SUMMARY OF POPULATION MONITORING OF RIO GRANDE SILVERY MINNOW

(22-25 April 2002)

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

The forth sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 22-25 April 2002. A total of 20 sites was sampled with five sites 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).

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 site sampled during this collecting effort was near Angostura Diversion Dam [RM 209.7] on 22 April 2002. Water visibility was clear and flow low. There were limited low velocity habitats along the channelized shoreline and many anglers present. Larval white sucker (*Catostomus commersoni*) were taken in shallow backwaters near algae and grasses. Water temperature in the main channel was relatively low (11°C at 12:30 h) while water temperature in backwaters were about 5°C warmer than the main channel.

The next downstream population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 22 April 2002. There were a wide variety of habitats present at this site and fish were collected in 13 of 17 seine hauls. The most commonly collected species were red shiner (*Cyprinella lutrensis*) and flathead chub (*Platygobio gracilis*). A few small (<20 mm SL) longnose dace (*Rhinichthys cataractae*) were present in shoreline habitats with moderate current. Rio Grande silvery minnow (*Hybognathus amarus*) was not captured at either this or the Angostura sites.

The monitoring site just upstream of the Rio Rancho wastewater treatment plant [RM 200.0] was also sampled on 22 April 2002. Water temperature at this locality was 13°C at 13:40 h. Water level of the river was low (exposing normally inundated riffles) and water clarity was high as schools of fish could be seen from the shoreline. Red shiner, which appeared to be the most abundant species at this site , were taken in a wide variety of habitats. Rio Grande silvery minnow were not collected at this site.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was conducted on 22 April 2002. There was moderate river braiding and numerous mesohabitats present at this location. Substrate was comprised primarily of sand and silt. The majority of the fish were collected from or adjacent to shoreline habitats. Small schools of flathead chub were visible in shallow riffles. Although fish were present in 16 of 17 seine hauls, Rio Grande silvery minnow were not collected at this site

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled during the morning off 22 April 2002 at which time water temperature was 12°C (10:25 h). Flow in the Rio Grande at the Rio Bravo Bridge was low and water clarity was high. A number of different pool/run habitats were present throughout the site but few fish were taken in any habitat. River carpsucker (*Carpiodes carpio*) was the most abundant species in the collections made at this site. Rio Grande silvery minnow were not taken at the Rio Bravo Bridge sampling site on 22 April 2002.

Los Lunas Bridge [RM 161.4], the most upstream site in the Isleta Reach, was sampled on 25 April 2002. The substrata at this locality primarily consisted of silt and sand. Aquatic habitats at the Los Lunas Bridge were restricted to a shallow channel with limited braiding. Flow in the river,

throughout the Isleta Reach, was less than that observed in the Angostura Reach which lead to the development of some isolated pools. Red shiner numerically dominated the catch in nearly every seine haul. Rio Grande silvery minnow were also thaken at this site and were relatively abundant.

Catch at the Belen Site [RM 151.5] on 25 April 2002 was numerically dominated by a few species including red shiner, fathead minnow (*Pimephales promelas*), and river carpsucker. Aquatic habitats at this site were braided with many shallow mesohabitats. Large numbers of fish were collected in low velocity habitats. Rio Grande silvery minnow were present at this site.

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 25 April 2002 and water temperature was 17°C at 12:00 h. Red shiner and river carpsucker were commonly collected from a wide variety of habitats. A few Rio Grande silvery minnow were collected at this site along the shoreline and in backwaters. Fish were taken in each of the 16 seine hauls made at this locality.

The U.S. Highway 60 Bridge site [RM 130.6] was sampled on 25 April 2002. Water temperatures were warm (16°C in the main channel at 10:15 h) and flow was low. Most of the flow was along the east bank of the river. The fish sample was numerically dominated by red shiner many of which (males) were in breeding color. Several of the seine hauls made at this locality produced no fish. Several Rio Grande silvery minnow were aken at this site including an emaciated individual taken from a backwater. The other Rio Grande silvery minnow collected at this site appeared to be in good condition.

The sampling locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 25 April 2002. The low flow in the river reduced auqatic habitats to a shallow main channel with only a few areas of braiding. Water visibility was high and the substrate was primarily sand and silt. Low flow resulted in a marked decrease in wetted area as compared with previous 2002 sampling efforts. Rio Grande silvery minnow were not taken at this site but a few channel catfish (*Ictalurus punctatus*) and western mosquitofish (*Gambusia affinis*) were present.

Aquatic habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 24 April 2002. Habitats at this site were predominantley a single channel run. Relatively few fish were collected in main channel habitats. There were moderate numbers of recently exposed sand bars near the upper boundary of this monitoring site. Fish were taken in all except two of the 17 seine hauls that were made but catch rate of fish was generally low. A few larvae (Catostomidae) were collected in a shallow backwater along the shoreline. No Rio Grande silvery minnow were collected.

The site immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 24 April 2002. There were several small side channel habitats created by water flowing over the top of the dam. Numerous flathead chub were collected near the diversion dam in high velocity and turbulent habitats. Fish were taken in 18 of 19 seine hauls made at this site. Rio Grande silvery minnow taken at this site appeared to be in good condition and female silvery minnow were moderately 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 24 April 2002. The channel was highly braided but, due to the low water level in the river, all habitats were easily accessible. Red shiner were present in every seine haul. Rio Grande silvery minnow were present in collections in a low numbers.

Sampling was also conducted on 24 April 2002 at the population monitoring site just upstream of the Socorro Wastewater Treatment Plant [RM 99.5]. Numerous shallow backwaters were present throughout the site many of which supported a dense growth of algae. Water temperature was several degrees higher in backwaters than in the main channel. No larval fish were seen or collected at this site. Rio Grande silvery minnow were taken in five of 18 seine hauls made at the Socorro Site.

The next downstream site (ca. 4 miles upstream of U.S. Highway 380 Bridge [RM 91.7]) was sampled on 24 April 2002. The flow was divided between the east and west sides of the river channel. Numerous backwaters and pools were present throughout the study area. Red shiner and fathead minnow dominated the catch. Rio Grande silvery minnow catch rate was realtively low with individuals of this species taken in five of 18 seine hauls.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 23 April 2002. Backwaters were present along the shoreline of the San Antonio site were primarily upstream of the bridge. These habitats produced most of the fish taken at this locality. Several isolated and dried pools were examined but none contained fish (live or dead). Fish were collected in each of the 18 seine hauls made at this site. Most of the Rio Grande silvery minnow collected at San Antonio were from backwater habitats.

Collecting efforts in the Rio Grande directly east of the Bosque del Apache National Wildlife Refuge [RM 79.1] occurred on 23 April 2002. Flow in the river was very low and the channel width was < 5 m in some locations. The river was confined to the far east shoreline leaving the rest of remainder of the river channel dry. Fish were taken in 16 of 17 seine hauls with a relatively small number of Rio Grande silvery minnow present in backwaters and side channels.

The San Marcial Railroad Bridge Crossing site [RM 68.6] was sampled on 23 April 2002. Flow in the Rio Grande was lower than that observed during March 2002 thereby exposing many sand islands. Most of the flow was constrained to a single channel. A few isolated pools were distributed along the sandy shoreline but there was no evidence of fish being stranded in these pools. Habitats were relatively heterogenous and fish collected in 16 of 18 seine hauls. Red shiner were gravid and expressed eggs when slight pressure was applied to the abdomen of females. Rio Grande silvery minnow were taken in two seine hauls at San Marcial.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was also sampled on 23 April 2002. Several sand islands were exposed which resulted in more complex aquatic habitats than were present during March 2002. The majority of river discharge was in the middle of the river channel as side channels that were formerly along the east side of the river had dried. Overall fish catch rate at this site were low with red shiner numerically dominating the catch. Rio Grande silvery minnow were not collected in any of the 17 seine hauls made at this locality.

The downstream-most site [RM 57.7] was sampled on 23 April 2002. Water level in the river was very low thereby exposing old flooded salt cedar stumps. The free access of cattle to the river in this area resulted in foul water conditions. Most seine hauls contained fish but a limited variety of habitats were present. Low catch rate of red shiner and a single common carp (*Cyprinus carpio*) composed the catch. Rio Grande silvery minnow were not present in any seine haul made 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, 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. 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. 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