SUMMARY OF POPULATION MONITORING OF RIO GRANDE SILVERY MINNOW

(20-26 February 2002)

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

The second sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 20-26 February 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. Fish from each sampling effort, including a small voucher series of Rio Grande silvery minnow, were preserved in the field in 10% formalin and then returned to the Museum of Southwestern Biology - Division of Fishes for later processing and identification. Specimens were transerred from 10% formalin to water and ultimately to 50% ethyl alcohol prior to being sorted.

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 26 February 2002. Water levels were moderate and there were limited low velocity habitats along the channelized shoreline. Shoreline habitats and backwaters were shallow and covered with ice. While these habitats generally produce the majority of individuals collected, there were no fish collected in any of 17 seine hauls. Water temperatures were extremely low (1°C at 0945 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 26 February 2002. Substrate consisted primarily of sand and gravel although pools had silt bottoms. The river was highly braided with a multitude of low velocity instream habitats. Of the 17 seine hauls that were made, 14 hauls produced fish. Fish were utilizing areas with cover, perhaps because of reduced instream water temperatures (e.g., 32°C at 1000 h). The most commonly collected species included red shiner (*Cyprinella lutrensis*) and fathead minnow (*Pimephales promelas*). Rio Grande silvery minnow (*Hybognathus amarus*) were captured in 8 seine hauls primarily in slower velocity habitats.

The next site sampled on 26 February 2002 was just upstream of the Rio Rancho wastewater treatment plant [RM 200.0]. Water temperature at this site was 3°C at 1200 h. A total of 19 seine hauls were taken at this site and fish were collected in all hauls. Most of the flow in the river at this locality was being carried in a single channel. Water was relatively clear and seemed less turbid than last month. The few Rio Grande silvery minnow females that were collected were beginning to show signs of being gravid.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was completed on 26 February 2002. Substrate consisted primarily of sand and silt. Some gravel bars were present in mid-channel areas but were only rarely encountered. There was moderate river braiding and numerous instream mesohabitats. Sampling was focused primarily in the upper portion of the study area. Only a few individuals were collected in the main channel of the river. Fish were present in only 8 of 18 seine hauls and there were a few Rio Grande silvery minnow collected in main channel pools.

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 26 February 2002. Water temperature was 4°C at 1500 h. A number of different pool/run habitats were present throughout the site. Side channels were shallow and did not produce fish. 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 25 February 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. Moderate densities of Rio Grande silvery minnow were noted and this taxon was collected in 10 of 17 seine hauls. The abdomens of Rio Grande silvery minnow females were moderately distended indicating the maturation of eggs.

Catch at the Belen Site [RM 151.5] on 25 February 2002 was numerically dominated by a few species including red shiner, fathead minnow, and river carpsucker (*Carpiodes carpio*). Large numbers of fish were collected in low velocity habitats. The river channel was braided but flows were lower than seen in January. Terrestrial vegetation was present on many of the small sand islands. Most of the fish collected were present in deep pools along the shoreline. Age-1 Rio Grande silvery minnow were present in 6 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 pipline crossing. This site was sampled on 25 February 2002 and water temperature was 7°C at 1200 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 13 of 18 seine hauls.

The U.S. Highway 60 Bridge site [RM 130.6] was sampled on 25 February 2002. Water temperatures were cool (7°C in the main channel at 1100 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. Most habitats contained high numbers of red shiner and fathead minnow. A single Rio Grande silvery minnow was collected at this site.

The sampling locality 3.5 miles downstream of Bernardo [RM 127.0] was sampled on 25 February 2002 and was composed of complex and diverse habitats. Slightly lower flows appeared to have resulted in an increase in habitat complexity. Most of the fish collected were present along the shoreline and in backwaters. Main channel habitats did not produce many fish. Small numbers of Rio Grande silvery minnow were present in 2 of 16 seine hauls made at this site.

Habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 22 February 2002. The availability of habitats was primarily limited to main channel runs and a few shoreline pools. Cool water temperatures still resulted in congregations of fish in very specific low-velocity habitats. Fish were collected in all but two of 18 seine hauls and relatively large numbers of flathead chub (*Platygobio gracils*) were noted. Limited numbers of Rio Grande silvery minnow were present in main channel pools.

The site immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 22 February 2002. There was a modest amount of water flowing under San Acacia Dam that resulted in substantial flow through the middle of the river channel. A wide variety of habitats were available and fish were present in moderate to high densities in all habitats. Fish were captured in 14 of 17 seine hauls. Rio Grande silvery minnow were collected in moderate densities that greatly exceeded densities observed just upstream [RM 116.8] of this significant instream barrier.

Habitat at the site 1.5 miles downstream of San Acacia Diversion Dam [RM 114.6] was composed primarily of main channel runs and some side channels. Sampling efforts were conducted

at this site on 22 February 2002. The abundance of fish was moderate in most habitats. The majority of individuals were collected in debris piles and along the shoreline. Rio Grande silvery minnow were present in moderate densities and were collected in 8 of 17 seine hauls.

Sampling was also conducted on 22 February 2002 at a site just upstream of the Socorro wastewater treatment plant [RM 99.5]. There were an extensive amount of habitats available at this site. The largest collections of fish were along the shoreline and in backwaters. Rio Grande silvery minnow were collected in 8 of 17 seine hauls but were most numerous in backwaters.

The next downstream site (ca. 4 miles upstream of U.S. Highway 380 Bridge [RM 91.7]) was sampled on 21 February 2002. Habitat diversity was high and numerous side channels meandered across the river channel. Red shiner were collected in nearly all seine hauls and a few flathead chub were present in main channel runs. Fish were collected in 13 out of 18 seine hauls. Rio Grande silvery minnow were present in low densities but found in a variety of main and side channel habitats.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 21 February 2002. Most of the flow was confined to a single channel although some diverse habitats were present several hundred meters upstream of the bridge. Fish were collected in 16 of 17 seine hauls. A few Rio Grande silvery minnow were collected from shoreline habitats and main channel pools.

Collecting efforts in the Rio Grande directly east of the Bosque del Apache National Wildlife Refuge [RM 79.1] took place on 21 February 2002. The river was confined to the east shoreline leaving the west bank 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 20 February 2002 and flows were lower than in January leaving many exposed sand islands. Habitats were relatively heterogenous and fish were collected in 16 of 17 seine hauls. The majority of individuals were captured in side channel runs and pools. Channel catfish (*Ictalurus punctatus*) were occasionally captured in higher velocity habitats. Rio Grande silvery minnow were only collected in three seine hauls.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was sampled on 20 February 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 but there were some deep side channels along the east side of the river. Most fish were present in shallow shoreline habitats. Backwaters produced a variety of nonnative taxa but red shiner dominated the catch. Rio Grande silvery minnow were present in low densities and were collected in three seine hauls.

The downstream-most site [RM 57.7] was also sampled on 20 February 2002. Water levels at this site were lower than in January and there were some exposed sand islands along the west side of the river channel. Most seine hauls contained fish but a limited variety of habitats were present. Red shiner and river carpsucker dominated the catch. A single Rio Grande silvery minnow was collected in a backwater. Fish were collected in 11 of 17 seine hauls and the highest densities of individuals were present in side channel shoreline runs and pools.

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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