SUMMARY OF POPULATION MONITORING OF RIO GRANDE SILVERY MINNOW

(22-28 January 2002)

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

The first sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 22-28 January 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 28 January 2002. Water levels were moderate and there were limited low-velocity habitats along the channelized shoreline. Shoreline habitats and backwaters produced the few individuals collected. Fish were collected in a variety of habitats but were most frequently present in lower velocity areas. The catch was comprised primarily of red shiner (*Cyprinella lutrensis*) and western mosquitofish (*Gambusia affinis*). No Rio Grande silvery minnow (*Hybognathus amarus*) were collected in any of the seine hauls made at the Angostura Site. Fish were only collected in 4 of 15 seine hauls.

The second population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 28 January 2002. Substrate consisted primarily of sand and gravel. The river was highly braided with a multitude of low velocity instream habitats. All 18 seine hauls produced fish. Fish were utilizing areas with cover, perhaps because of reduced instream water temperatures (e.g., 3.5°C at 1300 h). The most commonly collected species included red shiner, fathead minnow (*Pimephales promelas*), flathead chub (*Platygobio gracilis*), and white sucker (*Catostomus commersoni*). A few Rio Grande silvery minnow were captured at this site along the shoreline adjacent to flow.

The next site sampled on 28 January 2002 was just upstream of the Rio Rancho wastewater treatment plant [RM 200.0]. Water temperature at this site was 3°C at 1135 h. A total of 18 seine hauls were taken at this site and fish were collected in all but three hauls. Most of the flow in the river at this locality was being carried in a single channel. There was a large amount of silt exposed on the banks indicating a recent drop in flow. Rio Grande silvery minnow were collected primarily in shoreline habitats at the upper portion of the sampling site.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was completed on 28 January 2002. Substrate consisted primarily of sand and silt. Some gravel bars were present in the mid-channel areas but were only rarely encountered. There was moderate river braiding and numerous instream mesohabitats. Most fish were collected in pools, debris piles, and found primarily along the shoreline. Only a few individuals were collected in the main channel of the river. Many red shiner and river carpsucker (*Carpiodes carpio*) were collected throughout the study site. Fish were present in most seine hauls (14 of 18) and low numbers of Rio Grande silvery minnow were collected in a few side channels.

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 25 January 2002. Water temperature was 6°C at 1530 h. A number of different pool/run habitats were present throughout the site. These habitats produced low to moderate numbers of 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 than at upstream sites. We collected many river carpsucker but overall species diversity was low. 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 January 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. Fish were collected in nearly all habitats but were extremely numerous in pools. Moderate densities of Rio Grande silvery minnow were noted and this taxon was collected in 11 of 15 seine hauls.

Catch at the Belen Site [RM 151.5] on 25 January 2002 was numerically dominated by a few species including red shiner and western mosquitofish (*Gambusia affinis*). Large numbers of fish were collected in low velocity habitats. The river channel was braided. Terrestrial vegetation was present on many of the small sand islands. Instream vegetation consisted of heavy concentrations of algae covering the bottom of pools and backwaters. Age-1 Rio Grande silvery minnow were present in 10 of 17 seine hauls but were only numerous (i.e., >10) in deep main channel pools.

Aquatic habitat at the Transwestern Pipeline Crossing [RM 143.2] was heterogenous and numerous pools and backwaters were present. This site was sampled on 25 January 2002 and water temperature was 2.5°C at 0940 h. There was a large amount of silt in lower velocity habitats. A few Rio Grande silvery minnow were collected at this site primarily along the shoreline. Fish were collected in all 17 seine hauls.

The U.S. Highway 60 Bridge site [RM 130.6] was sampled on 24 January 2002. Water temperatures were cold (5°C in the main channel at 1355 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 exposed islands were inundated but were shallow and these areas did not produce many fish. Most habitats contained extremely high numbers of red shiner and fathead minnow. A single Rio Grande silvery minnow was collected at this site. A few common carp (*Cyprinus carpio*) were present in slack water habitats.

The sampling locality 3.5 miles downstream of Bernardo [RM 127.0] was sampled on 24 January 2002 and was composed of complex and diverse habitats. Recent higher flows appeared to have opened some previously dry side channels. 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 6 of 17 seine hauls made at this site.

Habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 24 January 2002. The availability of habitats was primarily limited to main channel runs and a few shoreline pools. Cool water temperatures appeared to result in congregations of fish in very specific low-velocity habitats. Fish were collected in all but two of 17 seine hauls and relatively large numbers of flathead chub were noted. Limited numbers of Rio Grande silvery minnow were present in main channel shoreline runs.

The site immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 24 January 2002. There was a modest amount of water flowing over the top of San Acacia Dam which created several side channels. A wide variety of habitats were available and fish were

present in moderate to high densities in all habitats. Fish were captured in 15 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 23 January 2002. The abundance of fish was low to 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 in shoreline habitats.

Sampling was also conducted on 23 January 2002 at a site just upstream of the Socorro wastewater treatment plant [RM 99.5]. There were a wide variety and quantity of aquatic habitats available at this site. The largest collections of fish were in low velocity runs and in pools. Rio Grande silvery minnow were collected in 8 of 17 seine hauls but were most numerous in deep pools.

The next downstream site (ca. 4 miles upstream of U.S. Highway 380 Bridge [RM 91.7]) was sampled on 23 January 2002. Habitat diversity was high and many low velocity mesohabitats were present throughout the sampling site. 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 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 23 January 2002. Most of the flow was confined to a single channel although some small and widely spaced backwaters were present. Fish were collected in 12 of 17 seine hauls. Rio Grande silvery minnow occupied slow moving water and its densities were moderate.

On 22 January 2002, we sampled the Rio Grande directly east of the Bosque del Apache National Wildlife Refuge [RM 79.1]. The river was confined to the east shoreline leaving the west bank dry. Much of the area on the east side of the former river channel was heavily vegetated and could become a permanent island. Most instream habitats were shallow but hadn't warmed much throughout the day (3°C at 1350 h). Rio Grande silvery minnow were present in a wide variety of habitats but were only found in low densities.

The San Marcial Railroad Bridge Crossing site [RM 68.6] was sampled on 22 January 2002 and flows were moderate resulting in a reduction of habitat heterogeneity. Some former backwaters were side channel runs. There was a limited variety of habitats present at this site but fish were collected in most seine hauls (12 out of 17). Channel catfish (*Ictalurus punctatus*) were relatively abundant and often found 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 22 January 2002. 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 in only two seine hauls.

The downstream-most site [RM 57.7] was also sampled on 22 January 2002. Water levels at this site remained fairly high throughout the winter and the river was channelized. Most seine hauls contained fish but a limited variety of habitats were present. Red shiner and river carpsucker dominated the catch. A few Rio Grande silvery minnow were present in pools and along the shoreline.

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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