

Current Monitoring and Management of Tricolored Blackbirds¹

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Abstract

Tricolored Blackbirds (*Agelaius tricolor*) are largely endemic to California. Over 90 percent of the population occurs within the state. Surveys indicate that populations have declined by 37 percent from 1994 to 1997 and by 33 percent from 1997 to 2000. Tricolors are listed as a nongame bird of conservation concern by U.S. Fish and Wildlife Service and a species of special concern by California Department of Fish and Game. Breeding tricolors are colonial, and form the largest colonies of any North American passerine bird. In the 1934 one colony was estimated to have 200,000 nests. Tricolors nest in freshwater wetlands, and upland spiny vegetation such as Himalayan Blackberry (*Rubus discolor*). They forage away from their nesting habitat. The severe population decline is likely a result of land conversion and heavy nest predation by herons, mammals, and corvids. PRBO Conservation Science and California Partners in Flight have initiated a web-based volunteer program to monitor Tricolored Blackbird breeding colonies. The information collected will be used to estimate tricolor abundance, and form management recommendations. An intensive state-wide census is recommended every three years to calculate population size. Lastly, the project will identify key colonies to manage and enhance. Further research and management recommendations for preserving and creating habitat, are still needed to control the precipitous decline of this species.

Introduction

Tricolored Blackbirds (*Agelaius tricolor*) are largely endemic to California, with 90 percent of the population occurring within the state (Beedy and Hamilton 1999). They are highly colonial and a breeding colony found in 1934 was estimated to have 200,000 nests (Neff 1937). Surveys indicate that populations declined by 37 percent between 1994 and

1997 and 33 percent between 1997 and 2000 (fig. 1; Hamilton 2000).

Recognizing a threat to the species, the California Department of Fish and Game (CDFG) put Tricolors on their state list of species of special concern in 1992 (CDFG 1992) and they remain on the most updated version (T. Gardali, pers. comm.). In 1995, the U.S. Fish and Wildlife Service (USFWS) listed them as a candidate for threatened status, and a nongame bird species of management concern (USFWS 1995). In 2001 PRBO Conservation Science and the USFWS under the auspices of Partners in Flight assumed responsibility of a volunteer monitoring program for Tricolored Blackbirds. With the help of volunteers, data were collected across the state, and compiled on a web-based data depository. This information will guide management recommendations that may reverse the decline in Tricolored Blackbird populations.

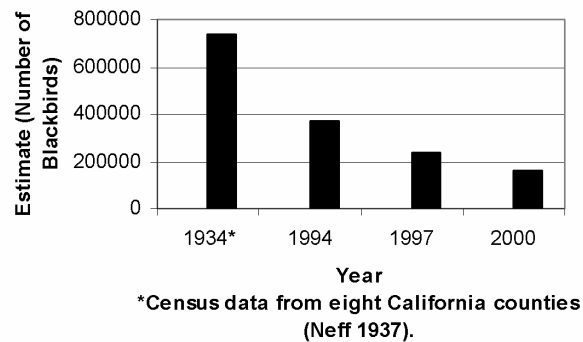


Figure 1— Population estimates of the Tricolored Blackbird population in California from pre-survey data and then three year time periods between 1994 and 2000.

Natural History

Tricolored Blackbirds have three habitat requirements for a successful nesting colony:

- 1) nearby open fresh water;
- 2) protected nesting habitat such as flooded marsh vegetation or thorny vegetation;
- 3) suitable feeding areas near the nesting colony such as rice fields, lightly grazed pasture, dairies, or alfalfa fields. Although the habitat has been greatly reduced, Tricolors still use grass-

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land and riparian feeding areas (Beedy and Hamilton 1997).

Most Tricolors seem to have little site fidelity, and depending on water and food availability may move to a different colony to nest after completing their first nesting attempt (Hamilton 1998). Colonies may settle to nest as early as late March and additional nesting attempts start 10 days after nests are lost or successfully completed (Payne 1969). Nesting continues through June. The majority of the Tricolored Blackbird population appears to spend the winter in the San Joaquin River Delta and near the central California coast (fig. 2; Beedy and Hamilton 1999).

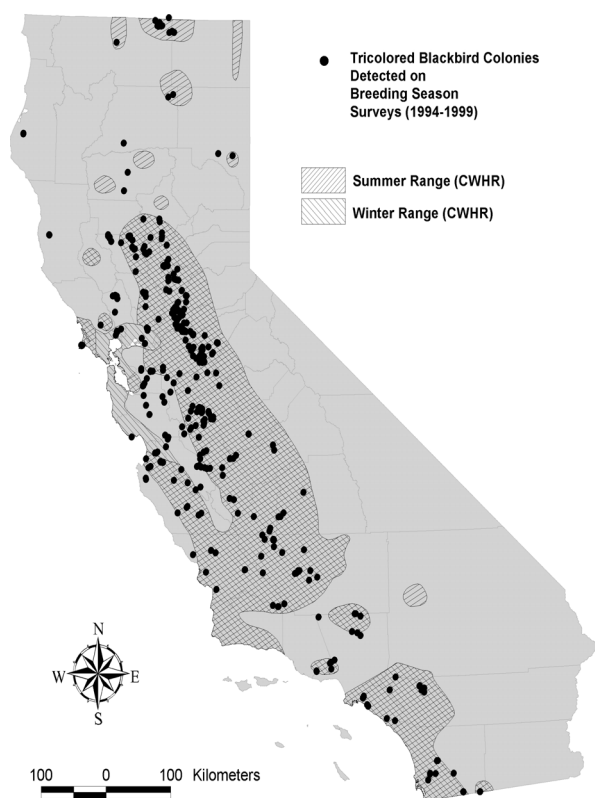


Figure 2— The summer and winter distribution of Tricolored Blackbirds in California.

Threats to the Population

Current threats to the population include:

- 1) Land conversion of both nesting and feeding areas to intensive agriculture and development;

- 2) Predation by Black-crowned Night-herons (*Nycticorax nycticorax*), coyotes (*Canis latrans*), raccoons (*Procyon lotor*), and ravens (*Corvus corax*), often causing nearly complete loss of nests at colonies;
- 3) Mowing of active nesting colonies in grain fields; and
- 4) Fluctuating water levels (Beedy and Hamilton 1997).

Current Monitoring

In 1993, California Department of Fish and Game, University of California Davis, and Audubon California started a monitoring program with the help of many volunteers. Surveys were done across the state over a period of a few days to avoid the double counting of birds. One of the authors (Hamilton) and Liz Cook also collected data on colony size, success, and population demographics (Hamilton 1993; Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton et al. 1999; Hamilton 2000). PRBO and the USFWS continued this survey in 2001 using a web based data entry form (see www.prbo.org/Trics.htm; fig. 3). This project attempted to collect data through the breeding season so volunteers could return to breeding areas to check the status of a colony. Colonies are often abandoned during the nesting period or used for later breeding attempts.

The objectives of the program were to:

- 1) Locate new Tricolored Blackbird colonies throughout the Tricolored range in California;
- 2) estimate the number of birds at key sites throughout the season while counting the entire population with an intensive census; and
- 3) determine the status of nesting colonies with repeated visits.

The intensive census effort is recommended to be conducted every three years (next scheduled for 2003) to compile a regular population estimate of Tricolor numbers and distribution. These data will be used to provide an estimate of Tricolor abundance at key areas and report on colony success, while identifying new colonies to manage and enhance.

Tricolored Blackbird Statewide Survey 2002

[Click here for full data collection instructions and field protocol.](#)

Observer: E mail address:
 Mailing address (street #, name and apt.#, if applicable):
 City: State: Zip code:
 Telephone: Fax:

DATE OF OBSERVATION (mm/dd/yy):

LOCATION INFORMATION (for breeding and non-breeding colonies)

County:

Directions (how to reach the observation site):

Latitude: Longitude:

Estimated precision (m): Elevation (m):

Check one:

- ddd mm.mmm (decimal degrees)
- ddd mm' ss.s" (degrees, minutes, seconds)
- UTM

Check one datum:

- WGS 84
- NAD 27
- NAD 83

Alternate (less preferable) location information-

Township: Range:

Section:

Land Use:

If Agriculture, Specify which type:

(common examples are barley, wheat, silage, thistles, and mustard)

Ownership:

Local contact: Contact phone number:

NESTING COLONIES (If no nesting behavior is observed, please go to NON-BREEDING, below)

Estimated Size of the Colony (total number of birds):

Figure 3— Data entry forms on the PRBO Tricolored Blackbird volunteer survey website.

Status of Tricolored Blackbird – Churchwell et al.

triform1 file:///Z:/www/trbl/triform.htm

Estimated Sex Ratio of the Colony (males/females):

Observed Behaviors (enter "yes" or "no"):

Singing: Nest Material Carries:

Adults Carrying Food: Fledglings out of Nest:

Nesting Substrate: Do not use tules as a category. Instead use cattails, bulrushes or other. If more than one species supports nests, include estimated percentages after each substrate type (e.g. cattails 40, Himalaya blackberries 60). Common Substrates include Cattails, Himalaya Blackberries, Willows, Bulrushes, Other Blackberries.

Substrate 1: Percentage:

Substrate 2: Percentage:

Substrate 3: Percentage:

Distance to the nearest water source used by the colony:

Type of water:
(examples include fresh water marsh and irrigation canal)

Estimated Area (hectares) of habitat OCCUPIED by NESTS:

Estimated Area (hectares) of habitat NOT OCCUPIED by NESTS:

Percentage estimate of area within suitable habitat occupied by nests:

Colony Shape: Length (m): Width (m):

Shape (general shape description):

Map Attached? (yes or no)

NON-BREEDING COLONIES OR FLOCKS

Estimated Size of the Colony (total number of birds):

Estimated Sex Ratio of the Colony (males/females):

History: (Have you or has anyone in your party observed tricolors nesting at this exact or nearby - specify which - location in the past?

If yes, give years:

Condition of historic site:

Notes:

2 of 2 12/12/2002 10:43 AM

Figure 3– contd.

Table 1— Top 10 Tricolor colonies in 2001 Tricolored Blackbird survey.

Site	County	Ownership	Size 2002	Substrate
Merced NWR-E Farm Field 3 Unit	Merced	Public	30,000	Thistle/mustard
Ave 120 Colony 1	Tulare	Private	30,000	Silage
Ave 120 Colony 3	Tulare	Private	15,000	Silage
Fresno 1	Fresno	Private	10,000	Silage
Ave 120 Colony 2	Tulare	Private	8,000	Silage
Grey Hills Duck Club	Colusa	Private	8,000	Cattails
NE Unit 1 Kern NWR	Kern	Public	6,000	Cattails/bulrushes
DCAA Dairy	Kern	Private	6,000	Silage
Merced NWR-E Dowitcher Unit	Merced	Public	6,000	Mustard/thistles
Acre Farms	Colusa	Private	5,000	Cattails

Summary of 2001 Data

During the 2001 season 48 sites were visited. Of these, 31 were active with nesting birds. A total of 142,045 Tricolors were counted at nesting colonies and 4,031 nonbreeders were surveyed. The total number is not comparable to other years because this year was not a population estimate census year, but individual locations can be compared. Five of the largest 10 breeding colonies reported to us were in silage, and were in danger of being mowed before the end of the breeding season (See *Table 1*; Humple and Churchwell 2002). The outcome of many colonies is not known because follow-up visits were not completed.

The following improvements to the web based data entry system, initiated in 2002 are:

- 1) Standard site names. This could be done with an accurate web-based map.
- 2) Volunteers should continued to visit locations throughout the breeding season, and not only one time, as was the protocol in for past years.
- 3) Data should be submitted even if there are no birds seen. More personal contact with volunteers may help solve this problem in the future.

Future Research and Management

Management recommendations to mitigate threats to Tricolored Blackbirds include protecting historic colonies from land use conversion. Habitat should be managed to enhance the three habitat requirements necessary to establish nesting colonies identified above. Water management has improved for tricolors during the breeding season, and the continuation of programs such as the water bank Conservation Reserve Program (USFWS, pers. comm.), which encourages water storage until mid July, should be an objective for the future. Hamilton and Hosea both observed complete loss of Tricolor colonies after spraying for mosquitoes and weeds (Beedy and Hamilton 1997), but little research has been done. Also, more research is needed on the population demographics of Tricolored Blackbirds. One recommendation is an intensive color banding and productivity study at several representative sites across the range of the species to help us track birds and gather reproductive information on the species. Maintenance of populations depends upon habitat enhancement and protection. Since suitable nesting and foraging habitats have different characteristics, improvement of conditions for either may produce a successful colony.

Acknowledgments

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