

SUMMARY OF POPULATION MONITORING OF
RIO GRANDE SILVERY MINNOW
(24-27 September 2002)

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

The ninth sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 24-27 September 2002 at 20 sites throughout the Middle Rio Grande. 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. Fish (including young-of-year) were identified in the field and released at the site of capture. Rio Grande silvery minnow were counted, identified to age-class, and released at the site of capture. 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 27 September 2002. Water levels were very low making it easy to sample at the base of the dam (discharge ca. 400 cfs). Overall fish catch rates were very low with the exception of several large samples of western mosquitofish (*Gambusia affinis*). The majority of fish collected were associated with shoreline habitats. Main channel habitats were deep and difficult to sample as most flow was channeled through a narrow thalweg. Habitats were homogenous (primarily runs) with few pools or backwaters were present. A total of six fish species were collected but the catch was numerically dominated by western mosquitofish, red shiner (*Cyprinella lutrensis*), and fathead minnow (*Pimephales promelas*). Rio Grande silvery minnow (*Hybognathus amarus*) was not collected at this site.

The next downstream population monitoring site was located near the NM State Highway 44 bridge crossing [RM 203.8] and was sampled on 27 September 2002. The river channel and was braided, flow was low, and water visibility was high (> 30 cm). There were a wide variety of aquatic habitats present and fish were collected in 16 of the 17 seine hauls. Red shiner was the most abundant species followed by flathead chub (*Platygobio gracilis*). Ten species were collected in seine hauls taken at this site. One age-1 Rio Grande silvery minnow was collected.

The Rio Grande silvery minnow population monitoring site located just upstream of the Rio Rancho wastewater treatment plant [RM 200.0] was sampled on 27 September 2002. Water temperature at this locality was 20°C at 14:00 h. Temperatures at all Rio Grande sites were lower than during August during the same time of day. Water level of the river was moderately low and several large backwaters had formed along the east side of the river. The majority of the catch was made in a few seine hauls. One age-0 Rio Grande silvery minnow (49 mm SL) was collected at this site in a seine haul that contained five other species.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was conducted on 27 September 2002. There was moderate river braiding and large deposits of silt along the shoreline. The river channel at this site was highly braided, flow was low, and water clarity was moderate. The abundance of fish at this site was moderate and western mosquitofish was the most commonly collected taxa. Rio Grande silvery minnow was not present in any of the 17 seine hauls made at this site.

The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 27 September 2002 and water temperature at 09:20 was 16°C. Catch rates and species richness were relatively low at this site. Water level was very low and flow was only about 200 cfs. There was a large

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amount of debris that was exposed by the lowered river levels. About 50% of the normally wetted river channel was dry. The most commonly collected taxa were channel catfish (*Ictalurus punctatus*), western mosquitofish, and river carpsucker (*Carpionodes carpio*). Rio Grande silvery minnow was not present in any collections.

Los Lunas Bridge [RM 161.4], the most upstream site in the Isleta Reach, was sampled on 26 September 2002. There were heavy deposits of silt throughout the site that were apparently the result of lowered flows. Red shiner, fathead minnow, and western mosquitofish were the most abundant species at this site. There was notably more water at this site than at any other site sampled in the Isleta Reach and no isolated pools were present. Fish were collected in each of the 17 seine hauls. One age-1 Rio Grande silvery minnow (72 mm SL) was present in collections at this site.

There was low-moderate flow in the river at the Belen collecting site [RM 151.5] on 26 September 2002. Flows appeared to be declining at this site but a wide variety of aquatic habitats persisted. The abundance of fishes is interesting considering this site consisted of only a few isolated pools in August. The September 2002 fish fauna was numerically dominated by: red shiner, fathead minnow, and western mosquitofish. No Rio Grande silvery minnow were captured at this site.

The Transwestern Pipeline Crossing [RM 143.2] site was sampled on 26 September 2002 and water temperature was 20°C at 11:05 h. Backwaters and low velocity habitats dominated the site. There was substantial growth of vegetation on and along instream islands. Most fish were taken in deep pools. Red shiner was present in all seine hauls and numerically dominated the sample. Water was moderately turbid (visibility < 5 cm) and the river was meandering widely throughout the site. Rio Grande silvery minnow was not collected in any of the 17 seine hauls taken at this site.

The Rio Grande was flowing at the US Highway 60 Bridge site [RM 130.6] on 26 September 2002. The river had been reduced to a series of isolated pools during August but was meandering across the full channel width during this sampling effort. Water temperature was cool (17°C in the main channel at 10:00 h) during the September 2002 sampling effort. Relatively large numbers of fish were present in each seine haul but the catch was dominated by red shiner, fathead minnow, and western mosquitofish. This species combination seems to be most common during stable low flow conditions. Rio Grande silvery minnow was not collected at site in any of the 17 seine hauls.

The population monitoring locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 26 September 2002. This site had flooded since the August sampling trip. There was a heavy deposit (ca. 15-20 cm thick) along the shoreline and on vegetated flats. Turbidity level was moderate and water visibility was about 0.1 m. The river had formed several secondary channels and these habitats produced the majority of the catch. Fish were collected in each of the 16 seine hauls and catch rates were higher at this site than at many of the downstream sites. Rio Grande silvery minnow were absent from fish collections at this site.

Aquatic habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 25 September 2002. Water level at this site was low-moderate and many previously exposed sandbars (i.e., during August sampling) were now inundated. Most fishes were collected adjacent to shore but some were also taken in main channel habitats. Fish were taken in 14 of 17 seine hauls but overall fish catch rates were very low. Red shiner, fathead minnow, flathead chub, and channel catfish were the most commonly collected taxa. Flathead chub was found in many of the habitats

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sampled (present in 12 of 17 seine hauls). Rio Grande silvery minnow was not found in any of the habitats sampled.

The Rio Grande silvery minnow population monitoring site located immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 25 September 2002. Channel catfish, flathead chub, and red shiner comprised the majority of the catch at this site. Most fish were collected in runs and backwaters with the largest number of individuals taken in main channel habitats. Fish were taken in 12 of 17 seine hauls made at this site and three adult (age-1) Rio Grande silvery minnow were collected. Flow over the dam was about 300 cfs (based on USGS gauge data) in contrast to 45 cfs during August sampling.

Habitat at the population monitoring site 1.5 miles downstream of San Acacia Diversion Dam [RM 114.6] was relatively homogenous and composed primarily of main channel runs. Sampling efforts at this site were conducted on 25 September 2002. Few fishes were collected at this site in any of the habitats sampled with the exception of one backwater. Fish were collected in 16 of 17 seine hauls with red shiner and western mosquitofish being the two most frequently collected taxa. Two Rio Grande silvery minnow (age-1=1; age-0=1) were collected at this site.

Fish sampling was conducted on 25 September 2002 at the population monitoring site just upstream of the Socorro Wastewater Treatment Plant [RM 99.5]. Water temperature in the main channel was 19 °C at 11:00 h. It appeared that there was flow along both the east and west banks of the river until recently. There were several shallow side channels but the majority of flow was in the main channel. Several large backwater had filled with silt. Fish were present in 13 of 17 seine hauls. Shallow low velocity habitats produced the majority of the catch. Three age-1 Rio Grande silvery minnow (61-66 mm SL) were collected at this site.

The next downstream site (ca. 4 miles upstream of US Highway 380 bridge crossing [RM 91.7]) was sampled on 25 September 2002. The level of the river had apparently dropped recently and there were several isolated pools along the west side of the site. Most habitats sampled were characterized by shallow, low velocity water. The abundance and diversity of fishes at this site exceeded that observed at sites downstream of this point where river drying has been pronounced this summer. One age-1 Rio Grande silvery minnow was collected in a backwater.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 24 September 2002. Water level was moderate and there were deposits of silt along the shoreline. There was little instream debris at this site. Water temperature in the main channel was 23 °C at 14:05 h. Fish were collected in 12 of 17 seine hauls made at this site. Catch rates were very low for all species. The few fish collected were primarily occupying shoreline habitats. Rio Grande silvery minnow was not present in any of the collections.

Collecting efforts in the Rio Grande directly east of Bosque del Apache National Wildlife Refuge [RM 79.1] occurred on 24 September 2002. The river at this site was flowing but there had been extensive and repeated river drying at this site throughout the summer. Fish were collected in only 13 of 17 seine hauls but the majority of hauls contained < 5 individuals. Red shiner and western mosquitofish were the most commonly collected taxa.

The San Marcial Railroad crossing site [RM 68.6] was sampled on 24 September 2002. Shoreline habitats produced the majority of the catch. Most of the flow at this site was confined to the middle of the river channel. Habitats were relatively heterogeneous and fish were collected in 16 of 18 seine hauls. Some backwaters were present at the site primarily in former side channels. Age-0 Rio Grande silvery minnow (n=12; 44-52 mm SL) were taken in one seine hauls.

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The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was also sampled on 24 September 2002. Recent high flows deposited as much as 20 cm of silt on bank of the river channel and water visibility was < 1 cm. Several former backwaters had completely filled with silt and no longer provided habitat for fishes. Water level was low and temperature was 19°C at 10:50 h. Very few fish were collected and most were red shiner or channel catfish. A single age-0 Rio Grande silvery minnow (41 mm SL) was collected in a low velocity mesohabitat.

The downstream-most site [RM 57.7] was sampled on 24 September 2002 and discharge was low (ca. 100 cfs) throughout this lower San Acacia Reach. Water was turbid and visibility was low (< 1 cm). Fish were evenly distributed between different habitats but were in low densities. Fish species collected at this site were red shiner, channel catfish, and western mosquitofish. Rio Grande silvery minnow were absent from collections made at this site. Although fish were present in 13 of 16 seine hauls, most samples contained < 3 individuals. Low catch rates, reduced species diversity, and rarity of Rio Grande silvery minnow in the lower San Acacia Reach are likely indicative of low flow conditions and periodic river drying that have occurred throughout the summer.

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

Site #	Site Locality
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ANGOSTURA REACH SITES

0	New Mexico, Sandoval County, Rio Grande, below Angostura Diversion Dam, Algodones. 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
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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
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SAN ACACIA REACH SITES (continued)

15 New Mexico, Socorro County, Rio Grande, directly east of Bosque del Apache National Wildlife Refuge headquarters, San Antonio.
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, San Marcial.
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, San Marcial.
River Mile 57.7 PARAJE WELL QUADRANGLE
3714740 N 307380 E
