

CENTRAL ARIZONA PROJECT FISH MONITORING FINAL ANNUAL REPORT

SUMMARY OF SAMPLE YEAR 2009 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 to

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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) 2009 (period July 7, 2009 to January 11, 2010). 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 will not be reiterated in detail here. In general, streams were stratified according to geomorphology or flow characteristics, and replicate 200-m "quantitative" 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 (1998) 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, (9) Aravaipa Creek below the fish barriers, and (10) 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), 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 to 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 25 fish taxa was captured during SY 2009 monitoring (Table 3). No new taxa were detected. Three species were taken in Cienega Creek, six in Salt River and FCG, seven in Aravaipa Creek, eight in Gila River, nine in CAP, 10 in San Pedro, 11 in SRPs, and 12 were taken in SRPn (Table 3). Six native species (24% of total taxa) were collected: Gila chub, longfin dace, roundtail chub, desert sucker, Sonora sucker, and Gila topminnow. Four were in Aravaipa Creek, three in SRPs and Cienega Creek, two in San Pedro River and SRPn, one in Salt River, and none was in Gila River, CAP, or FCG. Natives comprised 17 to 100% of all species among streams where natives occurred. The remaining 19 taxa were non-native, which among streams numbered between 0 (Cienega) and 10 (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 quantitative and qualitative sampling data. Data collected by qualitative means in SanP, Gila, and Salt rivers and CAP canal are presented in Table 7. Native fishes overall accounted for 56% of 6,014 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, CAP and FCG canals) to 100% (Cienega Creek). San Pedro was 52% native, Salt River was 4% native, and Aravaipa Creek was 95% native species. SRPs and SRPn samples were 41 and 38% natives above the electrical fish barriers, respectively, and 0 and 29% natives below those structures (Table 4).

Community structure differed substantially among waters, reaches, and stations (Tables 4 and 5). Native longfin dace was the most abundant species in combined samples from the San Pedro River (followed by mosquitofish). Mosquitofish followed by red shiner were the most abundant species from samples in the Gila River. Largemouth bass was most abundant in the Salt River catch (followed by bluegill). Redear sunfish followed by largemouth bass were the most abundant fishes in the CAP Canal. Native Sonora sucker predominated in samples above the electrical fish barriers in SRPs and SRPn (followed by red shiner in SRPs and by channel catfish in SRPn). Red shiner predominated the catch below the barrier on SRPn (followed by native Sonora sucker). No sample was taken downstream from the electrical barrier on SRPs. In FGC mosquitofish predominated the catch above the barrier (followed by threadfin shad), while threadfin shad (followed by channel catfish) predominated below the barrier. Native longfin dace was the most abundant species in both Aravaipa and Cienega creeks, followed by mosquitofish and native Gila topminnow, in these two streams, respectively.

SAN PEDRO RIVER

Sampling Notes and Deviations from Protocol – Sampling was led by Marsh & Associates (M&A) between October 13 and 15, 2009 (Table 1). Seven of eight currently available stations were sampled (station 1-2-2 was eliminated from the protocol in 2005). The sites at Hughes Ranch (station 1-2-1) and Mouth (1-3-3) were dry. Backpack electrofishing was conducted at all sites.

Species Richness and Distribution – Ten species were captured in the San Pedro River (Tables 5 and 6A). Captures of red shiner and channel catfish at Charleston (station 1-1-3) represent new records for that reach of stream. All ten species were taken in the upper reach, one in the middle, and one in the lower. Two natives were encountered (longfin dace and desert sucker). Longfin dace was found at five stations, while desert sucker was collected at two. Native lowland leopard frog and nonnative bullfrog tadpoles and northern crayfish were throughout the stream.

Eight non-natives were in the upper reach, none in the middle, and none in the lower. Common carp, fathead minnow, red shiner, black bullhead, channel catfish, mosquitofish, green sunfish, and largemouth bass were found in the upper reach.

Assemblage Structure – The two native species dominated the catch overall (52% of a total catch of 1277 individuals), and at all three reaches (Tables 4 and 6A). Native longfin dace was the most abundant fish species overall (48% of total numbers) and predominated the catch in all three reaches (Table 6A). Desert sucker was represented by 52 specimens collected in the upstream reach.

Mosquitofish was the most abundant non-native and the second most abundant species overall, making up 36% of the catch. Fathead minnow contributed about 5% to the total catch followed by black bullhead (about 2%). Other species each contributed 1% or less to the total numbers.

GILA RIVER

Sampling Notes and Deviations from Protocol – Reaches were sampled between November 15 and 17, 2009 (Table 1). Collections were made by M&A. Nine of eleven currently available stations were sampled; no stations were sampled in the upper reach because authorization to access these sites was unavailable from the land owner (San Carlos Apache Tribe). 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 but one site and was supplemented with trammel netting at Dripping Springs Wash (2-2-1). San Pedro River (station 2-3-1) was sampled by dip net.

Species Richness and Distribution – Eight fish species were captured in the Gila River (Tables 5 and 6B). No new species were detected. Seven were taken in the upper-middle reach, six in the lower-middle, and six 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 seven years (Marsh and Kesner 2007). Non-native larval and adult bullfrog and northern crayfish were throughout the stream.

Assemblage Structure – Threadfin shad, red shiner, channel catfish, flathead catfish, and mosquitofish were found in all reaches. Common carp was in upper-middle and lower reaches, black crappie was in the upper-middle, and green sunfish was in the lower-middle reach. Mosquitofish was the most abundant species overall (53% of a total catch of 511 individuals) and was predominant in the upper-middle and lower reaches. Red shiner was second in overall abundance ((29% of catch) and was predominant in the lower-middle reach. Channel catfish was third (9%), followed by flathead catfish (4%). Threadfin shad was 3%, common carp 2%, and black crappie and green sunfish each contributed less than 1% of total catch.

SALT RIVER

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A with assistance from Reclamation on December 18, 2009 (Table 1). The two upstream stations, Stewart Mountain Dam (3-1-1) and Goldfield Administrative Site (3-1-2, formerly Blue Point RS), could not be sampled because of atypically high flows. As was the case in 2008, presence of an occupied bald eagle *Haliaeetus leucocephalus* nest near the latter site could result in future access limitations. A boat-mounted electrofisher and trammel nets were used to sample the lower station.

Species Richness and Distribution – Six fish species were taken from the Salt River (Table 5 and 6C). No new species were detected. Sonora sucker was the only native species encountered. Nonnative yellow bullhead, bluegill, green sunfish, largemouth bass, and blue tilapia also were captured.

Assemblage Structure – Total catch from the Salt River was 81 individuals. The native fish comprised about 3% of the total catch (Tables 4 and 6C). In previous years native longfin dace and desert sucker were also collected, but both were from stations that were not sampled in 2008 or 2009 (Marsh & Kesner 2007, 2008; Kesner & Marsh 2009). Nonnative largemouth bass was the most abundant species captured overall (86% of total catch), followed by bluegill (5%), native Sonora sucker (3%), and green sunfish (2%). One yellow bullhead and one blue tilapia were also captured each contributing about 1% to the total catch.

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 7 to 9, 2009 and the middle and lower reaches between November 10 and 13, 2009 (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. Six species were taken from the upper reach, five from the Salt-Gila station (middle reach), and seven in the downstream reach (Tables 5 and 6D). Grass carp, common carp, and channel catfish were taken from all reaches. Striped bass was in middle and lower, and largemouth bass in upper and lower reaches. Four species each occurred in only one reach: bluegill and redear sunfish (lower), green sunfish (upper), and smallmouth bass (middle).

Assemblage Structure – Redear sunfish was the most abundant species overall (32% of total catch), followed by largemouth bass (24%) and striped bass (12%) in the sample of 271 individuals from the CAP Canal (Table 6D). Common carp and grass carp were 10% and 11% of total catch, respectively, channel catfish about 6%, bluegill 3%, and green sunfish about 1% of catch. A single smallmouth bass was captured in the middle reach.

Grass carp was the predominant species in the upper reach (31% of 55 individuals), followed by common carp (20%), channel catfish and striped bass (15 and 16%, respectively), largemouth bass (13%), and green sunfish (5%). Striped bass was the most abundant fish in the middle reach (76% of 21 individuals), grass carp (10%), and common carp, channel catfish, and smallmouth bass (5% each). Redear sunfish dominated the catch in the lower reach (46% of 195 individuals), followed by largemouth bass (29%), common carp (8%), grass carp (6%), and bluegill (5%). Striped bass was about 4%, channel catfish 3%, and bluegill less than 1% of the catch in the lower reach.

SRP SOUTH CANAL

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A with assistance from Reclamation and SRP on November 30, 2009 (Table 1). The upper reach (station 5-1-1) above the electrical fish barrier was sampled during routine monitoring with bag and straight seines. Water operations did not provide an opportunity to sample the lower reach (stations downstream of the barrier). Subsamples of live roundtail chub, Sonora sucker, channel catfish, and largemouth bass were taken by J. Sorenson and D. Ward (AZGFD). There was an unverified report of Pacu *Colossoma* sp. from SRPs near canal mile 6, which if confirmed would represent the first record of this South American characid from the SRP canal system.

Species Richness and Distribution – Eleven species including three natives were captured from above the barrier on the SRPs Canal (Tables 4 and 5). No new species were detected. Native roundtail chub, desert sucker, and Sonora sucker, plus non-native common carp, red shiner, channel catfish, flathead catfish, rainbow trout, mosquitofish, largemouth bass, and blue tilapia were encountered.

Assemblage Structure – Native fishes comprised 41% of the total catch (494 fish) above the fish barrier (Table 6E), and Sonora sucker, the most abundant species overall, accounted for 40% of the total. Native roundtail chub was about 1% and desert sucker less than 1% of the catch.

Among non-natives, red shiner was the most abundant and the second most common overall (32% of catch), followed by channel catfish (12%), largemouth bass (6%), common carp (5%), and flathead catfish (2%). Rainbow trout, mosquitofish, and blue tilapia each contributed 1% or less to the total catch.

SRP NORTH (ARIZONA) CANAL

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A with assistance from Reclamation and SRP on January 11, 2010 (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, experimental gill nets, 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 – Twelve 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). Eight species were taken above the electrical fish barrier and six were collected from below. Native Sonora sucker, plus non-native channel catfish, green sunfish, and largemouth bass were collected above and below the barrier. Common carp, native roundtail chub, flathead catfish, bluegill, and blue tilapia were encountered above but not below the barrier, while grass carp, mosquitofish, and green sunfish were taken below but not above.

Assemblage Structure – Native fishes collectively comprised about 31% of the total number of 692 individuals taken from the SRPn Canal (Table 4). Non-native red shiner was the predominant species overall (34% of total catch) followed by native Sonora sucker (31%). Native roundtail chub was less than 1% of the catch. Mosquitofish was the third most abundant species overall (15% of total catch), followed by channel catfish and largemouth bass (each 6%), and grass carp (5%). Common carp, flathead catfish, bluegill, green sunfish, and blue tilapia each comprised 1% or less of the total catch.

Above the fish barrier native Sonora sucker was the most abundant species captured (37% of 151 individuals), followed by non-native channel catfish (27%), largemouth bass (21%), bluegill (5%) and flathead catfish (4%). Common carp and blue tilapia each were about 2% of the catch, and native roundtail chub was about 1% of the total catch above the barrier (Table 6F).

Below the fish barrier, nonnative red shiner was the dominant species (43% of 541 individuals captured), followed by native Sonora sucker (29%), and nonnative mosquitofish (19%). Grass carp comprised 7% of the catch and other species, channel catfish, green sunfish, and largemouth bass each was about 1% or less 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 October 25, 2009 (Table 1). Six 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 five 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). 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. In addition to the four stations on the main FCG Canal, we sampled the Pima Lateral Canal with dip nets; the Pima Lateral Feeder Canal was dry.

Species Richness and Distribution – Six species were taken from the Florence-Casa Grande Canal (Tables 4 and 5); none was native. Five species were collected above and six below the electric fish barrier at China Wash. Threadfin shad was the most abundant species overall (41% of a total catch of 306 individuals) and was the most abundant species only at China Wash; mosquitofish (28%) followed by channel catfish (24) were the next most numerous fishes. A single non-native, juvenile spiny softshell turtle was taken below the turnout at canal mile 0 and northern crayfish were common throughout.

Assemblage Structure – No native species were represented in the total sample of 306 individuals from the FCG Canal (Table 4). Above the electrical fish barrier, the catch was predominated by mosquitofish (61%) followed by threadfin shad (36%). Two red shiner (1%), and one each (<1%) channel catfish and flathead catfish also were captured. Below the electrical fish barrier, threadfin shad predominated (45%), followed by channel catfish (43%) and red shiner (8%). Two common carp (1%), four flathead catfish (2%), and a single mosquitofish (<1%) constituted the remainder of the catch below the barrier (Table 6G).

ARAVAIPA CREEK

Sampling Notes and Deviations from Protocol – Sampling was performed by Reclamation with M&A assistance on October 5, 2009 (Table 1). Two reaches were sampled during routine monitoring: one comprised of a single site 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 qualitatively by backpack electrofishing, and the pool site below the barrier was sampled qualitatively by trammel net. The 200-m fixed station was sampled by backpack electrofishing. There were no deviations from standard protocol.

Species Richness and Distribution – Seven species including native longfin dace, roundtail chub, desert sucker, and Sonora sucker, plus non-native red shiner, yellow bullhead, and mosquitofish were taken from Aravaipa Creek (Tables 4 and 5). Five species excluding the two suckers were above the barrier and all seven were below that structure. Longfin dace was the most abundant species overall and comprised 94% of the total catch of 1348 individuals (Table 6H), followed by mosquitofish (3%) and red shiner (2%); other species each were <1% of total catch. Lowland leopard frog adults were encountered in the reach downstream from the barrier.

Assemblage Structure – Only eight individuals were captured in qualitative sampling above the barrier: three longfin dace, two red shiner, and one each of roundtail chub, yellow bullhead, and mosquitofish (Table 6H). Below the barrier a single adult roundtail chub was captured from the pool site. The quantitative sample below the barrier was predominated by longfin dace (94% of 1339 fish, Table 6H), followed by mosquitofish (3%) and red shiner (2%). Other species were roundtail chub, desert sucker, Sonora sucker, and yellow bullhead, each of which contributed <1% to the total catch.

CIENEGA CREEK

Sampling Notes and Deviations from Protocol – Sampling was performed by M&A on September 16, 2009 (Table 1). This was the third 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 for location data). Both stations were sampled using a backpack electrofisher and a straight seine; 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 a pool upstream of the upper station. Two adult lowland leopard frog were encountered in the lower station.

Assemblage Structure – Native longfin dace dominated the catch overall (972 individuals, 94% of total catch), and at both up- and downstream stations (93% and 98% respectively). Gila topminnow made up most of the remainder of the catch except for a single adult Gila chub encountered in a pool at the upper station (Table 6I).

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.” Presence of an occupied bald eagle nest near Salt River station 3-1-2 (Goldfield Administrative Site) could potentially limit future access at that location, so a suitable alternate site should be identified as a contingency.

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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 2009 (period July 7, 2009 to January 11, 2010). Stations are identified by 3-digit numeric codes that respectively indicate stream or canal name, reach name, (1-up to 4-down-stream), 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 (2009-2010). 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); tote barge shocker (TB); 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 stations all are associated with pumping plants, which are named for each station, while FCG and SRP 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 13 2009	Bp	904.0	Marsh & Associates
	1-1-2	Lewis Springs	10 13 2009	Bp	1081.0	M&A
	1-1-3	Charleston	10 13 2009	Bp	986.0	M&A
	1-2-1	Hughes Ranch	10 14 2009	DS		M&A
	1-2-3	Three Links Farm	10 14 2009	Bp	531.0	M&A
	1-3-1	Aravaipa Creek	10 14 2009	Bp	449.0	M&A
	1-3-2	Dudleyville	10 15 2009	Bp	311.0	M&A
	1-3-3	Mouth	10 15 2009	DS		M&A
	Gila River (Gila)	2-2-1	Dripping Springs Wash	11 15 2009	Bp	790.0
2-2-1		Dripping Springs Wash	11 15 2009	T	3.0	M&A
2-2-2		Christmas	11 15 2009	Bp	883.0	M&A
2-2-3		O'Carroll Canyon	11 15 2009	Bp	612.0	M&A
2-3-1		San Pedro River	11 15 2009	D	40.0	M&A
2-3-2		Kearny	11 15 2009	Bp	719.0	M&A
2-3-3		Kelvin	11 16 2009	Bp	553.0	M&A
2-4-1		A Diamond Ranch	11 16 2009	Bp	794.0	M&A
2-4-2		Cochran	11 16 2009	Bp	545.0	M&A
Salt River (Salt)	2-4-3	Box Canyon	11 17 2009	Bp	764.0	M&A
	3-1-3	Granite Reef Dam	12 18 2009	Ef	1190.0	M&A
	3-1-3	Granite Reef Dam	12 18 2009	T	3.5	M&A
CAP Canal (CAP)	4-1-1	Bouse Hills	07 7 2009	Ef	893.0	Reclamation
	4-1-1	Bouse Hills	07 7 2009	M	58.0	Reclamation
	4-1-1	Bouse Hills	07 7 2009	T	130.5	Reclamation
	4-1-1	Bouse Hills	07 7 2009	TL	275.5	Reclamation
	4-1-2	Little Harquahala	07 8 2009	Ef	764.0	Reclamation
	4-1-2	Little Harquahala	07 8 2009	M	60.0	Reclamation
	4-1-2	Little Harquahala	07 8 2009	T	130.9	Reclamation
	4-1-2	Little Harquahala	07 8 2009	TL	285.0	Reclamation
	4-1-2	Little Harquahala	07 9 2009	T	14.4	Reclamation
	4-1-3	Hassayampa	07 9 2009	Ef	666.0	Reclamation
	4-1-3	Hassayampa	07 9 2009	M	58.0	Reclamation
	4-1-3	Hassayampa	07 9 2009	T	112.3	Reclamation
	4-1-3	Hassayampa	07 9 2009	TL	277.1	Reclamation
	4-2-1	Salt-Gila	11 13 2009	Ef	758.0	Reclamation
	4-2-1	Salt-Gila	11 13 2009	M	60.0	Reclamation

Table 1. Continued

Stream	Station		Date	Gear	Effort	Lead
CAP Canal (CAP)	4-2-1	Salt-Gila	11 13 2009	T	146.0	Reclamation
	4-3-1	Brady	11 12 2009	Ef	552.0	Reclamation
	4-3-1	Brady	11 12 2009	M	60.0	Reclamation
	4-3-1	Brady	11 12 2009	T	134.6	Reclamation
	4-3-1	Brady	11 12 2009	TL	323.0	Reclamation
	4-3-2	Red Rock	11 11 2009	Ef	540.0	Reclamation
	4-3-2	Red Rock	11 11 2009	M	64.0	Reclamation
	4-3-2	Red Rock	11 11 2009	T	129.1	Reclamation
	4-3-2	Red Rock	11 11 2009	TL	304.0	Reclamation
	4-3-3	San Xavier	11 10 2009	Ef	746.0	Reclamation
	4-3-3	San Xavier	11 10 2009	M	60.5	Reclamation
	4-3-3	San Xavier	11 10 2009	T	139.4	Reclamation
SRP South Canal (SRPs)	4-3-3	San Xavier	11 10 2009	TL	346.8	Reclamation
	5-1-1	0.0 Above fish barrier	11 30 2009	BS	3.0	M&A
SRP North Canal (SRPn)	5-1-1	0.0 Above fish barrier	11 30 2009	SS	3.0	M&A
	6-1-0	0.0 Above fish barrier	01 11 2010	BS	5.0	M&A
FCG Canal (FCG)	6-1-0	0.0 Above fish barrier	01 11 2010	SS	2.0	M&A
	6-2-14.5	14.5 Indian Bend Wash	01 11 2010	Ef	1633.0	M&A
	6-2-14.5	14.5 Indian Bend Wash	01 11 2010	EXPG	1.7	M&A
	6-2-14.5	14.5 Indian Bend Wash	01 11 2010	T	3.7	M&A
Aravaipa Creek (Arav)	7-1-0	0.0 Below diversion dam	10 25 2009	Bp	266.0	M&A
	7-2-14.6	14.6 Kenilworth Road bridge	10 25 2009	Bp	171.0	M&A
	7-2-15.2	15.2 FCG at Pima Lateral	10 25 2009	SS	5.0	M&A
	7-2-15.3	15.3 Pima Lateral Canal	10 25 2009	D	5.0	M&A
	7-2-15.4	15.4 Pima Lateral Feeder Canal	10 25 2009	DS		M&A
	7-2-2.6	2.6 Below China Wash	10 25 2009	SS	9.0	M&A
Cienega Creek (Cien)	8-1-1	Above barrier	10 5 2009	Bp	34.0	M&A
	8-2-1	Below barrier	10 5 2009	Bp	1159.0	M&A
Cienega Creek (Cien)	9-1-1	Head-Cut	09 16 2009	Bp	361.0	M&A
	9-1-1	Head-Cut	09 16 2009	SS	2.0	M&A
	9-1-2	3 Bridges	09 16 2009	Bp	597.0	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>	STVI
Walleye	<i>Sander vitreus (Stizostedion vitreum)</i>	SAVI
Yellow perch	<i>Perca flavescens</i>	PEFL
Blue tilapia	<i>Oreochromis aureus (Tilapia aurea)</i>	TIAU
Blue tilapia	<i>Oreochromis aureus (Tilapia aurea)</i>	ORAU
Mozambique tilapia	<i>Oreochromis mossambicus (Tilapia mossambica)</i>	TIMO
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>	RACA
American bullfrog	<i>Lithobates catesbeianus (Rana catesbeiana)</i>	LICA
Lowland leopard frog	<i>Lithobates yavapaiensis (Rana yavapaiensis)</i>	RAYA
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>	TRSP
Spiny softshell turtle	<i>Apalone spinifera (Trionyx spinifera)</i>	APSP
Undetermined frog	<i>Lithobates ? (Rana ?)</i>	LITH
Undetermined frog	<i>Lithobates ? (Rana ?)</i>	RANA
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 2009 (period July 7, 2009 to January 11, 2010). Native fishes indicated by asterisks. Abbreviations as in Table 1.

Species	SanP	Gila	Salt	CAP	SRPs	SRPn	FCG	Arav	Cien	Combined sites
Threadfin shad	O	X	O	O	O	O	X	O	O	X
Common carp	X	X	O	X	X	X	X	O	O	X
Fathead minnow	X	O	O	O	O	O	O	O	O	X
Gila chub*	O	O	O	O	O	O	O	O	X	X
Grass carp	O	O	O	X	O	X	O	O	O	X
Longfin dace*	X	O	O	O	O	O	O	X	X	X
Red shiner	X	X	O	O	X	X	X	X	O	X
Roundtail chub*	O	O	O	O	X	X	O	X	O	X
Desert sucker*	X	O	O	O	X	O	O	X	O	X
Sonora sucker*	O	O	X	O	X	X	O	X	O	X
Black bullhead	X	O	O	O	O	O	O	O	O	X
Channel catfish	X	X	O	X	X	X	X	O	O	X
Flathead catfish	O	X	O	O	X	X	X	O	O	X
Yellow bullhead	O	O	X	O	O	O	O	X	O	X
Rainbow trout	O	O	O	O	X	O	O	O	O	X
Gila topminnow*	O	O	O	O	O	O	O	O	X	X
Mosquitofish	X	X	O	O	X	X	X	X	O	X
Striped bass	O	O	O	X	O	O	O	O	O	X
Black crappie	O	X	O	O	O	O	O	O	O	X
Bluegill	O	O	X	X	O	X	O	O	O	X
Green sunfish	X	X	X	X	O	X	O	O	O	X
Largemouth bass	X	O	X	X	X	X	O	O	O	X
Redear sunfish	O	O	O	X	O	O	O	O	O	X
Smallmouth bass	O	O	O	X	O	O	O	O	O	X
Blue tilapia	O	O	X	O	X	X	O	O	O	X
Total species (taxa)	10	8	6	9	11	12	6	7	3	25
Native	2	0	1	0	3	2	0	4	3	6
Non-native	8	8	5	9	8	10	6	3	0	19
Percent native	20	0	17	0	27	17	0	57	100	24

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 2009 (period July 7, 2009 to January 11, 2010). Native fishes indicated by asterisks. Ab and Bb respectively indicate Above and Below electrical fish barriers on SRPn, SRPs, and FCG canals.

Species	SanP	Gila	Salt	CAP	SRPs		SRPn		FCG		Cien	Total	
					Ab	Bb	Ab	Bb	Ab	Bb			Arav
Threadfin shad		15							51	75		141	
Common carp	19	9		27	23		3			2		83	
Fathead minnow	64											64	
Gila chub*											1	1	
Grass carp				30				38				68	
Longfin dace*	613										1266	972	2851
Red shiner	19	148			158			232	2	13	30		602
Roundtail chub*					3		2				5		10
Desert sucker*	52				1						3		56
Sonora sucker*			3		199		56	158			1		417
Black bullhead	27												27
Channel catfish	5	44		15	60		41	3	1	70			239
Flathead catfish		20			9		6		1	4			40
Yellow bullhead			1								5		6
Rainbow trout					6								6
Gila topminnow*												61	61
Mosquitofish	463	272			1			103	86	1	38		964
Striped bass				32									32
Black crappie		1											1
Bluegill			4	10			8						22
Green sunfish	8	2	2	3				1					16
Largemouth bass	7		70	64	32		32	6					211
Redear sunfish				89									89
Smallmouth bass				1									1
Blue tilapia			1		2		3						6
Total	1277	511	81	271	494	0	151	541	141	165	1348	1034	6014
Total natives	665	0	3	0	203	0	58	158	0	0	1275	1034	3396
Total nonnatives	612	511	78	271	291	0	93	383	141	165	73	0	2618
Percent native	52	0	4	0	41		38	29	0	0	95	100	56

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 2009 (period July 7, 2009 to January 11, 2010). 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 2008; 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	4	NS	NS	4	11	8	5	5	3
1-2	8	--	NS	5	--	--	--	--	2
1-3	7	NS	6	4	--	--	--	--	--
total	10	NS	6	6	11	8	5	5	3
n/nn	2/8		1/5	0/6	3/8	2/6	0/5	2/3	3/0
2-1	NS	7	--	5	NS	7	6	1	--
2-2	NS	5	--	--	NS	NS	1	7	--
2-3	1	4	--	--	NS	NS	2	--	--
2-4	--	--	--	--	NS	--	2	--	--
total	1	7	--	5	NS	7	6	7	--
n/nn	1/0	0/7		0/5		1/6	0/6	4/3	
3-1	1	6	--	5	--	--	--	--	--
3-2	1	2	--	6	--	--	--	--	--
3-3	NS	2	--	5	--	--	--	--	--
total	1	6	--	7			--	--	--
n/nn									
4-1	--	4	--	--	--	--	--	--	--
4-2	--	3	--	--	--	--	--	--	--
4-3	--	5	--	--	--	--	--	--	--
total	--	6	--	--	--	--	--	--	--
n/nn									
Total all reaches	10	8	6	9	11	12	6	7	3
n/nn	2/8	0/8	1/5	0/9	3/8	2/10	0/6	4/3	3/0
percent native	20	0	17	0	27	17	0	57	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 2009 (period July 7, 2009 to January 11, 2010). 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	0	12	2	0	14	0	0	0	0	0	14
	1	5	0	0	5	0	0	0	0	0	5
Fathead minnow		0	1	63	64	0	0	0	0	0	64
Longfin dace*		0	76	383	459	113	113	39	2	41	613
Red shiner		0	0	19	19	0	0	0	0	0	19
Desert sucker*	0	0	13	33	46	0	0	0	0	0	46
	1	0	4	2	6	0	0	0	0	0	6
Black bullhead	0	0	2	0	2	0	0	0	0	0	2
	1	23	1	1	25	0	0	0	0	0	25
Channel catfish	0	0	0	5	5	0	0	0	0	0	5
Mosquitofish		4	219	240	463	0	0	0	0	0	463
Green sunfish	0	0	8	0	8	0	0	0	0	0	8
Largemouth bass	0	1	5	0	6	0	0	0	0	0	6
	1	1	0	0	1	0	0	0	0	0	1
Totals		46	331	746	1123	113	113	39	2	41	1277

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 2009 (period July 7, 2009 to January 11, 2010). 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	
		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
Threadfin shad	0	1	0	0	1	2	0	0	2	5	0	7	12	15
Common carp	1	3	5	0	8	0	0	0	0	1	0	0	1	9
Red shiner		51	10	15	76	70	0	1	71	0	0	1	1	148
Channel catfish	0	7	0	7	14	2	6	0	8	0	0	12	12	34
	1	0	2	0	2	0	0	0	0	0	2	6	8	10
Flathead catfish	0	0	1	2	3	1	0	0	1	1	1	3	5	9
	1	1	2	2	5	5	0	0	5	1	0	0	1	11
Mosquitofish		6	89	64	159	37	3	26	66	24	12	11	47	272
Black crappie	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Green sunfish	0	0	0	0	0	2	0	0	2	0	0	0	0	2
Totals		70	109	90	269	119	9	27	155	32	15	40	87	511

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 2009 (period July 7, 2009 to January 11, 2010). 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		Totals
		3-1-3	Sum	
Sonora sucker*	0	1	1	1
	1	2	2	2
Yellow bullhead	1	1	1	1
Bluegill	0	1	1	1
	1	3	3	3
Green sunfish	1	2	2	2
Largemouth bass	0	65	65	65
	1	5	5	5
Blue tilapia	1	1	1	1
Totals		81	81	81

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 2009 (period July 7, 2009 to January 11, 2010). 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	10	11	1	1	15	0	0	15	27
Grass carp	1	0	10	7	17	2	2	2	1	8	11	30
Channel catfish	1	2	0	6	8	1	1	0	1	5	6	15
Striped bass	0	0	0	0	0	16	16	3	2	0	5	21
	1	6	3	0	9	0	0	2	0	0	2	11
Bluegill	0	0	0	0	0	0	0	1	0	0	1	1
	1	0	0	0	0	0	0	0	4	5	9	9
Green sunfish	0	2	1	0	3	0	0	0	0	0	0	3
Largemouth bass	0	1	0	0	1	0	0	0	4	25	29	30
	1	0	1	5	6	0	0	1	4	23	28	34
Redear sunfish	0	0	0	0	0	0	0	0	2	29	31	31
	1	0	0	0	0	0	0	0	0	58	58	58
Smallmouth bass	1	0	0	0	0	1	1	0	0	0	0	1
Totals		11	16	28	55	21	21	24	18	153	195	271

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 2009 (period July 7, 2009 to January 11, 2010). 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
		5-1-1	Sum	
Common carp	1	23	23	23
Red shiner		158	158	158
Roundtail chub*	1	3	3	3
Desert sucker*	1	1	1	1
Sonora sucker*	1	199	199	199
Channel catfish	1	60	60	60
Flathead catfish	1	9	9	9
Rainbow trout	1	6	6	6
Mosquitofish		1	1	1
Largemouth bass	1	32	32	32
Blue tilapia	1	2	2	2
Totals		494	494	494

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 2009 (period July 7, 2009 to January 11, 2010). 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	
Common carp	1	3	3	0	0	3
Grass carp	1	0	0	38	38	38
Red shiner		0	0	232	232	232
Roundtail chub*	1	2	2	0	0	2
Sonora sucker*	0	1	1	0	0	1
	1	55	55	158	158	213
Channel catfish	1	41	41	3	3	44
Flathead catfish	1	6	6	0	0	6
Mosquitofish		0	0	103	103	103
Bluegill	0	1	1	0	0	1
	1	7	7	0	0	7
Green sunfish	0	0	0	1	1	1
Largemouth bass	0	2	2	2	2	4
	1	30	30	4	4	34
Blue tilapia	1	3	3	0	0	3
Totals		151	151	541	541	692

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 2009 (period July 7, 2009 to January 11, 2010). 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	Sum	
Threadfin shad		51	51	71	0	4	0	75	126
Common carp	1	0	0	1	0	1	0	2	2
Red shiner		2	2	13	0	0	0	13	15
Channel catfish	0	1	1	9	42	0	13	64	65
	1	0	0	3	3	0	0	6	6
Flathead catfish	0	1	1	0	0	0	1	1	2
	1	0	0	3	0	0	0	3	3
Mosquitofish		86	86	1	0	0	0	1	87
Totals		141	141	101	45	5	14	165	306

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 2009 (period July 7, 2009 to January 11, 2010). 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	8-1-1	Reach Sum	8-2-1	Reach Sum	Totals
Longfin dace*		3	3	1263	1263	1266
Red shiner		2	2	28	28	30
Roundtail chub*	1	1	1		4	5
Desert sucker*	1	0	0	3	3	3
Sonora sucker*	0	0	0	1	1	1
Yellow bullhead	1	1	1	4	4	5
Mosquitofish		1	1	37	37	38
Totals		8	8	1340	1340	1348

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 2009 (period July 7, 2009 to January 11, 2010). 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	9-1-1	9-1-2	Totals
Gila chub*	1	1	0	1
Longfin dace*		771	201	972
Gila topminnow*		56	5	61
Totals		828	206	1034

Table 7. Total numbers of fishes captured using qualitative sampling methods applied at stations where routine sampling typically utilizes quantitative methods in the San Pedro (SanP), Gila and Salt rivers, CAP canal, and Aravaipa (Arav) and Cienega (Cien) creeks in behalf of a long-term monitoring plan for fish populations in selected waters of the Gila River basin, Arizona, sample year 2009 (period July 7, 2009 to January 11, 2010). Qualitative methods were used only on the Gila River during SY2009.

Species	SanP	Gila	Salt	CAP	Arav	Cien	Total
Longfin dace						34	34
Gila chub						1	1
Roundtail chub					1		1
Channel catfish		17					17
Gila topminnow						1	1
Totals	0	17	0	0	1	36	53