Western Riverside County
Multiple Species Habitat Conservation Plan
Biological Monitoring Program

2023 Riparian Bird Surveys

Riparian bird survey site within the San Mateo Wilderness in the Cleveland National Forest. Photo by Nicole Tomes (Santa Ana Watershed Association).

22 January 2025

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NOTE TO READER:

This report is an account of survey activities conducted by the Biological Monitoring Program (BMP) for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was permitted in June 2004. Reserve assembly is ongoing and is expected to take 20 or more years to complete. The Conservation Area includes lands acquired under the terms of the MSHCP and other lands that have conservation value (called Public or Quasi-Public Lands) within the boundary of the MSHCP (Plan Area). In this report, the term "Conservation Area" refers to these lands as they were understood by the BMP at the time the surveys were conducted.

The BMP monitors the status and distribution of the 146 species covered by the MSHCP within the Conservation Area to provide information to Permittees, land managers, the public, and the Wildlife Agencies [i.e., the California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game) and the U.S. Fish and Wildlife Service]. BMP activities are guided by defined conservation objectives for each Covered Species, other information needs identified in MSHCP Section 5.3 or elsewhere in the document, and the information needs of the Permittees. A list of the lands where data collection activities were conducted in 2023 is included in Section 8.0 of the Western Riverside County Regional Conservation Authority (RCA) Annual Report to the Wildlife Agencies.

The primary author of this report was Field Biologist Masanori Abe, who led this project under the guidance of the 2023 Avian Program Lead, Nicholas Peterson. This report should be cited as:

Biological Monitoring Program. 2025. Western Riverside County MSHCP Biological Monitoring Program 2023 Riparian Bird Survey Report. Prepared for the Western Riverside County Multiple Species Habitat Conservation Plan. Riverside, CA. Available online: https://www.wrc-rca.org/species-surveys/.

While we have made every effort to accurately represent our data and results, it should be recognized that data management and analysis are ongoing activities. Any reader wishing to make further use of the information or data provided in this report should contact the BMP to ensure that they have access to the best available or most current data.

Please contact the BMP Administrator with questions about the information provided in this report. Questions about the MSHCP should be directed to the Executive Director of the RCA. Further information on the MSHCP and the RCA can be found at www.wrc-rca.org.

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INTRODUCTION

Thirteen bird species covered by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP; Dudek & Associates 2003) inhabit riparian areas and include Cooper's Hawk (*Accipiter cooperii*), Downy Woodpecker (*Dryobates pubescens*[1]), Least Bell's Vireo (*Vireo bellii pusillus*), MacGillivray's Warbler (*Geothlypis tolmiei*[2]), Nashville Warbler (*Leiothlypis ruficapilla*[3]), Sharp-shinned Hawk (*Accipiter striatus*), Southwestern Willow Flycatcher (*Empidonax traillii extimus*), Tree Swallow (*Tachycineta bicolor*), Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*), White-tailed Kite (*Elanus leucurus*), Wilson's Warbler (*Cardellina pusilla*[4]), Yellow-breasted Chat (*Icteria virens*), and Yellow Warbler (*Setophaga petechia*[5]). The following eight species were targeted for this survey effort and are known to either breed with regularity in the Plan Area currently or historically: Cooper's Hawk, Downy Woodpecker, Least Bell's Vireo, Southwestern Willow Flycatcher, Tree Swallow, Western Yellow-billed Cuckoo, Yellow-breasted Chat, and Yellow Warbler.

The MSHCP identifies species objectives for Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo, Yellow-breasted Chat, and Yellow Warbler that require the demonstration of both use and successful reproduction within 75% of specified Core Areas every three years for Least Bell's Vireo, Southwestern Willow Flycatcher, and Western Yellow-billed Cuckoo; and every five years for Yellow-breasted Chat and Yellow Warbler. In 2023, surveys and nest searches and monitoring were conducted for these five species. The current monitoring period for Least Bell's Vireo, Southwestern Willow Flycatcher, and Western Yellow-billed Cuckoo is 2021–2023, and for Yellow-breasted Chat and Yellow Warbler it is 2019–2023. Southwestern Willow Flycatchers and Western Yellow-billed Cuckoos were last targeted during our 2017 riparian bird survey effort (Biological Monitoring Program 2018). Yellow-breasted Chats and Yellow Warblers were last targeted during our 2019 riparian bird survey effort (Biological Monitoring

[1] The MSHCP Covered Species name is Downy Woodpecker, *Picoides pubescens*, as adopted.
[2] The MSHCP Covered Species name is MacGillivray's Warbler, *Oporornis tolmiei*, as adopted.
[3] The MSHCP Covered Species name is Nashville Warbler, *Vermivora ruficapilla*, as adopted.
[4] The MSHCP Covered Species name is Wilson's Warbler, *Wilsonia pusilla*, as adopted.
[5] The MSHCP Covered Species name is Yellow Warbler, *Dendroica petechia brewsteri*, as adopted.

Program 2020). Finally, Least Bell's Vireo were last targeted during our 2020 Least Bell's Vireo survey effort (Biological Monitoring Program 2021).

For Cooper's Hawk, Downy Woodpecker, and Tree Swallow, the Plan specifies Core Areas but no reproductive objectives. The MSHCP objective for these species is to demonstrate use of 75% of Core Areas every eight years. These three species had not been surveyed since 2015. The current monitoring period for these species is 2016–2023.

Although White-tailed Kite, MacGillivray's Warbler, Nashville Warbler, Sharp-shinned Hawk, and Wilson's Warbler can be associated with riparian areas, these five species are surveyed/tracked differently by the BMP than the above eight species and therefore were not included in the 2023 survey effort.

We surveyed for our target species within 12 MSHCP designated Core Areas in 2023 (Dudek & Associates 2003; Figure 1), including Alberhill Creek, Cleveland National Forest (NF), Lake Skinner/Diamond Valley Lake, Murrieta Creek, Prado Basin/Santa Ana River, San Bernardino NF, San Timoteo Canyon/Creek, Temecula Creek, Temescal Wash, Vail Lake, Wasson Canyon, and Wilson Valley/Creek.

Survey Goals

1. Determine the distribution during migration and the breeding season of riparian Covered bird species and other co-occurring bird species within riparian habitat.
    a. Conduct repeat-visit point-transect surveys within accessible riparian habitat in the Plan Area, recording all bird species observed.
2. Determine whether Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo, Yellow-breasted Chat, and Yellow Warbler are successfully reproducing within their respective Core Areas.
    a. Conduct nest searches when we observe target species that have a breeding objective. When active nests are found, re-visit the nest up to two days per week, and continue to monitor the status of the nest until fledging or failure.

METHODS

Study Design

For this effort, we conducted point-transect surveys on 88 transects to document whether the target species were using the riparian habitat in their Core Areas during the 2023 breeding season (Table 1). We surveyed all points at least once and visited them up to three times if we did not detect the target species during the first two survey rounds. Additionally, for the target species requiring documentation of

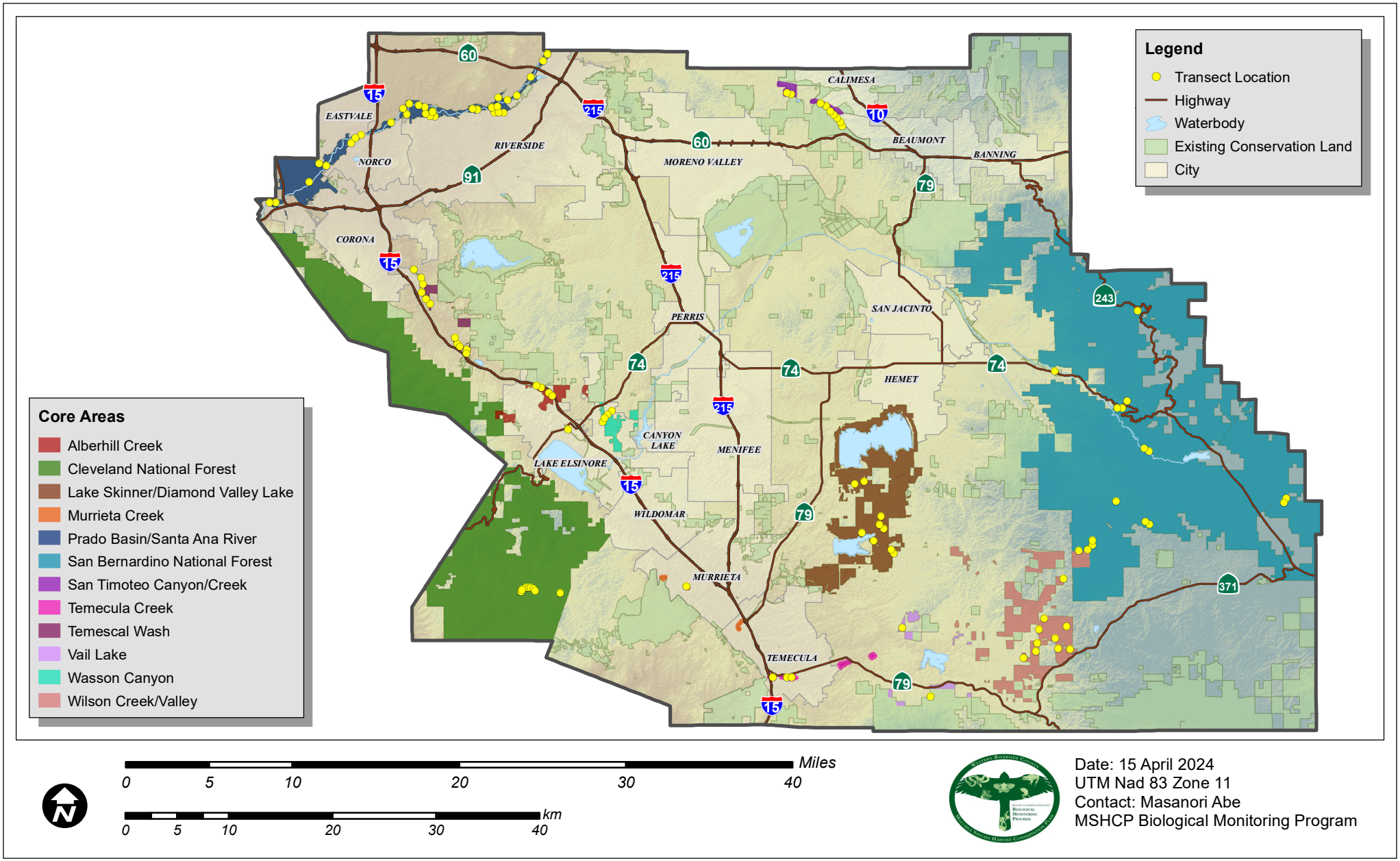

Figure 1. Riparian bird transect locations and Core Areas surveyed in 2023.

Table 1. Year of most recent detections on currently conserved land of the eight target species of our 2023 riparian bird surveys.

Core Area	Cooper's Hawk	Downy Woodpecker	Least Bell's Vireo	Southwestern Willow Flycatcher	Tree Swallow	Western Yellow-billed Cuckoo	Yellow-breasted Chat	Yellow Warbler
Alberhill Creek		2019[6]						
Cleveland National Forest	2023							
Lake Skinner / Diamond Valley Lake			2023		2023			
Murrieta Creek	2023		2023	N. R.[7]		N. R.		2023
Prado Basin / Santa Ana River	2023	2023	2023	(2015)[8]	2023	(2011)	2023	2023
San Bernardino National Forest	2023							2023
San Timoteo Canyon / Creek	2023		2023	N. R.		N. R.	2023	2023
Temecula Creek	2023	2023	2023	N. R.	2020	N. R.	2023	2023
Temescal Wash	2023	2023						
Temescal Wash / Canyon plus Alberhill Creek			2023	N. R.		N. R.	2023	2023
Vail Lake	2023	N. R.	N. R.	N. R.	2023		N. R.	2021
Wasson Canyon	2023				2023			2023
Wilson Valley / Creek	2023		(2007)		(2007)			2023
Percentage of Core Areas where we have detected species during current monitoring period	100	80	75	0	83	0	80	100

[6] Shading indicates designated Core Areas for each species.

[7] "N. R." indicates that the Biological Monitoring Program has no records of the species on conserved land in the Core Area from 2004 (inception of the MSHCP) onward.

[8] Parenthetical years indicate that the most recent detection occurred prior to the monitoring period (2021–2023 for Least Bell's Vireo, Southwestern Willow Flycatcher, and Western Yellow-billed Cuckoo; 2019–2023 for Yellow-breasted Chat and Yellow Warbler; and 2016–2023 for Cooper's Hawk, Downy Woodpecker, and Tree Swallow).

successful reproduction, we conducted nest searching and monitoring until we documented successful reproduction in at least 75% of their Core Areas, or early September, whichever occurred first. We defined successful reproduction as a nest that produced at least one fledgling.

Surveys took place on Conserved Lands within riparian habitat, including riparian woodland, forest, and scrub, as defined by our GIS vegetation layer (CDFG et al. 2005). We generated randomly-located transect center points, separated by a minimum of 250 meters (m), using the Hawth's Tools extension (Beyer 2004) in ArcGIS (Esri 2019). Each transect consisted of three survey points: a central "B" point and terminal "A" and "C" points that were exactly 100 m from the "B" point.

Field Methods

Point-Transects

We conducted surveys from 4 April through 1 September 2023. This period encompassed the time during which our target species were most likely to be present within the Plan Area. We conducted one survey round for all points, and up to three survey rounds if we did not detect target species during the first two rounds.

We started our first survey approximately 15 minutes after sunrise and did not start new transects after 1000 hours (h; i.e., transects already being surveyed at 1000 h were completed, regardless of time). We terminated surveys early if precipitation exceeded a light drizzle, the temperature exceeded 35 degrees Celsius (°C), or the maximum wind speeds exceeded 38 kilometers per hour (km/h).

We used a handheld GPS to navigate to our survey points, beginning at either the "A" or "C" point of the survey transect. After arriving at the survey point, we recorded the date, surveyor's initials, and point ID on the datasheet. We then recorded environmental data, including sky conditions (e.g., cloudy, clear, etc.), ambient noise, starting temperature (°C), and starting maximum and average wind speeds (km/h). After these initial data were recorded, observers recorded the survey start time on their datasheet.

Surveys consisted of five minutes of passive listening during which the observers recorded on their datasheet the first individual of each bird species observed. Observers recorded information for subsequently-observed individuals only if those individuals were a Covered Species. This allowed us to record data on detectability, abundance, and distribution of non-covered species within the Plan Area without compromising the ability to detect and record Covered Species. For each observation, observers recorded the species using a four-letter code as well as the sex and age class of the bird (when possible). We also recorded the distance (m)

to any target species detected. We measured distances using a laser rangefinder for accuracy. These measurements provide the data needed to calculate density information for the species. We then measured the distance to where the bird was first detected. If the bird's initial location could not be determined, we did not record a distance measurement. After five minutes of passive listening, observers moved to the central point, then to the remaining endpoint, repeating the procedure described above at each point. Observers used a separate datasheet for each of the three points along transects.

Following the conclusion of the 5-minute survey period, we attempted to identify any birds that we detected but were unable to identify during the survey. Any additional birds detected during this time were recorded in the "Notes" section of the datasheet. We also recorded any birds detected between survey points, or "in-transit," in the "Notes" section. If any of these individual birds were subsequently detected during a survey period, we removed the observation from the "Notes" section and recorded the necessary information on the associated survey datasheet.

Nest Searching and Monitoring

If we detected one of the target species with a nesting requirement, we notified the survey lead upon returning from the field. Nest searchers returned to the site and attempted to locate an active nest or detect fledglings.

When we found a pair of target species during a nest search, we observed the birds' behaviors until we had recorded the data necessary to determine the breeding status of the pair. Carrying nesting materials or food, or hearing begging or alarm calls, suggested an active nest nearby, and we reported the location of observations to the survey lead biologist along with detailed notes on the behaviors of the birds.

We also collected data on the species of nest substrate, the height of the substrate, and the height of the nest. The survey methods used in 2023 are described more completely in the *Western Riverside County MSHCP Biological Monitoring Program Protocol for 2023 Riparian Bird Surveys*, available from https://wrc-rca.org/survey_protocols/.

Area Searches

Cooper's Hawks are generally difficult to detect during point-transect surveys because the species does not vocalize frequently and are more easily detected during area searches that cover larger areas per visit. Although area searches do not provide detailed information, such as the abundance and distribution of each species detected when compared to point-count surveys, area searches generally increase species richness compared to point-count surveys (Craig 2004; Miller and Winchell 2016;

Pascoe et al. 2019). For less vocal species, like Cooper's Hawks, which are not frequent callers and usually remain quiet while hunting, additional survey rounds or larger area coverage are generally needed to improve detection.

RESULTS

Detections of Target Species

Beginning 4 April and ending 1 September, we surveyed 88, 35, and 23 transects during the first, second, and third survey rounds, respectively, for the eight target species in their designated Core Areas (Table 1). We discontinued surveys in Core Areas if all target species were detected during the first or second rounds; as a result, the numbers of surveyed transects in the second and third rounds were lower than the first round. Overall, we detected 104 avian species during the 2023 surveys, including 19 covered by the MSHCP and six of our eight target species (Appendix A).

Cooper's Hawk

We detected Cooper's Hawks in all 10 (100%) of its designated Core Areas in 2023, and within the current monitoring period (Figure 2 and Table 1). We detected Cooper's Hawks three times along two transects during the first round of point-transect surveys in two Core Areas, Prado Basin/Santa Ana River and Murrieta Creek. We did not detect any Cooper's Hawks along survey transects in the Cleveland NF, San Timoteo Canyon, San Bernardino NF, Temecula Creek, Temescal Wash, Vail Lake, Wasson Canyon, or Wilson Valley Core Areas, but we detected the species in all of these Core Areas incidentally in 2023. We also detected nesting pairs and fledglings in the Murrieta Creek, Prado Basin/Santa Ana River, San Timoteo Canyon, and Wasson Canyon Core Areas, although the MSHCP does not include a nesting objective for the species.

Downy Woodpecker

We detected Downy Woodpeckers in three (60%) of its five designated Core Areas in 2023, and four (80%) within the current monitoring period (2016–2023; Figure 3 and Table 1). We have never detected the species in the Vail Lake Core Area. We detected Downy Woodpeckers twice along one transect in the Prado Basin/Santa Ana River Core Areas during the first round of point-transect surveys. We did not detect any Downy Woodpeckers along survey transects in the other Core Areas, even though we conducted an extra two survey rounds in the Vail Lake Core Area and an extra survey round in the Temecula Creek Core Area; however, we detected Downy Woodpeckers incidentally in 2023 at the Temecula Creek and

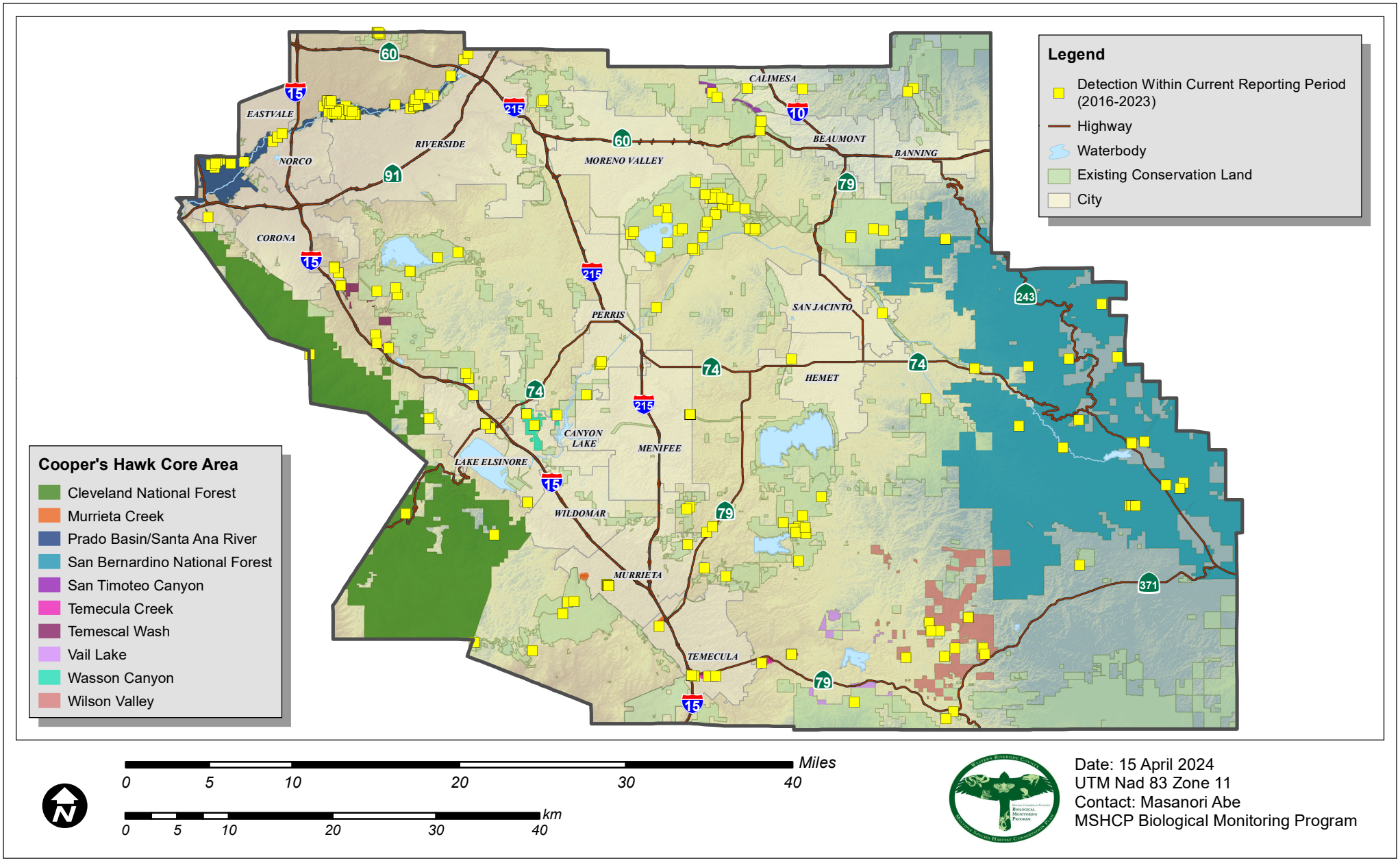

Figure 2. Cooper's Hawk Core Areas and detection locations (2016-2023).

Temescal Wash Core Areas, and in 2019 at the Alberhill Creek Core Area (Figure 3).

Least Bell's Vireo

We detected Least Bell's Vireos in six of eight (75%) Core Areas in 2023 and within the current monitoring period (2021–2023; Figure 4 and Table 1), thereby meeting the objective that requires the species use at least 75% of their designated Core Areas.

We detected Least Bell's Vireos 86 times along 32 transects during the first round of point transect surveys in five Core Areas, including Murrieta Creek, Prado Basin/Santa Ana River, San Timoteo Canyon, Temecula Creek, and Temescal Wash/Alberhill Creek. We did not detect Least Bell's Vireos along survey transects in the Lake Skinner/Diamond Valley Lake Core Area, but we detected the species incidentally during nest searching performed for other species. We conducted three survey rounds in the Vail Lake and Wilson Valley Core Areas, but we did not detect any Least Bell's Vireos in 2023 (Figure 4). The last detection of Least Bell's Vireo in the Wilson Valley Core Area occurred in 2007 (Table 1).

Southwestern Willow Flycatcher

We did not detect Southwestern Willow Flycatchers within any of their six designated Core Areas during the current monitoring period (2021–2023; Table 1); therefore, the species objective that requires the use of at least 75% of their designated Core Areas was not met. The only designated Core Area where BMP biologists have detected this species since 2005 is the Prado Basin/Santa Ana River Core Area, with the last observation occurring in 2015, outside the current monitoring period.

Tree Swallow

We detected Tree Swallows in four (67%) of their six designated Core Areas in 2023, and five (83%) within the current monitoring period (2016–2023; Figure 5 and Table 1). We detected a minimum estimation of 160 Tree Swallows along four transects in the Prado Basin/Santa Ana River Core Areas during the first round of point-transect surveys. We did not detect Tree Swallows along survey transects in the other Core Areas, despite conducting two additional survey rounds in the Vail Lake and Wilson Valley Core Areas, and one additional survey round in the Temecula Creek and Wasson Canyon Core Areas; however, we detected Tree Swallows incidentally in 2023 in the Lake Skinner/Diamond Valley Lake, Vail Lake, and Wasson Canyon Core Areas. Further, we detected the species incidentally within the Temecula Creek Core Area in 2020. We have not detected Tree Swallows in the Wilson Valley Core Areas since 2007.

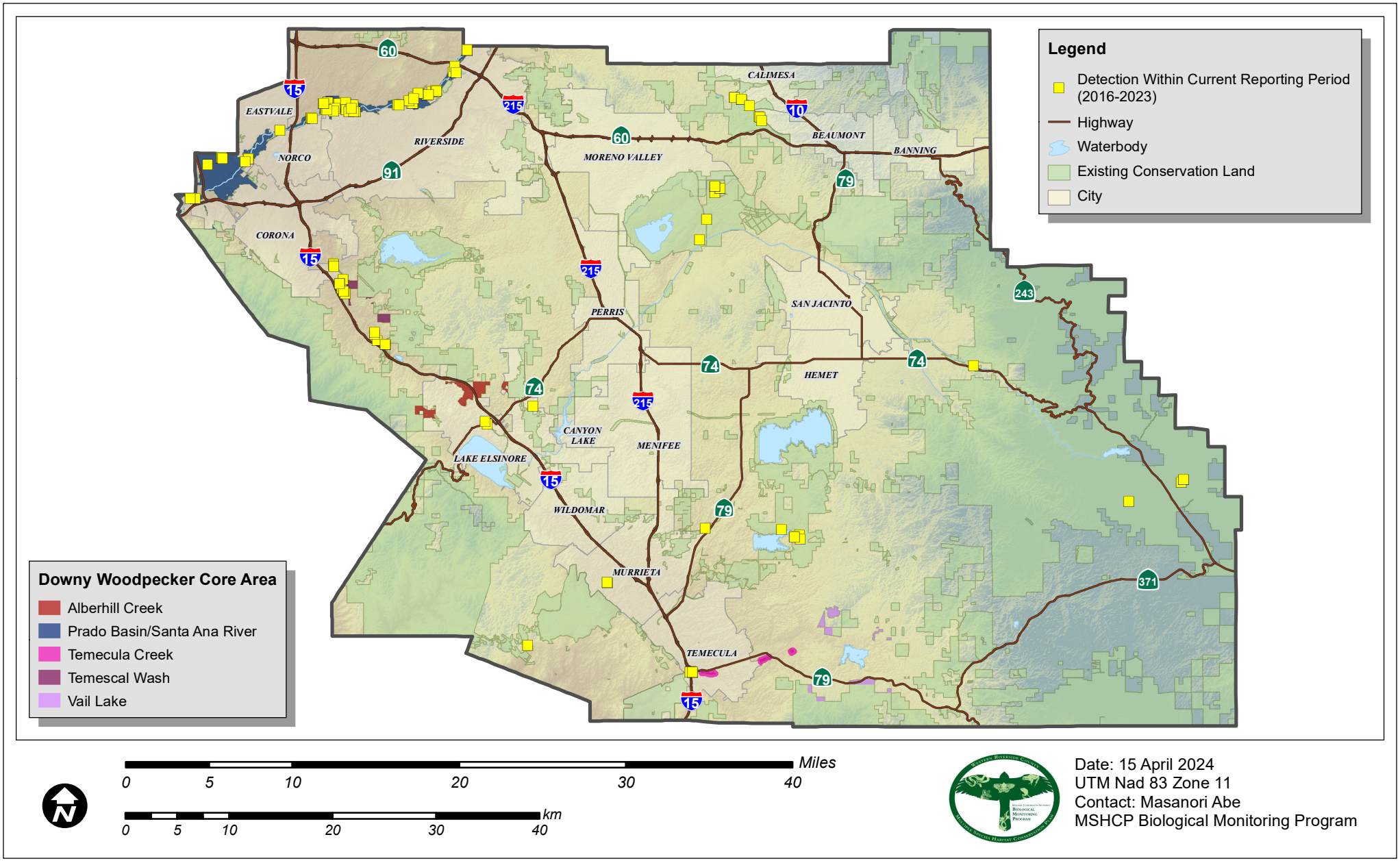

Figure 3. Downy Woodpecker Core Areas and detection locations (2016-2023).

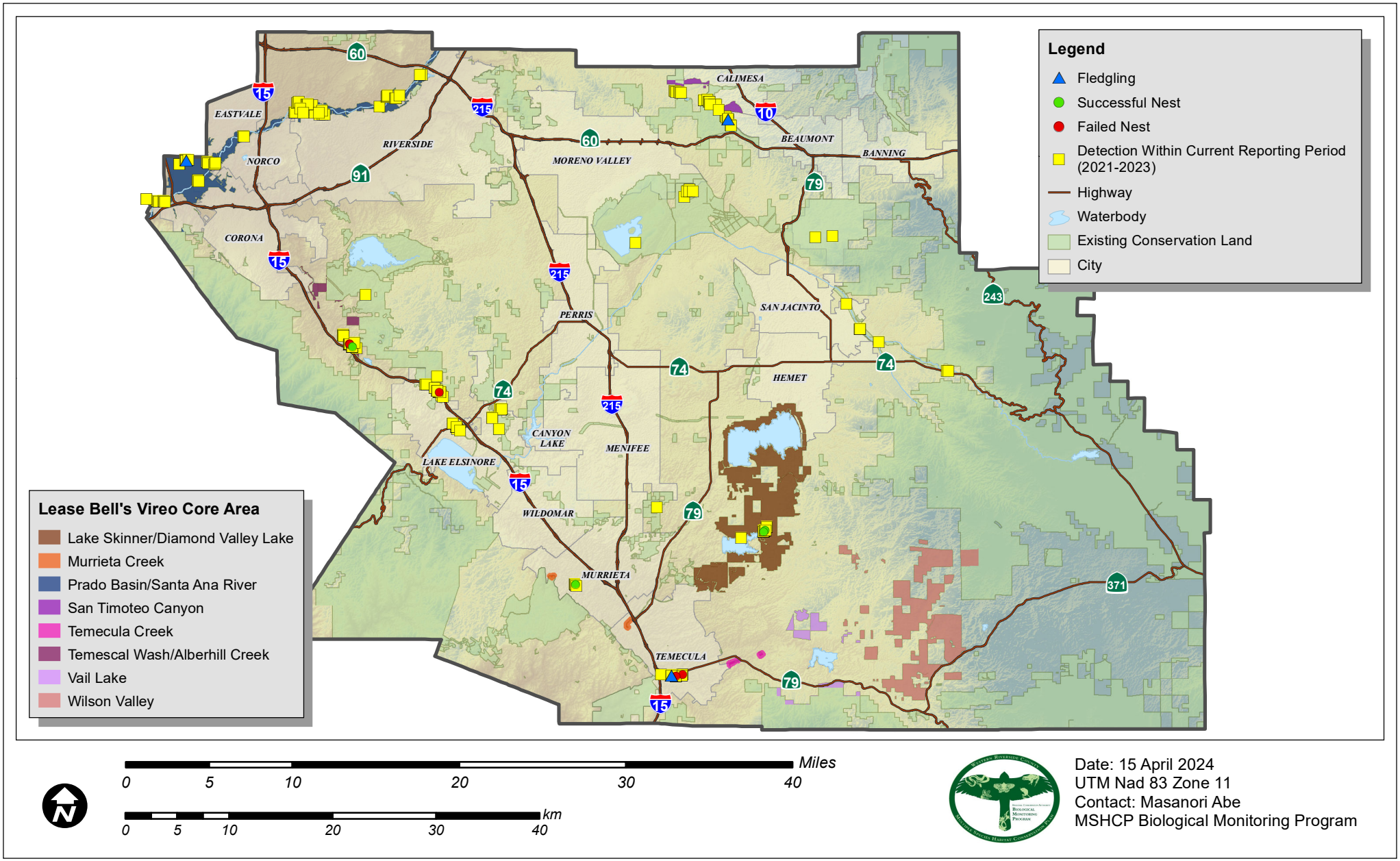

Figure 4. Least Bell's Vireo Core Areas, detections (2021-2023), and nest and fledgling locations (2023).

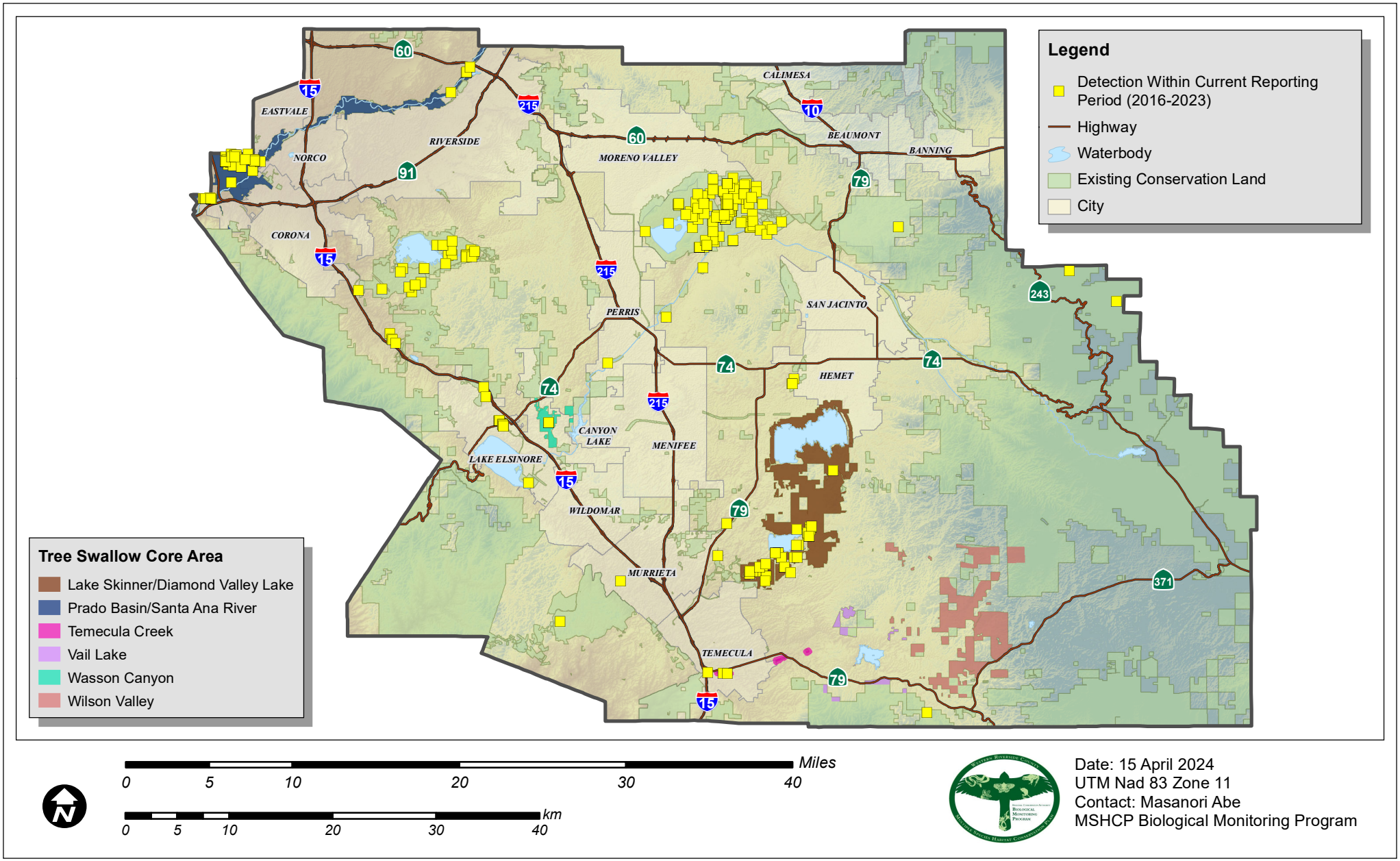

Figure 5. Tree Swallow Core Areas and detection locations (2016-2023).

Western Yellow-billed Cuckoo

We did not detect Western Yellow-billed Cuckoos within any of their five designated Core Areas in 2023 or within the current monitoring period for the species (2021–2023). The BMP has two records for the species since 2004. One of these was a detection in 2011 within the Prado Basin/Santa Ana River Core Area (Table 1) and the other was a detection in 2020 near Lake Skinner, which is not within a Core Area for the species.

Yellow-breasted Chat

We detected Yellow-breasted Chats in four (80%) of their five designated Core Areas in 2023 and within the current monitoring period (2019–2023; Figure 6 and Table 1), thereby meeting the objective that requires the species use at least 75% of their designated Core Areas. We have never detected the species within the Vail Lake Core Area.

We detected Yellow-breasted Chats 34 times along 13 transects during the first round of point-transect surveys in two Core Areas, specifically Prado Basin/Santa Ana River and Temecula Creek, with 32 of the detections in the Prado Basin/Santa Ana River Core Area and two in the Temecula Creek Core Area. We did not detect Yellow-breasted Chats along survey transects in the Temescal Wash/Alberhill Creek or San Timoteo Creek Core Areas, but we detected the species in both Core Areas incidentally during nest searching for other species. We conducted two additional survey rounds in the Vail Lake Core Area, but we did not detect Yellow-breasted Chats (Figure 6).

Yellow Warbler

We detected Yellow Warblers in eight of nine (89%) Core Areas in 2023, and all nine (100%) within the current monitoring period (2019–2023; Figure 7 and Table1), thereby meeting the species objective that requires use of at least 75% of designated Core Areas.

We detected Yellow Warblers 194 times along 42 transects during the first round of point-transect surveys in seven Core Areas: Prado Basin/Santa Ana River, San Timoteo Creek, San Bernardino NF, Temecula Creek, Temescal Wash/Alberhill Creek, Wasson Canyon, and Wilson Creek. We did not detect Yellow Warblers while surveying the Murrieta Creek Core Area, but we detected them in this Core Area incidentally during nest searching for other species. The Yellow Warbler detections in Wasson Canyon and Wilson Creek Core Areas were both likely migrants or

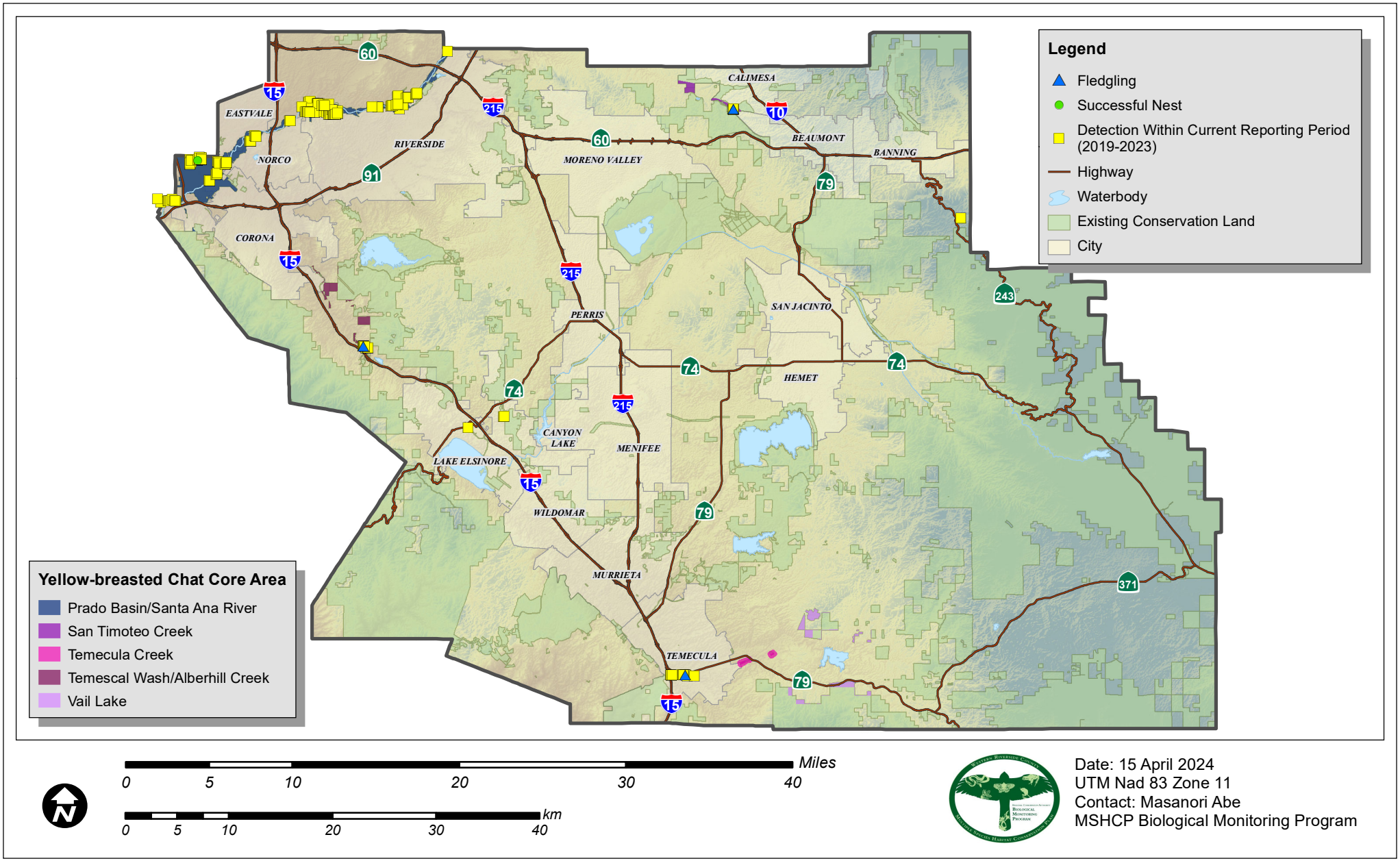

Figure 6. Yellow-breasted Chat Core Areas, detections (2019-2023), and nest and fledgling locations (2023).

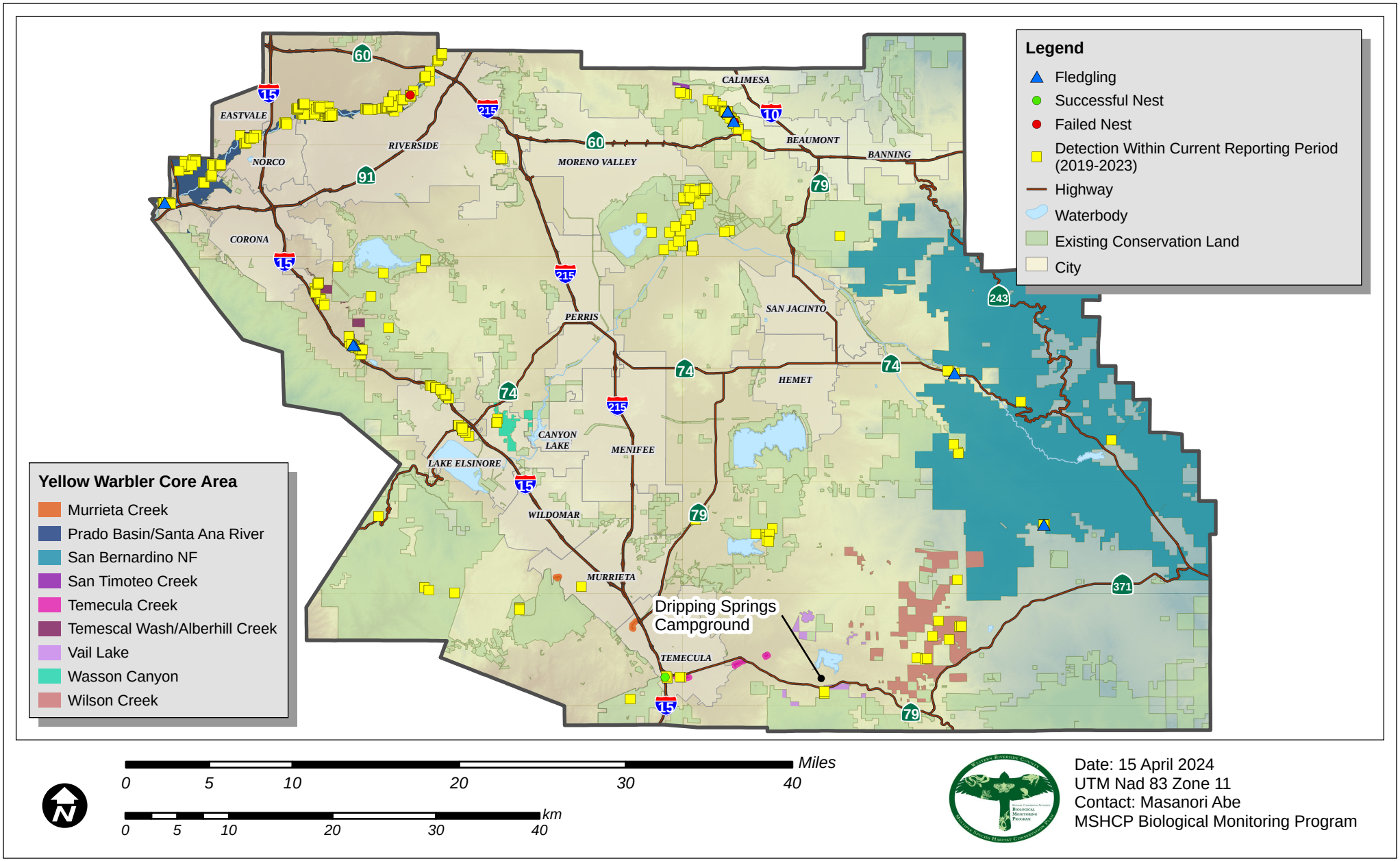

Figure 7. Yellow Warbler Core Areas, detections, and nest and fledgling locations (2019-2023).

transient individuals because we did not detect them during subsequent visits. We conducted three survey rounds in the Vail Lake Core Area, but we did not detect Yellow Warblers (Figure 7).

Nesting of Target Species

Least Bell's Vireo

We documented evidence of successful reproduction by Least Bell's Vireos on Conserved Land within six (75%) of their eight designated Core Areas (Table 2) in 2023, thereby meeting the objective for the species that requires successful reproduction within at least 75% of the designated Core Areas during the current monitoring period (2021–2023). We monitored successful nests in three Core Areas, specifically the Lake Skinner/Diamond Valley Lake, Murrieta Creek, and Temescal Wash/Alberhill Creek Core Areas.

In two additional Core Areas, Prado Basin/Santa Ana River and San Timoteo Canyon, we detected fledglings but did not locate their nests. In a sixth Core Area, Temecula Creek, we monitored two nests that failed, but also detected fledglings whose nest we did not locate (Table 3). Finally, we did not detect any evidence of occupancy or successful nesting within the Vail Lake or Wilson Valley Core Areas in 2023.

We found 11 Least Bell's Vireo nests in 2023. These nests were distributed within the Lake Skinner/Diamond Valley Lake, Murrieta Creek, Temescal Wash/Alberhill Creek, and Temecula Creek Core Areas (Table 3). We could not revisit two nests for monitoring due to a GPS malfunction and a shortage of biologists. As a result, we monitored nine nests to completion in. Of the nine nests monitored in the four Core Areas (Table 3), four (44.4%) were successful and five (55.6%) failed. Of the five failed nesting attempts, four (80%) were depredated and one (20%) was of unknown fate. Two nests were parasitized by Brown-headed Cowbirds (*Molothrus ater*), with both ultimately depredated; this loss to depredation is included in the preceding depredation count. Both parasitism events occurred in the Temecula Creek Core Area.

We documented Least Bell's Vireo nests producing a total of at least 10 fledglings, and the minimum estimated average number of fledglings was 1.11 per monitored nest (n = 9 nests). These data do not reflect family groups whose nests we did not locate. All monitored pairs (n = 4 nests with completed clutches) had clutch sizes of four eggs.

Table 2. Year of most recent evidence of successful reproduction on currently conserved land of the five target species of our 2023 riparian bird surveys that have a nesting objective.

Core Area	Least Bell's Vireo	Southwestern Willow Flycatcher	Western Yellow-billed Cuckoo	Yellow-breasted Chat	Yellow Warbler
Lake Skinner / Diamond Valley Lake	2023[9]				
Murrieta Creek	2023	N. R.[10]	N. R.		N. R.
Prado Basin / Santa Ana River	2023	N. R.	N. R.	2023	2023
San Bernardino National Forest					2023
San Timoteo Canyon / Creek	2023	N. R.	N. R.	2023	2023
Temecula Creek	2023	N. R.	N. R.	2023	2019
Temescal Wash / Canyon plus Alberhill Creek	2023	N. R.	N. R.	2023	2023
Vail Lake	N. R.	N. R.		N. R.	N. R.
Wasson Canyon					N. R.
Wilson Valley / Creek	N. R.				N. R.
Percentage of Core Areas where we have detected successful nesting during current monitoring period[11]	75	0	0	80	56

The mean height of the monitored Least Bell's Vireo nests was 0.75 m (± standard deviation [SD] of 0.3 m; range = 0.3–1.2 m; *n* = 11 nests) above ground. Nest substrates (*n* = 11 nests) consisted of willow (*Salix* spp.; *n* = 3 nests), Black Elderberry (*Sambucus nigra*; *n* = 3), Mulefat (*Baccharis salicifolia*; *n* = 2), California Mugwort (*Artemisia douglasiana*; *n* = 1), Common Nettle (*Urtica dioica*; *n* = 1), and Slender Sunflower (*Helianthus gracilentus*; *n* = 1).

Southwestern Willow Flycatcher

We did not document evidence of successful reproduction by Southwestern Willow Flycatchers in 2023. Similarly, we do not have records of successful

[9] Shading indicates designated Core Areas for each species.
[10] "N. R." indicates that the BMP has no records of the species nesting successfully on conserved land in the Core Area from 2004 onward.
[11] The current monitoring period for Least Bell's Vireo, Southwestern Willow Flycatcher, and Western Yellow-billed Cuckoo is 2021–2023; for Yellow-breasted Chat and Yellow Warbler, it is 2019–2023.

Table 3. The number (no.) of nests found within designated Core Areas for three of our target species during their current monitoring periods[12, 13].

Core Areas	Least Bell's Vireo		Yellow-breasted Chat		Yellow Warbler	
	No. Nests (No. Successful)	No. Fledgling Groups[14]	No. Nests (No. Successful)	No. Fledgling Groups	No. Nests (No. Successful)	No. Fledgling Groups
Lake Skinner/Diamond Valley Lake	3 (2)[15, 16]	0				
Murrieta Creek	1 (1)	0			0	0
Prado Basin / Santa Ana River	0	1	1 (1)	0	1 (0)	1
San Bernardino National Forest					0	2
San Timoteo Canyon / Creek	0	1	0	1	2 (0)	4
Temecula Creek	2 (0)	1	0	1	1(1)[17]	0
Temescal Wash / Canyon plus Alberhill Creek	5 (1)	0	0	1	0	2
Vail Lake	0	0	0	0	0	0
Wasson Canyon					0	0
Wilson Valley / Creek	0	0			0	0
Total	11 (4)	3	1 (1)	3	4 (1)	9

[12] The reporting period for Least Bell's Vireo is 2021–2023, and for Yellow-breasted Chat and Yellow Warbler it is 2019–2023.
[13] Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo are not included because we did not find any nests of those species during the 2021–2023 monitoring period.
[14] The number of fledgling groups indicates groups of fledglings whose nests we did not locate.
[15] Parenthetical values indicate the number of successful nests.
[16] Shading indicates nests or fledglings that occurred in the Core Area for each species.
[17] We found one successful Yellow Warbler nest in 2019 in the Temecula Creek Core Area, within the current monitoring period for the species.

reproduction by the species during their current monitoring period (2021–2023).

Western Yellow-billed Cuckoo

We did not document evidence of successful reproduction by Western Yellow-billed Cuckoos in 2023. Similarly, we do not have records of successful reproduction by the species during their current monitoring period (2021–2023) or prior to the current monitoring period.

Yellow-Breasted Chat

We documented evidence of successful reproduction by Yellow-breasted Chats in four (80%) of the five designated Core Areas (Table 2) in 2023, thereby meeting the reproductive objective for the species during the current monitoring period (2019–2023). We monitored a successful nest in the Prado Basin/Santa Ana River Core Area and found only fledglings (not nests) within the San Timoteo Creek, Temecula Creek, and Temescal Wash/Alberhill Creek Core Areas. We did not detect evidence of successful nesting within the Vail Lake Core Area within the current monitoring period.

The Yellow-breasted Chat nest in the Prado Basin/Santa Ana River Core Area produced at least three fledglings and built the nest in Wild Radish (*Raphanus sativus*). The nest height was 1.2 m above ground. We were unable to determine the exact number of fledglings from the family groups within the San Timoteo Creek, Temecula Creek, and Temescal Wash/Alberhill Creek Core Areas because we retreated from the nesting areas when we found at least one fledgling to avoid causing undue stress on the birds.

Yellow Warbler

We documented evidence of successful reproduction by Yellow Warblers within five (56%) designated Core Areas during the current monitoring period (2019–2023; Table 2), thereby failing to meet the reproductive objective for the species (75%). All of the monitored nests for this species in 2023 (n = 3 nests) failed (Table 3); however, we documented successful reproduction by detecting fledglings instead.

The three Yellow Warbler nests found in 2023 were distributed among two Core Areas, Prado Basin/Santa Ana River and San Timoteo Canyon/Creek (Table 3). Additionally, we found nine fledgling groups in four Core Areas: Prado Basin/Santa Ana River, San Bernardino NF, San Timoteo Canyon/Creek, and Temescal Wash/Alberhill Creek. We also found a successful nest in 2019 in the Temecula Creek Core Area, which produced at least two fledglings (Biological Monitoring

Program 2020). BMP biologists have never documented successful nesting by Yellow Warblers within the Murrieta Creek, Vail Lake, Wasson Canyon, or Wilson Creek Core Areas.

The mean height (± SD) of Yellow Warbler nests in 2023 was 8.17 m (± 3.75 m; range = 4.5–12 m; *n* = 3 nests) above ground. Nest substrates (*n* = 3 nests) consisted of cottonwoods (*Populus* spp.; *n* = 2 nests) and willows (*n* = 1).

DISCUSSION

Detections of Target Species

Cooper's Hawk

Cooper's Hawk was detected in 100% of its Core Areas. This species is present year-round within the Plan Area and is eclectic in its choice of habitats, which include deciduous, mixed, and coniferous forests (Reynolds et al. 1982; Millsap 2018a); and deciduous riparian habitat (Call 1978; Millsap 2018b). Further, Cooper's Hawks are tolerant of human disturbance and habitat fragmentation (Madden 2011; Millsap 2018b). These habitat preferences contribute to the widespread distribution of BMP detections of Cooper's Hawks within the Plan Area (Figure 2), which occur in all of the species' Core Areas as well as several non-Core Areas.

Downy Woodpecker

The BMP has not documented Downy Woodpecker on Conserved Land within the Vail Lake Core Area, which is the only Core Area in which the species was not detected during the current monitoring period. This Core Area appears to have suitable patches of riparian habitat, essentially along the perimeter of Vail Lake itself, but the property is not in MSHCP conservation. The remainder of the Core Area contains narrow patches of riparian habitat that are not ideal for the species and most of the other covered riparian bird species.

Least Bell's Vireo

The Core Areas in which we documented Least Bell's Vireos in 2023 (Table 1) were generally consistent with where we have detected the species during previous riparian bird survey efforts (Biological Monitoring Program 2009, 2012, 2015, 2018, 2021). BMP biologists have never detected this species within the Vail Lake Core Area. Most of the Conserved Land within the Core Area is not riparian habitat, so we surveyed just two transects there. According to our GIS vegetation layer, the two transects were within acceptable Least Bell's Vireo habitat, but both sites ultimately did not have suitable habitat for the species (e.g., no dense vegetation layer was

available for nesting; Goldwasser 1981; Franzreb 1989; Kus 1998). This explains why the BMP has never detected Least Bell's Vireos in this Core Area.

The other Core Area in which we did not detect Least Bell's Vireos in 2023 was Wilson Valley. The likely reason we did not detect Least Bell's Vireos is that the survey locations are not within ideal habitat for the species, despite being the most suitable conserved riparian habitat in the Core Area. Specifically, the understory scrub, which Least Bell's Vireos prefer (Grinnell and Miller 1944; Averill-Murray and Corman 2005), does not occur in the density preferred by the species. We have detected Least Bell's Vireos just once in the Wilson Valley Core Area, specifically along Cahuilla Creek in 2007, despite having surveyed the area during each riparian bird survey effort from 2007–2023.

Least Bell's Vireos are documented consistently using the Prado Basin/Santa Ana River, San Timoteo Canyon, Lake Skinner/Diamond Valley Lake, Temecula Creek, and Temescal Wash/Alberhill Core Areas. We also documented them using the Murrieta Creek Core Area in 2008, 2011, 2020, and 2023 (Biological Monitoring Program 2009, 2012, 2015, 2018, 2021).

Southwestern Willow Flycatcher

We have detected Willow Flycatchers eight times on Conserved Land within the Prado Basin/Santa Ana River Core Area since 2005 (first year of BMP), most recently in 2015. All of the detections likely represented migrants due to the time of year during which we detected them (i.e., mid-May to mid-June, and August to early October; Small 1994).

We have never detected Willow Flycatchers in the Murrieta Creek, San Timoteo Canyon, Temecula Creek, Temescal Wash/Alberhill Creek, or Vail Lake Core Areas. Conserved riparian habitat within Murrieta Creek, Temecula Creek, and Temescal Wash/Alberhill Creek generally does not contain the moist, shrubby areas with standing or running water that are preferred by the species during the breeding season (Sedgwick 2020). The San Timoteo Canyon Core Area does contain this habitat, although we have never confirmed the presence of the *E. t. extimus* subspecies here. As previously discussed, the perimeter of Vail Lake is not conserved, so we are unable to confirm whether the species or its habitat is present at that location.

Tree Swallow

We documented that Tree Swallows were using five Core Areas during the current monitoring period (2016–2023; Figure 5; Table 1). The one Core Area in which we did not detect Tree Swallows during the current monitoring period was

Wilson Valley, and the last year in which we detected them using Wilson Valley was 2007. Much of the Conserved Land in Wilson Valley consists of coastal sage scrub, desert scrub, and alkali desert scrub; however, some riparian habitat is also present, although it is a small percentage of the Wilson Valley Core Area. This may explain why we rarely detect Tree Swallows there.

Western Yellow-billed Cuckoo

We have detected Western Yellow-billed Cuckoos on Conserved Land within a Core Area just once, in 2011. The individual was detected within the Prado Basin/Santa Ana River Core Area and was likely a migrant because it was silent when detected and did not respond to broadcasts of conspecific vocalizations, suggesting it had not established a territory. Furthermore, the bird was not detected during subsequent checks of the area.

Western Yellow-billed Cuckoos breeding in California generally prefer tracts of riparian habitat 15–80 hectares (ha) in size, including ≥3 ha of closed canopy, with canopy heights of 5–30 m and understory vegetation heights of 1–6 m (Laymon and Halterman 1989). None of the Conserved Land within the Murrieta Creek, Temecula Creek, or Temescal Wash/Alberhill Creek Core Areas contain this kind of habitat. The San Timoteo Canyon Core Area may contain suitable Western Yellow-billed Cuckoo habitat with respect to its area and vegetation height; however, the riparian habitat there tends to be linear and susceptible to edge effect due to nearby habitat features (e.g., grasslands), which may reduce the likelihood of it being used by a species such as Western Yellow-billed Cuckoo that require large tracts of contiguous suitable habitat.

Yellow-breasted Chat

Yellow-breasted Chat was detected in four Core Areas, Prado Basin/Santa Ana River, San Timoteo Creek, Temecula Creek, and Temescal Wash/Alberhill Creek Core Areas. This species generally requires at least 0.82–1.2 ha (Brewer 1955; Thompson and Nolan 1973) of early successional riparian habitat with a well-developed shrub layer and an open canopy (Comrack 2008). There should also be dense thickets and tangles of vegetation below 2.5 m (Grinnell and Miller 1944; Ehrlich et al. 1988). These characteristics are present on Conserved Land in the four Core Areas in which we detected Yellow-breasted Chats during the current monitoring period (2019–2023; Table 1).

We detected Yellow-breasted Chats most frequently in the Prado Basin/Santa Ana River Core Area. The most likely reason for this phenomenon is due to the extent and quality of the habitat there. In western Riverside County, the Santa Ana

River ecosystem creates a continuous stretch of ideal chat habitat, including dense thickets of vegetation such as willow, Mulefat, and wild grape (*Vitis* spp.). Additionally, introduced species, including Wild Radish, mustard (*Brassica* spp.), and thistle (Family Asteraceae), are regularly used for nesting habitats. The extent of potential nesting and foraging habitat in the other Yellow-breasted Chat Core Areas is comparatively small. As a result, those Core Areas provide only a few suitable sites for Yellow-breasted Chats.

The Vail Lake Core Area was the only Core Area in which we did not detect Yellow-breasted Chats within the current monitoring period, and we have never detected the species there. This is because Yellow-breasted Chat breeding habitat on Conserved Land within the Core Area is not ideal, as stated previously for some of the aforementioned species that share similar habitat requirements.

Yellow Warbler

We detected Yellow Warblers within eight Core Areas in 2023, and all nine (100%) within the current monitoring period (2019–2023; Figure 7, Table 1). We regularly detect Yellow Warblers within the Prado Basin/Santa Ana River, San Bernardino NF, San Timoteo Creek, Temecula Creek, Temescal Canyon/Alberhill Creek, and Wilson Creek Core Areas. All these Core Areas contain conserved riparian habitat that is preferred by the species and can be characterized as wet thickets of deciduous trees that include cottonwoods and willows (Dunn and Garrett 1997; Garrett et al. 2012).

We detect Yellow Warblers less frequently in the remaining three designated Core Areas (Table 1). We have detected Yellow Warblers just one time on Conserved Land within the Murrieta Creek Core Area during the current monitoring period. The detection occurred on a small (2.6 ha) parcel of Conserved Land that is within a thin strip of riparian habitat that may not be ideal for Yellow Warblers (i.e., it is not characterized as a wet thicket of deciduous trees), which may explain why we do not detect them more frequently.

We have detected Yellow Warblers in the Vail Lake Core Area just twice during the current monitoring period for the species. Both detections occurred in the southern part of the Core Area, near the Dripping Springs Campground (Figure 7). This is the one location within the Core Area that has Conserved Land that seems suitable for use by Yellow Warblers. We suspect that some of the riparian habitat around Vail Lake contains Yellow Warbler habitat, but none of the land is currently conserved.

Finally, the Wasson Canyon Core Area contains little conserved riparian habitat that is suitable for Yellow Warblers. Specifically, there is an unnamed creek that traverses the northwestern section of the Core Area and provides just 5.3 ha of suitable Yellow Warbler habitat. This is where all three of our Yellow Warbler detections within the current monitoring period occurred. Two of the three detections occurred on the same day in mid-April 2019 and the birds were not detected during subsequent visits, suggesting they were using the creek as a migratory stopover site, rather than as a breeding site. Similarly, we had just one detection in 2023, despite surveying that particular point five times during the breeding season, again suggesting the species uses the Conserved Land within the Core Area as a migratory stopover site.

Nesting of Target Species

Least Bell's Vireo

The two Core Areas in which we did not document successful reproduction by Least Bell's Vireos during the current monitoring period were Vail Lake and Wilson Valley. The Conservation Lands within these two Core Areas do not contain marginally suitable Least Bell's Vireo habitat, and it is unlikely we will detect successful nesting unless additional lands containing better nesting habitat for the species is conserved.

Our records showed nest parasitism was occurring in 28.6% of Least Bell's Vireo nests monitored in 2023, which falls within the range of 0–31.6% reported by the BMP in previous years (Biological Monitoring Program 2009, 2012, 2015 2018, 2021). In 2023, 2011, and 2008, the parasitism rates were higher than in the other years, but the sample sizes of our monitored nests were low, which may have led to artificially high estimates of parasitism rates. The overall parasitism rate across all of our survey efforts was 5.6% (Biological Monitoring Program 2009, 2012, 2015, 2018, 2021), which is low compared to some previous studies (Kus 1999; Griffith and Griffith 2000; Kus and Whitfield 2005). This could be due to a reduction of the Brown-headed cowbird population resulting from the ongoing Brown-headed Cowbird population management in western Riverside County.

Least Bell's Vireos appear to be somewhat generalist in their selection of nest substrates, although they seem to select nest sites based on the density of vegetation in their territory. Specifically, Least Bell's Vireos prefer dense vertical structure and thick understory vegetation for nest site selection (Hendricks and Rieger 1989; Kus 1998, 2002). Least Bell's Vireos in our 2023 study built nests in trees or shrubs such as Blue Elderberry (n = 3 nests), willow (n = 3), and Mulefat (n = 2). The most common nest substrate in our previous studies combined was *Salix* spp., which was

the substrate in 47% (*n* = 30), 45% (*n* = 20), 100% (*n* = 5), and 39% (*n* = 23) of nests in 2008, 2011, 2014, and 2020, respectively (Biological Monitoring Program 2009, 2012, 2015, 2021). Occasionally, in 2023, Least Bell's Vireos used common riparian forb species such as California Mugwort, Common Nettle, and sunflower (*Helianthus* spp.) instead of trees or shrubs for nesting. Prior to 2023, we found Least Bell's Vireos nesting in Black Sage (*Salvia mellifera*), dead shrubs, milkweed (*Asclepias* spp.), California Wild Rose (*Rosa californica*), and wild grape (Biological Monitoring Program 2009, 2012, 2015, 2018, 2021).

The nest height of our monitored nests (mean = 0.75 m, range 0.3–1.2 m, *n* = 11 nests) was similar to data reported by other investigators. The range of nest heights in the Santa Margarita River were 0.3–2.4 m (*n* = 226 nests; Kus 2002) and along the San Luis Ray River were 0.3–1.7 m (*n* = 195 nests; Kus et al. 2008). In a separate study, Least Bell's Vireo nests in southern California were 0.7–1.6 m above ground (*n* = 55 nests; Kus et al. 2022). Finally, nests in the Santa Ynez River were 0.4–1.2 m above ground (*n* = 32 nests; Olson and Gray 1989). This suggests uniformity of preferred nest heights within the Plan Area and other parts of the Least Bell's Vireo's range.

Southwestern Willow Flycatcher

We did not detect successful nesting by Southwestern Willow Flycatchers in 2023, nor has the BMP ever detected successful nesting by the species. This may be explained by the fact that breeding by Southwestern Willow Flycatchers is exceptionally rare within southern California (Garrett et al. 2012), due largely to habitat loss, degradation, or type conversion (Katibah et al. 1984). The remaining and consistently used breeding sites in southern California are outside of the Plan Area and restricted to the South Fork of the Kern River; rivers in San Diego, Santa Barbara, and Ventura counties; and the lower Colorado River (Garrett et al. 2012).

Western Yellow-billed Cuckoo

We did not detect successful nesting by Western Yellow-billed Cuckoos in 2023, nor has the BMP ever detected successful nesting by the species. As previously discussed, suitable breeding habitat for the species may only exist in the Prado Basin/Santa Ana River Core Area; however, despite extensive survey efforts by the BMP since 2005, the species has been detected only once within the Core Area. There are approximately 40–50 breeding pairs of Yellow-billed Cuckoos in California, generally restricted to sites in the South Fork of the Kern River, the lower Colorado River, and the Sacramento River valley (USFWS 2013). These data indicate that the species no longer nests within the Plan Area with any regularity.

Yellow-breasted Chat

We documented Yellow-breasted Chats successfully reproducing in four of five Core Areas in 2023 (Figure 6, Table 2). Vail Lake is the only Core Area in which the BMP has never detected successful nesting by the species. As previously discussed, the Conserved Land within the Core Area does not contain suitable Yellow-breasted Chat habitat, which likely explains why we have never detected the species in that location.

Yellow Warbler

We documented Yellow Warblers successfully reproducing in five (56%) of their nine designated Core Areas within the current monitoring period (2019–2023; Figure 7, Table 2). We did not document successful reproduction by Yellow Warblers in the Murrieta Creek, Vail Lake, Wasson Canyon, or Wilson Creek Core Areas.

The Conserved Land in the Murrieta Creek Core Area that is suitable for this species is patchily distributed, with only 2.6 ha conserved. One pair of Yellow Warblers in 2023 primarily used Conserved Land as their territory and a second pair used a smaller portion of Conserved Land for their breeding territory. Although both pairs stayed in their territories throughout the breeding season, limited monitoring efforts prevented us from confirming their reproductive outcome. Habitat upstream and downstream of the Conserved Land also provides suitable habitat for nesting Yellow Warblers and the BMP observed additional pairs both upstream and downstream of Conserved Land in Murrieta Creek in 2023. These additional areas of suitable breeding habitat within the Core Area boundaries are not currently conserved, but if this land is acquired for conservation, we would likely be able to add Murrieta Creek to the list of Core Areas in which we regularly detect Yellow Warblers nesting.

In the Wasson Canyon and Wilson Valley Core Areas, we confirmed male Yellow Warblers at the beginning of the breeding season, but we did not detect them again later in season. Further, we did not detect female Yellow Warblers using these Core Areas in 2023. The habitat where Yellow Warblers were detected in these Core Areas was not optimal for the species. Overall, the habitat is patchy with a low density of canopy cover and is isolated from extensive riparian habitat. This may cause male Yellow Warblers to establish territories at these sites in the beginning of the season to attract females, but then leave the sites after females do not stay to breed.

Finally, we have detected Yellow Warblers just two times in the Vail Lake Core Area, with no records by the BMP of successful nesting by the species, suggesting that suitable habitat for the species does not exist within the currently Conserved Land in the Core Area.

Recommendations

Conservation and Management

Continued efforts should be made to conserve land in the Vail Lake Core Area. This is a Core Area for Cooper's Hawk, Downy Woodpecker, Least Bell's Vireo, Southwestern Willow Flycatcher, Tree Swallow, Yellow-breasted Chat, and Yellow Warbler, but we did not detect four of these species during this survey effort because the limited amount, or absence of, conserved land with suitable habitat for these species. Suitable riparian habitat may exist, specifically within the vicinity of the lake itself, but we are unable to make this determination without the land being conserved.

Core Area Definitions and Species Objectives

We frequently detect target species incidentally on Conserved Land that is not within species-specific Core Areas. In the San Jacinto Wildlife Area, we commonly detect Cooper's Hawks, Downy Woodpeckers, Least Bell's Vireos, Tree Swallows, and Yellow Warblers during other survey efforts. For example, we see one of the largest populations of Tree Swallows in western Riverside County using the San Jacinto Wildlife Area during the breeding season. Therefore, we recommend adding this as a Core Area for the aforementioned species, and considering a re-evaluation of currently designated Core Areas that do not appear to support the species. As an example, riparian habitat in the Wilson Valley/Creek Core Area is limited, and we have only seen Least Bell's Vireos one time, in 2007; Yellow Warblers 12 times since 2011; and Tree Swallows two times since 2005, despite it being a Core Area for all three species. If we re-evaluate the Wilson Valley/Creek as a Core Area and consider adding the San Jacinto Wildlife Area, we may be able to meet monitoring objectives for those species. Other areas that we recommend adding to the Core Areas are San Timoteo Canyon/Creek for Downy Woodpecker; Lake Skinner/Diamond Lake for Cooper's Hawk, Downy Woodpecker, and Yellow Warbler; and Lake Mathews/Estelle Mountain for Cooper's Hawk, Least Bell's Vireo, and Tree Swallow.

Future Surveys

Nest searching and monitoring are time-consuming and require well-trained biologists. Our sample size in 2023 was small due to the limited availability of

trained biologists and other concurrent projects. These have been consistent problems in the BMP for several years and will likely only be rectified if we have more field biologists on staff. Lastly, a comparison of the nest vegetation characteristics of successful and unsuccessful nests could guide future habitat management and estimates of population trends, but this also requires a larger sample size and a concomitant increase in the number of field biologists on staff. We recommend allocating more resources toward riparian bird surveys.

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Appendix A. Avian species detected during 2023 riparian bird surveys. Species in bold are covered by the MSHCP.

COMMON NAME	SCIENTIFIC NAME
Acorn Woodpecker	*Melanerpes formicivorus*
Allen's Hummingbird	*Selasphorus sasin*
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhynchos*
American Goldfinch	*Spinus tristis*
American Kestrel	*Falco sparverius*
American Robin	*Turdus migratorius*
Anna's Hummingbird	*Calypte anna*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Audubon's Warbler	*Setophaga coronata auduboni*
Bald Eagle	***Haliaeetus leucocephalus***
Band-tailed Pigeon	*Patagioenas fasciata*
Barn Swallow	*Hirundo rustica*
Bell's Sparrow	***Artemisiospiza belli***[18]
Bewick's Wren	*Thryomanes bewickii*
Black-chinned Sparrow	*Spizella atrogularis*
Black-crowned Night-Heron	***Nycticorax nycticorax***
Black-headed Grosbeak	*Pheucticus melanocephalus*
Black Phoebe	*Sayornis nigricans*
Blue-gray Gnatcatcher	*Polioptila caerulea*
Blue Grosbeak	*Passerina caerulea*
Brewer's Sparrow	*Spizella breweri*
Brown-headed Cowbird	*Molothrus ater*
Bullock's Oriole	*Icterus bullockii*
Bushtit	*Psaltriparus minimus*
California Quail	*Callipepla californica*
California Scrub-Jay	*Aphelocoma californica*
California Thrasher	*Toxostoma redivivum*
California Towhee	*Melozone crissalis*
Canada Goose	*Branta canadensis*
Canyon Wren	*Catherpes mexicanus*
Cassin's Finch	*Haemorhous cassinii*
Cassin's Kingbird	*Tyrannus vociferans*
Cliff Swallow	*Petrochelidon pyrrhonota*
Coastal California Gnatcatcher	***Polioptila californica californica***

[18] The MSHCP Covered Species name is Bell's Sage Sparrow, *Amphispiza belli belli*, as adopted.

COMMON NAME	SCIENTIFIC NAME
Common Raven	*Corvus corax*
Common Yellowthroat	*Geothlypis trichas*
Cooper's Hawk	***Accipiter cooperii***
Costa's Hummingbird	*Calypte costae*
Dark-eyed Junco	*Junco hyemalis*
Double-crested Cormorant	***Phalacrocorax auritus***
Downy Woodpecker	***Dryobates pubescens***[19]
Eurasian Collared-Dove	*Streptopelia decaocto*
European Starling	*Sturnus vulgaris*
Great Egret	*Ardea alba*
Great Horned Owl	*Bubo virginianus*
Great-tailed Grackle	*Quiscalus mexicanus*
Hairy Woodpecker	*Dryobates villosus*
Hermit Thrush	*Catharus guttatus*
Hooded Oriole	*Icterus cucullatus*
House Finch	*Haemorhous mexicanus*
House Wren	*Troglodytes aedon*
Hutton's Vireo	*Vireo huttoni*
Killdeer	*Charadrius vociferous*
Lawrence's Goldfinch	*Carduelis lawrencei*
Lazuli Bunting	*Passerina amoena*
Least Bell's Vireo	***Vireo bellii pusillus***
Lesser Goldfinch	*Spinus psaltria*
Lincoln's Sparrow	***Melospiza lincolnii***
Loggerhead Shrike	***Lanius ludovicianus***
Mallard	*Anas platyrhynchos*
Mountain Chickadee	*Poecile gambeli*
Mountain Quail	*Oreortyx pictus*
Mourning Dove	*Zenaida macroura*
Nashville Warbler	***Leiothlypis ruficapilla***[20]
Northern Flicker	*Colaptes auratus*
Northern Mockingbird	*Mimus polyglottos*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Nuttall's Woodpecker	*Dryobates nuttallii*
Oak Titmouse	*Baeolophus inornatus*
Orange-crowned Warbler	*Leiothlypis celata*
Pacific-slope Flycatcher	*Empidonax difficilis*

[19] The MSHCP Covered Species name is Downy Woodpecker, *Picoides pubescens*, as adopted.
[20] The MSHCP Covered Species name is Nashville Warbler, *Vermivora ruficapilla*, as adopted.

COMMON NAME	SCIENTIFIC NAME
Phainopepla	*Phainopepla nitens*
Pied-billed Grebe	*Podilymbus podiceps*
Red-shouldered Hawk	*Buteo lineatus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Rock Pigeon	*Columba livia*
Rock Wren	*Salpinctes obsoletus*
Ruby-crowned Kinglet	*Regulus calendula*
San Diego Cactus Wren	***Campylorhynchus brunneicapillus couesi***[21]
Say's Phoebe	*Sayornis saya*
Song Sparrow	*Melospiza melodia*
Southern California Rufous-crowned Sparrow	***Aimophila ruficeps canescens***
Spotted Towhee	*Pipilo maculatus*
Steller's Jay	*Cyanocitta stelleri*
Townsend's Solitaire	*Myadestes townsendi*
Townsend's Warbler	*Setophaga townsendi*
Tree Swallow	***Tachycineta bicolor***
Turkey Vulture	***Cathartes aura***
Violet-green Swallow	*Tachycineta thalassina*
Warbling Vireo	*Vireo gilvus*
Western Kingbird	*Tyrannus verticalis*
Western Tanager	*Piranga ludoviciana*
Western Wood-Pewee	*Contopus sordidulus*
White-breasted Nuthatch	*Sitta carolinensis*
White-crowned Sparrow	*Zonotrichia leucophrys*
White-throated Swift	*Aeronautes saxatalis*
White-winged Dove	*Zenaida asiatica*
Wilson's Warbler	***Cardellina pusilla***[22]
Wrentit	*Chamaea fasciata*
Yellow-breasted Chat	***Icteria virens***
Yellow-rumped Warbler	*Setophaga coronata*
Yellow Warbler	***Setophaga petechia***[23]

[21] The MSHCP Covered Species name is Cactus Wren, *Campylorhynchus brunneicapillus*, as adopted.
[22] The MSHCP Covered Species name is Wilson's Warbler, *Wilsonia pusilla*, as adopted.
[23] The MSHCP Covered Species name is Yellow Warbler, *Dendroica petechia brewsteri*, as adopted.