SUMMARY OF POPULATION MONITORING OF RIO GRANDE SILVERY MINNOW

(25-28 March 2002)

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2 April 2002

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

The third sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 25-28 March 2002. A total of 20 sites were sampled. 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 as Table 1.

Fish were obtained by rapidly drawing a 3.1 m x 1.8 m small mesh (5 mm) seine through discrete mesohabitats. Rio Grande silvery minnow were counted, identified to age-class, and released at the site of capture. All other fishes were identified to species, counted, and released at the site of capture.

Summary of population monitoring efforts by site

The upstream-most area sampled during this collecting effort was near Angostura Diversion Dam [RM 209.7] and was made on 28 March 2002. Water levels were low-moderate and there were limited low velocity habitats along the channelized shoreline. The water was clear and it was easy to see to the bottom of the stream bed. Water was being diverted at the dam for irrigation. While these habitats generally produce the majority of individuals collected, there were very few fish collected in any of 16 seine hauls. Water temperatures were low (9°C at 1245 h) which could have contributed to the difficultly in locating fish.

The second population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 28 March 2002. Substrate consisted primarily of sand and gravel although pools had silt bottoms. The water was clear and the reduced flow levels resulted in numerous shallow riffles. The river was braided with many low velocity instream habitats. Of the 17 seine hauls that were made, 13 hauls produced fish. The most commonly collected species included red shiner (*Cyprinella lutrensis*) and flathead chub (*Platygobio gracilis*). Rio Grande silvery minnow (*Hybognathus amarus*) were not captured at this site or the Angostura site.

The next site sampled on 28 March 2002 was just upstream of the Rio Rancho wastewater treatment plant [RM 200.0]. Water temperature at this site was 12°C at 1310 h. Water turbidity levels were low. A total of 19 seine hauls were taken at this site and fish were collected in 14 of those hauls. Most of the flow in the river at this locality was being carried in a single channel. However, a braided side channel at the upper portion of the site produced the majority of the catch. The few Rio Grande silvery minnow females that were collected were in excellent condition and were gravid.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was completed on 28 March 2002. Substrate consisted primarily of sand and silt. There was moderate river braiding and numerous instream mesohabitats. Shoreline areas were covered with a thick layer of silt from recent flow drops. Only a few individuals were collected in the main channel of the river. Several longnose dace (*Rhinichthys cataractae*) were found under a tree stump in an area of moderate flow. Fish were present in 11 of 18 seine hauls but no Rio Grande silvery minnow were collected.

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 28 March 2002. Water temperature was 11°C at 1020 h. A number of different pool/run habitats were present throughout the site. Flows were similar to what they were in February. Most fish were collected along the shoreline in deep pools and often associated with instream debris. Many fewer fish were

collected at this site and the Central site than at upstream sites (i.e., Rio Rancho and Bernalillo). No Rio Grande silvery minnow were captured at this site.

The most upstream site in the Isleta Reach was the Los Lunas Bridge [RM 161.4] and was sampled on 27 March 2002. The substrata consisted of silt and sand at this and all remaining downstream sites. Aquatic habitats at this site were primarily main and side channel runs and pools. The river was quite braided and habitat heterogeneity was very high. Backwaters produced large numbers of fish. Flows had dropped throughout the Isleta Reach leading to some isolation of pools and many low velocity habitats. Moderate densities of Rio Grande silvery minnow were noted and this taxon was collected in 5 of 17 seine hauls. The abdomens of Rio Grande silvery minnow females were distended indicating the final maturation stages of eggs.

Catch at the Belen Site [RM 151.5] on 27 March 2002 was numerically dominated by a few species including red shiner, fathead minnow (*Pimephales promelas*), and river carpsucker (*Carpiodes carpio*). Large numbers of fish were collected in low velocity habitats. The river channel was braided and flows were lower than those in February. There were a few isolated pools but not much evidence that other pools had dried. There were a large number of backwaters throughout the site. Age-1 Rio Grande silvery minnow were present in 5 of 17 seine hauls.

Aquatic habitat at the Transwestern Pipeline Crossing [RM 143.2] was heterogenous and numerous pools and backwaters were present just upstream of the pipeline crossing. This site was sampled on 27 March 2002 and water temperature was 12°C at 1030 h. There was a large amount of silt in lower velocity habitats. A few Rio Grande silvery minnow were collected at this site along the shoreline and in backwaters. Fish were collected in 18 of 19 seine hauls.

The U.S. Highway 60 Bridge site [RM 130.6] was sampled on 27 March 2002. Water temperatures were cool (13°C in the main channel at 1145 h) and flow was low. The river meandered widely at this locality and presented a wide variety of habitats to sample. Many of the previously inundated side channels had dried leaving behind large quantities of moist silt. Fish were still occupying areas associated with debris although the majority of the catch was taken in pools and backwaters. Fathead minnow females were gravid and had very distended abdomens. Most habitats contained high numbers of red shiner. Very few Rio Grande silvery minnow were collected at this site.

The sampling locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 27 March 2002 and was composed of complex and diverse habitats. Lower flows resulted in an increase in habitat complexity but a marked decrease in wetted area. Most of the fish collected were present along the shoreline and in backwaters. Main channel habitats produced the majority of captured individuals. The most commonly collected taxa were red shiner and fathead minnow; Rio Grande silvery minnow were rare.

Habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 26 March 2002. The availability of habitats was primarily limited to main channel runs and a few shoreline pools. There were moderate numbers of newly exposed sand bars at the upper portion of the site. The lower portion of the site was channelized with all flow confined to a single channel. Fish were collected in all but four of 19 seine hauls but densities of fish were generally low. No Rio Grande silvery minnow were collected.

The site immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 26 March 2002. Only one gate of the dam was open resulting in reduced water flow. Many different habitats were available and fish were present in moderate to high densities in most lower

velocity areas. Fish were captured in 17 of 18 seine hauls. Rio Grande silvery minnow were in good condition and females were gravid.

Habitat at the 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 were conducted at this site on 26 March 2002. The channel was highly braided and all habitats were easily accessible. Red shiner males exhibited spawning coloration. Instream debris piles produced moderate numbers of fish. The majority of individuals were collected in shoreline pools. Rio Grande silvery minnow were present in moderate densities and were collected in 7 of 18 seine hauls.

Sampling was also conducted on 26 March 2002 at a site just upstream of the Socorro wastewater treatment plant [RM 99.5]. There was an extensive amount of habitats available at this site. The largest collections of fish were along the shoreline and in backwaters. Some isolated pools existed but were shallow and appeared to have been recently connected to the main channel. Rio Grande silvery minnow were collected in 7 of 19 seine hauls.

The next downstream site (ca. 4 miles upstream of U.S. Highway 380 Bridge [RM 91.7]) was sampled on 26 March 2002. Habitat diversity was high and numerous side channels meandered across the river channel. Red shiner were collected in nearly all seine hauls and their increase in density over the past few years could continue if flows remain low in 2002. Fish were collected in 15 out of 17 seine hauls. Rio Grande silvery minnow were present in low densities but a single seine haul in an instream debris pile produced moderate numbers.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 25 March 2002. Most of the flow was confined to a single channel although more diverse habitats were present several hundred meters upstream of the bridge. A few large backwaters with silt subrate produced the majority of the catch. Fish were collected in 16 of 17 seine hauls. Most of the Rio Grande silvery minnow collected occupied backwater habitats.

Collecting efforts in the Rio Grande directly east of the Bosque del Apache National Wildlife Refuge [RM 79.1] took place on 25 March 2002. The river was confined to the far east shoreline leaving the rest of the channel dry. The largest numbers of fishes were collected in the low water velocities typical of side channels. Fish were collected in 17 of 19 seine hauls and low densities of Rio Grande silvery minnow were present in several backwaters and side channels.

The San Marcial Railroad Bridge Crossing site [RM 68.6] was sampled on 25 March 2002 and flows were lower than in February leaving many exposed sand islands. A few isolated pools dotted the sandy shoreline but there was no evidence of notable fish stranding. Habitats were relatively heterogenous and fish were collected in 16 of 18 seine hauls. The majority of individuals were captured in side channel runs and pools. Rio Grande silvery minnow were collected in three seine hauls.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was also sampled on 25 March 2002. The river channel was braided in places but most habitats where shallow in these areas. The majority of the flow was contained in the middle of the river channel and former side channels along the east side of the river had dried. Most fish were present in shallow shoreline habitats. Overall fish densities were low and red shiner dominated the catch. Rio Grande silvery minnow were not collected in any of the 17 seine hauls.

The downstream-most site [RM 57.7] was sampled on 25 March 2002. Water level was very low and many salt cedar stumps were exposed. Most seine hauls contained fish but a limited variety of habitats were present. Red shiner dominated the catch. Rio Grande silvery minnow were not present in any seine hauls.

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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, Angostura. 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 (continued.). Collection localities for 2002 population monitoring of Rio Grande silvery minnow.

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

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

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. 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. 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. River Mile 57.7 PARAJE WELL QUADRANGLE 3714740 N 307380 E