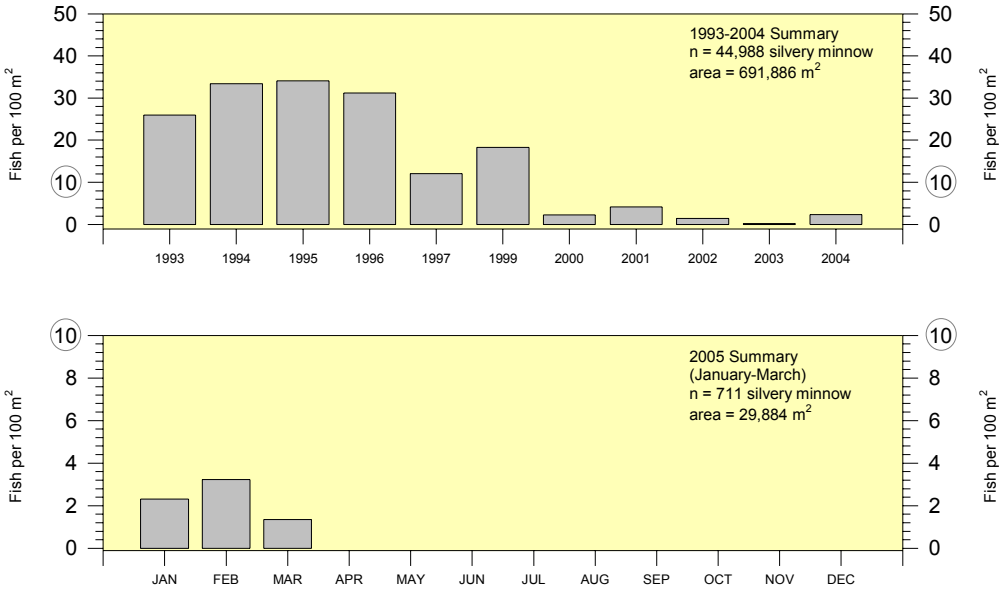
Summary of the Rio Grande silvery minnow Population Monitoring Program Results from March 2005

(14-18 March 2005)

A Middle Rio Grande Endangered Species Act Collaborative Program Funded Research Project



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18 April 2005

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Summary of Overall March 2005 Population Monitoring Efforts

The third sampling effort of the 2005 Rio Grande silvery minnow population monitoring program was conducted between 14-18 March 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 m^2 sampled) were prepared for the ten focal species, including Rio Grande silvery minnow, for the purpose of comparisons between reaches.

During March 2005, a total of 2,935 fish were taken in the 9,706 m^2 (surface area) of water sampled. Red shiner was the most abundant taxon (N=2,243) and comprised about 76% of the total catch. Rio Grande silvery minnow (N=133) was present in 41 of 202 seine hauls with fish (ca. 20%) and was abundant in specific mesohabitats such as backwaters and pools. Sampling at Sites #1 and #2 produced slightly less than half (N=137) of all Rio Grande silvery minnow collected during March. Cumulative fish catch rate was 29.7 individuals per 100 m^2 sampled; nearly double of what it was in February (19.5 individuals per 100 m^2 sampled). The overall abundance of fish (N=2,935) was comprised mostly of fish from the San Acacia Reach (N=1,558).

Summary of March 2005 Population Monitoring Effort by River Reach

Angostura Reach

Angostura Reach ichthyofaunal sampling took place between 24-25 March 2005. Discharge in the Rio Grande had increased slightly throughout the Angostura Reach during March 2005 compared to January 2005. Water levels were unstable and there were several flow pulses caused by localized precipitation events during March 2005. Discharge throughout the Angostura Reach ranged from about 500-1,500 cfs for most of month. The Angostura Diversion Dam sampling site (Site #0) and the Rio Rancho site (Site #2) produced the fewest numbers of fish of any of the Angostura Reach sites. The increased precipitation resulted in increased sediment supply to the river; water clarity was highest in the uppermost portion of the Angostura Reach (Secchi depth ca. 61 cm at Site #0) but the river quickly became turbid downstream of the confluence with the Jemez River (Secchi depth ca. 10 cm at Site #1). Water temperatures recorded at the different sampling sites ranged from 7.2°C to 11.6°C and were only a few degrees warmer than they were in February. 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. 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 March 2005 was red shiner (N=265). Rio Grande silvery minnow (N=88) was the second-most abundant taxon and was present in 18 seine hauls. The difference in the abundance of Rio Grande silvery minnow between February (N=288) and March (N=88) was largely caused by a large collection of individuals from Site #2 (N=137) in February. Several of the Rio Grande silvery minnow collected in March were marked (N=9), 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 March 2005 was less than the amount collected during January 2005 (N=178). Fish were likely more concentrated into small mesohabitats (making their capture easier) in January because of reduced water levels and water temperatures. Other frequently collected taxa included flathead chub (n=87) and white sucker (N=43). White sucker are likely preparing to spawn within the next month and the vast majority of the young are expected to be produced in the Angostura Reach.

Isleta Reach

Discharge in the Rio Grande was quite variable during March 2005. Several precipitation events early in the month resulted in high flows. Elevated discharge resulted in the persistence of many small side channels and some areas of inundation on islands and along the shoreline. Some islands were completely inundated while backwaters formed in other areas. Higher 2004/2005 winter flows resulted in a much higher area of the river channel with flowing water compared to summer of 2004. However, there were few areas where the river wetted the entire channel bank to bank. Water temperatures in the Isleta Reach generally ranged from 6.8-10.1°C from morning (0900 h) to afternoon (1300 h); this was about a 2°C decrease compared with February 2005. Water clarity was low (Secchi depth<15 cm) at most sampling sites because of increased discharge and minor input from sediment rich tributaries (e.g., Rios Salado and Puerco). The Isleta Reach had the second lowest catch rate (26.5 fish/100 m^2) of any of the sampling reaches in the Middle Rio Grande and was much lower than what was recorded during January 2005 (70.8 fish/100 m^2). Overall ichthyofaunal catch rates in the Angostura Reach (21.6 fish/100 m^2) were slightly lower compared to the Isleta Reach and had changed little since November 2004 (26.6 fish/100 m^2). The most commonly collected taxa in the Isleta Reach were red shiner (N=606), fathead minnow (N=68), western mosquitofish (N=54), and flathead chub (N=50); only seven Rio Grande silvery minnow were collected. Most of the Rio Grande silvery minnow utilized backwater or shoreline pool mesohabitats.

San Acacia Reach

Population monitoring was conducted in the San Acacia Reach (9 sites) of the Middle Rio Grande on 14-16 March 2005. Water levels had increased several times during the month but were approximately equal to flows observed during February monitoring. The elevated flow combined with low ambient temperatures resulted in relatively low water temperatures in the San Acacia Reach (range=5.9-9.9°C) during the second day of sampling (15 March). This was in contrast to the first day of sampling when water temperatures were notably higher (range=13.3-14.6°C) because of warmer ambient conditions. Despite elevated and fluctuating water levels, the turbidity levels in the San Acacia Reach were lower and instream visibility values were higher in March compared to February. The most commonly collected taxon during March 2005 in the San Acacia Reach was red shiner (N=1,372; 88.1% of total). Rio Grande silvery minnow individuals (N=38) were present in low velocity habitats and were most common (N=15) at Sites #10 and #11 in the San Acacia Reach (N=16 and 14, respectively). The San Acacia Reach catch rate (37.2 fish/100 m^2) 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. One collection produced several *Pimephales vigilax*, a taxon previously not collected in the Middle Rio Grande until recently.

Conclusion

Red shiner continued to be the most numerically dominant taxon collected in the Rio Grande (N=2,243); other common taxa included flathead chub (N=181), fathead minnow (N=171), Rio Grande silvery minnow (N=133), and western mosquitofish (N=60). These five taxa collectively comprised 95% 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 March, 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 spawning is not expected to occur until late April / early May. The abundance of Rio Grande silvery minnow was highest in the Angostura Reach, but about 1/3 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 is expected for 2005 so this may ameliorate potential low spawning output by increasing the likelihood of recruitment success by creating more favorable nursery habitats.

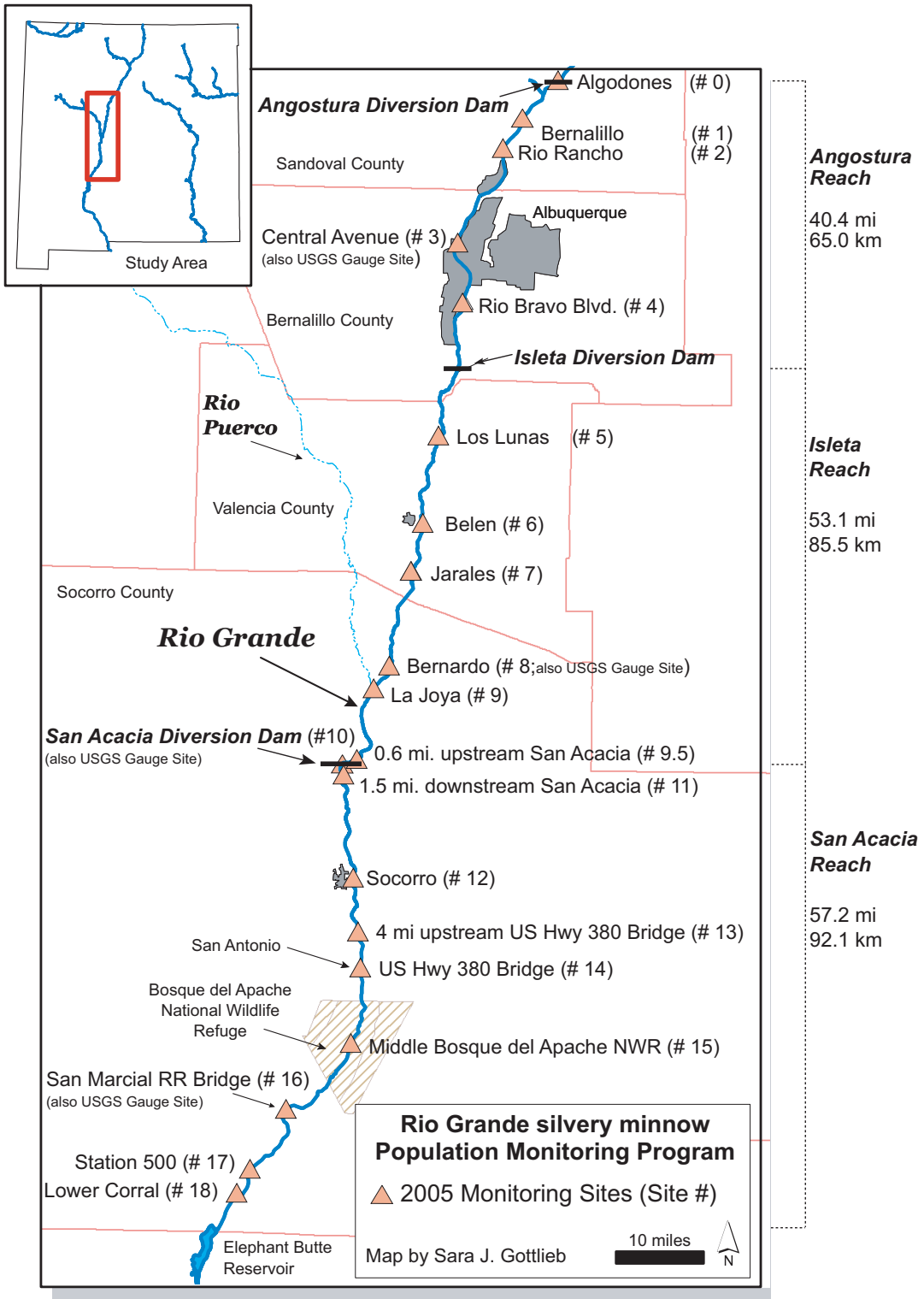

Figure 1. Map of the study area and sampling localities (numbered) for the 2005 Rio Grande silvery minnow population monitoring program. Sampling locality information that correspond with the numbered localities are provided in Appendix A (Table A-1).

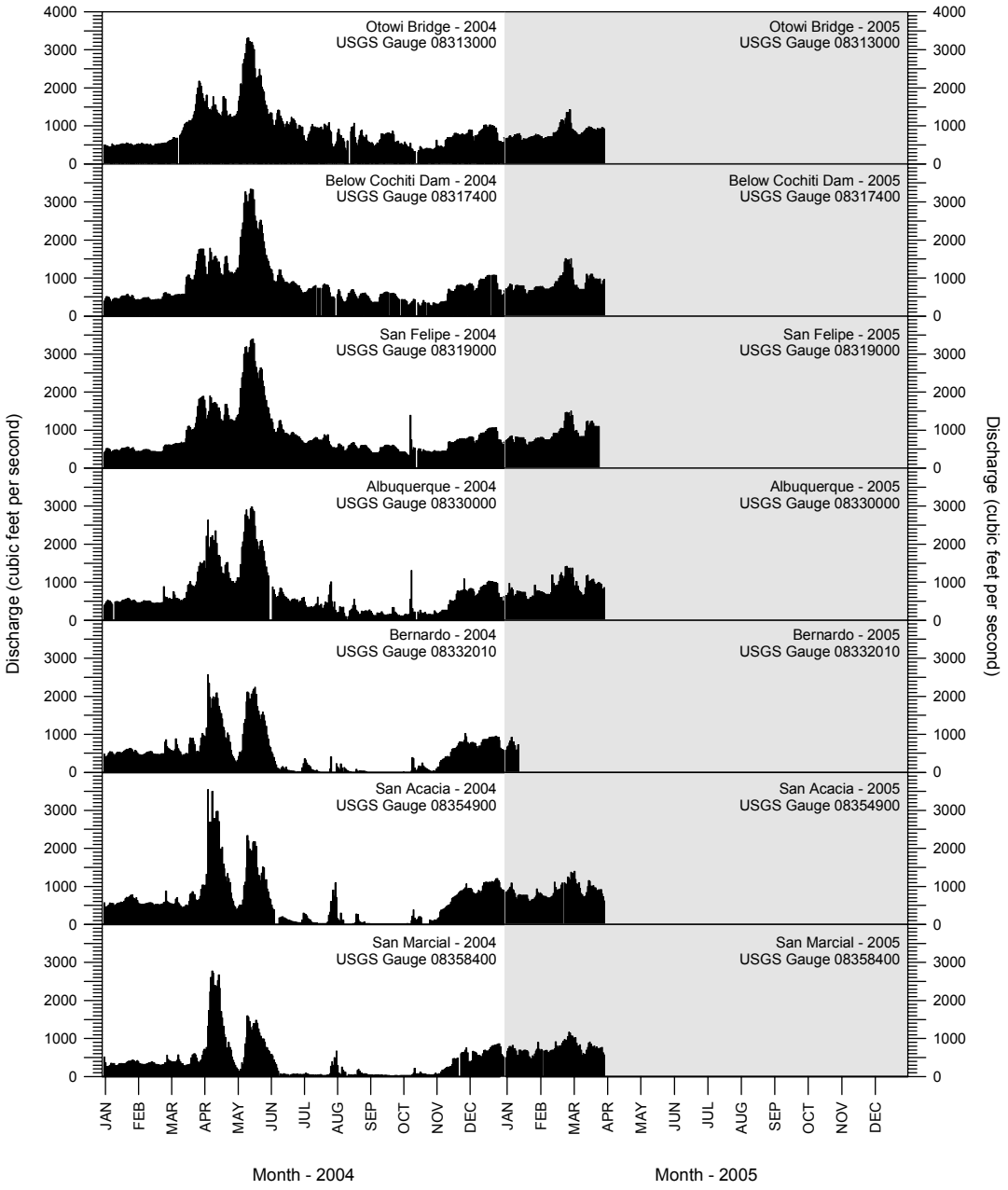

Figure 2. Discharge in the Rio Grande from January 2004 through March 2005 as recorded at seven U. S. Geological Survey (USGS) gauge stations. The Otowi Bridge gauge site is outside of the study area (ca. 25.5 river miles upstream of Cochiti Dam) and provided for reference. Discharge data are provisional 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	
Dorosoma cepedianum	gizzard shad	(GZS)
Order Cypriniformes		
Family Cyprinidae	carps and minnows	
Cyprinella lutrensis	red shiner [1]	(RDS)
Cyprinus carpio	common carp [1]	(CCA)
Gila pandora	Rio Grande chub	(RGC)
Hybognathus amarus	Rio Grande silvery minnow [1]	(RGM)
Pimephales promelas	fathead minnow [1]	(FHM)
Pimephales vigilax	bullhead minnow	(BHM)
Platygobio gracilis	flathead chub [1]	(FHC)
Rhinichthys cataractae	longnose dace [1]	(LND)
Family Catostomidae	suckers	
Carpiodes carpio	river carpsucker [1]	(RCS)
Catostomus commersonii	white sucker [1]	(WHS)
Ictiobus bubalus	smallmouth buffalo	(SMB)
Order Siluriformes		
Family Ictaluridae	North American catfishes	
Ameiurus melas	black bullhead	(BBH)
Ameiurus natalis	yellow bullhead	(YBH)
Ictalurus punctatus	channel catfish [1]	(CCT)
Pylodictis olivaris	flathead catfish	(FCT)
Order Salmoniformes		
Family Salmonidae	trouts and salmons	
Salmo trutta	brown trout	(BNT)
Order Cyprinodontiformes		
Family Poeciliidae	livebearers	
Gambusia affinis	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	
Morone chrysops	white bass	(WHB)
Order Perciformes		
Family Centrarchidae	sunfishes	
Lepomis cyanellus	green sunfish	(GNS)
Lepomis macrochirus	bluegill	(BGL)
Micropterus salmoides	largemouth bass	(LMB)
Pomoxis annularis	white crappie	(WCR)
Pomoxis nigromaculatus	black crappie	(BCR)
Family Percidae	perches	
Perca flavescens	yellow perch	(YWP)
Sander vitreus	walleye	(WLE)

Table 2. Summary of the March 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 OCCURRENCE[2]
HERRINGS					
gizzard shad	I	—	—	—	—
CARPS AND MINNOWS					
red shiner	N	2,243	76.42	20	100
common carp	I	3		1	5
Rio Grande chub	N	—	—	—	—
Rio Grande silvery minnow	N	133	4.53	13	65
fathead minnow	N	171	5.83	13	65
bullhead minnow	I	4	0.14	1	5
flathead chub	N	181	6.17	9	45
longnose dace	N	20	0.68	2	10
SUCKERS					
river carpsucker	N	41	1.40	12	60
white sucker	I	43	1.47	4	20
smallmouth buffalo	N	—	—	—	—
BULLHEAD CATFISHES					
black bullhead	I	—	—	—	—
yellow bullhead	I	—	—	—	—
channel catfish	I	35	1.19	10	50
flathead catfish	I	—	—	—	—
TROUTS					
brown trout	I	—	—	—	—
LIVEBEARERS					
western mosquitofish	I	60	2.04	10	50
TEMPERATE BASSES					
white bass	I	—	—	—	—
SUNFISHES					
green sunfish	I	—	—	—	—
bluegill	N	—	—	—	—
largemouth bass	I	1		1	5
white crappie	I	—	—	—	—
black crappie	I	—	—	—	—
PERCHES					
yellow perch	I	—	—	—	—
walleye	I	—	—	—	—
TOTAL		2,935			

[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	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
HERRINGS													
gizzard shad	—	—	—										—
CARPS AND MINNOWS													
red shiner	2,760	935	2,243										5,938
common carp	3	3	3										9
Rio Grande chub	—	—	—										—
Rio Grande silvery minnow	248	330	133										711
fathead minnow	356	144	171										671
bullhead minnow	—	1	4										5
flathead chub	112	187	181										480
longnose dace	1	14	20										35
SUCKERS													
river carpsucker	19	20	41										80
white sucker	16	59	43										118
smallmouth buffalo	—	—	—										—
BULLHEAD CATFISHES													
black bullhead	—	—	—										—
yellow bullhead	—	2	—										2
channel catfish	6	49	35										90
flathead catfish	—	—	—										—
TROUTS													
brown trout	—	—	—										—
LIVEBEARERS													
western mosquitofish	64	146	60										270
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										8,412

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

REACH Site Number Site Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ANGOSTURA REACH													
0 Angostura Dam	**—**	**0**	0										**—**
1 Bernalillo	**20**	**68**	36										**124**
2 Rio Rancho	**147(4)**	**137(8)**	25										**309**
3 Central Ave (Abq)	**7**	**64(17)**	12										**83**
4 Rio Bravo (Abq)	**4(1)**	**19(7)**	15										**38**
Angostura Reach Total	***178***	***288***	***88***										***554***
ISLETA REACH													
5 Los Lunas	**3**	**11**	2										**16**
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**
Isleta Reach Total	***48***	***18***	***7***										***73***
SAN ACACIA REACH													
10 San Acacia Dam	**3**	**0**	16										**19**
11 S of San Acacia	**13**	**15**	14										**42**
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**
San Acacia Reach Total	***22***	***24***	***38***										***84***
MONTHLY TOTALS	**248**	**330**	**133**										**711**

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC TOTAL

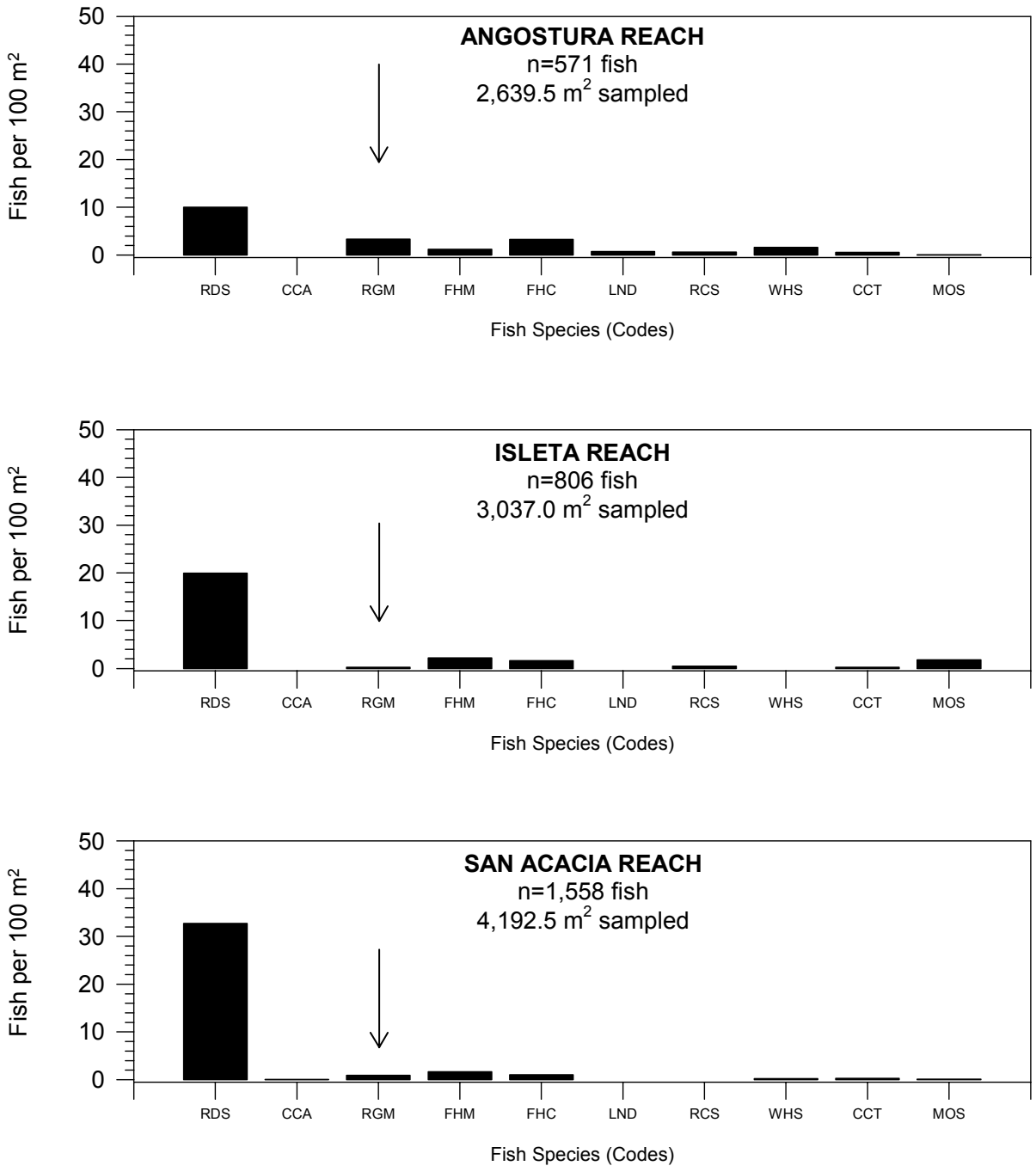

Figure 3. Catch rates, for the 10 focal species, by river reach during March 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes). An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

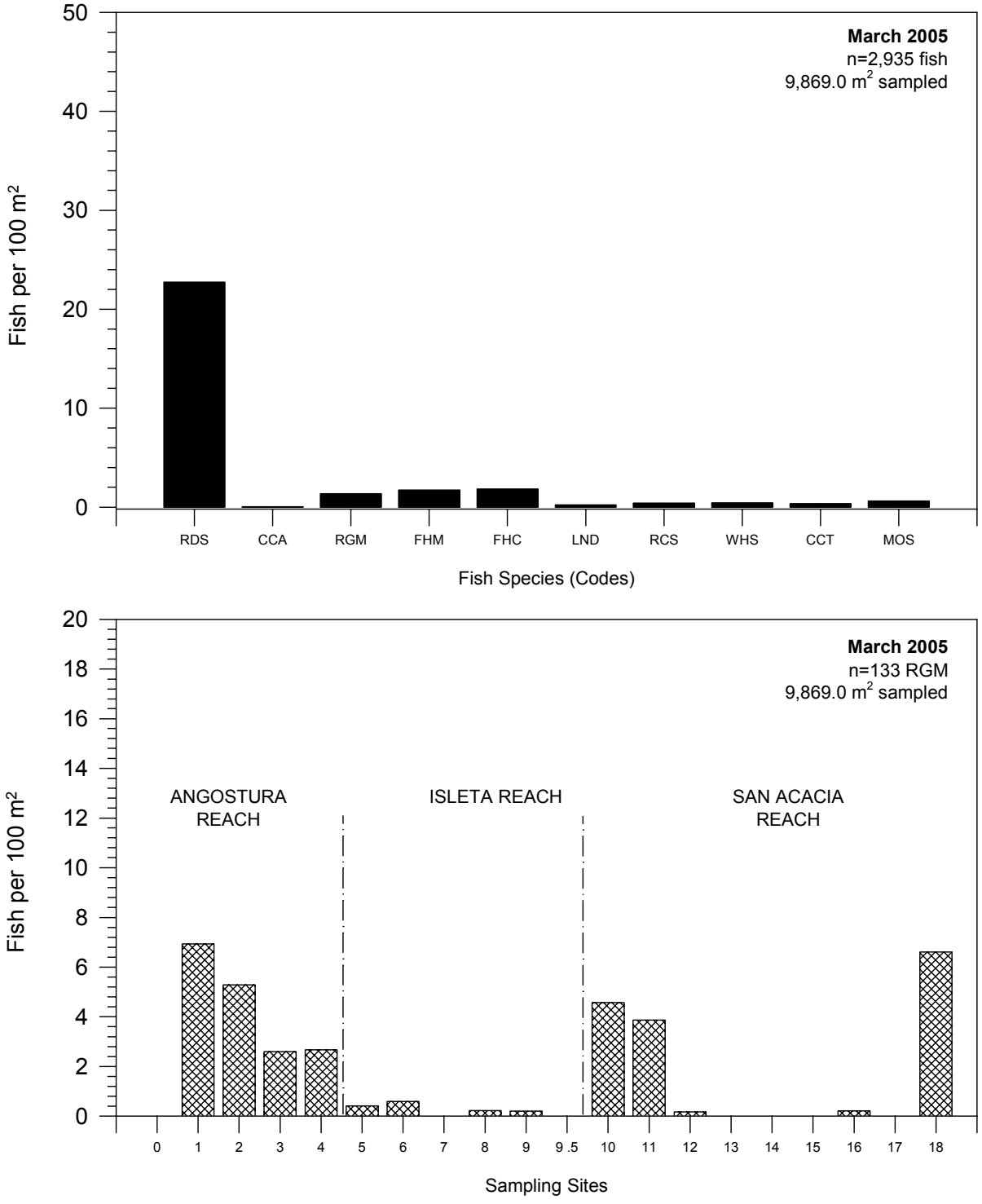

Figure 4. Catch rates for ten focal species (upper graph*), including Rio Grande silvery minnow, (RGM; lower graph*) during March 2005 at Rio Grande silvery minnow population monitoring program collection sites (see Table A-1 for fish species codes).

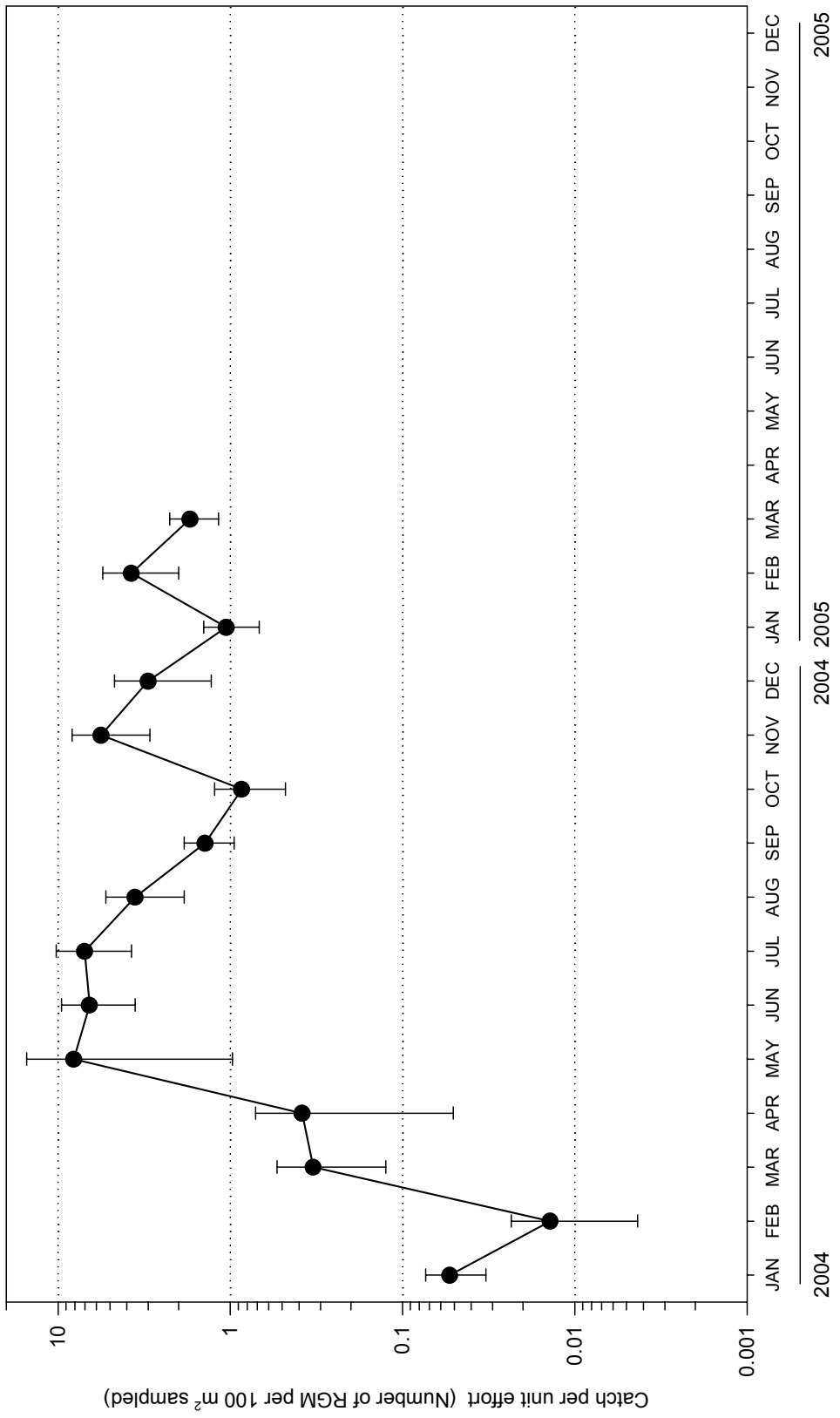

Figure 5. Month catch rates of Rio Grande silvery minnow during 2004 (January-December) and through March 2005 at Rio Grande silvery minnow population monitoring program collection sites. Solid circles indicate monthly means (n=20 site per month) and capped-bars represent the standard error of the mean.

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 March 2005
Rio Grande silvery minnow population monitoring efforts

Rio Grande silvery minnow Population Monitoring
March 2005

New Mexico: Sandoval Co., Rio Grande Drainage

Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0

18 March 2005 **RKD05-061** River Mile: 209.7

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

R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 620.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	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

18 March 2005 **RKD05-062** River Mile: 203.8

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

R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 519.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	41
76	*Hybognathus amarus**	36
76	*Pimephales promelas*	11
76	*Platygobio gracilis*	25
76	*Rhinichthys cataractae*	17
81	*Catostomus commersoni*	7

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

age-1: 36

Rio Grande silvery minnow Population Monitoring
March 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
18 March 2005 **RKD05-063**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington
Effort: 474.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	12
76	*Hybognathus amarus**	25
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	17
76	*Rhinichthys cataractae*	3
81	*Catostomus commersoni*	1
93	*Ictalurus punctatus*	1

*** *Hybognathus amarus* by age class:**
age-1: 25

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
17 March 2005 **RKD05-059**
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: 462.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	55
76	*Hybognathus amarus**	12
76	*Pimephales promelas*	12
76	*Platygobio gracilis*	36
81	*Carpiodes carpio*	4
81	*Catostomus commersoni*	29
93	*Ictalurus punctatus*	13
212	*Gambusia affinis*	1

*** *Hybognathus amarus* by age class:**
age-1: 11
age-2: 1

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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

17 March 2005 **RKD05-058**

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

R.K. Dudley, M.A. Farrington, and L.E. Renfro Effort: 563.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	156
76	*Hybognathus amarus**	15
76	*Pimephales promelas*	8
76	*Platygobio gracilis*	9
81	*Carpiodes carpio*	13
81	*Catostomus commersoni*	6
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	1
294	*Micropterus salmoides*	1

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

age-1: 15

New Mexico: Valencia Co., Rio Grande Drainage

Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5

17 March 2005 **RKD05-057** River Mile: 161.4

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

R.K. Dudley, M.A. Farrington, and L.E. Renfro Effort: 498.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	4
76	*Hybognathus amarus**	2
76	*Pimephales promelas*	5
81	*Carpiodes carpio*	2
212	*Gambusia affinis*	1

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

age-1: 2

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New Mexico: Valencia Co., Rio Grande Drainage

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

17 March 2005 **RKD05-056** 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: 512.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	167
76	*Hybognathus amarus**	3
76	*Pimephales promelas*	26
81	*Carpiodes carpio*	6
212	*Gambusia affinis*	18

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

age-1: 3

New Mexico: Valencia Co., Rio Grande Drainage

Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7

17 March 2005 **RKD05-055** 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: 542.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	140
76	*Pimephales promelas*	13
81	*Carpiodes carpio*	3
212	*Gambusia affinis*	11

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New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
16 March 2005 **RKD05-054** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 465.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	21
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	5
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	23

***Hybognathus amarus* by age class:**
age-1: 1

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
16 March 2005 **RKD05-053** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 493.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	266
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	19
81	*Carpiodes carpio*	2
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	1

***Hybognathus amarus* by age class:**
age-1: 1

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New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia — Site Number: 9.5
16 March 2005 — **RKD05-052** — River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington — Effort: 525.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	8
76	*Platygobio gracilis*	50
93	*Ictalurus punctatus*	6

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. — Site Number: 10
16 March 2005 — **RKD05-051** — River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington — Effort: 350.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	381
76	*Hybognathus amarus**	16
76	*Pimephales promelas*	53
76	*Platygobio gracilis*	8
81	*Carpiodes carpio*	5
93	*Ictalurus punctatus*	2

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

age-1: 16

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New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
16 March 2005 **RKD05-050** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 362.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	202
76	*Hybognathus amarus**	14
76	*Pimephales promelas*	6
76	*Platygobio gracilis*	33
81	*Carpiodes carpio*	2
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	2

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

age-1: 14

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
15 March 2005 **RKD05-049**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, W.H. Brandenburg, and L.E. Renfro Effort: 609.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	272
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	4
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	1

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

age-1: 1

Rio Grande silvery minnow Population Monitoring
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New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
15 March 2005 **RKD05-048** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, W.H. Brandenburg, and L.E. Renfro Effort: 605.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
14 March 2005 **RKD05-046** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
M.A. Farrington, L.E. Renfro, and T.L. Max Effort: 516.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	4
81	*Carpiodes carpio*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
14 March 2005 **RKD05-045** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
M.A. Farrington, L.E. Renfro, and T.L. Max Effort: 655.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	3

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New Mexico: Socorro Co., Rio Grande Drainage

Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16

14 March 2005 **RKD05-044** River Mile: 68.6

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

M.A. Farrington, L.E. Renfro, and T.L. Max Effort: 476.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	347
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	8
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	1

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

age-1: 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. Site Number: 17 River Mile: 60.5

14 March 2005 **RKD05-043**

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

M.A. Farrington, L.E. Renfro, and T.L. Max Effort: 526.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	160
76	*Pimephales vigilax*	4
76	*Platygobio gracilis*	2
93	*Ictalurus punctatus*	6

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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

15 March 2005 **RKD05-047**

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

R.K. Dudley, W.H. Brandenburg, and L.E. Renfro — Effort: 90.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	2
76	*Cyprinus carpio*	3
76	*Hybognathus amarus**	6

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

age-1: 6