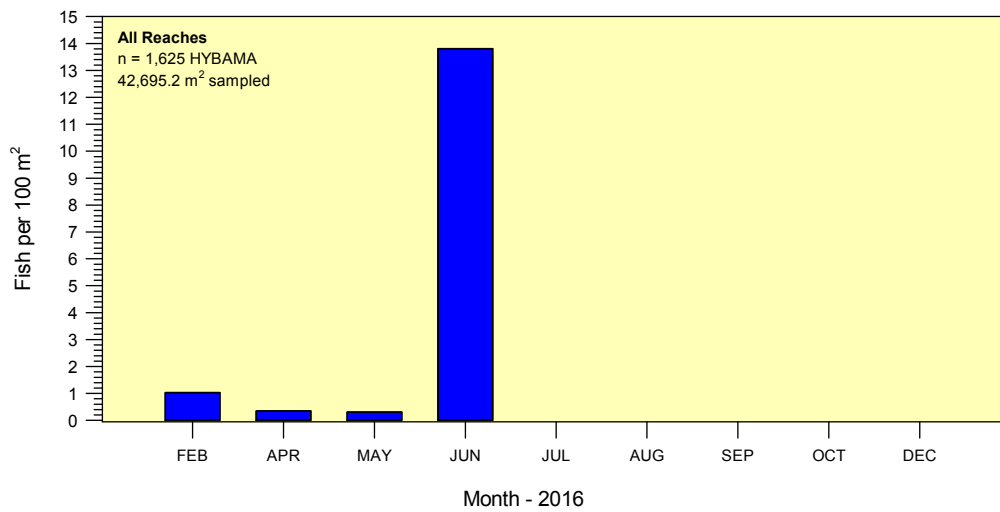
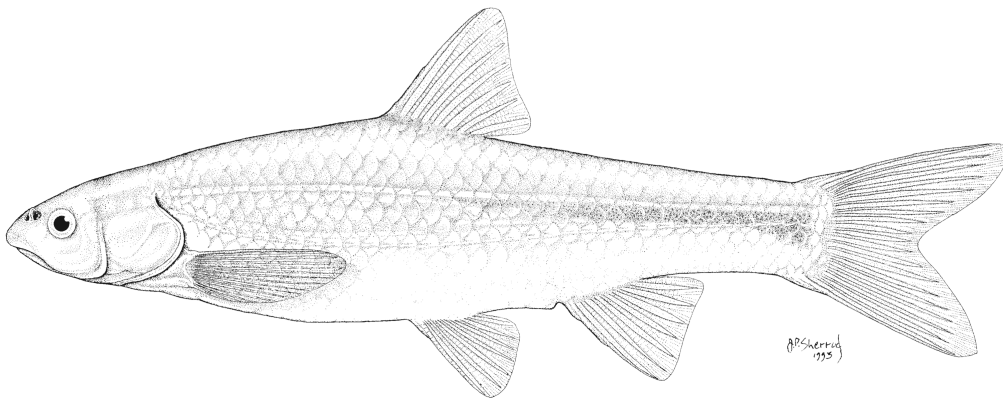


**RIO GRANDE SILVERY MINNOW POPULATION MONITORING RESULTS FROM  
JUNE 2016**

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



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15 July 2016

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***RIO GRANDE SILVERY MINNOW POPULATION MONITORING RESULTS FROM  
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prepared for:

***MIDDLE RIO GRANDE ENDANGERED SPECIES COLLABORATIVE PROGRAM***

**under Contract GS-10F-0249X:**

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## SUMMARY OF OVERALL JUNE 2016 POPULATION MONITORING EFFORTS

The June population monitoring efforts were conducted 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 (3/16<sup>th</sup> inch) seine through discrete mesohabitats. Larval fish were also collected with a 1.0 m x 1.0 m fine mesh (1/16<sup>th</sup> inch) seine in all seasons except winter. All fishes were identified to species and enumerated. We measured and aged all Rio Grande Silvery Minnow. Age-0 individuals are only present after annual spawning occurs (ca. May–June). Figures illustrating fish densities (i.e., fish per 100 m<sup>2</sup>) were prepared for the ten focal species to facilitate comparisons among reaches.

During June, sampling covered 10,405.4 m<sup>2</sup> (surface area) of water and yielded 2,723 fish. Cumulative fish density during June was 26.2 individuals/100 m<sup>2</sup> sampled. The three most common species were Rio Grande Silvery Minnow (n = 1,437), Red Shiner (n = 439), and Longnose Dace (n = 272). The 20 sampling sites yielded a total of 13 fish species. Rio Grande Silvery Minnow was present in 13 of the 198 seine hauls that yielded fish. We collected Rio Grande Silvery Minnow at 9 of the 20 sampling sites, and its overall density was 13.81 (n = 1,437) individuals/100 m<sup>2</sup> sampled. Densities of unmarked and marked individuals were 13.79 (n = 1,435) and 0.02 (n = 2) individuals/100 m<sup>2</sup> sampled, respectively. Densities of age-0, age-1, and age-2+ individuals were 13.76 (n = 1,432), 0.05 (n = 5), and 0.00 (n = 0) individuals/100 m<sup>2</sup> sampled, respectively.

Rio Grande Silvery Minnow that were stocked during autumn 2015 (ca. 200,000; Thomas P. Archdeacon, New Mexico Fish and Wildlife Conservation Office, pers. comm.) resulted in modest densities of this species during the winter of 2015/2016. However, the overwinter mortality of Rio Grande Silvery Minnow has apparently resulted in substantial losses of individuals since December 2015. Densities of age-0 Rio Grande Silvery Minnow were much higher in June 2016 than in other June collections taken during recent years. Summer flows will likely be crucial for the successful recruitment of Rio Grande Silvery Minnow during 2016.

## SUMMARY OF JUNE 2016 POPULATION MONITORING EFFORT BY RIVER REACH

### Angostura Reach

Mean daily discharge in the Angostura Reach (Rio Grande at Albuquerque, NM; USGS Gage 8330000) averaged 2,565.2 and ranged from 1,400 to 3,510 cfs from 16 May to 15 June. Water temperatures ranged from 20.5 to 22.5 °C during the Angostura Reach sampling efforts (ca. 0830–1530 h). Secchi disk measurements of water clarity ranged from 11 to 16 cm.

Sampling for fishes in the Angostura Reach during June yielded 821 individuals with a cumulative fish density of 32.8 individuals/100 m<sup>2</sup> sampled. The overall sampling effort in the Angostura Reach covered 2,504.2 m<sup>2</sup> (surface area) of water. Densities of all fish species combined ranged from 5.4 to 70.1 individuals per 100 m<sup>2</sup> at the five sampling sites. In June, there were 10 fish species collected in the Angostura Reach. Longnose Dace was the most abundant taxon (n = 272), followed by Rio Grande Silvery Minnow (n = 253), and Flathead Chub (n = 121). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 40.4 individuals per 100 m<sup>2</sup>. Rio Grande Silvery Minnow (n = 253) was present in 4 of the 60 seine hauls that yielded fish during June.

## Isleta Reach

In the Isleta Reach, mean daily discharge (Rio Grande at Isleta Lakes near Isleta, NM; USGS Gage 08354900) averaged 2,677.1 and ranged from 1,330 to 3,570 cfs from 16 May to 15 June. Water temperatures ranged from 22.0 to 29.0 °C throughout the sampling localities during the day (ca. 0930–1600 h). Secchi disk measurements ranged from 15 to 24 cm during sampling.

Isleta Reach population monitoring efforts produced 1,397 individuals in June with a cumulative fish density of 47.2 individuals/100 m<sup>2</sup> sampled. The total sampling effort in the Isleta Reach during June covered 2,962.7 m<sup>2</sup> (surface area) of water. Fish densities (all species combined) at the six sites ranged from 0.8 to 178.4 individuals per 100 m<sup>2</sup> sampled. There were 9 fish species collected in the Isleta Reach during June. Rio Grande Silvery Minnow was the most abundant taxon (n = 1,137), followed by Red Shiner (n = 93), and Common Carp (n = 44). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 166.4 individuals per 100 m<sup>2</sup>. Rio Grande Silvery Minnow (n = 1,137) was present in 3 of the 46 seine hauls that yielded fish during June.

## San Acacia Reach

Mean daily discharge at San Acacia (Rio Grande Floodway at San Acacia, NM; USGS Gage 08354900) from 16 May to 15 June was generally higher (average = 2,051.5; range = 663–2,700 cfs) as compared to San Marcial (Rio Grande Floodway at San Marcial, NM; USGS Gage 08358400) during the same period (average = 2,063.7; range = 506–2,820 cfs). Water temperatures in June for the San Acacia Reach ranged from 21.9 to 26.3 °C (ca. 0930–1600 h). Water clarity was generally lower in this reach (Secchi disk range = 6–16 cm) as compared to the two upstream reaches.

Population monitoring efforts in the San Acacia Reach during June yielded 505 individuals with a cumulative fish density of 10.2 individuals per 100 m<sup>2</sup> sampled. Sampling in the San Acacia Reach covered an area of 4,938.5 m<sup>2</sup> of water. Fish densities (all species combined) ranged from 3.2 to 26.3 individuals per 100 m<sup>2</sup> at the nine sites sampled in the San Acacia Reach. In June, there were 10 fish species collected in the San Acacia Reach. Red Shiner was the most abundant taxon (n = 278), followed by Flathead Chub (n = 86), and Channel Catfish (n = 72). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 8.8 individuals per 100 m<sup>2</sup>. Rio Grande Silvery Minnow (n = 47) was present in 6 of the 92 seine hauls that yielded fish during June.

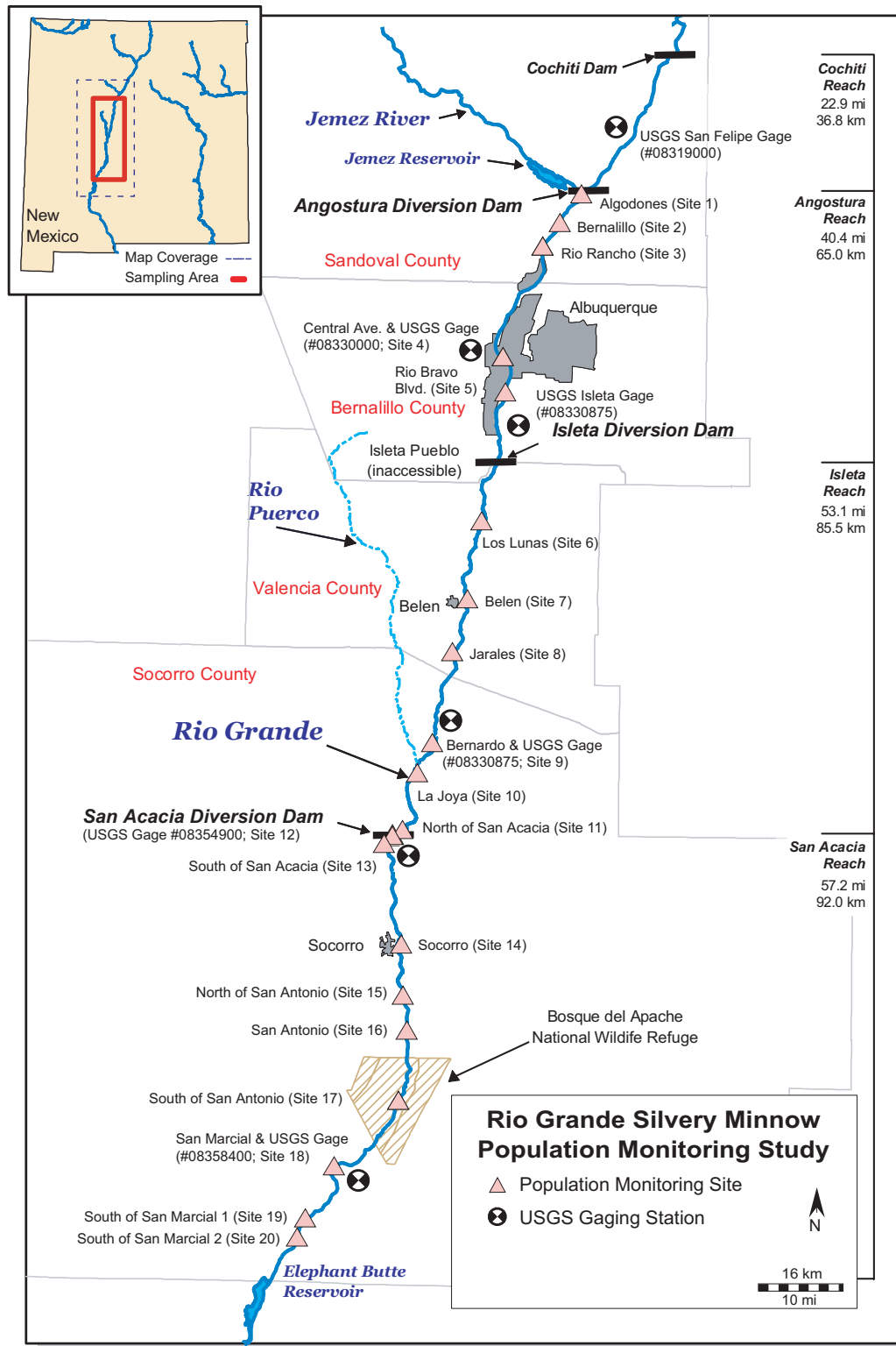


Figure 1. Map of the study area and sampling localities (numbered). Sampling locality information that corresponds with the numbered localities is provided in Appendix A (Table A-1).

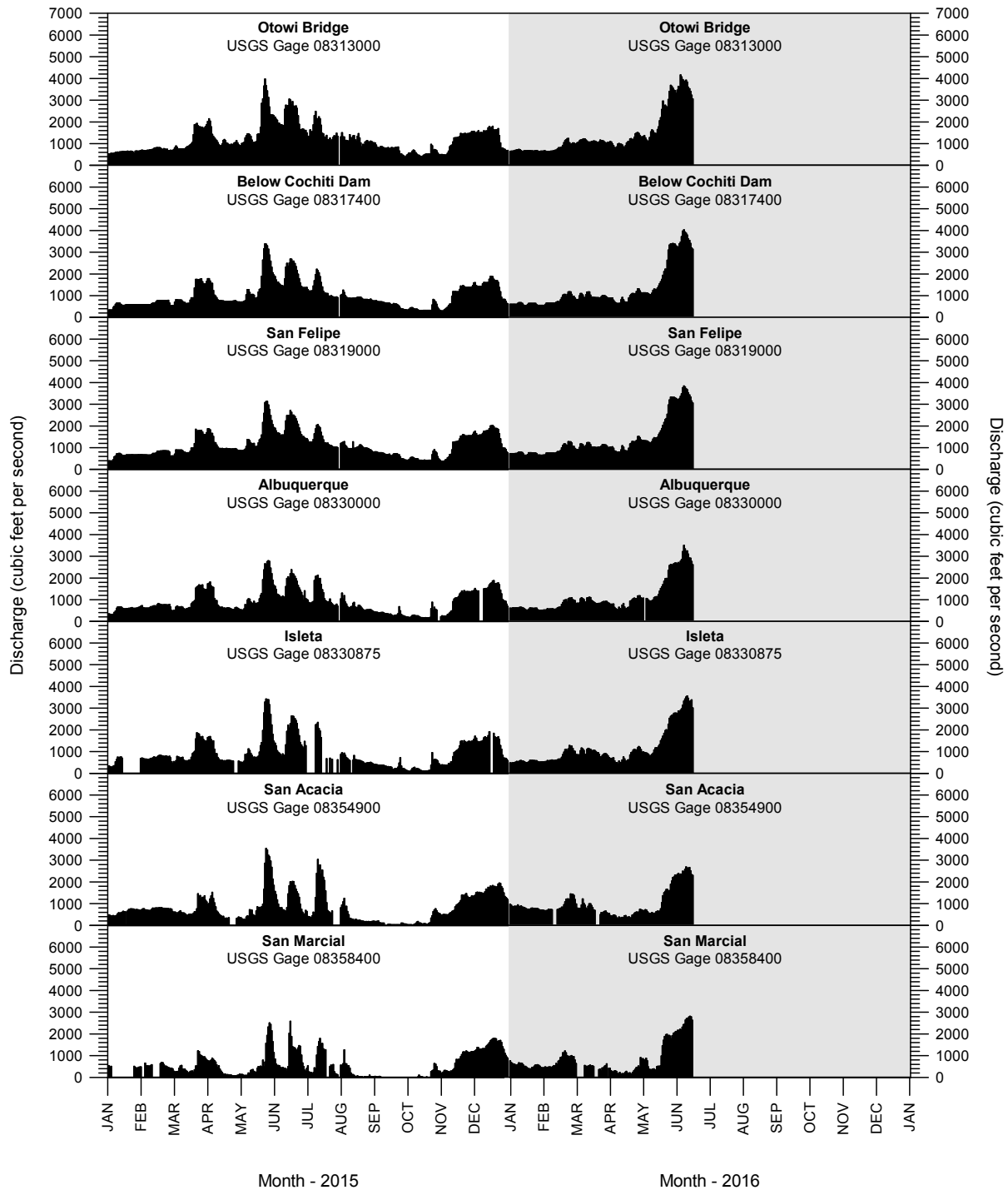


Figure 2. Discharge in the Rio Grande from 1 January 2015 through 15 June 2016 as recorded at seven U. S. Geological Survey (USGS) gage stations. The Otowi Bridge gage site is outside of the study area (ca. 25.5 river miles upstream of Cochiti Dam) and provided for reference. \*\*Discharge data are provisional and subject to change.

Table 1. Scientific and common names and species codes of fish collected in the Middle Rio Grande (since 1993).

Scientific Name	Common Name	Code
Order Clupeiformes		
Family Clupeidae	herrings	
<i>Dorosoma cepedianum</i> .....	Gizzard Shad	(DORCEP)
<i>Dorosoma petenense</i> .....	Threadfin Shad	(DORPET)
Order Cypriniformes		
Family Cyprinidae	carps and minnows	
<i>Campostoma anomalum</i> .....	Central Stoneroller	(CAMANO)
<i>Carassius auratus</i> .....	Goldfish	(CARAUR)
<i>Cyprinella lutrensis</i> .....	Red Shiner <sup>1</sup>	(CYPLUT)
<i>Cyprinus carpio</i> .....	Common Carp <sup>1</sup>	(CYPCAR)
<i>Gila pandora</i> .....	Rio Grande Chub	(GILPAN)
<i>Hybognathus amarus</i> .....	Rio Grande Silvery Minnow <sup>1</sup>	(HYBAMA)
<i>Notemigonus crysoleucas</i> .....	Golden Shiner	(NOTCRY)
<i>Pimephales promelas</i> .....	Fathead Minnow <sup>1</sup>	(PIMPRO)
<i>Pimephales vigilax</i> .....	Bullhead Minnow	(PIMVIG)
<i>Platygobio gracilis</i> .....	Flathead Chub <sup>1</sup>	(PLAGRA)
<i>Rhinichthys cataractae</i> .....	Longnose Dace <sup>1</sup>	(RHICAT)
Family Catostomidae	suckers	
<i>Carpodes carpio</i> .....	River Carpsucker <sup>1</sup>	(CARCAR)
<i>Catostomus commersonii</i> .....	White Sucker <sup>1</sup>	(CATCOM)
<i>Ictiobus bubalus</i> .....	Smallmouth Buffalo	(ICTBUB)
Order Siluriformes		
Family Ictaluridae	North American catfishes	
<i>Ameiurus melas</i> .....	Black Bullhead	(AMEMEL)
<i>Ameiurus natalis</i> .....	Yellow Bullhead	(AMENAT)
<i>Ictalurus furcatus</i> .....	Blue Catfish	(ICTFUR)
<i>Ictalurus punctatus</i> .....	Channel Catfish <sup>1</sup>	(ICTPUN)
<i>Pylodictis olivaris</i> .....	Flathead Catfish	(PYLOLI)
Order Salmoniformes		
Family Salmonidae	trouts and salmons	
<i>Oncorhynchus mykiss</i> .....	Rainbow Trout	(ONCMYK)
<i>Salmo trutta</i> .....	Brown Trout	(SALTRU)

Table 1. Scientific and common names and species codes of fish collected in the Middle Rio Grande (since 1993).

Scientific Name	Common Name	Code
Order Cyprinodontiformes		
Family Poeciliidae	livebearers	
<i>Gambusia affinis</i> .....	Western Mosquitofish <sup>1</sup>	(GAMAFF)
Order Perciformes		
Family Moronidae	temperate basses	
<i>Morone chrysops</i> .....	White Bass	(MORCHR)
<i>Morone saxatilis</i> .....	Striped Bass	(MORSAX)
Family Centrarchidae	sunfishes	
<i>Lepomis cyanellus</i> .....	Green Sunfish	(LEPCYA)
<i>Lepomis macrochirus</i> .....	Bluegill	(LEPMAC)
<i>Lepomis megalotis</i> .....	Longear Sunfish	(LEPMEG)
<i>Micropterus dolomieu</i> .....	Smallmouth Bass	(MICDOL)
<i>Micropterus salmoides</i> .....	Largemouth Bass	(MICSAL)
<i>Pomoxis annularis</i> .....	White Crappie	(POMANN)
<i>Pomoxis nigromaculatus</i> .....	Black Crappie	(POMNIG)
Family Percidae	perches	
<i>Perca flavescens</i> .....	Yellow Perch	(PERFLA)
<i>Percina macrolepida</i> .....	Bigscale Logperch	(PERMAC)
<i>Sander vitreus</i> .....	Walleye	(SANVIT)

<sup>1</sup> Focal taxa represent the most abundant species present in recent Middle Rio Grande collections; these species are illustrated in monthly plots of data.



Table 2. Summary of the June 2016 Rio Grande Silvery Minnow population monitoring results (species list is based on fish collected since 1993).

FAMILY	SPECIES COMMON NAME	RESIDENCE STATUS <sup>1</sup>	TOTAL NUMBER OF SPECIMENS	PERCENT (%) OF TOTAL	FREQUENCY OF OCCURRENCE <sup>2</sup>	% FREQUENCY OCCURRENCE <sup>2</sup>
Clupeidae	Gizzard Shad	N	-	-	-	-
Clupeidae	Threadfin Shad	I	-	-	-	-
Cyprinidae	Central Stoneroller	I	-	-	-	-
Cyprinidae	Goldfish	I	-	-	-	-
Cyprinidae	Red Shiner	N	439	16.12	19	95
Cyprinidae	Common Carp	I	71	2.61	7	35
Cyprinidae	Rio Grande Chub	N	-	-	-	-
Cyprinidae	Rio Grande Silvery Minnow	N	1,437	52.77	9	45
Cyprinidae	Golden Shiner	I	-	-	-	-
Cyprinidae	Fathead Minnow	N	70	2.57	7	35
Cyprinidae	Bullhead Minnow	I	-	-	-	-
Cyprinidae	Flathead Chub	N	248	9.11	17	85
Cyprinidae	Longnose Dace	N	272	9.99	5	25
Catostomidae	River Carpsucker	N	55	2.02	6	30
Catostomidae	White Sucker	I	32	1.18	6	30
Catostomidae	Smallmouth Buffalo	N	-	-	-	-
Ictaluridae	Black Bullhead	I	-	-	-	-
Ictaluridae	Yellow Bullhead	I	1	0.04	1	5
Ictaluridae	Blue Catfish	N	1	0.04	1	5
Ictaluridae	Channel Catfish	I	82	3.01	16	80
Ictaluridae	Flathead Catfish	N	-	-	-	-
Salmonidae	Rainbow Trout	I	-	-	-	-
Salmonidae	Brown Trout	I	-	-	-	-
Poeciliidae	Western Mosquitofish	I	14	0.51	4	20
Moronidae	White Bass	I	-	-	-	-
Moronidae	Striped Bass	I	-	-	-	-
Centrarchidae	Green Sunfish	I	-	-	-	-
Centrarchidae	Bluegill	N	1	0.04	1	5
Centrarchidae	Longear Sunfish	I	-	-	-	-
Centrarchidae	Smallmouth Bass	I	-	-	-	-
Centrarchidae	Largemouth Bass	I	-	-	-	-
Centrarchidae	White Crappie	I	-	-	-	-
Centrarchidae	Black Crappie	I	-	-	-	-
Percidae	Yellow Perch	I	-	-	-	-
Percidae	Bigscale Logperch	I	-	-	-	-
Percidae	Walleye	I	-	-	-	-
M MONTHLY TOTALS			2,723	100.00		

<sup>1</sup> N = native; I = introduced

<sup>2</sup> Frequency and % frequency of occurrence are based on 20 sample sites.

Table 3. Summary of the monthly catch of all fish species during 2016 (species list is based on fish collected since 1993).

FAMILY	SPECIES COMMON NAME	F E B	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	D E C	T O T A L
Clupeidae	Gizzard Shad	-	2	-	-	-	-	-	-	-	2
Clupeidae	Threadfin Shad	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Central Stoneroller	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Goldfish	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Red Shiner	362	1,054	1,218	439	-	-	-	-	-	3,073
Cyprinidae	Common Carp	3	5	3	71	-	-	-	-	-	82
Cyprinidae	Rio Grande Chub	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Rio Grande Silvery Minnow	120	36	32	1,437	-	-	-	-	-	1,625
Cyprinidae	Golden Shiner	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Fathead Minnow	8	11	8	70	-	-	-	-	-	97
Cyprinidae	Bullhead Minnow	-	5	9	-	-	-	-	-	-	14
Cyprinidae	Flathead Chub	73	174	313	248	-	-	-	-	-	808
Cyprinidae	Longnose Dace	1	8	181	272	-	-	-	-	-	462
Catostomidae	River Carpsucker	1	3	3	55	-	-	-	-	-	62
Catostomidae	White Sucker	1	4	654	32	-	-	-	-	-	691
Catostomidae	Smallmouth Buffalo	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Black Bullhead	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Yellow Bullhead	-	-	-	1	-	-	-	-	-	1
Ictaluridae	Blue Catfish	-	-	-	1	-	-	-	-	-	1
Ictaluridae	Channel Catfish	34	52	127	82	-	-	-	-	-	295
Ictaluridae	Flathead Catfish	-	1	-	-	-	-	-	-	-	1
Salmonidae	Rainbow Trout	-	-	-	-	-	-	-	-	-	0
Salmonidae	Brown Trout	-	-	-	-	-	-	-	-	-	0
Poeciliidae	Western Mosquitofish	15	39	64	14	-	-	-	-	-	132
Moronidae	White Bass	-	-	-	-	-	-	-	-	-	0
Moronidae	Striped Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Green Sunfish	-	-	1	-	-	-	-	-	-	1
Centrarchidae	Bluegill	-	-	-	1	-	-	-	-	-	1
Centrarchidae	Longear Sunfish	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Smallmouth Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Largemouth Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	White Crappie	1	-	1	-	-	-	-	-	-	2
Centrarchidae	Black Crappie	-	-	-	-	-	-	-	-	-	0
Percidae	Yellow Perch	-	-	-	-	-	-	-	-	-	0
Percidae	Bigscale Logperch	-	-	-	-	-	-	-	-	-	0
Percidae	Walleye	-	-	-	-	-	-	-	-	-	0
MONTHLY TOTALS		619	1,394	2,614	2,723	-	-	-	-	-	7,350

Table 4. Summary of the monthly catch of Rio Grande Silvery Minnow, by site and reach, during 2016. All marked individuals at a site are shown in parentheses (subset of the total).

REACH	SITE #	SITE NAME	F E B	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	D E C	T O T A L
Angostura	1	Angostura Dam	-	-	-	-	-	-	-	-	-	0
Angostura	2	Bernalillo	-	1(0)	-	-	-	-	-	-	-	1
Angostura	3	Rio Rancho	-	-	4(0)	209(0)	-	-	-	-	-	213
Angostura	4	Central Ave.	-	4(0)	-	2(0)	-	-	-	-	-	6
Angostura	5	Rio Bravo Blvd.	-	2(0)	-	42(0)	-	-	-	-	-	44
Angostura Totals			-	7	4	253	-	-	-	-	-	264
Isleta	6	Los Lunas	-	-	8(1)	844(0)	-	-	-	-	-	852
Isleta	7	Belen	3(1)	1(0)	2(0)	-	-	-	-	-	-	6
Isleta	8	Jarales	2(1)	-	-	228(0)	-	-	-	-	-	230
Isleta	9	Bernardo	6(1)	3(2)	3(2)	65(0)	-	-	-	-	-	77
Isleta	10	La Joya	22(16)	1(0)	-	-	-	-	-	-	-	23
Isleta	11	North of San Acacia	1(0)	-	-	-	-	-	-	-	-	1
Isleta Totals			34	5	13	1,137	-	-	-	-	-	1,189
San Acacia	12	San Acacia Dam	1(1)	10(2)	-	-	-	-	-	-	-	11
San Acacia	13	South of San Acacia	7(4)	4(1)	2(1)	3(0)	-	-	-	-	-	16
San Acacia	14	Socorro	37(34)	1(1)	-	-	-	-	-	-	-	38
San Acacia	15	North of San Antonio	6(4)	7(5)	1(1)	43(1)	-	-	-	-	-	57
San Acacia	16	San Antonio	10(10)	-	-	-	-	-	-	-	-	10
San Acacia	17	South of San Antonio	3(2)	1(1)	5(4)	-	-	-	-	-	-	9
San Acacia	18	San Marcial	1(0)	-	5(4)	1(1)	-	-	-	-	-	7
San Acacia	19	South of San Marcial 1	14(13)	1(1)	2(2)	-	-	-	-	-	-	17
San Acacia	20	South of San Marcial 2	7(5)	-	-	-	-	-	-	-	-	7
San Acacia Totals			86	24	15	47	-	-	-	-	-	172
MONTHLY TOTALS			120	36	32	1,437	-	-	-	-	-	1,625

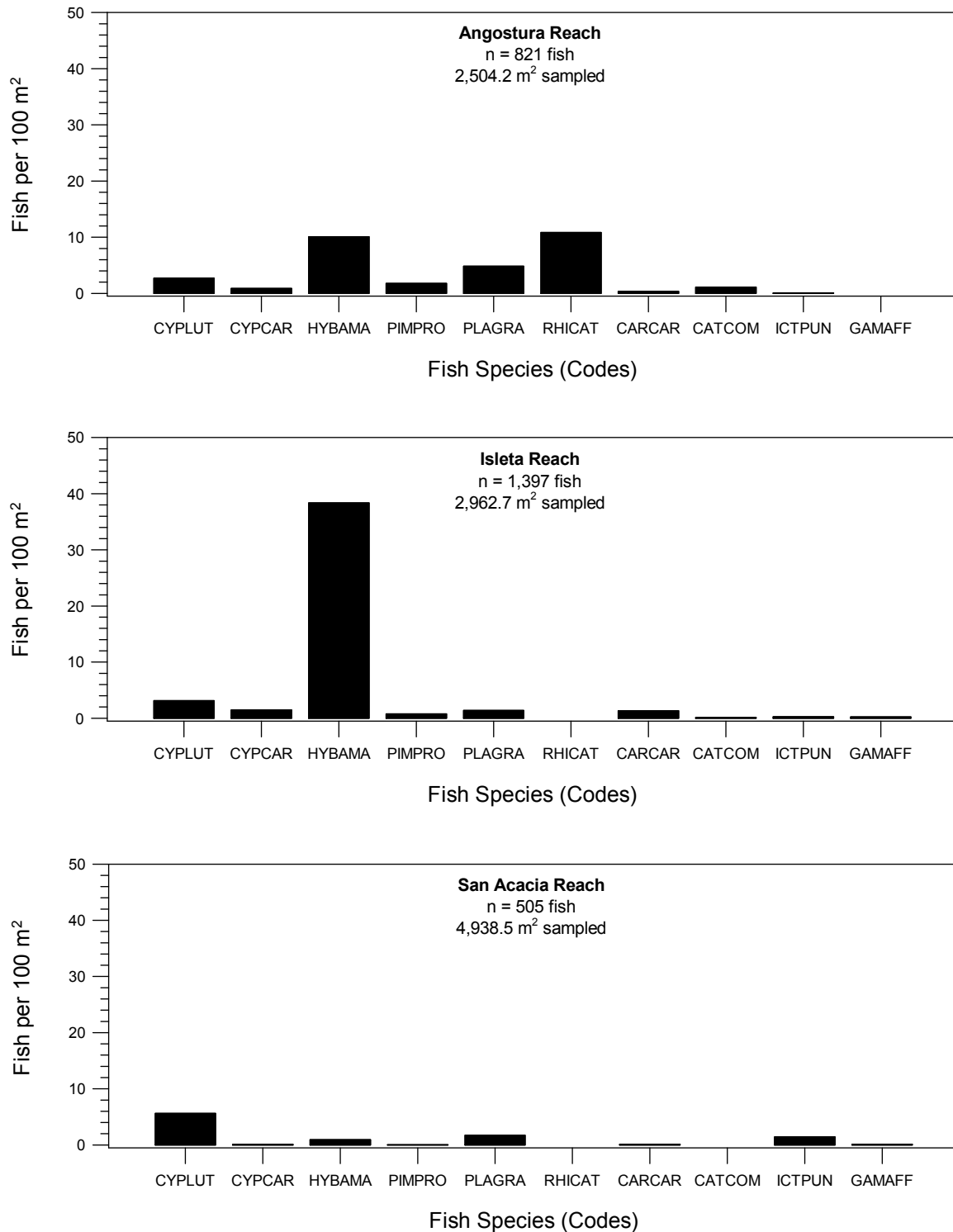


Figure 3. Fish densities from June 2016 for each focal species in the three reaches of the Middle Rio Grande (see Table 1 for fish species codes).

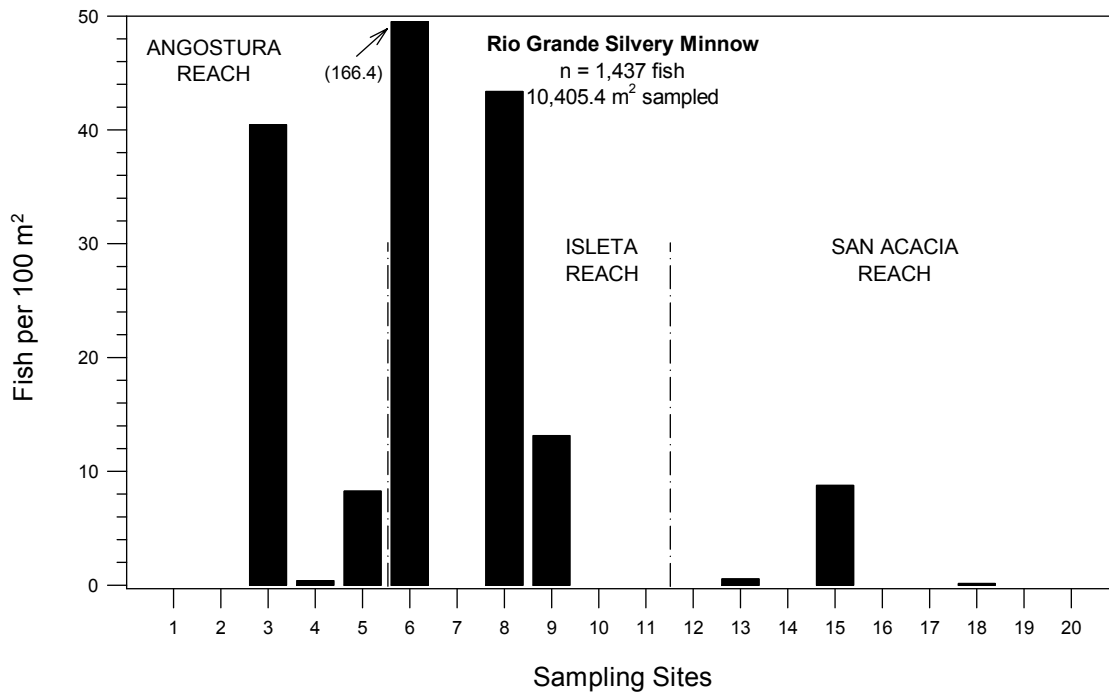
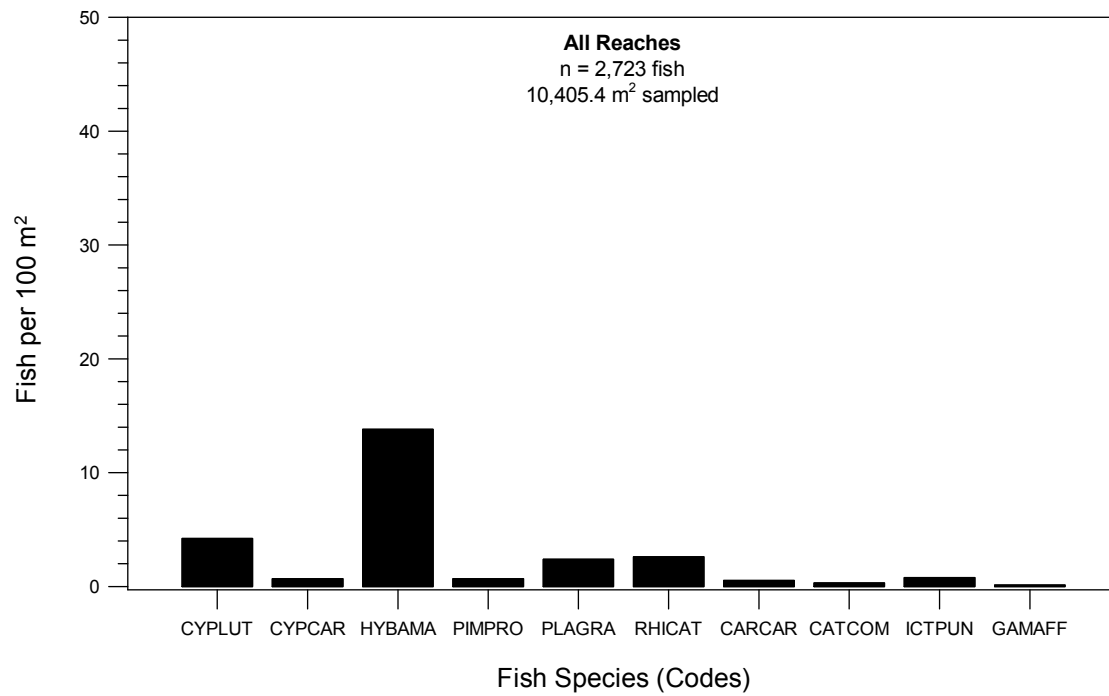


Figure 4. Catch rates for ten focal species from all reaches combined, including Rio Grande Silvery Minnow, during June 2016 (see Table 1 for fish species codes).

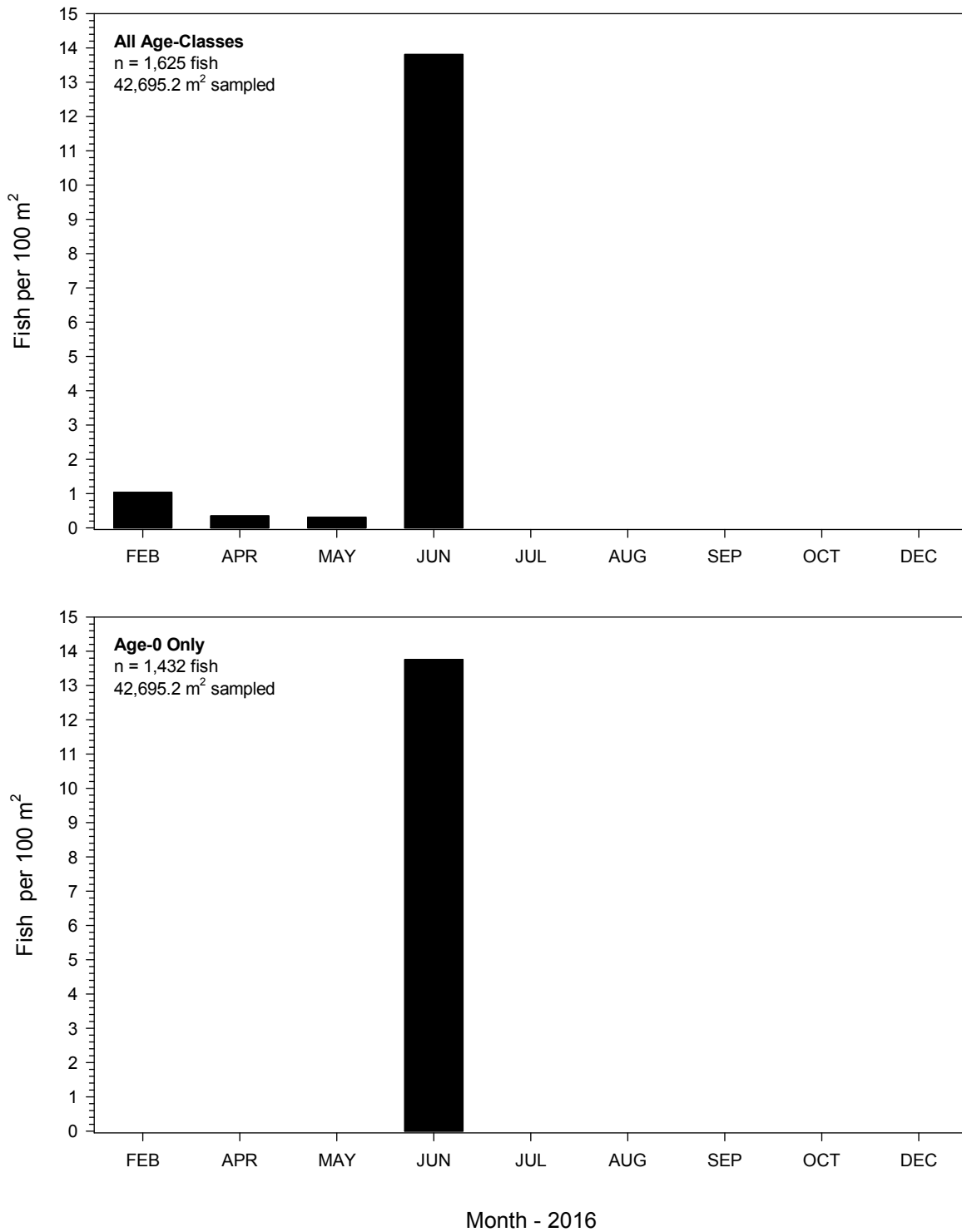


Figure 5. Inter-month fluctuations in densities of Rio Grande Silvery Minnow (all age-classes and age-0 only) during 2016.

## APPENDIX A.

### Collection localities of the Rio Grande Silvery Minnow population monitoring study

Table A-1. Collection localities of the Rio Grande Silvery Minnow population monitoring study.

Site #	Site Locality
<b>ANGOSTURA REACH SITES</b>	
<b>SITE #</b>	
1	New Mexico, Sandoval County, Rio Grande, downstream of Angostura Diversion Dam, Algodones.
2	New Mexico, Sandoval County, Rio Grande, upstream of US Highway 550 bridge crossing, Bernalillo.
3	New Mexico, Sandoval County, Rio Grande, ca. 4.0 miles downstream of US Highway 550 bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
4	New Mexico, Bernalillo County, Rio Grande, upstream of Central Avenue (US Highway 66) bridge crossing, Albuquerque.
5	New Mexico, Bernalillo County, Rio Grande, upstream of Rio Bravo Boulevard bridge crossing, Albuquerque.
<b>ISLETA REACH SITES</b>	
<b>SITE #</b>	
6	New Mexico, Valencia County, Rio Grande, ca. 0.3 miles upstream of Los Lunas (NM State Highway 49) bridge crossing, Los Lunas.
7	New Mexico, Valencia County, Rio Grande, ca. 1.0 miles upstream of NM State Highway 309/6 bridge crossing, Belen.
8	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.
9	New Mexico, Socorro County, Rio Grande, upstream of US Highway 60 bridge crossing, Bernardo.
10	New Mexico, Socorro County, Rio Grande, ca. 3.5 miles downstream of US Highway 60 bridge crossing, La Joya.
11	New Mexico, Socorro County, Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia.
<b>SAN ACACIA REACH SITES</b>	
<b>SITE #</b>	
12	New Mexico, Socorro County, Rio Grande, downstream of San Acacia Diversion Dam, San Acacia.



Table A-1. Collection localities of the Rio Grande Silvery Minnow population monitoring study (continued).

Site #	Site Locality
<b>SAN ACACIA REACH SITES (continued)</b>	
<b>SITE #</b>	
13	New Mexico, Socorro County, Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia.
14	New Mexico, Socorro County, Rio Grande, ca. 0.5 miles upstream of the Low Flow Conveyance Channel bridge, east and upstream of Socorro Wastewater Treatment Plant, Socorro.
15	New Mexico, Socorro County, Rio Grande, ca. 4.0 miles upstream of US Highway 380 bridge crossing, San Antonio.
16	New Mexico, Socorro County, Rio Grande, upstream of US Highway 380 bridge crossing, San Antonio.
17	New Mexico, Socorro County, Rio Grande, directly east of Bosque del Apache National Wildlife Refuge headquarters, San Antonio.
18	New Mexico, Socorro County, Rio Grande, downstream of the San Marcial railroad crossing, San Marcial.
19	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.
20	New Mexico, Socorro County, Rio Grande, ca. 10.0 miles downstream of the San Marcial Railroad Bridge crossing, San Marcial.

## APPENDIX B.

Site-specific ichthyofaunal composition during the June 2016  
Rio Grande Silvery Minnow population monitoring study

Monthly and annual reports are available at:  
<http://mrgescp.dbstephens.com>

\*\* Data are provisional and should be verified by direct inspection of field data \*\*

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage  
Rio Grande, directly below Angostura Diversion Dam, Algodones.

**RKD16-078**

Site Number: 1 River Mile: 209.7 09 June 2016  
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 484.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	13
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	5
76	<i>Rhinichthys cataractae</i>	188
81	<i>Catostomus commersonii</i>	1
294	<i>Lepomis macrochirus</i>	1

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage  
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo.

**RKD16-079**

Site Number: 2 River Mile: 203.8 09 June 2016  
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 481.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Platygobio gracilis</i>	79
76	<i>Rhinichthys cataractae</i>	28
81	<i>Catostomus commersonii</i>	9

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage **RKD16-080**

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: 3 River Mile: 200.0 09 June 2016  
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 516.7 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	15
76	<i>Cyprinus carpio</i>	19
76	<i>Hybognathus amarus</i> *	209
76	<i>Pimephales promelas</i>	34
76	<i>Platygobio gracilis</i>	13
76	<i>Rhinichthys cataractae</i>	54
81	<i>Carpionodes carpio</i>	2
81	<i>Catostomus commersonii</i>	16

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

age-0: 208  
age-1: 1  
age-2+:

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage **RKD16-077**

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

Site Number: 4 River Mile: 183.4 09 June 2016  
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 514.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	16
76	<i>Hybognathus amarus</i> *	2
76	<i>Platygobio gracilis</i>	7
76	<i>Rhinichthys cataractae</i>	1
81	<i>Catostomus commersonii</i>	2

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

age-0: 2  
age-1:  
age-2+:

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage

**RKD16-076**

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

Site Number: 5

River Mile: 178.3

09 June 2016

UTM Easting: 347554

UTM Northing: 3877163

Zone: 13

Quad: Albuquerque West

J.L. Kennedy, R.C. Keller, R.A. Reese

Effort: 508.3 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	24
76 <i>Cyprinus carpio</i>	3
76 <i>Hybognathus amarus</i> *	42
76 <i>Pimephales promelas</i>	10
76 <i>Platygobio gracilis</i>	17
76 <i>Rhinichthys cataractae</i>	1
81 <i>Carpodes carpio</i>	7
93 <i>Ictalurus punctatus</i>	2

\* *Hybognathus amarus* by age class:

age-0: 42

age-1:

age-2+:

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: VALENCIA Co., RIO GRANDE Drainage  
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas.

**RKD16-075**

Site Number: 6 River Mile: 161.4 08 June 2016  
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas  
M.A. Farrington, R.C. Keller, R.A. Reese Effort: 507.2 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	16
76 <i>Cyprinus carpio</i>	23
76 <i>Hybognathus amarus</i> *	844
76 <i>Pimephales promelas</i>	17
76 <i>Platygobio gracilis</i>	2
81 <i>Catostomus commersonii</i>	1
93 <i>Ictalurus punctatus</i>	1
212 <i>Gambusia affinis</i>	1

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

age-0: 844

age-1:

age-2+:

NEW MEXICO: VALENCIA Co., RIO GRANDE Drainage  
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen.

**RKD16-074**

Site Number: 7 River Mile: 151.5 08 June 2016  
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome  
M.A. Farrington, R.C. Keller, R.A. Reese Effort: 502.5 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	1
76 <i>Platygobio gracilis</i>	2
93 <i>Ictalurus punctatus</i>	1

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: VALENCIA Co., RIO GRANDE Drainage  
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales.

**RKD16-073**

Site Number: 8 River Mile: 143.2  
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita  
M.A. Farrington, R.C. Keller, R.A. Reese

08 June 2016

Effort: 525.8 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	14
76 <i>Cyprinus carpio</i>	17
76 <i>Hybognathus amarus</i> *	228
76 <i>Pimephales promelas</i>	5
81 <i>Carpoides carpio</i>	27
93 <i>Ictalurus punctatus</i>	1
212 <i>Gambusia affinis</i>	2

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

age-0: 228

age-1:

age-2+:

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, at US HWY 60 bridge crossing, Bernardo.

**RKD16-072**

Site Number: 9 River Mile: 130.6  
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas  
M.A. Farrington, R.C. Keller, R.A. Reese

08 June 2016

Effort: 494.5 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	13
76 <i>Cyprinus carpio</i>	4
76 <i>Hybognathus amarus</i> *	65
76 <i>Pimephales promelas</i>	1
76 <i>Platygobio gracilis</i>	8
81 <i>Carpoides carpio</i>	13
93 <i>Ictalurus punctatus</i>	1

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

age-0: 65

age-1:

age-2+:

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo.

**RKD16-071**

Site Number: 10 River Mile: 127.0  
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas  
M.A. Farrington, R.C. Keller, R.A. Reese

08 June 2016

Effort: 408.6 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	5
76 <i>Platygobio gracilis</i>	1
93 <i>Ictalurus punctatus</i>	1



## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia

**RKD16-070**

Site Number: 11 River Mile: 116.8  
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya  
R.K. Dudley, R.C. Keller, R.A. Reese

07 June 2016

Effort: 524.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	44
76	<i>Platygobio gracilis</i>	28
81	<i>Catostomus commersonii</i>	3
93	<i>Ictalurus punctatus</i>	3
212	<i>Gambusia affinis</i>	4

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, directly below San Acacia Diversion Dam, San Acacia.

**RKD16-069**

Site Number: 12 River Mile: 116.2  
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia  
R.K. Dudley, R.C. Keller, R.A. Reese

07 June 2016

Effort: 467.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	102
81	<i>Carpionodes carpio</i>	1
93	<i>Ameiurus natalis</i>	1
93	<i>Ictalurus punctatus</i>	12
212	<i>Gambusia affinis</i>	7

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia.

**RKD16-068**

Site Number: 13 River Mile: 114.6  
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar  
R.K. Dudley, R.C. Keller, R.A. Reese

07 June 2016

Effort: 552.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	51
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus</i> *	3
76	<i>Platygobio gracilis</i>	52
93	<i>Ictalurus punctatus</i>	7

\* *Hybognathus amarus* by age class:

age-0: 1  
age-1: 2  
age-2+:

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, Socorro.

**RKD16-067**

Site Number: 14 River Mile: 99.5  
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas  
R.K. Dudley, R.C. Keller, R.A. Reese

07 June 2016

Effort: 535.2 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	16
76	<i>Platygobio gracilis</i>	19
93	<i>Ictalurus punctatus</i>	2

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing.

**RKD16-066**

Site Number: 15 River Mile: 91.7 07 June 2016  
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio  
R.K. Dudley, R.C. Keller, R.A. Reese Effort: 490.7 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	1
76 <i>Cyprinus carpio</i>	4
76 <i>Hybognathus amarus</i> *	43
76 <i>Pimephales promelas</i>	2
76 <i>Platygobio gracilis</i>	3
81 <i>Carpoides carpio</i>	5
93 <i>Ictalurus furcatus</i>	1
93 <i>Ictalurus punctatus</i>	4

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

age-0: 42

age-1: 1

age-2+:

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, at US HWY 380 bridge crossing, San Antonio.

**RKD16-065**

Site Number: 16 River Mile: 87.1 06 June 2016  
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 536.7 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	7
76 <i>Platygobio gracilis</i>	1
93 <i>Ictalurus punctatus</i>	9

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Headquarters.

**RKD16-064**

Site Number: 17 River Mile: 79.1 06 June 2016  
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 540.2 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	7
76	<i>Platygobio gracilis</i>	7
93	<i>Ictalurus punctatus</i>	12

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, at San Marcial Railroad Bridge, San Marcial.

**RKD16-063**

Site Number: 18 River Mile: 68.6 06 June 2016  
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 686.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	22
76	<i>Hybognathus amarus</i> *	1
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus punctatus</i>	1

\* *Hybognathus amarus* by age class:

age-0:  
age-1: 1  
age-2+:

## Rio Grande Silvery Minnow Population Monitoring June 2016

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, ca. 8 miles downstream of the San Marcial railroad bridge crossing

**RKD16-062**

Site Number: 19 River Mile: 60.5 06 June 2016  
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 571.2 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	63
76	<i>Platygobio gracilis</i>	3
93	<i>Ictalurus punctatus</i>	13

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, ca. 10 mi downstream of the San Marcial railroad bridge crossing

**RKD16-061**

Site Number: 20 River Mile: 58.8 06 June 2016  
UTM Easting: 307846 UTM Northing: 3716150 Zone: 13 Quad: Paraje Well  
J.L. Kennedy, R.C. Keller, R.A. Reese Effort: 559.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	9
93	<i>Ictalurus punctatus</i>	12