# SUMMARY OF POPULATION MONITORING OF RIO GRANDE SILVERY MINNOW

(17-23 July 2002)

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

The seventh sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 17-23 July 2002 at 20 sites throughout the Middle Rio Grande. The 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. Those fish (primarily larval) that could not be identified in the field were preserved (5% buffered formalin) and returned to the lab for processing and identification. Adult Rio Grande silvery minnow were counted, identified to age-class, and released at the site of capture. Most 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 23 July 2002. On that date, the water in the river was moderately turbid and water visibility in the main channel was <6 cm. Flow at this site was lower (ca. 750 cfs) than that observed during the 19 June 2002 sampling effort (ca. 1,100 cfs). Sand and silt had recently filled cobble interstitial spaces. The majority of fish collected were associated with shoreline habitats. Red shiner (*Cyprinella lutrensis*) was collected in nearly all habitats and was the most abundant species. Six age-1 Rio Grande silvery minnow (*Hybognathus amarus*) were collected in a main channel pool at this site and appeared to be in good condition. The Rio Grande silvery minnow did not present external evidence of being reproductively active (i.e., were not gravid or expressing milt).

The next downstream population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 23 July 2002. There were a wide variety of aquatic habitats present and fish were collected in each of the 17 seine hauls. Red shiner was again the most abundant species followed by white sucker (*Catostomus commersoni*), longnose dace (*Rhinichthys cataractae*), and flathead chub (*Platygobio gracilis*). Larval fish were observed (and collected) along the shoreline and most were >15 mm TL facilitating field identifications. Two age-1 Rio Grande silvery minnow were collected from a main channel pool at this site. Neither individual expressed eggs or milt when slight pressure was applied to the abdomen.

The Rio Grande silvery minnow population monitoring site located just upstream of the Rio Rancho wastewater treatment plant [RM 200.0] was sampled on 23 July 2002. Water temperature at this locality was 23°C at 14:00 h. Water level of the river was moderately low. Some side channel habitats were flowing near the upper portion of the sampling site. Red shiner and white sucker were very common in the collections. Eight age-1 Rio Grande silvery minnow were taken; all were collected in side channel habitats.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was conducted on 23 July 2002. There was moderate river braiding and numerous mesohabitats present at this location on this date. Most fish collected were associated with shoreline and low velocity habitats. Water clarity was very low (< 1 cm) because of large inputs of silt to the river from recent rains. Although fish were present in 16 of 17 seine hauls, Rio Grande silvery minnow was absent from collections and the overall catch rate was low. The most commonly taken species

included river carpsucker (*Carpiodes carpio*), channel catfish (*Ictalurus punctatus*), and western mosquitofish (*Gambusia affinis*).

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 23 July 2002 and water temperature at 09:00 was warm (21°C). The river channel at this site was highly braided, flow was low-moderate, and water clarity was low. Relatively large numbers of fish were primarily collected in low velocity habitats. Fathead minnow (*Pimephales promelas*), river carpsucker, white sucker, and channel catfish were the most commonly collected taxa. A single seine haul (16.6 m) through a main channel pool produced 151 YOY channel catfish. Rio Grande silvery minnow was not present in any of the 17 seine hauls made at this site.

Los Lunas Bridge [RM 161.4], the most upstream site in the Isleta Reach, was sampled on 22 July 2002. There were several hundred fish, including at least one Rio Grande silvery minnow, stranded and desiccated along the shoreline near the bridge. There were heavy deposits of silt throughout the site that were apparently the result of recent localized rainstorms. Fathead minnow was the most abundant species at this site comprising over 65% of the July 2002 Los Lunas catch (juveniles and adults). Three adult (age-1) Rio Grande silvery minnow were captured at this site; none were gravid nor expressed milt.

Catch at the Belen collecting site [RM 151.5] on 22 July 2002 was numerically dominated by three species: red shiner, fathead minnow, and western mosquitofish. Most fish were collected in recently inundated habitats. There were numerous backwaters present throughout the site and large numbers of fish were collected in low velocity habitats. Three adult (age-1) Rio Grande silvery minnow were captured at this site.

The Transwestern Pipeline Crossing [RM 143.2] site was sampled on 22 July 2002 and water temperature was 23°C at 12:25 h. There was substantial growth of vegetation on and along instream islands. Most fish were taken in habitats adjacent to shore. Floodplain habitats were newly inundated by water and resulted in numerous low flow habitats. Fish were present in all 18 seine hauls made at this locality but no Rio Grande silvery minnow were taken. Red shiner, fathead minnow, and western mosquitofish were the most numerous species.

The US Highway 60 Bridge site [RM 130.6] was sampled on 22 July 2002. Water temperature was warm (23°C in the main channel at 10:05 h) and flow was low to moderate. Grassy areas on former sand islands were inundated by recent increased flows caused by local rain storms. Most of the catch was made in low velocity aquatic habitats and several species were taken syntopically. Fish were present in 14 of 17 seine hauls with red shiner and western mosquitofish numerically dominating the catch. Rio Grande silvery minnow were absent from collections at this site.

The population monitoring locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 22 July 2002. Water levels were noticeably higher at this and other sites within the Isleta Reach during this sampling trip compared to June 2002. However, this was largely an artifact of recent rainstorms in the vicinity. Turbidity levels were high and water visibility was < 1 cm. There were a few deep and slow moving side channels located near the eastern edge of the site. Fish were collected in all 18 seine hauls. A single adult Rio Grande silvery minnow was captured at this site.

Aquatic habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 18 July 2002. Water level at this site was low and there were numerous low velocity habitats near the shoreline. Most fishes were collected adjacent to the shoreline but a surprising number were found in main channel habitats. Fish were taken in all 15 seine hauls. Red shiner was the most

commonly collected taxon. One age-1 Rio Grande silvery minnow was collected from a side channel shoreline pool. Additionally, a single age-0 individual silvery minnow was captured in a main channel run.

The Rio Grande silvery minnow population monitoring site located immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 18 July 2002. Large numbers of fish, primarily red shiner and fathead minnow, were collected and released at this site. There were also moderate numbers of flathead chub and longnose dace present at this site. The largest number of fishes were taken in habitats close to the dam. Fish were taken in each of 18 seine hauls made at this site and nine adult (age-1) Rio Grande silvery minnow were collected. A few of the nine Rio Grande silvery minnow appeared to be slightly gravid.

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 18 July 2002. The channel was highly braided and all habitats were easily accessible. Water clarity was lower than in June and there was more debris drifting in the water column and on the surface than during the prior month's sampling effort. Fish were collected in all 17 seine hauls. Four adult (age-1) and one age-0 Rio Grande silvery minnow were collected. Some of the age-1 female Rio Grande silvery minnow collected were gravid as determined by their extended abdomens.

Fish sampling was conducted on 18 July 2002 at the population monitoring site just upstream of the Socorro Wastewater Treatment Plant [RM 99.5]. Water temperature in the main channel was 27 °C at 11:30 h. Flows were maintaining most habitats observed during June 2002 and no isolated pools were present. There were a number of shallow side channels but the majority of the flow was being carried through the main channel. A single age-1 Rio Grande silvery minnow was collected at this site. Water clarity was low and there was evidence of recent increases in flow caused by local rainstorms.

The next downstream site (ca. 4 miles upstream of US Highway 380 bridge crossing [RM 91.7]) was sampled on 18 July 2002. The river was no longer flowing at this site and no isolated pools remained. Only a few larger fish carcasses (mostly common carp [*Cyprinus carpio*] and channel catfish) were present at the bottoms of the deepest indentations in the dried and sandy river bed.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 17 July 2002. Water level was extremely low and the channel was braided. Water temperature in the main channel was 30 °C at 14:50 h. Larval and juvenile fish were collected in the thalweg of the shallow river (<20 cm). Fish were collected in all 16 seine hauls made at this site with red shiner comprising the vast majority (98.5%) of identifiable fish. Unidentifiable larval fish were retained and returned to the laboratory for identification. Fathead minnow and western mosquitofish were the only other fish species present.

Collecting efforts in the Rio Grande directly east of Bosque del Apache National Wildlife Refuge [RM 79.1] occurred on 17 July 2002. This site was lacking river flow and only the remnants of formerly larger isolated pools remained. As this site had been dry for several weeks, the number of desiccated fish still visible at the bottoms of former pools was low. Larval fish were collected in a single nearly dry algae covered pool and appeared to be the last aquatic survivors of this latest stream drying event.

The San Marcial Railroad crossing site [RM 68.6] was sampled on 17 July 2002. There were deep pools near the bridge pylons and these habitats produced the majority of the catch.

Most of the flow at this site was constrained to a single channel. Habitats were relatively heterogeneous and fish were collected in 18 seine hauls. Age-0 Rio Grande silvery minnow (n=26) were taken in seven seine hauls. The majority of individuals were taken in a single main channel run. Several age-1 Rio Grande silvery minnow were also collected and some appeared gravid.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was also sampled on 17 July 2002. Water level was very low and warm (24°C at 12:00 h). Pumps in the Low Flow Conveyance Channel that carried water from the former habitat to the river channel were the source of water for this isolated reach of the Rio Grande. Adult red shiner were present in all seine hauls and dominated (>95%) the catch. A few age-0 Rio Grande silvery minnow were collected in low velocity mesohabitats at this site.

The downstream-most site [RM 57.7] was sampled on 17 July 2002 and water level in the river was very low. The few fish collected at this site included red shiner, common carp, fathead minnow, and western mosquitofish. Interestingly, an age-0 smallmouth buffalo (*Ictiobus bubalus*) was also collected at this site. Although fish were present in all seine hauls, most samples contained only red shiner. No Rio Grande silvery minnow were collected 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, Algodones.<br>River Mile 209.7 SAN FELIPE PUEBLO QUADRANGLE<br>3916006 N 363811 E |
| 1 | New Mexico, Sandoval County, Rio Grande, at NM State Highway 44 bridge crossing, Bernalillo.<br>River Mile 203.8 BERNALILLO QUADRANGLE<br>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.<br>River Mile 200.0 BERNALILLO QUADRANGLE<br>3905355 N 354772 E |
| 3 | New Mexico, Bernalillo County, Rio Grande, at Central Avenue (US Highway 66) bridge crossing, Albuquerque.<br>River Mile 183.4 ALBUQUERQUE WEST QUADRANGLE<br>3884094 N 346840 E |
| 4 | New Mexico, Bernalillo County, Rio Grande, at Rio Bravo Boulevard bridge crossing, Albuquerque.<br>River Mile 178.3 ALBUQUERQUE WEST QUADRANGLE<br>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.<br>River Mile 161.4 LOS LUNAS QUADRANGLE<br>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.<br>River Mile 151.5 TOME QUADRANGLE<br>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.<br>River Mile 143.2 VEGUITA QUADRANGLE<br>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.<br>River Mile 130.6 ABEYTAS QUADRANGLE<br>3809726 N 334604 E |
| 9 | New Mexico, Socorro County, Rio Grande, ca. 3.5 miles downstream of US Highway 60 bridge crossing, La Joya.<br>River Mile 127.0 ABEYTAS QUADRANGLE<br>3805229 N 331094 E |
| 9.5 | New Mexico, Socorro County, Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia.<br>River Mile 116.8 LA JOYA QUADRANGLE<br>3792603 N 327902N |
| **SAN ACACIA REACH SITES** | |
| 10 | New Mexico, Socorro County, Rio Grande, directly below San Acacia Diversion Dam, San Acacia.<br>River Mile 116.2 SAN ACACIA QUADRANGLE<br>3791977 N 326162 E |
| 11 | New Mexico, Socorro County, Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia.<br>River Mile 114.6 LEMITAR QUADRANGLE<br>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.<br>River Mile 99.5 LOMA DE LAS CANAS QUADRANGLE<br>3771043 N 327097 E |
| 13 | New Mexico, Socorro County, Rio Grande, ca. 4.0 miles upstream of US Highway 380 bridge crossing, San Antonio.<br>River Mile 91.7 SAN ANTONIO QUADRANGLE<br>3761283 N 328140 E |
| 14 | New Mexico, Socorro County, Rio Grande, at US Highway 380 bridge crossing, San Antonio.<br>River Mile 87.1 SAN ANTONIO QUADRANGLE<br>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.<br>River Mile 79.1 SAN ANTONIO, SE QUADRANGLE<br>3740839 N 327055 E |
| 16 | New Mexico, Socorro County, Rio Grande, at the San Marcial railroad crossing, San Marcial.<br>River Mile 68.6 SAN MARCIAL QUADRANGLE<br>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.<br>River Mile 60.5 PARAJE WELL QUADRANGLE<br>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.<br>River Mile 57.7 PARAJE WELL QUADRANGLE<br>3714740 N 307380 E |