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Distribution, Abundance, and Breeding Activities of Southwestern Willow Flycatchers (*Empidonax traillii extimus*) on the San Dieguito River and Upper San Luis Rey River, San Diego County, California—2025 Data Summary

Data Report 1225

U.S. Department of the Interior
U.S. Geological Survey

Cover. Flooded Southwestern Willow Flycatcher habitat at Lake Henshaw. Photographs by Scarlett Howell, U.S. Geological Survey, May 29, 2025.

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Conversion Factors

International System of Units to U.S. customary units

Multiply	By	To obtain
	Length	
centimeter (cm)	0.3937	inch (in.)
meter (m)	3.281	foot (ft)
kilometer (km)	0.6214	mile (mi)

Datum

Horizontal coordinate information is referenced to the World Geodetic System of 1984 (WGS 84).

Abbreviations

CNF	Cleveland National Forest
RRR	Rey River Ranch
SD	San Dieguito
VID	Vista Irrigation District
VLH	Vista Irrigation District Lake Henshaw

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Executive Summary

We surveyed for Southwestern Willow Flycatchers (*Empidonax traillii extimus*; flycatcher) at the San Dieguito River and the upper San Luis Rey River in 2025. Surveys were completed at five locations: one along the San Dieguito River (San Dieguito [SD]), which was last surveyed in 2016, and four along the upper San Luis Rey River, including three downstream from Lake Henshaw that have been surveyed annually since 2015 (Rey River Ranch [RRR], Cleveland National Forest [CNF], Vista Irrigation District [VID]), and one upstream at VID Lake Henshaw (VLH) that has been surveyed annually since 2018. There was a minimum of 57 territorial flycatchers (22 male, 35 female) and 3 transient flycatchers of unknown subspecies detected at 1 location (VLH). In total, 37 territories were established, containing 35 pairs (20 males and 35 females) and 2 male flycatchers of undetermined breeding status. Of the 35 pairs, 12 were monogamous pairings, and 23 were polygynous pairings consisting of 3 males each pairing with 2 different females [6 pairs], 3 males each pairing with 3 different females [9 pairs], and 2 males each pairing with 4 different females [8 pairs]).

No territorial flycatchers were detected downstream from Lake Henshaw or along the San Dieguito River. Brown-headed Cowbirds (*Molothrus ater*; cowbird) were detected at all five survey locations. No banded flycatchers were detected during surveys.

Flycatchers used only one habitat type at VLH, mixed willow riparian. All flycatcher locations were in habitat characterized as mixed willow riparian dominated by Goodding's black willow (*Salix gooddingii*), and 93 percent were in habitat with greater than 95-percent native plant cover.

We monitored flycatcher nests at VLH to collect baseline data on nest success, productivity, and cowbird parasitism rate. There were 33 completed nests monitored in 26 territories; 10 were successful (30 percent). Of the 23 failed nests, 14 were depredated, 5 failed for unknown reasons, and 4 failed because of cowbird parasitism. There were 33 fledglings confirmed in monitored territories, yielding a seasonal productivity of 1.3 young/pair (33 young/26 monitored pairs). One additional fledgling was confirmed in an unmonitored territory during surveys at VLH. Based on 31 nests in which the contents were observed during the egg stage, 23 percent of nests in 2025 were parasitized. In two additional territories where nests were not located, adult flycatchers were observed feeding a cowbird fledgling.

Introduction

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*; flycatcher) is one of four subspecies of Willow Flycatcher in the United States, with each occupying a distinct breeding range: *E. t. traillii*, ranging east of the northern Rocky Mountains; *E. t. adastus*, ranging across the northern Rocky Mountains and Great Basin; *E. t. brewsteri*, found west of the Sierra Nevada and Cascade Mountains along the Pacific Slope; and *E. t. extimus*, the Southwestern Willow Flycatcher, which breeds across the Southwest. The breeding range of the Southwestern Willow Flycatcher includes southern California, Arizona, New Mexico, southwestern Colorado, extreme southern parts of Nevada and Utah, and possibly western Texas (Hubbard, 1987; Unitt, 1987; Sogge and others, 2010). Restricted to riparian habitat for breeding, the flycatcher has declined within the past five decades in response to widespread habitat loss throughout its range and, possibly, brood parasitism by the Brown-headed Cowbird (*Molothrus ater*; cowbird [Wheelock, 1912; Willett, 1912, 1933; Grinnell and Miller, 1944; Remsen, 1978; Garrett and Dunn, 1981; Unitt, 1984, 1987; Gaines, 1988; Schlorff, 1990; Whitfield and Sogge, 1999]). By 1993, the species was believed to number approximately 70 pairs in California (U.S. Fish and Wildlife Service, 1993) in small, disjunct populations. The flycatcher was listed as endangered by the State of California in 1992 and by the U.S. Fish and Wildlife Service in 1995. Based on survey data collected from 1993 to 2001, population estimates for flycatchers in California increased to 256 territories, with the increase largely attributed to expanded survey effort rather than population growth at known sites (U.S. Fish and Wildlife Service, 2002). In the 2014 5-year status review, estimates of California flycatcher territories decreased to 172, with declines occurring statewide (Durst and others, 2008; U.S. Fish and Wildlife Service, 2014), including at the Kern River and the Santa Margarita River on Marine Corps Base Camp Pendleton (Howell and Kus, 2024a).

Flycatchers in southern California co-occur with the Least Bell's Vireo (*Vireo bellii pusillus*; vireo), another riparian obligate species endangered by habitat loss and cowbird parasitism. Unlike the vireo, which has increased tenfold since the mid-1980s in response to management practices alleviating threats (U.S. Fish and Wildlife Service, 2006), the number of flycatchers has remained low. As of 2023, most flycatchers in California were concentrated at two known sites: (1) the Owens River valley in Inyo County (approximately 57 territories; Great Basin Bird Observatory, 2023) and (2) the upper San Luis Rey River at Lake Henshaw in San Diego County (approximately 51 territories; Howell and Kus, 2024b). Outside of these sites, flycatchers occur as small, isolated populations of five territories or fewer (Durst and others, 2008; U.S. Fish and Wildlife Service, 2014). Many of the small populations in San Diego County, including at the lower San Luis Rey River (Houston and others, 2024), have declined or been extirpated in the past two decades.

Most male flycatchers begin arriving in southern California in early to mid-May, whereas females arrive approximately 1 week later. While on the breeding grounds, males sing repeatedly from exposed perches. Once the pair bond is established, the female builds an open cup nest that is usually placed in a branch fork of a willow (*Salix* spp.) or plant with a similar branching structure approximately 1–3 meters (m) above the ground. The typical clutch of three to four eggs is laid in May–June. Females incubate for approximately 12 days, and nestlings fledge within 12–15 days in early July. Adults usually depart from their breeding territory in mid-August and early September for their wintering grounds in Central America and northern South America.

Flycatcher breeding habitat is characterized by patches of dense riparian vegetation along rivers, streams, and reservoir inflows, interspersed with small openings, open water, or areas of sparse vegetation. Vegetation species composition varies across the range, but most breeding habitats include tree or shrub cover that is at least 3 m tall, with patches of dense vegetation within 3–4 m of the ground. In addition, flycatcher breeding habitat is almost always near areas of standing water or saturated soil (U.S. Fish and Wildlife Service, 2002; Sogge and others, 2010).

The purpose of this study, which began in 2015, was to document the status of Southwestern Willow Flycatchers in San Diego County, California. The goals of the 2025 effort were to (1) assess the status of the flycatcher population at select locations in San Diego County, including one at the San Dieguito River near Escondido and four along the upper San Luis Rey River near Santa Ysabel; (2) assess the breeding activities of the flycatcher at Lake Henshaw, including nest success and productivity; and (3) evaluate the level of cowbird parasitism at Lake Henshaw. This report is the annual update to surveys that have been completed since 2015 (Howell and Kus, 2021, 2022a, b, 2023, 2024a, 2025). The data contained in this report can be found in the associated data release (Howell and Kus, 2022b). These data, when compared with data from other sites and years, provide information on the status of the flycatcher in San Diego County that can be used by natural resource managers to modify land-use and management practices as appropriate to support the species' survival.

Methods

Study Area

Surveys for the Southwestern Willow Flycatcher were completed in 2025 at five locations in San Diego County: one along the San Dieguito River near Escondido and four along the upper San Luis Rey River near Santa Ysabel (fig. 1). The San Dieguito River survey location (San Dieguito [SD]) consisted of an approximately 10.5-kilometer (km) reach of the San Dieguito River upstream from Interstate 15 (I–15; fig. 1) that was last surveyed in 2016 (Howell and others, 2022). The survey area included property owned by the City of San Diego Public Utilities Department.

Riparian habitat at San Dieguito included a mix of mature willow (*Salix* spp.), Fremont cottonwood (*Populus fremontii*), and non-native tamarisk (*Tamarix ramosissima*), with some mule fat (*Baccharis salicifolia*) present. Understory vegetation included native vegetation, such as poison oak (*Toxicodendron diversilobum*) and stinging nettle (*Urtica dioica*), interspersed with non-native giant reed (*Arundo donax*), poison hemlock (*Conium maculatum*), artichoke thistle (*Cynara cardunculus*), perennial pepperweed (*Lepidium latifolium*), and black mustard (*Brassica nigra*).

The upper San Luis Rey River survey area consisted of an approximately 6.9-km reach of the San Luis Rey River downstream from Lake Henshaw and the habitat surrounding Lake Henshaw (fig. 1). Four locations along the upper San Luis Rey River were surveyed for flycatchers in 2025, including three locations downstream from the Henshaw dam that have been surveyed annually since 2015 (Rey River Ranch [RRR], Cleveland National Forest [CNF], and Vista Irrigation District [VID]) and one location upstream from the Henshaw dam that has been surveyed annually since 2018 (VID Lake Henshaw [VLH]). The survey area included property managed by VID, CNF, and private property downstream from the Forest Service property. Surface flows were regulated by a dam at Lake Henshaw operated by VID, and water was present year-round. In most years, spring and summer flows were swift, and slow-moving backwater/marshy habitats were absent. In 2025, however, there was very little water in the San Luis Rey River, and some sections were completely dry. The flood plain in the downstream part of the study area was narrow and bordered by steep slopes that supported chaparral vegetation. Riparian habitat downstream included a diverse mix of mature willow (*Salix* spp.) and coast live oak (*Quercus agrifolia*) woodlands, dominated by coast live oak, willow, velvet ash (*Fraxinus velutina*), California sycamore (*Platanus racemosa*), and white alder (*Alnus rhombifolia*).

Thick understory vegetation was present, including California wildrose (*Rosa californica*), poison oak, stinging nettle, and California blackberry (*Rubus ursinus*), interspersed with patches of open habitat dominated by annual grasses and bracken fern (*Pteridium* sp.). The habitat surrounding Lake Henshaw was dominated by Goodding's black willow (*Salix gooddingii*), with some arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), Fremont cottonwood, and coast live oak where the west fork of the San Luis Rey River and several other minor creeks flowed into the lake. There were several patches of non-native tamarisk present. In 2023, above-average precipitation (114.5 centimeters [cm], 172 percent of mean from 1960 to 2022 [66.7 cm]; J. Sherwood, Vista Irrigation District, written commun., 2024) resulted in a lake level that partially inundated flycatcher habitat at Lake Henshaw. All understory vegetation was submerged, but the tops of mature willow, cottonwood, and tamarisk trees extended above the water line in some sections. Although the lake level lowered in 2024 after a year of average precipitation (67.2 cm; J. Sherwood, Vista Irrigation District, written commun., 2024), most of the flycatcher habitat continued to be submerged, and evidence of tree death was prominent. This habitat decline was especially apparent among cottonwood and tamarisk trees; most specimens of these two species were not leafed out and appeared to be dead. Black willow, a dominant tree species at Lake Henshaw, was affected at the high water line, and many trees snapped and fell over; however, some vertical shoots emerged from the horizontal trunks, indicating that the trees were still alive. At the beginning of the 2025 survey season (May), the trunks and roots of most trees in the areas historically occupied by flycatchers still were submerged in water from 0.5–1 m deep, which slowly receded over the course of the breeding season. In 2025, most cottonwood and tamarisk trees that had been submerged since February 2023 were dead, but most of the black willows survived more than 2 years of inundation.

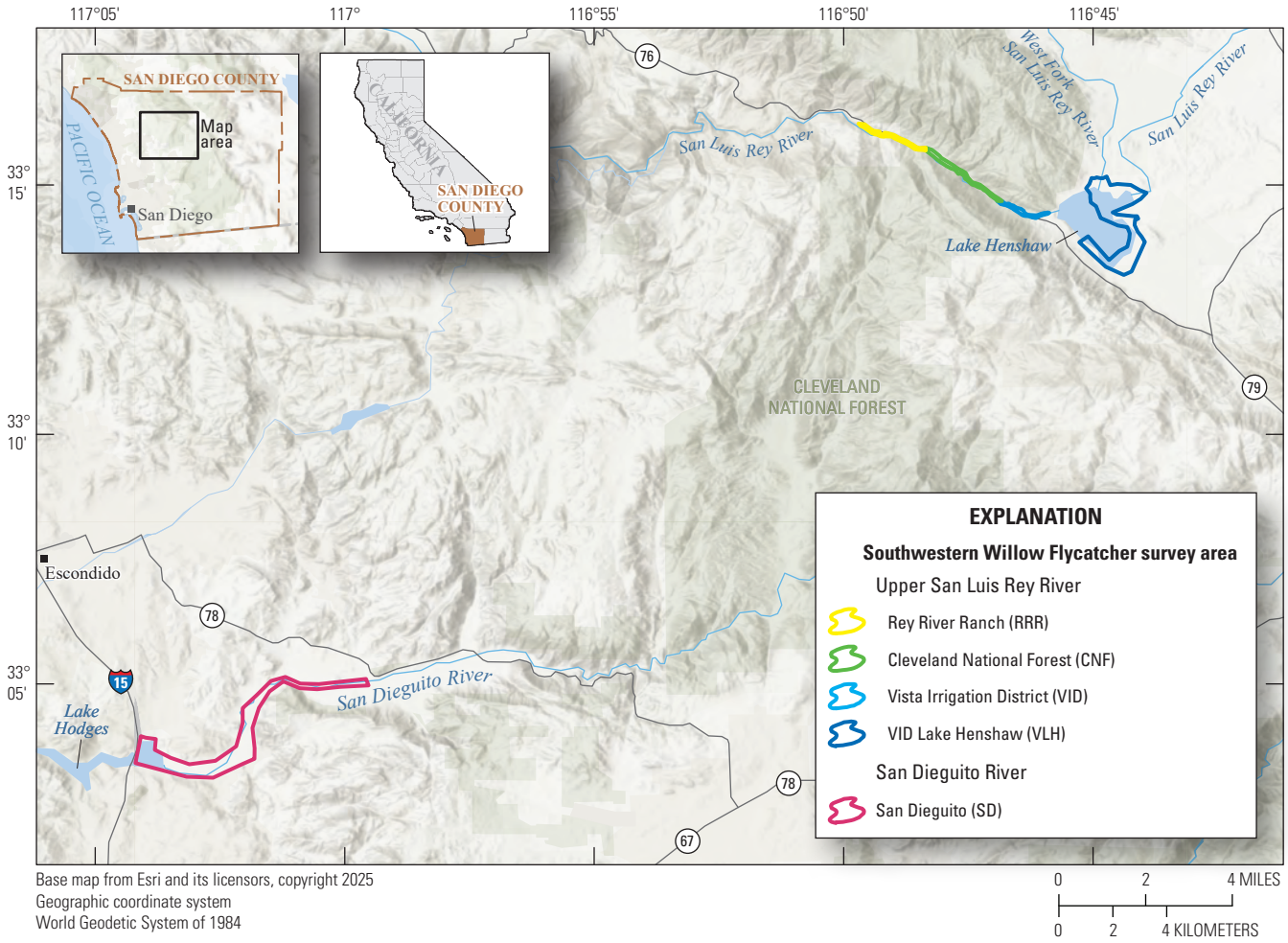

Figure 1. Locations of Southwestern Willow Flycatcher (*Empidonax traillii extimus*) survey areas on the San Dieguito River and San Luis Rey River, San Diego County, California, 2025.

Surveys

U.S. Geological Survey biologists Lisa Allen, Scarlett Howell, Suellen Lynn, and Shannon Mendia completed flycatcher surveys following a standardized call back survey protocol for Southwestern Willow Flycatchers (Sogge and others, 2010). The survey protocol is designed to increase the likelihood of detecting Southwestern Willow Flycatchers and aid in determining their breeding status by performing repeated surveys during the early to mid-nesting season, with three to four surveys carried out at least 5 days apart during three consecutive survey periods between May 15 and July 31. One survey was done between May 15 and May 31, one survey between June 1 and June 24, and one to two surveys between June 25 and July 31. Survey areas found to have breeding flycatchers received a second survey in the June 25 to July 31 period to increase the likelihood of detecting fledglings. Surveys were done between dawn and early afternoon, avoiding periods of inclement weather, such as temperatures below freezing, rain, or strong winds that inhibit detection of flycatchers. In areas accessible by foot, surveys were done by walking next to the river or lake, using caution to avoid disturbing the habitat or damaging nests. In wider stands, observers traversed the habitat, choosing routes that permitted detection of all birds throughout its extent, such as multiple straight transects, serpentine, zig-zag, or crisscross routes. In flooded habitat, surveys were done by boat, primarily by moving along the outside edge of the habitat patch and entering the interior habitat whenever possible. By mid-July, most flycatcher habitat could be reached on foot; however, large numbers of downed trees in 2025 prevented surveyors from accessing the interior habitat in some sections that could not be reached on foot, which may have resulted in an underestimate of the number of flycatcher territories present in these areas.

Upon initiation of the survey, investigators stood quietly for 1–2 minutes, listening for spontaneously singing flycatchers and acclimating to surrounding conditions, such as road and river noise. During boat surveys, investigators stopped the boat engine and floated quietly during the listening period. If there were no birds detected during the initial listening period, investigators broadcasted flycatcher song ("fitz-bew") using an MP3 player or mobile phone and an amplified speaker at the volume of typical bird songs for approximately 10–15 seconds and then looked and listened for approximately 1 minute for a response. Flycatchers typically responded by moving silently toward the song, singing in response to the song, or by producing some other call or vocalization. Song playback was ceased immediately upon detection of a flycatcher. Additional flycatcher vocalizations were broadcast occasionally during boat-based surveys to elicit a response and confirm flycatcher presence. This procedure was repeated (including a 10-second quiet pre-broadcast listening period) every 20–30 m throughout land-based survey sites or 80–100 m throughout boat-based survey sites and more frequently if background noise was loud. If a flycatcher was detected, the investigator moved approximately 50–80 m beyond the detection before additional playback occurred to avoid double counting birds. At most flycatcher territories, flycatchers in adjacent territories could be heard vocalizing simultaneously.

For each flycatcher encountered, observers recorded age (adult or juvenile), sex (male, female, or unknown), breeding status (paired, undetermined, or transient), and whenever possible, if the bird was banded. Flycatcher age was determined by the physical appearance of plumage (for example, juveniles [fledged young-of-the-year] exhibited buffy wing bars) combined with behavioral cues, such as territorial defense or singing. Sex determination was based on behavioral observations of adult flycatchers detected during each survey visit. For example, males often broadcast song continuously from conspicuous perches, whereas females sing only occasionally (Seutin, 1987; Sedgwick and Knopf, 1989). Females perform most of the nest building and incubation (U.S. Fish and Wildlife Service, 2002). If we could not confidently assign a sex during surveys, the flycatcher's sex was recorded as unknown. Breeding status of adult flycatchers was based on the culmination of behavioral observations observed over multiple visits. Flycatchers were considered paired if (1) a second flycatcher was present and unchallenged by the territorial male during more than one survey period, (2) male/female interactions were observed, (3) an adult flycatcher was observed carrying nesting material or food, (4) an active flycatcher nest was located, or (5) adults were observed actively feeding fledglings. To avoid overcounting male flycatchers, observers attempted to determine pairing type (monogamous or polygynous). Monogamous pairings consisted of one male paired with one female, whereas polygynous pairings consisted of one male paired with more than one female. Behaviors used to establish polygyny included males interacting with more than one female simultaneously or sequentially. For example, during a territory visit, observers often documented a male/female interaction in territory A while simultaneously hearing a third flycatcher vocalizing (for example, whitting) in the adjacent territory B, and when the territory A interaction ended, a male/female interaction was subsequently heard in territory B while the female in territory A simultaneously began vocalizing. Flycatcher breeding status was considered undetermined when behaviors, such as spontaneous singing or other territory defense, were observed during the non-migration period (from approximately June 15 to July 20; Sogge and others, 2010), but no pair behaviors were confirmed. A flycatcher was considered transient if detected only once, or if twice, was detected over two successive survey periods in which detections were less than 2 weeks apart.

Adult flycatcher locations were mapped using Environmental Systems Research Institute Field Maps (Esri, 2025) on mobile phones with built-in Global Positioning System to determine geographic coordinates (World Geodetic System 1984). Habitat was characterized by visual inspection within 50 m of each flycatcher location. Dominant native and exotic plants were recorded at each location, and percent cover of native vegetation was estimated using cover categories of less than 5 percent, 5–50 percent, 51–95 percent, and greater than 95 percent. Overall habitat type was specified according to the following categories:

Mixed willow riparian: Habitat dominated by one or more willow species, including Goodding's black willow, arroyo willow, red willow, and sandbar willow (*Salix exigua*), with mule fat as a frequent co-dominant.

Willow-ash: Willow riparian habitat in which velvet ash is a co-dominant.

Willow-cottonwood: Willow riparian habitat in which Fremont cottonwood is a co-dominant.

Willow-oak: Willow-riparian habitat in which coast live oak is a co-dominant.

Willow-sycamore: Willow riparian habitat in which California sycamore is a co-dominant.

Oak-sycamore: Woodlands in which coast live oak and California sycamore occur as co-dominants.

Non-native: Areas vegetated exclusively with non-native species, such as giant reed and tamarisk.

Nest Monitoring

From May 15 to August 22, U.S. Geological Survey biologists Scarlett Howell and Suellen Lynn monitored nesting attempts of paired flycatchers at Lake Henshaw to determine nest success, productivity, and cowbird parasitism rate (percentage of nests parasitized). Pairs were observed for evidence of nesting, and when vegetation structure allowed access, their nests were located and monitored following standard protocol (Rourke and others, 1999). To minimize the chances of leading predators or cowbirds to nest sites, nests were visited only as frequently as needed to collect sufficient data, and nests were not approached when predators or cowbirds were present (Rourke and others, 1999). Typically, there were three to four visits per nest, corresponding to about one visit per week. The first visits were timed to determine the number of eggs (cowbird and flycatcher) laid; subsequent visits were to determine hatching status and the age of any young, and the final visit was to confirm fledging. Whenever possible, cowbird eggs were removed from parasitized nests and destroyed to promote nest success because parasitized flycatcher nests are rarely successful in fledging host young (Rothstein and others, 2003). As flycatchers readily renest after failure, biologists frequently located and monitored more than one nest in a flycatcher territory. Field surveys and nest monitoring were authorized by U.S. Fish and Wildlife Service10(a)1(A) Recovery Permit ESPER0004080_0.3 and were approved by the U.S. Geological Survey Western Ecological Research Center Animal Care and Use Committee.

Nests were assigned six possible fates based on the following parameters. Nests that fledged at least one young were considered successful (SUC). Fledging was confirmed by detection of young outside the nest. Unsuccessful nests were placed into one of five nest fate categories. Nests found empty or destroyed prior to the estimated fledge date were considered depredated (PRE), as were nests where the adult flycatchers were not found tending fledgling(s). Previously active nests that were subsequently abandoned by adult flycatchers after one or more cowbird eggs were laid in the nest were considered to have failed because of nest parasitism (PAR). Any nests that fledged cowbird young without fledging flycatcher young also were considered to have failed because of nest parasitism (PAR). Nests failing for reasons such as poor nest construction, the collapse of a host plant that caused a nest's contents to be dumped onto the ground, or the presence of an unhatched clutch of eggs that were presumed to be infertile, were classified as failing because of other causes that were known (OTH). Nests that appeared intact and undisturbed but were abandoned with flycatcher eggs before the earliest hatch date or nests that were completed but failed before flycatcher eggs could be confirmed were classified as having failed because of unknown causes (UNK). Nests that were found empty and intact after the estimated fledge date, but no fledgling(s) could be confirmed, and no adults were detected in the territory, were also classified as UNK. Finally, nests that were seen during the construction phase but never completed or that showed evidence of being dismantled before flycatcher eggs were confirmed in the nest were classified as "incomplete" (INC).

We used information collected during territory and nest visits to determine nest initiation dates (date first egg laid), apparent nest success (the proportion of completed nests that fledged young), productivity (the number of young fledged per pair), and fledge date (the date on which fledging occurred, estimated from the nest chronology) or fail date (the date that a nest was discovered failed, or backward-dated based on the timing of a renest). We used the presence of cowbird eggs in flycatcher nests to calculate the percentage of nests parasitized, based on nests in which the contents were observed.

Banded Bird Resighting

Flycatchers were banded at three locations (RRR, CNF, and VID) as part of a separate demographic study from 2015 to 2019 (Howell and others, 2022). In that study, adults were captured at monitored territories using mist nets and song playback and were banded with a unique color-band combination. Nestlings from accessible nests were banded with a single metal dark blue band on the left or right leg. In subsequent years, flycatchers that were resighted with a single dark blue band ("natal") were recaptured and given a second leg band to yield a unique color-band combination. In 2025, we attempted to resight all flycatchers to identify individuals based on color-band combinations. If banded birds were detected, color-band resighting data were used to determine age and document movement from banding sites.

Results

Abundance and Distribution

In 2025, there were 57 territorial flycatchers and 3 transient flycatchers of unknown subspecies observed during surveys. All flycatchers were detected along the upper San Luis Rey River at VLH (figs. 2, 3; tables 1, 2). No flycatchers were detected at any of the survey locations downstream from Lake Henshaw or at San Dieguito. The flycatcher population at VLH increased 21 percent from 2024 (47 territorial flycatchers; Howell and Kus, 2022b, 2025) to 2025 (Howell and Kus, 2022b). There were 37 territories established at VLH, containing 35 pairs (20 males and 35 females) and 2 male flycatchers of undetermined breeding status. Of the 35 pairs, 12 were monogamous pairings, and 23 were polygynous pairings consisting of 3 males each pairing with 2 different females [6 pairs], 3 males each pairing with 3 different females [9 pairs], and 2 males each pairing with 4 different females [8 pairs]).

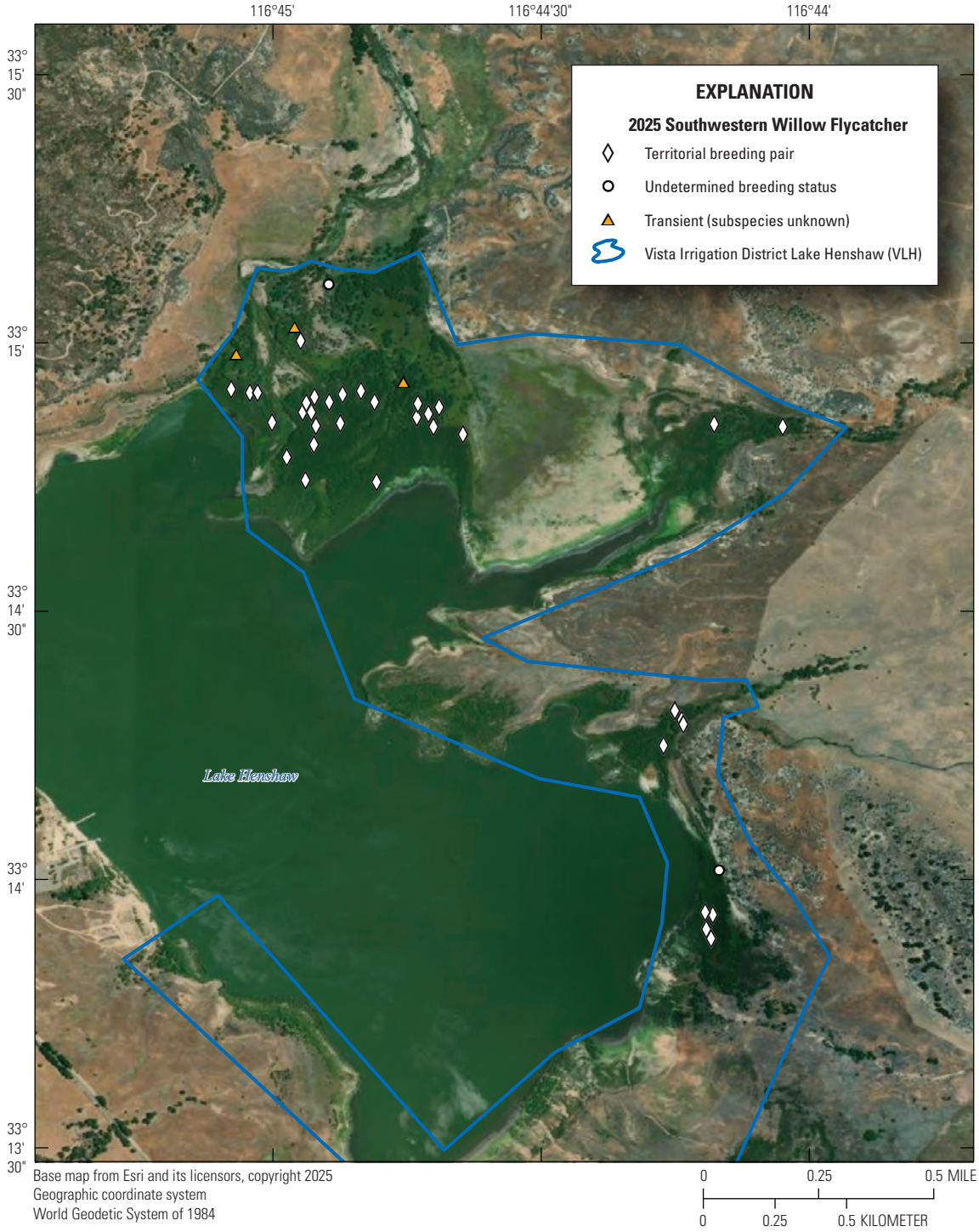

Figure 2. Willow Flycatcher (*Empidonax traillii*) detections and breeding status on the upper San Luis Rey River, San Diego County, California, 2025.

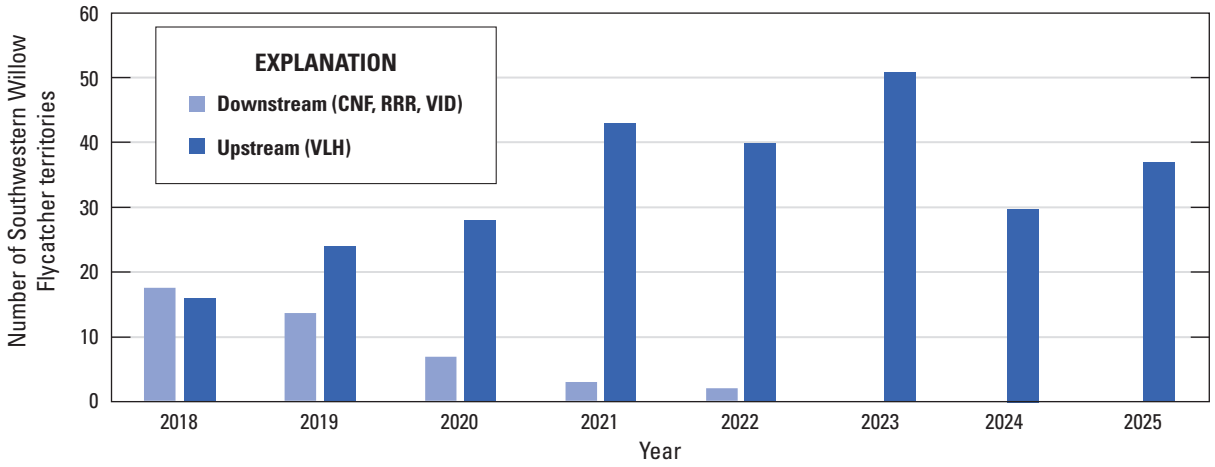

Figure 3. Distribution of Southwestern Willow Flycatcher (*Empidonax traillii extimus*) territories on the upper San Luis Rey River, San Diego County, California, 2018–25. Abbreviations: CNF, Cleveland National Forest; RRR, Rey River Ranch; VID, Vista Irrigation District; VLH, Vista Irrigation District Lake Henshaw.

Table 1. Total number and breeding status of Willow Flycatchers (*Empidonax traillii*) detected at survey locations on the San Dieguito River and upper San Luis Rey River, San Diego County, California, 2025.

[**Survey location**: CNF, Cleveland National Forest; RRR, Rey River Ranch; SD, San Dieguito; VID, Vista Irrigation District; VLH, Vista Irrigation District Lake Henshaw. **Abbreviations**: Juv., juveniles; Unk., unknown]

Survey location	Number of							Breeding status	
	Transient flycatchers	Territorial flycatchers	Males	Females	Unk. sex	Juv.	Territories	Paired	Undetermined
CNF	0	0	0	0	0	0	0	0	0
RRR	0	0	0	0	0	0	0	0	0
SD	0	0	0	0	0	0	0	0	0
VID	0	0	0	0	0	0	0	0	0
VLH	3	57	22	35	0	34	37	35	2
Total	3	57	22	35	0	34	37	35	2

Table 2. Locations, breeding status, and band status of Willow Flycatchers (*Empidonax traillii*) detected at Lake Henshaw on the upper San Luis Rey River, San Diego County, California, 2025.

[**Breeding status**: P, pair; T, transient (subspecies unknown); U, undetermined. **Sex**: F, female; M, male; U, unknown. **Banded bird(s) present**: N, no; U, unknown; Y, yes. **Other abbreviations**: ID, identification; &, and; —, no additional comment. **Comments**: For polygynous males (males that mated with more than one female), the additional territories (bird ID) where the male mated with additional females are shown in parentheses. For example, polygynous male LHW01F was mated with a female in LHW01F plus two additional females, one in LHW17F and one in LHW29F. Females that mated with a polygynous male are noted in comments. For example, comments for bird ID LHW17F notes that this is the second female of LHW01F, and the comments for bird ID LHW29F indicate that this is the third female of LHW01F]

Bird ID	Number of adults	Breeding status	Sex	Banded bird(s) present	Comments
LHW01F	2	P	M & F	N	Polygynous male (LHW01/17/29F)
LHW02F	2	P	M & F	U	Polygynous male (LHW02/18/21/22F)
LHW03F	2	P	M & F	U	Polygynous male (LHW03/24F)
LHW04F	1	T	U	N	Detected May 29 only
LHW05F	1	T	U	N	Detected May 23 and May 29 only
LHW06F	1	U	M	N	—
LHW07F	2	P	M & F	N	—
LHW08F	1	T	U	N	Detected May 29 only
LHW09F	2	P	M & F	U	Polygynous male (LHW09/11/27F)
LHW10F	2	P	M & F	U	Polygynous male (LHW10/19F)
LHW11F	1	P	F	N	Second female of LHW09F
LHW12F	2	P	M & F	U	—
LHW13F	2	P	M & F	N	—
LHW14F	2	P	M & F	N	—
LHW15F	2	P	M & F	N	Polygynous male (LHW15/25F)
LHW16F	2	P	M & F	N	—
LHW17F	1	P	F	N	Second female of LHW01F
LHW18F	1	P	F	U	Second female of LHW02F
LHW19F	1	P	F	N	Second female of LHW10F
LHW20F	2	P	M & F	N	—
LHW21F	1	P	F	N	Third female of LHW02F
LHW22F	1	P	F	N	Fourth female of LHW02F
LHW23F	2	P	M & F	N	—
LHW24F	1	P	F	N	Second female of LHW03F
LHW25F	1	P	F	N	Second female of LHW15F
LHW26F	2	P	M & F	N	—
LHW27F	1	P	F	N	Third female of LHW09F
LHW28F	2	P	M & F	N	—
LHW29F	1	P	F	N	Third female of LHW01F
MLH01F	2	P	M & F	N	—
MLH02F	2	P	M & F	N	—
VLH01F	2	P	M & F	U	Polygynous male (VLH01/05/07/09F)
VLH02F	2	P	M & F	N	Polygynous male (VLH02/03/08F)
VLH03F	1	P	F	N	Second female of VLH02F
VLH04F	2	P	M & F	U	—
VLH05F	1	P	F	N	Second female of VLH01F

Table 2. Locations, breeding status, and band status of Willow Flycatchers (*Empidonax traillii*) detected at Lake Henshaw on the upper San Luis Rey River, San Diego County, California, 2025.—Continued

[**Breeding status**: P, pair; T, transient (subspecies unknown); U, undetermined. **Sex**: F, female; M, male; U, unknown. **Banded bird(s) present**: N, no; U, unknown; Y, yes. **Other abbreviations**: ID, identification; &, and; —, no additional comment. **Comments**: For polygynous males (males that mated with more than one female), the additional territories (bird ID) where the male mated with additional females are shown in parentheses. For example, polygynous male LHW01F was mated with a female in LHW01F plus two additional females, one in LHW17F and one in LHW29F. Females that mated with a polygynous male are noted in comments. For example, comments for bird ID LHW17F notes that this is the second female of LHW01F, and the comments for bird ID LHW29F indicate that this is the third female of LHW01F]

Bird ID	Number of adults	Breeding status	Sex	Banded bird(s) present	Comments
VLH06F	1	U	M	N	—
VLH07F	1	P	F	U	Third female of VLH01F
VLH08F	1	P	F	N	Third female of VLH02F
VLH09F	1	P	F	N	Fourth female of VLH01F

The distribution of flycatcher territories along the upper San Luis Rey River has shifted since 2018 when Lake Henshaw was first surveyed. From 2018 to 2023, the combined population of flycatchers downstream from Lake Henshaw (CNF, RRR, VID) decreased annually before falling to zero territories in 2023, whereas the population upstream from Henshaw dam (VLH) increased from 2018 to 2021, declined slightly in 2022, increased in 2023, declined significantly in 2024, and increased in 2025 (fig. 3).

In 2025, all flycatcher detections were in mixed willow habitat type, dominated exclusively by Goodding's black willow. Exotic vegetation was not prevalent in the survey area; 93 percent (37/40) of flycatcher locations occurred in habitat with greater than 95-percent native plant cover. Most of the exotic vegetation consisted of non-native annuals, such as sweet clover (*Melilotus* spp.).

Nest Monitoring

Of the 35 territories at VLH that contained paired flycatchers, 26 were monitored during the 2025 breeding season. There were 40 flycatcher nests located and monitored, and of these, 7 were incomplete (table 3). Of the 33 completed nests, 30 percent (10) successfully fledged young. Two additional nests in two separate territories were not located but were successful based on the presence of fledglings. Of the 23 failed nests, 61 percent were depredated (14), 22 percent failed for unknown reasons (5), and 17 percent failed because of cowbird parasitism (4). There were 33 fledglings confirmed, yielding a seasonal productivity of 1.3 young/pair (33 young/26 monitored pairs). One additional fledgling was confirmed in an unmonitored territory during surveys at VLH (table 2).

Brown-headed Cowbirds

Cowbirds were detected at all five survey locations. During nest monitoring activities, we were able to observe the contents of 31 flycatcher nests. Seven of these nests (23 percent) were parasitized, each containing one cowbird egg (table 3). In 2025, all nests that contained a cowbird egg were too high to access the nest contents, and no cowbird eggs were removed. Of the seven parasitized nests, only one nest was ultimately successful after the cowbird egg failed to hatch (MLH01F nest 4; table 3). In two additional territories, adult flycatchers were observed feeding a cowbird fledgling.

Banded Birds

No banded flycatchers present in previous years were observed in 2025. However, flooded conditions made entering the interior habitat difficult, and we were unable to access one, the exact territory locations where banded birds were last observed in 2022.

Table 3. Nesting activities of Southwestern Willow Flycatchers (*Empidonax trailli extimus*) at the upper San Luis Rey River, Vista Irrigation District Lake Henshaw, San Diego County, California, 2025.

[**Nest outcome**: INC, nest was not completed or was dismantled; PAR, nest failed because of cowbird parasitism; PRE, nest failed as a result of predation; SUC, nest successfully fledged at least one flycatcher young; UNK, nest failed for unknown reasons. **Other abbreviations**: BHCO, Brown-headed Cowbird; SWFL, Southwestern Willow Flycatcher; #, number; —, no data]

Territory	Nest number	Nest outcome	First egg lay date	# of SWFL eggs	# of BHCO eggs	# of Nestlings	# of Fledglings	Fledge/fail date
LHW01F	1	INC	—	—	—	—	—	June 6, 2025
	2	UNK	—	—	—	—	—	June 19, 2025
	3	SUC	June 19, 2025	4	0	3	3	July 19, 2025
LHW02F	1	PRE	June 11, 2025	4	0	4	0	July 10, 2025
	2	PRE	July 19, 2025	3	0	3	0	August 18, 2025
LHW07F	1	UNK	—	—	—	—	—	June 19, 2025
LHW09F	1	UNK	June 18, 2025	3	0	0	0	July 3, 2025
	2	PAR	July 3, 2025	1	1	0	0	July 10, 2025
LHW11F	1	PRE	June 27, 2025	2	0	2	0	July 24, 2025
LHW14F	1	SUC	June 24, 2025	3	0	3	3	July 24, 2025
LHW15F	1	SUC	June 8, 2025	4	0	4	4	July 7, 2025
LHW16F	1	SUC	June 24, 2025	3	0	3	3	July 25, 2025
LHW17F	1	SUC	June 17, 2025	3	0	3	3	July 18, 2025
LHW18F	1	PRE	June 9, 2025	4	0	2	0	July 3, 2025
	2	PAR	July 5, 2025	4	1	1	0	July 25, 2025
LHW19F	1	SUC	June 15, 2025	3	0	3	3	July 13, 2025
LHW20F	1	PRE	June 17, 2025	3	0	0	0	June 27, 2025
	2	PRE	June 30, 2025	3	0	3	0	July 24, 2025
LHW21F	1	PRE	June 17, 2025	2	1	2	0	July 10, 2025
LHW24F	1	PRE	July 15, 2025	3	0	2	0	August 13, 2025
LHW25F	1	PRE	June 23, 2025	4	0	2	0	July 17, 2025
LHW26F	1	SUC	July 2, 2025	3	0	3	3	July 31, 2025
LHW27F	1	SUC	June 29, 2025	3	0	3	3	July 27, 2025
MLH01F	1	INC	—	—	—	—	—	June 6, 2025
	2	INC	—	—	—	—	—	June 13, 2025
	3	INC	—	—	—	—	—	June 19, 2025
	4	SUC	June 23, 2025	4	1	2	2	July 22, 2025
MLH02F	1	UNK	June 22, 2025	2	1	0	0	July 17, 2025
VLH01F	1	PAR	—	0	1	0	0	June 19, 2025
	2	PAR	June 26, 2025	3	1	0	0	July 17, 2025
	3	SUC	July 26, 2025	2	0	2	2	August 22, 2025
VLH02F	1	PRE	June 3, 2025	4	0	1	0	June 27, 2025
	2	PRE	June 18, 2025	1	0	1	—	July 11, 2025
VLH03F	1	INC	—	—	—	—	—	June 13, 2025
	2	INC	—	—	—	—	—	June 27, 2025
	3	PRE	July 22, 2025	3	0	2	0	August 18, 2025
VLH04F	1	PRE	June 13, 2025	1	0	0	0	June 19, 2025
	2	INC	—	—	—	—	—	July 17, 2025

Table 3. Nesting activities of Southwestern Willow Flycatchers (*Empidonax trailli extimus*) at the upper San Luis Rey River, Vista Irrigation District Lake Henshaw, San Diego County, California, 2025.—Continued

[**Nest outcome**: INC, nest was not completed or was dismantled; PAR, nest failed because of cowbird parasitism; PRE, nest failed as a result of predation; SUC, nest successfully fledged at least one flycatcher young; UNK, nest failed for unknown reasons. **Other abbreviations**: BHCO, Brown-headed Cowbird; SWFL, Southwestern Willow Flycatcher; #, number; —, no data]

Territory	Nest number	Nest outcome	First egg lay date	# of SWFL eggs	# of BHCO eggs	# of Nestlings	# of Fledglings	Fledge/fail date
VLH05F	1	PRE	June 25, 2025	3	0	0	0	July 3, 2025
	2	SUC	July 17, 2025	[1]2	—	[1]2	2	August 13, 2025
VLH08F	1	SUC	June 21, 2025	[1]2	—	[1]2	2	July 17, 2025
VLH09F	1	UNK	July 13, 2025	1	0	1	0	July 31, 2025

[1]Minimum number; nest contents not seen during egg/nestling stage.

Summary

In 2025, the overall Southwestern Willow Flycatcher population in the upper San Luis Rey River study area was confined to Vista Irrigation District Lake Henshaw (VLH); no territorial flycatchers were documented at the three survey locations below the Henshaw dam (Cleveland National Forest, Rey River Ranch, and Vista Irrigation District). Likewise, no flycatchers were detected at San Dieguito River. In 2025, the flycatcher population at VLH increased compared to 2024 (21 percent; from 47 territorial flycatchers to 57 territorial flycatchers).

Nest monitoring activities at Lake Henshaw were initiated in 2024 to gather baseline information, including nest success, productivity, and parasitism. In 2025, nest success was lower than in 2024 (30 percent compared to 41 percent). Seasonal productivity was also lower, at 1.3 young/pair in 2025, compared to 1.7 young/pair in 2024. The level of parasitism observed in 2025 (23 percent of nests) was higher than in 2024 (16 percent of nests) but was within the range observed during demographic monitoring downstream in 2016–19 (from 4 to 27 percent).

Except for Lake Henshaw and Owens River, the Southwestern Willow Flycatcher population in California seems to be experiencing a statewide decline. Populations on the lower San Luis Rey River, the Santa Margarita River on Marine Corps Base Camp Pendleton, and the Kern River have declined steeply or have been extirpated in recent years. Based on the most recent published data (2023), the population along the upper San Luis Rey River near Lake Henshaw is one of the few remaining Southwestern Willow Flycatcher populations in California, making it central to understanding the conditions that favor and promote flycatchers and their habitat.

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