

SUMMARY OF POPULATION MONITORING OF  
RIO GRANDE SILVERY MINNOW  
(17-20 December 2002)

prepared by:

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

The twelfth and final sampling effort of the 2002 Rio Grande silvery minnow population monitoring program was conducted between 17-20 December 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, counted, and released at the site of capture. Rio Grande silvery minnow were counted, identified to age-class, and released at the site of capture.

### *Summary of population monitoring efforts by site*

On 20 December 2002, sampling was conducted at the site just downstream of Angostura Diversion Dam [RM 209.7]. Water levels were higher than in November 2002 but were still low enough (discharge ca. 600 cfs) to allow sampling of habitats along the west bank and near the base of the dam. Water was not spilling over the top of the diversion dam and water clarity was high. Overall catch rates were low for all species with shoreline habitats producing the majority of the catch. A total of four fish species were collected with red shiner (*Cyprinella lutrensis*) being the most numerous taxon collected (n=13). Rio Grande silvery minnow (*Hybognathus amarus*) was not collected at this site.

Water levels on 20 December 2002 at the next downstream sampling site (NM State Highway 44 bridge crossing; RM 203.8), also appeared to be slightly higher than during the November 2002 sampling effort. Fish were collected in the majority of seine hauls (14 of 18) and species-richness was relatively high (n=6) but most main channel habitats produced few fish. Red shiner was the most abundant fish in the collection accounting for over 70% of the catch. Conversely, flathead chub (*Platygobio gracilis*) and longnose dace (*Rhinichthys cataractae*), the second and third most common species, were collectively less than 20% of the total catch. Rio Grande silvery minnow was not collected at this site.

The Rio Grande silvery minnow population monitoring site located just upstream of the Rio Rancho wastewater treatment plant [RM 200.0] was sampled on 20 December 2002. While fish were collected in 14 of 17 seine hauls, only a total of 35 fish were collected. Red shiner numerically dominated the catch (n=22) while none of the next most abundant species (fathead minnow, *Pimephales promelas*, n=5; flathead minnow, n=4; and western mosquitofish, *Gambusia affinis*, n=3) was represented by more than five individuals. Rio Grande silvery minnow was not collected at this site.

There was a large amount of ice covering shoreline habitats at the Central Avenue (U.S. Highway 66) bridge crossing [RM 183.4] site when sampled on 20 December 2002. Discharge in the river was about 500 cfs during the sampling effort and all habitats were easily accessible. Main channel habitats produced fewer fish than side channel habitats. A total of nine species was collected with red shiner and western mosquitofish being the most commonly collected taxa. Four Rio Grande silvery minnow (47-50 mm SL) were collected in three seine hauls taken in side channel habitats. All individuals had been marked with an orange VIE (visible implant elastomer) and were part of a 9 December 2002 release of hatchery-reared Rio Grande silvery minnow into the Rio Grande.

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Fish sampling at the Rio Bravo Boulevard bridge crossing [RM 178.3] was conducted during the early morning (08:40 h) of 20 December 2002 at which time the water temperature was 0.5°C. A thin layer of ice covered most shallow low velocity habitats. The overall catch rate at this site was extremely low and more than half of the seine hauls failed to produce fish. Flow was low and there was extensive river braiding resulting in many shallow side channels. The only species collected was river carpsucker (*Carpiodes carpio*) and it was found in low numbers (n=6). Rio Grande silvery minnow was not collected at this site.

Los Lunas Bridge [RM 161.4], the most upstream site in the Isleta Reach, was sampled on 19 December 2002. This site was braided with multiple side channel habitats. Backwater habitats produced the majority of the catch. Red shiner, fathead minnow, and river carpsucker were the most abundant of the 8 species taken at this site. Ambient and water temperatures had warmed noticeably during the day and resulted in warmer water in shallow habitats along shorelines and in backwaters. Fish were collected in 14 of the 17 seine hauls made at this site. Three Rio Grande silvery minnow, two age-1 (78, 80 mm SL) and one age-0 (54 mm SL), were collected at this site.

The flow in the river at the Belen collecting site [RM 151.5] on 19 December 2002 was higher than during November 2002. The increased amount of debris noted in the water column was probably the result of recently increased flows. Habitats were very diverse at this site with numerous islands directing flow through a complex of channels. The December 2002 Belen fish fauna was represented by only four species and numerically dominated by red shiner and fathead minnow. Rio Grande silvery minnow was not collected at this site.

On 19 December, the Transwestern Pipeline Crossing [RM 143.2] site was sampled for the 12th time during 2002. Backwater and low velocity habitats dominated the site and water temperature was generally cold (3°C at 11:15 h). This site contained a series of side channels that weaved through several island complexes. Red shiner was present in nearly all seine hauls and numerically dominated the sample. Fathead minnow and river carpsucker were, of the other five species, the only fish represented by more than eight individuals. No Rio Grande silvery minnow were collected at this sampling locality.

Water levels of the Rio Grande at the U.S. Highway 60 Bridge site [RM 130.6] were moderate on 19 December 2002 but most of the flow was being carried along the east side of the site. Flow during sampling was about 450 cfs as recorded at the USGS gauge (#08332010) and was nearly identical to flows during November 2002 sampling. Water temperature was cold (2.5°C in the main channel at 10:15 h) during the December 2002 sampling effort. Most fish collected utilized low velocity habitats near shorelines. Red shiner and fathead minnow dominated the catch. Fish were collected in only 7 of 17 seine hauls. Rio Grande silvery minnow was not collected at this site.

The population monitoring locality 3.5 miles downstream of Bernardo [RM 127.0] was also sampled on 19 December 2002. The river level at this site was moderate (ca. 450 cfs) and there were many inundated habitats. Side channels and debris piles provided the lowest velocity habitats. Fish were collected in 11 of the 17 seine hauls with red shiner being by far the most numerous taxon collected. Two age-1 Rio Grande silvery minnow (73, 74 mm SL) were collected in main channel shoreline runs.

The population monitoring site just upstream of the San Acacia Diversion Dam [RM 116.8] was sampled on 18 December 2002. The substrate was comprised primarily of shifting sand and the banks of the river were channelized. Aquatic habitats were relatively homogenous throughout the site. Fish were taken in 9 of 17 seine hauls but overall fish catch rate was low. Red shiner and

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flathead chub were the most commonly collected taxa. Rio Grande silvery minnow was not collected at this site.

The Rio Grande silvery minnow population monitoring site located immediately downstream of San Acacia Diversion Dam [RM 116.2] was sampled on 18 December 2002. It was snowing at the time of sampling. Red shiner and flathead chub comprised the majority of the catch at this site. Most fish were collected in pools with the largest number of individuals taken in side channel habitats. Fish were taken in 13 of 17 seine hauls made at this site and a total of seven species were collected. Flow immediately downstream of the dam (ca. 450 cfs) wetted most riverine habitats. No Rio Grande silvery minnow were collected at this sampling locality.

Fish sampling at the population monitoring site 1.5 miles downstream of San Acacia Diversion Dam [RM 114.6] was conducted on 18 December 2002. Fish were taken in 11 of 16 seine hauls with red shiner comprising over 75% of the total catch. Shoreline run habitats produced the most fish. There was little diversity of instream habitats and water was bank to bank. Two Rio Grande silvery minnow were collected at this site. One individual was 47 mm SL (age-0) and the other was 75 mm SL (age-1).

On 18 December 2002, fish were sampled at the population monitoring site just upstream of the Socorro Wastewater Treatment Plant [RM 99.5]. The majority of the flow was along the east side of the river in a single main channel run and water temperature was 3°C (at 10:45 h). Habitat heterogeneity at this site was low and pool or backwater habitats were rare. Fish were present in 10 of 18 seine hauls taken at this site with red shiner numerically dominating the catch. Of the five other fish species taken, all were represented by less than five individuals. A single age-1 Rio Grande silvery minnow (67 mm SL) was collected in a shallow and lower velocity main channel run.

The site about 4 miles upstream of U.S. Highway 380 bridge crossing [RM 91.7] was sampled on 18 December 2002. There was flow on both sides of the river channel but there was a broad range (depth and velocity) of instream habitats available. Ice had formed along the surface of several backwaters. Red shiner was the most commonly collected (n=118) of the five species taken at this site. Rio Grande silvery minnow was not taken at this site during the December 2002 sampling effort.

Sampling at the U.S. Highway 380 bridge crossing near San Antonio, NM [RM 87.1] occurred during the afternoon of 17 December 2002 at which time water temperature was 4.5 °C (14:30 h). The majority of the flow was in the main channel but there were also several low velocity pools and backwaters. Fish were collected in 15 of the 17 seine hauls made at this site but overall catch rate was low. Red shiner was present in nearly every seine haul and comprised over 90% of the total catch. Most fishes collected were occupying side channels and shoreline habitats. No Rio Grande silvery minnow were collected during this sampling effort at U.S. Highway 380 bridge crossing.

The Rio Grande silvery minnow population monitoring site located directly east of Bosque del Apache National Wildlife Refuge [RM 79.1] was sampled on 17 December 2002. Very low numbers of fish were collected at this sampling locality. Most individuals were collected from a large backwater. Fish were present in only 10 of 17 seine hauls and none of those hauls with fish contained more than 10 individuals. Western mosquitofish (n=12) was the most commonly collected taxon. Rio Grande silvery minnow was absent from all collections taken at this site.

During the 17 December 2002 sampling effort at the San Marcial Railroad crossing site [RM 68.6] flow in the Rio Grande was about 350 cfs. Most of the flow was contained in the

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middle of the river channel. Recent cold weather resulted in some freezing along the shoreline and in shallow (<2 cm) habitats. Riverine habitats were relatively homogeneous and fish were collected in 11 of 17 seine hauls. Three age-0 Rio Grande silvery minnow (49-60 mm SL) were collected in a large backwater near the lower end of the site.

The site at the former confluence of the Low Flow Conveyance Channel and Rio Grande [RM 60.5] was also sampled on 17 December 2002. On that date, most of the flow was contained in a single channel. The few low velocity habitats observed at this site were along the shoreline and in small backwaters. The upstream portion of the sampling site had the least diverse habitats. Five species were collected but all were represented by only a few individuals. Rio Grande silvery minnow was not collected at this site.

The downstream-most site [RM 57.7] was sampled on 17 December 2002. Water level (ca. 400 cfs) at this site was much higher than noted during most of the summer sampling period. Sampling in the middle of the channel was difficult but not impossible. However, most of the fish collected were present in shoreline habitats. Although fish were present in nine of 18 seine hauls, only two species were taken and most samples contained <5 individuals. Rio Grande silvery minnow was not taken at this site during December 2002.

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

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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.  
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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.  
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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

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