SUMMARY OF POPULATION MONITORING OF RIO GRANDE SILVERY MINNOW

(27-30 August 2002)

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submitted to:

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6 September 2002

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

The eighth sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 27-30 August 2002 at 20 sites throughout the Middle Rio Grande. 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. Fish (including young-of-year) were identified in the field and released at the site of capture. Adult Rio Grande silvery minnow were counted, identified to age-class, and released at the site of capture. Other fishes were identified to species, counted, and released at the site of capture.

Summary of population monitoring efforts by site

The site just downstream of Angostura Diversion Dam [RM 209.7] was sampled on 30 August 2002. The majority of fish collected were associated with shoreline habitats. Habitat at this site was very homogenous and no side channels and few pools were present. Many different species were collected but the catch was dominated by red shiner (*Cyprinella lutrensis*) and western mosquitofish (*Gambusia affinis*). Rio Grande silvery minnow (*Hybognathus amarus*) was not collected at this site.

The next downstream population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 30 August 2002. There were a wide variety of aquatic habitats present and fish were collected in each of the 17 seine hauls. Red shiner was the most abundant species followed by white sucker (*Catostomus commersoni*). The greatest concentrations of fish were present in a narrow side channel that extended ca. 60 m along the west side of the river near the entrance to the site. Two age-1 Rio Grande silvery minnow were collected from this site.

The Rio Grande silvery minnow population monitoring site located just upstream of the Rio Rancho wastewater treatment plant [RM 200.0] was sampled on 30 August 2002. Water temperature at this locality was 25°C at 13:15 h. Water level of the river was moderately low and several small shallow backwaters had formed along the west side of the river. Flathead chub (*Platygobio gracilis*) was present in habitats with moderate currents. No Rio Grande silvery minnow were collected in any of the 16 seine hauls taken at this site.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was conducted on 30 August 2002. There was moderate river braiding and numerous mesohabitats present at this location on this date. The river channel at this site was highly braided, flow was low-moderate, and water clarity was low. Habitats were primarily shallow and low velocity. The abundance of fish at this site was low and river carpsucker (*Carpiodes carpio*) was the most commonly collected taxa. A single age-0 Rio Grande silvery minnow (36 mm SL) was present in one of the 17 seine hauls made at this site.

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 30 August 2002 and water temperature at 09:25 was 19°C. The catch and relatively low abundance of fishes at this site was similar to the Central Avenue site. It appeared that the level of the river dropped recently as there was exposed algae along the shoreline. The most commonly collected taxa included river

carpsucker, channel catfish (*Ictalurus punctatus*), and western mosquitofish. Rio Grande silvery minnow was not present in any collections.

Los Lunas Bridge [RM 161.4], the most upstream site in the Isleta Reach, was sampled on 29 August 2002. There were heavy deposits of silt throughout the site that were apparently the result of recent localized rainstorms. Red shiner and fathead minnow (*Pimephales promelas*) were the most abundant species at this site. There was notably more water at this site than at any other site sampled in the Isleta Reach and no isolated pools were present. Rio Grande silvery minnow was absent from all seine hauls.

There was no flow in the river at the Belen collecting site [RM 151.5] on 29 August 2002. There were a few isolated pools present along the west side of the river and large numbers of fish were collected in these last remaining habitats. Isolated pools were widely spaced and only persisted in a few locations near shorelines. Vegetation was > 2 m tall in the middle of the former river channel. The isolated fish fauna was numerically dominated by three species: red shiner, fathead minnow, and western mosquitofish. Two young-of-year (age-0) Rio Grande silvery minnow were captured at this site.

The Transwestern Pipeline Crossing [RM 143.2] site was sampled on 29 August 2002 and water temperature was 21°C at 11:05 h. There was substantial growth of vegetation on and along instream islands. Most fish were taken in deep pools. Red shiner numerically dominated the catch and was present in all seine hauls. There was a heavy growth of algae at the bottom of the river but it was being dislodged by recent increases in flow. Water was moderately turbid (visibility < 5 cm) and the river was meandering widely throughout the site. A single age-1 Rio Grande silvery minnow (65 mm SL) was collected.

The Rio Grande was not flowing at the US Highway 60 Bridge site [RM 130.6] on 29 August 2002. The river had been reduced to a series of isolated pools scattered widely across the site. Water temperature in these disconneted habitats was warm (21°C in the main channel at 10:05 h). Relatively large numbers of fish were present in all seine hauls. The most commonly collected taxa were red shiner, fathead minnow, and western mosquitofish. A single age-1 Rio Grande silvery minnow was collected but that individual was in poor condition.

The population monitoring locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 29 August 2002. Water levels were noticeably lower at this and other sites within the Isleta Reach during this sampling trip compared to our July 2002 monitoring effort. Turbidity level was low and water visibility was at least 0.5 m (i.e., bottoms of deepest pools were visible). The site was wetted and there were many pools but flow appeared to be < 5 cfs. Fish were collected in all 16 seine hauls and catch rates were higher at this site than at any of the downstream sites. Two age-0 Rio Grande silvery minnow were captured at this site during this monitoring effort.

Aquatic habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 28 August 2002. Water level at this site was low and there were numerous low velocity habitats near the shoreline. The shore was covered with silt and flow was observed in the Rio Puerco indicating recent rains and input from this tributary. Most fishes were collected adjacent to shore but many were also taken in main channel habitats. There were a broad variety of habitats present at this site. Fish were taken in 14 of 15 seine hauls but overall fish catch rates were very low. Red shiner, fathead minnow, and channel catfish were the most commonly collected taxa. One age-0 Rio Grande silvery minnow (29 mm SL) was collected.

The Rio Grande silvery minnow population monitoring site located immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 28 August 2002. Moderate numbers of

fish, primarily red shiner and channel catfish, were collected and released at this site. Most fish were collected in runs and backwaters with the largest number of individuals taken in habitats close to the dam. Fish were taken in each of 18 seine hauls made at this site and four adult (age-1) Rio Grande silvery minnow were collected. Flow passing over the dam was about 45 cfs (based on USGS gauge data).

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 28 August 2002. The channel was braided and flow appeared to be declining in this section of the San Acacia Reach. Water clarity was much lower than in July and there was more debris present in the water column. Fish were collected in all 17 seine hauls with red shiner and channel catfish being the two most frequently collected taxa. Three Rio Grande silvery minnow (age-1=2; age-0=1) were collected at this site.

Fish sampling was conducted on 28 August 2002 at the population monitoring site just upstream of the Socorro Wastewater Treatment Plant [RM 99.5]. Water temperature in the main channel was 24 °C at 12:05 h. Flow was maintaining habitats observed during July 2002 and no isolated pools were present. There were several shallow side channels but the majority of flow was in the main channel. The water was moderately turbid (visibility < 2 cm) but there was little instream debris. A single age-1 Rio Grande silvery minnow was collected at this site.

The next downstream site (ca. 4 miles upstream of US Highway 380 bridge crossing [RM 91.7]) was sampled on 28 August 2002. The river was flowing on both sides of the large sand island located below the bridge but was shallow (depth < 0.3 m). The recent increase in flow appeared to be receding as extensive silt deposits were present along the shoreline. Fish occupying this site must have dispersed either upstream or downstream within the past several weeks as it was dry in late July. All 13 Rio Grande silvery minnow collected at this site were age-1. None of the Rio Grande silvery minnow taken were gravid or expressed milt upon slight pressure to abdomen; several individuals were emaciated and in poor condition.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 27 August 2002. Water level was low but turbid. There was a substantial amount of debris floating on the water's surface indicating a recent change in discharge. Water temperature in the main channel was 27 °C at 13:30 h. Fish were collected in 15 of 18 seine hauls made at this site. Catch rates were noticeably lower than during our July population monitoring efforts at this site. The few fish collected were primarily occupying shoreline habitats. Rio Grande silvery minnow was not present in any collections.

Collecting efforts in the Rio Grande directly east of Bosque del Apache National Wildlife Refuge [RM 79.1] occurred on 27 August 2002. Although the river at this site was flowing during this sampling trip, only a few isolated pools were present in July. As this site had been dry for several weeks, the low number of fish present was not unexpected. Fish were collected in only 6 of 16 seine hauls. The few individuals present must have recently dispersed from either upstream or downstream wetted habitats. Red shiner and western mosquitofish were the most commonly collected taxa.

The San Marcial Railroad crossing site [RM 68.6] was sampled on 27 August 2002. Deep pools near bridge pylons and shoreline habitats produced the majority of the catch. Most of the flow at this site was confined to a single channel. Habitats were relatively heterogeneous and fish were collected in all 17 seine hauls. Backwaters were present throughout the site primarily in former side channels that had been recently inundated by rains. There were deep deposits of silt along the

river bottom reflecting the low flow conditions that have persisted at this and other San Acacia Reach sites throughout the summer. Age-0 Rio Grande silvery minnow (n=5; 30-43 mm SL) were taken in two seine hauls. These individuals appeared emaciated and were generally in poor condition.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was also sampled on 27 August 2002. Water level was low and warm (22°C at 10:15 h). Pumped water from the Low Flow Conveyance Channel and recent rains were the primary sources of flow for this lowest reach of the Rio Grande. Shallow side channels were devoid of fish probably because these habitats have only recently become inundated. Very few fish were collected and most (>85%) were red shiner. A single age-0 Rio Grande silvery minnow was collected in a low velocity mesohabitat.

The downstream-most site [RM 57.7] was sampled on 27 August 2002 and discharge was minimal (ca. 10 cfs) throughout this lower San Acacia Reach. Water was turbid and visibility was low (< 2 cm). The few fish collected at this site included red shiner, channel catfish, and western mosquitofish. A single age-0 Rio Grande silvery minnow (ca. 40 mm SL) was also collected at this site. Although fish were present in all seine hauls, most samples contained only red shiner or channel catfish. Low catch rates might be indicative of low flow conditions and periodic river drying that have occurred throughout the summer.

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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