM
Tammy Knecht	Fishery Biologist	GS-0482-05	TERM
Angela James	Fishery Biologist	GS-0404-05	TEMP
Dustin J. Myers	Fishery Biologist	GS-0482-05	TEMP
Bobby Ray Duran	Fishery Biologist	GS-0482-05	TEMP
Paula Stubbs	Fishery Biologist	GS-0482-05	TEMP
Evan B. Anderson	Biol. Sci. Aid	GS-0404-03	STEP
Tristan J. Austring	Biol. Sci. Aid	GS-0404-03	STEP

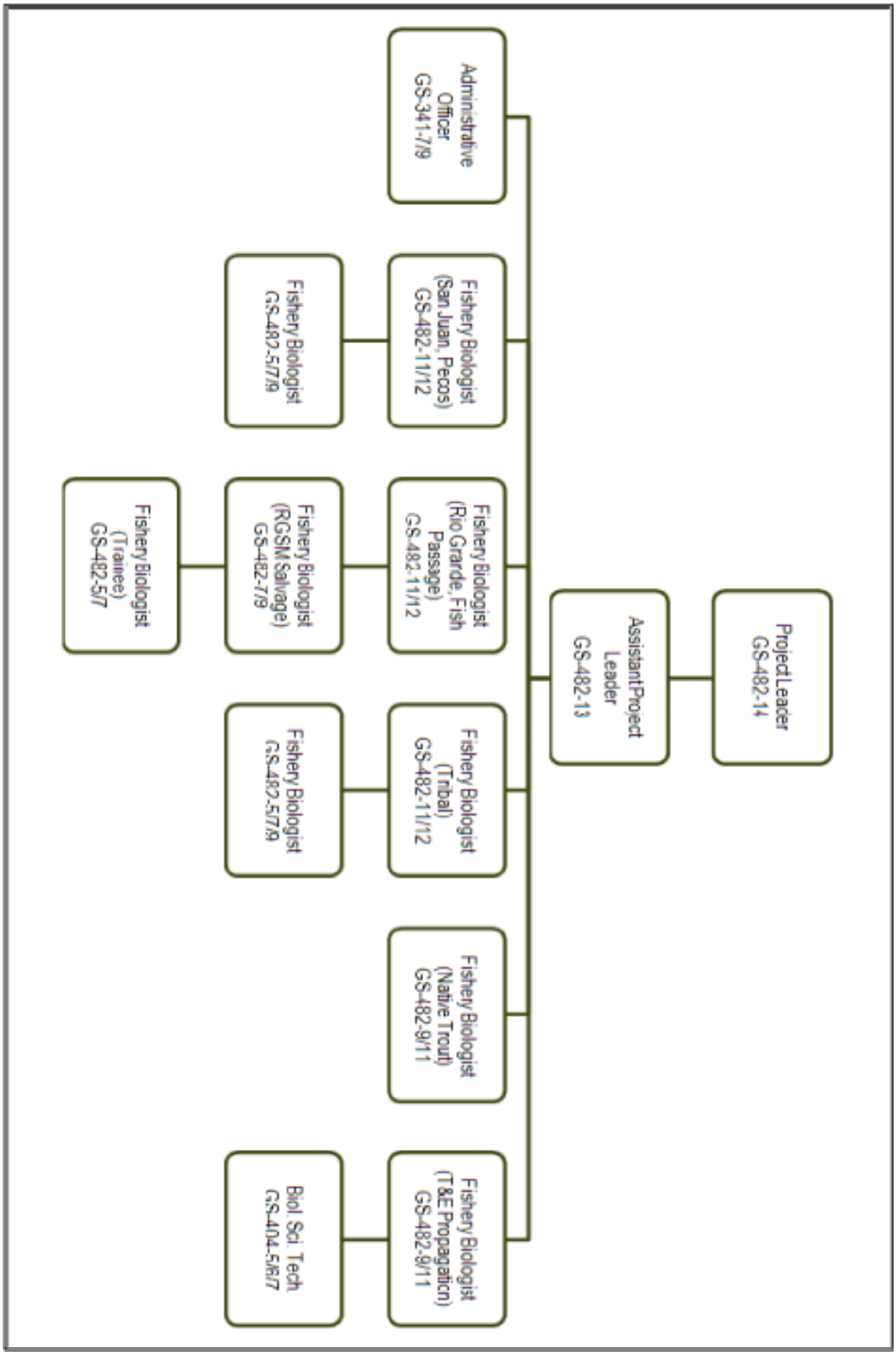


Figure 1. Approved Organizational Chart for New Mexico Fish and Wildlife Conservation Office

Resource Issues

Activities conducted by NMFWCO during FY08 address all six Fisheries Program Priorities: 1) recovery of listed and candidate species, 2) restoration of inter-jurisdictional fisheries and aquatic systems, 3) management of inter-jurisdictional fisheries, 4) fulfilling mitigation obligations, 5) restoring depleted aquatic populations to preclude listing, and 6) providing fish and wildlife management assistance to tribes and on FWS lands. Priorities 1, 2, 3, and 5 have considerable overlap in the American Southwest with its scarcity of water and, consequently, were commingled in station efforts. While satisfaction of Tribal trust responsibilities remains an important component of NMFWCO activities, management activities related to native and fish species listed under the ESA, as amended, within various ecosystems play an equally important role and also provide a substantial portion of annual station funding from other agencies. Inherent in station activities is close coordination with biologists and administrators from tribes, other federal and state agencies, a variety of local government agencies, non-governmental organizations, academic institutions, and many private landowners.

Activities are generally discussed below by ecosystems, but our tribal fisheries program activities are discussed separately and cover multiple ecosystems. Ecosystems in which NMFWCO conducted management activities were Upper Colorado River (San Juan Basin), Upper/Middle Rio Grande, Pecos, and Gila/Salt/Verde. In addition, work was performed in several river basins in the Sierra Madre Occidental, Mexico, in conjunction with ongoing surveys of native trout.

Pecos River

Pecos bluntnose shiner

Pecos bluntnose shiner was monitored at 14 Pecos River fish community monitoring sites in 2008. Eight sites were monitored within the reach occupied by the "core" population (river section 1) of Pecos bluntnose shiner (approximately De Baca/Chaves county line to Bitter Lake National Wildlife Refuge (NWR)), and 5 within the lower, poor habitat quality section (Bitter Lake NWR to Brantley Reservoir inflow, river section 2).

Core sites were monitored in all months except January and December, and lower sites were monitored in February, April, June, August, October and December (Table 2). Core sites were monitored more frequently to evaluate effects of lower winter flows on temporal trends in fish abundance. Pecos bluntnose shiner abundance trends are reported in four-month trimesters: January-April, May-August and September-December. Catch-per-unit-effort (fish/100 m^2), and percent abundance (number of Pecos bluntnose shiner divided by total fish collected) are calculated to track Pecos bluntnose shiner spatial and temporal trends.

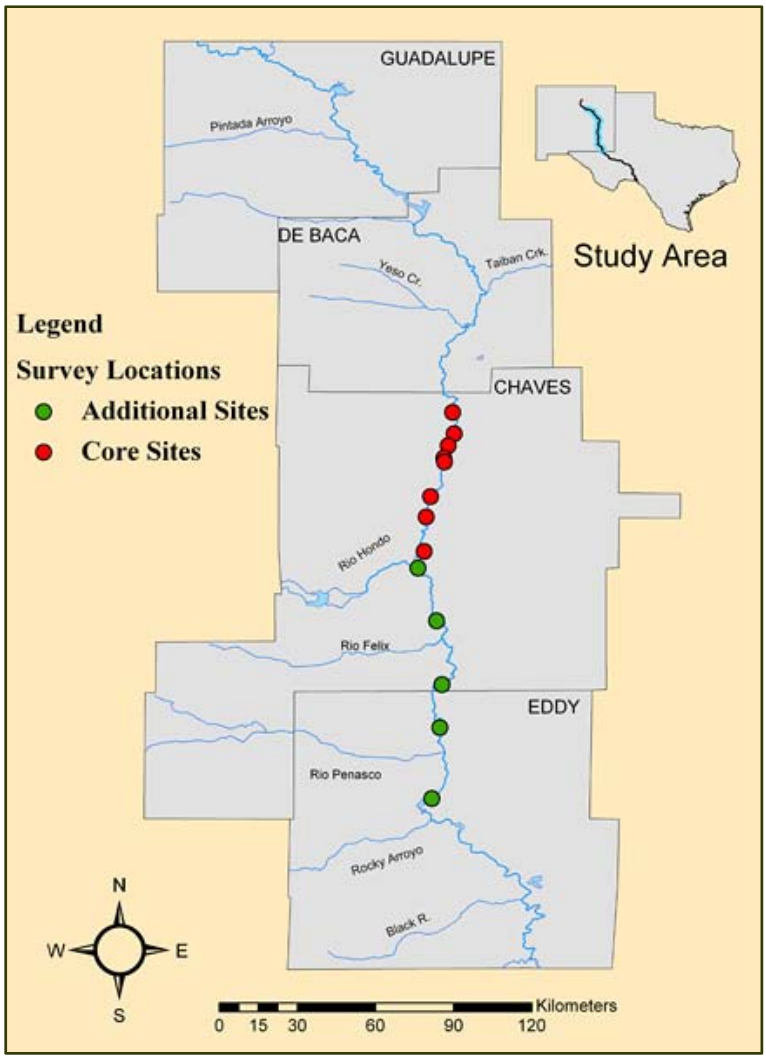
Pecos bluntnose shiner catch-rate and percent abundance has improved annually since surface flow intermittence ended in 2005, and this trend continued in 2008 (Table 3). Cumulative mean catch-rate was 11.4 fish/100 m^2 (± 2.6 fish/100 m^2 SE) and cumulative mean percent abundance was 9.6% (± 1.1% SE) of the total fish community. Lowest mean catch-rate was recorded in 2005 (2.2 fish/100 m^2, ± 0.4 SE). Total Pecos bluntnose shiner, catch-rate, and percent abundance are summarized in Table 2.

Table 2. Total number of Pecos bluntnose shiner collected in 2008, Pecos River, New Mexico. Data are reported by site for each sampling period. Sites not sampled are abbreviated ns.

	Site	*Site#*	*Feb*	*March*	*Apr*	*May*	*June*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
Tailwater Section	Old Fort Park	14		ns		ns	0	ns	ns	0	ns	ns	0	ns	0
Rangeland Section	Willow Creek	13		4		4	24	31	12	12	39	22	18	5	ns	171
	Six Mile Draw	12		60		12	19	37	20	35	20	24	15	3	ns	245
	Crockett Draw	11		134		9	20	62	25	17	17	19	14	20	ns	337
	Cortez Gasline	10		6		ns	ns	ns	ns	9	ns	ns	ns	33	ns	48
	Bosque Draw	9		36		7	46	222	39	24	7	20	24	ns	ns	425
	Gasline	8		21		14	33	32	55	39	19	20	20	19	ns	272
	Highway 70	7		82		34	62	67	6	22	16	47	41	27	ns	404
	Scout Camp	6		101		39	4	19	2	4	8	44	8	ns	ns	229
	Total			**444**		**119**	**208**	**470**	**159**	**162**	**126**	**196**	**140**	**107**		**2,131**
Farmland Section	Highway 380	5		0		ns	1	ns	21	ns	3	ns	29	ns	3	57
	Dexter Bridge	4		0		ns	2	ns	0	ns	4	ns	10	ns	0	16
	Lake Arthur Falls	3		3		ns	7	ns	0	ns	39	ns	86	ns	0	135
	Highway 82	2		0		ns	1	ns	1	ns	2	ns	11	ns	5	20
	Brantley Inflow	1		0		ns	0	ns	0	ns	43	ns	163	ns	10	216
	Total			**3**			**11**		**22**		**91**		**299**		**18**	**444**
Total				**447**		**119**	**219**	**470**	**181**	**162**	**217**	**196**	**439**	**107**	**18**	**2,575**

Table 3. Pecos bluntnose shiner raw abundance, catch-rate and percent abundance (± one standard error) by four month trimester and by river section for 2008

Trimester	River Section	Total PBS collected	CPUE	± 1 standard error	% Abundance	± 1 standard error
1	1	771	14.0	3.0	17.0	3.0
	2	14	0.6	0.3	2.9	1.2
2	1	917	11.0	2.9	13.2	2.1
	2	113	8.8	5.9	2.0	1.0
3	1	443	8.1	1.0	7.6	1.2
	2	338	33.8	24.9	7.5	3.4
	1	**2,131**	**11.1**	**1.5**	**12.7**	**1.3**
	2	**465**	**14.9**	**8.9**	**4.1**	**1.3**
Total		**2,596**	**11.4**	**2.6**	**9.6**	**1.1**



Study Area for Pecos River Fish Community Sampling

Pecos bluntnose shiner incidental take is calculated from a two-year running average. In 2008, the two-year running average of trimester 1 must be at least 2.5 Pecos bluntnose shiner/100 m^2 and by trimester 3 must be at least 4.0 Pecos bluntnose shiner/100 m^2. In subsequent years the catch-rate average increases. The two-year running average is calculated by averaging each year's trimester 1 and 3 catch-rate with the previous year catch-rate for the same trimester. Table 4 summarizes the two year running average to date.

Table 4. Pecos bluntnose shiner two year catch-rate mean with standard error, and number of samples (N). Standard error is not required under the 10 year Biological Opinion, but is provided to illustrate variation. Two year running average calculated from site means for the year stated and preceding year (for example in 2006, by calculating mean from all sites for trimester one in 2005 and 2006; same for trimester three).

Year	*Trimester one PBS/100 m^2*	*Trimester three PBS/100 m^2*	*Any trimester 2008*
2006	**3.5** (± 0.75 SE, N = 48)	**5.3** (± 0.90 SE, N = 48)	> 2.7 (2.5)
2007	**5.0** (± 0.8 SE, N = 53)	**9.8** (± 1.8 SE, N = 50)	> 4.0 (2.5)
2008	**7.2** (± 1.3 SE, N= 62)	**14.3** (± 4.5 SE, N= 59)	> 9.8 (2.5)

Pecos bluntnose shiner abundance trends reveal both intra- and inter-annual variation; with greatest variation resulting from years with low flows and surface flow intermittence. Greatest intra-annual variation occurred in river section two. The least amount of variation coincides with long periods of continuous surface flow. Long term catch-rate (Figure 2) remained relatively stable in the years 1992-2000, but during 2001-2004 catch-rate became unstable, coinciding with low flows and surface flow intermittence. Annual catch-rate in the years following surface flow intermittence (2005-2008) increased, but that increase was gradual. Recovery of Pecos bluntnose shiner following disturbances such as surface flow intermittence is slow, and multiple years are required for stable catch-rates to persist.

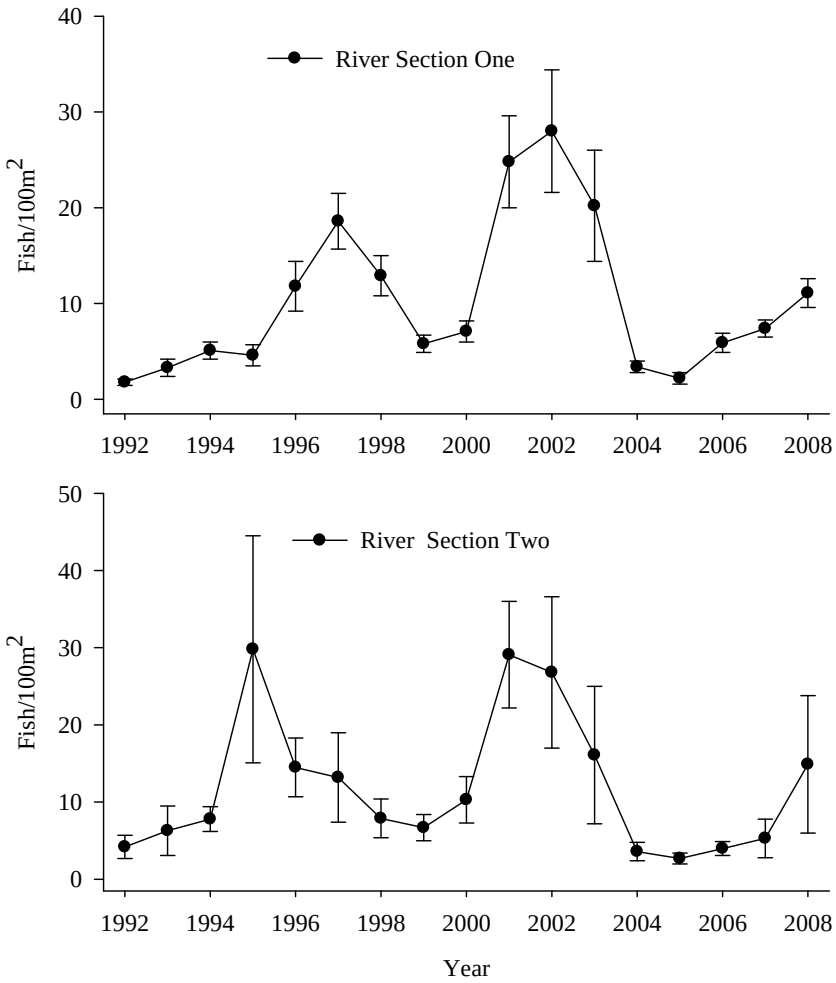


Figure 2. Annual Pecos bluntnose shiner catch-rate (fish/100m2), ± one standard error, in river sections one and two, 1992-2007.

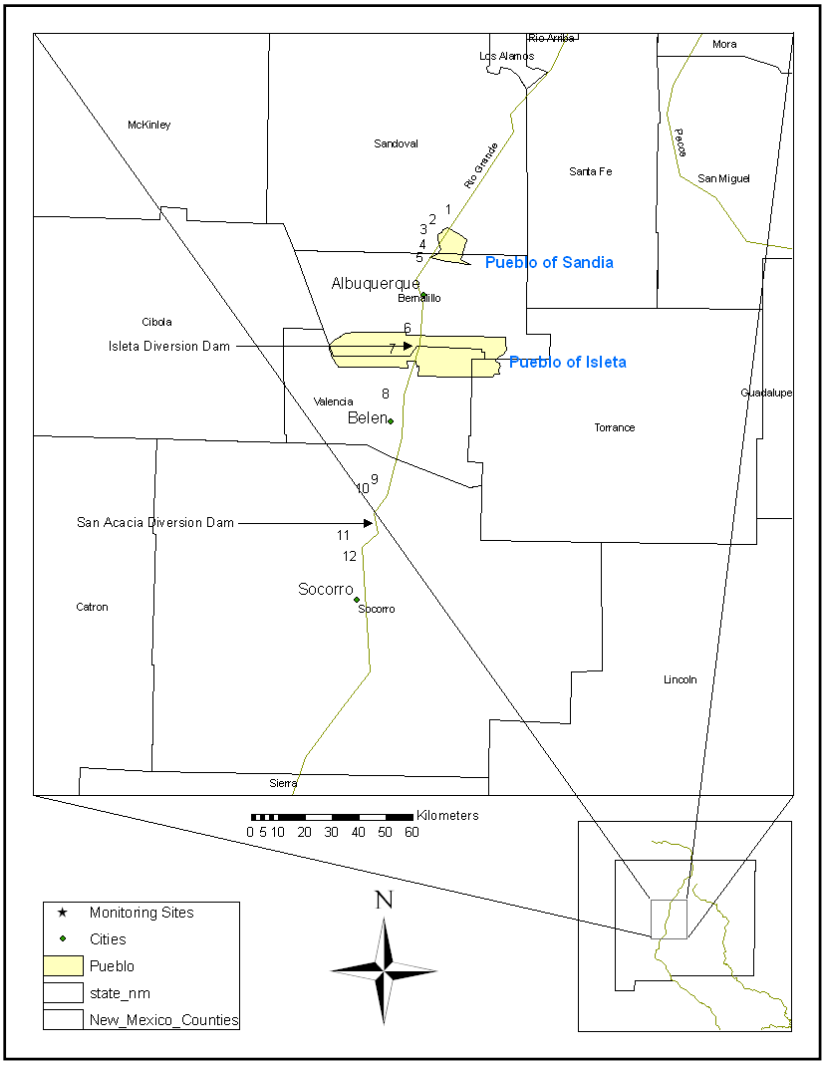
In October 2008, three sites yielded Pecos bluntnose shiner downstream of Brantley Inflow: Brantley Reservoir boat launch (n = 14, standard length 19.95-31.04 mm), New Mexico County Road 30 crossing (n = 1, standard length = 26.95mm) and Rocky Arroyo Confluence (n = 2, standard length = 22.86-29.62mm). New Mexico County Road 30 and Rocky Arroyo are monitored annually, but are not included in Pecos bluntnose shiner monthly status and trends monitoring. The collections at Brantley Reservoir boat launch are the first small bodied fish collections from that site. The collections in Brantley Reservoir likely resulted from displacement of Pecos bluntnose shiner eggs, larvae and juveniles into the reservoir following upstream reproduction. New Mexico County Road 30 and Rocky Arroyo are located downstream of Brantley Reservoir, and presence of Pecos bluntnose shiner downstream of the

reservoir may have resulted from eggs and larvae passing through the dam, a resident population downstream of the dam, or bait bucket release of fish by fisherman.

Long-term persistence of Pecos bluntnose shiner in Brantley Reservoir or in the river downstream is unlikely, because habitat modifications and frequent outbreaks of toxic golden algae dramatically increase mortality to fish. In December 2008, sampling at New Mexico County Road 30 yielded only dead or moribund fish, and sampling within Brantley Reservoir yielded no fish. In October 2007, no fish were collected at either New Mexico County Road 30 or Rocky Arroyo. Presumably, the fishless samples were a result of golden algae outbreaks prior to sampling.

Upper/Middle Rio Grande

Activities in the Rio Grande are focused primarily on management and restoration of the Rio Grande silvery minnow (silvery minnow) and the Middle Rio Grande Endangered Species Collaborative Program (MRGESCP). Within the MRGESCP, staff continues to be involved with the Science Workgroup, attending monthly meetings to discuss upcoming budgets, proposals, and project updates. Outside the realm of the MRGESCP, staff also participates in the Rio Grande silvery minnow Genetics and Propagation Workgroup, which is responsible for planning annual reproduction goals for the augmentation program under the goals set by the Rio Grande silvery minnow genetics and propagation plan.



Middle Rio Grande study area covered by NMFWCO activities.

A draft revised 5-year RGSM augmentation plan (2008-2012) for the Middle Rio Grande, New Mexico, is being finalized. In this revised plan, augmentation efforts will be directed toward the Isleta and San Acacia reaches while continuing evaluation of previous efforts in the Angostura Reach. Our stocking and monitoring efforts were initially focused in the Angostura Reach (Albuquerque), where catch rates were extremely low and the expected benefit of augmentation could be maximized. Between 2002 and 2004, 100,000 to 200,000 silvery minnow were released annually in the Angostura Reach; a total of 1,114,890 silvery minnow have been released throughout the Middle Rio Grande, New Mexico.

Rio Grande silvery minnow Augmentation and Monitoring

As detailed in the revised silvery minnow augmentation plan (2008-2012), augmentation will focus only within the Isleta and San Acacia reaches in the next 5 years. This will allow us to accurately assess the long-term benefits of recent (2002-2007) augmentation in the Angostura Reach. The release number (A) for each site (S_i) is calculated using the following formula:

$$AS_i = (C_t - C_o) \times (\text{total estimated area } m^2 \text{ between } S_i \text{ and } S_{i+1})$$

where; C_t = Target catch rate at each site, or 1 fish / 100 m^2,
C_o = Observed catch rate at each site in September
S_i = Site of release
S_{i+1} = Next downstream site.

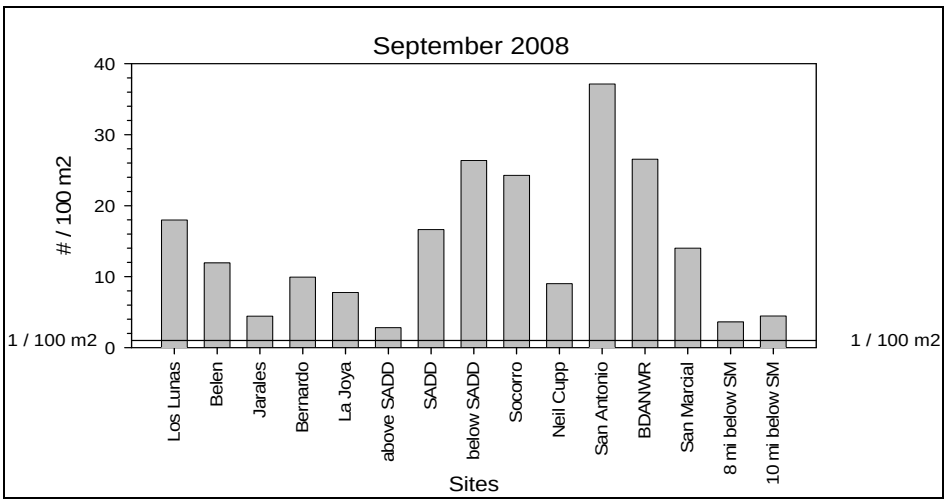


Figure 3. Catch rates for September 2008 monitoring

The catch rates from the September 2008 monitoring were compared with the target catch rate of 1 RGSM / 100 m^2 for each site (Figure 3). All 15 sites had catch rates over this target, including

a majority of the sites with significantly higher catch rates. Therefore, no augmentation of silvery minnow was necessary in the Middle Rio Grande during October 2008 (early FY09). Additional fish that were to be available for the Middle Rio Grande will be made available for the initial reintroduction in Big Bend, Texas, to occur in early December 2008.

A combination of factors in 2008 has led to these increased catch rates, including optimal spring runoff, recruitment flows throughout the early summer, and no river intermittency. With average overwinter survival, higher catch rates should be sustained through late winter/early spring prior to the 2009 season.

Monitoring for previously augmented fish continued in 2008. A total of 5 previously released Rio Grande silvery minnow were captured during monthly monitoring at selected sites within the Angostura and Isleta Reachs. In addition, 37 marked fish were identified during standard population monitoring conducted by American Southwest Ichthyological Research Foundation.

Rio Grande Silvery Minnow Rescue and Salvage

In 2008, the main channel of the Rio Grande between Albuquerque and Elephant Butte Reservoir remained intact for the entire year. This was the first year since salvage operations were implemented in 2001 that silvery minnow were not subject to river intermittency. Salvage activities in 2008 therefore were severely limited compared to previous years and consisted of lateral pool salvage and river maintenance-related fish relocation.

The 2008 salvage activities began on July 11, 2008, and ended October 1, 2008. Crews moved an estimated 7,500 silvery minnow from isolated pools. This total includes fish from pump channel maintenance in the San Acacia Reach (300), river channel maintenance in the San Acacia Reach (3,561), and lateral pool salvage from the Isleta Reach (3,639). In addition, 545 fish were lost during transport and were included in our Service permit. A total of 5 were found dead during salvage of construction areas and were considered as Incidental Take as defined under the 2003 Biological Opinion for the silvery minnow.

Rio Grande Silvery Minnow Monitoring for Egg Entrainment into Irrigation Canals

In May 2008, NMFWCO conducted daily monitoring of 4 irrigation canals below the three irrigation structures within the Middle Rio Grande, New Mexico, including the Angostura, Isleta, and San Acacia Diversion Dams. A total of 10 silvery minnow eggs were collected throughout the month. No eggs were collected in the Angostura Canal or Belen Feeder Canal sites. The lack of eggs in the Angostura Canal again suggests that the silvery minnow density upstream of Angostura Diversion Dam is extremely low if the species is present at all. The majority of eggs observed in irrigation canals in 2008 (Socorro Main, N=9) were found in the San Acacia Diversion Dam irrigation system, resulting from spawning activity in the Isleta Reach. The remaining egg collection (Peralta Main, N=1) from the east side of Isleta Diversion Dam resulted from spawning activity in the Angostura Reach. Relatively high river flows and low egg monitoring numbers in irrigation systems in 2008 suggest that egg entrainment and the negative effect on the Rio Grande silvery population were minimal.

Rio Grande Silvery Minnow Recovery Team

NMFWCO personnel continued to serve as Technical Advisers to the silvery minnow Recovery Team. In June 2008, the technical subgroup of the Recovery Team met with the peer review panel to discuss and review technical comments to the draft Recovery Plan and responses. In response to several comments regarding the recovery criteria, the Team developed a Rio Grande silvery minnow population viability analysis (PVA) to revise the recovery criteria for the species.

The documents now available for review include revised criteria and a new appendix to the Recovery Plan that describes the PVA model. The Draft Revised Plan will not be rereleased. After consideration of comments, the Recovery Plan will be submitted for final approval during FY09.

Rio Grande Silvery Minnow Big Bend Reintroduction

NMFWCO personnel are involved in the silvery minnow Big Bend Reintroduction Project. In FY08, staff attended technical team meetings to discuss reintroduction logistics set for early FY09 including pre-release monitoring, release locations, number of fish to be released, and personnel needs.

PIT Tag Research Related to Albuquerque Fish Passage Structure

Phase I of a research project to assess the viability of Passive Integrated Transponder (PIT) tagging silvery minnow greater than 50 millimeters in standard length was completed in FY2008. PIT-tags must be inserted through an incision made by a scalpel, as needle injections are often fatal.

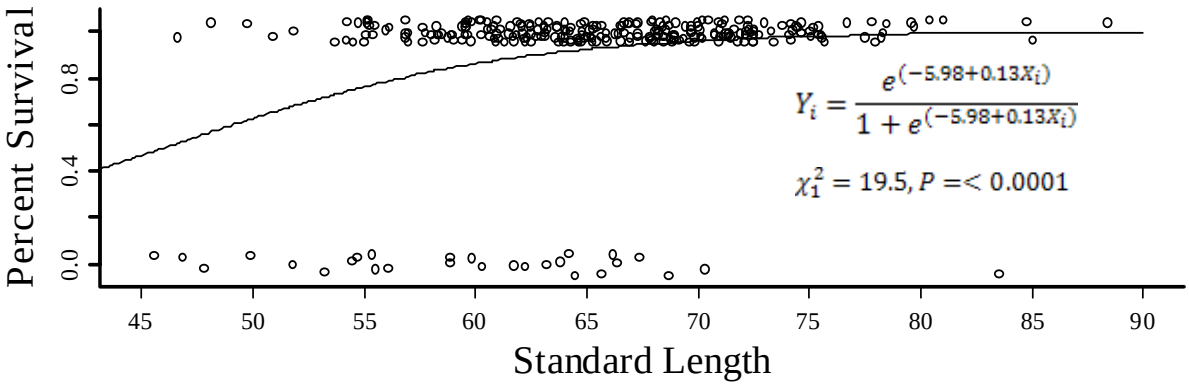
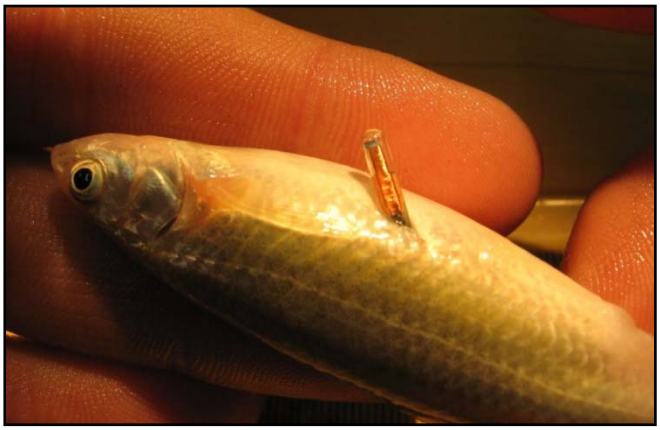


Figure 4. Logistic regression of survival predicted by standard length of Rio Grande silvery minnow PIT tagged by surgical implant, held in aquaria over 49-d

Project results showed PIT tagging to be relatively time consuming and expensive when compared to commonly used VIE tagging; however, fish can be uniquely-tagged and detected with passive, permanently placed scanners when implanted with PIT tags. Phase II of the research project is set to begin in early FY2009, including field testing the PIT-tag antenna installed at the fish passage located at the Albuquerque Drinking Water Facility with a release of about 200 tagged silvery minnow. Completion of Phase II, PIT-tagging 10,000 silvery minnow, will continue in FY2009.



PIT Tag placement in Rio Grande silvery minnow

Rio Grande Silvery Minnow Sanctuary

Collaboration between the NMFWCO and the U.S. Bureau of Reclamation (BOR) on the completion of the Rio Grande Silvery Minnow Sanctuary (Sanctuary) continued in 2008. The Sanctuary is designed to provide a more naturalized rearing habitat for the federally endangered silvery minnow, and to lessen the risk of loss of genetic diversity should there be catastrophic mortality at another Rio Grande silvery minnow facility. Located in Albuquerque's Rio Grande Valley State Park, the Sanctuary is distinct from other federal, state, and city facilities which produce and rear silvery minnow. The Sanctuary's distinction is that it is built within the historic floodplain, has approximately 400 meters of flowing naturalized braided channel with various habitats, and connects directly to the Rio Grande.

The basic concept of the Sanctuary is to borrow water from the Middle Rio Grande Conservancy District's Albuquerque Riverside Drain, pump it back into the Bosque's floodplain, allow it to flow through a constructed 'naturalized' channel that will hold silvery minnow, and finally return the water back to the Albuquerque Riverside Drain. By operating pumps at various rates, the Sanctuary will try to mimic the natural hydrograph and associated habitats of the Rio Grande. When it is decided to release silvery minnow, and river conditions are favorable, the water flowing through the Sanctuary can be temporarily diverted back to the Rio Grande allowing silvery minnow access to the river. This ability to release fish directly from the facility into the Rio Grande will help reduce the potentially harmful physiologic stress that is associated with the handling and hauling of fish.

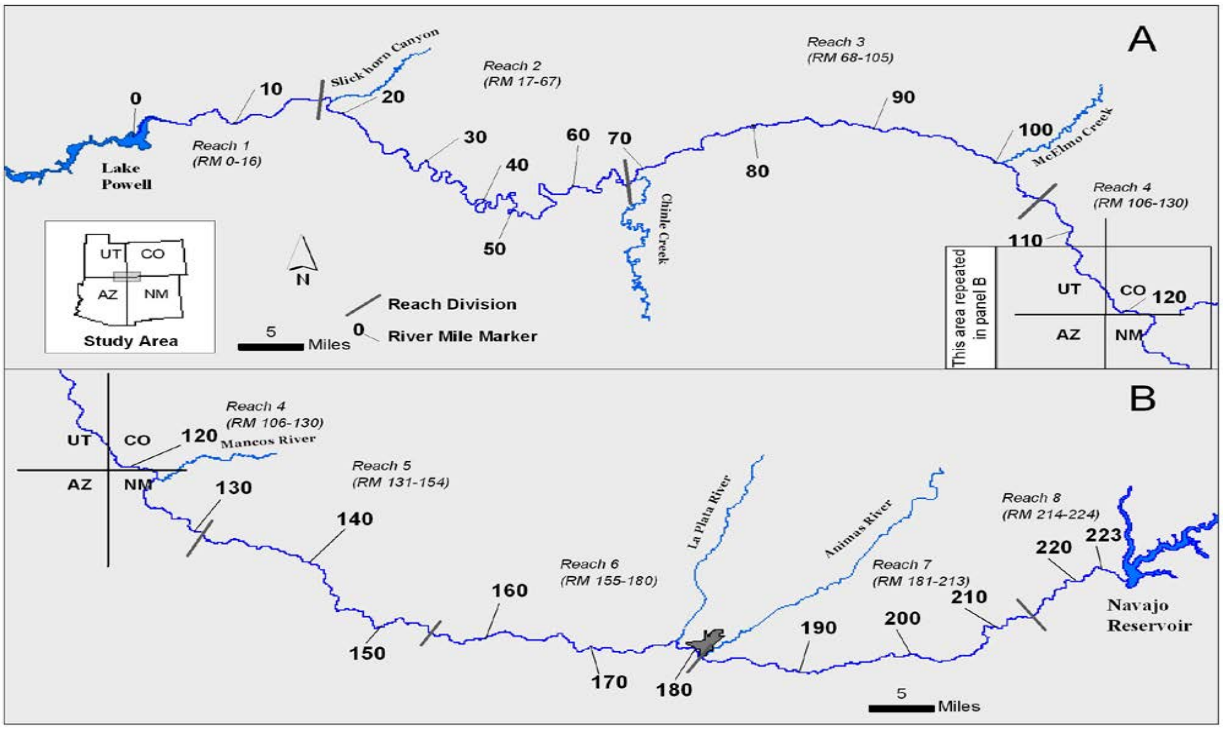
Currently in its final stages of construction, NMFWCO and BOR will continue to work closely together to ensure that the Sanctuary becomes an important management tool for the recovery of silvery minnow.

Pumphouse and outlet works at top of artificial stream channel at the Rio Grande Silvery Minnow Sanctuary

Upper Colorado River Basin – San Juan River

San Juan River Recovery Implementation Program (SJRIP)

The SJRIP is a cooperative recovery program designed to aid in the recovery of razorback sucker and Colorado pikeminnow while allowing water development to continue in the San Juan River Basin. Participants in the Program include the States of Colorado and New Mexico, four Native American Tribes (Jicarilla Apache Nation, Navajo Nation, Southern Ute, Ute Mountain Ute), water development interests, conservationists, and four DOI agencies (Bureaus of Indian Affairs, Land Management and Reclamation, and U.S. Fish and Wildlife Service – Regions 6 and 2). The SJRIP works through a committee process (Coordination, Biology, and Hydrology) and each participant has representation on these committees. For the Service, NMFWCO represents Region 2 on both the Coordination and Biology committees. The NMFWCO participates in all committee meetings and associated workshops related to the SJRIP. The NMFWCO is the principal investigator of a long-term program aimed at the control of large-bodied nonnative fishes, primarily channel catfish and common carp, as a management tool for the recovery of razorback sucker and Colorado pikeminnow. In addition to nonnative fish removal, NMFWCO has assumed the lead responsibility for augmentation efforts for the two federally protected species. A component of this includes the co-management, with the Navajo Nation Department of Fish and Wildlife, of a series of razorback sucker grow-out ponds located southeast of Farmington, New Mexico, on Navajo Agricultural Products Industries (NAPI) lands. The NMFWCO is also responsible for the pre-release acclimatization of hatchery-reared Colorado pikeminnow designed to improve survivability and short term retention of stocked fish.



Map of the San Juan River Basin

Nonnative Species Monitoring and Control

Intensive nonnative fish removal efforts conducted by NMFWCO began on a limited basis in 1998 with intensified efforts beginning in 2001. Efforts initially focused on a 7.6 mile reach located near Fruitland, NM. Location of concentrated removal efforts was influenced by information on adult fish distribution and abundance reported during the seven year research

(1991-1997) period. Numbers of channel catfish and common carp appeared to be lower upstream of PNM Weir (RM 166.6) and the majority of nonnative fishes were considered adult. The presence of water diversion structures that may serve as potential impediments to upstream fish movement and high abundance of large adult nonnative fishes determined where intensive removal efforts would focus.

In response to changes in channel catfish distribution and abundance, nonnative fish removal efforts have continued to expand to include removal efforts for a total of 113.7 river miles (RM) in 2008. Incorporating new information as part of the adaptive management process and shifting effort to priority reaches is expected to result in lowered channel catfish abundance riverwide.

Predation by nonnative channel catfish on stocked Colorado pikeminnow

In 2008, a total of 16,968 channel catfish and 1,115 common carp were removed from the San Juan River during 769.63 hours of electrofishing. When possible, channel catfish were transported by the Navajo Nation Department of Fish and Wildlife to closed impoundments to enhance recreational fishing opportunities to the Four Corners community.

Within upper removal Sections (RM 166.6 -147.9) channel catfish CPUE (fish/hour of electrofishing) significantly declined compared to observed values at the initiation of intensive nonnative removal. These efforts have resulted in a > 80% reduction in channel catfish abundance within these Sections since 2001 and 2003. Channel catfish mean total length (TL) decreased at one point of our study and was possibly a reproductive response by channel catfish to exploitation. Since this decline, mean TL has continued to increase with the observed value in 2008 the highest of the study period. Although mean TL has increased, overall abundance of channel catfish has been greatly reduced and the population appears to have become highly dependent on the 2003/2004 cohort. As non-size selective removal continues it is anticipated that these fish will be removed from the system prior to their ability to reproduce resulting in continued decreases in abundance.

Common carp abundance in 2008 was significantly lower than observed values from 2001-2006. Common carp, once ubiquitous, have become uncommon in collections throughout the San Juan River. At the initiation of intensive nonnative fish removal, common carp catch rates were as high as 20 fish/hour of electrofishing. Declines in common carp catch rates correspond with nonnative removal and common carp catch rates have been < 5 fish/hour for each of the past five years.

In addition to the removal of nonnative fishes, NMFWCO collected data on the distribution, abundance, growth and movement of Colorado pikeminnow and razorback sucker. Of the 577 razorback sucker collected in 2008, 55% were recaptured ± 7 river miles of the stocking location. Four razorback suckers recaptured > 6 times were found within 5 river miles of the stocking location with time between capture events ranging from 2 months to 2 years. One individual razorback sucker was recaptured 13.8 years post-stocking. Similar to razorback sucker, the majority of Colorado pikeminnow recaptures occurred ± 10 river miles of the stocking location. Mean TL ranged from 65-465 mm with 17% of all recaptures comprised of fish ≤ 150 mm TL. Only four Colorado pikeminnow > 400 mm TL were collected in 2008.

Rare Fish Augmentation

In 2008, NMFWCO and partners stocked a total of 275,105 Colorado pikeminnow and 4,444 razorback sucker. Of the Colorado pikeminnow, 4,857 were age-2+ fish stocked at various locations downstream of Shiprock, New Mexico. These fish were held in netted enclosures within low velocity habitats for up to 24 hours to acclimatize fish to a myriad of conditions prior to release into the river. This method of release is intended to increase survivability and short-term retention of stocked fish. Preliminary data suggest that 'soft' releases resulted in relatively high number of recaptures near stocking locations < 150 days post-stocking. Recaptures were distributed throughout the San Juan River as time from stocking increased. A total of 270,248 age-0 fish were stocked near Fruitland, New Mexico. Numbers of age-1+ fish stocked in 2008 were 61% over the targeted annual stocking goal while age-0 fish were -10% of annual goals. All Colorado pikeminnow were reared and delivered by staff from Dexter National Fish Hatchery and Technology Center. Stocked razorback sucker were harvested from NAPI ponds by Navajo Nation Department of Fish and Wildlife with the assistance of USFWS – Colorado River Project and NMWCO personnel.

Razorback sucker recaptured from earlier stocking of hatchery-reared fish

All activities reported here will continue in 2009 and beyond. The San Juan River Recovery Implementation Program is strongly supported by our field station. Activities that we will continue include: 1) intensive nonnative fish removal throughout 113.7 river miles of the San Juan River, 2) utilize various stocking localities and holding times (including control vs.

treatment groups) when releasing hatchery reared age-0 and age1+ Colorado pikeminnow and razorback sucker, 3) assist Utah Division of Wildlife Resources – Moab Field Office with nonnative fish removal in the lower canyon and USFWS- Colorado River Project with annual sub-adult adult fish community monitoring, 4) NMFWCO will continue its involvement in the Coordination Committee (Jim Brooks, chair) and Biology Committee (Jason E. Davis, member) of the San Juan River Recovery Implementation Program, 5) author amendments to the San Juan River Colorado pikeminnow and razorback sucker Augmentation Plans, and 6) participate in rare fish workshops aimed at the collection, dissemination, and analyses of data in an effort to evaluate current monitoring protocols.

Upper Gila River Basin

New Mexico Fish and Wildlife Conservation Office (NMFWCO) fisheries activities in the Gila River basin focused primarily on Gila trout *Oncorhynchus gilae* conservation and recovery. With the downlisting of Gila trout in August 2006 to threatened status including a 4(d) rule which allows fishing, activities also included recreational fishery stocking and monitoring. In cooperation with the United States Forest Service- Gila National Forest (USFS) and New Mexico Department of Game and Fish- Conservation Services (NMDGF), recovery efforts focused on monitoring existing populations, acquiring broodstock, stocking new populations, replicating relict lineages into new drainages, removing nonnative fish species from recovery streams, and participating in the annual Gila Trout Recovery Team Meeting. Additional work included efforts to control non-native fishes in the Cliff Dwellings area of the upper Gila. This work is funded through the Central Arizona Project, a large Colorado River mainstem diversion project that affects many aspects of fisheries in the Gila River Basin. Primary emphasis in on conservation of loach minnow *Tiaroga cobitis* and spikedace *Meda fulgida*

Gila trout

Population Monitoring

Backpack electrofishing surveys were conducted in four streams (Mogollon Creek, Black Canyon, West Fork Gila River, and Iron Creek) to determine the status of Gila trout populations, including the hybridized population in Iron Creek (Table 5). Mogollon, Black Canyon, and Iron Creek populations appeared in good condition (n>120), with multiple size classes present at each site indicating successful reproduction and recruitment. Nonnative brown trout *Salmo trutta* were collected in Black Canyon and West Fork Gila River (WFG). Brown trout in Black Canyon are derived from a remnant illegal stocking in 1989 (NMFWCO files and internal report). Along with brown trout, a few Gila trout (n<10) were found within the West Fork Gila River near White Creek and represent individuals that dispersed from an upstream population present above a waterfall in White Creek. Piscicide, *Antimycin-A*, treatments have been conducted in the WFG drainage aimed at eliminating brown trout. Future treatments of the WFG will be performed and upon successful renovation, Gila trout populations will be re-established throughout the drainage.

Jerry Monzingo-USFS, holding a Gila trout collected during nonnative removal trip in August 2008

Table 5. Total number (No.), total length (TL) range, and age structure of Gila trout and occurrence of nonnative trout in four streams surveyed during FY 2008 in Gila National Forest, New Mexico

Stream	*Total No. Collected*	*TL Range (mm)*	*Multiple Size Class Present*	*Nonnative trout present*
Mogollon Creek	553	50-280	Yes	No
Black Canyon	266	70-324	Yes	Yes
West Fork Gila River	5	217-253	No	Yes
Iron Creek (hybrid)	123	30-210	Yes	No

Mogollon Creek was surveyed in October 2007. Five hundred fifty three (553) Gila trout were collected at three sites in Mogollon Creek. Multiple size classes were present (50-280 mm, TL) indicating successful reproduction. No nonnative trout were collected. Black Canyon was surveyed in June 2008 to characterize the Gila trout population and determine the distribution of brown trout above the barrier. One hundred fifty (150) Gila trout were collected during the survey. Multiple size classes (70-340 mm, TL) were present, indicating successful reproduction.

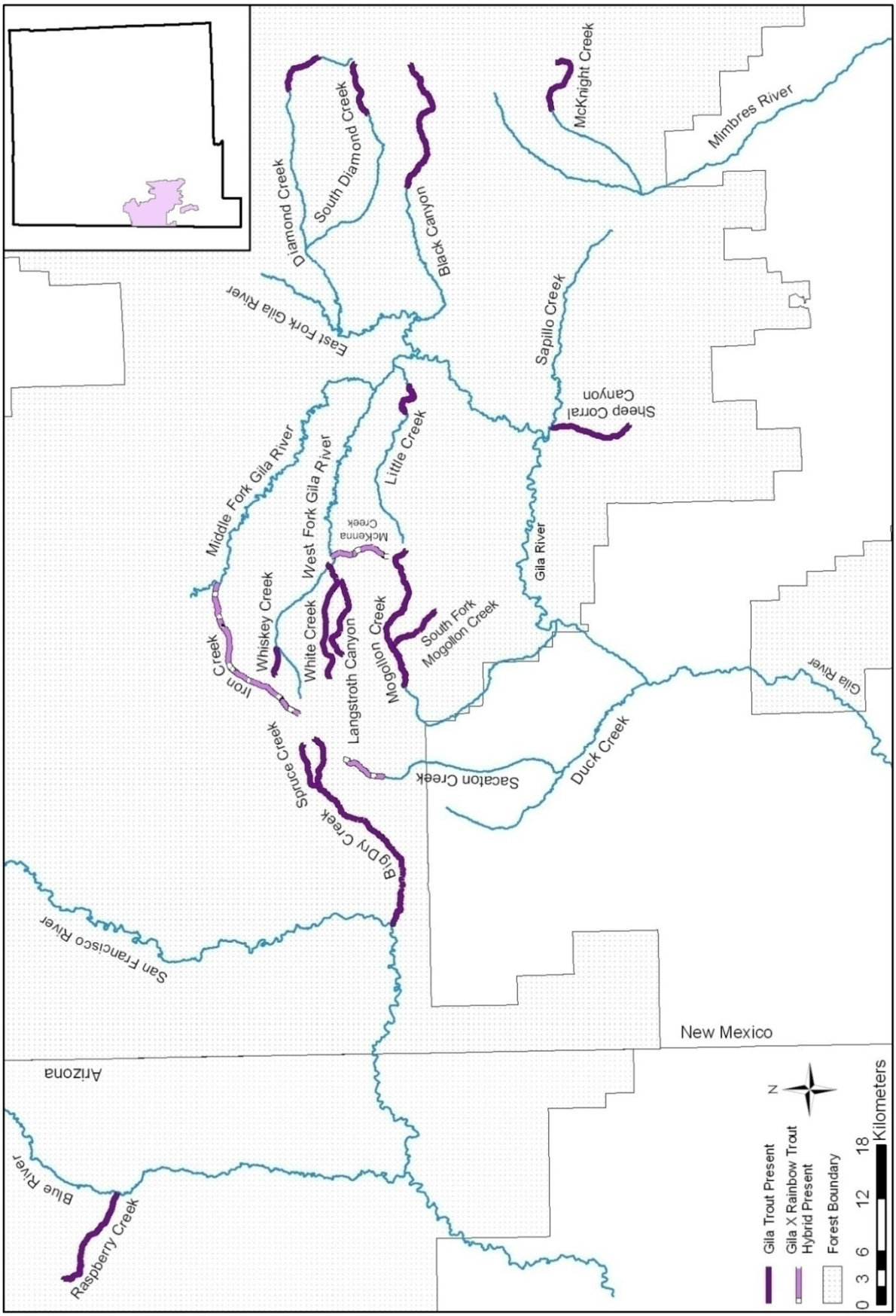


Figure 5. Gila Trout and Gila X Rainbow Trout Hybrid Current Distribution in NM and AZ

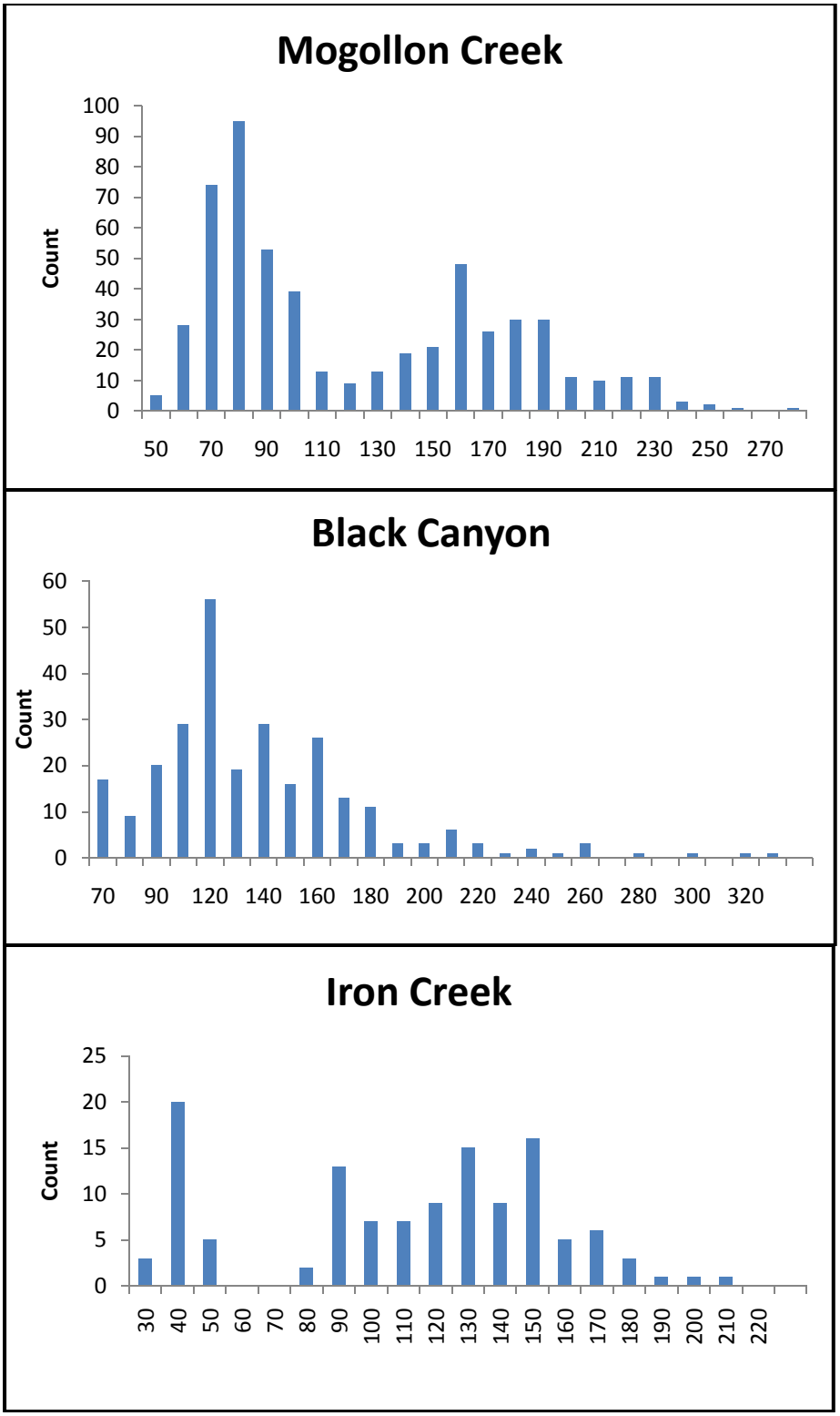


Figure 6. Length Frequency Histograms for Gila Trout (TL, mm) Collected in Gila Wilderness Streams, 2007-2008

Due to the occurrence of brown trout in Black Canyon above the barrier, a nonnative removal trip was conducted in July 2008 to remove brown trout prior to their reproductive season. In addition to the species caught during the June survey, native longfin dace *Agosia chrysogaster* were also collected during nonnative removal efforts in July 2008 (Table 6). Twenty two (22) brown trout were collected and removed during this effort. One hundred sixteen (116) Gila trout were collected, ranging in size from 101-266 mm TL.

Iron Creek was sampled in August 2008 to characterize the hybrid Gila trout population and obtain tissue samples to determine the level of gene introgression with nonnative rainbow trout *Oncorhynchus mykiss*. One hundred twenty three (123) hybrid Gila trout were collected during this effort. Multiple size classes were present (36-211 mm, TL), indicating successful reproduction (Figure 5). Tissue samples from twenty individuals were provided to Dr. Thomas Turner, University of New Mexico, for DNA analysis. Hybrid Gila trout was the only species collected.

Upper West Fork Gila River drainage was surveyed in May 2008 to update information on the distribution and abundance of brown trout. Five (5) adult Gila trout were collected, ranging in size from 217 -253 mm TL (Figure 6). Lack of size structure may indicate multiple years of unsuccessful reproduction, and/or intensive competition/predation by brown trout. Eighty six (86) adult brown trout were collected and removed (Table 6).

Broodstock Acquisition

Two of the four relict lineages, Main Diamond and Spruce Creek, were sampled for the purposes of monitoring and broodstock collection. A total of 100 Gila trout were collected from Main Diamond in April 2008 (08-GIT MD (WILD)) for Mora National Fish Hatchery and Technology Center (NFHTC) in accordance with the *Gila Trout – Genetic Broodstock Management Plan*. A total of 48 Gila trout were air lifted out of Spruce Creek by helicopter in June 2008, to initiate the development of a Spruce Creek broodstock at Mora NFHTC. Spruce Creek is the only relict lineage within the San Francisco Recovery Unit.

Stockings

During fiscal year 2008, 2,957 Main Diamond and South Diamond lineage Gila trout were stocked in non-recovery streams for recreational fishing and in recovery streams as part of *Gila Trout Recovery Plan-Third Revision* (Table 6). Gila trout produced at Mora NFHTC from 2006 spawning efforts and former broodstock (2003-06) were used in these stockings.

Table 6. Stocking Locations for Main and South Diamond Gila Trout during FY 2008

Stocking Site	*Date*	*Spawn Year*	*Lineage*	*No. Stocked*	*Mean TL*
Gilita Campground	11/14/2007	2006	MD	350	212
Willow Creek Work Center	11/14/2007	2006	MD	350	212
Willow Creek near Gilita	11/14/2007	2006	MD	350	212
Ben Lilly Campground	11/14/2007	2006	MD	237	212
Willow Creek Ranch Boundary	11/14/2007	2006	MD	175	212
Grapevine Campground	11/15/2007	2006	MD	500	212
Forks Campground	11/15/2007	2003	MD	85	493
Bridge above Heartbar	11/15/2007	2006	MD	200	212
Sapillo Creek	11/15/2007	2006	MD	200	212
Gilita Creek	06/16/2008	2006	MD	351	212
Willow Creek	06/16/2008	2006	SD	159	212

Augmentation

In September 2008, thirty-seven (37) age-0 and age-1 Gila trout were collected from Whiskey Creek and transplanted in Langstroth Creek to augment the Langstroth population. The Langstroth Creek population is a replicate of the Whiskey Creek population.

Whiskey Creek is one of four relict Gila trout lineages, and the Langstroth population will help to protect the Whiskey Creek lineage from natural disasters (i.e. catastrophic fire) and other potential threats (i.e. disease or human activities).

Nonnative Trout Removal with Piscicide

Since 2003, when the New Mexico Water Quality Control Commission (NM WQCC) accepted NMDGF's petition to remove non-natives via Antimycin A-FINTROL ™, there has been an ongoing effort to restore Gila trout to the entire upper West Fork Gila River (WFG) drainage. Renovation of the upper WFG drainage is vital to the recovery and stability of the species, and a necessary step toward de-listing. When complete, this project will open 32 km of stream for Gila trout and increase the number of established populations within the Gila River Recovery Unit.

In May 2008, WFG and its tributaries were surveyed to determine brown trout abundance and distribution (Table 6). Due to quality control issues with Fintrol™, renovation of the WFG had to be postponed. United States Geological Survey (USGS) lab in Wisconsin revealed that all Fintrol™ produced since 1999 was compromised. The active ingredient in Fintrol™, Anitmycin A, was found to be < 20% of the label-stated strength (stated 23%, actual 0.25-4.6%). Treatments in 2005-2007 likely used compromised product and could be responsible for incomplete fish kills and the occurrence of nonnative brown trout in WFG.

A request was made for an amendment to the original NM WQCC order to include CFT Legumine-Rotenone to complete the WFG renovation. The amendment was approved on August 11, 2008. Monsoon rains restricted access for the remainder of the year; thus, no piscicide treatments were conducted during FY 2008.

Table 7. Distribution of Brown Trout in the Upper West Fork Gila drainage, May 2008

Site	*Male*	*Female*	*Total*
Langstroth	1	1	2
Rawmeat and Trail Canyon	0	0	0
White Creek	0	0	1
West Fork Gila River			
Falls To White Creek	1	0	1
White Creek To Clover Patch	1	1	2
Beaver Pond	0	0	0
Clover Patch to Packsaddle	27	17	44
Packsaddle to Cub	26	10	36
Total	56	29	86

Fire and Fire Rehabilitation

The 2007 Aspen Fire burned into Black Canyon causing some hillside erosion. Black Canyon is currently rebounding from the effects of overgrazing and the Aspen Fire. The riparian areas are filling with native ground cover and several saplings are re-establishing the banks. The upper West Fork Gila is still recovering from the 2002 Cub fire. Ground cover, composed primarily of native grasses, had almost completely stopped erosion into the stream. Instream habitat is improving through natural input of large woody debris, and fallen logs creating pool habitat. However, access to Whiskey Creek and Langstroth Creek from White Creek cabin is still difficult due to the amount of fallen timber and rock slides in the trail.

Other pertinent recovery information

The Black Canyon barrier was repaired this summer from the damage it received from high flows during spring 2007. The wire splash apron portion of the gabion and baskets were repaired and strengthen by personnel from USFS and NMDGF. This should impede the movement of nonnative trout from below the barrier into the recovery site.

Gila Trout Recovery Team

The annual meeting of the Gila Trout Recovery Team was hosted by NMFWCO during December 2007. Personnel from NMDGF, AZGFD, UNM, USFS, USFWS, TU and private citizens participated in this meeting. The meeting reviewed recovery activities in Arizona and New Mexico during 2007 that included captive propagation efforts at MNFH&TC, population monitoring, recovery and recreational stockings, genetic concerns for recovery efforts, nonnative removal efforts, proposed angling regulations and stream selections, and status of renovation projects to remove nonnative trout. Tentative and preliminary plans were developed for 2009 activities.

Other Gila River Basin Fisheries Activities

Nonnative Fish Removal from Upper Gila River

Nonnative fish species and bullfrogs pose conservation threats to native fishes, particularly loach minnow *Tiaroga cobitis*, spikedace *Meda fulgida*, and headwater chub *Gila nigra*, in the upper Gila River Basin of New Mexico. Continuing in 2007, a joint project between NMFWCO, U.S. Forest Service, Gila National Forest, and New Mexico Department of Game and Fish, Conservation Services Division, affected removal of nonnative species and evaluation of the efficacy of removal efforts in a three-mile reach to improve native fish status. In conjunction with this study, Kansas State University is using stable isotope analysis to determine changes in fish community food web structure due to removal of nonnatives. The study area in the upper Gila River is between the confluence of Little Creek upstream to NM 15 Bridge.

Nonnative species targeted for removal are: brown trout, rainbow trout, yellow bullhead *Ameiurus natalis*, black bullhead *Ameiurus melas*, smallmouth bass *Micropterus dolomieu*, bullfrog *Rana catesbeiana*, green sunfish *Lepomis cyanellus*, flathead catfish *Pylodictis olivaris*, fathead minnow *Pimephales promelas*, and western mosquitofish *Gambusia affinis*. Nonnative species are removed by tandem backpack electrofishing and seining. Three nonnative fish removal trips were conducted on the Upper Gila River during FY 2008 (November 07; June 08; August 08). A total of 422 nonnatives were removed from the study area (Table 8).

Loach Minnow

Spikedace

Table 8. Nonnative Species Removed from Upper Gila River During 2008

Date	*Yellow bullhead*	*Smallmouth bass*	*Brown trout*	*Rainbow trout*	*Bullfrog*	*Flathead catfish*	*Fathead Minnow*	*Total Removed*
Nov 2007	102	37	21	19	18	4	0	201
June 2008	30	5	62	14	3	0	1	115
August 2008	11	6	64	24	1	0	0	106
Totals	**143**	**48**	**147**	**57**	**22**	**4**	**1**	**422**

Loach minnow *Tiaroga cobitis* was captured in all sampling efforts except November 2007. Spikedace and fathead minnow were captured in June 2008. During the spring monitoring efforts, Sonora sucker *Catostomus insignis* and desert sucker were the most common fishes. In conjunction with this study, Kansas State University is determining changes in fish community food web structure due to removal of nonnatives using stable isotope analysis.

Cooperative Mexico Fisheries Issues

Since 1995, NMFWCO personnel have participated in a variety of Mexico fish surveys and meetings for the purposes of characterization of native species distribution and status, threats, and possible management actions to remove or minimize threats. This has included both work on shared species, i.e. Yaqui fishes, and initiation of conservation efforts for others, such as a variety of native trout and catfishes in the Sierra Madre Occidental. Close working relationships have been built with numerous Mexican scientists, State personnel, and NGOs, notably the World Wildlife Fund. Presently, emphasis of our work is based upon conservation of the re-discovered Conchos trout and protection of the native fish community and associated habitats in the upper Rio Tutuaca, Rio Yaqui Basin.

Conchos Trout

Canada-Mexico-U.S. Trilateral Committee for Wildlife and Ecosystem Conservation and Management

Personnel from NMFWCO participated in the 10th Annual Meeting of the Canada-Mexico-U.S. Trilateral Committee for Wildlife and Ecosystem Conservation and Management in Veracruz, May 2008. A presentation on conservation of native trout of the Sierra Madre Occidental was given at the 'Species of Common Concern Working Table'. The presentation identified current problems regarding native trout conservation in Mexico and identified potential remedies. Emphasis was placed upon delivery of the message to the Mexican equivalent of FWS, SEMARNAT. While SEMARNAT is charged with management and protection of native

species, SAGARPA, the Mexican equivalent to U.S. Department of Agriculture, is responsible for rural development programs that promote fish farming with non-native species such as rainbow trout and channel catfish. Escapement of non-native fishes from hatchery facilities is a major threat to native fish communities in Mexican streams. Cooperation between SEMARNAT and SAGARPA is seen as a prominent need to ensure perpetuation of native fishes in the Sierra Madre Occidental mountain range of northern Mexico.

Fisheries Survey of the Rio Tutuaca

The Rio Tutuaca is the largest tributary of the Rio Aros, Rio Yaqui Basin. Previous work by this office and cooperators included the detailed inventory of the resident fish community in the Tutuaca's uppermost reach and inflowing tributaries in 2006. This work resulted in the discovery of a population of pure native Yaqui catfish *Ictalurus pricei*. This was an important find given the rarity of Yaqui catfish elsewhere in the Rio Yaqui Basin. Endangered by hybridization with non-native ictalurids, Yaqui catfish persist in the Rio Tutuaca with the, so far, total absence of non-native species. In conjunction with personnel from Universidad de Sonora (Alejandro Varela), CONANP (Mauro Ramos), and Rancho El Nogal (Tutuaca Mountain Center), we re-surveyed four sites during 29 February through 1 March 2008 to update species information and collect additional tissue samples for ongoing genetic studies of native Mexican catfish. Non-native species were again absent from collections and Yaqui catfish were collected at all sites sampled on the Rio Tutuaca.

Table 9. Electrofishing results for upper Rio Tutuaca, February-March 2008.

Sample	*Sample Effort (seconds)*	*Species*	*N*	*Total Length (mm)*	*Comments*
JEB08-005	2346	*Catostomus bernardini*	71	61-188	-
		Campostoma ornatum	14	53-102	-
		Codoma ornata	6	-	Genetic samples[a]
		Gila minacae	36	55-151	-
		Ictalurus pricei	2	125-226	Genetic samples[a]
JEB08-006[b]	2642	*Ictalurus pricei*	1	152	Genetic sample[a]
JEB08-007[b]	3954	*Ictalurus pricei*	5	119-301	Genetic samples[a]
JEB08-008	3492	*Catostomus bernardini*	111	-	-
		Campostoma ornatum	1	-	-
		Codoma ornata	5	-	-
		Gila minacae	119	-	-
		Ictalurus pricei	18	109-296	Genetic samples[a]

[a] Samples retained by AV, Universidad de Sonora.
[b] Sample was selective for catfish, no other species netted.

Fisheries Surveys in the Rio Conchos Basin

Arroyo Ureyna

Surveys were conducted for Rio Conchos trout status and distribution, 25-28 February 2008. Participants in surveys included biologists from World Wildlife Fund – Mexico, local Rarámuri (Tarahumarae) tribal members, a retired NM Department of Game Fish biologist, and NMFWCO personnel. The purposes of the surveys were to monitor and determine relative status of Conchos trout in Arroyo Ureyna and survey additional arroyos in the drainage. The native trout population in Arroyo Ureyna was distributed through previously occupied habitat and several year classes were sampled. A barbwire fence was built in the upper reaches of Arroyo Ureyna to exclude grazing from the immediate stream corridor and examination of the stream reach here showed some improvement in riparian vegetation conditions.

Table 10. Sampling (Electrofishing) Results for Rio Conchos Trout

Date	*Water*	*Sample effort (seconds)*	*Species*	*N*	*Total length (mm)*
26 Feb 08	Arroyo Ureyna	2665	*Oncorhynchus* sp.	36	78-202
26 Feb 08	A.Ureyna (upstream trib)	265	No fish	0	-
26 Feb 08	A. Ureyna (lower reach)	1282	*Oncorhynchus* sp. *Campostoma ornatum* *Codoma ornata* *Gila pulchra*	2 23 11 8	101-135 51-104 56-73 106-135
27 Feb 08	A. Chomachi (upper)	1991	No fish	0	-

Arroyo Chomachi was sampled to determine its suitability for transplantation of the Ureyna native trout population. This action is identified in the management plan for Conchos trout for the area and survey results indicated that suitable habitat conditions were present and worthy of further consideration for transplant efforts. Currently, needs are to examine habitats during extreme low summer flows to ensure that adequate pool habitats and flow are present prior to initiation of summer rains in July. Summer 2009 surveys will be conducted for this purpose. Fall sampling of the Arroyo Ureyna trout population will be used to determine if adequate fish numbers are present to allow for a transplant of no more than 50 individuals from the population during autumn 2009.

Otra Partes de Cuenca de Conchos

We travelled to and observed and/or sampled a number of streams in the southern portion of the Rio Conchos Basin south of and near El Vergel, CH, MX. This sampling was accomplished as a larger effort to search for and describe additional Conchos trout populations previously reported upon by Truchas Mexicanas, a bi-national group of professionals supporting description and conservation of Mexican native trout species. During 28-31 April 2009 we searched streams of the upper La Cueva Blanca sub-basin for the presence of trout. Results were largely discouraging, documenting extensive degradation of habitats caused primarily by logging. We also documented extensive livestock use of riparian corridors and associated impacts (stream channel sedimentation, incision, lack of streamside shading, etc). Stream survey results are shown in the table below. No additional native or non-native trout populations were identified during this effort. Travel was extremely difficult and consumed large volumes of time to access each individual sample site. Thus, completion of comprehensive surveys in this Basin (and elsewhere in the Sierra) will require a considerable commitment of time and resources.

Table 11. Sampling Results for Streams (Arroyos) in the Southern Rio Conchos Basin

Date	*Water*	*Sample effort (seconds)*	*Species*	*N*	*Total length (mm)*	*Comments*
29 Apr 08	Arroyo del Calvario (upper)	-	-	-	-	Dry
30 Apr 08	A. del Calvario	2215	*Campostoma ornatum*	59	40-124	-
30 Apr 08	A. de las Cruces	341	*Campostoma ornatum*	69	63-106	-
30 Apr 08	A. del Calvario, (upstream of de las Cruces confluence)	141	*Campostoma ornatum*	17	-	-

Mexican Golden Trout Surveys

In conjunction with the April/May 2008 sampling in the southern portion of the Rio Conchos Basin, we sampled streams to the west in the Rio Sinaloa Basin near the small mining town of Guadalupe y Calvo. The primary purpose of this sampling was to characterize resident fish communities and status of native Mexican golden trout populations. The area sampled was within a proposed protected area that encompasses the tallest (3307 m) mountain in Chihuahua, Cerro Mohinora, and within the boundaries of the Ejido, El Tule y Portugal. Ejido officials were present during much of the sampling and graciously supported our efforts. We rented facilities recently constructed by the Ejido at "Cabanas Piceadel Mohinora" and, to the best of our knowledge, were the first party to officially rent the cabanas and directly contribute to the Ejido economy. Prior to our departure, we met with the Ejido administration to discuss resource management needs and increasing pressure by the Ejido membership to initiate logging in the only high elevation stand of old growth forest in the Mexican State of Chihuahua. A suite of strategies was discussed. Much of this information was subsequently presented to the Species of Common Concern Working Table at the Trilateral meeting in Veracruz previously discussed in this report section.

Mexican Golden Trout

Lower right pine cone is from an Engelman spruce from Cerro Mohinora

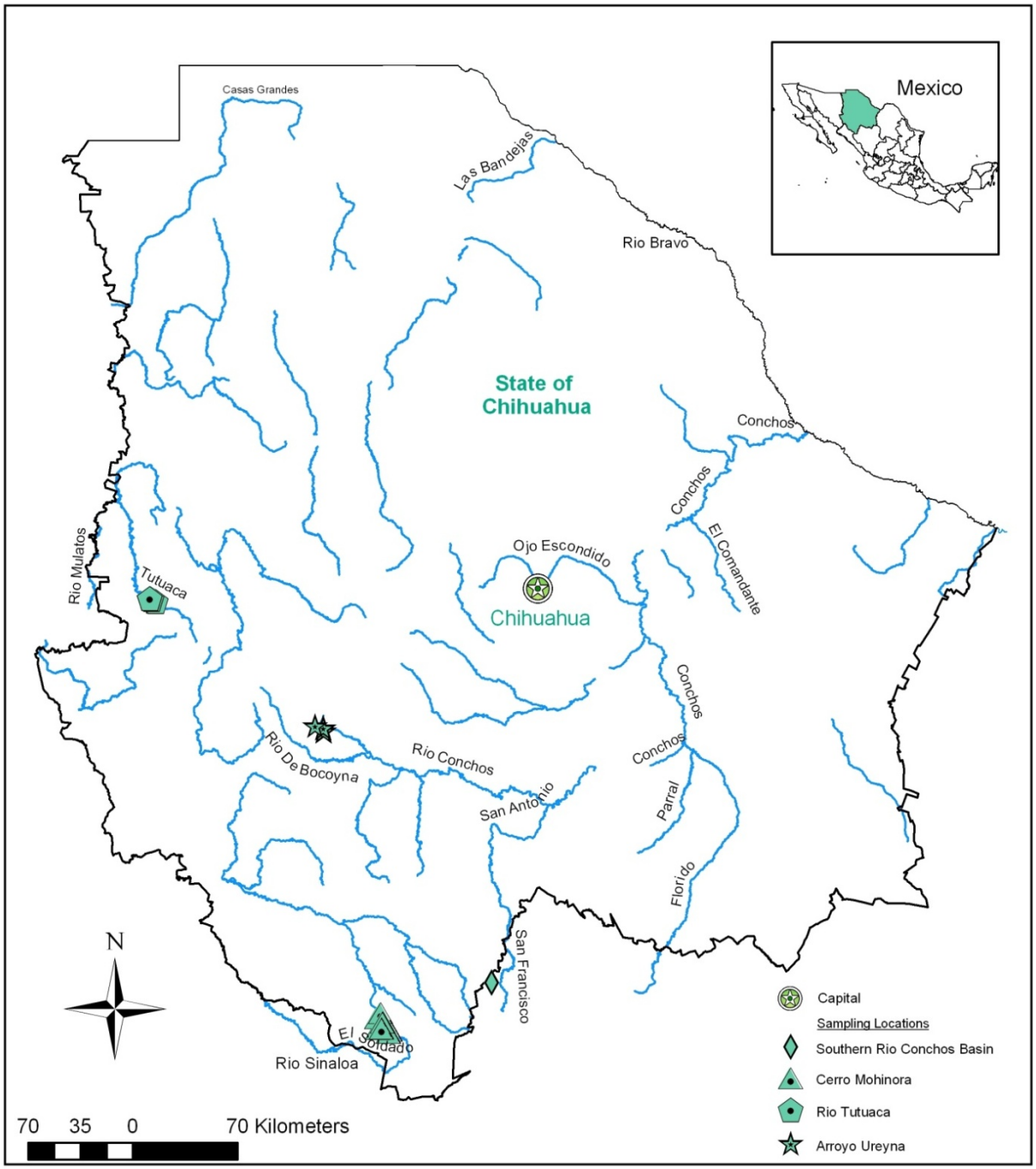


Figure 8. Sampling Locations for Mexican Surveys, 2008

We made five fish collections during 1-3 May 2009 within the boundaries of Ejido El Tule y Portugal. Two additional collections were made by another sampling crew associated with our efforts and are included here for complete reporting of collection activities within the area around Cerro Mohinora. Two species, Mexican golden trout *Oncorhynchus chrysogaster* and Yaqui sucker *Catotsomus bernardini*, were collected from these streams. Mexican golden trout was the most widely distributed and abundant species encountered. We observed generally degraded stream habitat conditions caused by scouring related to grazing stream channel banks. In addition, we observed a now defunct rainbow trout hatchery at the Arroyo Hondo sample site.

Table 12. Sampling Results for Streams at Cerro Mohinora

Date	*Water*	*Sample effort (seconds)*	*Species*	*N*	*Total length (mm)*	*Comments*
2 May 08	Rio Mohinora	1247	*Oncorhynchus chrysogaster* *Catostomus bernardini*	21 9	105-188 59-218	1 Genetic sample
2 May 08	Arroyo Hondo (local name, Chinacas on map)	1066	*Oncorhynchus chrysogaster*	38	81-153	22 Genetic samples
2 May 08	A. el Soldado[1]	3732	*Oncorhynchus chrysogaster*	52	ND[2]	Genetic samples
2 May 08	A. del Potrero[1]	ND	*Oncorhynchus chrysogaster*	38	ND	Genetic samples
3 May 08	Unnamed A.[3]	717	*Oncorhynchus chrysogaster* *Catostomus bernardini*	3 5	103-132 62-165	8 Genetic samples
3 May 08	A. Soldado	1087	*Oncorhynchus chrysogaster* *Catostomus bernardini*	13 7	96-202 52-173	20 Genetic samples

[1] Collection by other sampling crew.
[2] ND = no data.
[3] Arroyo name unknown, not on map and locals not available to identify, GPS location recorded; these data represent two collections combined on the same stream and separated by a short (<200m) box canyon.

The Cerro Mohinora area is important to many native Mexican floral and faunal species. Cerro Mohinora is the only mountainous area in Chihuahua that contains mixed-conifer, old-growth forest. Water originating in streams draining Cerro Mohinora are the primary water supply for Guadalupe y Calvo. Thus, maintenance of the present conditions on Cerro Mohinora not only protects native and endemic species, but also protects the principal potable water supply for a municipality with a population of approximately 52,000. Current pressures by a majority of Ejido El Tule y Portugal members to log the old growth for income are opposed by Ejido elders. In discussions with Ejido elders after our sampling we discussed a number of alternatives, including extension of an existing agreement with the Mexican federal forestry agency (CONAFOR) that provides funds to the ejido to not log and development of a new conservation easement agreement with The Nature Conservancy. The CONANP personnel are now working with the Ejido to develop and implement such agreements.

Meeting with Ejido El Tule y Portugal Elders

Tribal Fisheries Program Activities

The New Mexico Fish and Wildlife Conservation Office is responsible for providing technical assistance to Native American Tribes to develop and enhance native fish conservation and recreational programs on Tribal Lands. The duties provided by NMFWCO to Tribes have ranged from lake/stream surveys, habitat assessment, native fish conservation, non-native removal, educational outreach, and ESA collaboration.

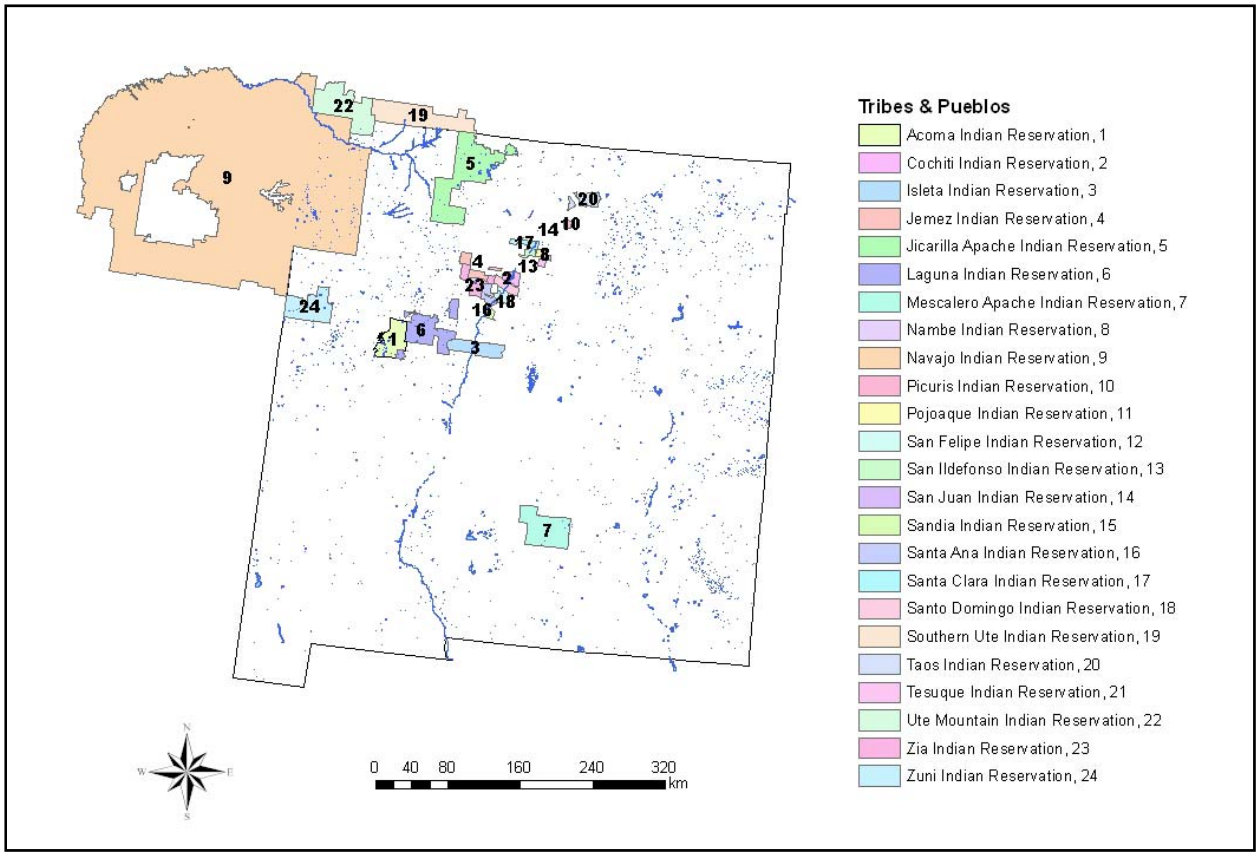


Figure 9. Tribal Lands Addressed by NMFWCO Management Activities

Southwest Tribal Fisheries Commission

The NMFWCO personnel participated in Southwest Tribal Fisheries Commission (SWTFC) quarterly meetings. The purpose of the commission is to provide a coordinated tribal management group to guide recreational fisheries management; and support for hatchery operations and native fish restoration. The development of the commission was in response to declining Service hatchery operations and concomitant reductions in hatchery stockings for tribal and other recreational fisheries programs. The NMFWCO staff and the executive director of SWTFC completed the final draft of Memorandum of Agreement between SWTFC and the Service and submitted to Regional Office for final review and signature.

Technical Assistance and Field Activities

The NMFWCO provided assistance to Mescalero Apache Tribe with the development and peer review of a Tribal Wildlife Grant (TWG) proposal entitled, *Comprehensive Habitat Inventory for Restoration of Rio Grande cutthroat trout on Mescalero Apache Indian Reservation.* The proposal focused on evaluating the ecological and biological conditions in the Sacramento Mountain range in efforts to restore native Rio Grande cutthroat trout. In addition, NMFWCO staff participated on the Regional Review Team to evaluate and rank all TWG proposals

submitted by all tribes/nations/pueblos within Region 2. Each peer-reviewer had approximately one month to review all TWGs before reconvening at the Regional Office in Albuquerque, New Mexico, to rank all proposals.

The NMFWCO completed three fisheries management plans for the Pueblo of Laguna, Pueblo of Acoma, and Pueblo of Santa Clara. The purpose of the management plans is, over the next five years, to identify key issues on the Pueblos and develop goals, objectives, and strategies for maintaining, enhancing, and conserving fishery resources while maintaining traditional and cultural values/beliefs.

The NMFWCO conducted lake surveys from March 17-28, 2008, and June 9-12, 2008, on Mescalero Apache Tribe, Pueblo of Laguna, Pueblo of Zuni, and Jicarilla Apache Indian Reservation to assess species composition, relative abundance, size structure, growth, and condition of fish in each waterbody. Sampling methodology included trammel nets and an electrofishing boat. All fish collected were identified to species, weighed to the nearest gram (g), measured for total (TL) and standard length (SL) to the nearest millimeter (mm), and returned to the reservoir. Length-weight data were used to evaluate body condition and growth rates of individual fish. The data were used to calculate Fulton's condition factor (K_{TL}), proportional stock density (PSD), relative stock density (RSD), and relative weight (Wr) for brown trout, rainbow trout, channel catfish, and largemouth bass.

NMFWCO staff (J. Sandoval and C. Kitcheyan) and Nelson Luna (Pueblo of Zuni – Fish and Wildlife Director) prepare to weigh a grass carp collected in Ojo Caliente

Non-Native Fish Removal

In conjunction with Pueblo of Zuni's Fish and Wildlife Department, NMFWCO staff conducted mechanical removal efforts in two spring-fed ponds from 28-29 May 2008. Staff used an electrofishing raft and removed 390 goldfish from Dog Springs. A pre-position electrofisher (electrified framework placed for a period of time, usually < 15 min, prior to fishing) was used in Well Springs to remove 237 goldfish. In addition, NMFWCO continued carp removal efforts on Mescalero Lake from 24-26 July 2008.

Recreational Fisheries Program

Beginning in March and continuing through June 2008, Alchesay-Williams Creek NFH distributed approximately 50,000 catchable rainbow trout (8 to 10 inches) to eight tribes/pueblos. Inks Dam NFH distributed approximately 37,454 channel catfish *Ictalurus punctatus* (8 to 10 inches) from April through July to Navajo Nation, Pueblo of Zuni, Ohkay Owingeh (formerly Pueblo of San Juan), and Jicarilla Apache Reservation. These recreational fish have enhanced recreational fishing opportunities for both tribal and non-tribal members and fulfilled Indian Fiduciary Trust responsibilities.

From July 29-31, 2008, NMFWCO staff fin-clipped 25,000 brown trout scheduled to be stocked into Stone and Mundo lakes on the Jicarilla Apache Tribe in October 2008. Follow-up spring surveys are scheduled to begin in May 2009 to assess species composition, relative abundance, size structure, growth, and fish condition for each water body.

Kevin Terry, Jicarilla Tribal Fish Biologist, holding a rainbow trout captured in Stone Lake

Rio Grande Silvery Minnow

In collaboration with the Pueblo of Isleta and the Pueblo of Sandia, staff from NMFWCO continued to work as partners to monitor the abundance and distribution of Rio Grande silvery minnow. All data collected on tribal lands remained with the Pueblos, as result of Tribal Sovereignty and Tribal self-governance. Monitoring was conducted monthly at designated sampling sites along the Rio Grande on tribal lands.

On two separate occasions (November 5-7, 2007 and July 8-10, 2008) NMFWCO provided assistance to the Pueblo of Santa Ana to evaluate the presence and abundance of Rio Grande silvery minnow and habitat utilization of restored habitats on the Rio Grande within their tribal boundaries. Funding for this projected was acquired from the Service's Tribal Landowner Incentive Program (TLIP) grant.

Education Outreach

The NMFWCO participated in the 15th Annual Native American Youth Practicum for two days (July 15-16, 2008) at Hermosa Ranch, and New Mexico Forestry Camp (June 4, 2008) at Seven Springs State Fish Hatchery to discuss backpack electrofishing and aquatic invertebrates. In addition, NMFWCO assumed the responsibilities of overseeing the Youth Conservation Corps (YCC) program at the Mescalero Tribal Fish Hatchery on the Mescalero Apache Indian Reservation. Four tribal youths worked from July7, 2008, to August 15, 2008, at the Mescalero Tribal Fish Hatchery. Unfortunately, two post-fire flooding events caused by the South Tularosa

Fire impacted the Mescalero Tribal Fish Hatchery. Thus, the majority of duties performed by YCC personnel focused on hatchery rehabilitation.

Rio Grande Cutthroat

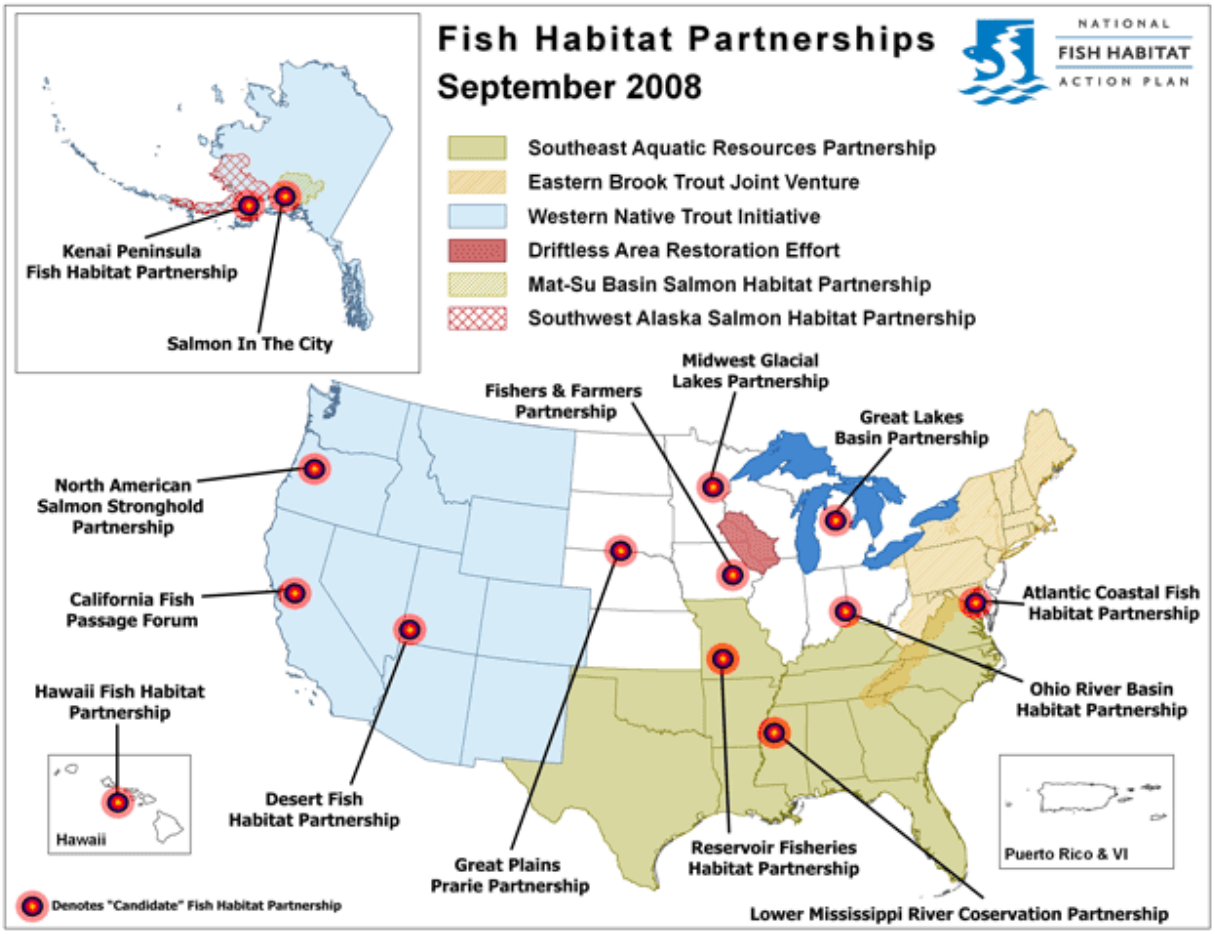
The NMFWCO participated in several Rio Grande Cutthroat Trout Working Group meetings. Ongoing discussions with Santa Clara Pueblo resulted in a number of actions to address proposed restoration of Rio Grande cutthroat trout. It is not known whether pure Rio Grande cutthroat trout persist in the upper watershed. Given the long history of stocking both rainbow and Yellowstone cutthroat trouts into Santa Clara Creek, it is unlikely that pure Rio Grande cutthroat trout continue to exist in this drainage. However, we supported Pueblo officials in their concern over making sure that no pure natives persisted. In June 2008, personnel from NMFWCO, Santa Clara Pueblo Environmental Department, and Mescalero Tribal Fish Hatchery collected 126 cutthroat trout from the headwaters in the Santa Clara Creek Drainage (Santa Clara and Turkey creeks) for use in genetic characterization studies. All trout were transported to Mescalero Tribal Fish Hatchery. On June 24, 2008, NMFWCO and Pueblo biologists collected length and weight measurements, took fin clips, and PIT-Tagged all cutthroat trout >90 mm TL to identify individual fish and evaluate growth and survival. It is anticipated that during FY09 a contractor will be selected and funded by the Pueblo to genetically characterize the fish held at Mescalero to determine their potential use in restoration activities on the Pueblo.

Rio Grande cutthroat trout (male) in spawning colors

National Fish Habitat Action Plan

Under the National Fish Habitat Action Plan (NFHAP), there are a number of partnerships and the Western Native Trout Initiative (WNTI) is the focus of current NMFWCO involvement in NFHAP activities. The WNTI is comprised of 12 western states, tribes, other federal agencies, and public and private non-governmental organizations. The basic objective of WNTI is to facilitate implementation of conservation actions by establishing collaborative conservation efforts for native trout across the western states through a joint venture Strategic Plan involving interagency efforts and partnerships. The WNTI is one of several joint ventures identified as an implementation tool for the National Fish Habitat Initiative. The NMFWCO Project Leader serves as the Region 2 Coordinator for WNTI.

During FY08, we allocated considerable resources to WNTI meetings, conference calls, document review, and inter-regional (Service) coordination. As part of NFHAP funding mechanisms for WNTI, FONS is the proposal submission process. The NMFWCO staff coordinated the direct production and input of FONS proposals for Gila trout and Rio Grande cutthroat trout and coordinated with Arizona FWCO on proposals for AZ-based Gila trout restoration activities. In NM, NMFWCO developed a Request For Proposals for WNTI FONS and provided to various cooperators. Proposals received were modified/added and ranked according to priority. Proposals were then input into FONS format. All proposals for AZ and NM Gila trout projects and NM Rio Grande cutthroat trout projects were then used to build a spreadsheet for final Region 2 ranking. A total of 4 reviewers from AZ and NM ranked the proposals and we then submitted the top ten FONS proposals to the Regional Office and to WNTI for funding consideration. We were successful in obtaining funds for two projects: 1) re-construction of the Black Canyon barrier to protect Gila trout and 2) construction of a new barrier on Alamitos Creek to protect a resident population of Rio Grande cutthroat trout. Along with the award of funds for these projects, we incurred considerable responsibility in re-allocating these funds to our partners.



Aquatic Nuisance Species

The NMFWCO continued prevention and early detection monitoring for aquatic nuisance species in FY 2008. Long term monitoring sites for zebra/quagga mussels included Conchas Lake, Navajo Lake, Heron Lake and Elephant Butte Lake State Parks (Figure 10). The NMFWCO also continued educational outreach such as Level I boat inspection and decontamination training and public education.

Monitoring locations for zebra/quagga mussels were chosen based on proximity to infested areas, high boater traffic, and opportunity for unique water activities (i.e., sail boating and jet skiing). Approval for monitoring efforts was obtained through the New Mexico State Park Division and selection of sampling sites was done in coordination with State and Federal agencies.

Two methods for early detection of zebra/quagga mussels were utilized at each sampling locale. Adult mussels were monitored using Portland-type artificial substrata placed at various localities and depths at each reservoir. These substrata were 12" lengths of PVC pipe suspended from boat and recreational fishing docks. Due to the proclivity of mussels, adult or veliger, to attach to hard substrates, this type of sampling has been commonly used as a monitoring technique for zebra/quagga mussels. In addition to Portland-type samplers, NMFWCO assisted the Region 2 Aquatic Nuisance Species Coordinator's Office with polymerase chain reaction (PCR) sampling at eight New Mexico reservoirs (Table 13). This early detection technique examines mitochondrial DNA from water samples to determine the presence of zebra/quagga mussel genetic material. This technique has the potential of identifying the presence of mussel species prior to the establishment of adult mussel populations and is considered a valuable early detection technique.

Table 13. ANS Monitoring 2008 including site, number of times monitored for zebra/quagga mussels, number of PCR sample collections for sites, and number of times monitored for New Zealand mudsnail.

Site	*Number of Substrata*	*Number of times monitored*	*Number of PCR Samples*	*New Zealand Mudsnail Samples*
Elephant Butte State Park	5	6	1	4
Conchas Lake State Park	5	7	3	0
Heron Lake State Park	5	4	2	2
Navajo Lake State Park	4	5	3	6
Abiquiu Lake State Park	0	0	1	0
Ute Lake State Park	0	0	1	0
Santa Rosa Lake State Park	0	0	1	0
Cochiti Lake State Park	0	0	1	0

Early detection monitoring for New Zealand mudsnail was conducted at six localities in FY 2008; two localities within each State Park at Elephant Butte, Heron, and Navajo lakes. The sampling sites for New Zealand mud snail were selected based on wading-based recreational activities (i.e., primarily fishing). The sampling sites selected were Chama River near Heron Reservoir, the San Juan Quality Waters below Navajo Lake State Park, and the Rio Grande below Elephant Butte State Park were chosen as possible areas of invasion (Figure 10).

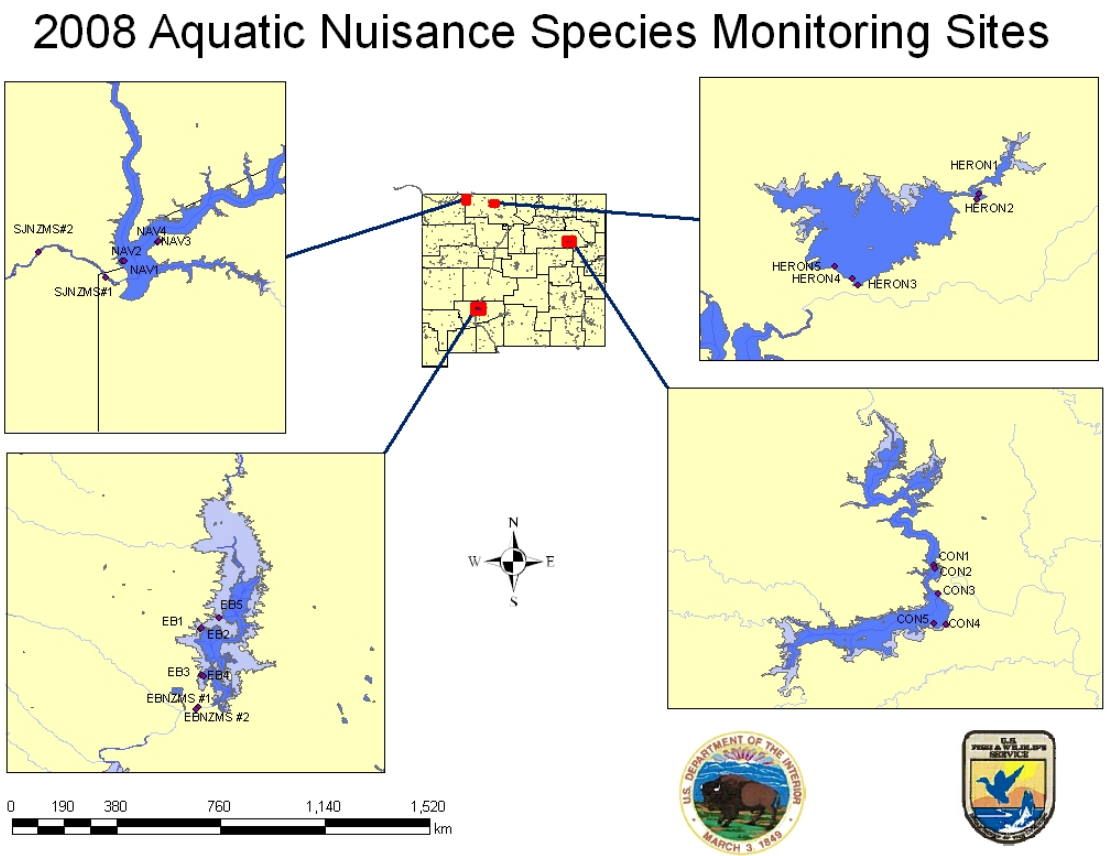


Figure 10. Map of Aquatic Nuisance Species monitoring sites in New Mexico for 2008

Substrata at Conchas Lake State Park were checked seven times in FY08. No zebra/quagga mussels were found. Samples for PCR analysis were collected on May 12, 2008, July 22, 2008, and September 25, 2008 from site Conchas #1. Portland-type substrata at Heron Lake State Park were monitored four times before their removal for the winter on September 23, 2008. No zebra/quagga mussels were found. PCR samples were collected on July 1, 2008, and September 23, 2008, from site Heron #1. Elephant Butte Lake State Park substrata were inspected six times in fiscal year 2008. No zebra/quagga mussels were discovered at any of these sites. A PCR sample was collected on May 25, 2008, from site Elephant Butte #3. Navajo Lake State Park substrata were inspected five times and no zebra/quagga mussels were found. The PCR samples were collected on May 24, 2008, July 1, 2008, and September 22, 2008, from Navajo #1. All PCR results were negative for zebra/quagga veligers in the all New Mexico Reservoirs that were tested.

Twenty-three (23) trailered boat survey interview forms were completed (Table 13) and 427 trailer inspections were completed (367 from New Mexico and 60 from other states). Zebra/quagga mussels were not found during any of these inspections.

Sampling for New Zealand mud snail consisted of vigorously kicking the substrate for 5 minutes and collecting the benthos with a standard D-net (0.5 - 1.0 mm). The sample was then placed in a five-gallon white bucket and allowed to sit for three days. The presence of New Zealand mudsnail was determined if snails were observed floating on the water surface or moving up the sides of the bucket. The bucket was checked daily for presence/absence of New Zealand mudsnail. New Zealand mudsnail were not detected in any of the samples.

Five Level I Watercraft Inspection/Decontamination trainings were conducted in fiscal year 2008. Two presentations for Aquatic Nuisance Species were given to the Southwestern Tribal

Fishery Commission and the Southwestern Region Native American Fish and Wildlife Society annual meeting. One presentation was given to McKinnley Elementary School third and fourth grade students, and one biological assessment was conducted for Zia Pueblo on an invasive aquatic plant species.

The NWFWCO will continue to work with New Mexico Aquatic Invasive Species Advisory Council, coordinate PCR sampling, processing, and shipping, provide Level I Watercraft Inspection and Decontamination Training, provide 100th Meridian a copy of the ANS database for use throughout the west, and provide technical assistance to other government organizations.

James P. Sandoval conducting a boat survey interview at Conchas Lake State Park.

Piscicide Use and Fisheries Management

For New Mexico projects, the Surface Water Quality Control Commission (Commission), operating in an oversight role to the Environment Department, regulates use of piscicides at the State level. Prior to 1995 New Mexico regulations were unclear about piscicide applications and general exemptions to State law were applied to these projects. With the establishment of pisicicide opposition groups, State procedures were developed and implemented to ensure adequate public scrutiny and comment on proposed projects. Generally, the State process in New Mexico requires a series of public presentations, legal hearings, and final affirmative decision making by the Commission before a project may proceed. This process may take up to a year to complete and has yet to render a decision prohibiting a piscicide application. However, the New Mexico Game and Fish Commission temporarily prohibited the use of piscicides during 2005 that delayed one Gila trout project discussed earlier in this report. This prohibition was lifted during late summer 2005 and has not been a factor in piscicide projects since that date.

One of the primary roles of NMFWCO in pisicide use in fisheries management in Region 2 is training. The NMFWCO Project Leader is one of four instructors for the National Conservation Training Center (NCTC) course, "*Rotenone and Antimycin Use in Fisheries Management*", FIS 2132. Duties for participation in this training include not only course instruction, but course development and revision that requires annual planning meetings and time allotted to course revision requirements. This course was taught at NCTC during May 2008 and one NMFWCO staff biologist participated in the training.

SAMMS

Beginning in FY06, NMFWCO was tasked with entering maintenance orders on personal property into the Service Asset Maintenance Management System (SAMMS) database. A total of $14,576 was spent during FY08 for the maintenance of personal property with the majority of these costs associated with vehicle maintenance and repair. Of this money, $13,063 was spent on material costs, including off-station labor. The NMFWCO staff spent 88 hours on maintenance activities at a cost to the station of $1,513. These numbers do not represent all maintenance actions; only those that were submitted to the office SAMMS coordinator were entered into the SAMMS database.

These data provided NMFWCO Project Leader with important information regarding time and costs associated with necessary preventative and corrective maintenance on station. Staff will continue to enter maintenance activities into the SAMMS database during FY09.

Budget

The budget of NMFWCO for the last five years represented a combination of base (13xx) and transfer funding (19xx). Transfer funding was for studies related to mechanical removal and control of nonnative fishes in the San Juan River, characterization of fish community structure of Pecos River fishes, propagation/augmentation and habitat use and availability studies of Rio Grande silvery minnow contributed to the 2006 budget. Transfer funding was provided by U. S. Bureau of Reclamation. Annual funding allocations to NMFWCO are shown below. Carryover funds in 19XX from FY07 contributed to the total for FY08.

Table 14. Annual Funding Allocations For NMFWCO, 2004-2008

SUBACTIVITY	*2004*	*2005*	*2006*	*2007*	*2008*
1113	5,123	0	0	0	37,250
1122	0	15,882	0	0	0
1311	11,994	0	0	0	0
1313	10,000	9,800	0	0	0
1331	25,880	24,500	18,100	45,000	8,000
1332	271,609	270,500	396,528	417,000	24,000
1334	0	0	0	0	577,000
1335	0	0	0	0	15,000
1342	0	0	0	0	20,000
19XX	447,131	578,465	601,979	1,100,087	1,361,816
1938 (YCC)	0	0	0	0	17,405
9831 (YCC)	0	0	0	0	4,000
TOTAL	**718,740**	**899,147**	**1,016,607**	**1,562,087**	**2,064,471**

Outreach and Information Dissemination

NMFWCO reported on a variety of station activities in technical agency reports and plans, symposium proceedings manuscripts, abstracts and presentations in technical meetings, individual trip reports, interagency meetings, and in media produced articles.

Technical Agency Reports and Publications

Archdeacon, T. P., W. J. Remshardt, and T. L. Knecht. MS. Comparison of two methods for implanting passive integrated transponders in Rio Grande silvery minnow. Submitted to North American Journal of Fisheries Management.

Archdeacon, T. P., and S. R. Davenport. 2008. Occupancy estimation of bigscale logperch in the Pecos River, New Mexico. Interim report of 2008 Share with Wildlife activities. Final Report submitted to New Mexico Department of Game and Fish, Santa Fe, NM.

Davis, J.E. and D.W. Furr. 2008. Non-native species monitoring and control in the upper San Juan River, New Mexico, 2007. Final Report. San Juan River Recovery Implementation Program, U.S. Fish and Wildlife Service, Albuquerque, NM. 39 pp.

Davenport, S.R. 2008. Stream Drying Effects on Long term Abundance Trends of Pecos Bluntnose Shiner Pecos River, New Mexico. Final Report submitted to the U.S. Army Corp of Engineers, Albuquerque Area Office, and U.S. Bureau of Reclamation, Albuquerque Area Office. 40 pp and appendices.

Davenport ,S. R. and W.J. Remshardt. 2008. Range extensions for *Pimephales vigilax* and *Percina macrolepida* in the Rio Grande, NM. Southwestern Naturalist 53:125-128

Davis, J.E. 2008. Expansion of nonnative fish removal and endangered fish augmentation efforts used as management tools on the San Juan River. Article in Swimming Upstream, San Juan River Recovery Implementation Program.

Hoagstrom, C.W., J.E. Brooks and S.R. Davenport. 2008. Recent habitat association and the historical decline of Notropis simus pecosensis. River Research and Applications. 24: 789-803

Hoagstrom, C.W., J E. Brooks and S.R. Davenport. 2008. Spatiotemporal population trends of *Notropis simus pecosensis* in relation to habitat conditions and the annual flow regime of the Pecos River, 1992-2005. Copeia 1:1-15.

Kitcheyan, D. C. 2008. Recreational Fishery Management Plan – Pueblo of Acoma, 2008-2012. Final Report submitted to U.S. Fish and Wildlife Service, Albuquerque, NM. 15pp.

Kitcheyan, D. C. 2008. Pueblo of Santa Clara Fisheries Management Plan, 2008-2012. Final Report submitted to U.S. Fish and Wildlife Service, Albuquerque, NM. 26pp.

Kitcheyan, D. C. 2008. Pueblo of Laguna Fisheries Management Plan, 2008-2012. Final Report submitted to U.S. Fish and Wildlife Service, Albuquerque, NM. 32pp.

NMFWCO. 2008. Station annual report of activities for Fiscal Year 2007. Report to FARC, Region 2, Albuquerque, NM.

NMFWCO. 2008. Annual collecting permit report for State of New Mexico activities. Report to New Mexico Department of Game and Fish, Santa Fe, NM.

NMFWCO. 2008. Annual collecting permit report for species listed under the Endangered Species Act, as amended. Report to Region 2 Division of Endangered Species, Albuquerque.

Remshardt, W.J. 2008. Rio Grande silvery minnow augmentation in the middle Rio Grande, New Mexico. Annual Report 2006. Prepared for U.S. Bureau of Reclamation, Albuquerque, NM. 70 pp.

Remshardt, W.J. 2008. Monitoring for Rio Grande silvery minnow downstream of Ft. Craig, New Mexico, in the Elephant Butte Temporary Channel and Elephant Butte Reservoir 2005-2006. Final Report submitted to Middle Rio Grande Bosque Initiative, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, Albuquerque, New Mexico. 17 pp.

Remshardt, W.J. 2008. May 2008 irrigation canal monitoring for Rio Grande silvery minnow eggs. Memorandum (June 9 2008) and Data Report submitted to Gary Dean, U.S. Bureau of Reclamation, Albuquerque, New Mexico.

Remshardt, W.J. and W.L. Fisher. 2008. Effects of variation in streamflow and channel structure on smallmouth bass habitat in an alluvial stream. River Res. and Appl. Published online in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/rra.1178.

Torres, L.T., W.J. Remshardt and D.C. Kitcheyan. 2008. Habitat Assessment for Rio Grande Silvery Minnow (*Hybognathus amarus*) in the Cochiti Reach, at Peña Blanca, New Mexico. Final Report submitted to U.S. Army Corps of Engineers, Albuquerque, New Mexico. 38 pp.

Technical Presentations at Meetings and Symposia

Brooks, J.E. and S.R. Davenport. Upper/Middle Rio Grande area report. The 39th Annual Desert Fishes Council Meeting, Ventura, CA.

Davenport, S.R. 2008. Overview of Fish Species of Bitter Lake National Wildlife Refuge. Presented August 2008 at Bitter Lake National Wildlife Refuge Wetland Review.

Davis, J.E. and D.W. Furr. 2008. Nonnative removal in the upper San Juan River: 2007. Presentation to Biology Committee, at Annual Researchers Meeting of the San Juan River Recovery Implementation Program, Farmington, NM

Davis, J.E. and D.W. Furr. 2008. Nonnative removal in the upper San Juan River: 2007. Presentation to Coordination Committee and Biology Committee, at Annual Review Meeting of the San Juan River Recovery Implementation Program, Durango, CO.

Davis, J.E. 2008. Soft release and acclimation of Colorado pikeminnow: 2007. Presentation to Biology Committee, San Juan River Recovery Implementation Program, Durango, CO.

Kitcheyan, D.C. 2008. U.S. Fish and Wildlife Service Update. Southwest Tribal Fisheries Commission, Quarterly Meeting, January 25, 2008, Bureau of Indian Affairs, Albuquerque, NM.

Kitcheyan, D.C. 2008. U.S. Fish and Wildlife Service Update. Southwest Tribal Fisheries Commission, Quarterly Meeting, April 25, 2008, Bureau of Indian Affairs, Albuquerque, NM.

Kitcheyan, D.C. 2008. U.S. Fish and Wildlife Service Update. Southwest Tribal Fisheries Commission, Quarterly Meeting, November 12, 2008, Bureau of Indian Affairs, Albuquerque, NM.

Kitcheyan, D.C. and M. Montoya. 2008. Youth Conservation Corps (YCC) Summer Employment Program on the Mescalero Apache Tribe.

Kitcheyan, D.C. and J.P. Sandoval. 2008. Backpack Electrofishing. New Mexico Forestry Camp, June 3-4, 2008, Seven Springs State Fish Hatchery, NM.

Kitcheyan, D.C. and J.P. Sandoval. 2008. Fish Population and Habitat Assessment. 15th Annual Native American Youth Practicum, July 15-16, 2008, Hermosa Ranch, NM.

Remshardt, W.J. 2008. Rio Grande silvery minnow Conservation through Augmentation and Reintroduction. The 39th Annual Desert Fishes Council Meeting, Ventura, CA.

Sandoval, J.P. 2008. FY 2007 Aquatic Nuisance Species Update Report, January 29, 2008.

Sandoval, J.P. 2008. Aquatic Species Monitoring/Detection and 100th Meridian Initiative Annual Report FY 2007, February 14, 2008.

Sandoval, J.P. 2008. Aquatic Nuisance Species Interim Report – 2008, July 7, 2008.

Sandoval, J.P. 2008. 2008. Aquatic Nuisance Species Presentation, SWTFC Meeting, January 25, 2008, Bureau of Indian Affairs, Albuquerque, NM.

Sandoval, J.P. 2008. Protocol for Artificial Substrata Replacement. Aquatic Nuisance Species Update for New Mexico, March 15, 2008, Core of Engineers, Conchas Dam, NM.

Sandoval, J.P. 2008. Level I Watercraft Inspection/Decontamination Training (WIT), May 16, 2008, Navajo Lake State Park, NM.

Sandoval, J.P. and D.C. Kitcheyan. 2008. Invasive Species Boat Inspection and Decontamination. The 23rd Annual Native American Fish and Wildlife Society – Southwestern Regional Conference, August 12-14, 2008, Flagstaff, AZ.

Sandoval, J.P. and D.C. Kitcheyan. 2008. Report on Eurasian Milfoil, Zia Lake Evaluation, February 25, 2008, Zia Pueblo, NM.

Sandoval, J.P. and D.C. Kitcheyan. 2008. Level I Watercraft Inspection/Decontamination Training (WIT), May 29, 2008, Zuni Pueblo, NM.

Sandoval, J.P. and D.C. Kitcheyan. 2008. Level I Watercraft Inspection/Decontamination Training (WIT), June 5, 2008, New Mexico Fish and Wildlife Conservation Office, Albuquerque, NM.

Sandoval, J.P. and D.C. Kitcheyan. 2008. Level I Watercraft Inspection/Decontamination Training (WIT), June 11, 2008, Jicarilla Apache Reservation, Dulce, NM.

Sandoval, J.P. and D.C. Kitcheyan. 2008. Level I Watercraft Inspection/Decontamination Training (WIT), June 25, 2008, Mescalero Apache Reservation, Mescalero, NM.

Sandoval, J.P. and D.C. Kitcheyan. 2008. Native American Youth Practicum, Water Quality /Benthic Surveys/Electrofishing, July 16, 2008, Hermosa, Gila National Forest, NM.

Resource Needs

NMFWCO functions have relied primarily upon transfer funds from other agencies or other FWS programs to perform field surveys and various studies. In some years, soft funding has exceeded two-thirds of the annual budget for that year and almost always exceeds half the budget for any given year. Program staffing and equipment acquisition planning are difficult to accurately assess. Thus, acquisition of adequate base funding, as is reflected by additional needs identified in FONS proposals, is important and necessary for NMFWCO to adequately address aquatic resource needs in New Mexico. The future of Fisheries funding allocations is uncertain for NMFWCO, as it is for other field stations.

It was originally perceived by field stations that such programs as the National Fish Passage Program and the National Fish Habitat Action Plan (NFHAP) would provide opportunities to increase base funding for field operations. However, as these two programs are structured and implemented they have actually increased the unfunded workload by requiring outsourcing of at least 70% of the funds to our partners. We are then left with 30% or less to account for contracting and other administrative duties, and project oversight. The NFHAP process is an appropriate example of how cumbersome funding allocations have become. As an example, we actively participate in the Western Native Trout Initiative (WNTI) process which now has four levels of review of FONS project proposals. When projects finally receive their blessing, funding generally does not wind its way through the process until summer, generally 3-4 months prior to the end of the Fiscal Year. To rub a little more salt in the wound, we are expected/required to have only “shovel-ready” projects funded. Given that such projects are far outnumbered by those that require more work, i.e. completion of environmental compliance requirements, the “low hanging fruit” has been harvested. What this means is that it is becoming increasingly difficult and time consuming to identify “shovel-ready” projects. Furthermore, implementation of monitoring efforts for the “low hanging fruit” projects is not allowed under NFHAP. This restriction serves to further limit the utility of NFHAP funds, along with such prohibitions as a non-native species removal project where habitat conditions are not the limiting factor to native species conservation (i.e. WNTI). Monitoring data are critical to project evaluations and future management actions and are fundamental data collected during normal FWCO operations. Non-support for such data exacerbate already critical funding needs for FWCOs and hinder our ability to implement cost effective projects that really work for NFHAP priorities.

In the end, base funding concerns remain and programs such as NFPP and NFHAP are not adequate to address those concerns.

HAACP Planning

NMFWCO has four HAACP plans to ensure safe conduct of fisheries management activities. Separate plans exist for backpack and boat-mounted electrofishing. Electrofishing, while a routine component of field sampling, requires close attention to detail to ensure safe operation and accurate data collection. A single plan exists for all active and passive sampling related to the use of gill and trammel nets, seines, traps, and any other method used in the collection of fish. The final plan concerns control of aquatic nuisance species through judicial processing of fish reared at FWS hatcheries for stocking or from field actions that result in the transfer of fish from one water to another.

FONS

FONS proposals are submitted on an annual basis in order to address additional operating needs for satisfactory performances of Fisheries Program directives. Proposals submitted address listed species recovery, nonnative species control, native species conservation, recreational fisheries management, and cooperation with private landowners. Since the initiation of FONS, only fish passage proposals have received funding. In FY07, NMFWCO received $114,400 funding for a fish passage and habitat conservation project in the Gila.

Numerous high priority proposals that satisfy a variety of GPRA objectives continue to be unfunded for this or any other conservation (non-hatchery) office in the Fisheries Program. Notably, unfunded native trout conservation and use of nonnative fish transplanted from wild environments satisfy numerous objectives relative to listed species recovery, habitat improvement, nonnative species interactions, and tribal fisheries management and trust responsibilities.

U.S. Department of the Interior
U.S. Fish & Wildlife Service

http://www.fws.gov

Fisheries and Aquatic Resource Conservation
New Mexico Fish and Wildlife Conservation Office

May 2009