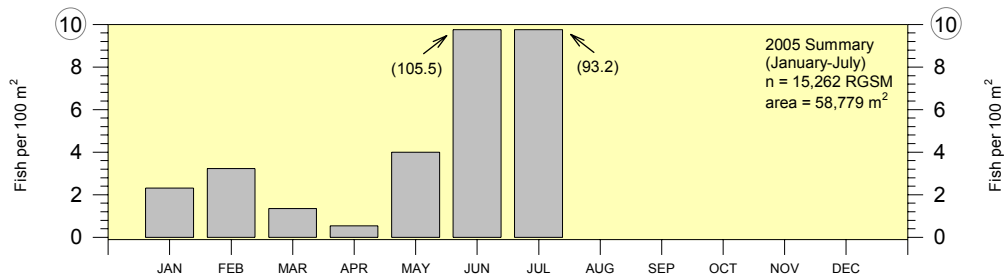
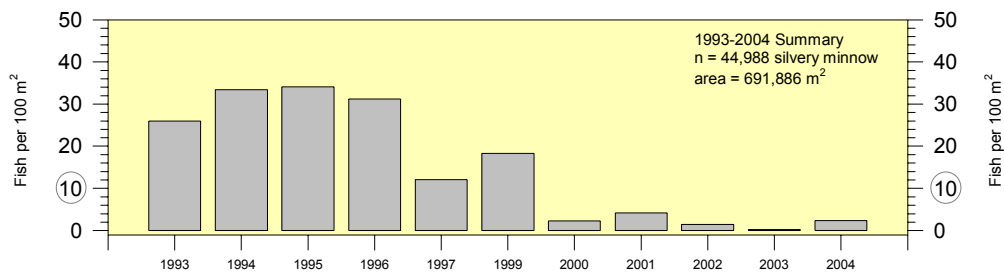


**SUMMARY OF THE RIO GRANDE SILVERY MINNOW
POPULATION MONITORING PROGRAM RESULTS FROM JULY 2005**
(25-29 July, 1 August 2005)

**A MIDDLE RIO GRANDE ENDANGERED SPECIES ACT
COLLABORATIVE PROGRAM FUNDED RESEARCH PROJECT**



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10 August 2005

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prepared for:

MIDDLE RIO GRANDE ENDANGERED SPECIES ACT COLLABORATIVE PROGRAM

under USBR contract:

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U.S. Bureau of Reclamation
Upper Colorado Regional Office
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10 August 2005

SUMMARY OF OVERALL JULY 2005 POPULATION MONITORING EFFORTS

The seventh sampling effort of the 2005 Rio Grande silvery minnow population monitoring program was conducted between 25-29 July, 1 August 2005 at 20 sites throughout the Middle Rio Grande. 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 A-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. Rio Grande silvery minnow were counted and identified to age-class. Other fishes were identified to species and enumerated, but age-class was not determined. Figures illustrating catch rates (number of fish per 100 m² sampled) were prepared for the ten focal species, including Rio Grande silvery minnow, for the purpose of comparisons between reaches.

During July 2005, a total of 14,252 fish were captured in the 8,229 m² (surface area) of water sampled. Rio Grande silvery minnow was the most abundant taxon (N=7,668) and comprised about 54% of the total catch. Rio Grande silvery minnow was present in 194 of 311 seine hauls with fish (ca. 62%) and was abundant in specific mesohabitats such as backwaters and pools. The majority of Rio Grande silvery minnow were found in the upper half of each sampling reach. Cumulative fish catch rate was 173.2 individuals per 100 m² sampled; nearly an order of magnitude higher than it was in April (22.0 individuals per 100 m² sampled). The overall abundance of fish (N=14,252) was comprised mostly of fish (primarily Rio Grande silvery minnow) from the Isleta and San Acacia reaches (N=12,347).

SUMMARY OF JULY 2005 POPULATION MONITORING EFFORT BY RIVER REACH

Angostura Reach

Sampling in the Angostura Reach took place on 28 July and 1 August 2005. While the discharge in the Rio Grande had increased greatly during May and June (peak was about 6,500 cfs), there was a gradual decline in flow throughout July. Discharge throughout the Angostura Reach declined from about 2,000 cfs to <400 cfs during July. The great decrease in flow resulted in reduced wetted habitats and loss of much of the over-bank flooded areas. While the total discharge during May and June was higher than it had been in nearly ten years, the flows at the end of July 2005 were comparable to what they were in July 2003. The return to low flow conditions happened over an extended time period in 2005, however, and may have allowed enough time for some percentage of the fish to move upstream to more permanent wetted habitats. Water clarity was highest in the uppermost portion of the Angostura Reach (Secchi depth ca. 20 cm) but there was little difference downstream of the confluence with the Jemez River as there had been in previous months. This is likely because to the decreased flows during July. Water temperatures recorded at the different sampling sites ranged from 21.1°C to 24.8°C and were warm enough to support rapid growth of larval and juvenile fish in appropriate low velocity habitats. The range of water temperatures was nearly identical to that recorded in May 2005. Several large backwaters and low velocity shoreline habitats with inundated terrestrial vegetation provided suitable nursery areas; many larval and juvenile fish were collected in these habitats. Rio Grande silvery minnow (N=583) was the most frequently collected taxon in the Angostura Reach during July 2005. The second most common species was red shiner (N=569). River carpsucker (N=121) were more numerous than in past months and were primarily found in shoreline run and pool habitats. Rio Grande silvery minnow was most numerous in the upper portion of the sampling reach. The Angostura Diversion Dam sampling site (Site #0) yielded many more Rio Grande silvery minnow than were collected in June 2005. The highest abundance of Rio Grande silvery minnow was recorded at the Bernalillo sampling site (Site #1). The increased water temperatures and elevated flows of late May and June resulted in successful spawning and recruitment by Rio Grande silvery minnow and several of the other taxa. However, the impact of low flows during July and later portions of the summer could ultimately limit the population. A better time to assess the conservation status of Rio Grande silvery minnow in the Angostura Reach will be in October.

Isleta Reach

While discharge in the Rio Grande was substantially higher during June 2005 than it had been in the past several years, flows had rapidly dropped back down to summer 2002-2003 levels by July 2005. The large volume of water that covered many of the vegetated islands had receded, leaving a greatly reduced wetted area of the river channel. Decreased flows resulted in the formation of several isolated pools and had left large areas of the inundated floodplain isolated from the main river. Water temperatures in the Isleta Reach generally ranged from 22.5-25.7°C from morning (0900 h) to afternoon (1300 h); this was about a 3°C increase compared with May 2005. Water clarity was almost five times higher in July (Secchi depth 30-40 cm) compared to previous months at most sampling sites. This was likely because of decreased discharge and erosion of the banks. The Isleta Reach had the highest catch rate (257.6 fish/100 m²) of any of the sampling reaches in the Middle Rio Grande. However, flows had dropped precipitously in this reach during July which could lead to large losses of fish if this trend continues throughout the summer. Overall ichthyofaunal catch rates in the Angostura Reach (84.5 fish/100 m²) were lower compared to the Isleta Reach and had decreased markedly in the last month, primarily because of the decline in the abundance of Rio Grande silvery minnow.

San Acacia Reach

Population monitoring was conducted in the San Acacia Reach (9 sites) of the Middle Rio Grande on 25 and between 27-28 July 2005. Water levels had decreased markedly since the beginning of the month but didn't reach their lowest levels until the middle of July. The decreased flow combined with high ambient temperatures resulted in very warm water temperatures in the San Acacia Reach in July 2005 (range=27.6-35.1°C) compared to May 2005 (range=21.0-25.7°C). The highest water temperatures were recorded at sites, such as Bosque del Apache (Site #15) where the channel was almost completely dry. These elevated water temperatures were recorded in the main channel, meaning that temperatures in static habitats (e.g., pools) were even higher. Elevated water temperatures combined with declining water quality are likely resulting in the loss of many fish in the San Acacia Reach. While the habitat was dominated by narrow main channel runs, some side channels and backwaters provided a variety of habitat conditions. The turbidity levels in the San Acacia Reach had declined since June but most sampling sites had a Secchi depth reading of <10 cm. The most commonly collected taxon during July 2005 in the San Acacia Reach was, by far, Rio Grande silvery minnow (N=3,561). Rio Grande silvery minnow were present at all sampling sites but were most abundant in the upper portion of the reach; the age-class structure was dominated by young-of-year individuals. The San Acacia Reach catch rate (177.7 fish/100 m²) was much higher than the catch rate in the Angostura Reach but lower than the catch rate in the Isleta Reach.

Conclusion

Rio Grande silvery minnow (N=7,668) was widespread and abundant in the Middle Rio Grande during July 2005. This species was more than three times more numerous than the next most-abundant taxon (red shiner, N=2,041). Other common taxa included western mosquitofish (N=1,685), fathead minnow (N=1,085), and common carp (N=631). The abundance of Rio Grande silvery minnow during the early part of 2005, including July, indicates that the status of this species has improved markedly compared to spring of 2004. The high number of young-of-year silvery minnow in the San Acacia Reach (N=3,561) indicates that environmental conditions were adequate for successful recruitment. The vast majority of Rio Grande silvery minnow (ca. 92%) were found in the upstream-most portions of the Isleta or San Acacia reaches (see Table 4 and Figure 4). This trend was particularly pronounced in the San Acacia Reach where over 1,700 Rio Grande silvery minnow were found at the base of San Acacia Diversion Dam as compared to 304 in June 2005. The duration and magnitude of the spring runoff for 2005 appears to be similar to 1993-1995 and 1997. However, declining flows during July have resulted in a reduction in wetted habitats and river drying in the areas (Isleta and San Acacia reaches) that currently support the most Rio Grande silvery minnow.

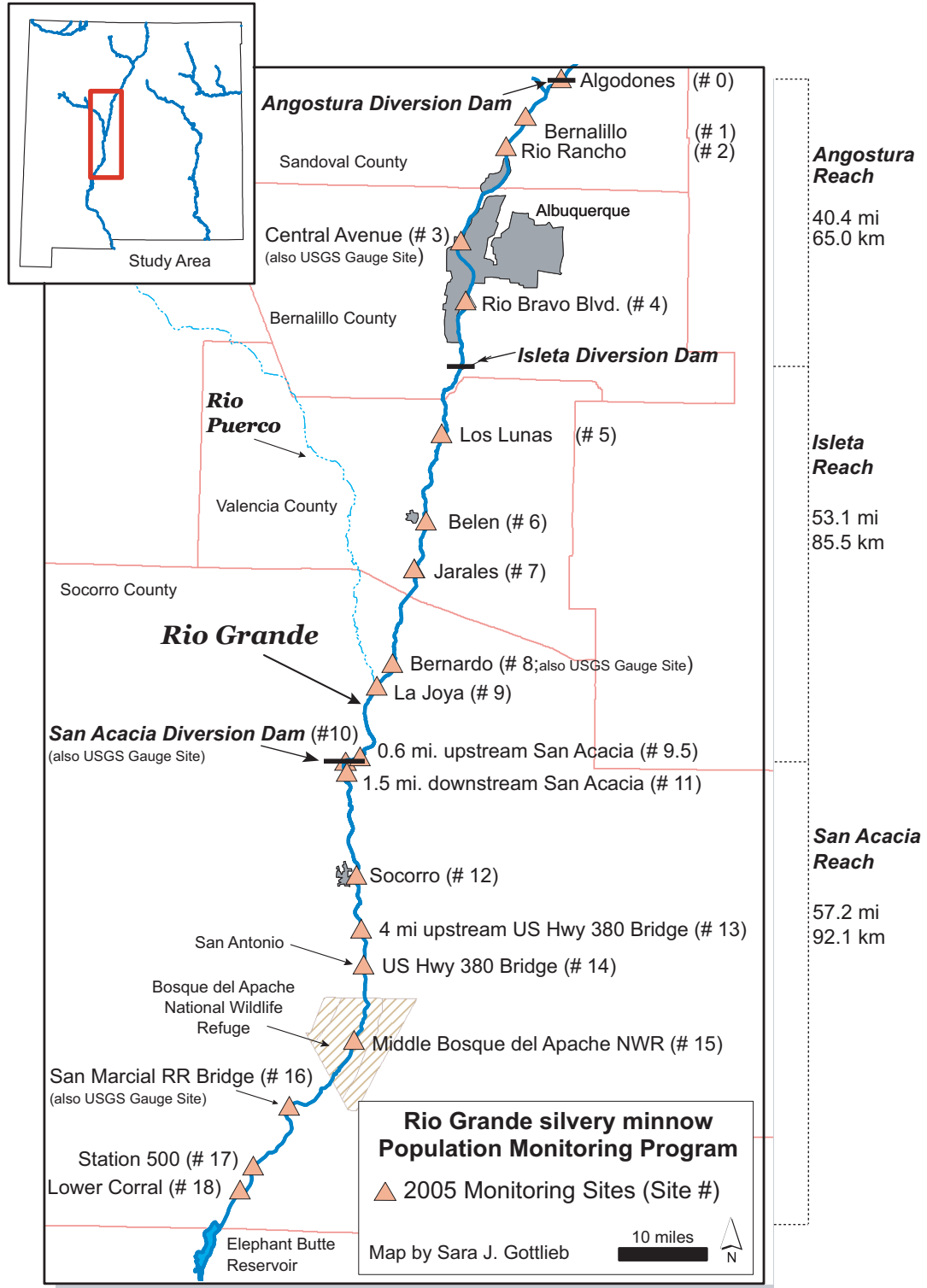


Figure 1. Map of the study area and sampling localities (numbered) for the 2005 Rio Grande silvery minnow population monitoring program. Sampling locality information that correspond with the numbered localities are provided in Appendix A (Table A-1).

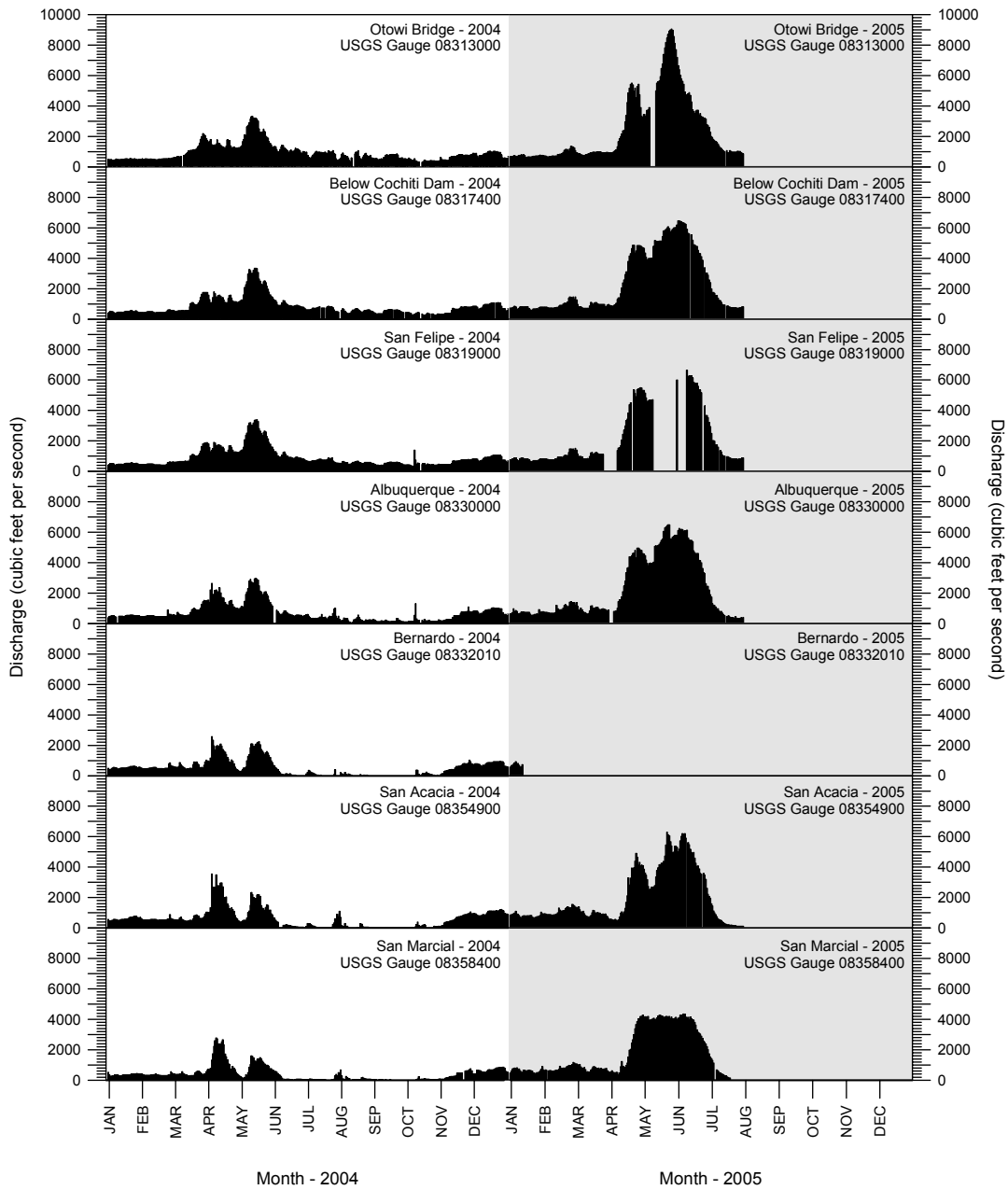


Figure 2. Discharge in the Rio Grande from January 2004 through July 2005 as recorded at seven U. S. Geological Survey (USGS) gauge stations. The Otowi Bridge gauge site is outside of the study area (ca. 25.5 river miles upstream of Cochiti Dam) and provided for reference. Discharge data are provisional and subject to change. *Note: Bernardo discharge data (USGS 08332010) became temporarily unavailable on 13 January 2005 and data collection is now discontinued at that gauge.

Table 1. Scientific and common names and species codes of fish collected in the Middle Rio Grande during the 1999-2004 Rio Grande silvery minnow population monitoring program.

Scientific Name	Common Name	Code
Order Clupeiformes		
Family Clupeidae	herrings	
<i>Dorosoma cepedianum</i>	gizzard shad	(GZS)
Order Cypriniformes		
Family Cyprinidae	carps and minnows	
<i>Cyprinella lutrensis</i>	red shiner ¹	(RDS)
<i>Cyprinus carpio</i>	common carp ¹	(CCA)
<i>Gila pandora</i>	Rio Grande chub	(RGC)
<i>Hybognathus amarus</i>	Rio Grande silvery minnow ¹	(RGM)
<i>Pimephales promelas</i>	fathead minnow ¹	(FHM)
<i>Pimephales vigilax</i>	bullhead minnow	(BHM)
<i>Platygobio gracilis</i>	flathead chub ¹	(FHC)
<i>Rhinichthys cataractae</i>	longnose dace ¹	(LND)
Family Catostomidae	suckers	
<i>Carpiodes carpio</i>	river carpsucker ¹	(RCS)
<i>Catostomus commersonii</i>	white sucker ¹	(WHS)
<i>Ictiobus bubalus</i>	smallmouth buffalo	(SMB)
Order Siluriformes		
Family Ictaluridae	North American catfishes	
<i>Ameiurus melas</i>	black bullhead	(BBH)
<i>Ameiurus natalis</i>	yellow bullhead	(YBH)
<i>Ictalurus punctatus</i>	channel catfish ¹	(CCT)
<i>Pylodictis olivaris</i>	flathead catfish	(FCT)
Order Salmoniformes		
Family Salmonidae	trouts and salmons	
<i>Salmo trutta</i>	brown trout	(BNT)
Order Cyprinodontiformes		
Family Poeciliidae	livebearers	
<i>Gambusia affinis</i>	western mosquitofish ¹	(MOS)

¹ focal taxa represent the most abundant species present in recent Middle Rio Grande collections and species illustrated in monthly plots of data.

Table 1. Scientific and common names and species codes of fish collected in the Middle Rio Grande during the 1999-2004 Rio Grande silvery minnow population monitoring program (continued).

Scientific Name	Common Name	Code
Order Perciformes		
Family Percichthyidae	temperate basses	
<i>Morone chrysops</i>	white bass	(WHB)
Order Perciformes		
Family Centrarchidae	sunfishes	
<i>Lepomis cyanellus</i>	green sunfish	(GNS)
<i>Lepomis macrochirus</i>	bluegill	(BGL)
<i>Micropterus salmoides</i>	largemouth bass	(LMB)
<i>Pomoxis annularis</i>	white crappie	(WCR)
<i>Pomoxis nigromaculatus</i>	black crappie	(BCR)
Family Percidae	perches	
<i>Perca flavescens</i>	yellow perch	(YWP)
<i>Sander vitreus</i>	walleye	(WLE)

Table 2. Summary of the July 2005 Rio Grande silvery minnow population monitoring program results (species list is based on fish collected from 1999-2004).

SPECIES	RESIDENCE STATUS ¹	TOTAL NUMBER OF SPECIMENS	PERCENT (%) OF TOTAL	FREQUENCY OF OCCURRENCE ²	% FREQUENCY OF OCCURRENCE ²
HERRINGS					
gizzard shad	I	373	2.62	8	40
CARPS AND MINNOWS					
red shiner	N	2,041	14.32	20	100
common carp	I	631	4.43	20	100
Rio Grande chub	N	—	0.00	—	—
Rio Grande silvery minnow	N	7,668	53.80	20	100
fathead minnow	N	1,085	7.61	19	95
bullhead minnow	I	1	0.01	1	5
flathead chub	N	147	1.03	15	75
longnose dace	N	34	0.24	4	20
SUCKERS					
river carpsucker	N	244	1.71	11	55
white sucker	I	69	0.48	6	30
smallmouth buffalo	N	110	0.77	7	35
BULLHEAD CATFISHES					
black bullhead	I	3	0.02	2	10
yellow bullhead	I	1	0.01	1	5
channel catfish	I	124	0.87	15	75
flathead catfish	I	—	0.00	—	—
TROUTS					
rainbow trout	I	1	0.01	1	5
brown trout	I	—	0.00	—	—
LIVEBEARERS					
western mosquitofish	I	1,685	11.82	19	95
TEMPERATE BASSES					
white bass	I	24	0.17	7	35
SUNFISHES					
green sunfish	I	—	0.00	—	—
bluegill	N	—	0.00	—	—
largemouth bass	I	10	0.07	6	30
white crappie	I	—	0.00	—	—
black crappie	I	—	0.00	—	—
PERCHES					
yellow perch	I	1	0.01	1	5
walleye	I	—	0.00	—	—
TOTAL		14,252			

¹ N = native; I = introduced

² Frequency and % frequency of occurrence are based on n=20 sample sites

Table 3. Summary of the monthly 2005 Rio Grande silvery minnow population monitoring program results (species list based on fish collected from 1999-2004).

SPECIES	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C	T O T A L
HERRINGS													
gizzard shad	—	—	—	—	1	3	373						377
CARPS AND MINNOWS													
red shiner	2,760	935	2,243	1,344	718	830	2,041						10,871
common carp	3	3	3	6	80	167	631						893
Rio Grande chub	—	—	—	—	—	—	—						—
Rio Grande silvery minnow	248	330	133	46	234	6,603	7,668						15,262
fathead minnow	356	144	171	53	67	762	1,085						2,638
bullhead minnow	—	1	4	—	—	—	1						6
flathead chub	112	187	181	181	136	217	147						1,161
longnose dace	1	14	20	83	54	107	34						313
SUCKERS													
river carpsucker	19	20	41	4	148	15	244						491
white sucker	16	59	43	30	1,311	262	69						1,790
smallmouth buffalo	—	—	—	—	—	51	110						161
BULLHEAD CATFISHES													
black bullhead	—	—	—	—	—	—	3						3
yellow bullhead	—	2	—	1	—	—	1						4
channel catfish	6	49	35	70	8	16	124						308
flathead catfish	—	—	—	—	—	—	—						—
TROUTS													
rainbow trout	—	—	—	—	—	—	1						1
brown trout	—	—	—	—	—	—	—						—
LIVEBEARERS													
western mosquitofish	64	146	60	62	109	235	1,685						2,361
TEMPERATE BASSES													
white bass	—	—	—	—	—	—	24						24
SUNFISHES													
green sunfish	—	—	—	—	—	—	—						—
bluegill	—	—	—	—	—	—	—						—
largemouth bass	—	1	1	—	—	2	10						14
white crappie	1	—	—	—	—	4	—						5
black crappie	—	—	—	—	—	—	—						—
PERCHES													
yellow perch	—	—	—	—	—	3	1						4
walleye	—	—	—	—	1	—	—						1
TOTAL	3,586	1,891	2,935	1,880	2,867	9,277	14,252						36,688

Table 4. Summary of the monthly catch of Rio Grande silvery minnow, by site and reach, during the 2005 Rio Grande silvery minnow population monitoring program. Numerals in parenthesis are the number of silvery minnow in a site collection that were marked (subset of the total).

REACH	J	F	M	A	M	J	J	A	S	O	N	D	T
Site Number	A	E	A	P	A	U	U	U	E	C	O	E	O
Site Name	N	B	R	R	Y	N	L	G	P	T	V	C	A
													L
ANGOSTURA REACH													
0 Angostura Dam	—	—	—	3	—	1	53						57
1 Bernalillo	20	68	36	5(1)	6(1)	146	295						576
2 Rio Rancho	147(4)	137(8)	25	7(1)	3(2)	578(1)	26						923
3 Central Ave (Abq)	7	64(17)	12	27	2	554	62						728
4 Rio Bravo (Abq)	4(1)	19(7)	15	—	—	325	147						510
Angostura Reach Total	178	288	88	42	11	1,604	583						2,794
ISLETA REACH													
5 Los Lunas	3	11	2	1	5	798	556						1,376
6 Belen	1	4	3	—	3	1,268	1,885						3,164
7 Jarales	30	—	—	—	—	1,059	417						1,506
8 US Hwy 60 Bernardo	8	1	1	—	35	390	430						865
9 South of Bernardo	5	2	1	—	—	207	148						363
10 North of San Acacia	1	—	—	—	—	2	88						91
Isleta Reach Total	48	18	7	1	43	3,724	3,524						7,365
SAN ACACIA REACH													
10 San Acacia Dam	3	—	16	2	—	304	1,729						2,054
11 S of San Acacia	13	15	14	1	—	73	1,093						1,209
12 Socorro	3	—	1	—	—	544	529						1,077
13 North of US Hwy 380	—	6	—	—	—	—	173						179
14 US Hwy 380	1	—	—	—	—	129	9						139
15 Bosque del Apache	2	—	—	—	2	54	13						71
16 San Marcial	—	—	1	—	177	104	12						294
17 South of San Marcial	—	—	—	—	1	10	2						13
18 South of San Marcial	—	3	6	—	—	57	1						67
San Acacia Reach Total	22	24	38	3	180	1,275	3,561						5,103
MONTHLY TOTALS													
	248	330	133	46	234	6,603	7,668						15,262
	J	F	M	A	M	J	J	A	S	O	N	D	T
	A	E	A	P	A	U	U	U	E	C	O	E	O
	N	B	R	R	Y	N	L	G	P	T	V	C	A
													L

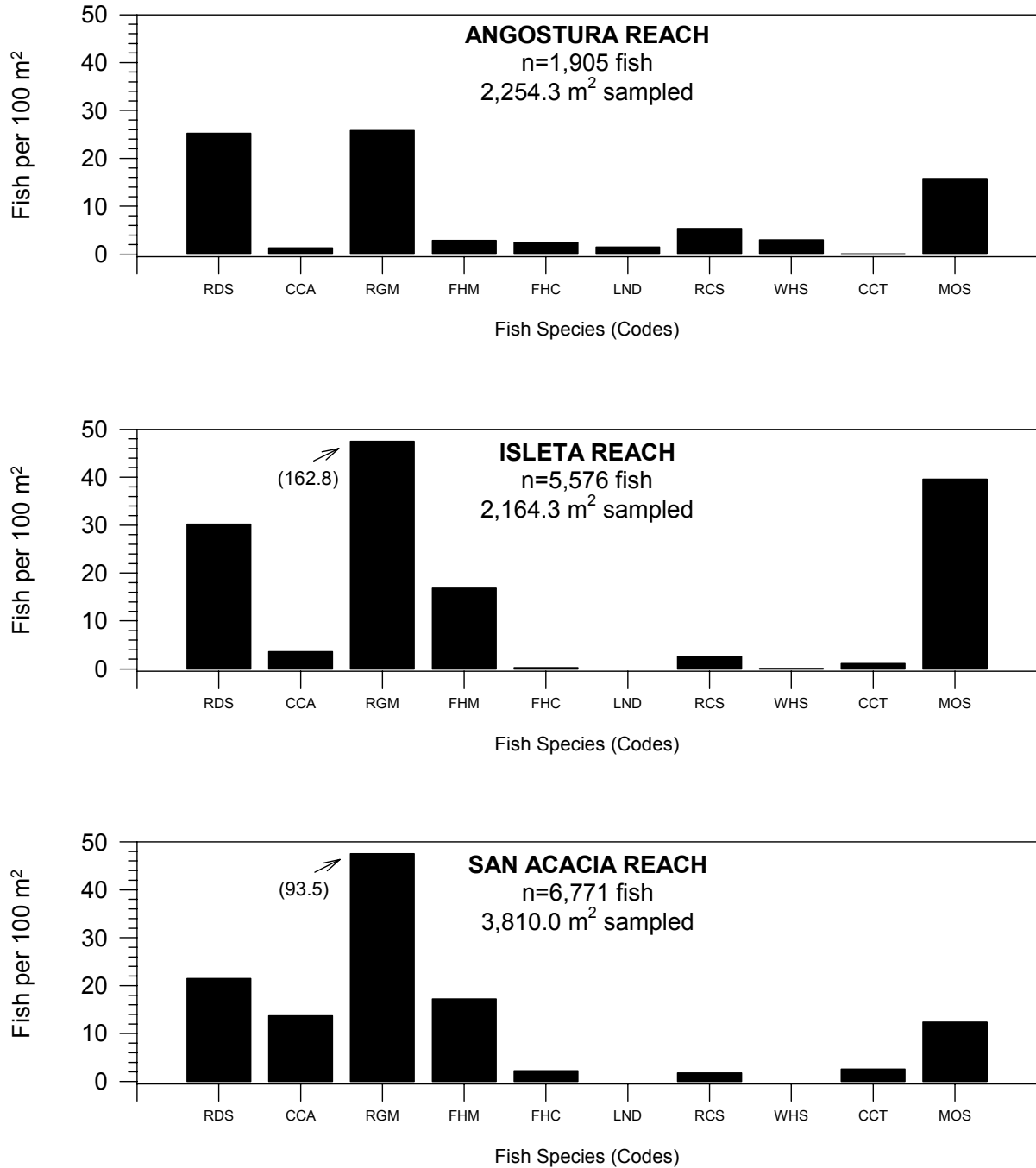


Figure 3. Catch rates, for the 10 focal species, by river reach during July 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes). An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

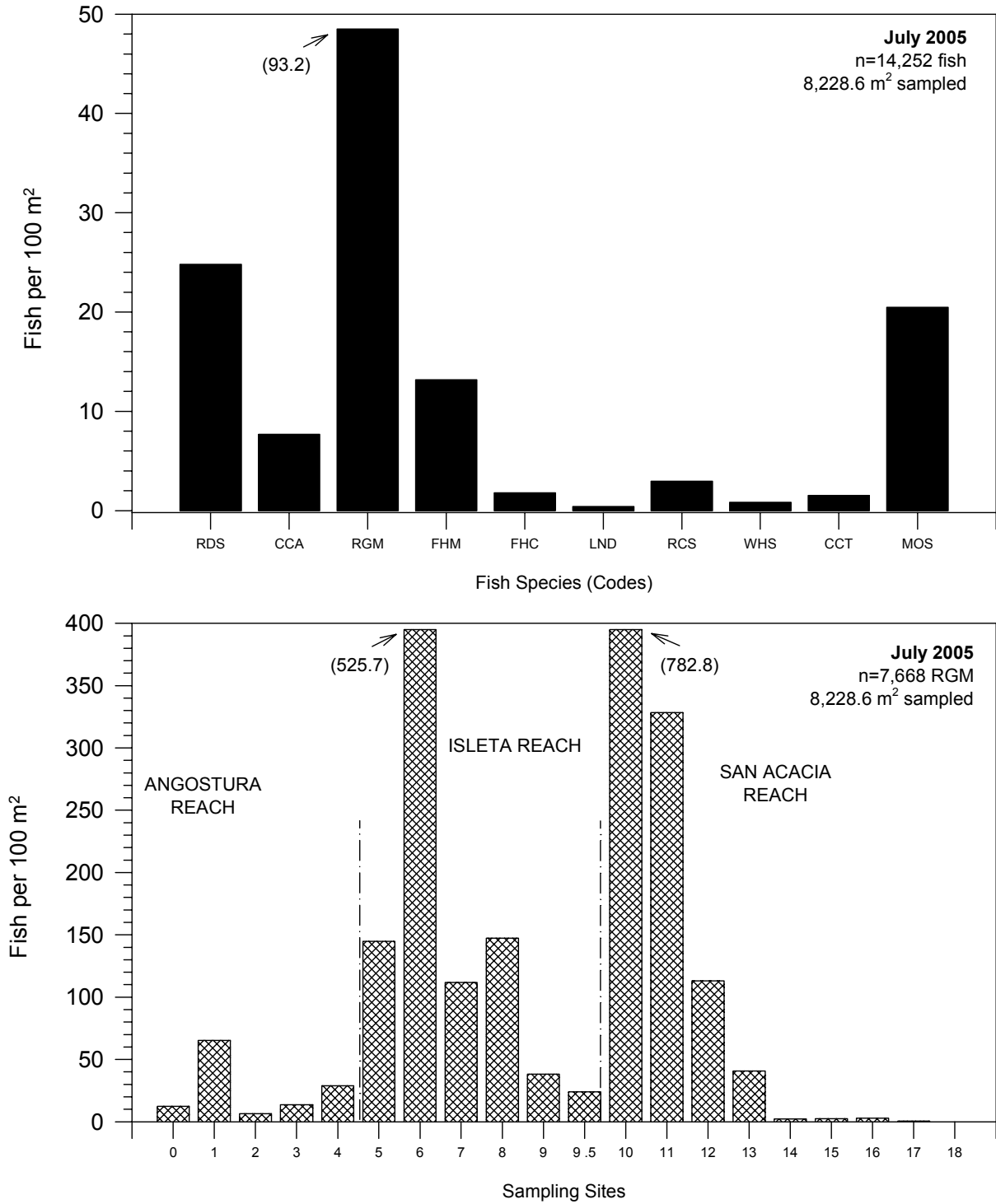


Figure 4. Catch rates for ten focal species (upper graph*), including Rio Grande silvery minnow, (RGM; lower graph*) during July 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes).

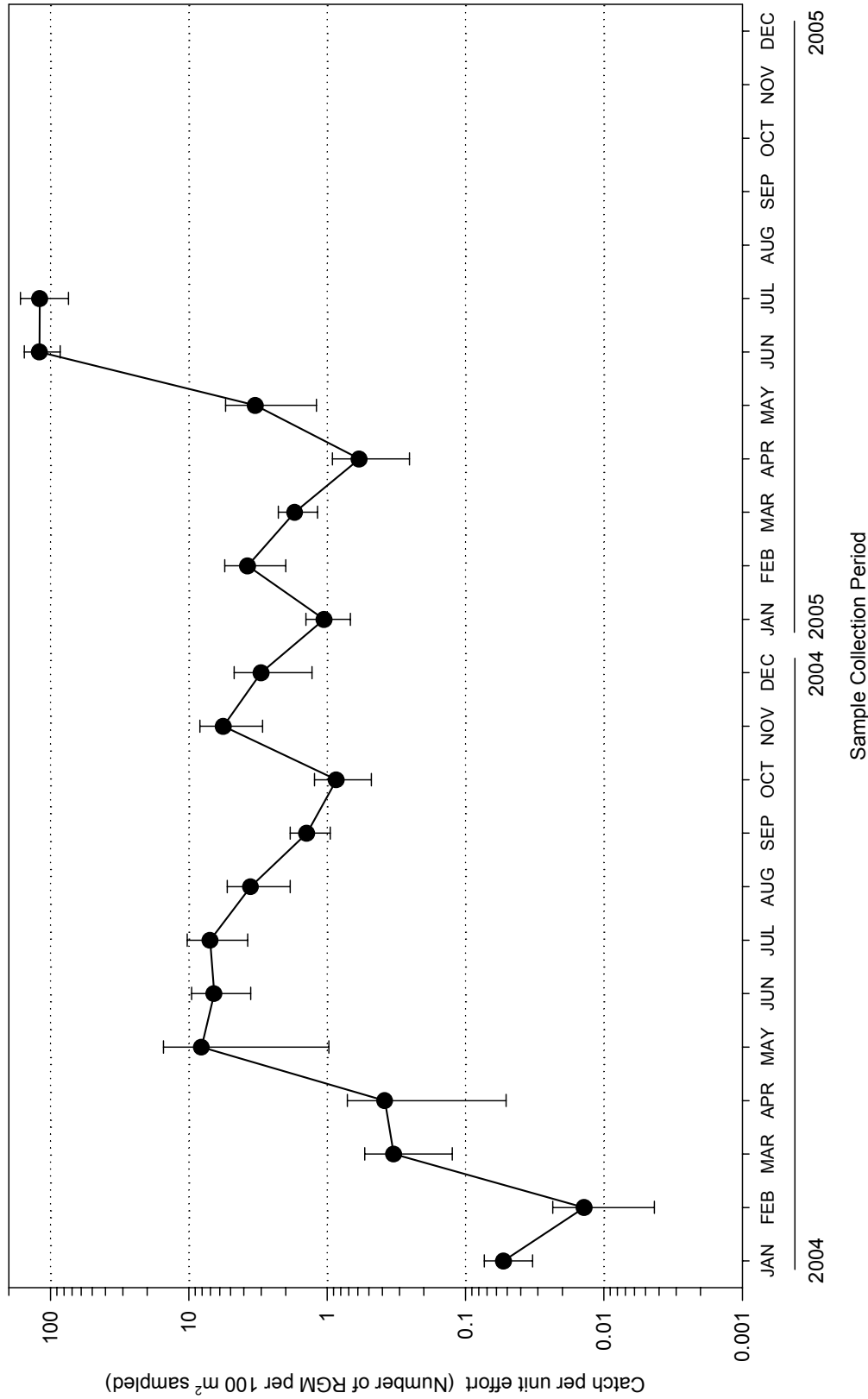


Figure 5. Month catch rates of Rio Grande silvery minnow during 2004 (January-December) and through July 2005 at Rio Grande silvery minnow population monitoring program collection sites. Solid circles indicate monthly means (n=20 site per month) and capped-bars represent the standard error of the mean.

APPENDIX A.

Collection localities of the 2005 Rio Grande silvery minnow population monitoring program.

Table A-1. Collection localities of the 2005 Rio Grande silvery minnow population monitoring program.

Site #	Site Locality
ANGOSTURA REACH SITES	
SITE #	
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 US Highway 550 bridge crossing, (formerly 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 US Highway 550 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	
SITE #	
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 Natural Gas Pipeline crossing), Jarales. River Mile 143.2 VEGUITA QUADRANGLE 3827329 N 338136 E

Table A-1. Collection localities of the 2005 Rio Grande silvery minnow population monitoring program (continued).

Site #	Site Locality
ISLETA REACH SITES (continued)	
SITE #	
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 327902 E
SAN ACACIA REACH SITES	
SITE #	
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 A-1. Collection localities of the 2005 Rio Grande silvery minnow population monitoring program (continued).

Site #	Site Locality
SAN ACACIA REACH SITES (continued)	
SITE #	
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

APPENDIX B.

Ichthyofaunal composition of the July 2005
Rio Grande silvery minnow population monitoring efforts

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Sandoval Co., Rio Grande Drainage

Rio Grande, directly below Angostura Diversion Dam, Algodones.

Site Number: 0

27 July 2005

RKD05-136

River Mile: 209.7

UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo

L.E. Renfro and C.C. McBride

Effort: 429.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	297
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus*</i>	53
76	<i>Pimephales promelas</i>	23
76	<i>Platygobio gracilis</i>	3
81	<i>Catostomus commersoni</i>	14
143	<i>Oncorhynchus mykiss</i>	1
212	<i>Gambusia affinis</i>	17
294	<i>Micropterus salmoides</i>	1

*** *Hybognathus amarus* by age class:**

age-0: 52

age-1: 1

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Sandoval Co., Rio Grande Drainage

Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo.
27 July 2005

RKD05-137

Site Number: 1

River Mile: 203.8

UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo

L.E. Renfro and C.C. McBride

Effort: 452.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	7
76	<i>Cyprinus carpio</i>	6
76	<i>Hybognathus amarus*</i>	295
76	<i>Pimephales promelas</i>	2
76	<i>Platygobio gracilis</i>	12
76	<i>Rhinichthys cataractae</i>	25
81	<i>Catostomus commersoni</i>	20
212	<i>Gambusia affinis</i>	43
283	<i>Morone chrysops</i>	2
294	<i>Micropterus salmoides</i>	1

*** *Hybognathus amarus* by age class:**

age-0: 295

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Sandoval Co., Rio Grande Drainage

Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44)
bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.

Site Number: 2

River Mile: 200.0

27 July 2005

RKD05-138

UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo

L.E. Renfro and C.C. McBride

Effort: 405.9 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	31
76	<i>Cyprinus carpio</i>	12
76	<i>Hybognathus amarus*</i>	26
76	<i>Pimephales promelas</i>	11
76	<i>Platygobio gracilis</i>	12
76	<i>Rhinichthys cataractae</i>	3
81	<i>Catostomus commersoni</i>	14
212	<i>Gambusia affinis</i>	187
283	<i>Morone chrysops</i>	3
294	<i>Micropterus salmoides</i>	4
295	<i>Perca flavescens</i>	1

*** *Hybognathus amarus* by age class:**

age-0: 25

age-1: 1

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Bernalillo Co., Rio Grande Drainage

Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.

Site Number: 3

01 August 2005

RKD05-147

River Mile: 183.4

UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West

R.K. Dudley and W.H. Brandenburg

Effort: 471.6 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	46
76	<i>Cyprinus carpio</i>	10
76	<i>Hybognathus amarus*</i>	62
76	<i>Pimephales promelas</i>	15
76	<i>Platygobio gracilis</i>	11
76	<i>Rhinichthys cataractae</i>	5
81	<i>Carpoides carpio</i>	9
81	<i>Catostomus commersoni</i>	13
212	<i>Gambusia affinis</i>	30
283	<i>Morone chrysops</i>	6

*** *Hybognathus amarus* by age class:**

age-0: 61

age-1: 1

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Bernalillo Co., Rio Grande Drainage

Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing,
Albuquerque.

Site Number: 4

River Mile: 178.3

01 August 2005

RKD05-146

UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West

R.K. Dudley and W.H. Brandenburg

Effort: 511.7 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	188
76	<i>Cyprinus carpio</i>	2
76	<i>Hybognathus amarus*</i>	147
76	<i>Pimephales promelas</i>	14
76	<i>Platygobio gracilis</i>	18
76	<i>Rhinichthys cataractae</i>	1
81	<i>Carpoides carpio</i>	112
81	<i>Catostomus commersoni</i>	7
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	79
294	<i>Micropterus salmoides</i>	2

* *Hybognathus amarus* by age class:

age-0: 147

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Valencia Co., Rio Grande Drainage

Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas.

29 July 2005

RKD05-145

UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas

M.A. Farrington and W.H. Brandenburg

Site Number: 5

River Mile: 161.4

Effort: 384.1 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	22
76	<i>Cyprinus carpio</i>	4
76	<i>Hybognathus amarus*</i>	556
76	<i>Pimephales promelas</i>	9
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus punctatus</i>	4
212	<i>Gambusia affinis</i>	21

*** *Hybognathus amarus* by age class:**

age-0: 556

New Mexico: Valencia Co., Rio Grande Drainage

Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen.

29 July 2005

RKD05-144

UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome

M.A. Farrington and W.H. Brandenburg

Site Number: 6

River Mile: 151.5

Effort: 358.6 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	5
76	<i>Cyprinus carpio</i>	3
76	<i>Hybognathus amarus*</i>	1885
76	<i>Pimephales promelas</i>	53
76	<i>Platygobio gracilis</i>	2
81	<i>Carpionodes carpio</i>	3
81	<i>Catostomus commersoni</i>	1
93	<i>Ictalurus punctatus</i>	7
212	<i>Gambusia affinis</i>	43

*** *Hybognathus amarus* by age class:**

age-0: 1885

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Valencia Co., Rio Grande Drainage

Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales.

29 July 2005

RKD05-143

UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita

M.A. Farrington and W.H. Brandenburg

Site Number: 7

River Mile: 143.2

Effort: 373.4 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	135
76	<i>Cyprinus carpio</i>	36
76	<i>Hybognathus amarus*</i>	417
76	<i>Pimephales promelas</i>	33
93	<i>Ictalurus punctatus</i>	6
212	<i>Gambusia affinis</i>	90

* *Hybognathus amarus* by age class:

age-0: 417

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, at US HWY 60 bridge crossing, Bernardo.

28 July 2005

RKD05-142

UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas

W.H. Brandenburg, M.A. Farrington, and L.E. Renfro

Site Number: 8

River Mile: 130.6

Effort: 292.1 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	95
76	<i>Cyprinus carpio</i>	11
76	<i>Hybognathus amarus*</i>	430
76	<i>Pimephales promelas</i>	86
76	<i>Platygobio gracilis</i>	2
81	<i>Carpoides carpio</i>	6
93	<i>Ameiurus natalis</i>	1
93	<i>Ictalurus punctatus</i>	4
212	<i>Gambusia affinis</i>	50
283	<i>Morone chrysops</i>	6
294	<i>Micropterus salmoides</i>	1

* *Hybognathus amarus* by age class:

age-0: 430

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9

28 July 2005

RKD05-141

River Mile: 127.0

UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas

W.H. Brandenburg, M.A. Farrington, and L.E. Renfro

Effort: 388.3 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	125
76	<i>Cyprinus carpio</i>	20
76	<i>Hybognathus amarus*</i>	148
76	<i>Pimephales promelas</i>	170
76	<i>Platygobio gracilis</i>	1
81	<i>Carpoides carpio</i>	1
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	341
283	<i>Morone chrysops</i>	3

*** *Hybognathus amarus* by age class:**

age-0: 148

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia
28 July 2005 **RKD05-140**

Site Number: 9.5

River Mile: 116.8

UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya

W.H. Brandenburg, M.A. Farrington, and L.E. Renfro

Effort: 367.7 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	272
76	<i>Cyprinus carpio</i>	4
76	<i>Hybognathus amarus*</i>	88
76	<i>Pimephales promelas</i>	13
81	<i>Carpoides carpio</i>	45
93	<i>Ameiurus melas</i>	2
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	312

*** *Hybognathus amarus* by age class:**

age-0: 88

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, directly below San Acacia Diversion Dam, San Acacia.

28 July 2005

RKD05-139

Site Number: 10

River Mile: 116.2

UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia

W.H. Brandenburg, M.A. Farrington, and L.E. Renfro

Effort: 220.9 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	62
76	<i>Cyprinella lutrensis</i>	129
76	<i>Cyprinus carpio</i>	48
76	<i>Hybognathus amarus*</i>	1729
76	<i>Pimephales promelas</i>	144
76	<i>Platygobio gracilis</i>	26
81	<i>Carpiodes carpio</i>	12
81	<i>Ictiobus bubalus</i>	1
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	68
283	<i>Morone chrysops</i>	3
294	<i>Micropterus salmoides</i>	1

*** *Hybognathus amarus* by age class:**

age-0: 1727

age-1: 2

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia.

26 July 2005

RKD05-134

UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar

M.A. Farrington, L.E. Renfro, and C.C. McBride

Site Number: 11

River Mile: 114.6

Effort: 333.0 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	2
76	<i>Cyprinella lutrensis</i>	84
76	<i>Cyprinus carpio</i>	2
76	<i>Hybognathus amarus*</i>	1093
76	<i>Pimephales promelas</i>	70
76	<i>Platygobio gracilis</i>	17
81	<i>Carpoides carpio</i>	6
81	<i>Ictiobus bubalus</i>	1
212	<i>Gambusia affinis</i>	21

*** *Hybognathus amarus* by age class:**

age-0: 1093

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance

Site Number: 12

Channel bridge and east just upstream of Socorro Wastewater Treatment Plant,

River Mile: 99.5

26 July 2005

RKD05-133

UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas

M.A. Farrington, L.E. Renfro, and C.C. McBride

Effort: 468.1 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	2
76	<i>Cyprinella lutrensis</i>	28
76	<i>Cyprinus carpio</i>	7
76	<i>Hybognathus amarus*</i>	529
76	<i>Pimephales promelas</i>	64
76	<i>Platygobio gracilis</i>	20
93	<i>Ictalurus punctatus</i>	15
212	<i>Gambusia affinis</i>	119

* *Hybognathus amarus* by age class:

age-0: 529

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing.

26 July 2005

RKD05-132

UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio

M.A. Farrington, L.E. Renfro, and C.C. McBride

Site Number: 13

River Mile: 91.7

Effort: 426.5 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	12
76	<i>Cyprinella lutrensis</i>	41
76	<i>Cyprinus carpio</i>	30
76	<i>Hybognathus amarus*</i>	173
76	<i>Pimephales promelas</i>	176
76	<i>Platygobio gracilis</i>	11
81	<i>Carpoides carpio</i>	7
81	<i>Ictiobus bubalus</i>	6
93	<i>Ameiurus melas</i>	1
93	<i>Ictalurus punctatus</i>	19
212	<i>Gambusia affinis</i>	52

* *Hybognathus amarus* by age class:

age-0: 173

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, at US HWY 380 bridge crossing, San Antonio.

Site Number: 14

26 July 2005

RKD05-131

River Mile: 87.1

UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio

M.A. Farrington, L.E. Renfro, and C.C. McBride

Effort: 404.6 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	8
76	<i>Cyprinella lutrensis</i>	133
76	<i>Cyprinus carpio</i>	38
76	<i>Hybognathus amarus*</i>	9
76	<i>Pimephales promelas</i>	78
76	<i>Platygobio gracilis</i>	4
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	138

*** *Hybognathus amarus* by age class:**

age-0: 9

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Headquarters. Site Number: 15

25 July 2005

RKD05-130

River Mile: 79.1

UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE

R.K. Dudley, L.E. Renfro, and C.C. McBride

Effort: 547.1 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	148
76	<i>Cyprinus carpio</i>	95
76	<i>Hybognathus amarus*</i>	13
76	<i>Pimephales promelas</i>	106
81	<i>Carpoides carpio</i>	42
81	<i>Ictiobus bubalus</i>	2
93	<i>Ictalurus punctatus</i>	38
212	<i>Gambusia affinis</i>	42

*** *Hybognathus amarus* by age class:**

age-0: 13

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, at San Marcial Railroad Bridge, San Marcial.

25 July 2005

RKD05-129

UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial

R.K. Dudley, L.E. Renfro, and C.C. McBride

Site Number: 16

River Mile: 68.6

Effort: 425.3 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	214
76	<i>Cyprinella lutrensis</i>	82
76	<i>Cyprinus carpio</i>	52
76	<i>Hybognathus amarus*</i>	12
76	<i>Pimephales promelas</i>	16
76	<i>Pimephales vigilax</i>	1
76	<i>Platygobio gracilis</i>	7
81	<i>Ictiobus bubalus</i>	69
93	<i>Ictalurus punctatus</i>	20

* *Hybognathus amarus* by age class:

age-0: 12

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles Site Number: 17
downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 River Mile: 60.5
miles downstream of the San Marcial Railroad Bridge crossing.

25 July 2005

RKD05-128

UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well

R.K. Dudley, L.E. Renfro, and C.C. McBride

Effort: 479.1 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	15
76	<i>Cyprinella lutrensis</i>	81
76	<i>Cyprinus carpio</i>	231
76	<i>Hybognathus amarus*</i>	2
81	<i>Carpoides carpio</i>	1
81	<i>Ictiobus bubalus</i>	14
93	<i>Ictalurus punctatus</i>	3
212	<i>Gambusia affinis</i>	21
283	<i>Morone chrysops</i>	1

* *Hybognathus amarus* by age class:

age-0: 2

**Rio Grande silvery minnow Population Monitoring
July 2005**

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache
National Wildlife Refuge

Site Number: 18

River Mile: 57.7

25 July 2005

RKD05-127

UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well

R.K. Dudley, L.E. Renfro, and C.C. McBride

Effort: 540.5 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	58
76	<i>Cyprinella lutrensis</i>	92
76	<i>Cyprinus carpio</i>	19
76	<i>Hybognathus amarus*</i>	1
76	<i>Pimephales promelas</i>	2
81	<i>Ictiobus bubalus</i>	17
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	11

* *Hybognathus amarus* by age class:

age-0: 1