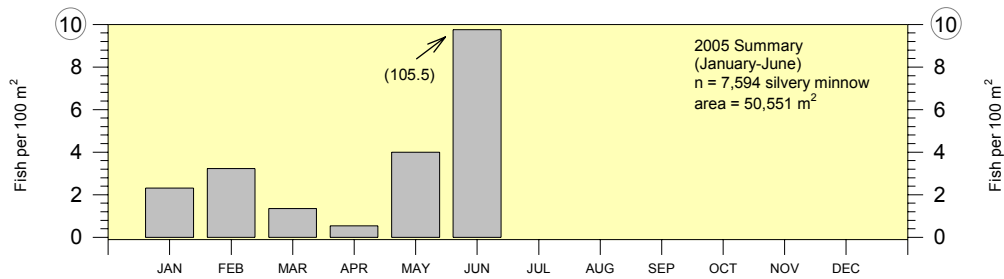
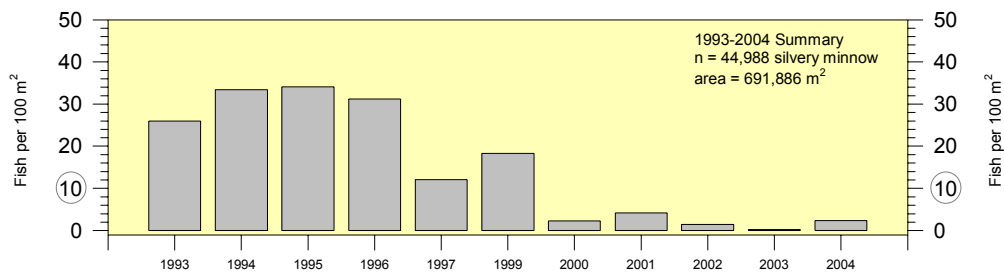


**SUMMARY OF THE RIO GRANDE SILVERY MINNOW
POPULATION MONITORING PROGRAM RESULTS FROM JUNE 2005**
(22-24, 27-28 June 2005)

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



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15 July 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
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15 July 2005

SUMMARY OF OVERALL JUNE 2005 POPULATION MONITORING EFFORTS

The sixth sampling effort of the 2005 Rio Grande silvery minnow population monitoring program was conducted between 22-24, 27-28 June 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 June 2005, a total of 9,277 fish were taken in the 6,260 m² (surface area) of water sampled. Rio Grande silvery minnow was by far the most abundant taxon (N=6,603) and comprised about 71% of the total catch. This species was present at 19 of the 20 sampling sites and in 205 of 267 seine hauls with fish (ca. 77%). The abundance of Rio Grande silvery minnow in June 2005 far surpassed its abundance in June 2004. The highest catch rates of Rio Grande silvery minnow were recorded in the upper Isleta Reach but densities were relatively high throughout the range, including the San Acacia Reach. The other most-abundant taxa were about an order of magnitude less abundant than Rio Grande silvery minnow. Cumulative fish catch rate was 148.2 individuals per 100 m² sampled; nearly double what it was in May (48.9 individuals per 100 m² sampled).

SUMMARY OF JUNE 2005 POPULATION MONITORING EFFORT BY RIVER REACH

Angostura Reach

Angostura Reach ichthyofaunal sampling took on 27 and 28 June 2005. Discharge in the Rio Grande had increased greatly throughout the Angostura Reach during May and June 2005 compared to April 2005. Discharge throughout the Angostura Reach peaked at about 6,500 cfs during June. Total discharge was higher than it has been in nearly ten years. Although the discharge was regulated and the flow peak was artificially dampened by the storage of water in Cochiti Reservoir, the increased discharge resulted in the formation of numerous flooded shoreline and island habitats. 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 19 cm at Site #0) but the river became more turbid downstream of the confluence with the Jemez River (Secchi depth 10 cm at Site #2). 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 19.9°C to 26.5°C and were warm enough to support rapid growth of larval fish in appropriate low velocity habitats. These water temperatures were about 5°C higher compared to May 2005. Several large backwaters and low velocity shoreline habitats with inundated terrestrial vegetation provided suitable nursery areas; many larval fish were collected in these habitats. 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 high current velocities and were relatively deep (ca. 2 m) because of the elevated discharge. Rio Grande silvery minnow (N=1,604) was, by far, the most frequently collected taxon in the Angostura Reach during June 2005. The second and third most common species were white sucker (N=257) and red shiner (N=204), respectively. White sucker had apparently spawned and recruited successfully based on the presence of juveniles along the shoreline and in backwater habitats. Flathead chub (N=102) and longnose dace (N=105) were surprisingly abundant and were primarily found in shoreline run habitats. 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. 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.

Isleta Reach

Discharge in the Rio Grande was substantially higher during June 2005 than it had been in many years. The suddenly large volume of water covered many of the vegetated islands that were slowly becoming established since 2002. Most islands were completely inundated while numerous backwaters formed along the shoreline in other areas. There were areas where the river had over-banked, but most of this "floodplain" was 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 low (Secchi depth 5-10 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 highest catch rate (244.3 fish/100 m²) of any of the sampling reaches in the Middle Rio Grande; the June catch rate value was more than an order of magnitude higher than the May 2005 value (14.9 fish/100 m²). Overall ichthyofaunal catch rates in the Angostura Reach (158.4 fish/100 m²) were lower compared to the Isleta Reach and had increased only slightly in the last month. This was caused primarily by the addition of Rio Grande silvery minnow balanced with the loss of white sucker. The most commonly collected taxa in the Isleta Reach were Rio Grande silvery minnow (N=3,724), fathead minnow (N=375), and red shiner (N=166).

San Acacia Reach

Population monitoring was conducted in the San Acacia Reach (9 sites) of the Middle Rio Grande from 22-24 June 2005. Water levels had increased markedly since the beginning of the month but didn't peak until the middle of June; there was a separate peak in May that was of similar magnitude. The elevated flow combined with moderate ambient temperatures resulted in relatively warm water temperatures in the San Acacia Reach (range=21.0-25.7°C) compared to April 2005; temperatures were nearly 10°C warmer in June. Many of the formerly dry side channels throughout the reach had been re-wetted and were flowing. Flooded bosque habitats that resulted from the elevated discharge created ideal nursery habitats for larval fishes. Many of these habitats were flowing through the bosque and then cascading back into the river at points farther downstream. While the habitat was dominated by main channel runs, flooded bosque areas were extensive in some areas (mostly downstream of San Marcial Railroad Bridge). The turbidity levels in the San Acacia Reach were elevated and most sampling sites had a Secchi depth reading of < or =5 cm. The most commonly collected taxon during June 2005 in the San Acacia Reach was Rio Grande silvery minnow (N=1,275). Rio Grande silvery minnow was present at all but one of the sampling sites and the age-class structure was dominated by young-of-year individuals. The larval and juvenile Rio Grande silvery minnow collected were in excellent condition and were likely to grow quickly in flooded bosque habitats. The San Acacia Reach fish catch rate (79.8 fish/100 m²) was lower than the catch rates in either the Angostura or Isleta reaches.

Conclusion

Rio Grande silvery minnow (N=6,603) was the most numerically dominant taxon collected during June 2005. The combination of high and prolonged spring flows apparently resulted in favorable conditions for the spawning and recruitment of Rio Grande silvery minnow. The high number of young-of-year silvery minnow in the San Acacia Reach (N=1,275) indicates that environmental conditions in that reach result in very high recruitment success despite the yearly loss of fish caused by channel drying and prolonged low flows. The abundance of Rio Grande silvery minnow during the early part of 2005, including June, indicates that the status of this species has improved markedly compared to spring of 2004. The duration and magnitude of the spring runoff for 2005 appears to be similar to 1993-1995 and 1997. While favorable spring flows of 2005 apparently resulted in the highest densities of Rio Grande silvery minnow observed in the past decade, the success of this year's cohort will be largely dependent on the amount of water that is allowed to remain in the channel in all three river reaches during the summer of 2005. Decreasing flows compounded by large water diversions could result in large losses of this year's reproductive effort if not offset by resource management intervention.

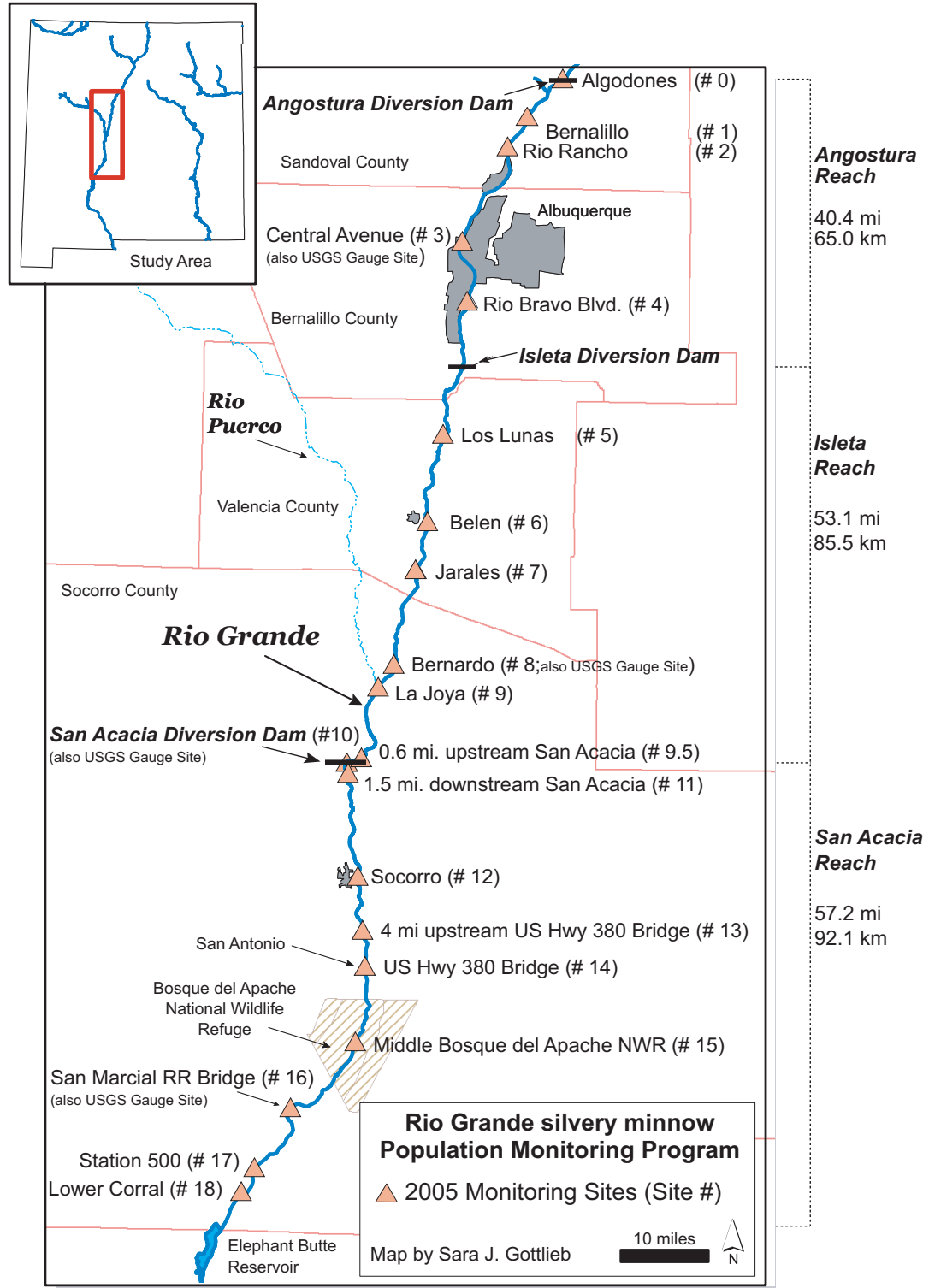


Figure 1. Map of the study area and sampling localities (numbered) for the 2005 Rio Grande silvery minnow population monitoring program. Sampling locality information that correspond with the numbered localities are provided in Appendix A (Table A-1).

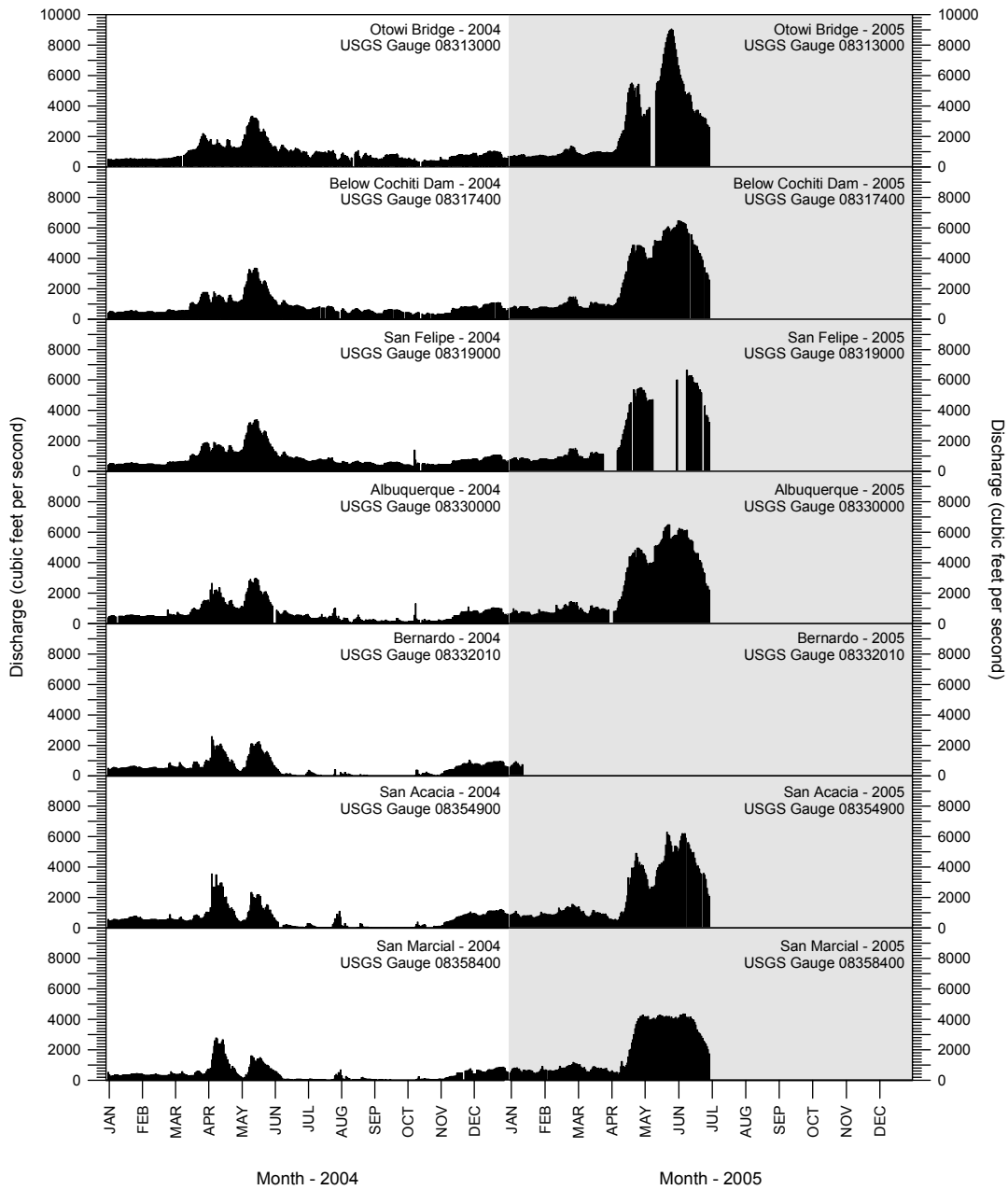


Figure 2. Discharge in the Rio Grande from January 2004 through June 2005 as recorded at seven U. S. Geological Survey (USGS) gauge stations. The Otowi Bridge gauge site is outside of the study area (ca. 25.5 river miles upstream of Cochiti Dam) and provided for reference. Discharge data are provisional 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 June 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	3	0.03	2	10
CARPS AND MINNOWS					
red shiner	N	830	8.95	18	90
common carp	I	167	1.80	15	75
Rio Grande chub	N	—	0.00	—	—
Rio Grande silvery minnow	N	6,603	71.18	19	95
fathead minnow	N	762	8.21	19	95
bullhead minnow	I	—	0.00	—	—
flathead chub	N	217	2.34	13	65
longnose dace	N	107	1.15	5	25
SUCKERS					
river carpsucker	N	15	0.16	4	20
white sucker	I	262	2.82	9	45
smallmouth buffalo	N	51	0.55	5	25
BULLHEAD CATFISHES					
black bullhead	I	—	0.00	—	—
yellow bullhead	I	—	0.00	—	—
channel catfish	I	16	0.17	6	30
flathead catfish	I	—	0.00	—	—
TROUTS					
brown trout	I	—	0.00	—	—
LIVEBEARERS					
western mosquitofish	I	235	2.53	17	85
TEMPERATE BASSES					
white bass	I	—	0.00	—	—
SUNFISHES					
green sunfish	I	—	0.00	—	—
bluegill	N	—	0.00	—	—
largemouth bass	I	2	0.02	2	10
white crappie	I	4	0.04	2	10
black crappie	I	—	0.00	—	—
PERCHES					
yellow perch	I	3	0.03	1	5
walleye	I	—	0.00	—	—
TOTAL		9,277			

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							4
CARPS AND MINNOWS													
red shiner	2,760	935	2,243	1,344	718	830							8,830
common carp	3	3	3	6	80	167							262
Rio Grande chub	—	—	—	—	—	—							—
Rio Grande silvery minnow	248	330	133	46	234	6,603							7,594
fathead minnow	356	144	171	53	67	762							1,553
bullhead minnow	—	1	4	—	—	—							5
flathead chub	112	187	181	181	136	217							1,014
longnose dace	1	14	20	83	54	107							279
SUCKERS													
river carpsucker	19	20	41	4	148	15							247
white sucker	16	59	43	30	1,311	262							1,721
smallmouth buffalo	—	—	—	—	—	51							51
BULLHEAD CATFISHES													
black bullhead	—	—	—	—	—	—							—
yellow bullhead	—	2	—	1	—	—							3
channel catfish	6	49	35	70	8	16							184
flathead catfish	—	—	—	—	—	—							—
TROUTS													
brown trout	—	—	—	—	—	—							—
LIVEBEARERS													
western mosquitofish	64	146	60	62	109	235							676
TEMPERATE BASSES													
white bass	—	—	—	—	—	—							—
SUNFISHES													
green sunfish	—	—	—	—	—	—							—
bluegill	—	—	—	—	—	—							—
largemouth bass	—	1	1	—	—	2							4
white crappie	1	—	—	—	—	4							5
black crappie	—	—	—	—	—	—							—
PERCHES													
yellow perch	—	—	—	—	—	3							3
walleye	—	—	—	—	1	—							1
TOTAL	3,586	1,891	2,935	1,880	2,867	9,277							22,436

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							4
1 Bernalillo	20	68	36	5(1)	6(1)	146							281
2 Rio Rancho	147(4)	137(8)	25	7(1)	3(2)	578(1)							897
3 Central Ave (Abq)	7	64(17)	12	27	2	554							666
4 Rio Bravo (Abq)	4(1)	19(7)	15	—	—	325							363
Angostura Reach Total	178	288	88	42	11	1,604							2,211
ISLETA REACH													
5 Los Lunas	3	11	2	1	5	798							820
6 Belen	1	4	3	—	3	1,268							1,279
7 Jarales	30	—	—	—	—	1,059							1,089
8 US Hwy 60 Bernardo	8	1	1	—	35	390							435
9 South of Bernardo	5	2	1	—	—	207							215
10 North of San Acacia	1	—	—	—	—	2							3
Isleta Reach Total	48	18	7	1	43	3,724							3,841
SAN ACACIA REACH													
10 San Acacia Dam	3	—	16	2	—	304							325
11 S of San Acacia	13	15	14	1	—	73							116
12 Socorro	3	—	1	—	—	544							548
13 North of US Hwy 380	—	6	—	—	—	—							6
14 US Hwy 380	1	—	—	—	—	129							130
15 Bosque del Apache	2	—	—	—	2	54							58
16 San Marcial	—	—	1	—	177	104							282
17 South of San Marcial	—	—	—	—	1	10							11
18 South of San Marcial	—	3	6	—	—	57							66
San Acacia Reach Total	22	24	38	3	180	1,275							1,542
MONTHLY TOTALS	248	330	133	46	234	6,603							7,594
	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

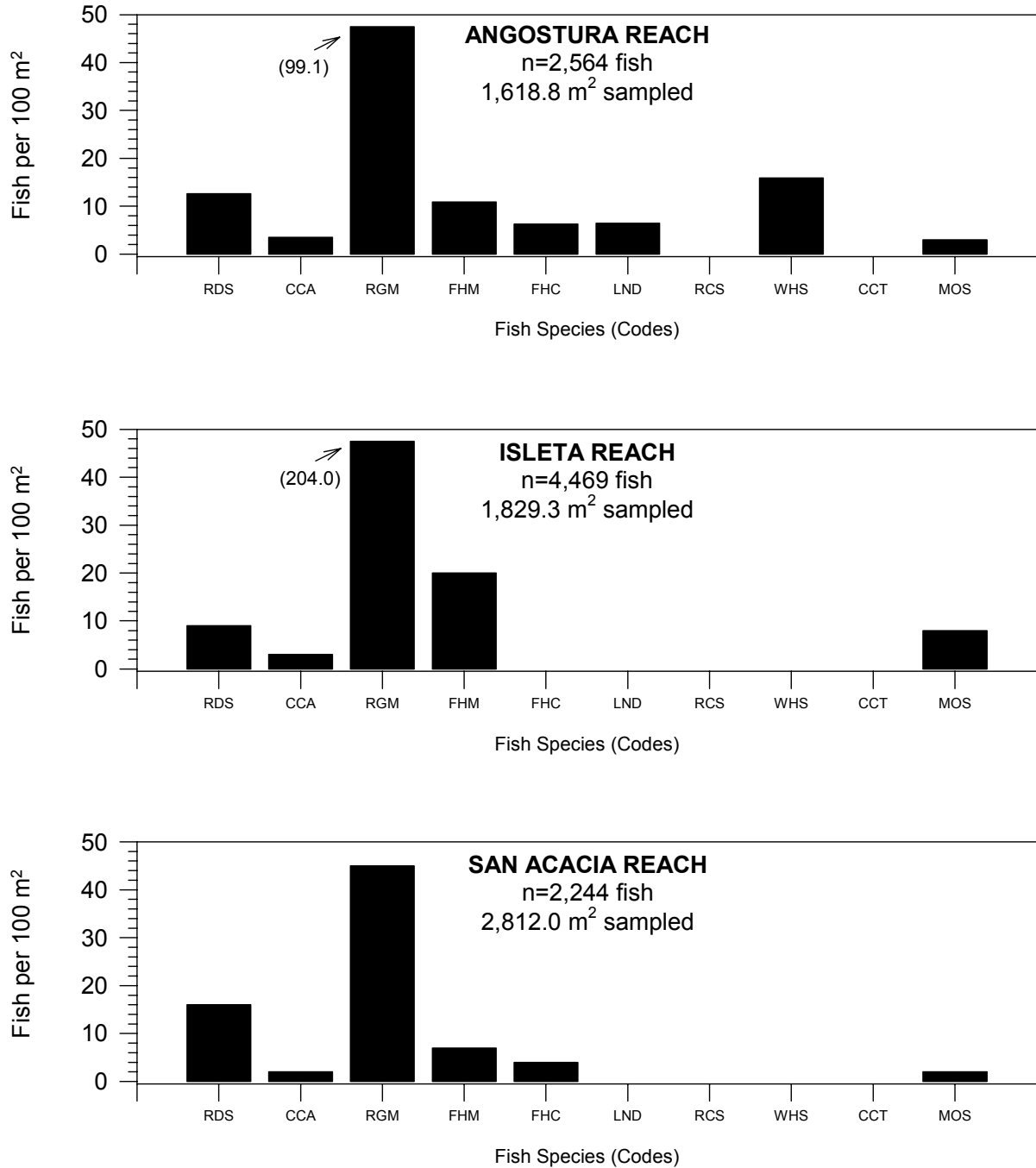


Figure 3. Catch rates, for the 10 focal species, by river reach during June 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes). An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

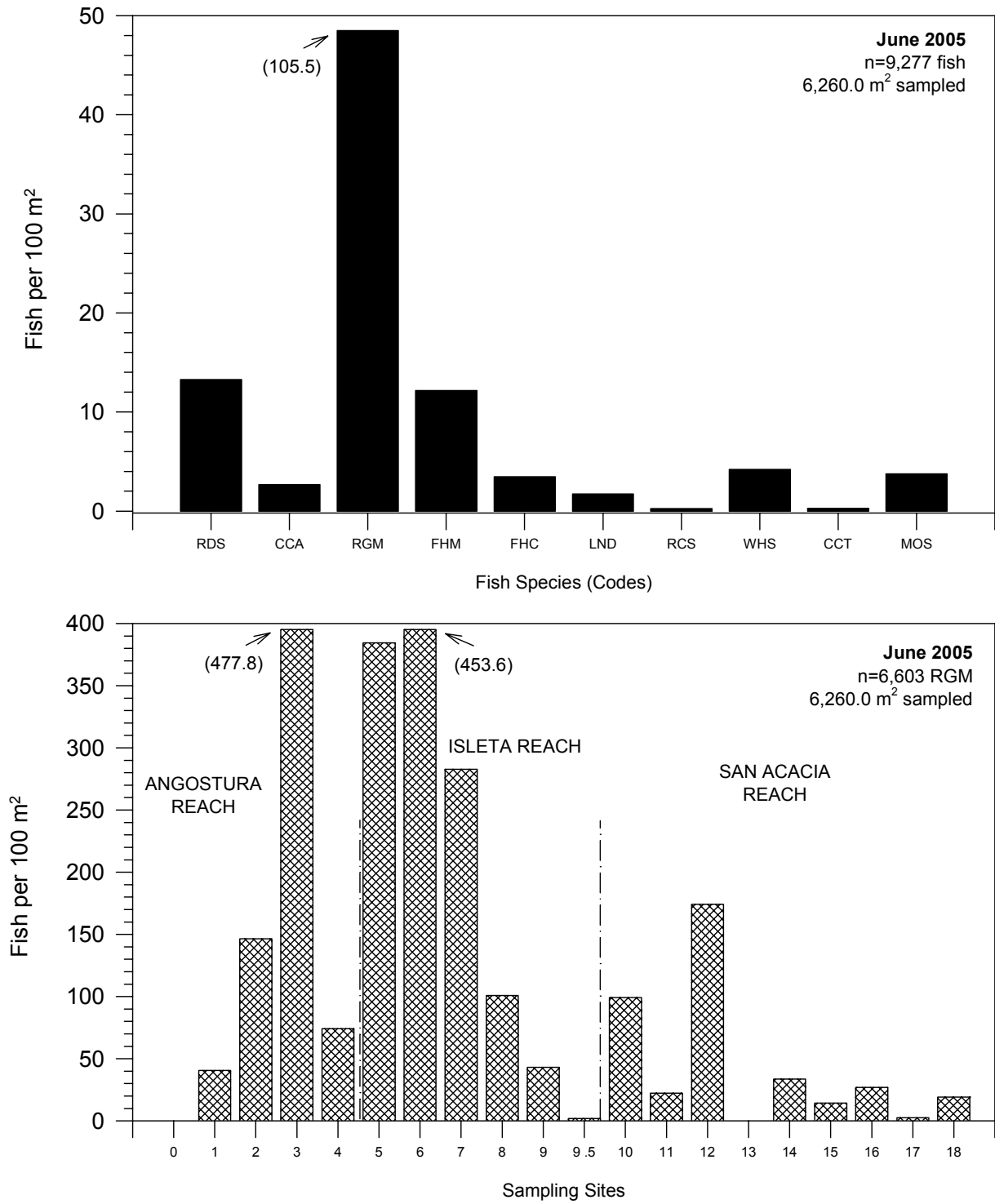


Figure 4. Catch rates for ten focal species (upper graph*), including Rio Grande silvery minnow, (RGM; lower graph*) during June 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes). *Note the difference in scales.

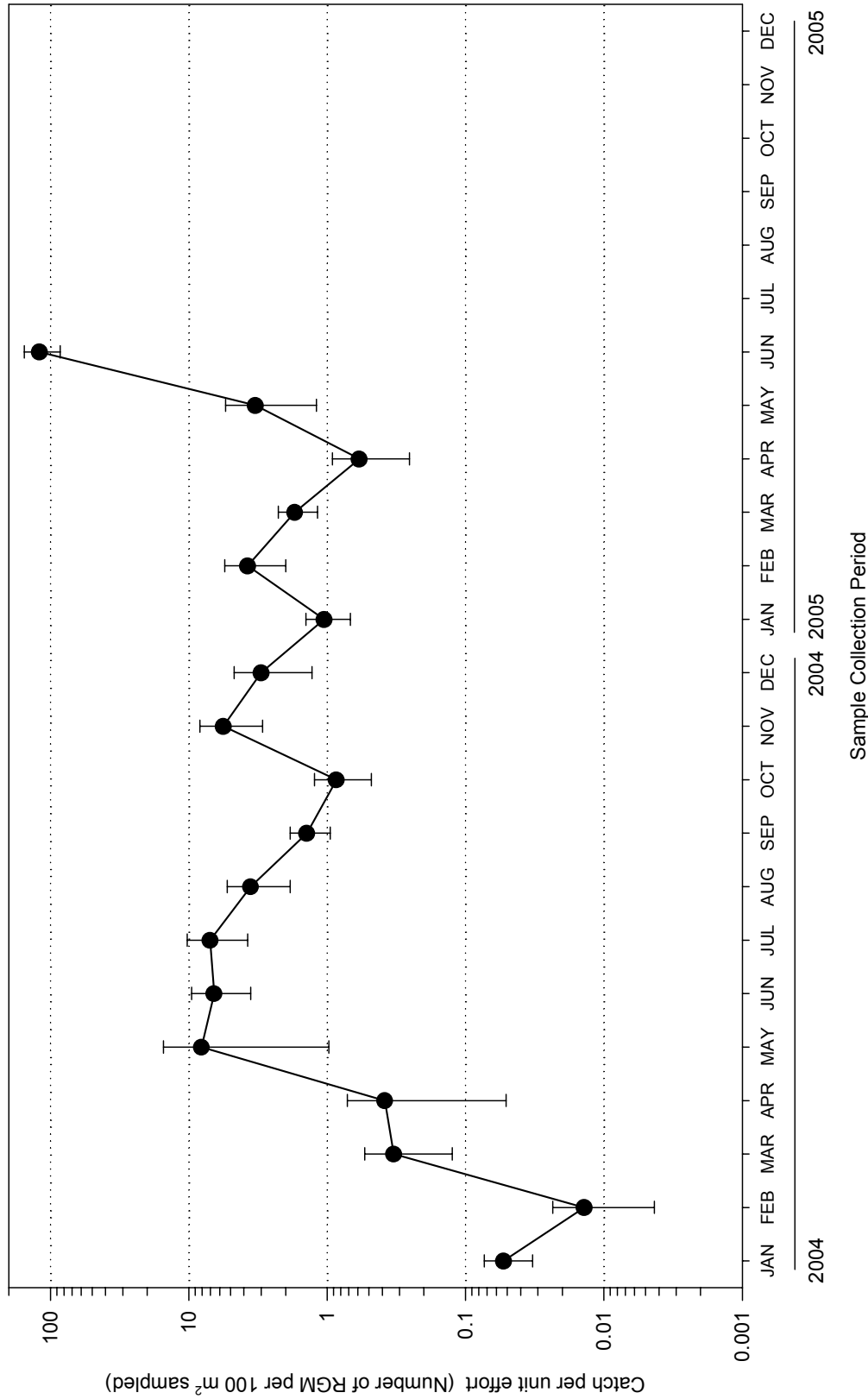


Figure 5. Month catch rates of Rio Grande silvery minnow during 2004 (January-December) and through June 2005 at Rio Grande silvery minnow population monitoring program collection sites. Solid circles indicate monthly means (n=20 site per month) and capped-bars represent the standard error of the mean.

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 June 2005
Rio Grande silvery minnow population monitoring efforts

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

New Mexico: Sandoval Co., Rio Grande Drainage

Rio Grande, directly below Angostura Diversion Dam, Algodones.

Site Number: 0

28 June 2005

RKD05-124

River Mile: 209.7

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

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

Effort: 309.5 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	74
76	<i>Hybognathus amarus*</i>	1
76	<i>Pimephales promelas</i>	7
76	<i>Rhinichthys cataractae</i>	44
81	<i>Catostomus commersoni</i>	114
212	<i>Gambusia affinis</i>	3

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

age-1: 1

New Mexico: Sandoval Co., Rio Grande Drainage

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

Site Number: 1

28 June 2005

RKD05-125

River Mile: 203.8

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

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

Effort: 360.6 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	20
76	<i>Cyprinus carpio</i>	2
76	<i>Hybognathus amarus*</i>	146
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	10
76	<i>Rhinichthys cataractae</i>	34
81	<i>Catostomus commersoni</i>	42
212	<i>Gambusia affinis</i>	10
294	<i>Micropterus salmoides</i>	1

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

age-0: 137

age-1: 9

**Rio Grande silvery minnow Population Monitoring
June 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

28 June 2005

RKD05-126

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

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

Effort: 394.9 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	80
76	<i>Cyprinus carpio</i>	29
76	<i>Hybognathus amarus*</i>	578
76	<i>Pimephales promelas</i>	13
76	<i>Platygobio gracilis</i>	84
76	<i>Rhinichthys cataractae</i>	27
81	<i>Catostomus commersoni</i>	62
212	<i>Gambusia affinis</i>	20

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

age-0: 576

age-1: 2

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

New Mexico: Bernalillo Co., Rio Grande Drainage

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

Site Number: 3

27 June 2005

RKD05-122

River Mile: 183.4

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

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

Effort: 116.0 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	13
76	<i>Cyprinus carpio</i>	10
76	<i>Hybognathus amarus*</i>	554
76	<i>Pimephales promelas</i>	77
76	<i>Platygobio gracilis</i>	8
81	<i>Catostomus commersoni</i>	17
212	<i>Gambusia affinis</i>	7
294	<i>Pomoxis annularis</i>	1
295	<i>Perca flavescens</i>	3

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

age-0: 553

age-1: 1

**Rio Grande silvery minnow Population Monitoring
June 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

27 June 2005

RKD05-121

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

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

Effort: 437.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	17
76	<i>Cyprinus carpio</i>	16
76	<i>Hybognathus amarus*</i>	325
76	<i>Pimephales promelas</i>	79
81	<i>Catostomus commersoni</i>	22
93	<i>Ictalurus punctatus</i>	7
212	<i>Gambusia affinis</i>	6

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

age-0: 324

age-1: 1

New Mexico: Valencia Co., Rio Grande Drainage

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

Site Number: 5

River Mile: 161.4

27 June 2005

RKD05-120

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

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

Effort: 207.6 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	12
76	<i>Cyprinus carpio</i>	21
76	<i>Hybognathus amarus*</i>	798
76	<i>Pimephales promelas</i>	210
81	<i>Catostomus commersoni</i>	1
212	<i>Gambusia affinis</i>	83
294	<i>Micropterus salmoides</i>	1

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

age-0: 798

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

New Mexico: Valencia Co., Rio Grande Drainage

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

RKD05-119

Site Number: 6

River Mile: 151.5

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

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

Effort: 279.5 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	39
76	<i>Cyprinus carpio</i>	12
76	<i>Hybognathus amarus*</i>	1268
76	<i>Pimephales promelas</i>	45
76	<i>Platygobio gracilis</i>	2
81	<i>Carpiodes carpio</i>	4
212	<i>Gambusia affinis</i>	20

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

age-0: 1268

New Mexico: Valencia Co., Rio Grande Drainage

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

RKD05-118

Site Number: 7

River Mile: 143.2

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

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

Effort: 374.6 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	57
76	<i>Cyprinus carpio</i>	6
76	<i>Hybognathus amarus*</i>	1059
76	<i>Pimephales promelas</i>	83
212	<i>Gambusia affinis</i>	3

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

age-0: 1059

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

New Mexico: Socorro Co., Rio Grande Drainage

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

Site Number: 8

24 June 2005

RKD05-117

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: 386.7 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	32
76	<i>Cyprinus carpio</i>	5
76	<i>Hybognathus amarus*</i>	390
76	<i>Pimephales promelas</i>	12
212	<i>Gambusia affinis</i>	9

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

age-0: 390

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

24 June 2005

RKD05-116

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: 479.4 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	26
76	<i>Cyprinus carpio</i>	3
76	<i>Hybognathus amarus*</i>	207
76	<i>Pimephales promelas</i>	20
76	<i>Platygobio gracilis</i>	2
212	<i>Gambusia affinis</i>	29

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

age-0: 207

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

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia
24 June 2005 **RKD05-115**

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: 101.6 m²

FAMILY		N
76	<i>Hybognathus amarus*</i>	2
76	<i>Pimephales promelas</i>	5
76	<i>Platygobio gracilis</i>	1
212	<i>Gambusia affinis</i>	2

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

age-0: 2

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, directly below San Acacia Diversion Dam, San Acacia.
24 June 2005 **RKD05-114**

Site Number: 10

River Mile: 116.2

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

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

Effort: 306.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	158
76	<i>Cyprinus carpio</i>	5
76	<i>Hybognathus amarus*</i>	304
76	<i>Pimephales promelas</i>	5
76	<i>Platygobio gracilis</i>	11
81	<i>Carpoides carpio</i>	1
81	<i>Catostomus commersoni</i>	1
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	14

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

age-0: 302

age-1: 2

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

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia.
23 June 2005

RKD05-113

Site Number: 11
River Mile: 114.6

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

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

Effort: 327.6 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	34
76	<i>Hybognathus amarus*</i>	73
76	<i>Pimephales promelas</i>	5
76	<i>Platygobio gracilis</i>	70
76	<i>Rhinichthys cataractae</i>	1
93	<i>Ictalurus punctatus</i>	2

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

age-0: 72

age-1: 1

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,
23 June 2005

RKD05-112

Site Number: 12
River Mile: 99.5

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

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

Effort: 312.4 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	27
76	<i>Cyprinus carpio</i>	5
76	<i>Hybognathus amarus*</i>	544
76	<i>Pimephales promelas</i>	4
76	<i>Platygobio gracilis</i>	2
76	<i>Rhinichthys cataractae</i>	1
212	<i>Gambusia affinis</i>	10

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

age-0: 543

age-1: 1

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

New Mexico: Socorro Co., Rio Grande Drainage

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

23 June 2005

RKD05-111

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

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

Site Number: 13

River Mile: 91.7

Effort: 0.4 m²

FAMILY		N
76	<i>Pimephales promelas</i>	3

New Mexico: Socorro Co., Rio Grande Drainage

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

23 June 2005

RKD05-110

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

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

Site Number: 14

River Mile: 87.1

Effort: 385.2 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	7
76	<i>Cyprinus carpio</i>	15
76	<i>Hybognathus amarus*</i>	129
76	<i>Pimephales promelas</i>	26
76	<i>Platygobio gracilis</i>	5
81	<i>Ictiobus bubalus</i>	1
212	<i>Gambusia affinis</i>	2

* *Hybognathus amarus* by age class:

age-0: 129

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

New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Headquarters. Site Number: 15
22 June 2005 **RKD05-109** River Mile: 79.1

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

R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 378.5 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	5
76	<i>Cyprinus carpio</i>	26
76	<i>Hybognathus amarus*</i>	54
76	<i>Pimephales promelas</i>	103
76	<i>Platygobio gracilis</i>	6
81	<i>Carpoides carpio</i>	4
81	<i>Catostomus commersoni</i>	2
81	<i>Ictiobus bubalus</i>	30
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	13

* *Hybognathus amarus* by age class:

age-0: 54

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

New Mexico: Socorro Co., Rio Grande Drainage

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

22 June 2005

RKD05-108

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

R.K. Dudley, W.H. Brandenburg, and M.A. Farrington

Site Number: 16

River Mile: 68.6

Effort: 388.0 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	2
76	<i>Cyprinella lutrensis</i>	24
76	<i>Cyprinus carpio</i>	10
76	<i>Hybognathus amarus*</i>	104
76	<i>Pimephales promelas</i>	59
81	<i>Carpoides carpio</i>	6
81	<i>Catostomus commersoni</i>	1
81	<i>Ictiobus bubalus</i>	13
212	<i>Gambusia affinis</i>	1

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

age-0: 104

**Rio Grande silvery minnow Population Monitoring
June 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.

22 June 2005

RKD05-107

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

R.K. Dudley, W.H. Brandenburg, and M.A. Farrington

Effort: 414.8 m²

FAMILY		N
76	<i>Cyprinella lutrensis</i>	138
76	<i>Cyprinus carpio</i>	2
76	<i>Hybognathus amarus*</i>	10
76	<i>Platygobio gracilis</i>	4
81	<i>Ictiobus bubalus</i>	1
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	3

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

age-0: 10

**Rio Grande silvery minnow Population Monitoring
June 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

22 June 2005

RKD05-106

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

R.K. Dudley, W.H. Brandenburg, and M.A. Farrington

Effort: 298.3 m²

FAMILY		N
69	<i>Dorosoma cepedianum</i>	1
76	<i>Cyprinella lutrensis</i>	67
76	<i>Hybognathus amarus*</i>	57
76	<i>Pimephales promelas</i>	5
76	<i>Platygobio gracilis</i>	12
81	<i>Ictiobus bubalus</i>	6
93	<i>Ictalurus punctatus</i>	2
294	<i>Pomoxis annularis</i>	3

* *Hybognathus amarus* by age class:

age-0: 57