

SUMMARY OF POPULATION MONITORING OF
RIO GRANDE SILVERY MINNOW
(22-28 October 2002)

prepared by:

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

The tenth sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 22-28 October 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 28 October 2002. Water levels were very low (discharge ca. 350 cfs) making it easy to sample near the base of the dam and cross the river to sample habitats along the western shoreline. Overall fish catch rates were low with the exception of several large samples of red shiner (*Cyprinella lutrensis*) and western mosquitofish (*Gambusia affinis*). The majority of fish collected were associated with shoreline habitats. Habitats were homogenous (primarily runs) and few pools or backwaters were present. A total of eight fish species were collected but the catch was numerically dominated by red shiner, western mosquitofish, longnose dace (*Rhinichthys cataractae*), and fathead minnow (*Pimephales promelas*). A single Rio Grande chub (*Gila pandora*) was collected. There are no records of this native species from population monitoring efforts. 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 28 October 2002. The river channel was braided, flow was low, and water visibility was low (<1 cm). There were recent rains in the area contributing to high turbidity levels. Fish were collected in all seine hauls and species richness was high. Red shiner was the most abundant species followed by flathead chub (*Platygobio gracilis*). Ten species were collected in seine hauls taken at this site. Six age-1 Rio Grande silvery minnow (range=67-77 mm standard length, SL) were 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 28 October 2002. Water temperature at this locality was 14°C at 14:00 h. Temperatures at all Rio Grande sites were notably lower than during September during the same time of day. Water level of the river was moderately low and several side channels had formed along the east side of the river. It was not uncommon to collect four to six fish species in a single seine haul. Two age-1 Rio Grande silvery minnow (68-77 mm SL) were collected at this site.

Sampling at the Central Avenue (US Highway 66) bridge crossing [RM 183.4] was conducted on 28 October 2002. Water level was low and flow was about 300 cfs during sampling efforts. 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 low. The abundance of fish at this site was low and channel catfish (*Ictalurus punctatus*) was the most commonly collected taxon. A single age-1 Rio Grande silvery minnow was collected in a main channel run.

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The Rio Bravo Boulevard bridge crossing [RM 178.3] was sampled on 28 October 2002 and water temperature at 09:00 was 7.5°C. Catch rates were relatively low at this site. Flow levels were low and there was extensive river braiding resulting in many shallow side channels. The most commonly collected taxa were western mosquitofish, channel catfish, and river carpsucker (*Carpiodes carpio*). Rio Grande silvery minnow was not present in any of the collections.

Los Lunas Bridge [RM 161.4], the most upstream site in the Isleta Reach, was sampled on 24 October 2002. There were heavy deposits of silt throughout the site that were apparently the result of lowered flows. Western mosquitofish, red shiner, fathead minnow 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 collected at this site.

There was low-moderate flow in the river at the Belen collecting site [RM 151.5] on 24 October 2002. This site consisted of two small flowing channels. There was a large vegetated island in the middle of the former river channel. The October 2002 fish fauna was numerically dominated by red shiner, western mosquitofish, and fathead minnow. No Rio Grande silvery minnow were captured at this site.

The Transwestern Pipeline Crossing [RM 143.2] site was sampled on 24 October 2002 and water temperature was 16°C at 12:20 h. Backwaters and low velocity habitats dominated the site. There was substantial growth of vegetation on and along instream islands. Most of the flow at this site was confined to a channel that ran along the east bank. Red shiner was present in all seine hauls and numerically dominated the sample. 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 24 October 2002. This site has been intermittent throughout the summer of 2002. Flows during sampling registered 20 cfs at the USGS gauge (#08332010, Rio Grande floodway near Bernardo, NM). The river was reduced to a series of isolated pools and a thin ribbon of flowing water (depths generally <25 cm) that meandered widely across the site. Water temperature was cool (14°C in the main channel at 12:00 h) during the October 2002 sampling effort. Relatively large numbers of fish were present in each seine haul but the catch was dominated by red shiner and fathead minnow. Rio Grande silvery minnow was not collected.

The population monitoring locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 24 October 2002. The river level at this site was very low and few side channels were available. Water clarity was high making it easy to see to the bottom of the river. Catch rates at this and other Isleta Reach sites were generally much higher than catch rates recorded in the San Acacia Reach. Fish were collected in 15 of the 16 seine hauls. Red shiner, fathead minnow, and western mosquitofish were the only fish species collected.

Aquatic habitats just upstream of the San Acacia Diversion Dam [RM 116.8] were sampled on 23 October 2002. Water level at this site was low-moderate and most previously exposed sandbars were inundated. There were large deposits of silt along the stream bottom. Limited river braiding was present at the upper end of the study site. Fish were taken in 8 of 17 seine hauls and overall fish catch rates were extremely low. Red shiner and flathead chub were the only collected taxa.

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The Rio Grande silvery minnow population monitoring site located immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 23 October 2002. Red shiner, fathead minnow, and channel catfish comprised the majority of the catch at this site. Most fish were collected in runs with the largest number of individuals taken in side channel habitats. Fish were taken in 15 of 17 seine hauls made at this site but Rio Grande silvery minnow was not collected. Flow over the dam was about 120 cfs (based on USGS gauge data) and provided minimal flow to downstream habitats.

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 23 October 2002. Most fish were collected in a few low velocity pools. Fish were collected in 15 of 18 seine hauls with red shiner comprising the vast majority of the catch. No Rio Grande silvery minnow were collected at this site.

Fish sampling was conducted on 23 October 2002 at the population monitoring site just upstream of the Socorro Wastewater Treatment Plant [RM 99.5]. Water temperature in the main channel was 14 °C at 11:00 h. There were some side channels along the east side of the river but most of the flow was being carried in a single main channel run. Several large backwater had filled with silt and there was very little debris in the river. Fish were present in all 17 seine hauls taken at this site. Red shiner dominated the catch distantly followed by fathead minnow, river carpsucker, and western mosquitofish. Rio Grande silvery minnow was absent from collections.

The next downstream site (ca. 4 miles upstream of US Highway 380 bridge crossing [RM 91.7]) was sampled on 23 October 2002. The level of the river was low but water turbidity levels resulted in visibility <2 cm. Most habitats sampled were characterized by shallow, low velocity water. All collected taxa were represented by <5 individuals with the exception of red shiner (n=245). Seine collections did not contain Rio Grande silvery minnow.

Sampling at the US Highway 380 bridge crossing near San Antonio, NM [RM 87.1] was conducted on 22 October 2002. Water level was moderate and there were deposits of silt along the shoreline and on the river bottom. There were a few small islands at the upper end of this site. Water temperature in the main channel was 15 °C at 13:40 h. Fish were collected in each of the 17 seine hauls made at this site. Catch rates were very low for all species except red shiner. Most fishes collected were occupying side channels and 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 22 October 2002. The river at this site was flowing but there had been extensive and repeated river drying at this site throughout the summer; the most recent drying event occurred less than one week prior to this sampling effort. The near absence of fish at this site reflected river drying. Fish were collected in only 6 of 14 seine hauls and all hauls contained <5 individuals. Red shiner (n=12) and western mosquitofish (n=4) were the most commonly collected taxa.

The San Marcial Railroad crossing site [RM 68.6] was sampled on 22 October 2002. Flows were about 60 cfs during sampling. Backwaters produced the majority of the catch. Most of the flow at this site was confined to the middle of the river channel. Many fish carcasses (primarily common carp [*Cyprinus carpio*]) had been discarded along the shoreline presumably by fisherman taking advantage of low flow conditions. Habitats were relatively heterogeneous and fish were collected in 15 of 16 seine hauls. Rio Grande silvery minnow were not collected in any seine hauls taken at this site.

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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 22 October 2002. Most of the flow was being carried through a single channel. Stable low flows throughout the summer resulted in relatively homogenous silt bottomed mesohabitats. Several former backwaters had completely filled with silt and no longer provided habitat for fishes. Water level was low and temperature was 13°C at 10:45 h. Very few fish were collected and most were red shiner or western mosquitofish. No Rio Grande silvery minnow were collected at this site.

The downstream-most site [RM 57.7] was sampled on 22 October 2002 and discharge was low throughout this lower San Acacia Reach. Water was moderately turbid (visibility <1 cm). Fish were collected primarily along shoreline habitats but overall catch rates were low. Red shiner were again the most commonly collected taxon. A single age-0 Rio Grande silvery minnow (42 mm SL) was collected in a side channel pool. Although fish were present in 13 of 17 seine hauls, most samples contained <10 individuals.

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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. 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, 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