SUMMARY OF POPULATION MONITORING OF RIO GRANDE SILVERY MINNOW

(18-24 June 2002)

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Annotated field notes are based on provisional data that are subject to change

The sixth sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 18-24 June 2002 at 20 sites throughout the Middle Rio Grande. The population monitoring sample sites have remained the same throughout 2002. Five sites were located in the Angostura Reach, six sites in the Isleta Reach, and nine sites in the San Acacia Reach. A list of collection localities is appended (Table 1).

Adult and juvenile fish were obtained by rapidly drawing a 3.1 m x 1.8 m small mesh (5 mm) seine through discrete mesohabitats. Larval fish were captured primarily in backwaters using a 0.3 m x 0.3 m fine mesh (1.5 mm) seine. Those fish (primarily larval) that could not be identified in the field were preserved (5% buffered formalin) and returned to the lab for processing and identification; a limited number were found desiccated and were preserved in 95% ethyl alcohol. Adult Rio Grande silvery minnow were counted, identified to age-class, and released at the site of capture; a limited number were found desiccated and were preserved in 10% formalin. Most other fishes were identified to species, counted, and released at the site of capture.

Summary of population monitoring efforts by site

The upstream-most site sampled during this collecting effort was near Angostura Diversion Dam [RM 209.7] on 19 June 2002. Water visibility was clear and flow was low. The low flow allowed us to cross the channel and sample habitats at the base of the dam. Unlike April and May monitoring trips (when discharge was higher than June), no anglers were observed in the immediate area. The majority of the fish collected were associated with shoreline habitats. Red shiner (*Cyprinella lutrensis*) were collected in nearly all habitats but the majority of individuals were taken in two seine hauls. Juvenile and larval white sucker (*Catostomus commersoni*) were present along the shoreline and in backwaters.

The next downstream population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 19 June 2002. There was a wide variety of aquatic habitats present, even at these low flows, and fish were collected in all 17 seine hauls. Red shiner was again the most abundant species followed by white sucker, longnose dace (*Rhinichthys cataractae*), and flathead chub (*Platygobio gracilis*). Larval fish were observed (and collected) along the shoreline and in backwaters. Two age-1 Rio Grande silvery minnow (*Hybognathus amarus*) were collected from a main channel pool at this site and were in good condition but not gravid.

The Rio Grande silvery minnow population monitoring site located just upstream of the Rio Rancho wastewater treatment plant [RM 200.0] was sampled on 19 June 2002. Water temperature at this locality was 19°C at 11:05 h. Water level of the river was low but not noticeably different than during the May monitoring trip. Recent rain storms had flushed sediment through an adjacent arroyo and created a sand and silt delta that extended ca. 10 m into the river channel. Red shiner and white sucker were very common in the collections. A few young-of-year (YOY) yellow perch (*Perca flavescens*) were taken in a main channel pool. Rio Grande silvery minnow were absent from our collections.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was conducted on 19 June 2002. There was moderate river braiding and numerous mesohabitats present at this location on this date. Most fish collected were associated with shoreline and low velocity habitats. Water clarity was high allowing schools of fish to be observed from the bank. Although fish were present in 16 of 17 seine hauls, Rio Grande silvery minnow were not collected at

this site and the overall catch rate was very low. The most commonly collected species included red shiner, fathead minnow (*Pimephales promelas*), white sucker, and channel catfish (*Ictalurus punctatus*).

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 19 June 2002 and water temperature at 8:45 was warm (20°C). The river channel at this site was highly braided, flow was low, and water clarity was high. Few fish were collected in any of the habitats sampled with the exception of backwaters. Fathead minnow, river carpsucker (*Carpiodes carpio*), white sucker, and western mosquitofish (*Gambusia affinis*) were the most commonly collected taxa. Rio Grande silvery minnow were not present in any of the 19 June 2002 Rio Bravo Boulevard bridge crossing samples.

Los Lunas Bridge [RM 161.4], the most upstream site in the Isleta Reach, was sampled on 18 June 2002. Vegetation on islands was > 2 m high in many areas. Stable but low discharge appears to be allowing the sand island vegetation to persist. There were heavy deposits of silt throughout the site that were apparently the result of recent localized rainstorms. Red shiner was the most abundant species at this site comprising over 75% of the June 2002 Los Lunas catch (juveniles and adults). Two adult Rio Grande silvery minnow were captured at this site.

Catch at the Belen collecting site [RM 151.5] on 18 June 2002 was numerically dominated by two species: red shiner and fathead minnow. Common carp (*Cyprinus carpio*), river carpsucker, and western mosquitofish were also represented by several individuals. There were numerous backwaters present throughout the site and large numbers of fish were collected in low velocity habitats. No adult Rio Grande silvery minnow were captured at this site.

The Transwestern Pipeline Crossing [RM 143.2] site was sampled on 18 June 2002 and water temperature was 28°C at 12:00 h. The high water temperature was a result of low flows combined with high ambient temperatures. There was substantial growth of vegetation on and along instream islands. Most fish were taken in habitats adjacent to shore. Fish were present in all 17 seine hauls made at this locality but only one adult Rio Grande silvery minnow was collected. Red shiner and fathead minnow were again the most numerous species.

The US Highway 60 Bridge site [RM 130.6] was sampled on 18 June 2002. Water temperature was warm (27°C in the main channel at 10:30 h) and flow was low. There was approximately a 10°C rise in water temperature (at similar time of day) as compared with the May 2002 visit to this site. Most of the catch was made in slack water habitats and several species were often collected together. Fish were present in all 16 seine hauls and red shiner and fathead minnow numerically dominated the catch. A single adult Rio Grande silvery minnow was collected.

The population monitoring locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 18 June 2002. Water levels were noticeably lower at this and other sites within the Isleta Reach during this sampling trip compared to May 2002. Much of the adjacent exposed shoreline was still moist suggesting a relatively recent decline of water level. There were a few deep and slow moving side channels located near the eastern edge of the site. Water visibility at this site was high and the substrate was primarily sand and silt. No adult Rio Grande silvery minnow were captured at this site.

Aquatic habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 24 June 2002. Most fishes were collected along shoreline habitats. Fish were taken in 15 seine hauls but the catch rate appeared generally low. Fathead minnow was the most commonly collected taxon. No Rio Grande silvery minnow were present at this site.

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The Rio Grande silvery minnow population monitoring site located immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 24 June 2002. Large numbers of fish, primarily red shiner and fathead minnow, were collected and released at this site. There were also moderate numbers of flathead chub and longnose dace present at this site. The large volume of water that had been diverted upstream left only a small ribbon of flow in the Rio Grande. Fish were taken in each of 16 seine hauls made at this site and 10 adult Rio Grande silvery minnow were collected. None of the Rio Grande silvery minnow were gravid or expressed milt.

Habitat at the population monitoring site 1.5 miles downstream of San Acacia Diversion Dam [RM 114.6] was composed primarily of main and side channel runs and pools. Sampling efforts at this site were conducted on 24 June 2002. The channel was highly braided and all habitats were easily accessible. Fish were collected in 17 seine hauls. There were no isolated pools at this site and flow was relatively low. Seven adult Rio Grande silvery minnow were collected and all were in good condition. One Rio Grande silvery minnow was found on it's side at the edge of a pool and appeared to be close to death; perhaps a post-spawning mortality.

Fish sampling was conducted on 24 June 2002 at the population monitoring site just upstream of the Socorro Wastewater Treatment Plant [RM 99.5]. Water temperature was about five degrees (°C) higher in backwaters (ca. 30°C) than in the main channel (25 °C) at 12:00 h. While flows were maintaining most habitats observed during May 2002, a few isolated pools had formed. Fewer larval fishes were collected at this site as compared with downstream sites. A total of 23 adult Rio Grande silvery minnow were collected at this site. A large backwater at the lower west side of the site produced the majority of these individuals. Several Rio Grande silvery minnow had scales missing and were in fair to poor condition..

The next downstream site (ca. 4 miles upstream of US Highway 380 bridge crossing [RM 91.7]) was sampled on 24 June 2002. The river was no longer flowing at this site and only a few scattered isolated pools remained. Dead and dying fish were present throughout the site. Several large (>300 mm SL) dead channel catfish were most noticeable upon our arrival at the site but large numbers of dead juvenile and larval fish were also noted. No live Rio Grande silvery minnow were collected but several dead and dried fish bodies were retained and will be examined in the laboratory in an attempt to ascertain their identity. Isolated pools were teeming with larval fish but most of the larger individuals were dead (perhaps as a result of inadequate dissolved oxygen). Red shiner and fathead minnow were the two most commonly collected species in isolated pools.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 20 June 2002. Water level was low and the channel was braided. Backwaters were located along the shoreline upstream of the bridge. Fish were collected in 17 seine hauls made at this site with red shiner comprising the majority of identifiable fish. Numerous larval fishes were retained so that they could be subsequently identified. Eleven adult Rio Grande silvery minnow were present in seine hauls made at this site. Many of the individuals collected appeared emaciated probably as a result of spawning during the previous month.

Collecting efforts in the Rio Grande directly east of Bosque del Apache National Wildlife Refuge [RM 79.1] occurred on 20 June 2002. This site was lacking river flow and there were a few large isolated pools that contained the vast majority of live fish remaining at this site. As this site had been dry for several weeks, the number of dead fish still present within the formerly wetted channel was low. Efforts were focused on obtaining a representative sample of larval fishes from this site. An extensive seining effort had been conducted earlier in the day (20 June 2002) at this site by USFWS to collect and relocate live Rio Grande silvery minnow. The aforementioned and other

recent sampling efforts by USFWS precluded acquiring useful information on the abundance of Rio Grande silvery minnow at this site. Additionally, the presence of fish in isolated pools would greatly exaggerate estimates of catch per unit effort. One dead Rio Grande silvery minnow was taken at this site near an isolated pool.

The San Marcial Railroad crossing site [RM 68.6] was sampled on 20 June 2002. There were deep pools near the bridge pylons and these habitats produced the majority of the catch. Most of the flow at this site was constrained to a single channel. Habitats were relatively heterogeneous and fish were collected in 16 seine hauls. Dead common carp were discarded near the bridge, probably by anglers. Rio Grande silvery minnow (n=20) were taken in seven of 16 seine hauls. The majority of individuals were taken in a single main channel pool. Several Rio Grande silvery minnow were emaciated and none were gravid.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was also sampled on 20 June 2002. Water level on 20 June 2002 was very low and warm (27°C at 10:45 h). Pumps in the Low Flow Conveyance Channel that carried water from the former habitat to the river channel was the source of water for this isolated reach of the Rio Grande. Adult red shiner were present in all seine hauls and dominated (>95%) the catch. No adult Rio Grande silvery minnow were collected at this site.

The downstream-most site [RM 57.7] was sampled on 20 June 2002 and water level in the river was very low. Water temperatures during the warmest part of the day often exceeded 30°C in the flowing portion of the channel (C. C. McBride, pers. comm.). The few fish collected at this site included red shiner, common carp, and fathead minnow. Although fish were present in 13 of 17 seine hauls, most samples contained < 5 individuals. Red shiner was the most abundant species in this collection and was often the only species present in a given seine haul. No adult Rio Grande silvery minnow were collected at this site.

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Table 1. Collection localities for 2002 population monitoring of Rio Grande silvery minnow.

Site #	Site Locality
ANGOSTURA REACH SITES	
0	New Mexico, Sandoval County, Rio Grande, below Angostura Diversion Dam, Algodones. River Mile 209.7 SAN FELIPE PUEBLO QUADRANGLE 3916006 N 363811 E
1	New Mexico, Sandoval County, Rio Grande, at NM State Highway 44 bridge crossing, Bernalillo. River Mile 203.8 BERNALILLO QUADRANGLE 3909722 N 358543 E
2	New Mexico, Sandoval County, Rio Grande, ca. 4 miles downstream of NM State Highway 44 bridge crossing at Rio Rancho Wastewater Treatment Plant, Rio Rancho. River Mile 200.0 BERNALILLO QUADRANGLE 3905355 N 354772 E
3	New Mexico, Bernalillo County, Rio Grande, at Central Avenue (US Highway 66) bridge crossing, Albuquerque. River Mile 183.4 ALBUQUERQUE WEST QUADRANGLE 3884094 N 346840 E
4	New Mexico, Bernalillo County, Rio Grande, at Rio Bravo Boulevard bridge crossing, Albuquerque. River Mile 178.3 ALBUQUERQUE WEST QUADRANGLE 3877163 N 347554 E
ISLETA REACH SITES	
5	New Mexico, Valencia County, Rio Grande, at Los Lunas (NM State Highway 49) bridge crossing, Los Lunas. River Mile 161.4 LOS LUNAS QUADRANGLE 3852531 N 342898 E
6	New Mexico, Valencia County, Rio Grande, ca. 1.0 miles upstream of NM State Highway 309/6 bridge crossing, Belen. River Mile 151.5 TOME QUADRANGLE 3837061 N 339972 E
7	New Mexico, Valencia County, Rio Grande, ca. 2.2 miles upstream of NM State Highway 346 bridge crossing (near Transwestern Pipeline crossing), Jarales. River Mile 143.2 VEGUITA QUADRANGLE 3827329 N 338136 E

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Table 1. Collection localities for 2002 population monitoring of Rio Grande silvery minnow. (continued)

Site #	Site Locality
ISLETA REACH SITES (continued)	
8	New Mexico, Socorro County, Rio Grande, at US Highway 60 bridge crossing, Bernardo. River Mile 130.6 ABEYTAS QUADRANGLE 3809726 N 334604 E
9	New Mexico, Socorro County, Rio Grande, ca. 3.5 miles downstream of US Highway 60 bridge crossing, La Joya. River Mile 127.0 ABEYTAS QUADRANGLE 3805229 N 331094 E
9.5	New Mexico, Socorro County, Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia. River Mile 116.8 LA JOYA QUADRANGLE 3792603 N 327902N
SAN ACACIA REACH SITES	
10	New Mexico, Socorro County, Rio Grande, directly below San Acacia Diversion Dam, San Acacia. River Mile 116.2 SAN ACACIA QUADRANGLE 3791977 N 326162 E
11	New Mexico, Socorro County, Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. River Mile 114.6 LEMITAR QUADRANGLE 3790442 N 325263 E
12	New Mexico, Socorro County, Rio Grande, 0.5 miles upstream of the Low Flow Conveyance Channel bridge, east and upstream of Socorro Wastewater Treatment Plant, Socorro. River Mile 99.5 LOMA DE LAS CANAS QUADRANGLE 3771043 N 327097 E
13	New Mexico, Socorro County, Rio Grande, ca. 4.0 miles upstream of US Highway 380 bridge crossing, San Antonio. River Mile 91.7 SAN ANTONIO QUADRANGLE 3761283 N 328140 E
14	New Mexico, Socorro County, Rio Grande, at US Highway 380 bridge crossing, San Antonio. River Mile 87.1 SAN ANTONIO QUADRANGLE 3754471 N 328914 E

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Table 1. Collection localities for 2002 population monitoring of Rio Grande silvery minnow. (continued)

Site #	Site Locality
SAN ACACIA REACH SITES (continued)	
15	New Mexico, Socorro County, Rio Grande, directly east of Bosque del Apache National Wildlife Refuge headquarters, San Antonio. River Mile 79.1 SAN ANTONIO, SE QUADRANGLE 3740839 N 327055 E
16	New Mexico, Socorro County, Rio Grande, at the San Marcial railroad crossing, San Marcial. River Mile 68.6 SAN MARCIAL QUADRANGLE 3728347 N 315284 E
17	New Mexico, Socorro County, Rio Grande, at its former confluence with the Low Flow Conveyance Channel and 16 miles downstream of the southern end of the Bosque del Apache National Wildlife Refuge, San Marcial. River Mile 60.5 PARAJE WELL QUADRANGLE 3718178 N 309487 E
18	New Mexico, Socorro County, Rio Grande, ca. 19 miles downstream of the southern end of the Bosque del Apache National Wildlife Refuge, San Marcial. River Mile 57.7 PARAJE WELL QUADRANGLE 3714740 N 307380 E