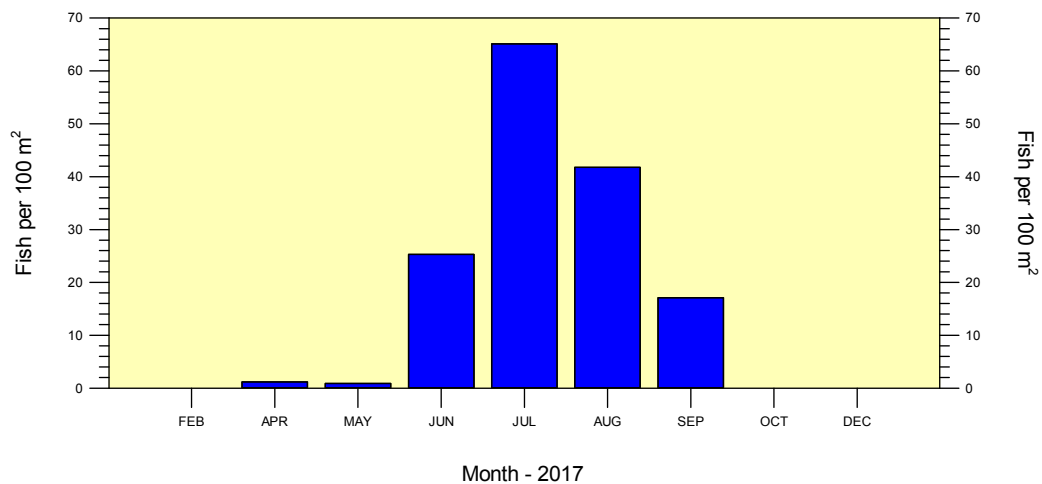
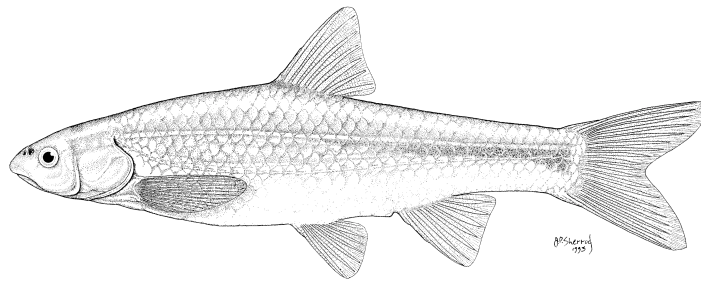


**RIO GRANDE SILVERY MINNOW POPULATION MONITORING RESULTS FROM  
SEPTEMBER 2017**

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



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13 October 2017

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**Contract R17PC00028:**

**Requisition 0040306655**

U.S. Bureau of Reclamation  
Albuquerque Area Office  
555 Broadway NE, Suite 100  
Albuquerque, NM 87102-2352

submitted to:

U.S. Bureau of Reclamation  
Albuquerque Area Office  
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## SUMMARY OF SEPTEMBER 2017 POPULATION MONITORING

The September population monitoring efforts were conducted at the 20 standard sites and at one replacement site. Five sites were located in the Angostura Reach, six sites in the Isleta Reach, and ten sites in the San Acacia Reach. The Middle Rio Grande Endangered Species Collaborative Program requested that replacement sites be added when there was drying at any of the standard sites. ***While this report follows the typical monthly report format, key changes to the text, tables, and figures are highlighted in bold-italic font. For September 2017, comparisons were made between standard sites and all sites (i.e., standard and replacement sites). For the 2017 monthly trends, data were based on all sites (i.e., standard, additional, and replacement sites) to maintain consistency across all monthly reports.*** A list of all collection localities is appended (Table A). Adult and juvenile fish were obtained by rapidly drawing a 3.1 m x 1.8 m small mesh (ca. 5 mm) seine through discrete mesohabitats. Larval fish were also collected with a 1.0 m x 1.0 m fine mesh (ca. 1.5 mm) seine. All fishes were identified to species and enumerated. We used length-age relationships to assign ages (i.e., age-0, age-1, and age-2+) to all Rio Grande Silvery Minnow collected. Age-0 individuals are, however, only present after annual spring spawning occurs (ca. April–June). Figures illustrating fish densities (i.e., fish per 100 m<sup>2</sup>) were prepared for the ten focal species to facilitate comparisons across reaches.

### *Standard Sites (n = 20)*

During September, sampling covered 9,795.9 m<sup>2</sup> (surface area) of water and yielded 4,590 fish. There was one dry sampling site (Site 17). Cumulative fish density during September was 46.86 individuals/100 m<sup>2</sup> sampled. The three most common species were Rio Grande Silvery Minnow (n = 1,679), Red Shiner (n = 1,074), and Western Mosquitofish (n = 1,002). The 20 sampling sites yielded a total of 17 fish species. Rio Grande Silvery Minnow was present in 181 of the 327 seine hauls that yielded fish. We collected Rio Grande Silvery Minnow at 19 of the 20 sampling sites, and its overall density was 17.14 (n = 1,679) individuals/100 m<sup>2</sup> sampled. Densities of unmarked and marked individuals were 17.14 (n = 1,679) and 0.00 (n = 0) individuals/100 m<sup>2</sup> sampled, respectively. Densities of age-0, age-1, and age-2+ individuals were 16.86 (n = 1,652), 0.28 (n = 27), and 0.00 (n = 0) individuals/100 m<sup>2</sup> sampled, respectively.

### *All Sites (n = 21)*

***During September, sampling covered 10,284.0 m<sup>2</sup> (surface area) of water and yielded 4,754 fish. There was one dry sampling site (Site 17), which was replaced by the nearest wetted upstream site in the same reach (Site 53). Cumulative fish density during September was 46.23 individuals/100 m<sup>2</sup> sampled. The three most common species were Rio Grande Silvery Minnow (n = 1,760), Red Shiner (n = 1,120), and Western Mosquitofish (n = 1,005). The 21 sampling sites yielded a total of 17 fish species. Rio Grande Silvery Minnow was present in 197 of the 345 seine hauls that yielded fish. We collected Rio Grande Silvery Minnow at 20 of the 21 sampling sites, and its overall density was 17.11 (n = 1,760) individuals/100 m<sup>2</sup> sampled. Densities of unmarked and marked individuals were 17.11 (n = 1,760) and 0.00 (n = 0) individuals/100 m<sup>2</sup> sampled, respectively. Densities of age-0, age-1, and age-2+ individuals were 16.85 (n = 1,733), 0.26 (n = 27), and 0.00 (n = 0) individuals/100 m<sup>2</sup> sampled, respectively.***

## SEPTEMBER 2017 POPULATION MONITORING BY RIVER REACH (ALL SITES)

### *Angostura Reach*

Mean daily discharge in the Angostura Reach (Rio Grande at Albuquerque, NM; USGS Gage 8330000) averaged 395.2 and ranged from 304 to 469 cfs from 16 April to 15 September. Water temperatures ranged from 19.1 to 22.9 °C during the Angostura Reach sampling efforts (ca. 0830–1530 h). Secchi disk measurements of water clarity ranged from 12 to 22 cm.

Sampling for fishes in the Angostura Reach during September yielded 725 individuals with a cumulative fish density of 28.6 individuals/100 m<sup>2</sup> sampled. The overall sampling effort in the Angostura Reach covered 2,537.9 m<sup>2</sup> (surface area) of water. Densities of all fish species combined ranged from 20.0 to 39.4 individuals per 100 m<sup>2</sup> at the five sampling sites. In September, there were 13 fish species collected in the Angostura Reach. Red Shiner was the most abundant taxon (n = 209), followed by Western Mosquitofish (n = 137), and Rio Grande Silvery Minnow (n = 132). Densities of Rio Grande Silvery Minnow ranged from 1.2 to 15.4 individuals per 100 m<sup>2</sup>. Rio Grande Silvery Minnow (n = 132) was present in 36 of the 85 seine hauls that yielded fish during September.

### *Isleta Reach*

In the Isleta Reach, mean daily discharge (Rio Grande at Isleta Lakes near Isleta, NM; USGS Gage 08354900) averaged 371.3 and ranged from 256 to 488 cfs from 16 April to 15 September. Water temperatures ranged from 21 to 34 °C throughout the sampling localities during the day (ca. 0930–1600 h). Secchi disk measurements ranged from 11 to 28 cm during sampling.

Isleta Reach population monitoring efforts produced 1,604 individuals in September with a cumulative fish density of 51.1 individuals/100 m<sup>2</sup> sampled. The total sampling effort in the Isleta Reach during September covered 3,138.5 m<sup>2</sup> (surface area) of water. Fish densities (all species combined) at the six sites ranged from 23.4 to 89.8 individuals per 100 m<sup>2</sup> sampled. There were 10 fish species collected in the Isleta Reach during September. Rio Grande Silvery Minnow was the most abundant taxon (n = 613), followed by Red Shiner (n = 465), and Western Mosquitofish (n = 210). Densities of Rio Grande Silvery Minnow ranged from 4.3 to 42.4 individuals per 100 m<sup>2</sup>. Rio Grande Silvery Minnow (n = 613) was present in 53 of the 97 seine hauls that yielded fish during September.

### *San Acacia Reach*

Mean daily discharge at San Acacia (Rio Grande Floodway at San Acacia, NM; USGS Gage 08354900) from 16 April to 15 September was generally higher (average = 85.4; range = 40–166 cfs) as compared to San Marcial (Rio Grande Floodway at San Marcial, NM; USGS Gage 08358400) during the same period (average = 27.6; range = 21–101 cfs). Water temperatures in September for the San Acacia Reach ranged from 20.6 to 30.8 °C (ca. 0930–1600 h). Water clarity was generally lower in this reach (Secchi disk range = 7–20 cm) compared to the two upstream reaches.

Population monitoring efforts in the San Acacia Reach during September yielded 2,425 individuals with a cumulative fish density of 52.6 individuals per 100 m<sup>2</sup> sampled. Sampling in the San Acacia Reach covered an area of 4,607.5 m<sup>2</sup> of water. Fish densities (all species combined) ranged from 0.0 to 92.5 individuals per 100 m<sup>2</sup> at the ten sites sampled in the San Acacia Reach. In September, there were 12 fish species collected in the San Acacia Reach. Rio Grande Silvery Minnow was the most abundant taxon (n = 1,015), followed by Western Mosquitofish (n = 658), and Red Shiner (n = 446). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 66.7 individuals per 100 m<sup>2</sup>. Rio Grande Silvery Minnow (n = 1,015) was present in 108 of the 163 seine hauls that yielded fish during September.

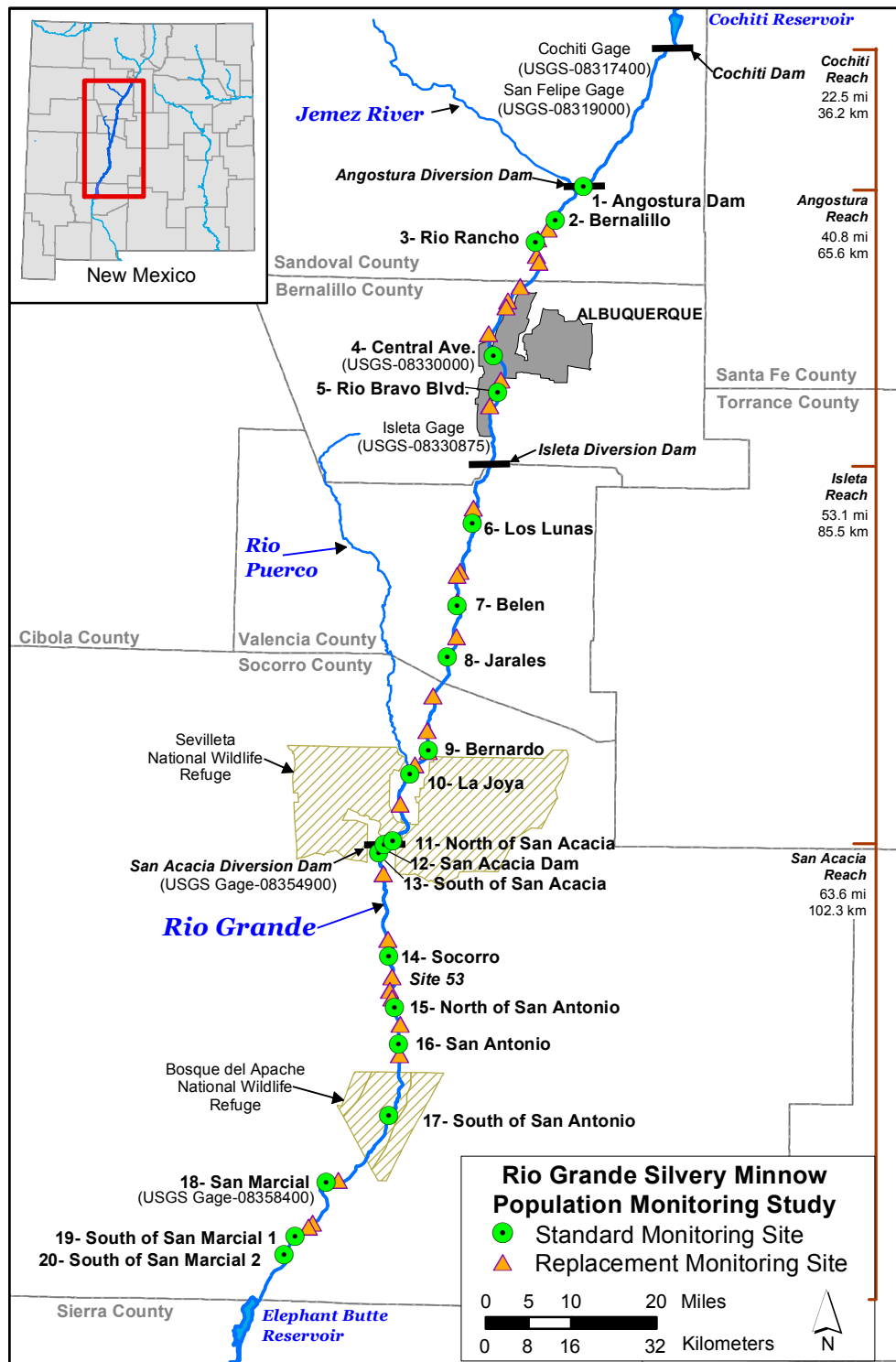


Figure 1. Map of the study area, **standard sites** (green), and **replacement sites** (orange) for the Rio Grande Silvery Minnow population monitoring study. Sampling site descriptions are located in Appendix A.

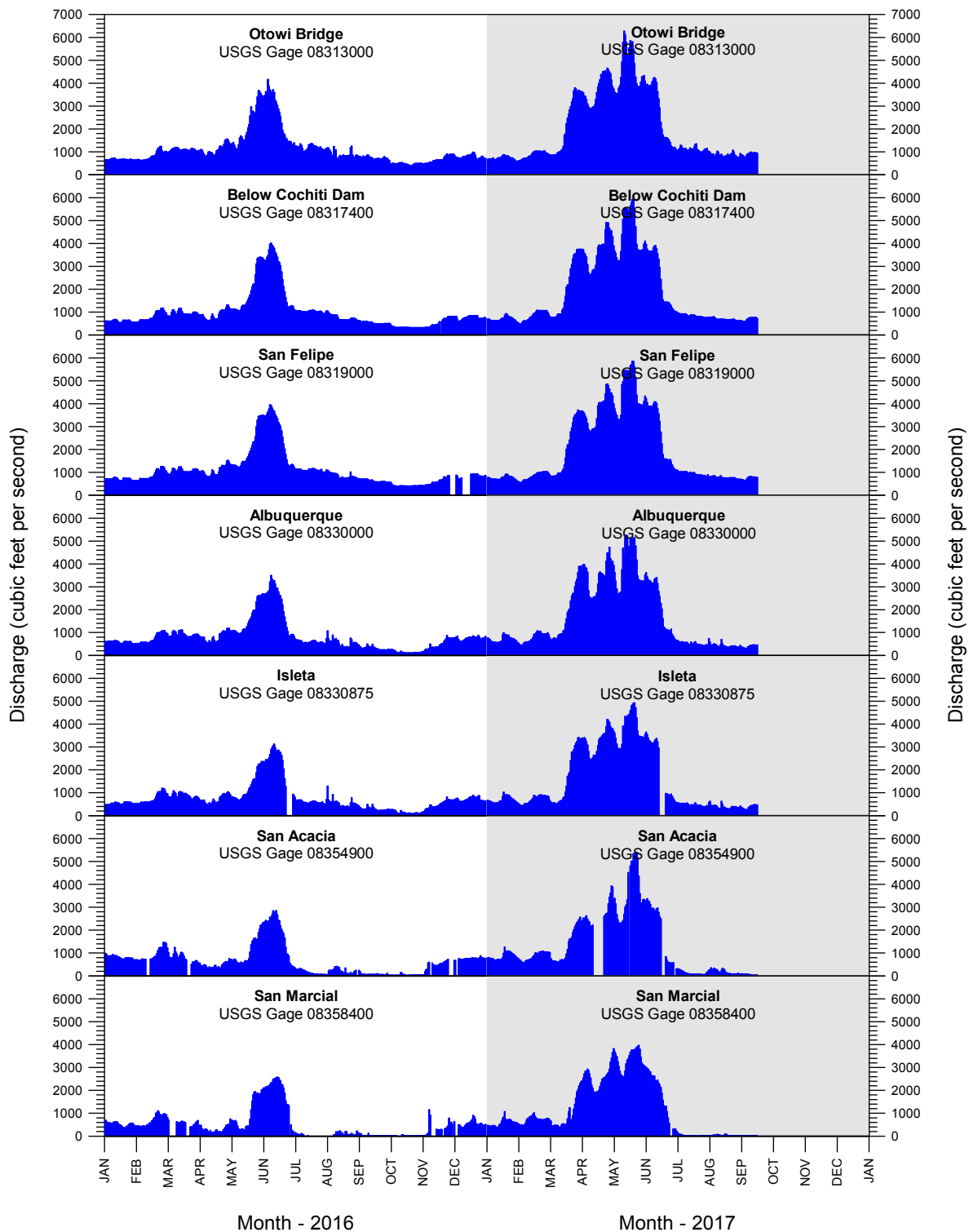


Figure 2. Rio Grande discharge from 1 January 2016 to 15 September 2017 at U.S. Geological Survey (USGS) gaging stations. Discharge data are provisional and subject to change.

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

Scientific Name	Common Name	Species Code
<b>Order Clupeiformes</b>		
<b>Family Clupeidae</b>		<b>herrings</b>
<i>Dorosoma cepedianum</i> .....	Gizzard Shad	(DORCEP)
<i>Dorosoma petenense</i> .....	Threadfin Shad	(DORPET)
<b>Order Cypriniformes</b>		
<b>Family Cyprinidae</b>		<b>carps and minnows</b>
<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)
<b>Family Catostomidae</b>		<b>suckers</b>
<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)
<b>Order Siluriformes</b>		
<b>Family Ictaluridae</b>		<b>North American catfishes</b>
<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)
<b>Order Salmoniformes</b>		
<b>Family Salmonidae</b>		<b>trouts and salmons</b>
<i>Oncorhynchus mykiss</i> .....	Rainbow Trout	(ONCMYK)
<i>Salmo trutta</i> .....	Brown Trout	(SALTRU)
<b>Order Cyprinodontiformes</b>		
<b>Family Poeciliidae</b>		<b>livebearers</b>
<i>Gambusia affinis</i> .....	Western Mosquitofish <sup>1</sup>	(GAMAFF)

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

Scientific Name	Common Name	Species Code
<b>Order Perciformes</b>		
<b>Family Moronidae</b>		
	<b>temperate basses</b>	
<i>Morone chrysops</i> .....	White Bass	(MORCHR)
<i>Morone saxatilis</i> .....	Striped Bass	(MORSAX)
<b>Family Centrarchidae</b>		
	<b>sunfishes</b>	
<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)
<b>Family Percidae</b>		
	<b>perches</b>	
<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 were the most abundant species from recent Middle Rio Grande collections.



Table 2. Summary of the September 2017 Rio Grande Silvery Minnow population monitoring results (species list is based on fish collected since 1993), **based on standard sites**.

Family	Common Name	Residence Status <sup>1</sup>	Total Number of Individuals	Percent (%) of Total	Frequency of Occurrence <sup>2</sup>	% Frequency of Occurrence <sup>2</sup>
Clupeidae	Gizzard Shad	N	-	-	-	-
Clupeidae	Threadfin Shad	I	-	-	-	-
Cyprinidae	Central Stoneroller	I	-	-	-	-
Cyprinidae	Goldfish	I	-	-	-	-
Cyprinidae	Red Shiner	N	1,074	23.40	19	95
Cyprinidae	Common Carp	I	122	2.66	13	65
Cyprinidae	Rio Grande Chub	N	-	-	-	-
Cyprinidae	Rio Grande Silvery Minnow	N	1,679	36.58	19	95
Cyprinidae	Golden Shiner	I	-	-	-	-
Cyprinidae	Fathead Minnow	N	17	0.37	5	25
Cyprinidae	Bullhead Minnow	I	14	0.31	1	5
Cyprinidae	Flathead Chub	N	262	5.71	16	80
Cyprinidae	Longnose Dace	N	53	1.15	4	20
Catostomidae	River Carpsucker	N	41	0.89	6	30
Catostomidae	White Sucker	I	19	0.41	3	15
Catostomidae	Smallmouth Buffalo	N	-	-	-	-
Ictaluridae	Black Bullhead	I	-	-	-	-
Ictaluridae	Yellow Bullhead	I	2	0.04	1	5
Ictaluridae	Blue Catfish	N	3	0.07	1	5
Ictaluridae	Channel Catfish	I	297	6.47	16	80
Ictaluridae	Flathead Catfish	N	1	0.02	1	5
Salmonidae	Rainbow Trout	I	-	-	-	-
Salmonidae	Brown Trout	I	-	-	-	-
Poeciliidae	Western Mosquitofish	I	1,002	21.83	18	90
Moronidae	White Bass	I	2	0.04	2	10
Moronidae	Striped Bass	I	-	-	-	-
Centrarchidae	Green Sunfish	I	-	-	-	-
Centrarchidae	Bluegill	N	-	-	-	-
Centrarchidae	Longear Sunfish	I	-	-	-	-
Centrarchidae	Smallmouth Bass	I	-	-	-	-
Centrarchidae	Largemouth Bass	I	1	0.02	1	5
Centrarchidae	White Crappie	I	1	0.02	1	5
Centrarchidae	Black Crappie	I	-	-	-	-
Percidae	Yellow Perch	I	-	-	-	-
Percidae	Bigscale Logperch	I	-	-	-	-
Percidae	Walleye	I	-	-	-	-
<b>Monthly Total</b>			<b>4,590</b>	<b>100.00</b>		

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

<sup>2</sup> = Frequency and % frequency of occurrence were based on 20 site samples.

Table 3. Summary of the September 2017 Rio Grande Silvery Minnow population monitoring results (species list is based on fish collected since 1993), **based on all sites**.

Family	Common Name	Residence Status <sup>1</sup>	Total Number of Individuals	Percent (%) of Total	Frequency of Occurrence <sup>2</sup>	% Frequency of Occurrence <sup>2</sup>
Clupeidae	Gizzard Shad	N	-	-	-	-
Clupeidae	Threadfin Shad	I	-	-	-	-
Cyprinidae	Central Stoneroller	I	-	-	-	-
Cyprinidae	Goldfish	I	-	-	-	-
Cyprinidae	Red Shiner	N	1,120	23.56	20	95
Cyprinidae	Common Carp	I	123	2.59	14	67
Cyprinidae	Rio Grande Chub	N	-	-	-	-
Cyprinidae	Rio Grande Silvery Minnow	N	1,760	37.02	20	95
Cyprinidae	Golden Shiner	I	-	-	-	-
Cyprinidae	Fathead Minnow	N	17	0.36	5	24
Cyprinidae	Bullhead Minnow	I	14	0.29	1	5
Cyprinidae	Flathead Chub	N	274	5.76	17	81
Cyprinidae	Longnose Dace	N	53	1.11	4	19
Catostomidae	River Carpsucker	N	41	0.86	6	29
Catostomidae	White Sucker	I	19	0.40	3	14
Catostomidae	Smallmouth Buffalo	N	-	-	-	-
Ictaluridae	Black Bullhead	I	-	-	-	-
Ictaluridae	Yellow Bullhead	I	3	0.06	2	10
Ictaluridae	Blue Catfish	N	3	0.06	1	5
Ictaluridae	Channel Catfish	I	317	6.67	17	81
Ictaluridae	Flathead Catfish	N	1	0.02	1	5
Salmonidae	Rainbow Trout	I	-	-	-	-
Salmonidae	Brown Trout	I	-	-	-	-
Poeciliidae	Western Mosquitofish	I	1,005	21.14	19	90
Moronidae	White Bass	I	2	0.04	2	10
Moronidae	Striped Bass	I	-	-	-	-
Centrarchidae	Green Sunfish	I	-	-	-	-
Centrarchidae	Bluegill	N	-	-	-	-
Centrarchidae	Longear Sunfish	I	-	-	-	-
Centrarchidae	Smallmouth Bass	I	-	-	-	-
Centrarchidae	Largemouth Bass	I	1	0.02	1	5
Centrarchidae	White Crappie	I	1	0.02	1	5
Centrarchidae	Black Crappie	I	-	-	-	-
Percidae	Yellow Perch	I	-	-	-	-
Percidae	Bigscale Logperch	I	-	-	-	-
Percidae	Walleye	I	-	-	-	-
<b>Monthly Total</b>			<b>4,754</b>	<b>100.00</b>		

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

<sup>2</sup> = Frequency and % frequency of occurrence were based on 21 site samples.

Table 4. Summary of the Rio Grande Silvery Minnow population monitoring results by month, **based on all sites**. Sampling was not conducted in February of 2017.

Family	Common Name	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Total
Clupeidae	Gizzard Shad	-	-	2	2	2	3	-	-	-	9
Clupeidae	Threadfin Shad	-	-	-	4	-	-	-	-	-	4
Cyprinidae	Central Stoneroller	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Goldfish	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Red Shiner	-	159	602	1,264	2,388	1,651	1,120	-	-	7,184
Cyprinidae	Common Carp	-	12	149	408	188	121	123	-	-	1,001
Cyprinidae	Rio Grande Chub	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Rio Grande Silvery Minnow	-	111	119	2,327	6,920	4,339	1,760	-	-	15,576
Cyprinidae	Golden Shiner	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Fathead Minnow	-	4	6	63	18	75	17	-	-	183
Cyprinidae	Bullhead Minnow	-	-	-	-	1	-	14	-	-	15
Cyprinidae	Flathead Chub	-	84	215	426	185	591	274	-	-	1,775
Cyprinidae	Longnose Dace	-	28	41	93	72	98	53	-	-	385
Catostomidae	River Carpsucker	-	2	5	9	111	159	41	-	-	327
Catostomidae	White Sucker	-	9	78	139	108	66	19	-	-	419
Catostomidae	Smallmouth Buffalo	-	-	4	-	20	-	-	-	-	24
Ictaluridae	Black Bullhead	-	-	-	-	9	3	-	-	-	12
Ictaluridae	Yellow Bullhead	-	-	-	1	23	26	3	-	-	53
Ictaluridae	Blue Catfish	-	-	2	25	27	24	3	-	-	81
Ictaluridae	Channel Catfish	-	86	61	38	130	873	317	-	-	1,505
Ictaluridae	Flathead Catfish	-	-	1	-	-	-	1	-	-	2
Salmonidae	Rainbow Trout	-	-	-	-	-	1	-	-	-	1
Salmonidae	Brown Trout	-	-	-	-	-	-	-	-	-	0
Poeciliidae	Western Mosquitofish	-	4	43	123	650	1,298	1,005	-	-	3,123
Moronidae	White Bass	-	-	1	1	-	2	2	-	-	6
Moronidae	Striped Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Green Sunfish	-	-	1	-	-	-	-	-	-	1
Centrarchidae	Bluegill	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Longear Sunfish	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Smallmouth Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Largemouth Bass	-	1	1	-	16	14	1	-	-	33
Centrarchidae	White Crappie	-	-	-	1	8	9	1	-	-	19
Centrarchidae	Black Crappie	-	-	-	-	-	-	-	-	-	0
Percidae	Yellow Perch	-	-	-	-	-	-	-	-	-	0
Percidae	Bigscale Logperch	-	-	-	-	-	-	-	-	-	0
Percidae	Walleye	-	-	-	-	-	-	-	-	-	0
<b>Monthly Totals</b>		-	<b>500</b>	<b>1,331</b>	<b>4,924</b>	<b>10,876</b>	<b>9,353</b>	<b>4,754</b>	-	-	<b>31,738</b>

Table 5. Summary of the abundance of Rio Grande Silvery Minnow, by reach, site, and month, during 2017, **based on all sites**. Marked individuals at sites are shown in parentheses. Sampling was not conducted in February of 2017. Sampling was conducted at the additional sites only in May of 2017. Sampling was conducted at the replacement sites only in September of 2017.

Reach	Site	Locality	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Total
Angostura	1	Angostura Dam	-	-	-	-	1(0)	33(0)	8(0)	-	-	42
Angostura	2	Bernalillo	-	8(0)	-	9(0)	82(0)	54(0)	21(0)	-	-	174
Angostura	3	Rio Rancho	-	-	1(0)	12(0)	58(0)	144(0)	84(0)	-	-	299
Angostura	21	Site 21	-	-	3(0)	-	-	-	-	-	-	3
Angostura	22	Site 22	-	-	-	-	-	-	-	-	-	0
Angostura	23	Site 23	-	-	1(0)	-	-	-	-	-	-	1
Angostura	24	Site 24	-	-	10(0)	-	-	-	-	-	-	10
Angostura	4	Central Ave.	-	9(0)	28(0)	201(0)	533(0)	54(0)	13(0)	-	-	838
Angostura	5	Rio Bravo Blvd.	-	18(0)	14(0)	17(0)	141(0)	67(0)	6(0)	-	-	263
Angostura	25	Site 25	-	-	11(0)	-	-	-	-	-	-	11
<i>Angostura Totals</i>			-	35	68	239	815	352	132	-	-	1,641
Isleta	26	Site 26	-	-	7(0)	-	-	-	-	-	-	7
Isleta	6	Los Lunas	-	-	-	796(0)	76(0)	224(0)	227(0)	-	-	1,323
Isleta	27	Site 27	-	-	2(0)	-	-	-	-	-	-	2
Isleta	7	Belen	-	-	2(0)	555(0)	231(0)	14(0)	21(0)	-	-	823
Isleta	8	Jarales	-	2(0)	2(0)	177(0)	389(0)	35(0)	170(0)	-	-	775
Isleta	28	Site 28	-	-	1(0)	-	-	-	-	-	-	1
Isleta	9	Bernardo	-	-	-	11(0)	326(0)	197(0)	67(0)	-	-	601
Isleta	10	La Joya	-	-	1(0)	15(0)	293(0)	158(0)	81(0)	-	-	548
Isleta	29	Site 29	-	-	1(0)	-	-	-	-	-	-	1
Isleta	11	North of San Acacia	-	-	-	8(0)	784(0)	340(0)	47(0)	-	-	1,179
<i>Isleta Totals</i>			-	2	16	1,562	2,099	968	613	-	-	5,260
San Acacia	12	San Acacia Dam	-	15(0)	2(0)	3(0)	1566(0)	165(0)	328(0)	-	-	2,079
San Acacia	13	South of San Acacia	-	37(0)	12(0)	75(0)	899(0)	760(0)	28(0)	-	-	1,811
San Acacia	30	Site 30	-	-	16(0)	-	-	-	-	-	-	16
San Acacia	14	Socorro	-	1(0)	-	16(0)	251(0)	1686(0)	83(0)	-	-	2,037
<b>San Acacia</b>	<b>53</b>	<b>Site 53</b>	-	-	-	-	-	-	<b>81(0)</b>	-	-	<b>81</b>
San Acacia	15	North of San Antonio	-	18(0)	2(0)	7(0)	588(0)	181(0)	228(0)	-	-	1,024
San Acacia	16	San Antonio	-	-	1(0)	17(0)	562(0)	105(0)	228(0)	-	-	913
San Acacia	17	South of San Antonio	-	-	1(0)	214(0)	84(0)	1(0)	-	-	-	300
San Acacia	18	San Marcial	-	2(0)	-	48(0)	21(0)	90(0)	9(0)	-	-	170
San Acacia	19	South of San Marcial 1	-	1(1)	-	146(0)	8(0)	26(0)	14(0)	-	-	195
San Acacia	20	South of San Marcial 2	-	-	1(1)	-	27(0)	5(0)	16(0)	-	-	49
<i>San Acacia Totals</i>			-	74	35	526	4,006	3,019	1,015	-	-	8,675
<b>Monthly Totals</b>			-	<b>111</b>	<b>119</b>	<b>2,327</b>	<b>6,920</b>	<b>4,339</b>	<b>1,760</b>	-	-	<b>15,576</b>

Table 6. Summary of the abundance of Rio Grande Silvery Minnow, by reach, site and mesohabitat, during September 2017, **based on all sites**. Blank cells indicate site-specific mesohabitats that were unavailable for sampling.

Reach	Site	Locality	BW	PO	RU	SHPO	SHRU	Total
Angostura	1	Angostura Dam	-	4	-	3	1	8
Angostura	2	Bernalillo	-	-	-	12	9	21
Angostura	3	Rio Rancho	-	-	-	7	77	84
Angostura	4	Central Ave.	-	1	5	-	7	13
Angostura	5	Rio Bravo Blvd.	1	1	-	4	-	6
<i>Angostura Totals</i>			<i>1</i>	<i>6</i>	<i>5</i>	<i>26</i>	<i>94</i>	<i>132</i>
Isleta	6	Los Lunas	1	7	134	3	82	227
Isleta	7	Belen	-	-	-	21	-	21
Isleta	8	Jarales	-	-	-	62	108	170
Isleta	9	Bernardo	-	-	28	-	39	67
Isleta	10	La Joya	-	59	3	2	17	81
Isleta	11	North of San Acacia	-	-	14	-	33	47
<i>Isleta Totals</i>			<i>1</i>	<i>66</i>	<i>179</i>	<i>88</i>	<i>279</i>	<i>613</i>
San Acacia	12	San Acacia Dam	-	69	35	141	83	328
San Acacia	13	South of San Acacia	1	-	11	-	16	28
San Acacia	14	Socorro	-	19	9	14	41	83
<b>San Acacia</b>	<b>53</b>	<b>Site 53</b>	<b>2</b>	-	<b>24</b>	<b>20</b>	<b>35</b>	<b>81</b>
San Acacia	15	North of San Antonio	10	-	23	97	98	228
San Acacia	16	San Antonio	21	-	71	49	87	228
San Acacia	17	South of San Antonio	-	-	-	-	-	0
San Acacia	18	San Marcial	1	-	6	1	1	9
San Acacia	19	South of San Marcial 1	2	4	1	5	2	14
San Acacia	20	South of San Marcial 2	2	4	3	-	7	16
<i>San Acacia Totals</i>			<i>39</i>	<i>96</i>	<i>183</i>	<i>327</i>	<i>370</i>	<i>1,015</i>
<b>Monthly Totals</b>			<b>41</b>	<b>168</b>	<b>367</b>	<b>441</b>	<b>743</b>	<b>1,760</b>

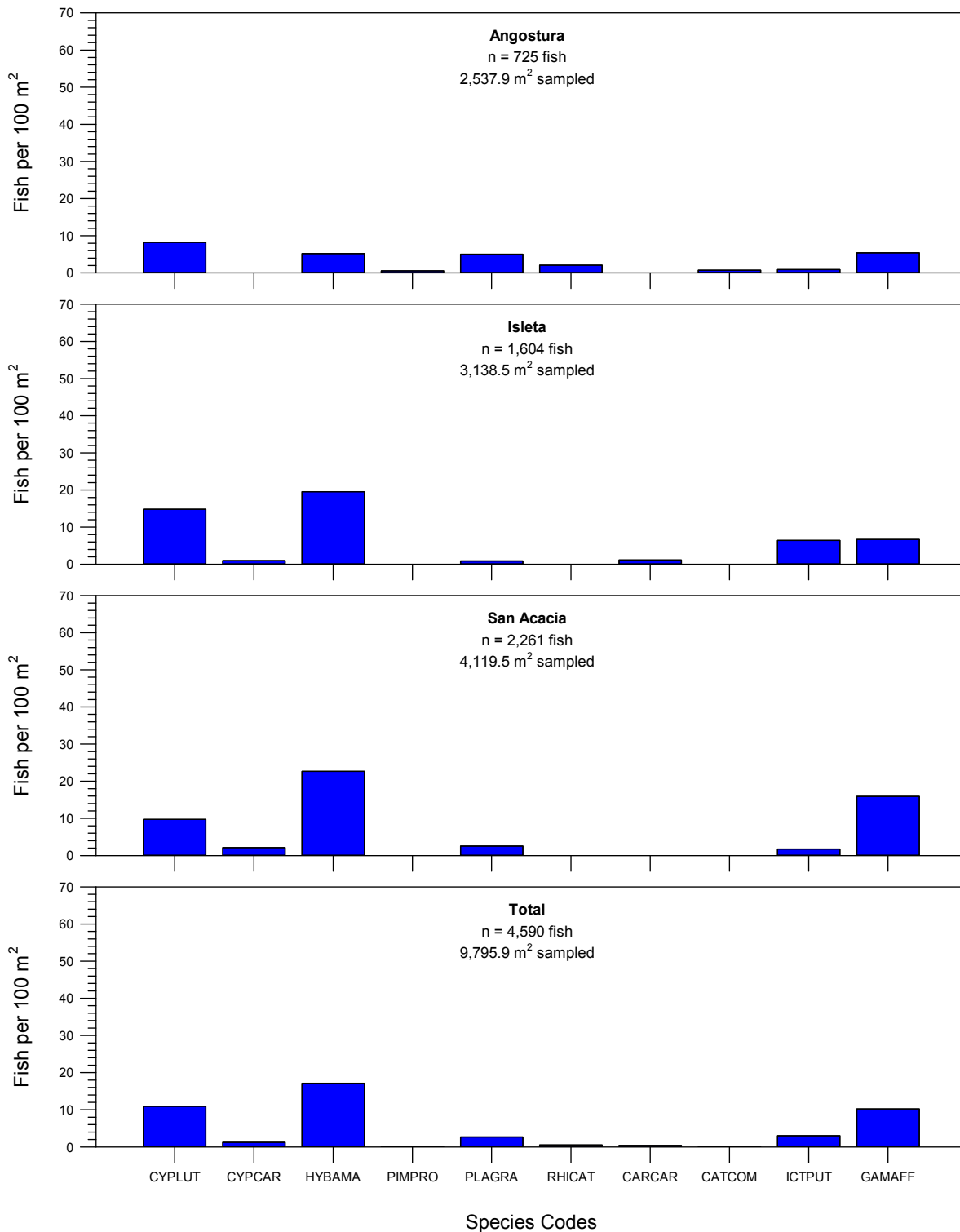


Figure 3. Fish densities during September 2017 for each focal species (see Table 1 for species codes), by sampling reach, **based on standard sites**. Note: all marked and unmarked individuals are included.

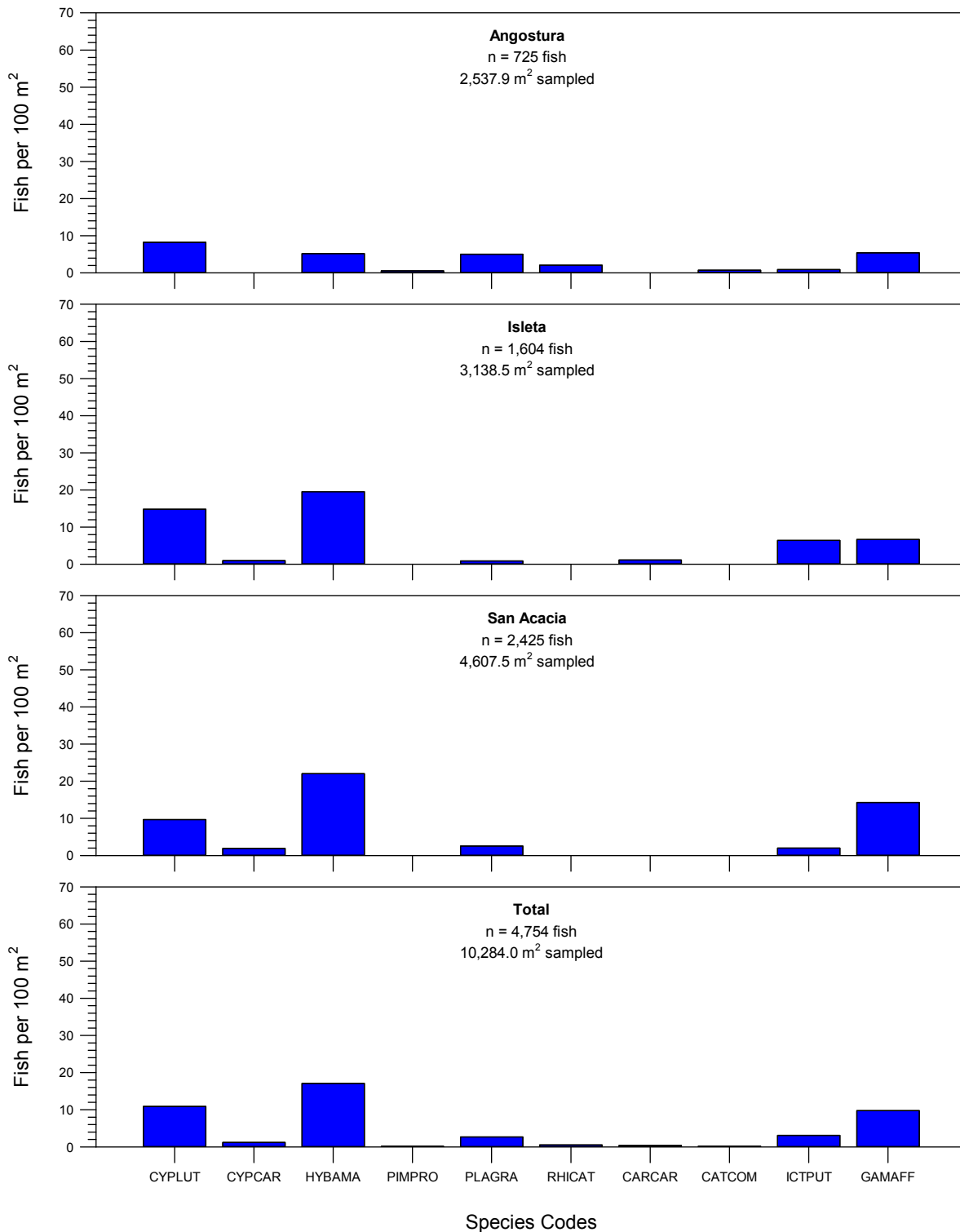


Figure 4. Fish densities during September 2017 for each focal species (see Table 1 for species codes), by sampling reach, **based on all sites**. Note: all marked and unmarked individuals are included.

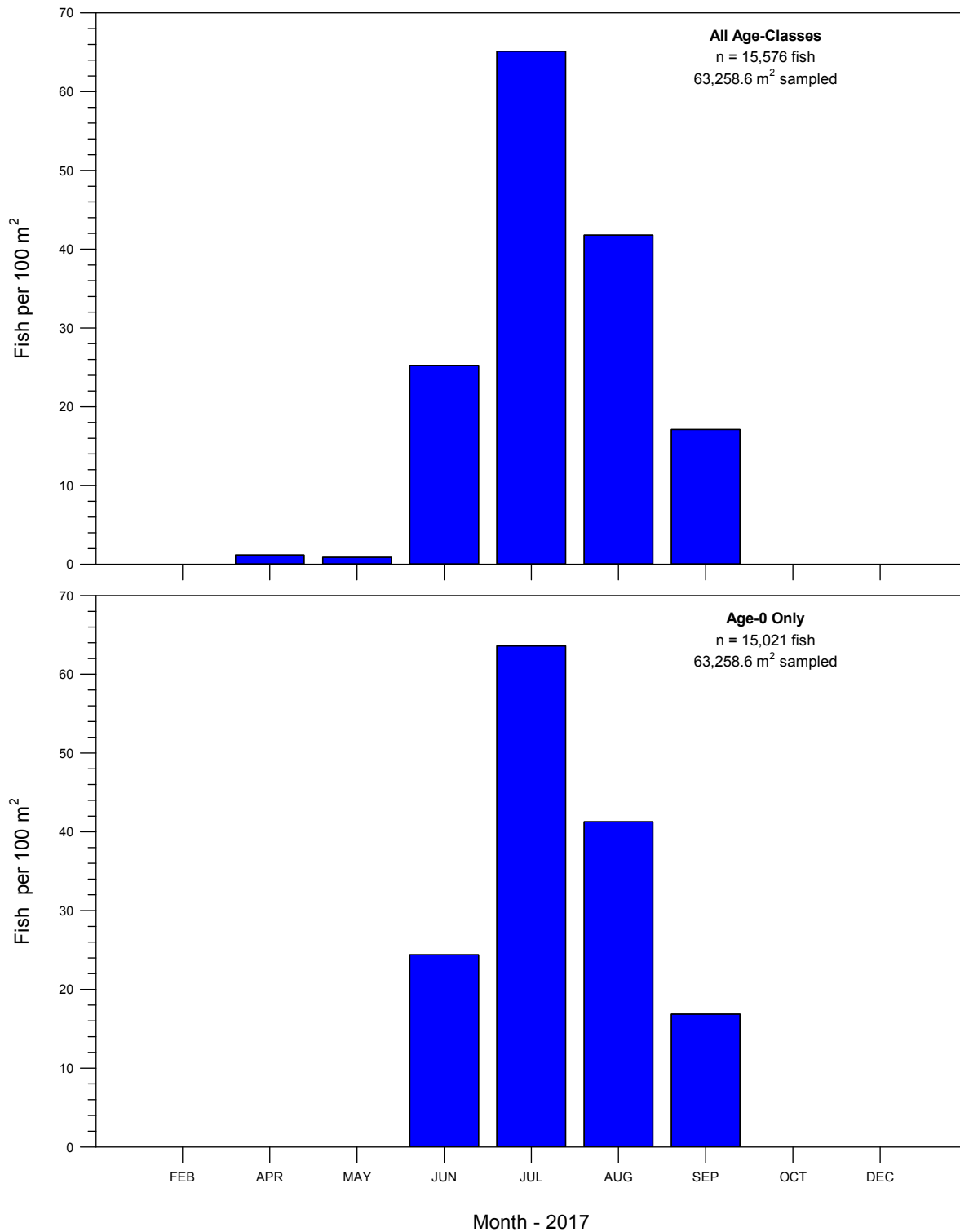


Figure 5. Rio Grande Silvery Minnow densities (all age-classes and age-0 only) during 2017, by sampling month, **based on all sites**. Note: all marked and unmarked individuals are included. Sampling was not conducted in February of 2017.



## **APPENDIX A (Sampling Sites)**

### **Middle Rio Grande Fish Sampling Sites**

Table A - 1. Sampling reaches and **standard sites** for population monitoring of Rio Grande Silvery Minnow in the Middle Rio Grande, NM.

Reach and Site	Locality
<b>Angostura Reach</b>	
1	New Mexico, Sandoval County, Rio Grande, downstream of Angostura Diversion Dam, Algodones. River Mile: 209.7; UTM Easting: 363811; UTM Northing: 3916006; Zone: 13S; Datum: NAD27
2	New Mexico, Sandoval County, Rio Grande, upstream of US Highway 550 bridge crossing, Bernalillo. River Mile: 203.8; UTM Easting: 358543; UTM Northing: 3909722; Zone: 13S; Datum: NAD27
3	New Mexico, Sandoval County, Rio Grande, ca. 4.0 miles downstream of US Highway 550 bridge crossing, east and upstream of Rio Rancho Wastewater Treatment Plant, Rio Rancho. River Mile: 200.0; UTM Easting: 354772; UTM Northing: 3905355; Zone: 13S; Datum: NAD27
4	New Mexico, Bernalillo County, Rio Grande, upstream of Central Avenue (US Highway 66) bridge crossing, Albuquerque. River Mile: 183.4; UTM Easting: 346840; UTM Northing: 3884094; Zone: 13S; Datum: NAD27
5	New Mexico, Bernalillo County, Rio Grande, upstream of Rio Bravo Boulevard bridge crossing, Albuquerque. River Mile: 178.3; UTM Easting: 347554; UTM Northing: 3877163; Zone: 13S; Datum: NAD27
<b>Isleta Reach</b>	
6	New Mexico, Valencia County, Rio Grande, ca. 0.3 miles upstream of Los Lunas (NM State Highway 49) bridge crossing, Los Lunas. River Mile: 161.4; UTM Easting: 342898; UTM Northing: 3852531; Zone: 13S; Datum: NAD27
7	New Mexico, Valencia County, Rio Grande, ca. 1.0 miles upstream of NM State Highway 309/6 bridge crossing, Belen. River Mile: 151.5; UTM Easting: 339972; UTM Northing: 3837061; Zone: 13S; Datum: NAD27
8	New Mexico, Valencia County, Rio Grande, ca. 2.2 miles upstream of NM State Highway 346 bridge crossing, Jarales. River Mile: 143.2; UTM Easting: 338136; UTM Northing: 3827329; Zone: 13S; Datum: NAD27
9	New Mexico, Socorro County, Rio Grande, upstream of US Highway 60 bridge crossing, Bernardo. River Mile: 130.6; UTM Easting: 334604; UTM Northing: 3809726; Zone: 13S; Datum: NAD27
10	New Mexico, Socorro County, Rio Grande, ca. 3.5 miles downstream of US Highway 60 bridge crossing, La Joya. River Mile: 127.0; UTM Easting: 331094; UTM Northing: 3805229; Zone: 13S; Datum: NAD27
11	New Mexico, Socorro County, Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia. River Mile: 116.8; UTM Easting: 327902; UTM Northing: 3792603; Zone: 13S; Datum: NAD27

Table A - 1. Sampling reaches and **standard sites** for population monitoring of Rio Grande Silvery Minnow in the Middle Rio Grande, NM (continued).

Reach and Site	Locality
<b>San Acacia Reach</b>	
12	New Mexico, Socorro County, Rio Grande, downstream of San Acacia Diversion Dam, San Acacia. River Mile: 116.2; UTM Easting: 326162; UTM Northing: 3791977; Zone: 13S; Datum: NAD27
13	New Mexico, Socorro County, Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. River Mile: 114.6; UTM Easting: 325263; UTM Northing: 3790442; Zone: 13S; Datum: NAD27
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. River Mile: 99.5; UTM Easting: 327097; UTM Northing: 3771043; Zone: 13S; Datum: NAD27
15	New Mexico, Socorro County, Rio Grande, ca. 4.0 miles upstream of US Highway 380 bridge crossing, San Antonio. River Mile: 91.7; UTM Easting: 328140; UTM Northing: 3761283; Zone: 13S; Datum: NAD27
16	New Mexico, Socorro County, Rio Grande, upstream of US Highway 380 bridge crossing, San Antonio. River Mile: 87.1; UTM Easting: 328914; UTM Northing: 3754471; Zone: 13S; Datum: NAD27
17	New Mexico, Socorro County, Rio Grande, directly east of Bosque del Apache National Wildlife Refuge headquarters, San Antonio. River Mile: 79.1; UTM Easting: 327055; UTM Northing: 3740839; Zone: 13S; Datum: NAD27
18	New Mexico, Socorro County, Rio Grande, downstream of the San Marcial railroad crossing, San Marcial. River Mile: 68.6; UTM Easting: 315284; UTM Northing: 3728347; Zone: 13S; Datum: NAD27
19	New Mexico, Socorro County, Rio Grande, ca. 8.0 miles downstream of the San Marcial Railroad Bridge crossing, San Marcial. River Mile: 60.5; UTM Easting: 309487; UTM Northing: 3718178; Zone: 13S; Datum: NAD27
20	New Mexico, Socorro County, Rio Grande, ca. 10.0 miles downstream of the San Marcial Railroad Bridge crossing, San Marcial. River Mile: 58.8; UTM Easting: 307846; UTM Northing: 3716150; Zone: 13S; Datum: NAD27

Table A - 2. Sampling reaches and **replacement sites** for population monitoring of Rio Grande Silvery Minnow in the Middle Rio Grande, NM.

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<b>Reach and Site</b>	<b>Locality</b>
<b>San Acacia Reach</b>	
53	New Mexico, Socorro County, Rio Grande, ca. 7.9 miles upstream of US HWY 380 bridge crossing, San Antonio. River Mile: 96.0; UTM Easting: 327972; UTM Northing: 3766569; Zone: 13S; Datum: NAD83

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### **APPENDIX B (Site-Specific Ichthyofaunal Composition)**

Site-specific ichthyofaunal composition during the September 2017  
Rio Grande Silvery Minnow population monitoring study,  
***based on standard and replacement sites***

Monthly and annual reports, along with raw data, 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 (Standard Sites)  
September 2017**

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

**RKD17-148**

Site Number: 1 River Mile: 209.7 08 September 2017  
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo  
R.K. Dudley, M.J. Chavez, A.C. Wedemeyer Effort: 452.2 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	12
76	<i>Hybognathus amarus*</i>	8
76	<i>Platygobio gracilis</i>	20
76	<i>Rhinichthys cataractae</i>	16
81	<i>Catostomus commersonii</i>	4
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	92
283	<i>Morone chrysops</i>	1
294	<i>Micropterus salmoides</i>	1
<b>*Hybognathus amarus (age-classes):</b>		
	age-0	7
	age-1	1
	age-2+	

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-149**

Site Number: 2 River Mile: 203.8 08 September 2017  
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo  
R.K. Dudley, M.J. Chavez, A.C. Wedemeyer Effort: 527.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	47
76	<i>Hybognathus amarus*</i>	21
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	43
76	<i>Rhinichthys cataractae</i>	24
81	<i>Carpiodes carpio</i>	1
81	<i>Catostomus commersonii</i>	11
93	<i>Ameiurus natalis</i>	2

**\*Hybognathus amarus (age-classes):**

age-0	16
age-1	5
age-2+	

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage

**RKD17-150**

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

08 September 2017

UTM Easting: 354772

UTM Northing: 3905355

Zone: 13

Quad: Bernalillo

R.K. Dudley, M.J. Chavez, A.C. Wedemeyer

Effort: 545.3 sq. m

<b><u>FAMILY</u></b>		<b><u>N</u></b>
76	<i>Cyprinella lutrensis</i>	64
76	<i>Hybognathus amarus*</i>	84
76	<i>Pimephales promelas</i>	9
76	<i>Platygobio gracilis</i>	20
76	<i>Rhinichthys cataractae</i>	11
81	<i>Catostomus commersonii</i>	4
93	<i>Ictalurus punctatus</i>	4
212	<i>Gambusia affinis</i>	19

**\*Hybognathus amarus (age-classes):**

age-0	78
age-1	6
age-2+	



**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage  
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.

**RKD17-147**

Site Number: 4 River Mile: 183.4 08 September 2017  
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West  
R.K. Dudley, M.J. Chavez, A.C. Wedemeyer Effort: 530.8 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	37
76	<i>Cyprinus carpio</i>	4
76	<i>Hybognathus amarus*</i>	13
76	<i>Platygobio gracilis</i>	29
76	<i>Rhinichthys cataractae</i>	2
93	<i>Ictalurus punctatus</i>	13
212	<i>Gambusia affinis</i>	8

**\*Hybognathus amarus (age-classes):**

age-0 13  
age-1  
age-2+

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage

**RKD17-146**

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

Site Number: 5

River Mile: 178.3

08 September 2017

UTM Easting: 347554

UTM Northing: 3877163

Zone: 13

Quad: Albuquerque West

R.K. Dudley, M.J. Chavez, A.C. Wedemeyer

Effort: 482.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	49
76	<i>Hybognathus amarus*</i>	6
76	<i>Pimephales promelas</i>	4
76	<i>Platygobio gracilis</i>	16
81	<i>Carpionodes carpio</i>	1
93	<i>Ictalurus punctatus</i>	4
212	<i>Gambusia affinis</i>	18

**\*Hybognathus amarus (age-classes):**

age-0 6

age-1

age-2+

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-145**

Site Number: 6 River Mile: 161.4 07 September 2017  
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas  
A.L. Barkalow, A.C. Wedemeyer, M.J. Chavez Effort: 535.9 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	168
76	<i>Cyprinus carpio</i>	7
76	<i>Hybognathus amarus*</i>	227
76	<i>Pimephales promelas</i>	2
76	<i>Platygobio gracilis</i>	7
93	<i>Ictalurus punctatus</i>	55
212	<i>Gambusia affinis</i>	15

**\*Hybognathus amarus (age-classes):**

age-0	220
age-1	7
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.

**RKD17-144**

Site Number: 7 River Mile: 151.5 07 September 2017  
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome  
A.L. Barkalow, A.C. Wedemeyer, M.J. Chavez Effort: 490.4 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	62
76	<i>Cyprinus carpio</i>	4
76	<i>Hybognathus amarus*</i>	21
81	<i>Carpodes carpio</i>	13
93	<i>Ictalurus punctatus</i>	26
212	<i>Gambusia affinis</i>	73

**\*Hybognathus amarus (age-classes):**

age-0	20
age-1	1
age-2+	

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-143**

Site Number: 8 River Mile: 143.2 07 September 2017  
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita  
A.L. Barkalow, A.C. Wedemeyer, M.J. Chavez Effort: 543.9 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	132
76	<i>Cyprinus carpio</i>	14
76	<i>Hybognathus amarus*</i>	170
76	<i>Pimephales vigilax</i>	14
76	<i>Platygobio gracilis</i>	1
81	<i>Carpoides carpio</i>	21
93	<i>Ictalurus punctatus</i>	61
212	<i>Gambusia affinis</i>	61

**\*Hybognathus amarus (age-classes):**

age-0	169
age-1	1
age-2+	

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-142**

Site Number: 9 River Mile: 130.6 07 September 2017  
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas  
A.L. Barkalow, A.C. Wedemeyer, M.J. Chavez Effort: 546.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	47
76	<i>Hybognathus amarus*</i>	67
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	6
93	<i>Ictalurus punctatus</i>	5
212	<i>Gambusia affinis</i>	2

**\*Hybognathus amarus (age-classes):**

age-0	66
age-1	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.

**RKD17-141**

Site Number: 10 River Mile: 127.0 07 September 2017  
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas  
A.L. Barkalow, A.C. Wedemeyer, M.J. Chavez Effort: 521.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	54
76	<i>Hybognathus amarus*</i>	81
76	<i>Platygobio gracilis</i>	3
81	<i>Carpoides carpio</i>	2
93	<i>Ictalurus punctatus</i>	3
212	<i>Gambusia affinis</i>	11

**\*Hybognathus amarus (age-classes):**

age-0	79
age-1	2
age-2+	

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-140**

Site Number: 11 River Mile: 116.8 06 September 2017  
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya  
M.A. Farrington, S.L. Clark Barkalow, M.J. Chavez, A.C. Wedemeyer Effort: 500.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	2
76	<i>Cyprinus carpio</i>	6
76	<i>Hybognathus amarus*</i>	47
76	<i>Platygobio gracilis</i>	12
93	<i>Ictalurus punctatus</i>	52
212	<i>Gambusia affinis</i>	48
294	<i>Pomoxis annularis</i>	1

**\*Hybognathus amarus (age-classes):**

age-0 47  
age-1  
age-2+

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

**RKD17-139**

Site Number: 12 River Mile: 116.2 06 September 2017  
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia  
M.A. Farrington, S.L. Clark Barkalow, M.J. Chavez, A.C. Wedemeyer Effort: 492.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	82
76	<i>Cyprinus carpio</i>	11
76	<i>Hybognathus amarus*</i>	328
76	<i>Platygobio gracilis</i>	18
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	15

**\*Hybognathus amarus (age-classes):**

age-0 327  
age-1 1  
age-2+

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-138**

Site Number: 13 River Mile: 114.6 06 September 2017  
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar  
M.A. Farrington, S.L. Clark Barkalow, M.J. Chavez, A.C. Wedemeyer Effort: 533.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	44
76	<i>Cyprinus carpio</i>	2
76	<i>Hybognathus amarus*</i>	28
76	<i>Platygobio gracilis</i>	15
93	<i>Ictalurus punctatus</i>	3
212	<i>Gambusia affinis</i>	14

**\*Hybognathus amarus (age-classes):**

age-0	26
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.

**RKD17-137**

Site Number: 14 River Mile: 99.5 06 September 2017  
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas  
M.A. Farrington, S.L. Clark Barkalow, M.J. Chavez, A.C. Wedemeyer Effort: 490.4 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	2
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus*</i>	83
76	<i>Platygobio gracilis</i>	13
93	<i>Ictalurus punctatus</i>	7
93	<i>Pylodictis olivaris</i>	1
212	<i>Gambusia affinis</i>	13

**\*Hybognathus amarus (age-classes):**

age-0	83
age-1	
age-2+	

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-136**

Site Number: 15 River Mile: 91.7  
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13  
M.A. Farrington, S.L. Clark Barkalow, M.J. Chavez, A.C. Wedemeyer

06 September 2017  
Quad: San Antonio  
Effort: 531.8 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	20
76	<i>Cyprinus carpio</i>	4
76	<i>Hybognathus amarus*</i>	228
76	<i>Platygobio gracilis</i>	42
93	<i>Ictalurus punctatus</i>	6
212	<i>Gambusia affinis</i>	5

**\*Hybognathus amarus (age-classes):**

age-0 228  
age-1  
age-2+



**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-135**

Site Number: 16 River Mile: 87.1  
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13  
A.L. Barkalow, S.L. Clark Barkalow, A.C. Wedemeyer, M.J. Chavez

05 September 2017  
Quad: San Antonio  
Effort: 539.9 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	64
76	<i>Cyprinus carpio</i>	2
76	<i>Hybognathus amarus*</i>	228
76	<i>Platygobio gracilis</i>	14
81	<i>Carpoides carpio</i>	3
93	<i>Ictalurus furcatus</i>	3
93	<i>Ictalurus punctatus</i>	39
212	<i>Gambusia affinis</i>	34

**\*Hybognathus amarus (age-classes):**  
age-0 228  
age-1  
age-2+

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

**RKD17-134**

Site Number: 17 River Mile: 79.1  
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13  
A.L. Barkalow, S.L. Clark Barkalow, A.C. Wedemeyer, M.J. Chavez

05 September 2017  
Quad: San Antonio SE  
Effort: sq. m

<u>FAMILY</u>		<u>N</u>
	Site Not Sampled (Site Dry)	

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-133**

Site Number: 18 River Mile: 68.6  
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13  
A.L. Barkalow, S.L. Clark Barkalow, A.C. Wedemeyer, M.J. Chavez

05 September 2017  
Quad: San Marcial  
Effort: 486.8 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	98
76	<i>Cyprinus carpio</i>	34
76	<i>Hybognathus amarus*</i>	9
212	<i>Gambusia affinis</i>	152
283	<i>Morone chrysops</i>	1

**\*Hybognathus amarus (age-classes):**

age-0 9  
age-1  
age-2+

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

**RKD17-132**

Site Number: 19 River Mile: 60.5  
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13  
A.L. Barkalow, S.L. Clark Barkalow, A.C. Wedemeyer, M.J. Chavez

05 September 2017  
Quad: Paraje Well  
Effort: 525.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	22
76	<i>Cyprinus carpio</i>	22
76	<i>Hybognathus amarus*</i>	14
76	<i>Platygobio gracilis</i>	3
212	<i>Gambusia affinis</i>	120

**\*Hybognathus amarus (age-classes):**

age-0 14  
age-1  
age-2+

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)  
September 2017**

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

**RKD17-131**

Site Number: 20 River Mile: 58.8 05 September 2017  
UTM Easting: 307846 UTM Northing: 3716150 Zone: 13 Quad: Paraje Well  
A.L. Barkalow, S.L. Clark Barkalow, A.C. Wedemeyer, M.J. Chavez Effort: 519.8 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	68
76	<i>Cyprinus carpio</i>	11
76	<i>Hybognathus amarus*</i>	16
93	<i>Ictalurus punctatus</i>	16
212	<i>Gambusia affinis</i>	302

**\*Hybognathus amarus (age-classes):**

age-0 16  
age-1  
age-2+

**Rio Grande Silvery Minnow Population Monitoring (Replacement Sites)  
September 2017**

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage  
Rio Grande, ca. 7.9 miles upstream of US HWY 380 bridge crossing, San Antonio

**RKD17-151**

Site Number: 53 River Mile: 96.0 13 September 2017  
UTM Easting: 327972 UTM Northing: 3766569 Zone: 13 Quad: Loma de las Canas  
R.K. Dudley, A. L. Barkalow, M.J. Chavez Effort: 488.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	46
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus*</i>	81
76	<i>Platygobio gracilis</i>	12
93	<i>Ameiurus natalis</i>	1
93	<i>Ictalurus punctatus</i>	20
212	<i>Gambusia affinis</i>	3

**\*Hybognathus amarus (age-classes):**

age-0 81  
age-1  
age-2+