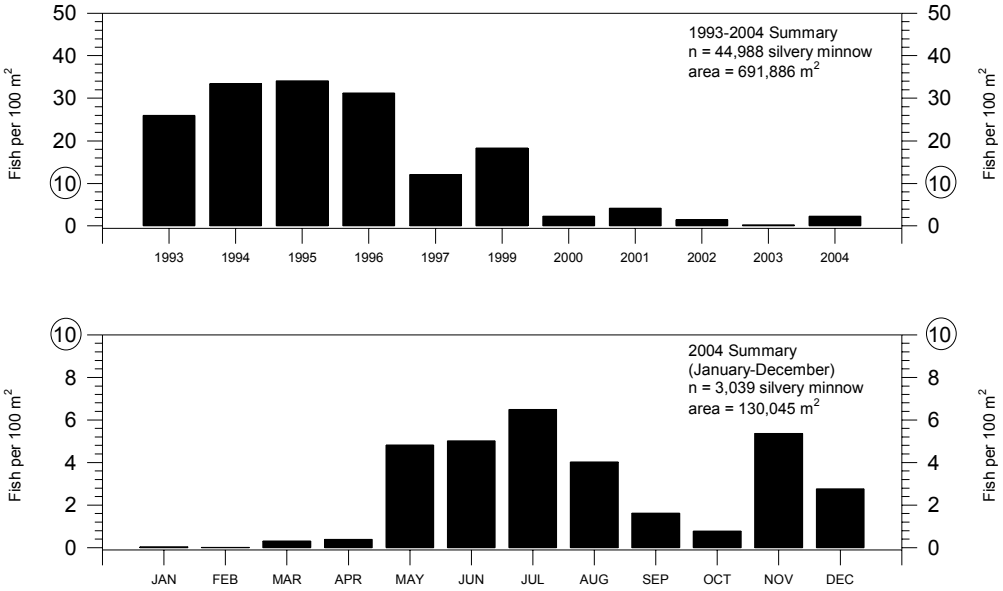
Rio Grande silvery minnow
Population Monitoring Program Results from 2004

Final

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



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15 April 2005

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Funded through the Middle Rio Grande Endangered Species Act Collaborative Program.

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EXECUTIVE SUMMARY

Rio Grande silvery minnow, *Hybognathus amarus*, has been declining in distribution and abundance in the Rio Grande Basin over the past fifty years. It has been extirpated from the Rio Chama, Pecos River, and from the vast majority of its historical range in the mainstem Rio Grande in New Mexico and Texas. The remaining population of this imperiled species resides in a 280 km reach of river between Cochiti Dam and Elephant Butte Reservoir in the Middle Rio Grande of New Mexico. This remnant population has been steadily declining in abundance despite the listing of Rio Grande silvery minnow as a federal endangered species in 1994. Multiple pronounced river drying events over the past decade have eroded the conservation status of this species in its current range. In addition, fragmentation of its remaining range into four segments (35.9, 65.2, 85.5, and 90.4 km long) by diversion dam structures (Angostura, Isleta, and San Acacia) pose threats to the species' long-term persistence.

Analysis of Rio Grande silvery minnow catch rates in 2004 revealed significant differences ($p<0.05$) in mean catch rates between population monitoring localities. The highest catch rates of silvery minnow were generally recorded at upstream sampling localities in each of the respective reaches (i.e., close to diversion dams) although the pattern was not as pronounced as in drought years (e.g., 2002 and 2003). This heterogenous spatial distribution of individuals was most pronounced in the Angostura and Isleta reaches about two months following spawning. In the Angostura Reach, this concentration of individuals was most abundant near Rio Rancho, NM in May but had apparently moved upstream about 15 km to the base of Angostura Diversion Dam by July. Diversion dams allow passive downstream movement of silvery minnow eggs and larvae but block upstream movements of juveniles and adults.

Population monitoring efforts of the fish community in the Middle Rio Grande show that silvery minnow catch rates declined about two orders of magnitude from 1993 to 2004. Additionally, relative abundance of Rio Grande silvery minnow has declined from about 50% of the total ichthyofaunal community in 1995 to about 5% in 2004. However, the October density of silvery minnow was significantly higher ($p<0.05$) in 2004 than in 2003 and autumnal catch rates had increased by over an order of magnitude between those years. The Angostura Reach yielded the most silvery minnow in 2004, followed by the Isleta Reach, and the San Acacia Reach. This was in contrast to previous years of population monitoring where the San Acacia Reach often produced the largest catch rates of silvery minnow. Low flow conditions and the diversion of water at Isleta Diversion Dam during summer of 2004 resulted in river drying in downstream reaches and losses of riverine habitat in the Isleta and San Acacia reaches.

Multivariate analyses of October catch rates of Rio Grande silvery minnow from 1993-2004 revealed significant associations with several hydraulic variables. At the Albuquerque gauge, catch rate increased significantly ($p<0.005$) with maximum spring discharge and all combinations of number of days with discharge exceeding a threshold value (i.e., density positively correlated with extended periods of high discharge). The relationship that explained the most variation (93%) in mean catch rate was number of days with discharge >3,000 cfs during spring; similar patterns were noted using the San Marcial gauge. Peak discharge of >5,000 cfs coupled with a one month period of discharge >3,000 cfs resulted in the highest catch rates of Rio Grande silvery minnow, likely because of increased recruitment success in flooded nursery habitats. In contrast, there was a strong negative relationship between the number of low flow days in the San Acacia Reach (either days<200 cfs or days<100 cfs) and mean October catch rate of Rio Grande silvery minnow. The density/discharge pattern observed for Rio Grande silvery minnow was reversed for red shiner, fathead minnow, and western mosquitofish (i.e., density positively correlated with extended periods of low discharge and negatively correlated with extended periods of high discharge).

The cumulative effects of years of channel drying, downstream displacement, river fragmentation, and habitat degradation continue to be manifested by relatively low numbers of Rio

Grande silvery minnow. However, increased and sustained spring discharge appears to have benefited Rio Grande silvery minnow probably by providing essential nursery habitats for young-of-year during 2004. Despite these short-term gains, a renewed focus on issues that directly affect the immediate survival of wild populations of Rio Grande silvery minnow is essential. Removal of instream barriers that prevent this species from repopulating upstream reaches, the need to maintain increased and variable flow throughout downstream reaches, and restoration and reconnection of the historical floodplain are paramount issues that need to be resolved to assure the continued persistence of Rio Grande silvery minnow in the wild.

INTRODUCTION

Population information on Rio Grande silvery minnow and the associated Middle Rio Grande (Rio Grande between Velarde and Elephant Butte Reservoir, New Mexico) fish community has been gathered regularly since 1987. The first studies were conducted by Platania (1993a) from 1987-1992 to determine spatial and temporal changes in the Middle Rio Grande ichthyofaunal community and to provide resolution of species-specific habitat use patterns. An additional purpose of those preliminary studies was to provide information on the conservation status of Rio Grande silvery minnow. Quarterly sampling efforts during 1989 and 1990 revealed that Rio Grande silvery minnow population numbers were extremely low. Based on previous samples, reduced numbers of silvery minnow indicated a rapid decline of this species in its already greatly reduced range. The 90-95% reduction in the range of Rio Grande silvery minnow and threats to its continued persistence in the Middle Rio Grande were central to this species being listed as endangered by the U. S. Fish and Wildlife Service (U. S. Department of Interior, 1994).

From 1992 until the present, the U. S. Bureau of Reclamation, U. S. Fish and Wildlife Service, New Mexico Department of Game and Fish, and U. S. Army Corps of Engineers have cooperated to fund numerous ichthyofaunal studies in the Middle Rio Grande. Among these studies was long-term monitoring of the distribution and relative abundance of the Middle Rio Grande fish community at numerous sites between Angostura Diversion Dam and Elephant Butte Reservoir (initiated in 1993). While Rio Grande silvery minnow was the primary focus of most efforts, research activities were also designed to provide information about the associated fish community.

The primary objective of the 2004 sampling activities was to monitor the abundance and status of Rio Grande silvery minnow at numerous sites throughout the Middle Rio Grande, New Mexico. Seasonal and spatial differences in population structure and abundance of native and nonnative Middle Rio Grande fishes were also examined. Annual changes in the distribution, abundance, and composition of all fish species were assessed. Information obtained from this study will allow a more thorough understanding of the current conservation status and population dynamics of Rio Grande silvery minnow, both of which are important components for the recovery of this species.

STUDY AREA

The headwaters of the Rio Grande are located in the San Juan Mountains of southern Colorado. The mainstem Rio Grande flows 750 km through New Mexico draining an area of about 68,104 km^2 (excluding closed basins). The Rio Chama is the only major perennial tributary of the Rio Grande in New Mexico and confluences with it near the city of Española. Snowmelt from southern Colorado and northern New Mexico provides the majority of water for the Rio Grande, but transmontane diversions from the San Juan River (Colorado River Basin) supplement flow. The highest flow in the Rio Grande generally occurs shortly after spring snowmelt, while the lowest flow usually occurs in late summer and autumn prior to the cessation of irrigation season. Low flow in the river from March 1 through October 31 is caused, in part, by diversions into irrigation canals. Summer thunderstorms periodically augment low flow in discrete reaches, but do not ensure that the river channel will remain wetted. Precipitation in the region is low and averages <25 cm/year (Gold and Denis, 1985).

The Middle Rio Grande is defined as the reach between Velarde, New Mexico and Elephant Butte Reservoir (Figure 1). This reach changes considerably in hydrological and biological character through its 364 km length. At high elevations, the Middle Rio Grande is a narrow coldwater river with large substrata and a salmonid-dominated fish community. In contrast, downstream areas are wide, sand-bottomed, and support a warmwater fish community. The study area is a segment of the Middle Rio Grande that encompasses the current range of Rio Grande silvery minnow (i.e., below Cochiti

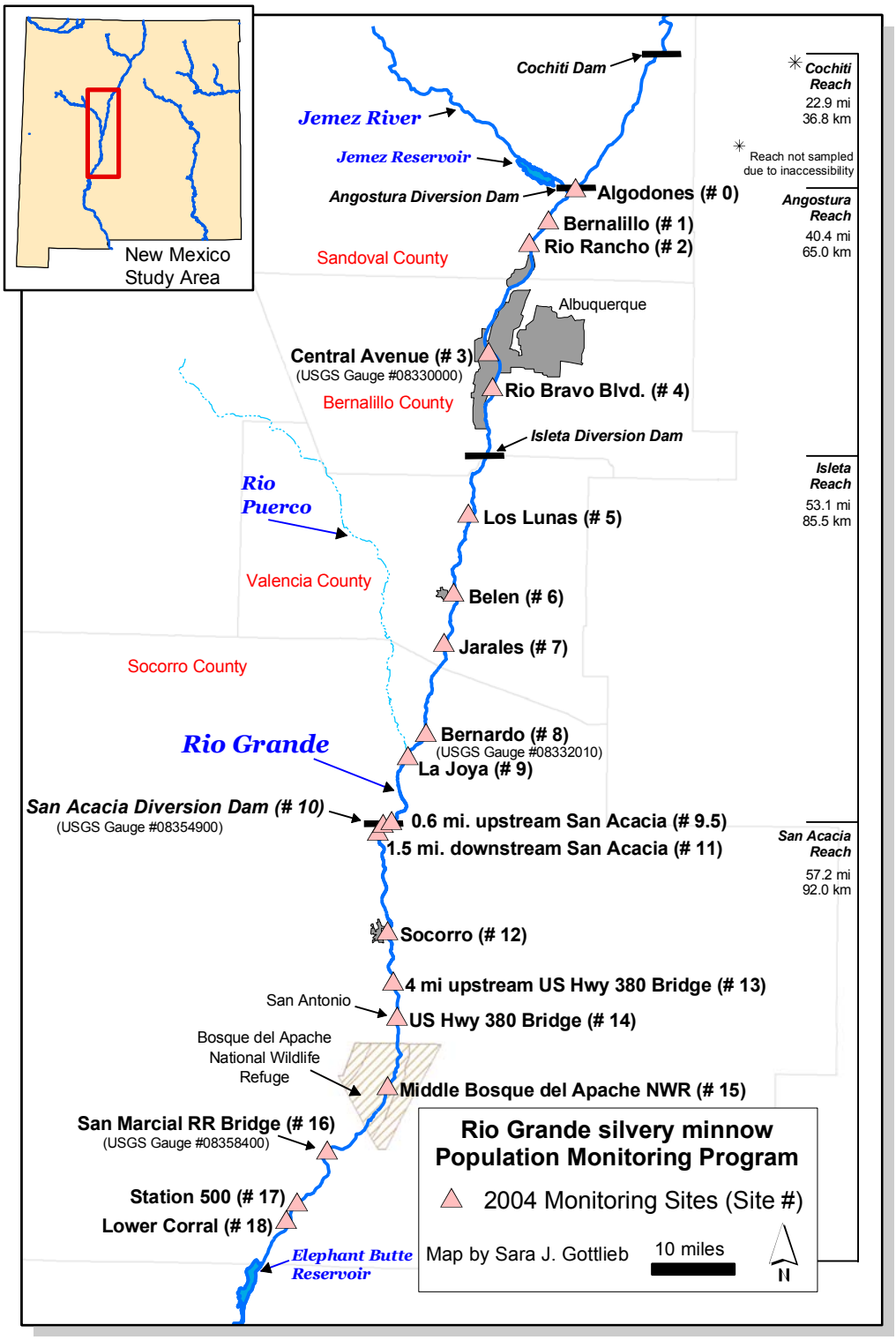

Figure 1. Map of the study area and sampling localities (numbered) for the 2004 Rio Grande silvery minnow population monitoring program. Sampling locality information that corresponds with the numbered localities is provided in Appendix A (Table A-1).

Dam to the inflow of Elephant Butte Reservoir). The Cochiti Reach of the Rio Grande (between Cochiti Dam and Angostura Diversion Dam) passes first through Cochiti Pueblo, then Santo Domingo Pueblo, and finally San Felipe Pueblo; access is currently restricted in this reach, precluding fish sampling during this study. The last comprehensive ichthyofaunal surveys of the Rio Grande in the Cochiti Reach documented the presence, at low abundance, of Rio Grande silvery minnow on Santo Domingo and San Felipe pueblos (Platania, 1995). Rio Grande silvery minnow were not taken within the boundaries of Cochiti Pueblo (Platania, 1993b).

Five mainstem reservoirs on the rios Chama and Grande and numerous smaller irrigation diversion dams regulate flow in the Middle Rio Grande. The complex system of ditches, drains, and conveyance channels provide water for extensive irrigated agriculture in the Rio Grande Valley. Cochiti Reservoir, located 76 km upstream of Albuquerque and operational since 1973, is the primary flood control reservoir and regulates flow to some degree in the mainstem Middle Rio Grande. The Middle Rio Grande has been greatly modified over the last 50 years; this has alternatively led to aggradation, degradation, amoring, and narrowing of the river channel in different portions of the reach (Lagasse, 1980).

Hypolimnetic water released from Cochiti Reservoir is cold and clear, creating a distinctly different riverine environment from the one that existed historically in this upper portion of the current range of Rio Grande silvery minnow (Cochiti Dam to Angostura Diversion Dam). This river is highly channelized in the Cochiti Reach because of flow regulation and the lack of an upstream sediment supply (i.e., upstream sediment settles out in Cochiti Reservoir). The substrata in this reach is primarily cobble and gravel through much of the reach and there are few backwater or side channel habitats.

The section of river from Angostura Diversion Dam to Bernalillo is a transition zone where the river channel becomes more braided, the floodplain widens, and substrata is primarily gravel and sand. From Bernalillo downstream to Albuquerque, the river channel often exceeds 100 m in width, lower velocity habitats are more common, and sand/silt subrata becomes more dominant. Backwaters and side channel habitats are more abundant in this reach than between Cochiti and Angostura Diversion dams.

Downstream of Albuquerque, the Rio Grande is wide and braided with a predominantly sand substrata, high suspended silt load, and a wide variety of mesohabitats. The mainstem channel is generally wide (100-200 m), <1 m deep, and has a current velocity of <1 m/s. However, the river channel is generally less than 50 m wide from about the middle of Bosque del Apache National Wildlife Refuge to the inflow of Elephant Butte Reservoir.

Diel and seasonal discharge was moderately-low during 2003-2004, especially in southern reaches of the Middle Rio Grande (Figure 2). There was a general trend of lower flow at downstream locations (e.g., U. S. Geological Survey (USGS) San Acacia Gauge [#08354900] and USGS San Marcial Gauge [#08358400]) compared to upstream locations (e.g., USGS Albuquerque Gauge [#08330000]). Mean annual discharge was higher and included higher peaks in 2004 compared to 2003. From the middle of March 2003 until late October 2003, extremely low flow and extensive river drying persisted in the Isleta and San Acacia reaches. While flow conditions in 2004 included periods of low flow, these were not as long or as persistent as they were in 2003. Also, relatively frequent summer rains in 2004 supplemented low base flows and resulted in brief but elevated turbidity levels.

METHODS

This study was structured to monitor the population of Rio Grande silvery minnow and the associated fish community at selected sites (Appendix A, Table A-1) in the study area. Monthly sampling efforts allowed for determination of general spatial and temporal changes in population structure and species abundance. Sampling was conducted at 20 sites during each month of 2004 (Appendix C).

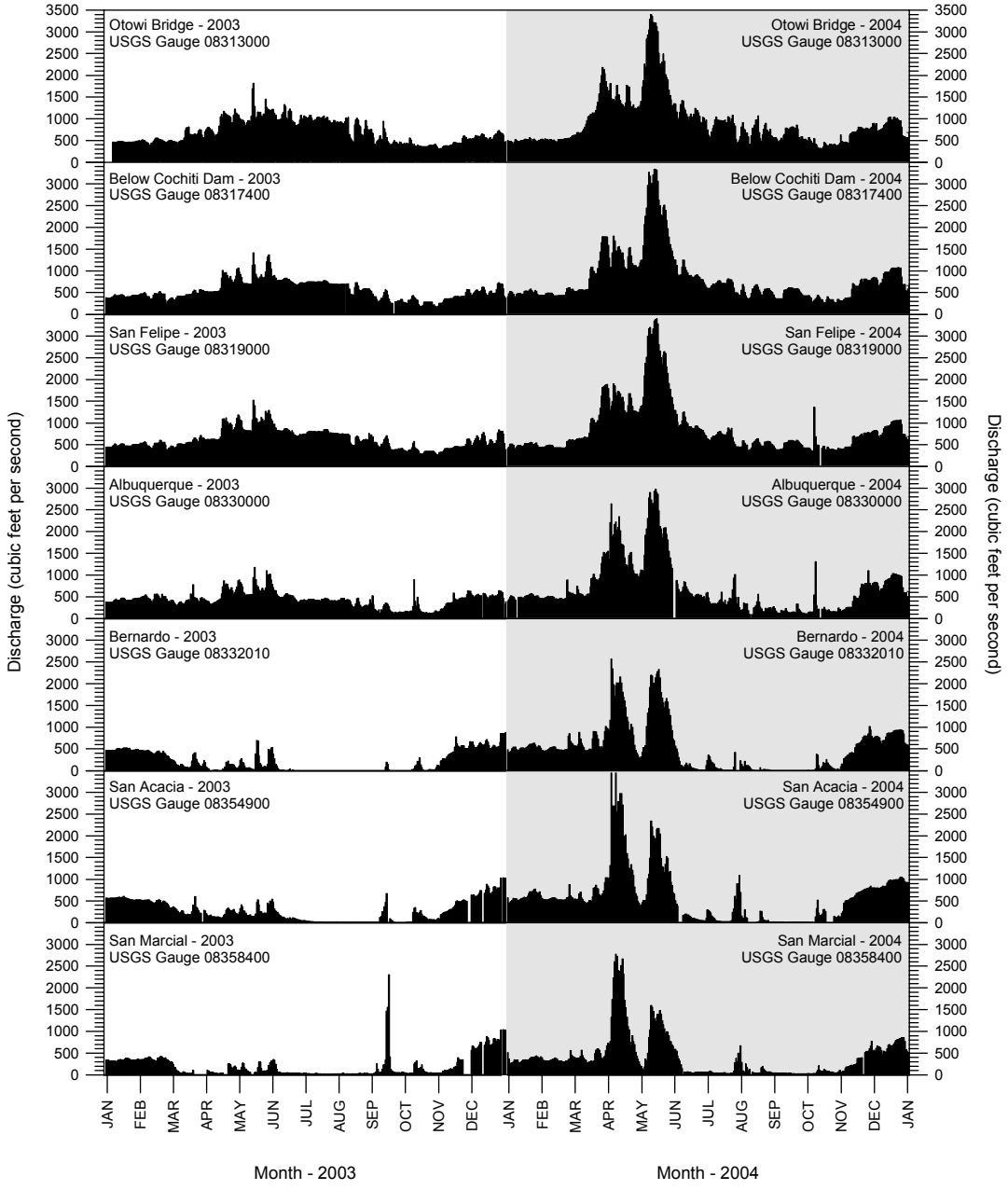

Figure 2. Discharge in the Rio Grande from January 2003 through December 2004 as recorded at seven U. S. Geological Survey (USGS) gauge stations. The Otowi Bridge gauge site is outside of the study area (ca. 25.5 river miles upstream of Cochiti Dam) but is provided for reference. Discharge data are provisional and subject to change.

Reach names were derived from the diversion structure at the upstream boundary of that reach of river. The Angostura Reach (Angostura Diversion Dam to Isleta Diversion Dam) had five sampling localities and the Isleta Reach (Isleta Diversion Dam to San Acacia Diversion Dam) had six sampling sites. There were nine sampling localities in the San Acacia Reach (San Acacia Diversion Dam to inflow of Elephant Butte Reservoir). The 20 sampling sites in the Middle Rio Grande overlap the current range of Rio Grande silvery minnow. However, no sampling was conducted in the Cochiti Reach as this reach of the Rio Grande is sovereign property under the jurisdiction of at least three discrete Native American Pueblos and is not generally accessible (see Study Area for more information).

Fish were collected by rapidly drawing a two-person 3.1 m x 1.8 m small mesh (ca. 5 mm) seine through discrete mesohabitats (usually <15 m). During spring and summer, a 1.0 m x 1.0 m fine mesh (ca. 1.5 mm) seine was used to selectively sample shallow low velocity habitats for larval fish. Graphical illustration of fish catch per unit effort is provided for the 10 focal species (the 10 most common taxa that occur throughout the study area) for each collection locality by sampling period (Appendix A; Figures A-1 to A-13). Scientific and common names of fishes in this report follow Nelson et al. (2004; Table 1). Common names are arranged in phylogenetic order and appear throughout this report in tables, figures, and text.

Moving averages (one, two, and five year) were calculated using mean quarterly Rio Grande silvery minnow catch rates over time (1993-1997, 1999-2004). Population trends were also evaluated by comparing mean annual and autumnal catch rates over time (1993-1997, 1999-2004). Linear regression modeling was used to determine the strength of the relationships between catch rates for the 10 focal species and hydraulic variables (e.g., peak discharge, days > or < a threshold discharge value). Peak discharge and days exceeding threshold discharge values (e.g., days>3,000 cubic feet per second, cfs) were selected to represent spring runoff conditions. Other threshold discharge values (e.g., days<200 cfs and days<100 cfs) were selected to represent summer low flow conditions. Samples obtained from isolated pools were not included in data analysis as catch rates in these confined habitats were artificially elevated. Fish CPUE data from all samples were log-transformed ($X' = \ln(X+1)$) based on low observed values and temporal heterogeneity of variance (Zar, 1984). A negative or positive trend in population abundance was defined as occurring when the slope of the regression was significantly different ($p<0.05$) from zero. Two-factor analysis of variance without replication (Sokal and Rohlf, 1995) was used to evaluate differences in mean catch rates between sampling sites over time.

RESULTS

Rio Grande silvery minnow

Population status-2004

The 2004 abundance of Rio Grande silvery minnow at reach-specific collection sites varied within and between seasons. Catch rate of silvery minnow also varied noticeably within and between sampling reaches (Figures 3-5). The Angostura Reach produced the highest catch rates and yielded more silvery minnow in 2004 than in the previous two years combined.

Population monitoring efforts during January 2004 yielded a small number of Rio Grande silvery minnow (n=7) with all of the individuals downstream of Isleta Diversion Dam. Rio Grande silvery minnow were present at six of 20 sampling localities during this sampling effort and they were distributed relatively evenly throughout the Middle Rio Grande with the exception of the upper Angostura Reach. None of the Rio Grande silvery minnow collected were marked (i.e, hatchery reared fish).

A total of 342 seine hauls were made during the February 2004 sampling trip of which two contained Rio Grande silvery minnow. The two upper-most sites of the Isleta Reach were the only

Table 1. Scientific and common names and species codes of fish collected in the Middle Rio Grande during the 2004 Rio Grande silvery minnow population monitoring program.

Scientific Name	Common Name	Code
Order Clupeiformes		
Family Clupeidae	herrings	
Dorosoma cepedianum	gizzard shad	(GZS)
Order Cypriniformes		
Family Cyprinidae	carps and minnows	
Cyprinella lutrensis	red shiner [1]	(RDS)
Cyprinus carpio	common carp [1]	(CCA)
Hybognathus amarus	Rio Grande silvery minnow [1]	(RGM)
Pimephales promelas	fathead minnow [1]	(FHM)
Pimephales vigilax	bullhead minnow	(BHM)
Platygobio gracilis	flathead chub [1]	(FHC)
Rhinichthys cataractae	longnose dace [1]	(LND)
Family Catostomidae	suckers	
Carpiodes carpio	river carpsucker [1]	(RCS)
Catostomus commersonii	white sucker [1]	(WHS)
Ictiobus bubalus	smallmouth buffalo	(SMB)
Order Siluriformes		
Family Ictaluridae	North American catfishes	
Ameiurus melas	black bullhead	(BBH)
Ameiurus natalis	yellow bullhead	(YBH)
Ictalurus punctatus	channel catfish [1]	(CCT)
Order Salmoniformes		
Family Salmonidae	trouts and salmons	
Salmo trutta	brown trout	(BNT)
Order Cyprinodontiformes		
Family Poeciliidae	livebearers	
Gambusia affinis	western mosquitofish [1]	(MOS)

[1] focal taxa represent the 10 most abundant species present in recent Middle Rio Grande collections and are illustrated in monthly plots of data.

Table 1. Scientific and common names and species codes of fish collected in the Middle Rio Grande during the 2004 Rio Grande silvery minnow population monitoring program (continued).

Scientific Name	Common Name	Code
Order Perciformes		
Family Centrarchidae	sunfishes	
Lepomis cyanellus	green sunfish	(GNS)
Lepomis macrochirus	bluegill	(BGL)
Micropterus salmoides	largemouth bass	(LMB)
Pomoxis annularis	white crappie	(WCR)
Family Percidae	perches	
Perca flavescens	yellow perch	(YWP)
Sander vitreus	walleye	(WLE)

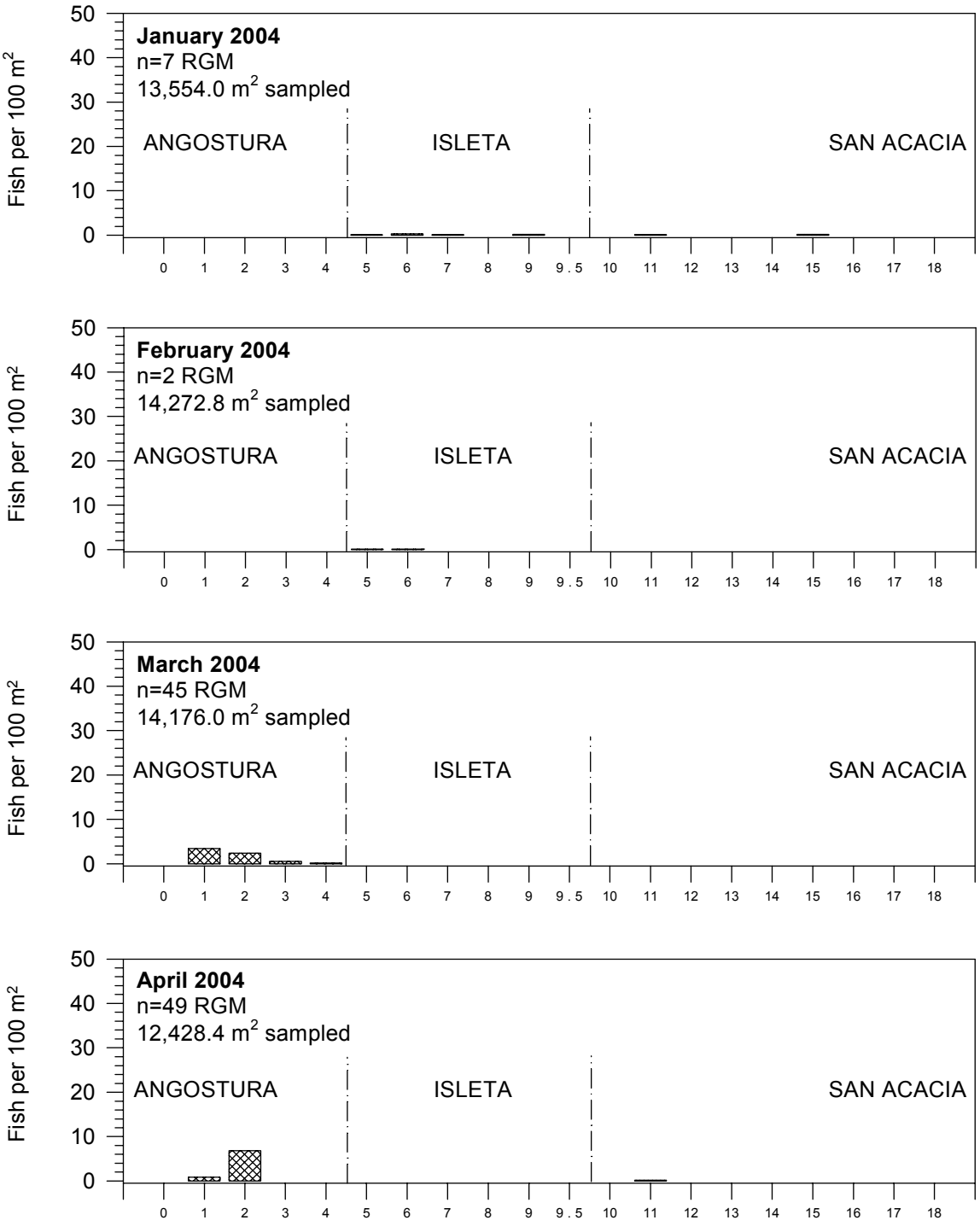

Figure 3. Rio Grande silvery minnow (RGM) catch rates (CPUE) from January-April 2004 for each collection locality in the Middle Rio Grande.

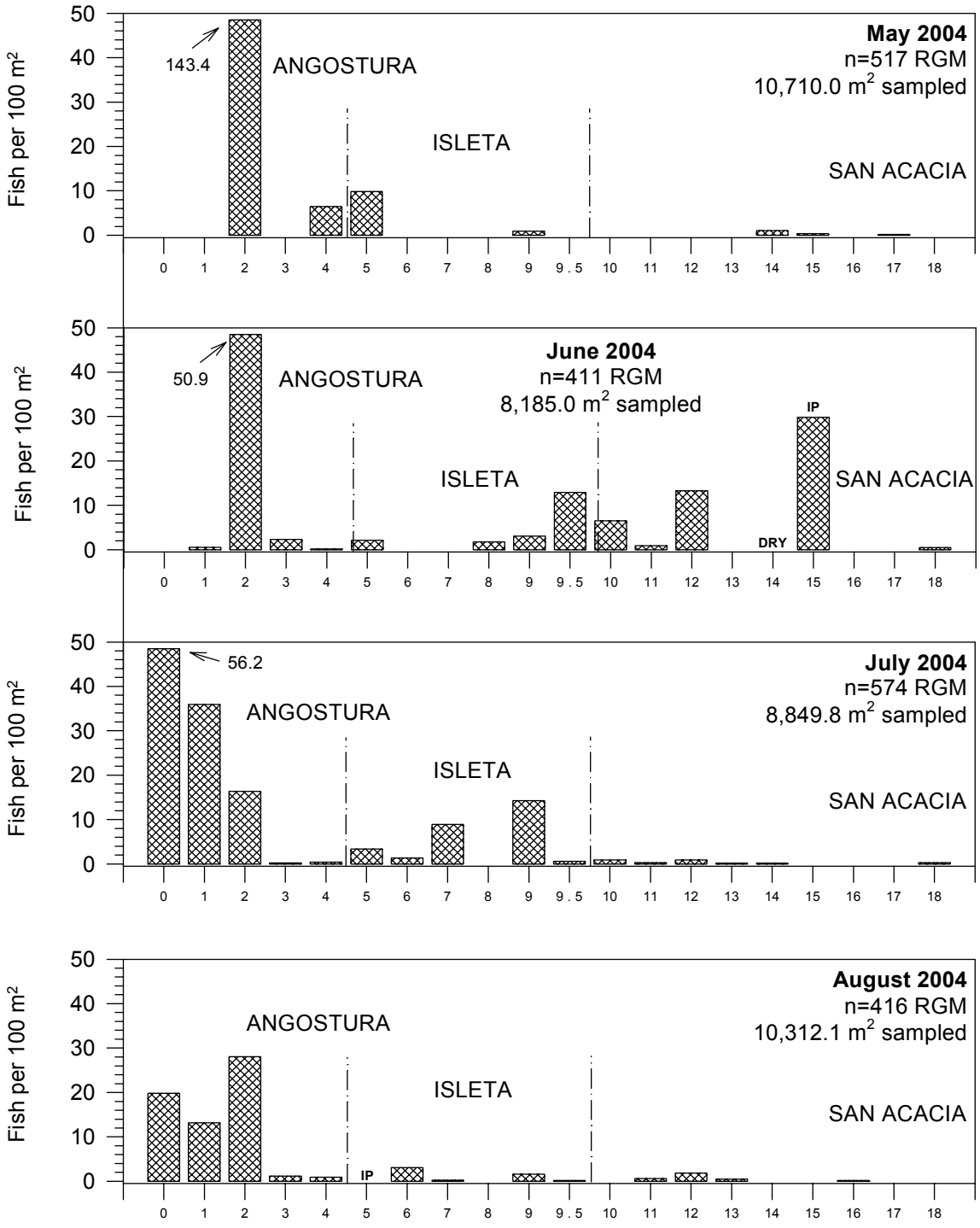

Figure 4. Rio Grande silvery minnow (RGM) catch rates (CPUE) from May-August 2004 for each collection locality in the Middle Rio Grande. Sites where the river had dried (DRY) or where only isolated pools (IP) remained are indicated.

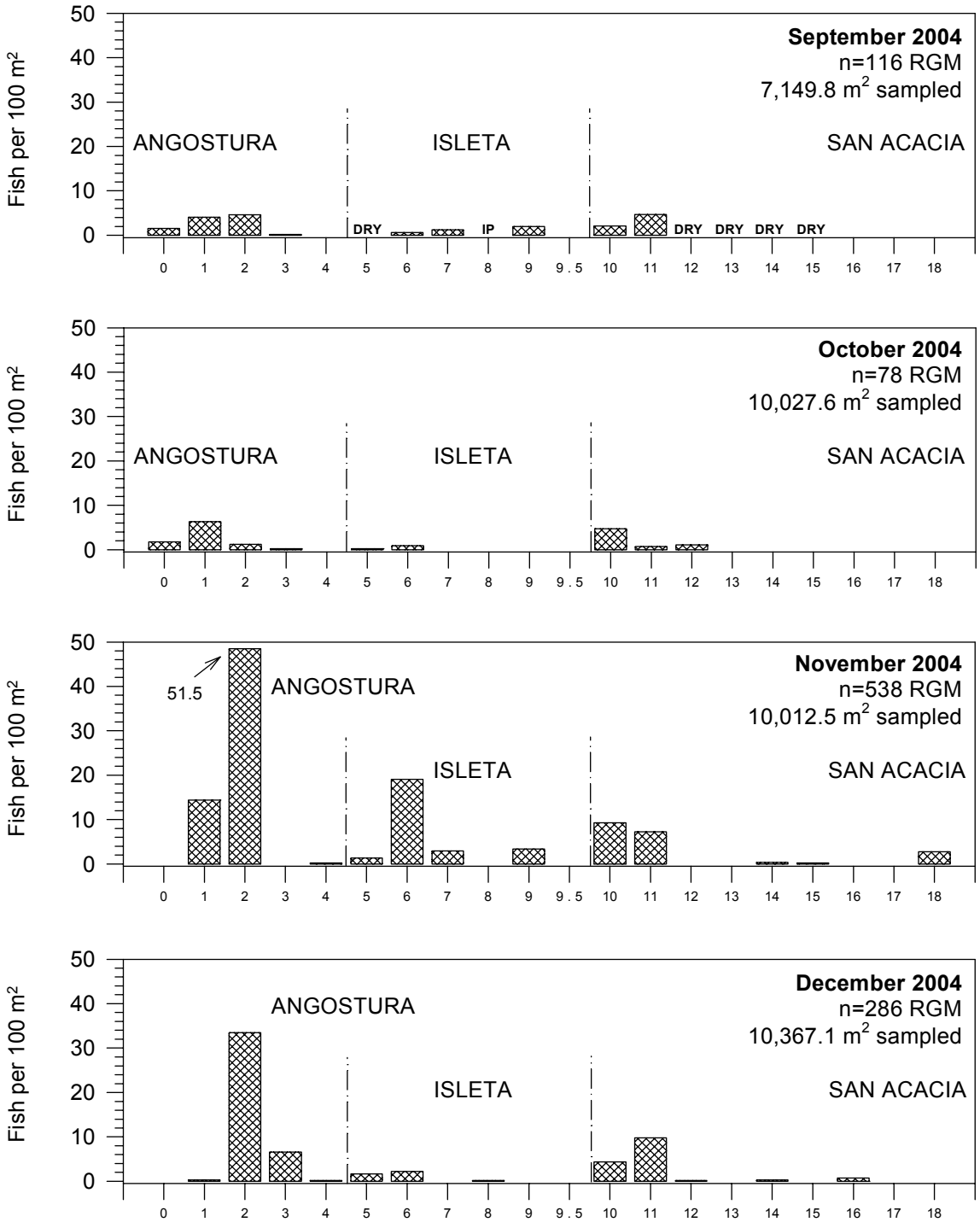

Figure 5. Rio Grande silvery minnow (RGM) catch rates (CPUE) from September-December 2004 for each collection locality in the Middle Rio Grande. Sites where the river had dried (DRY) or where only isolated pools (IP) remained are indicated.

areas where silvery minnow were collected during February 2004. Catch rates of silvery minnow were notably lower during February 2004 compared to February 2003.

Population monitoring sampling in March 2004 resulted in the collection of Rio Grande silvery minnow at four of 20 collecting localities. This species was present in 11 of 343 seine hauls taken in a wide variety of habitats, but was only present in the Angostura Reach. Most of the Rio Grande silvery minnow collected were age-1 (n=42) and the remainder were age-2 (n=3).

More Rio Grande silvery minnow were collected in April (n=49) than March 2004 (n=45). The highest catch rate was in the Angostura Reach at Site 2 (n=42). Marked individuals comprised 44.9% (22 of 49) of the total catch in the Angostura Reach. Rio Grande silvery minnow was collected in only four of 20 sampling sites during the April 2004 sampling effort.

Population monitoring in May 2004 (24-28 May) occurred soon after the initiation of Rio Grande silvery minnow spawning (ca. first week in May). The cumulative number of individual silvery minnow collected in May 2004 (n=517) was high and nearly all individuals (510 of 517; 98.7%) were age-0. The size range of young-of-year individuals was 6.4-9.5 mm Standard Length (SL). Rio Grande silvery minnow catch rate in May 2004 was highest in the Angostura Reach, but individuals were found in all study reaches. Rio Grande silvery minnow was present in samples at seven of 20 sampling localities.

The June 2004 population monitoring trip yielded fewer Rio Grande silvery minnow (n=411) than the May 2004 sampling trip. Young-of-year (=age-0) Rio Grande silvery minnow were collected in all river reaches and comprised about 99.8% of the cumulative silvery minnow catch. Catch rate of this species was highest in the Angostura Reach. Elevated catch rates were recorded in the Isleta and San Acacia reaches but few were found downstream of Site #12 (Socorro, NM). Site #14 was dry during June 2004 and Site #15 (Middle of Bosque del Apache National Wildlife Refuge) was reduced to a series of isolated pools.

The July 2004 sampling results highlighted the uneven distribution and abundance of Rio Grande silvery minnow in the Middle Rio Grande. The largest site-specific silvery minnow catch rate was recorded in the Angostura Reach (Site #0) where 234 age-0 fish were collected. This pattern of upstream re-distribution about two months following spawning was strikingly similar to one noted in July 2003 and suggests upstream migration occurred shortly following spawning. The majority of the Rio Grande silvery minnow collected during July were in the Angostura Reach but relatively high numbers were also present in the Isleta Reach.

The August 2004 sampling trip produced over 400 Rio Grande silvery minnow and catch rates were about an order of magnitude higher than they were in August 2003. Individuals were collected in all reaches of the Middle Rio Grande. The largest collections of Rio Grande silvery minnow were in the Angostura Reach (n=356) and their abundance ranged from 77-176 individuals at Sites #0-2. Very few Rio Grande silvery minnow were taken in collections in the San Acacia or Isleta reaches (n=50). Age-0 Rio Grande silvery minnow comprised 99.8% of the total catch (of this species) in August 2004.

Monitoring of Rio Grande silvery minnow during September 2004 yielded over 100 individuals in over 7,000 m^2 of aquatic habitat at 20 sites sampled. The amount of habitat sampled during September was less than any other month during 2004; many of the sampling sites were dry during September. Individuals were approximately evenly distributed between the three sampling reaches. Catch rates were about two orders of magnitude higher than they were in September 2003.

The October 2004 sampling effort produced a moderate number of Rio Grande silvery minnow (n=78) but many more individuals were collected compared with October 2003 (n=2). In 2004, the river had become reconnected between many of the sampling sites and discharge was relatively elevated. Higher flows during sampling may have reduced the catch rate somewhat because of the increased area of available habitat in the Isleta and San Acacia reaches.

Rio Grande silvery minnow were collected in greater numbers in November (n=538) than in October 2004. The high catch rate at Site #2 (Rio Rancho, NM) during November accounted for

most of this difference. Rio Grande silvery minnow were taken in all three reaches and collected at 12 of the 20 sampling localities. In November 2004, about 60% (n=322) of the cumulative silvery minnow catch was from the Angostura Reach.

Fewer Rio Grande silvery minnow were collected in December (n=286) compared to November 2004. The age-class structure of the population during December was comprised only of age-0 individuals. With the exception of Site #2 (n=163), none of the sites that yielded Rio Grande silvery minnow during December 2004 resulted in the collection of more than 50 individuals of this species.

A month-by-month summary of Rio Grande silvery minnow catch rates provides reference to trends in relative abundance observed during 2004 (Table 2). The effects of population augmentation efforts and improved spring spawning/recruitment conditions were most apparent in the Angostura Reach. Young-of-year silvery minnow produced in this reach, either by wild or hatchery reared fish, moved upstream following spawning but their overall abundance declined notably by autumn sampling efforts. Higher catch rates were observed during the months of November and December as water temperatures cooled and fish congregated into small mesohabitats (e.g., backwaters and debris piles).

Catch rates of Rio Grande silvery minnow in 2004 were generally highest in the Angostura Reach and approximately equal in the Isleta and San Acacia reaches. The Angostura Reach yielded the most silvery minnow (n=2,226) in 2004 (Figure 6), followed by the Isleta Reach (n=442), and San Acacia Reach (n=371). Higher catch rates of young-of-year following spawning and the addition of hatchery fish to the Angostura Reach primarily drove this pattern. The abundance of Rio Grande silvery minnow was relatively low in all reaches. December 2004 catch rates were over an order of magnitude higher than January 2004 catch rates. Age-0 individuals comprised nearly the entire silvery minnow catch from May to December and were most abundant from May to July (Figure 7). Catch rates of Rio Grande silvery minnow, in all reaches, decreased following summer spawning although inter-month variation was moderate. A noticeable increase in catch rate occurred from October to November 2004 and was likely an artifact of rapidly cooling water temperatures that concentrated fish into small mesohabitats.

A temporal and spatial comparison of Rio Grande silvery minnow collections revealed a significant interaction ($p<0.05$) of mean catch rate with month and locality. The highest catch rates of Rio Grande silvery minnow, in all three river reaches, were generally recorded at or near upstream sampling localities in each respective reach (Figure 8). This spatial distribution of individuals was most pronounced in the Angostura Reach.

Population trends-1993 to 2004

Rio Grande silvery minnow catch rate, plotted as quarterly collections, has declined since systematic sampling began in 1993 (Figures 9 and 10). However, catch rates in 2004 were noticeably higher than in either 2002 or 2003. Catch rates declined two to three orders of magnitude within the last decade with the largest declines occurring from 1999 to 2003. Rio Grande silvery minnow catch rates in 2004 were comparable to those in 2001. Despite seasonal fluctuations in the abundance of this species, recent samples indicate an increase over the last two years (Figure 11) with gains occurring in all three sampling reaches (Figure 12). October population monitoring samples illustrate that the magnitude of decline (as measured logarithmically) has been substantial (Figure 13). Although population levels in 2004 only approached the lows observed following extensive river drying in 1996, it is noteworthy that the percent increase between 2003 and 2004 was the single largest (i.e., over an order of magnitude) observed during the tenure of the project. Similar trends were also evident from a comparison of annual Rio Grande silvery minnow catch rates (Figure 14).

Table 2. Summary of the monthly catch of Rio Grande silvery minnow, by site and reach, during the 2004 Rio Grande silvery minnow population monitoring program. Numerals in parenthesis, a subset of the total catch, are the number of individual silvery minnow in that sample that were marked with VIE tags (=hatchery reared [stocked] fish).

REACH Site Number Site Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ANGOSTURA REACH													
0 Angostura Dam	—	—	—	—	—	—	234	100	8	8	—	—	350
1 Bernalillo	—	—	24	6	—	3	142(1)	77	28	28	60(1)	2	370
2 Rio Rancho	—	—	17	42(22)	425	218	74	176	29	7	261(11)	163(70)	1,412
3 Central Ave (Abq)	—	—	3	—	—	12	1	7	1	1	—	26 (6)	51
4 Rio Bravo (Abq)	—	—	1	—	31	1	2	6	—	—	1	1	43
Angostura Reach Total	—	—	*45*	*48*	*456*	*234*	*453*	*366*	*66*	*44*	*322*	*192*	*2,226*
ISLETA REACH													
5 Los Lunas	1	1	—	—	46	10	12	13	—	1	7	8	99
6 Belen	2	1	—	—	—	—	6	10	3	3	89	12	126
7 Jarales	1	—	—	—	—	—	36	1	5	—	15	—	58
8 US Hwy 60 Bernardo	—	—	—	—	—	6	—	—	—	—	—	1	7
9 South of Bernardo	1	—	—	—	6	10	51	6	7	—	16	—	97
9.5 North of San Acacia	—	—	—	—	—	51	3	1	—	—	—	—	55
Isleta Reach Total	*5*	*2*	—	—	*52*	*77*	*108*	*31*	*15*	*4*	*127*	*21*	*442*
SAN ACACIA REACH													
10 San Acacia Dam	—	—	—	—	—	24	4	—	6	18	38	19	109
11 S of San Acacia	1	—	—	1	—	4	1	4	29	5	43	46	134
12 Socorro	—	—	—	—	—	69	5	10	—	7	—	1	92
13 North of US Hwy 380	—	—	—	—	—	—	1	4	—	—	—	—	5
14 US Hwy 380	—	—	—	—	6	—	1	—	—	—	2	2	11
15 Bosque del Apache	1	—	—	—	2	1	—	—	—	—	1	—	5
16 San Marcial	—	—	—	—	—	—	—	1	—	—	—	5	6
17 South of San Marcial	—	—	—	—	1	—	—	—	—	—	—	—	1
18 South of San Marcial	—	—	—	—	—	2	1	—	—	—	5	—	8
San Acacia Reach Total	*2*	—	—	*1*	*9*	*100*	*13*	*19*	*35*	*30*	*89*	*73*	*371*
MONTHLY TOTALS	7	2	45	49	517	411	574	416	116	78	538	286	3,039
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL

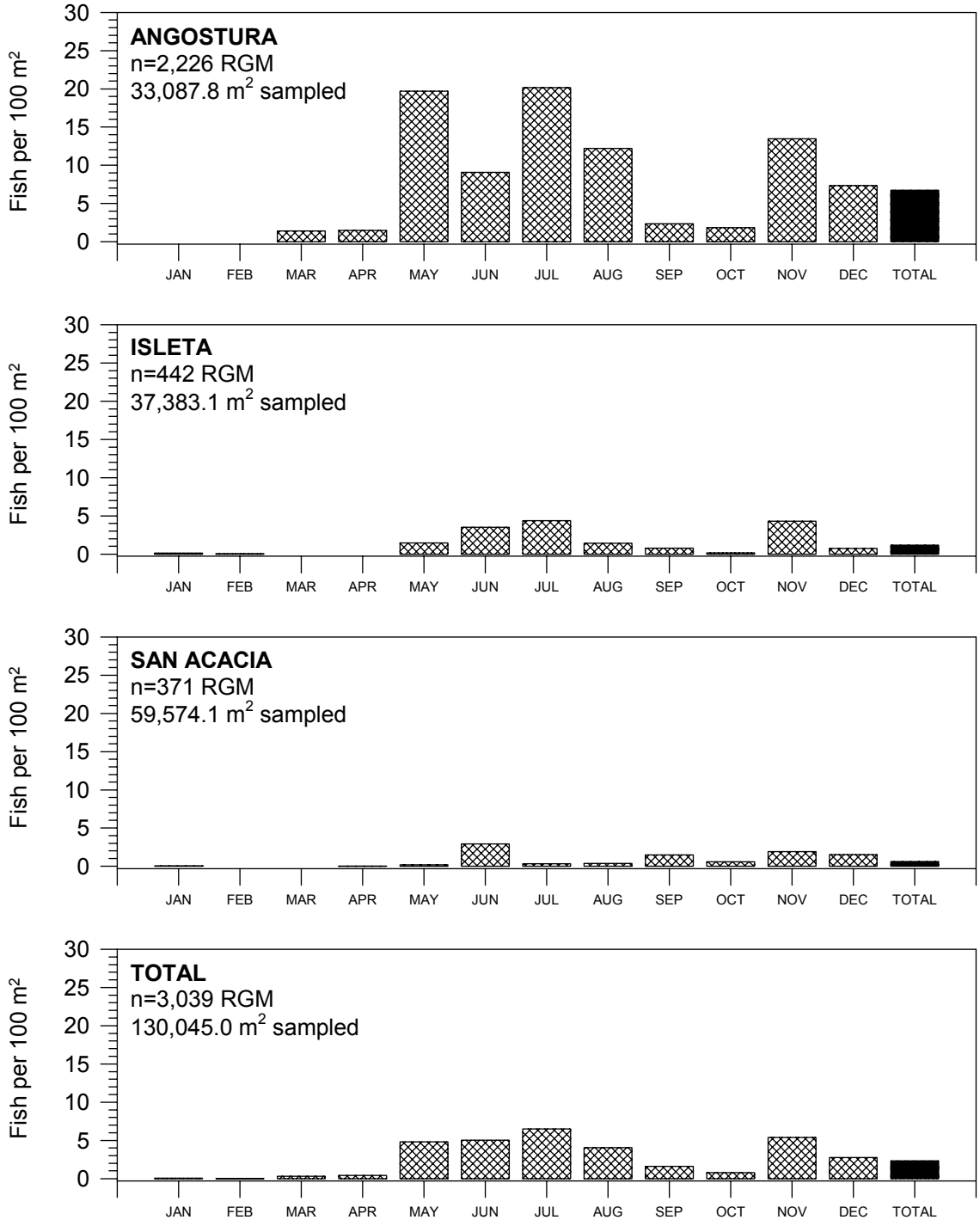

Figure 6. Rio Grande silvery minnow (RGM) catch rates (CPUE) by river reach for 2004 monthly samples in the Middle Rio Grande.

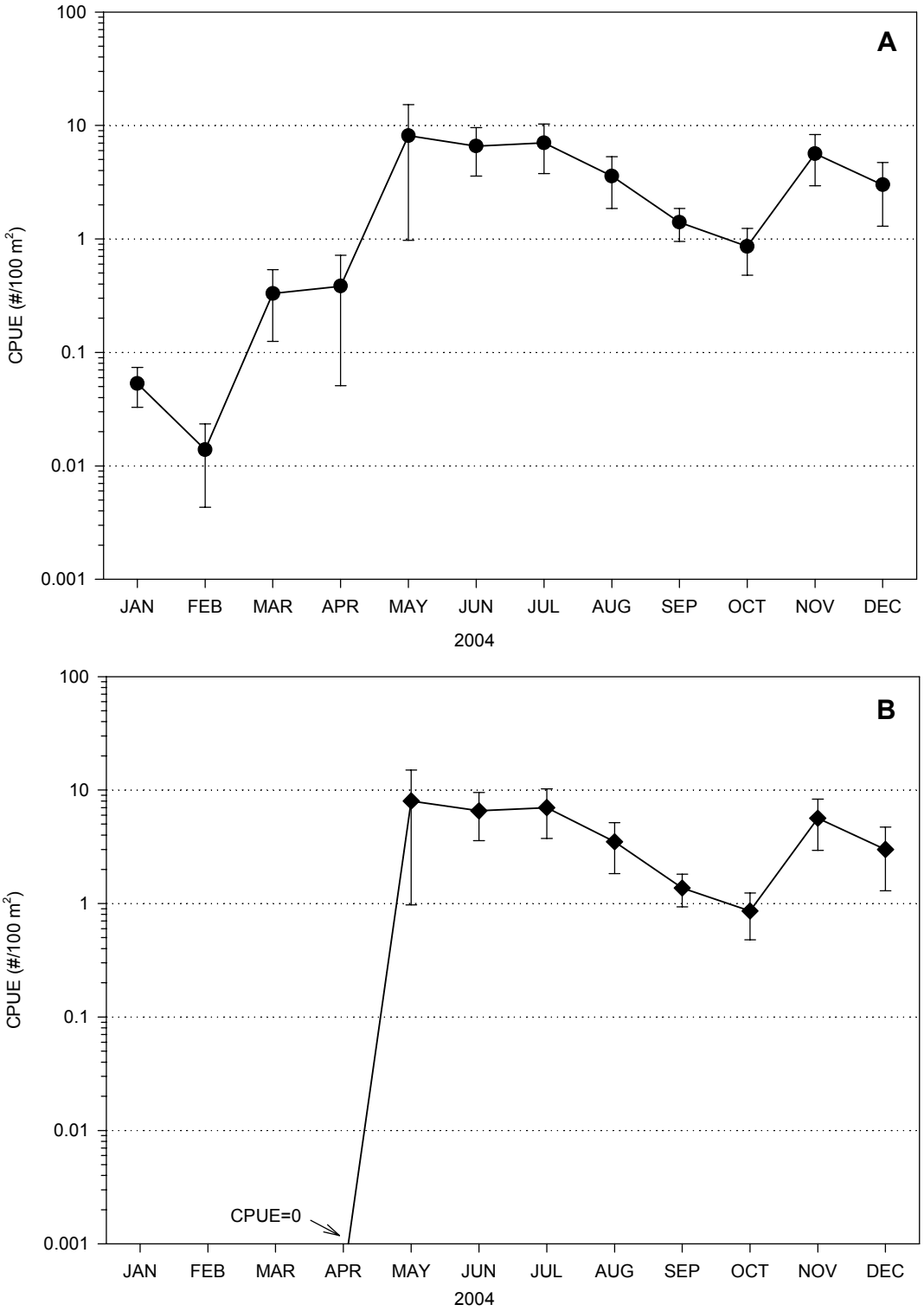

Figure 7. Inter-month fluctuations in catch rates of silvery minnow during 2004 (**A**=all age-classes including age-0 [circle]; **B**=age-0 only [diamond]). Symbols represent mean value for all sites sampled (n=20); bars represent the standard error. Dotted horizontal lines represent different orders of magnitude.

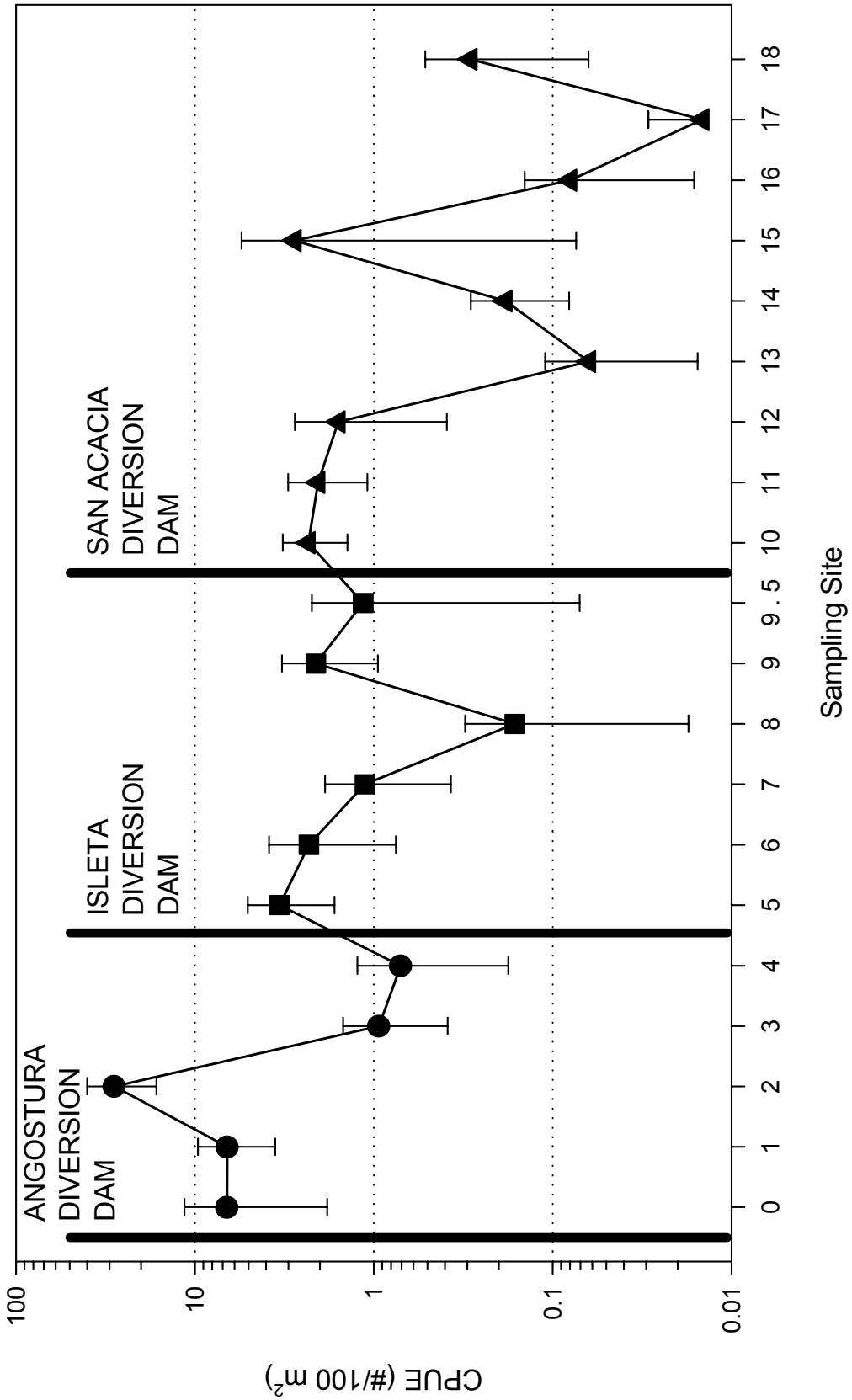

Figure 8. Inter-site comparison of Rio Grande silvery minnow catch rates (CPUE) by sampling locality (20 sites) and river reach (Angostura=circle, Isleta=square, San Acacia=triangle) during 2004. Symbols represent mean values for all sampling months (n=12) and bars represent the standard error. Dotted horizontal lines represent different orders of magnitude.

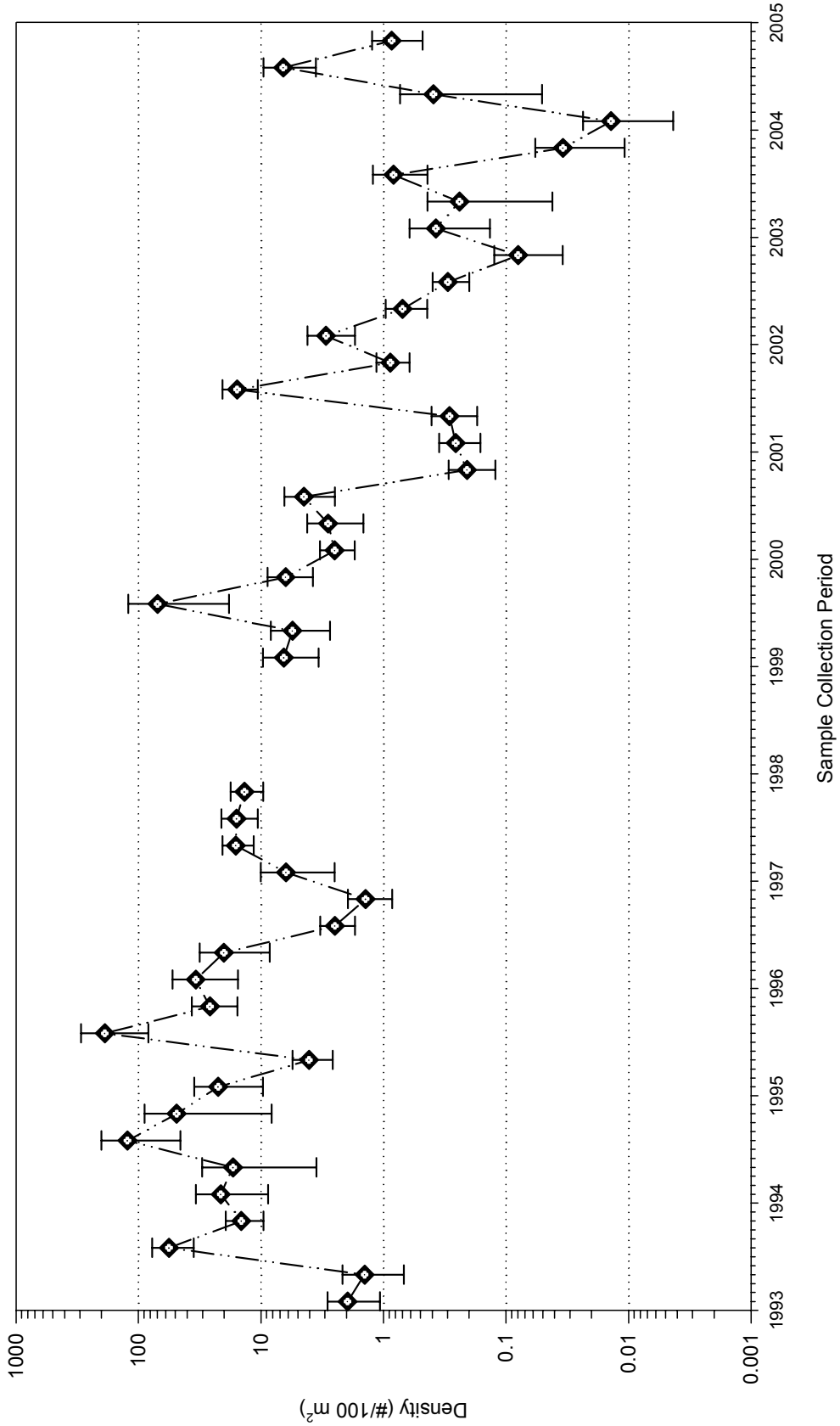

Figure 9. Time sequence of quarterly Rio Grande silvery minnow catch rates (1993-1997, 1999-2004) at population monitoring program collection sites. Hollow diamonds indicate sample means for each survey and capped-bars represent the standard error. Dotted horizontal lines represent different orders of magnitude.

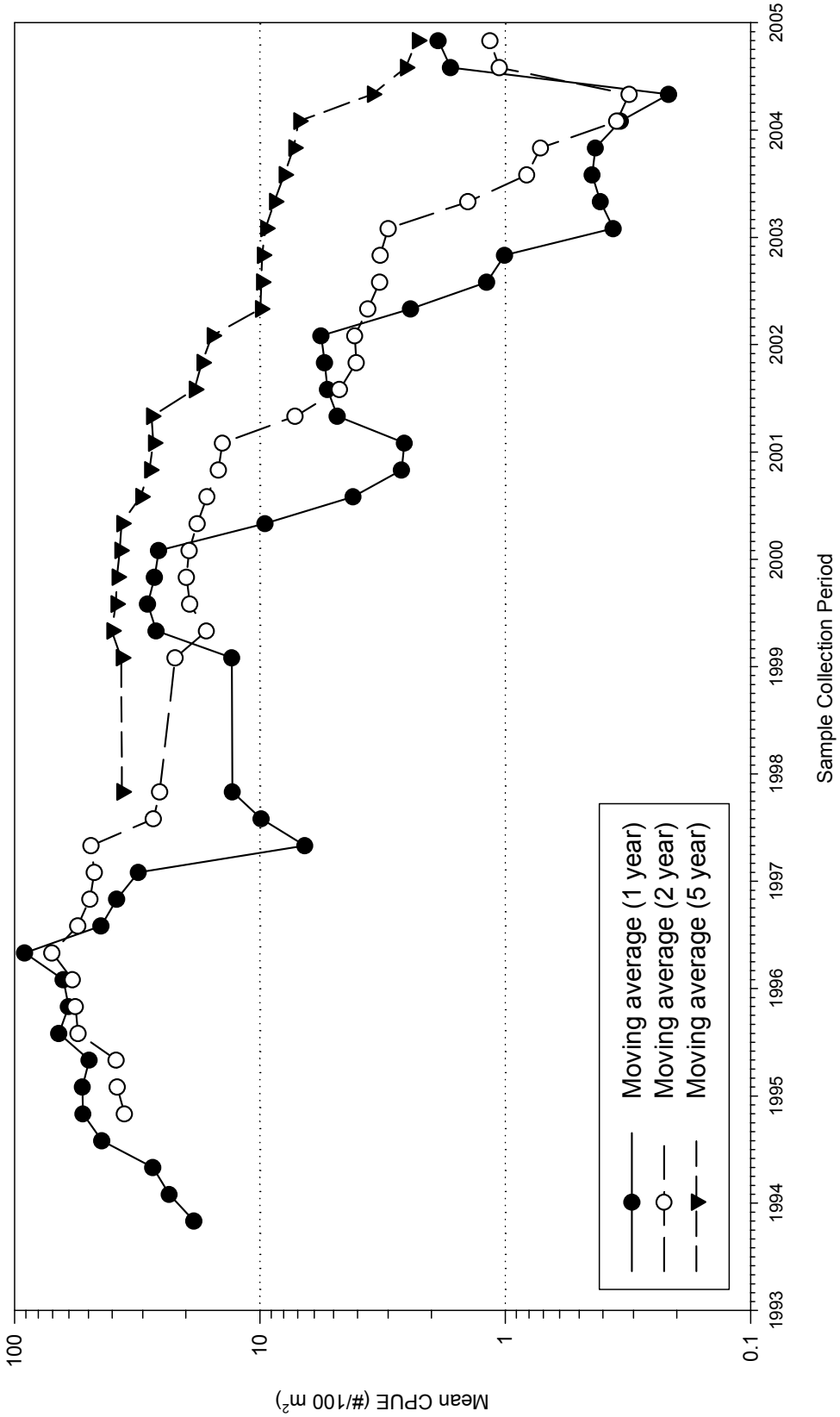

Figure 10. Moving averages (1, 2, and 5 year) of Rio Grande silvery minnow catch rates (1993-1997, 1999-2004) at population monitoring program collection sites. Dotted horizontal lines represent different orders of magnitude.

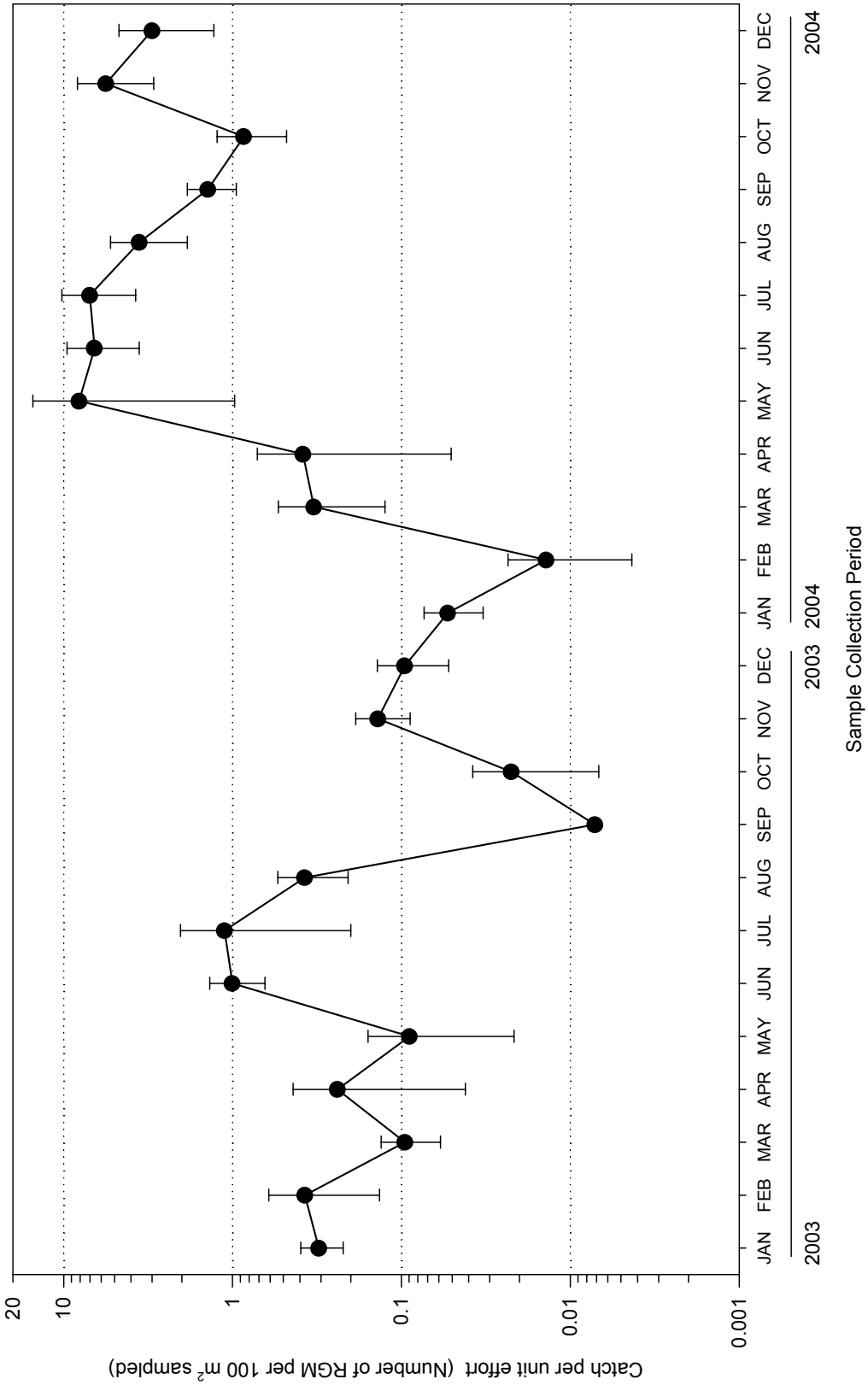

Figure 11. Monthly catch rates of Rio Grande silvery minnow during 2003 (January-December) and through December 2004 at population monitoring program collection sites. Solid circles indicate monthly means (n=20 sites per month) and capped-bars represent the standard error.

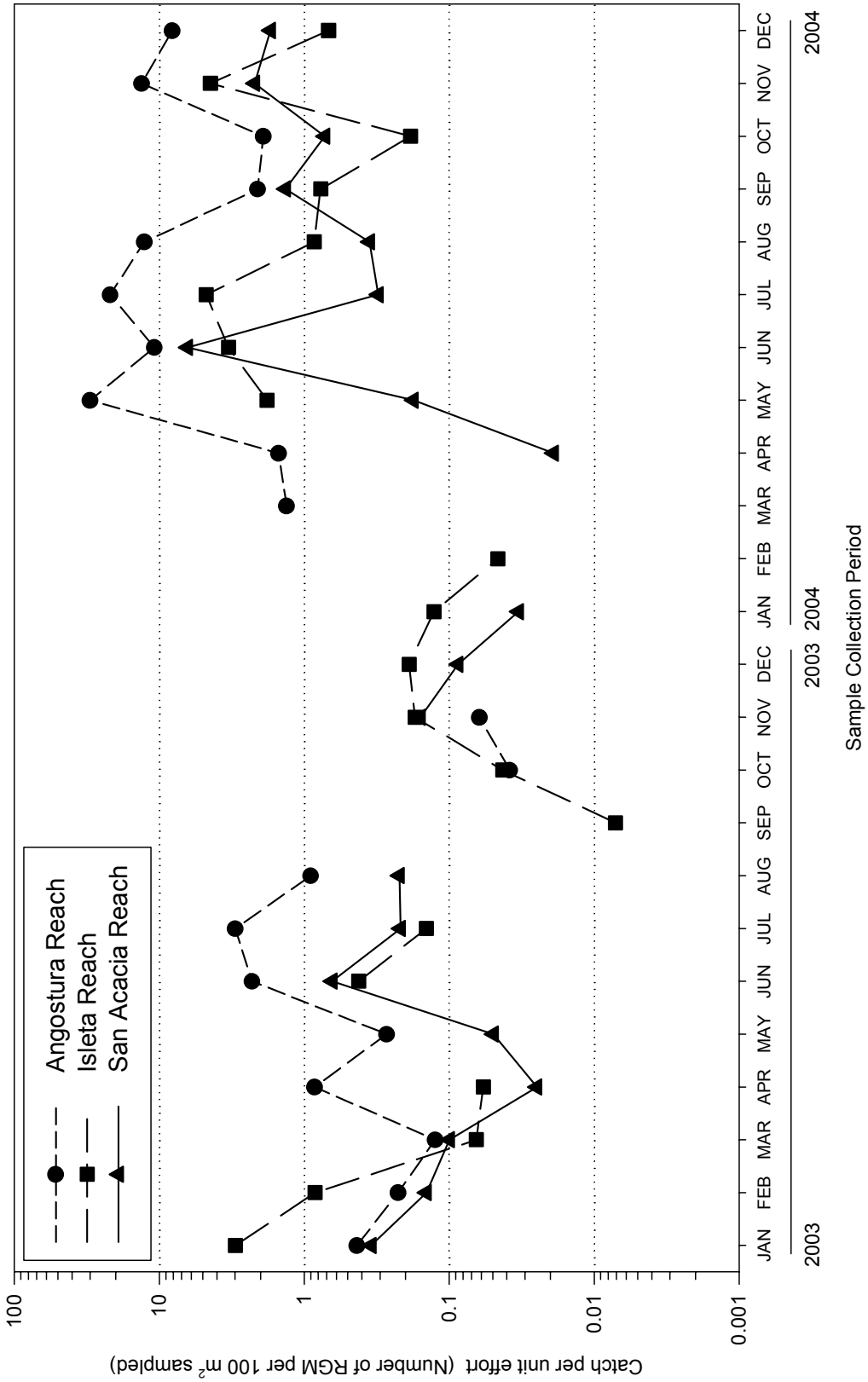

Figure 12. Mean monthly catch rates of Rio Grande silvery minnow during 2003 (January-December) and through December 2004 at population monitoring program collection sites in the Angostura, Isleta, and San Acacia reaches. Missing symbols indicate that no individuals were collected in a particular reach during that month.

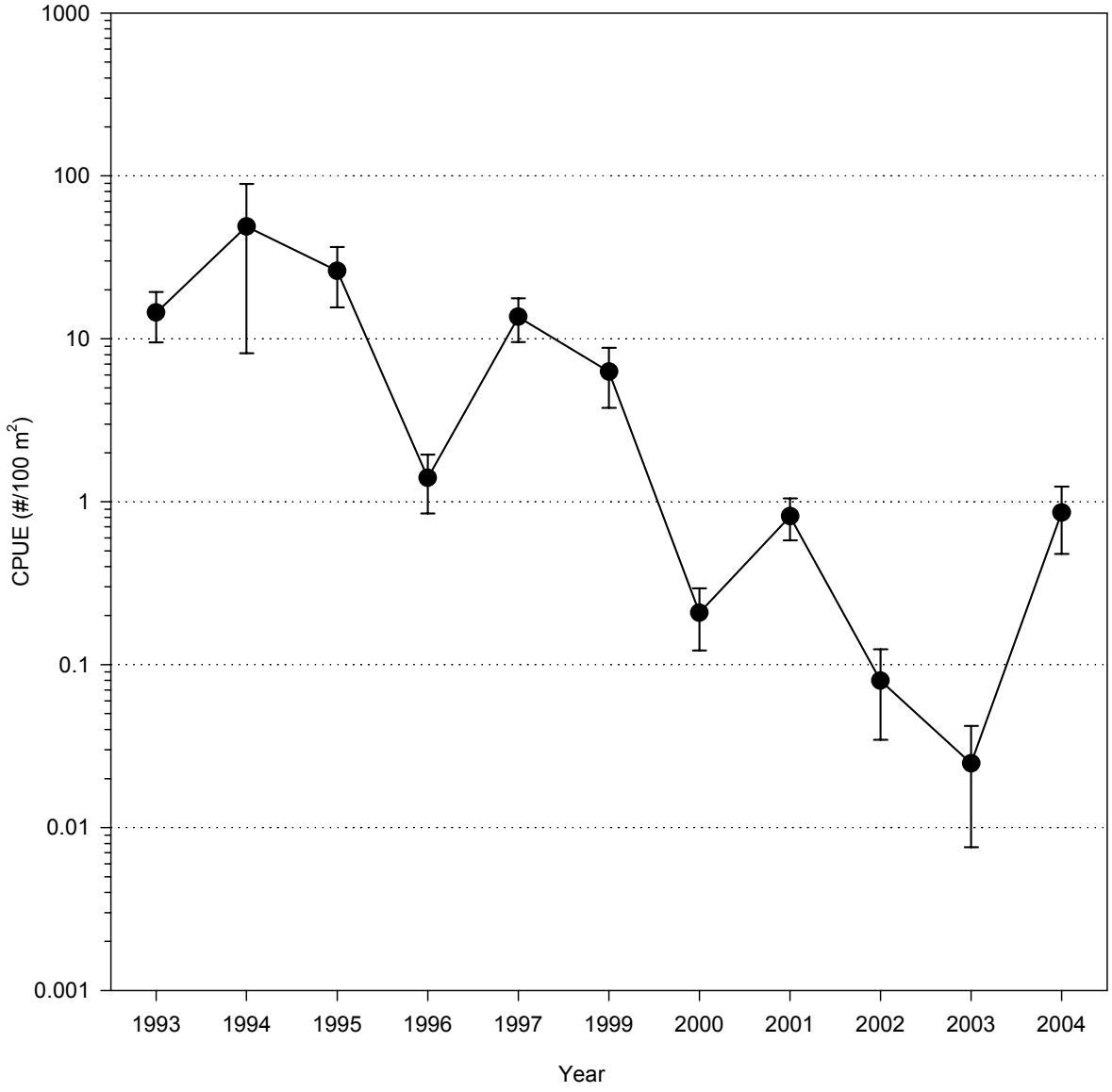

Figure 13. Rio Grande silvery minnow catch rates (CPUE) during October, at all sampling sites, by sampling year (1993-1997, 1999-2004). Solid circles indicate means and capped-bars represent the standard error. Dotted horizontal lines represent different orders of magnitude.

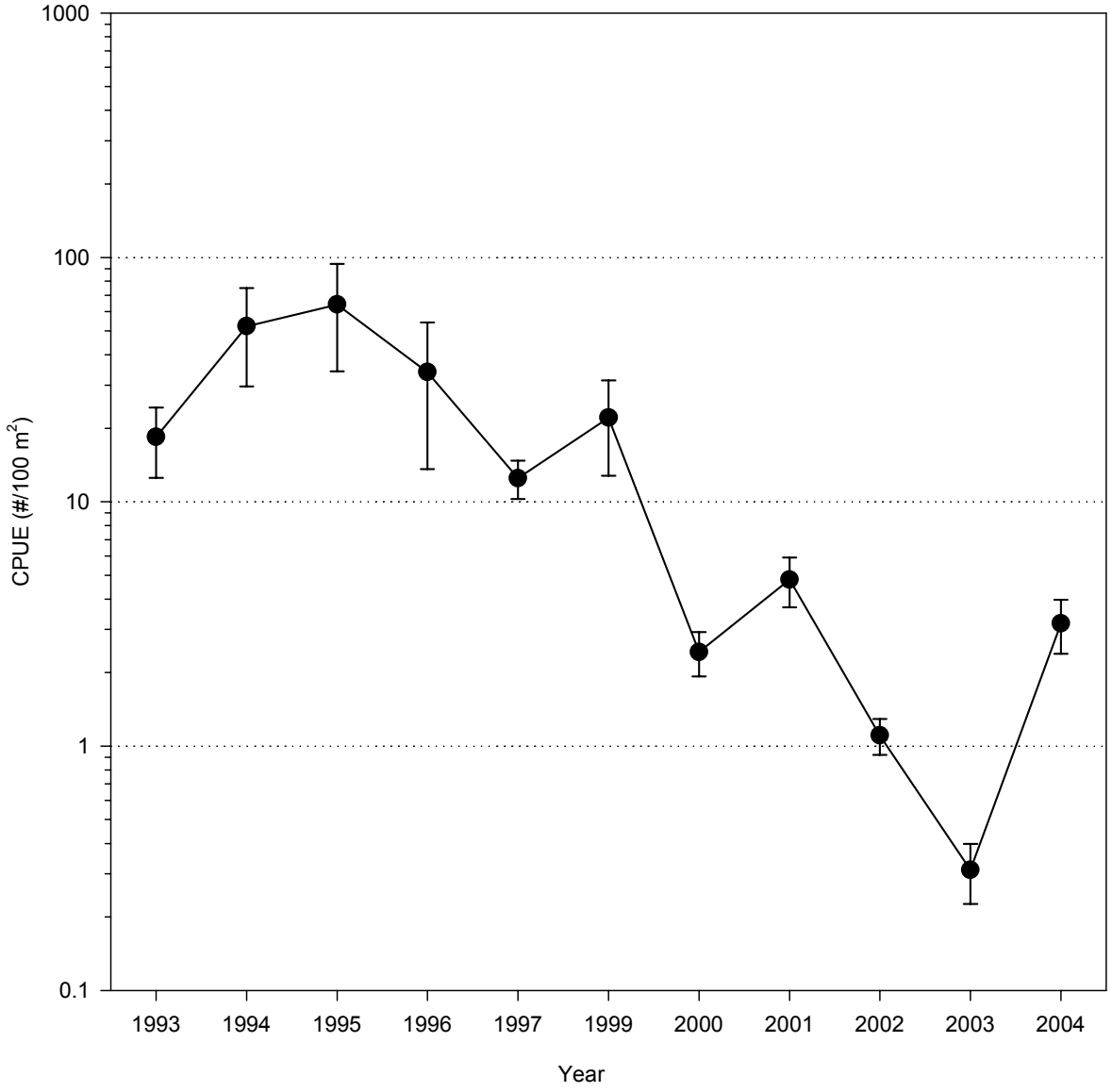

Figure 14. Annual Rio Grande silvery minnow catch rates (CPUE), at all sampling sites, by sampling year (1993-1997, 1999-2004). Solid circles indicate means and capped-bars represent the standard error. Dotted horizontal lines represent different orders of magnitude.

Hydraulic variables that represent different flow conditions were compared at upstream and downstream USGS gauging stations of the Middle Rio Grande (Table 3). Extended periods of higher flows were recorded in 1993-1995, 1997, and 1999. These years were notably different in both the magnitude and duration of higher flows compared with 1996 and 2000-2004. While there were slightly fewer high flow days at the downstream station compared with the upstream station, the number of low flow days at the downstream station was markedly higher for every year analyzed.

Multivariate analyses of October catch rates of Rio Grande silvery minnow from 1993-2004 revealed significant associations with hydraulic variables. Regression results based on several hydraulic variables were not presented for the Albuquerque gauge (days>4,000 cfs) and the San Marcial gauge (days>3,000, and days>4,000 cfs) because of high autocorrelation (coefficient>0.95) with other variables. Regression analysis of Rio Grande silvery minnow October catch rates revealed significant relationships with several hydraulic variables. At the Albuquerque gauge, catch rate increased significantly ($p<0.005$) with maximum discharge and all combinations of number of days with discharge exceeding a threshold value (Figure 15). The relationship that explained the most variation (93%) in mean catch rate was number of days with discharge >3,000 cfs. At the San Marcial gauge, mean October catch rate of Rio Grande silvery minnow increased significantly with maximum discharge and several of the combinations of number of days with discharge (cfs) exceeding a threshold value (Figure 16). The relationship that explained the most variation (93%) in mean catch rate was number of days discharge >2,000 cfs. Additionally, there was a strong negative relationship between the number of low flow days (either days<200 cfs or days<100 cfs) and mean October catch rate of Rio Grande silvery minnow. A striking pattern of association between changes in discharge and changes in Rio Grande silvery minnow abundance emerged when plotting all data over the past decade on a single graph (Figure 17).

Mesohabitat associations

Mesohabitats sampled in the Middle Rio Grande were classified during field sampling and given unique codes to identify their hydraulic features (Table 4). The overall distribution of mesohabitats did not differ notably between reaches although there were some exceptions. Backwaters and isolated pools were more commonly sampled in the Isleta and San Acacia reaches while riffles were more commonly sampled in the Angostura Reach (Figure 18). It is important to stress that a wide variety of habitats were sampled to provide a balanced monitoring program of the Middle Rio Grande ichthyofaunal community and all life stages of Rio Grande silvery minnow. The actual habitats occupied by Rio Grande silvery minnow were diverse and included all of the habitats sampled (Figure 19). Habitats that were occupied most frequently by Rio Grande silvery minnow included shoreline runs or pools and backwaters.

Fish Community

Population status-2004

The 2004 ichthyofaunal community in the Middle Rio Grande between Angostura Diversion Dam and Elephant Butte Reservoir was numerically dominated by cyprinids (Table 5). The native ichthyofauna consisted of seven species (red shiner, Rio Grande silvery minnow, fathead minnow, flathead chub, longnose dace, river carpsucker, and smallmouth buffalo) represented by between two and 32,523 individuals. Smallmouth buffalo (n=2) was the least abundant native fish and longnose dace (n=328) the second least collected native taxon. Rio Grande silvery minnow was the fourth most abundant of the 10 focal taxa used in the community composition analysis. Red shiner was the most abundant native species collected (n=32,523) followed by fathead minnow (n=5,572), Rio Grande silvery minnow (n=3,039), river carpsucker (n=1,843) and flathead chub (n=1,596). The most abundant introduced species were western mosquitofish (n=9,510), white sucker (n=1,715), channel catfish (n=881), common carp (n=419), yellow bullhead (n=27), and yellow perch (n=26). The nine

Table 3. Seven hydraulic variables used in correlation analyses for Albuquerque (A) and San Marcial (B) gauging stations. *Discharge values are presented in cubic feet per second (cfs).

(A) USGS 08330000-Rio Grande at Albuquerque, NM

Year	Max. discharge (May-June)	# days (May-June) discharge: >1,000	>2,000	>3,000	>4,000	# days (all year) discharge: <200	<100
1993	7,000	61	61	59	49	0	0
1994	6,250	61	61	60	48	0	0
1995	6,370	61	61	61	57	0	0
1996	1,770	5	0	0	0	2	0
1997	5,980	61	51	43	35	0	0
1999	4,550	61	57	30	13	0	0
2000	1,500	21	0	0	0	0	0
2001	4,760	50	21	2	2	0	0
2002	1,240	2	0	0	0	5	0
2003	1,260	4	0	0	0	42	0
2004	2,980	31	16	0	0	55	4

(B) USGS 08358400-Rio Grande Floodway at San Marcial, NM

Year	Max. discharge (May-June)	# days (May-June) discharge: >1,000	>2,000	>3,000	>4,000	# days (all year) discharge: <200	<100
1993	5,590	60	55	40	27	58	36
1994	5,440	61	61	47	22	69	51
1995	4,800	61	61	55	28	39	17
1996	1,690	1	0	0	0	164	152
1997	4,320	54	42	35	15	25	17
1999	4,840	53	26	13	4	71	37
2000	1,470	0	0	0	0	167	98
2001	2,430	20	2	0	0	141	96
2002	446	0	0	0	0	216	191
2003	351	0	0	0	0	229	181
2004	1,600	14	0	0	0	147	127

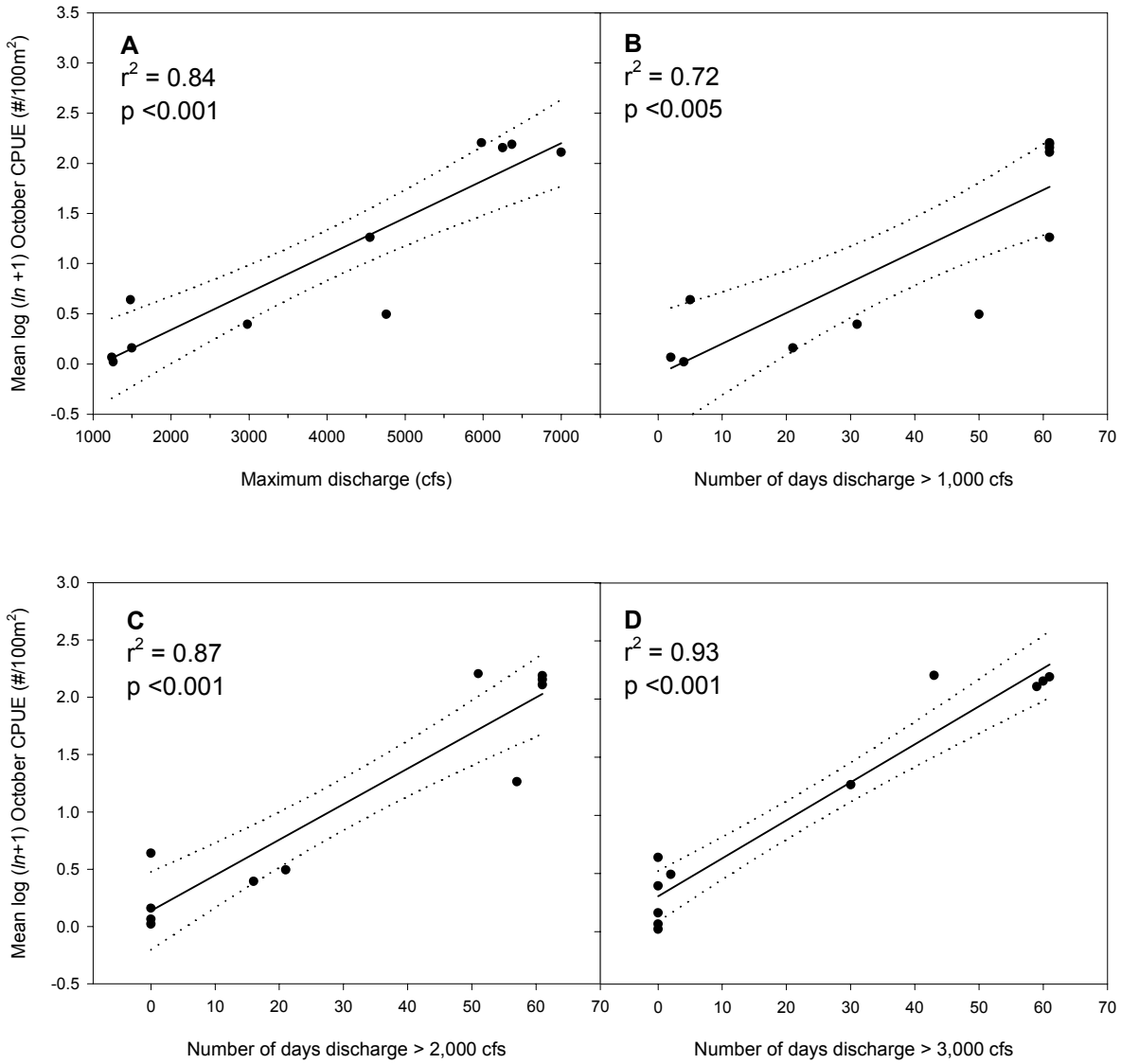

Figure 15A-D. Regression analysis of Rio Grande silvery minnow log-transformed mean October catch rates (1993-1997, 1999-2004) and different hydraulic variables (see Table 3) for USGS Gauge #08330000 (Rio Grande at Albuquerque, NM). Graph shows regression line (solid) and 95% confidence intervals (dotted).

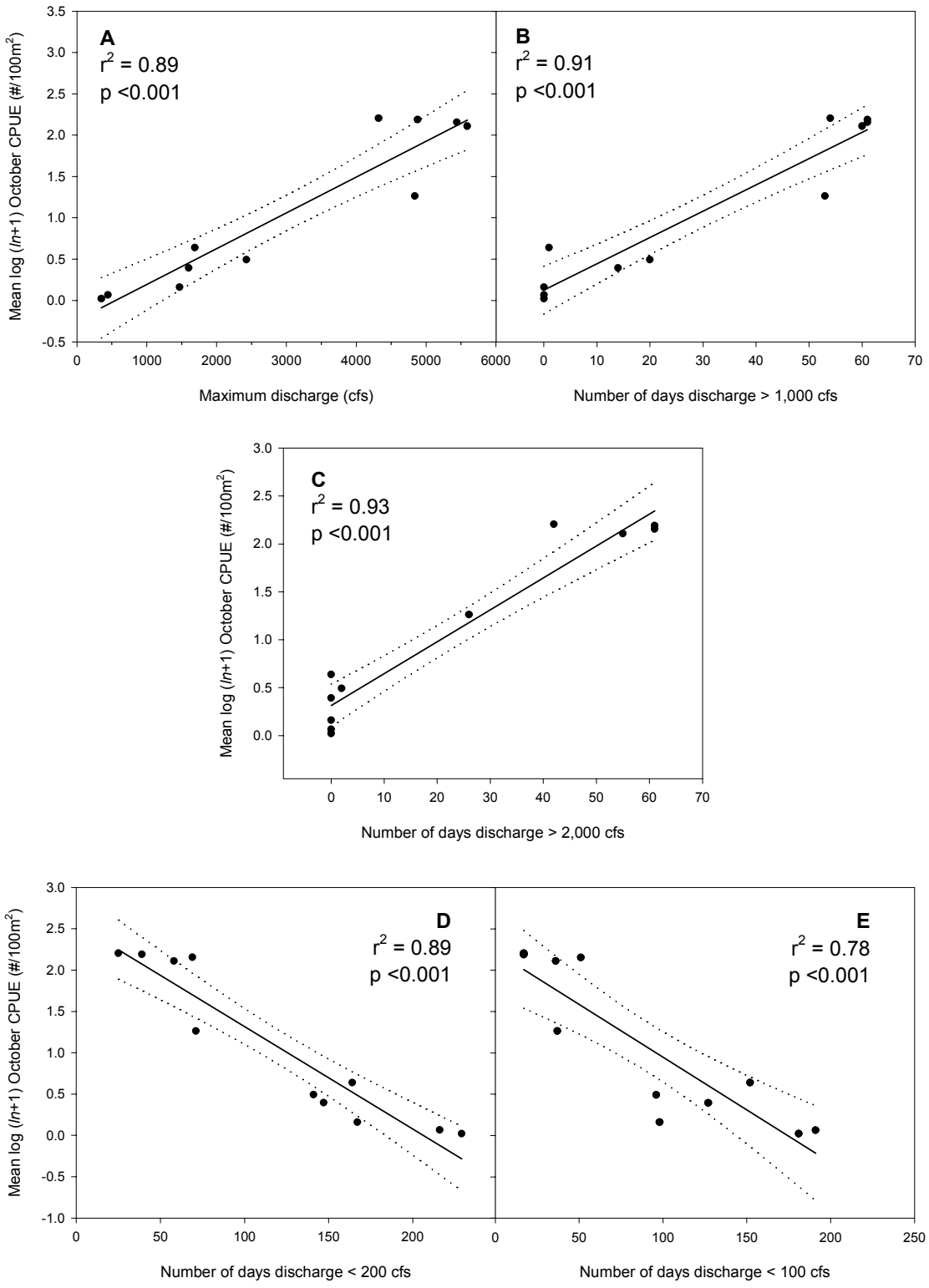

Figure 16A-E. Regression analysis of Rio Grande silvery minnow log-transformed mean October catch rates (1993-1997, 1999-2004) and different hydraulic variables (see Table 3) for USGS Gauge #08358400 (Rio Grande Floodway at San Marcial, NM). Graph shows regression line (solid) and 95% confidence intervals (dotted).

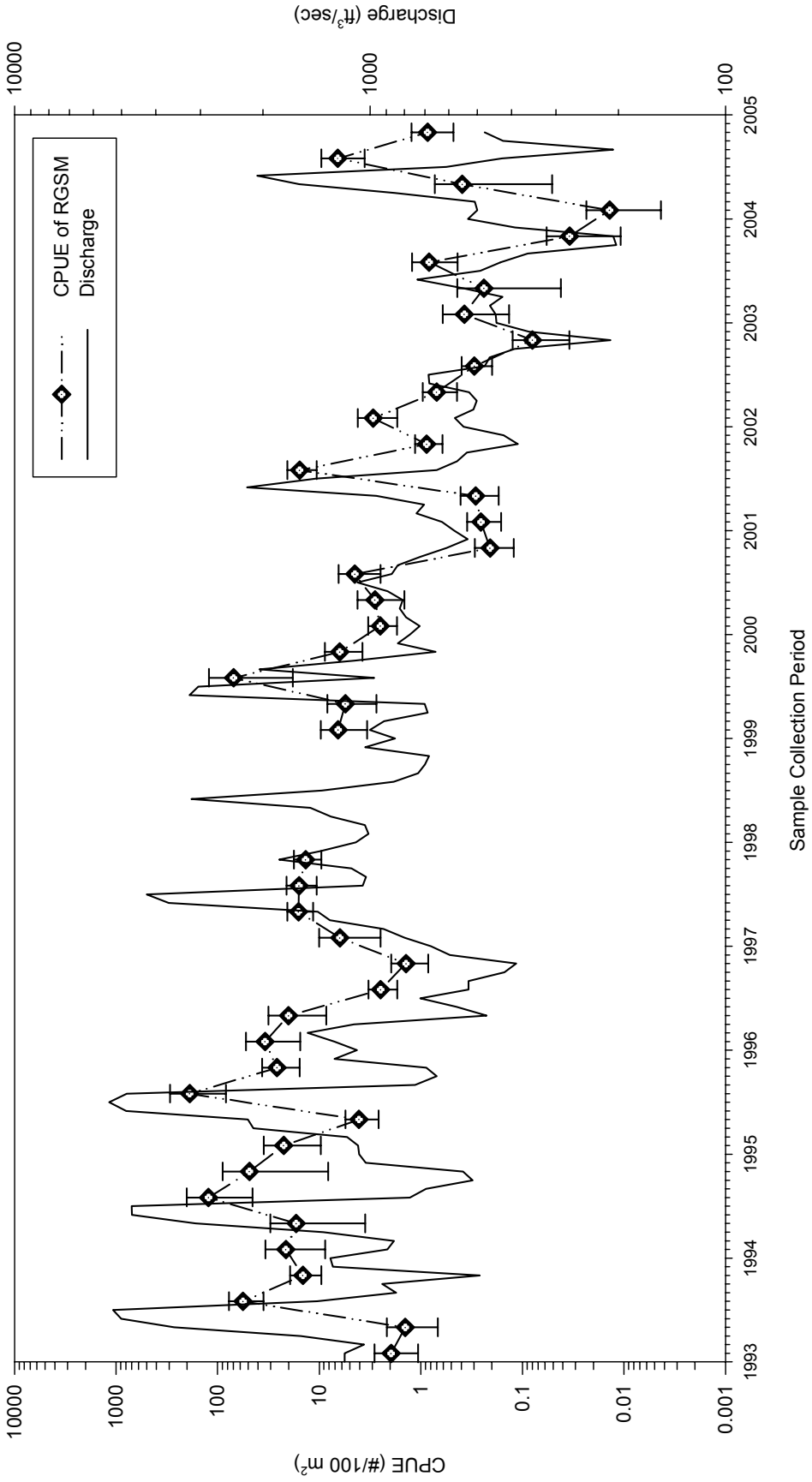

Figure 17. Time sequence of quarterly Rio Grande silvery minnow catch rates (1993-1997, 1999-2004) at population monitoring program collection sites and discharge at USGS Gauge #08330000 (Rio Grande at Albuquerque, NM). Diamonds indicate sample means for each survey and capped-bars represent the standard error.

Table 4. Codes used for mesohabitat type classification in the Middle Rio Grande.

MESOHABITAT TYPES	
Primary	
MC	**Main channel-** the section of the river which carries the majority of the flow; there can be only one main channel.
SC	**Secondary channel-** all channels not designated as the main channel; there can be zero or several secondary channels at a site.
BW	**Back water-** a body of water, connected to the main channel, with no appreciable flow; often created by a drop in flow which partially isolates a former channel.
IP	**Isolated pool-** a pool which is not connected to the main or secondary channel; frequently a former backwater which is no longer connected to the main or secondary channel.
RIFFLE	**Riffle-** a shallow and high velocity habitat where the water surface is irregular and broken by waves; generally indicates gravel-cobble substrate.
DEBRIS	**Debris-** any habitat that has associated organic cover (e.g., grasses, woody vegetation etc.) within all or part of the total surface area sampled.
Secondary	
PO	**Pool-** the portion of the river that is deep and with relatively little velocity compared to the rest of the channel.
RU	**Run-** a reach of relatively fast velocity water with laminar flow and a non-turbulent surface.
SH	**Shoreline-** usually a shallower, lower velocity area that is adjacent to shore. This designation precedes other mesohabitat types (i.e. SHRU= shoreline run or SHRI= shoreline riffle).

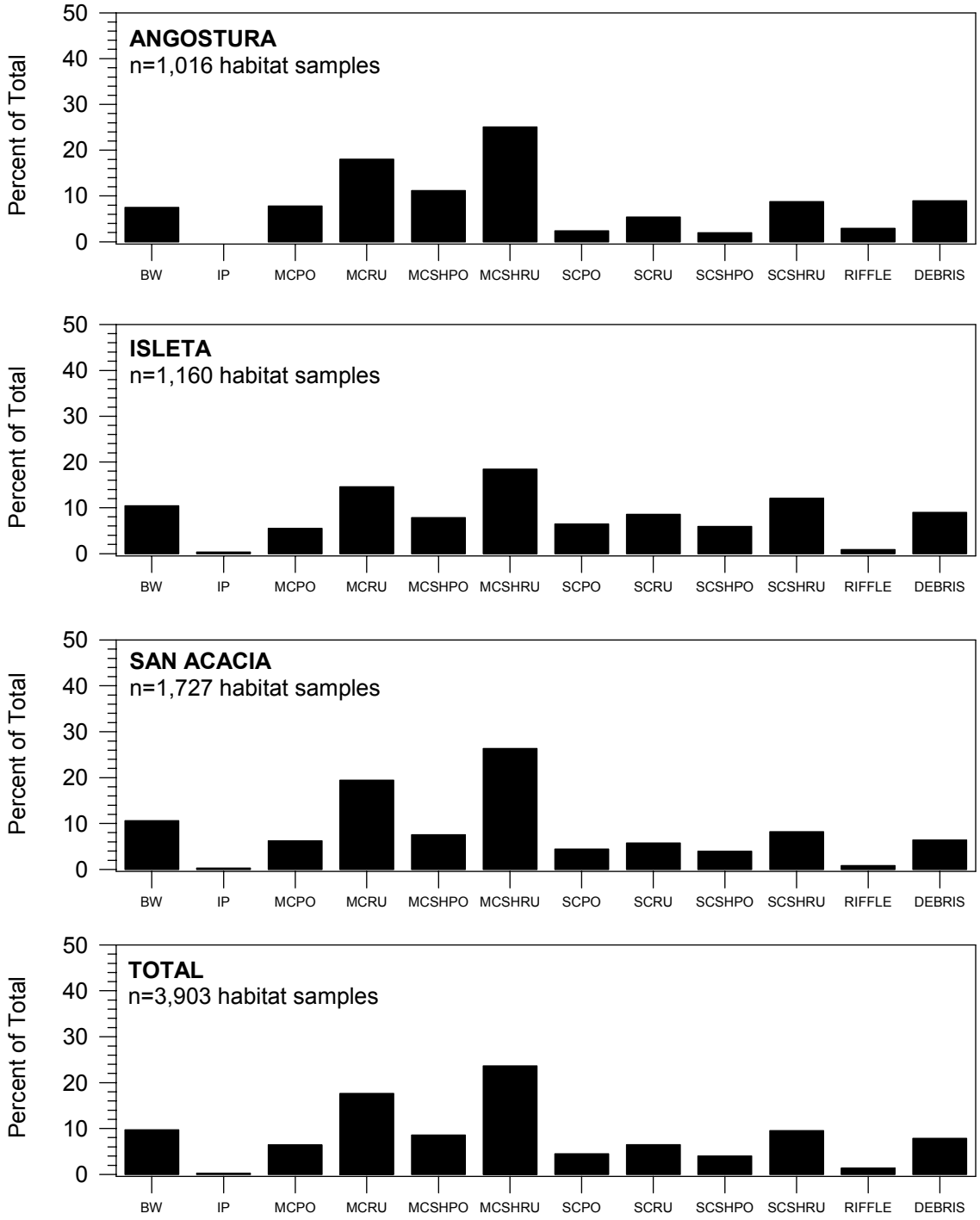

Figure 18. Percent total of mesohabitats (see Table 4 for codes) sampled in the Middle Rio Grande as part of population monitoring during 2004 for each river reach and the annual total.

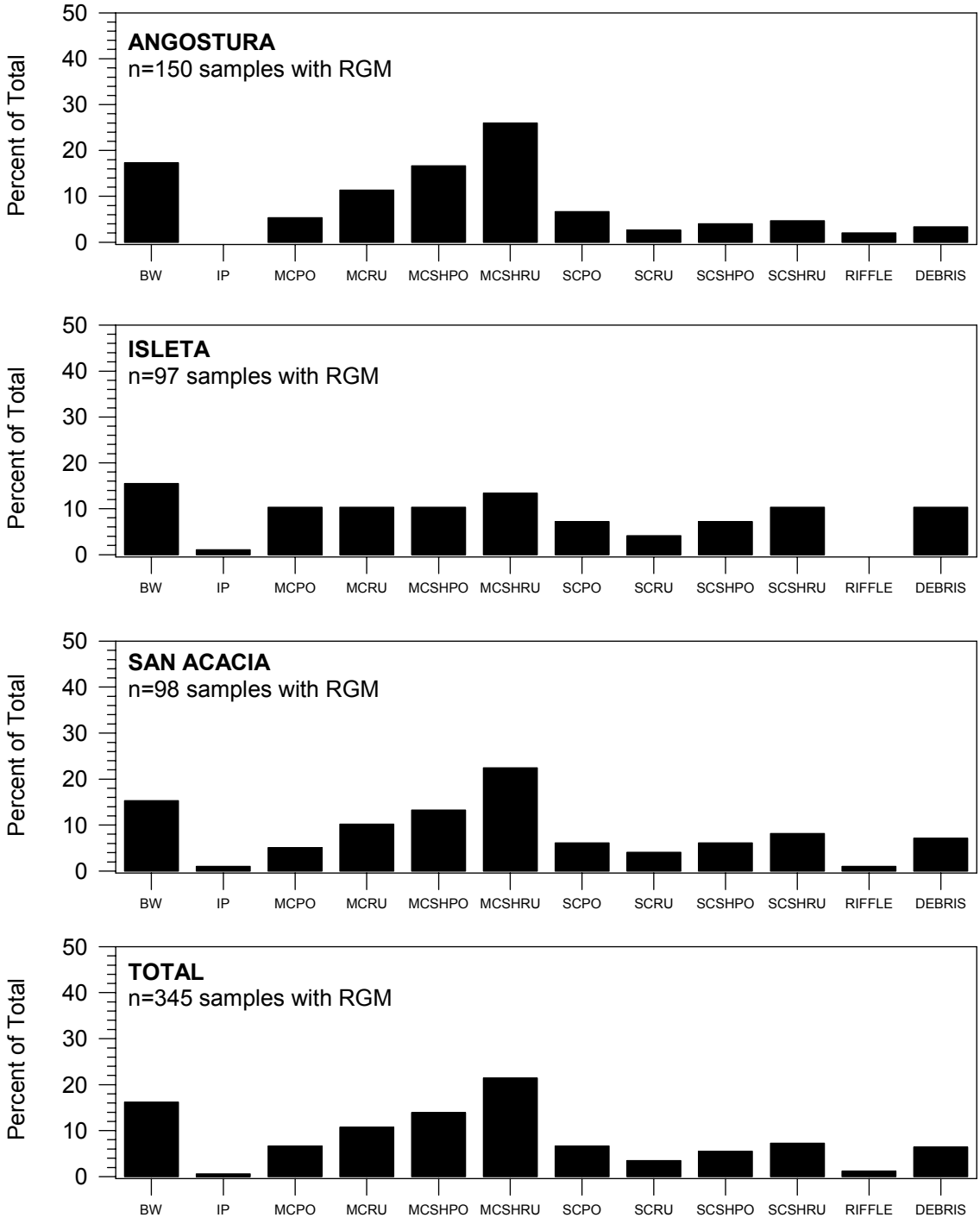

Figure 19. Percent total of mesohabitats (see Table 4 for codes) occupied by Rio Grande silvery minnow (RGM) in the Middle Rio Grande as part of population monitoring during 2004 for each river reach and the annual total.

Table 5. Summary of the 2004 Rio Grande silvery minnow population monitoring program fish collections.

SPECIES	RESIDENCE STATUS[1]	TOTAL NUMBER OF SPECIMENS	PERCENT OF % OF TOTAL	FREQUENCY OF OCCURRENCE[2]	% FREQUENCY OCCURRENCE[2]
HERRINGS					
gizzard shad	I	8	0.01	4	20
CARPS AND MINNOWS					
red shiner *	N	32,523	56.53	20	100
common carp *	I	419	0.73	19	95
Rio Grande silvery minnow *	N	3,039	5.28	20	100
fathead minnow *	N	5,572	9.69	20	100
bullhead minnow	I	1	<0.01	1	5
flathead chub *	N	1,596	2.77	20	100
longnose dace *	N	328	0.57	10	50
SUCKERS					
river carpsucker *	N	1,843	3.20	20	10
white sucker *	I	1,715	2.98	7	35
smallmouth buffalo	N	2	<0.01	2	10
NORTH AMERICAN CATFISHES					
black bullhead	I	4	<0.01	3	15
yellow bullhead	I	27	0.05	10	50
channel catfish *	I	881	1.53	18	90
TROUTS AND SALMONS					
brown trout	I	2	<0.01	1	5
LIVEBEARERS					
western mosquitofish *	I	9,510	16.53	20	100
SUNFISHES					
green sunfish	I	2	<0.01	2	10
bluegill	I	6	0.01	3	15
largemouth bass	I	12	0.02	6	30
white crappie	I	12	0.02	7	35
PERCHES					
yellow perch	I	26	0.05	6	30
walleye	I	1	<0.01	1	5
TOTAL		57,528	100	20	100

[1] N = native; I = introduced
[2] Frequency and % frequency of occurrence are based on n=20 sample sites
* indicates one of the 10 focal taxa used in all community composition figures

remaining nonnative fish species were present at much lower numbers (i.e., n<15) than were the aforementioned nonnatives.

Rio Grande silvery minnow comprised a higher fraction of the total ichthyofaunal community in 2004 than it has since 1999. This percentage has dropped precipitously over the past decade (Figure 20) but improved markedly between 2003 and 2004. However, Rio Grande silvery minnow has comprised <6% of the ichthyofaunal community since 2000 and its relative abundance of the total catch was lower (0.4%) in 2003 than had ever been previously recorded. The magnitude of change in catch rates of Rio Grande silvery minnow over time is particularly evident when compared to overall fish catch rates (all species) over the past decade (Figure 21). While the rank abundance of most fish species in the Middle Rio Grande has remained relatively constant over the past decade, Rio Grande silvery minnow has declined from being one of the most abundant species in the early to mid-1990s to being one of the least abundant species and the least regularly collected native taxa by 2003 (Table 6). However, the rank abundance of Rio Grande silvery minnow changed more from 2003 to 2004 than did any other fish species in the Rio Grande during that time period.

There were notable seasonal changes in the relative abundance of the 10 most abundant fish species during 2004 (Figures 22-24). Catch of all species increased during spring or summer. The highest catch rates of red shiner were recorded in June and September although the abundance of this taxon was high throughout the year. Other fish species whose catch rates peaked in June were common carp, fathead minnow, river carpsucker, and western mosquitofish. White sucker were most abundant during the May sampling trip. Rio Grande silvery minnow abundance in samples was highest from May to July 2004. A detailed accounting of species-specific temporal abundance revealed similar trends and documented the season-specific presence of certain nonnative taxa (e.g., gizzard shad, smallmouth buffalo, yellow perch; Table 7).

Besides temporal variation in the relative abundance in the fish community, there were also longitudinal differences in the abundance of fish species (Figure 25). Red shiner, fathead minnow, and western mosquitofish catch rates were highest in the Isleta Reach and about equal in the Angostura and San Acacia reaches. Catch rate of longnose dace and white sucker was higher in the Angostura Reach compared to the Isleta or San Acacia reaches. Rio Grande silvery minnow was most abundant in the Angostura Reach and overall catch rates of this taxon differed little between the two downstream river reaches.

Relative abundance of all fish species in 2004 fluctuated monthly for each of the river reaches (Figure 26). An increase in the relative abundance of fish occupying the three river reaches was discerned in May and June but declines were generally most apparent by October. Notable increases in fish catch rate occurred in May in the Angostura Reach but did not occur until June in the Isleta and San Acacia reaches. Isleta Reach fish catch rates were high from June through September primarily because of the large number of red shiner, fathead minnow, and western mosquitofish collected. Overall fish catch rates were highest in the Isleta Reach throughout most of the year.

Catch rates of individual taxa in the study reaches varied extensively by sampling period (Figures 27-29). Fish catch rates in the Angostura Reach were low for most of the focal species except red shiner, Rio Grande silvery minnow, and white sucker. Rio Grande silvery minnow catch rates were low from January to April 2004 but increased markedly during May. A second increase in silvery minnow catch rate was noted during July. Red shiner was most common in samples taken in May but catch rates remained elevated until October. White sucker abundance peaked in May following spawning by this species. Western mosquitofish was most abundant in Angostura Reach samples taken in July. Relative abundance of most other focal species in the Angostura Reach peaked during June and declined to pre-spawning levels by September.

Fish catch rates in the Isleta Reach, unlike the Angostura Reach, peaked in June. Red shiner, fathead minnow, and western mosquitofish were clearly the most abundant species in

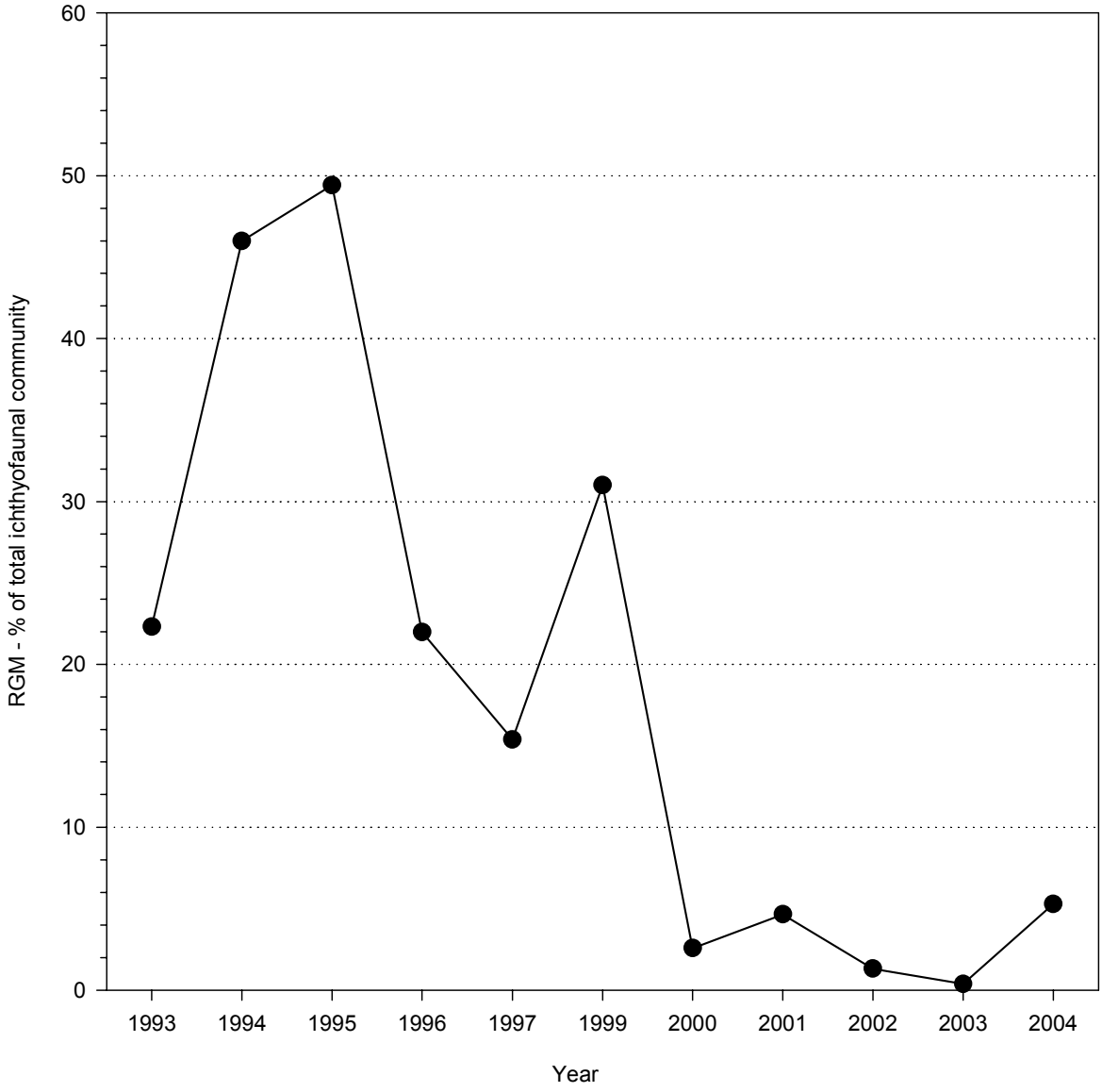

Figure 20. Relative abundance of Rio Grande silvery minnow as a percentage of the total ichthyofaunal community by sampling year (1993-1997, 1999-2004).

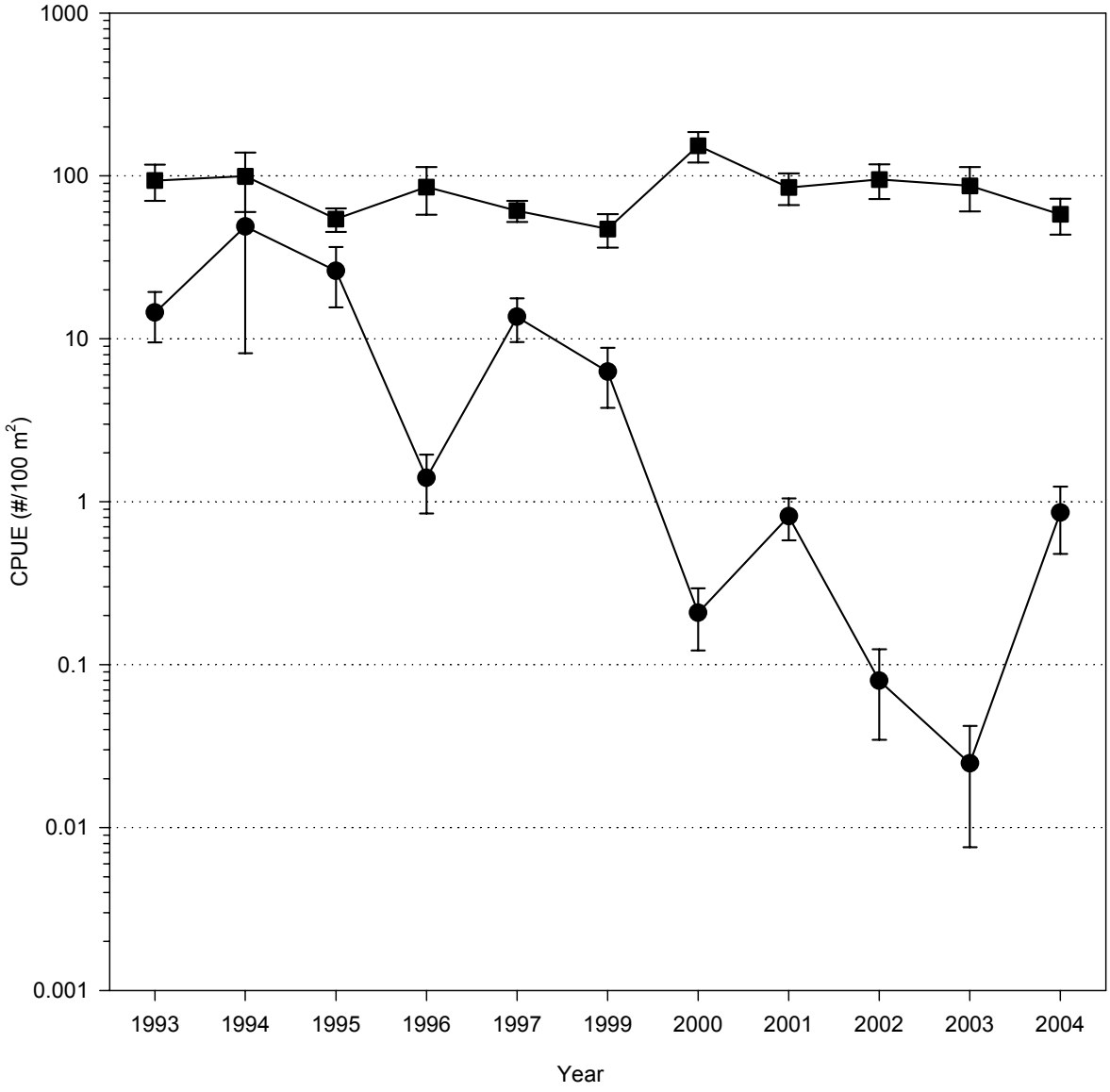

Figure 21. Catch rates (CPUE) of Rio Grande silvery minnow (circles) and the total ichthyofaunal community (squares) during October, at all sampling sites, by sampling year (1993-1997, 1999-2004). Solid circles or squares indicate means and capped-bars represent the standard error. Dotted horizontal lines represent different order of magnitude.

Table 6. Summary of annual rank abundance of species collected every year in the Rio Grande from 1993-1997 and 1999-2004.

SPECIES	1993	1994	1995	1996	1997	1999	2000	2001	2002	2003	2004
HERRINGS											
gizzard shad	10	13	11	8	11	8	12	11	13	14	13
CARPS AND MINNOWS											
red shiner	1	2	2	1	1	1	1	1	1	1	1
common carp	11	8	10	10	8	9	9	6	10	10	9
RG silvery minnow	***2***	***1***	***1***	***2***	***2***	***2***	***6***	***5***	***8***	***11***	***4***
fathead minnow	4	7	8	5	6	7	5	3	2	3	3
flathead chub	6	6	5	7	9	6	8	9	7	5	7
longnose dace	9	10	9	11	10	10	10	10	9	9	10
SUCKERS											
river carpsucker	5	5	6	4	4	3	4	4	4	4	5
white sucker	3	3	3	3	3	11	3	8	5	6	6
BULLHEAD CATFISHES											
black bullhead	17	15	15	16	13	12	17	17	16	16	15
yellow bullhead	12	14	14	12	17	15	13	14	11	8	11
channel catfish	7	4	7	9	8	4	7	7	6	7	8
LIVEBEARERS											
western mosquitofish	8	9	3	6	5	5	2	2	3	2	2
TEMPERATE BASSES											
white bass	14	11	12	17	15	14	15	12	15	16	NA
SUNFISHES											
bluegill	16	17	16	15	16	17	16	16	14	15	14
largemouth bass	15	16	17	14	12	16	14	15	16	13	12
white crappie	13	12	13	13	14	12	11	13	12	12	12

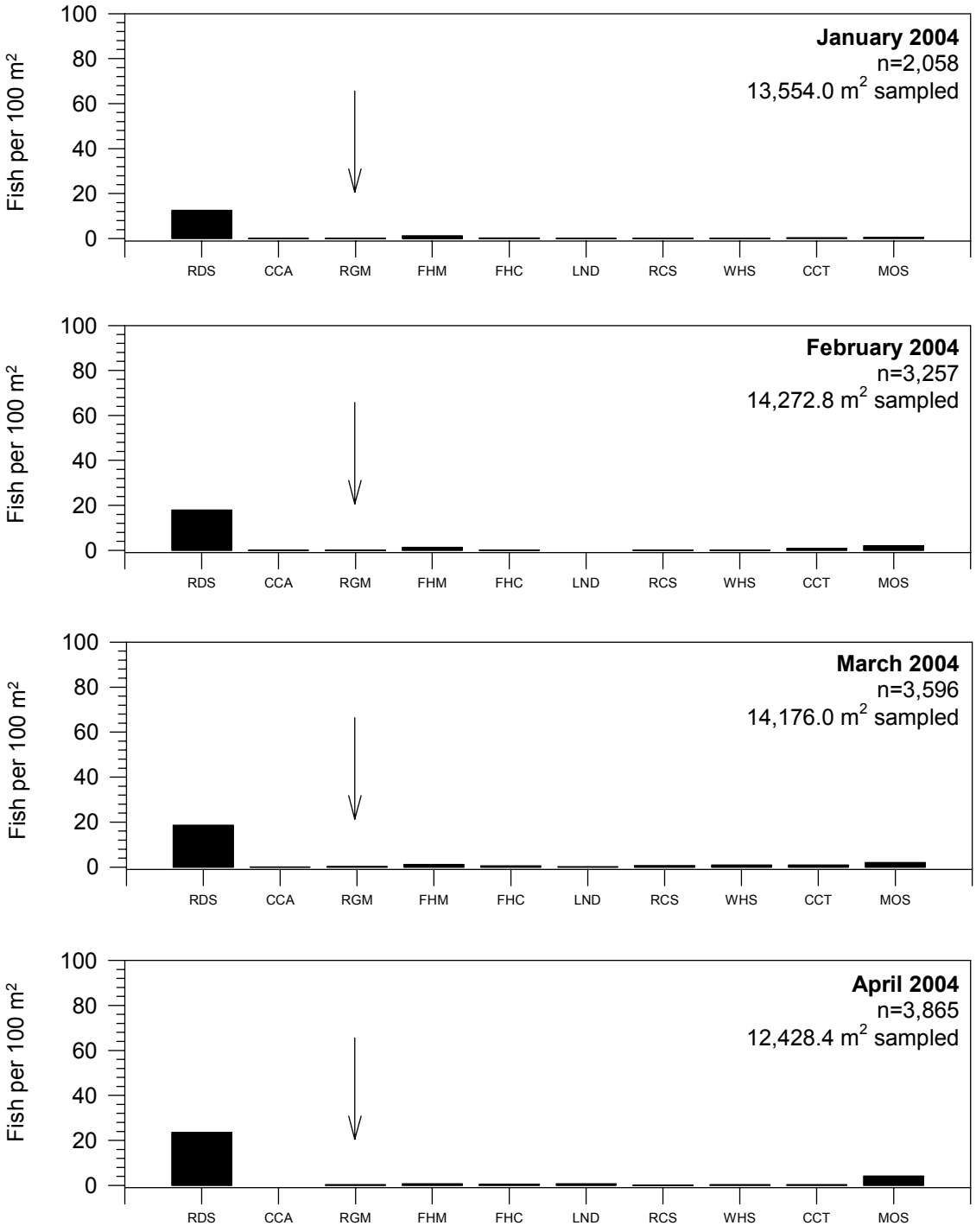

Figure 22. Fish catch rates (CPUE) from January-April 2004 for each focal species (see Table 1 for species codes) in the Middle Rio Grande. An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

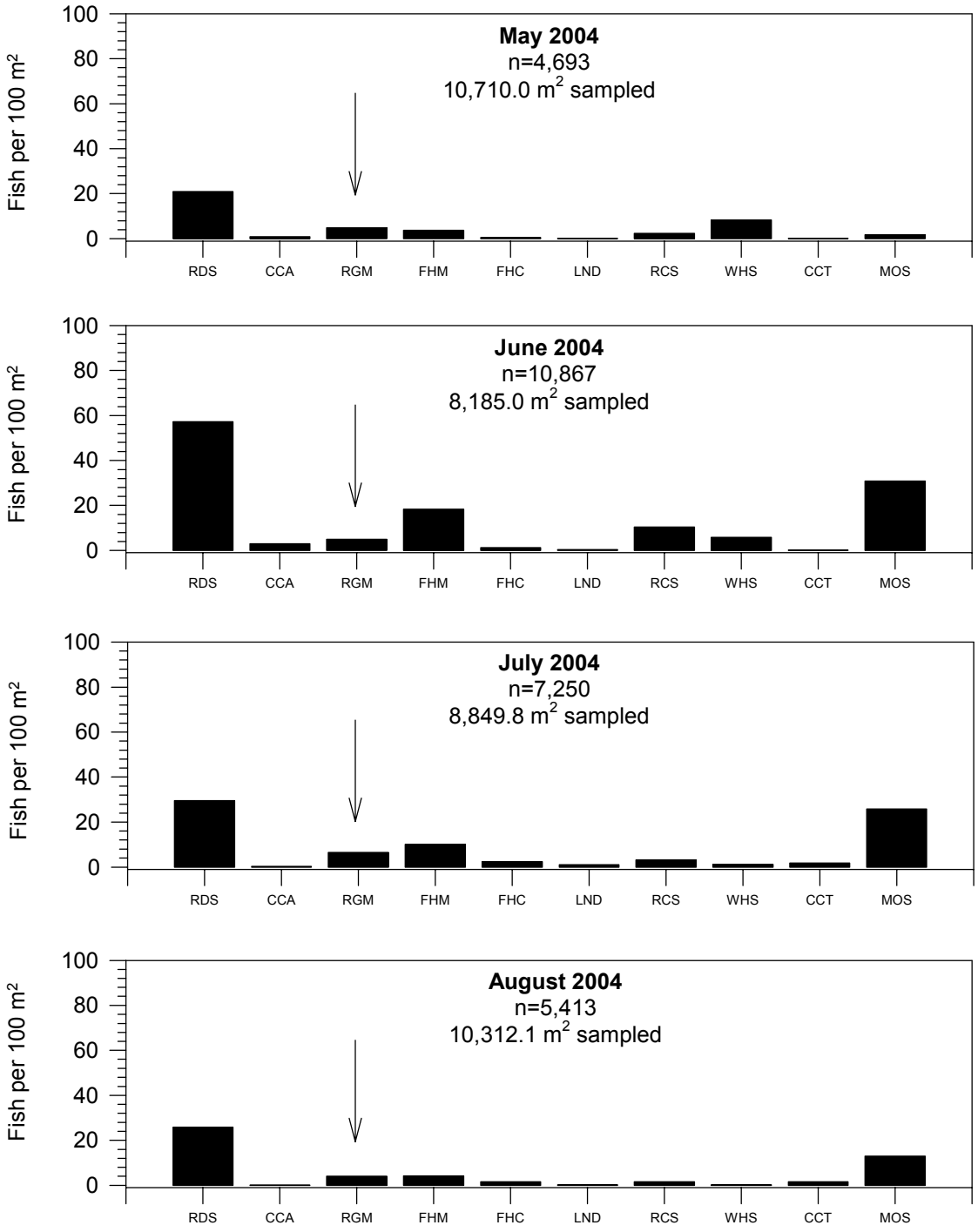

Figure 23. Fish catch rates (CPUE) from May-August 2004 for each focal species (see Table 1 for species codes) in the Middle Rio Grande. An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

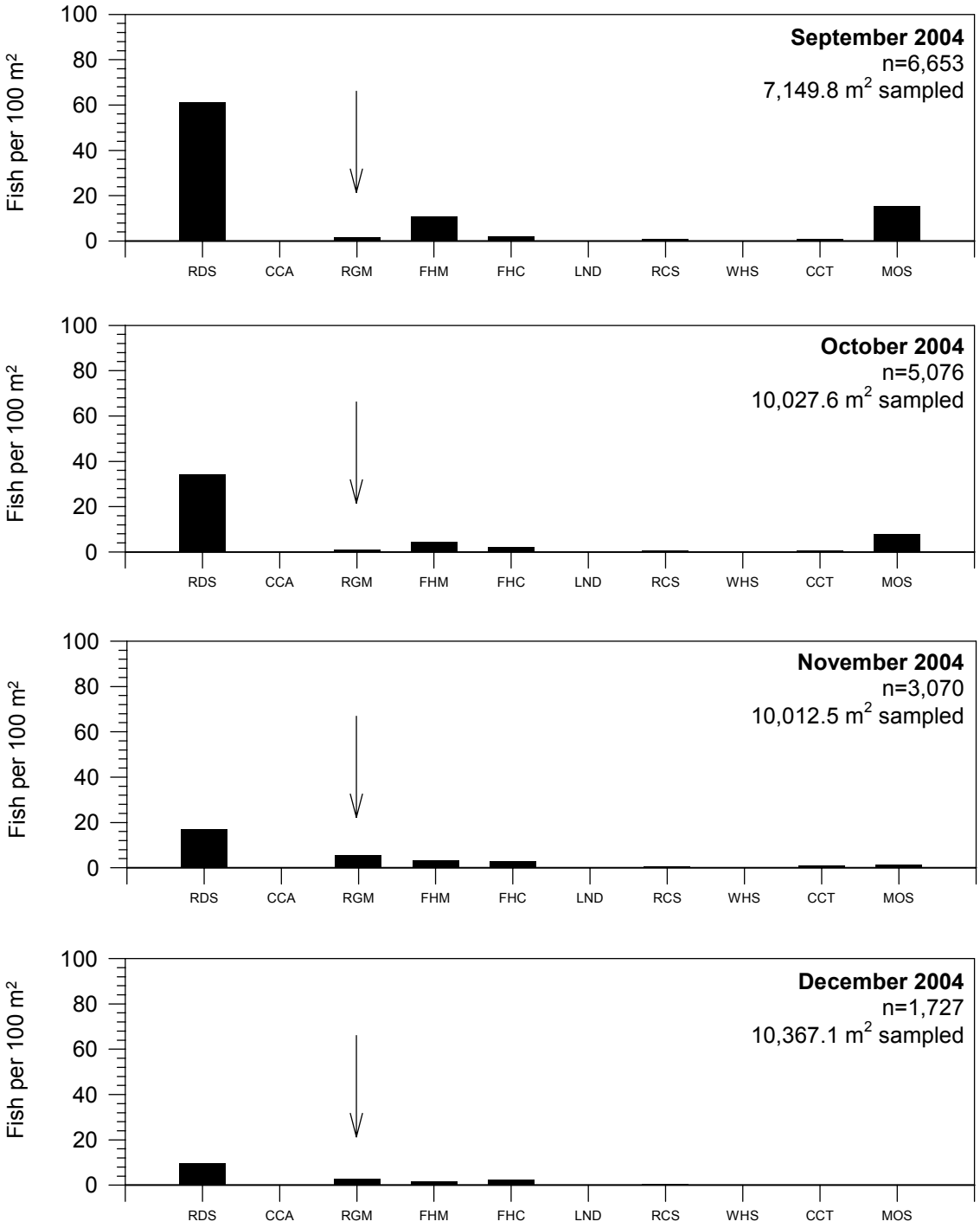

Figure 24. Fish catch rates (CPUE) from September-December 2004 for each focal species (see Table 1 for species codes) in the Middle Rio Grande. An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

Table 7. Summary of the monthly 2004 Rio Grande silvery minnow population monitoring program fish collections.

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
HERRINGS													
gizzard shad	—	—	1	—	—	3	1	3	—	—	—	—	8
CARPS AND MINNOWS													
red shiner	1,700	2,565	2,645	2,941	2,249	4,688	2,608	2,659	4,376	3,436	1,674	982	32,523
common carp	2	4	9	—	99	238	28	13	7	7	11	1	419
Rio Grande silvery minnow	7	2	45	49	517	411	574	416	116	78	538	286	3,039
Rio Grande chub	—	—	—	—	—	—	—	—	—	—	—	—	—
fathead minnow	166	193	167	95	407	1,501	896	439	776	447	322	163	5,572
bullhead minnow	—	—	—	—	—	—	—	—	—	1	—	—	1
flathead chub	38	30	79	61	52	105	211	158	138	194	296	234	1,596
longnose dace	2	1	26	99	9	26	91	23	11	24	14	2	328
SUCKERS													
river carpsucker	19	15	84	11	252	856	280	167	59	42	33	24	1,842
white sucker	4	23	128	43	896	479	106	20	2	5	6	3	1,715
smallmouth buffalo	—	—	—	—	—	—	—	2	—	—	—	—	2
BULLHEAD CATFISHES													
black bullhead	—	3	—	—	—	—	—	1	—	—	—	—	4
yellow bullhead	—	—	—	—	—	1	10	12	3	1	—	—	27
channel catfish	49	119	127	42	16	14	156	163	62	60	67	6	881
flathead catfish	—	—	—	—	—	—	—	—	—	—	—	—	—
TROUTS													
brown trout	—	—	—	—	—	—	—	—	—	—	—	2	2
LIVEBEARERS													
western mosquitofish	68	299	282	515	191	2,523	2,281	1,335	1,105	781	108	22	9,510
TEMPERATE BASSES													
white bass	—	—	—	—	—	—	—	—	—	—	—	—	—
SUNFISHES													
green sunfish	—	1	—	1	—	—	—	—	—	—	—	—	2
bluegill	—	—	—	3	1	—	—	1	1	—	—	—	6
largemouth bass	—	—	1	—	1	1	8	—	—	—	1	—	12
white crappie	3	1	—	5	1	1	—	—	—	—	—	1	12
black crappie	—	—	—	—	—	—	—	—	—	—	—	—	—
PERCHES													
yellow perch	—	1	1	—	2	20	—	1	—	—	—	1	26
walleye	—	—	1	—	—	—	—	—	—	—	—	—	1
TOTAL	2,058	3,257	3,596	3,865	4,693	10,867	7,250	5,413	6,656	5,075	3,070	1,727	57,528

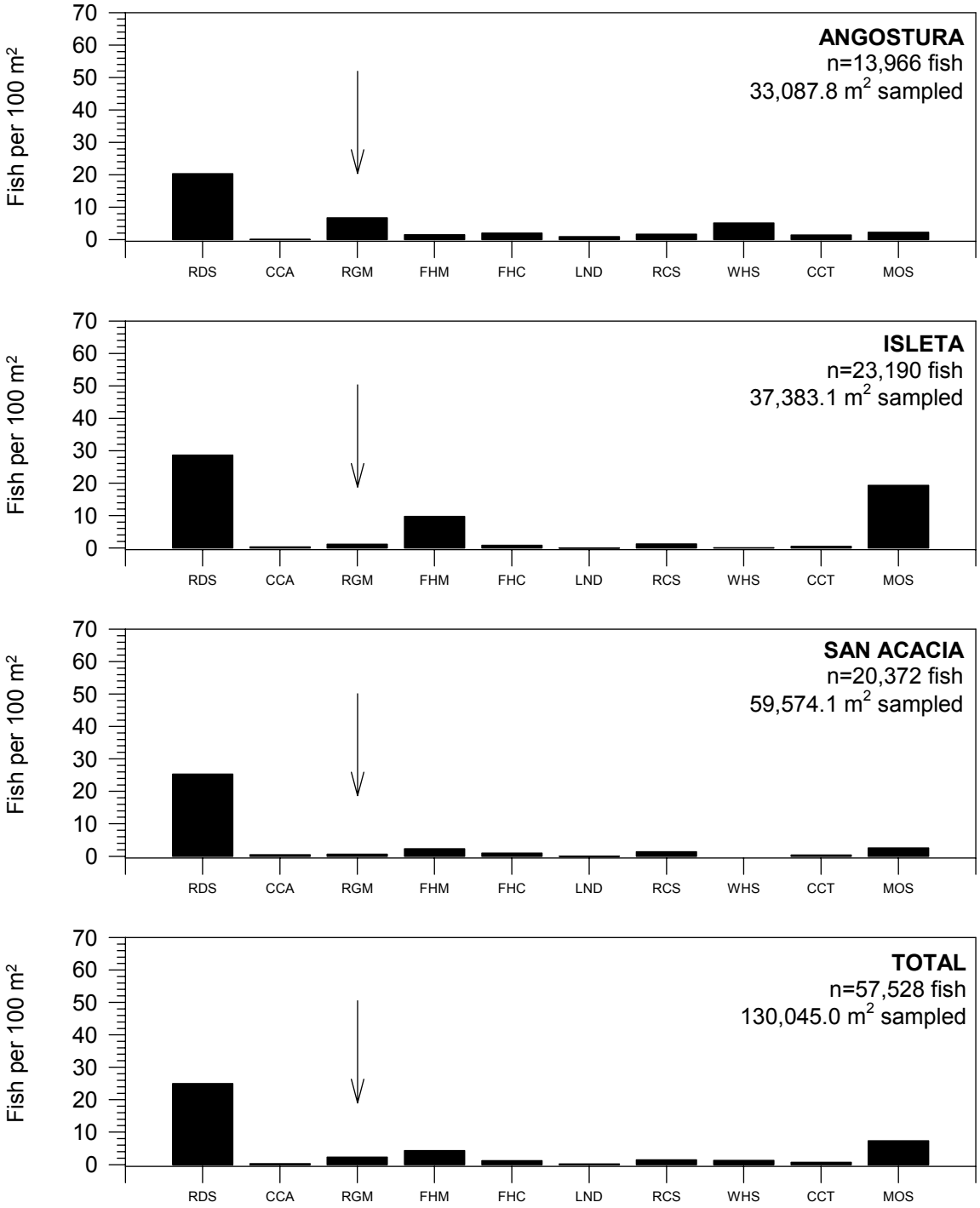

Figure 25. Fish catch rates (CPUE) by river reach for each focal species (see Table 1 for species codes) in the Middle Rio Grande during 2004. An arrow indicates the Rio Grande silvery minnow (RGM) histogram bar.

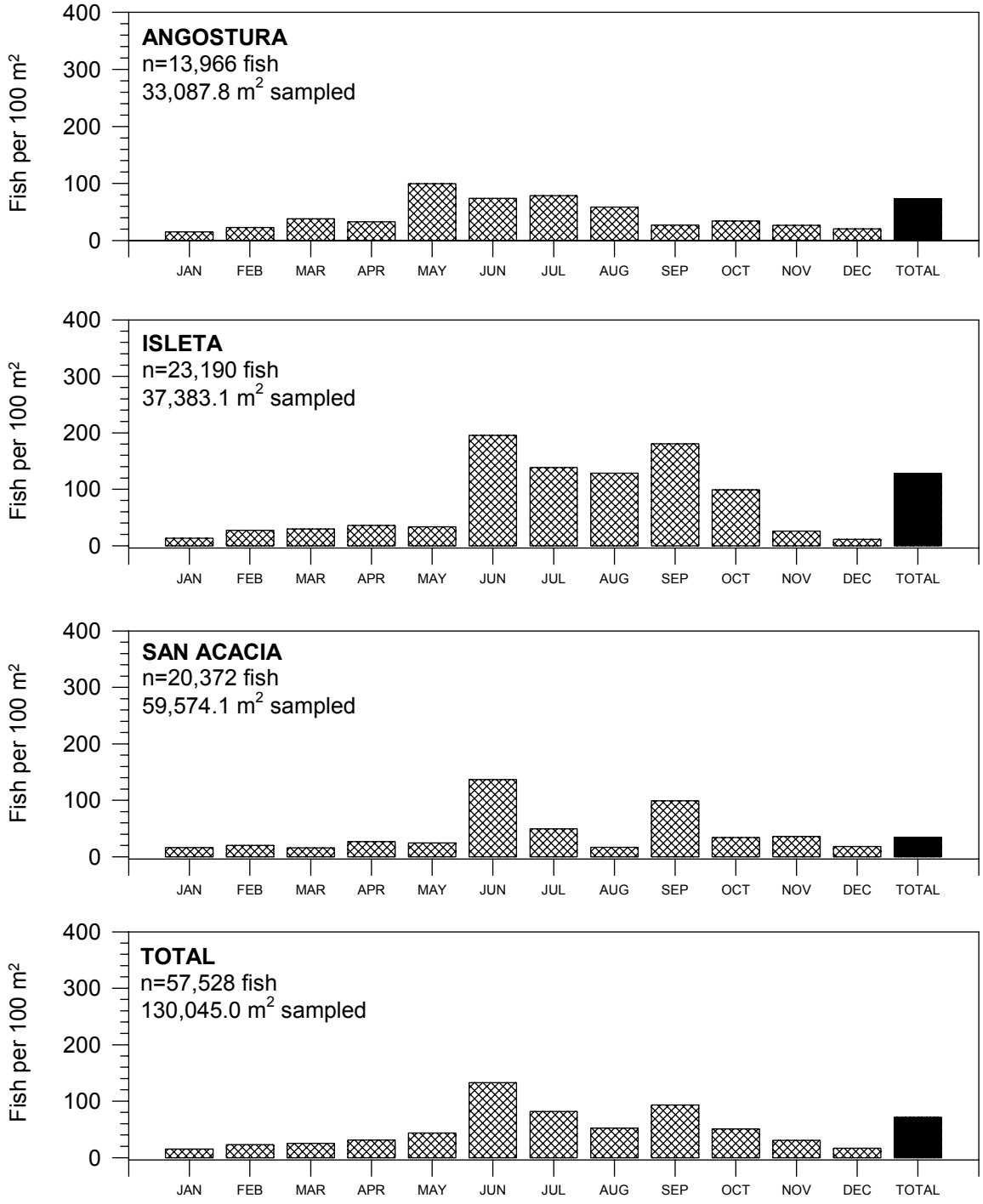

Figure 26. Fish catch rates (CPUE) by river reach for each sampling period in the Middle Rio Grande during 2004.

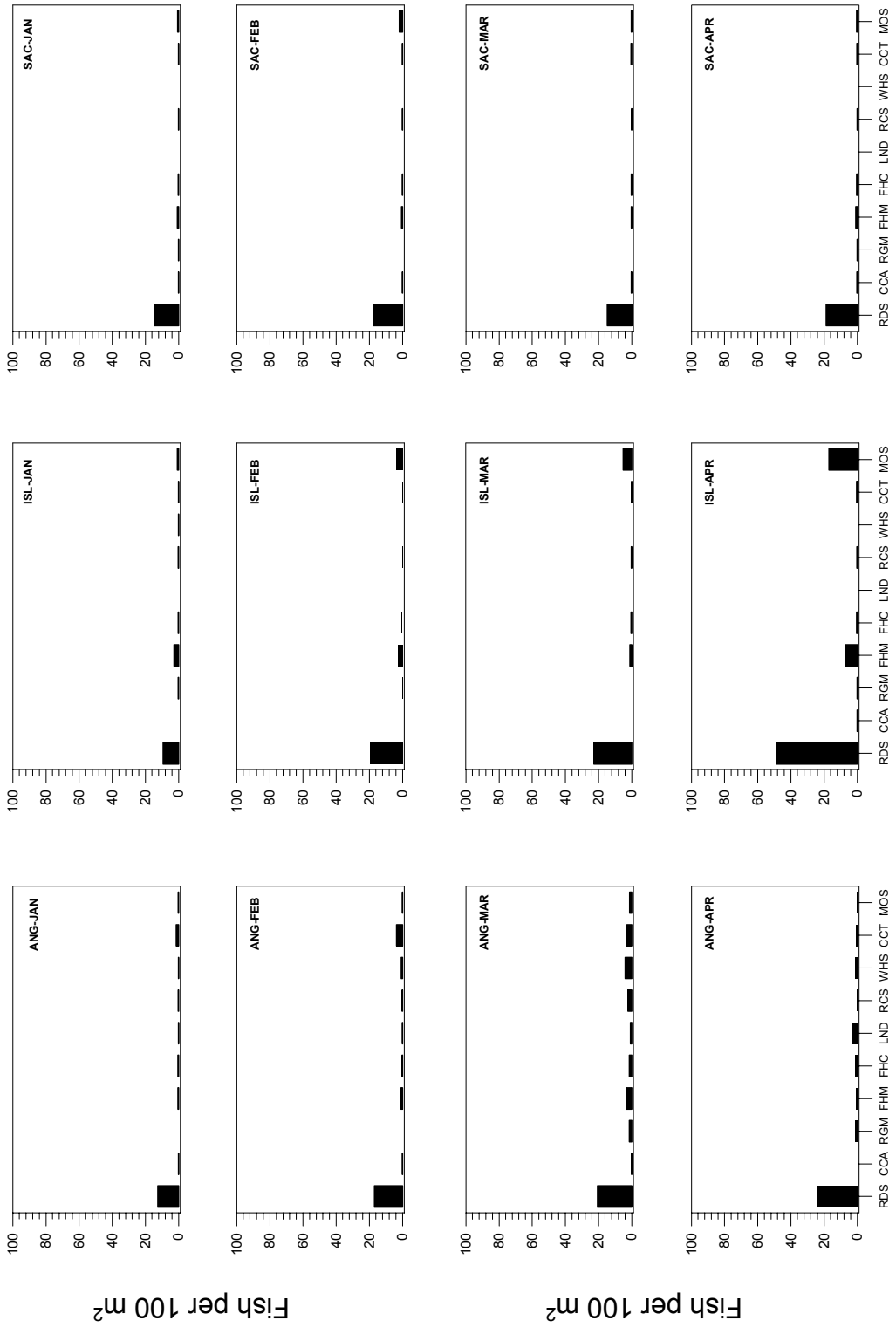

Figure 27. Fish catch rates (CPUE) by river reach from January-April 2004 for each focal species (see Table 1 for species codes) in the Middle Rio Grande (ANG=Angostura, ISL=Isleta, and SAC=San Acacia).

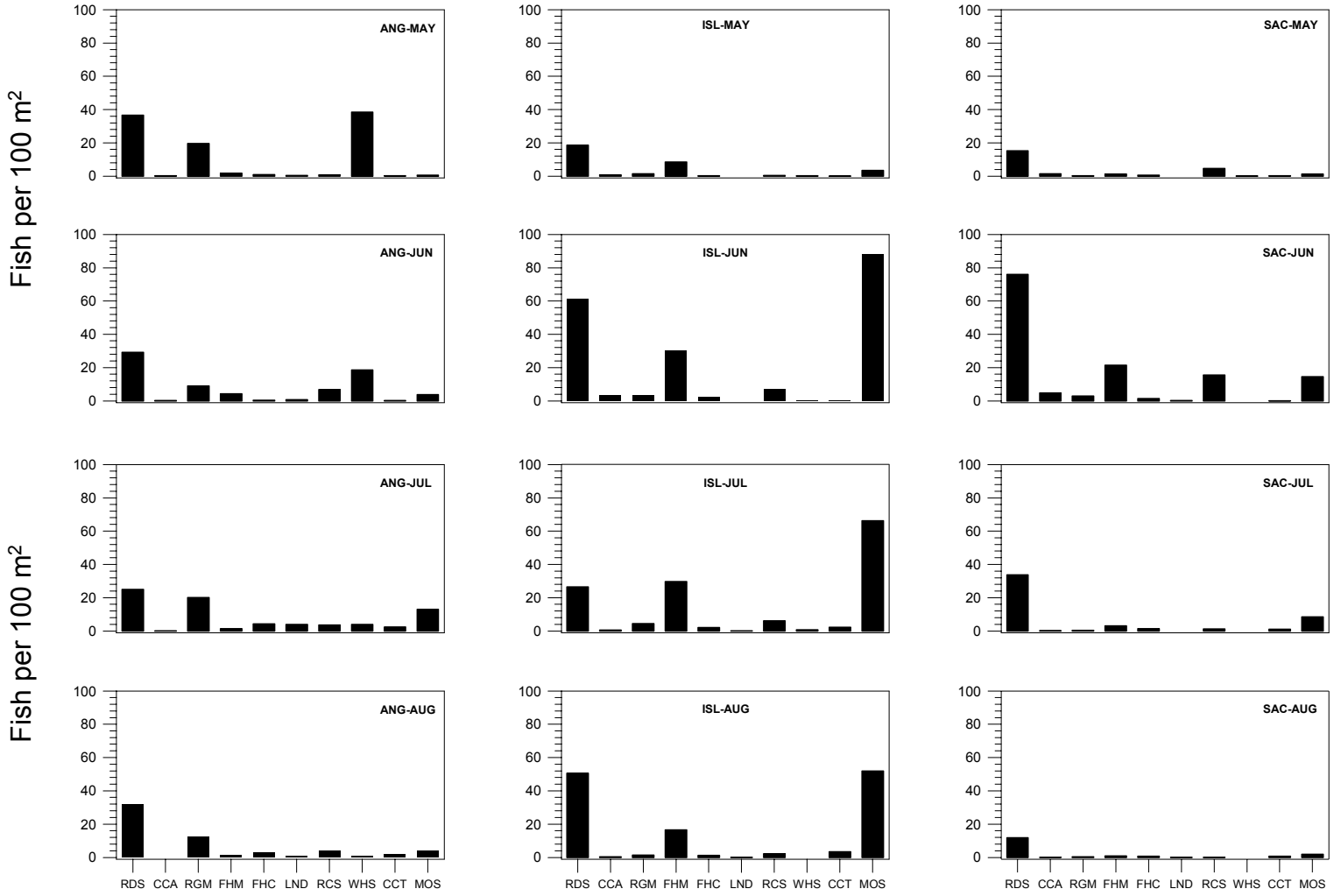

Figure 28. Fish catch rates (CPUE) by river reach from May-August 2004 for each focal species (see Table 1 for species codes) in the Middle Rio Grande (ANG=Angostura, ISL=Isleta, and SAC=San Acacia).

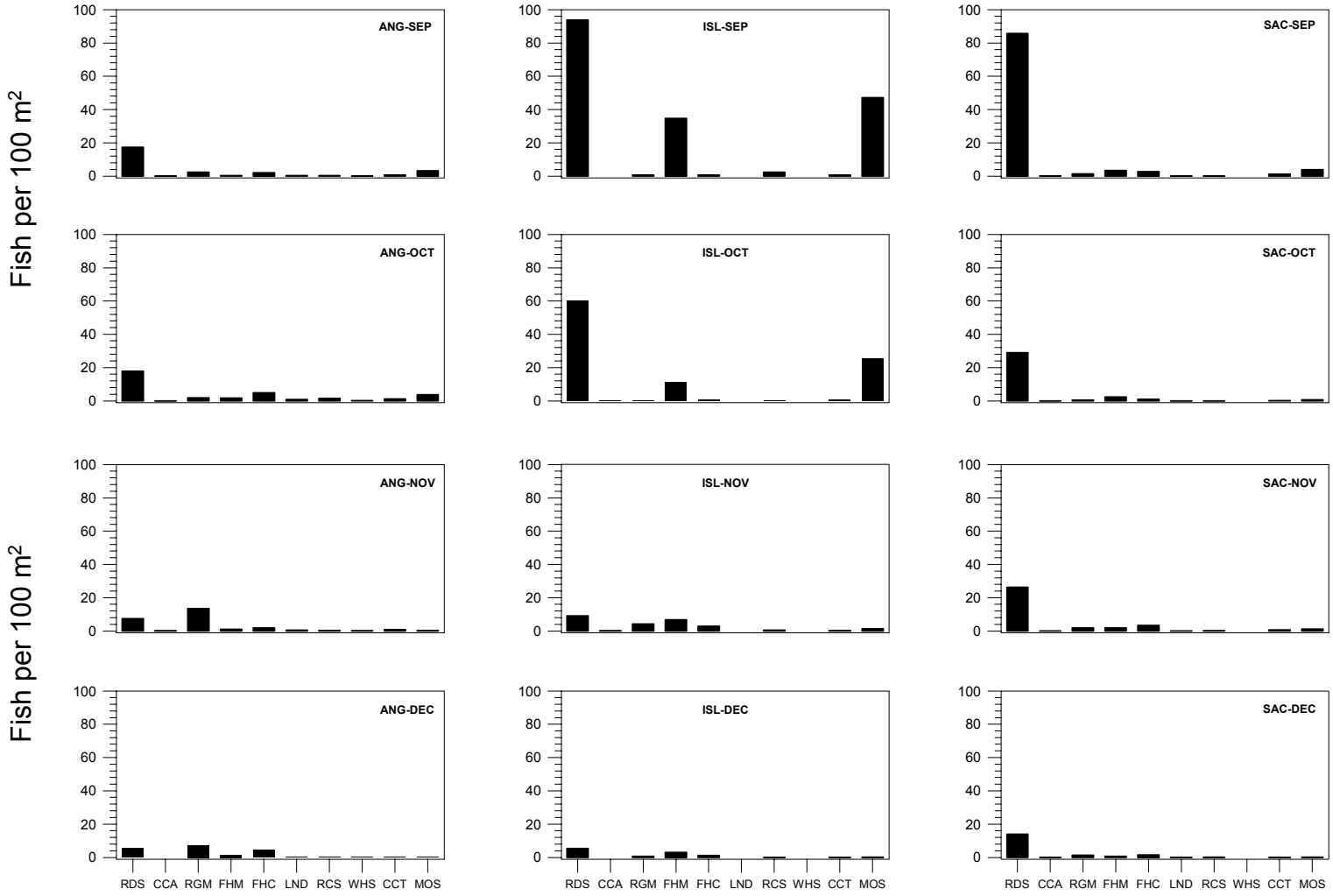

Figure 29. Fish catch rates (CPUE) by river reach from September-December 2004 for each focal species (see Table 1 for species codes) in the Middle Rio Grande (ANG=Angostura, ISL=Isleta, and SAC=San Acacia).

samples throughout the year. Rio Grande silvery minnow abundance in the Isleta Reach was low throughout the year but a small number of individuals was collected in this reach during every month except March. Red shiner abundance was relatively high throughout the year and the two largest collections were taken in June and September. Channel catfish was generally more prevalent in the Isleta Reach than in the other reaches and was most abundant in the July and August samples.

The 2004 relative abundance of red shiner in the San Acacia Reach was high during June but declined rapidly by August. A secondary increase in red shiner density occurred during September. Rio Grande silvery minnow catch rates in the San Acacia Reach were approximately equal to those recorded in the Isleta Reach. There was little discernible difference in the number of Rio Grande silvery minnow collected following June spawning. The abundance of Rio Grande silvery minnow in autumn was similar to values recorded in the Isleta Reach but lower than in the Angostura Reach. The abundance of other fish species (common carp, fathead minnow, river carpsucker, and western mosquitofish) in the San Acacia Reach peaked in June. Channel catfish and flathead chub were the only species whose abundance increased in the San Acacia Reach in July.

Multivariate analyses of October catch rates of the 10 focal species from 1993-2004 revealed significant associations with hydraulic variables (Table 8). However, the presence and strength of these associations varied widely between species and the specific pair-wise (taxon cpue X hydraulic variable) combination. Regression analysis of October catch rates revealed significant relationships with several hydraulic variables for six (red shiner, common carp, Rio Grande silvery minnow, fathead minnow, channel catfish, and western mosquitofish) of the 10 focal species. Although not significant for all pair-wise combinations, it was found that catch rates of seven (common carp, Rio Grande silvery minnow, flathead chub, longnose dace, river carpsucker, white sucker, and channel catfish) of the 10 focal species all had the same directional pattern of association with the hydraulic variables (i.e., positive correlations with high and sustained discharge but negative correlations with sustained low discharge). The pattern was reversed for the three remaining taxa (red shiner, fathead minnow, and western mosquitofish) with positive correlations only being noted during sustained low discharge and negative correlations during high and sustained discharge.

DISCUSSION

The population status of Rio Grande silvery minnow and the associated Middle Rio Grande ichthyofaunal community have been monitored since 1993. The unique value of this effort has been in providing consistent sampling of fishes in a systematic fashion over a long duration. Determining trends in short-lived fish populations is best accomplished by analyzing an extensive database of collections over time. A population monitoring sampling effort is, by default, designed so that an individual sample (or small number of samples) does not have a disproportionate effect on the results. It is not uncommon for a single sample to result in the collection of a relatively large number of Rio Grande silvery minnow. Selective samples taken for the purpose of collecting Rio Grande silvery minnow are not useful for identifying long-term population trends because methods are often inconsistent and sampling of specific habitats generates biased results. For these and other reasons, data generated from collecting efforts other than those of this comprehensive long-term population monitoring effort must be evaluated cautiously because few if any population comparisons would be valid.

Increased discharge in the Rio Grande during 2004 contrasted with the extended low-flow conditions observed throughout the Middle Rio Grande during 2003 and 2002. However, a portion of the Rio Grande between Isleta Diversion Dam and the southern terminus of the Bosque del Apache National Wildlife Refuge (NWR) was dried sporatically in 2004. The waters of the Rio Grande were diverted at dams located at the uppermost portions of the Cochiti, Angostura, Isleta, and San Acacia reaches of the Middle Rio Grande. Spring runoff resulted in a moderate amount of flow throughout

Table 8. Summary of regression analysis results between log-transformed (*ln*+1) mean October catch rates (CPUE) and different hydraulic variables (Table 3) for each focal species in the Middle Rio Grande, NM.

Variable[1]		**A** PEAK	**A** 1000	**A** 2000	**A** 3000	**A** 4000	**S** PEAK	**S** 1000	**S** 2000	**S** 200	**S** 100
CARPS AND MINNOWS											
red shiner	(*RSq.*[2])	0.21	0.24	0.33	0.30	0.31	0.22	0.33	0.32	0.32	0.24
	(*p*[3])	ns	ns	<0.1	<0.1	<0.1	ns	<0.1	<0.1	<0.1	ns
	(+/-[4])	-	-	**-**	**-**	**-**	-	**-**	**-**	**+**	+
common carp	(*RSq.*)	0.03	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.04
	(*p*)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	(+/-)	+	+	+	+	+	+	+	+	-	-
RG silvery minnow	(*RSq.*)	0.84	0.72	0.87	0.93	0.90	0.89	0.91	0.93	0.89	0.78
	(*p*)	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	(+/-)	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**-**	**-**
fathead minnow	(*RSq.*)	0.29	0.49	0.44	0.33	0.26	0.45	0.42	0.32	0.48	0.60
	(*p*)	<0.1	<0.05	<0.05	<0.1	ns	<0.05	<0.05	<0.1	<0.05	<0.01
	(+/-)	**-**	**-**	**-**	**-**	-	**-**	**-**	**-**	**+**	**+**
flathead chub	(*RSq.*)	0.11	0.03	0.13	0.25	0.27	0.21	0.14	0.25	0.18	0.08
	(*p*)	ns	ns	ns	ns	<0.1	ns	ns	ns	ns	ns
	(+/-)	+	+	+	+	**+**	+	+	+	-	-
longnose dace	(*RSq.*)	0.05	0.00	0.07	0.20	0.24	0.11	0.08	0.21	0.14	0.06
	(*p*)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	(+/-)	+	+	+	+	+	+	+	+	-	-
SUCKERS											
river carpsucker	(*RSq.*)	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.05	0.03
	(*p*)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	(+/-)	+	+	+	+	+	+	+	+	-	-
white sucker	(*RSq.*)	0.01	0.00	0.00	0.05	0.09	0.03	0.00	0.06	0.08	0.05
	(*p*)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	(+/-)	+	+	+	+	+	+	+	+	-	-
BULLHEAD CATFISHES											
channel catfish	(*RSq.*)	0.35	0.27	0.34	0.42	0.36	0.49	0.30	0.41	0.46	0.37
	(*p*)	<0.1	ns	<0.1	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05
	(+/-)	**+**	+	**+**	**+**	**+**	**+**	**+**	**+**	**-**	**-**
LIVEBEARERS											
western mosquitofish	*RSq.*)	0.37	0.36	0.60	0.60	0.47	0.63	0.59	0.58	0.45	0.36
	(*p*)	<0.05	<0.1	<0.005	<0.01	<0.05	<0.005	<0.01	<0.01	<0.05	<0.1
	(+/-)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**+**	**+**

1 Gauges: **A**=Albuquerque, **S**=San Marcial; PEAK=maximum discharge, 1000=days>1,000 cfs, 2000=days>2,000 cfs, 3000=days>3,000 cfs, 4000=days>4,000 cfs, 200=days<200 cfs, 100=days<100 cfs (see Table 3 for additional information)

2 RSq.= r-squared value

3 p= p-value (underline=significant at p<0.01)

4 +/- = positive/negative direction of the correlation (bold=significant at p<0.1)

the Middle Rio Grande over an extended duration. During low flow periods following spring runoff, most of the discharge was diverted at the Angostura and Isleta diversion dams. Extremely low flow conditions during September throughout the Isleta and San Acacia reaches resulted in extensive river drying and loss of aquatic life in this downstream section of the Middle Rio Grande. The areas that most frequently dried during 2004 were isolated sections of the river from Isleta Diversion Dam downstream to La Joya, NM and from near Escondida, NM downstream to the southern terminus of Bosque del Apache NWR. During periods of low flow, the lower section of the San Acacia Reach of the Rio Grande (downstream of Bosque del Apache NWR) was supplemented by water pumped from the Low Flow Conveyance Channel into the Rio Grande. This strategy prevented river drying but flow in this section of the Rio Grande remained low throughout the summer. Periodic rainstorms during 2004 provided enough supplemental flow to keep the channel wetted for a much longer time than occurred during recent drought years (e.g., 2002 and 2003).

The annual reproductive effort of Rio Grande silvery minnow normally occurs during spring and is initiated, in part, by a large-scale increase in stream discharge associated with high-mountain snowmelt. The reproductive strategy of this species results in the production of relatively large numbers of eggs that are released into the water column and dispersed downstream. Spring runoff, combined with increasing water temperatures, was likely the historical source of this reproductive stimulus. During years of sufficient snowpack, flow in the Middle Rio Grande peaked in late spring and resulted in several months of sustained flooded habitats. However, dams and reservoirs now moderate the magnitude, amplitude, and duration of spring discharge. Water diverted from the river for agricultural purposes can substantially reduce the total volume of water that would normally have flowed in the Rio Grande. This problem is further compounded in drought years when proportionally larger volumes of water are removed from the Rio Grande in early spring, reducing peak flows that stimulate silvery minnow spawning and drying sections of the river downstream.

A moderate amount of water passing through Cochiti Dam during May 2004 (peak mean daily discharge=3,340 cfs) was nearly three times the volume that occurred during May 2003 (peak mean daily discharge=1,420 cfs). The Rio Grande silvery minnow eggs collected during May 2004 were a direct result of this natural flow spike (Platania and Dudley, 2005). Despite the collection of few Rio Grande silvery minnow eggs during 2004 near the southern terminus of this species' range, this production of propagules ultimately resulted in the recruitment of substantially more individuals into the 2004 year-class compared with either the 2002 or 2003 year-classes. Catch rates of this species increased briefly following spawning in May 2004 and there was evidence, based on the presence of multiple size-classes, that Rio Grande silvery minnow also spawned in June. There was no evidence of spawning by Rio Grande silvery minnow during elevated stream flows in April 2004 based on catch rates and size-class distribution. By autumn 2004, the catch rate of Rio Grande silvery minnow had declined but was still higher than in the previous two years.

The timing of the 2004 flow spike was typical of a flow increase that would normally be expected at the onset of the spring runoff period. Runoff began in May 2004 and lasted for an extended period (weeks) in contrast to the artificial spike in 2003 that only lasted about four days. While flow in the river had returned to extremely low levels within a week during 2003, the elevated and extended flows during 2004 likely resulted in more favorable conditions for the growth and survivorship of newly hatch larvae of Rio Grande silvery minnow. It is possible that even low numbers of eggs and larvae could have resulted in greatly increased recruitment success because of the inundation of shoreline habitats, abandoned side channels, and backwaters. Low velocity and shallow areas provide the warm and productive habitats required by larval fishes to successfully complete their early life history.

Comparison of Rio Grande silvery minnow mean October catch rates (1993-1997, 1999-2004) to hydraulic variables measured at two Middle Rio Grande discharge gauges revealed some striking relationships. Peak discharge and duration of high flows during the spawning season (May-June) were significantly positively correlated with Rio Grande silvery minnow mean October catch

rates. In contrast, extended low flow periods were negatively correlated with Rio Grande silvery minnow mean October catch rates. The physical conditions produced by prolonged and elevated flows result in overbank flooding of vegetated areas, formation of inundated habitats within the river channel, and creation of shoreline and island backwaters. Low water velocities with variable depths frequently typify these habitat conditions. Overbank and other flooded habitats are well known to be essential for the successful recruitment of early life history stages of freshwater fishes throughout the world (for review see Welcomme, 1979). It is quite likely that similar processes are important for the successful survival and recruitment of the Middle Rio Grande ichthyofaunal community, including Rio Grande silvery minnow (Pease, 2004).

Extended periods of high discharge were found to have the opposite effect for red shiner, fathead minnow, and western mosquitofish. Similarly, these three taxa responded much more favorably to extended low flow conditions compared to Rio Grande silvery minnow. Differences in reproductive strategy, early life history, and environmental cues likely account for the varied population responses to flow conditions exhibited by the various members of the Middle Rio Grande ichthyofaunal community.

An ongoing factor in the decline of Rio Grande silvery minnow is the fragmentation of its range and longitudinal displacement of its propagules (drifting eggs and larvae) below instream barriers (i.e., Angostura, Isleta, and San Acacia diversion dams) and ultimately into irrigation networks or Elephant Butte Reservoir. Diversion dams do not preclude downstream passage of fish or their reproductive products but do prevent fish movement upstream of the diversion dam structures. Considerable upstream movement of this species (>25 km) was verified in marked hatchery reared individuals (Platania, et al., 2002) providing further validation of the negative impact these structures have on Rio Grande silvery minnow populations.

Given the reproductive ecology of this species, reach lengths, and diversion dam placement, the sequential decline and loss of this species from upstream to downstream was predicted (Platania and Altenbach, 1998). Fragmentation of this species' range in the Middle Rio Grande due to Angostura, Isleta, and San Acacia diversion dams has been identified as an issue of paramount importance that requires resolution for recovery of Rio Grande silvery minnow (U. S. Fish and Wildlife Service, 1999). Removing barriers to ichthyofaunal movement in the Middle Rio Grande will likely improve the status of now fragmented populations of Rio Grande silvery minnow.

The Isleta Reach is an intermediate reach, not only in geographic position but also in regards to flow. This reach does not maintain the volume or consistency of discharge as the Angostura Reach but, because of the numerous points of irrigation returns, has an increased likelihood of maintaining some continuous flow compared to the San Acacia Reach. Issues regarding range fragmentation and downstream transport of silvery minnow propagules in the Angostura Reach are equally as important in the Isleta Reach. Declines in the Rio Grande silvery minnow population in the Angostura Reach will result in fewer eggs and larvae being transported into the Isleta Reach and will thereby negatively affect population levels in the latter reach. Likewise, fewer individuals in the Isleta and Angostura reaches will translate to a lower Rio Grande silvery minnow population level in the San Acacia Reach.

The barrier to upstream movement imposed by San Acacia Diversion Dam in combination with the downstream transport of silvery minnow eggs and larvae (especially those produced in the San Acacia Reach) into Elephant Butte Reservoir continue to adversely impact the San Acacia Reach population of this species. The effects of these problems are synergistic and become especially critical during periods when the population level of this species is extremely low, as in 2003. Efforts to maintain increased and variable flow throughout the Middle Rio Grande in 2005 are essential as substantial losses of Rio Grande silvery minnow within its remaining range could potentially lead to the extirpation of this species from the wild.

The cumulative effects of several consecutive years of river drying, downstream displacement, and habitat degradation continue to be manifested in the decline of Rio Grande silvery minnow. The marked and alarming declines in abundance of Rio Grande silvery minnow recorded in 2003 during population monitoring efforts provide the strongest evidence that the problems that led to the precipitous decline of this species, and its protection under the Endangered Species Act, have not been remedied. The increased abundance of silvery minnow in 2004 is a positive sign but does not eliminate the threats that currently endanger this species. A renewed focus on issues that directly affect the immediate survival of this species in the wild is essential. Removal of instream barriers that prevent Rio Grande silvery minnow from repopulating upstream reaches, the need to maintain increased and variable flow throughout downstream reaches, and reconnection of the river to its historical floodplain are paramount issues that need to be resolved to assure the continued persistence of this species.

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Appendix A.
2004 Collection localities and
monthly fish catch rates by collection locality for each focal species

Table A-1. Collection localities for 2004 population monitoring of Rio Grande silvery minnow.

Site #	Site Locality
	ANGOSTURA REACH SITES
0	New Mexico, Sandoval County, Rio Grande, directly below Angostura Diversion Dam, Algodones. River Mile 209.7 SAN FELIPE PUEBLO QUADRANGLE UTM Easting: 363811 UTM Northing: 3916006 Zone: 13
1	New Mexico, Sandoval County, Rio Grande, at NM State Highway 44 bridge crossing, Bernalillo. River Mile 203.8 BERNALILLO QUADRANGLE UTM Easting: 358543 UTM Northing: 3909722 Zone: 13
2	New Mexico, Sandoval County, Rio Grande, ca. 4.0 miles downstream of NM State Highway 44 bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho. River Mile 200.0 BERNALILLO QUADRANGLE UTM Easting: 354772 UTM Northing: 3905355 Zone: 13
3	New Mexico, Bernalillo County, Rio Grande, at Central Avenue bridge crossing (US Highway 66), Albuquerque. River Mile 183.4 ALBUQUERQUE WEST QUADRANGLE UTM Easting: 346840 UTM Northing: 3884094 Zone: 13
4	New Mexico, Bernalillo County, Rio Grande, at Rio Bravo Boulevard bridge crossing, (NM State Highway 500), Albuquerque. River Mile 178.3 ALBUQUERQUE WEST QUADRANGLE UTM Easting: 347554 UTM Northing: 3877163 Zone: 13
	ISLETA REACH SITES
5	New Mexico, Valencia County, Rio Grande at Los Lunas bridge crossing (NM State Highway 49), Los Lunas. River Mile 161.4 LOS LUNAS QUADRANGLE UTM Easting: 342898 UTM Northing: 3852531 Zone: 13
6	New Mexico, Valencia County, Rio Grande, ca. 1.0 miles upstream of NM State Highway 309/6 bridge crossing, Belen. River Mile 151.5 TOME QUADRANGLE UTM Easting: 339972 UTM Northing: 3837061 Zone: 13
7	New Mexico, Valencia County, Rio Grande, ca. 2.2 miles upstream of NM State Highway 346 bridge crossing, Jarales. River Mile 143.2 VEGUITA QUADRANGLE UTM Easting: 338136 UTM Northing: 3827329 Zone: 13
8	New Mexico, Socorro County, Rio Grande, at US Highway 60 bridge crossing, Bernardo. River Mile 130.6 ABEYTAS QUADRANGLE UTM Easting: 334604 UTM Northing: 3809726 Zone: 13
9	New Mexico, Socorro County, Rio Grande, ca. 3.5 miles downstream of US Highway 60 bridge crossing, Bernardo. River Mile 127.0 ABEYTAS QUADRANGLE UTM Easting: 331094 UTM Northing: 3805229 Zone: 13

Table A-1. Collection localities for 2004 population monitoring of Rio Grande silvery minnow (continued).

Site #	Site Locality
	ISLETA REACH SITES (continued)
9.5	New Mexico, Socorro County, Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia River Mile 116.8 LA JOYA QUADRANGLE UTM Easting: 327902 UTM Northing: 3792603 Zone: 13
	SAN ACACIA REACH SITES
10	New Mexico, Socorro County, Rio Grande, directly below San Acacia Diversion Dam, San Acacia. River Mile 116.2 SAN ACACIA QUADRANGLE UTM Easting: 326162 UTM Northing: 3791977 Zone: 13
11	New Mexico, Socorro County, Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. River Mile 114.6 LEMITAR QUADRANGLE UTM Easting: 325263 UTM Northing: 3790442 Zone: 13
12	New Mexico, Socorro County, Rio Grande, east of Socorro, 0.5 miles upstream of the Socorro Low Flow Conveyance Channel bridge; east and upstream of Socorro Wastewater Treatment Plant, Socorro. River Mile 99.5 LOMA DE LAS CANAS QUADRANGLE UTM Easting: 327097 UTM Northing: 3771043 Zone: 13
13	New Mexico, Socorro County, Rio Grande, ca. 4.0 miles upstream of US Highway 380 bridge crossing. River Mile 91.7 SAN ANTONIO QUADRANGLE UTM Easting: 328140 UTM Northing: 3761283 Zone: 13
14	New Mexico, Socorro County, Rio Grande, at US Highway 380 bridge crossing, San Antonio. River Mile 87.1 SAN ANTONIO QUADRANGLE UTM Easting: 328914 UTM Northing: 3754471 Zone: 13
15	New Mexico, Socorro County, Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Headquarters. River Mile 79.1 SAN ANTONIO, SE QUADRANGLE UTM Easting: 327055 UTM Northing: 3740839 Zone: 13
16	New Mexico, Socorro County, Rio Grande, at San Marcial Railroad bridge crossing, San Marcial. River Mile 68.6 SAN MARCIAL QUADRANGLE UTM Easting: 315284 UTM Northing: 3728347 Zone: 13
17	New Mexico, Socorro County, Rio Grande, at its former confluence with the Low Flow Conveyance Channel; 16 miles downstream of the southern end of the Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of San Marcial Railroad bridge crossing. River Mile 60.5 PARAJE WELL QUADRANGLE UTM Easting: 309487 UTM Northing: 3718178 Zone: 13

Table A-1. Collection localities for 2004 population monitoring of Rio Grande silvery minnow (continued).

Site #	Site Locality
	SAN ACACIA REACH SITES
18	New Mexico, Socorro County, Rio Grande, ca. 19 miles downstream of the southern end of the Bosque del Apache National Wildlife Refuge. River Mile 57.7 PARAJE WELL QUADRANGLE UTM Easting: 307380 UTM Northing: 3714740 Zone: 13

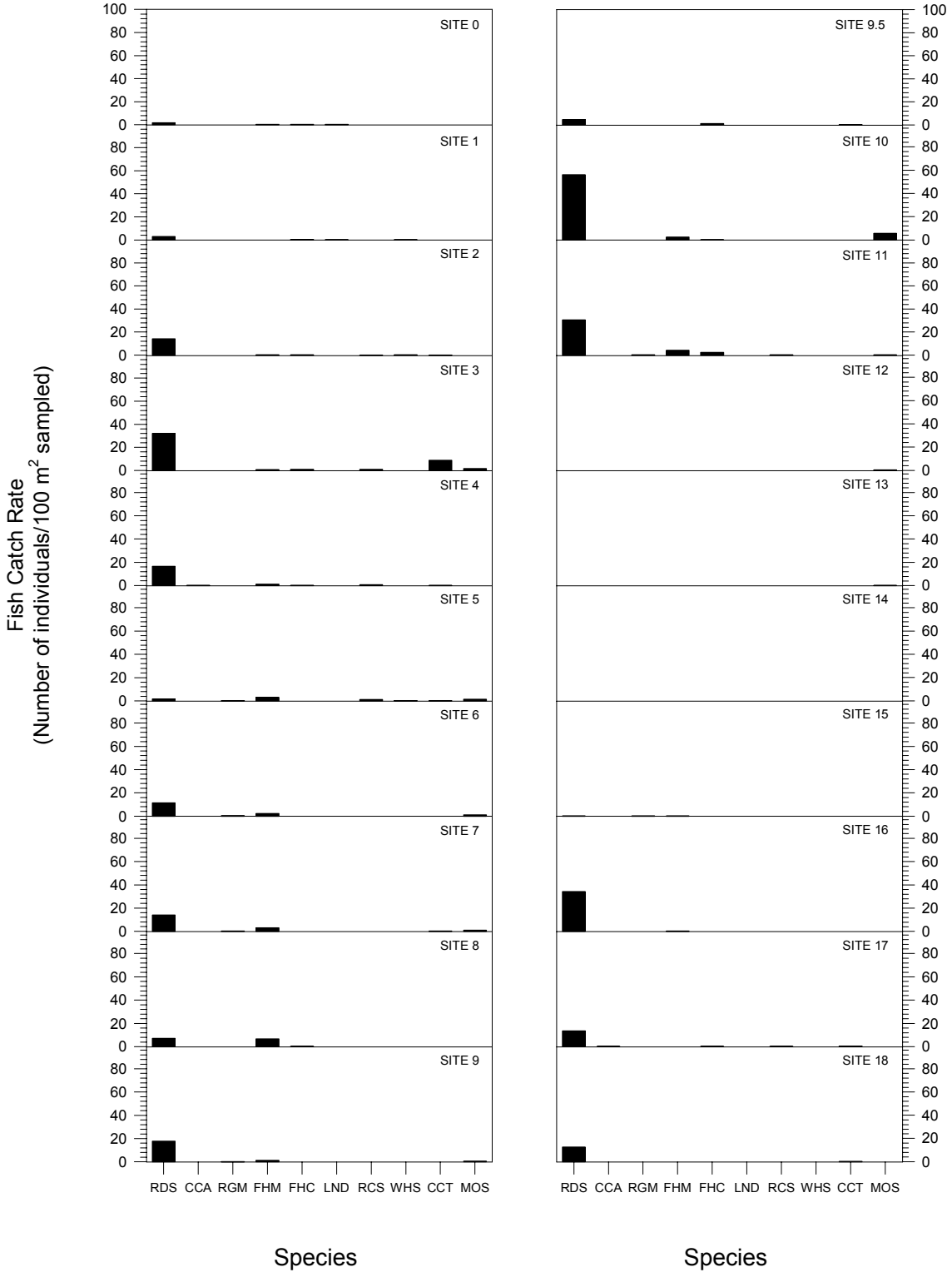


Figure A-1. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for January 2004.

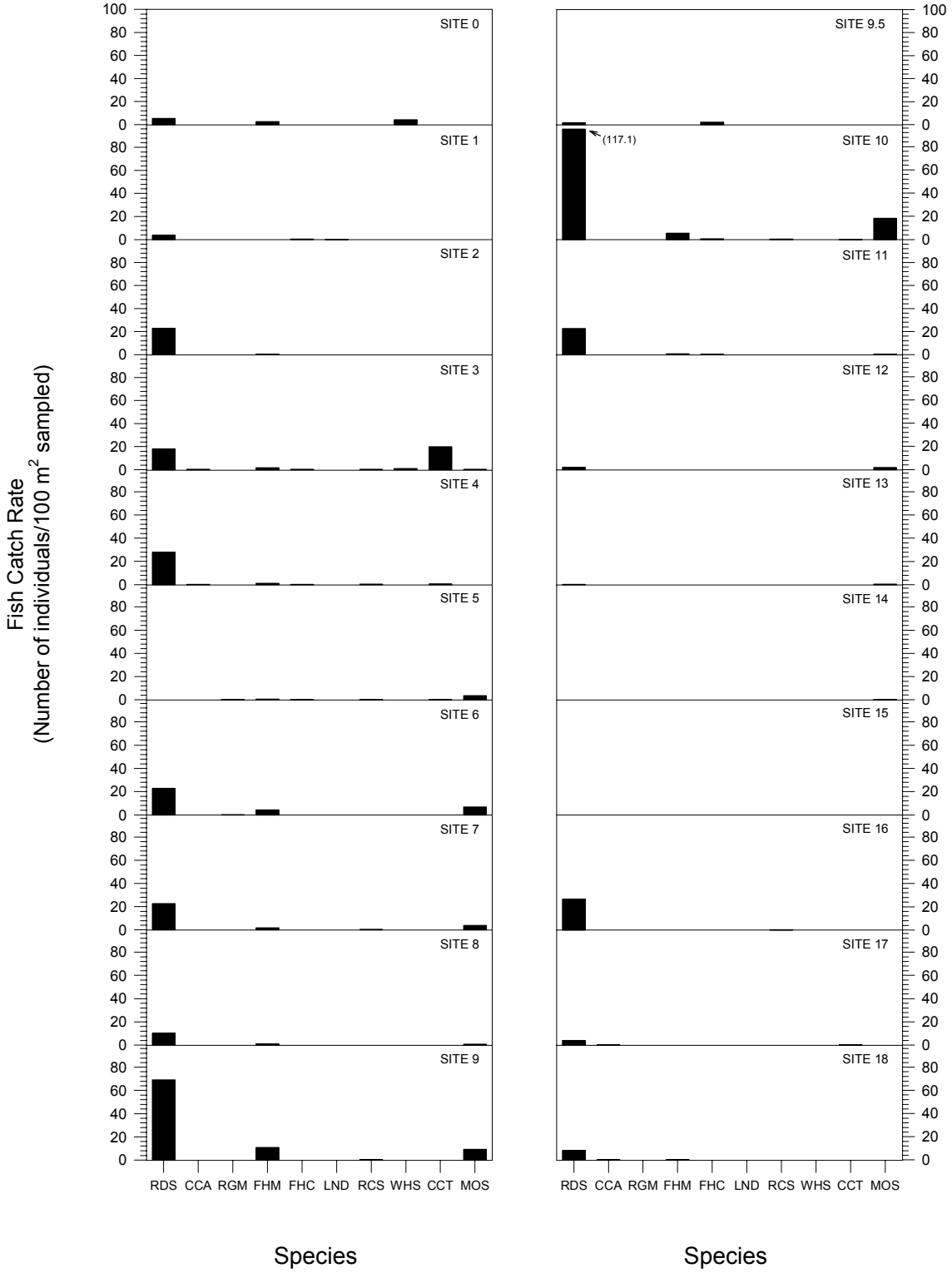


Figure A-2. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for February 2004.

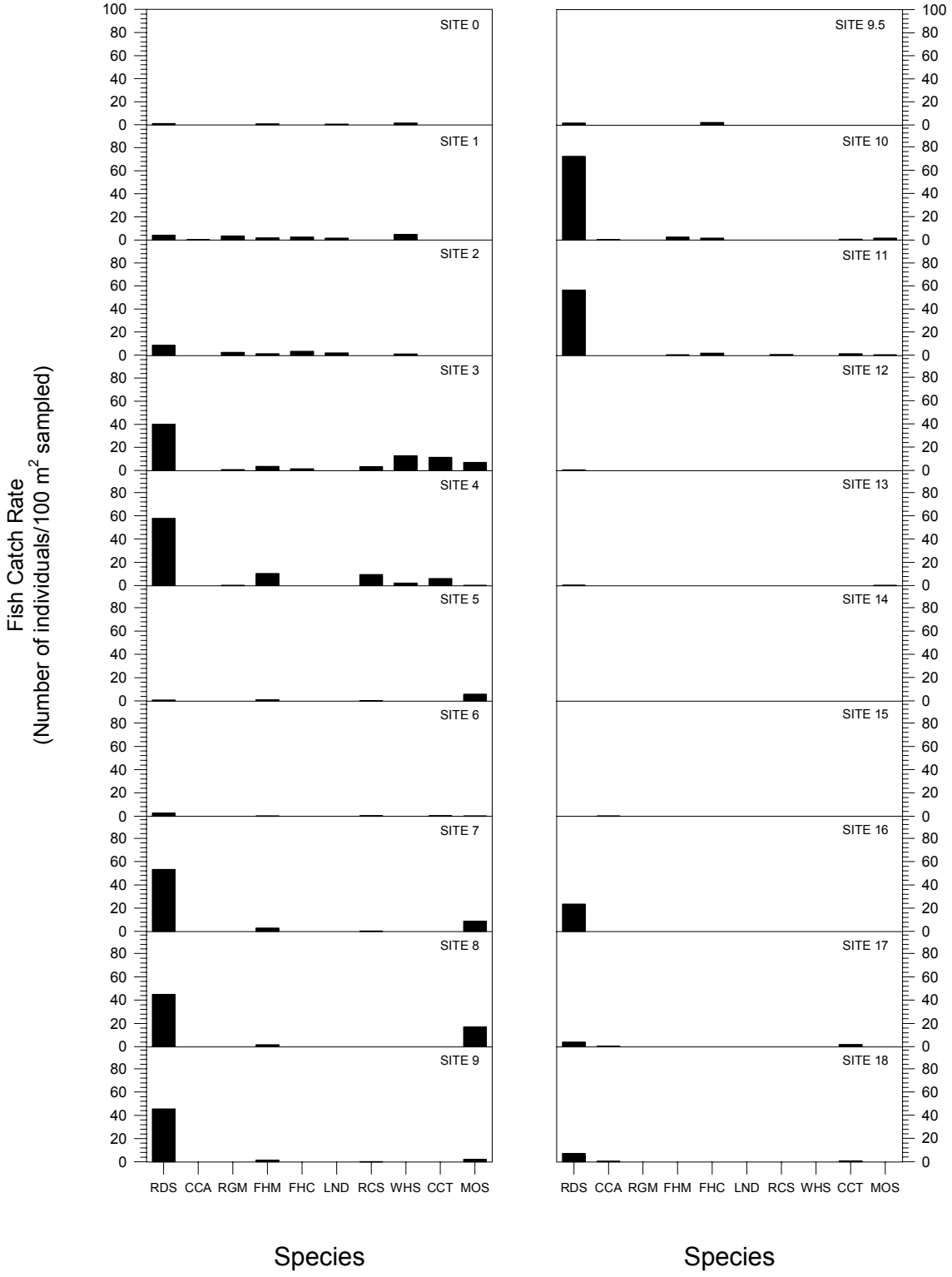


Figure A-3. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for March 2004.

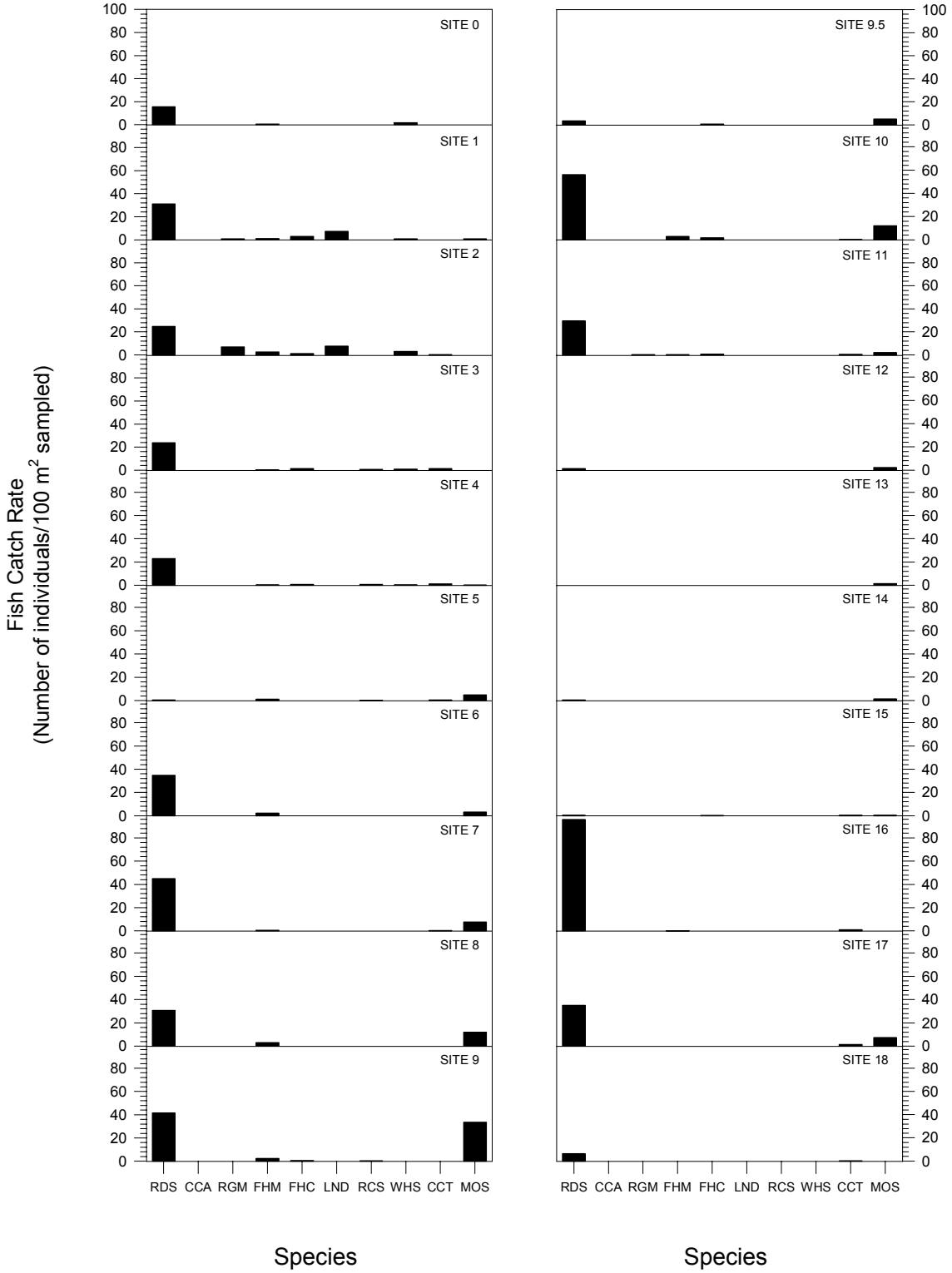


Figure A-4. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for April 2004.

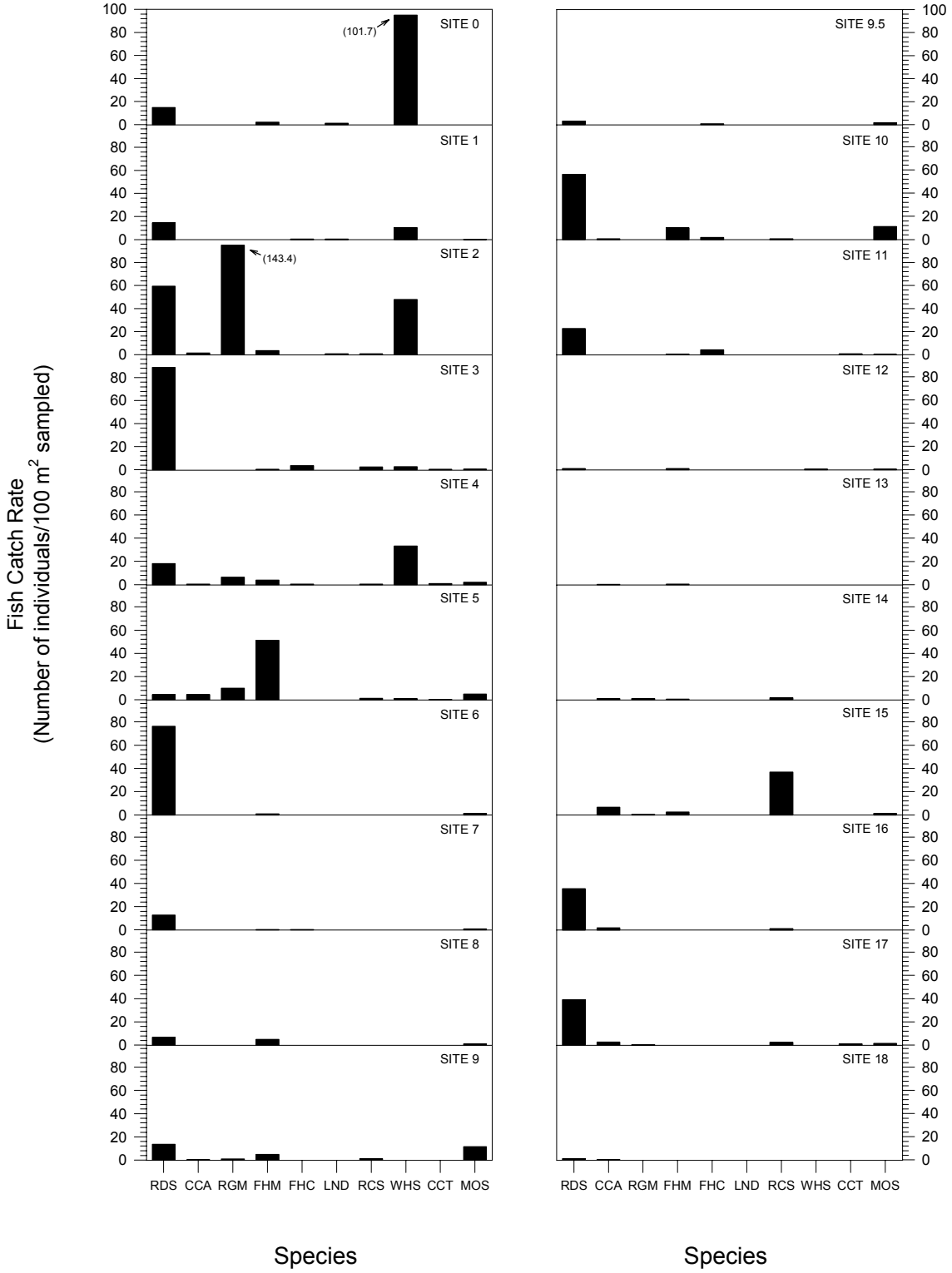


Figure A-5. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for May 2004.

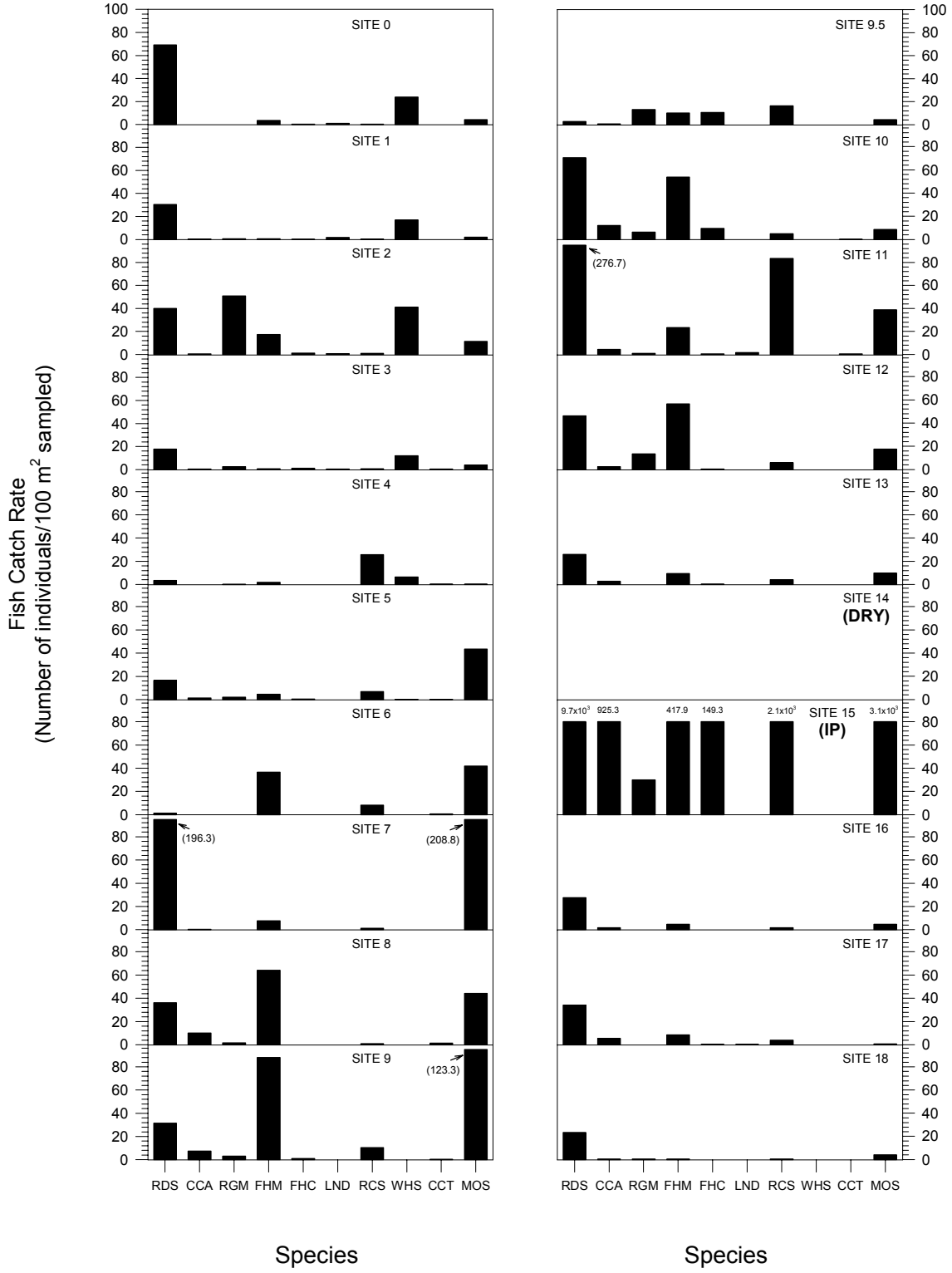


Figure A-6. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for June 2004.

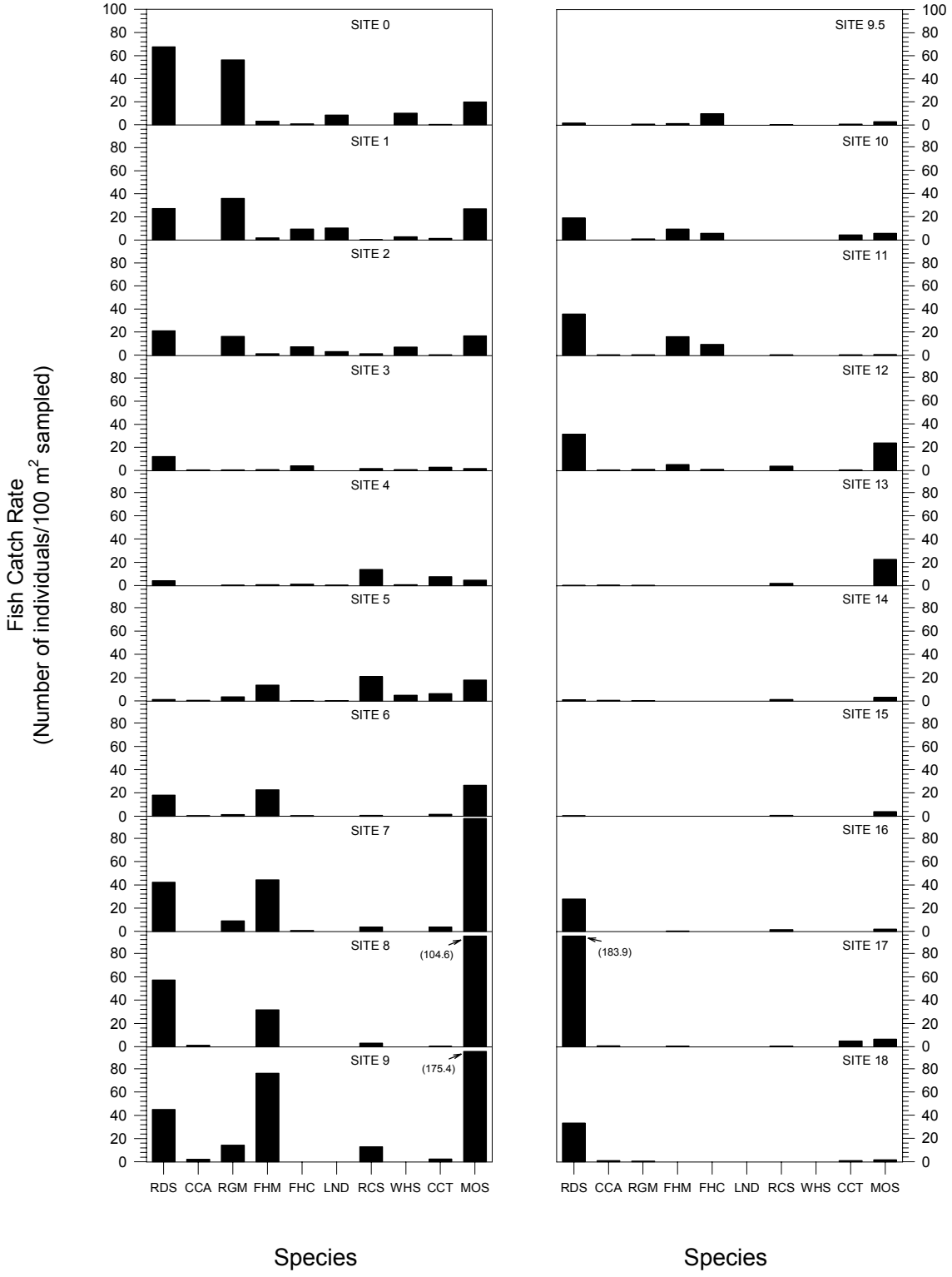


Figure A-7. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for July 2004.

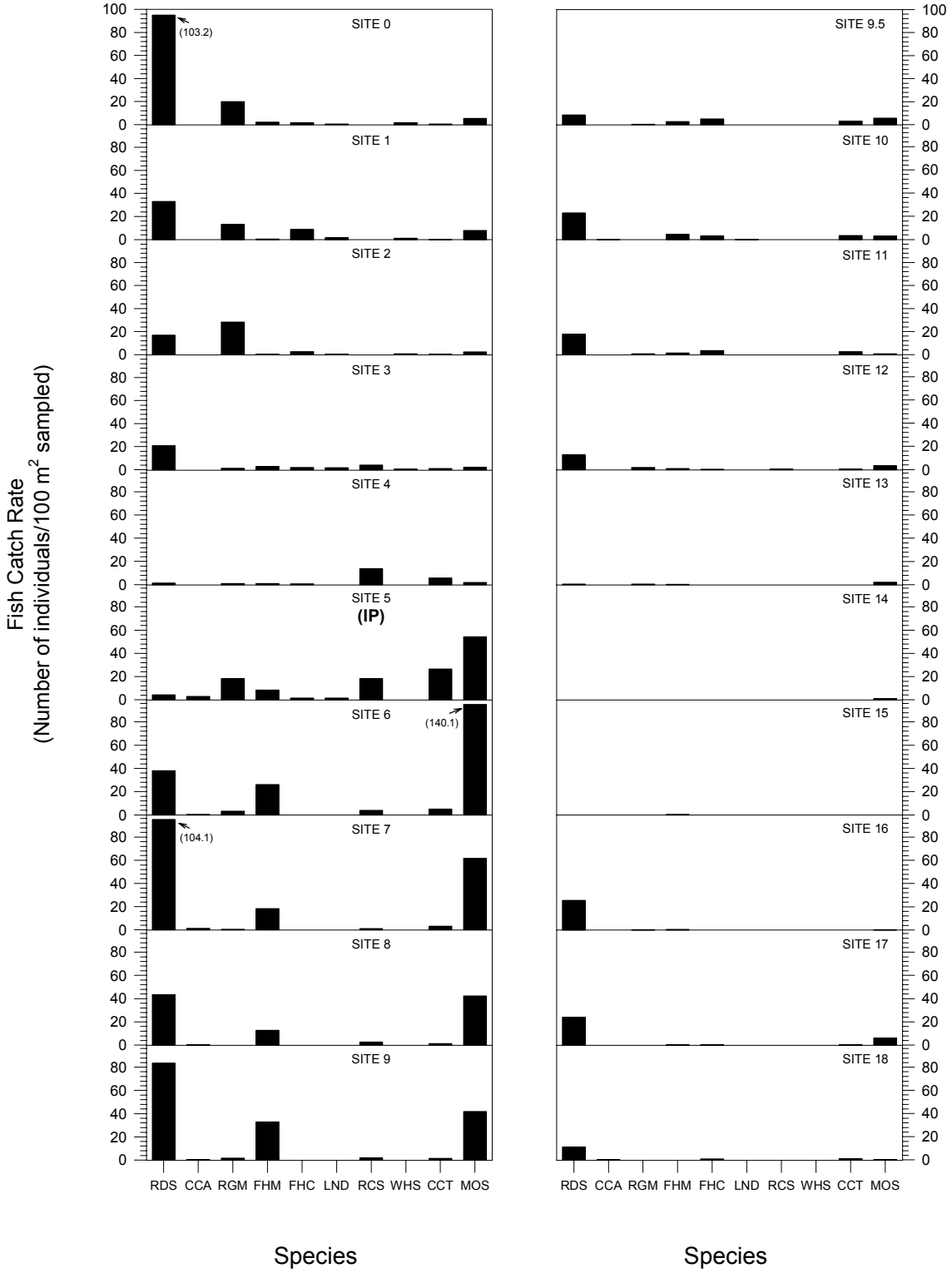


Figure A-8. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for August 2004. Sites where the river had dried (DRY) or where only isolated pools (IP) remained are indicated.

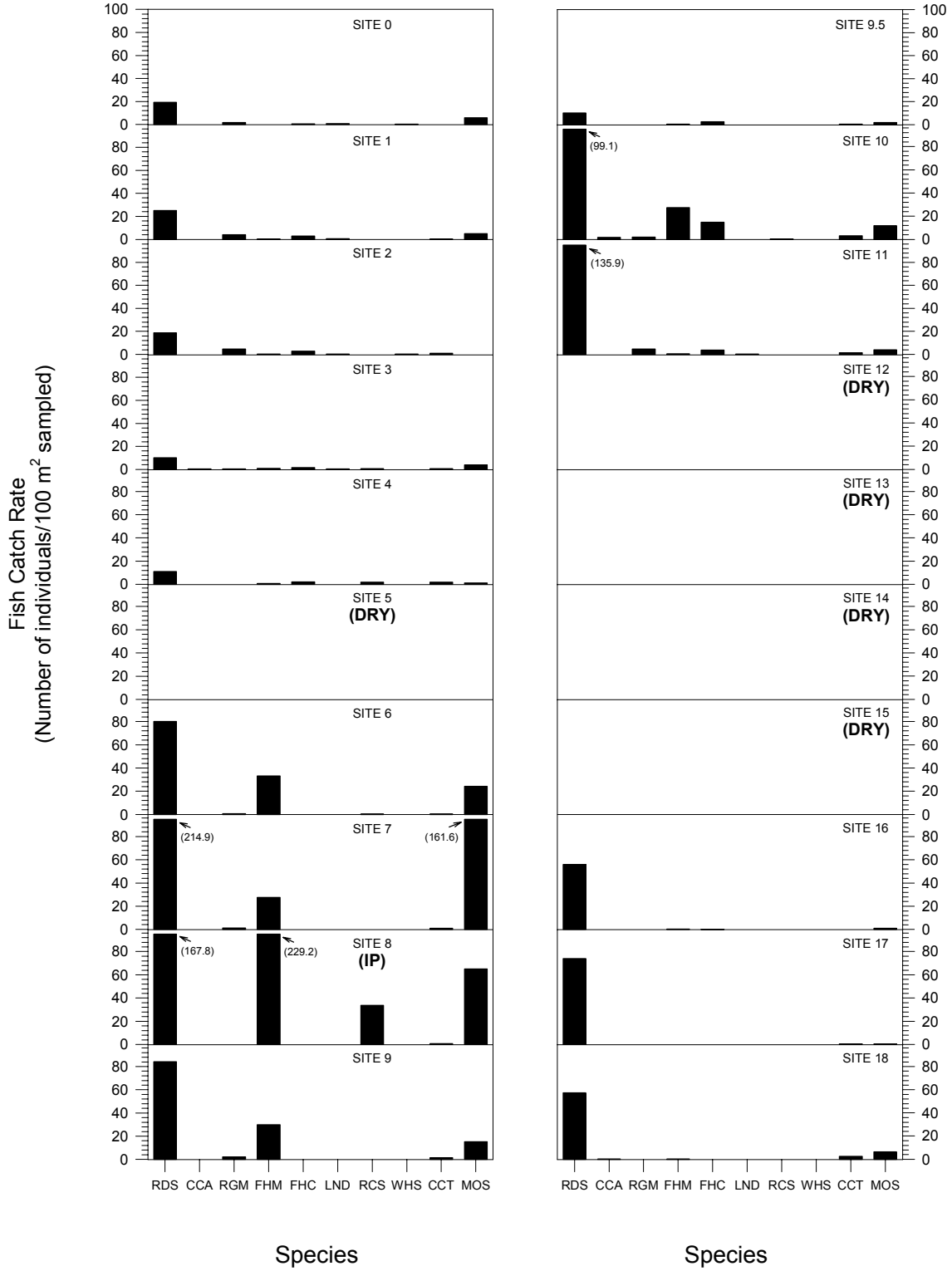


Figure A-9. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for September 2004. Sites where the river had dried (DRY) or where only isolated pools (IP) remained are indicated.

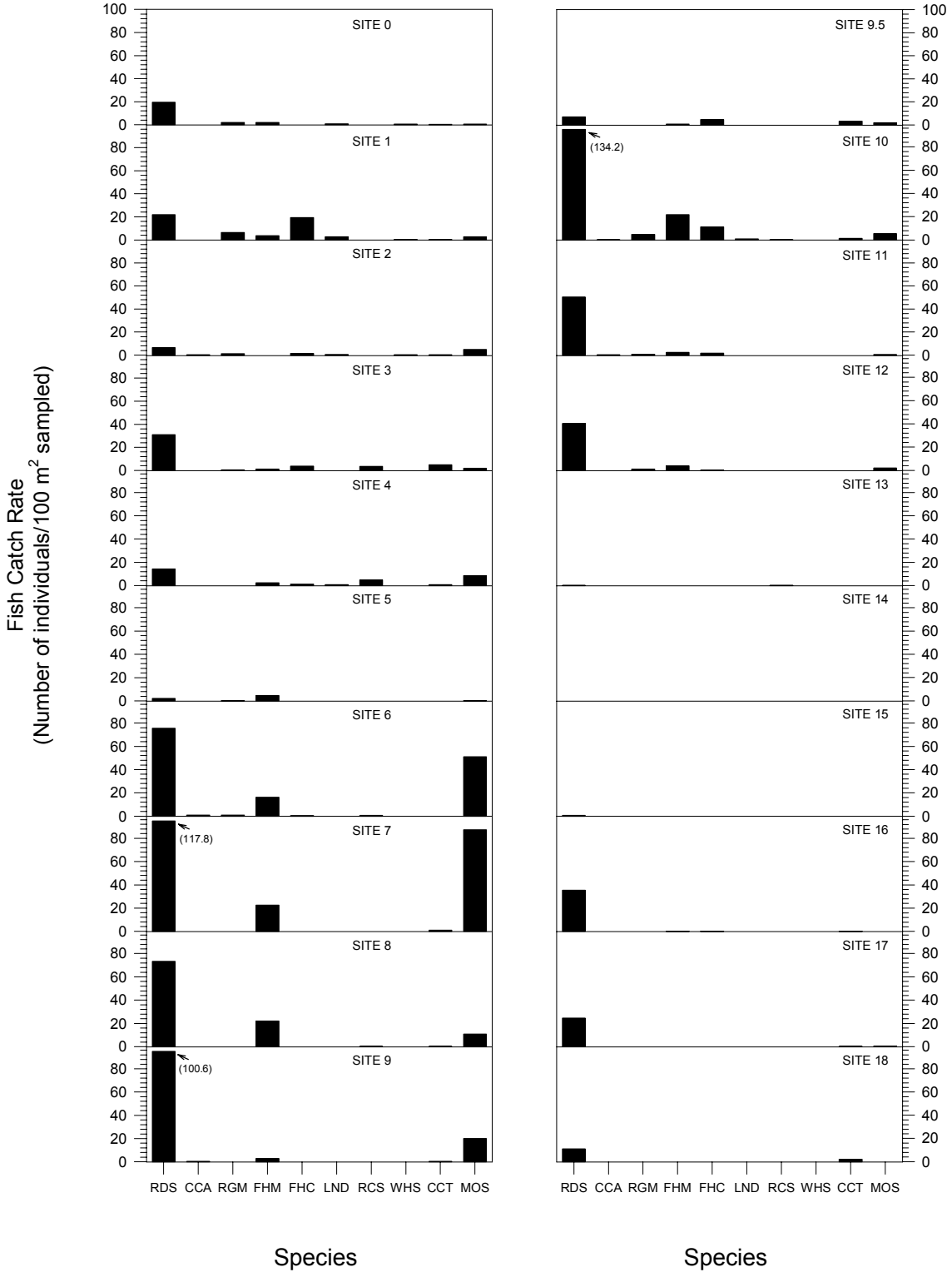


Figure A-10. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for October 2004.

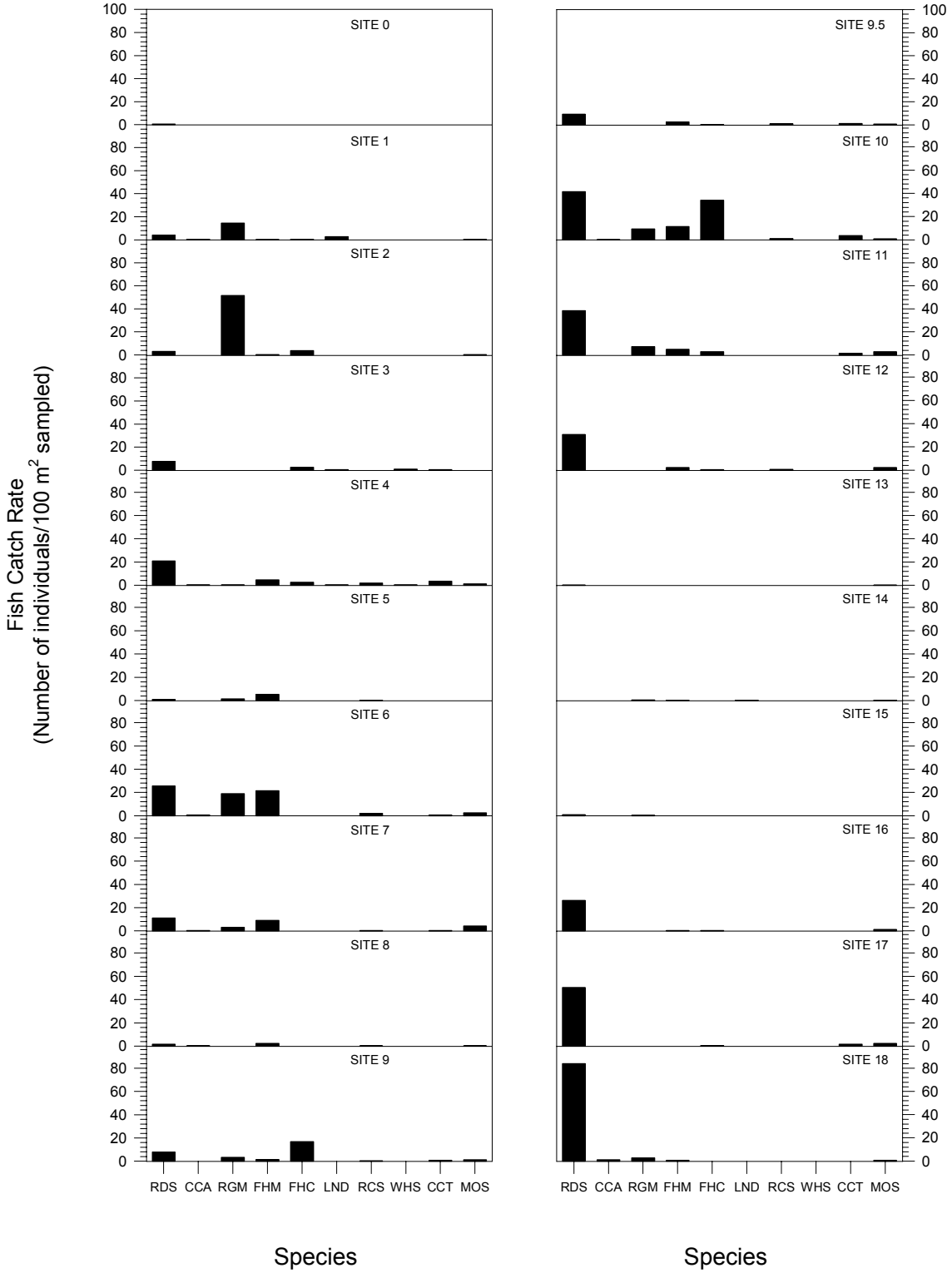


Figure A-11. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for November 2004.

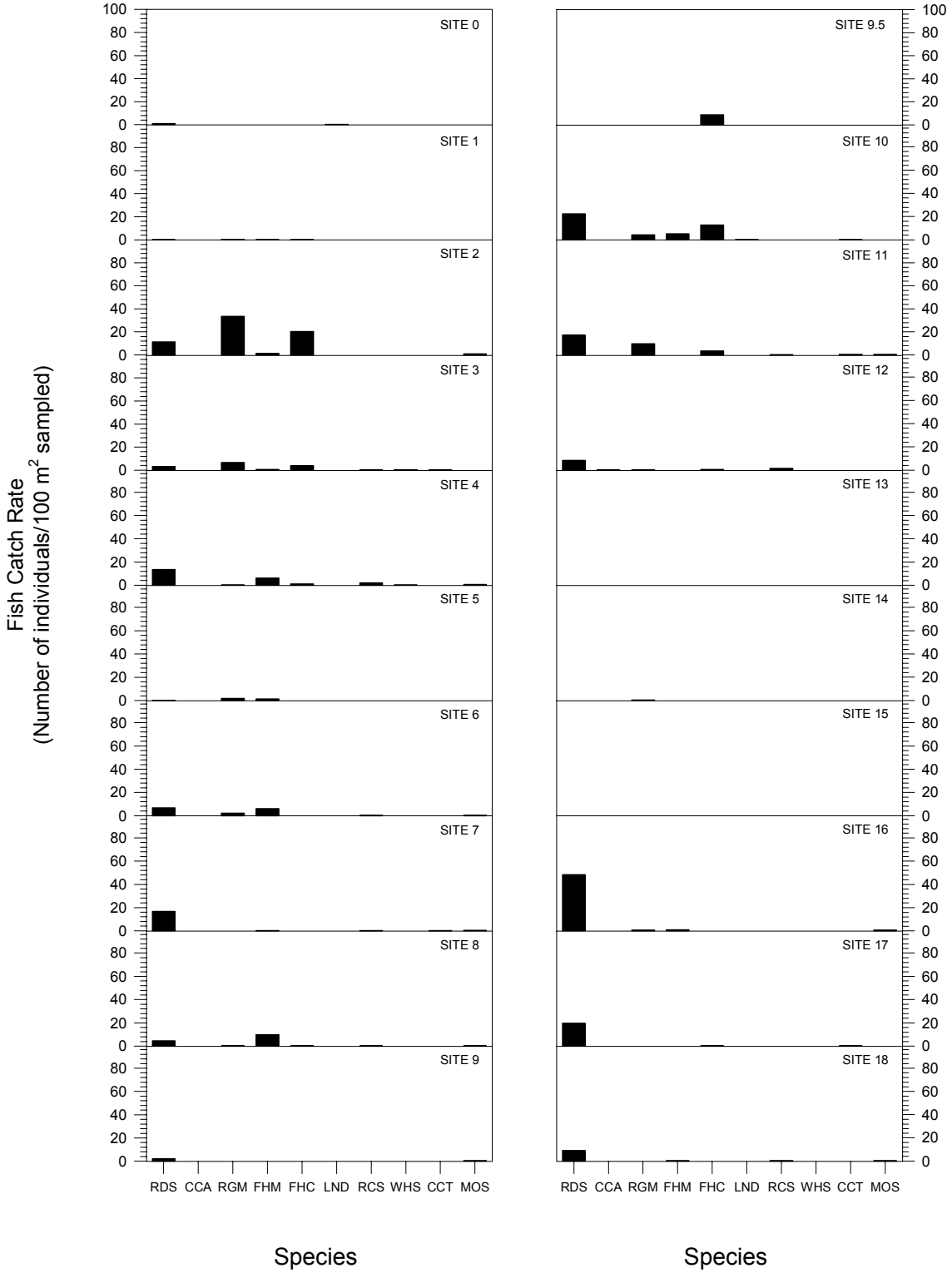


Figure A-12. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for December 2004.

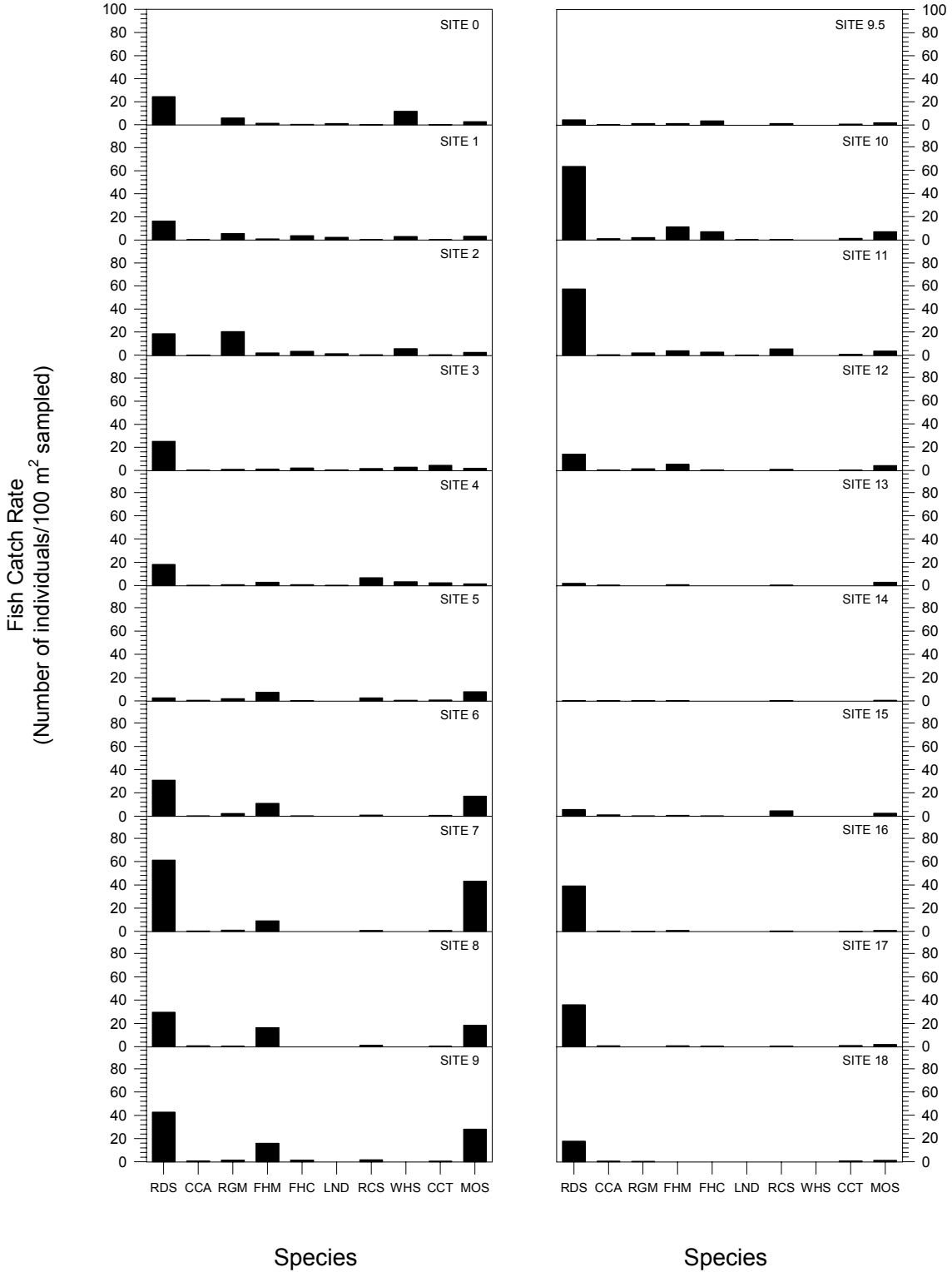


Figure A-13. Fish catch rates (CPUE) by collection locality for each focal species (see Table 1 for species codes) in the Middle Rio Grande for 2004 (all months).

Appendix B.
Rio Grande silvery minnow population monitoring 2004

World-Wide-Web Cover Page

http://msb-fish.unm.edu/rgsm2004

Rio Grande Silvery Minnow Population Monitoring 2004

Monthly **Fish Monitoring Data** Reports

- Most recent report: **November**

Spawning Periodicity Study (commences 1 May)

General Information about the Monitoring Sites

Site-Specific Information:

Angostura Reach

Algodones
Bernalillo
Rio Rancho
Central Ave. Bridge
Rio Bravo Blvd.

Isleta Reach

Los Lunas
Belen
Jarales
Bernardo
La Joya
0.6 mi upstream San Acacia

San Acacia Reach

San Acacia Dam
1.5 mi downstream San Acacia
Socorro
4 mi upstream 380 Bridge
380 Bridge
Middle Bosque del Apache
San Marcial
Station 500
Lower Corral

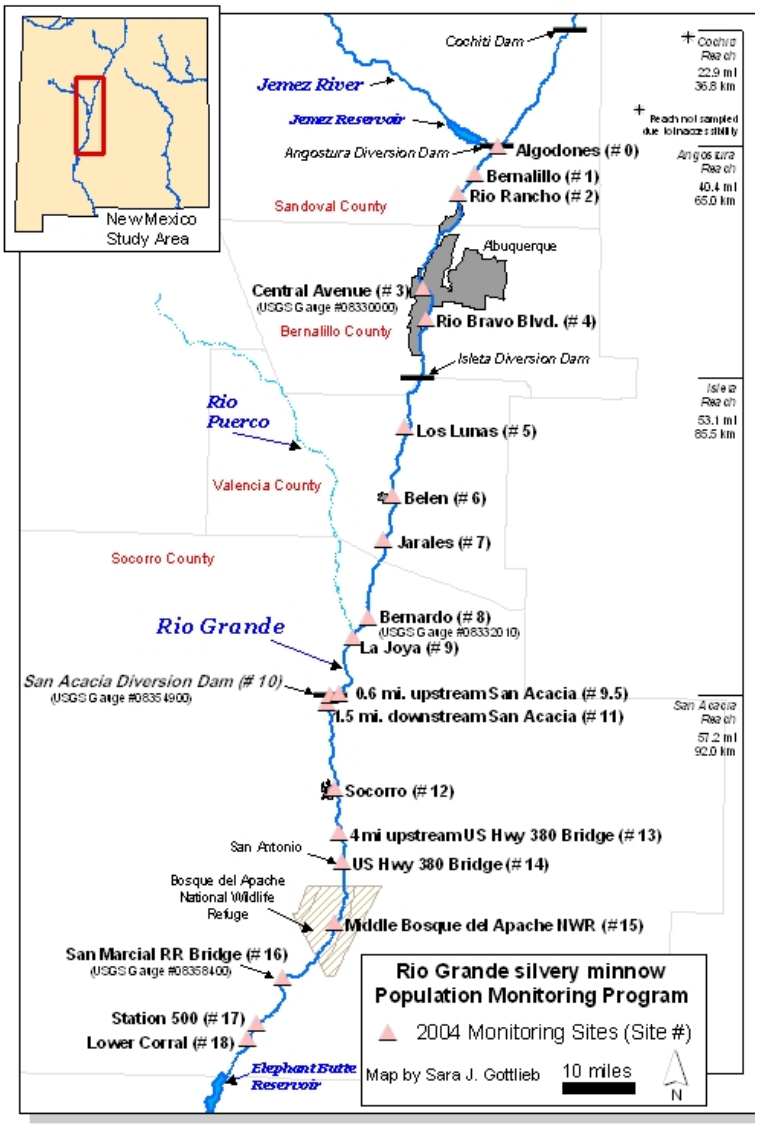
Data from previous project years:

2000 | **2001** | **2002** | **2003**

Reports

Project Credits

Site Map



Appendix C.
Ichthyofaunal composition of the 2004
Rio Grande silvery minnow population monitoring collections[1]

Data are available at:
http://msb-fish.unm.edu/rgsm2004

[1] The monthly 2004 fish collection data comprises about 100 pages and is not included in this hardcopy of the 2004 Rio Grande silvery minnow population monitoring report. It is, however, included in the electronic version of the report available at the above world-wide-web address.

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
24 January 2004 **RKD04-017** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, T.L. Kennedy, and W.J. Effort: 629.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	10
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	1
76	*Rhinichthys cataractae*	1

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
24 January 2004 **RKD04-018** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, T.L. Kennedy, and W.J. Effort: 627.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	19
76	*Platygobio gracilis*	2
76	*Rhinichthys cataractae*	1
81	*Catostomus commersonii*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
24 January 2004 **RKD04-019**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, T.L. Kennedy, and W.J.
Effort: 756.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	107
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	2
81	*Carpiodes carpio*	1
81	*Catostomus commersonii*	2
93	*Ictalurus punctatus*	1

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
24 January 2004 **RKD04-020**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, T.L. Kennedy, and W.J.
Effort: 461.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	148
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	4
81	*Carpiodes carpio*	4
93	*Ictalurus punctatus*	40
212	*Gambusia affinis*	7

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
23 January 2004 **RKD04-016**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 609.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	101
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	8
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	4
93	*Ictalurus punctatus*	1

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
23 January 2004 **RKD04-015** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 676.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	11
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	20
81	*Carpiodes carpio*	8
81	*Catostomus commersonii*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	10
294	*Pomoxis annularis*	2

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

age-1 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
23 January 2004 **RKD04-014** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 619.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	70
76	*Hybognathus amarus**	2
76	*Pimephales promelas*	14
212	*Gambusia affinis*	6

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

age-1 2

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
23 January 2004 **RKD04-013** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 708.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	99
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	21
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	6

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

age-1 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
22 January 2004 **RKD04-012** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, and T.L. Kennedy Effort: 646.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	45
76	*Pimephales promelas*	43
76	*Platygobio gracilis*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
22 January 2004 **RKD04-011** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, and T.L. Kennedy Effort: 663.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	117
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	8
212	*Gambusia affinis*	3
294	*Pomoxis annularis*	1

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

age-1 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia Site Number: 9.5
22 January 2004 **RKD04-010** River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, W.H. Brandenburg, and T.L. Kennedy Effort: 694.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	32
76	*Platygobio gracilis*	8
93	*Ictalurus punctatus*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. Site Number: 10
22 January 2004 **RKD04-009** River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, W.H. Brandenburg, and T.L. Kennedy Effort: 548.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	307
76	*Pimephales promelas*	13
76	*Platygobio gracilis*	1
212	*Gambusia affinis*	31

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
21 January 2004 **RKD04-008** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 682.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	209
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	29
76	*Platygobio gracilis*	16
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	2

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

age-1 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Site Number: 12
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant, River Mile: 99.5
21 January 2004 **RKD04-007**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 935.3 m^2

FAMILY		N
212	*Gambusia affinis*	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
21 January 2004 **RKD04-006** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 662.3 m^2

FAMILY		N
212	*Gambusia affinis*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
21 January 2004 **RKD04-005** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 805.5 m^2

No fish were collected.

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
20 January 2004 **RKD04-004** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 655.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	1

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

age-1 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
January 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16
20 January 2004 **RKD04-003** River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 666.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	227
76	*Pimephales promelas*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. Site Number: 17
River Mile: 60.5
20 January 2004 **RKD04-002**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 756.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	102
76	*Cyprinus carpio*	1
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	3

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge Site Number: 18
River Mile: 57.7
20 January 2004 **RKD04-001**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 750.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	95
93	*Ictalurus punctatus*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
20 February 2004 **RKD04-037** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 444.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	23
76	*Pimephales promelas*	11
81	*Catostomus commersonii*	18
93	*Ameiurus melas*	1

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
20 February 2004 **RKD04-038** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 630.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	24
76	*Platygobio gracilis*	3
76	*Rhinichthys cataractae*	1

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) Site Number: 2
bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho. River Mile: 200.0
20 February 2004 **RKD04-039**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 804.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	184
76	*Pimephales promelas*	3

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque. Site Number: 3
20 February 2004 **RKD04-040** River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, W.H. Brandenburg, M.A. Farrington, and T.L. Kennedy Effort: 555.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	100
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	9
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	1
81	*Catostomus commersonii*	5
93	*Ictalurus punctatus*	110
212	*Gambusia affinis*	1
294	*Lepomis cyanellus*	1

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Site Number: 4
Albuquerque. River Mile: 178.3
19 February 2004 **RKD04-036**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and T.L. Kennedy Effort: 731.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	204
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	7
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	3
93	*Ictalurus punctatus*	5

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
19 February 2004 **RKD04-035** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and T.L. Kennedy Effort: 697.3 m^2

FAMILY		N
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	4
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	2
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	24

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

age-1 1

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
19 February 2004 **RKD04-034** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and T.L. Kennedy Effort: 746.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	170
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	32
212	*Gambusia affinis*	50

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

age-1 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
19 February 2004 **RKD04-033** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and T.L. Kennedy Effort: 902.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	204
76	*Pimephales promelas*	15
81	*Carpiodes carpio*	2
212	*Gambusia affinis*	33

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
18 February 2004 **RKD04-032** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 726.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	74
76	*Pimephales promelas*	7
212	*Gambusia affinis*	6

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
18 February 2004 **RKD04-031** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 624.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	431
76	*Pimephales promelas*	68
81	*Carpiodes carpio*	3
212	*Gambusia affinis*	58

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia — Site Number: 9.5
18 February 2004 — **RKD04-030** — River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy — Effort: 830.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	13
76	*Platygobio gracilis*	17

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. — Site Number: 10
18 February 2004 — **RKD04-029** — River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy — Effort: 591.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	693
76	*Pimephales promelas*	32
76	*Platygobio gracilis*	4
81	*Carpiodes carpio*	2
93	*Ameiurus melas*	2
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	108
295	*Perca flavescens*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
17 February 2004 **RKD04-028** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 651.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	148
76	*Pimephales promelas*	4
76	*Platygobio gracilis*	3
212	*Gambusia affinis*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Site Number: 12
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant, River Mile: 99.5
17 February 2004 **RKD04-027**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 716.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	15
212	*Gambusia affinis*	13

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
17 February 2004 **RKD04-026** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 785.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1
212	*Gambusia affinis*	3

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
17 February 2004 **RKD04-025** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 790.8 m^2

FAMILY		N
212	*Gambusia affinis*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
16 February 2004 **RKD04-024** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 725.5 m^2

No fish were collected.

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16
16 February 2004 **RKD04-023** River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 684.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	182
81	*Carpiodes carpio*	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
February 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing.
Site Number: 17
River Mile: 60.5
16 February 2004 **RKD04-022**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy
Effort: 825.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	32
76	*Cyprinus carpio*	1
93	*Ictalurus punctatus*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge
Site Number: 18
River Mile: 57.7
16 February 2004 **RKD04-021**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, L.E. Renfro, and T.L. Kennedy
Effort: 808.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	67
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	1
294	*Pomoxis annularis*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
26 March 2004 **RKD04-057** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy Effort: 670.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	6
76	*Pimephales promelas*	4
76	*Rhinichthys cataractae*	2
81	*Catostomus commersonii*	9

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
26 March 2004 **RKD04-058** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy Effort: 694.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	28
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	24
76	*Pimephales promelas*	12
76	*Platygobio gracilis*	17
76	*Rhinichthys cataractae*	10
81	*Catostomus commersonii*	33

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

age-1	22
age-2	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
26 March 2004 **RKD04-059**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy
Effort: 704.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	61
76	*Hybognathus amarus**	17
76	*Pimephales promelas*	8
76	*Platygobio gracilis*	23
76	*Rhinichthys cataractae*	14
81	*Catostomus commersonii*	6

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

age-1	16
age-2	1

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
26 March 2004 **RKD04-060**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy
Effort: 532.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	212
76	*Hybognathus amarus**	3
76	*Pimephales promelas*	18
76	*Platygobio gracilis*	6
81	*Carpiodes carpio*	17
81	*Catostomus commersonii*	67
93	*Ictalurus punctatus*	60
212	*Gambusia affinis*	36

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

age-1	3

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
25 March 2004 **RKD04-056**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy Effort: 613.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	354
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	64
81	*Carpiodes carpio*	57
81	*Catostomus commersonii*	13
93	*Ictalurus punctatus*	37
212	*Gambusia affinis*	1
295	*Perca flavescens*	1

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

age-1 1

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
25 March 2004 **RKD04-055** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy Effort: 832.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	5
76	*Pimephales promelas*	8
81	*Carpiodes carpio*	2
212	*Gambusia affinis*	47
294	*Micropterus salmoides*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
25 March 2004 **RKD04-054** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy Effort: 825.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	21
76	*Pimephales promelas*	1
81	*Carpiodes carpio*	2
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	1

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
25 March 2004 **RKD04-053** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, L.E. Renfro, C.C. McBride, and T.L. Kennedy Effort: 757.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	403
76	*Pimephales promelas*	20
81	*Carpiodes carpio*	2
212	*Gambusia affinis*	65

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
24 March 2004 **RKD04-052** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 632.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	284
76	*Pimephales promelas*	10
212	*Gambusia affinis*	108

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
24 March 2004 **RKD04-051** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 703.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	319
76	*Pimephales promelas*	9
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	14
295	*Sander vitreus*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia Site Number: 9.5
24 March 2004 **RKD04-050** River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 838.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	13
76	*Platygobio gracilis*	16

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. Site Number: 10
24 March 2004 **RKD04-049** River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
W.H. Brandenburg, M.A. Farrington, L.E. Renfro, and T.L. Kennedy Effort: 498.0 m^2

FAMILY		N
69	*Dorosoma cepedianum*	1
76	*Cyprinella lutrensis*	358
76	*Cyprinus carpio*	2
76	*Pimephales promelas*	12
76	*Platygobio gracilis*	7
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	7

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
23 March 2004 **RKD04-048** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy Effort: 592.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	334
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	10
81	*Carpiodes carpio*	3
93	*Ictalurus punctatus*	7
212	*Gambusia affinis*	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

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, — Site Number: 12 — River Mile: 99.5
23 March 2004 **RKD04-047**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy — Effort: 965.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	4

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. — Site Number: 13
23 March 2004 **RKD04-046** — River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy — Effort: 762.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	2
212	*Gambusia affinis*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. — Site Number: 14
23 March 2004 **RKD04-045** — River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy — Effort: 700.8 m^2

No fish were collected.

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge — Site Number: 15
22 March 2004 **RKD04-044** — River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy — Effort: 809.3 m^2

FAMILY		N
76	*Cyprinus carpio*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. — Site Number: 16
22 March 2004 **RKD04-043** — River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy — Effort: 728.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	171

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. — Site Number: 17 — River Mile: 60.5
22 March 2004 **RKD04-042**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy — Effort: 744.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	30
76	*Cyprinus carpio*	3
93	*Ictalurus punctatus*	14

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
March 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge — Site Number: 18 — River Mile: 57.7
22 March 2004 **RKD04-041**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, C.C. McBride, and T.L. Kennedy — Effort: 572.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	40
76	*Cyprinus carpio*	2
93	*Ictalurus punctatus*	4

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
28 April 2004 **RKD04-078** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
L.E. Renfro, T.L. Max, and T.L. Kennedy Effort: 592.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	91
76	*Pimephales promelas*	3
81	*Catostomus commersonii*	10

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
28 April 2004 **RKD04-079** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
L.E. Renfro, T.L. Max, and T.L. Kennedy Effort: 708.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	220
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	8
76	*Platygobio gracilis*	21
76	*Rhinichthys cataractae*	52
81	*Catostomus commersonii*	6
212	*Gambusia affinis*	5

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

age-1 6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
28 April 2004 **RKD04-080**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
L.E. Renfro, T.L. Max, and T.L. Kennedy
Effort: 617.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	153
76	*Hybognathus amarus**	42
76	*Pimephales promelas*	16
76	*Platygobio gracilis*	7
76	*Rhinichthys cataractae*	47
81	*Catostomus commersonii*	19
93	*Ictalurus punctatus*	1
294	*Pomoxis annularis*	2

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

age-1 42

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
28 April 2004 **RKD04-077**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
L.E. Renfro, T.L. Max, and T.L. Kennedy
Effort: 675.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	160
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	8
81	*Carpiodes carpio*	4
81	*Catostomus commersonii*	5
93	*Ictalurus punctatus*	8

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
28 April 2004 **RKD04-076**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
L.E. Renfro, T.L. Max, and T.L. Kennedy Effort: 710.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	162
76	*Pimephales promelas*	2
76	*Platygobio gracilis*	5
81	*Carpiodes carpio*	5
81	*Catostomus commersonii*	3
93	*Ictalurus punctatus*	9
212	*Gambusia affinis*	1

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
27 April 2004 **RKD04-075** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, T.L. Kennedy, and T.L. Max Effort: 570.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	3
76	*Pimephales promelas*	6
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	27
294	*Lepomis macrochirus*	3
294	*Pomoxis annularis*	3

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
27 April 2004 **RKD04-074** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, T.L. Kennedy, and T.L. Max Effort: 520.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	180
76	*Pimephales promelas*	11
212	*Gambusia affinis*	16

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
27 April 2004 **RKD04-073** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, T.L. Kennedy, and T.L. Max Effort: 517.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	232
76	*Pimephales promelas*	2
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	38

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
27 April 2004 **RKD04-072** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, T.L. Kennedy, and T.L. Max Effort: 580.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	178
76	*Pimephales promelas*	17
212	*Gambusia affinis*	70

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
27 April 2004 **RKD04-071** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, T.L. Kennedy, and T.L. Max Effort: 495.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	206
76	*Pimephales promelas*	11
76	*Platygobio gracilis*	2
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	166
294	*Lepomis cyanellus*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia Site Number: 9.5
26 April 2004 **RKD04-070** River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 764.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	25
76	*Platygobio gracilis*	4
212	*Gambusia affinis*	38

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. Site Number: 10
26 April 2004 **RKD04-069** River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 549.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	308
76	*Pimephales promelas*	16
76	*Platygobio gracilis*	9
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	67

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
26 April 2004 **RKD04-068** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 583.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	173
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	4
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	12

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

age-1 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

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, — Site Number: 12 — River Mile: 99.5
26 April 2004 **RKD04-067**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 637.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	7
212	*Gambusia affinis*	14

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. — Site Number: 13
26 April 2004 **RKD04-066** — River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 684.3 m^2

FAMILY		N
212	*Gambusia affinis*	10

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. — Site Number: 14
26 April 2004 **RKD04-065** — River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 713.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	3
212	*Gambusia affinis*	9

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge — Site Number: 15
23 April 2004 **RKD04-064** — River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 771.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	2
76	*Platygobio gracilis*	1
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. — Site Number: 16
23 April 2004 **RKD04-063** — River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 639.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	612
76	*Pimephales promelas*	1
93	*Ictalurus punctatus*	6

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. — Site Number: 17 — River Mile: 60.5
23 April 2004 **RKD04-062**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 543.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	191
93	*Ictalurus punctatus*	8
212	*Gambusia affinis*	40

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
April 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge — Site Number: 18 — River Mile: 57.7
23 April 2004 **RKD04-061**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 554.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	35
93	*Ictalurus punctatus*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
27 May 2004 **RKD04-096** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 513.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	75
76	*Pimephales promelas*	10
76	*Rhinichthys cataractae*	5
81	*Catostomus commersonii*	522
295	*Perca flavescens*	1

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
27 May 2004 **RKD04-097** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 540.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	78
76	*Platygobio gracilis*	2
76	*Rhinichthys cataractae*	2
81	*Catostomus commersonii*	55
212	*Gambusia affinis*	1
294	*Pomoxis annularis*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
27 May 2004 **RKD04-098**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington
Effort: 296.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	176
76	*Cyprinus carpio*	4
76	*Hybognathus amarus**	425
76	*Pimephales promelas*	10
76	*Rhinichthys cataractae*	2
81	*Carpiodes carpio*	2
81	*Catostomus commersonii*	142
295	*Perca flavescens*	1

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

age-0	418
age-1	7

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
27 May 2004 **RKD04-100**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington
Effort: 488.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	434
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	16
81	*Carpiodes carpio*	11
81	*Catostomus commersonii*	12
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
27 May 2004 **RKD04-099**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, W.H. Brandenburg, and M.A. Farrington Effort: 477.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	86
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	31
76	*Pimephales promelas*	19
76	*Platygobio gracilis*	2
81	*Carpiodes carpio*	2
81	*Catostomus commersonii*	159
93	*Ictalurus punctatus*	4
212	*Gambusia affinis*	9

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

age-0 31

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
27 May 2004 **RKD04-095** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, W.H. Brandenburg, and C.C. McBride Effort: 465.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	21
76	*Cyprinus carpio*	21
76	*Hybognathus amarus**	46
76	*Pimephales promelas*	238
81	*Carpiodes carpio*	6
81	*Catostomus commersonii*	4
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	23
294	*Lepomis macrochirus*	1

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

age-0 46

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
27 May 2004 **RKD04-094** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, W.H. Brandenburg, and C.C. McBride Effort: 546.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	416
76	*Pimephales promelas*	5
212	*Gambusia affinis*	6

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
27 May 2004 **RKD04-093** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, W.H. Brandenburg, and C.C. McBride Effort: 645.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	82
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	1
212	*Gambusia affinis*	4

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
27 May 2004 **RKD04-092** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, and C.C. McBride Effort: 676.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	46
76	*Pimephales promelas*	33
212	*Gambusia affinis*	6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
27 May 2004 **RKD04-091** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, and C.C. McBride Effort: 655.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	88
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	31
81	*Carpiodes carpio*	8
212	*Gambusia affinis*	75

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

age-0	6

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia Site Number: 9.5
25 May 2004 **RKD04-090** River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, L.E. Renfro, and C.C. McBride Effort: 606.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	17
76	*Platygobio gracilis*	4
212	*Gambusia affinis*	10

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. Site Number: 10
25 May 2004 **RKD04-089** River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, L.E. Renfro, and C.C. McBride Effort: 330.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	185
76	*Cyprinus carpio*	2
76	*Pimephales promelas*	33
76	*Platygobio gracilis*	6
81	*Carpiodes carpio*	2
212	*Gambusia affinis*	37
294	*Micropterus salmoides*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
25 May 2004 **RKD04-088** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, L.E. Renfro, and C.C. McBride Effort: 503.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	114
76	*Pimephales promelas*	2
76	*Platygobio gracilis*	21
93	*Ictalurus punctatus*	4
212	*Gambusia affinis*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

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, — Site Number: 12 — River Mile: 99.5
25 May 2004 **RKD04-087**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, L.E. Renfro, and C.C. McBride — Effort: 562.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	5
76	*Pimephales promelas*	5
81	*Catostomus commersonii*	2
212	*Gambusia affinis*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. — Site Number: 13
25 May 2004 **RKD04-086** — River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, L.E. Renfro, and C.C. McBride — Effort: 733.7 m^2

FAMILY		N
76	*Cyprinus carpio*	2
76	*Pimephales promelas*	3

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. — Site Number: 14
24 May 2004 **RKD04-085** — River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, and L.E. Renfro — Effort: 581.3 m^2

FAMILY		N
76	*Cyprinus carpio*	5
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	3
81	*Carpiodes carpio*	10

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

age-0 6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge — Site Number: 15
24 May 2004 — **RKD04-084** — River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, M.A. Farrington, and L.E. Renfro — Effort: 521.1 m^2

FAMILY		N
76	*Cyprinus carpio*	34
76	*Hybognathus amarus**	2
76	*Pimephales promelas*	13
81	*Carpiodes carpio*	191
212	*Gambusia affinis*	7

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

age-0	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. — Site Number: 16
24 May 2004 — **RKD04-083** — River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, M.A. Farrington, and L.E. Renfro — Effort: 561.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	199
76	*Cyprinus carpio*	10
81	*Carpiodes carpio*	7

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
May 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing.
Site Number: 17
River Mile: 60.5
24 May 2004 **RKD04-082**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and L.E. Renfro
Effort: 570.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	223
76	*Cyprinus carpio*	15
76	*Hybognathus amarus**	1
81	*Carpiodes carpio*	13
93	*Ictalurus punctatus*	6
212	*Gambusia affinis*	8

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

age-0	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge
Site Number: 18
River Mile: 57.7
24 May 2004 **RKD04-081**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and L.E. Renfro
Effort: 434.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	4
76	*Cyprinus carpio*	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
25 June 2004 **RKD04-118** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 440.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	304
76	*Pimephales promelas*	15
76	*Platygobio gracilis*	1
76	*Rhinichthys cataractae*	4
81	*Carpiodes carpio*	1
81	*Catostomus commersonii*	105
212	*Gambusia affinis*	18

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
25 June 2004 **RKD04-119** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 551.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	167
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	3
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	1
76	*Rhinichthys cataractae*	10
81	*Carpiodes carpio*	2
81	*Catostomus commersonii*	94
212	*Gambusia affinis*	11

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

age-0 3

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
25 June 2004 **RKD04-120**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, and T.L. Max
Effort: 428.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	171
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	218
76	*Pimephales promelas*	74
76	*Platygobio gracilis*	5
76	*Rhinichthys cataractae*	3
81	*Carpiodes carpio*	4
81	*Catostomus commersonii*	176
212	*Gambusia affinis*	48
295	*Perca flavescens*	1

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

age-0	217
age-1	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque. Site Number: 3
25 June 2004 **RKD04-117** River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 513.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	91
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	12
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	5
76	*Rhinichthys cataractae*	1
81	*Carpiodes carpio*	3
81	*Catostomus commersonii*	61
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	19
295	*Perca flavescens*	7

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

age-0 24

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing. Site Number: 4
24 June 2004 **RKD04-116** River Mile: 178.3
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, W.H. Brandenburg, and T.L. Max Effort: 647.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	22
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	13
81	*Carpiodes carpio*	166
81	*Catostomus commersonii*	42
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	2
295	*Perca flavescens*	11

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
24 June 2004 **RKD04-115** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, W.H. Brandenburg, and T.L. Max Effort: 461.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	76
76	*Cyprinus carpio*	6
76	*Hybognathus amarus**	10
76	*Pimephales promelas*	21
76	*Platygobio gracilis*	2
81	*Carpiodes carpio*	32
81	*Catostomus commersonii*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	201
295	*Perca flavescens*	1

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

age-0 10

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
24 June 2004 **RKD04-114** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, W.H. Brandenburg, and T.L. Max Effort: 150.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	2
76	*Pimephales promelas*	55
81	*Carpiodes carpio*	12
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	63

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
24 June 2004 **RKD04-113** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, W.H. Brandenburg, and T.L. Max Effort: 526.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1033
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	40
81	*Carpiodes carpio*	6
212	*Gambusia affinis*	1099

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
23 June 2004 **RKD04-112** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 342.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	124
76	*Cyprinus carpio*	35
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	220
81	*Carpiodes carpio*	3
93	*Ictalurus punctatus*	5
212	*Gambusia affinis*	151
294	*Micropterus salmoides*	1
294	*Pomoxis annularis*	1

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

age-0 6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
23 June 2004 **RKD04-111** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 325.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	102
76	*Cyprinus carpio*	24
76	*Hybognathus amarus**	10
76	*Pimephales promelas*	287
76	*Platygobio gracilis*	3
81	*Carpiodes carpio*	34
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	402

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

age-0 10

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia Site Number: 9.5
23 June 2004 **RKD04-110** River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 393.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	10
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	51
76	*Pimephales promelas*	39
76	*Platygobio gracilis*	42
81	*Carpiodes carpio*	64
212	*Gambusia affinis*	17

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

age-0 51

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. Site Number: 10
23 June 2004 **RKD04-109** River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 370.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	261
76	*Cyprinus carpio*	45
76	*Hybognathus amarus**	24
76	*Pimephales promelas*	199
76	*Platygobio gracilis*	35
81	*Carpiodes carpio*	18
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	32

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

age-0 48

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
22 June 2004 **RKD04-108** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 424.3 m^2

FAMILY		N
69	*Dorosoma cepedianum*	3
76	*Cyprinella lutrensis*	1174
76	*Cyprinus carpio*	19
76	*Hybognathus amarus**	4
76	*Pimephales promelas*	99
76	*Platygobio gracilis*	2
76	*Rhinichthys cataractae*	7
81	*Carpiodes carpio*	354
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	165

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

age-0 4

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

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, — Site Number: 12 — River Mile: 99.5
22 June 2004 **RKD04-107**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 520.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	240
76	*Cyprinus carpio*	12
76	*Hybognathus amarus**	69
76	*Pimephales promelas*	294
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	31
212	*Gambusia affinis*	91

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

age-0 138

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. — Site Number: 13
22 June 2004 **RKD04-106** — River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 545.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	142
76	*Cyprinus carpio*	16
76	*Pimephales promelas*	51
76	*Platygobio gracilis*	2
81	*Carpiodes carpio*	23
212	*Gambusia affinis*	54

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
22 June 2004 **RKD04-105** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 0.0 m^2

River channel was dry. No collections were made.

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
21 June 2004 **RKD04-104** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 3.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	325
76	*Cyprinus carpio*	31
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	14
76	*Platygobio gracilis*	5
81	*Carpiodes carpio*	70
212	*Gambusia affinis*	103

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16
21 June 2004 **RKD04-103** River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 540.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	149
76	*Cyprinus carpio*	9
76	*Pimephales promelas*	25
81	*Carpiodes carpio*	9
212	*Gambusia affinis*	25

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. Site Number: 17
River Mile: 60.5
21 June 2004 **RKD04-102**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, L.E. Renfro, and T.L. Kennedy Effort: 569.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	195
76	*Cyprinus carpio*	31
76	*Pimephales promelas*	48
76	*Platygobio gracilis*	1
76	*Rhinichthys cataractae*	1
81	*Carpiodes carpio*	22
212	*Gambusia affinis*	4

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
June 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge — Site Number: 18 — River Mile: 57.7
21 June 2004 **RKD04-101**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, L.E. Renfro, and T.L. Kennedy — Effort: 428.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	100
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	2
76	*Pimephales promelas*	1
81	*Carpiodes carpio*	2
212	*Gambusia affinis*	18

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

age-0	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
30 July 2004 **RKD04-138** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 416.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	281
76	*Hybognathus amarus**	234
76	*Pimephales promelas*	12
76	*Platygobio gracilis*	3
76	*Rhinichthys cataractae*	34
81	*Catostomus commersonii*	41
93	*Ameiurus natalis*	2
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	82
295	*Perca flavescens*	5

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

age-0 234

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Sandoval Co., Rio Grande Drainage

Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1

30 July 2004 **RKD04-139** River Mile: 203.8

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

R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 395.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	108
76	*Hybognathus amarus**	142
76	*Pimephales promelas*	7
76	*Platygobio gracilis*	37
76	*Rhinichthys cataractae*	41
81	*Carpiodes carpio*	1
81	*Catostomus commersonii*	11
93	*Ameiurus natalis*	2
93	*Ictalurus punctatus*	5
212	*Gambusia affinis*	106

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

age-0	141
age-1	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.

Site Number: 2
River Mile: 200.0

30 July 2004 **RKD04-140**

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

R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max

Effort: 452.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	95
76	*Hybognathus amarus**	74
76	*Pimephales promelas*	6
76	*Platygobio gracilis*	32
76	*Rhinichthys cataractae*	14
81	*Carpiodes carpio*	6
81	*Catostomus commersonii*	31
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	76

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

age-0 74

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque. Site Number: 3
30 July 2004 **RKD04-137** River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 494.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	59
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	19
81	*Carpiodes carpio*	8
81	*Catostomus commersonii*	3
93	*Ictalurus punctatus*	13
212	*Gambusia affinis*	8
294	*Micropterus salmoides*	1

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Site Number: 4
Albuquerque. River Mile: 178.3
29 July 2004 **RKD04-136**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 490.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	20
76	*Hybognathus amarus**	2
76	*Pimephales promelas*	4
76	*Platygobio gracilis*	6
76	*Rhinichthys cataractae*	1
81	*Carpiodes carpio*	67
81	*Catostomus commersonii*	3
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	37
212	*Gambusia affinis*	23

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

age-0 2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Valencia Co., Rio Grande Drainage

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

29 July 2004 **RKD04-135** River Mile: 161.4

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

R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 355.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	4
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	12
76	*Pimephales promelas*	48
76	*Platygobio gracilis*	1
76	*Rhinichthys cataractae*	1
81	*Carpiodes carpio*	74
81	*Catostomus commersonii*	17
93	*Ameiurus natalis*	2
93	*Ictalurus punctatus*	22
212	*Gambusia affinis*	64
294	*Micropterus salmoides*	1

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

age-0 12

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
29 July 2004 **RKD04-134** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 452.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	81
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	102
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	3
93	*Ameiurus natalis*	2
93	*Ictalurus punctatus*	7
212	*Gambusia affinis*	120

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

age-0 6

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
29 July 2004 **RKD04-133** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 404.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	170
76	*Hybognathus amarus**	36
76	*Pimephales promelas*	179
76	*Platygobio gracilis*	2
81	*Carpiodes carpio*	15
93	*Ictalurus punctatus*	15
212	*Gambusia affinis*	392

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

age-0 36

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
28 July 2004 **RKD04-132** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 400.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	229
76	*Cyprinus carpio*	5
76	*Pimephales promelas*	127
81	*Carpiodes carpio*	12
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	419
294	*Micropterus salmoides*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
28 July 2004 **RKD04-131** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max Effort: 358.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	161
76	*Cyprinus carpio*	7
76	*Hybognathus amarus**	51
76	*Pimephales promelas*	273
81	*Carpiodes carpio*	46
93	*Ictalurus punctatus*	8
212	*Gambusia affinis*	628

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

age-0 51

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia — Site Number: 9.5
28 July 2004 — **RKD04-130** — River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max — Effort: 500.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	7
76	*Hybognathus amarus**	3
76	*Pimephales promelas*	6
76	*Platygobio gracilis*	48
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	14

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

age-0 3

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. — Site Number: 10
28 July 2004 — **RKD04-129** — River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, M.A. Farrington, H.L. Parmeter, and T.L. Max — Effort: 425.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	81
76	*Hybognathus amarus**	4
76	*Pimephales promelas*	40
76	*Platygobio gracilis*	24
93	*Ictalurus punctatus*	18
212	*Gambusia affinis*	24

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

age-0 4

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
27 July 2004 **RKD04-128** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 368.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	131
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	59
76	*Platygobio gracilis*	34
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	2

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

age-0 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Site Number: 12
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant, River Mile: 99.5
27 July 2004 **RKD04-127**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 532.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	165
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	5
76	*Pimephales promelas*	26
76	*Platygobio gracilis*	4
81	*Carpiodes carpio*	19
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	125

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

age-0 5

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
27 July 2004 **RKD04-126** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 540.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	1
81	*Carpiodes carpio*	10
212	*Gambusia affinis*	122

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

age-0 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
27 July 2004 **RKD04-125** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 582.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	5
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	1
81	*Carpiodes carpio*	6
212	*Gambusia affinis*	17

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge — Site Number: 15
26 July 2004 — **RKD04-124** — River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, M.A. Farrington, and T.L. Max — Effort: 472.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	2
81	*Carpiodes carpio*	3
212	*Gambusia affinis*	18

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. — Site Number: 16
26 July 2004 — **RKD04-123** — River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, M.A. Farrington, and T.L. Max — Effort: 420.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	117
76	*Pimephales promelas*	2
81	*Carpiodes carpio*	6
212	*Gambusia affinis*	8

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
July 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing.
Site Number: 17
River Mile: 60.5
26 July 2004 **RKD04-122**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and T.L. Max
Effort: 418.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	769
76	*Cyprinus carpio*	3
76	*Pimephales promelas*	2
81	*Carpiodes carpio*	2
93	*Ictalurus punctatus*	20
212	*Gambusia affinis*	27

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge
Site Number: 18
River Mile: 57.7
26 July 2004 **RKD04-121**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and T.L. Max
Effort: 368.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	122
76	*Cyprinus carpio*	3
76	*Hybognathus amarus**	1
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	6

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
30 August 2004 **RKD04-158** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, M.A. Farrington, and L.E. Renfro Effort: 504.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	520
76	*Hybognathus amarus**	100
76	*Pimephales promelas*	9
76	*Platygobio gracilis*	8
76	*Rhinichthys cataractae*	1
81	*Catostomus commersonii*	8
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	26
295	*Perca flavescens*	1

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

age-0 200

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
30 August 2004 **RKD04-159** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, and L.E. Renfro Effort: 583.7 m^2

FAMILY		N
76	*Cyprinella lutrensis*	192
76	*Hybognathus amarus**	77
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	50
76	*Rhinichthys cataractae*	8
81	*Catostomus commersonii*	6
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	45

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

age-0 154

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
30 August 2004 **RKD04-160**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, and L.E. Renfro
Effort: 626.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	105
76	*Hybognathus amarus**	176
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	16
76	*Rhinichthys cataractae*	3
81	*Catostomus commersonii*	4
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	15

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

age-0	175
age-1	1

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
30 August 2004 **RKD04-157**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, M.A. Farrington, and L.E. Renfro
Effort: 605.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	125
76	*Hybognathus amarus**	7
76	*Pimephales promelas*	16
76	*Platygobio gracilis*	11
76	*Rhinichthys cataractae*	9
81	*Carpiodes carpio*	23
81	*Catostomus commersonii*	2
93	*Ictalurus punctatus*	5
212	*Gambusia affinis*	13

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

age-0	7

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
24 August 2004 **RKD04-148**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 677.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	9
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	6
76	*Platygobio gracilis*	5
81	*Carpiodes carpio*	94
93	*Ictalurus punctatus*	39
212	*Gambusia affinis*	12

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

age-0 6

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
24 August 2004 **RKD04-147** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 72.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	3
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	13
76	*Pimephales promelas*	6
76	*Platygobio gracilis*	1
76	*Rhinichthys cataractae*	1
81	*Carpiodes carpio*	13
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	19
212	*Gambusia affinis*	39

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

age-0 13

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
24 August 2004 **RKD04-146** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 327.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	124
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	10
76	*Pimephales promelas*	85
81	*Carpiodes carpio*	12
93	*Ameiurus natalis*	7
93	*Ictalurus punctatus*	16
212	*Gambusia affinis*	459

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

age-0 10

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
24 August 2004 **RKD04-145** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 389.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	405
76	*Cyprinus carpio*	5
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	71
81	*Carpiodes carpio*	4
93	*Ameiurus melas*	1
93	*Ictalurus punctatus*	12
212	*Gambusia affinis*	240

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
26 August 2004 **RKD04-156** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, L.E. Renfro, and T.L. Max Effort: 483.9 m^2

FAMILY		N
76	*Cyprinella lutrensis*	210
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	61
81	*Carpiodes carpio*	12
93	*Ameiurus natalis*	2
93	*Ictalurus punctatus*	6
212	*Gambusia affinis*	204

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
26 August 2004 **RKD04-155** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, L.E. Renfro, and T.L. Max Effort: 373.0 m^2

FAMILY		N
69	*Dorosoma cepedianum*	2
76	*Cyprinella lutrensis*	312
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	125
81	*Carpiodes carpio*	7
93	*Ictalurus punctatus*	5
212	*Gambusia affinis*	156

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

age-0 6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia — Site Number: 9.5
26 August 2004 **RKD04-154** — River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, L.E. Renfro, and T.L. Max — Effort: 522.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	43
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	13
76	*Platygobio gracilis*	25
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	16
212	*Gambusia affinis*	28

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

age-0 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. — Site Number: 10
26 August 2004 **RKD04-153** — River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, L.E. Renfro, and T.L. Max — Effort: 520.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	119
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	24
76	*Platygobio gracilis*	16
76	*Rhinichthys cataractae*	1
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	17
212	*Gambusia affinis*	15

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
25 August 2004 **RKD04-152** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 613.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	108
76	*Hybognathus amarus**	4
76	*Pimephales promelas*	8
76	*Platygobio gracilis*	21
93	*Ictalurus punctatus*	16
212	*Gambusia affinis*	4

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

age-0 4

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Site Number: 12
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant, River Mile: 99.5
25 August 2004 **RKD04-151**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 546.8 m^2

FAMILY		N
69	*Dorosoma cepedianum*	1
76	*Cyprinella lutrensis*	69
76	*Hybognathus amarus**	10
76	*Pimephales promelas*	5
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	2
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	18

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

age-0 10

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
25 August 2004 **RKD04-150** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 789.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	3
76	*Hybognathus amarus**	4
76	*Pimephales promelas*	2
212	*Gambusia affinis*	17

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

age-0 4

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
25 August 2004 **RKD04-149** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 591.5 m^2

FAMILY		N
212	*Gambusia affinis*	6

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
23 August 2004 **RKD04-144** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 602.7 m^2

FAMILY		N
76	*Pimephales promelas*	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16
23 August 2004 **RKD04-143** River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 493.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	125
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	2
81	*Ictiobus bubalus*	1
212	*Gambusia affinis*	1
294	*Lepomis macrochirus*	1

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

age-0 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. Site Number: 17
River Mile: 60.5
23 August 2004 **RKD04-142**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, L.E. Renfro, and H.L. Parmeter Effort: 609.4 m^2

FAMILY		N
76	*Cyprinella lutrensis*	145
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	1
81	*Ictiobus bubalus*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	36

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
August 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge — Site Number: 18 — River Mile: 57.7
23 August 2004 **RKD04-141**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, L.E. Renfro, and H.L. Parmeter — Effort: 379.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	42
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	3
93	*Ictalurus punctatus*	4
212	*Gambusia affinis*	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
24 September 2004 **RKD04-178** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 512.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	98
76	*Hybognathus amarus**	8
76	*Platygobio gracilis*	2
76	*Rhinichthys cataractae*	4
81	*Catostomus commersonii*	1
212	*Gambusia affinis*	29
294	*Lepomis macrochirus*	1

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

age-0 8

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
24 September 2004 **RKD04-179** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 688.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	172
76	*Hybognathus amarus**	28
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	21
76	*Rhinichthys cataractae*	4
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	34

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

age-0 28

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
24 September 2004 **RKD04-180**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro
Effort: 623.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	117
76	*Hybognathus amarus**	29
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	17
76	*Rhinichthys cataractae*	1
81	*Catostomus commersonii*	1
93	*Ictalurus punctatus*	5

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

age-0	26
age-1	3

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
24 September 2004 **RKD04-177**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro
Effort: 548.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	55
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	4
76	*Platygobio gracilis*	8
76	*Rhinichthys cataractae*	1
81	*Carpiodes carpio*	3
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	20

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

age-0	1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
23 September 2004 **RKD04-176**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
M.A. Farrington, L.E. Renfro, and H.L. Parmeter Effort: 427.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	47
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	9
81	*Carpiodes carpio*	8
93	*Ictalurus punctatus*	8
212	*Gambusia affinis*	5

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
23 September 2004 **RKD04-175** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
M.A. Farrington, L.E. Renfro, and H.L. Parmeter Effort: 0.0 m^2

River channel was dry. No fish were collected.

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
23 September 2004 **RKD04-174** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
M.A. Farrington, L.E. Renfro, and H.L. Parmeter Effort: 467.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	374
76	*Hybognathus amarus**	3
76	*Pimephales promelas*	154
81	*Carpiodes carpio*	2
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	113

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

age-0 3

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
23 September 2004 **RKD04-173** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
M.A. Farrington, L.E. Renfro, and H.L. Parmeter Effort: 407.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	875
76	*Hybognathus amarus**	5
76	*Pimephales promelas*	112
93	*Ictalurus punctatus*	4
212	*Gambusia affinis*	658

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

age-0 5

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
22 September 2004 **RKD04-172** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 133.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	224
76	*Pimephales promelas*	306
81	*Carpiodes carpio*	45
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	87

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
22 September 2004 **RKD04-171** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 355.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	299
76	*Hybognathus amarus**	7
76	*Pimephales promelas*	106
93	*Ameiurus natalis*	1
93	*Ictalurus punctatus*	5
212	*Gambusia affinis*	54

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

age-0 7

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia — Site Number: 10
22 September 2004 **RKD04-170** — River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, M.A. Farrington, and H.L. Parmeter — Effort: 588.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	59
76	*Pimephales promelas*	2
76	*Platygobio gracilis*	14
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	10

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. — Site Number: 10
22 September 2004 **RKD04-169** — River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, M.A. Farrington, and H.L. Parmeter — Effort: 289.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	281
76	*Cyprinus carpio*	5
76	*Hybognathus amarus**	6
76	*Pimephales promelas*	79
76	*Platygobio gracilis*	43
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	9
212	*Gambusia affinis*	34

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

age-0 6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
21 September 2004 **RKD04-168** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 621.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	844
76	*Hybognathus amarus**	29
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	23
76	*Rhinichthys cataractae*	1
93	*Ictalurus punctatus*	9
212	*Gambusia affinis*	25

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

age-0 29

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Site Number: 12
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant, River Mile: 99.5
21 September 2004 **RKD04-167**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 0.0 m^2

River channel was dry. No fish were collected.

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
21 September 2004 **RKD04-166** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 0.0 m^2

River channel was dry. No fish were collected.

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
21 September 2004 **RKD04-165** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 0.0 m^2

River channel was dry. No fish were collected.

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
20 September 2004 **RKD04-164** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 0.0 m^2

River channel was dry. No fish were collected.

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16
20 September 2004 **RKD04-163** River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 558.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	313
76	*Pimephales promelas*	2
76	*Platygobio gracilis*	1
212	*Gambusia affinis*	5

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
September 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing.
Site Number: 17
River Mile: 60.5
20 September 2004 **RKD04-162**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and H.L. Parmeter
Effort: 472.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	350
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge
Site Number: 18
River Mile: 57.7
20 September 2004 **RKD04-161**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and H.L. Parmeter
Effort: 457.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	262
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	1
93	*Ictalurus punctatus*	11
212	*Gambusia affinis*	29

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
28 October 2004 **RKD04-197** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 443.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	86
76	*Hybognathus amarus**	8
76	*Pimephales promelas*	8
76	*Rhinichthys cataractae*	3
81	*Catostomus commersonii*	2
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	2

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

age-0 8

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
29 October 2004 **RKD04-198** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 443.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	97
76	*Hybognathus amarus**	28
76	*Pimephales promelas*	16
76	*Platygobio gracilis*	86
76	*Rhinichthys cataractae*	12
81	*Catostomus commersonii*	2
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	12

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

age-0 28

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
29 October 2004 **RKD04-199**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, and T.L. Max
Effort: 578.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	38
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	7
76	*Platygobio gracilis*	9
76	*Rhinichthys cataractae*	3
81	*Catostomus commersonii*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	29

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

age-0 7

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
29 October 2004 **RKD04-200**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, M.A. Farrington, and T.L. Max
Effort: 455.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	141
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	5
76	*Platygobio gracilis*	16
81	*Carpiodes carpio*	15
93	*Ictalurus punctatus*	21
212	*Gambusia affinis*	8

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
27 October 2004 **RKD04-192**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley and M.A. Farrington Effort: 456.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	65
76	*Pimephales promelas*	11
76	*Platygobio gracilis*	5
76	*Rhinichthys cataractae*	3
81	*Carpiodes carpio*	22
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	39

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
27 October 2004 **RKD04-191** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley and M.A. Farrington Effort: 449.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	9
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	21
212	*Gambusia affinis*	1

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
27 October 2004 **RKD04-190** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley and M.A. Farrington Effort: 339.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	256
76	*Cyprinus carpio*	3
76	*Hybognathus amarus**	3
76	*Pimephales promelas*	55
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	2
93	*Ameiurus natalis*	1
212	*Gambusia affinis*	173

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

age-0 3

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
27 October 2004 **RKD04-189** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley and M.A. Farrington Effort: 377.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	444
76	*Pimephales promelas*	85
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	329

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
28 October 2004 **RKD04-196** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 477.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	350
76	*Pimephales promelas*	105
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	52

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
28 October 2004 **RKD04-195** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, M.A. Farrington, and T.L. Max Effort: 440.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	443
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	12
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	88

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia — Site Number: 9.5
28 October 2004 — **RKD04-194** — River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, M.A. Farrington, and T.L. Max — Effort: 460.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	31
76	*Pimephales promelas*	3
76	*Platygobio gracilis*	21
93	*Ictalurus punctatus*	14
212	*Gambusia affinis*	8

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. — Site Number: 10
27 October 2004 — **RKD04-193** — River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley and M.A. Farrington — Effort: 381.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	512
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	18
76	*Pimephales promelas*	83
76	*Platygobio gracilis*	42
76	*Rhinichthys cataractae*	3
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	5
212	*Gambusia affinis*	21

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

age-0 18

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
26 October 2004 **RKD04-188** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 713.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	359
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	5
76	*Pimephales promelas*	18
76	*Platygobio gracilis*	12
212	*Gambusia affinis*	4

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

age-0 5

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Site Number: 12
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant, River Mile: 99.5
26 October 2004 **RKD04-187**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 648.1 m^2

FAMILY		N
76	*Cyprinella lutrensis*	260
76	*Hybognathus amarus**	7
76	*Pimephales promelas*	24
76	*Platygobio gracilis*	1
212	*Gambusia affinis*	13

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

age-0 7

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
26 October 2004 **RKD04-186** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 700.8 m^2

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

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
26 October 2004 **RKD04-185** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, W.H. Brandenburg, and H.L. Parmeter Effort: 807.0 m^2

FAMILY		N

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
25 October 2004 **RKD04-184** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 520.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	3

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
October 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16
25 October 2004 **RKD04-183** River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 484.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	171
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	1
93	*Ictalurus punctatus*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. Site Number: 17
River Mile: 60.5
25 October 2004 **RKD04-182**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 561.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	138
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge Site Number: 18
River Mile: 57.7
25 October 2004 **RKD04-181**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, and H.L. Parmeter Effort: 290.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	32
93	*Ictalurus punctatus*	6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
30 November 2004 **RKD04-218** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 432.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	2

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
30 November 2004 **RKD04-219** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 416.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	17
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	60
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	2
76	*Rhinichthys cataractae*	11
212	*Gambusia affinis*	2
294	*Micropterus salmoides*	1

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

age-0 60

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.
Site Number: 2
River Mile: 200.0
30 November 2004 **RKD04-220**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro
Effort: 507.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	15
76	*Hybognathus amarus**	261
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	19
212	*Gambusia affinis*	2

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

age-0 261

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.
Site Number: 3
30 November 2004 **RKD04-217**
River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro
Effort: 530.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	40
76	*Platygobio gracilis*	13
76	*Rhinichthys cataractae*	1
81	*Catostomus commersonii*	5
93	*Ictalurus punctatus*	2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
29 November 2004 **RKD04-216**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 504.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	105
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	23
76	*Platygobio gracilis*	13
76	*Rhinichthys cataractae*	1
81	*Carpiodes carpio*	9
81	*Catostomus commersonii*	1
93	*Ictalurus punctatus*	18
212	*Gambusia affinis*	6

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

age-0 1

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
29 November 2004 **RKD04-215** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 532.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	5
76	*Hybognathus amarus**	7
76	*Pimephales promelas*	28
81	*Carpiodes carpio*	1

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

age-0 7

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
29 November 2004 **RKD04-214** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 467.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	119
76	*Cyprinus carpio*	3
76	*Hybognathus amarus**	89
76	*Pimephales promelas*	100
81	*Carpiodes carpio*	9
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	11

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

age-0 89

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
24 November 2004 **RKD04-213** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 511.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	56
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	15
76	*Pimephales promelas*	46
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	1
212	*Gambusia affinis*	20

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

age-0 15

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
24 November 2004 **RKD04-212** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 474.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	8
76	*Cyprinus carpio*	1
76	*Pimephales promelas*	11
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
24 November 2004 **RKD04-210** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 496.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	39
76	*Pimephales promelas*	7
76	*Platygobio gracilis*	83
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	3
212	*Gambusia affinis*	6

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia — Site Number: 9.5
24 November 2004 **RKD04-211** — River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro — Effort: 478.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	43
76	*Hybognathus amarus**	16
76	*Pimephales promelas*	11
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	4
93	*Ictalurus punctatus*	5
212	*Gambusia affinis*	2

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

age-0 16

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. — Site Number: 10
23 November 2004 **RKD04-209** — River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro — Effort: 410.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	170
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	38
76	*Pimephales promelas*	47
76	*Platygobio gracilis*	140
81	*Carpiodes carpio*	4
93	*Ictalurus punctatus*	15
212	*Gambusia affinis*	3

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

age-0 38

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
23 November 2004 **RKD04-208** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 594.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	228
76	*Hybognathus amarus**	43
76	*Pimephales promelas*	30
76	*Platygobio gracilis*	17
93	*Ictalurus punctatus*	9
212	*Gambusia affinis*	16

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

age-0 43

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance Site Number: 12
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant, River Mile: 99.5
23 November 2004 **RKD04-207**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 617.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	189
76	*Pimephales promelas*	13
76	*Platygobio gracilis*	2
81	*Carpiodes carpio*	3
212	*Gambusia affinis*	14

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. Site Number: 13
23 November 2004 **RKD04-206** River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 567.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1
212	*Gambusia affinis*	1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. Site Number: 14
23 November 2004 **RKD04-205** River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 597.8 m^2

FAMILY		N
76	*Hybognathus amarus**	2
76	*Pimephales promelas*	1
76	*Rhinichthys cataractae*	1
212	*Gambusia affinis*	1

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

age-0 2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge Site Number: 15
22 November 2004 **RKD04-204** River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 483.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	4
76	*Hybognathus amarus**	1

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

age-0 1

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. Site Number: 16
22 November 2004 **RKD04-203** River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 539.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	142
76	*Pimephales promelas*	2
76	*Platygobio gracilis*	2
212	*Gambusia affinis*	7

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. Site Number: 17
River Mile: 60.5
22 November 2004 **RKD04-202**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro Effort: 669.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	337
76	*Platygobio gracilis*	4
93	*Ictalurus punctatus*	11
212	*Gambusia affinis*	15

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
November 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge — Site Number: 18 — River Mile: 57.7
22 November 2004 **RKD04-201**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
W.H. Brandenburg, M.A. Farrington, and L.E. Renfro — Effort: 183.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	154
76	*Cyprinus carpio*	2
76	*Hybognathus amarus**	5
76	*Pimephales promelas*	1
212	*Gambusia affinis*	1

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

age-0	5

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones. Site Number: 0
22 December 2004 **RKD04-238** River Mile: 209.7
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 589.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	6
76	*Rhinichthys cataractae*	1

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing, Bernalillo. Site Number: 1
22 December 2004 **RKD04-239** River Mile: 203.8
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 613.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1
76	*Hybognathus amarus**	2
76	*Pimephales promelas*	1
76	*Platygobio gracilis*	1
143	*Salmo trutta*	2

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

age-0 2

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Sandoval Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44) bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho. Site Number: 2
River Mile: 200.0
22 December 2004 **RKD04-240**
UTM Easting: 354772 UTM Northing: 3905355 Zone: 13 Quad: Bernalillo
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 486.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	55
76	*Hybognathus amarus**	163
76	*Pimephales promelas*	7
76	*Platygobio gracilis*	99
212	*Gambusia affinis*	4

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

age-0 163

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque. Site Number: 3
22 December 2004 **RKD04-237** River Mile: 183.4
UTM Easting: 346840 UTM Northing: 3884094 Zone: 13 Quad: Albuquerque West
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 396.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	12
76	*Hybognathus amarus**	26
76	*Pimephales promelas*	2
76	*Platygobio gracilis*	15
81	*Carpiodes carpio*	1
81	*Catostomus commersonii*	1
93	*Ictalurus punctatus*	1

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

age-0 26

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Bernalillo Co., Rio Grande Drainage
Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing, Albuquerque. Site Number: 4
River Mile: 178.3
21 December 2004 **RKD04-236**
UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 522.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	70
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	32
76	*Platygobio gracilis*	6
81	*Carpiodes carpio*	11
81	*Catostomus commersonii*	2
212	*Gambusia affinis*	3
294	*Pomoxis annularis*	1

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

age-0 1

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas. Site Number: 5
21 December 2004 **RKD04-235** River Mile: 161.4
UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 476.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	1
76	*Hybognathus amarus**	8
76	*Pimephales promelas*	6
295	*Perca flavescens*	1

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

age-0 8

*** All data are provisional and should be verified by direct inspection of field data and specimens whenever possible***

Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen. Site Number: 6
21 December 2004 **RKD04-234** River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 548.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	37
76	*Hybognathus amarus**	12
76	*Pimephales promelas*	34
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	2

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

age-0 12

New Mexico: Valencia Co., Rio Grande Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales. Site Number: 7
21 December 2004 **RKD04-233** River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 556.3 m^2

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

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Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo. Site Number: 8
20 December 2004 **RKD04-232** River Mile: 130.6
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and M.J. Osborne Effort: 494.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	22
76	*Hybognathus amarus**	1
76	*Pimephales promelas*	49
76	*Platygobio gracilis*	1
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	1

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

age-0 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo. Site Number: 9
20 December 2004 **RKD04-231** River Mile: 127.0
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and M.J. Osborne Effort: 436.8 m^2

FAMILY		N
76	*Cyprinella lutrensis*	9
212	*Gambusia affinis*	2

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia Site Number: 9.5
20 December 2004 **RKD04-230** River Mile: 116.8
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and M.J. Osborne Effort: 410.0 m^2

FAMILY		N
76	*Platygobio gracilis*	36

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Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia. Site Number: 10
20 December 2004 **RKD04-229** River Mile: 116.2
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, W.H. Brandenburg, L.E. Renfro, and M.J. Osborne Effort: 436.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	97
76	*Hybognathus amarus**	19
76	*Pimephales promelas*	23
76	*Platygobio gracilis*	56
76	*Rhinichthys cataractae*	1
93	*Ictalurus punctatus*	1

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

age-0 19

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. Site Number: 11
17 December 2004 **RKD04-228** River Mile: 114.6
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne Effort: 472.0 m^2

FAMILY		N
76	*Cyprinella lutrensis*	82
76	*Hybognathus amarus**	46
76	*Platygobio gracilis*	16
81	*Carpiodes carpio*	1
93	*Ictalurus punctatus*	2
212	*Gambusia affinis*	2

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

age-0 46

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Rio Grande silvery minnow Population Monitoring
December 2004

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, — Site Number: 12 — River Mile: 99.5
17 December 2004 **RKD04-227**
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne — Effort: 480.5 m^2

FAMILY		N
76	*Cyprinella lutrensis*	40
76	*Cyprinus carpio*	1
76	*Hybognathus amarus**	1
76	*Platygobio gracilis*	3
81	*Carpiodes carpio*	7

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

age-0 1

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing. — Site Number: 13
17 December 2004 **RKD04-226** — River Mile: 91.7
UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne — Effort: 662.3 m^2

FAMILY		N

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at US HWY 380 bridge crossing, San Antonio. — Site Number: 14
17 December 2004 **RKD04-225** — River Mile: 87.1
UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne — Effort: 663.3 m^2

FAMILY		N
76	*Hybognathus amarus**	2

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

age-0 2

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Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge — Site Number: 15
16 December 2004 **RKD04-224** — River Mile: 79.1
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne — Effort: 596.5 m^2

FAMILY		N

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial. — Site Number: 16
16 December 2004 **RKD04-223** — River Mile: 68.6
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne — Effort: 662.2 m^2

FAMILY		N
76	*Cyprinella lutrensis*	321
76	*Hybognathus amarus**	5
76	*Pimephales promelas*	7
212	*Gambusia affinis*	5

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

age-0	5

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, at (former) confluence with the Low Flow Conveyance Channel, 16.0 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge; ca. 8 miles downstream of the San Marcial Railroad Bridge crossing. — Site Number: 17 — River Mile: 60.5
16 December 2004 **RKD04-222**
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne — Effort: 542.6 m^2

FAMILY		N
76	*Cyprinella lutrensis*	107
76	*Platygobio gracilis*	1
93	*Ictalurus punctatus*	1

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Rio Grande silvery minnow Population Monitoring
December 2004

New Mexico: Socorro Co., Rio Grande Drainage
Rio Grande, ca. 19 miles downstream of the southern end of Bosque del Apache National Wildlife Refuge — Site Number: 18 — River Mile: 57.7
16 December 2004 **RKD04-221**
UTM Easting: 307380 UTM Northing: 3714740 Zone: 13 Quad: Paraje Well
R.K. Dudley, M.A. Farrington, L.E. Renfro, and M.J. Osborne — Effort: 321.3 m^2

FAMILY		N
76	*Cyprinella lutrensis*	29
76	*Pimephales promelas*	1
81	*Carpiodes carpio*	1
212	*Gambusia affinis*	1

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