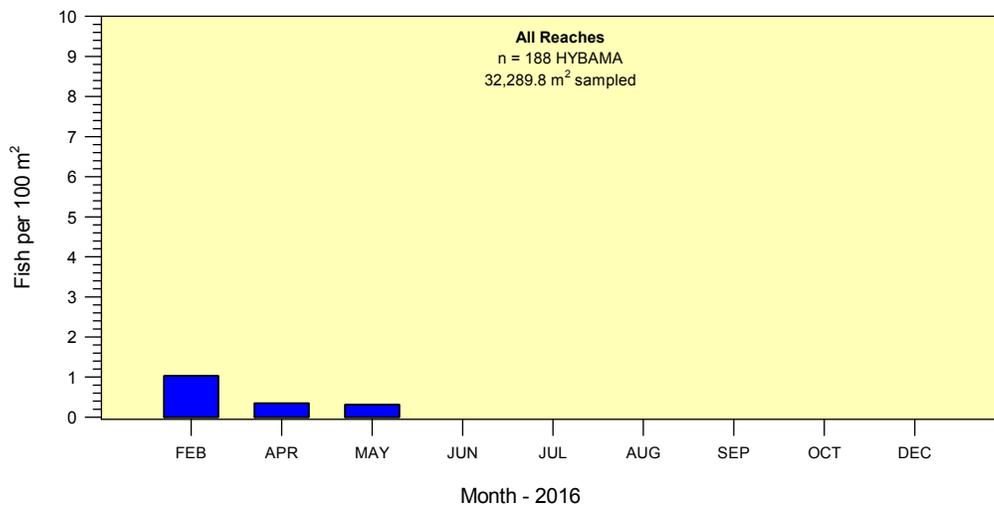
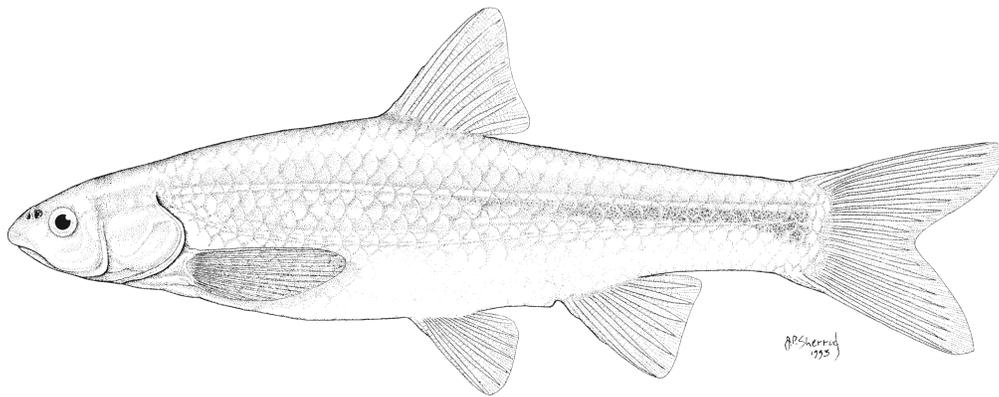


**RIO GRANDE SILVERY MINNOW POPULATION MONITORING RESULTS FROM
MAY 2016**

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



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17 June 2016

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

prepared for:

MIDDLE RIO GRANDE ENDANGERED SPECIES COLLABORATIVE PROGRAM

under Contract GS-10F-0249X:

Order R15PD00171

U.S. Bureau of Reclamation
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17 June 2016

SUMMARY OF OVERALL MAY 2016 POPULATION MONITORING EFFORTS

The May 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 (3/16th inch) seine through discrete mesohabitats. Larval fish were also collected with a 1.0 m x 1.0 m fine mesh (1/16th inch) seine in all seasons except winter. All fishes were identified to species and enumerated. We measured and aged all Rio Grande Silvery Minnow. As age-0 individuals are only present after annual spawning occurs (ca. May–June), their absence in the months preceding spawning is to be expected. Figures illustrating fish densities (i.e., fish per 100 m²) were prepared for the ten focal species to facilitate comparisons among reaches.

During May, sampling covered 10,326.6 m² (surface area) of water and yielded 2,614 fish. Cumulative fish density during May was 25.3 individuals/100 m² sampled. The three most common species were Red Shiner (n = 1,218), White Sucker (n = 654), and Flathead Chub (n = 313). The 20 sampling sites yielded a total of 13 fish species. Rio Grande Silvery Minnow was present in 21 of the 269 seine hauls that yielded fish. We collected Rio Grande Silvery Minnow at 9 of the 20 sampling sites, and its overall density was 0.31 (n = 32) individuals/100 m² sampled. Densities of unmarked and marked individuals were 0.16 (n = 17) and 0.15 (n = 15) individuals/100 m² sampled, respectively. Densities of age-0, age-1, and age-2+ individuals were 0.00 (n = 0), 0.28 (n = 29), and 0.03 (n = 3) individuals/100 m² 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. The timing, magnitude, and duration of spring flows in 2016 will likely be crucial for the successful spawning and recruitment of Rio Grande Silvery Minnow.

SUMMARY OF MAY 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 1,021.6 and ranged from 594 to 1,250 cfs from 16 April to 15 May. Water temperatures ranged from 13.0 to 16.3 °C during the Angostura Reach sampling efforts (ca. 0830–1530 h). Secchi disk measurements of water clarity ranged from 11 to 42 cm.

Sampling for fishes in the Angostura Reach during May yielded 1,014 individuals with a cumulative fish density of 39.5 individuals/100 m² sampled. The overall sampling effort in the Angostura Reach covered 2,570.2 m² (surface area) of water. Densities of all fish species combined ranged from 5.0 to 110.7 individuals per 100 m² at the five sampling sites. In May, there were 9 fish species collected in the Angostura Reach. White Sucker was the most abundant taxon (n = 621), followed by Longnose Dace (n = 181), and Flathead Chub (n = 142). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 0.8 individuals per 100 m². Rio Grande Silvery Minnow (n = 4) was present in 2 of the 64 seine hauls that yielded fish during May.

Isleta Reach

In the Isleta Reach, mean daily discharge (Rio Grande at Isleta Lakes near Isleta, NM; USGS Gage 08354900) averaged 986.4 and ranged from 562 to 1,260 cfs from 16 April to 15 May. Water temperatures ranged from 15.5 to 21.0 °C throughout the sampling localities during the day (ca. 0930–1600 h). Secchi disk measurements ranged from 4 to 10 cm during sampling.

Isleta Reach population monitoring efforts produced 798 individuals in May with a cumulative fish density of 25.7 individuals/100 m² sampled. The total sampling effort in the Isleta Reach during May covered 3,110.0 m² (surface area) of water. Fish densities (all species combined) at the six sites ranged from 17.4 to 37.0 individuals per 100 m² sampled. There were 7 fish species collected in the Isleta Reach during May. Red Shiner was the most abundant taxon (n = 657), followed by Flathead Chub (n = 55), and Western Mosquitofish (n = 42). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 1.7 individuals per 100 m². Rio Grande Silvery Minnow (n = 13) was present in 9 of the 90 seine hauls that yielded fish during May.

San Acacia Reach

Mean daily discharge at San Acacia (Rio Grande Floodway at San Acacia, NM; USGS Gage 08354900) from 16 April to 15 May was generally higher (average = 577.8; range = 346–749 cfs) as compared to San Marcial (Rio Grande Floodway at San Marcial, NM; USGS Gage 08358400) during the same period (average = 471.3; range = 155–921 cfs). Water temperatures in May for the San Acacia Reach ranged from 11.8 to 17.6 °C (ca. 0930–1600 h). Water clarity was generally lower in this reach (Secchi disk range = 3–7 cm) as compared to the two upstream reaches.

Population monitoring efforts in the San Acacia Reach during May yielded 802 individuals with a cumulative fish density of 17.3 individuals per 100 m² sampled. Sampling in the San Acacia Reach covered an area of 4,646.4 m² of water. Fish densities (all species combined) ranged from 2.1 to 34.0 individuals per 100 m² at the nine sites sampled in the San Acacia Reach. In May, there were 10 fish species collected in the San Acacia Reach. Red Shiner was the most abundant taxon (n = 510), followed by Flathead Chub (n = 116), and Channel Catfish (n = 103). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 1.1 individuals per 100 m². Rio Grande Silvery Minnow (n = 15) was present in 10 of the 115 seine hauls that yielded fish during May.

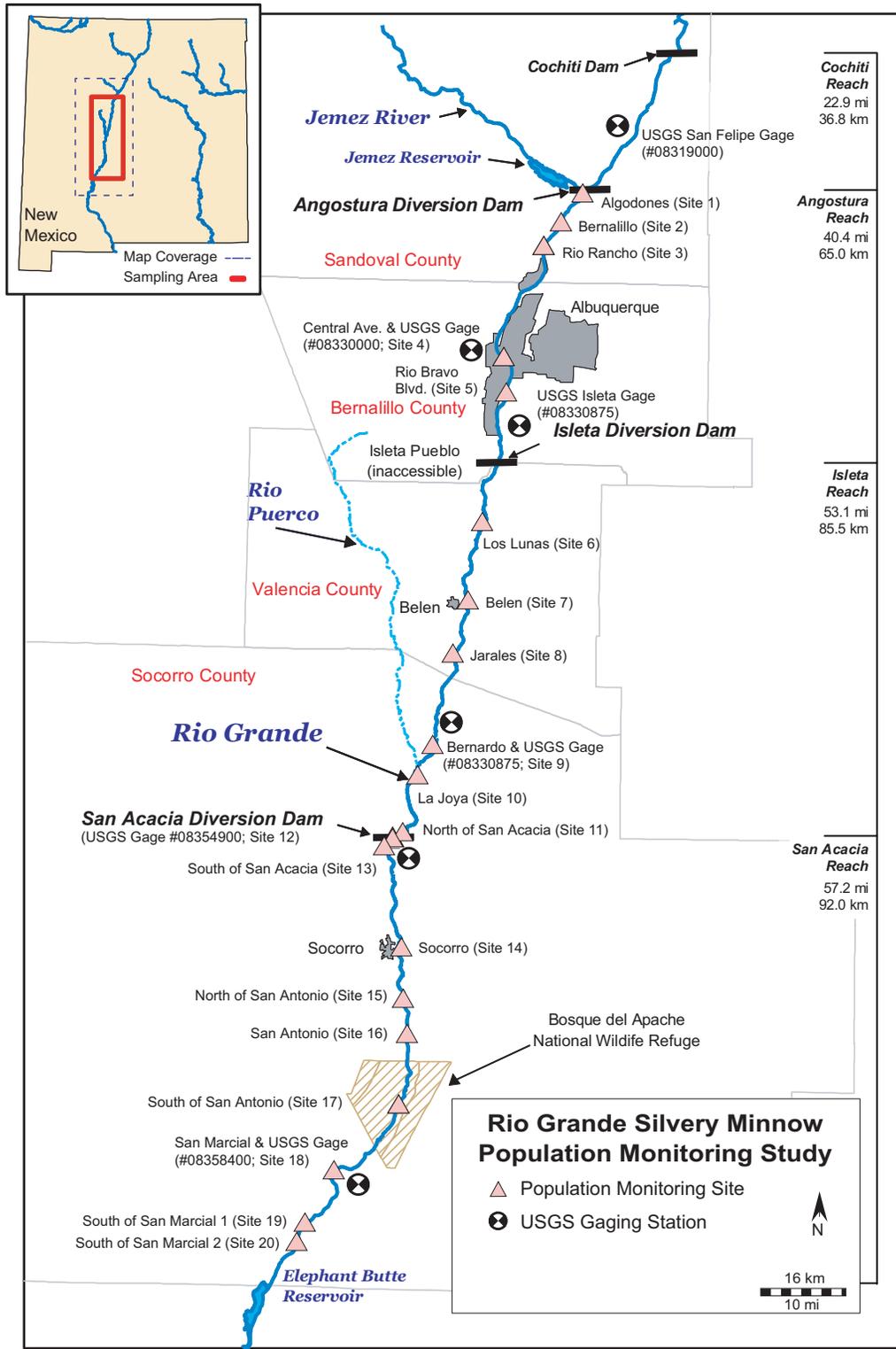


Figure 1. Map of the study area and sampling localities (numbered). Sampling locality information that corresponds with the numbered localities is provided in Appendix A (Table A-1).

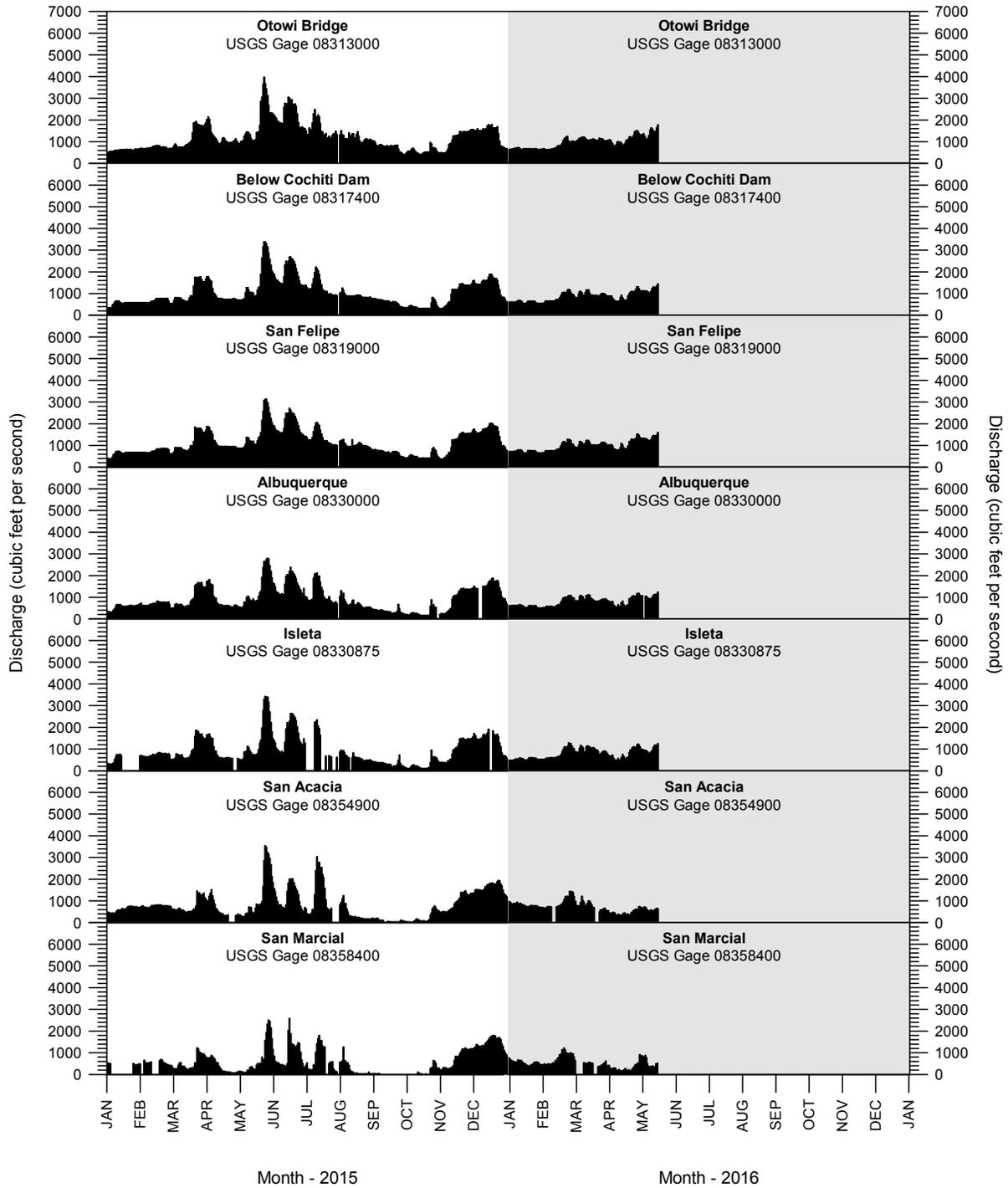


Figure 2. Discharge in the Rio Grande from 1 January 2015 through 15 May 2016 as recorded at seven U. S. Geological Survey (USGS) gage stations. The Otowi Bridge gage site is outside of the study area (ca. 25.5 river miles upstream of Cochiti Dam) and provided for reference. **Discharge data are provisional 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 ¹	(CYPLUT)
<i>Cyprinus carpio</i>	Common Carp ¹	(CYPCAR)
<i>Gila pandora</i>	Rio Grande Chub	(GILPAN)
<i>Hybognathus amarus</i>	Rio Grande Silvery Minnow ¹	(HYBAMA)
<i>Notemigonus crysoleucas</i>	Golden Shiner	(NOTCRY)
<i>Pimephales promelas</i>	Fathead Minnow ¹	(PIMPRO)
<i>Pimephales vigilax</i>	Bullhead Minnow	(PIMVIG)
<i>Platygobio gracilis</i>	Flathead Chub ¹	(PLAGRA)
<i>Rhinichthys cataractae</i>	Longnose Dace ¹	(RHICAT)
Family Catostomidae	suckers	
<i>Carpodes carpio</i>	River Carpsucker ¹	(CARCAR)
<i>Catostomus commersonii</i>	White Sucker ¹	(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 ¹	(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 ¹	(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)

¹ 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 May 2016 Rio Grande Silvery Minnow population monitoring results (species list is based on fish collected since 1993).

FAMILY	SPECIES COMMON NAME	RESIDENCE STATUS ¹	TOTAL NUMBER OF SPECIMENS	PERCENT (%) OF TOTAL	FREQUENCY OF OCCURRENCE ²	% FREQUENCY OCCURRENCE ²
Clupeidae	Gizzard Shad	N	-	-	-	-
Clupeidae	Threadfin Shad	I	-	-	-	-
Cyprinidae	Central Stoneroller	I	-	-	-	-
Cyprinidae	Goldfish	I	-	-	-	-
Cyprinidae	Red Shiner	N	1,218	46.60	19	95
Cyprinidae	Common Carp	I	3	0.11	3	15
Cyprinidae	Rio Grande Chub	N	-	-	-	-
Cyprinidae	Rio Grande Silvery Minnow	N	32	1.22	9	45
Cyprinidae	Golden Shiner	I	-	-	-	-
Cyprinidae	Fathead Minnow	N	8	0.31	3	15
Cyprinidae	Bullhead Minnow	I	9	0.34	4	20
Cyprinidae	Flathead Chub	N	313	11.97	18	90
Cyprinidae	Longnose Dace	N	181	6.92	4	20
Catostomidae	River Carpsucker	N	3	0.11	3	15
Catostomidae	White Sucker	I	654	25.02	12	60
Catostomidae	Smallmouth Buffalo	N	-	-	-	-
Ictaluridae	Black Bullhead	I	-	-	-	-
Ictaluridae	Yellow Bullhead	I	-	-	-	-
Ictaluridae	Blue Catfish	N	-	-	-	-
Ictaluridae	Channel Catfish	I	127	4.86	17	85
Ictaluridae	Flathead Catfish	N	-	-	-	-
Salmonidae	Rainbow Trout	I	-	-	-	-
Salmonidae	Brown Trout	I	-	-	-	-
Poeciliidae	Western Mosquitofish	I	64	2.45	13	65
Moronidae	White Bass	I	-	-	-	-
Moronidae	Striped Bass	I	-	-	-	-
Centrarchidae	Green Sunfish	I	1	0.04	1	5
Centrarchidae	Bluegill	N	-	-	-	-
Centrarchidae	Longear Sunfish	I	-	-	-	-
Centrarchidae	Smallmouth Bass	I	-	-	-	-
Centrarchidae	Largemouth Bass	I	-	-	-	-
Centrarchidae	White Crappie	I	1	0.04	1	5
Centrarchidae	Black Crappie	I	-	-	-	-
Percidae	Yellow Perch	I	-	-	-	-
Percidae	Bigscale Logperch	I	-	-	-	-
Percidae	Walleye	I	-	-	-	-
M MONTHLY TOTALS			2,614	100.00		

¹ N = native; I = introduced

² 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	-	-	-	-	-	-	2,634
Cyprinidae	Common Carp	3	5	3	-	-	-	-	-	-	11
Cyprinidae	Rio Grande Chub	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Rio Grande Silvery Minnow	120	36	32	-	-	-	-	-	-	188
Cyprinidae	Golden Shiner	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Fathead Minnow	8	11	8	-	-	-	-	-	-	27
Cyprinidae	Bullhead Minnow	-	5	9	-	-	-	-	-	-	14
Cyprinidae	Flathead Chub	73	174	313	-	-	-	-	-	-	560
Cyprinidae	Longnose Dace	1	8	181	-	-	-	-	-	-	190
Catostomidae	River Carpsucker	1	3	3	-	-	-	-	-	-	7
Catostomidae	White Sucker	1	4	654	-	-	-	-	-	-	659
Catostomidae	Smallmouth Buffalo	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Black Bullhead	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Yellow Bullhead	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Blue Catfish	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Channel Catfish	34	52	127	-	-	-	-	-	-	213
Ictaluridae	Flathead Catfish	-	1	-	-	-	-	-	-	-	1
Salmonidae	Rainbow Trout	-	-	-	-	-	-	-	-	-	0
Salmonidae	Brown Trout	-	-	-	-	-	-	-	-	-	0
Poeciliidae	Western Mosquitofish	15	39	64	-	-	-	-	-	-	118
Moronidae	White Bass	-	-	-	-	-	-	-	-	-	0
Moronidae	Striped Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Green Sunfish	-	-	1	-	-	-	-	-	-	1
Centrarchidae	Bluegill	-	-	-	-	-	-	-	-	-	0
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	-	-	-	-	-	-	4,627

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)	-	-	-	-	-	-	4
Angostura	4	Central Ave.	-	4(0)	-	-	-	-	-	-	-	4
Angostura	5	Rio Bravo Blvd.	-	2(0)	-	-	-	-	-	-	-	2
Angostura Totals			-	7	4	-	-	-	-	-	-	11
Isleta	6	Los Lunas	-	-	8(1)	-	-	-	-	-	-	8
Isleta	7	Belen	3(1)	1(0)	2(0)	-	-	-	-	-	-	6
Isleta	8	Jarales	2(1)	-	-	-	-	-	-	-	-	2
Isleta	9	Bernardo	6(1)	3(2)	3(2)	-	-	-	-	-	-	12
Isleta	10	La Joya	22(16)	1(0)	-	-	-	-	-	-	-	23
Isleta	11	North of San Acacia	1(0)	-	-	-	-	-	-	-	-	1
Isleta Totals			34	5	13	-	-	-	-	-	-	52
San Acacia	12	San Acacia Dam	1(1)	10(2)	-	-	-	-	-	-	-	11
San Acacia	13	South of San Acacia	7(4)	4(1)	2(1)	-	-	-	-	-	-	13
San Acacia	14	Socorro	37(34)	1(1)	-	-	-	-	-	-	-	38
San Acacia	15	North of San Antonio	6(4)	7(5)	1(1)	-	-	-	-	-	-	14
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)	-	-	-	-	-	-	6
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	-	-	-	-	-	-	125
MONTHLY TOTALS			120	36	32	-	-	-	-	-	-	188

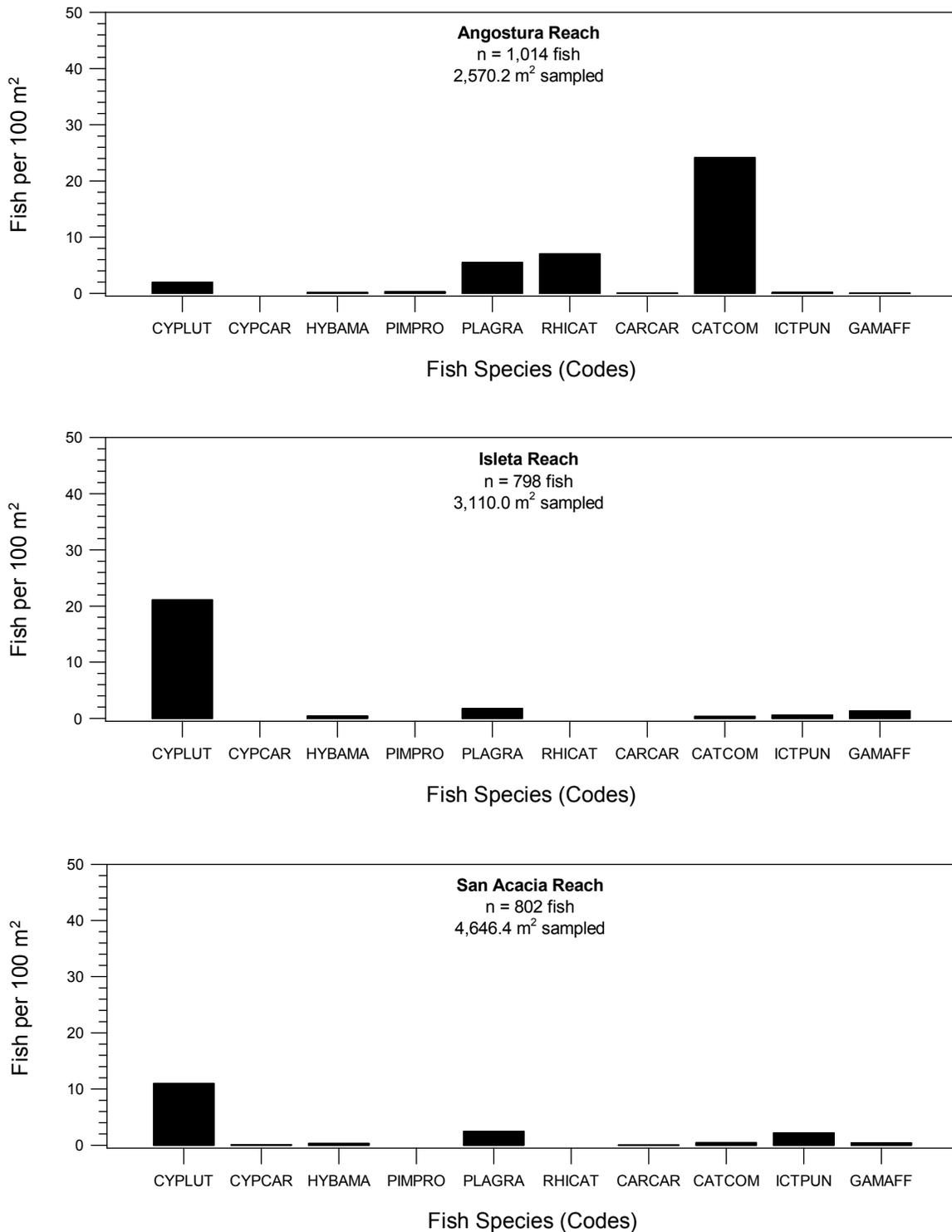


Figure 3. Fish densities from May 2016 for each focal species in the three reaches of the Middle Rio Grande (see Table 1 for fish species codes).

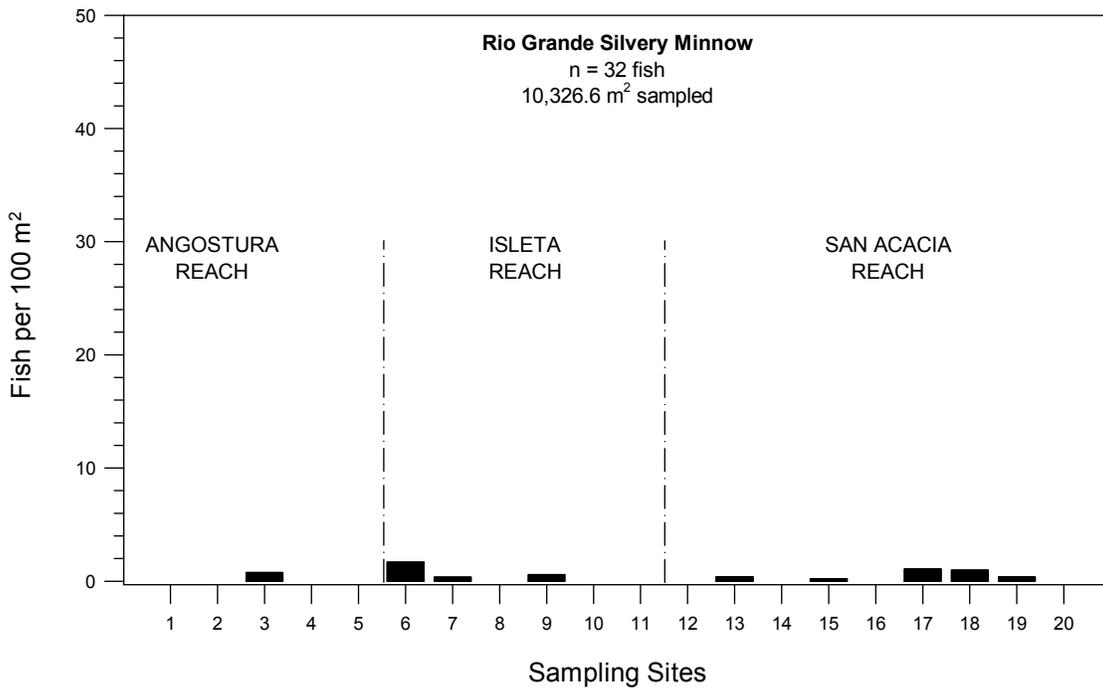
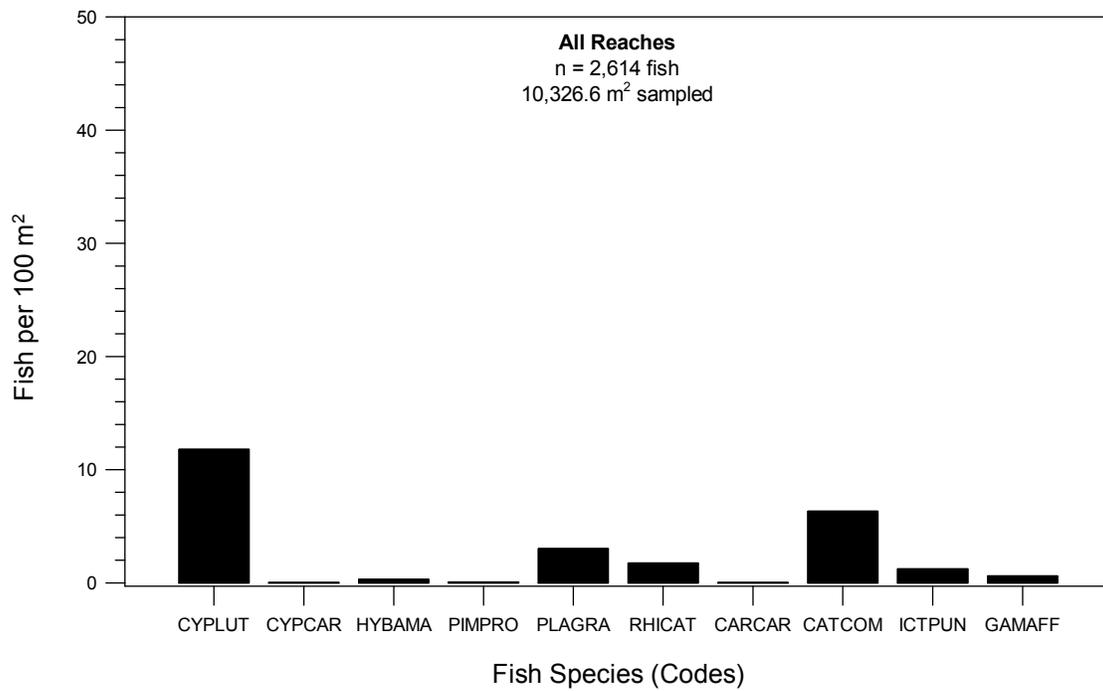


Figure 4. Catch rates for ten focal species from all reaches combined, including Rio Grande Silvery Minnow, during May 2016 (see Table 1 for fish species codes).

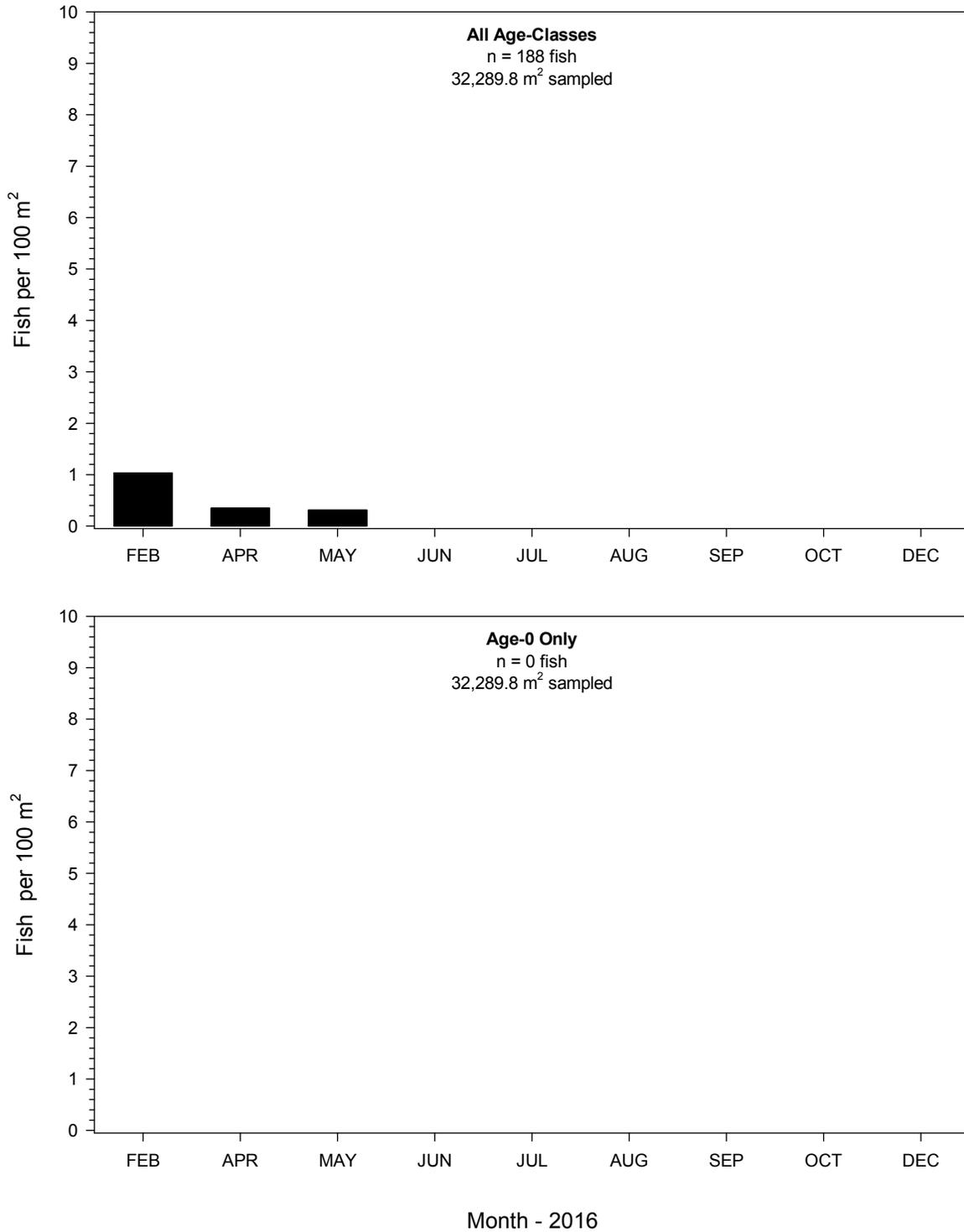


Figure 5. Inter-month fluctuations in densities of Rio Grande Silvery Minnow (all age-classes and age-0 only) during 2016.

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
ANGOSTURA REACH SITES	
SITE #	
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.
ISLETA REACH SITES	
SITE #	
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.
SAN ACACIA REACH SITES	
SITE #	
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
SAN ACACIA REACH SITES (continued)	
SITE #	
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 May 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 May 2016

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

RKD16-058

Site Number: 1 River Mile: 209.7 10 May 2016
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
W.H. Brandenburg, J.L. Kennedy, R.C. Keller Effort: 504.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	7
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	4
76	<i>Rhinichthys cataractae</i>	52
81	<i>Catostomus commersonii</i>	185

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

RKD16-059

Site Number: 2 River Mile: 203.8 10 May 2016
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
W.H. Brandenburg, J.L. Kennedy, R.C. Keller Effort: 529.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	8
76	<i>Pimephales promelas</i>	2
76	<i>Platygobio gracilis</i>	105
76	<i>Rhinichthys cataractae</i>	71
81	<i>Carpoides carpio</i>	1
81	<i>Catostomus commersonii</i>	397
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	1

Rio Grande Silvery Minnow Population Monitoring May 2016

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage **RKD16-060**

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 10 May 2016
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
W.H. Brandenburg, J.L. Kennedy, R.C. Keller Effort: 519.4 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Hybognathus amarus*</i>	4
76	<i>Pimephales promelas</i>	5
76	<i>Platygobio gracilis</i>	27
76	<i>Rhinichthys cataractae</i>	54
81	<i>Catostomus commersonii</i>	12
93	<i>Ictalurus punctatus</i>	3

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

age-0:
age-1: 4
age-2+:

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage **RKD16-057**

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

Site Number: 4 River Mile: 183.4 10 May 2016
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
W.H. Brandenburg, J.L. Kennedy, R.C. Keller Effort: 520.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	26
76	<i>Platygobio gracilis</i>	4
76	<i>Rhinichthys cataractae</i>	4
81	<i>Catostomus commersonii</i>	15

Rio Grande Silvery Minnow Population Monitoring May 2016

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage **RKD16-056**
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque.

Site Number: 5 River Mile: 178.3 10 May 2016
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
W.H. Brandenburg, J.L. Kennedy, R.C. Keller Effort: 497.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	10
76	<i>Platygobio gracilis</i>	2
81	<i>Catostomus commersonii</i>	12
93	<i>Ictalurus punctatus</i>	1

NEW MEXICO: VALENCIA Co., RIO GRANDE Drainage **RKD16-055**
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas.

Site Number: 6 River Mile: 161.4 09 May 2016
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, J.L. Kennedy, R.C. Keller Effort: 472.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	68
76	<i>Hybognathus amarus*</i>	8
76	<i>Platygobio gracilis</i>	2
81	<i>Catostomus commersonii</i>	1
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	1

* *Hybognathus amarus* by age class:
age-0:
age-1: 6
age-2+: 2

**Rio Grande Silvery Minnow Population Monitoring
May 2016**

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

RKD16-054

Site Number: 7 River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, J.L. Kennedy, R.C. Keller

09 May 2016

Effort: 561.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	126
76	<i>Hybognathus amarus*</i>	2
76	<i>Platygobio gracilis</i>	1
81	<i>Catostomus commersonii</i>	6
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	8

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

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

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

RKD16-053

Site Number: 8 River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, J.L. Kennedy, R.C. Keller

09 May 2016

Effort: 563.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	155
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	2

Rio Grande Silvery Minnow Population Monitoring May 2016

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

RKD16-052

Site Number: 9 River Mile: 130.6 09 May 2016
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, J.L. Kennedy, R.C. Keller Effort: 513.2 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	83
76	<i>Hybognathus amarus*</i>	3
76	<i>Platygobio gracilis</i>	6
93	<i>Ictalurus punctatus</i>	5
212	<i>Gambusia affinis</i>	16

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

age-0:
age-1: 3
age-2+:

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

RKD16-051

Site Number: 10 River Mile: 127.0 09 May 2016
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, J.L. Kennedy, R.C. Keller Effort: 470.9 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	84
93	<i>Ictalurus punctatus</i>	5
212	<i>Gambusia affinis</i>	13
294	<i>Lepomis cyanellus</i>	1

Rio Grande Silvery Minnow Population Monitoring May 2016

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

RKD16-050

Site Number: 11 River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

03 May 2016
Effort: 529.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	141
76	<i>Platygobio gracilis</i>	45
81	<i>Catostomus commersonii</i>	4
93	<i>Ictalurus punctatus</i>	4
212	<i>Gambusia affinis</i>	2

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

RKD16-049

Site Number: 12 River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

03 May 2016
Effort: 507.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	76
76	<i>Cyprinus carpio</i>	1
76	<i>Platygobio gracilis</i>	17
93	<i>Ictalurus punctatus</i>	22
212	<i>Gambusia affinis</i>	2
294	<i>Pomoxis annularis</i>	1

Rio Grande Silvery Minnow Population Monitoring May 2016

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

RKD16-048

Site Number: 13 River Mile: 114.6 03 May 2016
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 512.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	93
76	<i>Hybognathus amarus*</i>	2
76	<i>Platygobio gracilis</i>	49
81	<i>Catostomus commersonii</i>	8
93	<i>Ictalurus punctatus</i>	21
212	<i>Gambusia affinis</i>	1

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

age-0:
age-1: 1
age-2+: 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, Socorro.

RKD16-047

Site Number: 14 River Mile: 99.5 03 May 2016
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 547.2 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	11
76	<i>Cyprinus carpio</i>	1
76	<i>Platygobio gracilis</i>	36
93	<i>Ictalurus punctatus</i>	4

Rio Grande Silvery Minnow Population Monitoring May 2016

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

RKD16-046

Site Number: 15 River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

03 May 2016
Quad: San Antonio
Effort: 471.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	1
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus*</i>	1
76	<i>Platygobio gracilis</i>	1
81	<i>Catostomus commersonii</i>	3
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	2

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

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

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

RKD16-045

Site Number: 16 River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

02 May 2016
Quad: San Antonio
Effort: 573.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	7
76	<i>Platygobio gracilis</i>	8
93	<i>Ictalurus punctatus</i>	1

Rio Grande Silvery Minnow Population Monitoring May 2016

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

RKD16-044

Site Number: 17 River Mile: 79.1 02 May 2016
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 462.8 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	54
76	<i>Hybognathus amarus*</i>	5
76	<i>Pimephales vigilax</i>	2
76	<i>Platygobio gracilis</i>	1
81	<i>Carpionodes carpio</i>	1
81	<i>Catostomus commersonii</i>	7
212	<i>Gambusia affinis</i>	14

*** Hybognathus amarus by age class:**

age-0:
age-1: 5
age-2+:

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

RKD16-043

Site Number: 18 River Mile: 68.6 02 May 2016
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 511.4 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	92
76	<i>Hybognathus amarus*</i>	5
76	<i>Pimephales vigilax</i>	2
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus punctatus</i>	8
212	<i>Gambusia affinis</i>	1

*** Hybognathus amarus by age class:**

age-0:
age-1: 5
age-2+:

Rio Grande Silvery Minnow Population Monitoring May 2016

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

RKD16-042

Site Number: 19 River Mile: 60.5 02 May 2016
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 526.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	128
76	<i>Hybognathus amarus*</i>	2
76	<i>Pimephales vigilax</i>	4
76	<i>Platygobio gracilis</i>	3
81	<i>Carpionodes carpio</i>	1
81	<i>Catostomus commersonii</i>	4
93	<i>Ictalurus punctatus</i>	29
212	<i>Gambusia affinis</i>	1

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

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

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

RKD16-041

Site Number: 20 River Mile: 58.8 02 May 2016
UTM Easting: 307846 UTM Northing: 3716150 Zone: 13 Quad: Paraje Well
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 533.9 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	48
76	<i>Pimephales vigilax</i>	1
93	<i>Ictalurus punctatus</i>	17