

CENTRAL ARIZONA PROJECT FISH MONITORING FINAL ANNUAL REPORT

SUMMARY OF SAMPLE YEAR 2010 FISH SURVEYS IN BEHALF OF A
LONG-TERM MONITORING PLAN FOR FISH POPULATIONS IN
SELECTED WATERS OF THE GILA RIVER BASIN, ARIZONA

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Submitted in partial fulfillment of
Bureau of Reclamation Contract Number R09PD32013

Submitted to

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July 12, 2011

This report summarizes fish sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year (SY) 2010 (period July 12, 2010 to January 24, 2011). Reclamation's monitoring program is a result of several biological opinions on impacts of transportation and delivery of Central Arizona Project (CAP) water from the Colorado River at Lake Havasu to the Gila River basin. Its primary intention is to establish baseline data on the presence and distribution of non-native fishes and to detect changes in species composition or distribution in the CAP aqueduct and selected river, stream, and canal reaches in Arizona.

Protocols implemented during this monitoring are detailed by Clarkson (1996 a-c) and Clarkson et al. (2011), and will not be reiterated in detail here. In general, streams were stratified according to geomorphology or flow characteristics, and replicate 200-m "quantitative," fixed sampling stations were established as the source for distribution and assemblage structure data. The plan calls for electrofishing as the primary gear for this purpose, but use of other methods is encouraged if electrofishing is deemed inadequate. Following collection of quantitative data from fixed stream stations, qualitative sampling may be performed up- and/or downstream of each station to search for rare species.

In canals, sampling is more opportunistic, and is usually conducted during low flow or "dry-up" conditions. Sampling reaches are fixed, but only in the CAP canal are fixed stations sampled. For logistical reasons, pumping plant forebays are the primary source of CAP canal fishery data, and sampling there requires the use of a large array of sampling gears to be effective. Sampling in the Salt River Project (SRP) and Florence-Casa Grande (FCG) canals typically requires searches for available water and fish concentrations during flow outages, and primarily relies upon seines, dip nets, and entanglement gears for collection of fishes. SRP canals above the electrical fish barriers are sampled repeatedly with large seines and capture nearly all fishes in these short, confined reaches. See Clarkson et al. (2011) for more detailed descriptions of monitored streams and canals and the methods used to sample them.

Waters sampled during this monitoring were (1) San Pedro River (hereafter abbreviated SanP) downstream from the U.S. and Mexico international boundary, (2) Gila River between Coolidge Dam and Ashurst-Hayden Diversion, (3) Salt River between Stewart Mountain Dam and Granite Reef Diversion, (4) CAP Canal at selected pumping plants, (5) SRP South Canal (SRPs), (6) SRP Arizona (North) Canal (SRPn), (7) FCG Canal, (8) Aravaipa Creek below the fish barriers, and (9) lower Cienega Creek (Table 1).

Comparisons are not made with data acquired during prior years of this monitoring program as reported by Clarkson (1998, 1999, 2001), Kesner and Marsh (2008, 2009), Marsh (1999, 2004a-c), and Marsh and Kesner (2004, 2005, 2006a-b, 2007a-b, 2008) (available online at <http://www.usbr.gov/lc/phoenix/biology/azfish/aznativefish.html>), or with data reported under other studies of these waters (e.g., Marsh and Minckley 1982, Mueller 1996). The reader is referred to those documents for comparisons with prior years. A comprehensive list including common and scientific names and four-letter code of aquatic vertebrate taxa encountered during routine fish monitoring is provided in Table 2.

MONITORING OVERVIEW

A total of 27 fish taxa (excluding undetermined or hybrid sunfish) was captured during SY 2010 monitoring (Table 3). No new taxa were detected. Three species were taken in Cienega Creek, six in Gila River, seven in FCG, eight each in San Pedro River and Aravaipa Creek, nine in CAP, 11 in Salt River, 14 in SRPs, and 16 were taken in SRPn (Table 3). Seven native species (26% of total taxa) were collected: Gila chub, loach minnow, longfin dace, roundtail chub, desert sucker, Sonora sucker, and Gila topminnow. Five were in Aravaipa Creek, four in the Salt River, three in Cienega Creek, two in the San Pedro River, SRPs, and SRPn, one in FCG, and no native species were in the Gila River or CAP. Native species comprised 13 to 100% of all species among streams where natives occurred. The remaining 20 taxa were non-native, which among streams numbered between 0 (Cienega) and 14 (SRPn) species.

Total number of fish captured varied widely among waters, reaches, and stations (Table 4), a reflection of differences in sampling effort and gear type as well as fish abundance. Canal samples were not strictly comparable because those from SRPn, SRPs, and FCG were opportunistic and qualitative (except for samples above the electrical fish barriers on the SRP canals, which represented near-complete censuses). Monitoring in streams and rivers, and in the CAP Canal, is designed to be quantitative and accompanied by recorded effort data, but at times may be supplemented by some qualitative sampling, which is opportunistic and is not necessarily accompanied by recorded effort. Numbers presented in all tables include both quantitative and qualitative sampling data.

Native fishes overall accounted for 43% of 5,817 individuals captured at all Gila River basin stations during the sample year (Table 4). Proportion that native fishes comprised of total catch ranged from 0% (Gila River and CAP canal) to 100% (Cienega Creek). San Pedro was 61% native, Salt River was 78% native, and Aravaipa Creek was 77% native species. SRPs and SRPn samples were 38 and 23% natives above the electrical fish barriers, respectively, and 30 and 5% natives below those structures (Table 4). The capture of a single desert sucker below the electrical fish barrier in FCG canal was less than 1% of the total catch; no natives were taken above the barrier.

Community structure differed substantially among waters, reaches, and stations (Table 4). Native longfin dace was the most abundant species in combined samples from the San Pedro River (followed by black bullhead). Red shiner followed by mosquitofish was the most abundant species from samples in the Gila River. Desert sucker predominated the catch in the Salt River (followed by Sonora sucker). Striped bass followed by bluegill was the most abundant fish in the CAP Canal. Native Sonora sucker followed by channel catfish was most abundant above and below the electrical fish barrier in SRPs. This last ranking was reversed in the SRPn above the electrical fish barrier with channel catfish being most abundant followed by Sonora sucker. Below the barrier, red shiner predominated the catch followed by bluegill. In FCG channel catfish predominated the catch above and below the barrier (followed by mosquitofish, above, and red shiner, below). Native longfin dace was the most abundant

species in both Aravaipa and Cienega creeks, followed by native desert sucker and Gila topminnow, in the two streams, respectively.

SAN PEDRO RIVER

Sampling Notes and Deviations from Protocol – Sampling was led by Marsh & Associates (M&A) between October 4 and 6, 2010 (Table 1). Seven of eight currently available stations were sampled (station 1-2-2 was eliminated from the protocol in 2005). The site at Hughes Ranch (station 1-2-1) was dry. Backpack electrofishing was conducted at all sites.

Species Richness and Distribution – Eight species were captured in the San Pedro River (Tables 5 and 6A). Six species were taken in the upper reach, two in the middle, and three in the lower. Two natives were encountered (longfin dace and desert sucker). Longfin dace was found at four stations, while desert sucker was collected at two. Native lowland leopard frog adults were present.

Four non-natives were in the upper reach, one in the middle, and two in the lower. Common carp, mosquitofish, and green sunfish were found only in the upper reach. Black bullhead was found in the upper and middle reach, and red shiner and yellow bullhead were found only in the lower reach. Non-native bullfrog tadpoles and northern crayfish *Orconectes virilis* were present in the stream.

Assemblage Structure – Native longfin dace dominated the catch overall (52% of a total catch of 64 individuals), and in the middle and lower reaches (Tables 4 and 6A), although overall catch was substantially lower compared to 2009 when 1,277 individuals were encountered. Desert sucker was represented by six specimens collected in the upstream reach.

Black bullhead was the most abundant non-native, represented by young-of-year as well as adults, and was the second most abundant species overall (14% of the catch). Mosquitofish was fourth most abundant (8%), followed by common carp, red shiner, and yellow bullhead (about 5% each). The capture of two green sunfish added about 3% to the total.

GILA RIVER

Sampling Notes and Deviations from Protocol – Reaches 2 through 4 were sampled between November 29 and December 3, 2010, and the upper reach was sampled in the period January 18-19, 2011 (Table 1). This was the first time the upper reach has been sampled since 2002, where access and permission to make collections were authorized by San Carlos Apache Tribe. Catch data for the upper reach are not recorded in this report per tribal request. All eleven currently available stations were sampled. In 2008, the lower-most station (Box-O Wash, number 2-4-3) was relocated downstream approximately 1 km because of access issues and renamed “Box Canyon.” Backpack electrofishing was used at all sites and was supplemented with trammel netting at Coolidge Dam (2-1-1) and Hook & Line Ranch (2-1-3). A tote barge was also used at the Coolidge Dam site.

Species Richness and Distribution – Six fish species were captured in the Gila River (Tables 5 and 6B). No species new to the basin were detected. All six species were taken in the upper middle reach, three in the lower middle, and five in the lower. No native species were encountered. A single specimen of desert sucker captured in 2007 comprises the entirety of native fish catch for the Gila River in the past eight years (see prior year reports). Non-native larval and adult bullfrog and northern crayfish were collected in the stream.

Assemblage Structure – Channel catfish, flathead catfish, and mosquitofish were found in all three reaches. Common carp and red shiner were encountered in two reaches; upper middle and lower. Green sunfish was found only in the upper middle reach. Red shiner was the most abundant species overall (39% of a total catch of 193 individuals) and was predominant in the upper reach. Mosquitofish was second in overall abundance (27% of catch) and was predominant in the middle reach. Channel catfish was third (22%), dominating the catch in the lower reach. Flathead catfish made up 7% of the total catch, followed by common carp (4%). Green sunfish contributed less than 1% of total catch. Backpack electrofishing conducted upstream of the fixed station at Box Canyon (2-4-3) added eighteen channel catfish to the total catch for that station.

SALT RIVER

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A with assistance from Reclamation on November 5 and 24, 2010 (Table 1). All three stations were sampled. The stations at Stewart Mountain Dam (3-1-1) and Goldfield Administrative Site (3-1-2) were sampled with a backpack electrofisher supplemented with trammel nets, and the site at Granite Reef Dam (3-1-3) was sampled with a boat electrofisher, supplemented with trammel nets.

Species Richness and Distribution – Eleven fish species (excluding hybrid sunfish) were taken from the Salt River (Table 5 and 6C). No new species were detected. The capture of a single roundtail chub at Granite Reef Dam (3-1-3) was the first record of the species since 2000 for the monitoring program. Additional native species captures included longfin dace, Sonora sucker and desert sucker. Non-native red shiner, yellow bullhead, mosquitofish, yellow bass, bluegill, green sunfish, and largemouth bass also were captured.

Assemblage Structure – Total catch from the Salt River was 1,143 individuals. The native fish comprised about 78% of the total catch (Tables 4 and 6C). Native desert sucker was the most abundant species captured overall (67% of total catch), followed by Sonora sucker (10%), largemouth bass (8%), red shiner and yellow bullhead (4% each), bluegill (3%), and mosquitofish and longfin dace (each about 1%). Five bluegill-green sunfish hybrids were also captured. Desert and Sonora suckers dominated the catch in the upper and middle reaches, while largemouth bass and red shiner were preponderant in the lower reach. Backpack electrofishing outside the fixed station at Goldfield Administrative Site (3-1-2) resulted in the capture of 18 bluegill, 9 yellow bullhead, two largemouth bass, and one green sunfish.

CENTRAL ARIZONA PROJECT CANAL

Sampling Notes and Deviations from Protocol – All seven stations currently available were sampled by Reclamation with assistance from M&A; the upper reach from July 12 to 14, 2010, the lower reach between October 17-19, 2010, and the middle reach on October 28, 2010 (Table 1). Boat-mounted electrofishing, minnow trapping, trammel netting, and trot lining were conducted at all stations.

Species Richness and Distribution – Nine taxa, all non-native, were captured from the CAP Canal. No new species were detected. Eight species were taken from the upper reach, four from the Salt-Gila station (middle reach), and seven in the downstream reach (Tables 5 and 6D). Grass carp, channel catfish, and striped bass were taken from all reaches. Red shiner was in upper and middle, and common carp, bluegill, and largemouth bass in upper and lower reaches. Redear sunfish was found only in the lower reach.

Assemblage Structure – Striped bass was the most abundant species overall (19% of total catch), followed by bluegill (14%) in the sample of 164 individuals from the CAP Canal (Table 6D). Grass carp, channel catfish, and common carp each comprised 13% of total catch, followed by largemouth bass (11%), redeer sunfish (10%), and red shiner (5%). A single smallmouth bass was captured in the upper reach.

Channel catfish was the predominant species in the upper reach (26% of 70 individuals), followed by bluegill (24%), common carp and striped bass (14% each), grass carp (11%), largemouth bass (7%), and red shiner and smallmouth bass (about 1% each). Red shiner was the most abundant fish in the middle reach (40% of 20 individuals), followed by grass carp (30%), and channel catfish and striped bass (15% each). Striped bass was the most abundant species captured in the lower reach (24% of 74 individuals), followed by redeer sunfish (23%), largemouth bass (18%), common carp (15%), grass carp (11%), bluegill (8%), and channel catfish (1%).

SRP SOUTH CANAL

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A with assistance from Reclamation and SRP from November 21-22, 2010 (Table 1). Five stations were sampled during routine monitoring, one above the electrical fish barrier and four below the fish barrier. The station above the electrical fish barrier (5-1-1) was sampled with bag and straight seines. The station immediately below the barrier (5-2-0) was sampled with a straight seine, River Road Siphon (5-2-2.5) was sampled with a trammel net, visual observations were made at the Demossing Station (5-2-6.1), and dip nets were used at Triple Junction (5-2-9).

Species Richness and Distribution – Fourteen species, including two natives were captured from the SRPs Canal (Tables 4 and 5). No new species were detected. The canal was subdivided into two reaches: “above” (one station) and “below” (one station) the electrical fish barrier (Table 6E), although these reaches were not designated in the monitoring protocol (Clarkson 1996a).

Twelve species including two natives were captured from above the barrier on the SRPs Canal, and eight below. Native desert sucker and Sonora sucker, plus non-native, red shiner, channel catfish, flathead catfish, and largemouth bass were encountered above and below the fish barrier. Common carp, rainbow trout, bluegill, blue tilapia, Mozambique tilapia and walleye were only captured above the fish barrier, while mosquitofish and threadfin shad were only captured below.

Assemblage Structure – Native fishes comprised 35% of the total catch (408 fish) taken from the SRPs Canal (Table 4). Native Sonora sucker was the most abundant species overall, accounting for 33% of the total. Native desert sucker accounted for about 2% of the catch. Non-native channel catfish was the second most abundant species overall (22%) followed by largemouth bass (13%), red shiner and flathead catfish (each 7%), blue tilapia (6%), threadfin shad (5%), and common carp (4%). Mosquitofish, rainbow trout, Mozambique tilapia, walleye, and bluegill each contributed less than 1% to the total catch.

Above the fish barrier, native Sonora sucker was the most abundant species captured (36% of 278 individuals), followed by non-native channel catfish (22%), largemouth bass (14%), flathead catfish and blue tilapia (8% each), common carp (5%), red shiner (2%), and rainbow trout (1%). Mozambique tilapia, walleye, and bluegill each contributed less than 1% to the catch (Table 6E).

Below the fish barrier, native Sonora sucker was the predominant species (27% of 130 individuals captured), followed by non-native channel catfish (22%), and red shiner (17%). Threadfin shad comprised 15% of the catch, largemouth bass 11%, flathead catfish and desert sucker about 3% each, and mosquitofish 2% (Table 6E).

SRP NORTH (ARIZONA) CANAL

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A with assistance from Reclamation and SRP on January 24, 2011 (Table 1). Two stations were sampled during routine monitoring: one above the electrical fish barrier and one below the fish barrier. The above barrier site was sampled with bag and straight seines. A boat-mounted electrofisher and trammel nets were used to collect fishes below the barrier in the reach between the 101 (Pima) freeway and Indian Bend Wash, 14.5 miles downstream from Granite Reef Diversion Dam. Other stations were not sampled because there was no reach-wide outage that would have provided an opportunity to safely and effectively make collections.

Species Richness and Distribution – Sixteen species, including two natives were captured from the SRPn Canal (Tables 4 and 5). No new species were detected. The canal was subdivided into two reaches: “above” (one station) and “below” (one station) the electrical fish barrier (Table 6F), although these reaches were not designated in the monitoring protocol (Clarkson 1996a). Twelve species were taken above the electrical fish barrier and thirteen were collected from below. Native Sonora and desert suckers, plus non-native channel catfish, red shiner, largemouth bass, flathead catfish, bluegill, yellow bass, and common carp were collected above and below the barrier. Rainbow trout, walleye, and blue tilapia were encountered above but

not below the barrier, while threadfin shad, grass carp, mosquitofish, and green sunfish were taken below but not above.

Assemblage Structure – Native fishes collectively comprised about 19% of the total number of 913 individuals taken from the SRPn Canal (Table 4). Non-native channel catfish was the predominant species overall (40% of total catch) followed by red shiner (15%), native Sonora sucker (14%), largemouth bass (11%), flathead catfish (7%), and native desert sucker (5%). Bluegill comprised about 2% of the total catch followed by walleye and common carp each adding about 1% to the total. Threadfin shad, grass carp, mosquitofish, green sunfish, and blue tilapia each comprised less than 1% of the total catch.

Above the fish barrier, non-native channel catfish was the most abundant species captured (49% of 731 individuals), followed by native Sonora sucker (17%), non-native largemouth bass (13%), and flathead catfish (9%). Native desert sucker was fifth most abundant accounting for 6% of the catch. Rainbow trout and yellow bass each were about 2% of the catch, and walleye was about 1% of the total catch above the barrier. Bluegill, common carp, blue tilapia, and red shiner each contributed less than 1% to the total (Table 6F).

Below the fish barrier, non-native red shiner was the dominant species (76% of 182 individuals captured), followed by bluegill (7%), largemouth bass (4%), native Sonora sucker (3%), and non-native threadfin shad, common carp, and native desert sucker (about 2% each). Yellow bass and channel catfish each contributed 1% to totals, while green sunfish, mosquitofish, grass carp, and flathead each was less than 1% of total fish (Table 6F).

FLORENCE-CASA GRANDE CANAL

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A with Reclamation assistance on November 1, 2010 (Table 1). Four stations were visited during routine monitoring: one immediately below the canal headworks at Ashurst-Hayden Diversion Dam (above the electrical fish barrier located at China Wash), and three below China Wash barrier located 2.6 miles downstream from the diversion dam. Stations below the barrier were at China Wash, at the Kenilworth Road bridge 14.6 miles downstream from Ashurst-Hayden, and at the Pima Lateral Canal (15.2 miles downstream). In addition to the four stations on the main FCG Canal, we sampled the Pima Lateral Canal with dip nets (station 7-2-15.3), and the Pima Lateral Feeder Canal was visually inspected (station 7-2-15.4). The station at the dam was sampled using a backpack electrofisher and a straight seine. Seepage through the turnout gates was minimal. The wetted channel was variably 1 to 5 m wide, mostly shallow with deepest pools ca. 1 m, and substrate was sandy-gravel with some fines. China Wash was sampled using a straight seine, Kenilworth Road bridge with a backpack electrofisher, and the station at Pima Lateral was sampled with a straight seine.

Species Richness and Distribution – Seven species were taken from the Florence-Casa Grande Canal (Tables 4 and 5); a single desert sucker comprised the total native fish catch. Five species were collected above and seven below the electric fish barrier at China Wash. Channel catfish

was the most abundant species overall (91% of a total catch of 1,558 individuals) and was the most abundant species immediately below the dam and at the Pima Lateral Canal. All species captured above the electrical fish barrier also were encountered below, while threadfin shad and desert sucker, both represented by single specimens, were only encountered below the barrier.

Assemblage Structure – Channel catfish predominated above and below the electrical fish barrier making up 91% (1,418 individuals) of the total catch (Table 4). Second most abundant were red shiner (4%) and mosquitofish (4%). Flathead catfish, common carp, threadfin shad, and desert sucker each comprised less than 1% of the total catch (Table 6G). The ranking in abundance did not differ among below and above barrier samples, although threadfin shad and desert sucker were only found below the barrier (a single specimen each).

ARAVAIPA CREEK

Sampling Notes and Deviations from Protocol – Sampling was performed by Reclamation with M&A assistance on October 12, 2010 (Table 1). Two reaches were sampled during routine monitoring: one between the constructed fish barriers and one below the lower barrier and comprised of the fixed, 200-m standardized station plus a pool that periodically forms immediately downstream from the barrier apron. The reach above the barrier was sampled by backpack electrofishing, and the pool site below the barrier was sampled by trammel net. The 200-m fixed station was sampled by backpack electrofishing. There were no deviations from standard protocol.

Species Richness and Distribution – Eight species including native loach minnow, longfin dace, roundtail chub, desert sucker, and Sonora sucker, plus non-native red shiner, yellow bullhead, and green sunfish were taken from below the barrier on Aravaipa Creek (Tables 4 and 5). No new species were encountered above the barrier and no catch totals were recorded. Below the barrier, native longfin dace was the most abundant species and comprised 38% of the total catch of 479 individuals (Table 6H), followed by desert sucker (31%), yellow bullhead (17%), Sonora sucker (8%), and red shiner (5%); other species each were <1% of total catch.

Assemblage Structure – Below the barrier, six adult Sonora sucker and one adult green sunfish were captured from the pool site (outside the fixed station boundary). The fixed-station sample below the barrier was predominated by longfin dace (38% of 472, Table 6H), followed by desert sucker (31%), yellow bullhead (18%), Sonora sucker (7%), and red shiner (5%). Other species were roundtail chub and loach minnow each of which contributed <1% to the total catch.

CIENEGA CREEK

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A on October 27, 2010 (Table 1). This was the fourth year of monitoring for this stream reach, which was added to the monitoring program in 2007. Two stations were sampled during routine

monitoring: one at Head Cut and one at Three Bridges (see prior year reports or Clarkson et al. 2011 for location data). Both stations were sampled using a backpack electrofisher. A straight seine was used to supplement the effort at Head Cut; there were no deviations from standard protocol.

Species Richness and Distribution – Three species, native Gila chub, longfin dace, and Gila topminnow, were taken from Cienega Creek (Tables 4 and 5). Longfin dace and Gila topminnow were collected at both stations, while Gila chub was only collected from the upper station.

Assemblage Structure – Native longfin dace predominated the catch overall (635 individuals, 71% of total catch), and at both up- and downstream stations (70% and 96% respectively). Gila topminnow made up most of the remainder of the catch (355 individuals). The remainder of the catch was made of five Gila chub encountered in the upper station (Table 6I). Three longfin dace were captured by backpack electrofishing outside the boundaries of the lower fixed station.

RECOMMENDATIONS

The process of acquiring required authorization to access established stations should be initiated early in the sample year in attempt to ensure that all permissions are in hand when the field season begins. A suitable long-term alternate to Gila River station 2-4-3 (Box-O Wash) has been identified and evaluated to eliminate access issues; that new station is “Box Canyon.” The presence of an occupied bald eagle nest near Salt River station 3-1-2 (Goldfield Administrative Site) was previously noted as a potentially limiting factor for future access at that location, but was not an issue in 2010.

ACKNOWLEDGEMENTS

Participation in sampling of Robert W. Clarkson (Reclamation, Glendale AZ), Thomas E. Dowling and Melody Saltzgeber (Arizona State University, Tempe), Brian Moorhead (SRP, Phoenix), and Marcia Radtke (Bureau of Land Management [BLM], Safford AZ) is gratefully acknowledged. Permission to access sites under their jurisdictions was extended by A-Diamond Ranch, Kelvin; BLM, Safford; Central Arizona Water Conservation District, Phoenix; Copper Basin Railway, Hayden; ASARCO Corporation, Hayden; SRP, Phoenix; San Carlos Irrigation Project, Coolidge; and The Nature Conservancy, Tucson. Collections were under permit authority of U.S. Fish and Wildlife Service and the state of Arizona, and any voucher specimens are deposited in the collection of fishes, Arizona State University, Tempe.

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Table 1. Stream, station, date, gear type, effort, and lead entity for sampling activities conducted in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, for sample year 2010 (period July 12, 2010 to January 24, 2011). Stations are identified by 3-digit numeric codes that respectively indicate stream or canal name, reach name, (1 up- to 4 downstream), and station name (1-3 for upper, middle, and lower) (see Clarkson 1996 a-c). Where station location and name have changed from Clarkson 1996 a-c, the corrected (new) name is given. Dates are given as month (01-12) day (01-31) and year (2010-2011). Gear codes, names, and acronyms by category are Entrapment/Entanglement: gill net (G), trammel net (T), hoop net (H), fyke net (F), trap net (TR), minnow trap (M), shock/gill net (SGN), shock/trammel net (STN), experimental gill net (EXPG); Seining: straight seine (SS), bag seine (BS), kick seine (KS), dip net (D); Angling: spin-cast (SC), fly rod (FR), drop line (DL), trotline (TL); Electrofishing: backpack shocker (Bp), boat shocker (Ef), bank shocker (BKS); and Miscellaneous: trammel net/drifted (TND), gill net/drifted (GND), electric seine (ES), dry station (DS) and visual observation (VO). Effort is given in seconds (electrofishing), hours (entrapment/entanglement and angling gears), and haul numbers (seining gears). CAP Canal stations all are associated with pumping plants, which are named for each station, while FCG and SRP canal stations are given as approximate miles downstream from canal origin and a verbal location description.

Stream	Station		Date	Gear	Effort	Lead
San Pedro River (SanP)	1-1-1	Hereford	10 4 2010	Bp	429	M & A
	1-1-2	Lewis Springs	10 4 2010	Bp	684	M & A
	1-1-3	Charleston	10 4 2010	Bp	661	M & A
	1-2-1	Hughes Ranch	10 5 2010	DS		M & A
	1-2-3	Three Links Farm	10 5 2010	Bp	445	M & A
	1-3-1	Aravaipa Creek	10 5 2010	Bp	596	M & A
	1-3-2	Dudleyville	10 5 2010	Bp	270	M & A
	1-3-3	Mouth	10 6 2010	Bp	505	M & A
	Gila River (Gila)	2-1-1	Coolidge Dam	01 18 2011	Bp	613
2-1-1		Coolidge Dam	01 18 2011	T		M & A
2-1-1		Coolidge Dam	01 18 2011	TB	156	M & A
2-1-3		Hook & Line Ranch	01 18 2011	T		M & A
2-1-3		Hook & Line Ranch	01 19 2011	Bp	960	M & A
2-2-1		Dripping Springs Wash	11 29 2010	Bp	1203	M & A
2-2-2		Christmas	11 29 2010	Bp	967	M & A
2-2-3		O'Carroll Canyon	11 29 2010	Bp	905	M & A
2-3-1		San Pedro River	11 29 2010	Bp	831	M & A
2-3-2		Kearny	12 1 2010	Bp	732	M & A
2-3-3		Kelvin	12 1 2010	Bp	656	M & A
2-4-1		A Diamond Ranch	12 1 2010	Bp	879	M & A
2-4-2		Cochran	12 3 2010	Bp	467	M & A
2-4-3	Box Canyon	12 3 2010	Bp	742	M & A	
Salt River (Salt)	3-1-1	Stewart Mountain Dam	11 24 2010	Bp	692	M & A
	3-1-1	Stewart Mountain Dam	11 24 2010	T		M & A
	3-1-2	Goldfield Administrative Site	11 24 2010	Bp	608	M & A
	3-1-2	Goldfield Administrative Site	11 24 2010	T		M & A
	3-1-3	Granite Reef Dam	11 5 2010	Ef	947	M & A
	3-1-3	Granite Reef Dam	11 5 2010	T		M & A
CAP Canal (CAP)	4-1-1	Bouse Hills	07 12 2010	Ef	1097	Reclamation
	4-1-1	Bouse Hills	07 12 2010	M		Reclamation
	4-1-1	Bouse Hills	07 12 2010	T		Reclamation
	4-1-1	Bouse Hills	07 12 2010	TL		Reclamation
	4-1-2	Little Harquahala	07 13 2010	Ef	1341	Reclamation
	4-1-2	Little Harquahala	07 13 2010	M		Reclamation
	4-1-2	Little Harquahala	07 13 2010	T		Reclamation

Table 1. Continued.

Stream	Station		Date	Gear	Effort	Lead
CAP Canal (CAP)	4-1-2	Little Harquahala	07 13 2010	TL		Reclamation
	4-1-3	Hassayampa	07 14 2010	Ef	1016	Reclamation
	4-1-3	Hassayampa	07 14 2010	M		Reclamation
	4-1-3	Hassayampa	07 14 2010	T		Reclamation
	4-1-3	Hassayampa	07 14 2010	TL		Reclamation
	4-2-1	Salt-Gila	10 28 2010	Ef	954	Reclamation
	4-2-1	Salt-Gila	10 28 2010	M		Reclamation
	4-2-1	Salt-Gila	10 28 2010	T		Reclamation
	4-2-1	Salt-Gila	10 28 2010	TL		Reclamation
	4-3-1	Brady	10 19 2010	Ef	978	Reclamation
	4-3-1	Brady	10 19 2010	M		Reclamation
	4-3-1	Brady	10 19 2010	T		Reclamation
	4-3-1	Brady	10 19 2010	TL		Reclamation
	4-3-2	Red Rock	10 18 2010	Ef	917	Reclamation
	4-3-2	Red Rock	10 18 2010	M		Reclamation
	4-3-2	Red Rock	10 18 2010	T		Reclamation
	4-3-2	Red Rock	10 18 2010	TL		Reclamation
	4-3-3	San Xavier	10 17 2010	Ef	857	Reclamation
	4-3-3	San Xavier	10 17 2010	M		Reclamation
	4-3-3	San Xavier	10 17 2010	T		Reclamation
4-3-3	San Xavier	10 17 2010	TL		Reclamation	
SRP South Canal (SRPs)	5-1-1	0.0 Above fish barrier	11 22 2010	BS	5	M & A
	5-2-0	0.0 Below fish barrier	11 21 2010	SS	5	M & A
	5-2-2.5	2.5 Below River road siphon	11 21 2010	T		M & A
	5-2-6.1	6.1 Demossing Station	11 21 2010	VO		M & A
	5-2-9	9.0 Triple Junction	11 21 2010	D	10	M & A
SRP North Canal (SRPn)	6-1-0	0.0 Above fish barrier	01 24 2011	BS	6	M & A
	6-1-0	0.0 Above fish barrier	01 24 2011	SS	1	M & A
	6-2-14.5	14.5 Indian Bend Wash	01 24 2011	Ef	1178	M & A
	6-2-14.5	14.5 Indian Bend Wash	01 24 2011	T		M & A
FCG Canal (FCG)	7-1-0	0.0 Below diversion dam	11 1 2010	Bp	266	M & A
	7-1-0	0.0 Below diversion dam	11 1 2010	SS	12	M & A
	7-2-2.6	2.6 Below China Wash	11 1 2010	SS	10	M & A
	7-2-14.6	14.6 Kenilworth Road bridge	11 1 2010	Bp	183	M & A
	7-2-15.2	15.2 FCG at Pima Lateral	11 1 2010	SS	5	M & A
	7-2-15.3	15.3 Pima Lateral Canal	11 1 2010	D		M & A
	7-2-15.4	15.4 Pima Lateral Feeder Canal	11 1 2010	VO		M & A
Aravaipa Creek (Arav)	8-1-1	Above barrier	10 12 2010	Bp		Reclamation
	8-2-1	Below barrier	10 12 2010	T		Reclamation
	8-2-2	Below barrier	10 12 2010	Bp	910	Reclamation
Cienega Creek (Cien)	9-1-1	Head-Cut	10 27 2010	Bp	557	M & A
	9-1-1	Head-Cut	10 27 2010	SS	1	M & A
	9-1-2	3 Bridges	10 27 2010	Bp	181	M & A

Table 2. Common and scientific names and four-letter species codes of fishes and other aquatic vertebrates encountered during routine monitoring of waters in the Gila River basin, Arizona.

Common Name	Species Name	Species Code
Threadfin shad	<i>Dorosoma petenense</i>	DOPE
Bigmouth buffalo	<i>Ictiobus cyprinella</i>	ICCY
Black buffalo	<i>Ictiobus niger</i>	ICNI
Common carp	<i>Cyprinus carpio</i>	CYCA
Fathead minnow	<i>Pimephales promelas</i>	PIPR
Gila chub	<i>Gila intermedia</i>	GIIN
Goldfish	<i>Carassius auratus</i>	CAAU
Grass carp	<i>Ctenopharyngodon idella</i>	CTID
Loach minnow	<i>Tiaroga cobitis</i>	TICO
Longfin dace	<i>Agosia chrysogaster</i>	AGCH
Red shiner	<i>Cyprinella lutrensis</i>	CYLU
Roundtail chub	<i>Gila robusta</i>	GIRO
Speckled dace	<i>Rhinichthys osculus</i>	RHOS
Desert sucker	<i>Pantosteus clarki</i>	PACL
Hybrid sucker	<i>Pantosteus X Catostomus</i>	HYBR
Sonora sucker	<i>Catostomus insignis</i>	CAIN
Pacu	<i>Colossoma sp</i>	COLO
Black bullhead	<i>Ameiurus melas</i>	AMME
Channel catfish	<i>Ictalurus punctatus</i>	ICPU
Flathead catfish	<i>Pylodictis olivaris</i>	PYOL
Yellow bullhead	<i>Ameiurus natalis</i>	AMNA
Rainbow trout	<i>Oncorhynchus mykiss</i>	ONMY
Gila topminnow	<i>Poeciliopsis occidentalis</i>	POOC
Mosquitofish	<i>Gambusia affinis</i>	GAAF
Sailfin molly	<i>Poecilia latipinna</i>	POLA
Striped bass	<i>Morone saxatilis</i>	MOSA
White bass	<i>Morone chrysops</i>	MOCH
Yellow bass	<i>Morone mississippiensis</i>	MOMI
Black crappie	<i>Pomoxis nigromaculatus</i>	PONI
Bluegill	<i>Lepomis macrochirus</i>	LEMA
Green sunfish	<i>Lepomis cyanellus</i>	LECY
Largemouth bass	<i>Micropterus salmoides</i>	MISA
Redear sunfish	<i>Lepomis microlophus</i>	LEMI
Smallmouth bass	<i>Micropterus dolomieu</i>	MIDO
Undetermined or hybrid sunfish	<i>Lepomis ?</i>	LEPO
Walleye	<i>Sander vitreus (Stizostedion vitreum)</i>	SAVI
Yellow perch	<i>Perca flavescens</i>	PEFL
Blue tilapia	<i>Oreochromis aureus (Tilapia aurea)</i>	ORAU
Mozambique tilapia	<i>Oreochromis mossambicus (Tilapia mossambica)</i>	ORMO
Redbelly tilapia	<i>Tilapia zilli</i>	TIZI
Undetermined cichlid	<i>Tilapia ?</i>	TILA

Table 2. Continued.

Common Name	Species Name	Species Code
American bullfrog	<i>Lithobates catesbeianus (Rana catesbeiana)</i>	LICA
Lowland leopard frog	<i>Lithobates yavapaiensis (Rana yavapaiensis)</i>	LIYA
No fish caught	<i>No fish caught</i>	0000
Sonora mud turtle	<i>Kinosternon sonoriense</i>	KISO
Spiny softshell turtle	<i>Apalone spinifera (Trionyx spinifera)</i>	APSP
Undetermined frog	<i>Lithobates ? (Rana ?)</i>	LITH
Unknown fish species	<i>Unknown fish species</i>	FISH
Unknown species	<i>Unknown species</i>	UNKN

Table 3. Occurrence of fish species captured during sampling activities conducted in behalf a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Native fishes indicated by asterisks. Abbreviations as in Table 1.

Species	SanP	Gila	Salt	CAP	SRPs	SRPn	FCG	Arav	Cien	All sites
Threadfin shad	0	0	0	0	X	X	X	0	0	X
Common carp	X	X	0	X	X	X	X	0	0	X
Gila chub*	0	0	0	0	0	0	0	0	X	X
Grass carp	0	0	0	X	0	X	0	0	0	X
Loach minnow*	0	0	0	0	0	0	0	X	0	X
Longfin dace*	X	0	X	0	0	0	0	X	X	X
Red shiner	X	X	X	X	X	X	X	X	0	X
Roundtail chub*	0	0	X	0	0	0	0	X	0	X
Desert sucker*	X	0	X	0	X	X	X	X	0	X
Sonora sucker*	0	0	X	0	X	X	0	X	0	X
Black bullhead	X	0	0	0	0	0	0	0	0	X
Channel catfish	0	X	0	X	X	X	X	0	0	X
Flathead catfish	0	X	0	0	X	X	X	0	0	X
Yellow bullhead	X	0	X	0	0	0	0	X	0	X
Rainbow trout	0	0	0	0	X	X	0	0	0	X
Gila topminnow*	0	0	0	0	0	0	0	0	X	X
Mosquitofish	X	X	X	0	X	X	X	0	0	X
Striped bass	0	0	0	X	0	0	0	0	0	X
Yellow bass	0	0	X	0	0	X	0	0	0	X
Bluegill	0	0	X	X	X	X	0	0	0	X
Green sunfish	X	X	X	0	0	X	0	X	0	X
Largemouth bass	0	0	X	X	X	X	0	0	0	X
Redear sunfish	0	0	0	X	0	0	0	0	0	X
Smallmouth bass	0	0	0	X	0	0	0	0	0	X
Undetermined or hybrid sunfish	0	0	X	0	0	0	0	0	0	X
Walleye	0	0	0	0	X	X	0	0	0	X
Blue tilapia	0	0	0	0	X	X	0	0	0	X
Mozambique tilapia	0	0	0	0	X	0	0	0	0	X
Total species (taxa) ¹	8	6	11	9	14	16	7	8	3	27
Native	2	0	4	0	2	2	1	5	3	7
Non-native	6	6	7	9	12	14	6	3	0	20
Percent native	25	0	36	0	14	13	14	63	100	26

¹ Total species (taxa) excludes undetermined or hybrid sunfish, which are assumed to be subsumed into the individual species.

Table 4. Total numbers of fishes captured during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Native fishes indicated by asterisks. Ab and Bb respectively indicate Above and Below electrical fish barriers on SRPn, SRPs, and FCG canals.

Species					SRPs		SRPn		FCG				Total
	SanP	Gila	Salt	CAP	Ab	Bb	Ab	Bb	Ab	Bb	Arav	Cien	
Threadfin shad						19		4		1			24
Common carp	3	8		21	15		4	3	1	1			56
Gila chub*												5	5
Grass carp				22				1					23
Loach minnow*											3		3
Longfin dace*	33		9								181	635	858
Red shiner	3	76	45	9	5	22	1	139	15	52	25		392
Roundtail chub*			1								1		2
Desert sucker*	6		771		6	4	43	4		1	148		983
Sonora sucker*			111		99	35	122	5			37		409
Black bullhead	9												9
Channel catfish		42		22	62	29	361	2	129	1289			1936
Flathead catfish		14			23	4	66	1	2	5			115
Yellow bullhead	3		43								83		129
Rainbow trout					3		13						16
Gila topminnow*												255	255
Mosquitofish	5	52	16			3		1	19	43			139
Striped bass				31									31
Yellow bass			3				11	2					16
Bluegill			39	23	1		5	12					80
Green sunfish	2	1	5					1			1		10
Largemouth bass			95	18	38	14	97	7					269
Redear sunfish				17									17
Smallmouth bass				1									1
Undetermined or hybrid sunfish			5										5
Walleye					1		7						8
Blue tilapia					23		1						24
Mozambique tilapia					2								2
Total	64	193	1143	164	278	130	731	182	166	1392	479	895	5817
Total natives	39	0	892	0	105	39	165	9	0	1	370	895	2515
Total nonnatives	25	193	251	164	173	91	566	173	166	1391	109	0	3302
Percent native	61	0	78	0	38	30	23	5	0	< 1	77	100	43

Table 5. Fish species richness determined by sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Species counts exclude undetermined cichlids (see notes accompanying Table 1). See Table 1 for reach and station names (see also Clarkson 1996 a-c). Distances between stations and reaches are variable. Totals for each reach (and for all reaches) followed by number of native and non-native (n/nn) species; NS indicates no sample during SY 2010; dash (--) indicates designated reach or station does not exist on that stream/canal. Reaches along SRPn, SRPs, and FCG canals are artificial; canal reaches 1 are above respective electrical fish barriers and reaches 2, 3, and 4 are below; see also Clarkson (1996 a-c).

Reach-Station	SanP	Gila	Salt	CAP	SRPs	SRPn	FCG	Arav	Cien
1-1	2	--	6	6	12	12	5	NS	3
1-2	6	--	8	4	--	--	--	--	2
1-3	4	--	8	4	--	--	--	--	--
total	6	--	11	8	12	12	5	NS	3
n/nn	2/4		4/7	0/8	2/10	2/10	0/5		3/0
2-1	NS	5	--	4	2	13	4	2	--
2-2	NS	5	--	--	8	NS	2	7	--
2-3	2	3	--	--	2	NS	3	--	--
2-4	--	--	--	--	1	NS	2	--	--
total	2	6	--	4	8	13	7	8	--
n/nn	1/1	0/6		0/4	2/6	2/11	1/6	5/3	
3-1	3	2	--	4	--	--	--	--	--
3-2	1	2	--	4	--	--	--	--	--
3-3	NS	1	--	4	--	--	--	--	--
total	3	3	--	7			--	--	--
n/nn	1/2	0/3		0/7					
4-1	--	1	--	--	--	--	--	--	--
4-2	--	1	--	--	--	--	--	--	--
4-3	--	4	--	--	--	--	--	--	--
total	--	5	--	--	--	--	--	--	--
n/nn		0/5							
Total all reaches	8	6	11	9	14	16	7	8	3
n/nn	2/6	0/6	4/7	0/9	2/12	2/14	1/6	5/3	3/0
Percent native	25	0	36	0	14	13	14	63	100

Table 6A. Fish catch at San Pedro River stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2, data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; subtotals and total number are for each age class.

Species	Age	Reach			Reach			Reach			Totals
		1-1-1	1-1-2	1-1-3	Sum	1-2-3	Sum	1-3-1	1-3-2	Sum	
Common carp	1	2	1	0	3	0	0	0	0	0	3
Longfin dace*		0	1	0	1	4	4	24	4	28	33
Red shiner		0	0	0	0	0	0	3	0	3	3
Desert sucker*	1	0	2	4	6	0	0	0	0	0	6
Black bullhead	0	0	3	1	4	0	0	0	0	0	4
	1	2	0	2	4	1	1	0	0	0	5
Yellow bullhead	1	0	0	0	0	0	0	3	0	3	3
Mosquitofish		0	3	2	5	0	0	0	0	0	5
Green sunfish	1	0	1	1	2	0	0	0	0	0	2
Totals		4	11	10	25	5	5	30	4	34	64

Table 6B. Fish catch at Gila River stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to December 3, 2011). Fish species listed alphabetically using standard abbreviations in Table 2; data are total fish or number of young-of-year (age-0) followed by number of older age classes (age \geq 1), if specified; subtotals and total number are for each age class.

Species	Age	Reach				Reach				Reach			Totals	
		2-2-1	2-2-2	2-2-3	Sum	2-3-1	2-3-2	2-3-3	Sum	2-4-1	2-4-2	2-4-3		Sum
Common carp	1	0	1	4	5	0	0	0	0	0	3	0	3	8
Red shiner		67	6	2	75	0	0	0	0	0	0	1	1	76
Channel catfish	0	15	0	0	15	1	1	0	2	0	0	4	4	21
	1	0	2	0	2	0	0	0	0	0	0	19	19	21
Flathead catfish	0	1	0	0	1	1	0	1	2	1	0	0	1	4
	1	1	3	3	7	0	0	0	0	2	0	1	3	10
Mosquitofish		39	7	0	46	0	5	0	5	0	0	1	1	52
Green sunfish	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Totals		124	19	9	152	2	6	1	9	3	3	26	32	193

Table 6C. Fish catch at Salt River stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2, data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; total number is for each age class.

Species	Age	Reach			Sum	Totals
		3-1-1	3-1-2	3-1-3		
Longfin dace*		9	0	0	9	9
Red shiner		0	1	44	45	45
Roundtail chub*	1	0	0	1	1	1
Desert sucker*	0	98	593	0	691	691
	1	0	80	0	80	80
Sonora sucker*	0	35	51	0	86	86
	1	0	18	7	25	25
Yellow bullhead	0	1	32	0	33	33
	1	0	10	0	10	10
Mosquitofish		4	6	6	16	16
Yellow bass	1	0	0	3	3	3
Bluegill	0	0	4	7	11	11
	1	0	18	10	28	28
Green sunfish	0	0	0	1	1	1
	1	0	2	2	4	4
Largemouth bass	0	7	3	50	60	60
	1	0	20	15	35	35
Undetermined or hybrid sunfish	0	0	0	4	4	4
	1	0	0	1	1	1
Totals		154	838	151	1143	1143

Table 6D. Fish catch at Central Arizona Project (CAP) canal stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2; data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; subtotals and total number are for each age class.

Species	Age	Reach			Reach			Reach			Totals	
		4-1-1	4-1-2	4-1-3	Sum	4-2-1	Sum	4-3-1	4-3-2	4-3-3		Sum
Common carp	1	0	1	9	10	0	0	11	0	0	11	21
Grass carp	1	0	4	4	8	6	6	5	3	0	8	22
Red shiner		1	0	0	1	8	8	0	0	0	0	9
Channel catfish	0	1	0	0	1	0	0	0	0	0	0	1
	1	6	1	10	17	3	3	0	0	1	1	21
Striped bass	0	2	0	0	2	3	3	15	0	0	15	20
	1	8	0	0	8	0	0	0	3	0	3	11
Bluegill	0	0	0	0	0	0	0	0	0	1	1	1
	1	17	0	0	17	0	0	1	1	3	5	22
Largemouth bass	0	0	1	0	1	0	0	0	4	0	4	5
	1	3	0	1	4	0	0	0	6	3	9	13
Redear sunfish	1	0	0	0	0	0	0	0	0	17	17	17
Smallmouth bass	0	1	0	0	1	0	0	0	0	0	0	1
Totals		39	7	24	70	20	20	32	17	25	74	164

Table 6E. Fish catch at Salt River Project (SRP) South Canal stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2, data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; total number is for each age class. See Table 1 for sampling dates.

Species	Age	Reach					Reach		Totals
		5-1-1	Sum	5-2-0	5-2-2.5	5-2-6.1	5-2-9	Sum	
Threadfin shad	0	0	0	0	0	0	16	16	16
	1	0	0	0	0	0	3	3	3
Common carp	1	15	15	0	0	0	0	0	15
Red shiner		5	5	0	0	0	22	22	27
Desert sucker*	0	2	2	0	0	0	3	3	5
	1	4	4	0	0	0	1	1	5
Sonora sucker*	0	3	3	0	0	0	0	0	3
	1	96	96	26	0	3	6	35	131
Channel catfish	0	0	0	0	0	0	12	12	12
	1	62	62	12	0	0	5	17	79
Flathead catfish	0	0	0	0	0	0	1	1	1
	1	23	23	0	0	0	3	3	26
Rainbow trout	1	3	3	0	0	0	0	0	3
Mosquitofish		0	0	0	0	0	3	3	3
Bluegill	1	1	1	0	0	0	0	0	1
Largemouth bass	0	0	0	0	0	0	3	3	3
	1	38	38	0	5	6	0	11	49
Blue tilapia	1	23	23	0	0	0	0	0	23
Mozambique tilapia	1	2	2	0	0	0	0	0	2
Walleye	1	1	1	0	0	0	0	0	1
Totals		278	278	38	5	9	78	130	408

Table 6F. Fish catch at Salt River Project (SRP) North (Arizona) Canal stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2, data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; total number is for each age class. See Table 1 for sampling dates.

Species	Age	Reach		Reach		Totals
		6-1-0	Sum	6-2-14.5	Sum	
Threadfin shad	0	0	0	2	2	2
	1	0	0	2	2	2
Common carp	1	4	4	3	3	7
Grass carp	1	0	0	1	1	1
Red shiner		1	1	139	139	140
Desert sucker*	0	22	22	0	0	22
	1	21	21	4	4	25
Sonora sucker*	0	25	25	1	1	26
	1	97	97	4	4	101
Channel catfish	0	15	15	2	2	17
	1	346	346	0	0	346
Flathead catfish	1	66	66	1	1	67
Rainbow trout	1	13	13	0	0	13
Mosquitofish		0	0	1	1	1
Yellow bass	1	11	11	2	2	13
Bluegill	0	0	0	5	5	5
	1	5	5	7	7	12
Green sunfish	1	0	0	1	1	1
Largemouth bass	0	0	0	3	3	3
	1	97	97	4	4	101
Blue tilapia	1	1	1	0	0	1
Walleye	1	7	7	0	0	7
Totals		731	731	182	182	913

Table 6G. Fish catch at Florence Casa Grande (FCG) Canal stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2, data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; total number is for each age class. See Table 1 for sampling dates.

Species	Age	Reach					Reach		Totals	
		7-1-0	Sum	7-2-2.6	7-2-14.6	7-2-15.2	7-2-15.3	7-2-15.4		Sum
Threadfin shad	1	0	0	0	0	1	0	0	1	1
Common carp	1	1	1	0	1	0	0	0	1	2
Red shiner		15	15	52	0	0	0	0	52	67
Desert sucker*	1	0	0	0	0	0	1	0	1	1
Channel catfish	0	124	124	23	0	1264	0	0	1287	1411
	1	5	5	1	0	0	1	0	2	7
Flathead catfish	0	0	0	5	0	0	0	0	5	5
	1	2	2	0	0	0	0	0	0	2
Mosquitofish		19	19	41	1	1	0	0	43	62
Totals		166	166	122	2	1266	2	0	1392	1558

Table 6H. Fish catch at Aravaipa Creek stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2, data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; total number is for each age class. See Table 1 for sampling dates.

Species	Age	Reach		
		8-2-1	Sum	Totals
Loach minnow*		3	3	3
Longfin dace*		181	181	181
Red shiner		25	25	25
Roundtail chub*	0	1	1	1
Desert sucker*	0	113	113	113
	1	35	35	35
Sonora sucker*	0	1	1	1
	1	36	36	36
Yellow bullhead	0	40	40	40
	1	43	43	43
Green sunfish	1	1	1	1
Totals		479	479	479

Table 6I. Fish catch at Cienega Creek stations (see Table 1) during sampling in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, during sample year 2010 (period July 12, 2010 to January 24, 2011). Fish species listed alphabetically using standard abbreviations in Table 2, data are total fish or number of young-of-year (age-0) followed by number of older age classes (age ≥ 1), if specified; total number is for each age class. See Table 1 for sampling dates.

Species	Age	Reach			Totals
		9-1-1	9-1-2	Sum	
Gila chub*	0	5	0	5	5
Longfin dace*		609	26	635	635
Gila topminnow*		254	1	255	255
Totals		868	27	895	895