

**Western Riverside County
Multiple Species Habitat Conservation Plan
Biological Monitoring Program**

**2015 Tricolored Blackbird
(*Agelaius tricolor*)
Survey Report**



Photo by Anthony Metcalf

8 June 2016

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NOTE TO READER:

This report is an account of survey activities conducted by the Biological Monitoring Program 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 in the Plan Area (called public or quasi-public lands in the MSHCP). In this report, the term “Conservation Area” refers to these lands as they were understood by the Monitoring Program at the time the surveys were conducted.

The Monitoring Program 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]. Monitoring Program 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 2015 is included in Section 7.0 of the Western Riverside County Regional Conservation Authority (RCA) Annual Report to the Wildlife Agencies.

The primary author of this report was the 2015 Tricolored Blackbird Project Lead, Rose Cook. This report should be cited as:

Biological Monitoring Program. 2016. Western Riverside County MSHCP Biological Monitoring Program 2015 Tricolored Blackbird (*Agelaius tricolor*) Survey Report. Prepared for the Western Riverside County Multiple Species Habitat Conservation Plan. Riverside, CA. Available online: <http://wrc-rca.org/about-rca/monitoring/monitoring-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 Monitoring Program to ensure that they have access to the best available or most current data.

If there are any questions about the information provided in this report, please contact the Monitoring Program Administrator. If you have questions about the MSHCP, please contact 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

The Tricolored Blackbird (*Agelaius tricolor*) is a medium-sized songbird member of the family Icteridae and a near-California endemic, with 95% of its historic breeding range within the state (Beedy and Hamilton 1999). The species is one of 45 bird species covered by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP; “Plan”) (Dudek & Associates 2003). Species-specific Core Areas designated by the Plan for the Tricolored Blackbird include Mystic Lake/San Jacinto Wildlife Area, San Jacinto River Floodplain, Collier Marsh/Lake Elsinore Grasslands, Northwest Alberhill, and Vail Lake/Wilson Valley/Eastern Temecula Creek (Fig. 1). The Plan also stipulates specific conservation objectives, among which are the continued use of, and successful reproduction in, at least one of these five Core Areas at least once every five years (Objective 4), and the protection of all known nesting locations on conserved lands (Objective 6). Core Areas include most historic breeding sites known at the time the MSHCP was developed.

The Tricolored Blackbird was classified as Globally Endangered by the International Union for Conservation of Nature (IUCN) Red Data List since 2008 (Birdlife International 2012). Following results of a statewide survey conducted in the spring of 2014, the species was granted an emergency listing under the California Endangered Species Act; however, this protection expired in June 2015. A petition for full listing was submitted in August 2015 and the species became a candidate the following December. A federal petition for Endangered Species status is currently under review.

Tricolored Blackbirds are colonial breeding birds (Neff 1937): a single territory will include one male and 1–3 females, with an average sex ratio of 1:1.5 males to females (Payne 1969). Breeding occurs from March–June and can be itinerant (Hamilton 1998), whereby birds may nest multiple times during a season but in different parts of their range. Nests are built within small territories that usually occupy a few square meters within tight proximity to each other (Lack and Emlen 1939). Timing of nesting is highly synchronous and young fledge within a few days of each other, with juveniles often gathering together in flocks called creshes (Orians 1961). Only females build nests and incubate eggs but both sexes provision young (Neff 1937). Foraging is social, occurring away from the nest site (Orians 1961). In moderate to large colonies of 5000–300,000 birds or more, foraging flocks can be made up of hundreds or thousands of individuals. Adults feed on grain and insects throughout the year (Beedy and Hamilton 1999). Young up to nine days old depend entirely on insects that are gathered from fields of native and non-native forblands and grass/forbland mixtures, irrigated pasture, lightly grazed rangeland, dry season pools, mowed alfalfa (*Medicago sativa*) fields, and various scrub vegetation associations (Beedy and Hamilton 1999). Foraging for invertebrate prey can occur up to 13 km from the nest site but is usually within 5 km (Orians 1961). However, adults feeding themselves rarely travel more than 3 km from colony sites (Hamilton and Meese 2006). Colonies often disperse after the breeding season and individuals may join mixed flocks of songbirds, primarily other species of blackbirds, European Starlings (*Sturnus vulgaris*), and Brown-headed Cowbirds (*Molothrus ater*) (Orians 1961, Payne 1969).

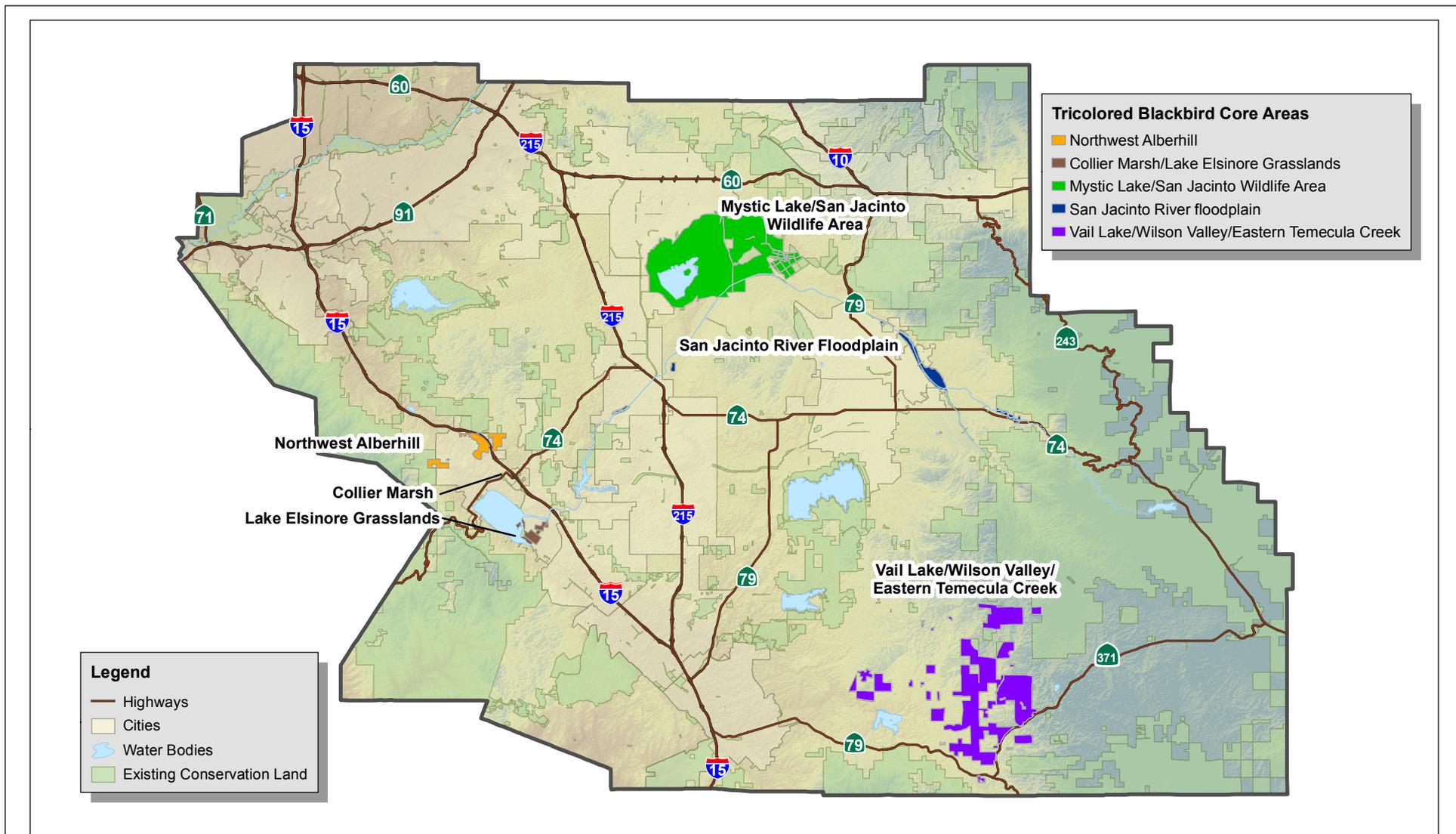


Figure 1. Western Riverside County MSHCP Plan Area and MSHCP-defined Core Areas for the Tricolored Blackbird (*Agelaius tricolor*).

The MSHCP describes primary (nesting) habitat as marshlands and freshwater bodies within the Riverside Lowlands and Foothills Bioregions of the MSHCP Plan Area. Secondary habitat includes playa and vernal pools, grasslands, agricultural land, and riparian scrub. Approximately 60% of all Tricolored Blackbird colonies observed within the Plan Area over the last three decades nested in freshwater marsh, 40% in undeveloped upland and agricultural areas (Biological Monitoring Program 2011). In marshes, nests are built over water in mature stands of cattail (*Typha* spp.) or bulrush (*Scirpus* spp.). In upland areas, nesting substrates consist primarily of spiny, protective vegetation such as milk thistle (*Silybum marianum*), bull thistle (*Cirsium vulgare*), stinging nettle (*Urtica dioica*), or grain crops grown as silage for cattle. In Riverside County, colonies are often located at or near dairy operations that provide an abundance of water, grain for adults, and insects for young, often collected from mature (2–3 y old) alfalfa fields (R. Cook, personal observation).

Conservation Objective 4 of the MSHCP was met in 2011 and 2014 (Biological Monitoring Program 2015), the second and fourth years of the current five year monitoring period. However, due to the dramatic decline of this species over the last two decades (Biological Monitoring Program 2011) and the critical need to obtain continuous data on population distribution and trend, we strive to conduct surveys for this species each year. In most years, our surveys target historic breeding sites as well as other suitable habitat within the species' Core Areas. Specifically, our goals and objectives for the 2015 survey year were as follows.

Goals and Objectives

1. Assess the population status of Tricolored Blackbird within the MSHCP Plan Area.
 - a. Estimate the abundance of adult birds by conducting targeted searches for breeding colonies at historic breeding sites over a three day period in April.
2. Document the breeding-season distribution of Tricolored Blackbird within the MSHCP Plan Area.
 - a. Assess the occupancy of historic breeding sites during the population status assessment.
3. Identify foraging habitat and invertebrate prey selection of Tricolored Blackbird colonies.
 - a. Determine locations where birds are foraging and identify potential prey species present in the greatest numbers.
 - b. Identify by observation, prey species or general types of prey carried by adult birds returning to their nests to feed young.
4. Document reproductive success of Tricolored Blackbird colonies within the species' Core Areas and the Conservation Area in general. We define reproductive success as the number of colonies that produce at least one fledged young and the number of nestlings fledged per colony.

- a. Revisit occupied breeding sites periodically until fledging occurs or all nests within the colony fail to fledge young.

METHODS

We conducted targeted searches for Tricolored Blackbird colonies from 20–22 April 2015, during the peak of the breeding season (Beedy and Hamilton 1999). The timing corresponded with most previous surveys for Tricolored Blackbirds in western Riverside County by the Biological Monitoring Program and other organizations (Biological Monitoring Program 2011). The short duration of the survey period is intended to prevent duplicate counting of birds that could occur if colony sites are abandoned by birds relocating and nesting in other areas (Hamilton 1998). Our 2015 survey was conducted in collaboration with the new reduced annual statewide Tricolored Blackbird survey organized by Dr. Robert Meese and his colleagues (University of California, Davis) and meets their data collection standards as well as our own. We acquired all necessary permissions from MSHCP Reserve Managers to access conserved lands before surveys began. Area searches outside of conserved lands consisted of driving public roadways and scanning the landscape for birds.

We followed the protocol of our earlier surveys (Biological Monitoring Program 2006, 2011, 2012, 2013, 2014, 2015) which includes visits to all known historic colony sites (Fig. 2), surveys of the species' five Core Areas and as much other suitable breeding habitat within the species' range as time and accessibility permitted. We also conducted an extensive search of suitable habitat within the Nuevo and San Jacinto Valley North areas because the majority of nesting Tricolored Blackbirds in western Riverside County have been observed in this area over the last 20 years (Biological Monitoring Program 2011). The only historic colony site we did not visit was Lake Norconian since there have been no documented occurrences there since 1950, and the area appears to support only marginal foraging habitat.

We recorded data for all breeding colonies, and for flocks of birds unassociated with breeding colonies during the target survey and follow-up period. Data were the same as those collected in our previous surveys and included the following: survey date; name of colony site or search area; identity of observers; observation start and end times; geographic coordinates (if a new location); minimum, maximum, and best estimate of abundance of adult, fledgling, and juvenile birds; method of estimation; adult sex ratio; behavior; presence of nearby stored grains; dominant surrounding land use; distance to fresh water; fresh water source; primary and secondary nesting substrate; and spatial dimensions of occupied nesting substrate. This year, we also included miles driven (for area searches), weather variables, ambient noise, and types and numbers of predator species observed. We assessed the temporal stage of nesting based on behavior and activity level of adult birds (i.e., whether they were vocalizing or quiet, carrying nest material or food) and whether fledglings could be seen or heard. We calculated distances between nest sites and foraging areas by observing the movements of foraging flocks and measuring the distance between these locations in Google Earth. The survey methods are more completely described in the *Western Riverside County MSHCP Biological Monitoring Program Tricolored Blackbird Survey Protocol*.

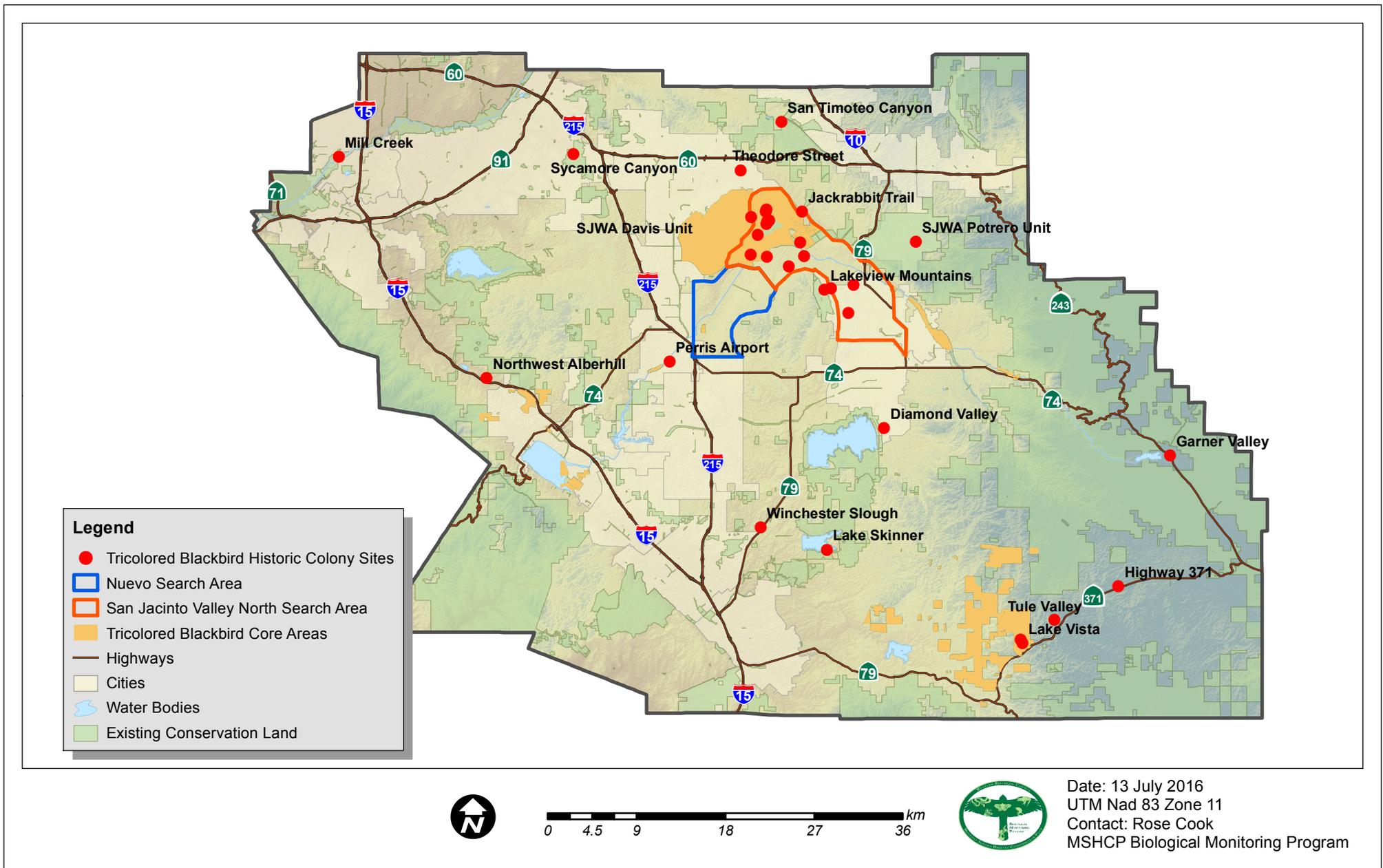


Figure 2. Tricolored Blackbird (*Agelaius tricolor*) 2015 survey locations. SJWA: San Jacinto Wildlife Area.

We assessed invertebrate species composition and relative abundance in areas where foraging activity was concentrated. We identified prey items by observation and photography of birds returning to their nests from foraging trips to those areas. In field surveys, we tallied organisms by species or the lowest taxonomic level possible from samples collected within 20 plots placed at random in each area. Plots were circular with a 10-foot radius. We removed all vegetation within 1 m² at the center of each plot by clipping vegetation at ground level, then shook the clipped vegetation vigorously into a large cloth butterfly net to dislodge organisms and tallied the contents of the net along with organisms observed on the ground in the clipped area. We also took sweep net samples of invertebrates on the standing vegetation at 10 random points within the plot. Each sample consisted of three sweeps in quick succession with each sweep beginning close to ground level and swinging upward to make as much contact with the vertical extent of the vegetation as possible. We took digital photos of all unidentified species for later identification.

We monitored reproductive success by revisiting colony sites at weekly intervals during the nesting cycle. We estimated the number of fledglings (young birds that have left the nest but are still being provisioned by their parents) and juveniles (i.e., when cresses formed or when juveniles joined flocks of foraging adults). We quantified reproductive success as the ratio of juvenile to adult female birds.

Training and Participation

All field personnel were trained in the identification of Tricolored Blackbirds by sight and sound, and demonstrated an understanding of the field methods associated with the study. All but one person had prior experience conducting Tricolored Blackbird surveys. All colonies detected were revisited and surveyed independently by the project lead. Field personnel included:

- Rose Cook (Project Lead, RCA)
- Karyn Drennan (RCA)
- Tara Graham (RCA)
- Ana Sawyer (RCA)
- Lynn Miller (RCA)
- Robert Packard (RCA)
- Nicholas Peterson (CDFW)
- Esperanza Sandoval (RCA)
- David Tafoya (RCA)

Data Analysis and Management

Data analysis consisted of mapping observations of Tricolored Blackbirds in a geographic information system (GIS) and assessing their distribution and reproductive success with respect to land ownership and conservation status, the species' Core Areas, and historic colony sites. Relative abundance and diversity of invertebrates were assessed by tallying organisms captured in sweep net samples.

All survey data are stored in the Biological Monitoring Program's central database. Paper data sheets and survey maps are retained in the program office in Riverside, CA. Data from the annual survey were also entered into the Tricolored

Blackbird Portal, a centralized website for data dissemination established as part of the Conservation Plan for the Tricolored Blackbird (Tricolored Blackbird Working Group 2009) and administered by the University of California Davis, Information Center for the Environment (<http://tricolor.ice.ucdavis.edu/>).

RESULTS

Population Distribution and Size

We detected five breeding colonies during our targeted search for Tricolored Blackbirds (Fig. 3). Four colonies were present within the Mystic Lake/San Jacinto Wildlife Area Core Area. The largest colony (approximately 2250 birds) was located in cattail marsh on a 4-acre pond on the Little Ramona Duck Club, a private inholding within the Davis Unit of the San Jacinto Wildlife Area which is managed under a conservation easement. Smaller colonies were located within the San Jacinto Wildlife Area in mixed upland vegetation (primarily *Rumex crispus* and *Lactuca serriola*) in the Mystic Lake dry lakebed (100 birds), and in cattail marsh in Bridge Street Pond (90) and the Spring-Summer Wetlands east of Davis Road (250). A fifth colony (Tule Valley) of approximately 1200 birds was located in cattail marsh on private property at a site that has been occupied every year since 2008. We observed seven birds near Lake Hemet but they did not appear to be associated with a colony and no colony was present at this site. In sum, we counted 2690 nesting birds on conserved lands and 3890 region-wide during the annual three day survey period. This represents a decrease from the previous year of 680 (Biological Monitoring Program 2015); however, follow-up monitoring suggested the numbers might have been higher than estimated during the annual survey.

We monitored colonies on the Wildlife Area until the end of the first week of June at which time all nesting was complete and birds were no longer occupying their nesting substrate. We monitored the Tule Valley colony until the majority of young had fledged which was also the first week of June. During subsequent visits to Wildlife Area colonies, we observed a larger number of breeding birds than had been evident during the annual survey period. This was due to asynchrony in the initiation of the nesting cycle by arrivals to some of the colony sites. As a result, later arrivals were in the incubation stage during the survey and undetected at that time. Furthermore, some colonies changed in size as groups of birds departed their original colonies and resettled in others. In total, we estimated 3700 adult birds at the Wildlife Area during the course of the breeding season. The Little Ramona Duck Club remained the largest colony at the time young began to fledge with approximately 3000 adult birds. Following in size were Bridge Street Pond ($n = 400$ adult birds), Mystic Lake ($n = 200$), and the Spring-Summer Wetlands ($n = 100$).

Foraging Habitat and Prey Selection

The Little Ramona Duck Club pond is located immediately adjacent to 40 acres of Wildlife Area property known as the Wildlands Parcel. Bridge Street Pond is adjacent to an 80-acre plot of land that had been cleared and planted with triticale and alfalfa. These two crops are used frequently by Tricolored Blackbirds as nesting substrate and foraging habitat, respectively, in the San Jacinto Valley (Biological Monitoring Program 2014) and elsewhere in California (Cook and Toft 2015). Both sites were targeted for

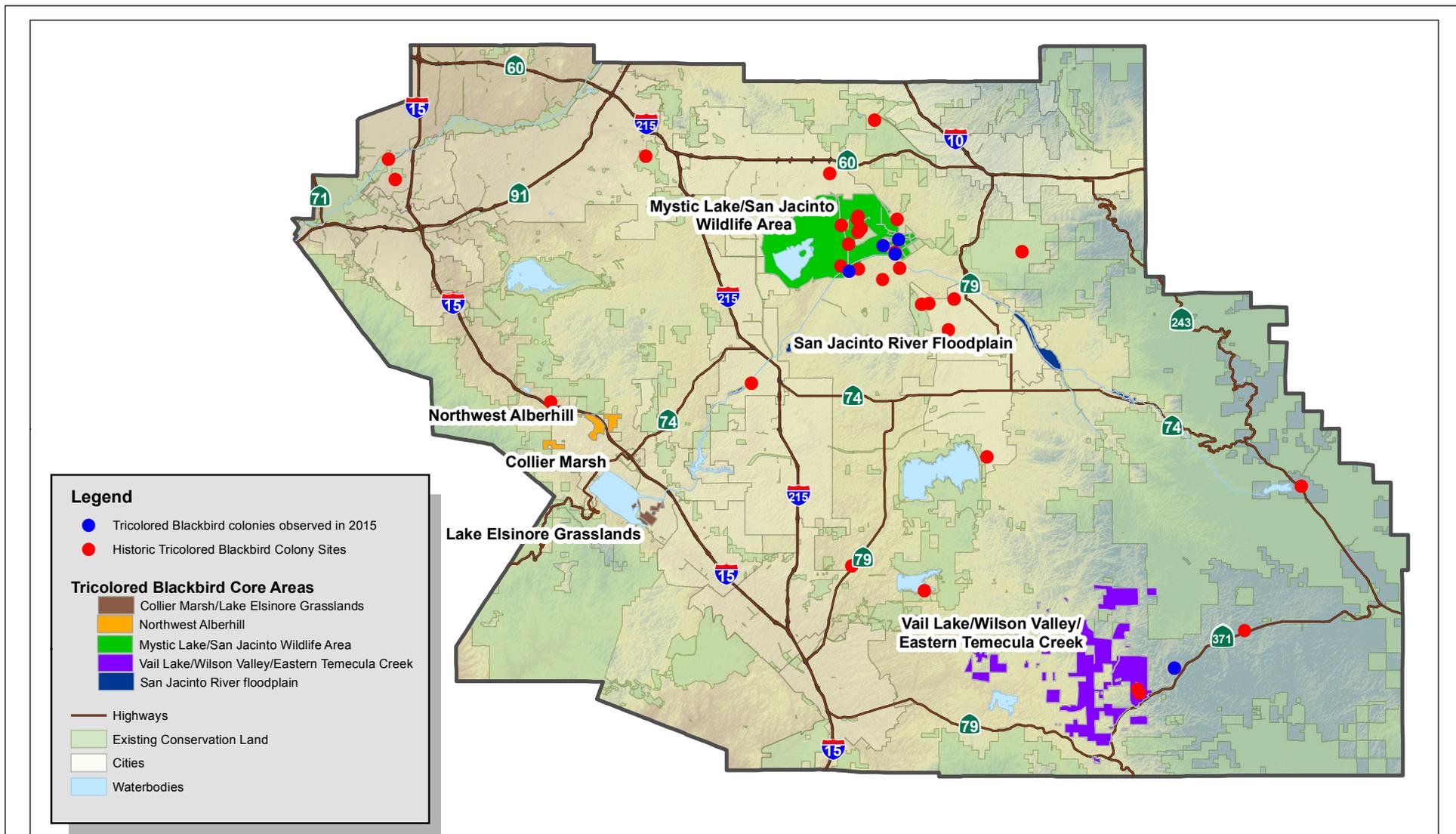


Figure 3. Tricolored Blackbird (*Agelaius tricolor*) colonies observed within the MSHCP Plan Area in 2015.

management to enhance Tricolored Blackbird breeding habitat within the Wildlife Area using funds made available through a Local Assistance Grant from the State of California to the RCA in 2014 (Cook 2016).

We conducted surveys for invertebrates at the Bridge Street Pond site on March 28 and April 28, 2015 and at the Wildlands Parcel on April 12, 2015. The most abundant species at the Bridge Street Pond site was a small (approximately 0.2 inches long) member of the True Bug family, Miridae, which comprised 44% of captures in March and 62% in April. Other species representing 1% or more of captures included aphids (Family Aphididae), lady bugs (Family Coccinellidae), caterpillars of the cabbage looper moth (*Trichoplusia ni*) and cabbage white butterfly (*Pieris rapae*), harlequin cabbage bug (*Murgantia histrionica*), green stink bug (*Chinavia hilaris*), green dock beetle (*Gastrophysa cyanea*), spiders, and damsel bugs (Family Nabidae). The brown marmorated stink bug (*Halyomorpha halys*) comprised 81% of invertebrates sampled at the Wildlands Parcel.

Birds from all four colonies on the Wildlife Area foraged for invertebrate prey at the Wildlands Parcel and surrounding fields, the Bridge Street Pond site, and Mystic Lake. Travel distances between nest sites and foraging areas averaged 2.3 km with a maximum of 5.0 km. Prey selection appeared to be opportunistic in nature with items taken by birds most often also being those encountered most frequently in sweep net surveys (Cook 2016). At the Tule Valley site, birds foraged in the open grassland and cattle pasture around the lake and the surrounding landscape. Prey items observed most frequently included caterpillars, grasshoppers, and small flies collected from the surface of lily pads near the lakeshore.

Reproductive Success

We confirmed reproductive success at three colonies within the Davis Unit of the San Jacinto Wildlife Area (Spring-Summer Wetlands, Bridge Street Pond, and the Little Ramona Duck Club) and Tule Valley. The Davis Units of the San Jacinto Wildlife Area lies within the Mystic Lake/San Jacinto Wildlife Area Core Area. The Tule Valley colony site is not currently protected under the MSHCP.

The Little Ramona Duck Club colony produced the largest number of juvenile birds. On May 28, we estimated that number to be 3000, approximately equal to adults in the colony. Based on an average ratio of one male to two females per territory, we estimate there had been approximately 2000 occupied nests at this site with an average reproductive rate of 1.5 young per nest. It was difficult to estimate reproductive success of the Bridge Street Pond colony because many adults and juveniles from the Little Ramona colony (and possibly the others) began to roost at Bridge Street Pond at the same time that young from this colony were becoming independent. Similarly, we were unable to account for reproduction at the Mystic Lake and Spring-Summer Wetlands sites due to difficulty of access. For these reasons, 3000 is likely to be an underestimate of the true magnitude of juvenile recruitment to the San Jacinto Valley population this year.

DISCUSSION

For the first time since we began conducting surveys for Tricolored Blackbirds in 2005, the entire San Jacinto Valley breeding population nested at the San Jacinto Wildlife Area in 2015. This was likely due in part or whole to the efforts to enhance habitat for the species at this site that began in 2014 (Cook 2016). The total number of breeding birds counted during our annual spring survey at the Wildlife Area ($n = 2640$) was less than that counted at all colony sites within the San Jacinto Valley in 2014 ($n = 2900$); however, it is possible that the current year's count was underestimated as described above. Compared to estimates made in May and near the end of the breeding season, the number ($n = 3700$) was actually greater than it had been in 2014. Most importantly though, these birds successfully raised more than 3000 young. By contrast, the largest colony in the San Jacinto Valley in 2014 ($n = 2500$), which represented 58% of the entire known Riverside County population that year, failed to reproduce, as did the largest colony (73% of the population) in 2013 (Biological Monitoring Program 2015).

The number of birds breeding in the Anza Valley area remained stable between 2014 and 2015 at approximately 1200 birds. As a whole, estimates of the entire Riverside population in 2015 exceeded that of 2014 by 555 birds based on results of our surveys in May of 2015. However, it would be premature to suggest that the population is actually increasing since a difference of this size could be due to error in counting alone. The Riverside population remains critically low and is still less than 40% the size it was ten years ago (Biological Monitoring Program 2011).

Overall, Tricolored Blackbird breeding season distribution is shrinking. Extensive searches for Tricolored Blackbirds in potentially suitable habitat throughout the Western Riverside County MSHCP Conservation Area, including grasslands, riparian forest, and coastal sage scrub in 2011 (Biological Monitoring Program 2012), emergent marshland in 2012 (Biological Monitoring Program 2013), and montane woodland in 2013 (Biological Monitoring Program 2014) yielded only two new colony sites. Two new sites were occupied in 2014 and a third in 2015, but all were within the San Jacinto Wildlife Area. Over the last ten years, breeding has been heavily concentrated in the San Jacinto and Tule Valley areas, and, to a lesser extent, the Potrero Unit of the San Jacinto Wildlife Area, San Timoteo Canyon, and Garner Valley areas.

Recommendations

Future Surveys

We believe it is important to continue to survey historic breeding sites on an annual basis except where suitable habitat no longer exists. These surveys should occur during the second week in April to provide data comparable with those of the annual and triennial statewide surveys. The small number of new colony sites encountered during our extensive surveys of potentially suitable breeding habitat from 2011-2013 suggests that annual monitoring of known breeding sites should be adequate to assess population status in years when larger scale efforts are not possible. Since Tricolored Blackbirds concentrate their breeding effort in only a few sites each year, and because occupancy may vary across sites between years, area searches are probably the most efficient method for locating new colony sites. We therefore recommend that area searches for

Tricolored Blackbirds be made in conjunction with survey efforts for riparian, marsh, coastal sage scrub, and grassland bird species. These surveys generally occur during the breeding season and cover much of the habitat suitable for Tricolored Blackbirds.

More information is needed on patterns of movement and winter habitat use within the MSHCP Plan Area. Incidental observations suggest that some over-wintering occurs in the San Jacinto Valley and Anza/Tule Valley areas, but more data are needed. Critical to this effort will be the banding of birds and reporting of re-sightings during the year. Other data sources, such as the Cornell Laboratory of Ornithology (e.g., Christmas Bird Count data set and eBird.com website) could be useful in this regard.

Conservation and Management

Based on accumulated observations over the last eleven years by Biological Monitoring Program biologists, the distribution of Tricolored Blackbirds in western Riverside County outside the breeding season appears to be concentrated in the areas where most breeding occurs in the spring, namely the San Jacinto and Tule Valleys. Only small numbers of birds are observed sporadically in the Badlands, Lake Mathews, and Garner Valley areas. Although inconclusive, these observations suggest that the population of Tricolored Blackbirds that breed in Riverside County are largely resident year-round, unlike their counterparts in the Central Valley. They also underscore the critical importance of conserving habitat year-round in both of these areas.

Tricolored Blackbirds continue to depend heavily on managed habitats and the local population will likely require active management to persist. Management must aim for rapid restoration of population numbers and multiple large breeding colonies ($\geq 5,000$ birds). The Davis Unit of the San Jacinto Wildlife Area remains the single most important site for the restoration of the population in Riverside County and southern California as a whole.

In previous reports, we proposed food limitation for nestling birds to be the principle factor impacting site occupancy, reproductive success, and juvenile recruitment at the Davis Unit of the San Jacinto Wildlife Area, and that management to enhance the production of caterpillars, grasshoppers, and other invertebrates during the breeding season could be a significant benefit to the population. Results of efforts to enhance breeding habitat through the production of forage crops and irrigation of natural grass/forblands (Cook 2016) are encouraging and we believe it is very important for these efforts to continue. The need to conserve and enhance habitat for foraging cannot be over-emphasized. In addition to improvements that can be made on lands currently in conservation, we recommend that additional foraging habitat in the vicinity of the Wildlife Area, particularly the grasslands north of Mystic Lake, be considered high priority for acquisition or other forms of long-term protection and management.

The MSHCP species management activities summary (Volume II, Chapter 9) states that Reserve Managers will conserve and protect from disturbance a 100-m buffer around any known nesting locations. All colonies should immediately be reported to Reserve Managers to help ensure this objective is met. Protection must include both nesting substrate and foraging habitat. The low rate at which we have discovered new colony sites underscores the importance of meeting this objective.

All historic colony sites within the Conservation Area should be evaluated for their value as breeding habitat (including nesting and foraging) and improvements made as soon as possible. These include the following:

- Davis Unit of the San Jacinto Wildlife Area
- Potrero Unit of the San Jacinto Wildlife Area
- Jackrabbit Trail
- Lakeview Mountains
- Lake Skinner
- Sycamore Canyon
- Mill Creek and the Santa Ana River Corridor
- Lake Vista Road in the Wilson Valley

Suitable breeding habitat includes upland as well as wetland habitat located within 0.5 km of a water source and 1–5 km from quality foraging habitat. Wetlands large enough to support only a few hundred to a few thousand birds could be beneficial if they lack sufficient roost or nest sites for avian predators. Black-crowned Night Herons (*Nycticorax nycticorax*) and Cattle Egrets (*Bubulcus ibis*) in particular, can be very destructive if their breeding colonies establish in or near those of Tricolored Blackbirds.

The value of upland nesting habitat should not be underestimated. Although usually composed of non-native plants such as bull thistle, stinging nettle, and cheeseweed mallow, nest densities can be very high. In fact, the highest density (six nests per m²) and greatest reproductive success on record is in Himalayan blackberry (*Rubus armeniacus*) (Cook and Toft 2005). Such habitats can support large numbers of nests in a concentrated and manageable area. Ideal locations would be within 0.5–1.0 km of large forbland or grass/forbland vegetation communities that produce an abundance of invertebrate prey, and areas where the recommended non-native species already exists. Habitat should be widely distributed throughout the landscape to buffer the population as a whole from localized stochastic events such as variation in rainfall and insect production.

Between 2005 and 2014, the majority of the western Riverside County population nested each year on private property which may be vulnerable to disturbance. Where birds nest in agricultural fields, harvest often occurs before young have fledged which results in total reproductive failure (Cook and Toft 2005). This happened in the San Jacinto Valley in 2013. Through a program launched in 2011, landowners may be eligible for reimbursement for harvest delays to protect nesting Tricolored Blackbirds through the Tricolored Blackbird Conservation Initiative or the Declining Species Wildlife Habitat Fund of the Natural Resource Conservation Service's Environmental Quality Incentives Program (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/ca/programs/financial/eqip/>). As of March 2015, any colonies found in agricultural fields should be reported immediately through the proper channels (Appendix).

In some cases, Tricolored Blackbird colonies utilize resources that occur on both private and conserved lands and protection will require collaborative conservation and management. For example, the San Timoteo site is private, but colonies observed in 2008

(Kelsey 2008) and in 2010 and 2012 by the Biological Monitoring Program provisioned nestlings with insects collected primarily from surrounding grasslands, much of which are managed by the Riverside County Parks and Open Space District. Similarly, the created wetlands at the San Jacinto Wastewater Treatment Plant have provided important nesting habitat in past years (Hamilton et al. 1994; Hamilton 1997) and might again in the future. However, this will depend not only on the management of nesting habitat within the wetlands but on the use of nearby lands, some of which are within the MSHCP Criteria Area.

Core Area Definitions and Species Objectives

We believe that the Northwest Alberhill and Collier Marsh/Lake Elsinore Grasslands areas fail to provide suitable or sufficient habitat for breeding, neither nesting nor foraging habitat. We recommend that their designations as Core Areas for this species be reconsidered.

We believe too that the San Jacinto River Floodplain Core Area as a whole lacks suitable breeding habitat for Tricolored Blackbirds at the present time. The eastern arm of the Core Area is surrounded by urban development and lacks sufficient foraging habitat, a condition that is unlikely to be improved by management. The western arm is largely agricultural but currently lacks suitable nesting and foraging habitat, except for a section of the river and surrounding grasslands near the Perris Airport, where a colony was observed during our 2005 Tricolored Blackbird surveys. Proper management in this area could potentially benefit the species in the future.

We propose that the boundaries of the Vail Lake/Wilson Valley/Eastern Temecula Creek Core be redefined. All of the breeding activity in this area since surveys began in 2005 has been concentrated in the eastern side and in the adjacent Tule Valley area. The Temecula Creek area is lacking in suitable habitat and it is unlikely that Vail Lake and the land around it is suitable, either, although we have not conducted surveys there yet due to restrictions with access.

We propose also that the Potrero Unit of the San Jacinto Wildlife Area be considered for addition as a Core Area. The Potrero colony site has been occupied in most years since 2005. Recommended habitat improvements at Potrero include removal of old growth cattails every 2-3 years on a rotational basis (?) during the fall to stimulate new growth, preventing invasion of tamarisk and willow into the pond, and pumping water if necessary to maintain water levels of 12-18 inches in the pond. Opportunities for establishing additional nesting substrate in other parts of the reserve should be considered as well.

We recommend that the species account of the Tricolored Blackbird in the MSHCP be modified to recognize loss of foraging habitat in the vicinity of breeding sites as a significant threat to the survival of the species, and that the stated management objectives be reconsidered as well. In particular, the prescription for managing "... this species in order to maintain (once every five years) the continued use of, and successful reproduction within at least one of the identified Core Areas" (Dudek & Associates 2003) is likely insufficient for a rapidly declining species that is dependent on patchy and unpredictable breeding habitats which are being rapidly lost throughout the Plan Area.

ACKNOWLEDGEMENTS

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Appendix

Tricolored Blackbird Silage Colony Response Plan 2015 Dairy Outreach for NRCS Program Offering

1. Researchers, field technicians, and volunteers survey public roads in Central Valley for Tricolored Blackbird colonies. Bob Meese, under contract with CDFW, and an Audubon field technician will be conducting surveys.
2. If a colony is located in an agricultural field, the field person should note the location, approximate colony size (# of birds), and colony acreage. Try to identify the farm's name, dairy cooperative, and creamery membership if there is visible signage at the entrance. Do not trespass.
3. Call one of the following point people AND send a joint-email to all four people. Include the farm's name and dairy cooperative or creamery membership if identified, location, and estimate of colony size.

Paul Sousa, Western United Dairymen
psousawud@yahoo.com or (209)-527-6453

Noelle Cremers, California Farm Bureau
ncremers@cfbf.com or (916)-601-5357

Samantha Arthur, Audubon California
sarthur@audubon.org or (916)-737-5707 ext 115

Jesse Bahm, Natural Resource Conservation Service
jesse.bahm@ca.usda.gov or (559)-252-2191 ext 105

4. If Paul, Noelle, Samantha, and Jesse are unresponsive contact the Western United Dairymen field rep and/or County Farm Bureau (see contact information below).
5. Depending on the dairy's membership, either Paul or Noelle will call the dairy to make the first contact. They will explain the species' protected status and the resources available through NRCS. Dairies will be encouraged to contact their local NRCS office and Jesse Bahm to enroll in the delayed harvest incentive program. Farmers should expect to be paid approximately \$600/acre for harvest delay. Harvest delay is only needed on the portion of the field with Tricolored Blackbirds, including a small buffer zone.
6. If the colony is initially reported by a non-expert, then experts in the field will coordinate to confirm the Tricolored Blackbird colony.
7. If the farmer does not want to participate in the NRCS program, but birds are at-risk then Dairy Cares will outreach to appropriate creameries.

8. Jesse and Samantha will visit the enrolled site over the course of several weeks to outline the field area to be enrolled in the program and give a harvest date based on the developmental stage of the colony.

9. Jesse will visit the site at the harvest date to monitor and ensure harvest was delayed to the identified date.

10. NRCS pays compensation directly to farmers. Payment can take 2-3 weeks.

If Paul, Noelle, Samantha, or Jesse cannot be reached, then field reps from Western United Dairymen or Farm Bureau should be called.

California Farm Bureau Kern and Riverside Counties All Other San Joaquin Valley Counties

Rachael Johnson (909) 556-2266

Andrew Genasci (209) 670-4390