

# Survivorship and Movements of Southwestern Willow Flycatchers at Roosevelt Lake, Arizona - 2002



(Photo by Suzanne Cardinal, USGS)

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## **EXECUTIVE SUMMARY**

This year at Roosevelt Lake proved to be the most challenging willow flycatcher field season USGS (United States Geological Survey) banding personnel have experienced in six years. Willow flycatcher breeding was greatly reduced in 2002 and it is highly suggestive that severe drought may have been a factor.

The 2002 USGS field season focused exclusively on Roosevelt Lake for the second consecutive season. This allowed us to track most banded willow flycatchers that were detected, observe high levels of movement, and address questions of management concern. Overall, we captured and banded 99 new adult flycatchers, recaptured 92, resighted 63, and monitored 216 banded adults. This year, perhaps due to the severe drought, nest success was extremely low, and as a result we banded only 3 of 6 known nestlings produced at Roosevelt Lake. In 2002, 19 of the 107 nestlings banded in 2001 returned and were detected, resulting in a juvenile survivorship estimate of 18%. We recorded 46% adult survivorship and high levels of movement from patch to patch. Of the 118 flycatchers known to survive from 2001 to 2002, approximately 70% returned to the same patch.

We greatly expanded our passive netting efforts to detect the presence of non-breeding flycatchers (floaters) within breeding areas. We totaled 126 willow flycatcher captures (5.4 captures per 100 net hours) of which 45 (36%) were new captures and 81 (64%) were recaptures. In addition, we captured 51 other species of birds. Of 98 birds captured passively, a minimum of eight (8%) were assumed to be floaters. This documentation of a non-breeding (and thus not counted) floater population of flycatchers at Roosevelt Lake has important management and conservation implications.

# Survivorship and Movements of Southwestern Willow Flycatchers at Roosevelt Lake, Arizona – 2002

## INTRODUCTION

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is a small, endangered bird that breeds only in riparian habitats scattered throughout portions of the Southwestern states (Marshall 2000, Unitt 1987). The flycatcher has suffered serious declines as riparian habitats have been lost or modified (Marshall and Stoleson 2000, USFWS 1993), and was listed as a Federal endangered species in 1995 (USFWS 1995).

Two of the largest Southwestern Willow Flycatcher breeding sites in Arizona are found at the Salt River and Tonto Creek inflows to Roosevelt Lake (Fig. 1). Flycatchers were first documented here in 1993 (Muiznieks et al. 1994), where they breed in patches of dense riparian habitat. These sites include a mosaic of patches, some of which are dominated by tamarisk (*Tamarix ramosissima*), others by native willow (*Salix goodingii*), and some with a mixture of tamarisk, willow, and cottonwood (*Populus fremontii*). The Salt River Inflow and Tonto Creek sites face the prospect of inundation and potential loss of habitat when increased lake levels, made possible by recent modifications to Roosevelt Dam, occur. However, it is also anticipated that the habitat will regenerate as lake levels recede. Since 1995, the lake level has been below the elevation of the breeding patches discovered in 1993, and based on historical reservoir elevation from 1951 through 2002 (Salt River Project, unpubl. data), the lake has reached the lowest levels in over 20 years.

The U.S. Bureau of Reclamation (Reclamation) consulted with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act (ESA) regarding potential impacts to the Southwestern Willow Flycatcher resulting from operation of the modified Roosevelt Dam and reservoir. The resulting Biological Opinion required that Reclamation fund a comprehensive Southwestern Willow Flycatcher research program that includes collection of demographic data (such as birth/death rates, lifetime reproductive success, immigration/emigration, site fidelity, movement between sites, age-specific reproductive success, and longevity). Such a study requires color banding flycatchers so that individuals can be identified and their movements, survivorship, and reproductive efforts can be tracked.

A major reason to study movements at Roosevelt Lake (and beyond) was to determine where resident flycatchers moved when their breeding habitat was inundated. At that time, little was known about site fidelity, dispersal, or movement behavior of willow flycatchers. Therefore, there was no way to predict how individual flycatchers would respond when habitat inundation occurred. The lower San Pedro River was then chosen for study because it was the closest population to Roosevelt Lake and the most likely area for flycatcher dispersers to settle. In 2000, USGS work ended at the San Pedro River so that we could focus efforts on the rapidly growing population at Roosevelt Lake.

The Roosevelt Lake Biological Opinion was the driving force behind the research presented in this report. Reclamation funded this USGS-based research program at Roosevelt Lake and the lower San Pedro River from 1996 to 2000, and exclusively at Roosevelt Lake in 2001 and 2002.

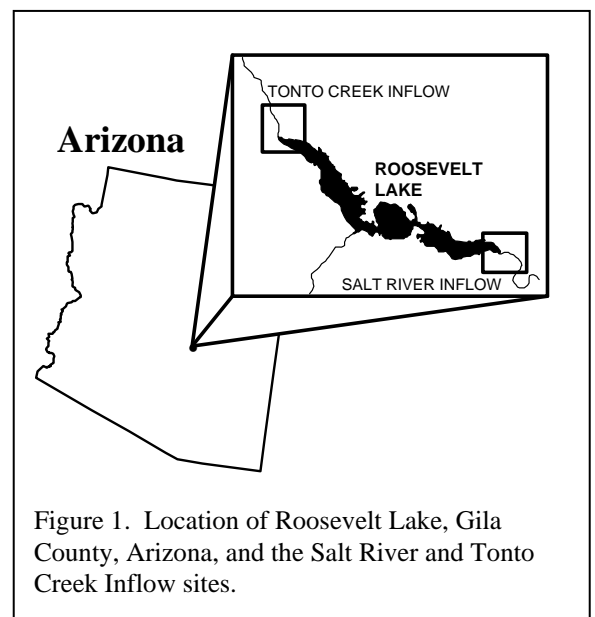


Figure 1. Location of Roosevelt Lake, Gila County, Arizona, and the Salt River and Tonto Creek Inflow sites.

## STUDY AREA AND BANDING HISTORY

### STUDY AREA

Roosevelt Lake is formed by Roosevelt Dam at the confluences of the Salt River and Tonto Creek in central Arizona, approximately 90 km northeast of Phoenix. Willow flycatchers are found at roughly 640 m elevation at the inflows of the Salt River and Tonto Creek, breeding in the riparian vegetation found in the flood basins near the lake shoreline. The breeding patches are several meters to 500 m from water, depending on fluctuating lake levels and creek/river flows. Roosevelt Lake's primary purpose is to hold and retain water for downstream use. Water levels can fluctuate significantly based on winter runoff and downstream demand, with winter runoff spikes and summer draw downs. In 1995, high water levels inundated portions of the historical breeding habitat. Since 1995, the average surface elevation of Roosevelt Lake has continued to drop due to lower than average precipitation in Arizona. This has allowed new habitat to form on the once inundated flood plain. In 1999, willow flycatchers were first detected occupying some of this new habitat and in years since, additional patches of new habitat have become occupied by breeding flycatchers.

The Tonto Creek and Salt River inflows consist of a matrix of riparian habitat of varying ages (Fig. 2). From 1995-2000, most of these patches were considered as separate sites (see Luff et al. 2000, Paradzick et al. 2001). However, based on the high degree of observed movement among these patches, both between and within years, we now consider the complex of patches at each inflow area as one site. The following sections give a brief history of the patches at the Salt River Inflow and the Tonto Creek Inflow:

**Salt River Inflow:** From 1996 through 1998, all field personnel activity at the Salt River Inflow was focused on a single location (now called Old Salt). Beginning in 1999, flycatchers were detected at additional sites at lower elevations in the lakebed. These new, young patches form a mosaic of different patch sizes, ages, and habitat composition. Many of these patches had significant numbers of flycatchers present when discovered, and may have been occupied by flycatchers prior to discovery. There were nine distinct habitat patches occupied by breeding willow flycatchers in 2002 (in order from farthest upstream to farthest downstream):

**Old Salt** - The vegetation became established at this patch in the early 1980s following the 1978-1980 floods. The original patch within which willow flycatchers were known to breed was discovered in 1993 (Muiznieks et al. 1994), and was not inundated during the high water levels of 1995. Old Salt consists of a monotypic stand of tamarisk.

**Mudflats** - Flycatchers were first detected here in 1999. This patch was inundated in 1995 and has developed since that time. It is composed mostly of tamarisk, with a small native component.

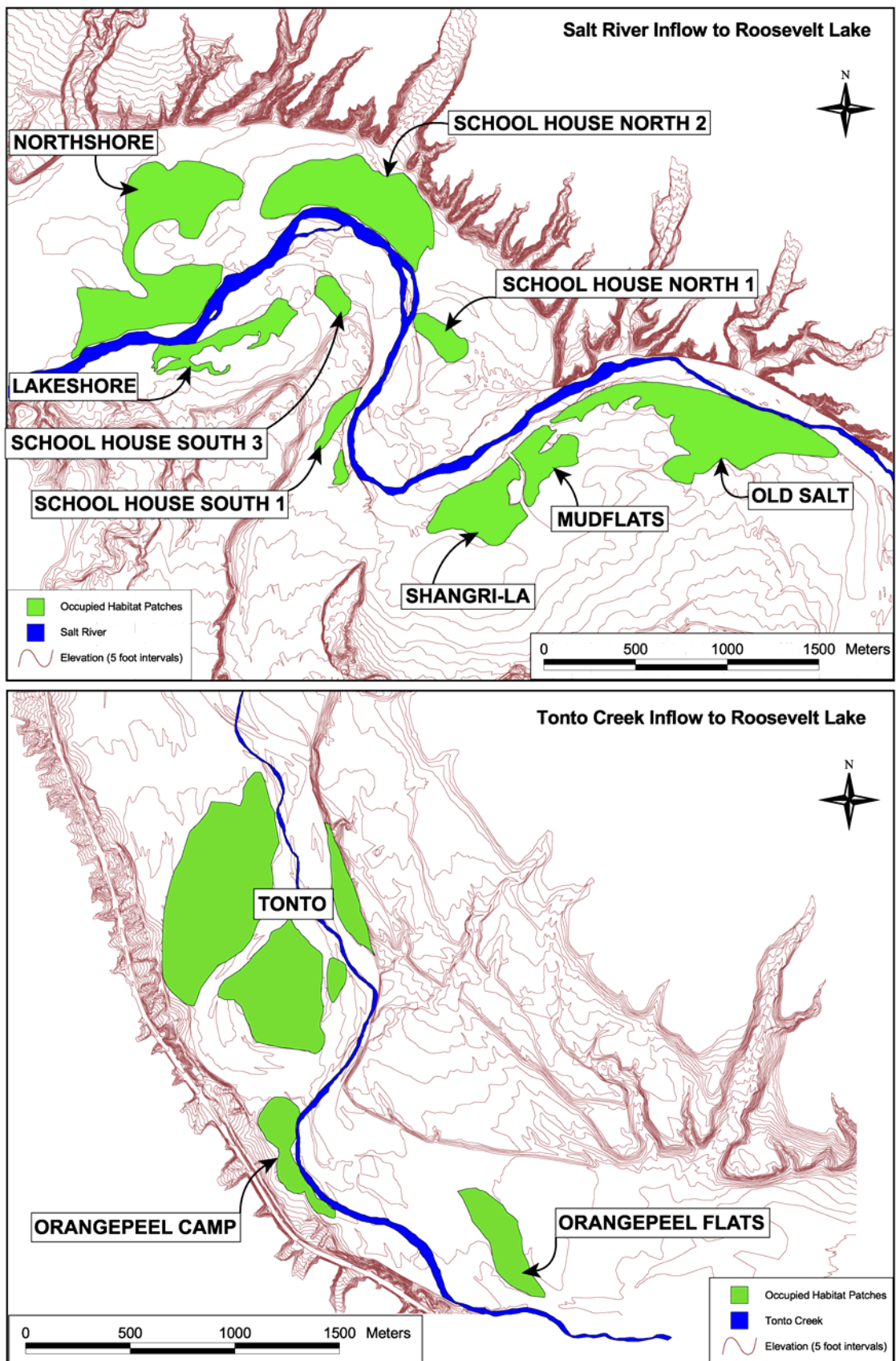
**Shangri-la** - Inundated in 1995, flycatchers were first detected here in 1999. This site is composed of dense willow, cottonwood (*Populus fremontii*), and tamarisk.

**School House South 1** - Inundated in 1995, flycatchers were first detected here in 1999. This site is composed primarily of a dense patch of tamarisk trees. No flycatchers were detected here in 2002.

**School House South 3** - Inundated in 1995, flycatchers were first detected here in 2000. This site is composed of a patch of mixed riparian habitat.

**School House North 1** - Inundated in 1995, flycatchers were first detected here in 1999. This site is composed of a dense habitat of tamarisk riparian habitat.

**School House North 2** - Inundated in 1995, flycatchers were first detected here in 2000. The patch is a large, dense patch of tamarisk.



**Figure 2:** Location and name of the willow flycatcher occupied habitat patches at Roosevelt Lake, Arizona.

**Lake Shore** - Inundated in 1995, flycatchers were first detected here in 2000. This patch is composed of a nearly monotypic stand of willow trees.

**North Shore 1 and 2** - 2001 was the first year of confirmed breeding at this patch, although flycatchers were heard singing from this patch in 2000. Inundated in 1995, these large areas are composed of a matrix of willow and tamarisk habitat. In 2002 we documented expansion of breeding flycatchers into newer habitat.

**Tonto Creek Inflow:** Until 2000, all flycatcher breeding activity at the Tonto Creek Inflow was within the Tonto habitat patch, with approximately 1 m (2-3 feet) of water at the base of the vegetation in 1995. As with the Salt River Inflow site, habitat in the dry lakebed began to be occupied by flycatchers in 2000. There were four distinct habitat patches occupied by breeding willow flycatchers in 2002 (in order from farthest upstream to farthest downstream):

**A-cross Road - (not shown in Fig. 2)** This small, isolated patch is 2.5 km (approximately 1 mile) upstream of the historic Tonto patch. Flycatchers were first detected here in 2000. This patch consists of relatively sparse tamarisk mixed with tall cottonwoods and an understory of short mesquite (*Prosopis* spp.).

**Tonto** - Tonto is the longest occupied patch of the Tonto Creek Inflow site, having been discovered in 1993 (Muiznieks et al. 1994). The vegetation within this patch was established after the 1978-1980 floods. The Tonto patch is comprised of tall tamarisk stands with willow and cottonwood emergents in most locations.

**Orange Peel Campground** - Birds were first confirmed breeding here in 2000, although there were flycatchers singing from the patch in 1999. Inundated in 1995, the site consists of willow interspersed with tamarisk and mesquite, and little understory structure.

**Orange Peel Flats** - Birds were first detected here in 2000. Inundated in 1995, the patch is composed of primarily dense tamarisk.

## BACKGROUND ON THE BANDING PROJECT AT ROOSEVELT LAKE

In 1996, the USGS Colorado Plateau Field Station (USGS) and the Arizona Game and Fish Department (AGFD) began a long term and large-scale demographic study of willow flycatchers in Arizona. AGFD continued its ongoing surveying and monitoring of new and known flycatcher breeding sites, while USGS joined the efforts by color banding the flycatchers at most of the AGFD monitored sites, as well as several other sites. From 1996 to 2002, 767 adults and 425 nestling willow flycatchers were captured and banded across Arizona by USGS. A listing of all flycatchers banded at Roosevelt Lake since 1996 is presented in Appendix 1. An additional population genetics component of this study took place during 1996 and 1997 (Sogge et al. 1998, Busch et al. 2000, Paxton 2000). The work conducted from 1996-2001 provides the foundation for this year's site and patch fidelity, movement, and survivorship data.



## PROJECT OBJECTIVES

The major goal of this project is to color band and resight Southwestern willow flycatchers at all locations within the Roosevelt Lake area. Monitoring these color-banded birds is the only effective way to determine between-year survivorship and mortality of adults and young, immigration and emigration, site and patch fidelity, and movement between sites. Furthermore, the presence of banded birds at Roosevelt Lake assists the AGFD in determining the number of breeding flycatchers present and enhances the ability to document breeding activities (e.g., pairing, nesting attempts, reproductive success), within and between years.

Specific objectives of the USGS-based demography study are:

- (1) collect data on between-year survivorship and mortality of adults and young, immigration, emigration, site and patch fidelity, and movement between sites;
- (2) assist AGFD in banding female flycatchers for their seasonal fecundity study;
- (3) determine, along with AGFD, the number of flycatchers present at Roosevelt Lake; and
- (4) genetically determine the sex of all Southwestern willow flycatchers that cannot be sexed in the field.

Thus far, seven years of data collection (1996-2002) have been funded and conducted. Results of 1996 through 2001 were reported by Paxton and Sogge (1996), Paxton et al. (1997), Netter et al. (1998), English et al. (1999), Luff et al. (2000), and Kenwood and Paxton (2001). This report summarizes results of the seventh year of fieldwork.

## METHODS

### BANDING ADULTS

All adult willow flycatchers were captured using mist nets (see Ralph et al. 1993). The mist nets were typically set up in a known breeding territory and recordings of willow flycatcher vocalizations (both songs and calls) were broadcast from a compact disk player to attract territorial flycatchers (Sogge et al. 2001).

Prior to 1998, all flycatchers were banded with a uniquely numbered Federal aluminum bird band and a unique combination of two plastic color bands. However, as birds were resighted in subsequent years it became apparent that plastic bands could cause injuries to the legs of some flycatchers and a technique was needed to develop non-plastic color bands. Therefore in 1998, we created color bands by (1) anodizing aluminum bands, (2) adhering automobile detailing tape to an aluminum band, and (3) sealing the entire band with epoxy (without contacting flycatchers' legs) (Figure 3). Thus, from 1998 to 2002 each captured adult was banded with a unique combination of a numbered Federal anodized colored bird band on one leg, and an aluminum color band (either striped or solid) on the other leg. We attempted to recapture most adults that had been previously banded with plastic bands; all plastic bands on recaptured adults were removed and replaced with a unique aluminum band combination. These techniques allowed each individual to be identified if seen again in the field without need for recapture (see Resighting section below).

In addition to banding, each adult was measured for wing chord, tail length, culmen length, bill width, weight, and fat level using a standardized method (Pyle 1997). When possible, the gender of adult flycatchers were determined by the presence of a cloacal protuberance (male) or brood patch (female). When gender could not be determined visually, DNA samples were taken for genetic analysis (see Genetics section below).



## RESIGHTING

Resighting consists of using binoculars to determine the identity of a color-banded flycatcher by observing, from a distance, the unique color band combination on its legs. This allows researchers to detect and monitor individual flycatchers without the need to recapture them. Typically, territories and nests were the focal areas for resighting in order to determine which individuals belonged to specific territories. This information could then be used to document movement, individual productivity, and gender-based behavioral patterns. Furthermore, resighting is the most reliable method for establishing the particular territory a flycatcher belongs to, as techniques used to capture adults (such as tape playbacks of flycatcher vocalizations) can lure in adults from neighboring territories.

Banders typically spent the early part of each morning banding, and then redirected their efforts to resighting as daylight increased and birds became more difficult to catch. All banders and AGFD field crews recorded their observations of color-banded flycatchers. For every resighted flycatcher, we recorded the color band combination, site, patch, specific location at the patch (using a designated territory number or aerial map), the level of confidence in the resight, and any behavioral observations. Because resighting is difficult, and misidentification of color combinations is a possibility, all resight data in this report are based on at least two resights of each color-banded individual in the same area.

## BANDING NESTLINGS

Nestlings were banded at 7-10 days of age and only when they could be taken from nests that were safely accessible. Unfortunately, most nests are not accessible without risk of damaging the nest or nest substrate, and accessible nests often fail (e.g., from predation) before the young could be banded. Thus, only a small proportion of nestlings are typically banded in any year. Nestlings were banded with a single colored-anodized Federal numbered bird band. A drop of blood was taken to determine gender genetically.

## PASSIVE NETTING

Passive netting is the process of placing one or more mist nets in an area and waiting for birds to fly into them (without the use of playbacks, decoys, etc). In 2001, USGS conducted a passive netting pilot project at Roosevelt Lake to evaluate the effectiveness of this technique for detecting non-breeding flycatchers (floaters) present at the sites that were not detected with conventional survey techniques (i.e. territorial response to playbacks). Additional objectives were to capture 1) individuals that might be using areas outside their noted territories, 2) flycatchers (banded and unbanded) not previously detected in the patch, and 3) flycatchers that were not responsive when using the target netting method described above.

In 2002, we expanded our effort and conducted intensive passive netting at one patch (Lake Shore) for four days (three days within and one immediately outside the breeding patch) every two weeks throughout the entire flycatcher breeding season (May-August). Additional passive netting was conducted within two other breeding patches (North Shore and Shangri-la), however, mist netting effort was less than at Lake Shore. At Lake Shore, at least six 12 meter nets were employed per netting day, typically from 0530 until 1100 hrs. We calculated netting effort employing standardized net hour units (one net hour = one 12 m net open for 1 hour). Nets were checked for birds every 20 minutes (or less); any flycatchers caught were processed per the methods stated in the Banding section.

## GENETICS

A genetic sample was taken from all newly captured flycatchers while being handled for banding. DNA was obtained from a small drop of blood taken (non-lethally) by clipping off the tip of one toenail, just past the quick (vascularized tissue). This technique works well for obtaining small amounts of blood from flycatchers and other small passerines, with no discernable negative effects (Super and van Riper 1995, Bush et al. 2000). The drop of blood was stored in a small vial with 1xSSC-EDTA buffer. Samples were placed on ice in the field, then frozen in the lab until the DNA was extracted. Gender was determined using the protocol developed by Griffiths et al. (1996). Gender determination makes it possible to look for gender-based differences in factors such as dispersal, site fidelity, and survivorship.

## DETERMINING AGE BY MOLT PATTERNS

Pyle (1998) proposed that second-year willow flycatchers can exhibit patterns of retained flight feathers (primaries and secondaries) not observed on older adults. While handling flycatchers during banding, each wing was inspected for retained feathers indicated by wear and lighter color (especially on the wing spines) when compared with adjacent newer flight feathers. We began to evaluate this as a possible technique for aging flycatchers in 1998, when the idea was first proposed. After several years of evaluating returning adults and known second-year birds, we are confident that retained feathers indicate a second year Southwestern willow flycatcher. However, not all second-year birds exhibited this pattern, so absence of retained feathers does not preclude the individual from being a second-year bird. Thus, all flycatchers with retained feathers are now being aged as second-year adults (SY), and those without the retained feathers are considered second year or older (AHY).

## RESULTS

### SUMMARY OF 2002 BANDING AND RESIGHTING EFFORTS

In 2002, the USGS banding crew banded 99 new adult flycatchers, one fledgling, and 2 nestlings from 2 nests within the Roosevelt Lake area. Overall, 77% of the total number of adult flycatchers detected at Roosevelt were banded by the end of the breeding season (Table 1).

The USGS crew spent considerable time resighting and recapturing banded birds, and with the help of AGFD, detected a total of 94 adult flycatchers banded in previous years. In addition, 27 individuals originally banded as nestlings at Roosevelt in previous years were detected, with 22 (82%) recaptured to determine identity. Of the returning banded adults, 69 returned to the patch where they were detected the previous year, 20 moved from their 2001 patch or site, and five went undetected in 2001 but were detected in 2002.

The numbers of flycatchers reported herein for each patch may differ slightly from those reported by AGFD. The differences between numbers are due to different approaches in determining the exact number of individual flycatchers. Our estimates are based on the number of banded and unbanded birds confirmed to a territory, taking into account birds that move (1) from patch to patch, (2) are polygamous, and (3) are captured but never detected again. Our estimates are best interpreted as the minimum number of individual adults detected in 2002.

**Table 1.** Summary of willow flycatchers banded during the 2002 breeding season at Roosevelt Lake, Arizona, including patch name, number of new captures, total numbers of banded adults, total numbers of adult birds banded or unbanded, total numbers of nestlings banded and percent of all adult birds banded.

Patch	# New Adult Captures	Total # Banded Adults	Total # Adult Birds Detected	# Nestlings Banded (# nests)	% of All Adults Banded
Old Salt	2	9	11	0 (0)	82
Mudflats	2	5	5	0 (0)	100
Shangri-la	7	50	70	0 (0)	71
School House South 3	4	9	14	0 (0)	64
School House North 1	4	12	14	0 (0)	86
School House North 2	9	13	16	0 (0)	81
Lake Shore	31	69	72	1 (1)	96
North Shore 1	19	31	37	2 (2)**	84
North Shore 2	11	14	16	0 (0)	88
A+ Cross Road	0	1	1	0 (0)	100
Tonto Creek Inflow	0	6	10	0 (0)	60
Orange Peel Campground	5	12	18	0 (0)	67
Orange Peel Flats	5	8	12	0 (0)	67
<b>Totals</b>	<b>99</b>	<b>212*</b>	<b>273*</b>	<b>3 (3)</b>	<b>80</b>

\* flycatchers confirmed to multiple patches were counted only once in the totals  
 \*\* one of the two was a captured fledgling from unknown nest

## SITE BY SITE BANDING RESULTS AT ROOSEVELT LAKE

### Salt River Inflow

In 2002, the USGS and AGFD crews detected 255 willow flycatchers (banded and unbanded) from 78 territories along the Salt River Inflow. The USGS banding crew captured 89 new flycatchers, recaptured 72, and with help from AGFD resighted 51 other returning banded flycatchers (Table 2).

**Table 2.** Willow flycatchers banded and resighted at the Salt River Inflow, Arizona in 2002, including patch name, date banded, Federal bird band number, color band combination, age in 2002, sex, status in 2002, territory number, and observation status (new capture, recapture, resight, and movement information).

Patch Name	Date Banded	Federal Bird Band Number	Color Band		Age 2002	Sex	Status 2002	Territory Number	Observation Status
			Left Leg	Right Leg					
Old Salt	6/15/2001	1490-89901	YO	ZZ	ASY	F*	TER	28	Resight
	7/19/1999	1710-20298	YKY	VV	4Y	M	TER	56	Resight
	7/16/1998	1710-20473	KW	ZZ	A5Y	M*	TER	52	Resight
	8/10/1999	1710-20589	OKO	VV	4Y	F	TER	58	Recapture <sup>P</sup>
	6/2/2000	1710-20682	WK	KK	A3Y	M	TER	97	Resight
	6/19/2002	1740-51792	RO	XX	SY	U	UNC		New
	6/16/2002	1740-51833	XX	GKG	AHY	U	TER	52	New
	6/11/1996	1740-91714	PD/RR	XX	A7Y	U	TER	97	Resight
	6/15/2000	1740-91966	KK	KD	A3Y	M	TER	28	Resight
Mudflats	6/29/2001	1490-88921	OG	ZZ	3Y	U	TER	96	Resight <sup>1</sup>
	6/7/1998	1590-97516	VV	KK	A5Y	M	TER	34	Resight
	6/23/1999	1710-20281	VV	GG	A4Y	M	TER	50	Resight <sup>1</sup>
	6/11/2002	1740-51798	XX	WD	AHY	U	UNC		New <sup>1</sup>
	6/11/2002	1740-51799	KD	XX	SY	U	UNC		New <sup>1</sup>
Shangri-la	6/28/2001	1490-89816	WK	VV	3Y	F*	TER	27	Resight
	6/29/2001	1490-89921	OG	ZZ	3Y	U	UNC		Recapture <sup>P,1</sup>
	7/11/2001	1490-89944	OW	ZZ	3Y	F*	TER	93	Resight
	6/7/1998	1590-97537	VV	RR	A5Y	U	TER	18	Resight
	6/30/1998	1590-97540	VV	RY	A5Y	F	TER	10	Resight
	6/22/1999	1590-97543	VV	WG	A4Y	U	TER	91	Resight
	6/22/1999	1590-97544	VV	RD	A4Y	M	UNC		Recapture <sup>P</sup>
	5/17/2001	1710-20219	DO	ZZ	ASY	U	TER	54	Resight
	5/22/2001	1710-20240	KG	ZZ	ASY	U	UNC		Recapture <sup>P</sup>
	6/5/2001	1710-20243	OD	ZZ	ASY	F*	TER	11	Resight
	6/3/2001	1710-20264	OO	VV	ASY	F*	TER	26	Recapture <sup>P</sup>
	7/2/2001	1710-20267	DY	VV	3Y	U	TER	75	Recapture
	6/23/1999	1710-20280	VV	KD	A4Y	M	TER	21	Resight
	5/13/1999	1710-20285	VV	YR	A4Y	M	TER	92	Resight
	7/26/1999	1710-20308	WO	VV	A4Y	F	TER	11	Resight
	6/27/1999	1710-20338	YD	VV	A4Y	M	TER	53	Resight
	6/22/1999	1710-20340	VV	OW	A4Y	F	TER	21	Resight
	6/27/1999	1710-20347	VV	YD	A4Y	M	TER	23	Resight
6/1/2001	1710-20461	VYV	ZZ	ASY	U	UNC		Recapture <sup>P</sup>	

Patch Name	Date Banded	Federal Bird Band Number	Color Band		Age 2002	Sex	Status 2002	Territory Number	Observation Status
			Left Leg	Right Leg					
	6/2/2001	1710-20462	DY	ZZ	ASY	U	TER	45	Recapture <sup>P,1</sup>
	5/4/2001	1710-20497	ZZ	YW	ASY	U	TER	13	Resight
	5/17/2000	1710-20595	KK	DK	A3Y	M	TER	10	Recapture
	5/9/2000	1710-20600	KK	GY	A3Y	M	TER	18	Resight
	5/22/2000	1710-20603	KK	VG	A3Y	M*	TER	26	Resight
	6/16/2000	1710-20611	GV	KK	A3Y	F	TER	90	Resight
	6/19/2000	1710-20613	KK	KK	A3Y	M	TER	27	Resight <sup>1</sup>
	6/19/2000	1710-20616	KK	YY	A3Y	F	TER	90	Resight
	5/10/2000	1710-46320	KK	WG	4Y	M	TER	25	Resight
	5/12/2000	1710-46323	GY	KK	A3Y	M*	TER	38	Resight
	5/12/2000	1710-46324	YG	KK	A3Y	M*	TER	14	Resight
	6/13/2000	1710-46327	KK	DY	4Y	M	TER	18	Resight
	7/23/2002	1740-51721	YRY	XX	SY	U	UNC		New <sup>P</sup>
	7/25/2002	1740-51722	XX	YY	SY	U	UNC		New <sup>P</sup>
	7/10/2002	1740-51733	OK	XX	AHY	U	UNC		New <sup>P</sup>
	7/10/2002	1740-51734	XX	DO	AHY	U	UNC		New <sup>P</sup>
	6/11/2002	1740-51736	XX	WRW	AHY	F*	FLT		Recapture <sup>P,1</sup>
	6/28/2002	1740-51753	XX	RZ	AHY	U	UNC		Recapture <sup>P,1</sup>
	7/16/02	1740-51754	XX	YKY	SY	U	UNC		New <sup>P</sup>
	6/3/2002	1740-51777	XX	VG	AHY	U	UNC		New
	6/16/2002	1740-51791	GRG	XX	AHY	U	UNC		Recapture <sup>P,1</sup>
	5/18/2002	1740-51818	XX	YK	AHY	U	TER	19	New
	7/3/2001	1740-51889	VWV	KK	3Y	U	TER	17	Resight
	6/27/2001	1740-51899	KK	ZKZ	SY	U	TER	75	Recapture
	7/12/2000	1740-91590	WDW	KK	A3Y	M	TER/TER	42/73	Resight
	7/12/2000	1740-91591	VW	KK	4Y	M	TER	37	Recapture <sup>P</sup>
	6/17/2000	1740-91968	WD	KK	A3Y	F	UNC		Resight
	6/19/2000	1740-91970	KK	VY	A3Y	M	UNC		Recapture <sup>1</sup>
	6/19/2000	1740-91973	WW	KK	A3Y	M	TER	11	Resight
	7/23/1997	2070-92905	WK/RR	XX	A6Y	M	TER/TER	29/90	Recapture <sup>P</sup>
	7/29/2001	2210-57041	KK	WDW	ASY	F*	TER	25	Recapture <sup>P</sup>
<b>School House South 3</b>	5/5/2001	1710-20239	ZZ	GO	ASY	U	TER	20	Resight
	6/12/2001	1710-20464	ZZ	KY	3Y	U	UNC		Recapture
	6/19/2000	1710-20613	KK	KK	A3Y	M	TER	17	Resight <sup>1</sup>
	6/30/2000	1710-20689	GO	KK	A3Y	F	TER	18	Resight
	6/28/2002	1740-51644	XX	DR	AHY	F*	TER	4	New
	6/16/2002	1740-51702	XX	KO	AHY	U	TER	4	New
	6/5/2002	1740-51778	YD	XX	AHY	U	TER	17	New
	6/2/2002	1740-51819	YDY	XX	AHY	U	TER	74	New
	6/2/1996	1740-91506	RW	XX	A6Y	M	TER	19	Resight
<b>School House North 1</b>	6/14/2001	1710-20242	YG	ZZ	ASY	F*	TER	17	Resight
	6/2/2001	1710-20462	DY	ZZ	ASY	U	TER	65	Resight <sup>1</sup>
	7/29/1999	1710-20567	YO	VV	A4Y	M	TER	17	Resight
	6/6/2000	1710-20686	KK	KW	A3Y	M	TER	37	Resight
	5/27/2002	1740-51747	XX	GWG	AHY	M*	TER	73	Resight <sup>1</sup>
	6/11/2002	1740-51757	VW	XX	AHY	F*	TER	33	New

Patch Name	Date Banded	Federal Bird Band Number	Color Band		Age 2002	Sex	Status 2002	Territory Number	Observation Status
			Left Leg	Right Leg					
	6/11/2002	1740-51758	DWD	XX	AHY	F*	TER	37	New
	5/29/2002	1740-51797	XX	OK	AHY	U	TER	6	New
	6/12/2002	1740-51832	XX	GO	SY	U	TER	33	New
	6/19/2000	1740-91970	KK	VY	A3Y	M	TER	38	Resight <sup>1</sup>
	6/19/2000	1740-91974	GK	KK	A3Y	F	TER	38	Resight
	7/1/2001	2210-57033	KK	OR	SY	F*	UNC		Recapture <sup>1</sup>
School House North 2	7/9/1999	1710-20385	YRY	DD	4Y	M	TER	95	Recapture <sup>1</sup>
	7/1/2000	1710-20700	WV	KK	3Y	F	TER	94	Recapture <sup>1</sup>
	5/11/2000	1710-46321	KK	GW	A3Y	M*	TER	97	Resight
	5/31/2002	1740-51731	XX	GR	AHY	U	UNC		New
	6/11/2002	1740-51736	XX	WRW	AHY	M*	TER	5	New <sup>1</sup>
	6/11/2002	1740-51737	XX	KV	AHY	U	UNC		New
	6/11/2002	1740-51738	YW	XX	AHY	M*	TER	18	New
	6/26/2002	1740-51775	XX	VY	AHY	F	TER	18	New
	5/22/2002	1740-51783	XX	OO	AHY	U	UNC		New
	5/22/2002	1740-51796	XX	KW	AHY	U	UNC		New
	6/19/02	1740-51820	WZ	XX	AHY	U	UNC		New
	6/16/2000	1740-91967	KK	GK	A3Y	F	TER	8	Resight
7/30/2000	2210-57010	WGW	KK	3Y	F	TER	96	New	
Lake Shore	7/10/2001	1490-88943	RDR	ZZ	ASY	F*	TER	46	Recapture <sup>P</sup>
	6/19/2001	1490-89931	GKG	ZZ	SY	U	FLT		Recapture <sup>P</sup>
	6/26/2001	1490-89934	ZZ	KYK	3Y	F*	UNC		Recapture <sup>P,1</sup>
	6/20/2001	1490-89949	DWD	ZZ	SY	U	UNC		Recapture <sup>P</sup>
	6/18/2001	1490-89959	ZZ	WVW	SY	U	FLT		Recapture <sup>P</sup>
	6/18/2001	1490-89959	ZZ	WVW	SY	U	TER	53	Recapture <sup>P</sup>
	6/14/2001	1490-89964	ZZ	DRD	3Y	F*	UNC		Recapture <sup>P</sup>
	6/14/2001	1710-20222	ZZ	VYV	ASY	U	FLT		Recapture <sup>P,1</sup>
	6/25/2001	1710-20225	KYK	ZZ	SY	U	UNC		Recapture <sup>P</sup>
	6/25/2001	1710-20230	ZZ	WZ	SY	U	FLT		Recapture <sup>P</sup>
	6/6/1999	1710-20263	GW	VV	A4Y	F	TER	45	Recapture <sup>P</sup>
	6/22/1999	1710-20275	VV	OO	A4Y	M	TER	30	Recapture <sup>P</sup>
	6/23/1999	1710-20281	VV	GG	A4Y	M	UNC		Recapture <sup>P,1</sup>
	6/30/1999	1710-20288	VV	RYR	4Y	M	TER	45	Recapture <sup>P</sup>
	7/24/2001	1710-20317	OD	VV	3Y	M*	TER	9	Recapture <sup>P</sup>
	7/30/2001	1710-20322	VV	RDR	3Y	M*	TER	47	Recapture <sup>P</sup>
	6/18/1999	1710-20339	VV	OG	5Y	M	TER	6	Recapture <sup>P</sup>
	7/9/1999	1710-20385	YRY	DD	4Y	M	UNC		Recapture <sup>P,1</sup>
	5/5/2001	1710-20458	ZZ	OG	ASY	U	TER	8	Recapture <sup>P</sup>
	8/10/1999	1710-20578	VV	DD	4Y	M	TER	2	Recapture <sup>P</sup>
	6/30/2000	1710-20604	KK	KV	A3Y	M	TER	7	Recapture <sup>P</sup>
	6/29/2000	1710-20622	KK	DO	3Y	F	UNC		Recapture <sup>P</sup>
	6/13/2000	1710-20688	RK	KK	A3Y	U	TER	46	Recapture <sup>P</sup>
	6/13/2000	1710-20698	YY	KK	A3Y	F	TER	13	Recapture <sup>P</sup>
	6/13/2000	1710-46325	WG	KK	A3Y	F	TER	2	Recapture <sup>P</sup>
	6/13/2000	1710-46330	YD	KK	4Y	F	TER	6	Recapture <sup>P</sup>
	5/21/2002	1740-51713	VG	XX	AHY	U	UNC		New <sup>P</sup>

Patch Name	Date Banded	Federal Bird Band Number	Color Band		Age 2002	Sex	Status 2002	Territory Number	Observation Status
			Left Leg	Right Leg					
	6/12/2002	1740-51714	XX	WO	AHY	U	TER	8	New <sup>P</sup>
	6/18/2002	1740-51715	WV	XX	SY	U	UNC		New <sup>P</sup>
	6/27/2002	1740-51716	XX	RKR	AHY	F*	TER	30	New <sup>P</sup>
	6/27/2002	1740-51717	XX	VYV	AHY	F*	UNC		New <sup>P</sup>
	7/14/2002	1740-51718	XX	KYK	AHY	U	UNC		New <sup>P</sup>
	7/16/2002	1740-51719	WRW	XX	AHY	U	UNC		New <sup>P</sup>
	7/26/2002	1740-51720	XX	OD	AHY	U	UNC		New <sup>P</sup>
	8/7/02	1740-51723	OKO	XX	AHY	U	UNC		New <sup>P</sup>
	6/4/2002	1740-51728	OW	XX	AHY	F*	UNC		New <sup>P</sup>
	6/14/2002	1740-51729	XX	OG	AHY	U	UNC		New <sup>P</sup>
	7/17/2002	1740-51730	KO	XX	AHY	U	FLT		Recapture <sup>P,1</sup>
	6/27/2002	1740-51739	YKY	XX	AHY	M*	FLT		New <sup>P</sup>
	5/18/2002	1740-51740	XX	DY	AHY	M*	TER	1	New <sup>P</sup>
	6/12/2002	1740-51744	VYV	XX	AHY	F*	TER	9	New
	5/27/2002	1740-51747	XX	GWG	AHY	M*	UNC		New <sup>1</sup>
	6/18/2002	1740-51768	GW	XX	AHY	U	UNC		Recapture <sup>P,1</sup>
	6/18/2002	1740-51774	XX	OZ	SY	F*	UNC		Recapture <sup>P,1</sup>
	8/6/02	1740-51776	XX	KGK	AHY	U	UNC		New <sup>P</sup>
	5/23/2002	1740-51784	GR	XX	AHY	U	TER	7	New
	5/29/2002	1740-51785	XX	WK	AHY	U	TER	3	New
	6/11/2002	1740-51799	KD	XX	SY	F*	TER		Recapture <sup>P,1</sup>
	6/26/2002	1740-51821	RWR	XX	SY	M*	TER	32	New
	7/25/2001	1740-51840	KG	KK	SY	U	FLT		Recapture <sup>P</sup>
	7/1/2000	1740-91975	KK	OY	A3Y	M*	TER	40	Recapture <sup>P</sup>
	7/17/2001	1740-91976	KO	KK	SY	F*	UNC		Recapture <sup>P,1</sup>
	8/2/2001	2140-66693	RR	WVW	SY	U	UNC		Recapture <sup>P</sup>
	7/31/2000	2210-57014	KK	DD	3Y	F*	TER	7	Recapture <sup>P</sup>
	7/1/2001	2210-57033	KK	OR	SY	F*	UNC		Recapture <sup>P,1</sup>
	7/11/2000	2210-57069	VK	KK	3Y	M*	TER	13	Recapture <sup>P</sup>
	7/22/2002	2210-57093	DY	KK	SY	F*	UNC		Recapture <sup>P</sup>
	7/15/2002	2210-57301	XX	KWK	AHY	F*	TER	40	New <sup>P</sup>
	7/15/2002	2210-57302	XX	WGW	SY	U	UNC		New <sup>P</sup>
	7/21/2002	2210-57303	ZK	XX	AHY	U	UNC		New <sup>P</sup>
	7/21/2002	2210-57304	XX	YRY	AHY	F*	UNC		New <sup>P</sup>
	7/22/2002	2210-57305	XX	ZKZ	AHY	F*	UNC		New <sup>P</sup>
	7/22/2002	2210-57306	KGK	XX	AHY	U	UNC		New <sup>P</sup>
	7/16/2002	2210-57308	KZK	XX	SY	U	UNC		New <sup>P</sup>
	7/29/2002	2210-57309	VWV	XX	SY	U	UNC		New <sup>P</sup>
	7/29/2002	2210-57319	XX	ZRZ	SY	U	UNC		New <sup>P</sup>
	7/27/2002	2210-57322	XX	OKO	SY	U	UNC		New <sup>P</sup>
	7/29/2002	2210-57326	XX	ZO	SY	U	UNC		Recapture <sup>P,1</sup>
	8/9/2002	2280-96761	ZO	XX	AHY	U	UNC		New <sup>P</sup>
	8/8/2002	2280-96838	WKW	XX	SY	U	UNC		New <sup>P</sup>
<b>North Shore 1</b>	6/1/2001	1490-89910	VK	ZZ	ASY	U	TER	70	Resight
	6/19/2001	1490-89933	RGR	ZZ	SY	U	UNC		Recapture <sup>P</sup>
	7/13/2002	1490-89941	ZZ	DO	SY	U	UNC		Recapture



Patch Name	Date Banded	Federal Bird Band Number	Color Band		Age 2002	Sex	Status 2002	Territory Number	Observation Status
			Left Leg	Right Leg					
	6/20/2001	1490-89951	ZZ	GKG	SY	U	UNC		Recapture <sup>P</sup>
	6/18/2001	1490-89962	RZ	ZZ	SY	U	UNC		Recapture
	6/18/2001	1490-89966	RWR	ZZ	SY	M*	TER	81	Recapture
	6/23/1999	1710-20281	VV	GG	A4Y	M	TER	4	Resight <sup>1</sup>
	7/17/2002	1740-51730	KO	XX	AHY	U	UNC		New <sup>P,1</sup>
	6/30/2002	1740-51732	DRD	XX	SY	F*	UNC		New
	6/3/2002	1740-51742	XX	YDY	SY	U	UNC		New
	6/3/2002	1740-51743	XX	DRD	AHY	M*	TER	9	New
	7/9/2002	1740-51749	VK	XX	SY	M*	UNC		New <sup>P</sup>
	7/11/2002	1740-51750	KRK	XX	AHY	U	UNC		New <sup>P</sup>
	6/13/2002	1740-51773	XX	KR	AHY	M*	UNC		New
	6/16/2002	1740-51779	XX	DYD	AHY	F*	UNC		New
	7/15/2002	1740-51781	XX	YR	AHY	F*	TER	3	New
	6/4/2002	1740-51786	XX	WDW	AHY	F*	UNC		New
	6/28/2002	1740-51793	XX	WVW	SY	F*	UNC		New
	7/14/2002	1740-51794	XX	ZG	AHY	F*	UNC		New
	6/11/2002	1740-51798	XX	WD	AHY	U	UNC		Recapture <sup>1</sup>
	6/26/2002	1740-51802	XX	DWD	AHY	U	TER	86	Recapture
	7/27/2002	1740-51804	ZKZ	XX	SY	U	UNC		New <sup>P</sup>
	7/27/2002	1740-51805	GKG	XX	AHY	F*	UNC		New
	7/2/2002	1740-51834	DYD	XX	SY	M*	UNC		New
	7/18/2001	2210-57002	KK	OK	3Y	M	TER	3A	Recapture <sup>P</sup>
	7/1/2001	2210-57032	DRD	KK	SY	M*	UNC		Recapture
	6/27/2001	2210-57095	KK	YKY	SY	F*	TER	70	Recapture <sup>P</sup>
	7/17/2002	2210-57324	WG	XX	SY	F*	TER	92	New <sup>P</sup>
	7/17/2002	2210-57325	XX	OR	SY	U	TER	92	New <sup>P</sup>
	7/17/2002	2210-57326	XX	ZO	SY	U	UNC		New <sup>P,1</sup>
	7/29/2002	2210-57327	RY	XX	AHY	F*	UNC		New <sup>P</sup>
<b>North Shore 2</b>	6/29/2001	1490-89921	OG	ZZ	3Y	U	UNC		Recapture <sup>1</sup>
	6/16/2001	1710-20248	ZZ	RZR	SY	F*	UNC		New
	7/1/2000	1710-20700	WV	KK	3Y	F	UNC		Recapture <sup>P,1</sup>
	7/14/2002	1740-51751	XX	YV	SY	F*	UNC		New
	7/14/2002	1740-51752	XX	WKW	SY	U	UNC		New <sup>P</sup>
	6/28/2002	1740-51753	XX	RZ	AHY	F*	UNC		New <sup>1</sup>
	7/14/2002	1740-51755	KZ	XX	AHY	M*	UNC		New
	7/14/2002	1740-51756	XX	WG	AHY	F*	UNC		New
	6/27/2002	1740-51760	DO	XX	AHY	U	UNC		New
	6/30/2002	1740-51780	YVY	XX	AHY	F*	TER	57	New
	7/15/2002	1740-51787	OD	XX	SY	U	UNC		New <sup>P</sup>
	6/16/2002	1740-51791	GRG	XX	AHY	U	TER	11	New <sup>1</sup>
	6/28/2002	1740-51800	XX	GRG	AHY	U	UNC		New
	7/17/2001	1740-91976	KO	KK	SY	F*	UNC		Recapture <sup>1</sup>

**Color band color codes:** X=silver, V=violet, Z=gold, K=black, D=blue, G=green, O=orange, R=red, W=white, Y=yellow, and P=pink  
**Age:** SY=2 years, AHY=2 years or older, 3Y=3 years, ASY=3 years or older, 4Y=4 years, A3Y=4 years or older, A4Y=5 years or older, 6Y=6 years, A5Y=6 years or older, A6Y=7 years or older, A7Y= 8 years or older

Patch Name	Date Banded	Federal Bird Band Number	Color Band		Age 2002	Sex	Status 2002	Territory Number	Observation Status
			Left Leg	Right Leg					

Sex: F=female, M=male, U=unknown.  
 \* individuals sexed in the field  
 TER = territorial, UNC = uncertain, FLT = floater  
<sup>1</sup> exhibited within season movement between patches; <sup>P</sup> captured passively

### Tonto Creek Inflow

In 2002, USGS and AGFD detected 41 willow flycatchers (banded and unbanded) from 19 territories along the Tonto Creek Inflow. The USGS banding crew captured 10 new flycatchers, recaptured 3, and along with AGFD resighted the remaining 14 adults banded in previous years (Table 3).

**Table 3.** Willow flycatchers banded and resighted at Tonto Creek Inflow, Arizona in 2002, including patch name, date banded, Federalbird band number, color band combination, age in 2002, sex, status in 2002, territory number, and observation status in 2002 (new capture, recapture, resight, and movement information).

Patch Name	Date Banded	Federal Bird Band Number	Color Band		Age 2002	Sex	Status 2002	Territory Number	Observation Status 2002
			Left Leg	Right Leg					
<b>A+ Cross Road</b>	5/21/2001	1710-20202	ZZ	VWV	ASY	U	TER	49	Resight
<b>Tonto</b>	6/26/2001	1490-89936	RYR	ZZ	ASY	U	TER/TER	45/96	Resight
	5/11/1999	1590-97202	KR	XX	A6Y	M	TER	57	Resight
	6/6/2001	1710-20208	ZZ	WY	ASY	F*	TER	17	Resight
	5/18/2000	1710-20671	KK	WY	A3Y	M	TER	18	Resight
	5/13/1998	1740-91706	KY	XX	A7Y	M	TER	37	Resight
	7/12/2000	2210-57071	RG	KK	A3Y	U	TER	17	Resight
<b>Orange Peel Campground</b>	5/9/2001	1490-89907	ZZ	WO	A3Y	U	TER	9	Resight
	6/26/2001	1490-89934	ZZ	KYK	3Y	U	UNC		Recapture <sup>P,1</sup>
	6/14/2001	1710-20222	ZZ	VYV	ASY	U	TER	1	Resight <sup>1</sup>
	5/8/2001	1710-20500	WG	ZZ	ASY	F*	TER	6	Resight
	6/2/2000	1710-20681	KK	RW	A3Y	F	TER	8	Resight
	6/18/2000	1710-20696	KK	RG	A3Y	F*	TER	9	Resight
	6/30/2002	1740-51748	XX	KG	AHY	U	UNC		Recapture <sup>P</sup>
	6/12/02	1740-51759	XX	KD	AHY	U	UNC		New
	6/18/2002	1740-51768	GW	XX	AHY	U	TER	2	New <sup>1</sup>
	6/18/2002	1740-51774	XX	OZ	SY	F*	TER	2	New <sup>1</sup>
	5/18/2002	1740-51782	XX	DW	AHY	U	TER/TER	65/73	New
5/23/2002	1740-51831	XX	RGR	AHY	U	UNC		New	
<b>Orange Peel Flats</b>	5/20/2001	1490-89908	ZZ	YO	ASY	U	TER/TER	34/88	Resight
	7/28/1999	1710-20561	DO	VV	4Y	F	TER	88	Resight
	5/23/2002	1740-51741	XX	RW	AHY	U	UNC		New
	6/16/2002	1740-51745	DK	XX	AHY	F*	TER	34	New
	6/16/2002	1740-51746	RYR	XX	AHY	F*	TER	70	New
	5/18/2002	1740-51761	YY	XX	AHY	U	TER	85	New
	5/18/2002	1740-51830	XX	VWV	AHY	U	TER	85	New
	7/10/2001	1740-51894	KK	KRK	SY	U	TER	26	Recapture

Color band color codes: X=silver, V=violet, Z=gold, K=black, D=blue, G=green, O=orange, R=red, W=white, Y=yellow, and P=pink

Age: SY=2 years, AHY=2 years or older, 3Y=3 years, ASY=3 years or older, 4Y=4 years, A3Y=4 years or older, A4Y=5 years or older,

6Y=6 years, A5Y=6 years or older, A6Y=7 years or older, A7Y= 8 years or older

Sex: F=female, M=male, U=unknown.

\* individuals sexed in the field

TER = territorial, UNC = uncertain

<sup>1</sup> exhibited within season movement between patches

<sup>P</sup> captured passively

## ADULT SURVIVORSHIP

Survivorship is defined as the number of individuals known to survive from one year to the next. Survivorship calculations are based on resights and recaptures of banded individuals. In 2002, 90 of 196 banded adult flycatchers that were detected at Roosevelt Lake patches in 2001 returned to the same or different breeding location. Thus, overall 2001-2002 survivorship was 46% (Table 4).

**Table 4:** Willow flycatcher survivorship at Roosevelt Lake in Arizona from 2001 to 2002. Data are listed by site and patch name. The table includes the total number of banded flycatchers present in 2001, the number that were detected in 2002, and overall percent survivorship.

Site	Patch	# Banded 2001	# detected in 2002	% Survivorship
Salt River Inflow	Old Salt	18	8	44
	Mudflats	11	3	27
	Shangri-la	58	29	51
	School House South <sup>3</sup> <sup>1</sup>	7	4	57
	School House South <sup>1</sup> <sup>1</sup>	3	0	0
	School House North <sup>1</sup> <sup>2</sup>	17	9	56
	School House North <sup>2</sup> <sup>2</sup>	1	0	0
	Lake Shore	39	20	51
	North Shore 1	9	2	22
<b>Salt River Inflow Totals:</b>		<b>157</b>	<b>75</b>	<b>48</b>
Tonto Creek Inflow	A+ Cross Road	6	1	17
	Tonto Creek	15	6	40
	Orange Peel Campground	12	6	50
	Orange Peel Flats	6	2	33
	<b>Tonto Creek Totals:</b>		<b>39</b>	<b>15</b>
<b>Overall Totals</b>		<b>196</b>	<b>90</b>	<b>46</b>
<sup>1</sup> patches designated as School House South in 2001				
<sup>2</sup> patches designated as School House North in 2001				

## ADULT PATCH FIDELITY

Patch fidelity is defined as an adult flycatcher returning to the same breeding patch that it used the previous year. It is calculated by dividing the number of banded birds returning to the patch in 2002 by the total number of banded birds at the patch in 2001. For the purpose of comparison with past USGS reports, in which patches were considered separate sites, we have calculated patch fidelity (as well as site fidelity). Also calculated is the percent of those flycatchers that returned in 2002 which showed patch fidelity. We detected 65 (of 196 possible) flycatchers that returned to the same breeding patch that they

occupied in 2001 (33% patch fidelity; Table 5). Of the 118 flycatchers known to survive from 2001 to 2002, approximately 70% returned to the same patch.

**Table 5.** Willow flycatcher patch fidelity at Roosevelt Lake, Arizona organized by site and patch. Table includes site, patch, number of banded flycatchers present in 2001, number of returning banded flycatchers in 2002, patch fidelity, and percent of returning birds (from Table 4) which returned to the same patch.

Site	Patch	# of Flycatchers Banded in 2001	# of Flycatchers Returned in 2002	Patch Fidelity (%)	% Return Rate
Salt River Inflow	Old Salt	18	7	39	77
	Mudflats	11	2	18	67
	Shangri-la	57	26	46	90
	School House South 3	7	3	43	75
	School House North 1	16	5	31	31
	Lake Shore	39	15	38	75
	North Shore 1	9	0	0	0
<b>Salt River Inflow Site Fidelity:</b>		<b>157</b>	<b>58</b>	<b>37</b>	<b>71</b>
Tonto Creek Inflow	A+ Cross Road	6	1	16	100
	Tonto Creek	15	5	33	83
	Orange Peel Campground	12	4	33	67
	Orange Peel Flats	6	2	33	100
<b>Tonto Creek Inflow Site Fidelity:</b>		<b>39</b>	<b>12</b>	<b>31</b>	<b>92</b>
<b>Overall Totals:</b>		<b>196</b>	<b>70</b>	<b>36</b>	<b>78</b>

## ADULT MOVEMENT

### **Between-year, Between-patch Movement: 2001-2002**

Between-patch movement occurs when a flycatcher moves from one breeding patch to another breeding patch, and may occur between and within years. Year to year movement between patches may occur within and between drainages, the latter being less common.

In 2002, we detected 24 within-drainage movements and 2 between-drainage movements by adult flycatchers (Table 6). Nineteen moved between-patches within the same site at either the Tonto Creek or Salt River Inflows, and five flycatchers moved between the Tonto Creek and Salt River Inflows. Also, an adult captured by USGS at Grand Canyon River Mile 264, Arizona in 1998 has been returning to Mormon Mesa, Nevada since 1999 (G. Braden pers. comm.).

**Table 6.** Adult Southwestern willow flycatchers at Roosevelt Lake, Arizona that exhibited between-year, between-patch movement from 2001 to 2002. Table includes patches where flycatchers were detected in 2001 and 2002, distance moved, color band combination, Federal bird band number, age in 2002, and sex.

Patch detected in 2001 (unless previous year is noted)	Patch Detected in 2002	Distance Moved (km)	Color Band		Federal Bird Band Number	2002 Age	Sex
			Left Leg	Right leg			
Old Salt	Shangri-la	1.4	VV	YR	1710-20285	A4Y	M
		1.4	WW	KK	1740-91973	A3Y	M
Mudflats	Shangri-la	0.4	KG	ZZ	1710-20240	ASY	U
Shangri-la	Mudflats	0.4	OG	ZZ	1490-89921	3Y	U
	North Shore 1	2.5	VK	ZZ	1490-89910	ASY	U
	Orange Peel Campground	27.8	WG	ZZ	1710-20500	ASY	F*
Shangri-la (2000)	Lake Shore	1.9	KK	OY	1740-91975	A3Y	M*
School House North 1	School House North 2	1	KK	GK	1740-91967	A3Y	F
		1	YRY	DD	1710-20385	4Y	M
	Lake Shore	1.6	RK	KK	1710-20688	A3Y	U
		1.6	VK	KK	2210-57069	3Y	M*
School House South 3	School House North 2	0.5	KK	GW	1710-46321	A3Y	M*
School House South 3 (2000)	Shangri-la	1.5	KK	YY	1710-20616	A3Y	F
Lake Shore	Shangri-la	1.9	WK	VV	1490-89816	3Y	F*
	San Pedro River (Gila River North 4)	70	VV	VW	1490-89806	ASY	F*
	Orange Peel Campground	25.3	ZZ	VYV	1710-20222	ASY	U
	School House North 1	1.6	DY	ZZ	1710-20462	ASY	U
	School House South 3	1	ZZ	KY	1710-20464	3Y	U
	North Shore 1	0.5	KK	OK	2210-57002	3Y	M
North Shore 1	Lake Shore	0.5	ZZ	DRD	1490-89964	3Y	F*
	Shangri-la	2.5	DY	VV	1710-20267	3Y	U
Orange Peel Campground	Tonto	.7	RYR	ZZ	1490-89936	ASY	U
	Lake Shore	25.9	KK	DO	1710-20622	3Y	F
Tonto	Shangri-la	27.4	KK	WG	1710-46320	4Y	M

Tonto (2000)	School House South 3	26.9	RW	XX	1740-91506	A6Y	M
*Birds sexed in the field							

### Same-year, Between-patch Movement: 2002

Same year movement between patches occurred on 21 occasions in 2002 (Table 7). Most of the flycatchers moved between patches along the Salt River Inflow. However, four flycatchers moved from Orange Peel Campground to Lake Shore, a distance of 25 km (9.6 miles).

**Table 7.** Adult willow flycatchers at Roosevelt Lake, Arizona that exhibited same-year, between-patch movement in 2002. Table includes patches where flycatchers were first and later detected, distance moved, Federal bird band number, color band combination, age in 2002, and sex.

Patch First Detected	Patch(s) Later Detected	Distance Moved (km)	Federal Bird Band No.	Color Band		Age	Sex
				Left Leg	Right Leg		
Mudflats	North Shore 1	3.3	1740-51798	XX	WD	AHY	U*
	Lake Shore	1.9	1740-51799	KD	XX	SY	F*
	North Shore 2	3	1490-89921	OG	ZZ	TY	U*
	Shangri-la	2.8					
	Lake Shore	2	1710-20281	VV	GG	A4Y	M
	North Shore 1	0.4					
Shangri-la	North Shore 2	2.9	1740-51753	XX	RZ	AHY	F*
School House North 1	Shangri-la	0.9	1710-20462	DY	ZZ	ASY	U*
		1.1	1740-91970	KK	VY	A3Y	M
	Lake Shore	1.5	2210-57033	KK	OR	SY	F*
School House North 2	Lake Shore	1.1	1710-20385	YRY	DD	4Y	M
	North Shore 2	1.5	1710-20700	WV	KK	TY	F
	Shangri-la	2.1	1740-51736	XX	WRW	AHY	M*
School House South 3	Shangri-la	1.7	1710-20613	KK	KK	A3Y	M
North Shore 2	Shangri-la	2.7	1740-51791	GRG	XX	AHY	U*
Lake Shore	North Shore 2	0.8	1740-91976	KO	KK	SY	F*
	School House North 1	0.9	1740-51747	XX	GWG	AHY	M*
	Lake Shore	1					
North Shore 1	Lake Shore	0.7	1740-51730	KO	XX	AHY	U*
		0.7	2210-57326	XX	ZO	SY	U*
Orange Peel Campground	Lake Shore	25.0	1490-89934	ZZ	KYK	3Y	
			1710-20222	ZZ	VYV	ASY	U*
			1740-51768	GW	XX	AHY	U*
			1740-51774	XX	OZ	SY	F*

\* birds sexed in the field

## NESTLING BANDING, SURVIVORSHIP AND MOVEMENT

### **Nestling Banding: 2002**

Nestlings were banded only when they could be taken from nests that were safely accessible and only when 7-10 days of age. Nestlings banded in 2002 received a colored-anodized Federal bird band on one leg. We banded a total of 2 nestlings (from 2 nests) and 1 fledgling from an unknown nest at Roosevelt Lake (Table 8).

**Table 8.** Willow flycatcher nestlings and fledglings banded in 2002.

Patch	2002 Territory and Nest	Date Banded	Bird Band Number	Color Band	
				Left Leg	Right Leg
Lake Shore	13B	7/21/2002	1490-89850		V
North Shore 1	3B	8/15/2002	1490-89793	V	
	Unknown*	7/29/2002	1490-89730		V
<b>Color Band Color code: V=Violet Federal Band</b>					
* Fledgling caught at North Shore 1 in a passive net, uncertain as to which patch and nest this bird was associated with.					

### **First Year Survivorship and Movements:**

In 2001, we banded 107 nestlings at seven patches at Roosevelt Lake; 19 of these nestlings were recaptured in 2002 (Table 9). In addition to these 19, five were resighted and not recaptured, but are known to be year 2000 or 2001 Roosevelt nestlings based on the color of the anodized Federal band. Thus, 2001-2002 first year survivorship (based on the percentage of banded nestlings subsequently recaptured) was 18%. Also, one nestling banded in 1999 and two banded in 2000 at Roosevelt Lake were recaptured for the first time in 2002 (Table 9). A flycatcher banded as a nestling in 2000 (#2140-66693) at Mormon Mesa along the Virgin River, Nevada was recaptured at the Lake Shore patch, color-banded(RR:WVW), and was never seen again this year. Also, a flycatcher banded as a nestling at Roosevelt Lake in 2001 was detected on the Gila River (GRN4), Arizona, in 2002. Other long-distance between-year movements recorded in the Southwest in 2002 include a nestling banded at Mesquite, Nevada and passive netted on the Kern River, California (M. Whitfield pers. comm.), and a nestling banded in 1999 at Shangri-la that was recaptured in June 2002 on the Colorado River Delta at Lake Mead.

**Table 9.** Willow flycatcher nestlings banded in previous years and recaptured for the first time in 2002. Table includes natal banding location, patch detected in 2002, distance moved from natal site, Federal bird band number, new color band combination, natal date banded, and sex.

Natal Banding Location	Patch Detected in 2002	Distance Moved (km)	Fed. Bird Band No.	Color Band		Natal Date Banded	Sex	
				Left Leg	Right Leg			
Mudflats	North Shore 1	3.1	2210-57095	KK	YKY	6/27/2001	F*	
Shangri-la	Old Salt	1.3	1710-20589	OKO	VV	8/10/1999	F	
	School House North 1	0.9	2210-57033	KK	OR	7/1/2001	F*	
	School House North 2		2.0	1710-20700	WV	KK	7/1/2000	F
			1.9	2210-57010	WGW	KK	7/30/2000	F
	Lake Shore		1.9	1490-89931	GKG	ZZ	6/19/2001	U
			1.8	1490-89949	DWD	ZZ	6/20/2001	U
			1.9	1490-89959	ZZ	WVW	6/18/2001	U
			2.0	1710-20225	KYK	ZZ	6/25/2001	U
			1.7	1710-20230	ZZ	WZ	6/25/2001	U
			1.9	1740-51840	KG	KK	7/25/2001	U
	North Shore 1		2.2	2210-57093	DY	KK	6/27/2001	F*
			2.7	1490-89933	RGR	ZZ	6/19/2001	U
			2.3	1490-89941	ZZ	DO	7/25/2001	U
			2.2	1490-89951	ZZ	GKG	6/20/2001	U
			2.4	1490-89962	RZ	ZZ	6/18/2001	U
			2.4	1490-89966	RWR	ZZ	6/18/2001	M*
	North Shore 2		2.2	2210-57032	DRD	KK	7/1/2001	M*
		1.0	1710-20248	ZZ	RZR	6/16/2001	F*	
	Colorado River Delta, Lake Mead	400	1590-97546	VV	RW <sup>P</sup>	7/4/1999	M	
Lake Shore	North Shore 2	1.0	1740-91976	KO	KK	7/17/2001	F*	
	Mormon Mesa, NV	440.0	2140-66693	RR	WVW	2000	U	
Orange Peel Campground	Shangri-la	27.5	1740-51899	KK	ZKZ	6/27/2001	U	
	Orange Peel Flats	0.9	1740-51894	KK	KRK	7/10/2001	U	

M = male, F = female, U = sex unknown  
 \* sexed in the field  
<sup>P</sup> = plastic bands placed on bird by the San Bernadino County Museum

PASSIVE NETTING



From 21 April through 10 August 2002, we totaled 2031, 176, and 85 net hours passive netting at Lake Shore, Shangri-la, and North Shore 1, respectively. We totaled 126 willow flycatcher captures (5.4 captures per 100 net hours) of which 45 (36%) were new captures and 81 (64%) were recaptures. In addition, we captured 51 other species of birds (Table 10).

We noted three categories of willow flycatcher encounters while passive netting: (1) territorial individuals, (2) floaters (non-breeding flycatchers, not associated with a territory), and (3) uncertain (i.e. captured and never seen again that year). Of the individuals captured passive netting, 33 were territorial individuals, eight were floaters, and 56 were uncertain.

**Table 10.** Passive-netting results for all species caught at Lake Shore, Roosevelt Lake, Arizona in 2002. Table includes species captured, total numbers captured, and capture rate (per 100 net hours).

Species	Total Number Captured	Capture Rate (per 100 net hours)	Species	Total Number Captured	Capture Rate (per 100 net hours)
American Redstart	1	0.04	Lazuli Bunting	2	0.09
Ash-throated Flycatcher	14	0.60	Lesser Goldfinch	7	0.30
Bell's Vireo	13	0.56	Lincoln's Sparrow	2	0.09
Bewick's Wren	4	0.17	Lucy's Warbler	20	0.86
Black and White Warbler	1	0.04	MacGillivray's Warbler	14	0.60
Black Phoebe	13	0.56	Mourning Dove	3	0.13
Black-chinned Hummingbird	13	0.56	Northern Cardinal	2	0.09
Blue Grosbeak	57	2.45	Northern Rough-winged Swallow	1	0.04
Brewer's Sparrow	1	0.04	Orange-crowned Warbler	1	0.04
Brown-crested Flycatcher	14	0.60	Plumbeous Vireo	3	0.13
Brown-headed Cowbird	5	0.21	Ruby-crowned Kinglet	1	0.04
Bullock's Oriole	1	0.04	Song Sparrow	164	7.05
Cassin's Kingbird	2	0.09	Summer Tanager	24	1.03
Common Ground Dove	1	0.04	Swainson's Thrush	1	0.04
Common Yellowthroat	46	1.98	Townsend's Warbler	3	0.13
Crissal Thrasher	1	0.04	Vermilion Flycatcher	25	1.07
Dusky Flycatcher	14	0.60	Virginia's Warbler	2	0.09
Gila Woodpecker	2	0.09	Warbling Vireo	7	0.30
Green-tailed Towhee	8	0.34	Western Tanager	6	0.26
Grey Vireo	1	0.04	White-crowned Sparrow	8	0.34
Hammond's Flycatcher	4	0.17	<b>Willow Flycatcher</b>	<b>126</b>	<b>5.41</b>
Hooded Oriole	4	0.17	Wilson's Warbler	34	1.46
House Finch	11	0.47	Yellow Warbler	122	5.24
Hutton's Vireo	3	0.13	Yellow-breasted Chat	86	3.70
Ladder-backed Woodpecker	4	0.17	Yellow-rumped Warbler	42	1.80
Western Flycatcher	17	0.73			

## DISCUSSION

This year at Roosevelt Lake proved to be the most challenging willow flycatcher field seasons USGS banding personnel have experienced in six years. Willow flycatcher breeding behaviors such as dawn song, pair interactions, territory defense, and nest attentiveness were greatly reduced in 2002 compared to previous years. Observable breeding behaviors are the cues used by field personnel to locate willow flycatcher territories and ultimately particular individuals. Although this field season was successful in that all research objectives were met, the overall reduction in breeding activity resulted in a great many flycatchers being difficult to observe, resight and confirm to territories. Although the mechanism(s) responsible for the marked reduction in willow flycatcher breeding activity at Roosevelt Lake in 2002 are unknown, it is highly suggestive the 2002 drought, one of the most severe in decades, may have been a factor.

### 2002 BANDING AND RESIGHTING EFFORTS

For the second consecutive year, the USGS banding project focused exclusively on Roosevelt Lake, and no work was conducted at the lower San Pedro River sites. The purpose for this was two-fold. First, by focusing on one area, we hoped to increase the likelihood of detecting secretive or remote birds, increase the number of adults banded, and increase the number of nestlings banded. These goals were realized successfully. Second, the willow flycatcher population at Roosevelt Lake has been increasing in numbers rapidly since 1999, after several years of relative stability (Kenwood and Paxton 2001). Because of the rapidly growing population and colonization of new patches, the complexity of working at Roosevelt Lake has increased as well, requiring increased work effort and focus.

Overall, 99 new adults and 3 nestling willow flycatchers were banded in 2002, and 90 adults banded in previous years returned. This resulted in 77% of all adult flycatchers detected at Roosevelt Lake being banded by the end of the 2002 season. Furthermore, 28 flycatchers banded as nestlings in previous years were detected, with 23 recaptured to determine identity.

From 1996 to 2001, territories and pairs could be confirmed for almost all flycatchers detected throughout any given breeding season. In 2002, territories could be confirmed for only 51% of all banded adults detected at Roosevelt Lake. Having only confirmed half of the banded population to territories is in great part due to reduced flycatcher breeding activity and greater movements noted above.

From 1996 to 2002, we banded 430 adult and 250 nestling Southwestern willow flycatchers at Roosevelt Lake; as a result 68% or more of all flycatchers detected at Roosevelt Lake within a given year were banded (Paxton and Sogge 1996, Paxton et al. 1997, Netter et al. 1998, English et al. 1999, Luff et al. 2000, Kenwood and Paxton 2001). Maintaining high overall percentages of banded birds is important because it increases the proportion of banded birds returning in subsequent years, which in turn increases our ability to detect site fidelity and movement, provides a more accurate calculation of survivorship, and provides AGFD with banded females for their seasonal fecundity study. This large number of banded

flycatchers will be important when the habitat is inundated, as we will have a better chance of detecting some of the Roosevelt Lake flycatchers that move to other sites.

### ADULT SURVIVORSHIP

Survivorship is defined as the number of individuals that survive from one year to the next, and accurate calculations depend on year to year detection of birds. The estimated 2001-2002 survivorship rate was 45%, based on 90 of 196 returning banded adults. Given that flycatchers were difficult to detect this year (as noted above), a number of flycatchers may have returned and gone undetected. Thus, true survivorship for 2001-2002 may be higher than 46%.

One problem with calculating survivorship is that it assumes that all living flycatchers are detected. This year we detected five flycatchers at our monitoring sites that were not detected in 2001. Recalculating survivorship for 2001 by including these individuals increases the 2000-2001 survivorship rate from 65% (as reported in Kenwood and Paxton 2001) to 68%. This results in corrected estimates that are higher than those presented earlier, underscoring the fact that survivorship estimates are just that – *estimates*. In the past, the chances of a banded flycatcher that moved to another site being detected via resighting or recapture was high. With reduced resighting effort at the San Pedro River in 2002, the probability of detecting a banded flycatcher that moved out of the Roosevelt Lake area is less than in previous years.

The complementary calculation of survivorship is mortality; hence we have a mortality rate of 54% between 2001-2002. From 1996 to 2001, estimated flycatcher mortality at Roosevelt Lake has ranged from 35 to 47%. In southern California, 38% of adult males and 48% of adult female flycatchers did not return the following year (Whitfield *in* Sedgwick 2000), consistent with our mortality estimates prior to 2002. Although estimated mortality for 2002 (54%) is the highest yet observed at Roosevelt Lake, we believe this is due to lower detection of flycatchers and not a higher mortality year. No mechanism for these differing mortality rates are known, though possible factors include increased resight effort (especially in remote areas at Roosevelt Lake), mortality during migration and/or the wintering period.

The demographic patterns of wild bird populations often vary from year to year, sometimes to a very large degree. Thus, it is no surprise to find relatively substantial differences (up to 20%) among survivorship and mortality rates for different years. The different patterns that we observe reinforce the variability of demographic traits and the need for long-term data. The value of long-term and large-scale data is further illustrated by the upward adjustments of previous year survivorship estimates - adjustments that would not have been possible without multiple years of sampling and multiple study sites.

### ADULT SITE FIDELITY, PATCH FIDELITY AND MOVEMENT

Site and patch fidelity are defined as an adult flycatcher returning to the same breeding site or patch that it used the previous year. It is calculated by dividing the number of banded birds returning to the site or patch in 2002 by the total number of banded birds at the site or patch in 2001. Flycatchers that survive the winter and return to the breeding grounds select between returning to the approximate area where they bred the year before, or moving to a new breeding location. Based on banding results from 1997 to 2002, we know that a high number of flycatchers move to different breeding patches and sites from one year to the next. In the past, we have presented site fidelity (returning to the same site) and movement among sites based on definitions of most habitat patches being separate sites. However, the degree of movement observed indicates that a site, to the flycatcher, is best defined on a reach by reach basis. Therefore, since 2001, we have considered all patches within the Salt River Inflow as one site, and all patches within the Tonto Creek Inflow as one site. Prior to 2001, each patch was considered a different site. This difference changes the numbers for birds moving between sites, and site fidelity. For the highest resolution, we have presented the return patterns by patch, which can be compared with past "site"-level (now patch-level) data.

## Site and Patch Fidelity

Site and patch fidelity is the tendency of flycatchers to return to the same breeding site and/or patch between years. Over the last five years, 1996-2001, average patch fidelity rates ranged from 35% to 44% (Luff et al. 2000, Kenwood and Paxton 2001). Our 2001-2002 patch fidelity rate of 36% is similar, though slightly lower, than previous years. With the more encompassing definition of site adopted in 2001, the site fidelity for Roosevelt Lake is 70% in 2002.

Calculating site fidelity as the number of flycatchers returning to a site divided by the total number of banded birds present at that site the year before is convenient for comparisons among sites and to other studies, but it does not differentiate between fidelity based on mortality versus site selection. Because this study encompasses all known occupied willow flycatcher areas at Roosevelt Lake, movements are readily detected. Thus, it is instructive to look at an alternate calculation of site fidelity – the percentage of birds known to *survive*, thus having the alternative between site fidelity or movement. In this comparison, 74% and 80% of known surviving 2001 adults returned to Salt and Tonto, respectively in 2002.

## Adult Movement

Between-year movement gives us an indication of the dynamic nature of habitat use by the willow flycatcher. As in past years, in 2002 we observed a high degree of movement at Roosevelt Lake and movement has been increasing partly due to an increasing number of flycatcher territories and field effort. This year we detected six adult flycatchers that moved between the Tonto and Salt sites, as compared to three in 1997, one in 1998, zero in 1999, six in 2000, and nine in 2001. Between-patch, same-site movement has also been increasing with five in 1999, 10 in 2000, 20 in 2001, and 19 in 2002.

These levels of movement have significant implications to genetic structure, site tenacity, and response to habitat modification and/or destruction. This level of population movement and genetic mixing may contribute to the patterns of high genetic diversity within, and low population structuring (e.g., low reproductive isolation) among willow flycatcher populations in the Southwest (Busch et al. 2000). These types of movements also provide information on willow flycatcher site selection, particularly with regard to habitat patchiness and isolation.

Detection of continuous movement of flycatchers throughout the breeding season, both within and between different sites, underscores that surveys throughout the breeding season are essential for accurate population estimates of breeding willow flycatchers. In fact, accurate population estimates in large, densely populated breeding sites may require intense color-banding and tracking of individual birds. Additionally, our data indicate that areas within suitable habitat that are unoccupied early in the breeding season may become occupied later as flycatchers resettle territories. We also find that within a site, the birds settle first into high population density areas most recently occupied and later arriving birds settle into less populated outlying areas. Furthermore, the presence of a flycatcher at a territory throughout the breeding season does not mean that it is the same individual, as reshuffling and replacement of individuals does occur. Although a flycatcher territory may be occupied in consecutive years and have nearly identical territory boundaries in both years, it may not be occupied by the same flycatcher.

## NESTLING SURVIVORSHIP, MOVEMENT AND BANDING

Nineteen of the 107 nestlings banded in 2001 returned to Roosevelt Lake this year and were recaptured, resulting in a survivorship rate of 18%. Over the past years, we have observed that many banded nestlings are not detected for two or more years after being banded. In 2002, two nestlings banded in 1999 and two banded in 2000 were detected for the first time. Thus, recalculated nestling survivorship

for 1999 and 2000 was 22% and 32%, respectively. We expect to detect more 2001 nestlings next year, and possibly beyond, which will increase nestling survivorship rate.

Nestling dispersal was high in 2002, with many nestlings moving to different sites and even different drainages. In 2001, we observed only the second returning nestling to settle in the same patch from which it fledged. These results are consistent with this year in that all returning nestlings moved to different patches, sites and/or drainages, including two individuals that moved approximately 400 km from their natal patches. As noted in 2001, second year flycatchers tended to settle into newer habitat (Kenwood and Paxton 2001). Compared with the relatively high site fidelity of adults, young birds may be the main colonizers of new habitat.

Due to very low willow flycatcher reproductive success in 2002 (AGFD unpublished data), out of 75 nests discovered, only six nestlings were known to fledge of which we banded two from two nests. This is the least number of nestlings banded in a single year at Roosevelt Lake. As mentioned above, it is highly likely the severe drought affecting the Southwest may have been a factor in the low reproductive effort and success. The low number of flycatcher nestlings banded in 2002 will affect the ability to calculate nestling survival and movements next year, and possibly beyond. More importantly, fewer returning nestlings next year equates to lower recruitment of second year flycatchers in subsequent years.

#### PASSIVE NETTING AND DETECTION OF NON-BREEDING FLYCATCHERS

This year we greatly increased passive netting effort to capture non-territorial floater flycatchers; these efforts were a success. In 2002, we captured 95 different individual flycatchers of which eight (8%) were assumed to be floaters. Although the percentage of floaters captured passively in 2001 (36%) was higher with less netting effort, the encounter status for 56 of the flycatchers captured passively in 2002 was uncertain (many were never seen again in 2002). Thus, some (unknown) portion of these individuals are likely to have been floaters which would increase the number of floaters present in 2002. Given the success of the passive netting project, and the important management and conservation implications of these findings, we anticipate continuing the efforts for next year.

## **ACKNOWLEDGMENTS**

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The following table lists all willow flycatchers banded by the USGS at Roosevelt Lake, Arizona from 1996 to 2002. The table is sorted by individual Federal band number, and includes color band combination, site and patch where banded, age when banded (either adult or nestling), sex, date banded, and the year(s) detected (including the year banded). A numerical footnote in a "Year(s) Detected" column indicates that the flycatcher moved that year to a different site/patch than it occupied the prior year, with the number indicating the new location (see end of table for site numbers).

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1490-89730	:V	Salt River	North Shore 1	HY	U	29-Jul-02							X
1490-89793	V:	Salt River	North Shore 1	N	U	15-Aug-02							X
1490-89801	V:WV	Salt River	Salt River Inflow	AHY	F*	15-Jun-01						X	
1490-89802	V:WRW	Salt River	North Shore	AHY	F*	14-Jul-01						X	
1490-89803	V:WDW	Salt River	Shangri-la	AHY	F*	1-Jul-01						X	
1490-89804	RYR:V	Tonto Creek	Orange Peel Flats	AHY	F*	30-Jun-01						X	
1490-89805	V:DWD	Salt River	Lake Shore	SY	U	2-Jul-01						X	
1490-89806	V:VW	Salt River	Lake Shore	AHY	F*	18-Jun-01						X	
1490-89816	WK:V	Salt River	Lake Shore	SY	F*	28-Jun-01						X	X <sup>3</sup>
1490-89817	KG:V	Salt River	North Shore	SY	U	26-Jul-01						X	
1490-89850	:V	Salt River	Lake Shore	N	U	20-Jul-02							X
1490-89901	YO:Z	Salt River	Salt River Inflow	AHY	F*	15-Jun-01						X	X
1490-89902	KO:Z	Tonto Creek	A+ Cross Road	AHY	F*	16-Jun-01						X	
1490-89903	Z:DWD	Salt River	Lake Shore	AHY	F*	18-Jun-01						X	
1490-89906	Z:VW	Salt River	Lake Shore	AHY	U	5-May-01						X	
1490-89907	Z:WO	Tonto Creek	Orange Peel Camp	AHY	U	9-May-01						X	X
1490-89908	Z:YO	Tonto Creek	Orange Peel Flats	AHY	U	20-May-01						X	X
1490-89909	YK:Z	Salt River	Shangri-la	AHY	U	30-May-01						X	
1490-89910	VK:Z	Salt River	Shangri-la	AHY	U	1-Jun-01						X	X <sup>10</sup>
1490-89911	GO:Z	Tonto Creek	A+ Cross Road	AHY	F*	12-Jun-01						X	
1490-89912	Z:YDY	Tonto Creek	A+ Cross Road	AHY	U	12-Jun-01						X	
1490-89913	Z:K GK	Salt River	Shangri-la	SY	M*	27-Jun-01						X	
1490-89914	VWV:Z	Salt River	Lake Shore	AHY	U	28-Jun-01						X	
1490-89921	OG:Z	Salt River	Shangri-la	SY	U	29-Jun-01						X	X <sup>4</sup>
1490-89929	OY:Z	Salt River	Mudflats	SY	U	15-Jun-01						X	
1490-89930	Z:KO	Tonto Creek	Orange Peel Camp	AHY	U	18-Jun-01						X	
1490-89931	GKG:Z	Salt River	Shangri-la	N	U	19-Jun-01						X	X <sup>9</sup>
1490-89932	Z:	Salt River	Shangri-la	N	U	19-Jun-01						X	
1490-89933	RGR:Z	Salt River	Shangri-la	N	U	19-Jun-01						X	X <sup>10</sup>
1490-89934	Z:KYK	Tonto Creek	Orange Peel Camp	SY	U	26-Jun-01						X	X
1490-89935	Z:WKW	Tonto Creek	Orange Peel Camp	AHY	U	26-Jun-01						X	
1490-89936	RYR:Z	Tonto Creek	Orange Peel Camp	AHY	U	26-Jun-01						X	X <sup>2</sup>
1490-89939	Z:	Salt River	Shangri-la	N	U	25-Jun-01						X	
1490-89940	:Z	Salt River	Shangri-la	N	U	25-Jun-01						X	
1490-89941	Z:DO	Salt River	Shangri-la	N	U	25-Jun-01						X	X <sup>10</sup>
1490-89942	:Z	Salt River	Shangri-la	N	U	25-Jun-01						X	
1490-89943	RDR:Z	Salt River	Lake Shore	AHY	F*	10-Jul-01						X	X
1490-89944	OW:Z	Salt River	Shangri-la	SY	F*	11-Jul-01						X	X
1490-89945	YRY:Z	Salt River	Lake Shore	AHY	F*	12-Jul-01						X	
1490-89949	DWD:Z	Salt River	Shangri-la	N	U	20-Jun-01						X	X <sup>9</sup>
1490-89950	Z:	Salt River	Shangri-la	N	U	20-Jun-01						X	
1490-89951	Z:GKG	Salt River	Shangri-la	N	U	20-Jun-01						X	X <sup>10</sup>

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1490-89953	:Z	Salt River	Shangri-la	N	U	20-Jun-01						X	
1490-89954	:Z	Salt River	Shangri-la	N	U	20-Jun-01						X	
1490-89955	:Z	Salt River	Shangri-la	N	U	20-Jun-01						X	
1490-89956	:Z	Salt River	Shangri-la	N	U	20-Jun-01						X	
1490-89957	:Z	Salt River	Shangri-la	N	U	20-Jun-01						X	
1490-89959	Z:WVW	Salt River	Shangri-la	N	U	18-Jun-01						X	X <sup>9</sup>
1490-89962	RZ:Z	Salt River	Shangri-la	N	U	18-Jun-01						X	X <sup>10</sup>
1490-89964	Z:DRD	Salt River	North Shore	SY	F*	14-Jul-01						X	X <sup>9</sup>
1490-89966	RWR:Z	Salt River	Shangri-la	N	U	18-Jun-01						X	X <sup>10</sup>
1490-89968	Z:DK	Tonto Creek	Orange Peel Flats	AHY	M*	30-Jun-01						X	
1490-89969	Z:	Salt River	Shangri-la	N	U	18-Jun-01						X	
1490-89970	Z:	Salt River	Shangri-la	N	U	18-Jun-01						X	
1490-89971	Z:	Salt River	Shangri-la	N	U	18-Jun-01						X	
1590-97202	KR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	13-May-97		X	X	X	X	X	X
1590-97203	UW/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	15-May-97		X					
1590-97213	X:Y/WR	Salt River	Salt River Inflow	AHY	F	31-May-97		X					
1590-97214	X:D/WR	Salt River	Salt River Inflow	AHY	M	1-Jun-97		X					
1590-97215	X:P/WR	Salt River	Salt River Inflow	AHY	M	1-Jun-97		X					
1590-97216	L/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	2-Jun-97		X	X				
1590-97217	Y/WR:X	Salt River	Salt River Inflow	AHY	M	3-Jun-97		X					
1590-97218	X:O/WR	Salt River	Salt River Inflow	AHY	M	3-Jun-97		X	X				
1590-97219	X:DP/WR	Salt River	Salt River Inflow	AHY	F	3-Jun-97		X	X				
1590-97236	R:X	Salt River	Salt River Inflow	N	F	23-Jun-97		X					
1590-97237	R:X	Salt River	Salt River Inflow	N	M	23-Jun-97		X					
1590-97249	P/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	29-Jun-97		X					
1590-97250	X:R	Salt River	Salt River Inflow	N	F	30-Jun-97		X					
1590-97251	X:R	Salt River	Salt River Inflow	N	F	30-Jun-97		X					
1590-97252	X:R	Salt River	Salt River Inflow	N	M	30-Jun-97		X					
1590-97253	X:PD/R	Salt River	Salt River Inflow	AHY	F	30-Jun-97		X	X				
1590-97254	RW/R:X	Salt River	Salt River Inflow	AHY	M	1-Jul-97		X					
1590-97263	PD/R:X	Salt River	Salt River Inflow	AHY	F	24-Jul-97		X	X	X	X		
1590-97264	X:WU/R	Salt River	Salt River Inflow	AHY	M	24-Jul-97		X					
1590-97268	X:R	Salt River	Salt River Inflow	N	F	7-Aug-97		X					
1590-97269	X:R	Salt River	Salt River Inflow	N	U	7-Aug-97		X					
1590-97304	G/RW:X	Salt River	Salt River Inflow	AHY	M	14-May-97		X	X	X <sup>5</sup>	X	X	
1590-97311	W/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	31-May-97		X	X	X			
1590-97312	O/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	31-May-97		X					
1590-97313	P/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	31-May-97		X	X	X	X	X	
1590-97314	KW/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	F	1-Jun-97		X	X				
1590-97315	X:W/RW	Salt River	Salt River Inflow	AHY	M	2-Jun-97		X					
1590-97316	D/RW:X	Salt River	Salt River Inflow	AHY	M	2-Jun-97		X	X				
1590-97317	X:G/RW	Salt River	Salt River Inflow	AHY	F	2-Jun-97		X					
1590-97318	X:W/PD	Salt River	Salt River Inflow	AHY	F	2-Jun-97		X	X	X	X <sup>3</sup>	X	
1590-97319	X:O/PD	Salt River	Salt River Inflow	AHY	M	2-Jun-97		X	X	X			
1590-97320	X:Y/PD	Tonto Creek	Tonto Creek Inflow	AHY	M	3-Jun-97		X	X				
1590-97321	X:L/RW	Tonto Creek	Tonto Creek Inflow	AHY	M	3-Jun-97		X					
1590-97325	KW/O:X	Verde River	Camp Verde	AHY	F	5-Jun-97		X	X <sup>14</sup>	X	X <sup>3</sup>		
1590-97351	X:K/RW	Salt River	Salt River Inflow	AHY	M	28-Jun-97		X	X				
1590-97352	W/PD:X	Salt River	Salt River Inflow	AHY	F	28-Jun-97		X					
1590-97359	UW/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	F	1-Jul-97		X					

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1590-97360	DP/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	1-Jul-97		X	X	X			
1590-97373	VG:X	Salt River	Salt River Inflow	AHY	F	14-Jul-97		X	X	X <sup>6</sup>	X	X <sup>7</sup>	
1590-97374	X:PD/RW	Salt River	Salt River Inflow	AHY	M	14-Jul-97		X					
1590-97375	WU/RW:X	Salt River	Salt River Inflow	AHY	F	14-Jul-97		X					
1590-97501	V:GW	Salt River	Salt River Inflow	AHY	F	18-Jun-98			X				
1590-97502	:V	Tonto Creek	Tonto Creek Inflow	N	F	21-Jul-98			X				
1590-97503	GY:V	Tonto Creek	Tonto Creek Inflow	N	M	21-Jul-98			X	X <sup>3</sup>	X <sup>18</sup>		
1590-97506	V:	Salt River	Salt River Inflow	N	F	28-Jun-99				X			
1590-97507	V:YKY	Salt River	Shangri-la	N	F	28-Jun-99				X	X <sup>4</sup>		
1590-97508	V:	Salt River	Salt River Inflow	N	F	28-Jun-99				X			
1590-97509	:V	Tonto Creek	Tonto Creek Inflow	N	F	28-Jun-99				X			
1590-97511	KR:V	Tonto Creek	Tonto Creek Inflow	N	F	28-Jun-99				X	X <sup>13</sup>	X <sup>9</sup>	
1590-97512	:V	Tonto Creek	Tonto Creek Inflow	N	U	28-Jun-99				X			
1590-97513	YK:V	Tonto Creek	Tonto Creek Inflow	AHY	M	13-May-98			X	X	X		
1590-97514	V:YK	Salt River	Salt River Inflow	AHY	M	24-May-98			X	X <sup>6</sup>			
1590-97515	V:RG	Salt River	Salt River Inflow	AHY	M	3-Jun-98			X				
1590-97516	V:KK	Salt River	Salt River Inflow	AHY	M	7-Jun-98			X	X <sup>4</sup>	X	X	X
1590-97517	V:KY	Salt River	Salt River Inflow	AHY	F	7-Jun-98			X	X <sup>3</sup>			
1590-97518	V:GR	Salt River	Salt River Inflow	AHY	M	7-Jun-98			X		X		
1590-97519	KY:V	Tonto Creek	Tonto Creek Inflow	AHY	M*	8-Jun-98			X				
1590-97520	KK:V	Tonto Creek	Tonto Creek Inflow	AHY	M	16-Jun-98			X				
1590-97521	GR:V	Tonto Creek	Tonto Creek Inflow	AHY	F	17-Jun-98			X				
1590-97522	WY:V	Tonto Creek	Tonto Creek Inflow	AHY	F	17-Jun-98			X	X	X		
1590-97523	YG:V	Tonto Creek	Tonto Creek Inflow	AHY	M	17-Jun-98			X				
1590-97524	YW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	1-Jul-98			X	X	X <sup>4</sup>	X	
1590-97525	RW:V	Tonto Creek	Tonto Creek Inflow	AHY	U	8-Jun-98			X		X		
1590-97526	DK:V	Tonto Creek	Tonto Creek Inflow	AHY	U	8-Jun-98			X				
1590-97527	WW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	9-Jun-98			X			X <sup>9</sup>	
1590-97528	DW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	17-Jun-98			X				
1590-97529	V:RW	Salt River	Salt River Inflow	AHY	M	18-Jun-98			X				
1590-97530	V:DW	Salt River	Salt River Inflow	SY	M	18-Jun-98			X	X			
1590-97531	V:WW	Salt River	Salt River Inflow	AHY	F	19-Jun-98			X		X	X	
1590-97537	V:RR	Salt River	Salt River Inflow	AHY	U	7-Jun-98			X		X <sup>3</sup>	X	X
1590-97538	V:YY	Salt River	Salt River Inflow	AHY	M	7-Jun-98			X				
1590-97539	YR:V	Salt River	Salt River Inflow	AHY	F	19-Jun-98			X				
1590-97540	V:RY	Salt River	Salt River Inflow	AHY	F	30-Jun-98			X	X <sup>5</sup>	X <sup>3</sup>	X	X
1590-97541	:V	Tonto Creek	Tonto Creek Inflow	N	M	27-Jul-98			X				
1590-97542	:V	Tonto Creek	Tonto Creek Inflow	N	F	27-Jul-98			X				
1590-97543	V:WG	Salt River	Shangri-la	AHY	U	22-Jun-99				X	X <sup>4</sup>	X <sup>3</sup>	X
1590-97544	V:RD	Salt River	Shangri-la	AHY	M	22-Jun-99				X	X	X	X
1590-97545	V:	Salt River	Salt River Inflow	N	F	4-Jul-99				X			
1590-97546	V:	Salt River	Salt River Inflow	N	M	4-Jul-99				X			
1590-97547	V:	Salt River	Salt River Inflow	N	F	4-Jul-99				X			
1590-97548	:V	Salt River	Salt River Inflow	N	M	10-Aug-99				X			
1590-97549	VK:V	Tonto Creek	Tonto Creek Inflow	AHY	M	14-May-99				X			
1590-97550	RD:V	Tonto Creek	Tonto Creek Inflow	AHY	M	14-May-99				X			
1710-20202	Z:VWV	Tonto Creek	A+ Cross Road	AHY	U	21-May-01						X	X
1710-20203	Z:RO	Salt River	Shangri-la	AHY	U	22-May-01						X	
1710-20204	Z:OD	Salt River	Salt River Inflow	AHY	F*	30-May-01						X	
1710-20205	WVW:Z	Salt River	Lake Shore	AHY	U	31-May-01						X	

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1710-20207	RY:Z	Salt River	Shangri-la	AHY	U	5-Jun-01						X	
1710-20208	Z:WY	Tonto Creek	Tonto Creek Inflow	AHY	F*	6-Jun-01						X	X
1710-20209	Z:WRW	Salt River	Lake Shore	AHY	U	2-Jun-01						X	
1710-20210	Z:RDR	Salt River	Shangri-la	AHY	F*	13-Jun-01						X	
1710-20211	RKR:Z	Salt River	School House North 1	SY	F*	14-Jun-01						X	
1710-20219	DO:Z	Salt River	Shangri-la	AHY	U	17-May-01						X	X
1710-20220	VV:Z	Salt River	Mudflats	AHY	F*	3-Jun-01						X	
1710-20221	GY:Z	Tonto Creek	A+ Cross Road	AHY	U	12-Jun-01						X	
1710-20222	Z:VYV	Salt River	Lake Shore	AHY	U	14-Jun-01						X	X <sup>11</sup>
1710-20223	Z:WG	Salt River	School House South 3	AHY	U	16-Jun-01						X	
1710-20224	:Z	Salt River	Shangri-la	N	U	25-Jun-01						X	
1710-20225	KYK:Z	Salt River	Shangri-la	N	U	25-Jun-01						X	X <sup>9</sup>
1710-20226	Z:	Salt River	Shangri-la	N	U	25-Jun-01						X	
1710-20229	Z:	Salt River	Shangri-la	N	U	25-Jun-01						X	
1710-20230	Z:WZ	Salt River	Shangri-la	N	U	25-Jun-01						X	X <sup>9</sup>
1710-20231	:Z	Salt River	Shangri-la	N	U	25-Jun-01						X	
1710-20232	:Z	Salt River	Shangri-la	N	U	25-Jun-01						X	
1710-20233	:Z	Salt River	Shangri-la	N	U	25-Jun-01						X	
1710-20239	Z:GO	Salt River	School House South 3	AHY	U	5-May-01						X	X
1710-20240	KG:Z	Salt River	Mudflats	AHY	U	22-May-01						X	X <sup>3</sup>
1710-20241	KY:Z	Salt River	Shangri-la	AHY	F*	3-Jun-01						X	
1710-20242	YG:Z	Salt River	School House North 1	AHY	F*	4-Jun-01						X	X
1710-20243	OD:Z	Salt River	Shangri-la	AHY	F*	5-Jun-01						X	X
1710-20244	Z:RWR	Tonto Creek	Orange Peel Camp	AHY	M*	6-Jun-01						X	
1710-20245	:Z	Salt River	Shangri-la	N	U	16-Jun-01						X	
1710-20246	:Z	Salt River	Shangri-la	N	U	16-Jun-01						X	
1710-20247	:Z	Salt River	Shangri-la	N	U	16-Jun-01						X	
1710-20248	Z:RZR	Salt River	Lake Shore	N	U	16-Jun-01						X	X <sup>19</sup>
1710-20249	:Z	Salt River	Lake Shore	N	U	16-Jun-01						X	
1710-20250	:Z	Salt River	Shangri-la	N	U	18-Jun-01						X	
1710-20251	V:WK	Salt River	Salt River Inflow	AHY	M	15-Jun-99				X			
1710-20252	V:WY	Salt River	Salt River Inflow	SY	F	15-Jun-99				X			
1710-20253	V:KO	Salt River	Salt River Inflow	SY	M	15-Jun-99				X			
1710-20254	V:GO	Salt River	Salt River Inflow	AHY	M	15-Jun-99				X			
1710-20255	V:OK	Salt River	Mudflats	AHY	M	23-Jul-99				X			
1710-20256	V:KW	Salt River	Mudflats	AHY	F	23-Jun-99				X	X	X	
1710-20257	V:GK	Salt River	Mudflats	SY	M	23-Jun-99				X			
1710-20258	V:OY	Salt River	Mudflats	SY	F	23-Jun-99				X	X		
1710-20261	VG:V	Tonto Creek	Tonto Creek Inflow	AHY	M	5-Jun-99				X			
1710-20262	V:GY	Tonto Creek	Tonto Creek Inflow	AHY	M	5-Jun-99				X			
1710-20263	GW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6-Jun-99				X	X <sup>9</sup>	X	X
1710-20264	OO:V	Salt River	Shangri-la	AHY	F*	3-Jun-01						X	X
1710-20265	KW:V	Salt River	North Shore	SY	F*	30-Jun-01						X	
1710-20266	DR:V	Salt River	North Shore	SY	U	30-Jun-01						X	
1710-20267	DY:V	Salt River	North Shore	SY	U	2-Jul-01						X	X <sup>3</sup>
1710-20268	GV:V	Salt River	Mudflats	SY	F*	11-Jul-01						X	
1710-20271	V:VWV	Tonto Creek	Orange Peel Camp	AHY	F*	26-Jun-01						X	
1710-20273	V:KR	Salt River	Shangri-la	AHY	F	22-Jun-99				X	X	X	
1710-20274	V:GV	Salt River	Shangri-la	AHY	M	22-Jun-99				X		X	
1710-20275	V:OO	Salt River	Shangri-la	AHY	M	22-Jun-99				X	X	X <sup>9</sup>	X

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1710-20276	GG:V	Tonto Creek	Tonto Creek Inflow	AHY	M*	4-Jun-99				X			
1710-20277	WG:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6-Jun-99				X	X	X	
1710-20278	GK:V	Tonto Creek	Tonto Creek Inflow	AHY	F	14-Jun-99				X			
1710-20279	V:VG	Salt River	Shangri-La	AHY	M	18-Jun-99				X			
1710-20280	V:KD	Salt River	Mudflats	AHY	M	23-Jun-99				X	X <sup>3</sup>	X	X
1710-20281	V:GG	Salt River	Mudflats	AHY	M	23-Jun-99				X	X	X	X
1710-20282	V:YO	Salt River	Mudflats	AHY	F	23-Jun-99				X	X <sup>3</sup>	X	
1710-20283	WR:V	Tonto Creek	Tonto Creek Inflow	AHY	F	14-Jun-99				X	X	X <sup>6</sup>	
1710-20284	RY:V	Tonto Creek	Tonto Creek Inflow	AHY	M	14-May-99				X			
1710-20285	V:YR	Salt River	Salt River Inflow	AHY	M	13-May-99				X	X	X	X <sup>3</sup>
1710-20287	V:	Salt River	Salt River Inflow	N	F	30-Jun-99				X			
1710-20288	V:RYR	Salt River	Salt River Inflow	N	M	30-Jun-99				X		X <sup>9</sup>	X
1710-20289	V:	Salt River	Salt River Inflow	N	F	30-Jun-99				X			
1710-20290	V:	Salt River	Salt River Inflow	N	F	30-Jun-99				X			
1710-20291	V:	Salt River	Salt River Inflow	N	M	30-Jun-99				X			
1710-20293	V:VK	Salt River	Mudflats	AHY	F	23-Jun-99				X			
1710-20294	GO:V	Tonto Creek	Tonto Creek Inflow	AHY	F	29-Jun-99				X			
1710-20295	:V	Salt River	Salt River Inflow	N	F	9-Jul-99				X			
1710-20296	OW:V	Tonto Creek	Tonto Creek Inflow	AHY	M	29-Jun-99				X			
1710-20297	:V	Salt River	Salt River Inflow	N	F	9-Jul-99				X			
1710-20298	YKY:V	Tonto Creek	Tonto Creek Inflow	N	M	19-Jul-99				X		X <sup>1</sup>	X
1710-20299	:V	Tonto Creek	Tonto Creek Inflow	N	F	19-Jul-99				X			
1710-20300	V:	Salt River	Salt River Inflow	N	M	19-Jul-99				X			
1710-20301	V:VY	Salt River	Salt River Inflow	SY	F	14-Jul-99				X			
1710-20302	V:DR	Salt River	Salt River Inflow	SY	M	14-Jul-99				X	X <sup>3</sup>	X	
1710-20303	V:WD	Salt River	Salt River Inflow	SY	F	14-Jul-99				X			
1710-20304	:V	Salt River	Salt River Inflow	N	U	14-Jun-99				X			
1710-20305	V:DO	Salt River	Shangri-la	AHY	M	24-Jul-99				X	X		
1710-20306	V:K GK	Salt River	Shangri-la	N	M	24-Jul-99				X	X <sup>7</sup>		
1710-20307	KO:V	Salt River	Salt River Inflow	AHY	M	25-Jul-99				X			
1710-20308	WO:V	Salt River	Shangri-la	AHY	F	26-Jul-99				X	X	X	X
1710-20309	RK:V	Salt River	Shangri-la	AHY	F	27-Jul-99				X			
1710-20310	OK:V	Salt River	Shangri-la	AHY	F	27-Jul-99				X			
1710-20316	WV:V	Tonto Creek	A+ Cross Road	AHY	U	12-Jun-01						X	
1710-20317	OD:V	Salt River	Lake Shore	SY	U	24-Jul-01						X	X
1710-20320	V:RK	Salt River	North Shore	SY	M*	14-Jul-01						X	
1710-20321	V:K RK	Salt River	Lake Shore	SY	F*	18-Jul-01						X	
1710-20322	V:R DR	Salt River	Lake Shore	SY	M*	30-Jul-01						X	X
1710-20323	:V	Salt River	Mudflats	N	F	24-Jun-00					X		
1710-20324	:V	Salt River	Shangri-la	N	M	24-Jun-00					X		
1710-20325	DYD:V	Salt River	Shangri-la	N	F	24-Jun-00					X	X <sup>7</sup>	
1710-20326	V:	Salt River	Shangri-la	N	F	24-Jun-00					X		
1710-20327	V:	Salt River	Shangri-la	N	F	24-Jun-00					X		
1710-20328	:V	Salt River	Shangri-la	N	F	24-Jun-00					X		
1710-20329	RR:V	Tonto Creek	Orange Peel Camp	AHY	F*	2-Jun-01						X	
1710-20330	VY:V	Tonto Creek	Orange Peel Camp	AHY	U	2-Jun-01						X	
1710-20331	V:Y W	Salt River	Salt River Inflow	AHY	F	2-Jul-98				X			
1710-20332	RG:V	Tonto Creek	Tonto Creek Inflow	AHY	F	23-Jul-98				X	X		
1710-20333	OY:V	Tonto Creek	Tonto Creek Inflow	AHY	F	26-Jun-99					X		
1710-20334	YV:V	Tonto Creek	Tonto Creek Inflow	AHY	F	26-Jun-99					X	X	

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1710-20335	V:KG	Salt River	Shangri-la	AHY	F	27-Jun-99				X	X		
1710-20336	V:OR	Salt River	Shangri-la	AHY	M*	27-Jun-99				X			
1710-20337	WD:V	Salt River	Shangri-la	AHY	F	27-Jun-99				X	X		
1710-20338	YD:V	Salt River	Shangri-la	AHY	M	27-Jun-99				X	X	X	X
1710-20339	V:OG	Salt River	Shangri-la	SY	M	18-Jun-99				X	X <sup>9</sup>	X	X
1710-20340	V:OW	Salt River	Shangri-la	AHY	F	22-Jun-99				X	X	X	X
1710-20341	V:VV	Salt River	Shangri-la	AHY	F	22-Jun-99				X	X		
1710-20342	V:DY	Salt River	Shangri-la	AHY	M	22-Jun-99				X			
1710-20343	V:WR	Salt River	Shangri-la	AHY	F	22-Jun-99				X			
1710-20344	V:WO	Salt River	Shangri-la	AHY	M	27-Jun-99				X			
1710-20345	V:YG	Salt River	Shangri-la	AHY	F	27-Jun-99				X	X <sup>24</sup>		
1710-20346	V:RO	Salt River	Shangri-la	SY	F	27-Jun-99				X			
1710-20347	V:YD	Salt River	Shangri-la	AHY	M	27-Jun-99				X	X	X	X
1710-20348	V:OD	Salt River	Shangri-la	SY	M	27-Jun-99				X			
1710-20385	YRY:D	San Pedro River	Kearny Sewage Ponds	N	M	9-Jul-99				X		X <sup>7</sup>	X <sup>8</sup>
1710-20456	WRW:Z	Salt River	Shangri-la	AHY	F*	30-May-01						X	
1710-20457	YDY:Z	Salt River	Salt River Inflow	AHY	M*	17-Jun-01						X	
1710-20458	Z:OG	Salt River	Lake Shore	AHY	U	5-May-01						X	X
1710-20459	Z:OW	Salt River	Salt River Inflow	AHY	U	22-May-01						X	
1710-20460	Z:WDW	Tonto Creek	Tonto Creek Inflow	AHY	U	31-May-01						X	
1710-20461	VYV:Z	Salt River	Shangri-la	AHY	U	1-Jun-01						X	X
1710-20462	DY:Z	Salt River	Lake Shore	AHY	U	2-Jun-01						X	X <sup>3</sup>
1710-20463	Z:KV	Salt River	Lake Shore	SY	U	2-Jun-01						X	
1710-20464	Z:KY	Salt River	Lake Shore	SY	U	12-Jun-01						X	X <sup>6</sup>
1710-20465	DYD:Z	Tonto Creek	Orange Peel Flats	AHY	U	14-Jun-01						X	
1710-20466	Z:YKY	Tonto Creek	Orange Peel Flats	AHY	U	14-Jun-01						X	
1710-20473	KW:Z	San Pedro River	Aravaipa	AHY	M*	16-Jul-98			X	X <sup>1</sup>	X	X	X
1710-20497	Z:YW	Salt River	Shangri-la	AHY	U	4-May-01						X	X
1710-20498	Z:WV	Salt River	Salt River Inflow	AHY	U	17-May-01						X	
1710-20499	WO:Z	Salt River	Salt River Inflow	AHY	U	17-May-01						X	
1710-20500	WG:Z	Salt River	Shangri-la	AHY	F*	18-May-01						X	X <sup>11</sup>
1710-20553	V:	Salt River	Salt River Inflow	N	F	19-Jul-99				X			
1710-20554	V:	Salt River	Salt River Inflow	N	F	19-Jul-99				X			
1710-20555	:V	Tonto Creek	Tonto Creek Inflow	N	F	20-Jul-99				X			
1710-20556	:V	Tonto Creek	Tonto Creek Inflow	N	M	20-Jul-99				X			
1710-20557	V:DK	Salt River	Shangri-la	AHY	F	23-Jul-99				X	X <sup>2</sup>		
1710-20558	V:	Salt River	Salt River Inflow	N	F	24-Jul-99				X			
1710-20559	V:	Salt River	Salt River Inflow	N	M	24-Jul-99				X			
1710-20560	V:KV	Salt River	Shangri-la	AHY	F	25-Jul-99				X			
1710-20561	DO:V	Salt River	Shangri-la	N	F	28-Jul-99				X	X <sup>12</sup>	X	X
1710-20562	V:	Salt River	Salt River Inflow	N	F	28-Jul-99				X			
1710-20563	V:	Salt River	Salt River Inflow	N	F	28-Jul-99				X			
1710-20564	OR:V	Salt River	Salt River Inflow	SY	F	28-Jul-99				X			
1710-20565	YY:V	Salt River	Salt River Inflow	AHY	M*	28-Jul-99				X			
1710-20566	KV:V	Salt River	Shangri-la	AHY	F	29-Jul-99				X			
1710-20567	YO:V	Salt River	Shangri-la	AHY	M	29-Jul-99				X	X <sup>2</sup>	X <sup>5</sup>	X <sup>7</sup>
1710-20568	KD:V	Salt River	Shangri-la	AHY	M	29-Jul-99				X			
1710-20569	:V	Salt River	Salt River Inflow	N	M	29-Jul-99				X			
1710-20570	DWD:V	Salt River	Salt River Inflow	N	M	29-Jul-99				X		X <sup>2</sup>	
1710-20571	:V	Salt River	Salt River Inflow	N	M	29-Jul-99				X			

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1710-20572	V:	Salt River	Salt River Inflow	N	F	10-Aug-99				X			
1710-20573	:V	Tonto Creek	Tonto Creek Inflow	N	F	7-Jul-99				X			
1710-20574	:V	Tonto Creek	Tonto Creek Inflow	N	F	7-Jul-99				X			
1710-20575	:V	Tonto Creek	Tonto Creek Inflow	N	F	7-Jul-99				X			
1710-20576	V:	Salt River	Salt River Inflow	N	M	7-Jul-99				X			
1710-20577	V:	Salt River	Salt River Inflow	N	M	7-Jul-99				X			
1710-20578	V:DD	Salt River	Shangri-la	N	M	7-Jul-99				X	X <sup>9</sup>	X	X
1710-20579	:V	Salt River	Salt River Inflow	N	F	10-Aug-99				X			
1710-20580	V:	Salt River	Salt River Inflow	N	M	10-Aug-99				X			
1710-20581	V:	Salt River	Salt River Inflow	N	M	10-Aug-99				X			
1710-20582	V:	Salt River	Salt River Inflow	N	M	10-Aug-99				X			
1710-20588	:V	Salt River	Salt River Inflow	N	M	10-Aug-99				X			
1710-20589	OKO:V	Salt River	Salt River Inflow	N	F	10-Aug-99				X			X
1710-20590	:V	Salt River	Salt River Inflow	N	F	10-Aug-99				X			
1710-20591	V:	Salt River	Salt River Inflow	N	F	10-Aug-99				X			
1710-20592	:V	Salt River	Salt River Inflow	N	M	10-Aug-99				X			
1710-20593	K:WD	Salt River	Shangri-la	AHY	M	6-Jun-00					X		
1710-20594	K:KG	Salt River	Shangri-la	AHY	F	15-Jun-00					X		
1710-20595	K:DK	Salt River	Shangri-la	AHY	M	17-May-00					X	X	X
1710-20596	YV:K	Tonto Creek	Tonto Creek Inflow	AHY	M	18-May-00					X		
1710-20597	K:YV	Salt River	Shangri-la	AHY	M	20-May-00					X	X	
1710-20598	VY:K	Salt River	School House South	AHY	M	19-Jun-00					X		
1710-20599	K:KY	Salt River	Shangri-la	AHY	M*	9-May-00					X	X	
1710-20600	K:GY	Salt River	Shangri-la	AHY	M	9-May-00					X	X	X
1710-20601	K:GR	Salt River	Mudflats	AHY	M	17-May-00					X	X <sup>1</sup>	
1710-20602	GR:K	Tonto Creek	Tonto Creek Inflow	AHY	M	18-May-00					X		
1710-20603	K:VG	Salt River	Shangri-la	AHY	F	22-May-00					X	X	X
1710-20604	K:KV	Salt River	Lake Shore	AHY	M	30-Jun-00					X	X	X
1710-20605	KGK:K	Salt River	Lake Shore	AHY	M	30-Jun-00					X	X <sup>3</sup>	
1710-20606	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	
1710-20609	WR:K	Salt River	Shangri-la	AHY	M	15-Jun-00					X	X	
1710-20610	:K	Salt River	Shangri-la	N	M	16-Jun-00					X		
1710-20611	GV:K	Salt River	Salt River Inflow	AHY	F	16-Jun-00					X	X <sup>3</sup>	X
1710-20612	VG:K	Tonto Creek	Orange Peel	AHY	F*	18-Jun-00					X		
1710-20613	K:KK	Salt River	School House South 3	AHY	M	19-Jun-00					X	X	X
1710-20614	K:RR	Salt River	School House South 3	AHY	F	19-Jun-00					X	X	
1710-20615	K:GG	Salt River	School House South 3	AHY	M	19-Jun-00					X		
1710-20616	K:YY	Salt River	School House South 3	AHY	F	19-Jun-00					X		X <sup>3</sup>
1710-20617	K:	Salt River	Shangri-la	N	U	21-Jun-00					X		
1710-20618	K:VK	Salt River	Shangri-la	N	U	21-Jun-00					X	X <sup>9</sup>	
1710-20619	K:	Salt River	Shangri-la	N	U	21-Jun-00					X		
1710-20620	:K	Salt River	Mudflats	N	M	29-Jun-00					X		
1710-20621	:K	Salt River	Mudflats	N	F	29-Jun-00					X		
1710-20622	K:DO	Salt River	Shangri-la	N	F	29-Jun-00					X	X <sup>11</sup>	X <sup>9</sup>
1710-20623	K:	Salt River	Shangri-la	N	M	29-Jun-00					X		
1710-20624	:K	Salt River	Shangri-la	N	F	29-Jun-00					X		
1710-20625	OW:K	Salt River	Shangri-la	N	M	29-Jun-00					X	X <sup>4</sup>	
1710-20626	RO:K	Tonto Creek	Orange Peel Flats	AHY	U	2-Jul-00					X	X <sup>9</sup>	
1710-20627	OO:K	Tonto Creek	Orange Peel Camp	AHY	U	2-Jul-00					X		
1710-20628	K:GO	Tonto Creek	A+ Cross Road	AHY	M	3-Jul-00					X		

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1710-20630	VV:X	White Mountains	Greer Town	AHY	M*	15-Jul-98			X	X	X	X <sup>3</sup>	
1710-20639	X:	Tonto Creek	Alamo Lake	AHY	M	23-Jun-98			X				
1710-20640	:X	Tonto Creek	Alamo Lake	AHY	F	23-Jun-98			X				
1710-20671	K:WY	Tonto Creek	Tonto Creek Inflow	AHY	M	18-May-00					X	X	X
1710-20678	K:YW	Tonto Creek	Tonto Creek Inflow	AHY	F	31-May-00					X	X	
1710-20679	RW:K	Salt River	Mudflats	SY	M	1-Jun-00					X		
1710-20680	YW:K	Salt River	Salt River Inflow	AHY	M*	2-Jun-00					X		
1710-20681	K:RW	Salt River	Salt River Inflow	AHY	F	2-Jun-00					X	X <sup>11</sup>	X
1710-20682	WK:K	Salt River	Salt River Inflow	AHY	M	2-Jun-00					X	X	X
1710-20686	K:KW	Salt River	Shangri-la	AHY	M	6-Jun-00					X	X <sup>7</sup>	X
1710-20687	KR:K	Salt River	Shangri-la	AHY	F	6-Jun-00					X	X	
1710-20688	RK:K	Salt River	Lake Shore	AHY	U	13-Jun-00					X	X <sup>7</sup>	X <sup>9</sup>
1710-20689	GO:K	Salt River	Lake Shore	AHY	F	30-Jun-00					X	X <sup>6</sup>	X
1710-20690	K:VW	Salt River	Lake Shore	AHY	F	30-Jun-00					X		
1710-20691	RR:K	Salt River	Shangri-la	AHY	M	15-Jun-00					X	X <sup>7</sup>	
1710-20692	K:GV	Salt River	Shangri-la	AHY	F*	15-Jun-00					X	X <sup>5</sup>	
1710-20693	K:WK	Salt River	Salt River Inflow	AHY	M	16-Jun-00					X		
1710-20694	GG:K	Salt River	Salt River Inflow	AHY	F*	16-Jun-00					X	X <sup>2</sup>	
1710-20695	KW:K	Tonto Creek	Orange Peel Camp	AHY	M*	18-Jun-00					X		
1710-20696	K:RG	Tonto Creek	Orange Peel Camp	AHY	F*	18-Jun-00					X	X	X
1710-20697	YK:K	Salt River	Lake Shore	AHY	M	19-Jun-00					X		
1710-20698	YY:K	Salt River	Lake Shore	AHY	F	19-Jun-00					X	X	X
1710-20699	K:WR	Salt River	Lake Shore	AHY	M	19-Jun-00					X	X	
1710-20700	WV:K	Salt River	Shangri-la	N	F	1-Jul-00					X		X <sup>8</sup>
1710-46318	XDX:	Salt River	Shangri-la	AHY	U	14-Jul-99				X			
1710-46319	K:YG	Tonto Creek	Tonto Creek Inflow	AHY	M*	10-May-00					X	X	
1710-46320	K:WG	Tonto Creek	Tonto Creek Inflow	SY	M*	10-May-00					X	X	X <sup>3</sup>
1710-46321	K:GW	Salt River	Shangri-la	AHY	M*	11-May-00					X	X <sup>6</sup>	X <sup>8</sup>
1710-46322	KY:K	Salt River	Shangri-la	AHY	M*	11-May-00					X		
1710-46323	GY:K	Salt River	Shangri-la	AHY	M*	12-May-00					X	X	X
1710-46324	YG:K	Salt River	Shangri-la	AHY	M*	12-May-00					X	X	X
1710-46325	WG:K	Salt River	Lake Shore	AHY	F	13-Jun-00					X	X	X
1710-46326	K:KR	Salt River	Lake Shore	AHY	M	13-Jun-00					X		
1710-46327	K:DY	Salt River	Lake Shore	SY	M	13-Jun-00					X	X <sup>3</sup>	X
1710-46328	GW:K	Salt River	Lake Shore	AHY	M	13-Jun-00					X		
1710-46329	WY:K	Salt River	Lake Shore	AHY	F	13-Jun-00					X		
1710-46330	YD:K	Salt River	Lake Shore	SY	F	13-Jun-00					X	X	X
1740-51644	X:DR	Salt River	School House South 3	AHY	F*	28-Jun-02							X
1740-51702	X:KO	Salt River	School House South 3	AHY	U	16-Jun-02							X
1740-51713	VG:X	Salt River	Lake Shore	AHY	F*	21-May-02							X
1740-51714	X:WO	Salt River	Lake Shore	AHY	U	12-Jun-02							X
1740-51715	WV:X	Salt River	Lake Shore	SY	U	18-Jun-02							X
1740-51716	X:RKR	Salt River	Lake Shore	AHY	F*	27-Jun-02							X
1740-51717	X:VYV	Salt River	Lake Shore	AHY	F*	27-Jun-02							X
1740-51718	X:KYK	Salt River	Lake Shore	AHY	M*	14-Jul-02							X
1740-51719	WRW:X	Salt River	Lake Shore	AHY	U	16-Jul-02							X
1740-51720	X:OD	Salt River	Lake Shore	AHY	U	26-Jul-02							X
1740-51721	YRY:X	Salt River	Shangri-la	SY	U	23-Jul-02							X
1740-51722	X:YY	Salt River	Shangri-la	SY	U	25-Jul-02							X
1740-51723	OKO:X	Salt River	Lake Shore	AHY	U	7-Aug-02							X



USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1740-51728	OW:X	Salt River	Lake Shore	AHY	F*	4-Jun-02							X
1740-51729	X:OG	Salt River	Lake Shore	AHY	U	14-Jun-02							X
1740-51730	KO:X	Salt River	North Shore 1	AHY	U	17-Jul-02							X
1740-51731	X:GR	Salt River	School House North 2	AHY	U	31-May-02							X
1740-51732	DRD:X	Salt River	North Shore 1	SY	F*	30-Jun-02							X
1740-51733	OK:X	Salt River	Shangri-la	AHY	U	10-Jul-02							X
1740-51734	X:DO	Salt River	Shangri-la	AHY	U	10-Jul-02							X
1740-51736	X:WRW	Salt River	School House North 2	AHY	M*	11-Jun-02							X
1740-51737	X:KV	Salt River	School House North 2	AHY	U	11-Jun-02							X
1740-51738	YW:X	Salt River	School House North 2	AHY	M*	11-Jun-02							X
1740-51739	YKY:X	Salt River	Lake Shore	AHY	M*	27-Jun-02							X
1740-51740	X:DY	Salt River	Lake Shore	AHY	M*	18-May-02							X
1740-51741	X:RW	Tonto Creek	Orange Peel Flats	AHY	M*	23-May-02							X
1740-51742	X:YDY	Salt River	North Shore 1	SY	U	3-Jun-02							X
1740-51743	X:DRD	Salt River	North Shore 1	AHY	M*	3-Jun-02							X
1740-51744	VYV:X	Salt River	Lake Shore	AHY	F*	12-Jun-02							X
1740-51745	DK:X	Tonto Creek	Orange Peel Flats	AHY	F*	16-Jun-02							X
1740-51746	RYR:X	Tonto Creek	Orange Peel Flats	AHY	F*	16-Jun-02							X
1740-51747	X:GWG	Salt River	Lake Shore	AHY	M*	27-May-02							X
1740-51748	X:KG	Tonto Creek	Orange Peel Camp	AHY	U	30-Jun-02							X
1740-51749	VK:X	Salt River	North Shore 1	SY	M*	9-Jul-02							X
1740-51750	KRK:X	Salt River	North Shore 1	AHY	U	11-Jul-02							X
1740-51751	X:YV	Salt River	North Shore 2	SY	F*	14-Jul-02							X
1740-51752	X:WKW	Salt River	North Shore 2	SY	U	14-Jul-02							X
1740-51753	X:RZ	Salt River	North Shore 2	AHY	F*	28-Jun-02							X
1740-51754	X:YKY	Salt River	Shangri-la	AHY	U	16-Jul-02							X
1740-51755	KZ:X	Salt River	North Shore 2	AHY	M*	14-Jul-02							X
1740-51756	X:WG	Salt River	North Shore 2	AHY	F*	14-Jul-02							X
1740-51757	VW:X	Salt River	School House North 1	AHY	F*	11-Jun-02							X
1740-51758	DWD:X	Salt River	School House North 1	AHY	F*	11-Jun-02							X
1740-51759	X:KD	Tonto Creek	Orange Peel Camp	AHY	M*	12-Jun-02							X
1740-51760	DO:X	Salt River	North Shore 2	AHY	U	27-Jun-02							X
1740-51761	YY:X	Tonto Creek	Orange Peel Flats	AHY	U	18-May-02							X
1740-51768	GW:X	Tonto Creek	Orange Peel Camp	AHY	M*	18-Jun-02							X
1740-51773	X:KR	Salt River	North Shore 1	AHY	M*	13-Jun-02							X
1740-51774	X:OZ	Tonto Creek	Orange Peel Camp	AHY	F*	18-Jun-02							X
1740-51775	X:VY	Salt River	School House North 2	AHY	F*	26-Jun-02							X
1740-51776	X:KGK	Salt River	Lake Shore	AHY	U	6-Aug-02							X
1740-51777	X:VG	Salt River	Shangri-la	AHY	U	3-Jun-02							X
1740-51778	YD:X	Salt River	School House South 3	AHY	U	5-Jun-02							X
1740-51779	X:DYD	Salt River	North Shore 1	AHY	F*	16-Jun-02							X
1740-51780	YVY:X	Salt River	North Shore 2	AHY	F*	30-Jun-02							X
1740-51781	X:YR	Salt River	North Shore 1	AHY	F*	15-Jul-02							X
1740-51782	X:DW	Tonto Creek	Orange Peel Camp	AHY	U	21-May-02							X
1740-51783	X:OO	Salt River	School House North 2	AHY	U	22-May-02							X
1740-51784	GR:X	Salt River	Lake Shore	AHY	U	23-May-02							X
1740-51785	X:WK	Salt River	Lake Shore	AHY	U	29-May-02							X
1740-51786	X:WDW	Salt River	North Shore 1	AHY	F*	4-Jun-02							X
1740-51787	OD:X	Salt River	North Shore 2	SY	U	15-Jul-02							X
1740-51791	GRG:X	Salt River	North Shore 2	AHY	U	16-Jun-02							X

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1740-51792	RO:X	Salt River	Old Salt	SY	U	19-Jun-02							X
1740-51793	X:VWV	Salt River	North Shore 1	SY	F*	28-Jun-02							X
1740-51794	X:ZG	Salt River	North Shore 1	AHY	F*	14-Jul-02							X
1740-51796	X:KW	Salt River	School House North 2	AHY	U	22-May-02							X
1740-51797	X:OK	Salt River	School House North 1	AHY	U	29-May-02							X
1740-51798	X:WD	Salt River	Mudflats	AHY	U	11-Jun-02							X
1740-51799	KD:X	Salt River	Mudflats	SY	U	11-Jun-02							X
1740-51800	X:GRG	Salt River	North Shore 2	AHY	U	28-Jun-02							X
1740-51802	X:DWD	Salt River	North Shore 1	AHY	U	26-Jun-02							X
1740-51804	ZKZ:X	Salt River	North Shore 1	SY	U	27-Jul-02							X
1740-51805	GKG:X	Salt River	North Shore 1	AHY	F*	27-Jul-02							X
1740-51818	X:YKY	Salt River	Shangri-la	AHY	U	18-May-02							X
1740-51819	YDY:X	Salt River	School House South 3	AHY	U	2-Jun-02							X
1740-51820	WZ:X	Salt River	School House North 2	AHY	U	19-Jun-02							X
1740-51821	RWR:X	Salt River	Lake Shore	SY	M*	26-Jun-02							X
1740-51830	X:VWV	Tonto Creek	Orange Peel Flats	AHY	U	18-May-02							X
1740-51831	X:RGR	Tonto Creek	Orange Peel Camp	AHY	U	23-May-02							X
1740-51832	X:GO	Salt River	School House North 1	SY	U	12-Jun-02							X
1740-51833	X:GKG	Salt River	Old Salt	AHY	U	16-Jun-02							X
1740-51834	DYD:X	Salt River	North Shore 1	SY	M*	2-Jul-02							X
1740-51837	Z:	Tonto Creek	Orange Peel Camp	N	U	2-Jul-01						X	
1740-51838	Z:	Tonto Creek	Orange Peel Camp	N	U	2-Jul-01						X	
1740-51839	Z:	Tonto Creek	Orange Peel Camp	N	U	2-Jul-01						X	
1740-51840	KG:K	Salt River	Shangri-la	N	U	25-Jul-01						X	X <sup>9</sup>
1740-51841	:K	Salt River	North Shore	N	U	26-Jul-01						X	
1740-51842	K:	Salt River	North Shore	N	U	26-Jul-01						X	
1740-51843	:K	Salt River	North Shore	N	U	26-Jul-01						X	
1740-51850	:K	Salt River	Shangri-la	N	F	1-Jul-00					X		
1740-51851	:K	Salt River	Mudflats	N	M	6-Jul-00					X		
1740-51852	:K	Salt River	Mudflats	N	F	6-Jul-00					X		
1740-51853	K:VWV	Salt River	Shangri-la	N	M	6-Jul-00					X	X <sup>10</sup>	
1740-51854	K:	Salt River	Shangri-la	N	F	6-Jul-00					X		
1740-51855	:K	Salt River	Shangri-la	N	F	6-Jul-00					X		
1740-51856	:K	Salt River	Shangri-la	N	M	6-Jul-00					X		
1740-51857	RY:K	Salt River	Shangri-la	N	F	6-Jul-00					X	X <sup>7</sup>	
1740-51858	OK:K	Salt River	Shangri-la	N	F	9-Jul-00					X	X <sup>1</sup>	
1740-51859	:K	Salt River	Shangri-la	N	M	9-Jul-00					X		
1740-51861	:K	Salt River	Shangri-la	N	F	9-Jul-00					X		
1740-51862	:K	Salt River	Shangri-la	N	F	9-Jul-00					X		
1740-51863	K:YO	Salt River	Salt River Inflow	N	F	9-Jul-00					X	X <sup>10</sup>	
1740-51865	:K	Salt River	Mudflats	N	U	30-Jun-01						X	
1740-51866	:K	Salt River	Shangri-la	N	U	30-Jun-01						X	
1740-51867	:K	Salt River	Shangri-la	N	U	30-Jun-01						X	
1740-51868	:K	Salt River	Shangri-la	N	U	30-Jun-01						X	
1740-51869	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	
1740-51870	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	
1740-51871	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	
1740-51872	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	
1740-51873	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	
1740-51874	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1740-51875	:K	Salt River	Lake Shore	N	U	17-Jul-01						X	
1740-51876	:K	Salt River	Shangri-la	N	F	3-Jul-00					X		
1740-51877	:K	Salt River	Shangri-la	N	F	3-Jul-00					X		
1740-51878	:K	Salt River	Shangri-la	N	M	18-Jul-00					X		
1740-51879	:K	Salt River	Shangri-la	N	F	18-Jul-00					X		
1740-51880	K:	Salt River	Lake Shore	N	U	29-Jun-01						X	
1740-51881	:K	Salt River	Shangri-la	N	U	29-Jun-01						X	
1740-51882	:K	Salt River	Shangri-la	N	U	29-Jun-01						X	
1740-51883	:K	Salt River	Shangri-la	N	U	2-Jul-01						X	
1740-51884	K:	Salt River	Shangri-la	N	U	2-Jul-01						X	
1740-51885	:K	Salt River	Shangri-la	N	U	2-Jul-01						X	
1740-51886	:K	Salt River	Lake Shore	N	U	2-Jul-01						X	
1740-51887	K:	Salt River	Lake Shore	N	U	2-Jul-01						X	
1740-51888	:K	Salt River	Lake Shore	N	U	2-Jul-01						X	
1740-51889	VWV:K	Salt River	Shangri-la	SY	U	3-Jul-01						X	X
1740-51890	:K	Tonto Creek	Orange Peel Flats	N	U	10-Jul-01						X	
1740-51891	K:	Tonto Creek	Orange Peel Flats	N	U	10-Jul-01						X	
1740-51892	:K	Tonto Creek	Orange Peel Flats	N	U	10-Jul-01						X	
1740-51893	:K	Tonto Creek	Orange Peel Camp	N	U	10-Jul-01						X	
1740-51894	K:KRK	Tonto Creek	Orange Peel Camp	N	U	10-Jul-01						X	X <sup>12</sup>
1740-51895	K:	Tonto Creek	Orange Peel Camp	N	U	10-Jul-01						X	
1740-51896	K:	Salt River	Shangri-la	N	U	25-Jul-01						X	
1740-51897	K:	Salt River	Shangri-la	N	U	25-Jul-01						X	
1740-51899	K:ZKZ	Tonto Creek	Orange Peel Camp	N	U	27-Jul-01						X	X <sup>3</sup>
1740-51900	K:RDR	Salt River	Shangri-la	AHY	U	25-Jul-01						X	
1740-91506	RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	2-Jun-96	X		X	X	X		X <sup>6</sup>
1740-91507	K/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	F	2-Jun-96	X	X					
1740-91523	X:R/R	Tonto Creek	Tonto Creek Inflow	AHY	U	12-Jun-96	X	X	X	X	X		
1740-91524	RW/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	14-Jun-96	X						
1740-91532	RK:X	Verde River	Camp Verde	N	M	6-Jul-96	X			X <sup>2</sup>	X <sup>1</sup>	X <sup>7</sup>	
1740-91539	R:X	Tonto Creek	Tonto Creek Inflow	N	F	9-Aug-96	X						
1740-91540	R:X	Tonto Creek	Tonto Creek Inflow	N	M	9-Aug-96	X	X <sup>1</sup>					
1740-91541	R:X	Tonto Creek	Tonto Creek Inflow	N	M	9-Aug-96	X						
1740-91590	WDW:K	Salt River	Shangri-la	AHY	M	12-Jul-00					X		X
1740-91591	VW:K	Salt River	Salt River Inflow	SY	M	12-Jul-00					X	X <sup>3</sup>	X
1740-91592	K:WV	Tonto Creek	Tonto Creek Inflow	AHY	F	13-Jul-00					X		
1740-91593	K:	Tonto Creek	Tonto Creek Inflow	N	M	14-Jul-00					X		
1740-91594	K:	Tonto Creek	Tonto Creek Inflow	N	M	14-Jul-00					X		
1740-91595	K:	Tonto Creek	Tonto Creek Inflow	N	M	14-Jul-00					X		
1740-91596	OD:K	Salt River	Shangri-la	N	M	19-Jul-00					X	X	
1740-91597	:K	Salt River	Shangri-la	N	M	21-Jul-00					X		
1740-91598	:K	Salt River	Shangri-la	N	F	21-Jul-00					X		
1740-91599	:K	Salt River	Shangri-la	N	M	21-Jul-00					X		
1740-91600	K:DW	Salt River	Shangri-la	AHY	M	15-Jun-00					X		
1740-91632	KW:X	White Mountains	Alpine Horse Pasture	N	M	11-Jul-96	X		X <sup>17</sup>			X <sup>3</sup>	
1740-91701	R/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	1-Jun-96	X						
1740-91702	X:G/R	Tonto Creek	Tonto Creek Inflow	AHY	M	1-Jun-96	X	X					
1740-91703	L/R:X	Tonto Creek	Tonto Creek Inflow	AHY	F	1-Jun-96	X						
1740-91704	K/R:X	Tonto Creek	Tonto Creek Inflow	AHY	F	1-Jun-96	X	X					
1740-91705	X:D/R	Tonto Creek	Tonto Creek Inflow	AHY	F	2-Jun-96	X						

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
1740-91706	KY:X	Tonto Creek	Tonto Creek Inflow	AHY	M	3-Jun-96	X	X	X	X	X	X	X
1740-91707	W/R:X	Salt River	Salt River Inflow	AHY	M	4-Jun-96	X						
1740-91708	X:R/DP	Salt River	Salt River Inflow	AHY	M	4-Jun-96	X						
1740-91709	X:G/R	Salt River	Salt River Inflow	AHY	F	4-Jun-96	X	X					
1740-91710	X:L/R	Salt River	Salt River Inflow	AHY	F	4-Jun-96	X		X <sup>2</sup>				
1740-91711	X:K/R	Salt River	Salt River Inflow	AHY	F	5-Jun-96	X						
1740-91712	X:Y/R	Salt River	Salt River Inflow	AHY	F	5-Jun-96	X	X <sup>2</sup>					
1740-91713	X:W/R	Salt River	Salt River Inflow	AHY	M	5-Jun-96	X	X <sup>2</sup>	X				
1740-91714	PD/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	11-Jun-96	X		X	X		X <sup>2</sup>	X
1740-91715	KW/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	11-Jun-96	X						
1740-91716	D/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	12-Jun-96	X						
1740-91717	G/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	12-Jun-96	X	X	X <sup>16</sup>				
1740-91718	O/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	13-Jun-96	X						
1740-91719	L/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	F	14-Jun-96	X						
1740-91720	X:O/R	Salt River	Salt River Inflow	AHY	F	15-Jun-96	X	X					
1740-91721	X:WV	Salt River	Salt River Inflow	AHY	M	15-Jun-96	X		X <sup>2</sup>	X	X	X	
1740-91722	X:L/RW	Salt River	Salt River Inflow	AHY	M	16-Jun-96	X						
1740-91723	X:K/WR	Salt River	Salt River Inflow	AHY	F	16-Jun-96	X	X					
1740-91724	X:D/RW	Salt River	Salt River Inflow	AHY	M	17-Jun-96	X						
1740-91725	X:Y/RW	Salt River	Salt River Inflow	AHY	M	18-Jun-96	X	X					
1740-91726	X:O/RW	Salt River	Salt River Inflow	AHY	F	18-Jun-96	X						
1740-91727	X:KW/R	Salt River	Salt River Inflow	AHY	M	19-Jun-96	X						
1740-91728	X:RG	Salt River	Salt River Inflow	AHY	M	27-Jun-96	X	X	X	X <sup>5</sup>	X <sup>3</sup>	X	
1740-91729	X:Y/DP	Salt River	Salt River Inflow	AHY	M	28-Jun-96	X	X <sup>2</sup>					
1740-91730	X:W/DP	Salt River	Salt River Inflow	AHY	F	29-Jun-96	X						
1740-91731	X:O/DP	Salt River	Salt River Inflow	AHY	F	29-Jun-96	X						
1740-91732	X:RW/DP	Salt River	Salt River Inflow	AHY	M	29-Jun-96	X						
1740-91733	X:KW/DP	Salt River	Salt River Inflow	AHY	M	29-Jun-96	X						
1740-91734	X:K/DP	Salt River	Salt River Inflow	AHY	M	29-Jun-96	X						
1740-91739	X:WY	Salt River	Salt River Inflow	AHY	M	19-Jun-96	X	X	X	X <sup>3</sup>	X		
1740-91740	X:KW/RW	Salt River	Salt River Inflow	AHY	F	19-Jun-96	X						
1740-91741	D/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	F	12-Jul-96	X	X					
1740-91742	Y/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	12-Jul-96	X	X					
1740-91743	R:X	Tonto Creek	Tonto Creek Inflow	N	F	13-Jul-96	X						
1740-91744	PD/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	13-Jul-96	X	X	X	X	X		
1740-91745	R/DP:X	Salt River	Salt River Inflow	AHY	M	14-Jul-96	X						
1740-91760	X:G/PD	Salt River	Salt River Inflow	AHY	F	15-Jul-96	X	X					
1740-91857	D:RG	San Pedro River	Kearny Sewage Ponds	N	F	22-Jun-98			X	X <sup>15</sup>	X <sup>14</sup>	X <sup>3</sup>	
1740-91966	K:KD	Salt River	Shangri-la	AHY	M	15-Jun-00					X	X <sup>1</sup>	X
1740-91967	K:GK	Salt River	Mudflats	AHY	F	16-Jun-00					X	X <sup>7</sup>	X <sup>8</sup>
1740-91968	WD:K	Salt River	Shangri-la	AHY	F	17-Jun-00					X	X	X
1740-91969	DW:K	Salt River	Salt River Inflow	AHY	F	18-Jun-00					X	X	
1740-91970	K:VY	Salt River	School House North 1	AHY	M	19-Jun-00					X	X	X
1740-91972	YD:K	Salt River	School House North 1	AHY	F	19-Jun-00					X	X <sup>3</sup>	
1740-91973	WW:K	Salt River	School House North 1	AHY	M	19-Jun-00					X	X <sup>1</sup>	X <sup>3</sup>
1740-91974	GK:K	Salt River	School House North 1	AHY	F	19-Jun-00					X	X	
1740-91975	K:OY	Salt River	Shangri-la	AHY	M*	1-Jul-00					X		X <sup>9</sup>
1740-91976	KO:K	Salt River	Lake Shore	N	U	17-Jul-01						X	X <sup>19</sup>
1870-58350	Y/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	12-Jul-95	X						
2070-92904	X:WU/R	Salt River	Salt River Inflow	AHY	F	1-Jul-97		X					

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
2070-92905	WK/R:X	Salt River	Salt River Inflow	AHY	M	23-Jul-97		X	X <sup>2</sup>	X	X <sup>3</sup>	X	X
2070-92954	R/X:R	Salt River	Salt River Inflow	AHY	M	14-Jul-97		X					
2140-66693	VV:WVW	L. Colorado River	Mormon Mesa	N	U	2-Aug-01							X <sup>9</sup>
2210-57001	K:	Salt River	Shangri-la	N	F	21-Jul-00					X		
2210-57002	K:OK	Salt River	Shangri-la	N	M	21-Jul-00					X	X <sup>9</sup>	X <sup>10</sup>
2210-57003	:K	Salt River	Shangri-la	N	F	21-Jul-00					X		
2210-57006	:K	Salt River	Mudflats	N	M	27-Jul-00					X		
2210-57007	WO:K	Salt River	Shangri-la	N	F	27-Jul-00					X	X <sup>9</sup>	
2210-57008	K:YR	Salt River	Shangri-la	N	F	29-Jul-00					X	X <sup>9</sup>	
2210-57009	:K	Salt River	Shangri-la	N	F	30-Jul-00					X		
2210-57010	WGW:K	Salt River	Shangri-la	N	F	30-Jul-00					X		X <sup>8</sup>
2210-57011	:K	Salt River	Shangri-la	N	F	30-Jul-00					X		
2210-57012	:K	Salt River	Shangri-la	N	M	30-Jul-00					X		
2210-57013	:K	Salt River	Shangri-la	N	M	30-Jul-00					X		
2210-57014	K:DD	Salt River	Shangri-la	N	F	31-Jul-00					X	X <sup>9</sup>	X
2210-57015	K:	Salt River	Shangri-la	N	M	31-Jul-00					X		
2210-57031	K:OW	Salt River	Lake Shore	SY	M	16-Jul-00					X		
2210-57032	DRD:K	Salt River	Shangri-la	N	U	1-Jul-01						X	X <sup>10</sup>
2210-57033	K:OR	Salt River	Shangri-la	N	U	1-Jul-01						X	X <sup>7</sup>
2210-57034	:K	Salt River	Shangri-la	N	U	1-Jul-01						X	
2210-57035	:K	Salt River	Shangri-la	N	U	1-Jul-01						X	
2210-57037	:K	Salt River	Shangri-la	N	U	1-Jul-01						X	
2210-57038	K:	Salt River	Shangri-la	N	U	10-Jul-01						X	
2210-57039	:K	Salt River	Shangri-la	N	U	10-Jul-01						X	
2210-57040	K:	Salt River	Shangri-la	N	U	10-Jul-01						X	
2210-57041	K:WDW	Salt River	Shangri-la	AHY	F*	29-Jul-01						X	X
2210-57044	:K	Salt River	Shangri-la	N	U	28-Jun-01						X	
2210-57045	:K	Salt River	Shangri-la	N	U	28-Jun-01						X	
2210-57046	:K	Salt River	Shangri-la	N	U	28-Jun-01						X	
2210-57047	:K	Salt River	Lake Shore	N	U	4-Jul-01						X	
2210-57048	:K	Salt River	Lake Shore	N	U	10-Jul-01						X	
2210-57049	K:	Salt River	Lake Shore	N	U	10-Jul-01						X	
2210-57051	K:	Salt River	Shangri-la	N	U	12-Jul-01						X	
2210-57052	:K	Salt River	Shangri-la	N	U	12-Jul-01						X	
2210-57053	K:	Salt River	Shangri-la	N	U	12-Jul-01						X	
2210-57054	:K	Salt River	Shangri-la	N	U	12-Jul-01						X	
2210-57055	K:	Salt River	Shangri-la	N	U	25-Jul-01						X	
2210-57056	K:	Salt River	Shangri-la	N	U	25-Jul-01						X	
2210-57057	K:	Salt River	Shangri-la	N	U	25-Jul-01						X	
2210-57058	K:	Salt River	Shangri-la	N	U	27-Jul-01						X	
2210-57059	:K	Salt River	Shangri-la	N	U	27-Jul-01						X	
2210-57060	:K	Tonto Creek	Tonto Creek Inflow	N	F	15-Jul-00					X		
2210-57061	K:	Salt River	Shangri-la	N	F	17-Jul-00					X		
2210-57062	K:OD	Salt River	Shangri-la	N	F	17-Jul-00					X	X <sup>9</sup>	
2210-57063	K:	Salt River	Shangri-la	N	F	17-Jul-00					X		
2210-57064	:K	Salt River	Salt River Inflow	N	F	17-Jul-00					X		
2210-57065	:K	Salt River	Salt River Inflow	N	M	17-Jul-00					X		
2210-57066	K:	Salt River	Salt River Inflow	N	M	17-Jul-00					X		
2210-57067	K:	Salt River	Salt River Inflow	N	F	17-Jul-00					X		
2210-57068	:K	Salt River	Shangri-la	N	F	18-Jul-00					X		

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected						
							96	97	98	99	00	01	02
2210-57069	VK:K	Salt River	Shangri-la	N	M	11-Jul-00					X	X <sup>7</sup>	X <sup>9</sup>
2210-57070	RD:K	Salt River	Shangri-la	N	F	11-Jul-00					X	X <sup>8</sup>	
2210-57071	RG:K	Tonto Creek	Orange Peel Flats	AHY	M	12-Jul-00					X	X <sup>2</sup>	X
2210-57072	:K	Tonto Creek	Tonto Creek Inflow	N	F	15-Jul-00					X		
2210-57073	:K	Tonto Creek	Tonto Creek Inflow	N	M	15-Jul-00					X		
2210-57074	:K	Salt River	Shangri-la	N	F	15-Jul-00					X		
2210-57075	OG:K	Salt River	Shangri-la	N	F	15-Jul-00					X	X <sup>9</sup>	
2210-57076	K:OO	Salt River	Salt River Inflow	N	F	19-Jul-00					X	X <sup>3</sup>	
2210-57077	K:	Salt River	Salt River Inflow	N	M	19-Jul-00					X		
2210-57078	RWR:K	Salt River	Lake Shore	AHY	M*	18-Jun-01						X	
2210-57079	K:	Salt River	Lake Shore	N	U	26-Jun-01						X	
2210-57080	K:	Salt River	Lake Shore	N	U	26-Jun-01						X	
2210-57081	K:	Salt River	Lake Shore	N	U	26-Jun-01						X	
2210-57092	:K	Salt River	Shangri-la	N	U	27-Jun-01						X	
2210-57093	DY:K	Salt River	Shangri-la	N	U	27-Jun-01						X	X <sup>9</sup>
2210-57094	K:	Salt River	Mudflats	N	U	27-Jun-01						X	X <sup>10</sup>
2210-57095	K:YKY	Salt River	Mudflats	N	U	27-Jun-01						X	X <sup>10</sup>
2210-57096	:K	Salt River	School House South 3	N	U	27-Jun-01						X	
2210-57097	:K	Salt River	Lake Shore	N	U	29-Jun-01						X	
2210-57098	:K	Salt River	Lake Shore	N	U	29-Jun-01						X	
2210-57099	K:	Salt River	Lake Shore	N	U	29-Jun-01						X	
2210-57301	X:KWK	Salt River	Lake Shore	AHY	F*	15-Jul-02							X
2210-57302	X:WGW	Salt River	Lake Shore	AHY	U	15-Jul-02							X
2210-57303	ZK:X	Salt River	Lake Shore	AHY	U	21-Jul-02							X
2210-57304	X:YRY	Salt River	Lake Shore	AHY	F*	21-Jul-02							X
2210-57305	X:ZKZ	Salt River	Lake Shore	AHY	F*	22-Jul-02							X
2210-57306	KGK:X	Salt River	Lake Shore	AHY	M*	22-Jul-02							X
2210-57308	KZK:X	Salt River	Lake Shore	SY	U	16-Jul-02							X
2210-57309	VWV:X	Salt River	Lake Shore	SY	U	29-Jul-02							X
2210-57319	X:ZRZ	Salt River	Lake Shore	SY	U	29-Jul-02							X
2210-57322	X:OKO	Salt River	Lake Shore	SY	U	27-Jul-02							X
2210-57324	WG:X	Salt River	North Shore 1	SY	F*	17-Jul-02							X
2210-57325	X:OR	Salt River	North Shore 1	SY	U	17-Jul-02							X
2210-57326	X:ZO	Salt River	North Shore 1	SY	U	17-Jul-02							X
2210-57327	RY:X	Salt River	North Shore 1	AHY	F*	29-Jul-02							X
2280-96761	ZO:X	Salt River	Lake Shore	AHY	U	9-Aug-02							X
2280-96838	WKW:X	Salt River	Lake Shore	SY	U	8-Aug-02							X

**Site codes (for movement):** 1=Old Salt, 2=Tonto, 3=Shangri-la, 4=Mudflats, 5=School House South 1, 6=School House South 3, 7=School House North 1, 8=School House North 2, 9=Lake Shore, 10=North Shore 1, 11=Orange Peel Campground, 12=Orange Peel Flats, 13=A-Cross Road, 14=Kearny Sewage Ponds (San Pedro River), 15=Indian Hills (San Pedro River), 16=Gila River South 07 (GS07), 17=Greer Township (White Mtns.), 18=Gila River 19= North Shore 2