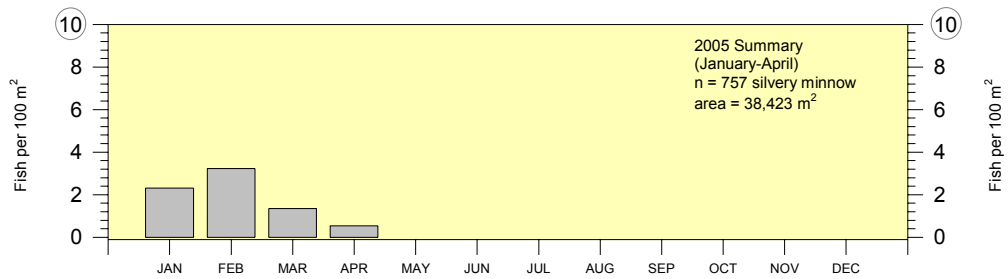
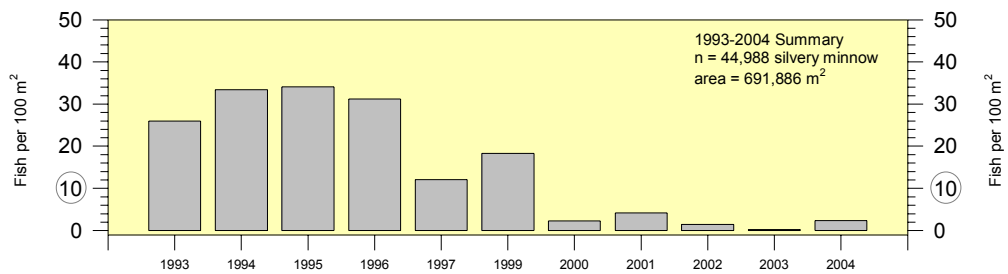


**SUMMARY OF THE RIO GRANDE SILVERY MINNOW
POPULATION MONITORING PROGRAM RESULTS FROM APRIL 2005**
(12-14, 19-20 April 2005)

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



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12 May 2005

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prepared for:

MIDDLE RIO GRANDE ENDANGERED SPECIES ACT COLLABORATIVE PROGRAM

under USBR contract:

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Upper Colorado Regional Office
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12 May 2005

SUMMARY OF OVERALL APRIL 2005 POPULATION MONITORING EFFORTS

The fourth sampling effort of the 2005 Rio Grande silvery minnow population monitoring program was conducted between 12-14 and 19-20 April 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 April 2005, a total of 1,876 fish were taken in the 8,539 m² (surface area) of water sampled. Red shiner was the most abundant taxon (N=1,341) and comprised about 71% of the total catch. Rio Grande silvery minnow (N=46) was present in 23 of 198 seine hauls with fish (ca. 12%) and was abundant in specific mesohabitats such as backwaters and pools. Sampling at Sites #2 and #3 produced more than half (N=34) of all Rio Grande silvery minnow collected during April. Cumulative fish catch rate was 22.0 individuals per 100 m² sampled; nearly equal to what it was in February (19.5 individuals per 100 m² sampled). The overall abundance of fish (N=1,876) was comprised mostly of fish from the San Acacia Reach (N=1,077).

SUMMARY OF APRIL 2005 POPULATION MONITORING EFFORT BY RIVER REACH

Angostura Reach

Angostura Reach ichthyofaunal sampling took on 14 and 20 April 2005. Discharge in the Rio Grande had increased greatly throughout the Angostura Reach during April 2005 compared to March 2005. Water levels were rising and the total discharge was higher than it has been in several years. Discharge throughout the Angostura Reach rose from about 1,000 cfs to 5,000 cfs during the last two weeks of May. The increased discharge resulted in increased turbidity; erosion of banks and inundation of sand islands resulted in increased input of suspended sediments. Water clarity was highest in the uppermost portion of the Angostura Reach (Secchi depth ca. 20 cm at Site #0) but the river quickly became turbid downstream of the confluence with the Jemez River (Secchi depth ca. 8 cm at Site #1). In contrast, the Secchi depth reading in March 2005 at Site #0 was about 61 cm. Water temperatures recorded at the different sampling sites ranged from 12.4°C to 15.9°C and were about 4°C warmer than they were in March. Shoreline habitats were sampled frequently and often were associated with instream debris piles. Very few fish were collected in main channel habitats or other mesohabitats that had current velocities >0.5 m/s. Large portions of the river had higher current velocities because of the elevated discharge. Fish were most often occupying areas along the shoreline and in low or no velocity habitats; debris piles frequently produced relatively high numbers of fish. The most frequently collected taxon in the Angostura Reach during April 2005 was red shiner (N=163). Longnose dace were surprisingly abundant (N=83) and were primarily found in shoreline run habitats. Rio Grande silvery minnow (N=42) was the third-most abundant taxon and was present in 21 seine hauls. The Angostura Diversion Dam sampling site (Site #0) and the Rio Bravo site (Site #4) produced the fewest numbers of Rio Grande silvery minnow of any of the Angostura Reach sites. Several of the Rio Grande silvery minnow collected in April were marked (N=2), indicating their identity as hatchery fish. The majority of Rio Grande silvery minnow were between 40-60 mm SL. The number of Rio Grande silvery minnow collected during April 2005 was less than the amount collected during March 2005 (N=88). Fish were likely more concentrated into small mesohabitats (making their capture easier) in March because of reduced water levels and water temperatures. White sucker are likely preparing to spawn or have already spawned but no young of year were collected during April. As water temperatures warm in May, it is likely that several taxa (including Rio Grande silvery minnow) will reproduce.

Isleta Reach

Discharge in the Rio Grande substantially higher during April 2005 than it had been in the past several years. The large volume of water had covered many of the vegetated islands that were slowly becoming established since 2002. Elevated discharge resulted in the persistence of many small side channels and extensive areas of inundation on islands and along the shoreline. Some islands were completely inundated while backwaters formed mostly along the shoreline in other areas. Water temperatures in the Isleta Reach generally ranged from 12.7-16.7°C from morning (0900 h) to afternoon (1300 h); this was about a 5°C increase compared with March 2005. However, water temperatures were likely still too cool for most taxa to initiate spawning. Water clarity was low (Secchi depth < 10 cm) at most sampling sites because of increased discharge and erosion of accumulated material in the formerly dry portions of the river channel. The Isleta Reach had the lowest catch rate (13.6 fish/100 m²) of any of the sampling reaches in the Middle Rio Grande and was much lower than what was recorded during March 2005 (26.5 fish/100 m²). Overall ichthyofaunal catch rates in the Angostura Reach (20.9 fish/100 m²) were higher lower compared to the Isleta Reach and had changed little since November 2004 (26.6 fish/100 m²). The most commonly collected taxa in the Isleta Reach were red shiner (N=227), flathead chub (N=115), western mosquitofish (N=23), and fathead minnow (N=11); only one Rio Grande silvery minnow was collected.

San Acacia Reach

Population monitoring was conducted in the San Acacia Reach (9 sites) of the Middle Rio Grande on 12-13 and 19 April 2005. Water levels had increased markedly since the beginning of the month but didn't peak until the end of April. The elevated flow combined with moderate ambient temperatures resulted in relatively warmer water temperatures in the San Acacia Reach (range=11.8-18.4°C) compared to March 2005. Many of the formerly dry side channels throughout the reach had been re-wetted and were flowing. The width of the river had also increased noticeably and resulted in the creation of new backwater habitats. However, the habitat was dominated by main channel runs that were deep and swift. The turbidity levels in the San Acacia Reach were elevated and most sampling sites has a Secchi depth reading of < 5 cm. The most commonly collected taxon during April 2005 in the San Acacia Reach was red shiner (N=954). Rio Grande silvery minnow (N=3) were occasionally present but far less abundant compared to other taxa. The few silvery minnow collected were in excellent condition and appeared ready to spawn within a month. The San Acacia Reach catch rate (29.0 fish/100 m²) was higher than the catch rates in either the Angostura or Isleta reaches. The primary reason for the elevated catch rate in the San Acacia Reach was the increased abundance of red shiner.

Conclusion

Red shiner continued to be the most numerically dominant taxon collected in the Rio Grande (N=1,344); other common taxa included flathead chub (N=181), longnose dace (N=83), channel catfish (N=70), western mosquitofish (N=62), fathead minnow (N=53), and Rio Grande silvery minnow (N=46). These six taxa collectively comprised 98% of the total catch of fish in the Middle Rio Grande study area. The abundance of Rio Grande silvery minnow during the early part of 2005, including April, indicates that the status of this species has improved markedly compared to 2004. Several of the largest female Rio Grande silvery minnow appeared to be slightly gravid but peak spawning is not expected to occur until early May because of the reduced instream water temperatures. The abundance of Rio Grande silvery minnow was highest in the Angostura Reach and only about 10% of all individuals were collected in either the Isleta or San Acacia reaches. Many of the Rio Grande silvery minnow collected in the Angostura Reach (likely a result of spawning by hatchery fish) appeared to be stunted and some were likely too small (ca. 30-40 mm SL) to spawn effectively in the spring of 2005. Higher than average spring runoff (peak magnitude and duration) is expected for 2005 which may increase the likelihood of recruitment success by creating more favorable nursery habitats.

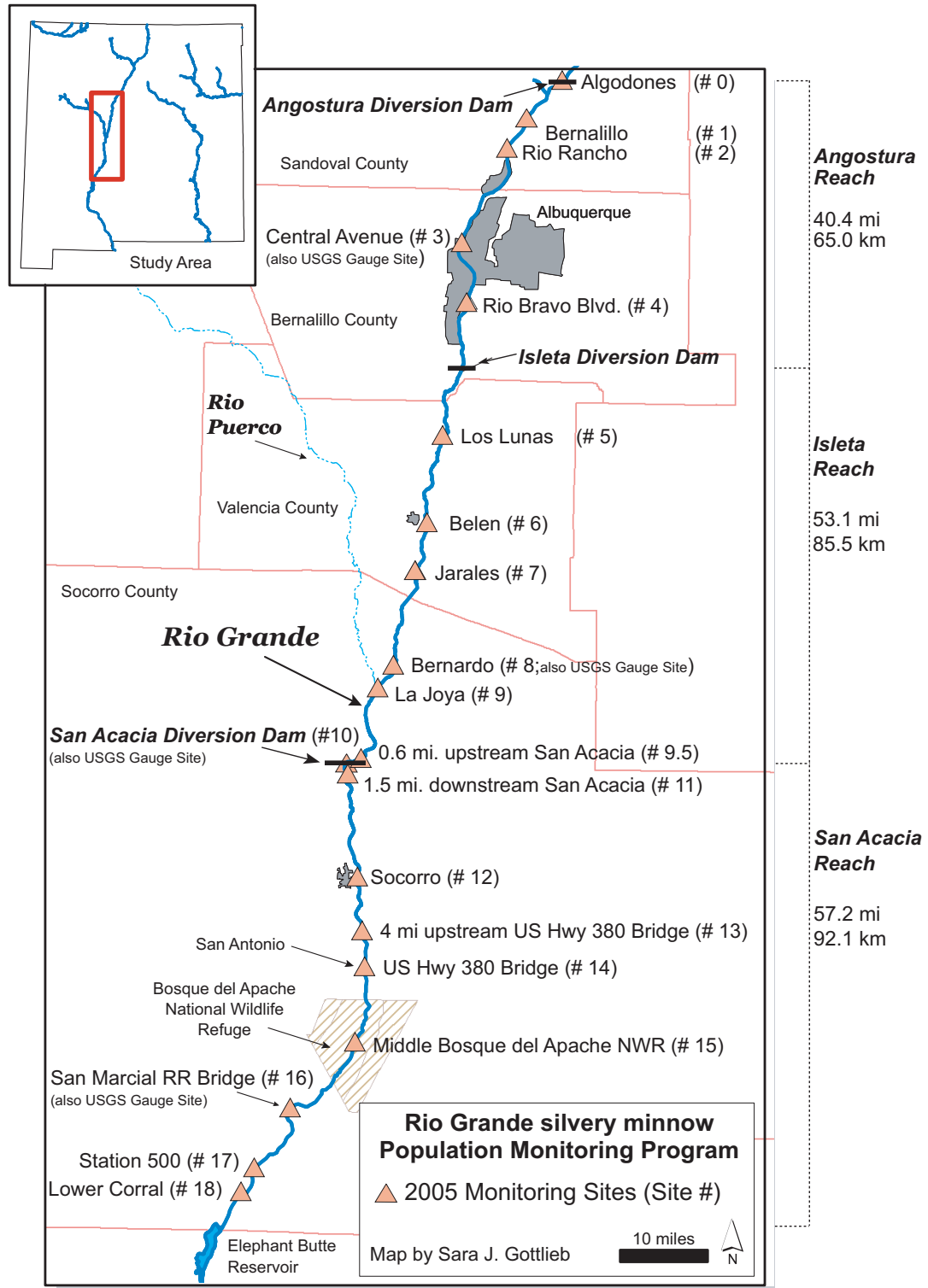


Figure 1. Map of the study area and sampling localities (numbered) for the 2005 Rio Grande silvery minnow population monitoring program. Sampling locality information that correspond with the numbered localities are provided in Appendix A (Table A-1).

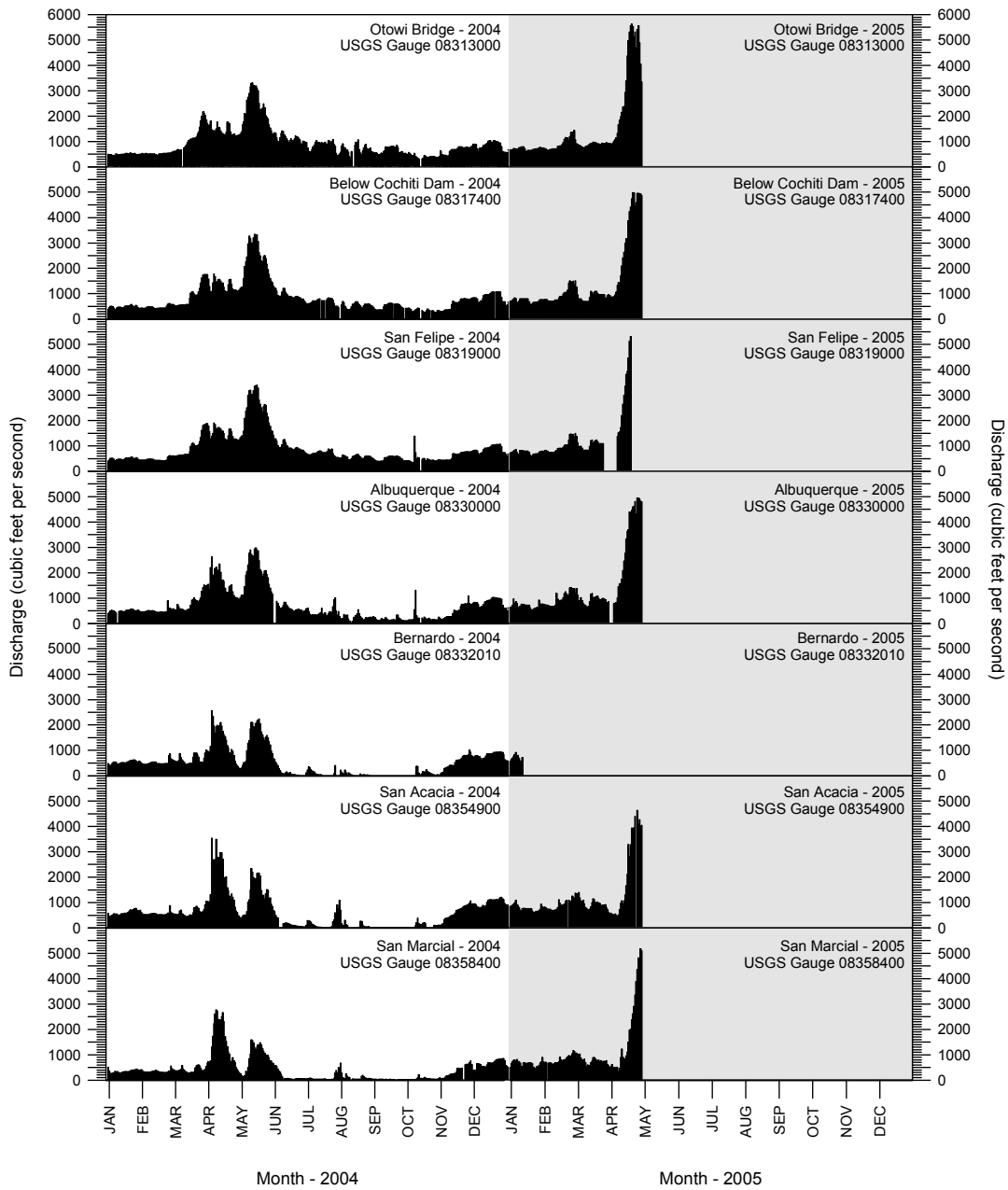


Figure 2. Discharge in the Rio Grande from January 2004 through April 2005 as recorded at seven U. S. Geological Survey (USGS) gauge stations. The Otowi Bridge gauge site is outside of the study area (ca. 25.5 river miles upstream of Cochiti Dam) and provided for reference. Discharge data are provisional 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 April 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	—	—	—	—
CARPS AND MINNOWS					
red shiner	N	1,344	71	20	100
common carp	I	6	—	4	20
Rio Grande chub	N	—	—	—	—
Rio Grande silvery minnow	N	46	2	7	35
fathead minnow	N	53	3	16	80
bullhead minnow	I	—	—	—	—
flathead chub	N	181	10	9	45
longnose dace	N	83	4	3	15
SUCKERS					
river carpsucker	N	4	—	2	10
white sucker	I	30	2	3	15
smallmouth buffalo	N	—	—	—	—
BULLHEAD CATFISHES					
black bullhead	I	—	—	—	—
yellow bullhead	I	1	—	1	5
channel catfish	I	70	4	8	40
flathead catfish	I	—	—	—	—
TROUTS					
brown trout	I	—	—	—	—
LIVEBEARERS					
western mosquitofish	I	62	3	13	65
TEMPERATE BASSES					
white bass	I	—	—	—	—
SUNFISHES					
green sunfish	I	—	—	—	—
bluegill	N	—	—	—	—
largemouth bass	I	—	—	—	—
white crappie	I	—	—	—	—
black crappie	I	—	—	—	—
PERCHES					
yellow perch	I	—	—	—	—
walleye	I	—	—	—	—
TOTAL		1,880			

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	—	—	—	—	—	—	—	—	—	—	—	—	—
CARPS AND MINNOWS													
red shiner	2,760	935	2,243	1,344	—	—	—	—	—	—	—	—	7,282
common carp	3	3	3	6	—	—	—	—	—	—	—	—	15
Rio Grande chub	—	—	—	—	—	—	—	—	—	—	—	—	—
Rio Grande silvery minnow	248	330	133	46	—	—	—	—	—	—	—	—	757
fathead minnow	356	144	171	53	—	—	—	—	—	—	—	—	724
bullhead minnow	—	1	4	—	—	—	—	—	—	—	—	—	5
flathead chub	112	187	181	181	—	—	—	—	—	—	—	—	661
longnose dace	1	14	20	83	—	—	—	—	—	—	—	—	118
SUCKERS													
river carpsucker	19	20	41	4	—	—	—	—	—	—	—	—	84
white sucker	16	59	43	30	—	—	—	—	—	—	—	—	148
smallmouth buffalo	—	—	—	—	—	—	—	—	—	—	—	—	—
BULLHEAD CATFISHES													
black bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
yellow bullhead	—	2	—	1	—	—	—	—	—	—	—	—	3
channel catfish	6	49	35	70	—	—	—	—	—	—	—	—	160
flathead catfish	—	—	—	—	—	—	—	—	—	—	—	—	—
TROUTS													
brown trout	—	—	—	—	—	—	—	—	—	—	—	—	—
LIVEBEARERS													
western mosquitofish	64	146	60	62	—	—	—	—	—	—	—	—	332
TEMPERATE BASSES													
white bass	—	—	—	—	—	—	—	—	—	—	—	—	—
SUNFISHES													
green sunfish	—	—	—	—	—	—	—	—	—	—	—	—	—
bluegill	—	—	—	—	—	—	—	—	—	—	—	—	—
largemouth bass	—	1	1	—	—	—	—	—	—	—	—	—	2
white crappie	1	—	—	—	—	—	—	—	—	—	—	—	1
black crappie	—	—	—	—	—	—	—	—	—	—	—	—	—
PERCHES													
yellow perch	—	—	—	—	—	—	—	—	—	—	—	—	—
walleye	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	3,586	1,891	2,935	1,880	—	—	—	—	—	—	—	—	10,292

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	—	0	0	3									3
1 Bernalillo	20	68	36	5									129
2 Rio Rancho	147	137	25	7									316
3 Central Ave (Abq)	7	64	12	27									110
4 Rio Bravo (Abq)	4	19	15	—									38
<i>Angostura Reach Total</i>	<i>178</i>	<i>288</i>	<i>88</i>	<i>42</i>									<i>596</i>
ISLETAREACH													
5 Los Lunas	3	11	2	1									17
6 Belen	1	4	3	—									8
7 Jarales	30	0	0	—									30
8 US Hwy 60 Bernardo	8	1	1	—									10
9 South of Bernardo	5	2	1	—									8
9.5 North of San Acacia	1	0	0	—									1
<i>Isleta Reach Total</i>	<i>48</i>	<i>18</i>	<i>7</i>	<i>1</i>									<i>74</i>
SAN ACACIA REACH													
10 San Acacia Dam	3	0	16	2									21
11 S of San Acacia	13	15	14	1									43
12 Socorro	3	0	1	—									4
13 North of US Hwy 380	—	6	0	—									6
14 US Hwy 380	1	0	0	—									1
15 Bosque del Apache	2	—	0	—									2
16 San Marcial	—	—	1	—									1
17 South of San Marcial	—	—	0	—									—
18 South of San Marcial	—	3	6	—									9
<i>San Acacia Reach Total</i>	<i>22</i>	<i>24</i>	<i>38</i>	<i>3</i>									<i>87</i>
MONTHLY TOTALS	248	330	133	46									757
	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

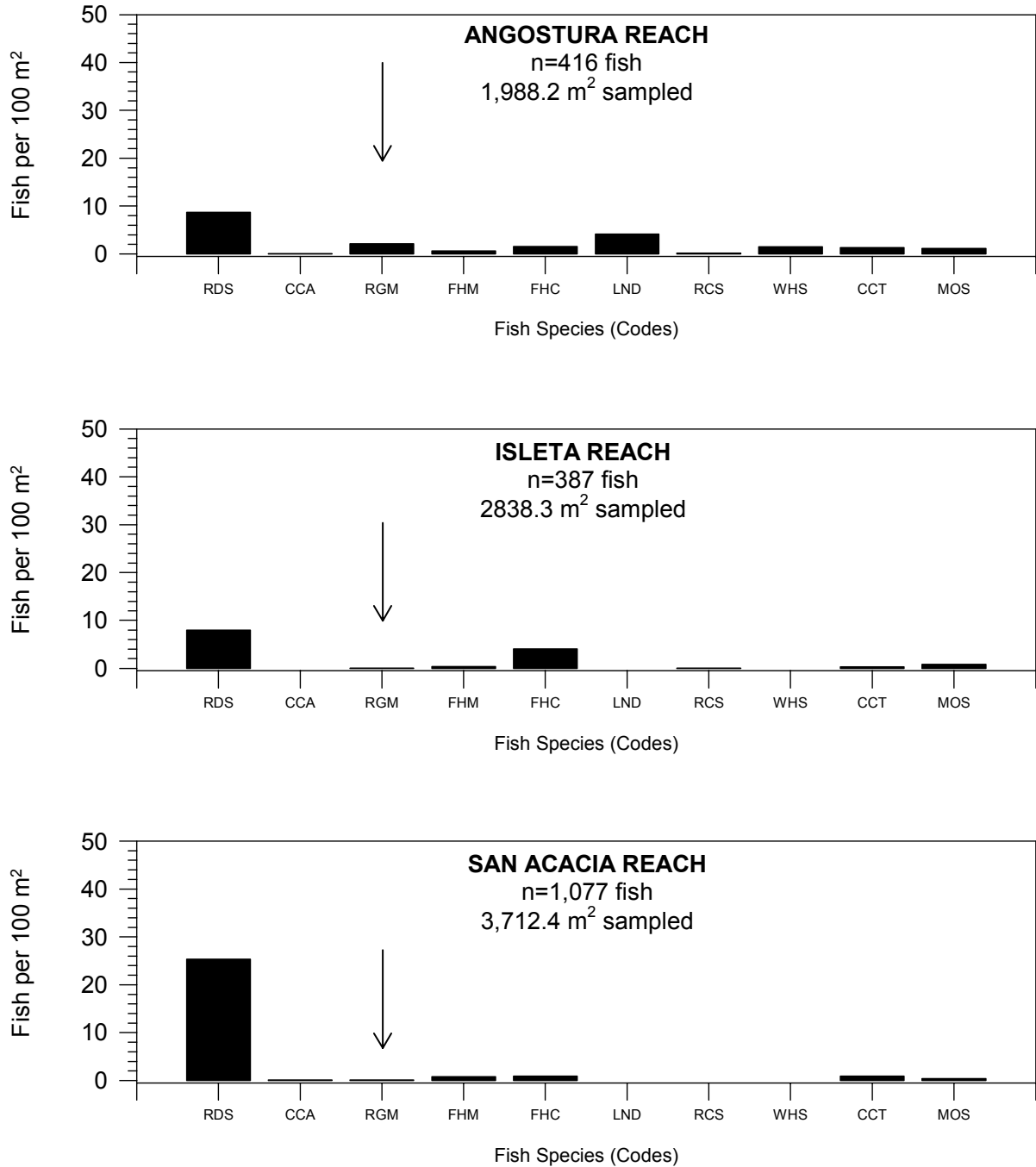


Figure 3. Catch rates, for the 10 focal species, by river reach during April 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes). An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

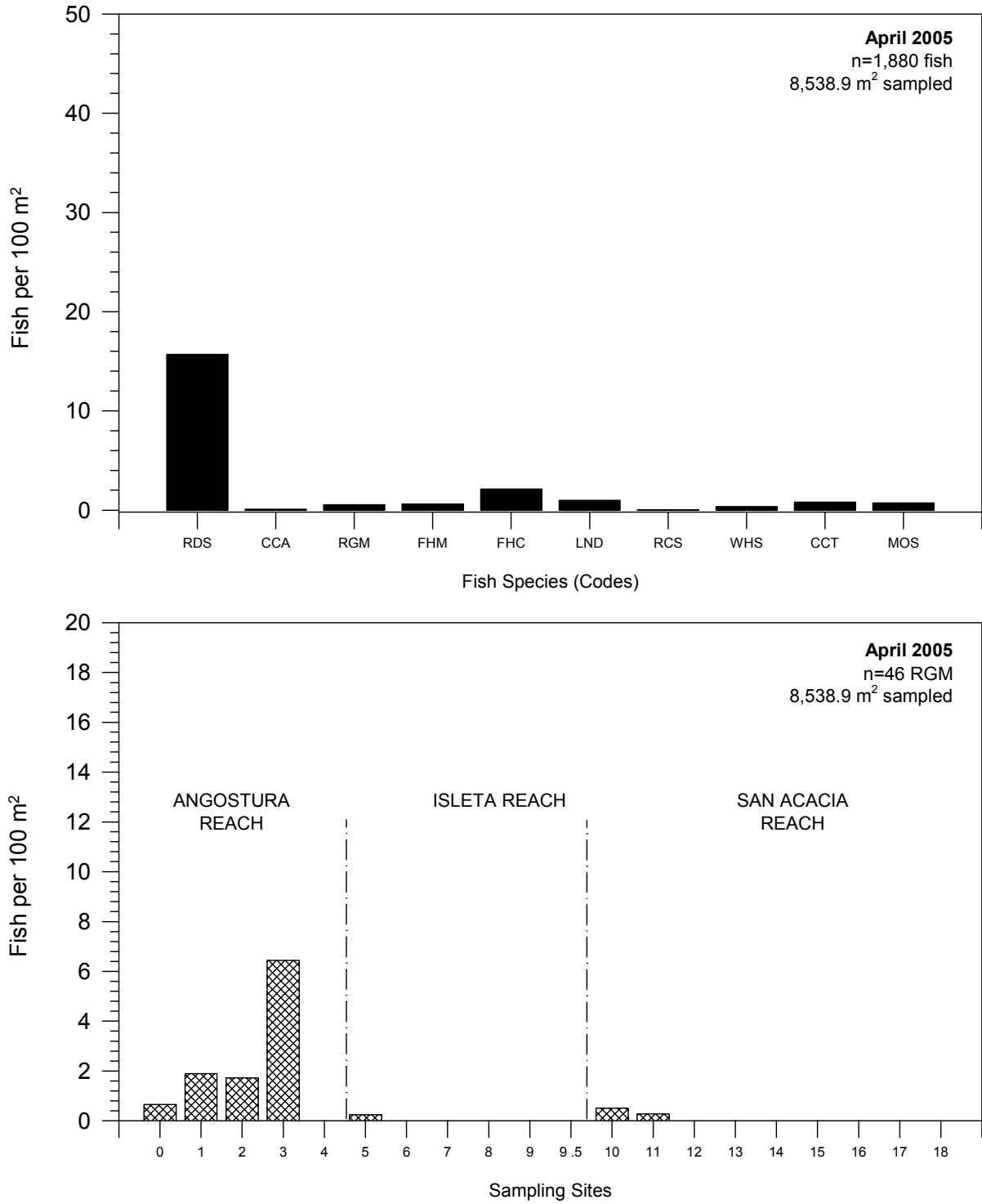


Figure 4. Catch rates for ten focal species (upper graph*), including Rio Grande silvery minnow, (RGM; lower graph*) during April 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes).

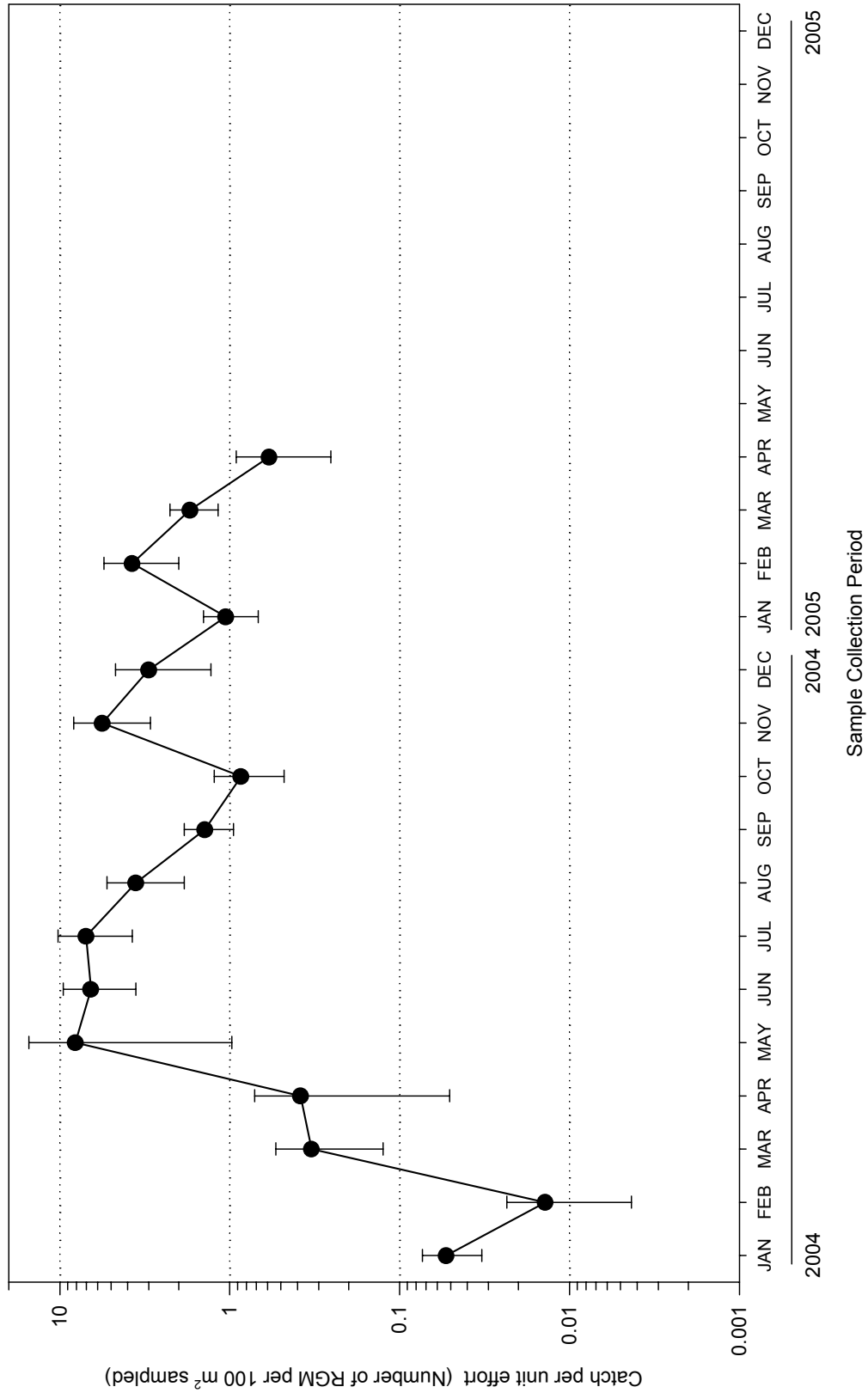


Figure 5. Month catch rates of Rio Grande silvery minnow during 2004 (January-December) and through April 2005 at Rio Grande silvery minnow population monitoring program collection sites. Solid circles indicate monthly means (n=20 site per month) and capped-bars represent the standard error of the mean.

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 April 2005
Rio Grande silvery minnow population monitoring efforts

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

New Mexico: Sandoval Co., Rio Grande Drainage

Rio Grande, directly below Angostura Diversion Dam, Algodones.

Site Number: 0

20 April 2005

RKD05-082

River Mile: 209.7

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

R.K. Dudley and L.E. Renfro

Effort: 459.5 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	12
76	<i>Hybognathus amarus*</i>	3
76	<i>Pimephales promelas</i>	2
76	<i>Rhinichthys cataractae</i>	70

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

age-1: 3

New Mexico: Sandoval Co., Rio Grande Drainage

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

Site Number: 1

20 April 2005

RKD05-083

River Mile: 203.8

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

R.K. Dudley and L.E. Renfro

Effort: 264.3 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	8
76	<i>Hybognathus amarus*</i>	5
76	<i>Platygobio gracilis</i>	3
76	<i>Rhinichthys cataractae</i>	11
81	<i>Catostomus commersoni</i>	1
212	<i>Gambusia affinis</i>	14

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

age-1: 5

**Rio Grande silvery minnow Population Monitoring
April 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

20 April 2005

RKD05-084

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

R.K. Dudley and L.E. Renfro

Effort: 408.3 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	6
76	<i>Hybognathus amarus*</i>	7
76	<i>Pimephales promelas</i>	2
76	<i>Rhinichthys cataractae</i>	2
212	<i>Gambusia affinis</i>	4

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

age-1: 7

New Mexico: Bernalillo Co., Rio Grande Drainage

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

Site Number: 3

14 April 2005

RKD05-076

River Mile: 183.4

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

R.K. Dudley, W.H. Brandenburg, and L.E. Renfro

Effort: 419.5 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	114
76	<i>Hybognathus amarus*</i>	27
76	<i>Pimephales promelas</i>	2
76	<i>Platygobio gracilis</i>	19
81	<i>Carpionodes carpio</i>	3
81	<i>Catostomus commersoni</i>	27
93	<i>Ameiurus natalis</i>	1
93	<i>Ictalurus punctatus</i>	20
212	<i>Gambusia affinis</i>	3

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

age-1: 27

**Rio Grande silvery minnow Population Monitoring
April 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

14 April 2005

RKD05-075

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

R.K. Dudley, W.H. Brandenburg, and L.E. Renfro

Effort: 436.6 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	23
76	<i>Cyprinus carpio</i>	1
76	<i>Pimephales promelas</i>	7
76	<i>Platygobio gracilis</i>	9
81	<i>Catostomus commersoni</i>	2
93	<i>Ictalurus punctatus</i>	6
212	<i>Gambusia affinis</i>	2

New Mexico: Valencia Co., Rio Grande Drainage

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

Site Number: 5

14 April 2005

RKD05-074

River Mile: 161.4

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

R.K. Dudley, W.H. Brandenburg, and L.E. Renfro

Effort: 415.5 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	5
76	<i>Hybognathus amarus*</i>	1
76	<i>Pimephales promelas</i>	1
93	<i>Ictalurus punctatus</i>	1

* *Hybognathus amarus* by age class:

age-1: 1

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

New Mexico: Valencia Co., Rio Grande Drainage

Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen.
14 April 2005

RKD05-073

Site Number: 6
River Mile: 151.5

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

R.K. Dudley, W.H. Brandenburg, and L.E. Renfro

Effort: 435.9 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	11
76	<i>Pimephales promelas</i>	1
212	<i>Gambusia affinis</i>	4

New Mexico: Valencia Co., Rio Grande Drainage

Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales.
14 April 2005

RKD05-072

Site Number: 7
River Mile: 143.2

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

R.K. Dudley, W.H. Brandenburg, and L.E. Renfro

Effort: 539.4 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	37
76	<i>Pimephales promelas</i>	4
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	3

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, at US HWY 60 bridge crossing, Bernardo.
13 April 2005

RKD05-071

Site Number: 8
River Mile: 130.6

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

R.K. Dudley, M.A. Farrington, and L.E. Renfro

Effort: 489.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	34
76	<i>Pimephales promelas</i>	2
212	<i>Gambusia affinis</i>	1

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

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo.
13 April 2005

RKD05-070

Site Number: 9

River Mile: 127.0

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

R.K. Dudley, M.A. Farrington, and L.E. Renfro

Effort: 412.0 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	95
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	1
81	<i>Carpionodes carpio</i>	1
93	<i>Ictalurus punctatus</i>	5
212	<i>Gambusia affinis</i>	3

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia
13 April 2005

RKD05-069

Site Number: 9.5

River Mile: 116.8

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

R.K. Dudley, M.A. Farrington, and L.E. Renfro

Effort: 545.7 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	45
76	<i>Pimephales promelas</i>	2
76	<i>Platygobio gracilis</i>	114
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	12

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

New Mexico: Socorro Co., Rio Grande Drainage

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

13 April 2005

RKD05-068

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

R.K. Dudley, M.A. Farrington, and L.E. Renfro

Site Number: 10

River Mile: 116.2

Effort: 398.3 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	329
76	<i>Hybognathus amarus*</i>	2
76	<i>Pimephales promelas</i>	19
76	<i>Platygobio gracilis</i>	27
212	<i>Gambusia affinis</i>	3

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

age-1: 2

New Mexico: Socorro Co., Rio Grande Drainage

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

19 April 2005

RKD05-080

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

R.K. Dudley, L.E. Renfro, and T.L. Max

Site Number: 11

River Mile: 114.6

Effort: 359.7 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	60
76	<i>Hybognathus amarus*</i>	1
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	6
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	5

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

age-1: 1

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

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Channel bridge and east just upstream of Socorro Wastewater Treatment Plant,
19 April 2005

Site Number: 12
River Mile: 99.5

RKD05-079

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

R.K. Dudley, L.E. Renfro, and T.L. Max

Effort: 435.5 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	17
76	<i>Cyprinus carpio</i>	1
76	<i>Pimephales promelas</i>	1

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing.
19 April 2005

Site Number: 13
River Mile: 91.7

RKD05-078

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

R.K. Dudley, L.E. Renfro, and T.L. Max

Effort: 513.2 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	1
212	<i>Gambusia affinis</i>	1

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, at US HWY 380 bridge crossing, San Antonio.
19 April 2005

Site Number: 14
River Mile: 87.1

RKD05-077

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

R.K. Dudley, L.E. Renfro, and T.L. Max

Effort: 404.0 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	3
76	<i>Pimephales promelas</i>	1
212	<i>Gambusia affinis</i>	7

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

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge
12 April 2005 **RKD05-067** Site Number: 15
River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, W.H. Brandenburg, and L.E. Renfro Effort: 501.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	3

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial.
12 April 2005 **RKD05-066** Site Number: 16
River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, W.H. Brandenburg, and L.E. Renfro Effort: 443.0 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	267
76	<i>Cyprinus carpio</i>	3
76	<i>Pimephales promelas</i>	6
76	<i>Platygobio gracilis</i>	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0
miles downstream of the southern end of Bosque del Apache National Wildlife
Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing.
12 April 2005 **RKD05-065** Site Number: 17
River Mile: 60.5
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, W.H. Brandenburg, and L.E. Renfro Effort: 552.2 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	248
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus punctatus</i>	33

**Rio Grande silvery minnow Population Monitoring
April 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

12 April 2005

RKD05-064

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

R.K. Dudley, W.H. Brandenburg, and L.E. Renfro

Site Number: 18

River Mile: 57.7

Effort: 104.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	26
76	<i>Cyprinus carpio</i>	1