CENTER FOR BIOLOGICAL DIVERSITY

Protecting endangered species and wild places through science, policy, education, and environmental law.

VIA FEDERAL EXPRESS AND FACSIMILE

April 8, 2004

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Re: Petition to list Tricolored Blackbird under the State and Federal Endangered Species Acts and Request for Emergency Action to Protect the Species

This request for immediate protection of the Tricolored Blackbird ("Tricolor;" *Agelaius tricolor*) is submitted on behalf of the Center for Biological Diversity ("Center"). The Center is a non-profit organization dedicated to protecting imperiled species and their habitats by combining scientific research, public organizing, and strategic litigation. The Center has over 9,000 members, many of whom reside and own property in the Central Valley of California, where the largest numbers of Tricolors annually attempt to breed. The Center is extremely concerned about the continued destruction of Tricolor nests on dairy farms and other agricultural lands in the Central Valley and the failure of the responsible agencies to protect active nests and birds in this critical Tricolor nesting habitat. As a result, through this letter, the Center is requesting immediate action by the U.S. Fish and Wildlife Service ("FWS") and California Fish & Game Commission ("FGC") prohibiting or at a minimum delaying harvesting and plowing activities on private lands used for Tricolor breeding during the nesting season. These activities are in clear violation of not only the federal Migratory Bird Treaty Act but also California's Unfair Competition Law, Business & Professions Code Section 17200. Furthermore, these activities are in large part responsible for current precipitous decline of the species that necessitates immediate listing under the state and federal Endangered Species Acts as discussed in detail below.

The Center acknowledges that FWS and California Department of Fish and Game ("DFG") have occasionally engaged in "public/private cooperation" to address the ongoing violations of the applicable statutes and the resultant large-scale nesting failures. For example, in 2000 the agencies

arranged to compensate the Tevelde Farm to delay harvesting on approximately 50 acres in order to permit Tricolors to nest and approximately 20,000 young to fledge (FWS News Release, June 16, 2000), with similar voluntary efforts in other years (Beedy and Hamilton 1997at 20-21). However, while laudable, these measures are only acceptable mitigation measures if they are consistently negotiated and proven effective at significantly reducing Tricolor nest failures. Given that FWS and DFG take the position that crop purchases or reimbursements for delayed harvest are not a feasible long-term solution for Tricolor habitat management on private agricultural lands, the Center is not optimistic that these cooperative methods will be sufficient to reverse the Tricolor's steady decline. Consequently, unless you demonstrate concrete measures will be implemented immediately to protect critical nesting sites on private lands beginning this breeding season (2004), and permanently establish such protective measures in the long-term, other courses of action will be necessary.

In addition, with or without public/private cooperation this nesting season, the Tricolor indisputably warrants listing under both the federal and state Endangered Species Acts as discussed more fully below. As a result, and as described in depth below, pursuant to the Endangered Species Act of 1973, 16 U.S.C. §§ 1531 *et seq.* and the California Endangered Species Act, California Fish & Game Code §§ 2070, *et seq*., the Center hereby formally petitions the FWS and FGC to list the Tricolored Blackbird, a state and federal species of concern, as "endangered" under the federal and state ESAs, respectively. In addition, the Center hereby requests that FWS and FGC immediately adopt emergency regulations to list the Tricolored blackbird as endangered under 16 U.S.C. Section1533(b)(3)(C)(iii) and (b)(7) and California Fish and Game Code Section 2076.5, respectively.

I. SUMMARY OF LEGAL VIOLATIONS OCCURRING ON PRIVATE AGRICULTURAL LANDS

The Tricolor is declining at an alarming rate in large part due to the harvest of grain dairy silage and other agricultural grain crops and routine plowing of weedy fields throughout most of its range. Every year, thousands of pairs of Tricolors unsuccessfully nest on agricultural lands because their eggs and nests are destroyed during harvest or weed abatement activities. This wholesale destruction of Tricolor nests is threatening the survival of this species. Because these activities are contributing annually to significant breeding failure, efforts to reduce and reverse population decline necessitate that FGC, DFG, FWS, and citizen enforcers ensure that private parties comply with the governing laws.

While the Tricolor is considered a non-game bird of management concern by FWS, this designation does not provide any specific legal protection to the species. The Tricolor is also designated a species of special concern by DFG and theoretically must be considered during project actions subject to the California Environmental Quality Act ("CEQA"). However, this status does not protect the species from activities that do not trigger CEQA's environmental review requirements, and even when considered, CEQA's substantive mandates for environmental protection have not been implemented with regards to protection of the Tricolor.

Furthermore, while the species is theoretically afforded protection under the federal Migratory Bird Treaty Act ("MBTA"), the statute is rarely if ever enforced against private property owners who are in blatant violation of its provisions. Congress enacted the MBTA for the express purpose of making protections afforded migratory birds "effective and enforceable by the courts." H.R. Rep. No. 65-243, at 1 (1918). The statute was intended to protect the birds from all forms of unauthorized harm. *See, e.g.*, 56 Cong. Rec. 7448 (June 6, 1918) (Statement of Rep. Robbins). The statute implements this intent by strictly prohibiting all "taking" of migratory birds unless authorized by a permit issued

pursuant to Department of Interior regulations. *See* 50 C.F.R. § 10.13 (list of migratory birds protected by MBTA). The language of Section 703 of the MBTA is unequivocal:

> Unless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill . . . any migratory bird . . . included in the terms of the [conventions between the United States and Great Britain, Mexico, Japan, and Russia].

16 U.S.C. § 703. "Take" is defined as to "pursue, hunt, shoot, wound, kill, capture, or collect," or attempt to do so. 50 C.F.R. § 10.12. By crushing Tricolor nests, private property owners are in clear violation of the MBTA and its implementing regulations.

Private property owners are not only violating the MBTA, but those with dairies or other commercial agricultural operations on their property also are in violation of the California Business & Professions Code Section 17200, *et seq*. The Code defines "unfair competition" to include "unlawful, unfair or fraudulent business practice and unfair, deceptive, untrue or misleading advertising." A business practice constitutes unfair competition if it is forbidden by any law, whether civil or criminal, federal, state, or municipal, statutory, regulatory, or court-made. As the California Supreme Court has determined, Business & Professions Code Section 17200 treats other laws committed pursuant to a business activity as unlawful practices independently actionable under Section 17200 and subject to the distinct remedies provided by the Code. The remedies authorized for violation of Section 17200 are cumulative to each other and to any other remedies available elsewhere in the law. Business & Professions Code Section 17200 serves a completely different purpose than the underlying statutory or regulatory violation upon which the Section 17200 claim is based. As a result, private business owners who are destroying Tricolor nests are vulnerable to enforcement actions under both the MBTA and the California Business & Professions Code.

II. THE TRICOLORED BLACKBIRD WARRANTS LISTING UNDER THE FEDERAL AND CALIFORNIA ENDANGERED SPECIES ACTS

The Tricolor is a colonial-nesting passerine largely endemic to California. The geographic range of Tricolors is generally restricted to California's Central Valley and surrounding foothills, and sparsely throughout coastal and inland locations north of the Central Valley and in southern California (Beedy and Hamilton 1999). California supports more than 99% of the population, but the species has also been reported in small numbers in southern Oregon and northernmost western coastal Baja California with rare reports in western Nevada, and central Washington (Beedy and Hamilton 1997, 1999; DeHaven 2000).

The Tricolor is sympatric with and morphologically similar to the Red-winged Blackbird ("Red-wing;" *A. phoeniceus*). However, unlike Red-wings, Tricolors breed in dense colonies, often traveling long distances to forage for their chicks, and males defend relatively smaller territories within their colonies, mating with one to several females per year (Beedy and Hamilton 1999). The overall distribution and location of nesting sites vary from year to year, and Tricolors are itinerant breeders (i.e., they may nest more than once at different locations during the breeding season) (Hamilton 1998).

Tricolors form the largest colonies of any North American land bird, and breeding colonies may consist of tens of thousands of birds at a single site. While Tricolor colonies can number in the thousands giving an appearance of high abundance to casual observers, the status of the bird is of

concern because the overall population has declined dramatically over the past 70 years, its geographical range is restricted, and its gregarious nesting behavior renders colonies vulnerable to large-scale nesting failures due to widespread destruction of active nests in its agricultural habitats and high levels of predation in its little remaining native emergent marsh habitat (predominately cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.)). Every year, Tricolors experience large losses of reproductive effort to crop-harvesting and other agricultural activities, and predation, and suffer habitat losses to land conversions from rangeland to vineyards, orchards, and urban development and possibly to direct efforts to remove the birds from private property (Liz Cook, pers. comm.). These serious threats continue today.

Beginning in the 1930s and continuing until 2000, five major studies have estimated population abundance of Tricolors (Neff 1937; DeHaven et al.1975; Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton 2000). These studies clearly and unequivocally demonstrate a precipitous decline in the population of Tricolors in the Central Valley, the historical stronghold of the species, and elsewhere. The population of Tricolors in the Central Valley declined by at least 50% between the 1930's and early 1970's (DeHaven et al. 1975), and an additional decline of approximately 56% of the remaining population was reported from 1994 to 2000 (Hamilton 2000). Population censuses sponsored by FWS and DFG in the 1990's and 2000 indicate that within a decade, the Tricolor declined from an estimated 370,000 in 1994 to 240,000 in 1997 and 162,000 in 2000 (Hamilton 2000).

A. Description, Taxonomy, and Natural History

1. Species Description

The Tricolor is medium-sized and sexually dimorphic, breeding in dense colonies largely in California's Central Valley, Coast Ranges, and southern California (Beedy and Hamilton 1999). Total length ranges from 18-24 cm, and body mass ranges from 40-70 g depending on the season (Beedy and Hamilton 1999).

The sexes of the Tricolor differ in size, plumage and behavior. Beedy and Hamilton (1999) offered a detailed description of the species:

> "In general, males are larger than females; have striking red, white, and black plumage; and display when breeding. Adult males are entirely black with a blue gloss in full sunlight, with bright brownish-red lesser wing coverts forming a red patch on the epaults (wing shoulder), and median coverts buffy (August-February) to pure white (February-July), depending on the season. Adult females are mostly black with grayish streaks, relatively whitish chin and throat (rarely with faint pinkish or peach wash), and small but distinct reddish shoulder patch. Immature males are similar to adult males but with duller black plumage mottled with gray (August-March), becoming almost entirely dull black (April-June), and with shoulder patch mixed with black (August-March only). Immature females are similar to adult females but the wing lacks the reddish patch. Immatures of both sexes usually retain some brownish or grayish underwing coverts, which contrast with newer adjacent black feathers. Juveniles of both sexes (April-August) are similar to adult females, but much paler gray and buff."

The plumage of the Tricolor and Red-wing is so similar that museum specimens are sometimes misidentified (Orians 1961a). The adult male Tricolor has a bluish luster to its black plumage, and the red of the epaults is a dull crimson in contrast to the bright scarlet of the male Redwing (Orians 1961a). Both sexes of Tricolors are distinguished from Red-wings by bill shape, tail shape, and primary

feathering formula; the outermost primary (P9) is longer than P6 in Tricolors and shorter in Red-wings (Beedy and Hamilton 1999). In addition, Tricolors have longer outer primaries, creating a narrower and more pointed wing shape than other blackbirds (Beedy and Hamilton 1999). The most conspicuous feature of the male plumage is the broad white border to the middle wing coverts (Orians 1961a). In most races of the Red-wing these feathers are tipped with buffy, but in those races occupying the central Coast Ranges and Central Valley of California, where the Tricolor is most abundant, these feathers are black so that the wing lacks the light-colored stripe (Orians 1961a). Orians (1961a) noted that "...This plumage difference between males is not only conspicuous to the human observer, it is the most important means of species identification used by the birds themselves. Occasional Redwings in a flock of Tricolors are singled out for special attack by a resident male Redwing in whose territory the flock lands." Orians (1961a) also described the difference between female Tricolors and Red-wings: "...In general, female Tricolors are more uniformly sooty than female Redwings, there being less contrast between throat and breast. In the autumn, female Redwings are strongly tinged with rusty on the back, a feature never shown by the female Tricolor." Females of both species are more difficult to distinguish because, although female Tricolors are darker than most races of the female Red-wing, female Red-wings are actually the darkest in the region of distributional overlap. Interestingly, there appears to be a convergence of female plumage where the two species overlap, in contrast to a divergence of plumage in the males (Orians 1961a).

Sexual dimorphism in size is less in the Tricolor than in the Red-wing. Male Tricolors are smaller than male Red-wings in wing, tail, tarsus, and bill depth, but are larger in culmen, whereas female Tricolors are larger than female Red-wings in wing, tail, tarsus, and culmen, but are smaller in bill depth (Orians 1961a). This longer, narrow bill of the Tricolor is one of the most reliable morphological differences between the species (Orians 1961a).

Flight of the Tricolor consists of long, shallow undulations and flocks tend to be compact (Beedy and Hamilton 1999).

2. Taxonomy

Mitochondrial DNA (cytochrome *b*) studies indicate that the nine *Agelaius* species are a polyphyletic assemblage of ecologically similar species (Beedy and Hamilton 1999). Red-winged and Tricolors were found to be sister taxa; in turn these species are sister to Tawny-shouldered blackbirds (*A. humeralis*) and Yellow-shouldered Blackbird (*A. xanthomus*) found in the Caribbean (Beedy and Hamilton 1999).

3. Habitat Use and Home Range

Within the Central Valley, DeHaven et al. (1975) documented breeding colonies in the rice-growing regions of the Sacramento Valley and in the pasturelands of the lower Sacramento Valley and San Joaquin Valley. In the rice lands, the annually flooded rice was the dominant crop, but small grains, hay, safflower, sugar beets, corn, and beans were also grown. The pasturelands consisted largely of irrigated fields of introduced grasses, alfalfa, hay, and small grains. In both areas, insects in flooded fields probably provide the primary food for breeding Tricolors. Colonies outside the Central Valley were found in a diverse array of habitat types, including within chaparral covered hills (Riverside and Colusa Counties), orange and avocado groves interspersed with grass-covered hills (San Diego County), sagebrush grasslands (Siskiyou County), and salt-marsh habitat of San Francisco Bay (Alameda County) (DeHaven et al. 1975).

Historically, nesting substrate consisted mostly of native emergent marsh vegetation (Table 1). Neff (1937) documented about 93% of nests in cattails, bulrushes and willows (*Salix* spp.). Orians (1961a) found 64% of colonies in the Sacramento Valley nesting in cattails and other emergent vegetation; other nests were in agricultural fields, and one colony nested in trees along a river. DeHaven et al. (1975) reported that about 69% of colonies had nests built in marsh vegetation including cattails, bulrushes, willows, or some combination, and 49% were in cattails only.

TABLE 1. Proportions of colonies and individuals of Tricolored Blackbirds by predominately used nesting substrates in the 1930's, 1970's, 1994 and 2000. Source: Cook and Toft (in review)

	1932-34		*1968-72*		*1994*		*2000*	
	Percent of							
nesting substrate	***colonies***	***birds***	***colonies***	***birds***	***colonies***	***birds***	***colonies***	***birds***
emergent marsh	94.8	92.7	69.7	[a]	47.4	25.7	59.6	54.0
Himalayan blackberry	1.3	0.1	16.1	[a]	31.4	20.8	20.2	11.5
silage	0.0	0.0	0.0	[a]	5.1	40.2	5.8	16.7

Data from 1932-1934 are from Neff (1937), Sacramento Valley and northern San Joaquin Valley. Data from 1968-1972 are from DeHaven et al. (1975), statewide. When nesting substrate vegetation was mixed, the predominant vegetation was used to categorize the nesting substrate. Percent of colonies and birds are for all colonies located throughout the breeding season.

[a] *Data are not available*

In recent decades some of the largest Tricolor colonies have been found in silage and other grain fields in the San Joaquin Valley (Collier 1968; Hamilton et al. 1995; Beedy and Hamilton 1999). In 1994 approximately 40% of all breeding birds located throughout the nesting season were found in silage (Cook and Toft, in review) (Table 1). Approximately 47% nested in native emergent marshes and 31% in thickets of the introduced Himalayan blackberry (*Rubus discolor*). Approximately 17% of the breeding effort of the much smaller 2000 population occurred in silage. During this year about 54% of nesting was in emergent marsh and 12% in Himalayan blackberry. Additional colonies nested in other flooded and upland habitats.

Tricolors are nomadic and highly colonial, and males defend relatively small territories within the colony (Orians and Collier 1962). Territories average about 35 square feet, or 1.8 m^2 to 2.35 m^2 in size, and one to three females construct nests within these small territories (Orians and Collier 1962; Beedy and Hamilton 1999). Unlike Red-wings, who gather food on and adjacent to their territories which average about 500-30,000 square feet in size, Tricolors do not forage on their territories but exploit the area around the colony (Orians and Collier 1962; *see* "Food Habits" below).

Itinerant breeding of Tricolors suggests that they may be philopatric to more than one nesting site (Beedy and Hamilton 1999). Hamilton et al. (1995) found that 19 of 72 (26%) colonies used the same nesting sites during surveys conducted between 1992 and 1994. Eleven (15%) colonies in 1994 repeated either their 1992 or 1993 nesting location but not both. These results may indicate a low to moderate degree of site tenacity and/or that suitable breeding habitat is limited (Cook and Toft, in review). The yearly shifts in breeding distribution of Tricolors are likely related to insect supplies and other, unknown, breeding requirements (DeHaven et al. 1975).

4. Food Habits

Tricolors are opportunistic foragers, taking any locally abundant insect including grasshoppers (Orthoptera), beetles and weevils (Coleoptera), caddis fly larvae (Trichoptera), moth and butterfly larvae (Lepidoptera), dragonfly larvae (Odonata), and lakeshore midges (Diptera), as well as grains, snails, and small clams (Beedy and Hamilton 1999). In earlier studies Tricolors were described as grasshopper followers (Orians 1961b; Payne 1969) and losses of grasslands and reduced grasshopper abundance may have contributed to the decline of the Tricolor population observed between the 1930s and 1970s (Crase and DeHaven 1977). Recently, however, grasshoppers have been abundant enough locally to support some large Tricolor colonies. Grasshoppers appeared to be the predominant food fed to nestlings in every year of studies in Sacramento County after about April (Liz Cook, pers. comm.). Notably, foraging distances were shorter and reproductive success was highest on average there compared to other regions in the state during the early 1990s prior to the near extirpation of Tricolors from the area.

Tricolors forage in all seasons in pastures, dry seasonal pools, agricultural fields including alfalfa with continuous mowing schedules, rice fields, feedlots, and dairies (Beedy and Hamilton 1997). The birds will also forage in riparian scrub, saltbush (*Atriplex* spp.) scrub, borders of marshes, and grasslands. They do not forage regularly in weed-free row crops and intensively managed orchards and vineyards (Beedy and Hamilton 1997). Rangeland that is not heavily grazed is also important foraging habitat for Tricolors in some portions of their range (Cook 1996).

During nesting, Tricolors tend to forage away from their nest sites, at distances usually ranging from within sight of the colony up to 5 km away (Orians 1961a), with occasional forays of up to 13 km from the colony (Beedy and Hamilton 1997), although sustained short-distance foraging within sight of the colony is also observed (Cook 1996). There are some indications that the size of the foraging arena may correlate to nestling starvation as adults travel longer distances to find food (Liz Cook, pers. comm.).

Only a portion of the area within commuting distance from the nest is used for foraging. Many unsuitable areas, including cultivated row crops, orchards, vineyards, and heavily grazed grasslands, are associated with high-quality Tricolor foraging habitat such as irrigated pastures, lightly grazed rangelands, dry seasonal pools, mowed alfalfa, fields, feedlots, and dairies (Beedy and Hamilton 1999). Wintering Tricolors in the Sacramento Valley appear to forage heavily on the seeds of plants such as rice, grains, and weeds (Crase and DeHaven 1978).

Orians (1961a) demonstrated that the Tricolor's colonial social structure is more energetically demanding than the territorial structure of the Red-wing due to the high energetic requirements of flying back and forth from distant feeding sites when foraging for young. Tricolors require food supplies that can be rapidly exploited once they reach the feeding site. Thus, the species has an unpredictable breeding distribution and has poorer reproductive success than the Red-wing in unfavorable years (Orians and Collier 1962).

5. Reproduction

Males begin singing as early as late February. Nesting is initiated in late March to early April, primarily in the San Joaquin Valley, and again in May to June in the rice-growing region of Sacramento Valley and foothill areas (Hamilton 1998, Beedy and Hamilton 1999). Male Tricolors may arrive before females at the colony sites, but sometimes by less than one day, and sometimes both

sexes arrive together and begin breeding activity the same day (Beedy and Hamilton 1999). Dense concentrations of birds will gather and suddenly fly to another place, changing locations frequently and then returning to potential nest sites. This is described as “prospecting behavior” (Beedy and Hamilton 1999). Requirements for breeding colony sites are accessible water, protected nesting sites such as flooded or spiny, urticating, or otherwise armored vegetation, and adequate amounts of suitable foraging areas within a few kilometers of the nesting colony (Beedy and Hamilton 1997). Most adults at a colony site begin nesting 12–17 days after prospecting begins. When Tricolors arrive at a breeding site, previously established breeding Red-wings and Yellow-headed (*Xanthocephalus xanthocephalus*) blackbirds may be excluded from territories by extremely large numbers of Tricolors.

Females construct their nest within the small territory of the male, and one male will breed with 1–4 females (Beedy and Hamilton 1999). Extreme synchrony is characteristic of most colonies of Tricolors — even in colonies of up to 100,000 nests, all eggs may be laid within one week (Orians 1961a). Males do not assist with nest construction or incubation, but do assist with food gathering and feeding of the young.

During the breeding season, Tricolors exhibit itinerant breeding; individuals often move after their first nesting attempts and breed again at a different geographical location (Hamilton 1998). At some colonies a second wave of nesting follows fledging of the initial cohort (Beedy and Hamilton 1999).

6. Survival and Mortality

Band recovery data suggest that Tricolors live at least 13 years, although no studies of annual survival rates have been conducted (Beedy and Hamilton 1997). Causes of mortality include exposure to inclement weather (Cook 1996); predation (see "Disease and Predation," *supra*); starvation and possible brood reduction via removal of live chicks from nests by females (Hamilton et al. 1995); competition with other species, including Great-tailed Grackles (*Quiscalus mexicanus*) which are aggressive towards Tricolors and may represent a serious future threat (Beedy and Hamilton 1999); agricultural contaminants (see "Other Natural or Anthropogenic Factors," *infra*); and wide-spread destruction of nesting substrate during the nesting season that results in direct mortality of nestlings (see "Present Or Threatened Destruction, Modification, Or Curtailment Of Habitat Or Range," *infra*).

B. Range and Distribution

1. Species Range

The range of the Tricolor has largely been restricted to southernmost Oregon and the Modoc Plateau of northeastern California, south through the lowlands of California west of the Sierra Nevada to northwestern Baja California (Neff 1937; Orians 1961a; DeHaven et al. 1975; Beedy and Hamilton 1999; *see* Figure 1). Beedy also notes some rare reports from Nevada and Washington (Beedy and Hamilton 1999). The elevational range of the Tricolor is documented to extend from sea level to approximately 4,000 ft in Shasta County to 4,200 ft on Klamath Lake (Neff 1937).

Within its range, the species is nomadic and highly colonial; large flocks appear suddenly in areas from which they have been absent for months, they breed, and then quickly withdraw (Orians 1961a). In one season nesting colonies have been found widely scattered, and in another there have been great concentrations in relatively restricted districts (Neff 1937). The size and location of colonies vary from year to year, although certain sites are regularly used (Orians 1961a, Hamilton et al.

1995, Cook 1996, Hamilton 2000).

2. Historical Distribution

Historically, rivers flowing into the Central Valley would flood and create extensive marshes, providing abundant breeding habitat for Tricolors and other wetland-dependent species. In the 19th century, autumn flocks of thousands of Tricolors were described in the Shasta area, and a wintering flock observed in Solano County "...numbering so many thousands as to darken the sky for some distance by their masses," (Baird 1870 *in* Beedy and Hamilton 1999). J. G. Cooper noted that the Tricolor was "the most abundant species near San Diego and Los Angeles, and not rare at Santa Barbara," (Baird 1870 *in* Beedy and Hamilton 1999).

The first systematic range-wide surveys of the population status and distribution of the Tricolor were conducted by Neff (1937). These surveys found Tricolor breeding colonies in at least 26 counties in California, although the survey of the range was still incomplete. Neff (1937) estimated abundance at 252 colonies, mostly associated with freshwater emergent wetlands in rice-growing areas of California, and numerous very large colonies were reported (see "Population Status and Trends," *infra*).

Population surveys and banding studies carried out from 1969–1972 by DeHaven et al. (1975) found 168 breeding colonies at 113 locations, each at least 1.6 km apart. About 78% (131) of the colonies were in the Central Valley, with 80 in the Sacramento Valley and 51 in the San Joaquin Valley. The remaining 22% (37) of colonies were in other parts of California and in southern Oregon. The counties where the most colonies were found in a single season were Sacramento, Merced, Stanislaus, Glenn, and Colusa.

The survey results from DeHaven et al. (1975) indicated that the geographic range and major breeding areas of the species had not changed since the first surveys were conducted by Neff in 1937. However, DeHaven et al. (1975) found fewer colonies, fewer non-breeding Tricolors, no nesting areas even approaching the size of some of the previously reported colonies, fewer birds in the largest colonies, and fewer total Tricolors. These results are discussed in detail under "Population Status and Trends," *infra*.

It is worth noting that even the earliest surveys had been conducted after most of the Central Valley's wetlands were already lost. Thus, the historical distribution and population abundance of Tricolors prior to the profound and widespread loss of their native wetland and grassland habitats are unknown.

3. Current Distribution

Since 1980, active Tricolor breeding colonies have been observed in 46 counties in California, and most of the largest colonies are still located in the Central Valley (Beedy and Hamilton 1999). The species currently breeds throughout the Central Valley west of the Cascade Range and east of the Sierra Nevada (into the foothills), and southeastern deserts from Humboldt and Shasta Counties, south to extreme southwestern San Bernardino County, western Riverside County, and western and southern San Diego County. Breeding also occurs in marshes of the Klamath Basin in Siskiyou and Modoc Counties, Honey Lake Basin in Lassen County and in some central California coastal counties.

Outside California, the Tricolor has bred in southern Klamath and southern Jackson Counties and in northeast Portland (Multnomah County), near Clarno and Wamic (Wasco County), at the John Day Fossil Beds National Monument (Wheeler County), near Stanfield (Umatilla County), and at Summer Lake (Lake County). A small colony reportedly nested in Grant County, Washington in 1998, and small colonies were identified in Douglas County, Nevada and in northern Baja California (Beedy and Hamilton 1999). Few, if any, reports of Tricolors nesting outside of California have been submitted since 1999.

In 1991 researchers at the University of California at Davis (UCD) initiated a large-scale study of Tricolors, investigating size and location of colonies, nesting habitat characteristics, behavior, reproductive success as correlated with habitat type and patterns of land ownership. This study was expanded in 1994 to include a FWS and DFG sponsored range-wide population census led by the UCD researchers and including a volunteer base of experienced local ornithologists. The results of this census and additional season long survey data are reported in Hamilton et al. (1995). Census participants located an estimated 369,359 individuals nesting in 74 colonies in 32 California counties, with breeding occurring in 26 counties (Figure 2). In 1994, the largest Tricolor colonies were found in Merced, Colusa, Tulare, Glen, Kern, Sacramento, and Yuba Counties (Beedy and Hamilton 1997).

Annual population censuses were henceforth attempted in 1995 and 1996 but efforts and methods were not comparable to those of 1994. A second comparable census and additional season long surveys were conducted in 1997 using the same coverage, methods, and surveyors as in 1994 (Beedy and Hamilton 1997). Census results included a total of 232,960 breeding and non-breeding Tricolors in 32 California counties, including 50 non-breeding adults in Klamath County, Oregon, and 950 breeding adults in northwestern Baja California.

In 1997, the largest Tricolor colonies were found in Colusa, Tulare, Kings, Riverside, Kern, Sacramento, and San Joaquin Counties (Beedy and Hamilton 1997). The two largest observed colonies during the 1997 breeding season were found in Colusa and Tulare Counties. The Colusa County colony formed in May, after the volunteer survey ended, by birds that probably nested elsewhere earlier on in the season. Interestingly, in 1997, a wetland created in 1994 in Hemet, Riverside County, hosted a colony of about 23,300 nests, representing a large increase in the southern California total compared with the 1994 survey.

The last comparable census and additional season long survey work, including methods and effort comparable to those of 1994 and 1997, was conducted in 2000. During the 2000 census, 162,508 individual Tricolors and 25 colonies were located with the largest colonies occurring in Tulare, Merced and Riverside counties. The largest colonies located throughout the breeding season were in Tulare, Merced, Riverside and Colusa counties. It is notable that the large colonies that formed in Sacramento county in the early 1990s (including 1994) have been absent in surveys conducted between 1997 and 2003 (Liz Cook, pers. comm.).

Table 2 below describes the distribution and population estimates of breeding and non-breeding individual Tricolors throughout their range during the population censuses of 1994, 1997 and 2000.

TABLE 2. Summary Comparison of Tricolored Blackbird Censuses Conducted in Late April 1994, 1997 and 2000. Sources: Beedy and Hamilton 1997 and Hamilton 2000.

	1994			1997			2000		
Region and County	**Breeding**	**Non-breeding**	**Total**	**Breeding**	**Non-breeding**	**Total**	**Breeding**	**Non-Breeding**	**Total**
Sacramento Valley									
Colusa	25	2	27	100	4,075	4,175	2,500	0	2,500
El Dorado	0	0	0	200	0	200	0	0	0
Glenn	2,000	0	2,000	0	0	0	0	0	0
Placer	1,000	0	1,000	430	228	4	6,200	0	6,200
Sacramento	93,225	803	94,028	25,730	5,608	31,338	12,275	4,108	16,383
Sutter	35	200	235	0	0	0	200	0	200
Tehama	0	0	0	35	0	35	0	0	0
Yolo	400	75	475	200	0	200	880	0	80
Yuba	0	597	597	0	950	950	0	0	0
Butte	N/a	N/a	N/a	N/a	N/a	N/a	5,035	399	5,434
Subtotal	96,685	1,677	98,362	26,695	10,861	37,556	26,290	4,507	30,797
San Joaquin Valley									
Calaveras	0	0	0	8,253	60	8,313	260	500	760
Fresno	21,150	0	21,150	2,500	50	2,550	5,046	15	5,061
Kern	70,600	1,655	72,255	16,950	50	17,000	10,600	50	10,650
Kings	0	10,000	10,000	33,300	0	33,300	10,000	0	10,000
Merced	60,100	19,000	79,100	12,500	500	13,000	25,980	1,120	27,100
San Joaquin	13,750	2,228	15,978	11,750	107	11,857	7,008	65	7,073
Stanislaus	2,500	1,428	3,928	150	0	150	0	15	15
Tulare	50,000	0	50,000	53,500	2,000	55,500	53,300	0	53,300
Subtotal	218,100	34,311	252,411	138,903	2,767	141,670	112,194	1,765	113,959
San Francisco Bay and Delta									
Alameda	20	4	24	1,200	0	1,200	0	0	0
Contra Costa	400	0	400	0	0	0	0	0	0
Marin	0	400	400	0	0	0	0	0	0
Napa	11	0	11	350	50	400	104	0	104
Santa Clara	3,350	150	3,500	550	0	550	0	0	0
Solano	0	5	5	37	38	75	0	0	0
Subtotal	3,781	559	4,340	2,137	88	2,225	104	0	104
North Coast									
Humboldt	100	0	100	32	0	32	0	0	0
Lake	0	0	0	0	60	60	0	0	0
Mendocino	0	0	0	12	0	12	0	0	0
Sonoma	0	30	30	0	0	0	0	0	0
Subtotal	100	30	130	44	60	104	0	0	0
Central Coast									
Monterey	2,200	20	2,220	5,500	400	5,900	955	63	1,018
San Luis Obispo	0	0	0	660	0	660	500	500	1,000
Santa Barbara	2,000	0	2,000	0	0	0	0	0	0
San Benito	0	0	0	460	318	778	702	718	1,420
Santa Cruz	N/a	N/a	N/a	N/a	N/a	N/a	200	0	200
Subtotal	4,200	20	4,220	6,620	718	7,338	2,357	1,281	3,638

Southern California									
Los Angeles	755	60	815	430	0	430	510	100	610
Orange	1,000	34	1,034	231	0	231	490	5	495
Riverside	2,100	75	2,175	37,950	406	38,356	10,000	0	10,000
San Bernardino	0	0	0	300	0	300	0	0	0
San Diego	2,000	0	2,000	3,178	58	3,236	1,310	711	2,021
Ventura	90	0	90	0	0	0	0	0	0
Subtotal	5,945	169	6,114	42,089	464	42,553	12,710	991	13,701
Northeast Interior									
Lassen	0	0	0	0	6	6	300	9	399
Modoc	0	250	250	0	250	250	0	0	0
Shasta	2,500	85	2,585	0	0	0	0	0	0
Siskiyou	400	547	947	250	0	250	0	0	0
Subtotal	2,900	882	3,782	250	256	506	300	9	399
Oregon									
Klamath	0	0	0	0	50	50	N/a	N/a	N/a
Nevada									
Douglas	0	0	0	8	0	8	N/a	N/a	N/a
Mexico									
Baja California	0	0	0	950	0	950	N/a	N/a	N/a
TOTAL	**331,711**	**37,648**	**369,359**	**217,696**	**15,264**	**232,960**	**153,955**	**8,553**	**162,508**

The largest numbers of breeding Tricolors were historically found in the Central Valley; Orians (1961a) and DeHaven et al. (1975) reported that the species' center of breeding abundance and the largest colonies were in this region. In 1994 and 1997, more than 75% of all breeding adults were located there (Beedy and Hamilton 1997). In 2000 approximately 70% of the population was located in the Central Valley (Hamilton 2000). A comparison of historical and current distribution of the species shows that in some portions of their range, Tricolors have declined or been eliminated (Beedy and Hamilton 1997). Local near or complete extirpation has occurred in portions of the Central Valley where the species was once abundant, such as Yolo County and Sacramento County, and many historical sites in coastal southern California counties, including Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties (Beedy and Hamilton 1997).

C. Population Status and Trends

Beginning in the 1930s and continuing until 2000, five major studies have estimated population abundance of Tricolors, providing a clear assessment of a dramatic population decline over time (Neff 1937; DeHaven et al.1975; Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton 2000). DeHaven et al. (1975) concluded that population size of Tricolors in the Central Valley had declined by at least 50% during the 1970s compared to the 1930s. The population censuses sponsored by FWS and DFG between 1994 and 2000 indicate that the Tricolor population has continued to decline; numbers of birds fell from an estimated 370,000 in 1994 to 240,000 in 1997 and 162,000 in 2000 (Hamilton 2000; Table 2).

1. Historical Population Estimates

As stated *supra*, the first surveys and population estimates for Tricolors were instigated by Neff in the early 1930s. During the 1960s, other researchers focused their studies on ecology and behavior

of the species (e.g., Orians 1960, 1961a, 1961b; Orians and Collier 1962; Payne 1969), but did not provide range-wide population estimates. DeHaven et al. (1975) conducted a second set of more comprehensive range-wide surveys to determine changes in the population status of Tricolors since Neff's work in the 1930s. Results from these surveys are reported in detail below.

Neff (1937) — From 1930 to 1936, Neff (1937) estimated the population of Tricolors using several methods. The author and cooperators checked the active population of colonies numerous times by conducting flight-line counts (i.e., counting the birds flying in or out across a base line for five minutes); checking distance from base line to feeding ground or nesting site, and estimating probable time required for each trip. Nests were counted by walking into a colony at random and counting each nest that could be seen, and then extrapolating to the colony size. Generally, numbers of nests rather than adult population size were reported.

Based on number of nests reported and multiplying by 1.5 (mean estimated sex ratio of 2 females per male), Beedy and Hamilton (1997) calculated that the surveyors in the 1930s observed as many as 736,500 adults per year in just 8 counties. Neff (1937) documented numerous large colonies, including one in 1934 in Glenn County that contained about 200,000 nests (300,000 breeding adults), over an area greater than 24 ha. Several other colonies in Sacramento and Butte Counties contained more than 100,000 nests. Hamilton et al. (1995) calculated that Neff observed at about 1,105,100 individual Tricolors. Neff, however, concentrated most of his effort in the Sacramento Valley so many have underestimated total population size at the time.

DeHaven et al. (1975) — In 1969 and 1970, DeHaven et al. (1975) surveyed the Central Valley Tricolor breeding range by car; in 1971, the entire breeding range (excluding Baja California) was surveyed. In 1972, the authors surveyed from the northern San Joaquin Valley to southern Oregon. Additional information was provided to the authors by volunteer ornithologists. Population estimates were made by counts and by projections based on research findings that each Tricolor female attends one active nest and the colony supports on average two females for every male, depending on timing within the breeding season.

DeHaven et al. (1975) estimated the number of breeding birds at 157 colonies. Of these, 40 colonies (25%) had fewer than 1,000 birds, 97 colonies (62%) had from 1,000 to 10,000 birds, and 20 colonies (13%) had more than 10,000 birds. All colonies outside the Central Valley contained fewer than 10,000 Tricolors. As stated *supra* in "Range and Distribution," DeHaven et al. (1975) found fewer colonies, fewer non-breeding Tricolors, no nesting areas even approaching the size of some of the previously reported colonies, fewer birds in the largest colonies, and fewer total Tricolors than Neff (1937). Overall, DeHaven et al. (1975) concluded that the population of Tricolors has likely been reduced by more than 50% below levels reported in the 1930s, and that downward trajectory was continuing.

2. Recent Population Estimates

Beedy et al. (1991) summarized all historical and recent breeding accounts, including unpublished observer reports from a variety of sources. Based upon this information they concluded that the Tricolor had declined further from population estimates by DeHaven et al (1975), and that this decline was coincident with continuing losses of wetland habitats in the Central Valley. They reported a range of about 35,000-110,000 breeding adults per year in the 1980s, with an approximate average of 52,000 breeding adults reported per year in that decade (from Beedy and Hamilton 1997).

Unfortunately their population estimates were not based well enough on field surveys so can not be considered adequate for evaluating the population for the period addressed.

The most reliable recent, range-wide population estimates for breeding Tricolors are from the three comprehensive censuses conducted in 1994, 1997, and 2000 (Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton 2000). Each of these censuses employed similar methodology: Tricolors were intensively surveyed on the third weekend in April throughout the breeding range of the species. As mentioned under "Range and Distribution," *supra*, this research was cosponsored by FWS and DFG to study Tricolor population status, including investigating size and location of colonies, nesting habitat characteristics, behavior, reproductive success as correlated with habitat type, patterns of land ownership, and total population size and distribution. The censuses were coordinated by experienced Tricolor researchers at UCD and included these researchers in addition to numerous local volunteer ornithologists and agency personnel as participants. UCD researchers often provided follow-up confirmation of the larger volunteer-reported colonies.

Census results indicate that the number of Tricolors plummeted from an estimated 370,000 in 1994, to 240,000 in 1997, and 162,000 in 2000 (Hamilton 2000). These population data suggest a decline of 56% during the 1990s alone. Fewer colonies were located in 2000 than in 1994 (Hamilton 2000) and colonies were smaller on average in 2000 compared to 1994 (Cook and Toft, in review). Results from the 1994, 1997 and 2000 censuses are reported in detail below.

Hamilton et al. (1995) — The total number of Tricolors located during the 1994 census was estimated to be 369,359 individuals (Table 2). This suggests a decrease in population abundance of at least 50% (and probably more) based on Neff's (1937) results between the 1930's and early 1990's. The ten largest colonies located during the census and additional full season range-wide surveys in 1994 included 60.5% of all breeding individuals, pointing to the importance of protecting large breeding colonies and their nesting and foraging habitat, if the species is to be conserved. Importantly, full season survey results indicated that 70% of all Tricolor nests and 86% of all foraging by nesting birds occurred on private agricultural land in 1994 (Hamilton et al. 1995). Approximately 54% of all observed Tricolor nesting efforts were associated with crops (primarily silage at dairies) (Beedy and Hamilton 1997).

Beedy and Hamilton (1997) — The total number of Tricolors located during the 1997 census was estimated to be 232, 960 individuals (Table 2). This suggests a decrease in the population by approximately 37% between 1994 and 1997. Population declines were most apparent in the species' historical stronghold in the Central Valley, including Sacramento, Fresno, Kern, and Merced Counties. Approximately 75% of all breeding adults located during the census were concentrated within the 10 largest colonies.

Hamilton (2000) — The total number of Tricolors located during the 2000 census was estimated to be 162,508 individuals (Table 2). This suggests an additional decrease in the population by approximately 30% between 1997 and 2000 and an overall decline of approximately 56% between 1994 and 2000. Reliability of the censuses to estimate the Tricolor population almost certainly increased over time because the number of participants grew and participants were better informed about colony locations in each succeeding year (Hamilton 2000). Hamilton (2000) states "…the method of the Census and the survey, to reinvestigate all known breeding places and to search for new ones, has become an increasingly complete assessment of Tricolored Blackbird distribution and abundance. The 2000 Census probably located a greater proportion of the entire population that did censuses in previous years."

More than 40% of all Tricolor reproductive effort in 2000 was associated with dairies in the San Joaquin Valley and southern California (Hamilton 2000). Hamilton (2000) pointed out that conditions were more favorable for breeding Tricolors in 2000 than 1999, including the buyout of the Tevelde and George Colonies in Tulare County (*see* "Destruction of Grain Silage Nesting Habitat," *infra*) and the success of the Delevan NWR and Hills Duck Club (Colusa County) and Merced NWF (Merced County) colonies. However, at least four large colonies, one in Fresno County, two in Kings County, and one in Tulare County, were lost to crop harvest in 2000.

Despite the favorable conditions in 2000, Hamilton (2000) stated that "...the central conclusion of the Census and survey is that tricolors are continuing to decline precipitously in numbers … The conclusion that tricolor numbers are plummeting is based not only upon these data, but also on the collective experience of local experts throughout California who have observed tricolors over long intervals."

3. Summary

Reported Tricolor colony size estimates in 1994 compared to the total count in 1997 indicated that the total Tricolor population declined by about 37%, and the greatest declines occurred in Sacramento, Fresno, Kern, and Merced Counties, which hosted about 72% of the total adults observed in April 1994 (Beedy and Hamilton 1997). Between 1997 and 2000, Tricolor numbers declined by an additional 30% (Hamilton 2000). Overall the population is estimated to have declined by approximately 56% between 1994 and 2000.

A census of the population has not been conducted since 2000, although a volunteer based survey was sponsored by FWS and conducted by the Point Reyes Bird Observatory (PRBO) in 2001. The PRBO effort did not entail a true census, but rather included citing reports submitted by participants over several months (Humple and Churchwell 2002). Hence, the data are not comparable to the census data gathered in 1994, 1997 and 2000 and are not considered in this letter. If they were to be, however, they would indicate that the population declined by approximately 10% more between 2000 and 2001.

Every major study of *A. tricolor* published since the 1970s has sounded the alarm bell regarding the dramatic population decline of the species:

> "Further research is needed to determine whether this downward trend, which may have reduced the Central Valley population by more than 50%, is continuing, and whether it has yet reached the point of concern.…" (DeHaven et al. 1975)

> "Reported tricolor colony size estimates in 1994 compared to the total count in 1997...indicated that the total tricolor population declined by about 37%, and the greatest declines occurred in Sacramento, Fresno, Kern, and Merced Counties, which hosted about 72% of the total adults observed in April 1994...In some portions of their range, tricolors have definitely declined or been eliminated, including local extirpation in portions of the Central Valley where they were once abundant...and many historical sites in coastal southern California counties." (Beedy and Hamilton 1997)

> "The central conclusion of the Census and survey is that tricolors are continuing to decline precipitously in numbers, from millions in the 1930s...to an estimated 750,000 in 1975...,

370,000 as of the 1994 Census and 162,000 in this account for 2000. The conclusion that tricolor numbers are plummeting is based not only upon these data, but also on the collective experience of local experts throughout California...Tricolors are a diminished natural spectacle in the Central Valley and in Southern California, the former strongholds of this species." (Hamilton 2000)

"The long-term population trends and patterns in reproduction reported in this study reveal that the Tricolored Blackbird possesses most of the traits that ultimately led to the extinction of the Passenger Pigeon in the same ecological circumstances. These factors include the loss of vast areas of native wetland along with the increasing loss of upland, non-native vegetation favorable for nesting, the trend of decreasing colony size in a highly social breeder, a habit of itinerant breeding, and wholesale mowing down of the largest breeding colonies in agricultural harvest." (Cook and Toft, in review)

Extensive range-wide surveys for the Tricolor provide clear and unequivocal evidence that the species has experienced and is continuing to experience a precipitous population decline. Further, there is no evidence that the factors causing this decline are being prevented or alleviated, including ongoing destruction of grain silage colonies; failure to protect highly productive nesting substrates (i.e. Himalayan blackberry thickets and other productive upland breeding habitats); permanent loss of nesting and foraging habitat due to increasing urbanization and vineyard and orchard deployment in the Central Valley and southern California; continued high levels of predation in marsh nesting habitats by herons and other predators; and spraying of agricultural contaminants throughout the range of the species. Without the legal protection offered by the Federal and California Endangered Species Acts, current trends are likely to continue and the Tricolor is likely to become extinct in the foreseeable future.

D. Satisfaction of Federal and State ESA Petition and Listing Factors

The purpose of the federal ESA is to "provide a means whereby the ecosystems on which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of [such species]." 16 U.S.C. § 1531(b). An "endangered" species is one that is in danger of extinction throughout all or a significant portion of its range. 16 U.S.C. § 1532(6). A "threatened" species is one that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. 16 U.S.C. § 1532(20). Any person may submit a petition to the Secretary to list a species. *See* 16 U.S.C. § 1533(b)(3). FWS is charged with listing species as threatened or endangered based "solely on the basis of the best scientific and commercial data available . . .," *id*. § 1533(b)(1)(A), and whenever listing is warranted based on any one of the following five listing factors: (1) the present or threatened destruction, modification, curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; or (5) other natural or manmade factors affecting its continued existence. *Id*. § 1533(a)(1).

Under the California ESA, a petition must include information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce (*see supra*). The petition must also include information about the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, the availability and sources of information, information regarding the kind of habitat necessary for species survival, and a detailed distribution map, all of which are both satisfied below. Cal. Fish & Game Code § 2072.3.

1. Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

The vast majority of the native habitat for Tricolors has been lost or degraded. Only 560,500 of an original 4,000,000 acres (about 14%) of wetlands in the Central Valley were extant in 1939 (Beedy and Hamilton 1997). By the mid-1980s, an estimated 480,000 acres of freshwater emergent marshes, or 85% of the total remaining freshwater wetlands in 1939, were reduced by one-half to about 243,000 acres (Beedy and Hamilton 1997). Further, native perennial grasslands — prime Tricolor foraging habitat — have been reduced by more than 99% in the Central Valley and surrounding foothills (Beedy and Hamilton 1997). Remaining marsh nesting habitat has been reduced to small isolated patches of habitat that also support high densities of Tricolor predators.

Tricolors have been flexible in their choice of nesting substrates and have shown an increasing trend towards use of upland substrates for nesting following the 1930s (Table 1). More recent important nesting substrates have included agricultural fields (especially grain silage) and Himalayan blackberry (DeHaven et al. 1975; Hamilton et al. 1995; Cook 1996). The most commonly used substrates today include native emergent marshes, grain silage at dairies and Himalayan blackberry (Table 3).

TABLE 3. Numbers of Tricolored Blackbird colonies and proportions of colonies and individuals nesting by substrate during the years 1994, 1997 and 2000 combined among identified regions in California. Source: Cook and Toft, in review.

	emergent marsh			*Himalayan blackberry*			*silage*			*other flooded vegetation*			*other protecting vegetation*		
Region	*No. col.*	*Percent of col.*	*birds*	*No. col.*	*Percent of col.*	*birds*	*No. col.*	*Percent of col.*	*birds*	*No. col.*	*Percent of col.*	*birds*	*No. col.*	*Percent of col.*	*birds*
San Joaquin Valley	52	15.0	12.6	14	4.0	2.3	17	4.9	29.6	7	2.0	3.4	16	4.6	5.2
Sacramento Valley	40	11.6	20.8	18	5.2	2.7	0	0	0.0	5	1.4	1.2	1	0.3	2.1
Sacramento County	7	2.2	1.6	48	13.9	9.5	0	0	0.0	0	0.0	0.0	0	0.0	0.0
Southern California	59	17.0	5.4	2	0.6	0.1	0	0	0.0	2	0.6	0.1	8	2.3	1.1
Other	30	8.7	1.2	5	1.4	0.4	0	0	0.0	3	0.9	0.3	12	3.5	0.6

DeHaven et al. (1975) pointed out that many marshes and other "apparently suitable" nesting sites were unused by Tricolors each year. As an example, Tricolors have largely been extirpated from Sacramento County in recent years as traditional nesting sites there have been lost, despite the remaining presence of habitat that appears similar but is not used (Liz Cook, pers. comm.). Suitable Tricolor habitat must, therefore, be more than meets the human eye: factors such as insect availability or other specific unknown habitat characteristics may also provide crucial breeding requirements for Tricolors in addition to suitable nesting substrates. Therefore, it is critical at present to protect the habitat that is documented to be used by Tricolors, rather than assuming that protecting habitat that superficially appears suitable but is not actually used (i.e., relying solely on currently protected public lands that do not currently support breeding Tricolors) will be sufficient to conserve the species.

a. Destruction of Native Habitats

Destruction of Tricolor breeding habitat has been documented as far back as the first published population studies on the species. Neff (1937) stated "...the destruction of nesting habitats by man is of most importance. Reclamation and drainage have destroyed many favorable habitats. Areas in the vicinity of San Francisco and Los Angeles are now so highly developed that it is doubtful whether or not any colonies could exist there. Other habitats have been destroyed by the dredging or cleaning of reservoirs, marshes, and canals in order to destroy the growths of cattails and tules." The surveyors documented specific instances of destruction of known colony sites, including draining and burning of some surveyed localities.

DeHaven et al. (1975) also noted the loss of breeding habitat leading to the loss of colonies where they formerly occurred. Colonies studied near Davis in Yolo County during the 1960s were not located again due to the near-complete loss of nesting habitat. No nesting habitat was found near Riego Road in Sacramento County where Orians (1961a) found colonies, and at Cache Creek in Kern County where Collier (1963) found colonies.

b. Colony Destruction by Agricultural Activities

The relatively recent phenomenon of Tricolors nesting in grain silage fields at dairies was not mentioned by DeHaven et al. (1975) (but see Collier 1968), however silage is well documented as a primary attribute of present day Tricolor nest site selection (Beedy and Hamilton 1997; Beedy and Hamilton 1999). Harvest of grain silage is conducted in relation to moisture content of the forage, the timing of which coincides with Tricolors using the crops for nesting (USFWS 2000). This causes nest destruction and direct mortality, which in turn is threatening much of the remaining breeding population of the species (USFWS 2000). In addition, many former agricultural areas within the range of the Tricolor are now being urbanized, and the trend is projected to continue (Beedy and Hamilton 1997).

Dairy grain silage consists of varieties of wheat, often triticale, but also barley, oats, and other crops. Crops can be monocultures or mixtures of grain plants and may also be infested with weeds such as prickly lettuce (*Lactuca serriola*) and thistles (*Cirsium* spp.). These plants may grow to 3–4 ft in height and appear to provide some protection against predators on Tricolor nests because of their dense growth, somewhat spiny/irritating character and typically monotonous relief in the landscape.

Silage fields around dairies are probably highly attractive to breeding Tricolors because of relative protection from predators but also because crops at a single location may cover tens of acres or

more. Because they are intensely colonial, tens of thousands of Tricolors can potentially occupy a silage field as small as 20–40 acres in size. Nest densities in these fields are often not as great as in some other upland substrates but approximately one nest per square meter is not uncommon (Liz Cook, pers. comm.). In addition to providing a suitable nesting substrate, dairies typically provide abundant grain sources at their feedlots for settling adult Tricolors, large amounts of nearby foraging habitat for insects (e.g. alfalfa), and reliable water supplies.

Silage is grown to be an early cut green feed. Crops are planted in late winter/early spring and mature to harvest stage usually between about mid April and the first week in May. Harvest stage occurs when the plants contain the highest amount of moisture in their seed heads (milk stage). This stage may last about a week within which time the plants are most valuable as silage feed. The crop is chopped, often in a single day, into fine pieces and allowed to ferment into the final product that is fed to dairy cows. Fields that grew silage are almost immediately turned over to a second crop such as corn (Liz Cook pers. comm. with David Hardt, refuge manager, Kern National Wildlife Refuge).

Tricolors begin establishing nesting colonies in grain silage in late March/April when the plants are tall and sturdy enough to support nests. This means that the timing of silage harvest usually coincides closely with the late nestling/early fledgling stage of Tricolor offspring. The timing of silage harvest and the Tricolor nesting cycle is such that colonies in silage are always lost unless there is intervention on their behalf or for some other unlikely reason that the crop is not harvested (Liz Cook, pers. comm.).

The concentration of most of the Tricolor reproductive effort into a few large colonies that are selecting grain silage as a nesting substrate has greatly increased the risk of extinction should the annual destruction of such a large proportion of nests continue unabated (Cook and Toft, in review). Table 4 below provides some examples of recent breeding failures because of harvest of grain silage. Note that approximately half of the last documented Tricolor population (2000 census results) nested in two silage fields in 2003 and that the vast majority of this breeding effort was destroyed. All of it would almost certainly have been lost without the concerted effort of a couple of individuals from the public sector (Liz Cook, pers. comm.).

TABLE 4. Some examples of distinct colonies nesting in dairy silage whose nests were lost to crop harvesting. This is not a complete list and does not necessarily represent all silage colonies lost to harvesting in the period indicated. Specific locations of dairies are not provided but are available. Sources: Hamilton 1993; Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton et al. 1999; Hamilton 2000; Liz Cook unpublished data.

Year	County	Number of Breeding Birds
1993	Tulare	48,000
1994	Fresno	70,000
1994	Kern	11,600
1994	Tulare	50,000
1995	Fresno	50,000
1995	Tulare	50,000
1996	Fresno	50,000
1996	Tulare	50,000

1997	Fresno	52,500
1997	Tulare	40,000
1998	Fresno	40,000
1998	Tulare	40,000
1999	Tulare	14,000
2003	Tulare	20,000
2003	Kern	50,000*

* nests of approximately 20000 of these birds saved by crop by-out

c. Destruction of Other Suitable Upland Breeding Substrates and Surrounding Habitats

Himalayan blackberry supports the highest densities of nesting Tricolors among all used substrates and reproductive success is significantly higher in these than other most commonly used substrates (emergent marsh and silage) (Table 5). However, Himalayan blackberry nesting sites are currently not protected and many important traditionally used sites have been lost in recent years (Cook and Toft, in review). Other important upland nesting substrates, including thistles and prickly lettuce, are likewise not protected because they are considered to be non-native plants and often occur on private property.

Tricolors nesting in Himalayan blackberry had greater reproductive success than those nesting in grain silage, but colonies in grain silage were far larger than those in any other upland nesting substrate, and where nests were not destroyed by silage harvest, number of fledglings per nest was higher than in native marsh habitat (Table 5) (Cook and Toft, in review). These results suggest that the annual loss of nests due to harvest of grain silage during the Tricolor breeding season is an extremely significant factor contributing to the decline of the species.

TABLE 5. Mean reproductive success (# of chicks per nest at 8 days after first egg hatched) of colonies by substrate and study region from 1992 – 2003. Source: Cook and Toft, in review.

	Number of chicks per nest		
	n	Mean	SE
Nesting Substrate			
emergent marsh	40	0.5	0.09
Himalayan blackberry	23	2.0	0.16
Silage – all	26	0.2	0.08
silage [a]	4	1.0	0.26

[a] *Excluding colonies that were lost to crop harvesting.*

2. Inadequacy of Existing Regulatory Mechanisms

The Tricolored Blackbird is not protected by existing regulatory mechanisms. Although the Yolo Audubon Society submitted a petition to the California Fish and Game Commission to list this species as endangered under the state Endangered Species Act in 1991, the petition was withdrawn in 1992. Beedy and Hamilton (1997), at 19-20.

Based on concerns about the Tricolor's population status, FWS included this species as a Category 2 candidate for federal listing as either threatened or endangered. *See, e.g.*, 59 Fed. Reg. 58992 (November 15, 1994).[1] However, FWS later decided to discontinue the practice of maintaining a list of Category 2 candidates. 61 Fed.Reg. 64,481 (December 5, 1996). Currently, the Tricolored Blackbird is only considered a FWS non-game bird of management concern (species are of concern because of (1) documented or apparent population declines, (2) small or restricted populations, or (3) dependence on restricted or vulnerable habitats) and a species of special concern by DFG (animals not listed under the federal Endangered Species Act or the California Endangered Species Act, but which nonetheless (1) are declining at a rate that could result in listing, or (2) historically occurred in low numbers and known threats to their persistence currently exist). These designations do not provide any specific legal protection to the bird aside from the requirement that project's triggering CEQA review must analyze the impacts of the proposed action on the Tricolor. *See, e.g.*, 14 Cal. Code Regs. §§ 15065, 15380. However, its special status does not protect the species from activities that do not trigger CEQA review. Furthermore, while the species is arguably afforded protection under the MBTA, *see supra* at 2-3, enforcement agencies have turned a blind eye to the annual violations of the MBTA by private property owners during Tricolor nesting season.

3. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Neff (1942) reported that:

> "Market hunting of blackbirds in the interior valleys of California became a thriving business in about 1928 or 1929, and a dependable market for them was developed largely through Italian produce firms in the larger cities. During the depression years the number of men so engaged increased markedly, but decreased by 1936 or 1937. Using automatic shotguns and firing into dense masses of blackbirds feeding on rice stubble, these market hunters killed large numbers of all species of blackbirds; one group of market hunters shipped nearly 400,000 dressed blackbirds from one Sacramento Valley shipping point in five seasons, and during the winter season of 1935-1936 they shipped about 88,000 birds."

In addition, blackbirds were reportedly shot in great numbers by ranchers in order to drive the flocks away from crops, or by pleasure hunters utilizing blackbirds for target practice, and poison to regulate blackbird damage to crops was a major source of adult mortality (Neff 1942). Beedy and Hamilton (1997) noted that this practice continued until the 1960s, during which thousands of Tricolors were killed in the Central Valley. Reduction in numbers of blackbirds and improved

[1] Category 2 candidates are species for which information in the possession of FWS indicates that proposing to list as endangered or threatened is possibly appropriate, but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules.

harvesting methods have resulted in the termination of blackbird extermination programs in the region. Nonetheless, a history of widespread persecution of blackbird species likely has contributed to the Tricolor population decline documented over the past century.

4. Disease or Predation

Tricolors construct nests in flooded or spiny, urticating or otherwise armored vegetation to protect them from terrestrial predators (Beedy and Hamilton 1999). Emergent vegetation such as cattails, bulrushes, and willows are the most often used flooded substrates while Himalayan blackberry, silage and other grain crops, thistles, prickly lettuce, and native nettle (*Urtica dioica*) are among the most important upland nesting substrates.

Historically terrestrial predators have probably included wolves (*Canis lupus*), coyotes (*Canis latrans*), gray foxes (*Urocyon cinereoargenteus*), raccoons (*Procyon lotor*), mink (*Mustela vison*), striped skunks (*Mephitis mephitus*) and spotted skunks (*Spilogale gracilis*), gopher snakes (*Pituophis catenifer*), non-native rats (*Ratus ratus*), western rattlesnakes (*Crotalus viridis*), and king snakes (*Lampropeltis getulus*). Avian predators are reported to be Black-crowned Night-Herons (*Nycticorax nycticorax*), Great Blue Herons (*Ardea herodias*), Common Raven's (*Corvus corax*), Cooper's Hawks (*Accipter cooperii*), Burrowing Owls (*Athene cunicularia*), American Crows (*Corvus brachyrhynchos*), Swainson's Hawks (*Buteo swainsoni*), Northern Harriers (*Circus cyaneus*), Barn Owls (*Tyto alba*), Short-eared Owls (*Asio flammeus*), Yellow-billed Magpies *(Pica nuttalli*), and Merlins (*Falco columbarius*). Predation by feral cats (*Felis catus*) has recently been reported (Beedy and Hamilton 1997). Tricolors respond to predators by sitting silently when rather than attempting to attack them, as do Red-wings (Beedy and Hamilton 1997, 1999).

Predation is a major cause of large-scale nesting failures in many Tricolor colonies, especially those nesting in native emergent marshes (Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton 2000). Cook and Toft (in review) found that reproductive success was significantly lower in native emergent marshes than other substrates, excluding silage that was not lost to harvesting operations (Table 5). Heron and raccoon predation upon colonies nesting in marshes, especially, can destroy all or nearly all nests within colonies (Hamilton et al. 1995; Hamilton 2000). For example, Tricolor nesting at Kern NWR, Kern County and at Maxwell I and Maxwell II colonies in Colusa County failed due to night-heron predation. Black-crowned Night Heron predation — which often results in the nest failure of an entire colony — is particularly troubling at national wildlife refuges, which are becoming increasingly important nesting sites for both Night Herons and Tricolors as private range and dairy lands are converted to vineyards and orchards or urban uses, and as grain silage fields are subject to harvest during nesting season.

5. Other Natural or Anthropogenic Factors

Beedy and Hamilton (1997) document evidence of Tricolor mortality due to contaminants. A large Tricolor breeding colony of nearly 50,000 birds at Kesterson Reservoir in Merced County experienced a complete nesting failure in 1986 (Beedy and Hayworth 1992). Some of the dead nestlings had club feet; other shorebirds and water birds collected at the reservoir had similar deformities. Pathological examinations of the Tricolor nestlings indicated heart muscle degeneration, and liver sampled showed higher concentrations of selenium than in Red-wing nestlings collected in an uncontaminated area at Merced NWR (Beedy and Hayworth 1992). The cause of the 1986 Tricolor nestling deaths was suspected to be selenium toxicosis (Beedy and Hamilton 1997).

Hamilton observed a colony sprayed by mosquito abatement operators in Kern County, and all sprayed eggs failed to hatch, and the loss of at least two Tricolor colonies was attributed to herbicide applications (Beedy and Hamilton 1999). While the link between environmental contaminants and nesting failure of Tricolors is largely unstudied, enormous amounts of chemicals are introduced into the environment every year by the California agriculture industry, particularly in the Central Valley, which is the historical stronghold of the Tricolor and the most intensive agricultural region in the state. Table 5 shows amount and type of pesticides applied in five of the counties that support the some of the greatest numbers of breeding Tricolors.

Table 5. Type and Amount of Pesticides Used in Fresno, Merced, Sacramento, San Joaquin, and Tulare Counties. Source: California Department of Pesticide Regulation 2002.

County	Chemical	Pounds Applied	Chemical	Pounds Applied
Fresno	Aluminum Phosphide	15,080.9830	Metam-Sodium	1,981,875.2816
	Bacillus Thuringiensis I	1,690.3241	Methoprene	15.6594
	Chlorophacinone	0.1511	Methyl Bromide	417,510.3194
	Chlorpyrifos	321,888.9509	Oryzalin	11,850.1164
	Copper Sulfate	115,084.1100	Petroleum Oil	2,329,338.9000
	Diazinon	70,289.4242	Phosmet	95,969.6584
	Diphacinone	0.7339	Pyrethrins	162.6464
	Malathion	43,158.9558	Strychnine	40.7266
	Mancozeb	37,528.9088	Zinc Phosphide	35.7129
Merced	Aluminum Phosphide	2,971.6662	Metam-Sodium	422,398.3113
	Bacillus Thuringiensis I		Methoprene	157.8358
	Chlorophacinone	1.1929	Methyl Bromide	131,116.9563
	Chlorpyrifos	61,795.4767	Oryzalin	2,594.6929
	Copper Sulfate	105,569.4900	Petroleum Oil	569,390.7400
	Diazinon	23,995.9920	Phosmet	9,044.3520
	Diphacinone	0.8929	Pyrethrins	590.9544
	Malathion	17,868.8865	Strychnine	89.1223
	Mancozeb	8,991.6591	Zinc Phosphide	265.5314
Sacramento	Aluminum Phosphide	1,957.8636	Metam-Sodium	34,853.1512
	Bacillus Thuringiensis I	77.9603	Methoprene	278.8712
	Chlorophacinone	0.1346	Methyl Bromide	9,339.2350
	Chlorpyrifos	29,307.3649	Oryzalin	6,544.5375

	Copper Sulfate	49,294.402	Petroleum Oil	223,652.1400
	Diazinon	14,780.1577	Phosmet	8,031.6110
	Diphacinone	0.3048	Pyrethrins	71.4711
	Malathion	2,852.0994	Strychnine	0.8122
	Mancozeb	11,154.9237	Zinc Phosphide	60.1408
San Joaquin	Aluminum Phosphide	2,362.2914	Metam-Sodium	10,122.7993
	Bacillus Thuringiensis I	562.7223	Methoprene	95.2427
	Chlorophacinone	0.1439	Methyl Bromide	176,519.4093
	Chlorpyrifos	52,076.1370	Oryzalin	6,757.1516
	Copper Sulfate	100,613.6600	Petroleum Oil	534,153.4400
	Diazinon	17,664.0315	Phosmet	10,195.7060
	Diphacinone	0.3140	Pyrethrins	260.5963
	Malathion	11,265.6954	Strychnine	35.1823
	Mancozeb	23,385.1615	Zinc Phosphide	12.6028
Tulare	Aluminum Phosphide	2,786.4064	Metam-Sodium	117,861.9303
	Bacillus Thuringiensis I	198.8293	Methoprene	0.6954
	Chlorophacinone	0.2265	Methyl Bromide	123,817.5579
	Chlorpyrifos	202,428.6137	Oryzalin	6,219.4719
	Copper Sulfate	267,978.4700	Petroleum Oil	2,978,688.3000
	Diazinon	43,560.2082	Phosmet	81,260.5161
	Diphacinone	1.1976	Pyrethrins	46.7505
	Malathion	25,292.3724	Strychnine	57.4777
	Mancozeb	16,267.6174	Zinc Phosphide	1.6000

While Tricolors were not studied directly, many of the chemicals used within the breeding range of the Tricolor are known to be highly toxic to birds. For example, malathion, chylorpyrifos, and diazinon are organophosphorus pesticides that bind with cholinesterase in animals and disrupt neural functioning. Chlorpyrifos is moderately to very highly toxic to birds (EXOTOXNET 2004). Birds are quite susceptible to diazinon poisoning: in 1988, the EPA concluded that the use of diazinon in open areas poses a "widespread and continuous hazard" to birds. Bird kills associated with diazinon use have been reported in every area of the country and at all times of the year. Birds are significantly more susceptible to diazinon than other wildlife (EXOTOXNET 2004).

Malathion is moderately toxic to birds. The reported acute oral LD50 values are 167 mg/kg in blackbirds and starlings (EXOTOXNET 2004). The precise oral or inhalation median lethal doses for aluminum phosphide or phosphine in birds are not known, but exposure of turkeys and hens to 211 and

224 mg/meters cubed for 74 and 59 minutes respectively resulted in labored breathing, swelling of organs, tonic-clonic convulsions and death (EXOTOXNET 2004).

Methoprene is slightly toxic to birds, but non-lethal effects that may affect survival of the birds appeared at acute oral doses of 500 mg/kg, and included slowness, reluctance to move, sitting, withdrawal, and incoordination (EXOTOXNET 2004). These effects may decrease bird survival by making them temporarily more susceptible to predation (EXOTOXNET 2004).

Phosmet is documented to be highly toxic in Red-wings, with a reported acute oral LD50 of 18 mg/kg (EXOTOXNET 2004). Zinc phosphide is highly toxic to wild birds, although blackbirds were found to be less sensitive than other taxa (EXOTOXNET 2004).

Hamilton et al. (1995) suggested that chemical use in agricultural areas does not appear to be inducing a serious population problem for Tricolors. However, some mortality has been documented due to toxic chemicals, and this source of mortality could become more significant if the number of birds continues to dwindle.

6. Suggestions for Future Management

Management objectives for Tricolors include maintaining a viable, self-sustaining population throughout the geographic range of the species; avoiding the losses of the colonies and their associated habitats; increasing the breeding population on suitable public and private lands managed for this species; and enhancing public awareness and support for protection of habitat and active colonies (Beedy and Hamilton 1999). Measures have been taken at times to protect the nesting activities of Tricolors, including purchasing portions of crops to preserve some large colonies, or delaying harvest to avoid impacting nests during the active breeding season. These actions and participation by landowners resulted in additions of an estimated 37,000 to 44,000 first-year adults to the 1994 and 1995 breeding seasons, and should be aggressively pursued and funded.

Another suggested protective measure includes the creation of low-risk nesting substrates such as marshes and blackberries within key dairy regions of the San Joaquin and Sacramento Valleys, to provide alternative nesting sites to grain silage fields (USFWS 2000). Any newly created nesting substrates must be evaluated for their successful use by nesting Tricolors. Once such areas are determined to be contributing positively to the reproductive success of Tricolors, they should be preserved and managed in perpetuity. Given the perilous status of the species, the creation and use of alternative nest sites by some Tricolor colonies must not be considered a rationale for allowing destruction of silage fields concurrently used by other colonies during the breeding season.

Other activities that result in Tricolor nesting losses include mowing, plowing, or burning of marsh areas within duck clubs and reservoirs or wetland maintenance of reservoirs containing occupied habitat. These losses are temporal and could easily be avoided by delaying the activity until after the colony completes the breeding cycle (Beedy and Hamilton 1999). In addition, the protection and enhancement of an important Tricolor breeding site known as Toledo Pit in Tulare County should be prioritized (DeHaven 2000).

Any effort to conserve the Tricolor must include adequate funding to monitor population status and habitat use. Research priorities include but are not limited to: continuing and expanding annual range-wide censuses; initiating mark-recapture and ratio-telemetry studies to determine demographic rates such as survival, reproduction, and population growth, and site fidelity as related to reproductive

success; and conducting studies of foraging ecology to determine key characteristics and possibilities to enhance foraging habitat.

III. REQUEST FOR EMERGENCY ACTION

For the reasons provided above, the Center requests that FWS and FGC take immediate action on this petition and issue emergency regulations to list the Tricolored Blackbird. The federal ESA's emergency listing provision gives FWS the authority to issue a regulation to protect a species from "any emergency posing a significant risk to the well-being of any species of fish or wildlife or plants." 16 U.S.C. §§ 1533(b)(3)(C)(iii) and (b)(7). Emergency listing is not subject to the normal listing process and procedures. An "emergency listing" may take effect immediately upon publication of the regulation in the Federal Register, and is effective for 240 days thereafter. 16 U.S.C. § 1533(b)(7). Similarly, California Fish and Game Code Section 2076.5 permits FGC to issue emergency listing rules to provide imperiled species with immediate substantive protection. As discussed above, the Tricolor is in immediate need of protection from the severe nesting failures caused each year by agriculture harvesting and plowing activities.

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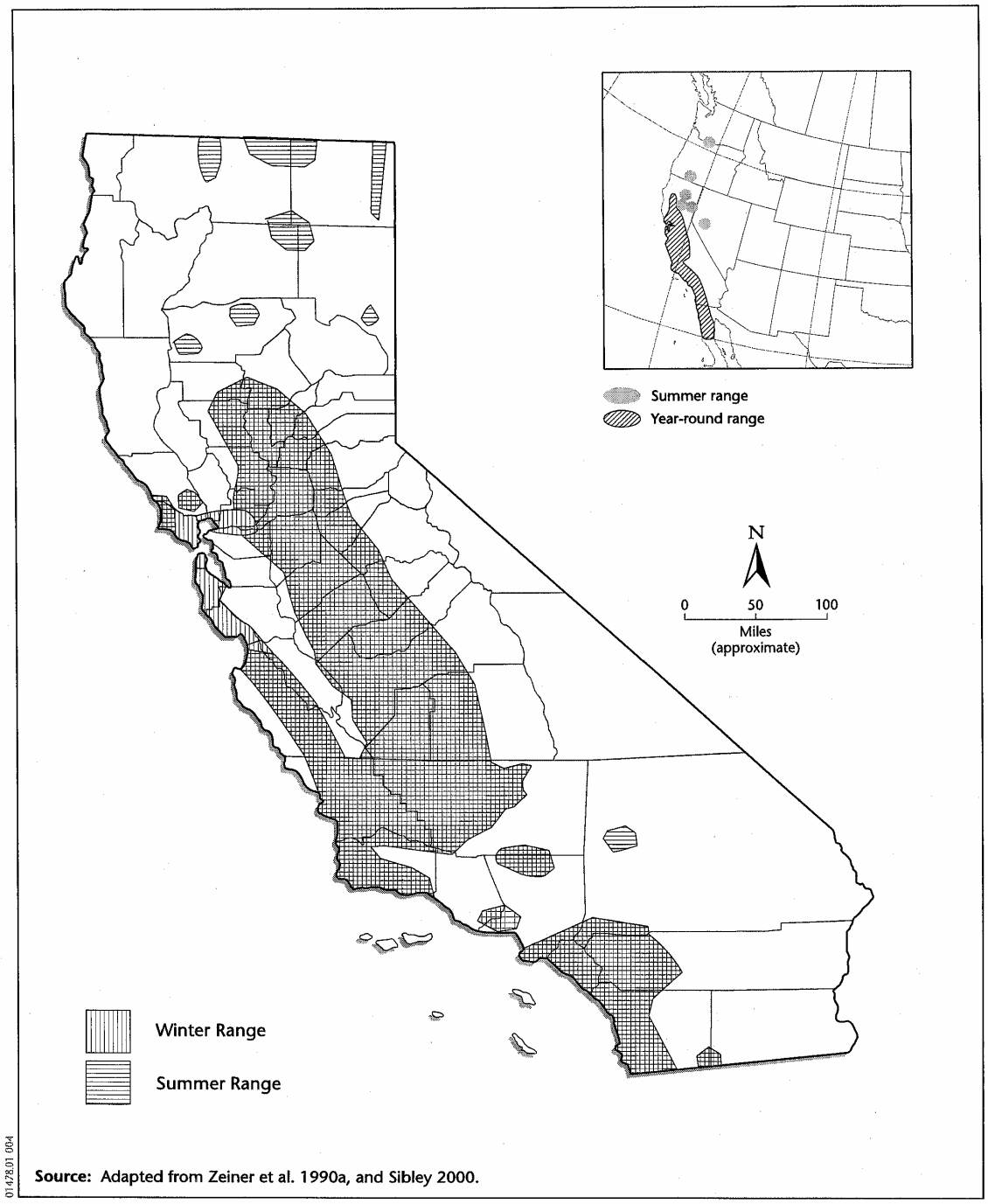

Figure 1. Distribution of the Tricolored Blackbird. Source: Eastern Contra Costa County HCP, http://www.cocohcp.org/draft-hcp/app_figs/AppD-03b_Tricolored_Blackbird.pdf.

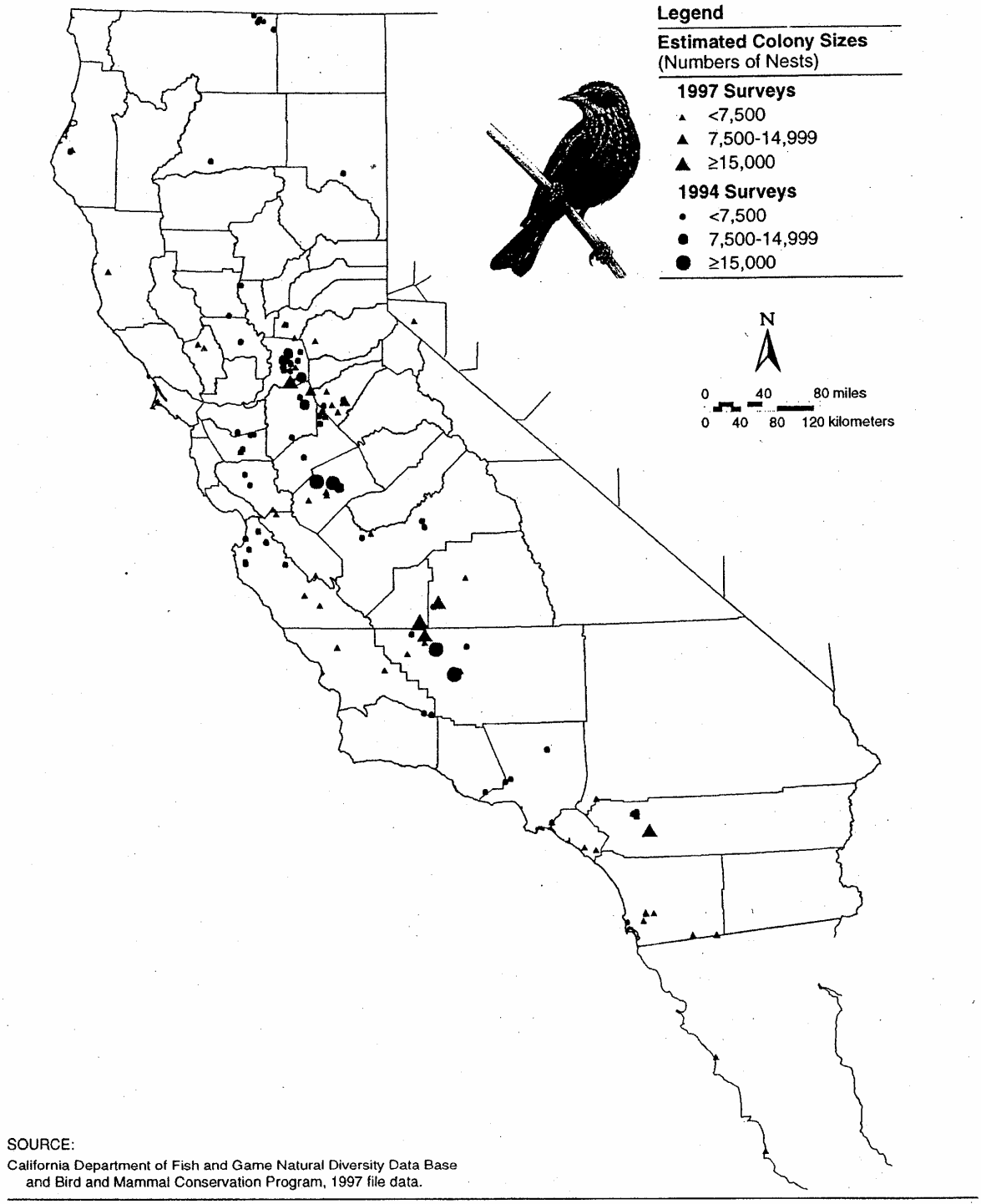

Figure 2. Locations of Tricolored Blackbird nesting colonies, April 1994 and 1997. Source: Beedy and Hamilton 1997.